SVP SECTION

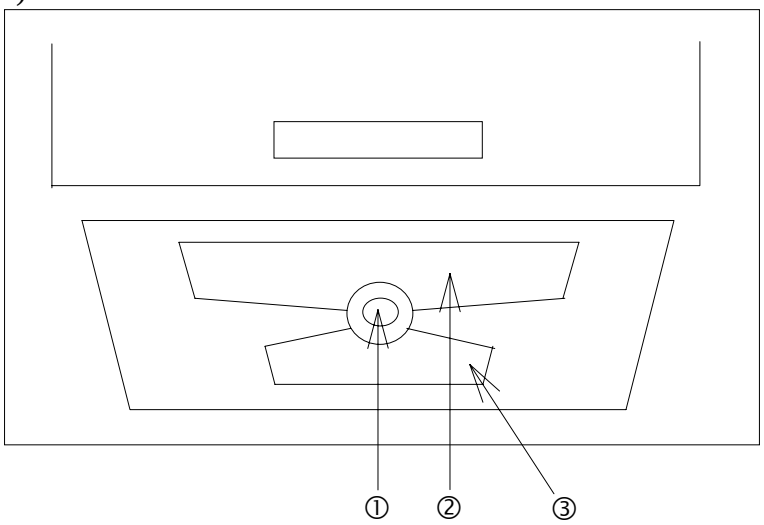
Contents

1 How to Operate the SVP (PC)

This manual describes how to operate the SVP (PC) with a trackball.

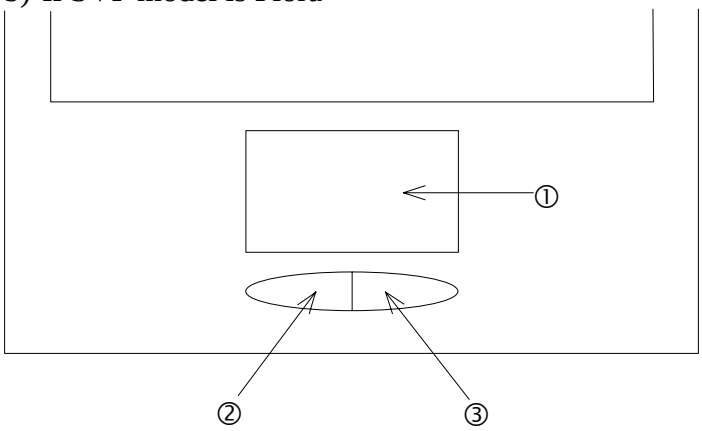
1.1 How to use a trackball or touchpad

a) If SVP model is Armada



① : Trackball
Rotate this device to move the pointer to a desired position.
② : Button
Pressing this button selects an item on which the pointer is placed.
③ : Not used

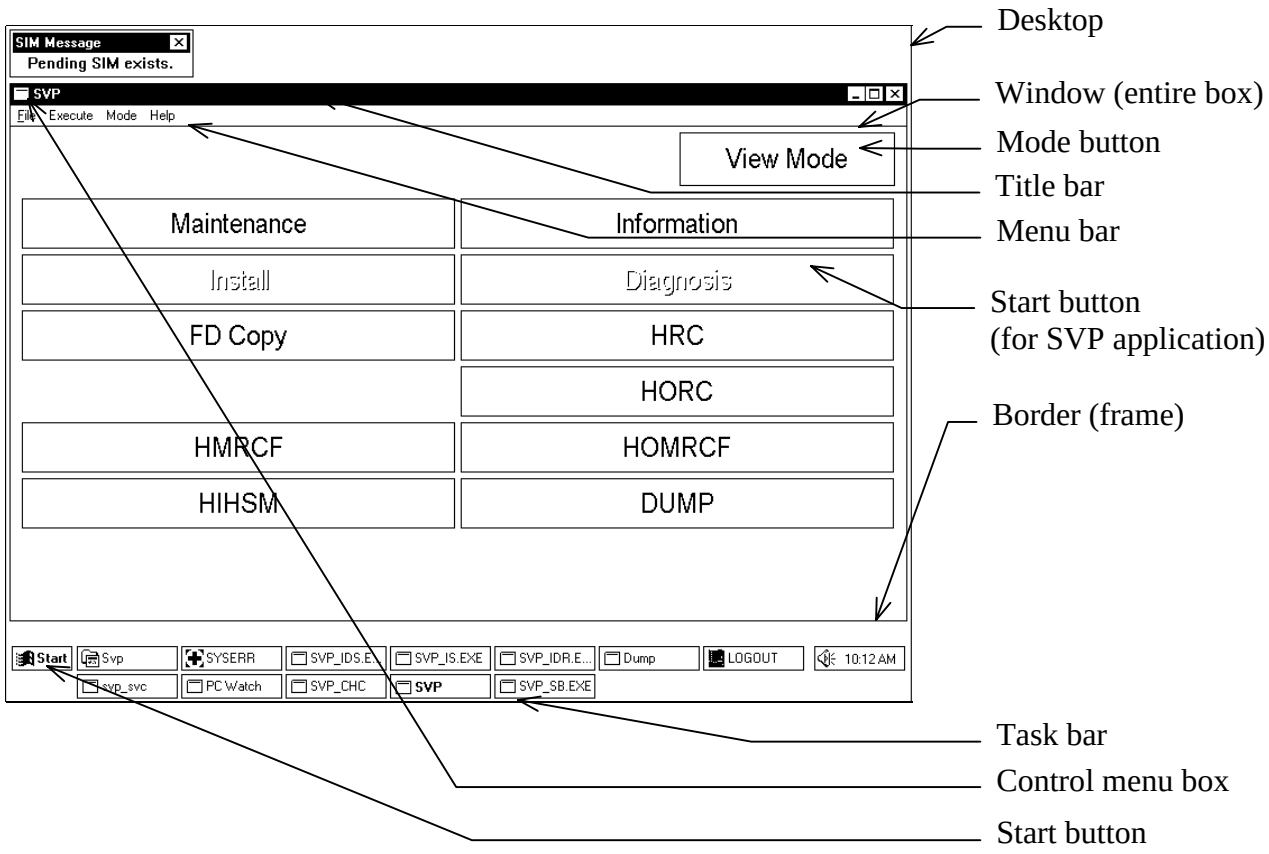
b) If SVP model is Flora



① : Touchpad
Trace this device to move the pointer to a desired position.
② : Button
Pressing this button selects an item on which the pointer is placed.
③ : Not used

1.2 Windows Screen Component Nomenclature

Either of the following windows is displayed.



(Note)
Each SVP screen on this maintenance manual is a sample, and it may not be the same as the actual screen.

1.3 How to use Windows

(1) Notation

In this manual, “select” has the following three meanings, and (CL), (DC), or (DR) is added to the word for each meaning.

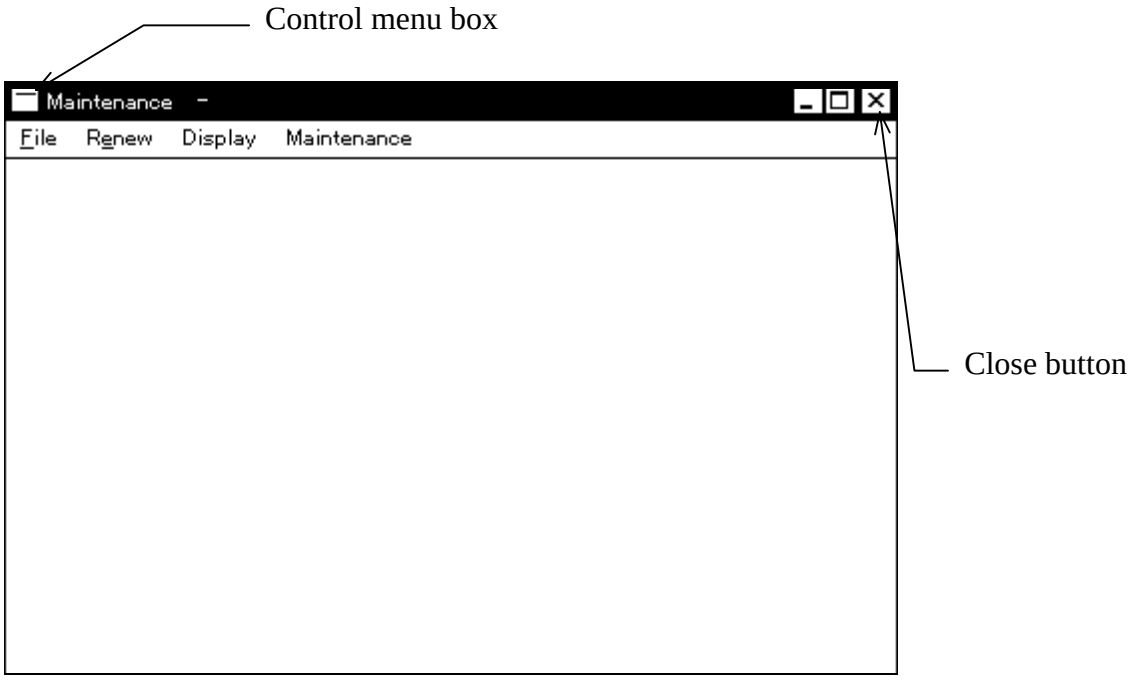
(CL) Click:
Quickly press and release the button above the trackball.
(DC) Double-click:
Click the button above the trackball or touchpad twice in rapid succession.
(DR) Drag:
To hold down the button above the trackball or touchpad while you rotate the trackball or trace the touchpad to move the pointer to a desired position. Then release the button.

example)
Select (DC) the [Install] icon in the ‘SVP’ window.

Move the pointer to [Install] with the trackball or touchpad. Then click the button above the trackball or touchpad twice in rapid succession.

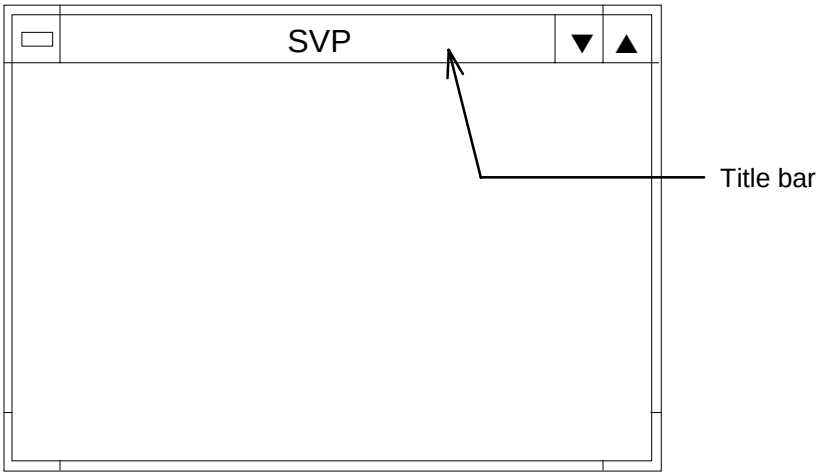
(2) Close

“Close” means to close the aplication window.
(Double-click the control menu box of the window or click the close button for Windows 95.)



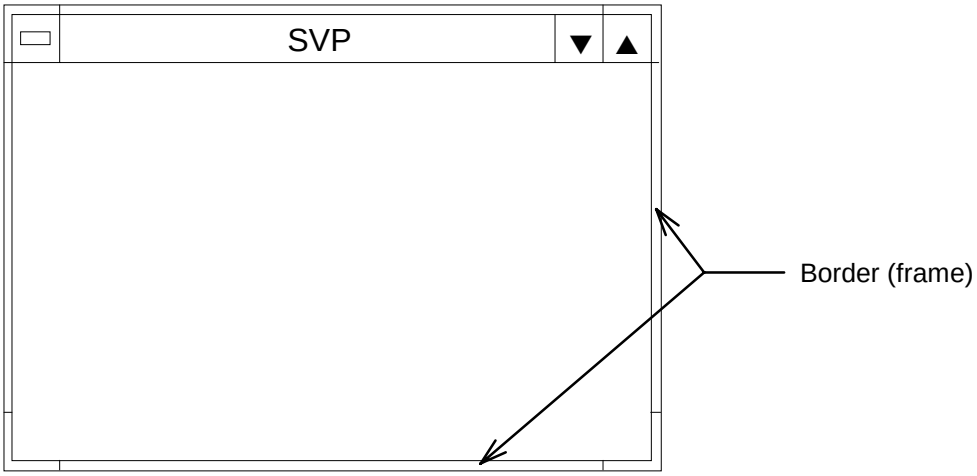
(3) Moving the Window

Move the pointer to the title bar with the trackball.
While pressing the button, move the window with the trackball or touchpad (DR) to a desired position and release the button.



(4) Changing the window size

Move the pointer to the window border (frame) (the pointer changes to the double- headed arrow). While pressing the button, move the border (the border changes to the broken line) until the window becomes a desired size, and release the button.



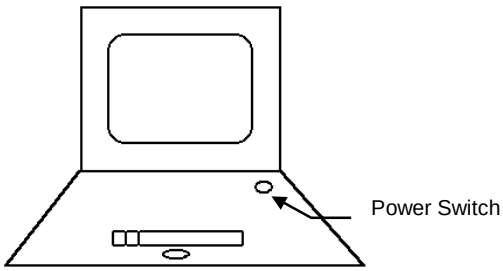
(5) Switching the screen (when two or more screens are opened)

While pressing the ALT key , press TAB (or ESC) until your desired window title is displayed, and release the ALT key.

1.4 Power On

Usually, SVP start automatically at the breakers-ON.
If some problem occurred and you must start SVP, do as following procedures.

(1) Power On SVP
a. Press Power Switch on the SVP keyboard.
b. Watch messages displayed on the SVP screen.
If following messages are displayed, Go to (2).
Otherwise, power off (press Power Switch) and on SVP to retry. (*1)
If no message appears after retrying twice, re-install the SVP OS using the SVP image CD.
Then install the latest micro code.
If it still does not recovered, replace the SVP.



[Message]
xxxx KB OK
Starting Windows95
(Some other messages)

(2) Windows Start (SVP Start)
a. Wait a few minutes until Windows system will start.
b. Read message displayed on the SVP screen. (Go to SVPMSG section)
Otherwise, power off (press Power Switch) and on SVP to retry. (*1)
After retrying twice, replace SVP.
[End of Power On]

*1: If you press only Power Switch on the SVP keyboard when SVP and Windows system are active, these systems will be frozen.
You should be sure to press Power Switch for power off SVP.

*2: If Windows 95 doesn't start, check the following items.
(1) Is the DKC "CE mode" ?
(2) The two LEDs at the LAN cable socket are always on?

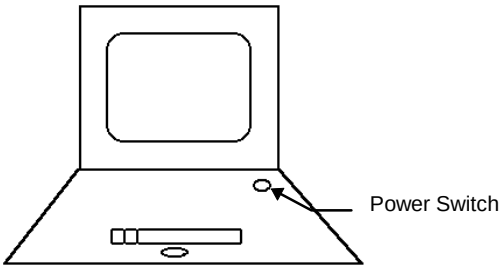
If above two conditions are satisfied, pull out LAN cable until Windows 95 is starting.

Blank Sheet

1.5 Power Off

(1) What is running?

a. See what is displayed.
If Windows is displayed, Go to (2).
If DOS prompt is displayed, like “C:\>”, Go to (3).



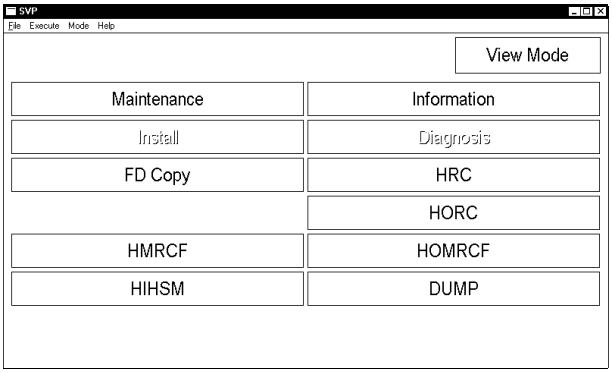
(2) Exit Windows(Stop SVP)
a. Select (CL) “Start button”.
b. Select (CL) “Shut Down”.
c. Select (CL) “Shut Down the computer?”, and
Select (CL) [Yes].
[End of Power Off]

(3) Power Off SVP
a. Press Power Switch simultaneously.
[End of Power Off]

Note : Do not press only Power Switch key.
Because, since SVP does not stop to perfection, we do not guarantee the operation of SVP after re-power on.
If only Power Switch key was pressed, please power off SVP.

1.6 Mode

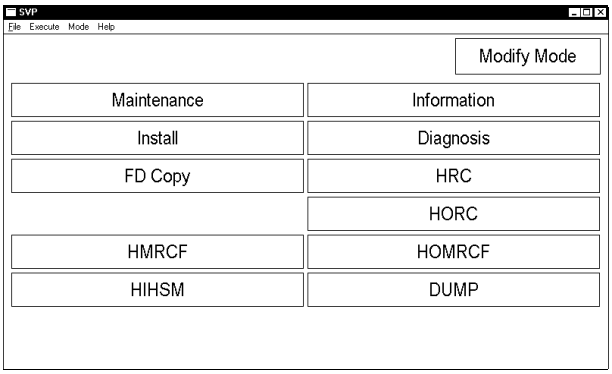
(1) View Mode
In view mode, only referring the subsystem status can be allowed.



Note : When view mode, pending SIMs (if exist) are reported to host.

(2) Modify Mode
In modify mode, referring and changing the subsystem status can be allowed.

For example, log/pin data indication and status display on MAINTENANCE are available in any mode, but replacement is available in only modify mode.

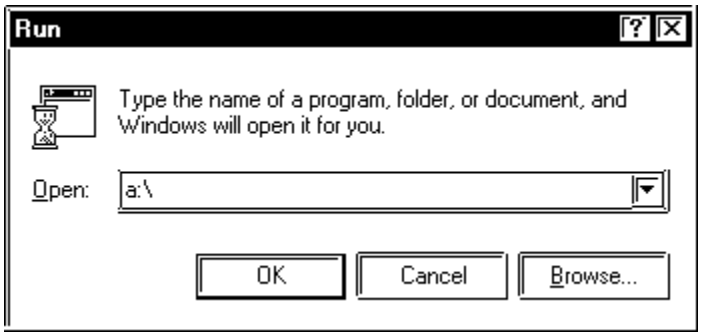


(3) Change Mode
If you push (CL) [View Mode] button, it changes [Modify Mode], and SVP changes Modify Mode.
If you push (CL) [Modify Mode] button, it changes [View Mode], and SVP changes View Mode.

1.7 Run

(1) <Select the [Run]>
Select (CL) the [Run...] in the [Start button].

(2) <Input file name>
Input file name in 'Open' and select (CL) [OK].



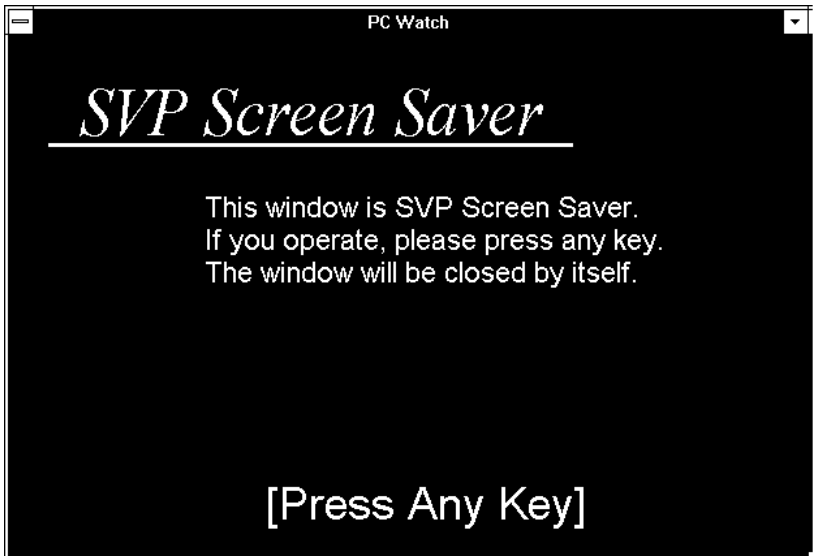
1.8 Screen Saver, and SVP reboot function

This function executes SVP reboot at intervals of a certain duration, one time per day.
Normally, the function displays a new windows for Screen Saver.

(1) SVP (PC) reboot
When SVP detects the reboot time under displaying the Screen Saver, the function will reboot SVP automatically. But, if other applications of SVP are executing, the function will stop rebooting, and wait until the next time will arrive.

(2) Screen Saver

1. If there is no access from keyboard or mouse during 60 minutes, and other SVP applications windows are closed, SVP will open the screen saver window.

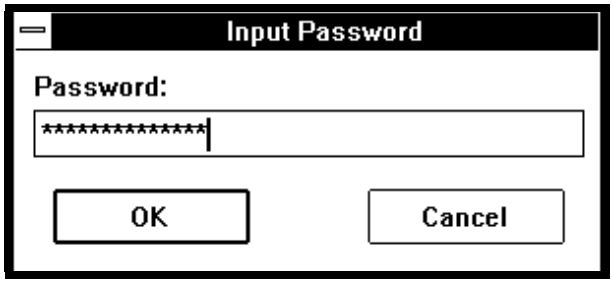


2. Normally, the function becomes icon.

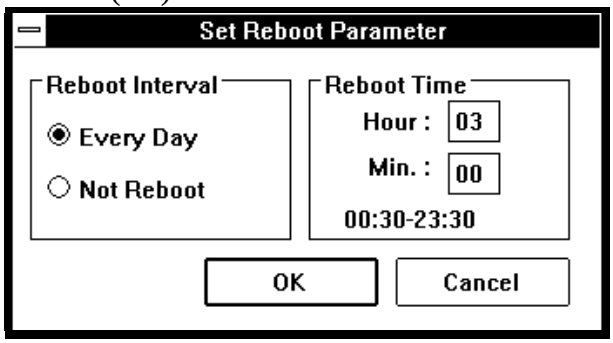
(3) Setting reboot timer

1. Please select (DC) “PC Watch” Icon.

2. SVP will displays “Input Password” screen. Please enter the password and select (CL) “OK”.



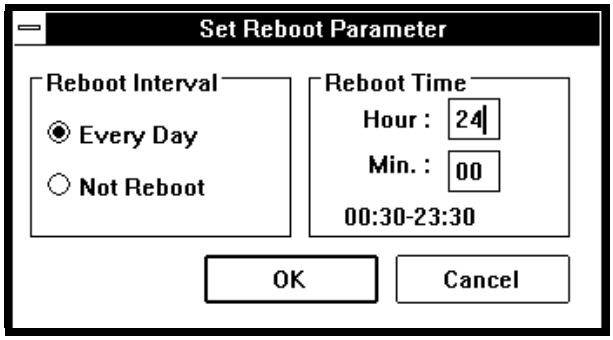
3. Next, SVP will displays “Set Reboot Parameter” Screen. Please input Reboot interval and Reboot time, and select (CL) “OK”.



① Reboot Interval
Every Day : one time per day.
Not Reboot : not available to reboot.

② Reboot Time
Reboot time will be set.
Notice:
The SVP usually receives a TH/ORM log data from DKC-Main at 23:30 - 0:30, so that you can not input those time.

If you input the reboot time as 24:00 or above timer 23:30 - 0:30, will move the focus.



1.9 How to reference the manual on CDR

Preface

The Maintenance Manual is released by CDR.
The manual is provided in the PDF (Portable Document Format). To read this manual, you must have a special reader software program in SVP.

How to install Acrobat Reader

The CDR contains the setup program of Acrobat Reader. You can use this setup program to install Acrobat Reader into SVP. To install Acrobat Reader:

(1) Insert the CDR into the drive of your PC.
(2) Use Explorer to locate the CDR drive.
(3) Double-click the "Acr\xxx.exe" to start the setup program.
(4) Follow instruction messages to install Acrobat Reader.

How to reference the manual

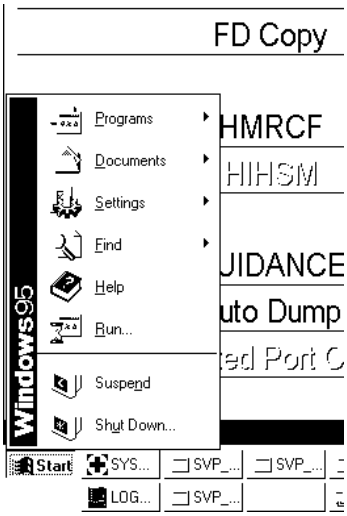
To reference this manual:

(1) Insert the CDR into the drive of your PC.
(2) Use Explorer to locate the CDR drive.
(3) Double-click a desired file.
The content of the selected file will be displayed on another window.

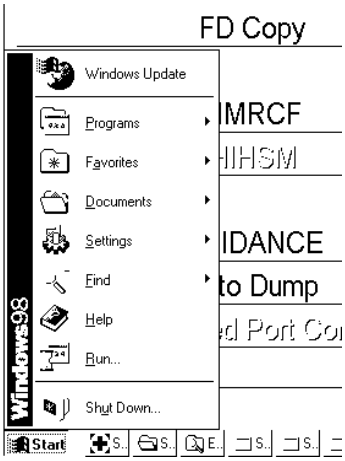
1.10 How to distinguish the Windows

Select (CL) [Start].

Windows95 --------- The right menu displayed.



Windows98 --------- The right menu displayed.



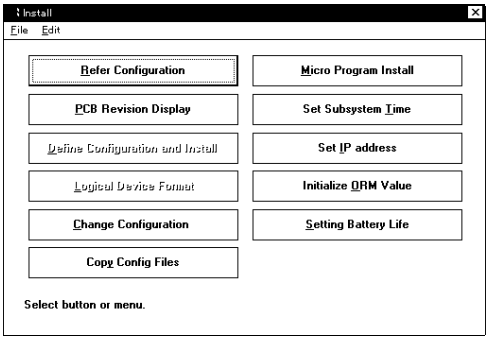
2 Function of the SVP

2.1 TOD (Time Or Date) setting

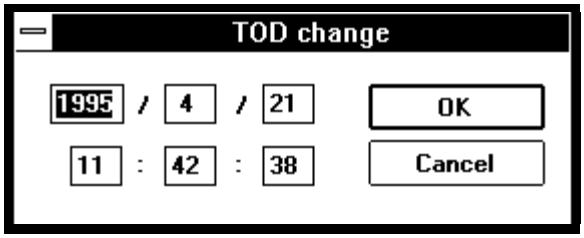
(1) Change the mode to [Modify Mode] from [View Mode] (CL).

(2) Select (CL) [Install].

(3) Select (CL) [Set Subsystem Time] in the 'Install' window.



(4) Specify the date (year, month and day) and time (hour, minute and second) and select (CL) [OK].



(5) Close the ‘Install’ window.

2.2 Log indication

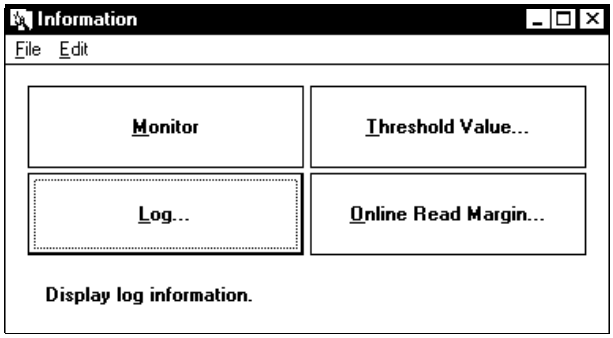
Indication condition

If there is no corresponding log, you cannot select any log from the menu.

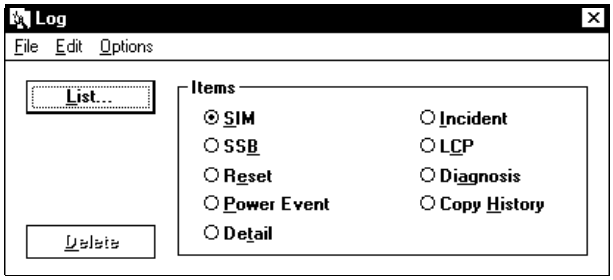
Do this first:

(1) Select (CL) [Information].

(2) Select (CL) [Log...].

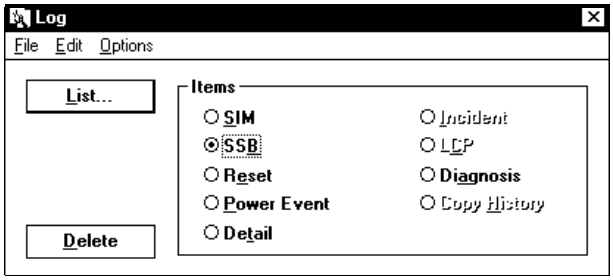


(3) 'Log' dialog box is displayed.



[1] SSB Log

(1) Select (CL) [SSB] in the 'Log'.
Select (CL) [List].



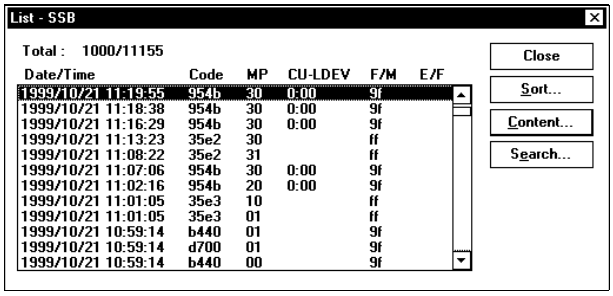
(2) Select (CL) data to be indicated in the 'List-SSB' dialog box and select (CL) [Content...].

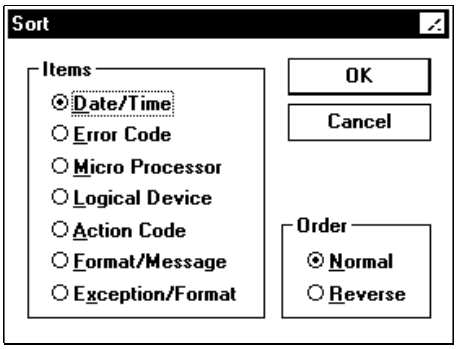
Note1: To sort and list items, select (CL) [Sort...] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].

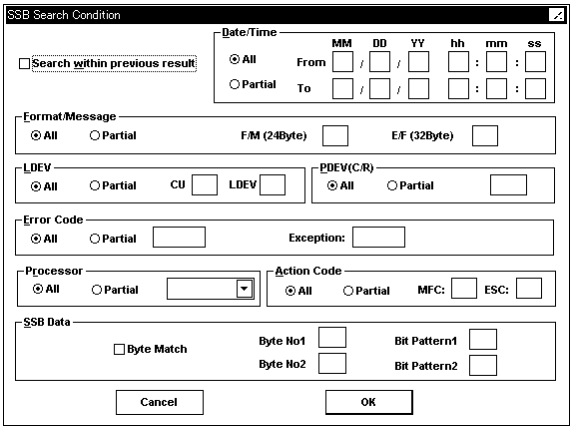
Note2: To search for the desired log, select (CL) [Search...]. Then set the log for which you want to search individual List in the 'SSB Search Condition' dialog box and select (CL) [OK].

Note3: In case of the log data exceeded 1000 cases (Denominator of the total displays 1000 or more), the log data can be displayed from new data to 1000 data out of the entry sequence on SVP.
The entry sequence sometimes differs from occurrence order of the log.
Perform search function in order to check occurrence order.

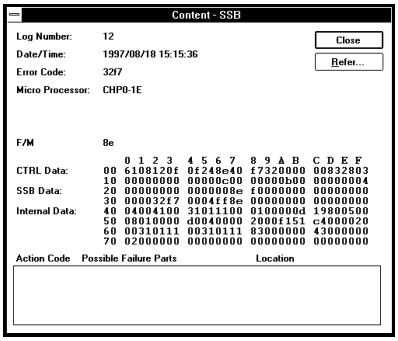
Note4: Please do not change an application's window until search function finish.



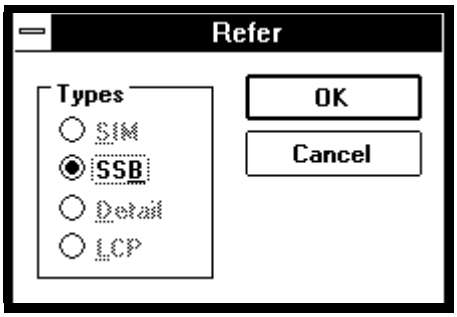




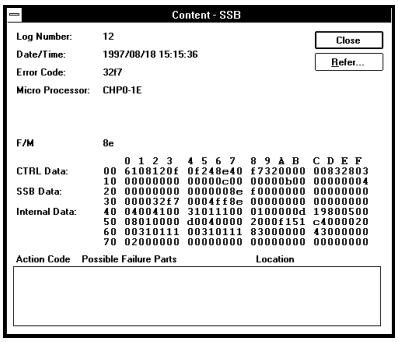
(3) The detailed data is displayed in the ‘Content-SSB’ dialog box.
Select (CL) [Refer...] in the ‘Content-SSB’ dialog box to display the relative log is displayed.



(4) Select (CL) the log to be displayed in the ‘Refer’ dialog box.
([SSB] is selected in this example.)



(5) Display the log to be selected.
(‘SSB Log’ is displayed in this example.)
See SSB LOG Section

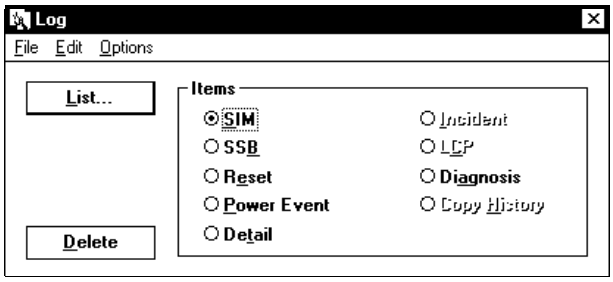


(6) Select (CL) [Close] in the ‘Content-SSB’ dialog box.
Select (CL) [Close] in the ‘List-SSB’ dialog box.
Close the ‘Log’ dialog box and close the ‘Information’ window.

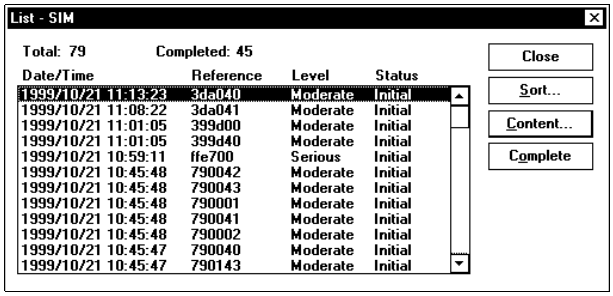
[2] SIM Log

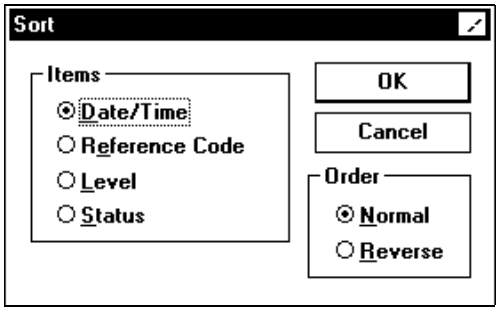
Note: When SIM log exists after SVP started up, the 'SIM Message' window is displayed.

(1) Select (CL) [SIM] in the 'Log' dialog box.
Select (CL) [List...].



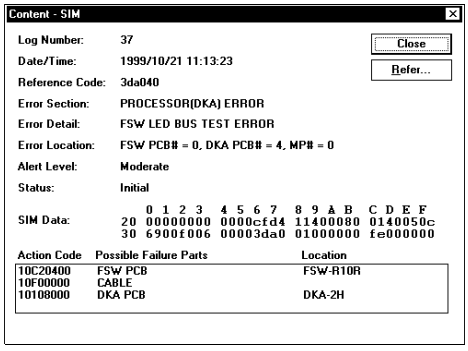
(2) Select (CL) data to be indicated in the 'List-SIM' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].



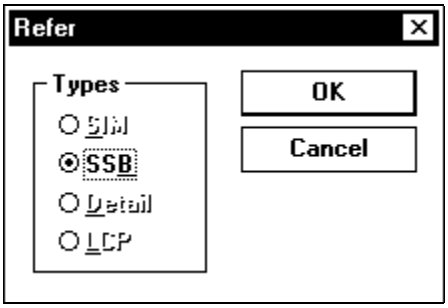


(3) The 'Content-SIM' dialog box is displayed.
Select (CL) [Refer...] in the 'Content-SIM' dialog box, when the relative log is displayed.

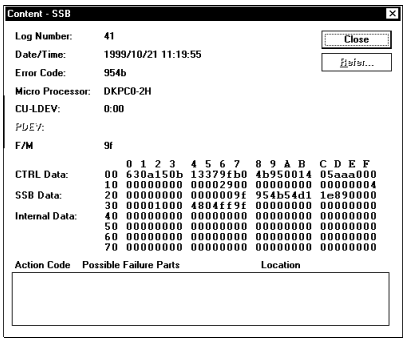
Note1: In WCHK1 dump and ABEND dump received SIM (RC = 3080X0, 3081X0), the system error code is indicated in the format [YYYY] as in Reference Code 3080X0[YYYY].
Note2: If Reference Code is 73XX00 or 1400X0, perform the recovery procedure for LAN error. (see TRBL05-60.)



(4) Select (CL) the log to be displayed in the 'Refer' dialog box.
([SSB] is selected in this example.)



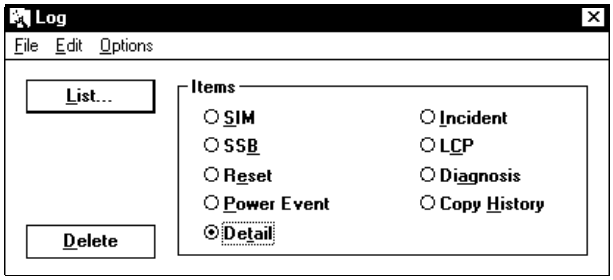
(5) The selected log is displayed.
('Content-SSB' is displayed in this example.)



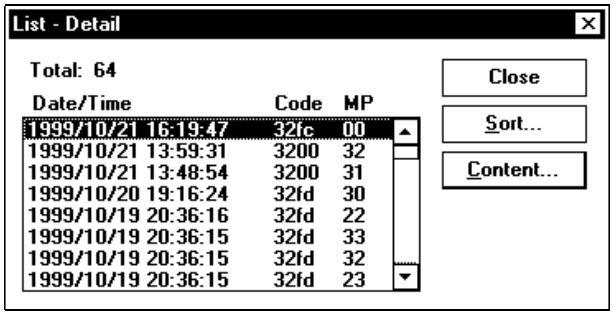
(6) Select (CL) [Close] in the 'Content-SSB' dialog box.
Select (CL) [Close] in the 'Content-SIM' dialog box.
Select (CL) [Close] in the 'List-SIM' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

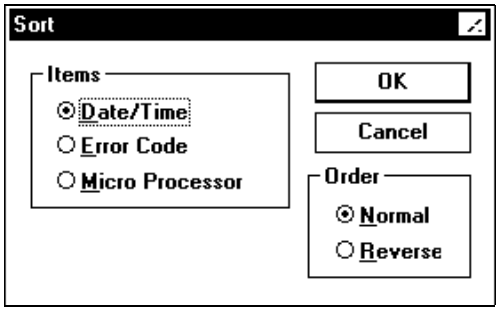
[3] Detail Log

(1) Select (CL) [Detail] in the 'Log' dialog box.
Select (CL) [List...].

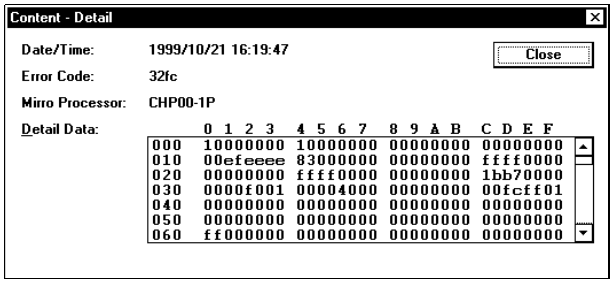


(2) Select (CL) data to be indicated in the 'List-Detail' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].





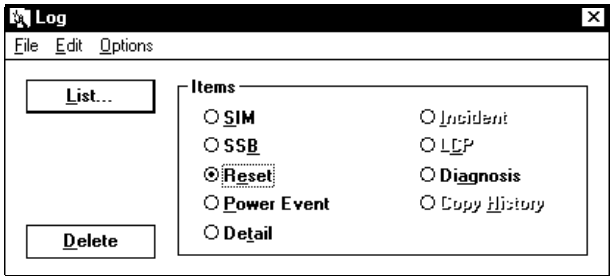
(3) The 'Content - Detail' dialog box is displayed.



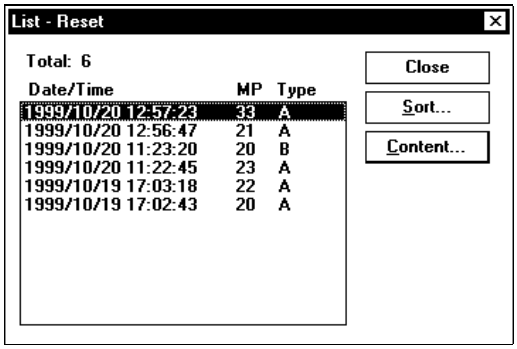
(4) Select (CL) [Close] in the 'Content - Detail' dialog box.
Select (CL) [Close] in the 'List-Detail' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

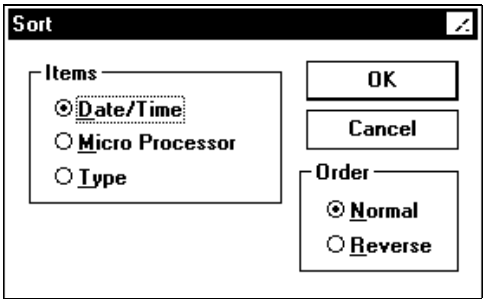
[4] Reset Log

(1) Select (CL) [Reset] in the 'Log' dialog box.
Select (CL) [List...].

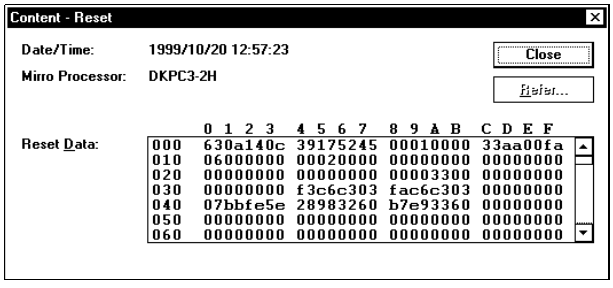


(2) Select (CL) data to be indicated in the 'List-Reset' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Reset Log Sort' dialog box, and select (CL) [OK].





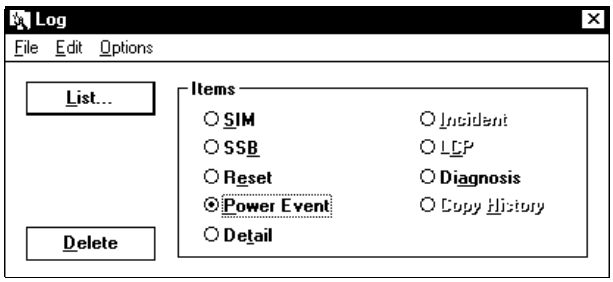
(3) The 'Content-Reset' dialog box is displayed.



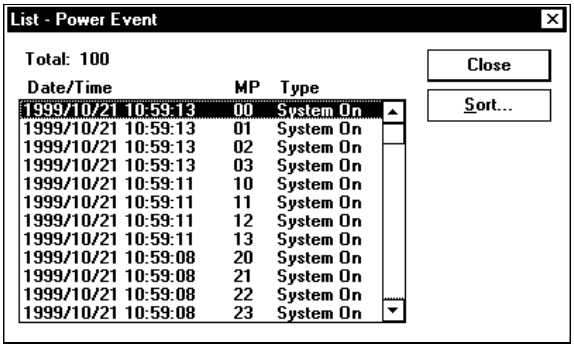
(4) Select (CL) [Close] in the 'Content-Reset' dialog box.
Select (CL) [Close] in the 'List-Reset' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

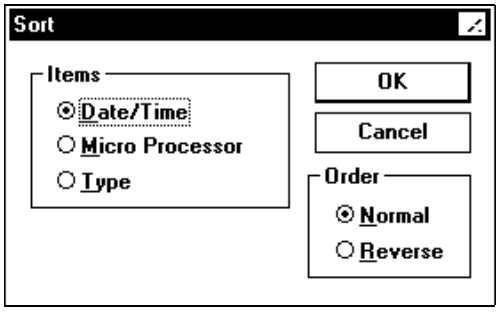
[5] Power Event Log

(1) Select (CL) [Power Event] in the 'Log' dialog box.
Select (CL) [List...].



(2) The 'List-Power Event' dialog box is displayed.
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].

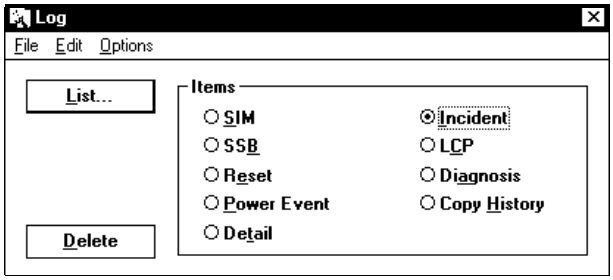




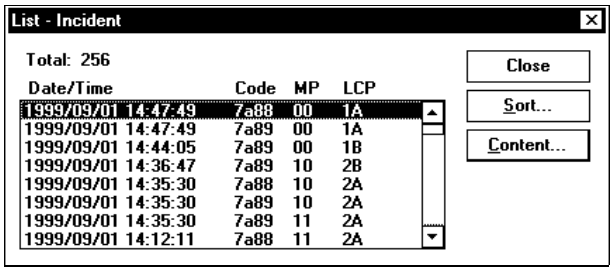
(3) Select (CL) [Close] in the 'List-Power Event' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

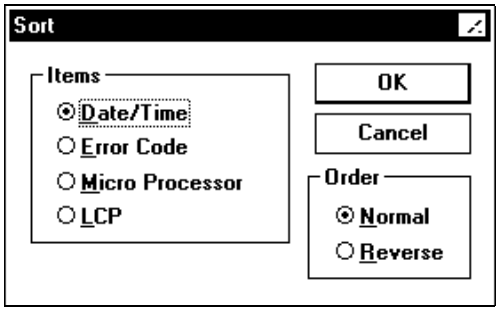
[6] Incident Log

(1) Select (CL) [Incident] in the 'Log' dialog box.
Select (CL) [List...].

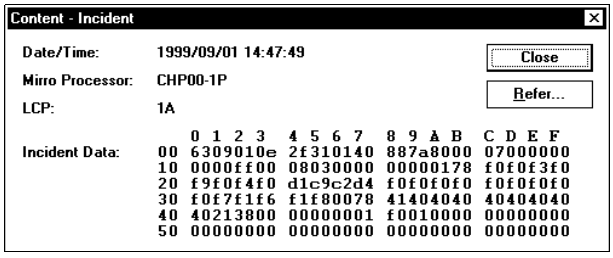


(2) Select (CL) data to be indicated in the 'List-Incident' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].

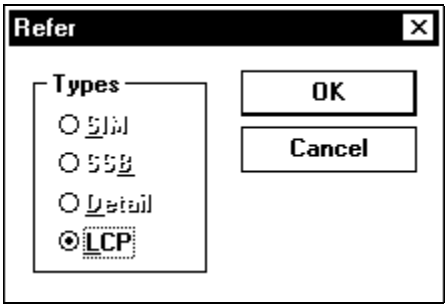




(3) The 'Content-Incident' dialog box is displayed.



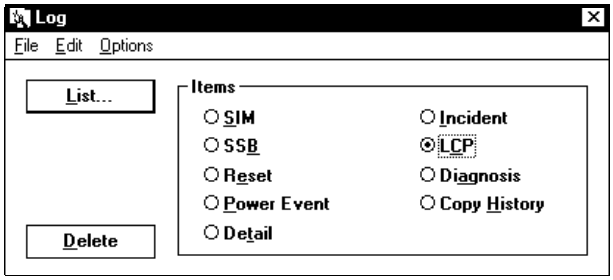
(4) To display the relative log, select (CL) [Refer...] in the 'Content-Incident' dialog box.
Select (CL) the log type to be displayed in the 'Refer' dialog box and then select (CL) [OK].



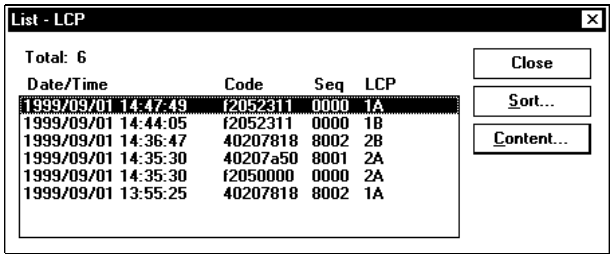
(5) Select (CL) [Close] in the 'Content-Incident' dialog box.
Select (CL) [Close] in the 'List-Incident' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

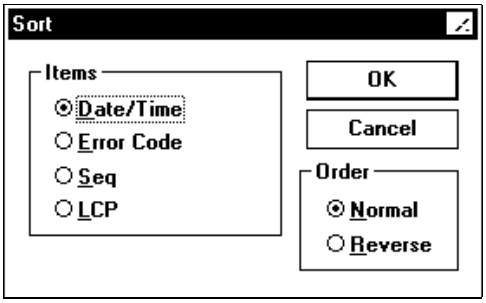
[7] LCP Log

(1) Select (CL) [LCP] in the 'Log' dialog box.
Select (CL) [List...].

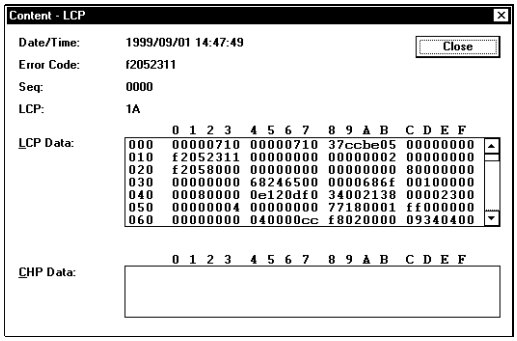


(2) Select (CL) data to be indicated in the 'List-LCP' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].





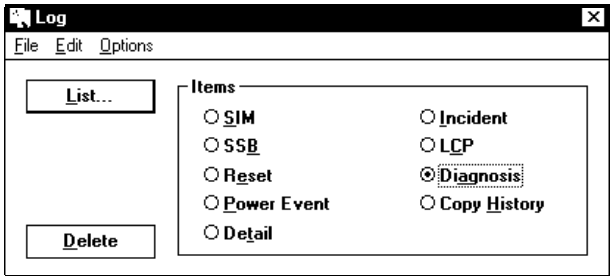
(3) The 'Content-LCP' dialog box is displayed.



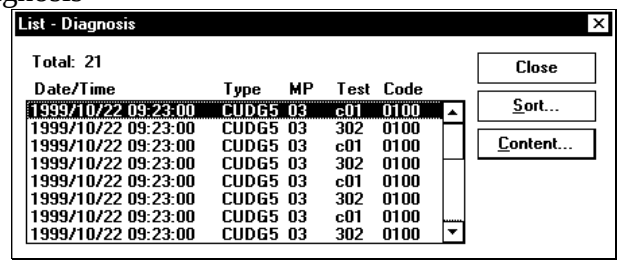
(4) Select (CL) [Close] in the 'Content-LCP' dialog box.
Select (CL) [Close] in the 'List-LCP' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

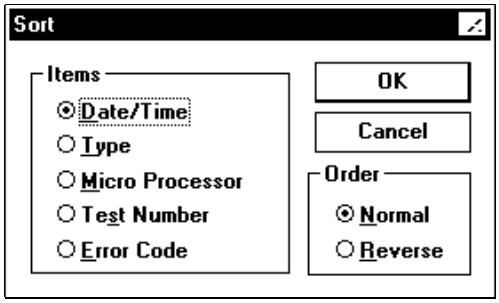
[8] Diagnosis Log

(1) Select (CL) [Diagnosis] in the 'Log' dialog box.
Select (CL) [List...].

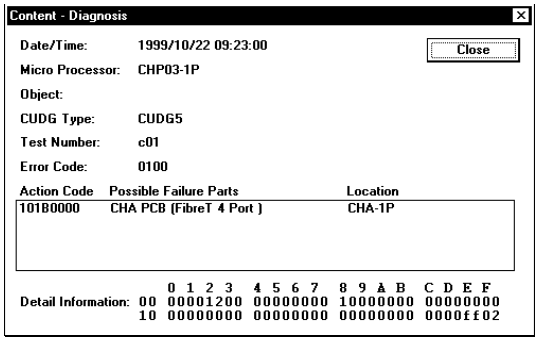


(2) Select (CL) data to be indicated in the 'List-Diagnosis' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].





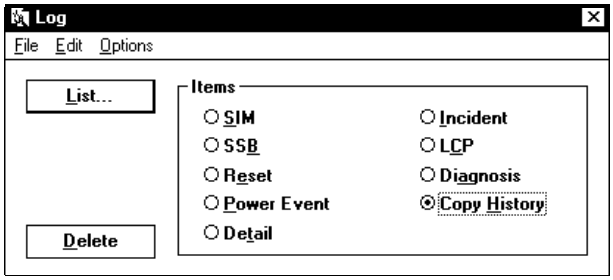
(3) The 'Content-Diagnosis' dialog box is displayed.



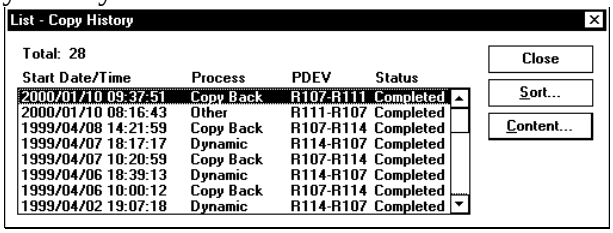
(4) Select (CL) [Close] in the 'Content-Diagnosis' dialog box.
Select (CL) [Close] in the 'List-Diagnosis' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

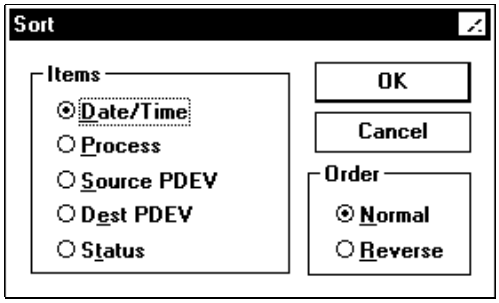
[9] Copy History Log

(1) Select (CL) [Copy history] in the 'Log' dialog box.
Select (CL) [List...].

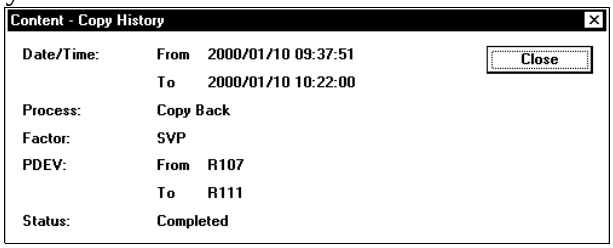


(2) Select (CL) data to be indicated in the 'List-Copy history' dialog box and select (CL) [Content...].
Note: To sort and list items, select (CL) [Sort] first.
Then select (CL) the desired item in the [Items] and [Order] options in the 'Sort' dialog box, and select (CL) [OK].





(3) The 'Content-Copy History' dialog box is displayed.



(4) Select (CL) [Close] in the 'Content-Copy History' dialog box.
Select (CL) [Close] in the 'List- Copy History' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

[10] MP# - Location correspondence table

Separate Model

Location				MP#	Location				MP#
CHA	Cluster1	CHA-1P	CHP00-1P	00	DKA	Cluster1	DKA-1B	DKP80-1B	20
			CHP01-1P	01				DKP81-1B	21
			CHP02-1P	02				DKP82-1B	22
			CHP03-1P	03				DKP83-1B	23
		CHA-1Q	CHP10-1Q	04			DKA-1C	DKP90-1C	24
			CHP11-1Q	05				DKP91-1C	25
			CHP12-1Q	06				DKP92-1C	26
			CHP13-1Q	07				DKP93-1C	27
		CHA-1R	CHP20-1R	08			DKA-1D	DKPA0-1D	28
			CHP21-1R	09				DKPA1-1D	29
			CHP22-1R	0a				DKPA2-1D	2a
			CHP23-1R	0b				DKPA3-1D	2b
		CHA-1S	CHP30-1S	0c			DKA-1E	DKPB0-1E	2c
			CHP31-1S	0d				DKPB1-1E	2d
			CHP32-1S	0e				DKPB2-1E	2e
			CHP33-1S	0f				DKPB3-1E	2f
	Cluster2	CHA-2V	CHP40-2V	10		Cluster2	DKA-2H	DKPC0-2H	30
			CHP41-2V	11				DKPC1-2H	31
			CHP42-2V	12				DKPC2-2H	32
			CHP43-2V	13				DKPC3-2H	33
		CHA-2W	CHP50-2W	14			DKA-2J	DKPD0-2J	34
			CHP51-2W	15				DKPD1-2J	35
			CHP52-2W	16				DKPD2-2J	36
			CHP53-2W	17				DKPD3-2J	37
		CHA-2X	CHP60-2X	18			DKA-2K	DKPE0-2K	38
			CHP61-2X	19				DKPE1-2K	39
			CHP62-2X	1a				DKPE2-2K	3a
			CHP63-2X	1b				DKPE3-2K	3b
		CHA-2Y	CHP70-2Y	1c			DKA-2L	DKPF0-2L	3c
			CHP71-2Y	1d				DKPF1-2L	3d
			CHP72-2Y	1e				DKPF2-2L	3e
			CHP73-2Y	1f				DKPF3-2L	3f

Single Cabinet Model

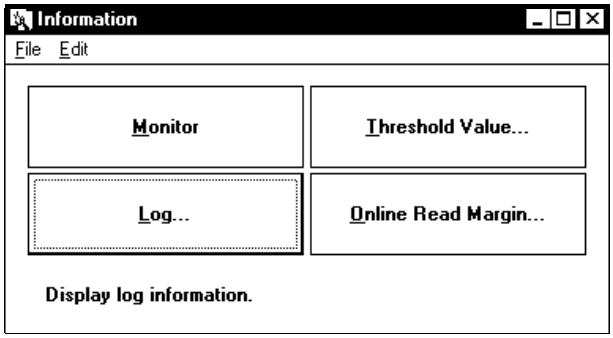
Location				MP#	Location				MP#
CHA	Cluster1	CHA-1C	CHP00-1C	00	DKA	Cluster1	DKA-1B	DKP80-1B	20
			CHP01-1C	01				DKP81-1B	21
			CHP02-1C	02				DKP82-1B	22
			CHP03-1C	03				DKP83-1B	23
		CHA-1D	CHP10-1D	04		Cluster2	DKA-2L	DKPC0-2L	30
			CHP11-1D	05				DKPC1-2L	31
			CHP12-1D	06				DKPC2-2L	32
			CHP13-1D	07				DKPC3-2L	33
		CHA-1F	CHP20-1F	08					
			CHP21-1F	09					
			CHP22-1F	0a					
			CHP23-1F	0b					
	Cluster2	CHA-2G	CHP40-2G	10					
			CHP41-2G	11					
			CHP42-2G	12					
			CHP43-2G	13					
		CHA-2J	CHP50-2J	14					
			CHP51-2J	15					
			CHP52-2J	16					
			CHP53-2J	17					
		CHA-2K	CHP60-2K	18					
			CHP61-2K	19					
			CHP62-2K	1a					
			CHP63-2K	1b					

2.3 Log delete

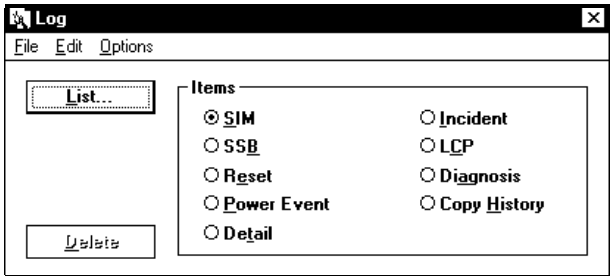
[1] SSB Log
[2] SIM Log
[3] Detail Log
[4] Reset Log
[5] Power Event Log
[6] Incident Log
[7] LCP/MCP Log
[8] Diagnosis Log
[9] Copy History Log

(1) Select (CL) the [Information] in the 'SVP' window.

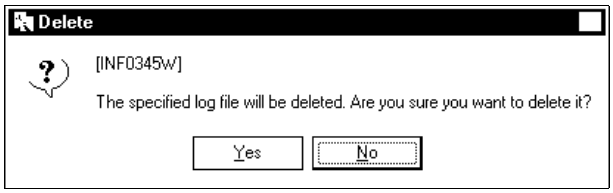
(2) Select (CL) [Log] in the 'Information' dialog box.



(3) In the Log dialog box, select (CL) an item to be deleted.
Select (CL) [Delete].



(4) Select (CL) [Yes] in the 'Delete' dialog box.

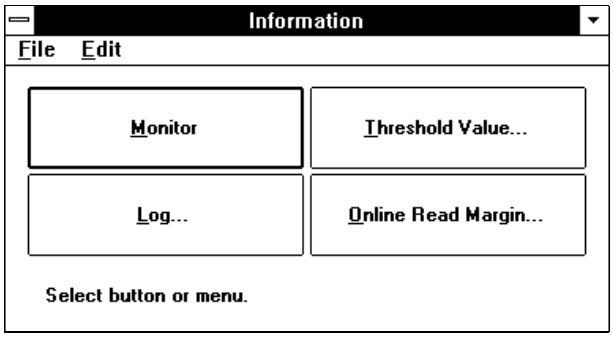


(5) Close the 'Log' dialog box and close the 'Information' window.

2.4 Monitoring

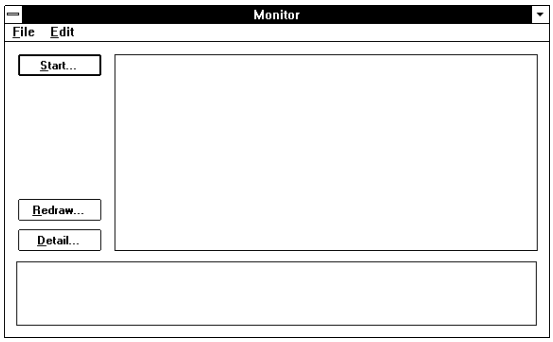
(1) Select (CL) the [Information] in the 'SVP' window.

(2) Select (CL) [Monitor] in the 'Information' window

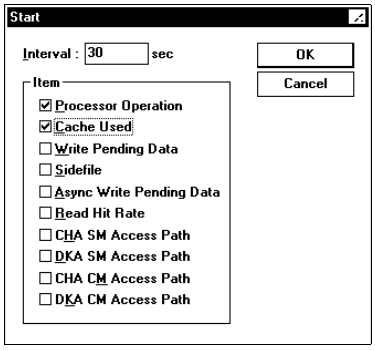


[1] Displaying a graph for items

(1) Select (CL) [Start...].



(2) Select (CL) [Interval] , [File Output] , and [Item] in the 'Monitoring' dialog box and select (CL) [OK].

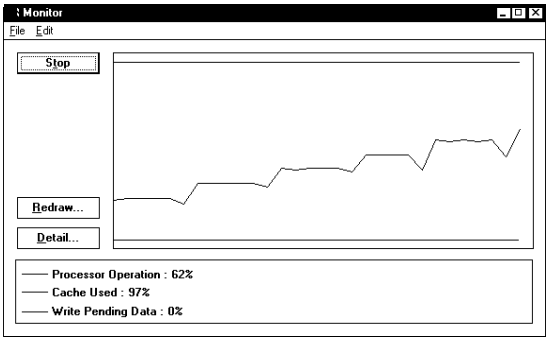


Note 1 : "Interval" indicates a time interval from 5 to3600 at which samples are taken.

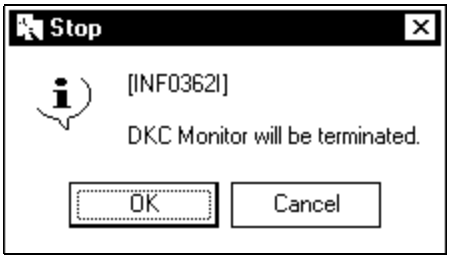
Note 2 : Up to three items can be selected in the "Item" list box. The selectable values are:

Processor Operation	: Operation ratio of the processor
Cache Used	: Use ratio of the cache
Write Pending Data	: Write pending data ratio
Sidefile	: Sidefile ratio of the subsystem
Async Write Pending Data	: Async write pending data ratio
Read Hit Rate	: Read hit ratio of the subsystem
CHA SM Access Path	: Use ratio of the Access Path CHA - SM.
DKA SM Access Path	: Use ratio of the Access Path DKA - SM.
CHA CM Access Path	: Use ratio of the Access Path CHA - CM.
DKA CM Access Path	: Use ratio of the Access Path DKA - CM.

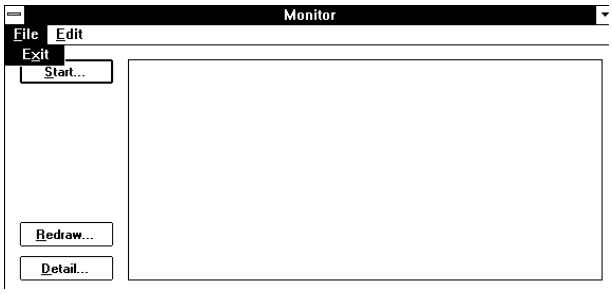
(3) After a few minutes, a graph is displayed for the item selected in step (2).



(4) When [Stop] is selected (CL) during the display of the graph, displaying is interrupted.
If [OK] is selected (CL) in the 'Stop' dialog box, displaying is stopped.



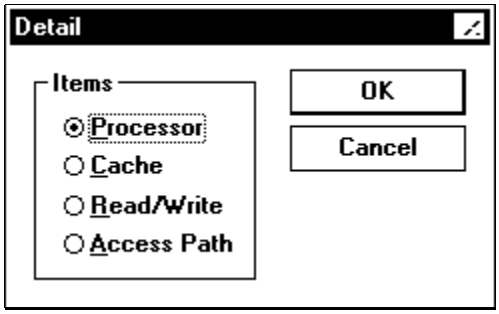
(5) Select (CL) the [File] menu in the 'Monitor' and select (DR) [Exit].



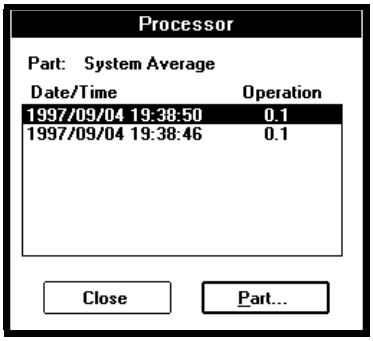
(6) Close the 'Monitor' dialog box and close the 'Information' window.

[2] Displaying the operation ratio of the processor

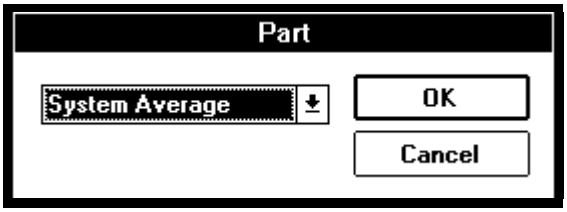
(1) Display a graph (see steps listed above).
Select (CL) [Processor Operation] in the “Item” list box.
Select (CL) [Detail...] and select (CL) [Processor].



(2) Select (CL) [Part...] in the ‘Processor’ dialog box.



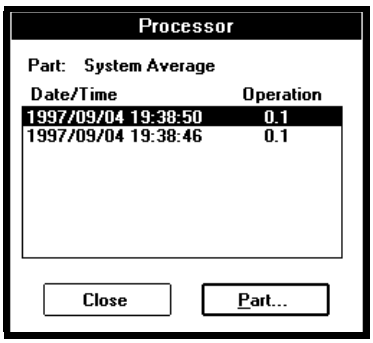
(3) Select (DR) the contents of “Parts” in the ‘Part’ dialog box and select (CL) [OK].
Note: In the Parts list box, the following values are selectable.



System Average : Average in the system
CHP[CHT] Average : Average for the CHP[CHT]
CHP[CHA] Average : Average for the CHP[CHA]
DKP[DKF] Average : Average for the DKP
CHP00-1P : Average for a particular processor

-
-
-

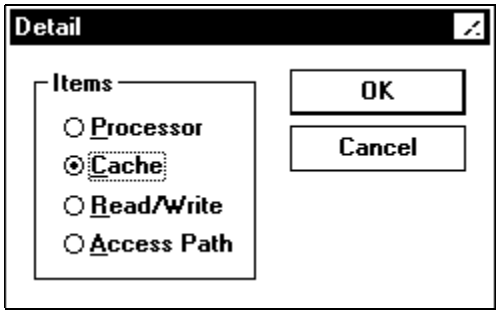
(4) Select (CL) [Close] in the 'Processor' dialog box.



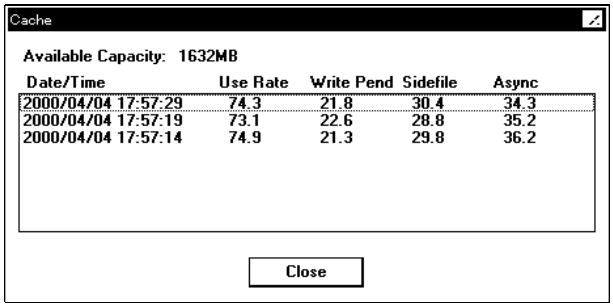
(5) Close the 'Monitor' dialog box and close the 'Information' window.

[3] Displaying the use ratio of the cache and the write pending data ratio in a tabular form.

(1) Display a graph (see section [1] (SVP02-200) above).
Select (CL) [Write Pending Data], [Cache Used] or [Sidefile] in the “Item” list box.
Select (CL) [Detail...] in the ‘Monitor’. Select (CL) [Cache] in the ‘Detail’ and select (CL) [OK].



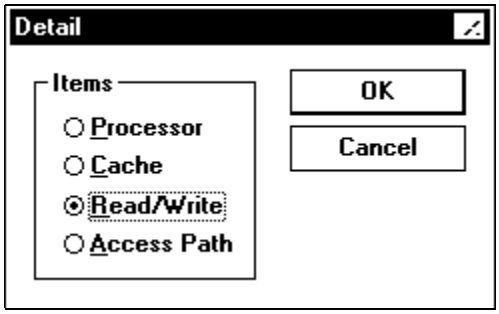
(2) Select (CL) [Close] in the ‘Cache’ dialog box.



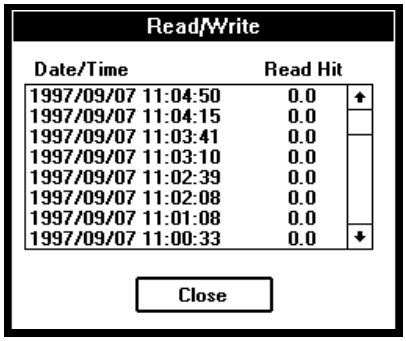
(3) Close the ‘Monitor’ dialog box and close the ‘Information’ window.

[4] Displaying the read hit ratio in a tabular form

(1) Display a graph by executing steps (1) to (5) in "[1] Displaying a graph for items" in advance.
In step (2), select (CL) [Read Hit Rate] in the "Item" list box.
Select (CL) [Detail...] in the 'Monitor'. Select (CL) [Read/Write] in the 'Detail' and select (CL) [OK].



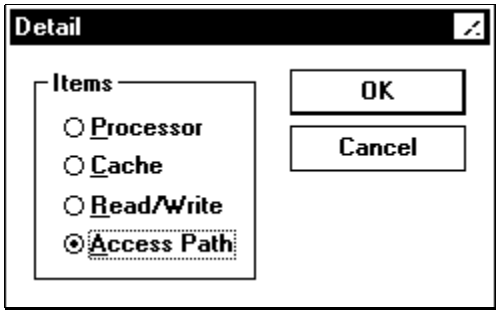
(2) Select (CL) [Close] in the 'Read/Write' dialog box.



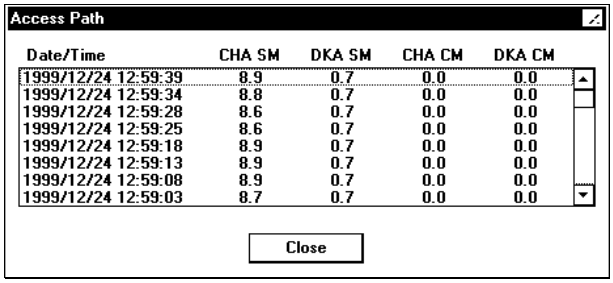
(3) Close the 'Monitor' window and close the 'Information' window.

[5] Displaying the use ratio of the Access Path in a tabular form

(1) Display a graph by executing steps (1) to (5) in "[1] Displaying a graph for items" in advance. Select (CL) [Detail...] in the 'Monitor'. Select (CL) [Access Path] in the 'Detail' and select (CL) [OK].



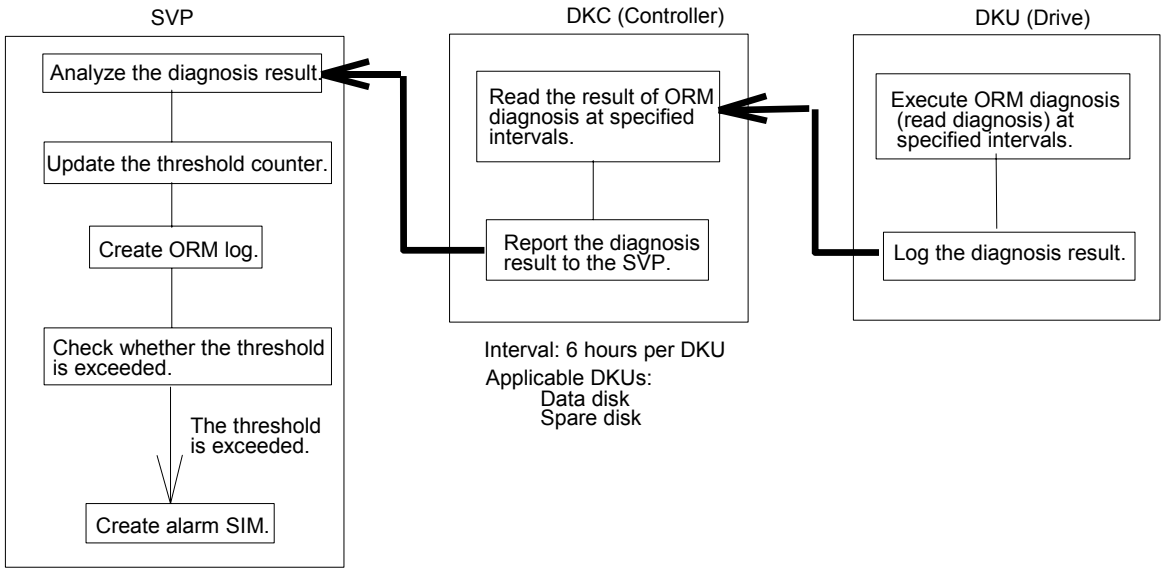
(2) Select (CL) [OK] in the 'Access Path' dialog box.



(3) Close the 'Monitor' window and close the 'Information' window.

2.6 Online read margin (ORM)

[Overview]
The on-line read margin test (ORM) function is a read diagnostic function provided for preventive maintenance of disk drives. The diagnostic is automatically executed in each drive. The DKC reads the diagnostic result at specified intervals and reports it to the SVP.
The SVP calculates the error ratio to the threshold value which is set in advance, and indicates it in the OVER RATE Display (see [1], (2)). When the Rate in the display exceeds 100%, it means the error count is exceeding the threshold, the SVP creates the warning SIM. It is, however, not reported to the Host. The disk drive reporting the SIM should be exchanged with higher priority than other normal drives.



The SVP classifies the errors into six types in the Over Rate Counter Display. They are Unrecovered Read Error, Recovered Read Error, Unrecovered Seek error, Recovered Seek Error, Not Ready and Other Errors. Each has three types of counters indicated as Today, 7 days and Total. Refer to [1], (4) for the Over Rate Counter Display. In the Over Rate Counter Display, the error ratio which has the largest number among those classified types is displayed for each drive to represent each error.

The warning SIMs to be reported in the ORM are shown below.

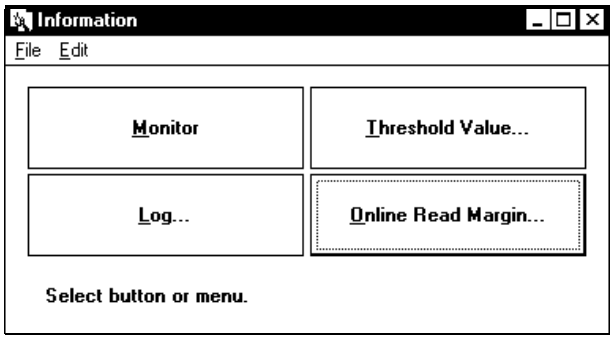
ORM SIM and Reference Code

No	Error Type	Reference Code	Meaning
1	Unrecovered Read Error	502X (X = 0 ~ F)	Drive Media Error
2	Recovered Read Error		
3	Unrecovered Seek Error	501X (X = 0 ~ F)	Drive Unit Error
4	Recovered Seek Error		
5	Not Ready		
6	Other Errors		

(1) Check SVP Mode.
Following operation needs SVP Mode is 'Modify'. (See SVP 01-80)
[2] Resetting an error count
[4] Altering a threshold
[6] Resetting thresholds

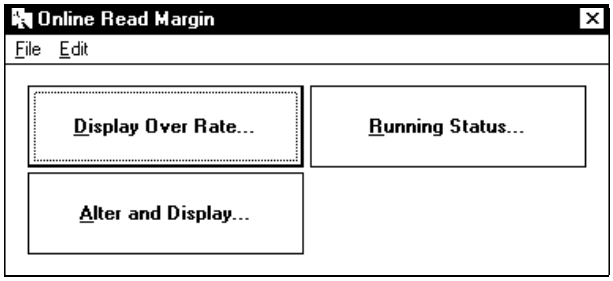
(2) Select (CL) the [Information] in the 'SVP' window.

(3) Select (CL) [Online Read Margin...] in the 'Information' window.



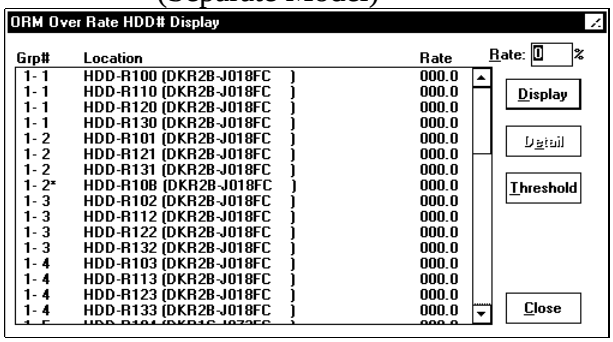
[1] Displaying an error count, thresholds, and log

(1) Select (CL) [Display Over Rate...] in the 'Online Read margin' window.

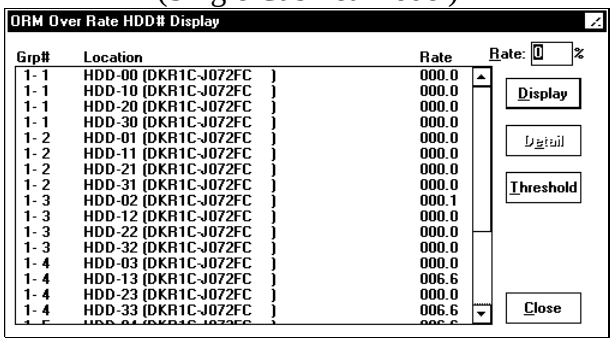


(2) Enter a number from 0 to 100 at "Rate" in the 'ORM Over Rate HDD# Display' dialog box. Select (CL) [Display].
Then only the HDDs which have the rate of equal to or greater than the input number at "Rate" will appear in the display.
Rate : ratio of the number of errors for the threshold value.
Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)

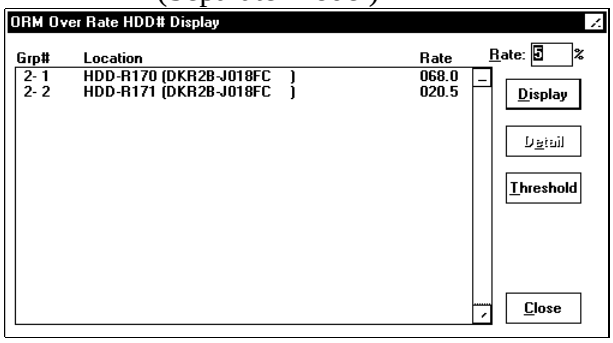


(Single Cabinet Model)

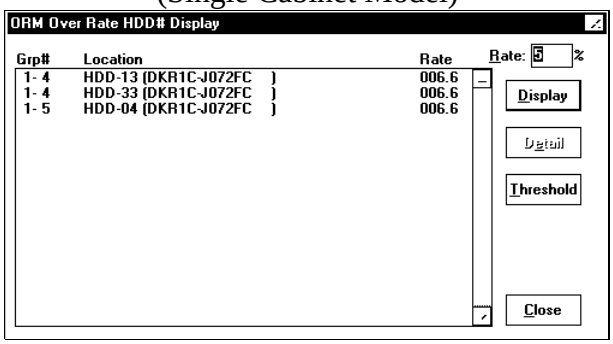


(3) When more detail information is needed for the particular drive, select (CL) the HDD from the "HDD Location" list box.
Select (CL) [Detail].

(Separate Model)

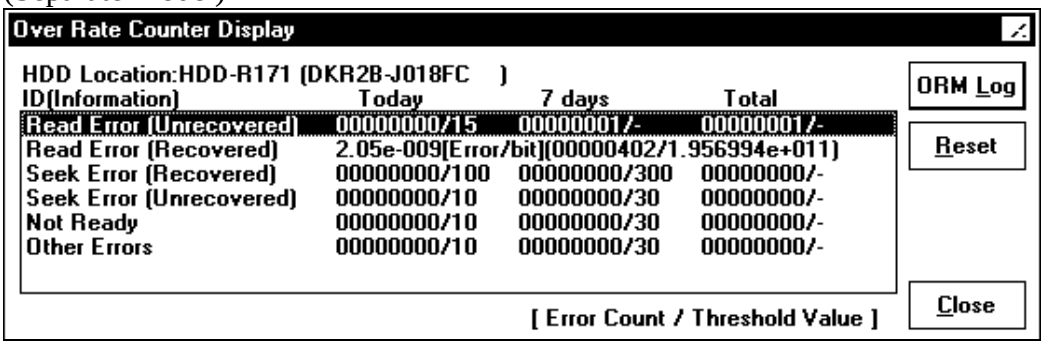


(Single Cabinet Model)

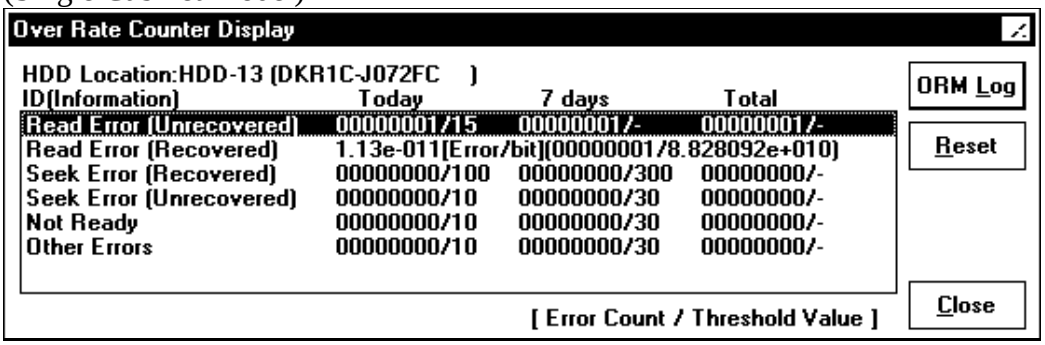


(4) In the 'Over Rate Counter Display' dialog box, select (CL) the error for which detailed log is to be displayed from the "ID" list box. Select (CL) [ORM LOG].

(Separate Model)



(Single Cabinet Model)



The errors detected in the ORM are classified into six types of error category. Each error has the following definition.

a) Read Error [Unrecovered]
A disk media error was detected. After ten times retries, the error was judged that it might become a serious media error which could not be recovered with ECC or retries.

b) Read Error [Recovered]
A disk media error was detected. After ten times retries, the error was judged that it was an intermittent read error and recoverable, and included in the error rate management for the preventive maintenance.

c) Seek Error [Recovered]
A seek error was detected. After ten times retries, the error was judged to be recoverable.

d) Seek Error [Unrecovered]
A seek error was detected. After ten times retries, the error was judged to be unrecoverable.

e) Not Ready
Not Ready status of the drive was detected.

f) Other Errors
Any error which does not belong to the above classification was detected.

They are also managed with different time periods. "Today" is for one day count and cleared at AM 0:00 every day. "7 days" is for the cumulative value in the latest 7 days. "Total" shows the total cumulative count.

In this Over Rate Counter Display, each error category indicates the Error Count and the Threshold value except for the Read Error [Recovered]. The "-" for the Threshold value means no threshold is set.

Only the Read Error [Recovered] has an error rate expression. It is not managed with error count per day, per 7 days or Total. The error rate of the Read Error [Recovered] is calculated in the following formula:

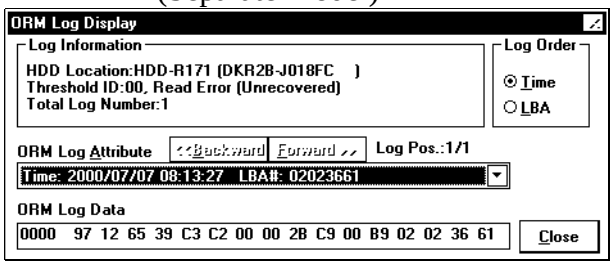
Error rate = Number of error sectors/Number of ORM scan bits

Note 1) Only the result from approximately the latest one volume scan in ORM is used for the calculation.

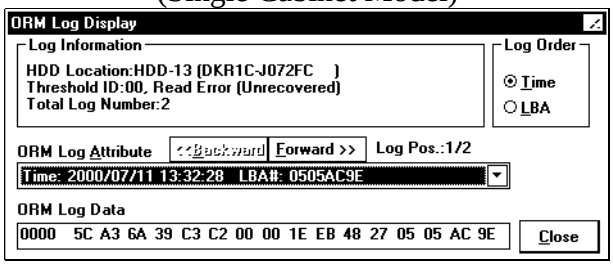
In the example display, "4.13e-011" means the error rate is "4.13×10^{-10}". This is corresponding to the raw error count and scan bits shown as "00000001/2.422270e+010", where the error count is one sector and the scan bits is 2.422270×10^{10}.

(5) The nature of the error selected in step (4) is displayed.

(Separate Model)



(Single Cabinet Model)



Byte	Bit	Name	Explanation
0 - 3		UCT	Time when the diagnostic result was reported from the DKC to the SVP
4	7	Log Valid	When this bit is 1, it indicates that this log is valid.
	6	Address Valid	When this bit is 1, it indicates that the address information in bytes 8 to F is valid
	5 - 4	(Reserved)	Reserved
	3 - 0	Sense Key	Error sense key in the SCSI drive report. (*1)
5		Additional Sense Code	Additional sense code in the SCSI drive report .(*1)
6		Sense Code Qualifier	Additional sense code qualifier in the SCSI drive report. (*1)
7		Seek Error Count	Number of seek errors within 10 seek error retries.
8 - 9		CC	Address of the cylinder where the error occurred.
A		H	Address of the head where the error occurred.
B		S	Address of the sector where the error occurred.
C - F		LBA	LBA where the error occurred.

*1 Definition and contents of the error codes are same as those of the SSB for ordinary DKU errors.

(6) Select (CL) [Close] in the 'ORM Log Display' dialog box.

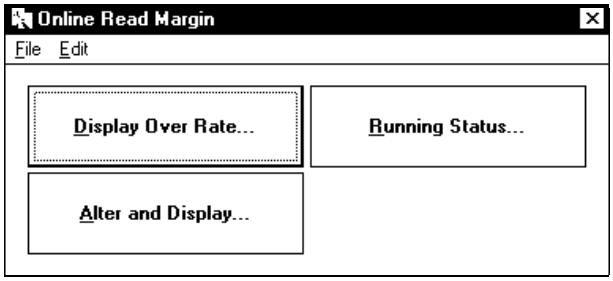
(7) Select (CL) [Close] in the 'Over Rate Counter Display' dialog box.

(8) Select (CL) [Close] in the 'ORM Over Rate HDD# Display' dialog box.

(9) Close the 'Information' window.

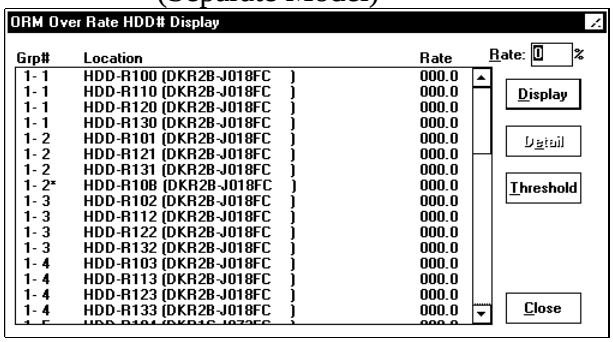
[2] Resetting an error count

(1) Select (CL) [Display Over Rate...] in the 'Online Read Margin' window.

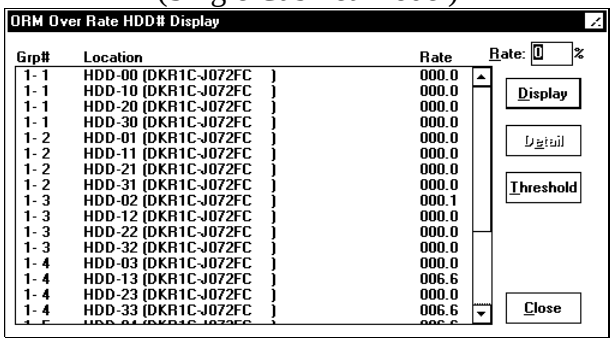


(2) Enter a number from 0 to 100 at 'Rate' in the 'ORM Over Rate HDD# Display' dialog box. Select (CL) [Display].
Then only the HDDs which have the rate of equal to or greater than the input number at "Rate" will appear in the display.
Rate : ratio of the number of errors for the threshold value.
Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)

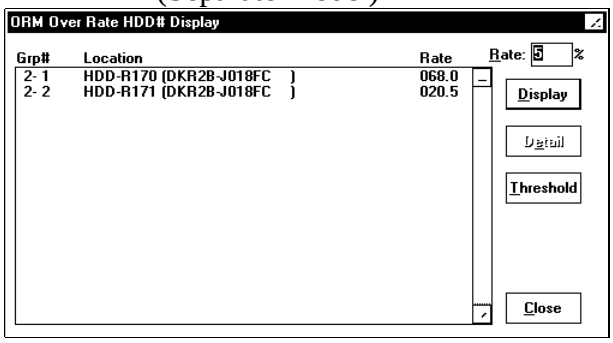


(Single Cabinet Model)

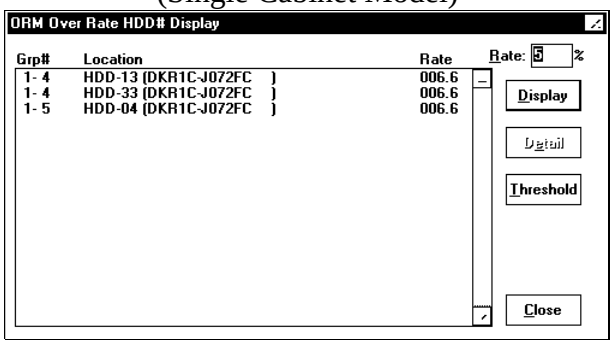


(3) In the ‘ORM Over Rate HDD# Display’ dialog box,select (CL) the HDD for which an error count and thresholds are to be reset from the “HDD Location” list box. Select (CL) [Detail].

(Separate Model)

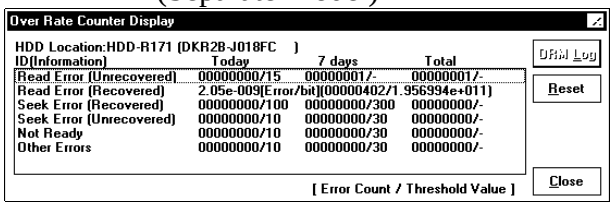


(Single Cabinet Model)

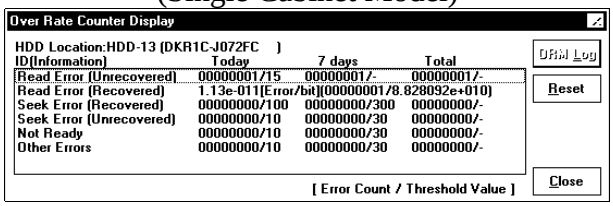


(4) In the 'Over Rate Counter Display' dialog box, select (CL) [Reset].

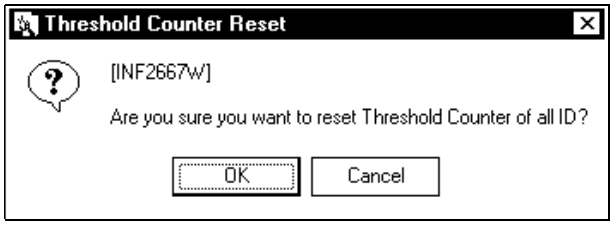
(Separate Model)



(Single Cabinet Model)



(5) Select (CL) [OK] in the 'Threshold Counter Reset' dialog box.



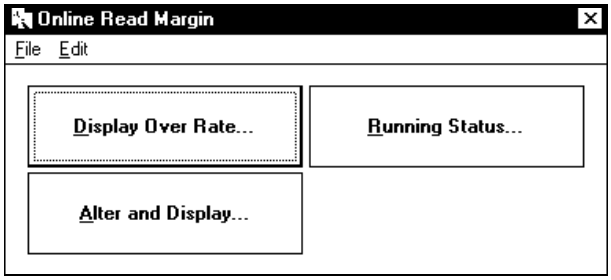
(6) Select (CL) [Close] in the 'Over Rate Counter Display' dialog box.

(7) Select (CL) [Close] in the 'ORM Over Rate HDD# Display' dialog box.

(8) Close the 'Information' window.

[3] Displaying thresholds

(1) Select (CL) [Alter and Display] in the 'Online Read Margin' window.

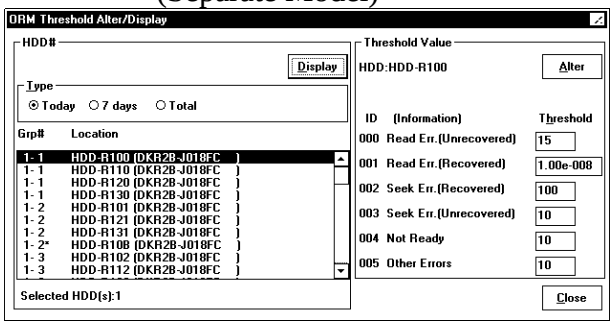


(2) In the 'ORM Threshold Alter/Display' dialog box, select (CL) an HDD from the "HDD#" list box and select (CL) [Display]. In order to display threshold of another interval, select (CL) the interval from the "Type" list box.

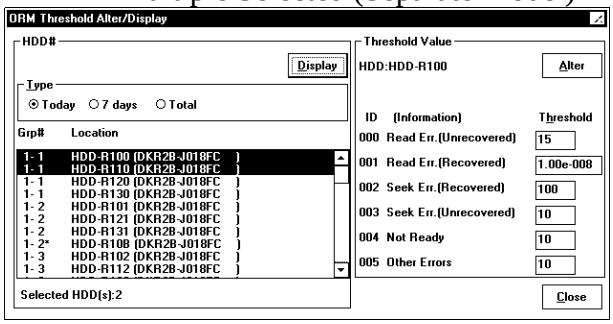
Note: Multiple HDDs can be selected (CL) from the "HDD#" list box while the control key is being held down. In this case, each "Threshold" field in the "Threshold Value" list box shows the threshold for the HDD that is highlighted in the "HDD#" list box.

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

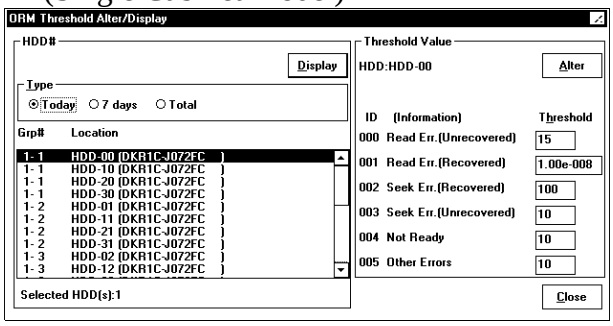
(Separate Model)



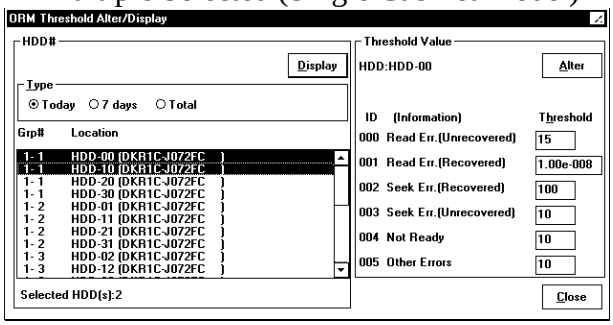
Multiple Selected (Separate Model)



(Single Cabinet Model)



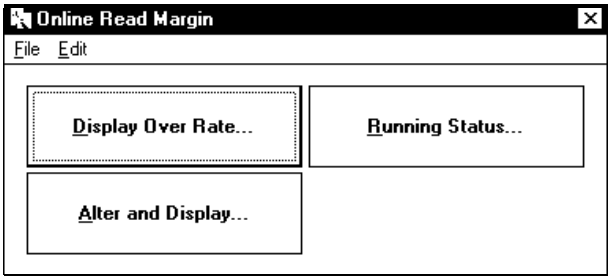
Multiple Selected (Single Cabinet Model)



(3) Select (CL) [Close] in the ‘ORM Threshold Alter/Display’ dialog box and close the ‘Information’ window.

[4] Altering a threshold

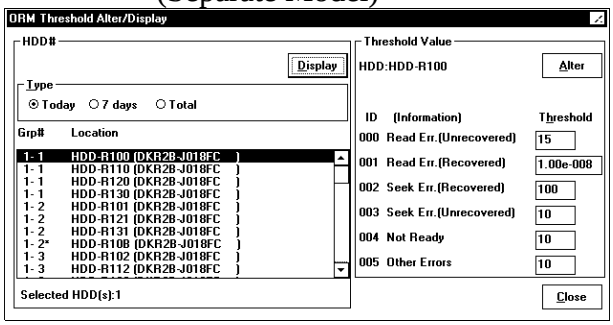
(1) Select (CL) [Alter and Display...] in the 'Online Read Margin' window.



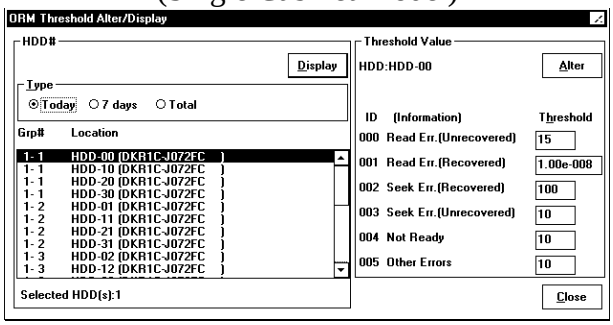
(2) In the 'ORM Threshold Alter/Display' dialog box, select (CL) an HDD from the "HDD#" list box and select (CL) [Display]. In order to display threshold of another interval, select (CL) the interval from the "Type" list box.

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)

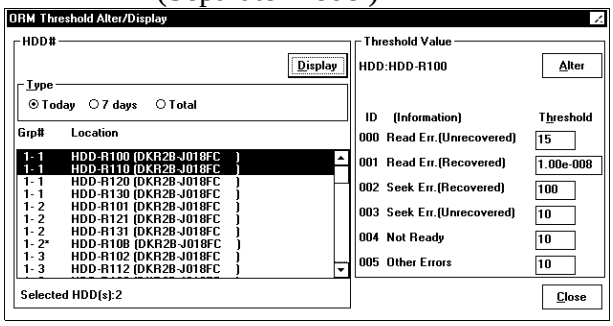


(Single Cabinet Model)

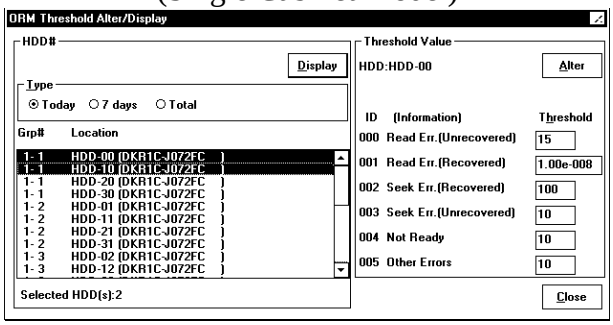


(3) In the 'ORM Threshold Alter/Display' dialog box, alter the threshold in the "Threshold" field in the"Threshold Value" list box. Then select (CL)[Alter].
Note: When multiple HDDs are selected in the "HDD#" list box, the thresholds of all HDDs are altered to the same value.

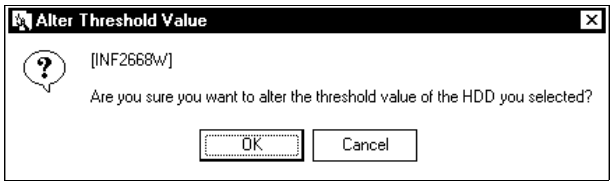
(Separate Model)



(Single Cabinet Model)



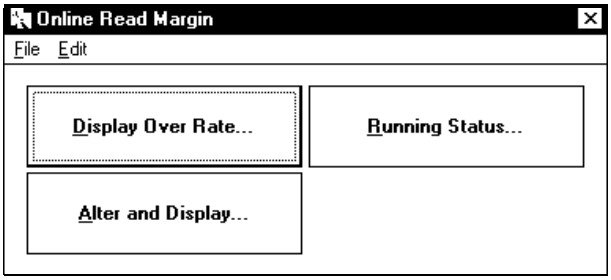
(4) Select (CL) [OK] in the 'Alter Threshold Value' dialog box.



(5) Select (CL) [Close] in the 'ORM Threshold Alter/Display' dialog box and close the 'Information' window.

[5] Displaying the ORM running status

(1) Select (CL) [Running Status...].

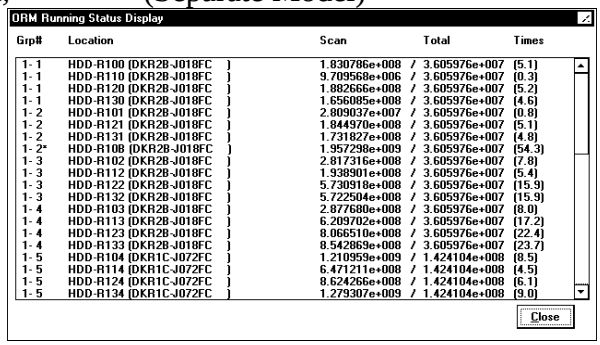


(2) In the 'ORM Running Status Display' dialog box, the ORM running status is displayed as the number of sectors.

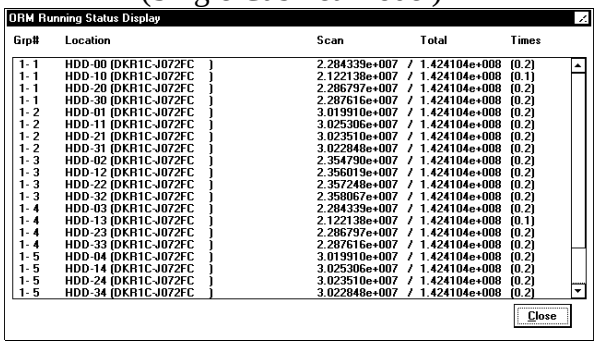
Note: The "HDD#" list box shows the location numbers of HDDs. "Scan" shows the number of scanned sectors. "Total" shows the total number of sectors in the drive. "Times" shows the number of times the entire drive was scanned.

Grp# : shows the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)



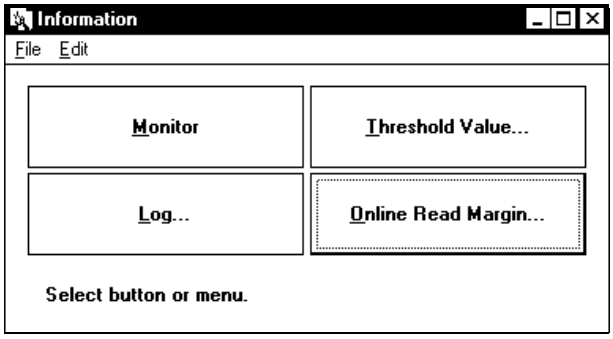
(Single Cabinet Model)



(3) Select (CL) [Close] in the 'ORM Running Status Display' dialog box and close the 'Information' window.

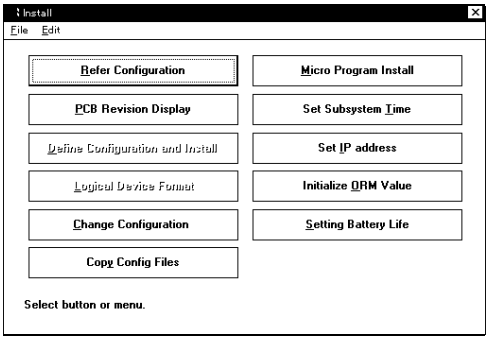
[6] Resetting thresholds

(1) Select (CL) [File]-[Exit] in the 'Information' window.

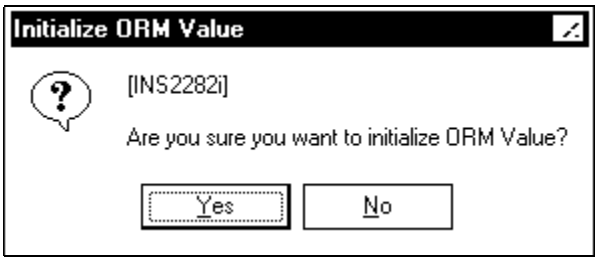


(2) Select (CL) [Install] in the 'SVP'.

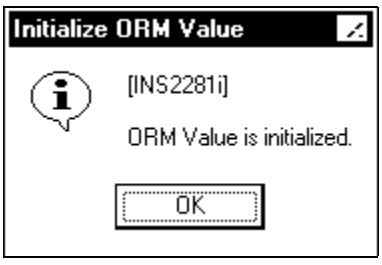
(3) Select (CL) [Initialize ORM Value] in the 'Install' window.



(4) Select (CL) [Yes] in the 'Initialize ORM Value' dialog box.



(5) Select (CL) [OK] in the 'Initialize ORM Value' dialog box.

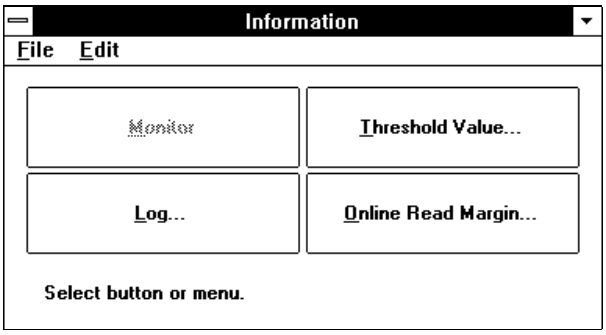


2.7 SIM Reporting Specification

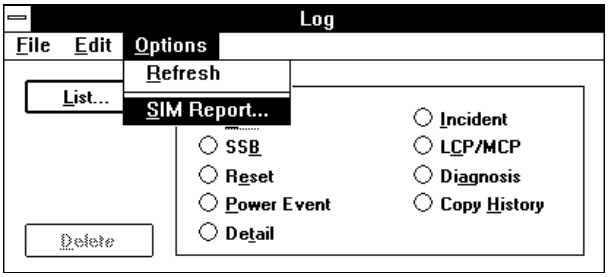
[1] DKC SIM
[2] Cache SIM
[3] Media SIM
[4] Device SIM

(1) Select (CL) [Information].

(2) Select (CL) [Log...] in the 'Information'.

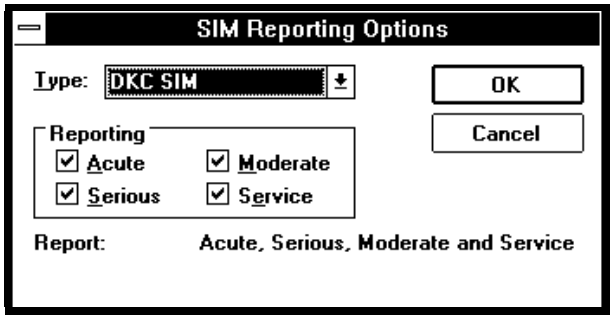


(3) Select (DR) [SIM Report...] from the [Options] menu in the 'Log' dialog box.



(4) Select (CL) SIM report type from the 'Type' list box.

Type : DKC SIM
Cache SIM
Media SIM
Device SIM



Select (CL) the level to be reported in the 'SIM Reporting Option' dialog box, and also select (CL) [OK].

SIM message report level are arranged as follows in order of the higher level.
Acute > Serious > Moderate > Service
Selecting of a level means all higher levels are to be reported.

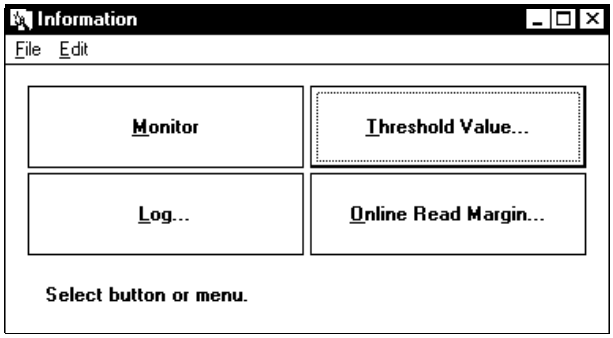
(5) Close the 'Log' dialog box and also close the 'Information' window.

2.8 Management of drive threshold values

(1) Check SVP Mode.
Following operation needs SVP Mode is 'Modify'. (See SVP01-80)
[2] Altering threshold value
[4] Resetting an error count

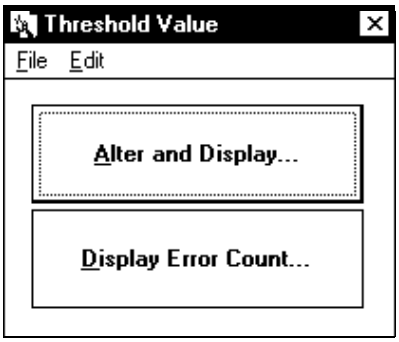
(2) Select (CL) the [Information] in the 'SVP' window.

(3) Select (CL) [Threshold Value...] in the 'Information'.



[1] Displaying threshold values

(1) Select (CL) [Alter and Display...] in the 'Threshold Value'

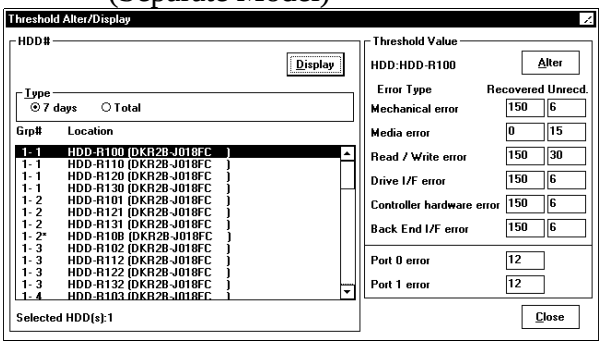


(2) Select (CL) an HDD location from the "HDD#" list box in the 'Threshold Alter/Display' dialog box and select(CL) [Display].
In order to display threshold of another interval, select (CL) the interval from the "Type" list box.

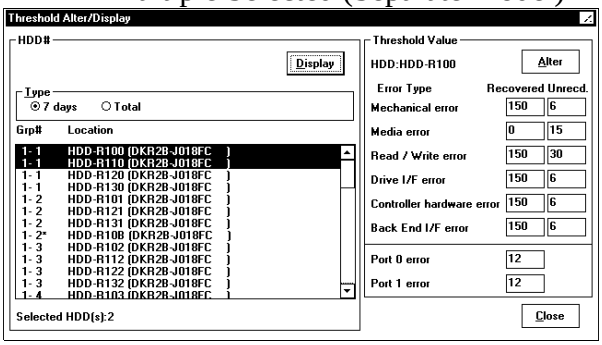
Note: Multiple HDD locations can be selected (CL) from the "HDD#" list box while the control key being held down. The threshold value in the "Threshold Value" list box shows the threshold value for the HDD location that is highlighted in the "HDD#" list box.
Recovered: Threshold of errors recoverable by retry.
Unrecd: Threshold of errors not recoverable by retry.

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

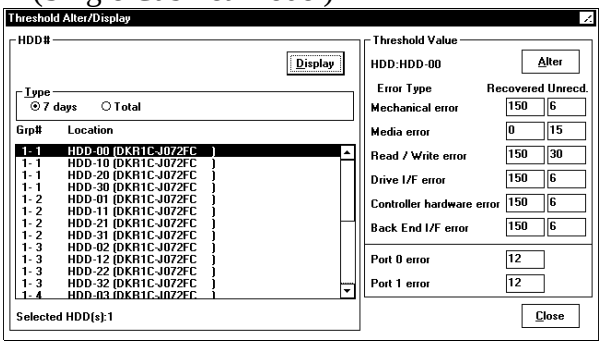
(Separate Model)



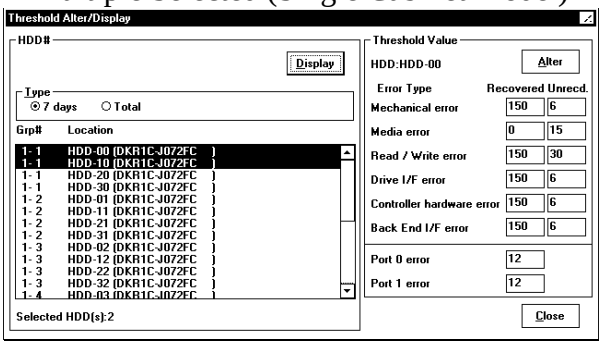
Multiple Selected (Separate Model)



(Single Cabinet Model)



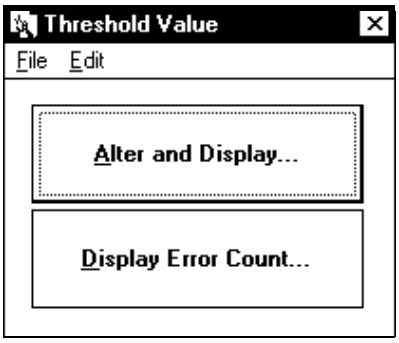
Multiple Selected (Single Cabinet Model)



(3) Select (CL) [Close] in the ‘Threshold Alter/Display’ dialog box and close the ‘Information’ window.

[2] Altering threshold value

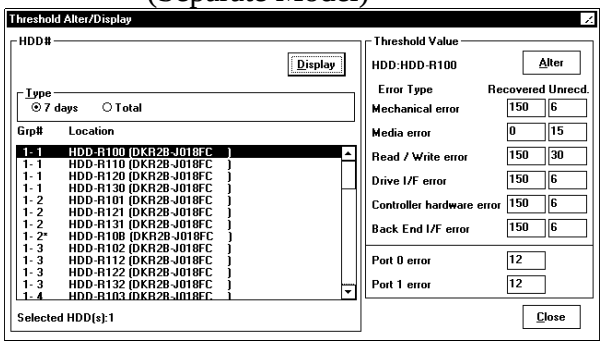
(1) Select (CL) [Alter and Display...] in the 'Threshold Value'.



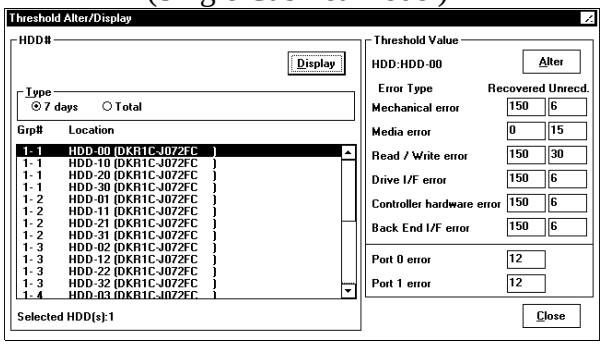
(2) Select (CL) an HDD location from the "HDD#" list box in the 'Threshold Alter/Display' dialog box and select (CL) [Display]. In order to display threshold of another interval, select (CL) the interval from the "Type" list box.

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)

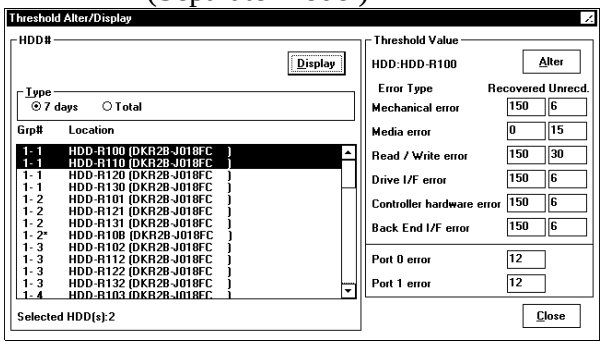


(Single Cabinet Model)

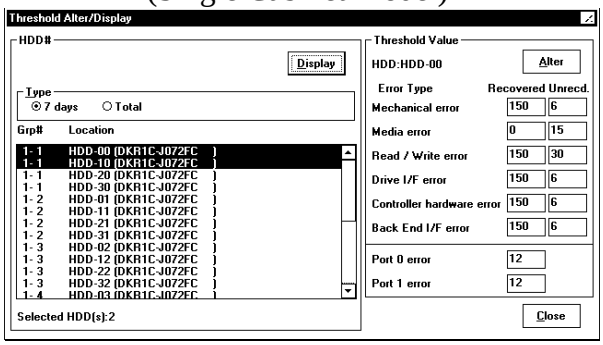


(3) Alter a threshold value in the “Threshold Value” list box in the ‘Threshold Alter/Display’ dialog box.
Then select (CL) [Alter].
Note: When multiple HDD location are selected(CL) from the “HDD#” list box while the control key being hold down, the thresholds for the all selected HDDs are modified to the same value.

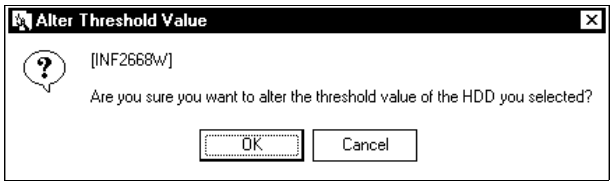
(Separate Model)



(Single Cabinet Model)



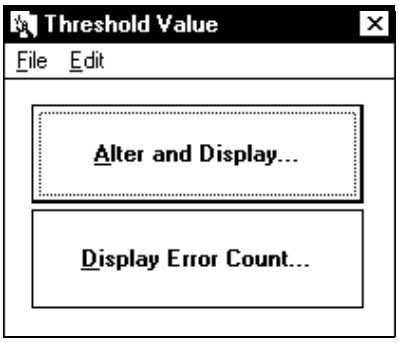
(4) Select (CL) [OK] in the ‘Alter Threshold Value’ dialog box.



(5) Select (CL) [Close] in the ‘Threshold Alter/Display’ dialog box and close the ‘Information’ window.

[3] Displaying an error count

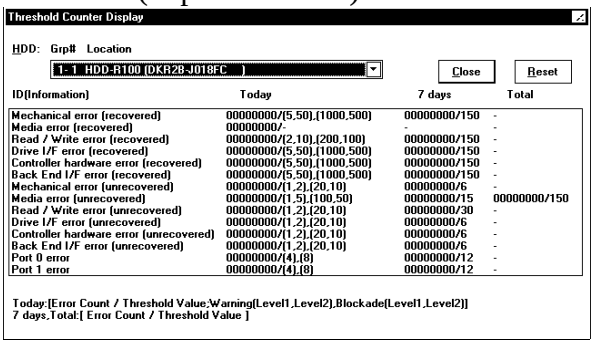
(1) Select (CL) [Display Error Count...] in the 'Threshold Value'.



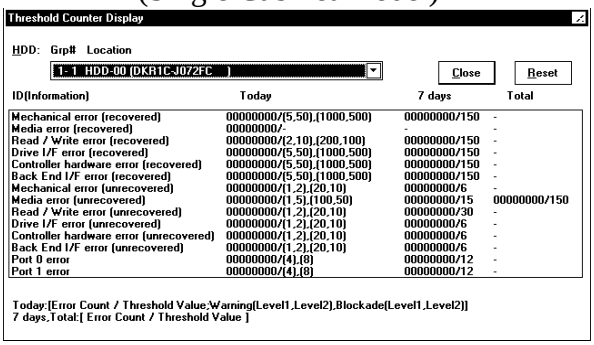
(2) Select (CL) an HDD location from the "HDD Location"drop-down list in the 'Threshold Counter Display' dialog box to display the error count for the HDD.

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

(Separate Model)



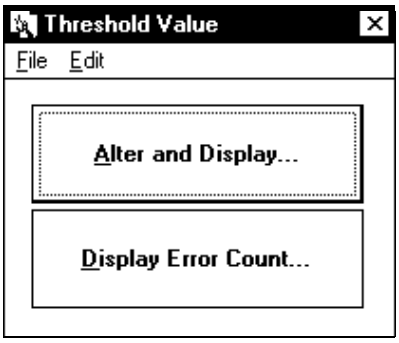
(Single Cabinet Model)



(3) Select (CL) [Close] in the 'Threshold Counter Display' dialog box and close the 'Information' window.

[4] Resetting an error count

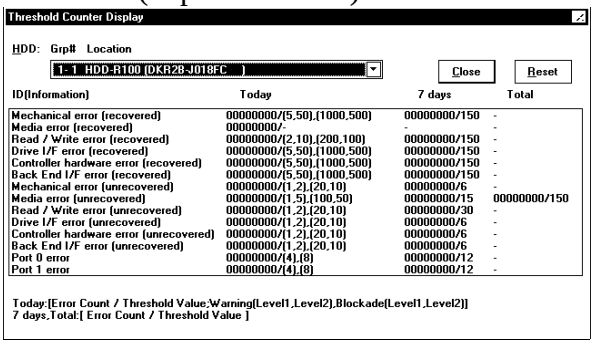
(1) Select (CL) [Display Error Count...] in the 'Threshold Value'.



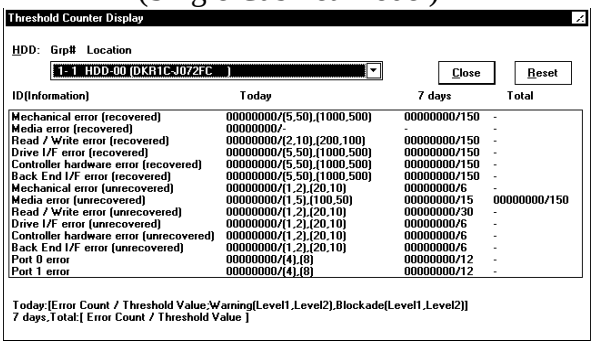
(2) Select (CL) the HDD location , for which you want to reset the error count, from the "HDD Location" drop-down list in the 'Threshold Counter Display' dialog box and also select (CL) [Reset].

Grp# : the parity group.
SPARE : spare HDD
RSRVD : reserved HDD with sparing
* : spare HDD in use.

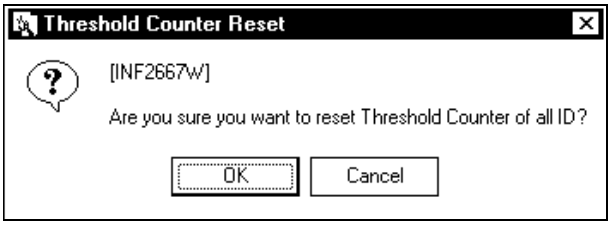
(Separate Model)



(Single Cabinet Model)

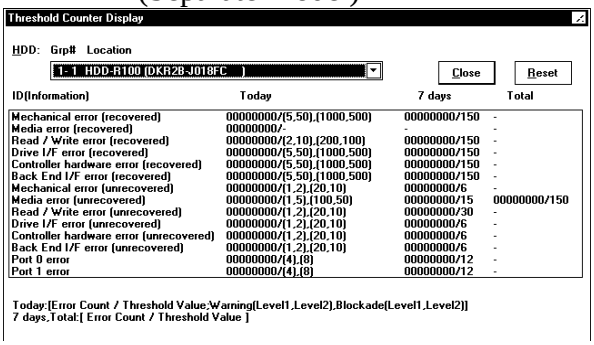


(3) Select (CL) [OK] in the 'Threshold Counter Reset' dialog box.

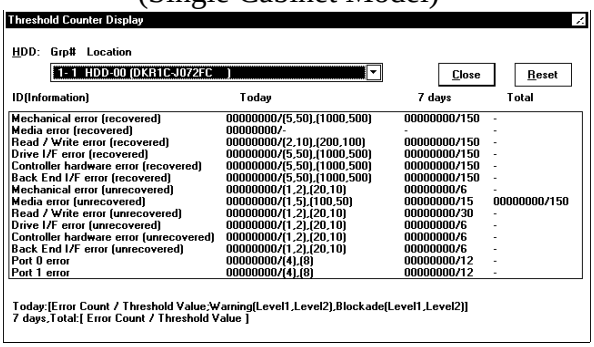


(4) After confirming that the error count has been reset in the 'Threshold Counter Display' dialog box select (CL) [Close] and close the 'Information' window.

(Separate Model)



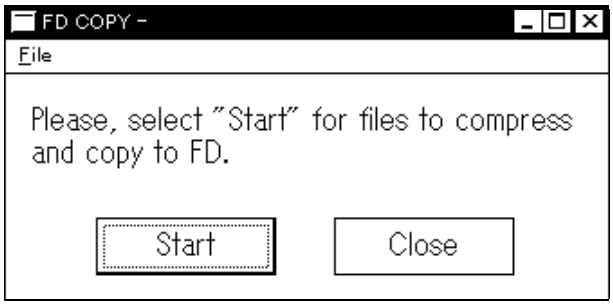
(Single Cabinet Model)



2.9 DUMP/LOG FD Copy

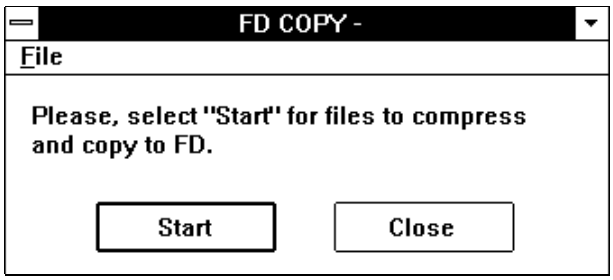
The first operation.

(1) Select (CL) [FD Copy].
If this function has been terminated abnormally (e.g, Ctrl + Alt + Delete), you should reboot SVP and retry again.

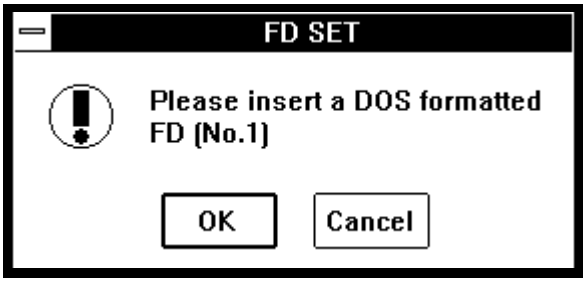


Copying the dump and log files to a floppy disk.

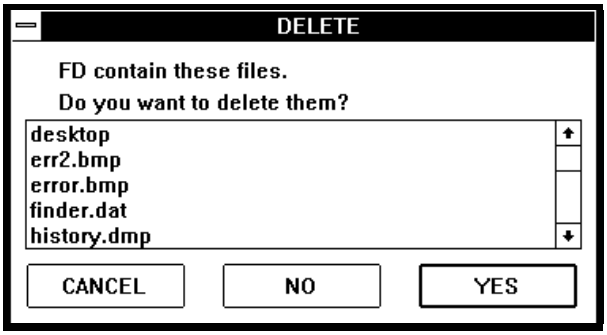
(1) Select (CL) [Start] in the ‘FD Copy” dialog box.

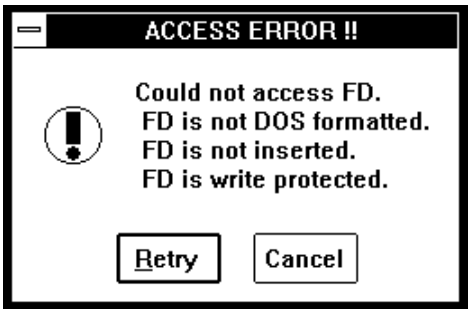


(2) The message “Please insert a DOS formatted FD (NO.1) ” will be displayed in the ‘FD SET’ dialog box.
In response to this message, insert a floppy disk and select (CL) [OK].



(3) If the floppy disk contains files, the message “FD contain these files. Do you want to delete them ?” is displayed.
If you want to delete these files, select (CL) [YES] and proceed to step (4).
If you don’t want to delete these files, select (CL) [NO] and proceed to step (4).
If an error occurs, check the items indicated by the ‘ACCESS ERROR!!’ dialog box then select (CL) [Retry].
(You will go to the beginning of step (4).)





(4) The message “Compressing files...” is displayed, and compressing is started.

(5) The message “Copying files to FD...” is displayed, and copying is started.
(If the capacity of the floppy disk becomes insufficient, go back to step (2) and replace the floppy disk with a new one.)

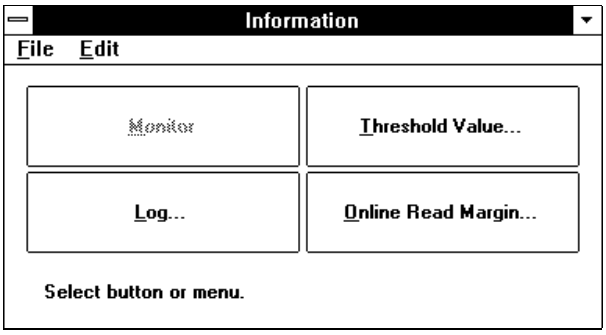
(6) The message “Delete DUMP files in HDD.” is displayed in the ‘DUMP DELETE’ dialog box.
Select (CL) [OK] and delete DUMP files in HDD.

(7) Close the ‘Fdcopy’ dialog box.

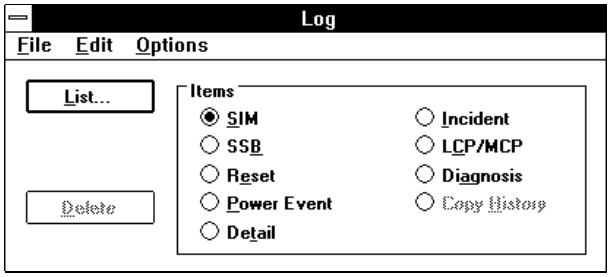
2.10 SIM Log Complete

(1) Select (CL) [Information].

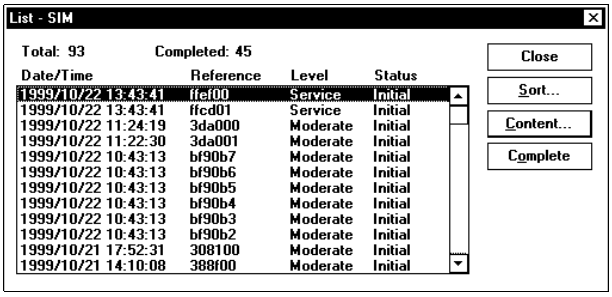
(2) Select (CL) [Log...] in the 'Information' dialog box.



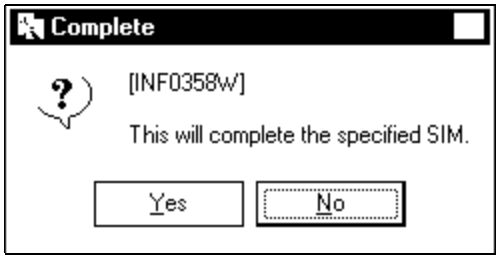
(3) Select (CL) [SIM] and [List...] in the 'Log'.



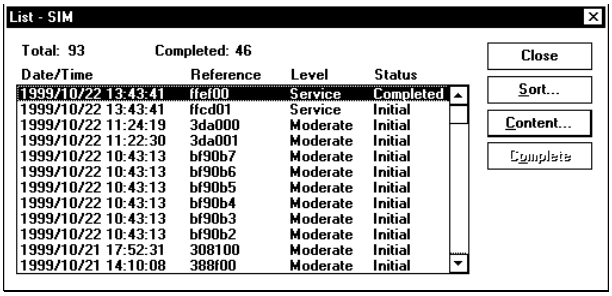
(4) Select (CL) data to be completed in the 'List-SIM' dialog box and select (CL) [Complete].



(5) Select (CL) [Yes] in the 'Complete' dialog box.



(6) In the 'List-SIM' dialog box, make sure that "Completed" is displayed in the status.



(7) Select (CL) [Close] in the 'List-SIM' dialog box.
Close the 'Log' dialog box and close the 'Information' window.

2.11 Dump

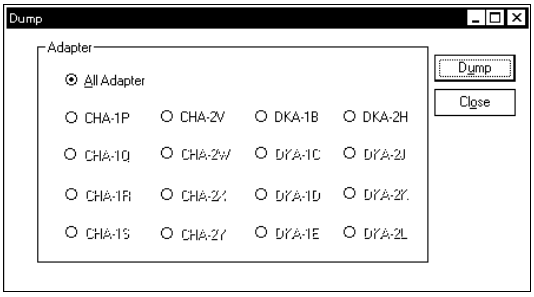
Auto Dump is useful because you can select the dump data type and the output media.
So please use Auto Dump in order to get dump information.

Note 1) Please use DUMP in order to select MP.
Note 2) You can use DUMP as usual.

[1] Manual Dump

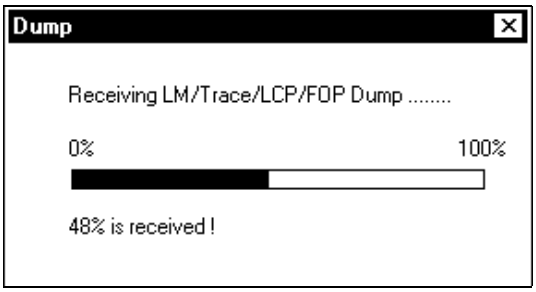
(1) Select (CL) [Dump] in the 'SVP' window.

(2) Select (CL) “Location No.” of the processor in the ‘Dump’ dialog box, and select (CL) [Dump]. When [All Adapters] is selected, dumps from all the processors are performed

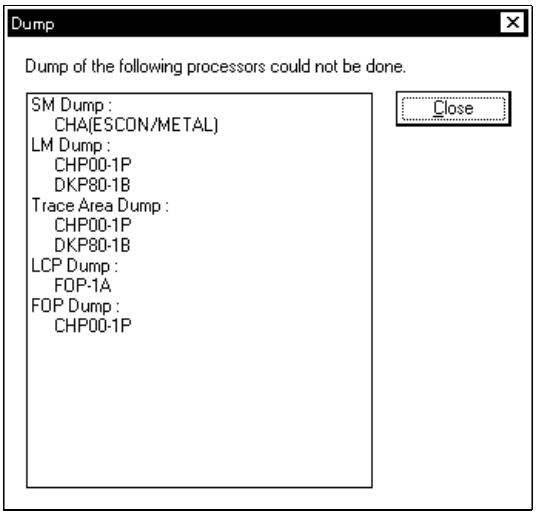


(3) A box indicating progress of the dump is displayed.

When the dump terminates normally, go to step (6).



(4) When an error occurs, the following dialog box is displayed.
Return to step (2) by selecting (CL) [Close], and then retry the dump.



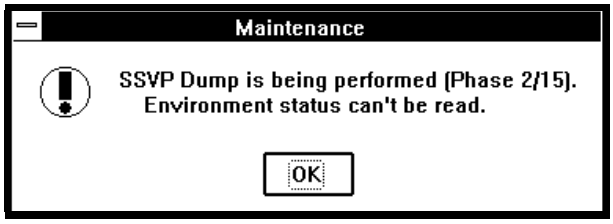
(5) When copying the dump file to an FD, execute the “[1] Copying the dump file to a floppy disk” in Section 2.8 “Copying DUMP/LOG FD”.

(6) “Dump is received successfully” is displayed. select (CL) [OK].

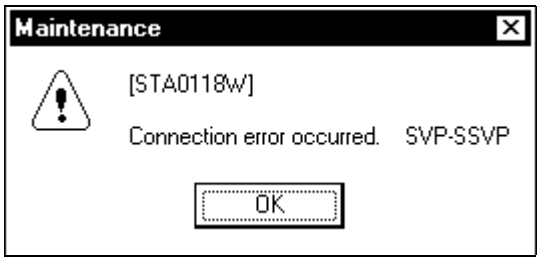
[2] SSVP DUMP

(1) Push the SSVP DUMP switch.
(Refer to Fig. 2.11-1.)

(2) Open Maintenance display (see SVP section). Confirm that the message “SSVP Dump is being performed [XXXX]. Environment status can’t be read.” is displayed and select (CL) [OK].



If the message “Connection error occurred. SVP-SSVP” is displayed, check the wiring connection and select (CL) [OK] to start from step (1) again. If step (1) is performed three times and the same message “Connection error occurred. SVP-SSVP”is displayed, replace SSVP (see REP01-170).

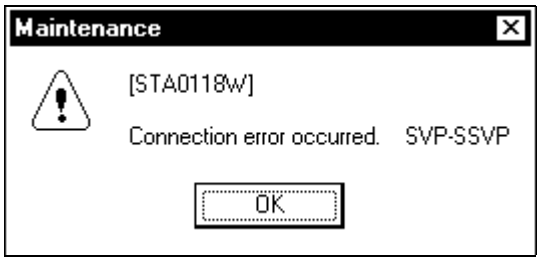


(3) SSVP ALARM lamp blinks after completion of dump.
(Within about 10 minutes after performing step (1))

(4) Copy dump file to FD.
Perform “2.9 DUMP/LOG FD Copy” on page SVP02-470.

(5) Push the SSVP Alarm Reset switch.
(Refer to Fig. 2.11-1.)

(6) Open Maintenance display.
If the message “Connection error occurred .SVP-SSVP” is displayed, select (CL) [OK] to perform step (5) again.
If step (5) is performed three times and the same message “Connection error occurred. SVP- SSVP” is displayed, replace SSVP (see REP01-170).



(7) If the message shown at step (6) is not displayed, the SSVP IMPL is completed.

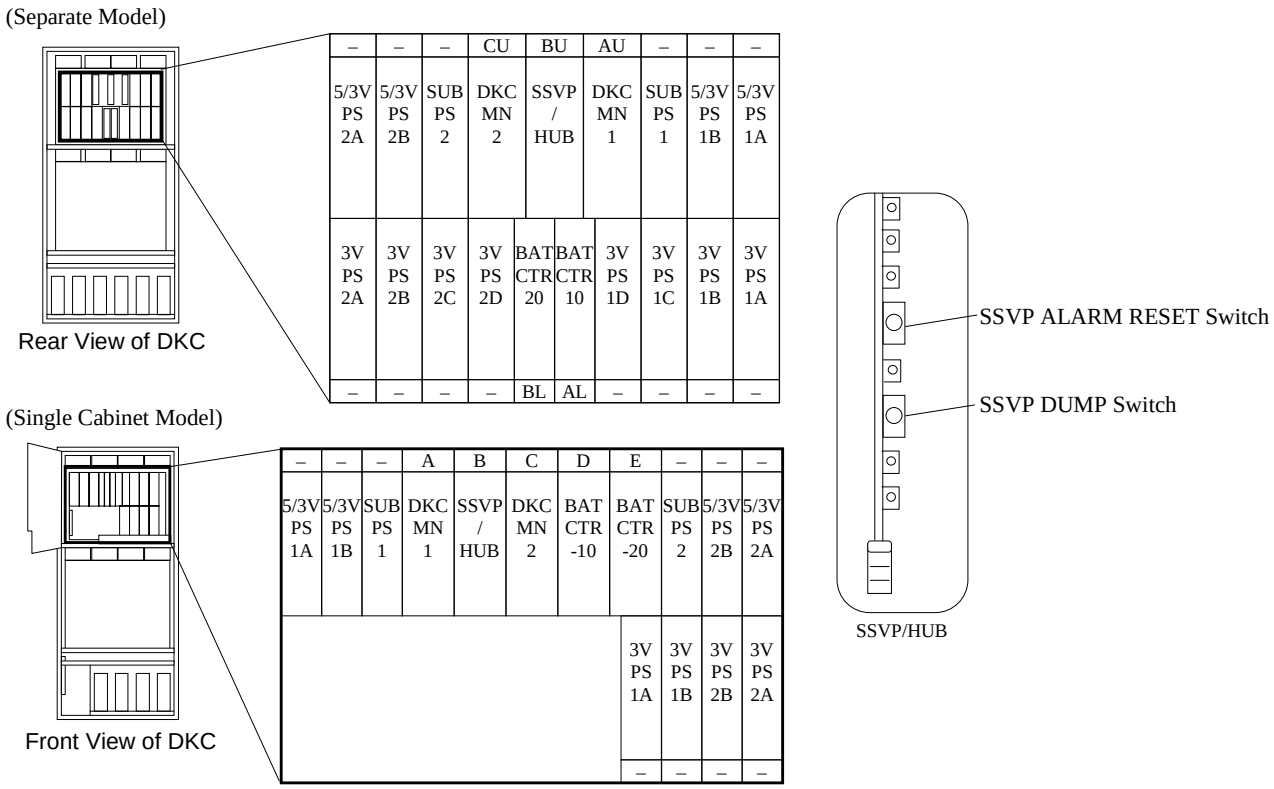
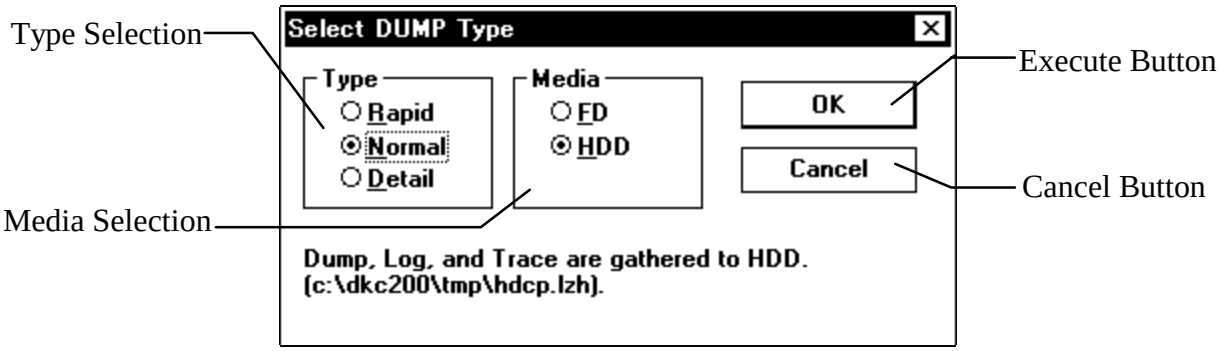


Fig. 2.11-1 RESET/DUMP Switch

[3] Auto Dump

(1) Select(CL) [**AutoDump**] button

(2) Select one of three dump types and one of two media types, and select (CL) [OK].



<Dump Type>

(a)Rapid This dump type is to get log information, SVP operation history, or configuration information. SVP will compress these files automatically. The compressed files will be stored in a few FDs. This dump type will be used when the initial analysis of error is need. In this case, you should gather the files used by this type and send it to the Center. After sending this files, you should gather dump data by selection "Normal" type and send it to the Center to be able to analysis more detail.

(b)Normal This dump type is to get dump data (you can get DUMP information of all adapters.) adding to the log files used by "Rapid" type. SVP will compress these dump files automatically. You should get dump data by using this dump type after sending the "Rapid" type of data to Center.

(c)Detail This type is to get monitor information adding to the dump files used by "Normal" type. This data will be need when the performance of the DKC want to be checked. If there is no order to get these data, you do not need to use this type.

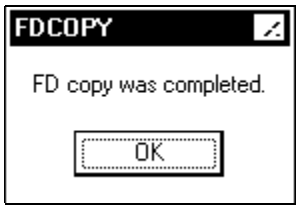
<Media>

(a)FDD SVP will store the compressed files to FD. If the data could not be hold in one FD, SVP will divide the compressed files into smaller files and store them into several FDs. If you cannot transfer the compressed files to your center from the SVP, you could use this media type to save files into several FDs and transfer them by using other PC which can connect to the center.

(b)HDD SVP will store the compressed files to HDD. The file name is "c:\dkc200\tmp\hdcp.lzh". If you can transfer the files to your center directly, this type will be useful. (Notice When operating the maintenance, SVP will sometimes delete the files. Do not use the maintenance operation before sending the files to your center.)

(3) Executing Auto Dump
SVP will execute Auto Dump. Please refer to the following section during the process.
2.9 DUMP/LOG FD Copy
2.11 DUMP

(4) Finish Auto Dump
After finishing the auto dump function, SVP will display the message, "FD Copy was completed". Select (CL) [OK] to end this process.

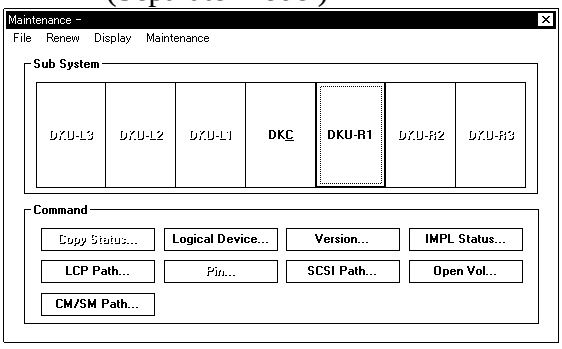


2.12 Logical Device Maintenance

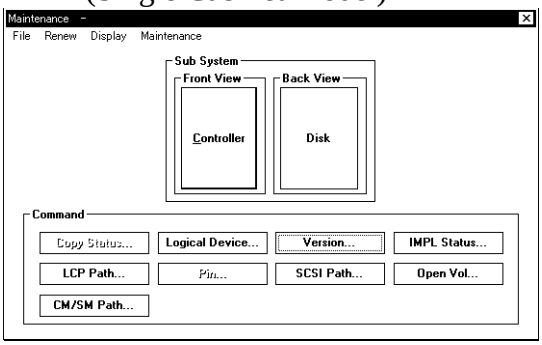
2.12.1 Logical Device

(1) Select (CL) the [Maintenance] in the 'SVP' window.

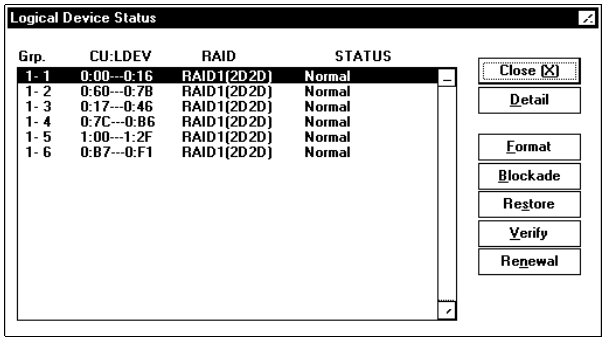
(2) Select (CL) [Logical Device] in the 'Maintenance'. (Separate Model)



(Single Cabinet Model)

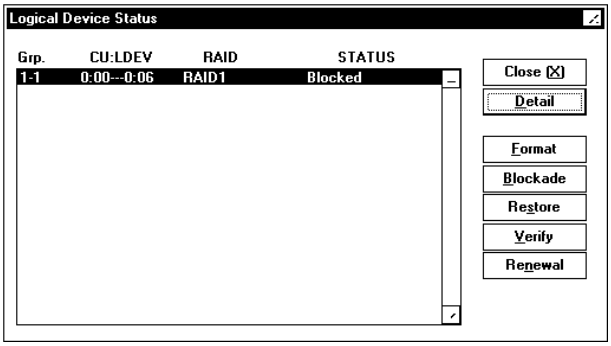


(3) “Logical Device Status” is displayed.



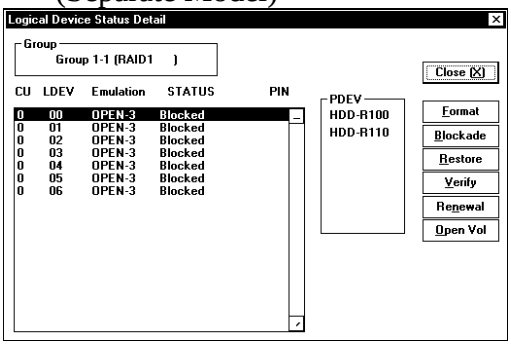
[1] Physical Device List

(1) Select (CL) an LDEV from the LDEV list box in the 'Logical Device Status' dialog box and select (CL) [Detail].

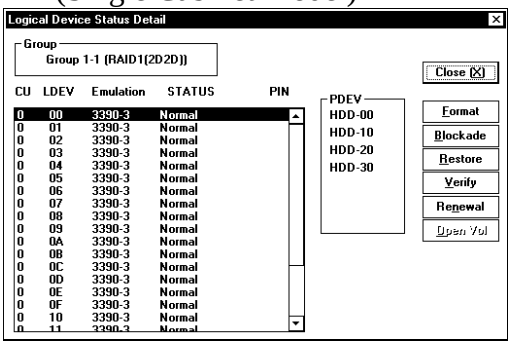


(2) 'Logical Device Status Detail' is displayed. And select (CL) [Close].

(Separate Model)



(Single Cabinet Model)

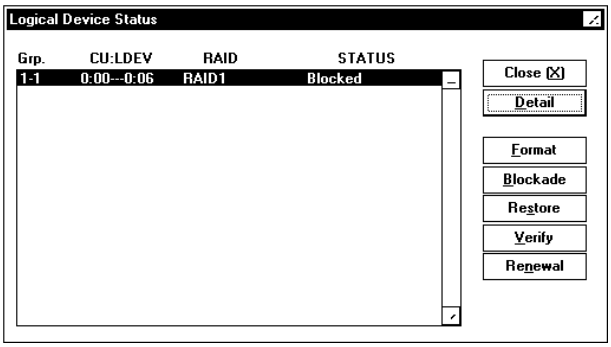


(3) Select (CL) [Close] in the 'Logical Device Status' dialog box. Close the 'General Status Display' window.

[2] FORMAT Logical Device

NOTICE
Executing this operation may cause a serious error such as a system down or a data loss. Accordingly, confirmation of the appropriateness of the operation and input of a password on the succeeding password input screen is required.

(1) Select (CL) ECC group from the LDEV list box in the 'Logical Device Status' dialog box.

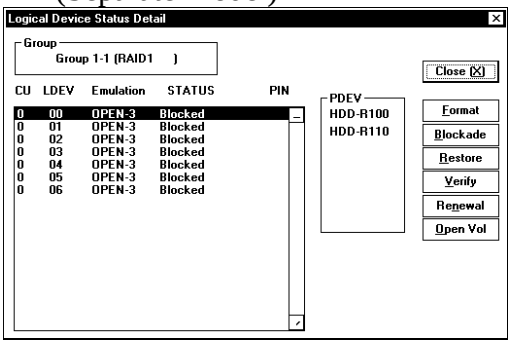


Format by Ldev unit :
Select (CL) [Detail] -----Go to (2-1)
Format by ECC group :
Select (CL) [Format]----Go to (2-2)
(It can select multiple item at once)

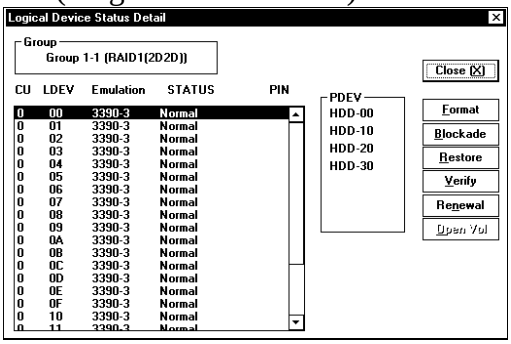
Note: Execute Format Logical Device after you confirm the target Logical Device is blocked.

(2-1) Select (CL) LDEVs which you want to format from "Logical Device Status Detail", and select (CL) [Format]. Go to (2-2).
(It can select multiple items at once.)

(Separate Model)

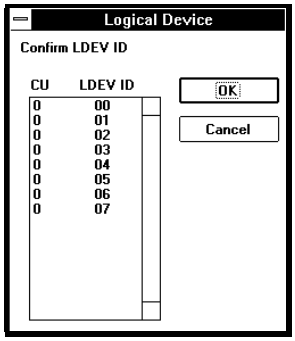


(Single Cabinet Model)

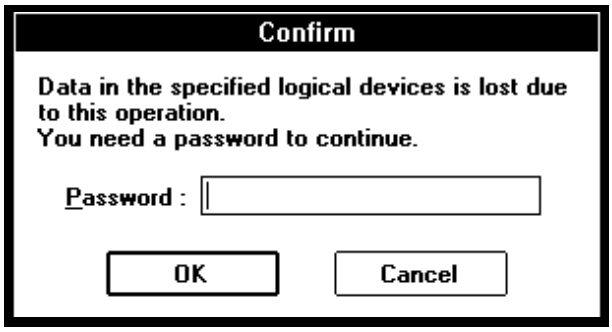


(2-2) Select (CL) corresponding LDEV from the LDEV ID list in the 'Logical Device' dialog box and select (CL) [OK].

If target LDEV was not blocked, return to 'Logical Device Status' dialog box.

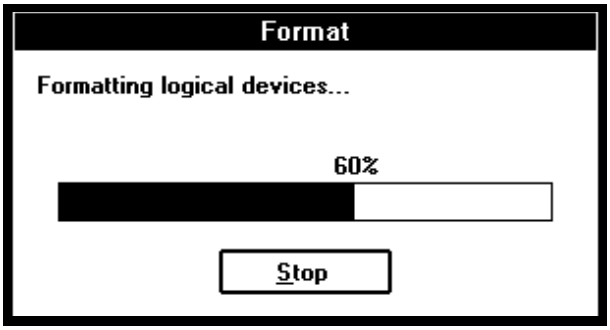


(3) "Data in the specified logical devices is lost due to this operation. You need a password to continue." is displayed.
Enter the password and select (CL) [OK].



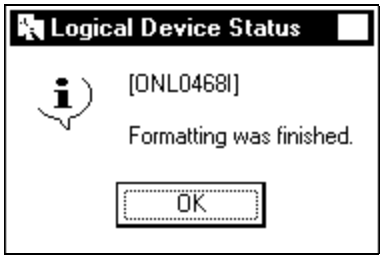
NOTICE
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support center about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

(4) "Formatting the logical device..." is displayed.



NOTICE
When REFER CONFIG etc. is executed during LDEV FORMAT of open volume, there is the rare case that MAINTENANCE WINDOW may disappear. Then please reboot SVP and execute LDEV FORMAT again.
For your information, even if rebooting SVP, LDEV FORMAT is executed without intermission. When you open LDEV FORMAT WINDOW again, you can see the current status of LDEV FORMAT.

(5) Select (CL) [OK] in response to “Formatting was finished.”.

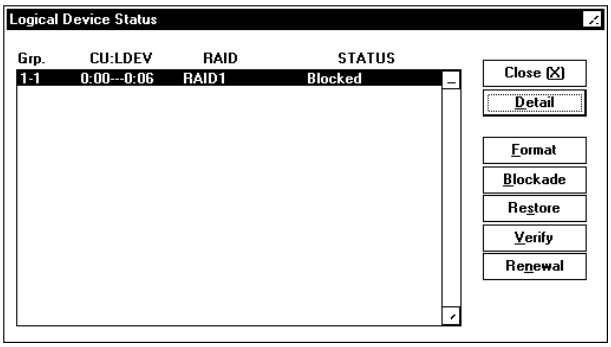


(6) Select (CL) [Close] in the ‘Logical Device Status’ dialog box.
Close the ‘Maintenance’ window.

[3] Block Logical Device

NOTICE
Executing this operation may cause a serious error such as a system down or a data loss. Accordingly, confirmation of the appropriateness of the operation and input of a password on the succeeding password input screen is required.

(1) Select (CL) ECC group from the LDEV list box in the 'Logical Device Status' dialog box.

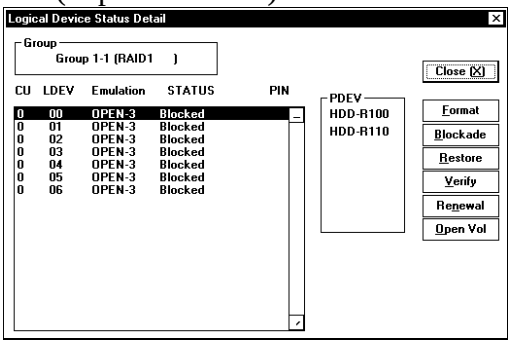


Blockade by Ldev unit :
Select (CL) [Detail] -------Go to (2-1)
Blockade by ECC group :
Select (CL) [Blockade] ---Go to (2-2)
(It can select multiple item at once)

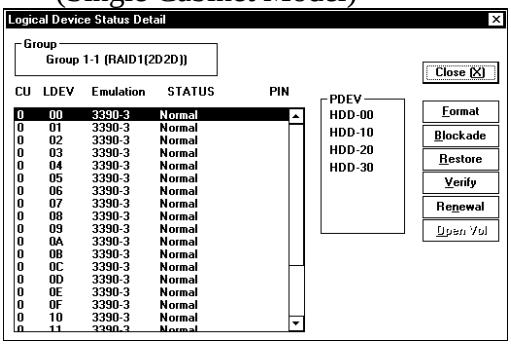
NOTICE
Execute Format Logical Device after you confirm the target Logical Device is blocked.

(2-1) Select (CL) LDEVs which you want to format from "Logical Device Status Detail", and select (CL) [Blockade]. Go to (2-2).
(It can select multiple items at once.)

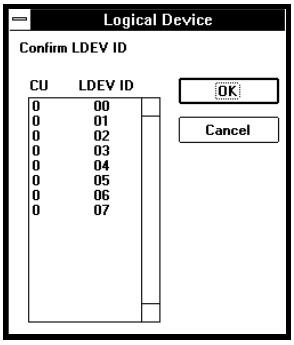
(Separate Model)



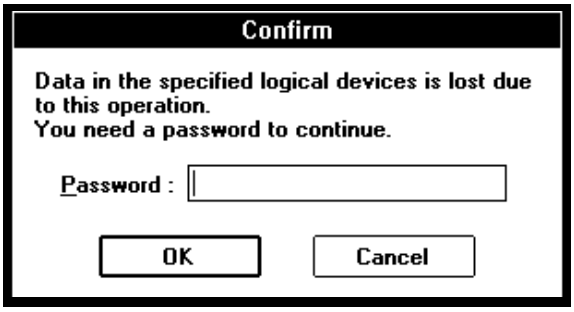
(Single Cabinet Model)



(2-2) Select corresponding LDEV from the LDEV ID list in the 'Logical Device' dialog box and select (CL) [OK].



(3) "Data in the specified logical devices is lost due to this operation. You need a password to continue." is displayed.
Enter the password and select (CL) [OK].



NOTICE
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support center about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

(4) "Blocking the logical device..." is displayed.

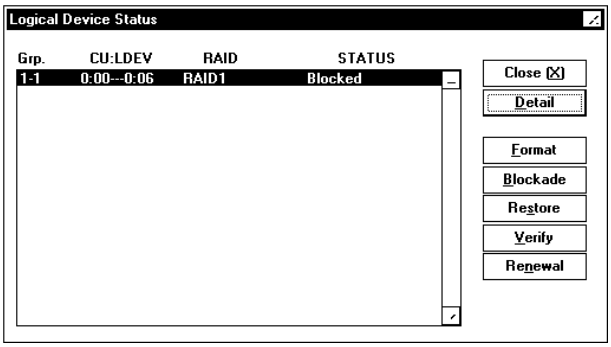
(5) Select (CL) [OK] in response to "Blocking the logical device is completed.".

(6) Select (CL) [Close] in the ‘Logical Device Status’ dialog box.
Close the ‘Maintenance’ window.

[4] Restore the Logical Device

NOTICE
Executing this operation may cause a serious error such as a system down or a data loss. Accordingly, confirmation of the appropriateness of the operation and input of a password on the succeeding password input screen is required.

(1) Select (CL) ECC group from the LDEV list box in the 'Logical Device Status' dialog box.

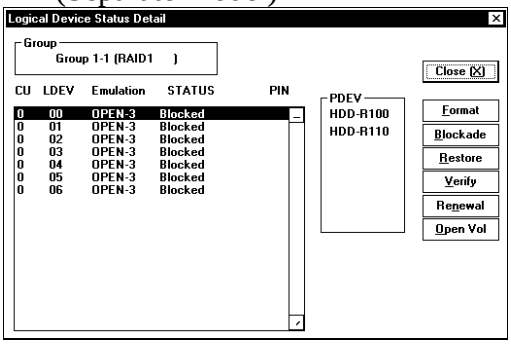


Restore by Ldev unit :
Select (CL) [Detail] -----Go to (2-1)
Restore by ECC group :
Select (CL) [Restore] ---Go to (2-2)
(It can select multiple item at once)

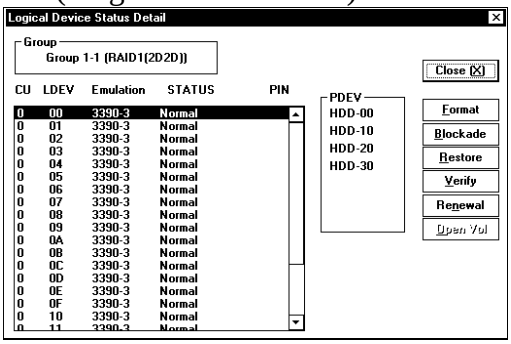
Note: Execute Restore Logical Device after you confirm the target Logical Device is blocked.

(2-1) Select (CL) LDEVs which you want to format from "Logical Device Status Detail", and select (CL) [Restore]. Go to (2-2).
(It can select multiple items at once.)

(Separate Model)

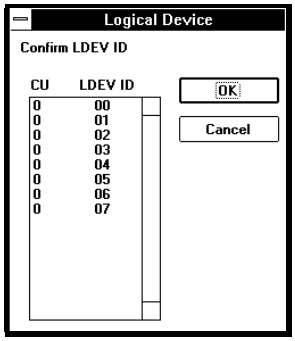


(Single Cabinet Model)

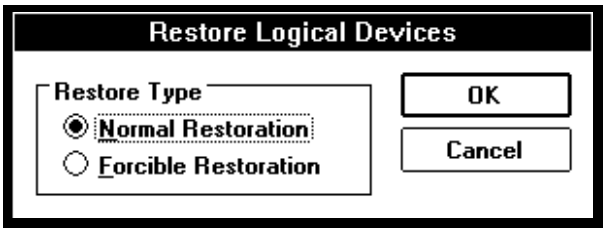


(2-2) Select (CL) corresponding LDEV from the LDEV ID list in the 'Logical Device' dialog box and select (CL) [OK].

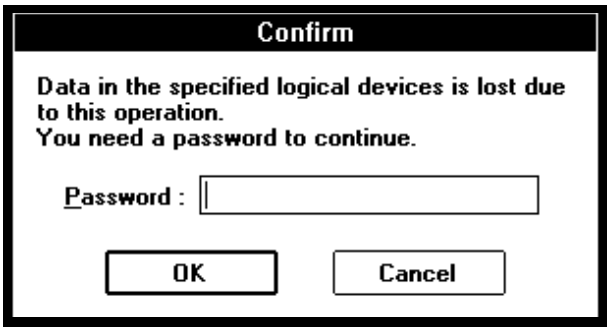
If target LDEV was not blocked, return to 'Logical Device Status' dialog box.



(3) Select (CL) corresponding item from the Restore Type in the 'Restore Logical Device' dialog box and select (CL) [OK].



If "Forcible Restoration" is selected, the message "Data in the specified logical devices is lost due to this operation.
You need a password to continue." is displayed.
Enter the password and select (CL) [OK].



NOTICE
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support center about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

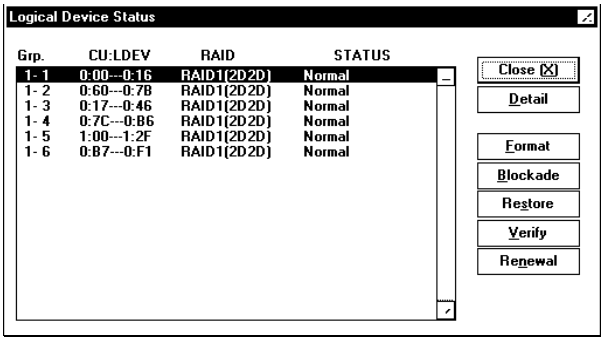
(4) "Restoring..." is displayed.

(5) Select (CL) [OK] in response to “Restoring the logical device is completed.”.

(6) Select (CL) [Close] in the ‘Logical Device Status’ dialog box.
Close the ‘Maintenance’ window.

[5] Refer the system configuration data

(1) Select (CL) [Renewal] in the 'Logical Device Status' dialog box.



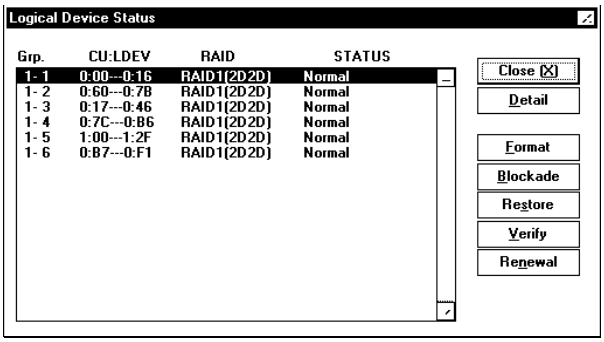
(2) "Reading the subsystem configuration..." is displayed.

(3) Select (CL) [Close] in the 'Logical Device Status' dialog box.
Close the 'Maintenance' window.

[6] Verify Logical Device

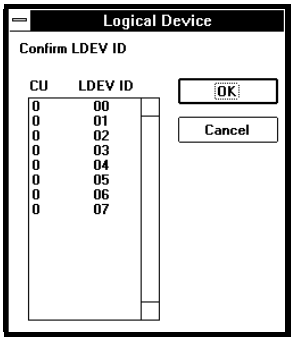
NOTICE
Executing this operation may cause a serious error such as a system down or a data loss. Accordingly, confirmation of the appropriateness of the operation and input of a password on the succeeding password input screen is required.

(1) Select (CL) an LDEV from the LDEV list box in 'Logical Device Maintenance List' dialog box and select (CL) [Verify...].



(2) Select (CL) corresponding LDEV from the LDEV ID list in the 'Logical Device' dialog box and select (CL) [OK].

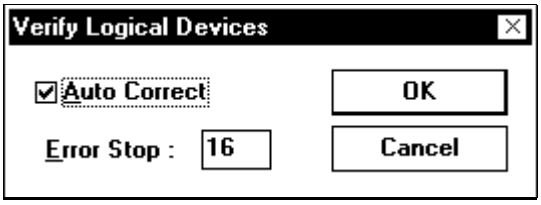
If target LDEV was not Normal, return to 'Logical Device Status' dialog box.



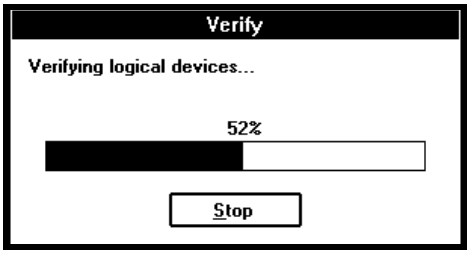
(3-1) Enter the password and select (CL) [OK].

NOTICE
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss and requires an input of a password. Ask the technical support center about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

Select (CL) 'Auto Correct' or input the value of Error Stop, and select (CL) [OK].



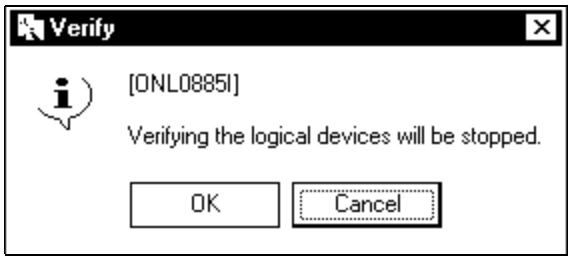
(3-2) “Verifying logical devices...” is displayed.
If you want to stop the check, select (CL) [Stop].
Go to (5)
If the parity error is not beyond the ‘Error Stop’ value, go to (4).
If the error is beyond the value, go to (7).

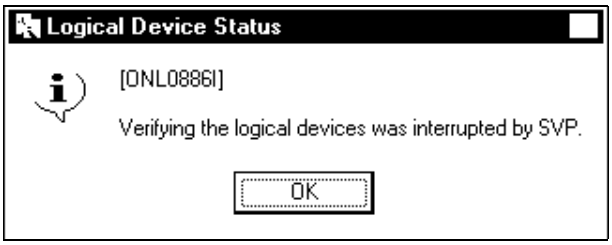


(4) If parity has errors less than the specified “Error Stop”, “Verifying the logical devices is finished.” is displayed.

Go to (6)

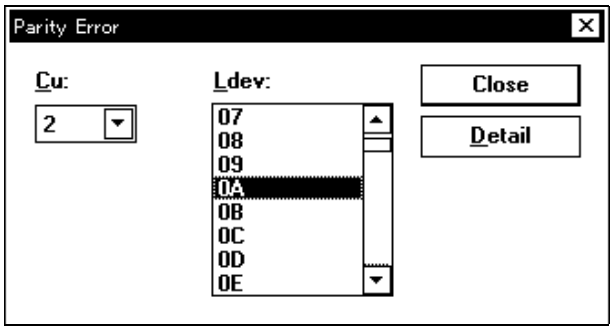
(5) If [Stop] is selected (CL) and [OK] in response to inquiry message is selected (CL), “Verifying the logical devices was interrupted by SVP.” is displayed.





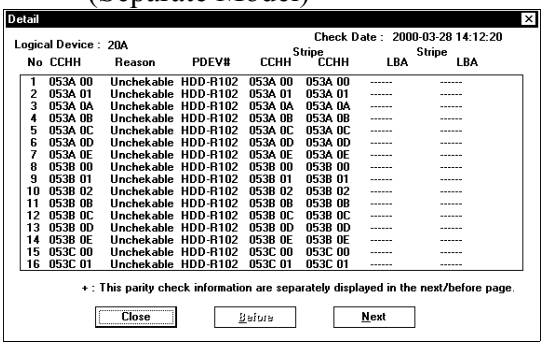
(6) Select (CL) [OK] in response to the message (4) ~ (5).
Select (CL) [Close] in the 'Logical Device Status' dialog box,
Close the 'Maintenance' window.

(7) LDEV to exist parity errors is displayed.
Select (CL) LDEV to be indicated in the 'Parity Error' dialog box and select (CL) [Detail...].

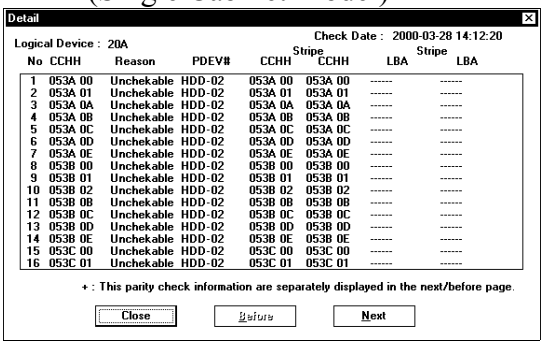


(8) Detail of parity errors.
(When "No." exist more than 17, select (CL) [Next].)
(Note) In case of OPEN-LDEV, only LBA's are displayed. If LBA of the error slot can not be displayed, "----" is displayed in both CCHH and LBA columns.
As for "Logical Device:", LDEV#:"XXX" of the error slot and LDEV#:"(YYY)" at the head of extension LU are displayed. But, LDEV at the head of extension LU doesn't display "(YYY)".

(Separate Model)



(Single Cabinet Model)

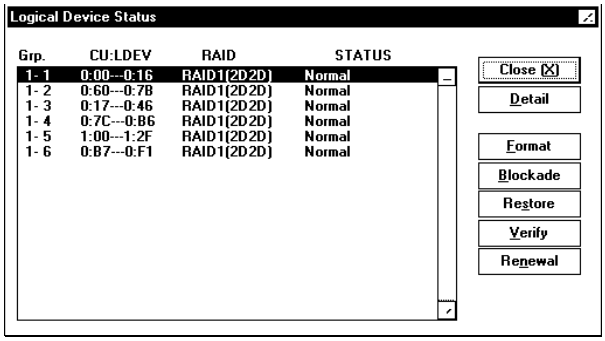


(9) Select (CL) [Close] in the 'Detail' dialog box.
Select (CL) [Close] in the 'Parity Error' dialog box.

(10) Select (CL) [close] in the 'Logical Device Status' dialog box.
Close the 'Maintenance' window.

[7] LDEV recovery for multiple PDEV failure

(1) Select (CL) ECC group from the LDEV list box in the 'Logical Device Status' dialog box.

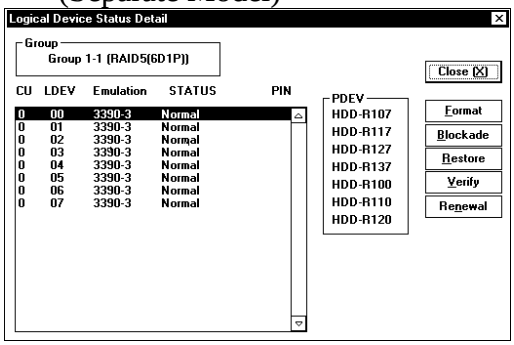


Restore by Ldev unit :
Select (CL) [Detail] -----Go to (2-1)
Restore by ECC group :
Select (CL) [Restore] ---Go to (2-2)
(It can select multiple item at once)

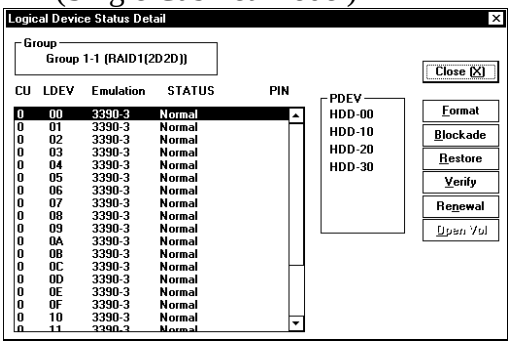
Note: Execute Restore Logical Device after you confirm the target Logical Device is blocked.

(2-1) Select (CL) LDEVs which you want to format from "Logical Device Status Detail", and select (CL) [Restore]. Go to (2-2).
(It can select multiple items at once.)

(Separate Model)

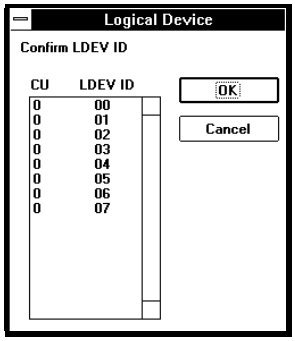


(Single Cabinet Model)



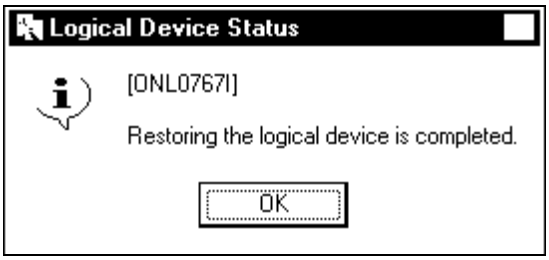
(2-2) Select (CL) corresponding LDEV from the LDEV ID list in the 'Logical Device' dialog box and select (CL) [OK].

If target LDEV was not blocked, return to 'Logical Device Status' dialog box.



(3) “Restoring...” is displayed.

(4) Select (CL) [OK] in response to “Restoring the logical devices is completed.”.



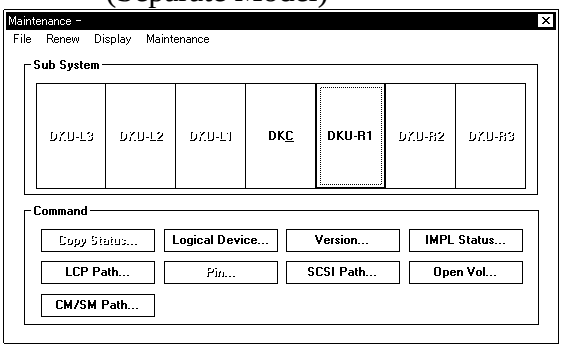
(5) Select (CL) [Close] in the ‘Logical Device Status’ dialog box.
Close the ‘Maintenance’.

2.12.2 Open VOL

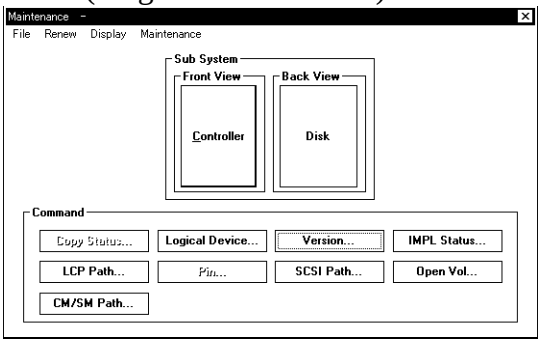
(1) Select (CL) the [Maintenance] in the 'SVP' window.

(2) Select (CL) [Open VOL] in the 'Maintenance'.

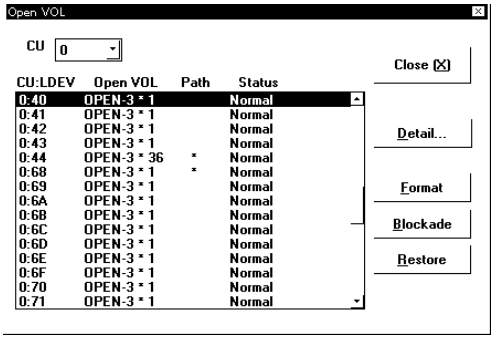
(Separate Model)



(Single Cabinet Model)

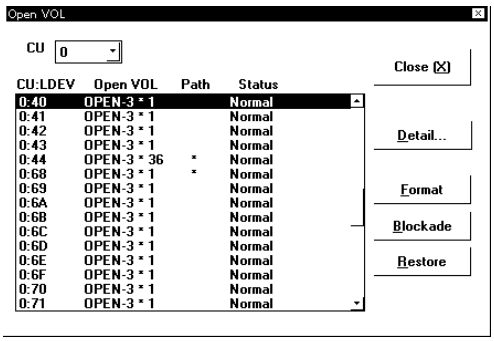


(3) 'Open VOL' is displayed.



[1] FORMAT Open VOL

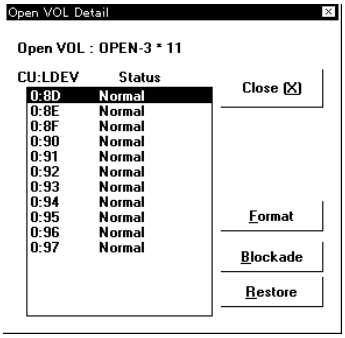
(1) Select (CL) Open VOL from the Open VOL list box in the 'Open VOL' window.



Format by LDEV unit:
Select (CL) [Detail] -------- Go to (2)
Format by Open VOL:
Select (CL) [Format] ------- Go to (3)
(It can select multiple item at once.)

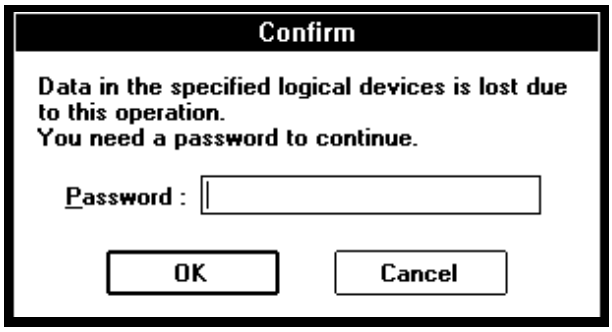
Note: Execute Format Open VOL after you confirm the target Open VOL is blocked.

(2) Select (CL) LDEVs which you want to format form 'Open VOL Detail' window, and select (CL) [Format]. Go to (3). (It can select multiple items at once.)

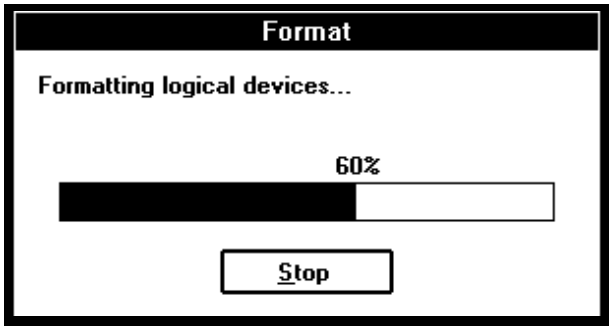


(3) "Data in the specified logical devices is lost due to this operation. You need a password to continue." is displayed.
Enter the password and select (CL) [OK].

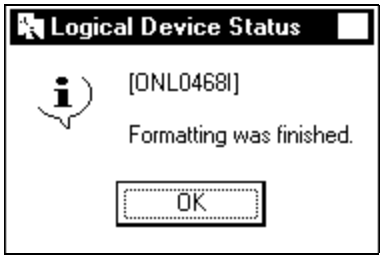
Password is needed for this operation.
Please call Technical Support Center to obtain password and authorization.



(4) “Formatting the logical device...” is displayed.



(5) Select (CL) [OK] in response to “Formatting was finished.”.



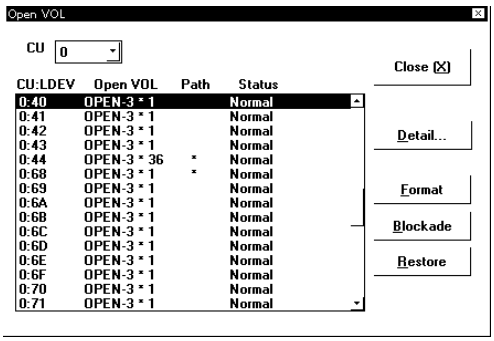
(6) Select (CL) [Close] in the ‘Open VOL’ window.
Close the ‘Maintenance’ window.

[2] Block Open VOL

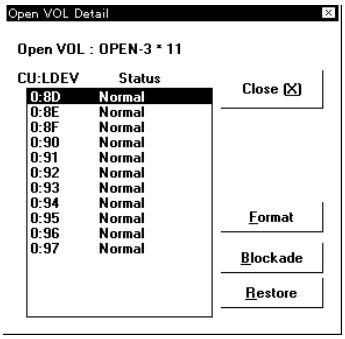
(1) Select (CL) Open VOL from the Open VOL list box in the 'Open VOL' window.

Blocked by LDEV unit:
Select (CL) [Detail] -------- Go to (2)
Blocked by Open VOL:
Select (CL) [Block]--------- Go to (3)
(It can select multiple items at once.)

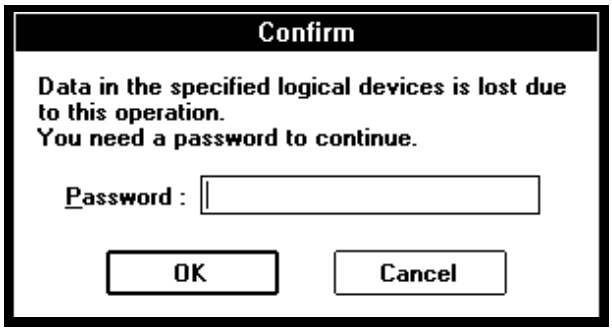
Note: Execute Format Open VOL after you confirm the target Open VOL is blocked.



(2) Select (CL) LDEVs which you want to block from 'Open VOL Detail' window, and select (CL) [Blockade]. Go to (3).
(It can select multiple items at once.)



(3) "Data in the specified logical devices is lost due to this operation. You need a password to continue." is displayed.
Enter the password and select (CL) [OK].
Password is needed for this operation.
Please call Technical Support Center to obtain password and authorization.



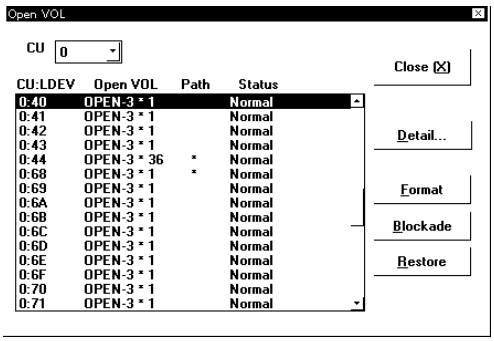
(4) “Blocking the logical device...” is displayed.

(5) Select (CL) [OK] in response to “Blocking the logical device is completed.”.

(6) Select (CL) [Close] in the ‘Open VOL’ window.
Close the ‘Maintenance’ window.

[3] Restore Open VOL

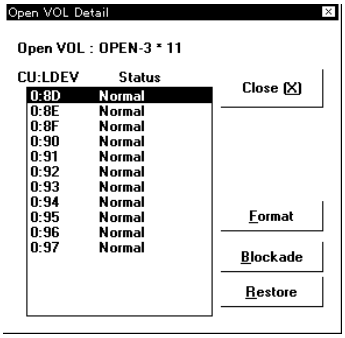
(1) Select (CL) Open VOL from the Open VOL list box in the 'Open VOL' window.



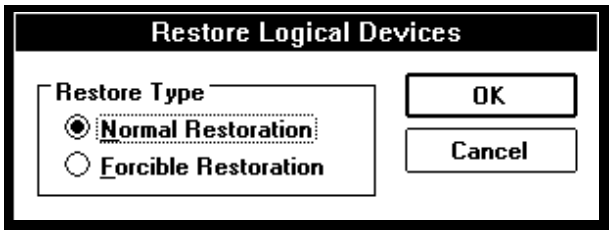
Restore by LDEV unit:
Select (CL) [Detail] -------- Go to (2)
Restore by Open VOL:
Select (CL) [Restore]------- Go to (3)
(It can select multiple items at once.)

Note: Execute Restore Open VOL after you confirm the target Open VOL is blocked.

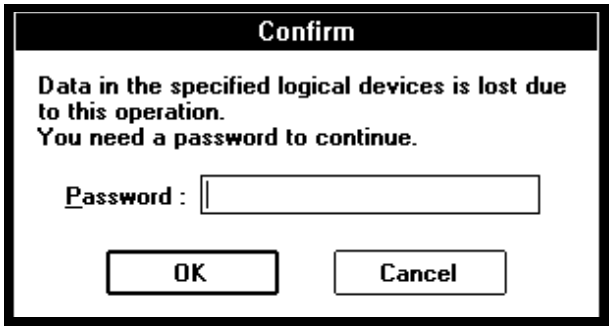
(2) Select (CL) LDEVs which you want to restore from 'Open VOL Detail' window, and select (CL) [Restore]. Go to (3).
(It can select multiple items at once.)



(3) Select (CL) corresponding item from the Restore Type in the 'Restore Logical Device' window and select (CL) [OK].

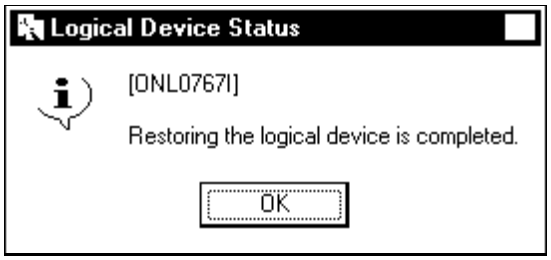


If "Forcible Restoration" is selected, the message "Data in the specified logical devices is lost due to this operation. You need a password to continue." is displayed.
Enter the password and select (CL) [OK].
Password is needed for this operation.
Please call Technical Support Center to obtain password and authorization.



(4) “Restoring...” is displayed.

(5) Select (CL) [OK] in response to “Restoring the logical device is completed.”.

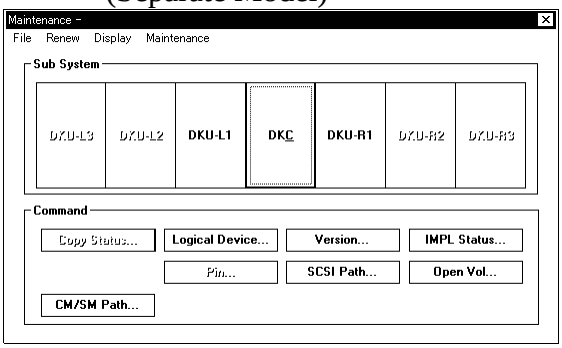


(6) Select (CL) [Close] in the ‘Open VOL’ window.
Close the ‘Maintenance’ window.

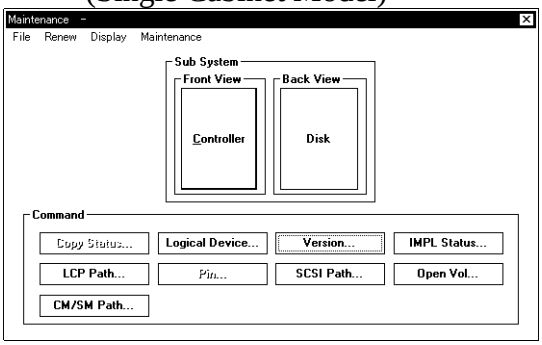
2.13 Pin Data indication

Prerequisite operation
(1) Select (CL) [Maintenance].

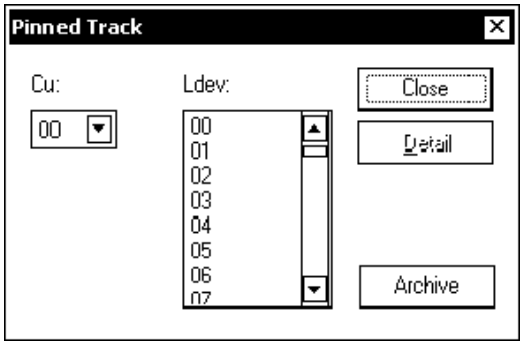
(2) Select (CL) [PIN] in the 'Maintenance' dialog box. (Separate Model)



(Single Cabinet Model)



(3) Display an LDEV with a pinned slot.
Select (CL) the LDEV, details of which you want to display, in "Ldev" and select (CL) "Detail….".
----------Go to Step (4).
(Note) When the pinned slot is gone, the LDEV, an occurrence of the pinned slot in which was reported by a SIM, is not displayed.

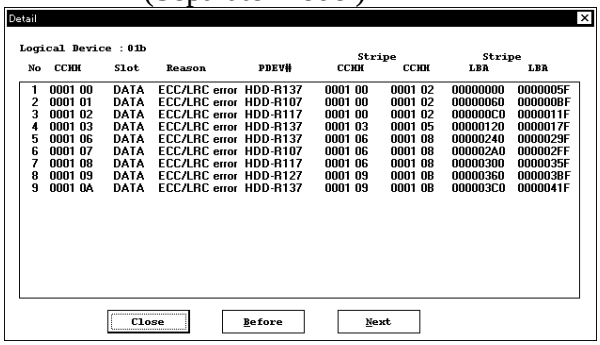


When you want to output pinned data to a file, select the [Archive] button.
----------Go to Step (5).

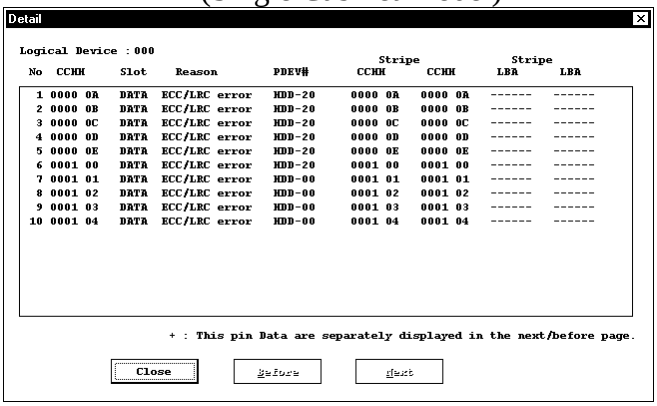
When you close the 'Pinned Track' window, select (CL) the [Close] button.
----------Go to Step (7).

(4) Displays the detail of a Pin Slot.
If there are more than 17 Pin Slots, [Next] button will be enable to display other Pin Slots.)
(Note) If a Pin Slot has some trouble, but it can be recovered, the detail of the Pin Slot will not be displayed.
In case of OPEN-LDEV, only LBA's are displayed. But, if LBA of the Pin Slot can't be displayed, "-----" is displayed in both CCHH and LBA columns.

(Separate Model)

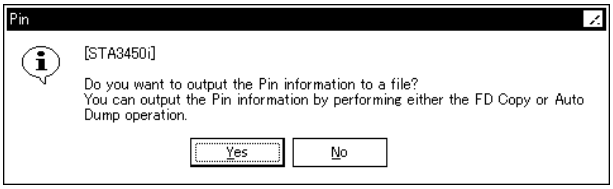


(Single Cabinet Model)



When you close the 'Detail' window, select (CL) the [Close] button.
----------Go to Step (3).

(5) "Do you want to output the Pin information to a file? You can output the Pin information by performing either the FD Copy or Auto Dump operation." is displayed.
When you want to output the result to a file, select (CL) [Yes].



----------Go to Step (6).

When you do not want to output the result to a file, select (CL) [No].
----------Go to Step (3).

---

(6) "The Pin information was outputted to a file." is displayed.
----------Go to Step (3).

---

(7) Close the 'General Status' window.

2.14 Multi PCB Replace

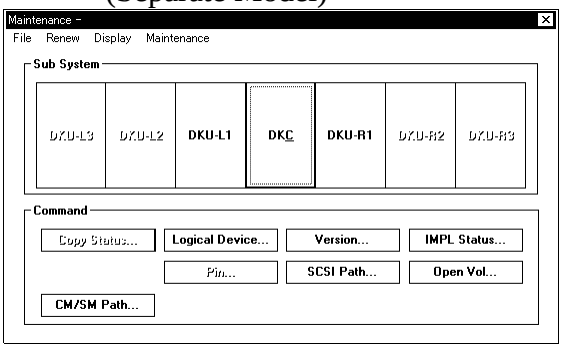
(1) <Set path offline>
Set the path offline from HOST when replacing CHA.

(2) <Maintenance>
'Maintenance' window is displayed.

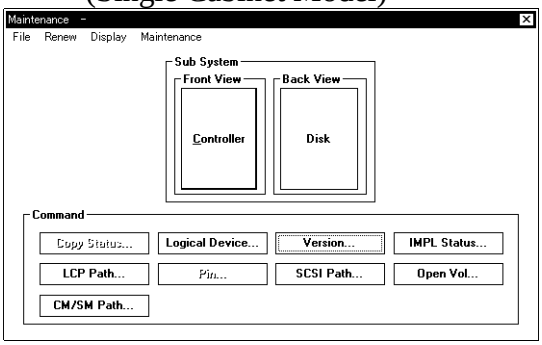
(Separate Model)
In the 'Maintenance' window, check and select (CL) [Controller] to be replaced.

(Single Cabinet Model)
In the 'Maintenance' window, check and select (CL) [Controller] to be replaced.

(Separate Model)



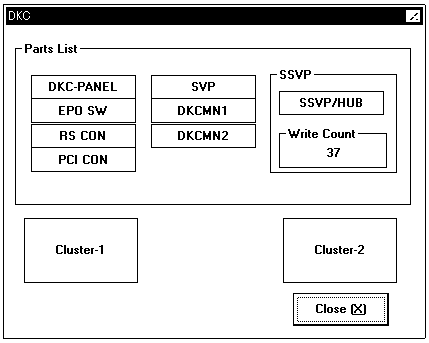
(Single Cabinet Model)



(3)

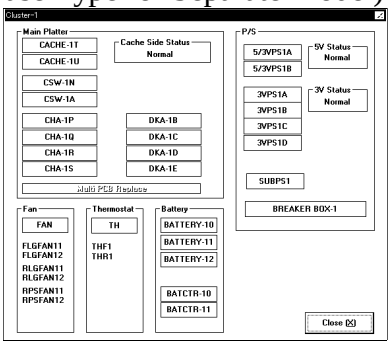
(Separate Model)
<DKC window)
Select (CL) [Cluster-n] in the 'DKC'.

(Single Cabinet Model)
<Controller window>
Select (CL) [Cluster-n] in the 'Controller'.

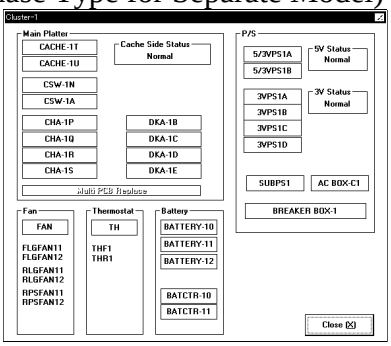


(4) <Select Multi PCB Replace>
Select (CL) [Multi PCB Replace].
Selecting (CL) [Close] returns you to step (3).

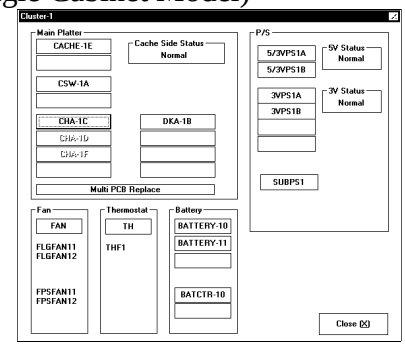
(3-Phase Type for Separate Model)



(1-Phase Type for Separate Model)

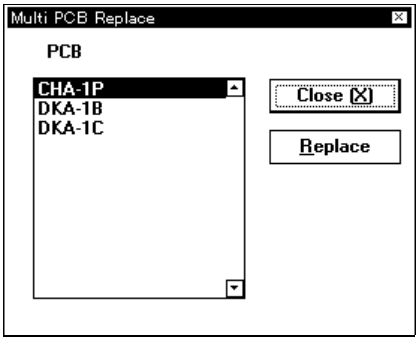


(Single Cabinet Model)



(ex. Cluster-1)

(5) <Select CHA/DKA>
Select (CL) CHA/DKA PCB.
Select (CL) [Replace].

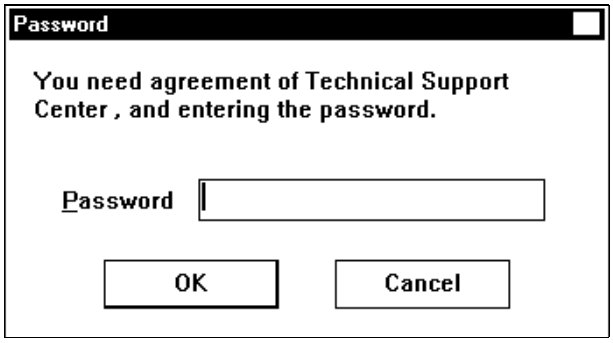


NOTICE
When the subsystem is placed online, ask the customer to place it offline.

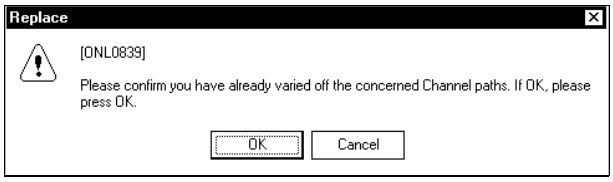
NOTICE
When the screen prompting an operator to input a password in order to prevent a multiple maintenance, contact the technical support center to ask for an instruction.

(6) <Enter Password>
Enter the password in response to [Password?] and select (CL) [OK].

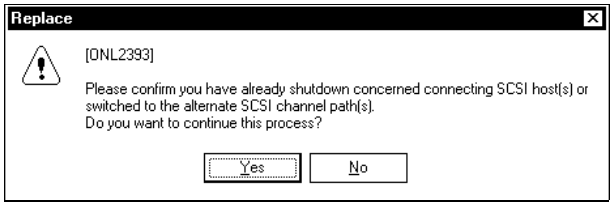
NOTICE
Executing this operation may cause a serious error such as a system down or a data loss.
Accordingly, confirmation of the appropriateness of the operation and input of a password on the succeeding password input screen is required.



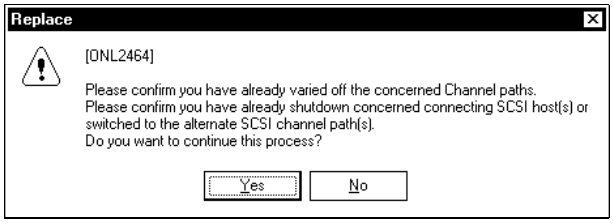
(7) <Confirm Channel Path offline>
Select (CL) [OK] in response to "Please confirm you have already varied off the concerned Channel paths. If OK, please press OK."



If SCSI channel adapter is installed:
After you confirm that you have stopped concerned SCSI Channel paths, select (CL) [OK].



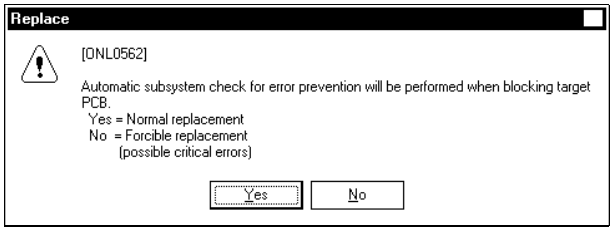
CHA and CHA (SCSI) are exist:
After you confirm that you have stopped concerned Channel paths and SCSI channel paths, select (CL) [OK].



(8) <Caution message for system down>

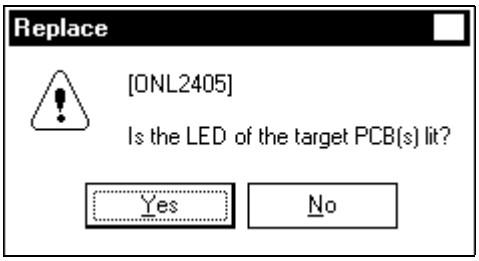
NOTICE
Select (CL) [Yes] in response to the message below.

"Automatic subsystem check for error prevention will be performed when blocking target PCB.
Yes = Normal replacement
No = Forcible replacement
(Possible critical errors)"



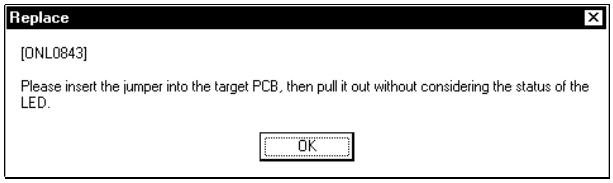
(9) <CHA/DKA blocking>
* For CHA
"The CHA-xx is being blocked..."
* For DKA
"The DKA-xx is being blocked..."

(10) <Check to see if shut down LED is lit>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(s) lit?".
If [No] is selected:
Select in response to "Is the LED of the target PCB(s) lit?" again.



NOTICE
If the jumper is inserted in the wrong PCB, a system down may be caused.

<Forcing shut down LED on>
If [No] is selected twice:
Insert a jumper in response to "Please insert jumper into the target PCB, then pull it out without considering the status of the LED".

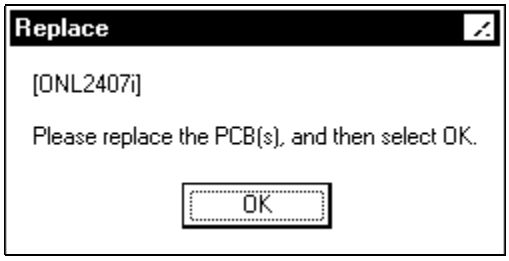


For CHA (SERIAL)	HARDWARE C (REP03-80)
For FIBRE	HARDWARE D (REP03-110)
For DKA	HARDWARE E (REP03-140)

(11) <Beginning of CHA / DKA Replacement>

"Please replace the PCB(s), and then select OK." is displayed.

Select (CL) [OK] after replacing the PCBs.



For CHA (Serial)	Go to HARDWARE C (REP03-80)
For FIBRE	Go to HARDWARE D (REP03-110)
For DKA	Go to HARDWARE E (REP03-140)

(12)

Select (CL) [OK] in response to "Please replace the PCB(s). After replacement, please press OK."

"Waiting for Power Event... Usually, several minutes (maximum 10 minutes)" is displayed.

(13) <Check the recovery processing>

The following message is displayed:

* For DKA

"Restoring the DKA-xx..."

"DKA-xx is being path recovered..."

(14) <Check the end of CHA/DKA recovery>
Select (CL) [OK] in response to “Replace finished.”.

NOTICE
When one or more PCBs are replaced normally, “Replace finished.” will be displayed. So please confirm PCBs’ status.

(15) <Path on-line when CHA is replaced>
Whenever a CHA is replaced, set the path (from the host) on the replaced CHA to ONLINE by your customer.

(16) <SIM Complete>
Go to SVP02-510.

(17)
Close ‘Multi PCB Replace’ window.
Close ‘Cluster-n’ window.
Close ‘Maintenance’ window.

2.16 System Option

⚠ CAUTION

There is some possibility that "Syserr's Clues" occurs during this operation. In this case, retry the same setting operations after SVP (PC) is rebooted. (The settings operations with "Syserr's Clues" caused have no effects on the system.

[Over view]

Change following system option when the system operates.

<1> Spare Disk Recovering - Select the performance density when data is copied to a spare disk. (correction copy and drive copy)

- Interleave : Everytime 4-slot copy is completed, copy job sleeps for the time dependent on load of HOST I/O.
- Offline : No sleep. (No considering HOST job)

NOTICE

Please do not use if no channel paths is varied offline.

<2> Disk Copy Pace ---------- Specification of copy pace is supported with the "Interleave" mode at Spare Disk Recovering. 3 modes are supported.

- Medium : Optimization mode. The copy time depends on load of HOST I/O.
- Faster : Copy job is prior to HOST job.
- Slower : HOST job is prior to copy job.

<3> Copy Operation ----------

- Dynamic Sparing : Copy automatic to a spare disk if disk failure exceeded the threshold value.
- Correction Copy : Execute correction copy to a spare disk automatically when one drive has blocked.

<4> Read Configuration Data Mode

---------- To change the method of adding S/N which DKC reports by Read Configuration Data command.

- OFF : Compatible method
- ON : 4096 support method (default)

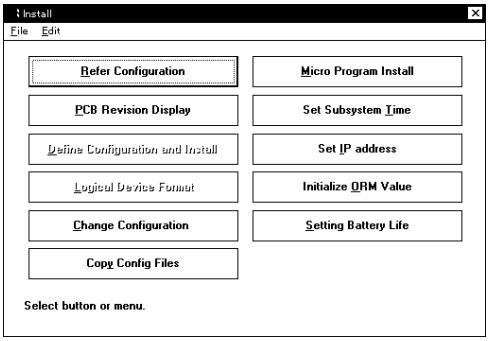
<5> PS Off Timer ---------- Enters the Destage time.

- OFF : The Destage time is effectively.
- ON : The Destage time is ineffectively, and change the Destage time.

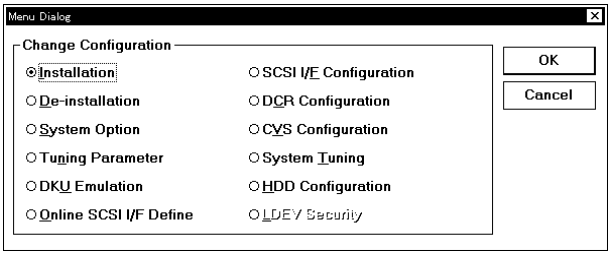
<6> VTOC ---------- Setting the VTOC size.

(1) Select (CL) [Install].

(2) Select (CL) the [Change Configuration] menu in the 'Install' window and select (CL) [OK].

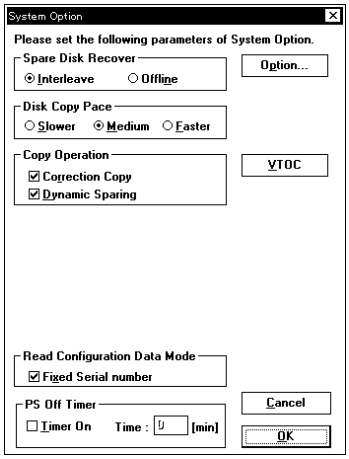


(3) Select (CL) [System Option] menu in the 'Menu Dialog' window and select (CL) [OK].

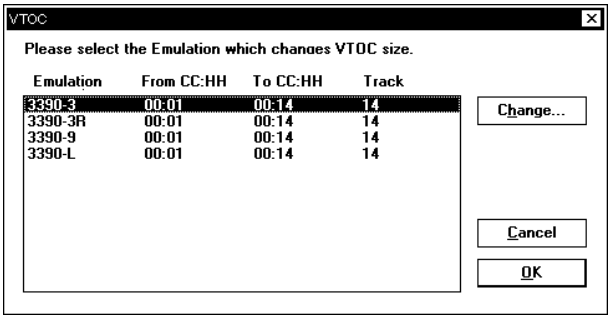


(4) Select (CL) the desired item in the 'System Option' dialog box.
[VTOC]: Setting the VTOC size. Go to step (4-1).

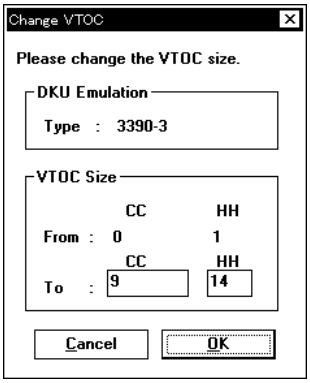
After setting up all items, select (CL) [OK].
Go to step (5).



(4-1) Select (CL) the DKU Emulation to be defined and select (CL) [Change...]. Go to step (4-2). After setting up all items, select (CL) [OK]. Return to step (4).

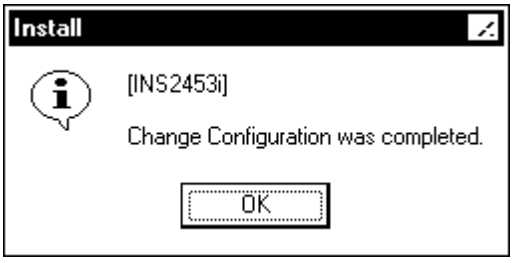


(4-2) Setting the VTOC Size (to CC:HH), and select (CL) [OK]. Return to step (4-1).

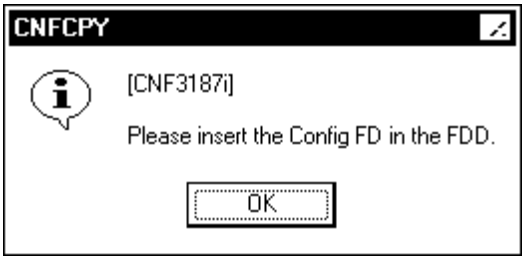


(5) "Loading configuration..." is displayed.

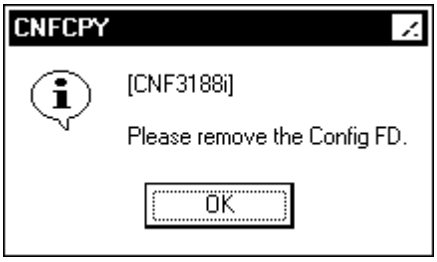
(6) "Change configuration was completed." is displayed. Select (CL) [OK].



(7) “Reading subsystem configuration data...” is displayed.
“Please insert the Config FD in the FDD.” is displayed.
Insert the configuration FD into FDD, select (CL) [OK].



(8) When this procedure is completed, message “Please remove the Config FD.” is displayed.
Remove the FD, select (CL) [OK].



(9) Close the ‘Install’ window.

2.18 Blocking of Cluster

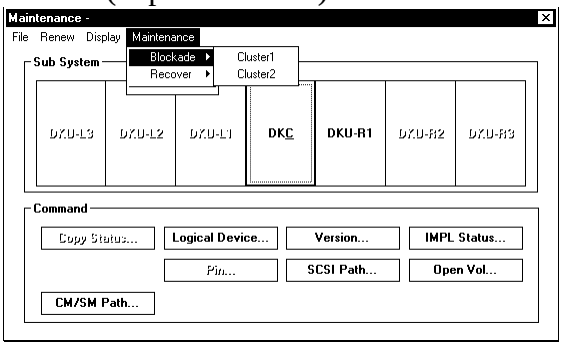
NOTICE
These following procedure is very special. Please ask your TSC if you can do.

The following windows demonstrate with blocking of Cluster-1 for an example.

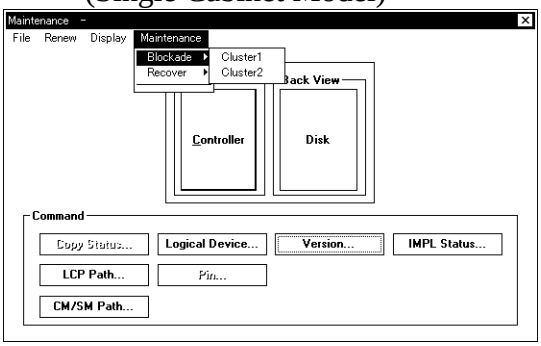
(1) Select (CL) [Maintenance].

(2) Select (CL) the [Maintenance] menu in the 'Maintenance' dialog box and select(DR) [Blockade].

(Separate Model)

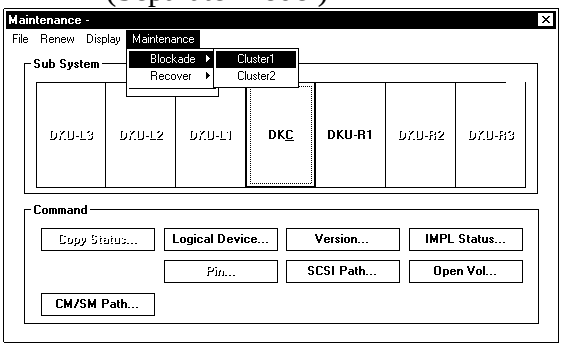


(Single Cabinet Model)

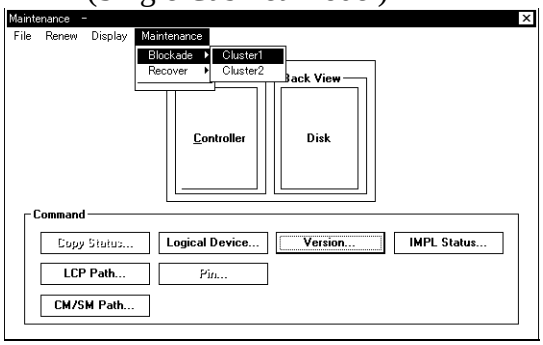


(3) Select (DR) the [Cluster-n] to be blocked.

(Separate Model)



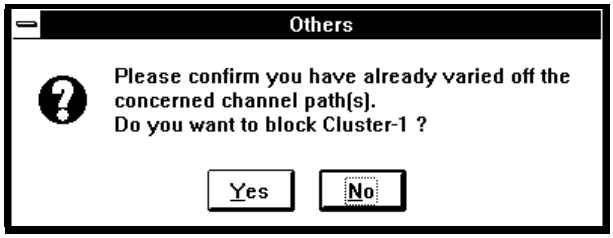
(Single Cabinet Model)



(4) Beginning Block

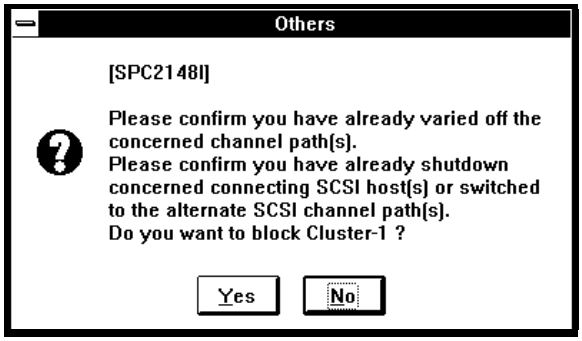
• When only serial or parallel channels, or they are mixed.

Select [Yes] (CL) in response to “Please confirm you have already varied off the concerned channel path(s). Do you want to block xxxxx?”.



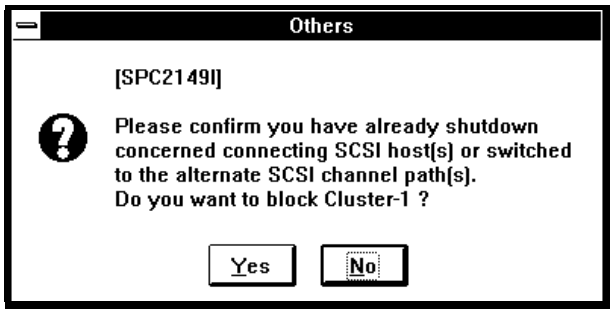
• When SCSI channels and other kinds are mixed.

Select [Yes] (CL) in response to “Please confirm you have already varied off the concerned channel path(s). Please confirm you have already shutdown concerned connecting SCSI host(s) or switched to the alternate SCSI channel path(s). Do you want to block xxxxx?”.



• When only SCSI channels are installed.

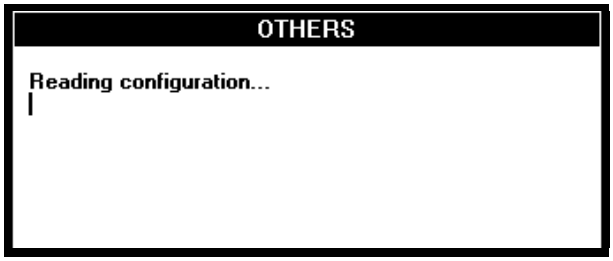
Select [Yes] (CL) in response to “Please confirm you have already shutdown concerned connecting SCSI host(s) or switched to the alternate SCSI channel path(s). Do you want to block xxxxx?”.



Valid xxxxx values are listed below.

• Cluster-1
• Cluster-2

(5) Processing to Cluster block.



"Reading configuration..."
"Blocking cache memory..."
"Blocking shared memory..."
"Blocking CHA..."
"Blocking CHP..."
"Blocking DKA..."
"Blocking DKP..."
"Blocking CSW..."
"Blocking Cluster failure report..."
"Processing to disable the environment check..."

(6) End of Cluster block
Select [OK] (CL) in response to "The blockade has finished. Cluster is blocked.".

(7) Close the 'Maintenance' window.

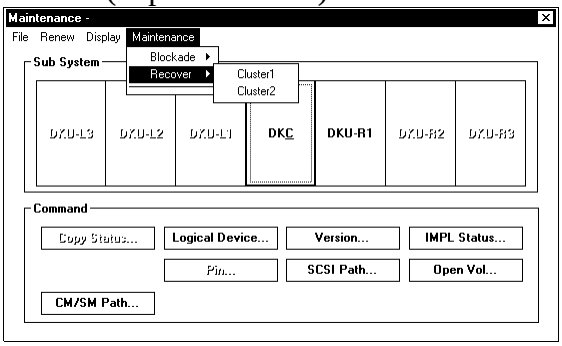
2.19 Recovering of Cluster

Note : Before recovering of Cluster, please reboot SVP.
The following windows demonstrate with blocking of Cluster-1 for an example.

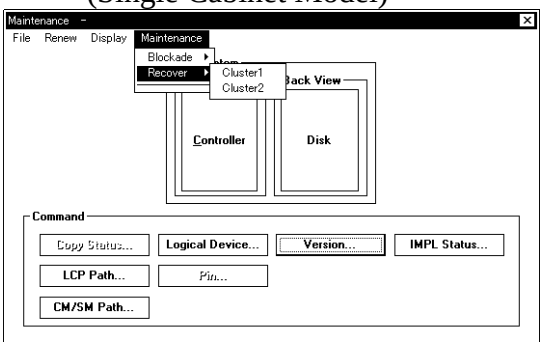
(1) Select (CL) [Maintenance]

(2) Select (CL) the [Maintenance] menu in the 'Maintenance' and select(DR) [Recover].

(Separate Model)

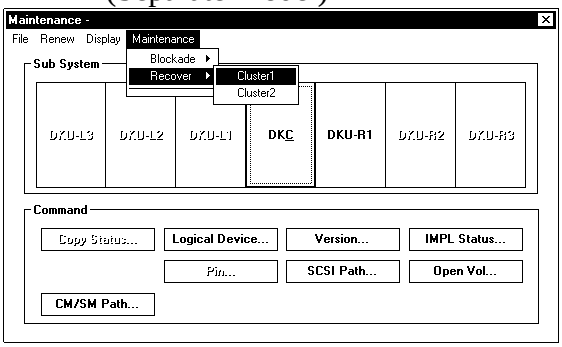


(Single Cabinet Model)

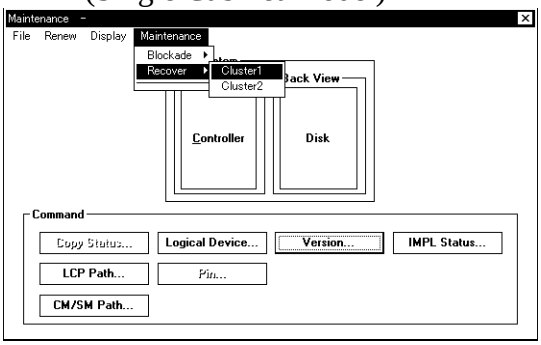


(3) Select (DR) [Cluster-n] to be recovered.

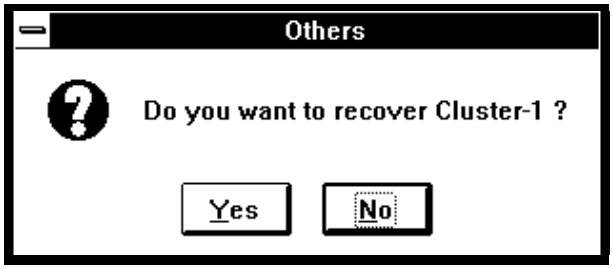
(Separate Model)



(Single Cabinet Model)



(4) Beginning Recover
Select [Yes] (CL) in response to “Do you want to recover xxxx?”.

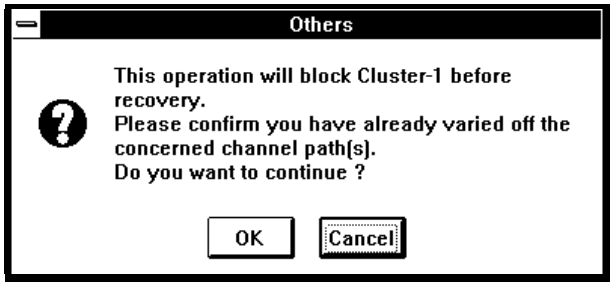


Valid xxxx values are listed below.
• Cluster-1
• Cluster-2

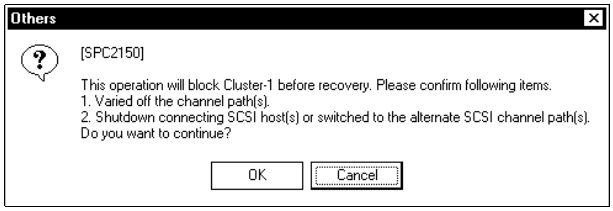
If Cluster 1/2 is fail. Go to (5)
If Cluster 1/2 is blockade. Go to (8)
If Cluster 1/2 is normal. Go to (9)

---

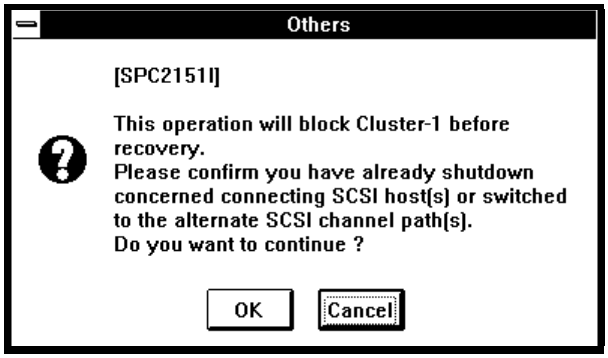
(5) Confirm varied Off-line.
• When only serial or parallel channels, or they are mixed.
Select [OK] (CL) in response to “This operation will block xxxxx before recovery. Please confirm you have already varied off the concerned channel path(s). Do you want to continue?”.



• When SCSI channels and other kinds are mixed.
Select [OK] (CL) in response to “This operation will block xxxxx before recovery. Please confirm following items.
1. Varied off the channel path(s).
2. Shutdown connecting SCSI host(s) or switched to the alternate SCSI channel path(s).
Do you want to continue?”.

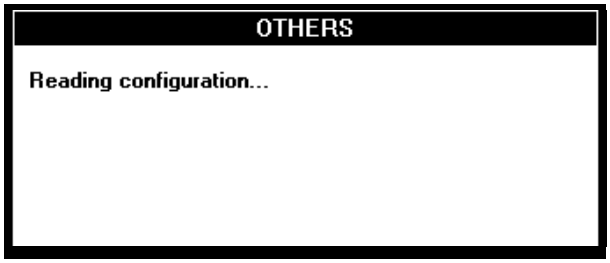


• When only SCSI channels are installed.
Select [OK] (CL) in response to "This operation will block xxxxx before recovery. Please confirm you have already shutdown concerned connecting SCSI host(s) or switched to the alternate SCSI channel path(s). Do you want to continue?".



Valid xxxxx values are listed below.
• Cluster-1
• Cluster-2

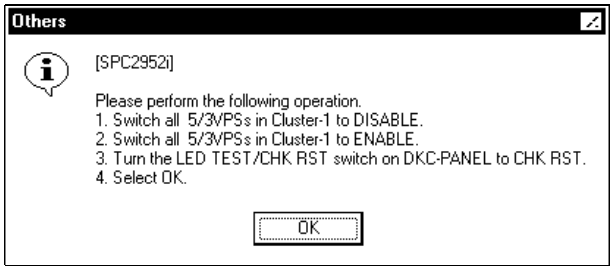
(6) Processing to Cluster block.



"Reading configuration..."
"Checking status of Cluster..."
"Blocking Cluster..."
"Blocking cache memory..."
"Blocking shared memory..."
"Blocking CHA..."
"Blocking CHP..."
"Blocking DKA..."
"Blocking DKP..."
"Blocking CSW..."
"Blocking Cluster failure report..."
"Processing to disable the environment check..."

(7)

NOTICE
- In this step, operate only 5/3VPSxA, 5/3VPSxB in this cluster.
- Do not operate other PSs, or it might cause subsystem down or parts failure.
- This operation makes SUBSYSTEM ALARM LED on, ignore it because the operation of the LED TEST/CHK RST Switch makes it off.

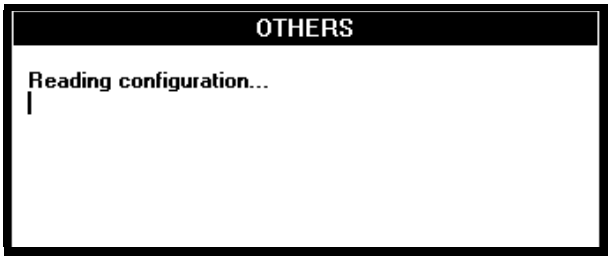


Select [OK] (CL) response to
"Please perform the following operation.
1.Switch all 5/3VPSs in Cluster-X to DISABLE.
2.Switch all 5/3VPSs in Cluster-X to ENABLE.
3.Turn the LED TEST/CHK RST switch on DKC-PANEL to CHK RST.
4.Select OK.".

Valid X values are listed below.
• Cluster-1 --- 1
• Cluster-2 --- 2

(8) The SVP automatically checks the power supplies to determine if cluster is recoverable.

(9) Processing to Cluster recover.



"Reading configuration..."
"Checking status of Cluster..."
"Restoring Cluster..."
"Checking Power on..."
"Waiting for Power Event...
Usually, several minutes(maximum 15 minutes)"
"Reading configuration..."
"Restoring DKA (PDEV Spin up)..."
"Restoring DKP Path..."
"Restoring Cluster failure report..."
"Setting C-Port register..."
"Running INLINE CUDG..."
"Running CSW Path test..."
"Restoring shared memory..."
"Restoring cache memory..."
"Processing to enable the environment check..."

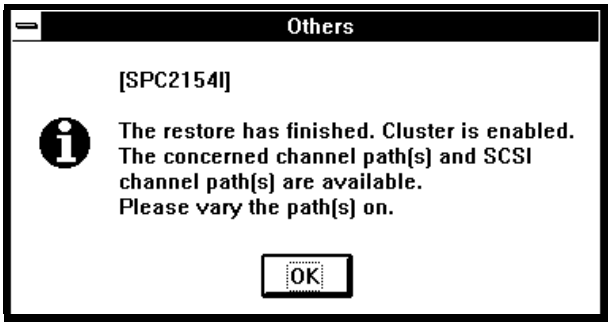
(10) End of Cluster Recover

• When only serial or parallel channels, or they are mixed.

Select (CL) [OK] in response to “The restore has finished. Cluster is enabled. The concerned channel path(s) are available. Please vary the path(s) on.”.

• When SCSI channels and other kinds are mixed.

Select (CL) [OK] in response to “The restore has finished. Cluster is enabled. The concerned channel path(s) and SCSI channel path(s) are available. Please vary the path(s) on.”.



• When only SCSI channels are installed.

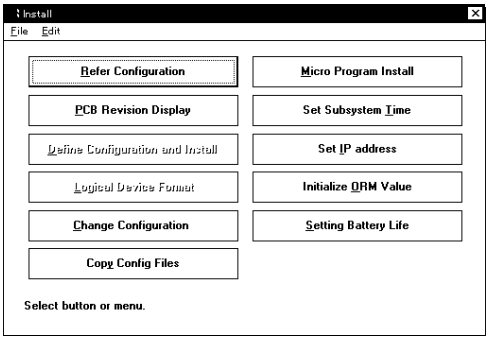
Select (CL) [OK] in response to “The restore has finished. Cluster is enabled. The concerned SCSI channel path(s) are available.”.

(11) Close the ‘Maintenance’ window.

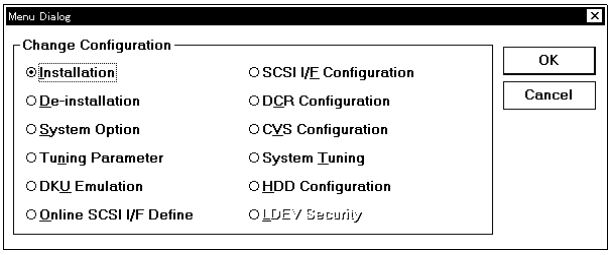
2.20 HDD Configuration

(1) Select (CL) [Install].

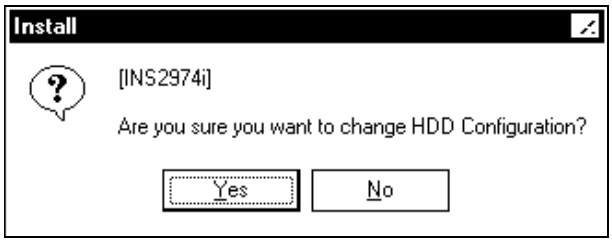
(2) Select (CL) [Change Configuration] on 'Install' map screen in 'Install' screen.



(3) Select (CL) [HDD Configuration] on 'Menu Dialog' screen, and select (CL) [OK].

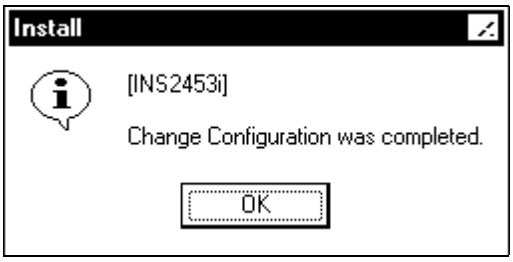


(4) Select (CL) [Yes] in response to the message "Are you sure you want to change HDD Configuration?".



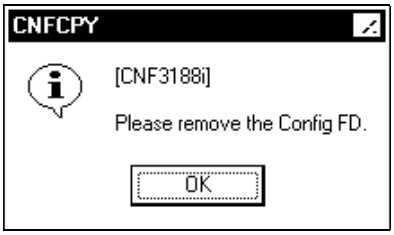
(5) Display the message “Loading Configuration...”.

(6) Select (CL) [OK] in response to the message “Change Configuration was completed.” to terminate the processing.



(7) The message “Reading subsystem configuration data...” is displayed, and also the message “Please insert the Config FD in the FDD.” is displayed.
Insert Config FD into FDD and select (CL) [OK].

(8) After the completion of FD backup, the message “Please remove the Config FD.” is displayed.
Pull out FD from FDD and select (CL) [OK].



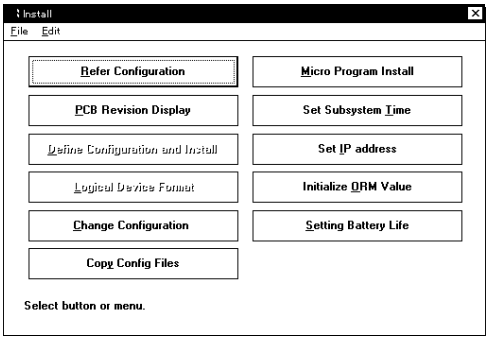
[In case of HDD Installation]
- Separate Model
  Non-disruptive Installation : Go to INST02-110 step (8)-1.
  Disruptive Installation : Go to INST02-210 step (8)-1.

- Single Cabinet Model
  Non-disruptive Installation : Go to INST02-110 step (8)-2.

2.22 PCB Revision Display

(1) Select (CL) [Install] in the 'SVP' window.

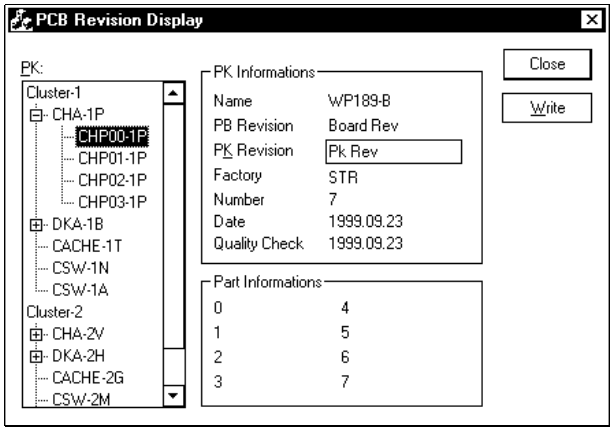
(2) Select (CL) [PCB Revision Display] in the 'Install' window.



(3) 'Reading or Writing PCB revision informations...' is displayed.

(4) Select a PCB whose revision you want to display in the 'PCB Revision Display' window.

- When [Write] is selected (CL) in the 'PCB Revision Display' window, the revision will be displayed again after the processing is completed.



(5) Select(CL) [Close] in the 'PCB Revision Display' dialog box.

(6) Close the 'Install' window.

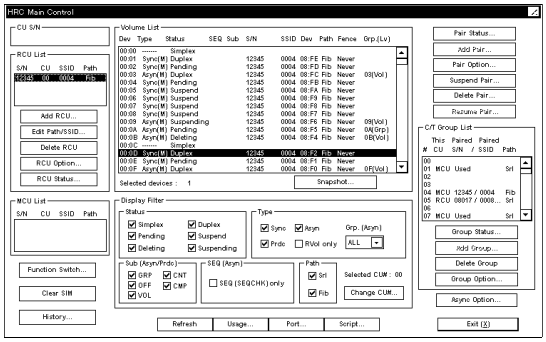
2.23 HRC Operation

2.23.1 Referring to the Path Status

Refer to the MCU-RCU connection status. This operation is possible only from the MCU.

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

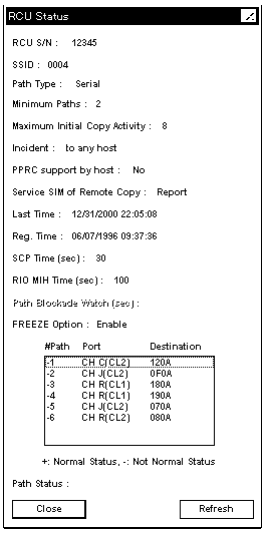
2. Selecting an RCU
   Set the CU# corresponding to the CU image address of the subsystem.
   Select an RCU whose path status is desired to be referred to from the RCU list (see the figure) on the HRC screen. (Two or more RCUs cannot be selected here.)



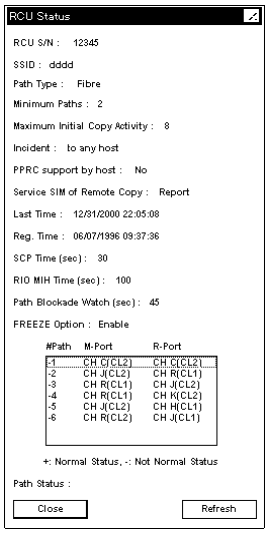
3. Displaying the RCU status
   Select (CL) the [RCU Status...] button on the HRC screen to display the RCU Status screen.

4. Selecting a path to be displayed

The path list is displayed on the RCU Status screen. Select a path whose status is desired to be displayed from the list. (Two or more paths cannot be selected here.)



(Serial)



(Fibre)

5. Updating the path status

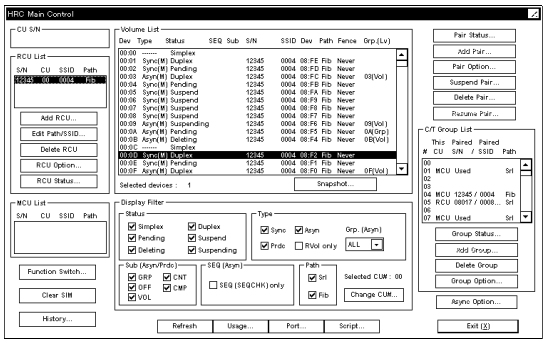
Select (CL) the [Refresh] button on the RCU Status screen to update the screen display. When updating the screen display, select (CL) the [Refresh] button. When closing the screen, select (CL) the [Close] button.

2.23.2 Referring to the Pair Status

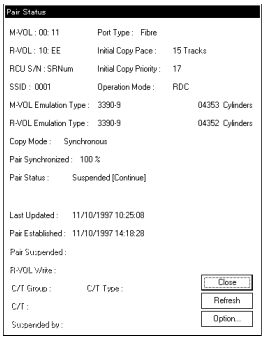
Refer to the object volume pair status. The screen data displayed will differ between when this operation is executed from only the MCU and when it is executed from the RCU.

1. Displaying the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting a volume
   Set the CU# corresponding to the CU image address of the subsystem.
   Select a volume whose status is desired to be referred to from the volume list (see the figure) on the HRC screen. (Select only one volumes here although two or more volume can be selected from the list.)



3. Displaying the pair status
   Select (CL) the [Pair Status...] button on the HRC screen. The Pair Status screen will appear.



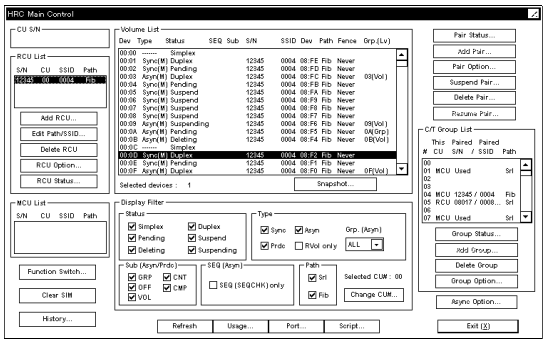
4. Updating the pair status
   Select (CL) the [Refresh] button on the Pair Status screen. This operation updates the display of the pair status. Press (CL) the [Close] button to close the screen.

2.23.3 Suspending the Volume Pair(s)

This operation suspends the object volume pair(s). The operation can be executed from both the MCU and the RCU.

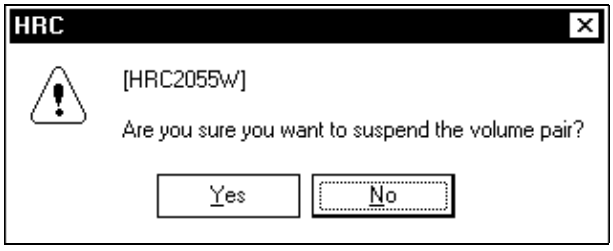
1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting the volume pair(s)
   Set the CU# corresponding to the CU image address of the subsystem.
   Select the volume pair(s) desired to be suspended from the volume list (see the figure) on the HRC screen.

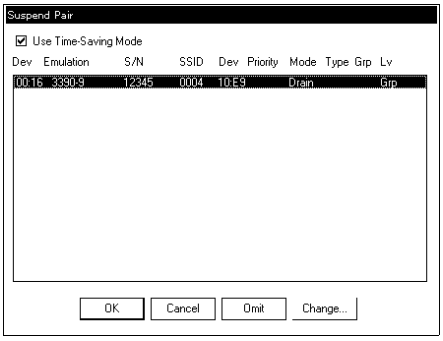


NOTICE
When you select 2 or more pairs for an operation, even if setting "GROUP" as parameter, only the selected pairs will be the target of the operation. So when you want to process all pairs of the group, please select one pair of them.

3. Instructing a suspension
   Select (CL) the [Pair Suspend...] button on the HRC screen. A confirmation message will appear. To suspend the pair really, press (CL) the [Yes] button. The Suspend Pair screen will appear.



4. Confirm the suspension volume pairs

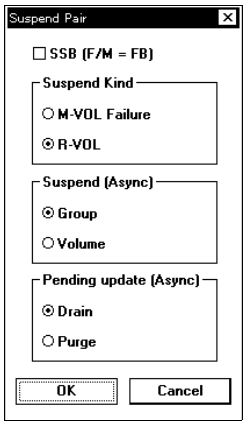


Confirm the suspension volume pairs that are displayed to the Suspend pair screen and select (CL) [OK] button and go to 6.

Please specify “Use Time-Saving Mode” to execute suspending the pair quickly.
WARNING :
Please confirm the volumes which fails in the pair suspending on the HRC Main Control screen when the time-out is generated specifying “Use Time-Saving Mode”.
Please remove the specification of “Use Time-Saving Mode” to them if there are volumes which fails in pair suspending, and do the Suspend Pair operation again.

If you want to change suspend parameters, select the volume pairs from the volume list and select (CL) [Change...] button and go to 5.
If you want to omit the volume pair suspension, select the volume pairs from the volume list and select (CL) [Omit] button.

5. Inputting the suspending parameters



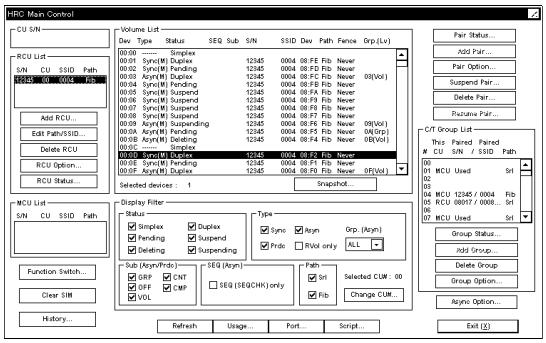
Press (CL) the [OK] button on the Suspend Pair screen to execute the suspending processing.

- SSB [F/M= FB]
  This parameter specifies whether to issue a suspension report with SSB[F/M= FB].
- Suspend Kind
  This parameter specifies which instruction is to be issued, an M-VOL suspension or an R-VOL suspension.
- Suspend (Async)
  This parameter specifies the kind of suspension.
  “Group” means all volume pair(s) suspension which are assigned to the same C/T group as the specified volume pair(s).
  “Volume” means only specified volume pair(s) will be suspended.
  This parameter can be specified HRC asynchronous copy volume pairs only.
- Pending update (Async)
  This parameter specifies the method of the release of the Record set.
  “Drain” means that the volume pair(s) should be suspended after all pending record set are settled.
  “Purge” means that the volume pair(s) should be suspended even if pending record set remain. The pending record set will be copied when the Resume Pair operated.
  This parameter can be specified HRC asynchronous copy volume pair(s) only.

Notice : During the initial copy, M-VOL suspension is rejected. (Error Code = 0102)

6. Verifying the suspension

Verify if the volume pair selected from the volume list (see the figure) is in the suspended status or not by pressing (CL) the [Refresh] button on the HRC screen.

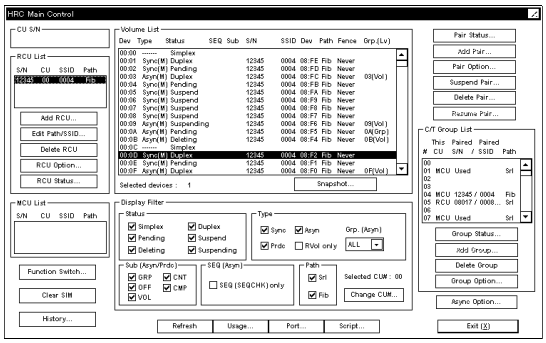


2.23.4 Resuming the Suspended Pair(s)

This operation resumes the volume pair(s) suspended. The operation can be performed only from the MCU.

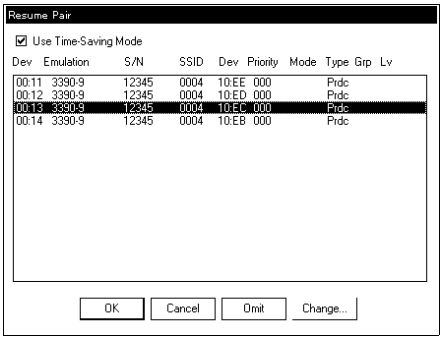
1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting the volume pair(s)
   Set the CU# corresponding to the CU image address of the subsystem.
   Select the volume pair(s) desired to be resumed from the volume list (see the figure) on the HRC screen to resume it.
   Select the [Resume Pair...] button on the HRC screen. The Resume Pair screen will appear.



NOTICE
When you select 2 or more pairs for an operation, even if setting "GROUP" as parameter, only the selected pairs will be the target of the operation. So when you want to process all pairs of the group, please select one pair of them.

3. Confirm a resume parameter



Confirm a resume option on the Resume Pair screen.
Select (CL) the [OK] button on the Resume Pair screen and go to 6.

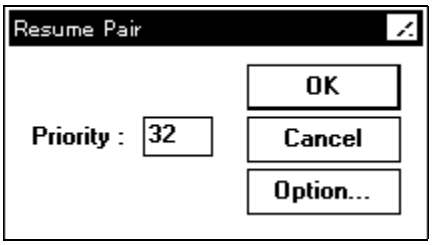
Please specify “Use Time-Saving Mode” to execute resuming the pair quickly.
WARNING :

Please confirm the volumes which fails in the pair resuming on the HRC Main Control screen when the time-out is generated specifying “Use Time-Saving Mode”.
Please remove the specification of “Use Time-Saving Mode” to them if there are volumes which fails in pair resuming, and do the Resume Pair operation again.

If you want to change resume parameter, select the volume pairs from the volume list and select (CL) [Change...] button and go to 4.
If you want to omit resume pair, select the volume pairs from the volume list and select (CL) [Omit] button.

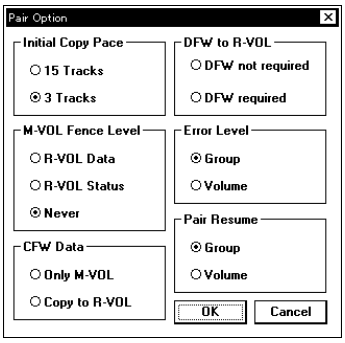
---

4. Inputting the resume parameter



On the Resume pair screen, perform the following.
Input the initial copy priority to the Priority.
If you want to set pair option, press (CL) [Option...] button and go to 5.
When all operations above are finished, press (CL) the [OK] button (see the figure) and go to 3.

5. Setting HRC pair option



On the Pair Option screen, perform the following.
Set one of the following in Initial Copy Pace.
- 15 Tracks
- 3 Tracks

Set one of the following in M-VOL Fence Level.
(Fixed “Never” when asynchronous copy pair resuming)
- R-VOL Data
- R-VOL Status
- Never

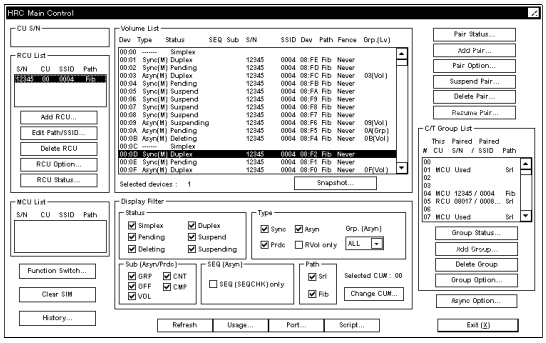
Set one of the following in Error Level.
(Effective only asynchronous copy pair.)
- Group
- Volume

Set one of the following in Pair Resume.
(Effective only asynchronous copy pair.)
- Group
- Volume

When all above operation are finished, press (CL) [OK] button. Then go to 4.1.

6. Verifying the resumption

Verify if the volume pair(s) selected from the volume list (see the figure) is in the pending (or duplex) status by pressing (CL) the [Refresh] button on the HRC screen.

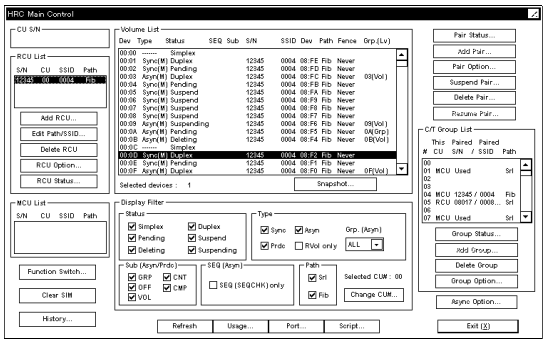


2.23.5 Deleting the Existing HRC Pair(s)

This operation deletes the HRC pair(s). The operation can be performed from both the MCU and the RCU.

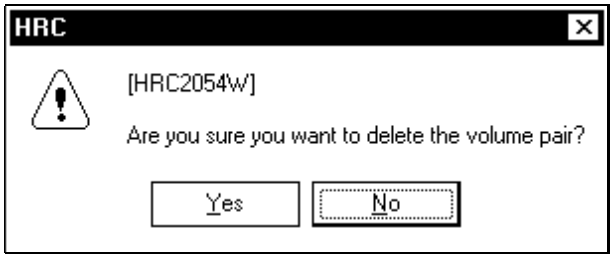
1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting the volume pair(s)
   Set the CU# corresponding to the CU image address of the subsystem.
   Select the volume pair(s) desired to be deleted from the volume list (see the figure) on the HRC screen.

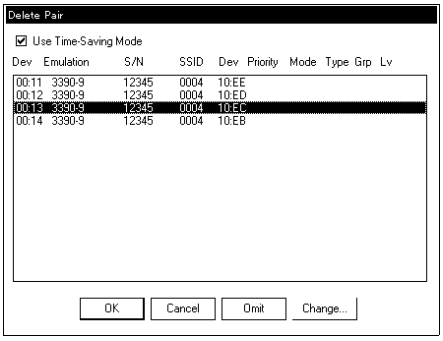


NOTICE
When you select 2 or more pairs for an operation, even if setting "GROUP" as parameter, only the selected pairs will be the target of the operation. So when you want to process all pairs of the group, please select one pair of them.

3. Instructing the deletion
   Select (CL) the [Delete Pair...] button on the HRC screen. The confirmation message will appear. To delete the pair(s) really, press (CL) the [Yes] button. Then Delete Pair screen will appear.



4. Confirm the deletion volume pairs



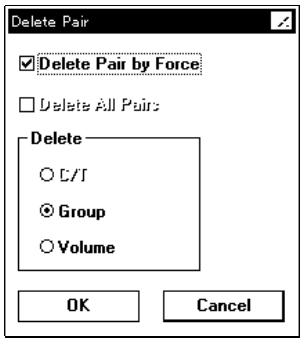
Confirm the deletion volume pairs that are displayed to the Delete pair screen and select (CL) [OK] button and go to 6.

Please specify “Use Time-Saving Mode” to execute deleting the pair quickly.
WARNING :

Please confirm the volumes which fails in the pair deleting on the HRC Main Control screen when the time-out is generated specifying “Use Time-Saving Mode”.
Please remove the specification of “Use Time-Saving Mode” to them if there are volumes which fails in pair deleting, and do the Delete Pair operation again.

If you want to change delete parameters, select the volume pairs from the volume list and select (CL) [Change...] button and go to 5.
If you want to omit the volume pair deletion, select the volume pairs from the volume list and select (CL) [Omit] button.

5. Inputting a deleting parameter



Press (CL) the [OK] button on the Delete Pair screen to execute the deletion and go to 4.

- Delete by Force

This parameter deletes the selected pair(s) forcibly regardless of the status of the communication between MCU and RCU.

- Delete All Pairs

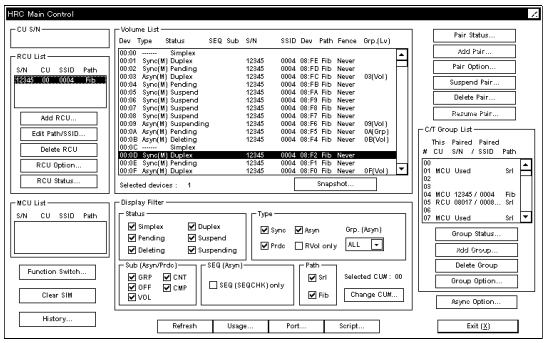
By using this parameter, you can delete all pairs (This operation could not be done against the asynchronous pairs.) In the step (2), you can use this option when you select one volume (it is not asynchronous copy) and select Delete Pair by Force.
Set one of the following in Delete.
(Effective only asynchronous copy pair.)

- C/T
- Group
- Volume

“C/T” means all volume pair(s) deletion which have the same C/T as the specified volume pair(s). “C/T” can be specified only R-VOL.
“Group” means all volume pair(s) deletion which is(are) assigned to the same C/T group as the specified volume pair(s).
“Volume” means only specified volume pair(s) will be deleted.

6. Verifying the pair(s) deleted

Verify if the volume pair(s) selected from the volume list (see the figure) is(are) in the simplex status by pressing (CL) the [Refresh] button on the HRC screen.



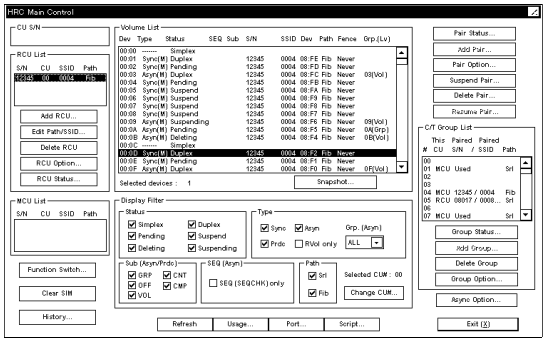
Blank Sheet

2.23.6 Deleting an RCU Registered

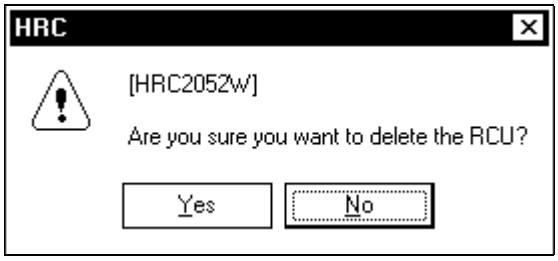
This function deletes an RCU. The function can be executed only from the MCU.

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting an RCU
   Set the CU# corresponding to the CU image address of the subsystem.
   Select an RCU desired to be deleted from the RCU list (see the figure) on the HRC screen. (Only one RCU can be selected here.)

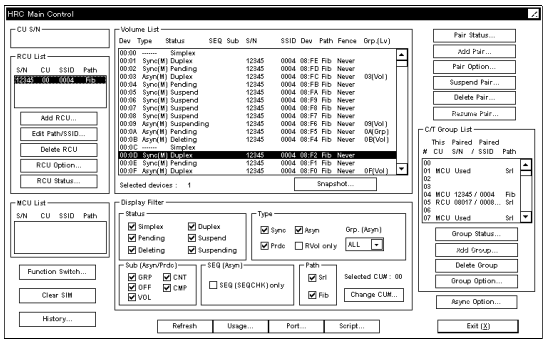


3. Instructing the deletion
   Select (CL) the [Delete RCU] button on the HRC screen. The confirmation message will appear. To delete the RCU really, press (CL) the [Yes] button.



4. Verifying the RCU deletion

Press (CL) the [Refresh] button on the HRC screen to verify if the RCU selected from the RCU list (see the figure) is deleted.

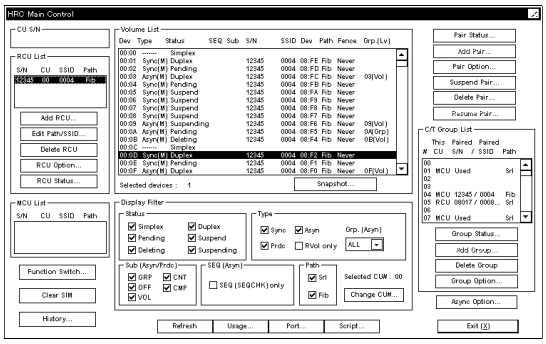


2.23.7 Adding the Path(s) to the RCU

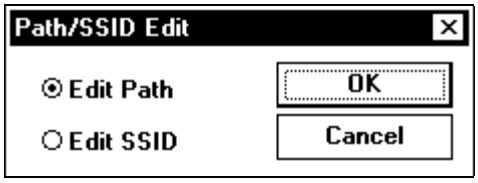
This operation adds the path(s) to the RCU already registered. The operation can be performed from both the MCU and the RCU.

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

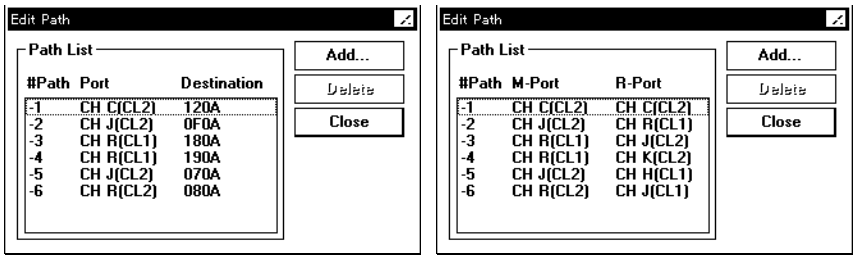
2. Selecting an RCU
   Set the CU# corresponding to the CU image address of the subsystem.
   Select an RCU the number of paths to which is desired to be increased from the RCU list (see the figure) on the HRC screen. (Only one RCU can be selected here.)



3. Selecting a function
   Select (CL) the [Edit Path/SSID...] button on the HRC screen.
   The Path/SSID Edit screen will appear.
   Select (CL) the [Edit Path] radio button then press (CL) the [OK] button on the screen.

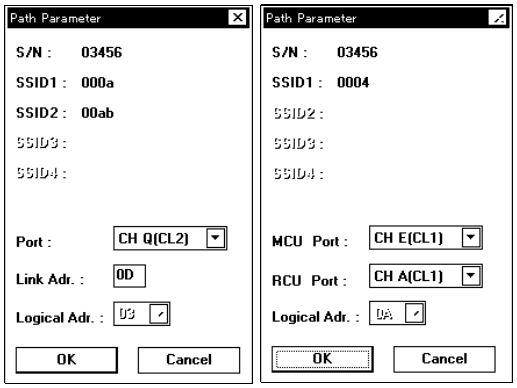


4. Instructing the addition of the path(s)
The Edit Path screen will appear. Then press (CL) the [Add...] button on the screen.



(Serial) (Fibre)

5. Inputting the parameters
When the Path Parameter screen appears, input the necessary parameters
and press (CL) the [OK] button.

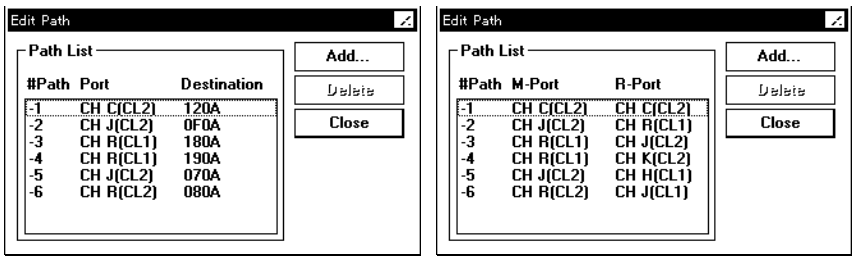


(Serial) (Fibre)

(In the case of Serial Path)
- Port
  Specify the RCP port.
- Destination link address
  Specify the RCU side link address. When the ESCD is to be used, input the RCU-connected link address. When the ESCD is not used, input '00'.

(In the case of Fibre Path)
- MCU Port
  Specify the initiator port.
- RCU Port
  Specify the RCU target port of the RCU side.
- Logical address
  The Logical address can not be specified.

6. Verifying the path added
Make sure on the Edit Path screen that the specified path has been added correctly.



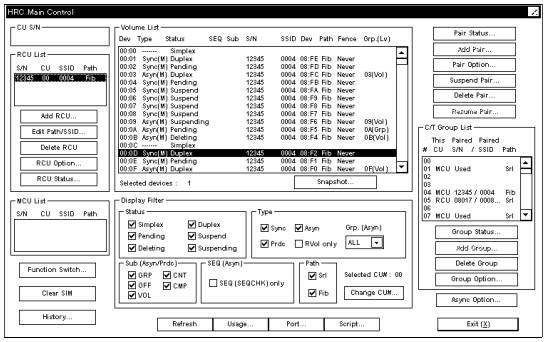
(Serial) (Fibre)

2.23.8 Reducing the Path(s) from the RCU

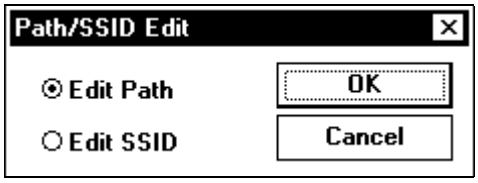
This operation reduces the number of paths connected to an RCU registered already.

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting an RCU selection
   Set the CU# corresponding to the CU image address of the subsystem.
   Select an RCU the number of paths to which is desired to be reduced from the RCU list (see the figure) on the HRC screen. (Only one RCU can be selected here.)

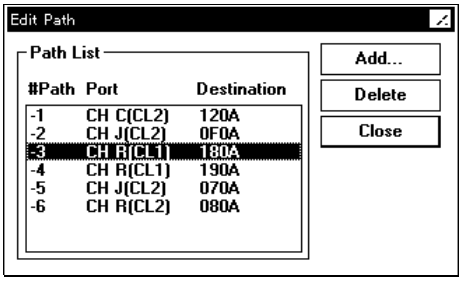


3. Instructing the reduction of the path(s)
   Select (CL) the [Edit Path/SSID...] button on the HRC screen. The Edit Path/SSID screen will appear.
   Select (CL) the [Edit Path] radio button then press (CL) the [OK] button on the screen.

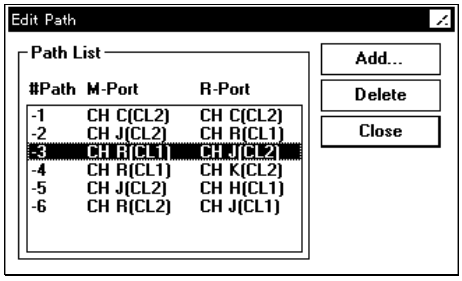


4. Selecting a path to be deleted

Select a path desired to be deleted from the path list displayed on the Edit Path screen and press (CL) the [Delete] button.



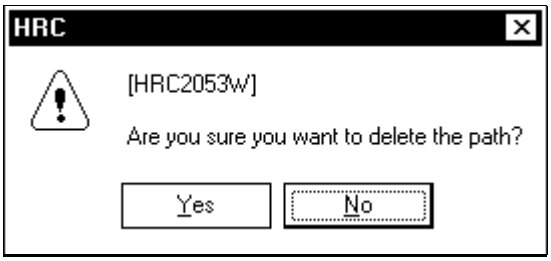
(Serial)



(Fibre)

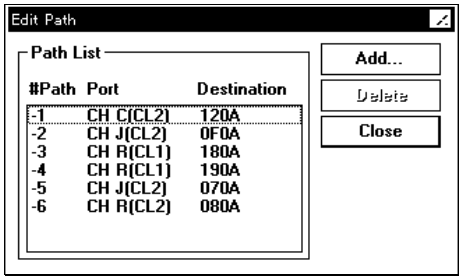
5. Confirmation message

When the confirmation message appears, confirm the path to be deleted and press (CL) the [Yes] button.

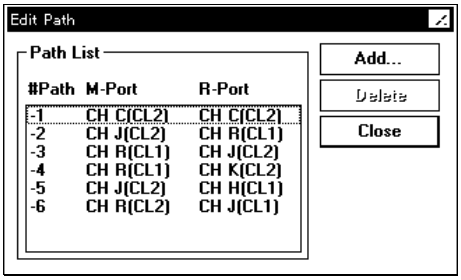


6. Verifying the path deleted

Make sure on the Edit Path screen that the path specified has been deleted correctly.



(Serial)



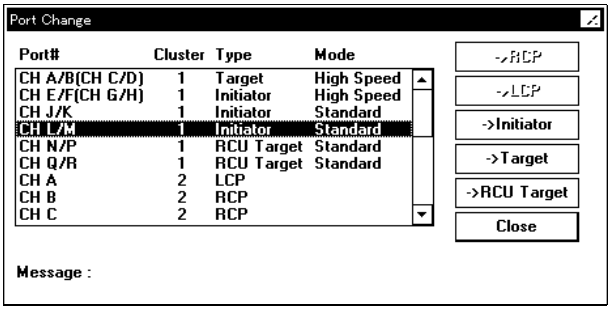
(Fibre)

2.23.9 Changing the Port Type

This operation specifies which port type is selected, LCP (to connect to the host) or RCP (to connect to the RCU).

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

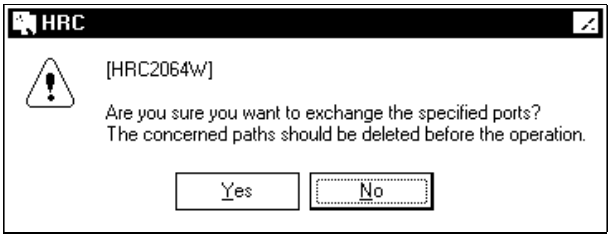
2. Selecting the processing to change the port type
   Select (CL) the [Port...] button on the on the HRC screen to display the Path Change screen.



3. Instructing the port change
   When the port list and the port types are displayed in the list box on the Path Change screen, select one or more ports whose type(s) is(are) to be changed.
   To select LCP for the port type, press the [-> LCP] button. Then go to step 4.
   To select RCP for the port type, press the [-> RCP] button. Then go to step 5.
   To select Initiator for the port type, press the [-> Initiator] button. Then go to step 5.
   To select Target for the port type, press the [-> Target] button. Then go to step 4.
   To select RCU target for the port type, press the [-> RCU Target] button. Then go to step 4.

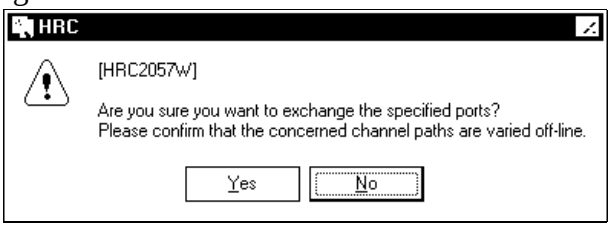
4. Confirmation message and indication of executing status

When the confirmation message appears, confirm the port(s) whose type(s) is(are) to be changed again. If it is correct, press (CL) the [Yes] button.
Status of execution is displayed in the "Message" field on the Port Change screen.
Go to step 6.



5. Confirmation message and indication of executing status

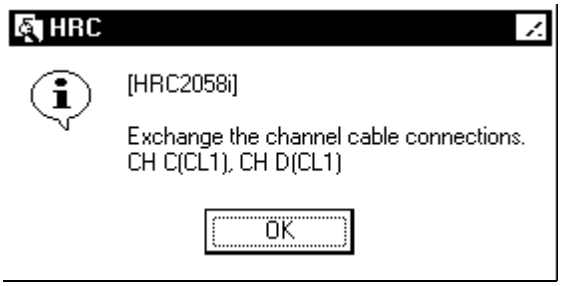
When the confirmation message appears, confirm the port(s) whose type(s) is(are) to be changed again. If it is correct, press (CL) the [Yes] button.
Status of execution is displayed in the "Message" field on the Port Change screen.



6. Indication message

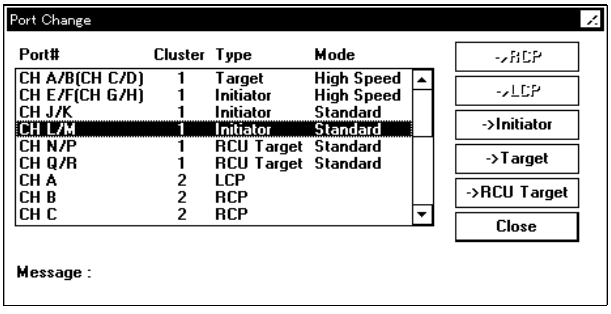
After exchanging channel cable connecting, press (CL) the [OK] button.

[Notes]
When channel cable connection is not changed here, connection composition is set to LCP-LCP and SIM (REF CODE = 213Z) may be reported. In this case, the connection state of a cable is corrected.



7. Verifying port change

After the change is finished, make sure on the Port Change screen that the type(s) of the specified port(s) has(have) been changed correctly.



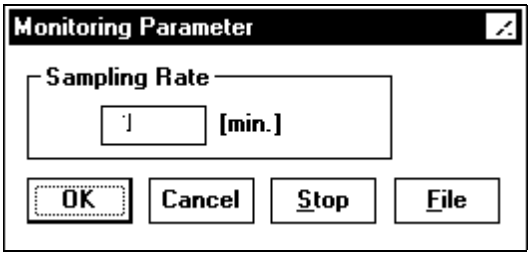
2.23.10 Displaying HRC Operation Status

This operation displays a graphic indication of the HRC operation status.

1. Display the HRC screen.

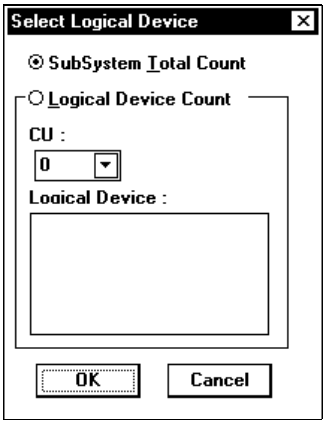
   To display HRC operation of some devices:
   Select (CL) [HRC] in the 'SVP' window.

2. Setting a sampling rate
   Press (CL) the [Usage...] button on the on the HRC screen to display the Sampling Rate Setting screen. Then, input a sampling rate and press (CL) the [OK] button. (Sampling rate can be set within 1 to 546 minutes in steps of 1 minute.)
   In the state to collect operation information, the sampling rate cannot be input.
   Please input a sampling rate after selecting the [Stop] button when you change the sampling rate.

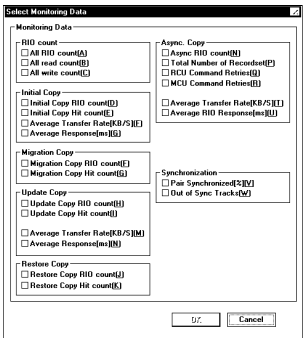


   Note: It occasionally takes time for about one minute until the next screen opens.

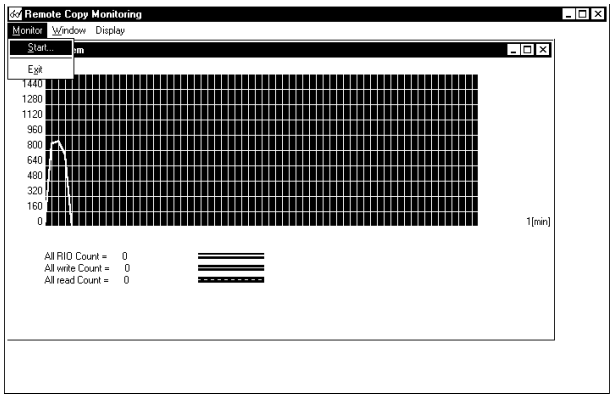
3. Selecting an object device
   When the valid logical device list is displayed in the list box on the Select Logical Device screen, select a logical device and press (CL) the [OK] button. To display the information of the whole subsystem, select "Sub System".



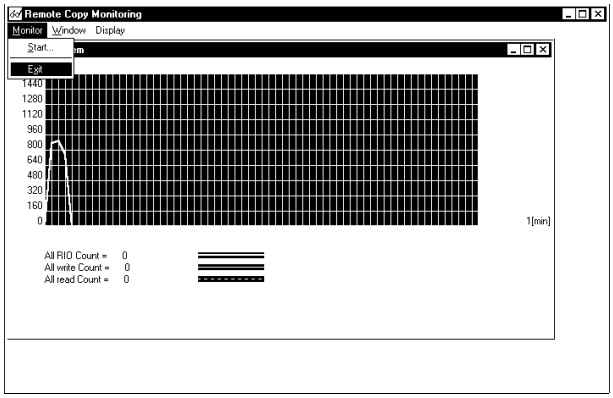
4. Selecting information desired to be acquired
Select one or more data items on the Select Monitoring Data screen, then press (CL) the [OK] button.



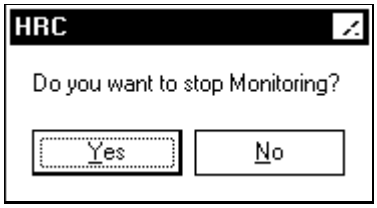
5. Displaying the operation information
The Operation Information Display window appears. To view operation information of other devices, select Monitor-Start from the menu and go to step 3. (Two or more screens can be displayed at a time.)



6. Terminating the operation information display
To terminate the operation information display, select Monitor-Exit to return to the HRC screen.



7. Continuance of operation information
When the collection of operation information is canceled with display screen shut, press (CL) the [Yes] button. When the collection of operation information is continued with display screen shut, press (CL) the [No] button.



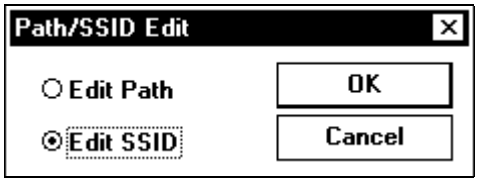
2.23.11 Adding the SSID(s) to the RCU

This operation adds the SSID(s) to the RCU already registered. The operation can be performed from both the MCU and the RCU.

1. Selecting an RCU
   Set the CU# corresponding to the CU image address of the subsystem.
   Display the HRC screen and select (CL) an RCU from RCU List which is desired to be increased SSIDs. (Only one RCU can be selected here.)

2. Selecting a function
   Select (CL) the [Edit Path SSID...] button on the HRC screen.
   The Path/SSID Edit screen will appear.

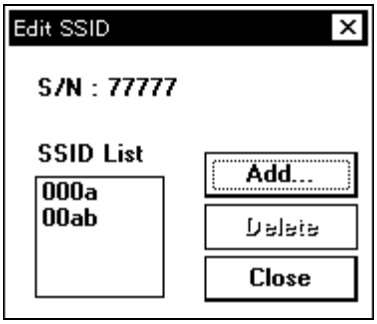
   Select (CL) the [Edit SSID] radio button then press (CL) the [OK] button on the screen.



3. Confirming the number of SSID(s)
   The Edit SSID screen will appear.

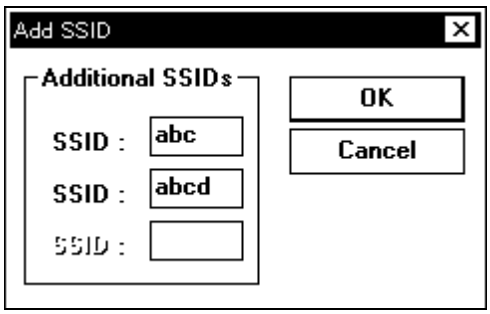
   Press (CL) [Add] button on the screen.
   (See the figure.)

   Note: If 4 SSIDs are registered on the RCU, you can not add a SSID further. ([Add...] button will be not active.)

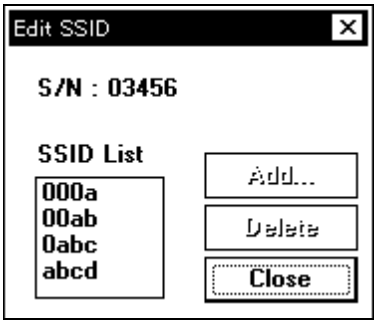


4. Adding the SSID(s) to the RCU
   The Add SSID screen will appear.

   Input 4-digit hexadecimal SSID(s) number in SSID, then press (CL) [OK] button.



5. Verifying the SSIDs added
   Make sure on the Edit SSID screen that the specified SSIDs have been added correctly.



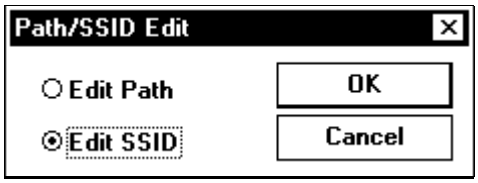
2.23.12 Reducing the SSID(s) from the RCU

This operation reduces the SSID(s) from the RCU already registered.

1. Selecting an RCU
   Set the CU# corresponding to the CU image address of the subsystem.
   Display the HRC screen and select (CL) an RCU from RCU List which is desired to be reduced SSIDs. (Only one RCU can be selected here.)

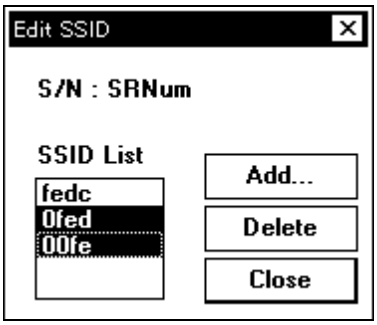
2. Selecting a function
   Select (CL) the [Edit Path SSID...] button on the HRC screen.
   The Path/SSID Edit screen will appear.

   Select (CL) the [Edit SSID] radio button then press (CL) the [OK] button on the screen.

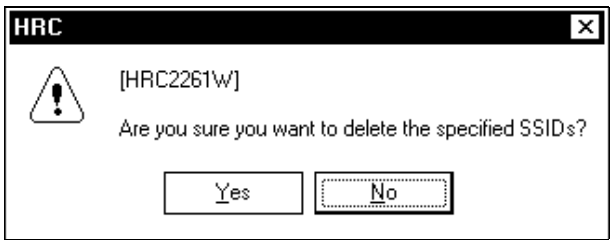


3. Selecting SSID(s) to be deleted
   The Edit SSID screen will appear.

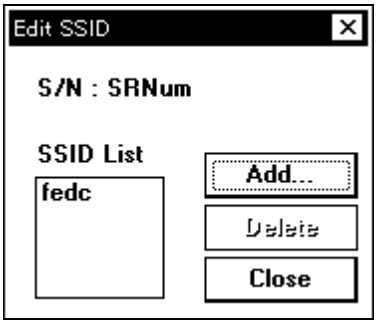
   Select SSIDs desired to be deleted from the SSID List displayed on the Edit SSID screen and press (CL) [Delete] button (See the figure).



4. Confirmation message
   When the confirmation message appears, confirm the SSIDs to be deleted and press (CL) the [Yes] button.



5. Verifying the SSIDs deleted
   Make sure on the Edit SSID screen that the specified SSIDs have been deleted correctly.



Blank Sheet

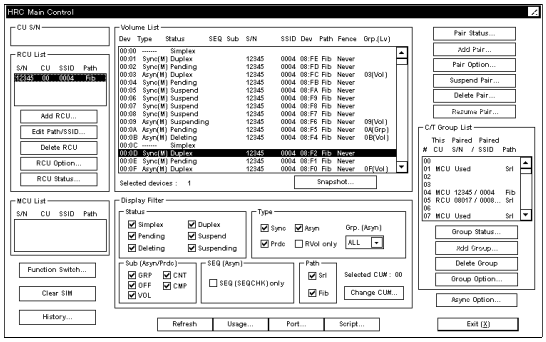
Blank Sheet

2.23.13 Referring the C/T group status

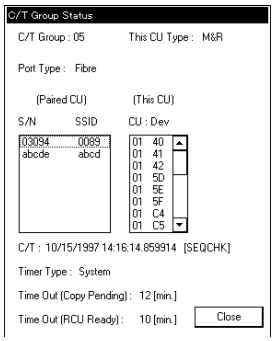
This operation shows the specified C/T group status.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting a C/T group
   Select a C/T group whose status is desired to be referred to from the C/T Group List (see the figure) on the HRC screen. (Only one C/T group can be selected here.)



3. Confirming the C/T group status
   Select (CL) the [Group Status...] button on the HRC screen.
   The C/T Group Status screen will appear.
   Press (CL) the [Close] button to close the screen.

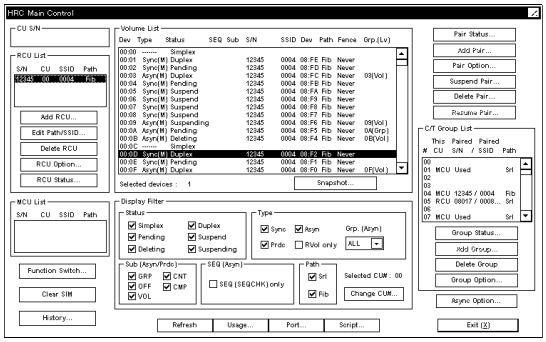


2.23.14 Releasing the using C/T group

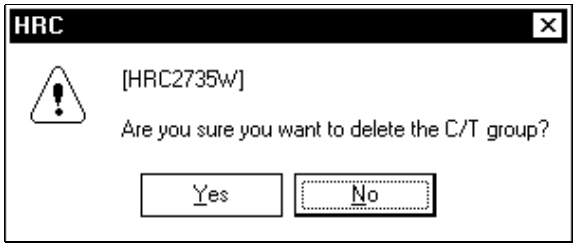
This operation releases the specified C/T group already used. This operation can be performed only from the MCU.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

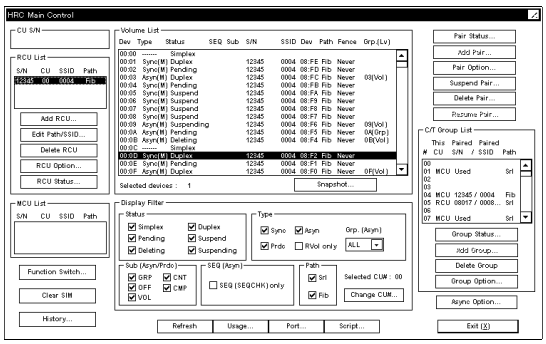
2. Selecting a C/T group
   Select a C/T group desired to be released from the C/T Group List (see the figure) on the HRC screen.



3. Instructing a release
   Press (CL) the [Delete Group] button on the HRC screen. The confirmation message will appear.
   To release the C/T group really, press (CL) the [Yes] button.



4. Verifying the C/T group released
   Verify if the C/T group selected from C/T Group List (see the figure) is displayed as blank.

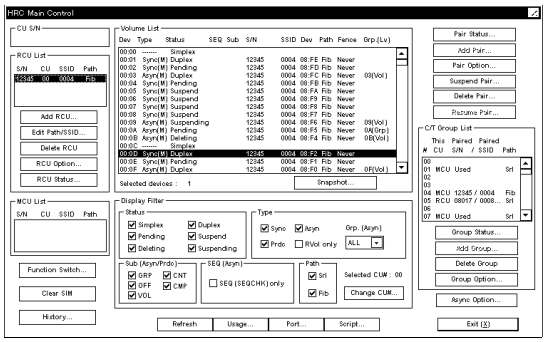


2.23.15 Changing the using C/T group parameters

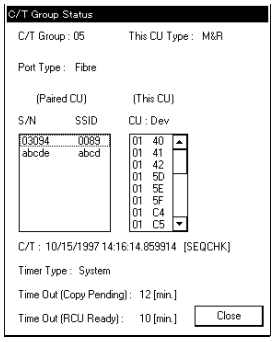
This operation changes the specified C/T group parameters which already used.
This operation can be performed only from the MCU.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting a C/T group
   Select a C/T group desired to be changed from the C/T Group List (see the figure) on the HRC screen.



3. Inputting the C/T group parameters
   Press (CL) [Group Option...] button on the HRC screen. The C/T Group Option screen will appear.
   On the C/T Group Option screen, perform the following.
   Select the timer type of the C/T indicated at Timer Type.
   Select the port type indicated at Port Type.
   Select maximum delay time of update data from combo-box at Time Out (Copy Pending).
   Select maximum waiting time for the RCU gets ready from combo-box at Time Out (RCU Ready).
   When all the above operations are finished, press (CL) the [OK] button.

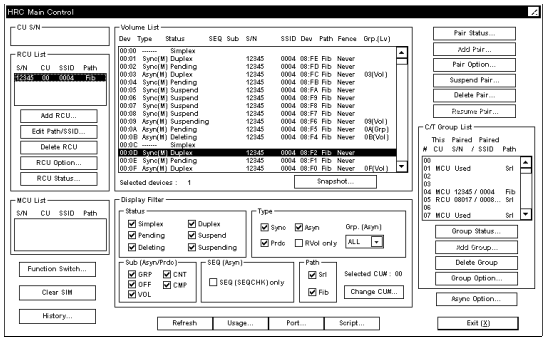


4. Verifying the C/T group status
   Open the C/T Group Status screen, then verify the C/T group parameters are correctly changed. (Refer to 2.23.13)

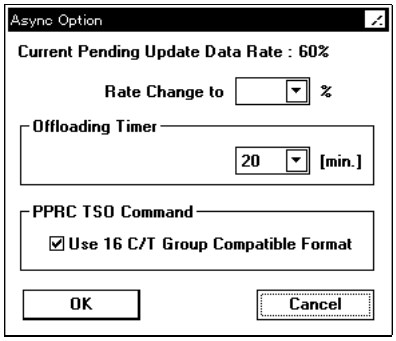
2.23.16 Changing the asynchronous option parameters

This operation changes the asynchronous option parameters.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.
   The HRC screen will appear.
   Press (CL) the [Async Option...] button on the HRC screen.



2. Inputting the asynchronous option parameters
   The Async Option screen will appear.
   On the Async Option screen, perform the following.
   If there is necessity for changing the occupation rate of pending update data among the Record Set, select a number of rate from combo-box at Rate Change to.
   (Note : Changing the rate is not indispensable.)
   Select monitoring time for the Record Set from combo-box indicated at Offloading Timer.
   Specify the format of PPRC TSO commands from check-box at PPRC TSO Command.
   When all the above operations are finished, press (CL) the [OK] button.



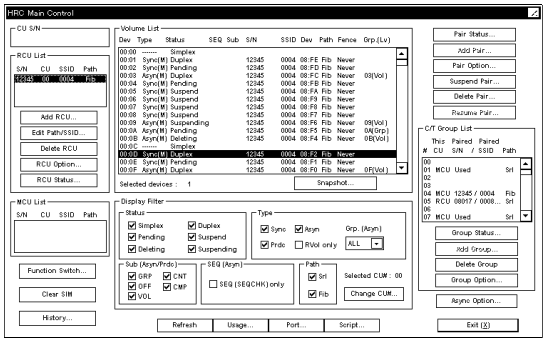
3. Verifying the asynchronous option parameters
   Open the Async Option screen again, then verify the occupation rate indicated at Current Pending Update Data Rate is correct.
   Verify the monitoring time indicated at Offloading Timer is correct, too.

2.23.17 Clear reported SIM

This section is described how to clear reported SIM.

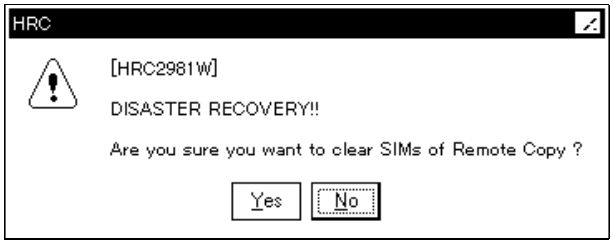
1. Open HRC screen
   Select (CL) [HRC] in the SVP window.

2. Clear reported SIM
   Select (CL) [Clear SIM] in the HRC window.



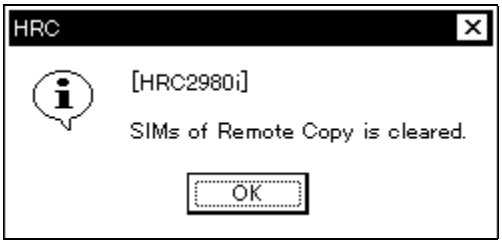
3. Execute
   Select (CL) [Yes] in the confirmation message if you want to clear.

   Notice: This operation clears the other Remote Copy SIM(s) too.



4. End message
   Select (CL) [OK] in the end message.
   When SIM is cleared, the SUBSYSTEM MESSAGE lamp of the SYSTEM PANEL is turned off.

   Notice: The SUBSYSTEM MESSAGE lamp is not turned off when there are SIM other than a remote copy.
   It occasionally takes about 30 minutes until the SUBSYSTEM MASSAGE lamp is turned off.

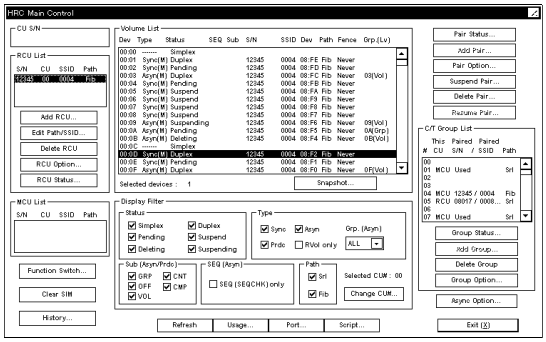


2.23.18 Saving of HRC operation information

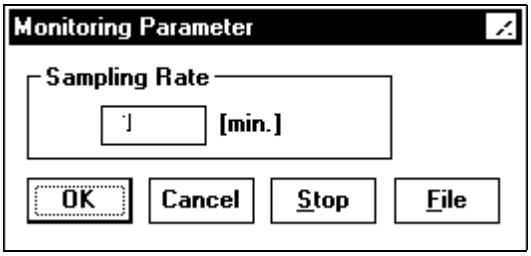
The operation information data on HD of SVP is stored in FD.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

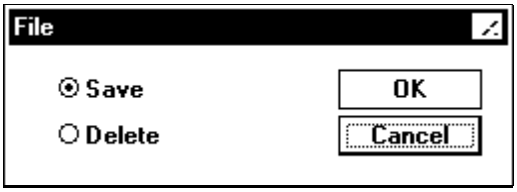
2. Display the Usage screen
   Select (CL) [Usage…] button in the HRC screen.



3. Display the File Operation screen
   Select (CL) [File] button in the Monitoring Parameter screen.
   The File Operation screen will appear.

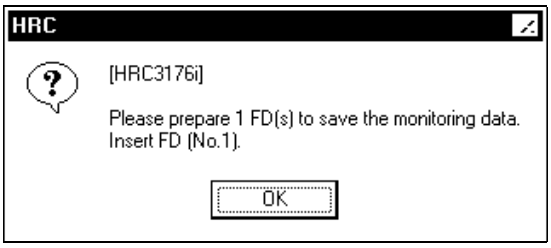


4. Saving of operation information data
   Select (CL) [Save], and press (CL) the [OK] button.



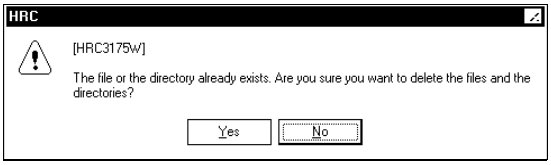
5. Confirmation message

(1) FD of DOS preformatting is inserted in FDD and the [OK] button is pushed.



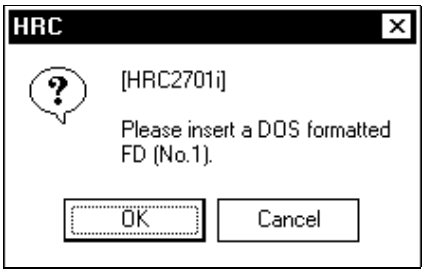
Note: The number of sheets FD necessary to save the operation information data is confirmed, and No. xx is filled in FD.

(2) When the file or the directory exists in FD, the message in the figure below is displayed.



When the file or the directory is deleted, the [Yes] button is pushed.
When the file or the directory is not deleted, the [No] button is pushed.

When the [No] button is pushed, the message is displayed. The [OK] button is pushed when keeping processing, and when processing is interrupted, the [Cancel] button is pushed.

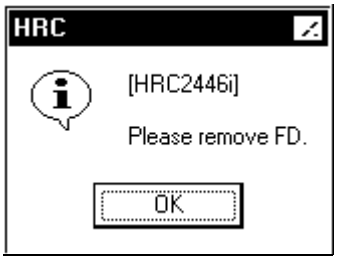


6. FD storage of operation information data

The operation information data etc. being stored by HD on SVP are stored in FD.

7. End message

Because the saving of the operation information data ended, FD is pushed from FDD and the taking out [OK] button is pushed.



8. Close the File Operation screen

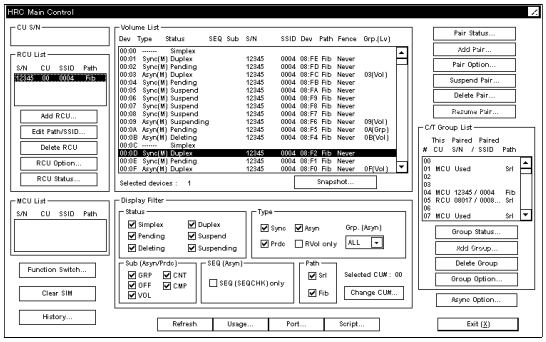
The [Cancel] button is pushed on the File Operation screen.

2.23.19 Deletion of HRC operation information

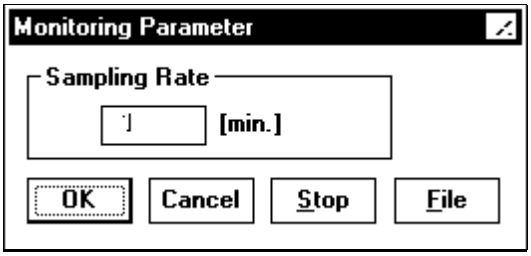
The operation information data on HD of SVP is deleted.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

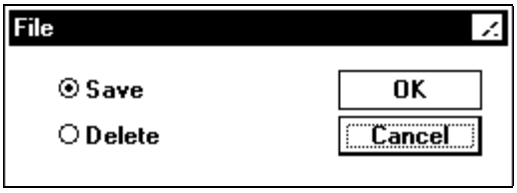
2. Display the Usage screen
   Select (CL) [Usage…] button in the HRC screen.



3. Display the File Operation screen
   Select (CL) [File] button in the Monitoring Parameter screen.
   The File Operation screen will appear.

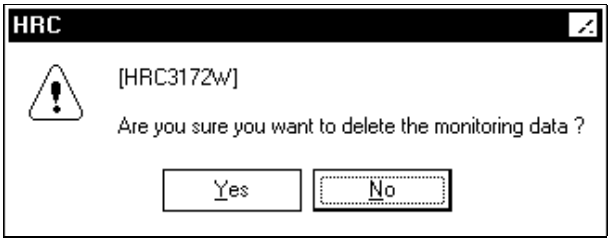


4. Operation information data deletion
   Select (CL) [Delete], and press (CL) the [OK] button.

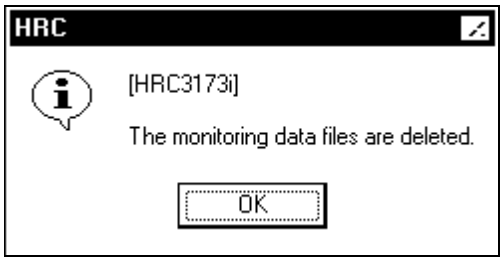


5. Confirmation message
The confirmation message is displayed.
When the operation information data is deleted, the [Yes] button is pushed.

Note: When the monitor starts, the operation information data cannot be deleted.



6. End message
Press (CL) the [OK] button to the end message.



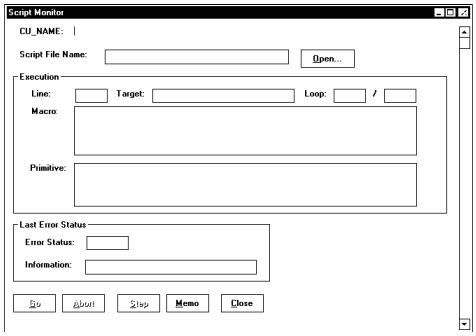
7. Close the File Operation screen
Press (CL) the [Cancel] button on the File Operation screen.

2.23.20 HRC Script

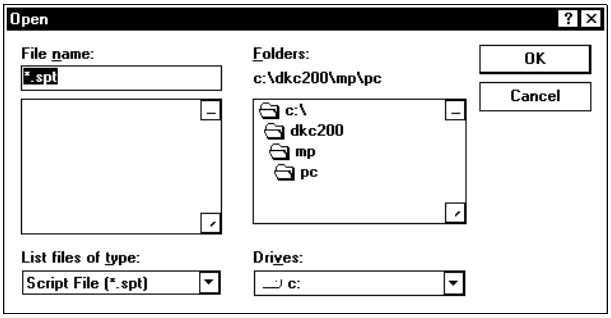
This operation is described how to use HRC Script.
HRC Script is a language to describe a series of HRC operation.

1. Display the HRC screen.
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting a function.
   Select (CL) the [Script…] button on the HRC screen to display the Script Monitor Screen.

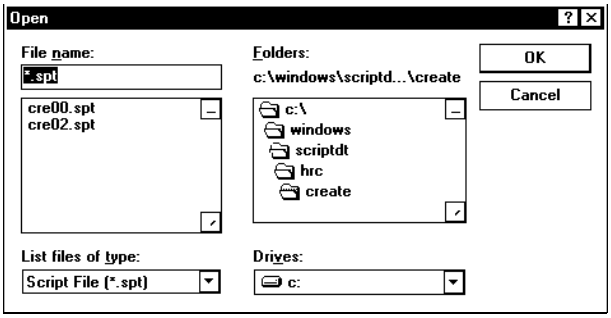


3. Selecting a script file name
   When the Script Monitor screen is displayed, press (CL) the [OPEN] button.



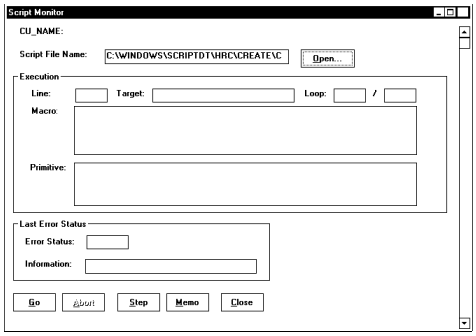
4. Loading a HRC Script file

On the File Selection Screen, perform the following.
Select a HRC Script file, and press (CL) the [OK] button.
A HRC Script file will be loaded.



5. Executing the script

The Script Monitor screen will appear.
Select (CL) the [GO] button to execute the script.



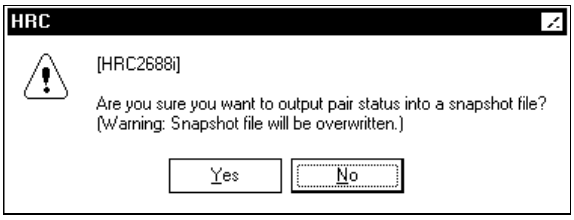
6. End of script

After HRC Script is done, the following message “Normal End” is displayed.
Confirm the message, and press (CL) [OK] button.

2.23.21 HRC Snapshot

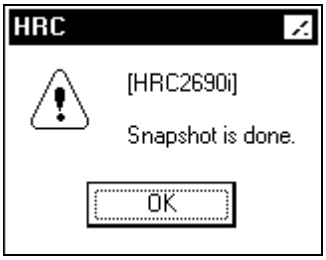
This operation creates or overwrites a text file, in which HRC pairs status is described.

1. Confirmation message
   Select (CL) the [Snapshot] button on the HRC screen.
   The confirmation message will appear.
   If you want to create or overwrite a snapshot file, press (CL) the [Yes] button.



2. End of snapshot
   After HRC snapshot is done, press (CL) [OK] button, and confirm the contents of snapshot file (C:\DKC200\DUMP\SVP\HRCSNAP.TXT).

   Note: All HRC pairs whose status are selected by Display Filter of Main Screen are listed.



A sample snapshot file is as follows:

```
 (1)
<Snapshot at 12/20/00 05:30:46>
(2)     (3)       (4)        (5)    (6)  (7)    (8)  (9)
Dev   Type     Status     S/N    SSID Dev   Prio Sync
00:00 Sync(M)  Duplex     61491  0004 00:05 032  100
00:01 Sync(M)  Duplex     61491  0004 00:06 032  100
00:02 Sync(M)  Duplex     61491  0004 00:07 032  100
00:05 Sync(R)  Duplex     61491  0004 00:00
00:06 Sync(R)  Duplex     61491  0004 00:01
00:07 Sync(R)  Duplex     61491  0004 00:02
00:0A Sync(M)  Pending    61491  0004 00:10 032  100
00:0B Sync(M)  Pending    61491  0004 00:11 032  100
00:0C Sync(M)  Pending    61491  0004 00:12 032  100
00:10 Sync(R)  Pending    61491  0004 00:0A
00:11 Sync(R)  Pending    61491  0004 00:0B
00:12 Sync(R)  Pending    61491  0004 00:0C
```

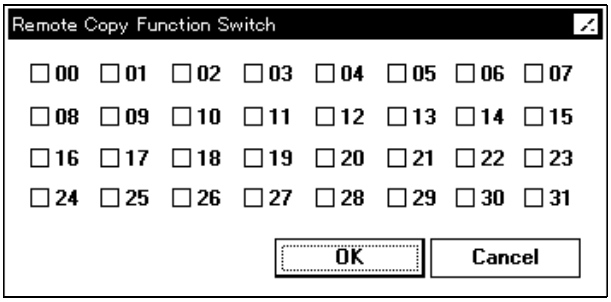
(1) The time you have done the snapshot.
(2) “Dev” means the CU#:LDEV# (CU Number : LDEV Number).
(3) “Type” means the copy mode and volume type of pair.
(4) “Status” means the pair status of the volume shown as “Dev”.
(5) “S/N” means the RCU sequence number of the volume shown as “Dev”.
(6) “SSID” means the SSID (hexadecimal) of the RCU shown as “S/N”.
(7) “Dev” means the CU#:LDEV# (CU Number and LDEV Number on the destination controller).
(8) “Prio” means the copy priority of the volume shown as “Dev”.
(9) “Sync” means the progress of initial copy.

2.23.22 Changing the remote copy functions

This operation changes the remote copy functions.

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.
   The HRC screen will appear.
   Press (CL) the [Function Switch…] button on the HRC screen.

2. Specify the remote copy functions
   The Remote Copy Function Switch screen will appear.
   Specify the check-box indicated at 00 through 31, then press (CL) [OK] button.

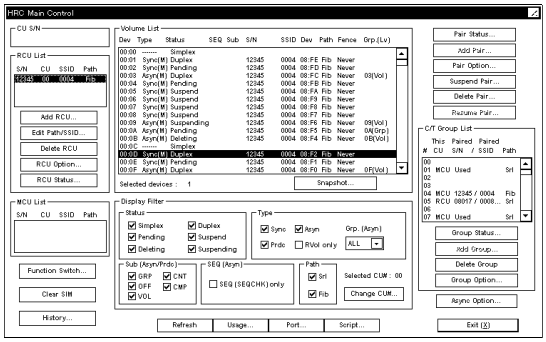


3. Verifying the remote copy functions
   Open the Remote Copy Function Switch screen again,
   then verify the remote copy functions are specified correctly.
   Press (CL) [Cancel] button to exit this screen.

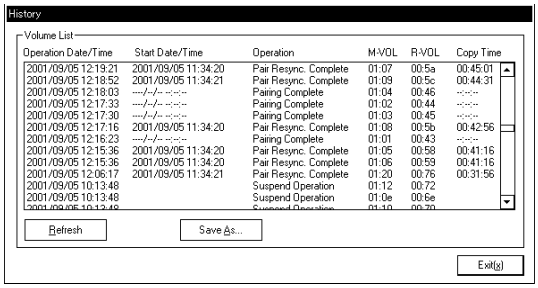
2.23.23 Referring to the History

1. Display the HRC screen
   Select (CL) [HRC] in the 'SVP' window.

2. Selecting an History
   Select (CL) [History…] button in the HRC screen.

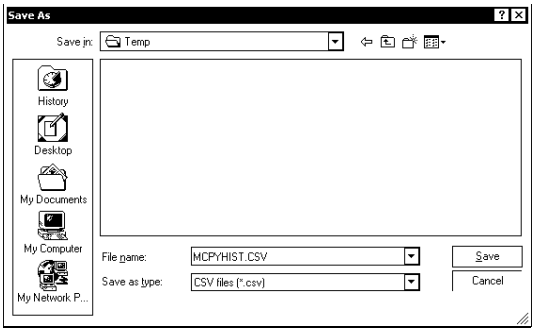


3. Display the History screen
   The History screen will appear.



4. Refresh
   Select (CL) [Refresh] button in the History window.
   The History screen will re-appear.

5. Saving a file
Select (CL) [Save As…] in the History window.
Save as window will appear.



6. Finish of referring history
Select (CL) [Exit] button in the History window.
The History window will be closed.

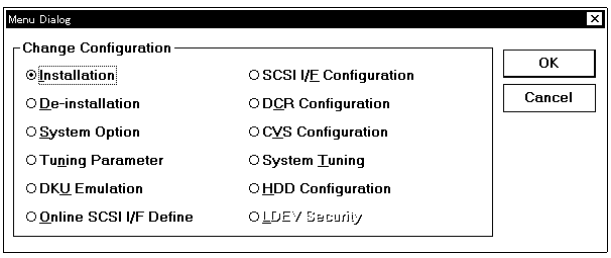
2.24 Tuning Parameter

(1) Exchange threshold information. (See MICRO-FC08-10)

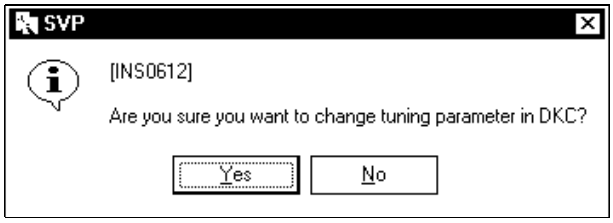
(2) Select (CL) [Install].

(3) Select (CL) [Change Configuration] menu in the 'Install' window and select (CL) [OK].

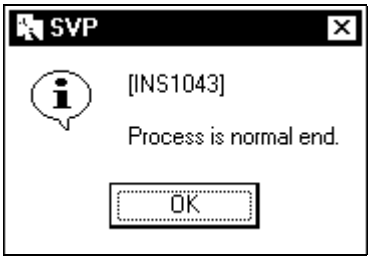
(4) Select (CL) the [Tuning Parameter] menu in the 'Menu Dialog' window and select (CL) [OK].



(5) Select (CL) [Yes] for a message of confirming.



(6) Select (CL) [OK] for a message of finishing.



2.25 (Blank)

Blank Sheet

Blank Sheet

Blank Sheet

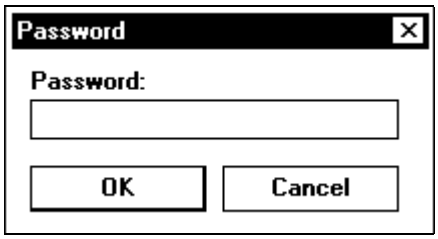
Blank Sheet

Blank Sheet

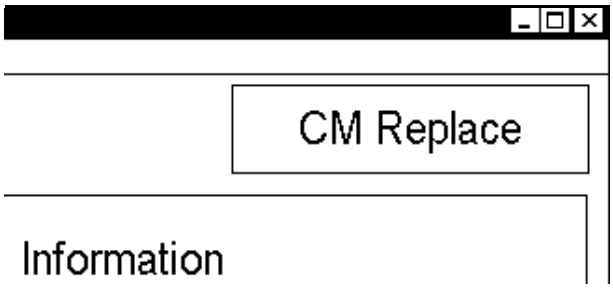
2.26 Change CM Module group size

1. Close the all SVP menu.

2. <Enter the password>
   Press “Shift+Ctrl+C” in the ‘SVP’ window.
   Enter the password, and select (CL) [OK].
   (Please call Technical Support Center for asking it.)



3. <CM Replace Mode>
   ‘CM Replace’ is displayed.
   Select (CL) [Maintenance].

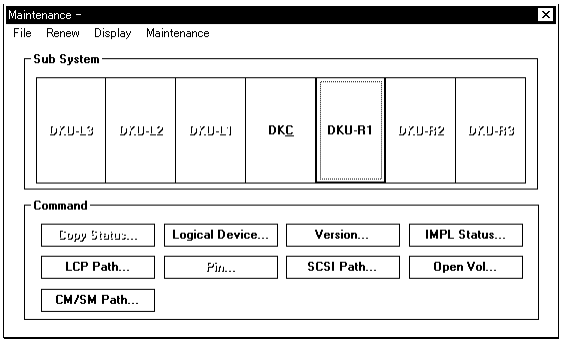


4. <Maintenance window>
'Maintenance' window is displayed.

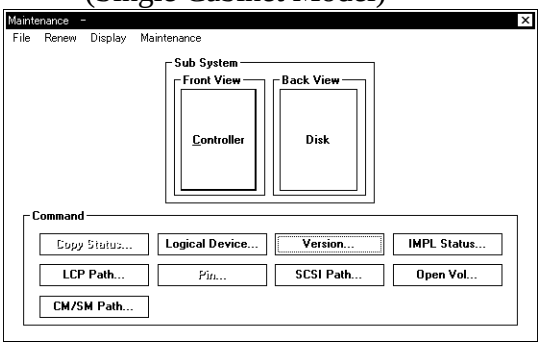
(Separate Model)
In the 'Maintenance' window, check and select (CL) [DKC] to be replaced.

(Single Cabinet Model)
In the 'Maintenance' window, check and select (CL) [Controller] to be replaced.

(Separate Model)



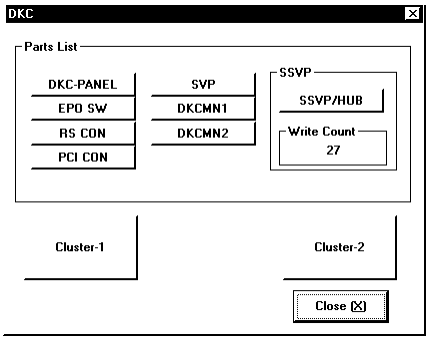
(Single Cabinet Model)



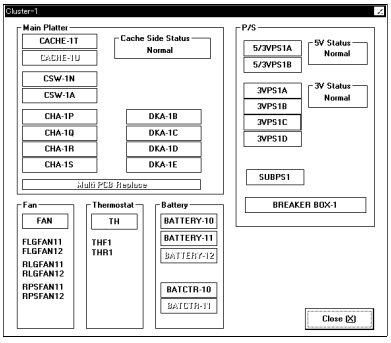
5.

(Separate Model)
<DKC window>
Select (CL) [Cluster-n] in the 'DKC'.

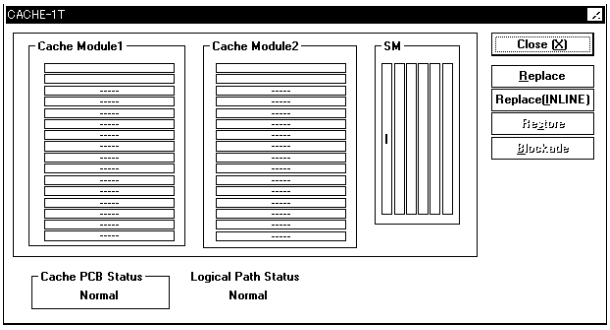
(Single Cabinet Model)
<Controller window>
Select (CL) [Cluster-n] in the 'Controller'.



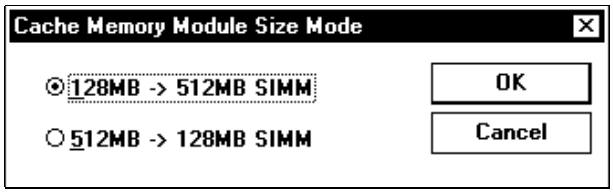
6. <Select Cache>
Select (CL) part.



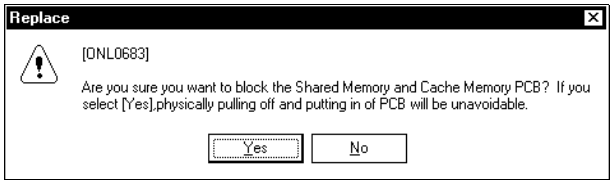
7. <Replace>
Check status display.
Select (CL) [Replace].



8. <Change the Cache Memory Module Size>
Select (CL) module size in the 'Cache Memory Module Size Mode', and select (CL) [OK].

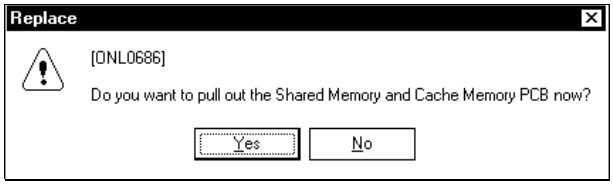


9. <Check beginning of cache blocking>
Select (CL) [Yes] after making sure that the package to be blocked is correct in response to:
"Are you sure you want to block the Shared Memory and Cache Memory PCB? If you select [Yes], physically pulling off and putting in of PCB will be unavoidable."

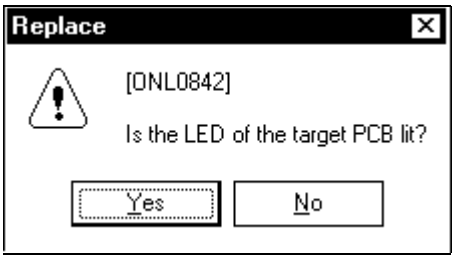


10. <Cache blocking>
"The Cache Memory PCB is being blocked." is displayed.
"The Shared Memory PCB is being blocked…" is displayed.

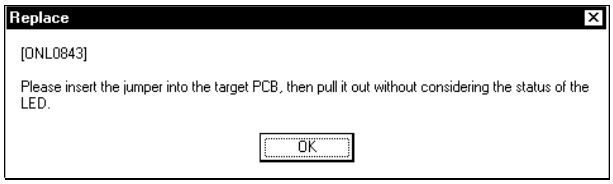
11. <Check removal of cache>
Select (CL) [Yes] in response to:
"Do you want to pull out the Shared Memory and Cache Memory PCB now?"



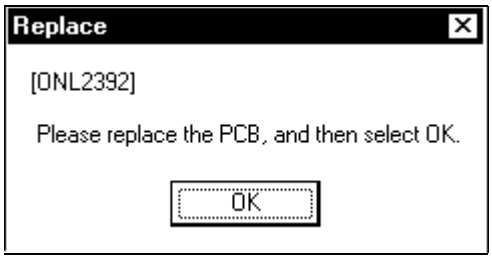
12. <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB lit?".



<Forcing shut down LED on>
If [No] is selected:
Insert a jumper in response to "Please insert jumper into the target PCB, then pull it out without considering the status of the LED".
(Refer REP03-50)
Go to step 9.



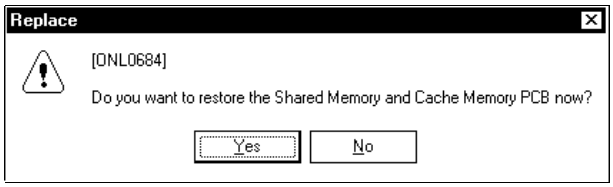
13. <Cache Replacement>
"Please replace the PCB, and then select OK." is displayed.
(Select (CL) [OK] after replacing the PCB.)



14. <Replace cache PCB>
    Replace cache.

    See HARDWARE B (REP03-40)

15. <Check the beginning of cache/SM recovery>
    Select (CL) [Yes] in response to:
    "Do you want to restore the Shared Memory and Cache Memory PCB now?"



16. <Restoring the Shared Memory>
    "Restoring the Shared Memory PCB..." is displayed.

17. <Restoring the Cache Memory>
    "Restoring the Cache Memory PCB..." is displayed.

18. <Check the end of Cache/Shared Memory recovery>
Select (CL) [OK] in response to “Replace finished.”.

19.
Close ‘CACHE-xx’ window.
Close ‘Cluster-n’ window.
(If finishing in the Cluster-2 side, go to 21.)

20. <Change the Cache Memory module size in Cluster-2 side>
Perform steps 5 to 19.
Select [Cluster-2], [CACHE-2G].

21.
Close ‘DKC’ window.
Close ‘Maintenance’ window.
Change the mode to [View Mode].

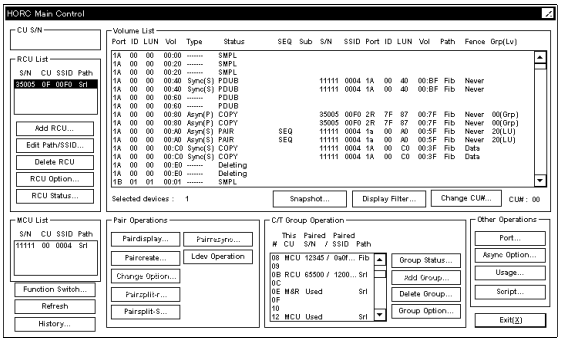
2.27 HORC Operation (for OPEN VOL)

2.27.1 Referring to the Path Status

Refer to the MCU-RCU connection status. This operation is possible only from the MCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

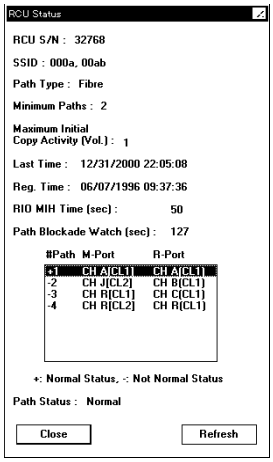
2. Selecting an RCU
   Select an RCU whose path status is desired to be referred to from the RCU list (see the figure) on the HORC screen. (Two or more RCUs cannot be selected here.)



3. Displaying the RCU status
   Select (CL) the [RCU Status...] button on the HORC screen to display the RCU Status screen.

4. Selecting a path to be displayed

The path list is displayed on the RCU Status screen. Select a path whose status is desired to be displayed from the list. (Two or more paths cannot be selected here.)



5. Updating the path status

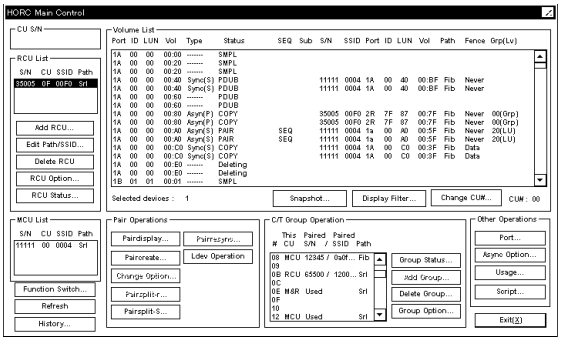
Select (CL) the [Refresh] button on the RCU Status screen to update the screen display. When updating the screen display, select (CL) the [Refresh] button. When closing the screen, select (CL) the [Close] button.

2.27.2 Referring to the Pair Status of OPEN VOL (open volume)

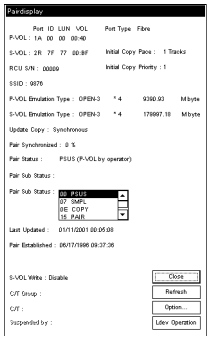
Refer to the object volume pair status of OPEN VOL (open volume). The screen data displayed will differ between when this operation is executed from only the MCU and when it is executed from the RCU.

1. Displaying the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting a volume
   Select a volume whose status is desired to be referred to from the volume list (see the figure) on the HORC screen. (Select only one volumes here although two or more volume can be selected from the list.)



3. Displaying the pair status of OPEN VOL
   Select (CL) the [Pairdisplay...] button on the HORC screen.
   The Pairdisplay screen will appear.



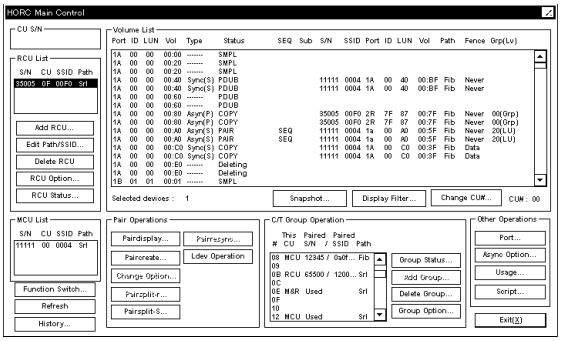
4. Updating the pair status of OPEN VOL
   Select (CL) the [Refresh] button on the Pair Status screen. This operation updates the display of the pair status. Press (CL) the [Close] button to close the screen.

2.27.3 Referring to the Pair Status of LDEV

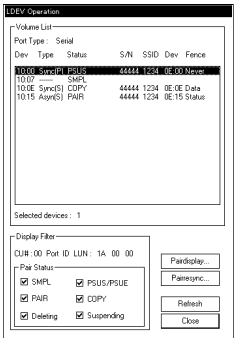
Refer to the object volume pair status of LDEV. The screen data displayed will differ between when this operation is executed from only the MCU and when it is executed from the RCU.

1. Displaying the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

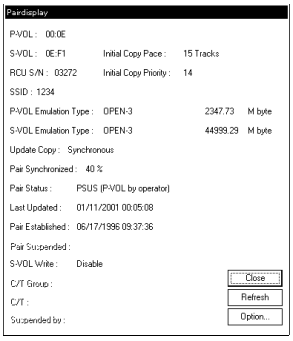
2. Selecting a volume
   Select a volume whose status is desired to be referred to from the volume list (see the figure) on the HORC screen. (Select only one volumes here although two or more volume can be selected from the list.)
   Select (CL) the [Ldev Operation] button on the HORC screen.
   This operation display the HORC sub screen.



3. Selecting a LDEV
   Select a LDEV whose status is desired to be referred to from the volume list (see the figure) on the HORC sub screen.



4. Displaying the pair status of LDEV
Select (CL) the [Pairdisplay...] button on the HORC sub screen.
The Pairdisplay of LDEV screen will appear.



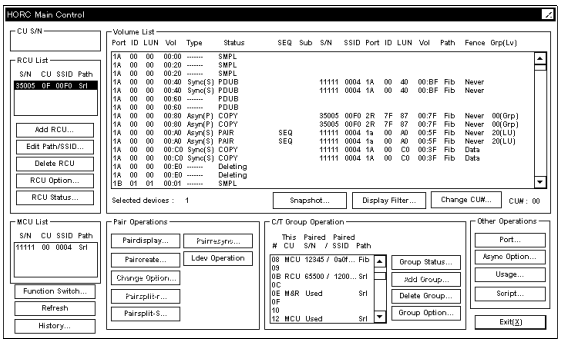
5. Updating the pair status of LDEV
Select (CL) the [Refresh] button on the Pair Status screen. This operation updates the display of the pair status. Press (CL) the [Close] button to close the screen.

2.27.4 Suspending the Volume Pair(s) of OPEN VOL (open volume)

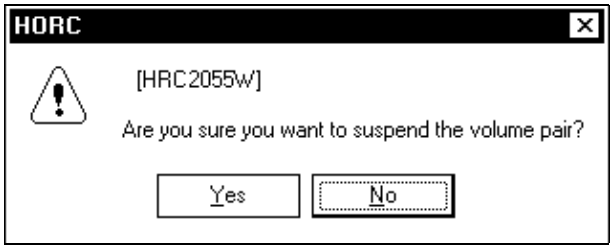
This operation suspends the object volume pair(s). The operation can be executed from both the MCU and the RCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

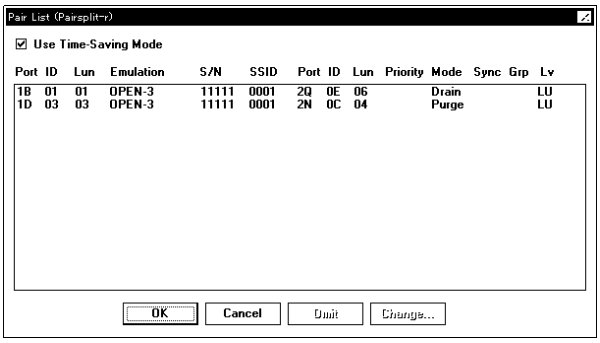
2. Selecting the volume(s)
   Select the volume(s) desired to be suspended from the volume list (see the figure) on the HORC screen.



3. Instructing a suspension
   Select (CL) the [Pairsplit-r...] button on the HORC screen. A confirmation message will appear. To suspend the pair really, press (CL) the [Yes] button. The Pairsplit-r screen will appear.



4. Confirm the suspension volumes



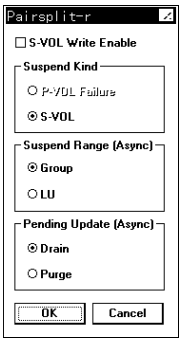
Confirm the suspension volumes that are displayed to the Pairsplit-r screen and select (CL) [OK] button and go to 6.

Please specify “Use Time-Saving Mode” to execute suspending the pair quickly.
WARNING :

Please confirm the volumes which fails in the pair suspending on the HORC Main Control screen when the time-out is generated specifying “Use Time-Saving Mode”. Please remove the specification of “Use Time-Saving Mode” to them if there are volumes which fails in pair suspending, and do the Pairsplit-r operation again.

If you want to change suspend parameters, select the volumes from the volume list and select (CL) [Change...] button and go to 5.
If you want to omit the volume suspension, select the volumes from the volume list and select (CL) [Omit] button.

5. Inputting the suspending parameters

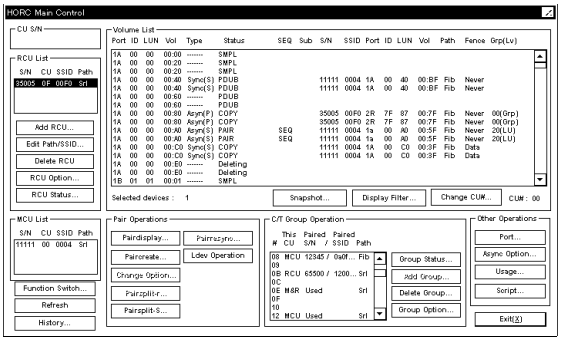


Press (CL) the [OK] button on the Pairsplit-r screen to execute the suspending processing.

- S-VOL Write Enable
  This parameter specifies whether to enable S-VOL to write.
  If you want to use this parameter, select “S-VOL” in Suspend Kind parameter.
- Suspend kind
  This parameter specifies which instruction is to be issued, an P-VOL suspension or an S-VOL suspension. “P-VOL Failure”cannot be specified for asynchronous copy pairs.
- Suspend Range (Async)
  This parameter specifies the kind of suspension.
  “Group” means all volume pair(s) suspension which are assigned to the same C/T group as the specified volume pair(s).
  “LU” means only specified volume pair(s) will be suspended. If 2 or more volume pairs are specified, this parameter is fixed to “LU”.
  This parameter can be spedcified HORC asynchronous copy volume pairs only.
- Pending update (Async)
  This parameter specifies the method of the release of the Record set.
  “Drain” means that the volume pair(s) should be suspended after all pending record set are settled. If “Drain” is specified, please stop I/O from the hosts.
  “Purge” means that the volume pair(s) should be suspended even if pending record set remain. The pending record set will be copied when the Pairresync operated.
  This parameter can be specified HORC asynchronous copy volume pair(s) only.

6. Verifying the suspension

Verify if the volume selected from the volume list (see the figure) is in the suspended status or not by pressing(CL) the [Refresh] button on the HORC screen.

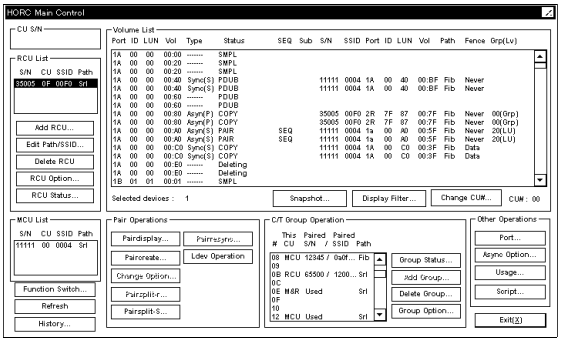


2.27.5 Resuming the Suspended Pair(s) of OPEN VOL (open volume)

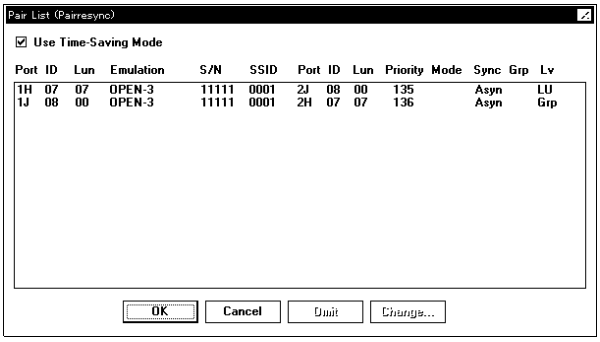
This operation resumes the volume pair(s) of OPEN VOL suspended. The operation can be performed only from the MCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting the volume(s)
   Select the volume(s) desired to be resumed from the volume list (see the figure) on the HORC screen to resume it.
   Select the [Pairresync...] button on the HORC screen. The Pairresync screen will appear.
   (You can select several volumes. However, you can't select the synchronous copy pair and asynchronous copy pair at the same time.)



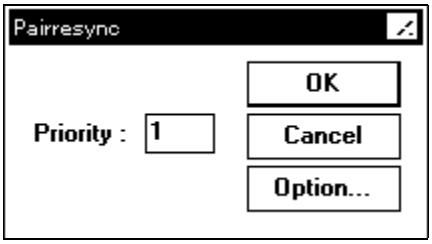
3. Confirm a resume parameter
   Confirm a resume option on the Pairresync screen.
   Select (CL) the [OK] button on the Resume HORC Pair screen and go to 6.



   Please specify "Use Time-Saving Mode" to execute resuming the pair quickly.
   WARNING :
   Please confirm the volumes which fails in the pair resuming on the HORC Main Control screen when the time-out is generated specifying "Use Time-Saving Mode".
   Please remove the specification of "Use Time-Saving Mode" to them if there are volumes which fails in pair resuming, and do the Pairresync operation again.

   If you want to change resume parameter, select the volumes from the volume list and select (CL) [Change...] button and go to 4.
   If you want to omit resume pair, select the volumes from the volume list and select (CL) [Omit] button.

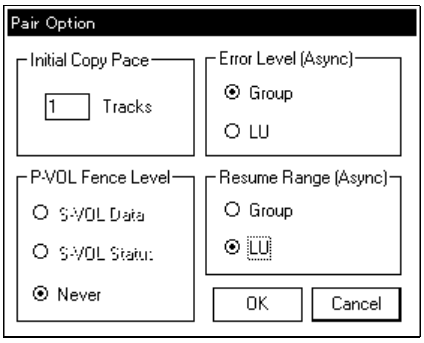
4. Inputting the resume parameter



On the Resume HORC pair Parameter Input screen, perform the following.
Input the initial copy priority to the Priority.
In the case of asynchronous copy pairs, you can't input the initial copy prionity if the Resume Range (see 5.) is "Group".
If you want to set pair option, press (CL) [Option...] button and go to 5.
When all operations above are finished, press (CL) the [OK] button (see the figure) and go to 3.

---

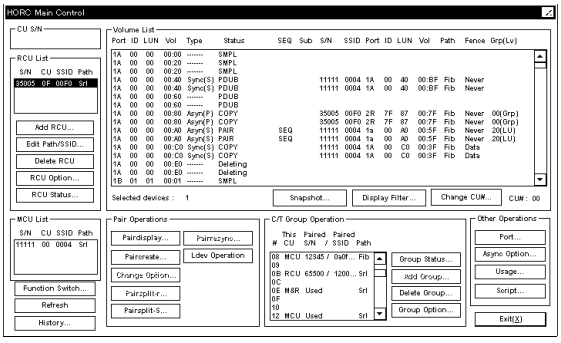
5. Setting HORC pair option



On the Pair Option screen, perform the following.
Set one of the following in Initial Copy Pace.
• 1 ~ 15 Tracks
Set one of the following in P-VOL Fence Level.
(Fixed "Never" when asynchronous copy pairing)
• S-VOL Data
• S-VOL Status
• Never
Set one of the following in Error Level.
(Effective only asynchronous copy pairing and Resume Range is "LU".)
• Group
• LU
Set one of the following in Resume Range.
(Effective only asynchronous copy pairing. If 2 or more volume pairs are specified, this parameter is fixed to "LU".)
• Group
• LU
When all above operation are finished, press (CL) [OK] button.
Then go to 4.

---

6. Verifying the resumption



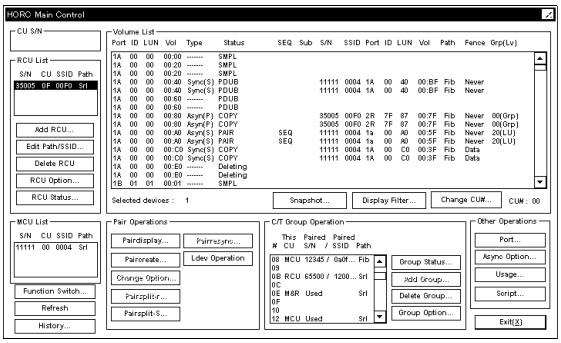
Verify if the volume(s) selected from the volume list (see the figure) is in the pending (or duplex) status by pressing (CL) the [Refresh] button on the HORC screen.

2.27.6 Resuming the Suspended Pair(s) of LDEV

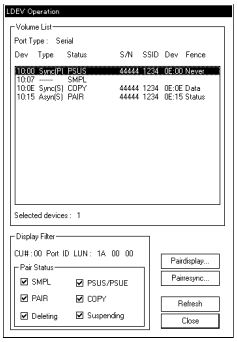
This operation resumes the volume pair(s) of LDEV suspended. The operation can be performed only from the MCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting the volume of OPEN VOL
   Select the volume desired to be resumed from the volume list (see the figure) on the HORC screen to resume it.
   Select the [Ldev Operation...] button on the HORC screen.
   The HORC Sub screen screen will appear.

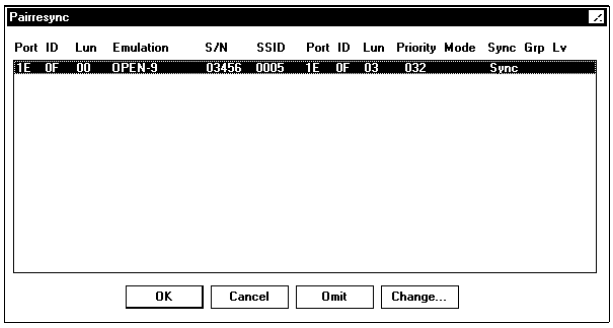


3. Selecting the volume(s) of LDEV
   Select the volume(s) desired to be resumed from the volume list (see figure) on the HORC Sub screen to resume it.
   Select (CL) the [Pairresync...] button on the HORC screen.
   The Pairresync screen will appear.



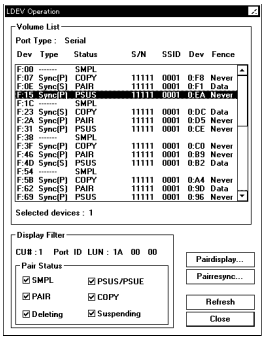
4. Confirm a resume parameter

Confirm a resume option on the Resume HORC Pair screen.
Select (CL) the [OK] button on the Resume HORC Pair screen and go to 5.
If you want to omit Pairresync, select the volumes from the volume list and select (CL) [Omit] button.



5. Verifying the resumption

Verify if the volume(s) selected from the volume list (see the figure) is in the pending (or duplex) status by pressing (CL) the [Refresh] button on the HORC sub screen.

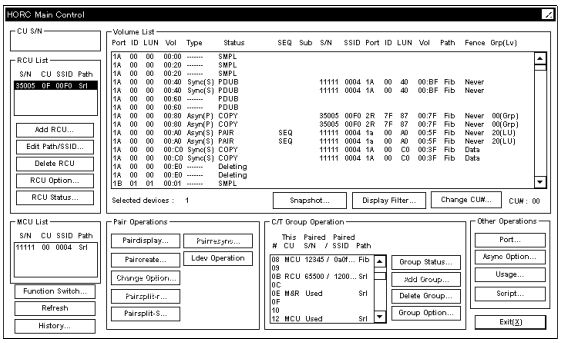


2.27.7 Deleting the Existing HORC Pair(s)

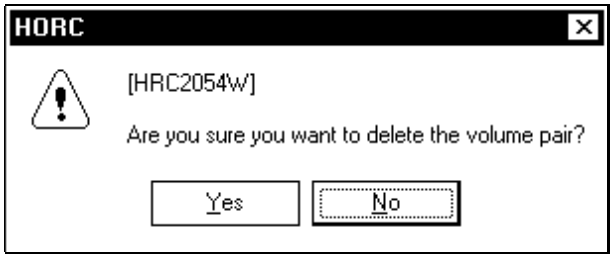
This operation deletes the HORC pair(s). The operation can be performed from both the MCU and the RCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting the volume(s)
   Select the volume pair(s) desired to be deleted from the volume list (see the figure) on the HORC screen.

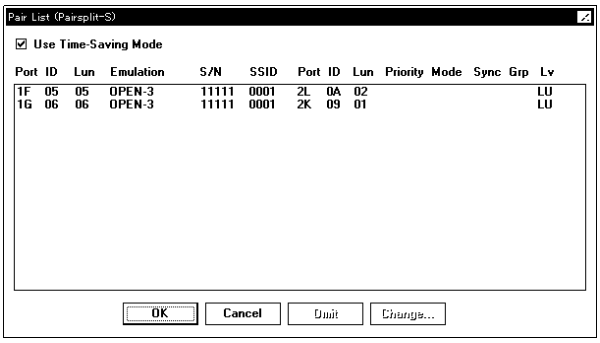


3. Instructing the deletion
   Select (CL) the [Pairsplit-S...] button on the HORC screen. The confirmation message will appear. To delete the pair(s) really, press (CL) the [Yes] button. Then Pairsplit-S screen will appear.



4. Confirm the deletion volumes

Confirm the deletion volumes that are displayed to the Pairsplit-S screen and select (CL) [OK] button and go to 6.

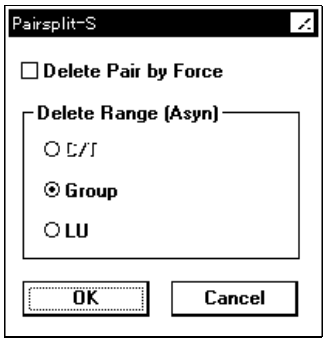


Please specify “Use Time-Saving Mode” to execute deleting the pair quickly.
WARNING :
Please confirm the volumes which fails in the pair deleting on the HORC Main Control screen when the time-out is generated specifying “Use Time-Saving Mode”. Please remove the specification of “Use Time-Saving Mode” to them if there are volumes which fails in pair deleting, and do the Pairsplit-S operation again.

If you want to change delete parameters, select the volumes from the volume list and select (CL) [Change...] button and go to 5.
If you want to omit the volume deletion, select the volumes from the volume list and select (CL) [Omit] button.

5. Inputting a deleting parameter

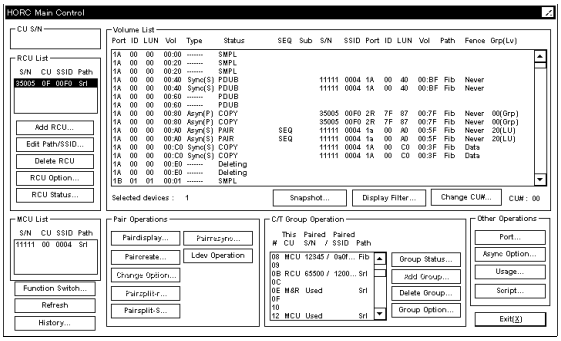
Press (CL) the [OK] button on the Pairsplit-S screen to execute the deletion and go to 4.



• Delete Pair by Force
This parameter deletes the selected pair(s) forcibly regardless of the status of the communication between MCU and RCU. In the case of asynchronous copy pairs, “Delete Pair by Force” can be specified if the Delete Range is “Group”. Set one of the following in Delete Range (Asyn).
(Effective only asynchronous copy pair. Fixed “LU” if 2 or more volumes are specified.)
• C/T
• Group
• LU
“C/T” means all pair(s) deletion which have the same C/T as the specified pair.
“C/T” can be specified only if the specified pair is :
• S-VOL
• Neither “Suspending” status nor “Deleting” status
“Group” means all pair(s) deletion which is(are) assigned to the same C/T group as the specified pair.
“LU” means only specified pair(s) will be deleted.

6. Verifying the pair(s) deleted

Verify if the volume(s) selected from the volume list(see the figure) is(are) in the simplex status by pressing(CL) the [Refresh] button on the HORC screen.

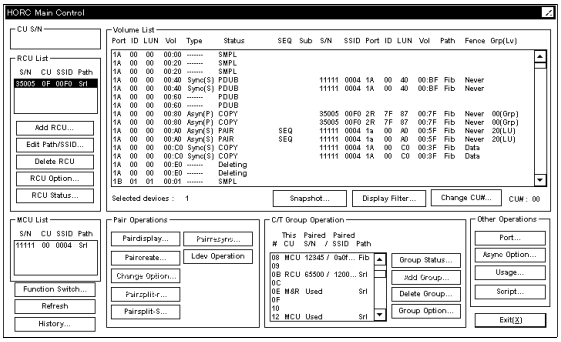


2.27.8 Deleting an RCU Registered

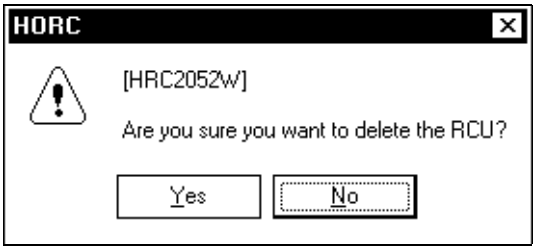
This function deletes an RCU. The function can be executed only from the MCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

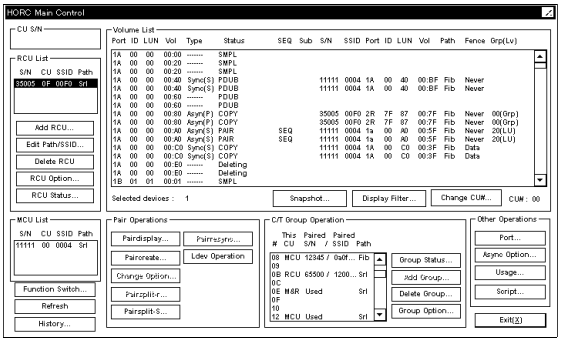
2. Selecting an RCU
   Select an RCU desired to be deleted from the RCU list(see the figure) on the HORC screen. (Only one RCU can be selected here.)



3. Instructing the deletion
   Select (CL) the [Delete RCU] button on the HORC screen. The confirmation message will appear. To delete the RCU really, press (CL) the [Yes] button.



4. Verifying the RCU deletion
   Press (CL) the [Refresh] button on the HORC screen to verify if the RCU selected from the RCU list (see the figure) is deleted.

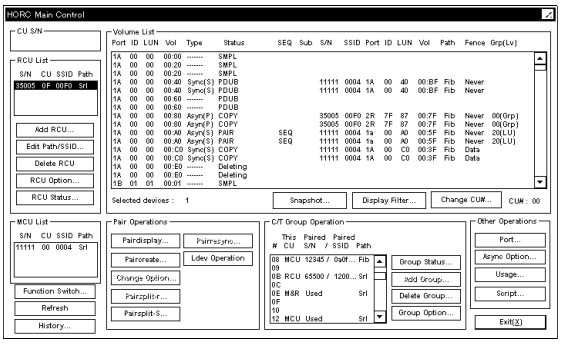


2.27.9 Adding the Path(s) to the RCU

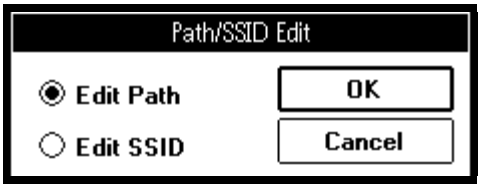
This operation adds the path(s) to the RCU already registered. The operation can be performed from both the MCU and the RCU.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting an RCU
   Select an RCU the number of paths to which is desired to be increased from the RCU list (see the figure) on the HORC screen. (Only one RCU can be selected here.)

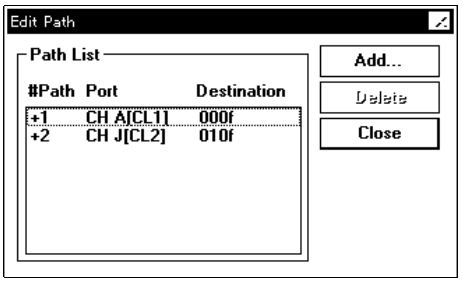


3. Selecting a function
   Select (CL) the [Edit Path/SSID...] button on the HORC screen.
   The Path/SSID Edit screen will appear.
   Select (CL) the [Edit Path] radio button then press (CL) the [OK] button on the screen.

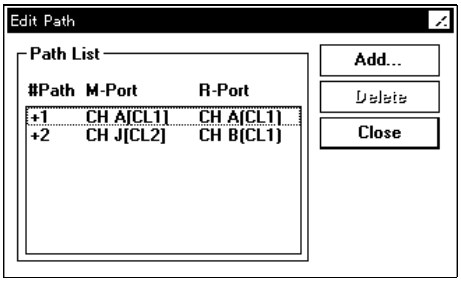


4. Instructing the addition of the path(s)

The Edit Path screen will appear. Then press (CL) the [Add...] button on the screen.



(Serial)



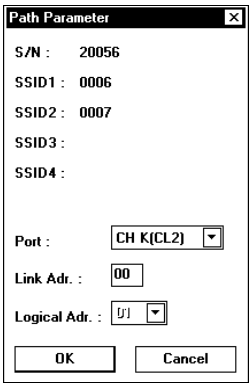
(Fibre)

5. Inputting the parameters

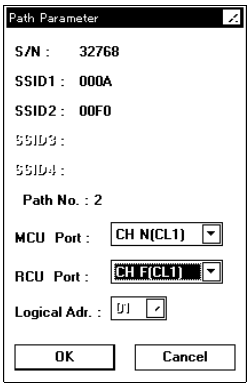
When the Path Parameter screen appears, input the necessary parameters and press (CL) the [OK] button.

(In the case of Serial Path)

- Port
  Specify the RCP port.
- Destination link address
  Specify the RCU side link address. When the ESCD is to be used, input the RCU-connected link address. When the ESCD is not used, input '00'.



(Serial)



(Fibre)

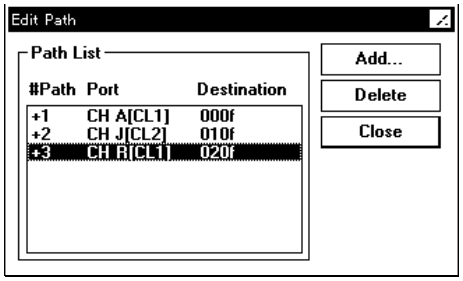
(In the case of Fibre Path)

- MCU Port
  Specify the initiator port.
- RCU Port
  Specify the RCU target port of the RCU side

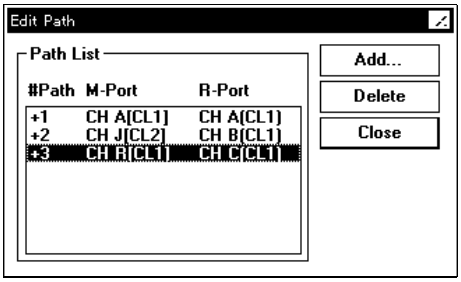
As for the logical address, the CU number which was already registered by the RCU addition is displayed.

6. Verifying the path added

Make sure on the Edit Path screen that the specified path has been added correctly.



(Serial)



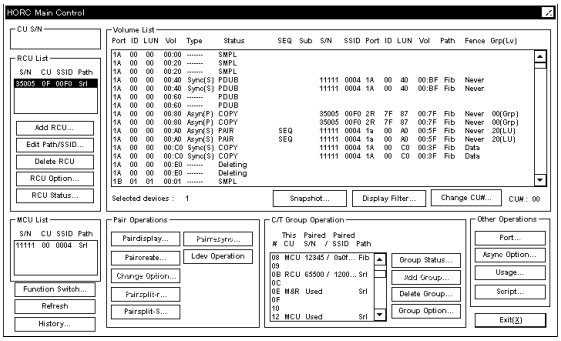
(Fibre)

2.27.10 Reducing the Path(s) from the RCU

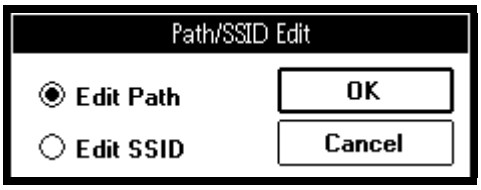
This operation reduces the number of paths connected to an RCU registered already.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting an RCU selection
   Select an RCU the number of paths to which is desired to be reduced from the RCU list (see the figure) on the HORC screen. (Only one RCU can be selected here.)

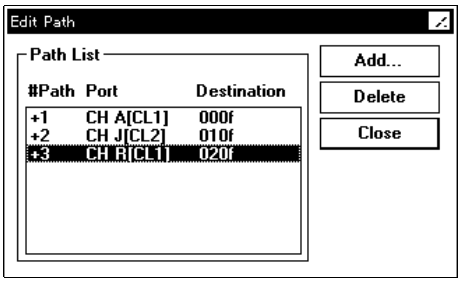


3. Instructing the reduction of the path(s)
   Select (CL) the [Edit Path/SSID...] button on the HORC screen. The Edit Path/SSID screen will appear.
   Select (CL) the [Edit Path] radio button then press (CL) the [OK] button on the screen.

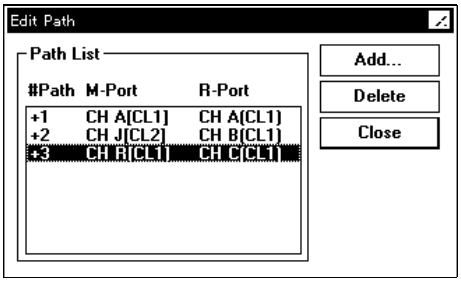


4. Selecting the path(s) to be deleted

Select the path(s) desired to be deleted from the path list displayed on the Edit Path screen and press (CL) the [Delete] button.



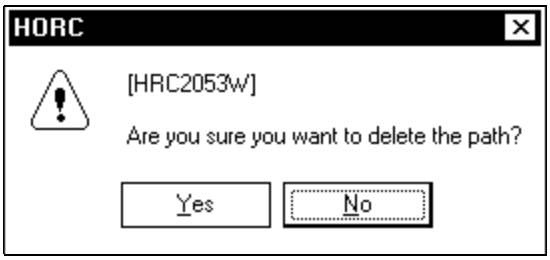
(Serial)



(Fibre)

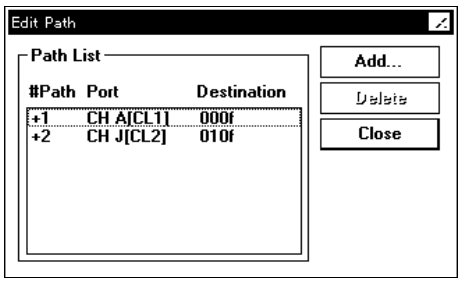
5. Confirmation message

When the confirmation message appears, confirm the path to be deleted and press (CL) the [Yes] button.

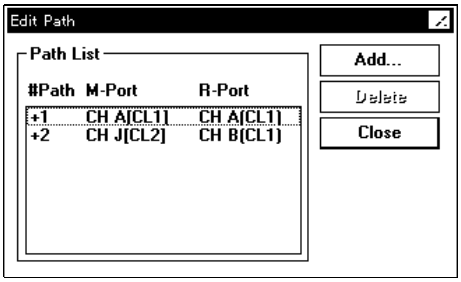


6. Verifying the path deleted

Make sure on the Edit Path screen that the path specified has been deleted correctly.



(Serial)



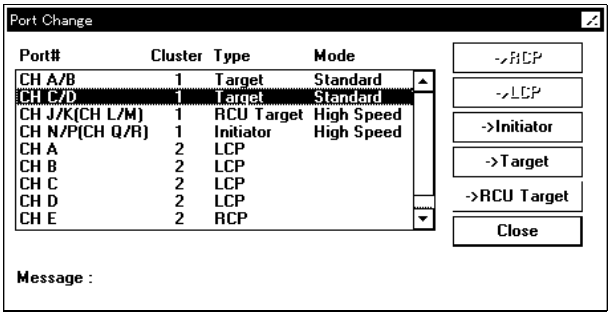
(Fibre)

2.27.11 Changing the Port Type

This operation changes the specified port type.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

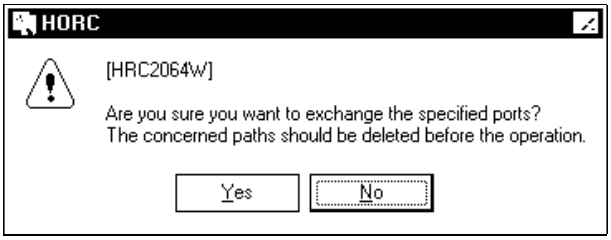
2. Selecting the processing to change the port type
   Select (CL) the [Port...] button on the on the HORC screen to display the Port Change screen.



3. Instructing the port change
   When the port list and the port types are displayed in the list box on the Path Change screen, select one or more ports whose type(s) is(are) to be changed.
   Note: Serial type (LCP/RCP) and fibre type (Initiator/Target/RCU Target) cannot be selected at the same time.
   To change the port type to LCP, press the [-> LCP] button. Then go to step 4.
   To change the port type to RCP, press the [-> RCP] button. Then go to step 5.
   To change the port type to initiator, press the [->Initiator] button. Then go to step 5.
   To change the port type to target, press the [->Target] button. Then go to step 4.
   To change the port type to RCU target, press the [->RCU Target] button. Then go to step 4.

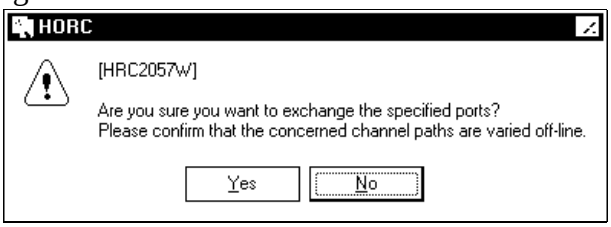
4. Confirmation message and indication of executing status

When the confirmation message appears, confirm the port(s) whose type(s) is(are) to be changed again. If it is correct, press (CL) the [Yes] button.
Status of execution is displayed in the "Message" field on the Port Change screen.
Go to step 6.



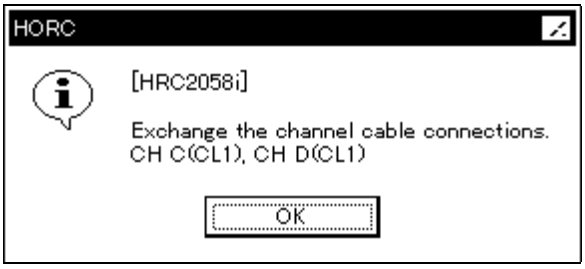
5. Confirmation message and indication of executing status

When the confirmation message appears, confirm the port(s) whose type(s) is(are) to be changed again. If it is correct, press (CL) the [Yes] button.
Status of execution is displayed in the "Message" field on the Port Change screen.



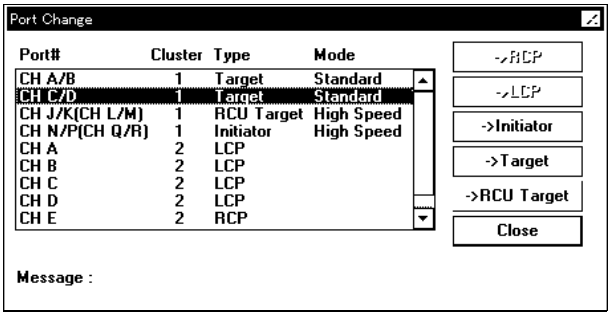
6. Indication message

After exchanging channel cable connecting, press (CL) the [OK] button.



7. Verifying port change

After the change is finished, make sure on the Port Change screen that the type(s) of the specified port(s) has(have) been changed correctly.

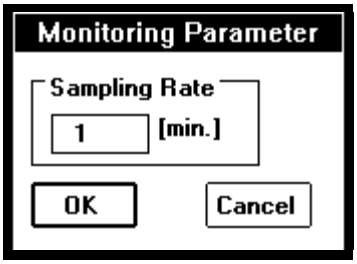


2.27.12 Displaying HORC Operation Status

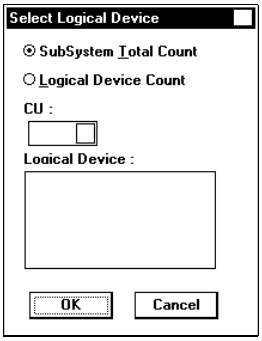
This operation displays a graphic indication of the HORC operation status.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

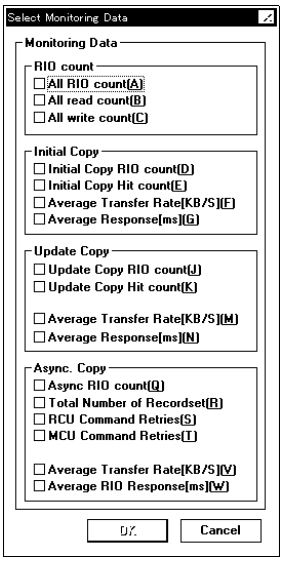
2. Setting a sampling rate
   Press (CL) the [Usage...] button on the on the HORC screen to display the Sampling Rate Setting screen. Then, input a sampling rate and press (CL) the [OK] button. (Sampling rate can be set within 1 to 546 minutes in steps of 1 minute.)



3. Selecting an object device
   When the valid logical device list is displayed in the list box on the Select Logical Device screen, select a logical device and press (CL) the [OK] button. To display the information of the whole subsystem, select "Sub System".



4. Selecting information desired to be acquired
Select one or more data items on the Select Monitoring Data screen, then press (CL) the [OK] button.



5. Displaying the operation information
The Operation Information Display window appears. To view operation information of other devices, select Monitor-Start from the menu and go to step 3. (Two or more (MAX. 15) screens can be displayed at a time.)

6. Terminating the operation information display
To terminate the operation information display, select Monitor-Exit to return to the HORC screen.

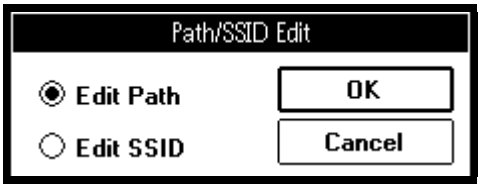
2.27.13 Adding the SSID(s) to the RCU

This operation adds the SSID(s) to the RCU already registered. The operation can be performed from both the MCU and the RCU.

1. Selecting an RCU
   Display the HORC screen and select (CL) an RCU from RCU List which is desired to be increased SSIDs. (Only one RCU can be selected here.)

2. Selecting a function
   Select (CL) the [Edit Path SSID...] button on the HORC screen.
   The Path/SSID Edit screen will appear.

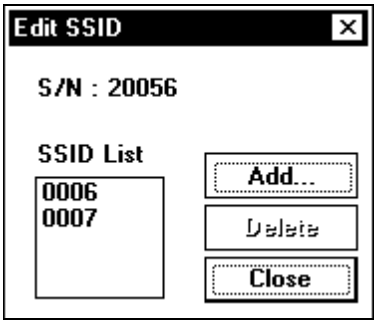
   Select (CL) the [Edit SSID] radio button then press (CL) the [OK] button on the screen.



3. Confirming the number of SSID(s)
   The Edit SSID screen will appear.

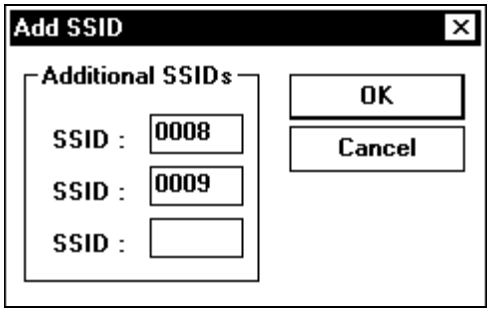
   Press (CL) [Add] button on the screen.
   (See the figure.)

   Note: If 4 SSIDs are registered on the RCU, you can not add a SSID further. ([Add...] button will be not active.)

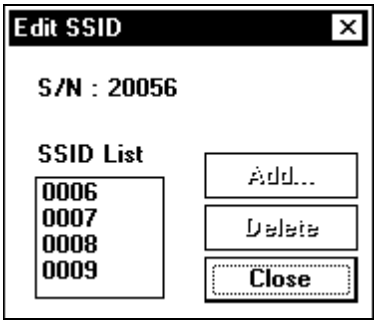


4. Adding the SSID(s) to the RCU
   The Add SSID screen will appear.

   Input 4-digit hexadecimal SSID(s) number in SSID, then press (CL) [OK] button.



5. Verifying the SSIDs added
   Make sure on the Edit SSID screen that the specified SSIDs have been added correctly.



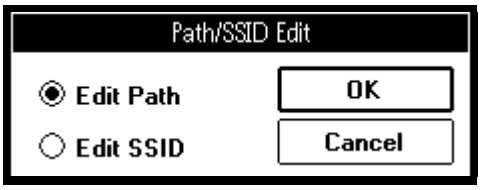
2.27.14 Reducing the SSID(s) from the RCU

This operation reduces the SSID(s) from the RCU already registered.

1. Selecting an RCU
   Display the HORC screen and select (CL) an RCU from RCU List which is desired to be reduced SSIDs. (Only one RCU can be selected here.)

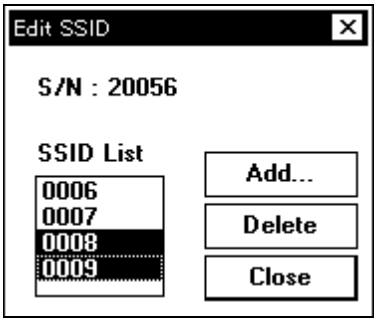
2. Selecting a function
   Select (CL) the [Edit Path SSID...] button on the HORC screen.
   The Path/SSID Edit screen will appear.

   Select (CL) the [Edit SSID] radio button then press (CL) the [OK] button on the screen.



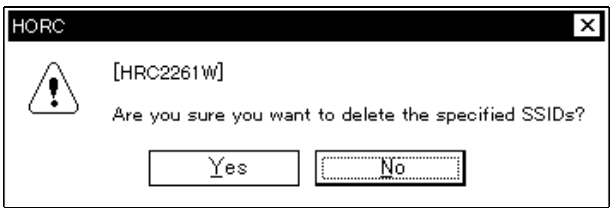
3. Selecting SSID(s) to be deleted
   The Edit SSID screen will appear.

   Select SSIDs desired to be deleted from the SSID List displayed on the Edit SSID screen and press (CL) [Delete] button (See the figure).

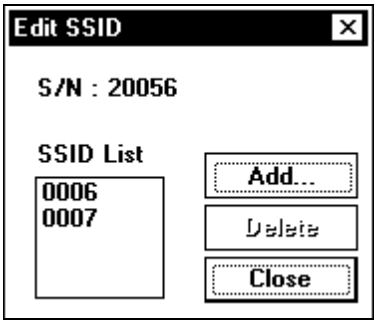


4. Confirmation message
   A confirmation message will appear.

   If wanting to delete the SSID really, press (CL) the [YES] button.



5. Verifying the SSIDs added
   Make sure on the Edit SSID screen that the specified SSIDs have been deleted correctly.

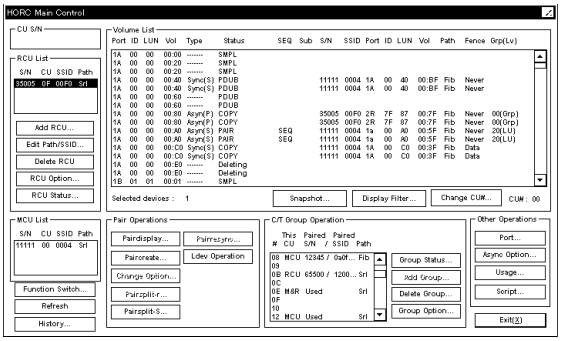


2.27.15 Referring the C/T group status

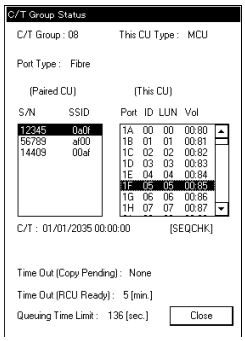
This operation shows the specified C/T group status.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting a C/T group
   Select a C/T group whose status is desired to be referred to from the C/T Group List (see the figure) on the HORC screen.
   (Only one C/T group can be selected here.)
   (Note: C/T groups which are assigned by HRC are not displayed on the list.)



3. Confirming the C/T group status
   Select (CL) the [Group Status...] button on the HORC screen.
   The C/T Group Status screen will appear.
   Press (CL) the [Close] button to close the screen.

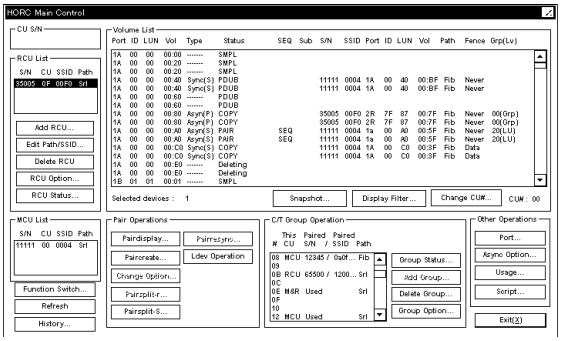


2.27.16 Releasing the using C/T group(s)

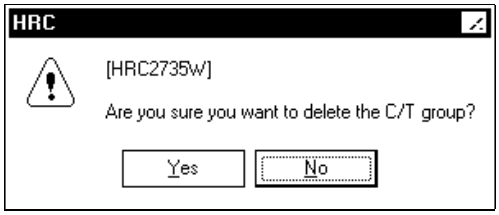
This operation releases the specified C/T group already used.
This operation can be performed only from the MCU.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

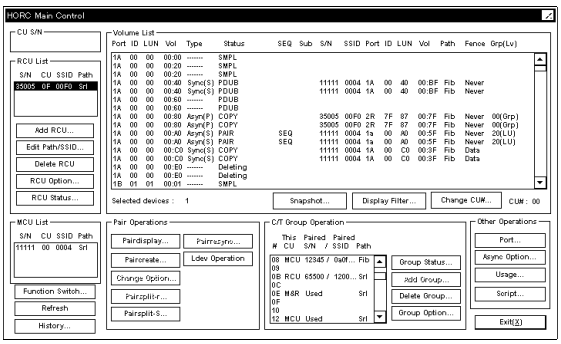
2. Selecting the C/T group(s)
   Select the C/T group(s) desired to be released from the C/T Group List (see the figure) on the HORC screen.
   (Note: C/T groups which are assigned by HRC are not displayed on the list.)



3. Instructing a release
   Press (CL) the [Delete Group] button on the HORC screen. The confirmation message will appear. To release the C/T group really, press (CL) the [Yes] button.



4. Verifying the C/T group released
   Verify if the C/T group selected from C/T Group List (see the figure) is displayed as blank.

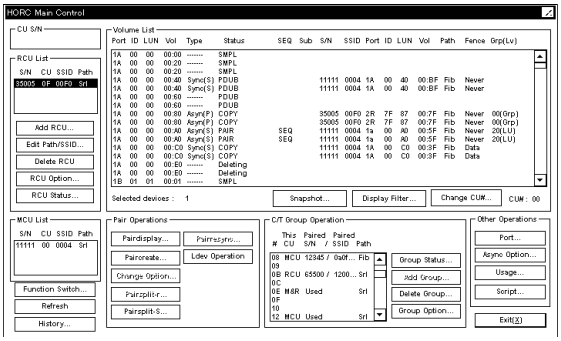


2.27.17 Changing the using C/T group parameters

This operation changes the specified C/T group parameters which already used.
This operation can be performed only from the MCU.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting the C/T group(s)
   Select the C/T group(s) desired to be changed from the C/T Group List (see the figure) on the HORC screen.
   (Note: C/T groups which are assigned by HRC are not displayed on the list.)



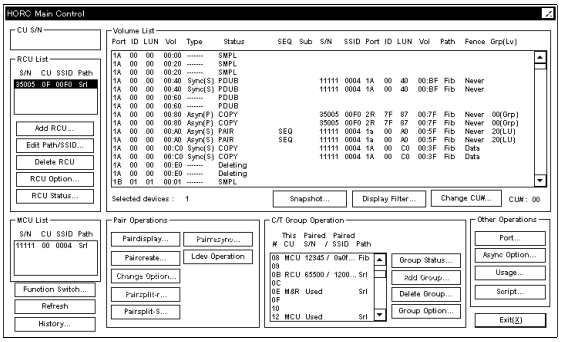
3. Inputting the C/T group parameter
   Press (CL) [Group Option...] button on the HORC screen. The C/T Group Option screen will appear.
   On the C/T Group Option screen. Perform the following.
   Select maximum delay time of update data from combo-box at Time Out (Copy Pending).
   Select maximum waiting time for the RCU gets ready from combo-box at Time Out (RCU Ready).
   When all the above operations are finished, press (CL) the [OK] button.

4. Verifying the C/T group status
   Open the C/T Group Status screen, then verify the C/T group parameters are correctly changed. (Refer to 2.27.15)

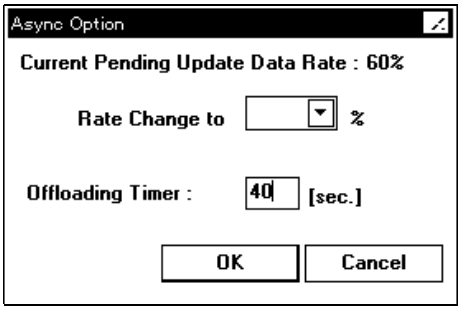
2.27.18 Changing the asynchronous option parameters

This operation changes the asynchronous option parameters.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.
   The HORC screen will appear Press (CL) the [Async Option...] button on the HORC screen.



2. Inputting the asynchronous option parameters
   The Async Option screen will appear.
   On the Async Option screen, perform the following. If there is necessity for changing the occupation rate of pending update data among the Record set, select a number of rate from combo-box at Rate Change to. (Notice 1)
   If the C/T group(s) which is(are) assigned by HORC is(are) exist, the rate can not be changed.



   Select monitoring time for the Record Set form combo-box indicated at Offloading Timer. (0 ~ 255)
   (Notice 2)
   In case of channel-extender-connection, Record Sets are easy to remain MCU. In order to avoid effecting host I/O, set Offloading Timer to 35 or less.
   When all the above operations are finished, press (CL) the [OK] button.

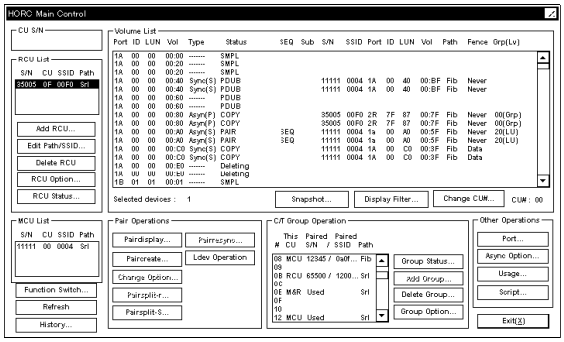
3. Verifying the asynchronous option parameters
   Open the Async Option screen again, then verify the occupation rate indicated at Current Pending Update Data Rate is correct.
   Verify the monitoring time indicated at Offloading Timer is correct, too.

2.27.19 Saving of HORC operation information

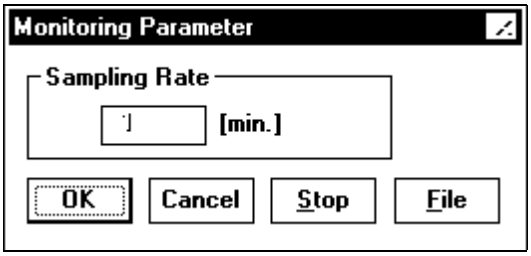
The operation information data on HD of SVP is stored in FD.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

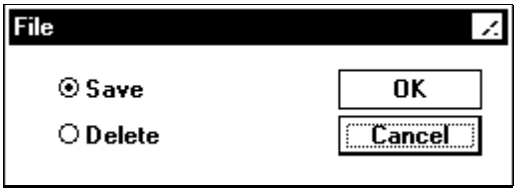
2. Display the Usage screen
   Select (CL) [Usage…] button in the HORC screen.



3. Display the File Operation screen
   Select (CL) [File] button in the Monitoring Parameter screen.
   The File Operation screen will appear.

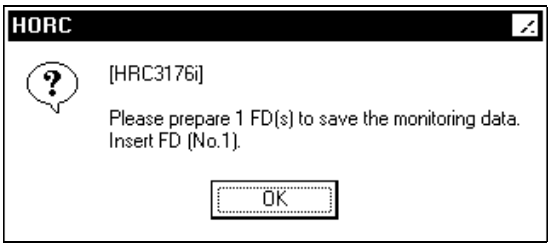


4. Saving of operation information data
   Select (CL) [Save], and press (CL) the [OK] button.



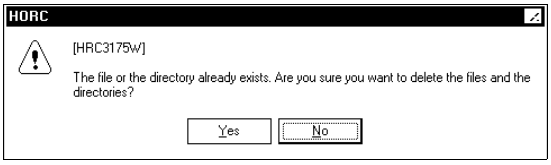
5. Confirmation message

(1) FD of DOS preformatting is inserted in FDD and the [OK] button is pushed.



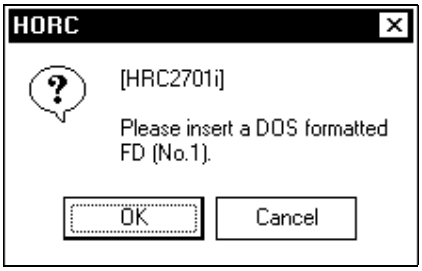
Note: The number of sheets FD necessary to save the operation information data is confirmed, and No. xx is filled in FD.

(2) When the file or the directory exists in FD, the message in the figure below is displayed.



When the file or the directory is deleted, the [Yes] button is pushed.
When the file or the directory is not deleted, the [No] button is pushed.

When the [No] button is pushed, the message is displayed. The [OK] button is pushed when keeping processing, and when processing is interrupted, the [Cancel] button is pushed.

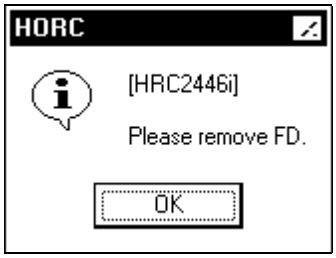


6. FD storage of operation information data

The operation information data etc. being stored by HD on SVP are stored in FD.

7. End message

Because the saving of the operation information data ended, FD is pushed from FDD and the taking out [OK] button is pushed.



8. Close the File Operation screen

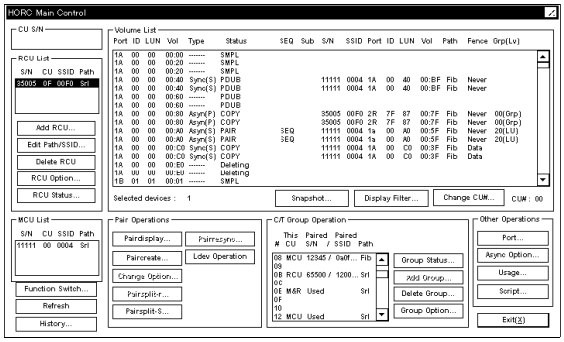
The [Cancel] button is pushed on the File Operation screen.

2.27.20 Deletion of HORC operation information

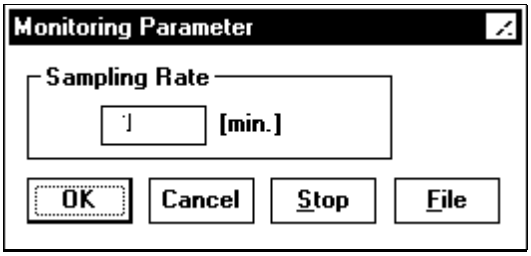
The operation information data on HD of SVP is deleted.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

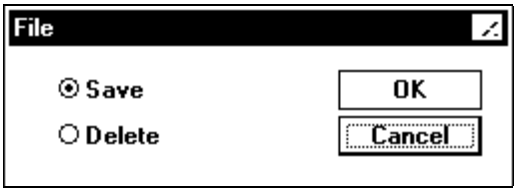
2. Display the Usage screen
   Select (CL) [Usage…] button in the HORC screen.



3. Display the File Operation screen
   Select (CL) [File] button in the Monitoring Parameter screen.
   The File Operation screen will appear.



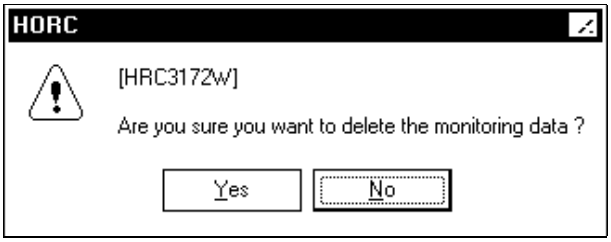
4. Operation information data deletion
   Select (CL) [Delete], and press (CL) the [OK] button.



5. Confirmation message

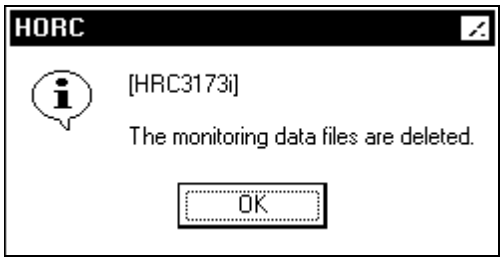
The confirmation message is displayed. When the operation information data is deleted, the [Yes] button is pushed.

Note: When the monitor starts, the operation information data cannot be deleted.



6. End message

Press (CL) the [OK] button to the end message.



7. Close the File Operation screen

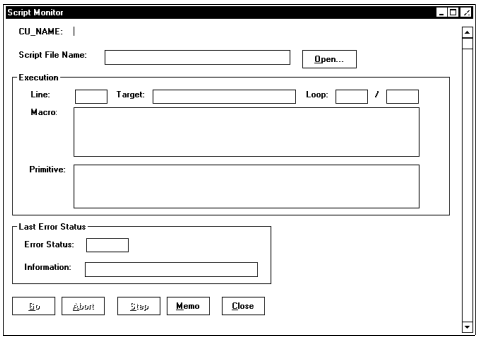
Press (CL) the [Cancel] button on the File Operation screen.

2.27.21 HORC Script

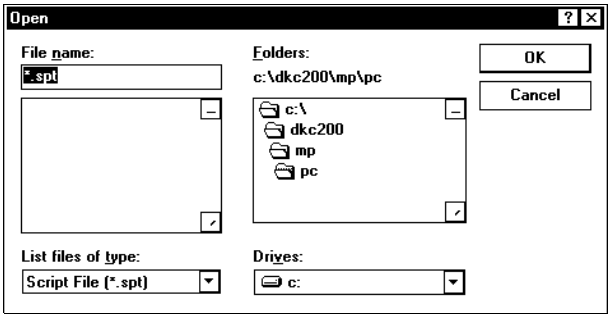
This operation is described how to use HORC Script, HORC Script is a language to describe a series of HORC operation.

1. Display the HORC screen.
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting a function.
   Select (CL) the [Script…] button on the HORC screen to display the Script Monitor Screen.

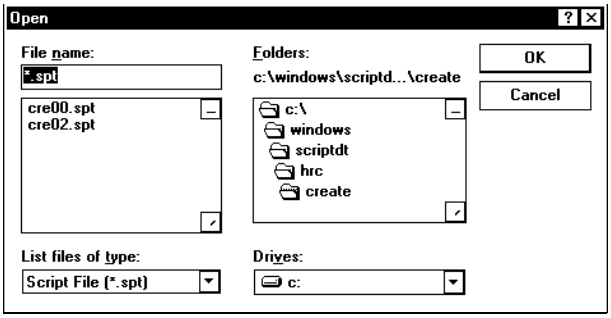


3. Selecting a script file name
   When the Script Monitor screen is displayed, press (CL) the [OPEN] button.



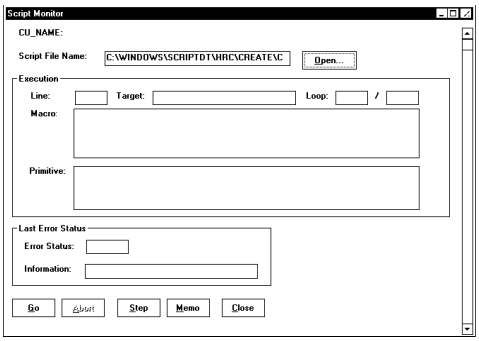
4. Loading a HORC Script file

On the File Selection Screen, perform the following.
Select a HORC Script file, and press (CL) the [OK] button.
A HORC Script file will be loaded.



5. Executing the script

The Script Monitor screen will appear.
Select (CL) the [GO] button to execute the script.



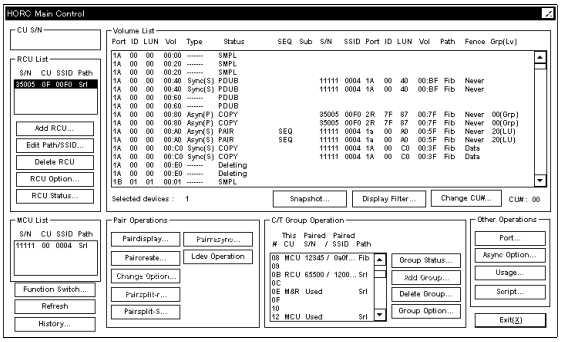
6. End of script

After HORC Script is done, the following message “Normal End” is displayed.
Confirm the message, and press (CL) [OK] button.

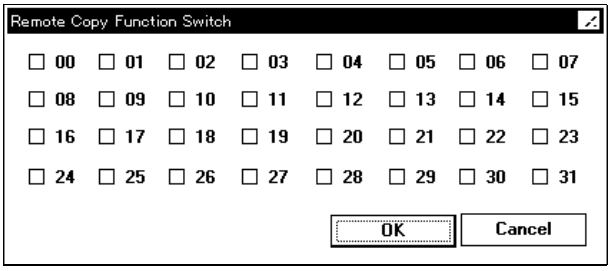
2.27.22 Changing the remote copy functions

This operation changes the remote copy functions.

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.
   The HORC screen will appear.
   Press (CL) the [Function Switch…] button on the HORC screen.



2. Specify the remote copy functions
   The Remote Copy Function Switch screen will appear.
   Specify the check-box indicated at 00 through 31, then press (CL) [OK] button.

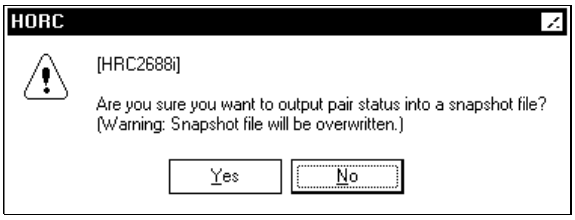


3. Verifying the remote copy functions
   Open the Remote Copy Function Switch screen again, then verify the remote copy functions are specified correctly.
   Press (CL) [Cancel] button to exit this screen.

2.27.23 HORC Snapshot

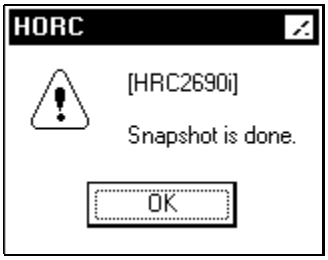
This operation creates or overwrites a text file, in which HORC pairs status is described.

1. Confirmation message
   Select (CL) the [Snapshot] button on the HORC screen.
   The confirmation message will appear.
   If you want to create or overwrite a snapshot file, press (CL) the [Yes] button.



2. End of snapshot
   After HORC snapshot is done, press (CL) [OK] button, and confirm the contents of snapshot file (C:\DKC200\DUMP\SVP\HORCSNAP.TXT).

   Note: All HORC pairs whose status are selected by Display Filter of Main Screen are listed.



A sample snapshot file is as follows:

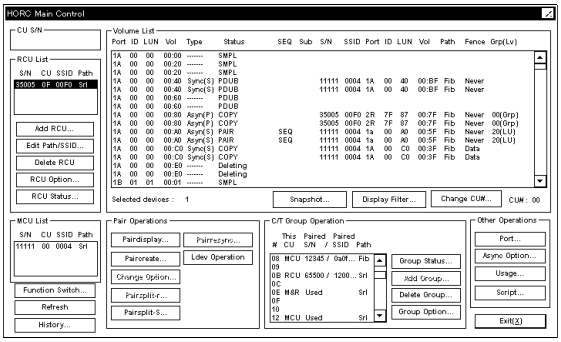
```
 (1)
<Snapshot at 12/20/00 05:30:46>
 (2)          (3)    (4)       (5)        (6)    (7)     (8)          (9)    (10) (11)
Port:Id:Lun Vol    Type     Status     S/N    SSID Port:Id:Lun Vol    Prio Sync
  1A:0F:00  00:00 Sync(P) PAIR       61453 0004   1A:0F:03  00:03 032  100
  1A:0F:01  00:01 Sync(P) PAIR       61453 0004   1A:0F:04  00:04 032  100
  1A:0F:02  00:02 Sync(P) PAIR       61453 0004   1A:0F:05  00:05 032  100
  1A:0F:03  00:03 Sync(S) PAIR       61453 0004   1A:0F:00  00:00
  1A:0F:04  00:04 Sync(S) PAIR       61453 0004   1A:0F:01  00:01
  1A:0F:05  00:05 Sync(S) PAIR       61453 0004   1A:0F:02  00:02
  1B:0F:00  00:06 ------- SMPL
  1B:0F:01  00:07 ------- SMPL
  2B:0F:01  00:07 ------- SMPL
```

(1) The time you have done the snapshot.
(2) “Port:Id:Lun” means the PORT#:ID#:LUN# of the volume shown as “Vol”.
(3) “Vol” means the CU#:LDEV# (CU Number : LDEV Number).
(4) “Type” means the copy mode and volume type of pair.
(5) “Status” means the pair status of the volume shown as “Vol”.
(6) “S/N” means the RCU sequence number of the volume shown as “Vol”.
(7) “SSID” means the SSID (hexadecimal) of the RCU shown as “S/N”.
(8) “Port:Id:Lun” means the PORT#:ID#:LUN# of the volume shown as “Vol”.
(9) “Vol” means the CU#:LDEV# (CU Number and LDEV Number on the destination controller).
(10) “Prio” means the copy priority of the volume shown as “Vol”.
(11) “Sync” means the progress of initial copy.

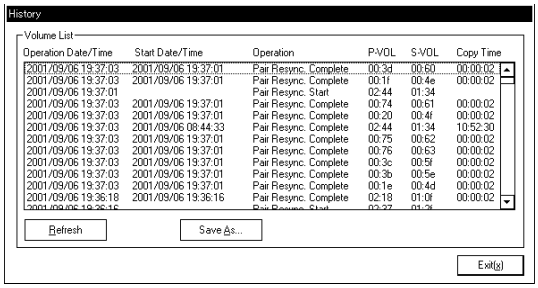
2.27.24 Referring to the History

1. Display the HORC screen
   Select (CL) [HORC] in the 'SVP' window.

2. Selecting an History
   Select (CL) [History…] button in the HORC screen.

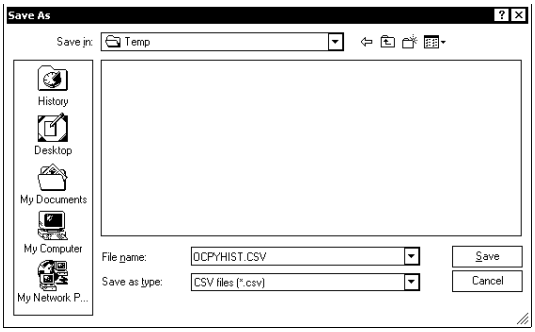


3. Display the History screen
   The History screen will appear.



4. Refresh
   Select (CL) [Refresh] button in the History window.
   The History screen will re-appear.

5. Saving a file
Select (CL) [Save As…] in the History window.
Save as window will appear.



6. Finish of referring history
Select (CL) [Exit] button in the History window.
The History window will be closed.

2.28 Setting Battery Life

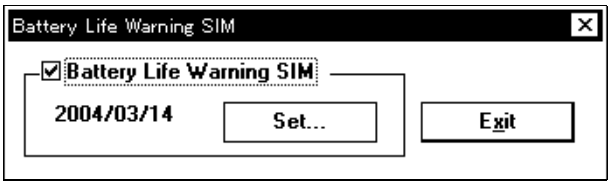
Set the Battery Life warning SIM to prompt to prepare the periodical exchange maintenance of a battery before the lifetime of the battery (3 years) equipped in the Subsystem.
Set the number of days remained until you generate [Battery Life Warning SIM] based on your maintenance plan.

1.

Select (CL) the [Setting Battery Life] menu in the 'Install' window.

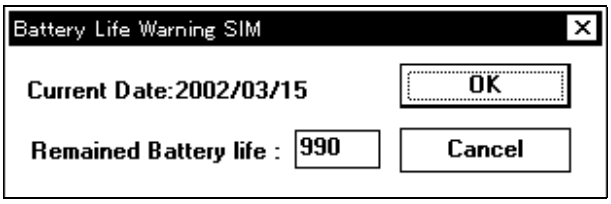
2.

Select [Set...] applying the check to 'Battery Life Warning SIM'.



3.

Select (CL) [OK] after inputting the remainder days until Warning SIM is reported.



Note 1: After executing the periodical exchange of a battery, set 33 months (990 days).

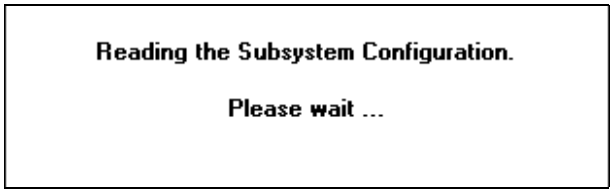
Note 2: Default value is 2 years (730 days), which is a year earlier than the lifetime of a battery (3 years).
Determine the number of days remained based on your maintenance plan.

3 Activating and Terminating STATUS

3.1 Activating STATUS

(1) Select (CL) the [Maintenance] in the 'SVP' window.

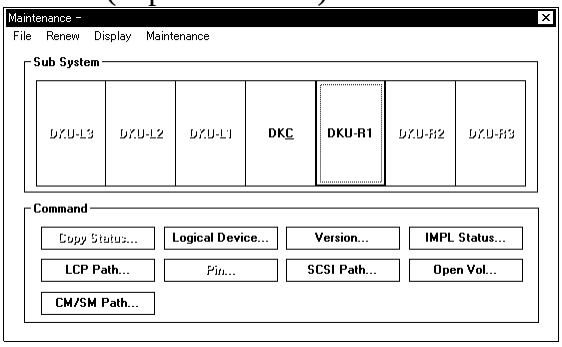
(2) The 'Maintenance' window will appear, on which the message "Reading the Subsystem Configuration. Please wait..." is displayed. Upon completion of reading the system configuration information, go to step (3). If a read
error occurs, go to step (4) or (5).



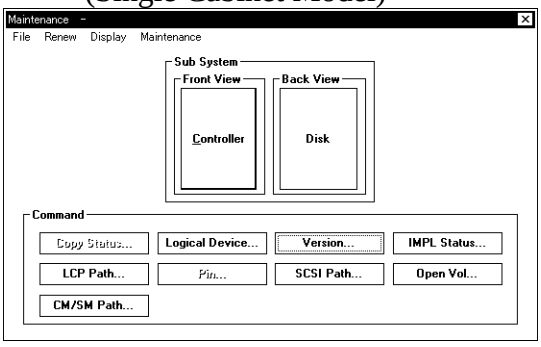
* Please do not change an application's window until SVP-DKC communication finish.

(3) The main screen shown on the right will appear on the 'Maintenance' window, completing activation of STATUS.

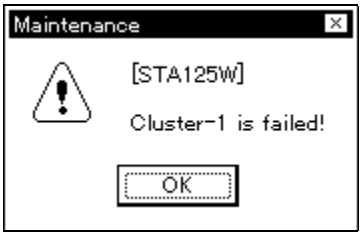
(Separate Model)



(Single Cabinet Model)

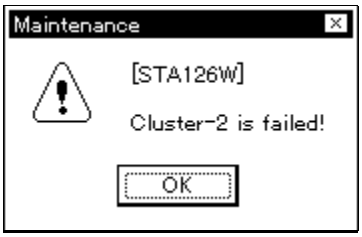


(4) If an error occurs, the nature of error is displayed.
"Cluster X is failed!"
X : 1 or 2
Select (CL) [OK].

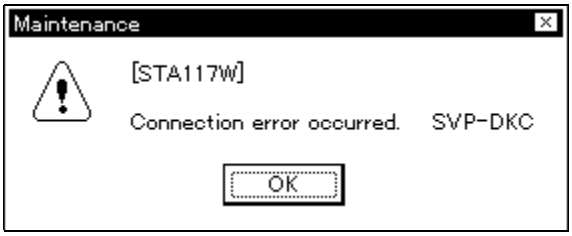


If status of power supplies is failure (refer to step SVP03-20), see TROUBLE SHOOTING SECTION (refer to step 3.2.7 (TRBL03-180)).

If status of power supplies is normal (refer to step SVP03-20), see SVP SECTION (refer to step 2.19 (SVP02-970)).



(5) If an error occurs, the nature of the error is displayed.
① "Connection error occurred. SVP-XXX" is displayed.
XXX : DKC or SSVP
② "Initializing SSVP (Phase X/16) Please Wait"
X : 1~16
③ "SSVP Dump is being performed (Phase X/15). Environment Status Can't be read."
X : 1~15
Select (CL) [OK].

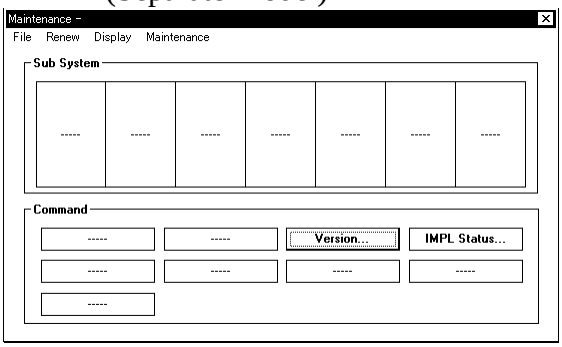


(6) The similar screen as in step (3) will appear, but the buttons are indicated by "-----" to indicate an error.
Terminate STATUS and activate it again.
If the error is not recovered, remove the cause of the error.

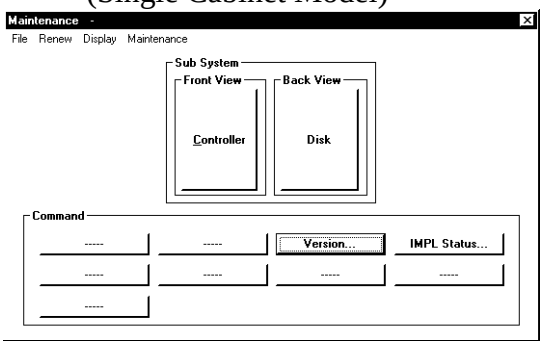
Note :When a communication error has occurred on either the SVP-DKC or the SVP-SSVP, the status that was taken through communication is displayed.
The example on the right is the screen displayed when a SVP-DKC and a SVP-SSVP communication error occurs.

* When a communication error has occurred on either SVP-DKC or SVP-SSVP, refer to the "5.3 Recovery Procedure for LAN Error (TRBL05-60)".

(Separate Model)

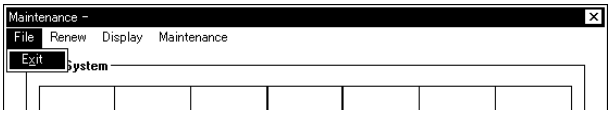


(Single Cabinet Model)



3.2 Terminating STATUS

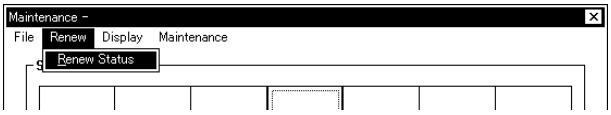
(1) Close the 'Maintenance' window.
Select (CL) [File] - [Exit] in menu bar on 'Maintenance'. (Screen on the right.)
or
Select (DC) Control Box at the left on the title bar.
or
Select (CL) Control Box - [Close].



3.3 Updating the STATUS display

The STATUS display remains unchanged while the screen is displayed or being switched.
To display the latest status, follow the procedure below.

(1) Select (CL) [Renew] - [Renew Status] in the menu bar on the main screen. (Screen on the right)



or

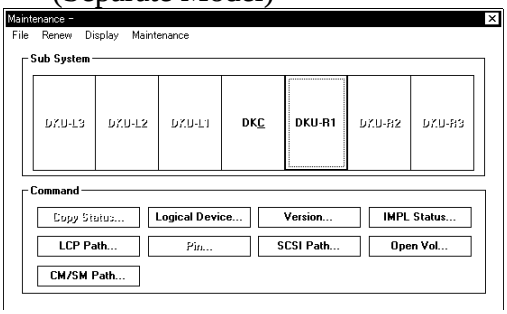
(2) Terminate STATUS and activate it again.

* When a communication error has occurred on either SVP-DKC or SVP-SSVP, terminate STATUS and activate it again.
If the error is not recovered, refer to the "5.3 Recovery Procedure for LAN Error (TRBL05-60)".

3.4 Main screen

After STATUS is activated, the buttons on the 'Maintenance' window indicate each status as follows.

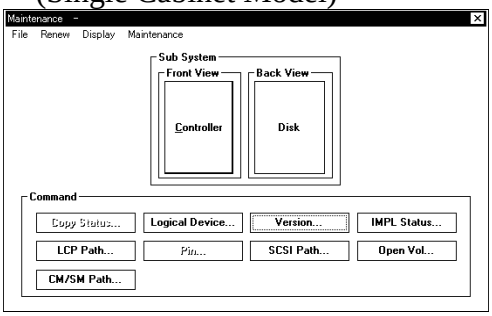
(Separate Model)



DKC ..... Status of the DKC (Details are displayed on the lower layered screen.)
- Valid button : Normal
- Blinking button : Failure or under maintenance

DKU-R1,R2,R3,L1,L2,L3 ..... Status of the DKU (Details are displayed on the lower layered screen.)
- Valid button : Normal
- Blinking button : Failure or under maintenance or during a copy operation
- Invalid button : Non-mounted

(Single Cabinet Model)



Controller ..... Status of the Controller (Details are displayed on the lower layered screen.)
- Valid button : Normal
- Blinking button : Failure or under maintenance

Disk ..... Status of the Disk (Details are displayed on the lower layered screen.)
- Valid button : Normal
- Blinking button : Failure or under maintenance or during a copy operation
- Invalid button : Non-mounted

Copy Status ..... Status of copy work
- Blinking button : Copy work is in progress. (Details are displayed on the lower layered screen.)
- Invalid button : Copy work is not performed. (The lower layered screen is not provided.)

Logical Device .. Logical device information is displayed on the lower layered screen.
- Valid button : Normal
- Blinking button : Failure or vender maintenance.

Version ..... Version information on the micro-program is displayed on the lower layered screen.

SCSI Path ..... SCSI Path definition is displayed.

Pin ..... Pinned Track is displayed.

IMPL Status ..... IMPL Sequence codes each MP are displayed.

LCP Path ..... LCP Path information is displayed on the lower layered screen.

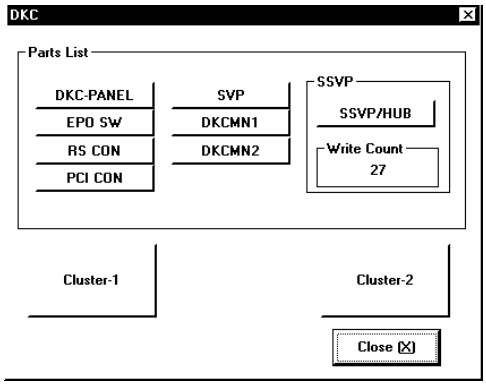
Open Vol..... Open Volume information is displayed on the lower layered screen.
Valid button : Normal
Blinking button : Failure or vender maintenance.
No displayed : Non open volume
CM/SM Path ..... CM/SM Path information is displayed on the lower layered screen.

The menus in the menu bar are explained below.

Renew ..... The configuration information is read. The status display is updated.(Select (CL) [Renew] - [Renew Status].)
File ..... The pull-down menu to terminate STATUS appears.
Selecting (CL) [Exit] terminates STATUS.
Display ..... The pull down menu and select (CL) [PCBs Cluster1] or [PCBs Cluster2]. The 'Cluster' window will appear.

3.5 DKC (Controller)

(1) Status of DKC (Controller)
Select (CL) [DKC] ([Controller]) on the main screen.
The 'DKC' ('Controller') window will appear.



DKCMN-1 ----- Status of DKCMN-1 and
DKCMN-2 DKCMN-2
Valid button : Normal
Blinking button : Failure

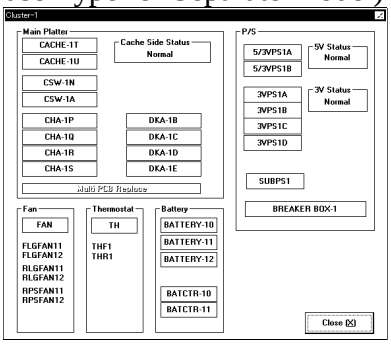
Cluster-1 ------- Status of Cluster-1 and Cluster-2 (Details are
Cluster-2 displayed on the lower layered screen.)

DKC Panel ---- Only parts names are displayed.
EPO SW
SVP
SSVP/HUB
RS CON
PCI CON

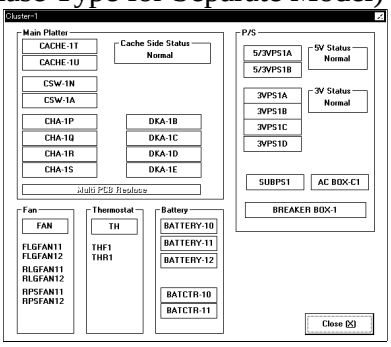
Write Count --- Memory write Count of SSVP is display.

(2) Status of Cluster-1 and 2
Select (CL) [Cluster-1] or [Cluster-2] in the 'DKC' window.
The 'Cluster-1/2' window will appear.

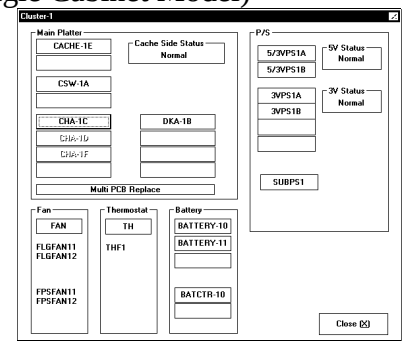
(3-Phase Type for Separate Model)



(1-Phase Type for Separate Model)



(Single Cabinet Model)



(ex. Cluster-1)

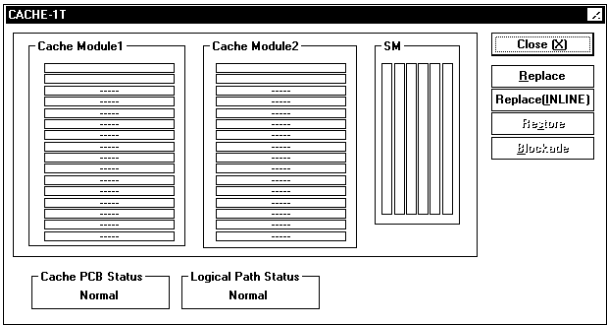
3VPSn0 --- Status of the power supplies
5V/3VPSn0 Valid button : Normal
3VPSn1 Blinking button : Failure
5V/3VPSn1
3VPSn2
3VPSn3
SUBPS
BREAKER BOX - Only Breaker Box names are displayed.
AC BOX ---------- Only AC Box names are displayed.
5V Status ---------- Status of the 5 voltage
3V Status ---------- Status of the 3 voltage
• Normal
• Warning (abnormal)
FLGFANn1 ----- Status of the fans
FLGFANn2 Valid button : Normal
RLGFANn1 Blinking button : Failure
RLGFANn2
RPSFANn1
RPSFANn2
THFn ---------- Status of the temperature
THRn Valid button : Normal
Blinking button : Abnormal
BATTERY-n0 ---- Status of the expanded power supplies
BATTERY-n1 Valid button : Normal
BATTERY-n2 Blinking button : Abnormal
BAT-CTR-n0
BAT-CTR-n1
Cache Side Status ---- Status of the Cache Side
• Normal
• Warning (abnormal)
• Failed (blocked due to a failure)
• Blocked (blocked for maintenance)
CACHE-nx --- Status of Cache (Details are displayed on the lower layered screen.)
Valid button : Normal
Blinking button: Failure or under maintenance
Invalid button : Non-mounted

CHA-nx -------- Status of the CHA (Details are displayed on the lower layered screen.)
Valid button : Normal
Blinking button: Abnormal
Invalid button : Non-mounted
DKA-nx -------- Status of the DKA (Details are displayed on the lower layered screen.)
Valid button : Normal
Blinking button: Abnormal
Invalid button : Non-mounted

The number n is 1 for cluster 1 or 2 for cluster 2.

(3) Status of each PCB (Cache)
Select (CL) one of [Cache-nxx/nx] in the 'Cluster-1/2' window.

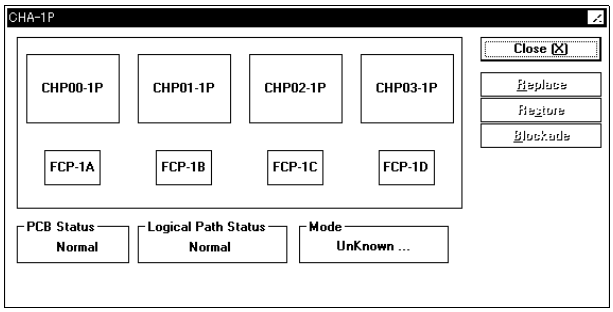
The window for the selected PCB will appear.
The same configuration is used for all PCBs.



Cache Module ------- Status of the cache memory module (Displayed for each module group)
Valid button : Normal
Blinking '*' in the button : Failure
'--' displayed in the button : Non-mounted
SM ---------- Status of the shared memory module
Valid button : Normal
Blinking '*' in the button : Failure or under maintenance
'¦' displayed in the button : Non-mounted
PCB Status ---------- Status of this package
Valid button : Normal
Blinking button: Warning (abnormal)
: Blocked (blocked for maintenance)
: Failed (blocked due to a failure)
: Cache Access Error (PCB blocked and CMG normal)
Logical Path Status -- Status of PCB Logical Path
• Normal
• Warning (abnormal)
• Blocked (blocked for maintenance)
• Failed (blocked due to a failure)

(4) Status of the CHA

Select (CL) one of [CHA-nx] in the 'Cluster-1/2' window. The 'CHA' window will appear. The CHA part location number is displayed in the title.



CHPX-XX Status of program CHP in the CHA
- Valid button : Normal
- Blinking button : Failure

LCPXX ---- Status of program LCP in the LCM
- Valid button : Normal
- Blinking button : Failure
- Invalid button : Non-mounted

FCP XX --- Status of processor FCP
- Valid button : Normal
- Blinking button : Failed or Blocked (status displayed under FCP button)
- Invalid button : Non-mounted

HTP XX --- Status of processor HTP
- Valid button : Normal
- Blinking button : Failed or Blocked
- Invalid button : Non-mounted

PCB Status Status of the CHA package
- Normal
- Warning (abnormal)
- Blocked (blocked for maintenance)
- Failed (blocked due to a failure)

Logical Path Status --- Status of PCB Logical Path
- Normal
- Warning (abnormal)
- Blocked (blocked for maintenance)
- Failed (blocked due to a failure)

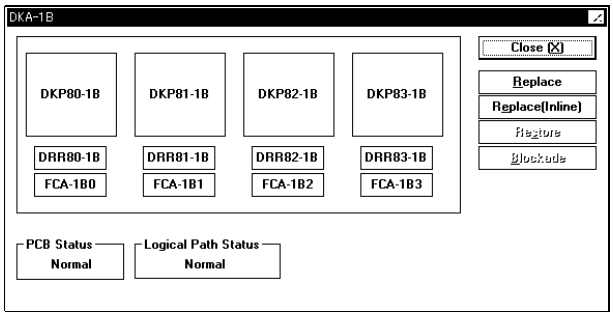
Mode ------ Mode of the CHA package
- Standard
- High Speed to Standard
- Standard to High Speed
- High Speed

(5) Status of the DKA

Select (CL) one of [DKA-nx] in the 'Cluster-1/2' window. The 'DKA' window will appear.

DKPX-XX Status of programs DMP and DSP in the DKA

Valid button : Normal
Blinking button : Failure or under maintenance



FCA-XXX Status of the FCA (No. 0 ~ 3)

PCB Status Status of the DKA package

- Normal
- Warning (abnormal)
- Blocked (blocked for maintenance)
- Failed (blocked due to a failure)

DRR-XX -- Status of DRR

Valid button : Normal
Blinking button : Failure

Logical Path Status --- Status of PCB Logical Path

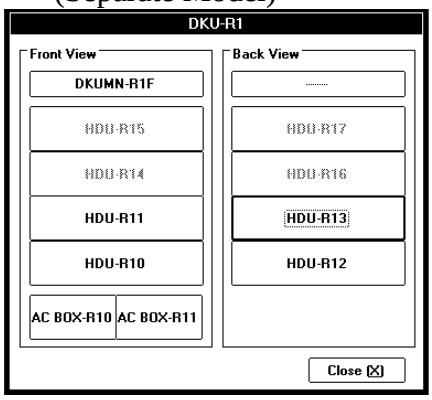
- Normal
- Warning (abnormal)
- Blocked (blocked for maintenance)
- Failed (blocked due to a failure)

3.6 DKU (Disk)

(1) Status of the DKU (Disk)

Select (CL) [DKU-R1] , [DKU-R2] , [DKU-R3] , [DKU-L1] , [DKU-L2] or [DKU-L3] (Disk) in the main screen. The 'DKU' ('Disk') window will appear. The DKU (Disk) part location number is displayed in the title.

(Separate Model)

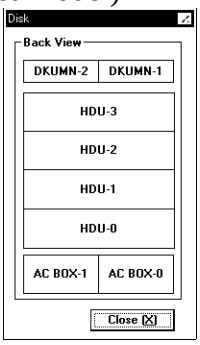


HDU-XXn Status of the HDUs constituting the selected DKU (Disk)

HDU-n ---- (Details are displayed on the lower layered screen.)

- Valid button : Normal
- Blinking button: Failure or under maintenance or copy work in progress
- Invalid button : Non-mounted

(Single Cabinet Model)

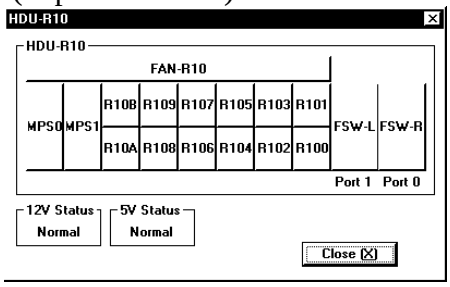


DKUMN-XXF - Status of DKU monitor
DKUMN-XXR Valid button : Normal
DKUMN-n Blinking button : Failure
AC BOX-XXn -- Only AC BOX names are displayed.
AC BOX-n
XX represents XX in DKU-XX: for example, R1 for DKU-R1 and L2 for DKU-L2.

(2) Status of the HDU

Select (CL) one of [HDU-XXn] ([HDU-n]) in the 'DKU' ('Disk') window. The 'HDU' window will appear.

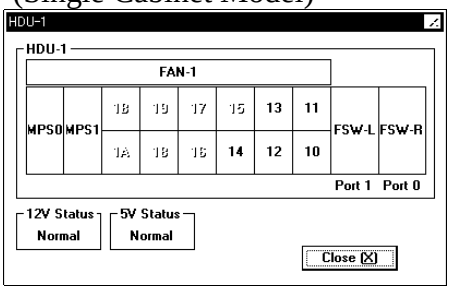
(Separate Model)



XXn ---------- Status of the HDDs constituting the HDU nn (Details are displayed on the lower layer screen.)

- Valid button : Normal
- Blinking button : PDEV error, failure, or under maintenance Blocked port Copy work in progress
- Invalid button: Non-mounted
- " ---- "button : No information due to SVP-DKC error

(Single Cabinet Model)

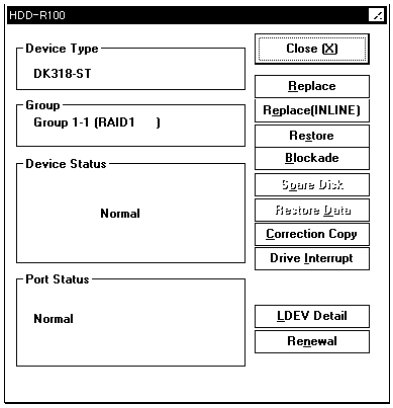


MPS0 -------- Status of the HDU power supplies
MPS1 Valid button : Normal
Blinking button : Failure
" ---- "button : No information due to SVP-SSVP error

FAN-XX0 --- Status of the fans in the HDU
FAN-n Valid button : Normal
Blinking button : Failure
" ---- "button : No information due to SVP-SSVP error
FSW-R ------- Only Fibre switch names are displayed.
FSW-L " ---- "button : No information due to SVP-SSVP error
12V Status -- Status of the 12 voltage
5V Status ---- Status of the 5 voltage
• Normal
• Warning (abnormal)

YYY represents YYY in HDU-YYY: when HDU-R12 is selected, for example, YYY is R12.

(3) Status of the HDD
Select (CL) one of [YYY0] to [YYYB] in the 'HDU' window.
The 'HDD' window will appear.
The HDD part location number is displayed in the title.

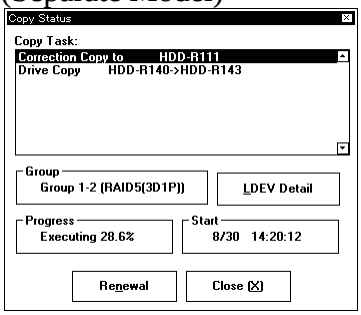


Device Type --- Model name of the HDD
Group ---------- Number of the parity group to which the HDD belongs
LDEV Detail -- The involved logical devices are listed.
Device Status -- The status of the HDD and the work name are displayed.
• Normal
• Correction Copy (xx%)
• Copy Back (xx%)
• Drive Copy (xx%)
• Dynamic Sparing (xx%)
• Blocked (blocked for maintenance)
• Failed (blocked due to failure)
• Warning (Either Port is blocked.)
• Failed (Both Ports are blocked.)
• Free (available spare disk.)
• Reserved (not available spare disk. The spare disk is reserved.)
During a copy operation, copy destination/copy source is displayed.
• to HDD-xx : Data is copied form this drive to HDD-xx.
• from HDD-xx : Data is copied from HDD-xx to this drive.
Port Status ----- Port status
• Normal
• Warning (Port 0 failed): port 0 is blocked.
• Warning (Port 1 failed): port 1 is blocked.
• Failed: Both ports are blocked.

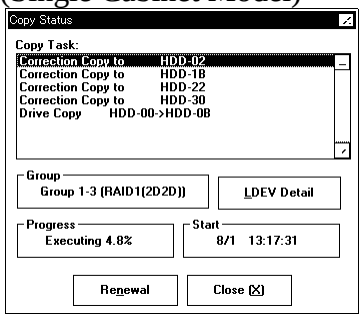
3.7 Copy status

(1) Select (CL) [Copy Status] in the main screen.
The 'Copy Status' window will appear.

(Separate Model)



(Single Cabinet Model)



Copy Task The operations of the drive copy currently running are listed.
- Correction Copy to HDD-XXXX
- Dynamic Sparing HDD-XXXX->HDD-XXXX
- Copy Back HDD-XXXX->HDD-XXXX
- Drive Copy HDD-XXXX->HDD-XXXX

Group ------ Number of the parity group to which the target drive belongs.

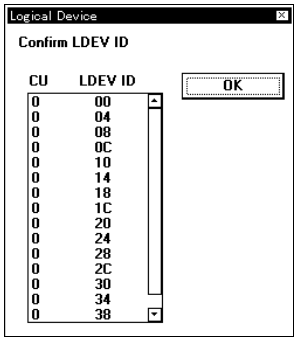
Start -------- Date and time when the job started

Progress --- Degree of job progress (indicated in percent)

Select (CL) one job item from the list. And select (CL) [LDEV Detail] in the 'Copy Status' screen. The following information concerning the selected LDEV ID will be displayed:

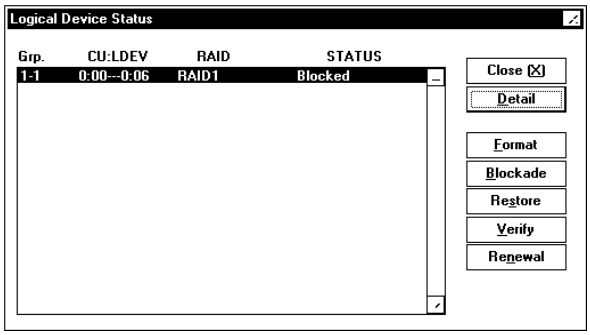
CU --------- CU ID

LDEV ID -- Logical Device ID



3.8 Logical device

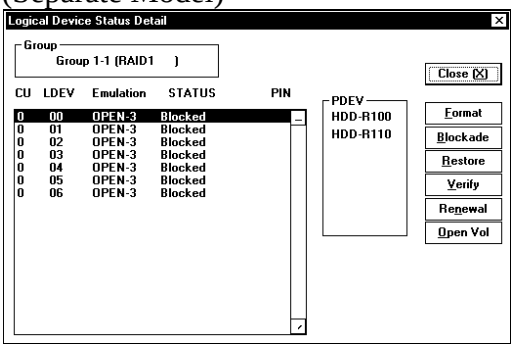
(1) Select (CL) [Logical Device] in the main screen. The 'Logical Device Status' window will appear.



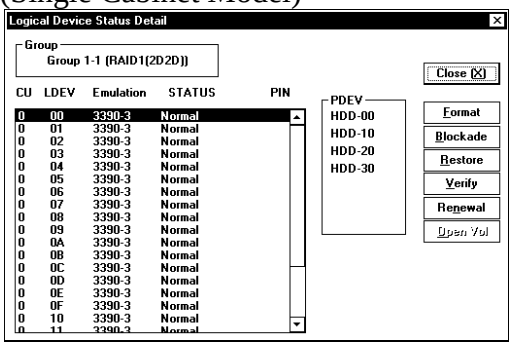
Grp---------- Grp ID
CU:LDEV - List of the mounted logical devices
RAID ------- RAID Level
Status ------- Status of the logical device

Select (CL) a logical device from the list. And select (CL) [Detail] in the 'logical device status' screen. The following information concerning the selected logical device will be displayed:

(Separate Model)



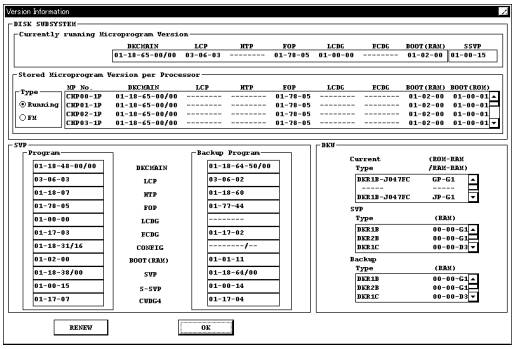
(Single Cabinet Model)



Parity Group--- Parity group to which the Logical Device belongs
PDEV ---------- Number of the HDD including the Logical Device
PIN ---------- If an Ldev has PIN, SVP will indicate the PIN status as '*'.
'*' : PIN occurred.
' ' : Normal (not occurred).

3.9 Micro-program version

Select (CL) [Version] from the main screen.
The message indicating that the version data of the micro-program currently running is being read is displayed, followed by the message indicating that the version data of the disk drive is read. Finally, the message indicating that the version data of the micro-program in the processor is being read is displayed.
Then, the 'Version Information' dialog box is displayed.



* Please do not change an application's window until SVP-DKC communication finish.

DISK SUBSYSTEM area : Displays the version of the currently running micro-program.
- Representative version
- Version of each processor

SVP area : Displays the version of the micro-program saved in the SVP.
- Latest version in the SVP
- Old version in the SVP

DKU area
- Drive version

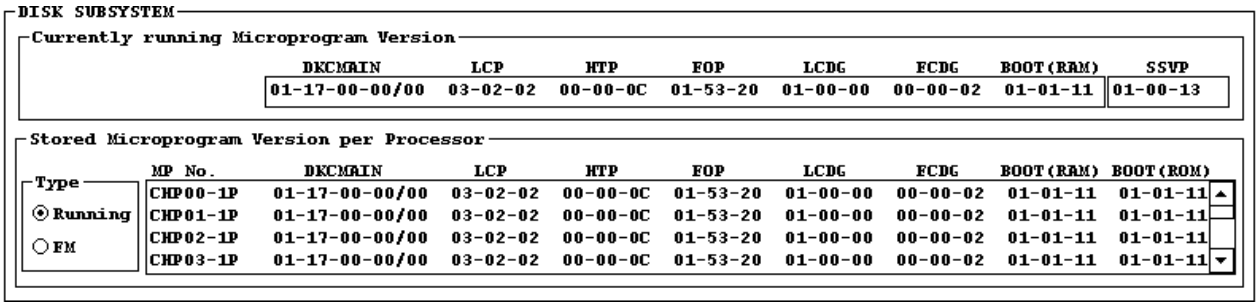
In the version display areas, a hyphen "-" indicates that micro-program is not installed.
In the version display areas, a question mark "?" indicates that version data could not be obtained while the letter "x" indicates that the obtained data is invalid.

If the version of the PCB which has already been installed is displayed as "x", please exchange the micro-code corresponding to "x" by micro FC (refer to MICRO-FC SECTION 4.4 Hard Disk Download (MICRO-FC04-160)).

To obtain new version data, select (CL) [RENEW]. The contents of the display will be updated accordingly.

To quit the version display, select (CL) [OK]. This will take you back to the main screen.

[1] DISK SUBSYSTEM area



(1) Representative version and version for each processor

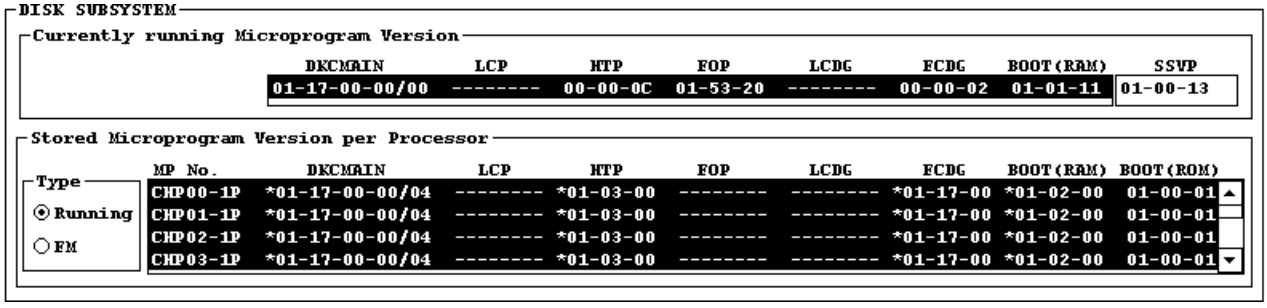
The Currently running Micro-program Version area displays the representative version of micro-program currently running.

The Stored Micro-program Version per Processor area displays the version of the currently running micro-program for each processor.

This parameter specifies the kind of DKCMAIN micro program version. If you select "Running", currently running DKCMAIN micro program version in SM is displayed. If you select "FM", DKCMAIN micro program version in FM is displayed.

A micro-program is divided into eight items: MAIN, LCP, HTP, FOP, LCDG, FCDG, BOOT (RAM), BOOT (ROM). The version of MAIN is displayed in the form of VV-RR-NN-PP/nn. The other versions are displayed in the form of VV-RR-NN.

The representative version may be displayed in reverse video. This display indicates that there is a processor version that does not match the representative version. The processor displayed in reverse video in the Stored Micro-program Version per Processor area is the one that caused a mismatch. An asterisk "*" in front of a version number indicates the mismatching item in the mismatching processor.



(2) Patch status display

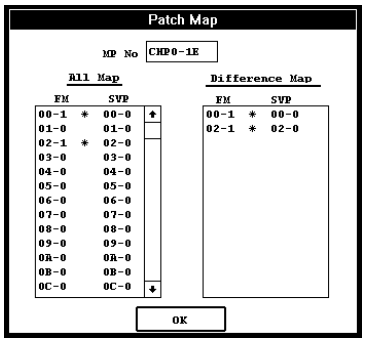
Select the (DC) one line from the list in the Stored Micro-program Version per Processor area on the 'Version Information' dialog box.

'Patch Map' dialog box will be displayed, showing the patch status for the target processor.

MP No ---------- Processor ID

All Map ---------- List of all maps. All maps in the FM and SVP are displayed. When a match is not found between a map in the FM and the corresponding map in the SVP, an asterisk "*" is displayed between them.

Difference Map -- Only the maps which do not provide a match between the FM and SVP in All Map.



The example on the right shows that, in processor CHP0-1E, the contents for patch ID numbers 00 and 02 are contained in the flash memory (FM) but not in the SVP.

To quit the patch status map display, select (CL) [OK].

(3) Drive version

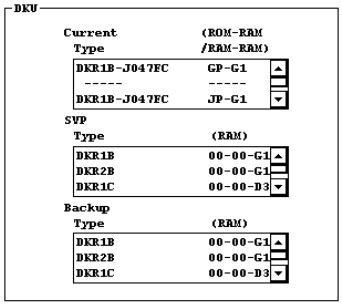
The DKU area on the 'Version Information' dialog box lists drive versions as ROM Version-RAM Version. If types of drives are OEM drives, it lists version as RAM Version (xx-xx) only.

Type : Types of drives currently running (DKxxx).

Current : Version of micro-program currently running.

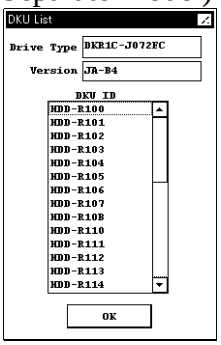
SVP : New version of micro-program stored in SVP hard disk. (00-00-RAM Version)

Backup : Old version of micro-program stored in SVP hard disk. (00-00-RAM Version)



(4) Drive name display

(Separate Model)

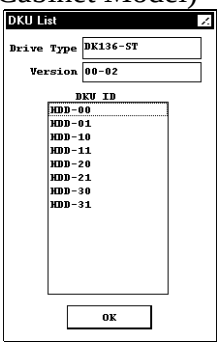


Select (DC) one line from the list in the DKU area on the 'Version Information' dialog box. The 'DKU List' dialog box will be displayed, in which the drive identified by the version are listed.

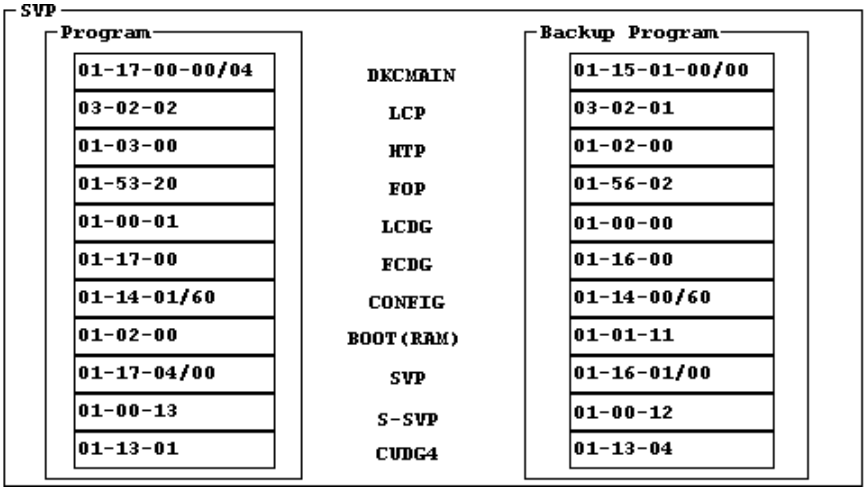
Drive Type- Types of drives identified by the selected version.
Version----- Selected version
DKU ID---- List of IDs of the drives identified by the selected version.

To quit 'Drive List', select (CL) [OK].

(Single Cabinet Model)



[2] SVP area



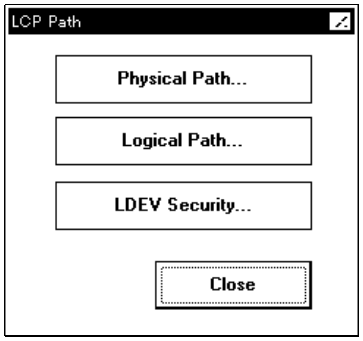
This area displays the versions of two generations (previous and most recent) of micro-programs saved on the SVP hard disk. Each micro-program is divided into eleven items: MAIN, LCP, HTP, FOP, LCDG, FCDG, CONFIG, BOOT (RAM), SVP, S-SVP, and CUDG4. The version of MAIN is displayed in the form of VV-RR-NN-PP/nn while that of SVP, CONFIG is displayed in the form of VV-RR-NN/nn. The other versions are displayed in the form of VV-RR-NN.

Program Version ---------- The latest version is displayed.
Backup Program Version ----- The old version is displayed.

3.10 LCP/MCP Path

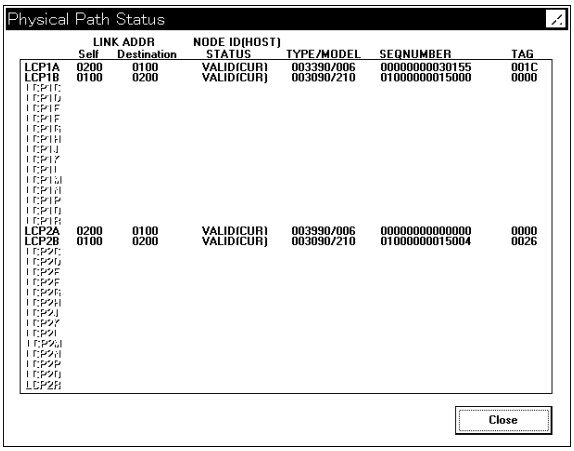
Select (CL) [LCP Path] from the main screen.
The message shown on the right is displayed while the SVP is reading path information from the DKC.

Upon completion of reading the path information, the LCP Path screen is displayed for selecting the physical or logical path.



* Please do not change window until SVP-DKC communication finish.

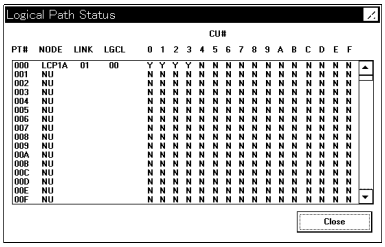
(1) Physical Path
Select (CL) [Physical Path] in the screen.
The 'Physical Path Status' window will appear.



LCPxx/RCPxx ----------LCP/RCP mount position
LINK ADDR
Self ---------- LCP/RCP link address
Destination -------- Connection destination (host) link address
NODE ID (HOST)
STATUS ---------- Node ID obtainment status
TYPE/MODEL --- Connection destination type/model name
SEQNUMBER ---- Connection destination production number
TAG ---------- Connection destination tag

To exit the display, press [Close].

(2) Logical Path
Select (CL) [Logical Path] in the screen.
The 'Logical Path Status' window will appear.



PT# --------Path number
NODE-----LCPxx : LCP to which the logical path is allocated
RCPxx : RCP to which the logical path is allocated.
NU : Unused logical path
LINK ------Link address of the connected host
"NA" is displayed when the RCP is specified.
LGCL------Logical address of the connected host.

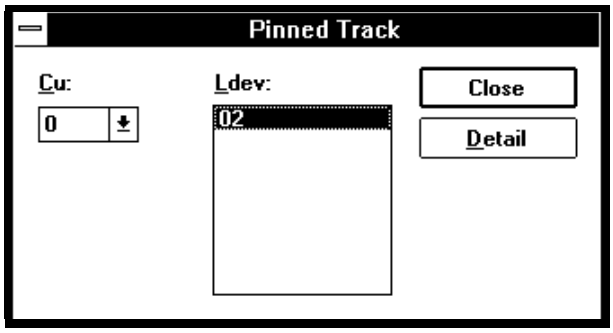
Since data can be displayed only in 16 rows within a screen, use the scroll bar to display data not included in the screen.
To exit the display, press (CL) [Close].

CU#----------Control unit address:
Y : Connected
N : Not connected

(3) LDEV Security
Go to INST05-1060

3.11 Pin

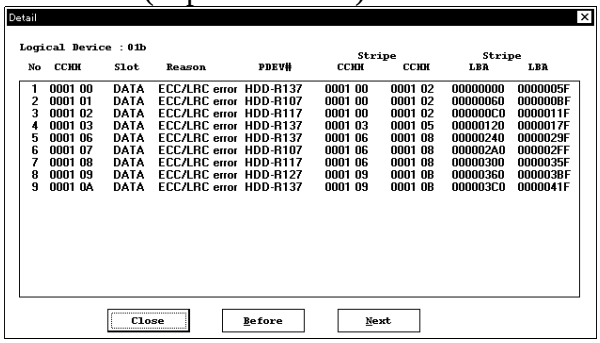
(1) Select (CL) [Pin] in the main screen.
The 'Pinned Track' windows will appear.



CU ---------- CU ID
Ldev -------- Logical device number which PIN exists.

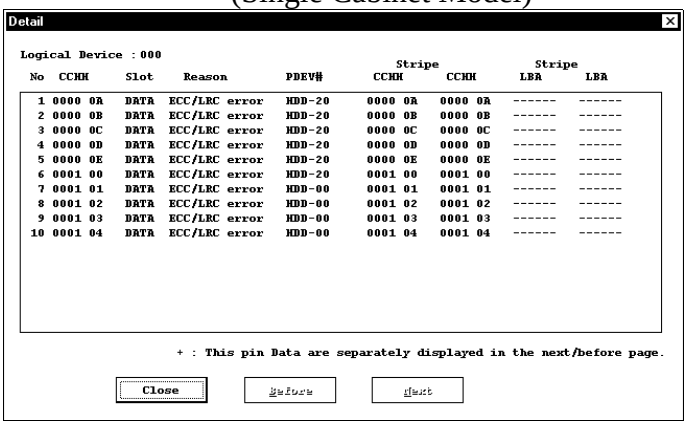
Select (CL) a Ldev from the list. And select (CL) [Detail] in the 'Pinned Track' screen. The following information concerning the selected Ldev will be displayed.

(Separate Model)



CCHH------ Number of cylinder and head which PIN exist.
Slot --------- Kind of Track which PIN exists.
DATA : DATA Track
PRTY : Parity Track
Reason ----- Cause of Pin.
ELC/LRC error : see TRBL04-20
WRITE error : see TRBL04-30
PDEV#----- HDD number which Logical device has PIN.
Stripe ------- The first and the last CCHH of parity stripes.
The first and the last LBA of parity stripes.

(Single Cabinet Model)

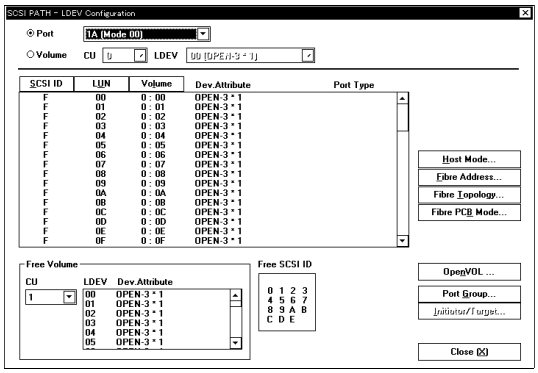


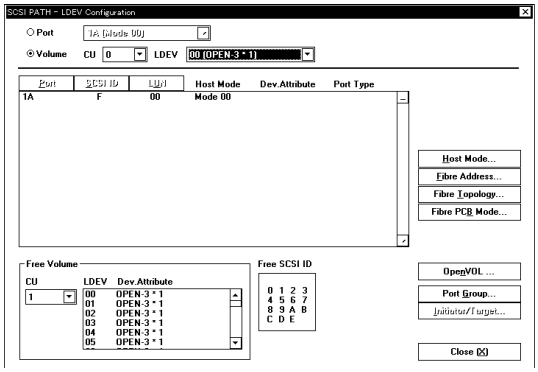
Select (CL) [Next] to display the next PIN detail information.
Select (CL) [Before] to display the before PIN detail information.

3.12 SCSI Path

(1) Status of SCSI Path

Select (CL) [SCSI Path] in the main screen.
The 'SCSI Path-LDEV Configuration' window will appear.

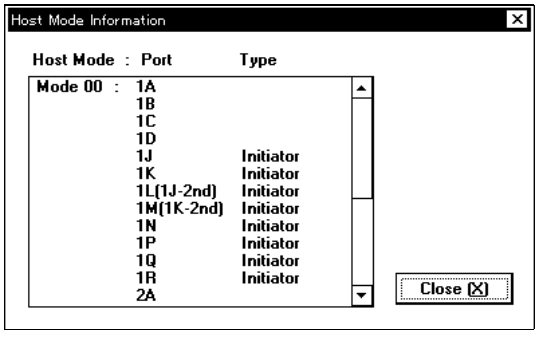




Port list---------- List of the ports installed SCSI and Fibre PCBs
CU:LDEV list-------- List of installed CU:LDEV IDs corresponding to OPEN-LDEV
Port button---------- SCSI paths are sorted increasingly in port number.
SCSI ID button------- SCSI paths are sorted increasingly in ID.
LUN button---------- SCSI paths are sorted increasingly in LUN.
Volume button ------- SCSI paths are sorted increasingly CU:LDEV ID.
SCSI Path list -------- List of defined SCSI paths. The string '[for Cmd. Dev.]' denotes 'Command Device'.
Free SCSI ID area ---------- Unused SCSI IDs
Free Volume list ---------- Unused CU:LDEV IDs
Host Mode button ---------- 'Host Mode Information' window will appear.
Fibre Address button------- 'Fibre-Port Address Information' window will appear.
Fibre Topology button ----- 'Fibre-Topology Information' window will appear.
Fibre PCB Mode button --- 'Fibre PCB Mode' window will appear.
Open VOL button ---------- 'LU Expansion Define' window will appear.
Port Group button ---------- 'Port Group' window will appear.

(2) Status of Host Mode

Select (CL) [Host Mode...] in the 'SCSI Path-LDEV Configuration' window.
The 'Host Mode Information' window will appear.

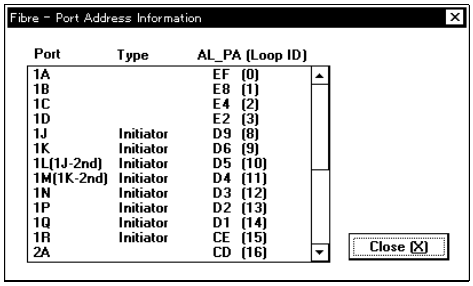


Mode:Port list -------- Displays Host Mode of each port

(3) Status of Port Address

Select (CL) [Fibre Address...] in the 'SCSI PATH-LDEV Configuration' window.
The 'Fibre-Port Address Information' window will appear.

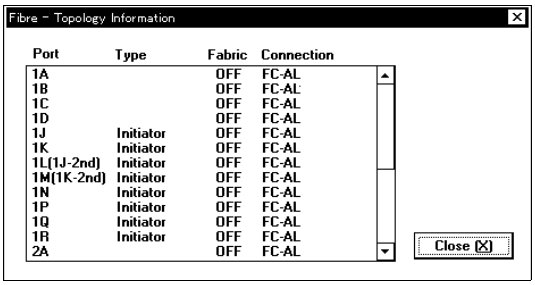
Port Address list ----- Displays address of each port



(4) Status of Topology

Select (CL) [Fibre Topology...] in the 'SCSI PATH-LDEV Configuration' window.
The 'Fibre-Topology Information' window will appear.

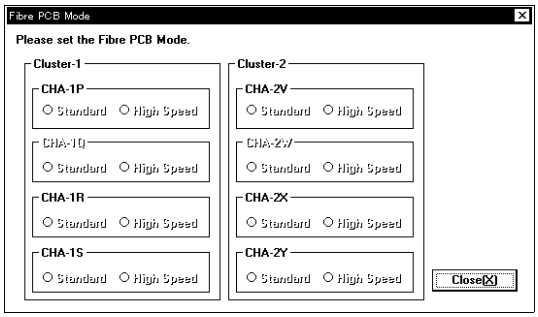
Port Fabric Connection list
---------- Displays Fabric and connection type of each port.



(5) Status of PCB Mode

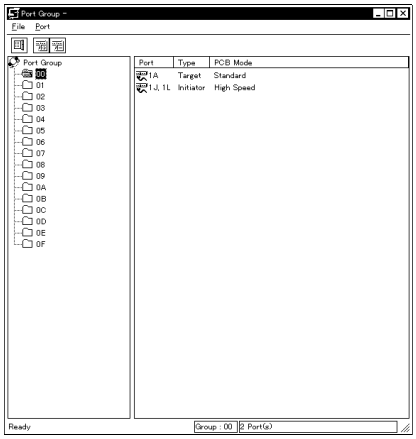
Select (CL) [Fibre PCB Mode…] in the 'SCSI PATH-LDEV Configuration' window.
The 'Fibre PCB Mode' window will appear.

Displays Fibre PCB Mode of each CHA PCB.



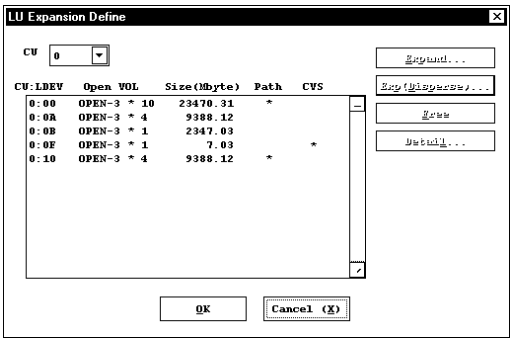
(6) Status of Port Group

Go to INST05-921.



(7) Status of Open VOL

Select (CL) [Open VOL...] button in 'SCSI Path-LDEV Configuration' window.
'LU Expansion Define' window is displayed.



Detail of the list

CU:LDEV : The list is displayed line by line in CU (The selection can be done on CU list).

OPEN VOL : The number of LDEVs connected sequentially together which formalize LU Expansion (Open VOL).
ex.) The first line on the right figure indicates that 10 LDEVs whose emulation type is OPEN-3 are connected together sequentially.

Size (Mbyte) : The capacity of Open VOL

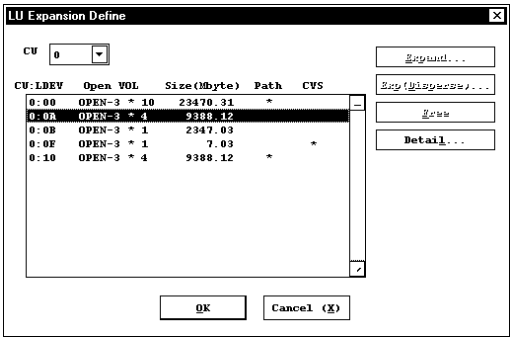
Path : The existence of SCSI path definition to the Open VOL
ex.) In the first line, '*' shows that CU:LDEV=0:00 has a SCSI path definition.

CVS : The existence of CVS definition to the Open VOL
ex.) In the fourth line '*' shows that CU:LDEV=0:0F has a CVS definition.

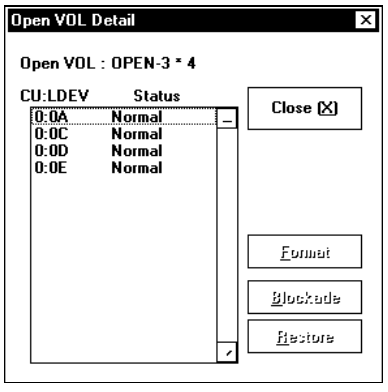
[Detail...] button : To display 'Open VOL Detail' window.

(7.1) Display detail information of Open VOL ('Open VOL Detail' window)

After the selection (CL) of LDEV at 'LU Expansion Define' window, select (CL) [Detail...] button.



'Open VOL Detail' window is displayed.



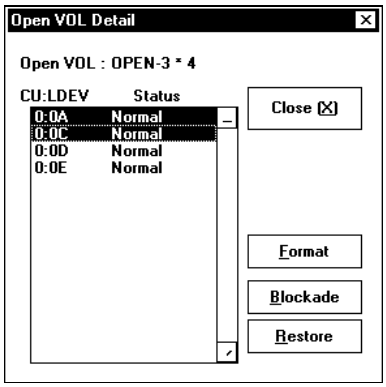
Detail of displayed information

CU:LDEV : CU:LDEV# of LDEV compose Open VOL

Status : Status of CU:LDEV

After selection (CL) of CU:LDEV from the list, maintenance logical device.

[Format] button : Format logical device
[Blockade] button : Block logical device
[Restore] button : Restore logical device

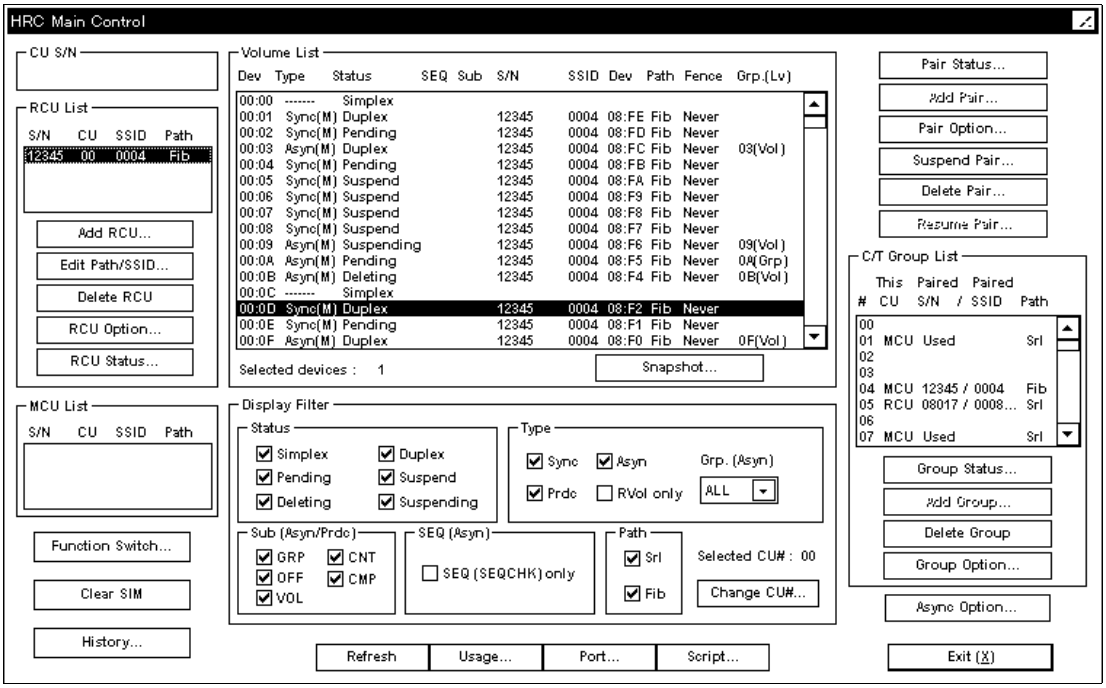


3.13 Error or Failure Status Action

When an error status of, Warning, Failed, or other is displayed on the screen and action is required, locate the part in error and follow the instructions sccording to the action code (ACC). The ACC can be obtained by executing the SSB log or SIM log displayed function of the SVP.

4 References for HRC Operation Screen

4.1 Main screen



RCU List.....This List Box displays Controllers as RCU(Remote disk Control Unit).
"XXXXX XX XXXX XXX"
Serial Number CU# SSID Path Type

MCU List.....This List Box displays Controllers as MCU(Main disk Control Unit).
(Only volume pairing is established.)
"XXXXX XX XXXX XXX"
Serial Number CU# SSID Path Type

Volume List.....This List Box displays valid LDEV(Logical Device) and the pair status.
"XX:XX XXXX(X) XXXXXXX XXX XXX XXXXX XXXX XX:XX XXX XXXX
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

X(XXX)"
⑫

① CU# : LDEV# .....CU address: LDEV address
② Copy Mode.....“Sync” : Synchronous
“Asyn” : Asynchronous
“-” : SIMPLEX Volume
③ Volume Type.....“M” : Main Volume,
“R” : Remote Volume
“ - ” : SIMPLEX Volume

④ Pair status ..... Volume pair status
"Simplex" : Simplex
"Duplex" : Duplex
"Pending" : Pending
"Suspend" : Suspend
"Suspending" : Suspending
"Deleting" : Deleting

⑤ SEQCHK..... If the volume pair is in SEQCHK status, "SEQ" is displayed.

⑥ Sub Status ..... Suspend sub status. "GRP" means the volume pair is suspended by the C/T group entirely.
"VOL" means the volume pair is suspended alone.
"OFF" means the volume pair is suspended by the MCU P/S off.

⑦ Serial Number ..... Serial Number of destination Controller.

⑧ SSID ..... SSID of destination controller.

⑨ CU# : LDEV# ..... Pair CU address : LDEV address.

⑩ Path ..... Path Type
"Srl" : Serial path
"Fib" : Fibre path

⑪ Fence Level ..... LDEV Fence Level

⑫ Grp.(Lv) ..... C/T group#(Error Level)

Snapshot ..... Output HRC pairs status into a text file.

Display Filter ..... Display filter of the Volume List.

• Status
"Simplex" ~ "Suspending" check box ... LDEVs whose status are selected by check box are displayed.
(Note : If "Suspend" check box is not selected, "GRP" ~ "VOL" check box are displayed ineffectively.)

• Type
"Sync" ~ "Asyn" check box .. LDEVs whose synchronous mode are selected by check box are displayed.
(Note : If "Asyn" check box is not selected, "Deleting", "Suspending", "GRP", "OFF", "VOL", "SEQ only" check box and "Grp.(Asyn)" combo box are displayed ineffectively.)

"Grp.(Asyn)" combo box ..... LDEVs whose C/T group# is selected by combo box is displayed.
("ALL" displays all C/T groups.)

• Sub(Asyn)
"GRP" ~ "VOL" check box .. LDEVs whose sub status are selected by check box are displayed.

- SEQ(Asyn)
  "SEQ (SEQCHK) only" check box
  ..... Displays only SEQCHK LDEVs
  "Simplex", "Sync" check box are displayed ineffectively.
  "RVol only" check box ..... Displays only R-Vols
  (Note: "Simplex" check box displayed ineffectively).
- Path
  "Srl"~"Fib" check box ..... LDEVs whose path are selected by check box are displayed.

Change CU# ..... Specifies CU address (CU#) to display the RCU List, the MCU List and the Volume List concerned with the CU.

Clear SIM ..... It will clear SIMs of Remote Copy.

Port Operation

Port ..... Changes the serial port type between LCP and RCP. Changes the fibre port type to Initiator/Target/RCU target.
When the MCU is connected to the RCU with serial port, the MCU side port type must be set to RCP.
When the MCU is connected to the RCU with fibre port, the MCU side port type must be set to initiator.

Path Operation

Add RCU ..... Establishes the path between the MCU and the RCU. When establishing the path, the MCU must register the object RCU first. This function registers the object RCU and establishes the path at a time. When the MCU registers the object RCU successfully, the RCU is added to the RCU list. (Up to 4 RCU units can be registered for one MCU.)

Edit Path/SSID ... Adds/reduces the number of paths or SSIDs to an RCU selected from the RCU list within a range of 1 to 4.

Delete RCU ..... Deletes an RCU selected from the RCU list and the path(s) to the RCU at a time. Before executing this function, all the units paired with the RCU must be set to simplex status.

RCU Option ..... Changes the option for connection to an RCU selected from the RCU list. The connection option can also be specified when the RCU is registered, but this function is used to change the option during operation.

RCU Status ..... Displays the status of an RCU selected from the RCU list. This function can also display the status of each path to the RCU.

Pair Operation

(Note : All pair operations are disabled if the synchronous copy volume pair(s) and asynchronous copy volume pair(s) are selected at the same time.)

Pair Status ..... Displays the status of a volume selected from the volume list. This function is disabled if two or more volumes are selected from the volume list.

Add Pair ..... Creates the HRC pair(s) by making the simplex volume(s) selected from the volume list become the M-VOL(s). Before executing this function, the CU that includes the R-VOL(s) must be registered as the RCU(s). This function is disabled if the volume(s) selected include(s) the volume(s) in the status other than simplex.

Change Option ... Changes the pair option of the volume(s) selected from the volume list. The pair option can also be specified when the pair is created, but this function is used to change the option during the operation. This function is disabled if any volume(s) selected include(s) the simplex, suspending, deleting and remote volume(s).

Suspend Pair ..... Suspends the pair(s) of the volume(s) selected from the volume list. This function is disabled if any volume(s) selected include(s) the simplex, suspend, suspending, and deleting volume(s).

Delete Pair..... Deletes the pair of the volume(s) selected from the volume list.

Resume Pair ..... Resume the pair of the volume(s) (in the suspend status) selected from the volume list. This function is enabled if the selected volume(s) is(are) suspended M-VOL(s).

C/T Group Operation

Group Status. ..... Displays the status of a C/T group selected from C/T group list.

Add Group ..... Assigns the C/T group selected from C/T group list. This function is disabled if the specified if the specified C/T group has already assigned.

Delete Group..... Releases the C/T group selected from C/T group list. This function is enabled if the CU type of the specified C/T group is “MCU” (Displayed “MCU” on the C/T group list).

Group Option ..... Changes the option parameters of the C/T group selected from C/T group list. This function is disabled if the CU type of the specified C/T group is “RCU” (Displayed “RCU” on the C/T group list). Also, the specified C/T group is not assigned, too.

Async Option Operation

Async Option ..... Changes the option parameters of the asynchronous function

Other Functions

Usage. ..... Displays Remote Copy operation control information.

Refresh. ..... Updates information displayed on the screen. Information displayed on the screen is kept as is until this function is executed.

Script..... Executes HRC Script.

Function Switch ..... Set and display remote copy function switches.

History..... Refferring the History window.

Exit..... Exits the operation screen.

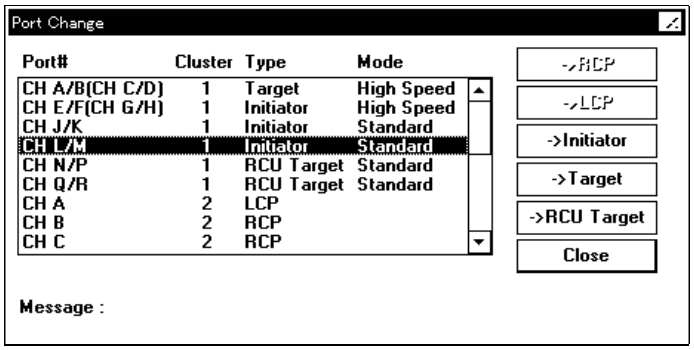
Blank Sheet

Blank Sheet

Blank Sheet

Blank Sheet

4.2 Port... screen



List.....Displays the list of usable serial channels.

CH X X XXX XXX

① ② ③ ④

① Channel ID

Example display by type of the port type.

CHA ..... Serial or 2 port fibre (standard)

CH A/B ..... 4 port fibre (standard)

CH A(CHC) ..... 2 port fibre (high speed)

CH A/B(CH C/D)... 4 port fibre (high speed)

② Cluster ID (1 or 2)

③ Channel type (LCP, RCP, Initiator, Target, RCU Target)

④ Speed (Standard or High Speed, fibre port only)

-> RCP.....Changes the channel type selected from the list to the RCP.

-> LCP .....Changes the channel type selected from the list to the LCP.

-> Initiator.....Changes the channel type selected from the list to the initiator.

-> Target .....Changes the channel type selected from the list to the target.

-> RCU Target.....Changes the channel type selected from the list to the RCU target.

Message .....Displays the progress of each changing process when the Changing function is started.

Checking port# CH X[CL Y] ...

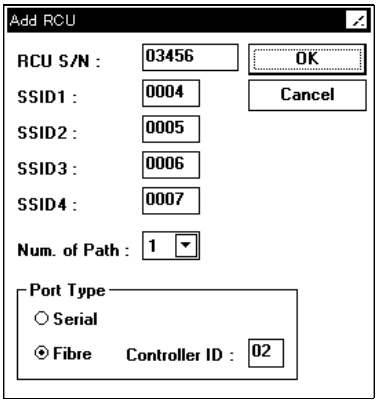
Blocking port# CH X[CL Y] ...

Setting port# CH X[CL Y] ...

Restoring port# CH X[CL Y] ...

4.3 Add RCU... screen

• Specify RCU parameter.



RCU S/N..... Input the Serial number of RCU.
"XXXXX"..... 5 characters. (Use only lower 5 figures in the RCU serial number. Ignore over 6'th figures)

SSID1 ~ 4 ..... Input the SSID of RCU. (Note)
"XXXX"..... 4 hexadecimal digits number.

Num. Of Path..... Specifies the number of path between MCU & RCU.(1 ~ 8)

Port Type ..... Specifies the port type (Serial or Fibre).

Controller ID..... The Controller identification used in WWN.
It is effective only when Fibre is specified for Port Type.

Note: How to Set Up Remote Copy between DKC210I and DKC410I

1. Difference in Setting SSIDs

   Both DKC210I and DKC410I can have different SSIDs for each 64 boundary of LDEV#.

   For DKC210I, only one SSID can be specified. Adding zero, one, two, and three to the specified value, DKC210I generates four consecutive SSIDs. These four consecutive SSIDs are automatically given to LDEVs x'00'-x'3F', x'40'-x'7F', x'80'-x'BF', and x'C0'-x'FF' respectively.

   It is possible for DKC410I to have independent SSIDs for each 64 boundary (or each 128, 256 boundary of LDEV#) of LDEV#.

2. RCU/R-VOL Setting When MCU is DKC210I and RCU is DKC410I

Since DKC210I can accept only one SSID per one RCU, each 64 LDEVs must be registered as a different RCU.

DKC210I expects that SSIDs read from R-VOLs have the same rule as itself because conventional DKC210I can not detect the difference between DKC210I and DKC410I. That is, DKC210I expects that zero, one, two, and three are implicitly added to the registered value for R-VOLs x‘00’-x‘3F’, x‘40’-x‘7F’, x‘80’-x‘BF’, and x‘C0’-x‘FF’ respectively.

Therefore, an operator should subtract one, two, and three from SSIDs set to DKC410I, and enter the result of this subtraction. Note that SSID is defined as 16 bits unsigned hexadecimal value. For example, two subtracted from x‘0201’ leaves x‘01FF’. The result of subtraction is called an “adjusted SSID”.

The table 4-1 shown below describes the summary. Boldfaced italic letters (***A*** to ***E***) denote the values specified by configuration setting. Numbers 1 to 4 in the RCU# column just means that each row should be treated as different RCU.

Table 4-1 RCU/R-VOL Settings to MCU (DKC210I)

Configuration of RCU (DKC410I)			RCU/R-VOL Settings to MCU (DKC210I)			
Serial #	SSID	LDEV #	RCU #	Serial #	SSID	R-VOL #
A	***B***	x‘00’ - x‘3F’	1	***A***	***B*** - *0*	x‘00’ - x‘3F’
A	***C***	x‘40’ - x‘7F’	2	***A***	***C*** - *1*	x‘40’ - x‘7F’
A	***D***	x‘80’ - x‘BF’	3	***A***	***D*** - *2*	x‘80’ - x‘BF’
A	***E***	x‘C0’ - x‘FF’	4	***A***	***E*** - *3*	x‘C0’ - x‘FF’

If the R-VOLs are behind several SSIDs, as many adjusted SSIDs must be registered by separate ADDRCU/ESTPATH operations. The same serial number must be specified. Path parameters (LCP port number and link destination address) may be the same or different.

For ADDPAIR/ESTPAIR, DELPAIR, SUSPEND, and RECOVER operations, the adjusted SSID that the R-VOL belongs to must be specified.

To remove all of the RCU registrations which have been specified to have different SSIDs, as many DELRCU/DELPATH operations are required.

3. RCU/R-VOL Setting When MCU is DKC410I and RCU is DKC210I

DKC410I expects that SSID read from an R-VOL is always identical to the specified value. Therefore corresponding SSID must be explicitly specified including SSIDs automatically generated by DKC210I.

Since DKC410I can handle up to four SSIDs per an RCU, one RCU registration is enough to register all SSIDs of one DKC210I.

The table 4-2 shown below describes the summary. Boldfaced italic letters (A and B) denote the values specified by configuration setting. Number 1 in the RCU# column just means that up to four SSIDs can be set to the same RCU registration.

Table 4-2 RCU/R-VOL Settings to MCU (DKC410I)

Configuration of RCU (DKC210I)			RCU/R-VOL Settings to MCU (DKC410I)			
Serial #	SSID	LDEV #	RCU #	Serial #	SSID	R-VOL #
A	***B***	x‘00’ - x‘3F’	1	***A***	***B***	x‘00’ - x‘3F’
A	*(**B**+ 1)*	x‘40’ - x‘7F’	1	***A***	***B*** *+ 1*	x‘40’ - x‘7F’
A	*(**B**+ 2)*	x‘80’ - x‘BF’	1	***A***	***B*** *+2*	x‘80’ - x‘BF’
A	*(**B**+ 3)*	x‘C0’ - x‘FF’	1	***A***	***B*** *+3*	x‘C0’ - x‘FF’

ADDRCU panel has been modified so that it can accept up to four SSIDs at the time of the RCU registration. EDITSSID panel is also available. It is possible to add new SSID(s) to, or remove SSID(s) from, the RCU registration.

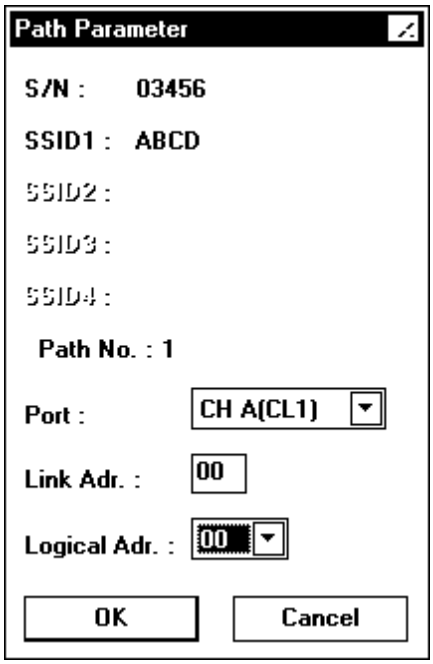
To register several SSIDs by using ESTPATH command, as many separate commands are required. The same serial number must be specified. Path parameters (LCP port number and link destination address) may be the same or different. If the same path parameters are specified, the specified SSID is added to SSIDs of the existing RCU registration. Otherwise, it is registered as a different RCU.

For ADDPAIR/ESTPAIR, DELPAIR, SUSPEND, and RECOVER operations, the actual SSID that the R-VOL belongs to must be specified.

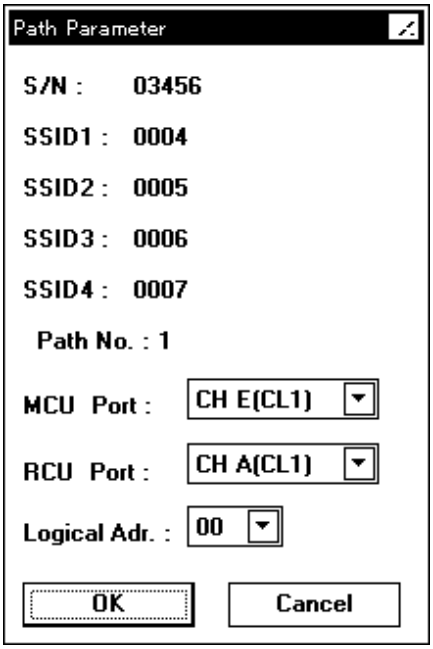
DELRCU operation removes RCU registration. For just removing specified SSID(s) from the RCU registration, EDITSSID panel is available.

DELPATH command removes specified SSID from the RCU registration if more than one SSID have been registered. When the last SSID is removed by DELPATH, the RCU registration is also removed.

• Specify PATH parameter.
Input the RCU parameter, then input the path parameter for each specified path.



(Serial)



(Fibre)

Port(Serial)..... Specified port using as RCP in the Combo Box.

Link Adr.(Serial).. Input the destination link address.
"XX" ..... 2 characters of hexadecimal number. ("00" through "fd")
If RCU is connected to MCU directly without ESCD, specified "00" at the [Link Adr.].
If RCU is connected to MCU with ESCD, specified destination link address at the [Link Adr.].

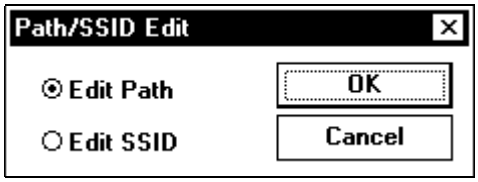
MCU Port(Fibre).. Specify the port using as initiator in the Combo Box.

RCU Port(Fibre)... Specify the port using as RCU target on the RCU side.

Logical Adr. ..... Specified logical address of the destination DKC.
Please select a logical address which are defined as CU images in the RCU.
CU images are:
00 through 0F for Serial
00 through 1F for Fibre

4.4 Edit Path/SSID

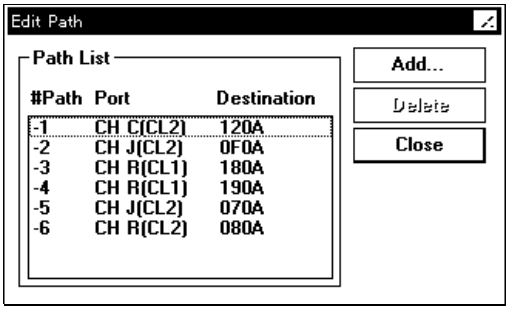
4.4.1 Path/SSID Edit... screen



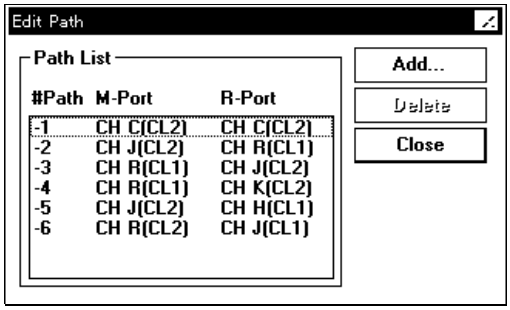
Edit Path ...Adding/reducing the number of paths.

Edit SSID..Adding/reducing the number of SSIDs.

4.4.2 Edit Path... screen



(Serial)



(Fibre)

Path List....Display current path's information.

Serial: "X CH X (CL X) XXXX"
① ② ③ ④

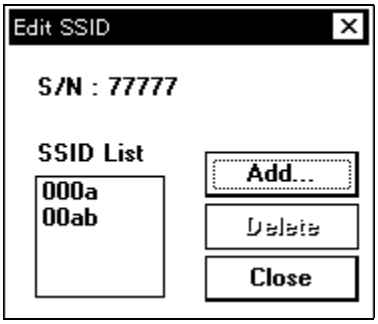
Fibre: "X CH X (CL X) CH X (CL X)"
① ② ③ ④ ⑤

① #Path.....Status(+:Normal -:Abnormal) and Path No.(1 ~ 8)
② #Port.....Port of path creating.(CH A ~ CH R)
③ #Cluster.....Cluster. (1 ~ 4)
④ Destination(Serial) ....Link address (2 hexadecimal numbers) + Logical address (2 hexadecimal numbers)
④ #Port(Fibre).....Port# of path creating on RCU side.
⑤ #Cluster(Fibre).....Cluster# of concerned port on RCU side. (CL1 ~ CL4)

Add... .....Adding new path. (Refer to Add.. RCU-Specified Path Parameter)

Delete.....Deleting the path selected in the Path List.

4.4.3 Edit SSID... screen

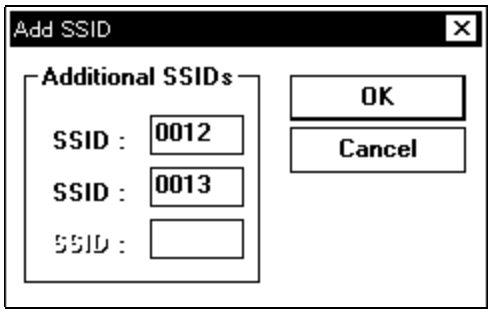


SSID List ..Display current SSIDs information.

Add .....Adding new SSIDs.

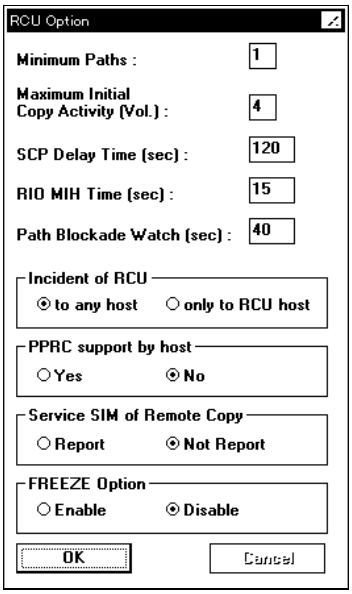
Delete.....Deleting the SSIDs selected in the SSID List.

4.4.4 Add SSID... screen



Additional SSIDs.....To add the SSIDs, input 4 hexadecimal digits numbers.

4.5 RCU Option... screen



Minimum Paths ..... Specifies lowest number of paths needed for continuation of Remote Copy. Defined between 1 to 8.

Maximum Initial Copy Activity (Vol.) ..... Specifies maximum number of Initial copy execution. (First group of defined Remote Copy volume pairs.) Defined between 1 to 4 or 8.

SCP Delay Time [sec] ..... Specifies SCP delay time. Defined between 0 to 600.

RIO MIH Time ..... Specifies RIO MIH time. (10 through 100, default is 15.)

Path Blockade Watch..... Specifies the time to watch the blockade of fibre path. (0 through 45, default is 40.) This parameter can be specified only for fibre path.

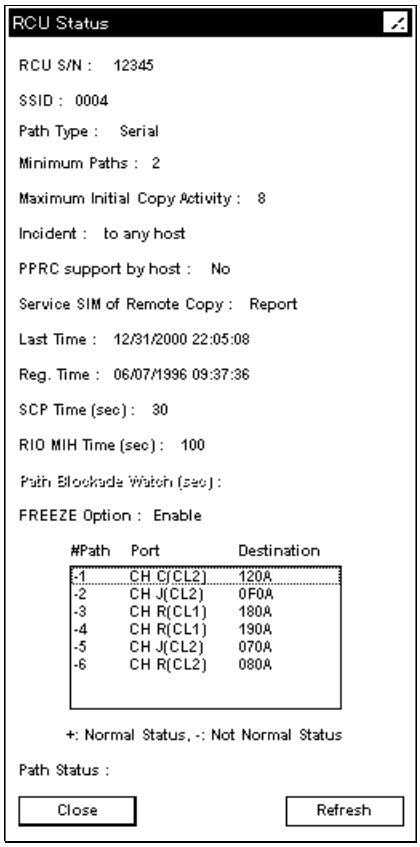
Incident of RCU..... Specifies method for handling Incident that occurs in RCU.
"to any host"..... Incident is reported to MCU host too.
"only to RCU host" ..... Incident is reported to only RCU host .

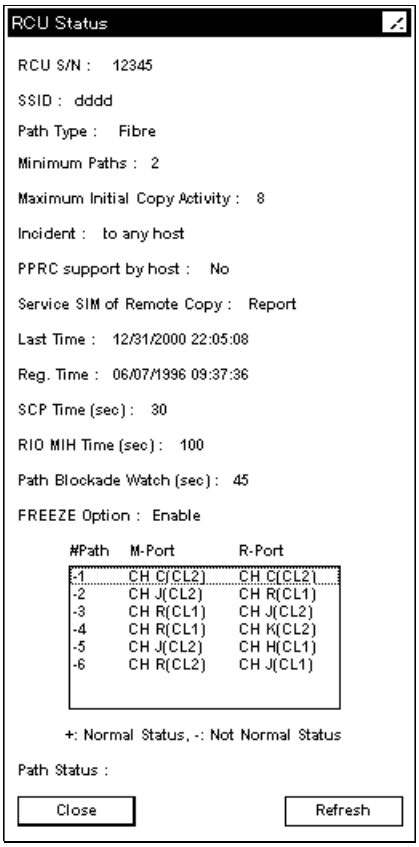
PPRC support by host..... Is PPRC(HRC) supported by RCU host .
"Yes" ..... Supported.
"No" ..... Not supported.

Service SIM of Remote Copy..... Specifies method for handling SIM of Remote Copy.
"Report" ..... SIM is reported.
"Not Report" ..... SIM is not reported.

FREEZE Option ..... Specifies freeze option.
"Enable" ..... Freeze option is enable.
"Disable" ..... Freeze option is disable.

4.6 RCU Status... screen





(Serial) (Fibre)

RCU s# ..... Display Serial number of the RCU.
"XXXXX" ..... 5 decimal digits.

SSID..... Display SSID of the RCU.
"XXXX" ..... 4 hexadecimal digits.

Path Type ..... Display the path type. (Serial or Fibre)

Minimum Paths ..... Display lowest number of paths necessity for continuation of Remote Copy.

Maximum Initial Copy Activity .....Display maximum number of initial copies.

Incident ..... Display method for handling Incident that occurs in RCU.
"to any host" ..... Incident is reported to MCU host too.
"only to RCU host" ..... Incident is reported to only RCU host.

PPRC support by host..... Display PPRC support information of HOST system.
"Yes" ..... PPRC is supported by HOST.
"No" ..... PPRC isn't supported by HOST.

Service SIM of Remote Copy.....Specifies method for handling SIM of Remote Copy.
"Report" .....SIM is reported.
"Not Report" .....SIM is not reported.

Last Time.....Display last update time & date of the RCU.

Reg. Time .....Display registration time & date of the RCU.

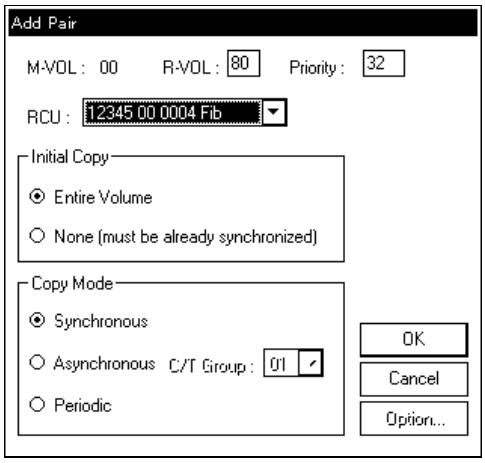
SCP Time [sec].....Display SCP delay time.

FREEZE Option .....Display freeze option.
"Enable" .....Freeze option is enable.
"Disable" .....Freeze option is disable.

Path Status .....Display status of path that selected in list.
If it isn't "Normal", do the recovery action according to TRBL06-190 "Recovery Action of Path Status Error".
"Nothing" ..... No established.
"Normal" ..... The status of path is normal.
"Initialization Failed" ..... Error has occurred in the path initialization.
"Communication Time Out" ..... Communication between MCU and RCU time out.
"Resource Shortage(MCU)"..... Resource at the MCU is short.
"Resource Shortage(RCU)" ..... Resource at the RCU is short.
"Serial Number Mismatch"..... Specified serial number is mismatch.
"Invalid Port" ..... Specified port is invalid.
"RCU Port Number Mismatch" . Specified port of the RCU is mismatch.
"RCU does not support Fibre Remote Copy" ...RCU does not support Fibre Remote Copy function.
"Communication Failed"..... The communication failed.

Refresh.....Refresh displayed information.

4.7 Add Pair... screen



M-VOL ..... Display volume(LDEV) that is MCU side.

R-VOL ..... Specifies volume(LDEV) that is RCU side.
"XX" ..... 2 hexadecimal digits.

Priority ..... Specifies priority of initial copy execution.

RCU ..... Select RCU from the Combo Box.
The list of RCUs currently registered will appear.
XXXXX XX XXXX XXX
① ② ③ ④
① Serial number of RCU
② CU# of RCU
③ SSID of RCU
④ Type of the path
"Srl" ...Serial
"Fib" ..Fibre

Initial Copy ..... Specifies initial copy type. (Valid only for the remote dual copy function.)
"Entire Volume" ..... Specifies all cylinders.
"None" ..... Nothing

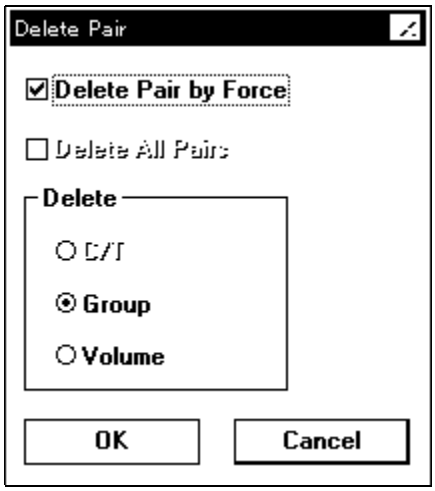
Copy Mode ..... Specifies copy mode. (Valid only for the remote dual copy function.)
"Synchronous" ..... Specifies synchronous copy.
"Asynchronous" ..... Specifies asynchronous copy.

C/T Group..... Select C/T group# from the combo box.
The list of C/T group# (2 hexadecimal digits) currently assigned will appear, except the CU type of the C/T group is not RCU (Displayed as "RCU" in the C/T group list).
This combo box is displayed effectively if the "Asynchronous" is specified.

Option... ..... Specifies pair option item. (Refer to Pair Option...)

4.8 (Blank)

4.9 Delete Pair... screen

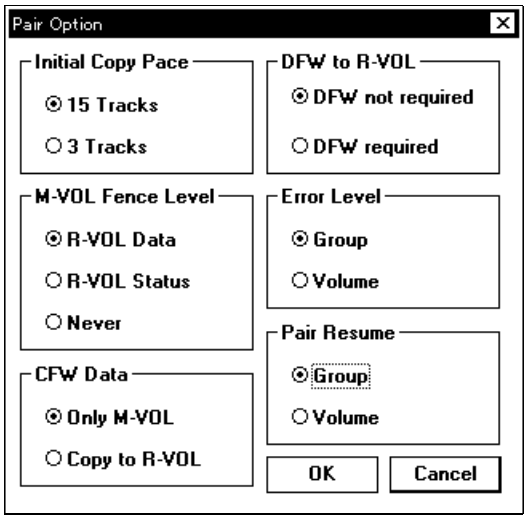


Delete Pair by Force ....Specified forcibly delete mode.
The pair status is deleted even when the communication with the CU is disabled.
(Note : Fixed at forcibly delete mode if the status of the specified volume(s) is(are) suspending or deleting state.)

Delete All Pairs.....To delete all pairs except HRC asynchronous pairs.

Delete.....Select the kind of deletion. (Effective only asynchronous copy pair.)
- C/T.....All volume(s) will be deleted which have the same C/T as the specified volume(s). (Displayed effectively if the specified volume(s) is(are) R-VOL(s).
- Group.....All volume(s) will be deleted which are assigned to the same C/T group as the specified volume(s).
- Volume ...Only specified volume(s) will be deleted.

4.10 Pair Option... screen



Initial Copy Pace.....Specifies Initial copy pace. (Remote Dual Copy)(HRC option)
"15 Tracks"..... 15tracks
"3 Tracks"..... 3tracks

DFW to R-VOL.....Is Remote Dual Copy continued when DFW blockade occurred. (HRC option)
"DFW not required".... When DFW block, Remote Dual Copy do not stop.
"DFW required"..... When DFW block, Remote Dual Copy stop.

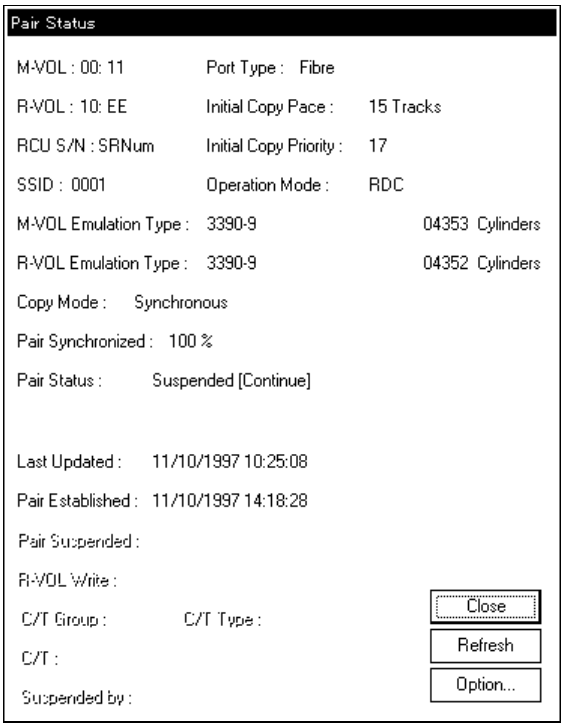
CFW Data.....Is the CFW data on the subject of Remote Dual Copy ? (HRC option)
Displayed ineffectively if the specified volume is asynchronous copy volume.
"Copy to R-VOL"..... Yes
"Only to M-VOL"..... No

M-VOL Fence Level....M-VOL fence level(HRC option)
"R-VOL Data"..... M-VOL fence when data is unmatched
"R-VOL Status"..... M-VOL fence when status can not be changed.
"Never"..... Never fence
(Note : Fixed "Never" if the specified volume is asynchronous copy volume)

Error Level.....The suspension kind when asynchronous pairing is failed. (HRC Option)
Displayed effectively if the specified volume is asynchronous copy volume.
"Group"..... All asynchronous copy volumes under the same C/T group as the specified volume(s) will be suspended.
"Volume"..... Only specified volume(s) will be suspended.

Pair Resume.....The resumption kind of suspended asynchronous copy volume. (HRC option) Displayed effectively when asynchronous copy pair resuming.
"Group"..... All asynchronous copy volumes under the same C/T group as the specified volume(s) will be resumed.
"Volume"..... Only specified volume(s) will be resumed.

4.11 Pair Status... screen



M-VOL ..... Displays CU# : LDEV#(MCU side).

R-VOL ..... Displays CU# : LDEV#(RCU side).

RCU S/N..... Displays serial number of the RCU.

SSID..... Displays SSID of the RCU.

Port Type ..... Displays port type of the RCU.

Initial Copy Pace..... Displays Initial copy pace.
"15 Tracks"..... 15tracks
"3 Tracks"..... 3tracks

Initial Copy Priority..... Displays priority of initial copy execution.

Operation Mode..... Displays pair creative mode.
"RDC" ..... Remote Dual Copy (HRC)

M-VOL Emulation Type ..... Displays M-VOL device emulation type and number of cylinders.

R-VOL Emulation Type ..... Displays R-VOL device emulation type and number of cylinders.

Copy Mode ..... Displays pair synchronous mode.

Pair Synchronized..... Displays progress of initial copy.

Pair Status .....Displays pair status information.
"Simplex"
"Duplex Pending"
"Duplex"
"Suspended(M-VOL by Operator)"
"Suspended(R-VOL by Operator)"
"Suspended(by MCU)"
"Suspended(by RCU)"
"Suspended(Delete pair to RCU)"
"Suspended(R-VOL failure)"
"Suspended(MCU IMPL)"
"Suspended(Initial Copy Failed)"
"Suspended(by FREEZE)"
"Suspended(MCU P/S OFF)"
"Suspending"
"Deleting"

Last Updated .....Displays last update time of pair status.

Pair Established.....Displays registration time the volume pair.

Pair Suspended.....Displays suspension time of the volume pair.

R-VOL Write .....Displays R-VOL write permission status.
"Enable"..... R-VOL write permission is enabled.
"Enable/Received"..... R-VOL write command is received.
"Enable/Not Received".... R-VOL write command is not received.
"Disable" ..... R-VOL write permission is disabled.

C/T Group .....Displays the C/T group# ('00' ~ '3F') of the volume.
(Displayed effectively if the volume is asynchronous copy volume.)

C/T Type .....Displays the timer type of the volume.
(Displayed effectively if the volume is asynchronous copy volume.)
"System" ..... Use the timer of the HOST.
"Local"..... Use the timer of the SVP.
"None" ..... The correctness of the C/T is not guaranteed.

C/T .....Display the consistency time of the volume.
(Displayed effectively if the volume is asynchronous copy volume.)
(Note : If "Overflow" is displayed, the consistency time is after 2042. If "Underflow" is displayed, the consistency time is before 1972.)

[SEQCHK].....Displayed if the volume is in the "SEQCHK" status.

Suspended by ..... Displays the C/T status of the volume.
(Displayed effectively if the volume is asynchronous copy R-VOL.)
"Group" ..... The consistency time of the volume correspond to the C/T group's which the volume belongs to.
"Volume"..... The consistency time of the volume is different from the C/T group's which the volume belongs to.

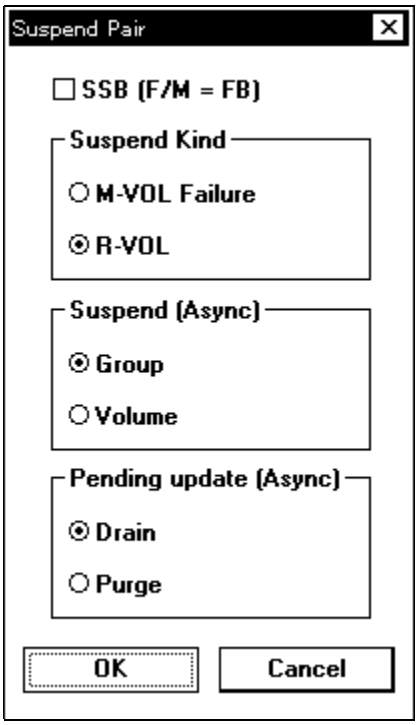
Option... ..... Displays pair option item. (Same to Pair Option...)

Refresh ..... Refresh displayed information.

Blank Sheet

Blank Sheet

4.12 Suspend Pair... screen



SSB (F/M=FB)..... Specifies suspension reporting method.

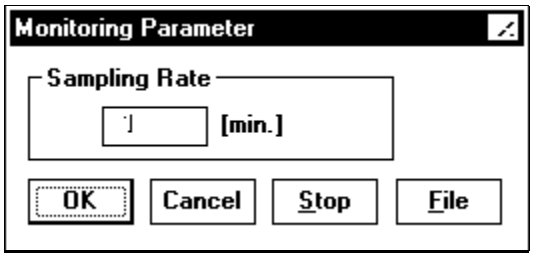
Suspend Kind..... Specifies suspended type.
"M-VOL Failure" ..... M-VOL suspension reported as M-VOL failure
"R-VOL" ..... R-VOL suspension
(Note : Fixed "R-VOL" if asynchronous copy pair suspension.)

Suspend (Async) ..... Specifies suspension kind of asynchronous copy pair(s).
Displayed effectively when asynchronous copy pair(s) suspension.
"Group" ..... All asynchronous copy pairs which belong to the same C/T group as the specified volumes will be suspended.
"Volume"..... Only specified volume(s) will be suspended.

Pending update (Async)... Specifies releasing method of the Record Set.
Displayed effectively when asynchronous copy pair(s) suspension.
"Drain" ..... The pair volume(s) of the specified volume(s) will be updated with pending data in the Record Set.
"Purge" ..... The pair volume(s) of the specified volume(s) will be not updated.

4.13 Usage... screen

Monitoring Parameter

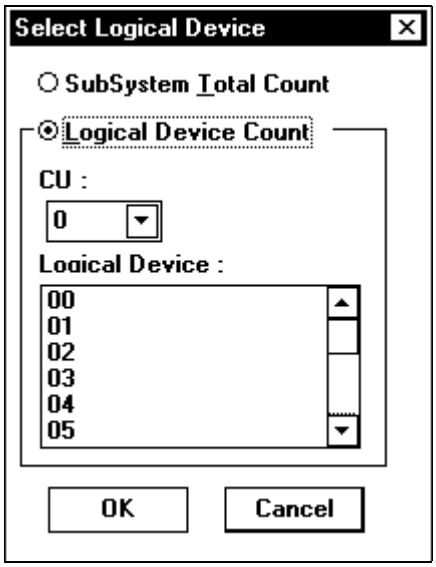


Sampling Rate.... Sets the sampling rate of operation control information within a range of 1 to 546 in steps of a minute.

File..... The saving and the deletion of the operation information data are done.

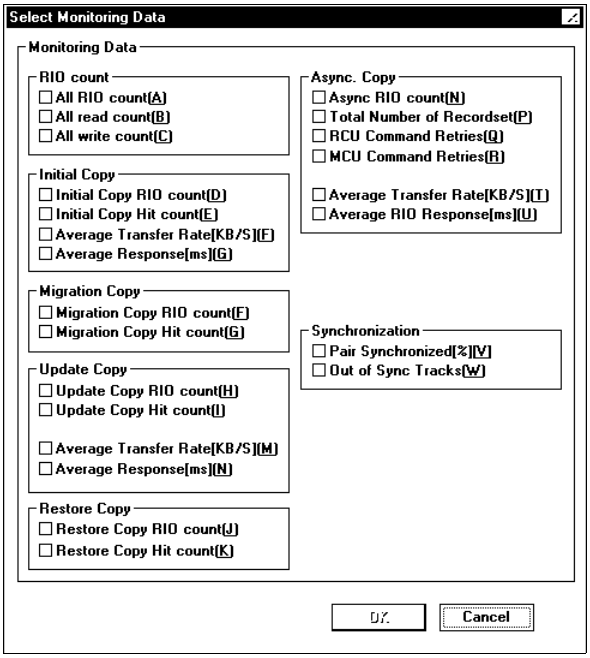
Stop..... The monitor is stopped.

Select Logical Device



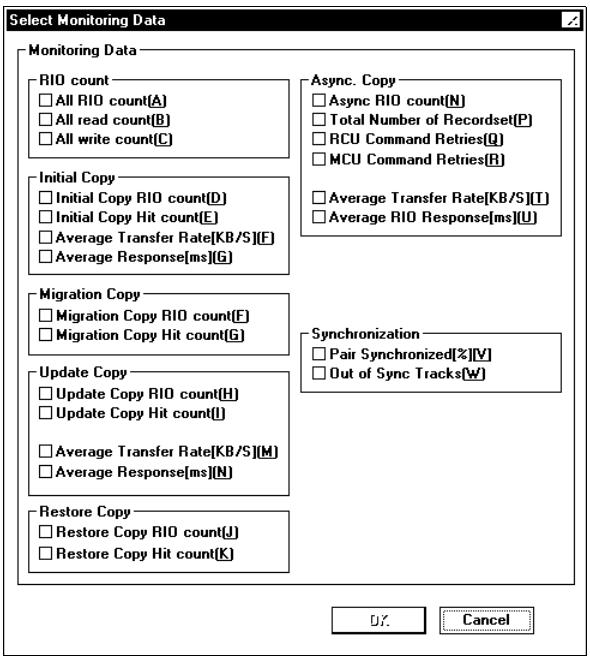
Logical Device:.. Displays the list of logical devices valid in the subsystem. Select the device from the list to display its operation information. To display the operation information of the whole subsystem, select “Sub System”.

Select Monitoring Data
(1) Subsystem



[CAUTION]
• Average Transfer Rate [KB/s]
• Average RIO Response [ms]
• Pair Synchronized [%]
You can’t select above 2 items with other items.

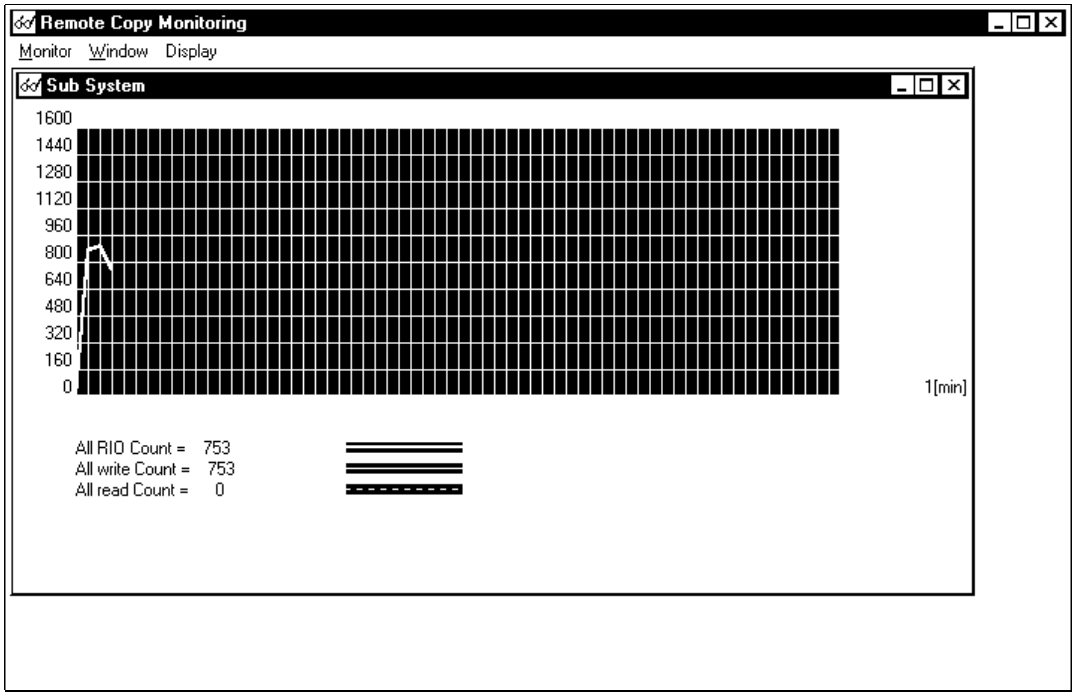
(2) Logical Device for HRC



[CAUTION]
• Average Transfer Rate [KB/s]
• Average RIO Response [ms]
• Pair Synchronized [%]
You can't select above 2 items with other items.

RIO count .....Specifies the read/write count concerning the Remote Copy.
Initial Copy .....I/O count for the initial copy.
Migration Copy.....I/O count for migration copy.
Update Copy .....I/O count for renewal copy.
Restore Copy .....I/O count for recovering copy.
Async. Copy.....I/O count for Asynchronous Remote Copy.
Synchronization .....Number of difference tracks.

Remote Copy Monitoring Screen



Monitor Menu.... Start... .....Displays another Remote Copy Monitoring screen.
EXit... .....Closes the Remote Copy Monitoring screen.

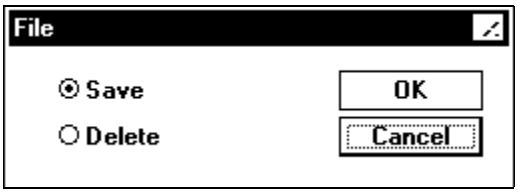
Window Menu ... Cascade (C) ...Displays Remote Copy Monitoring windows side by side.
Tile (T) .....Displays lined-up Remote Copy Monitoring windows.
Icon (I).....Lines up Remote Copy Monitoring window icons.
All close (A) ..Closes all the Remote Copy Monitoring windows.

Display Menu..... Line Model ....Displays or hides the explanation of lines.

Vertical Axis..... Indicates the count number.

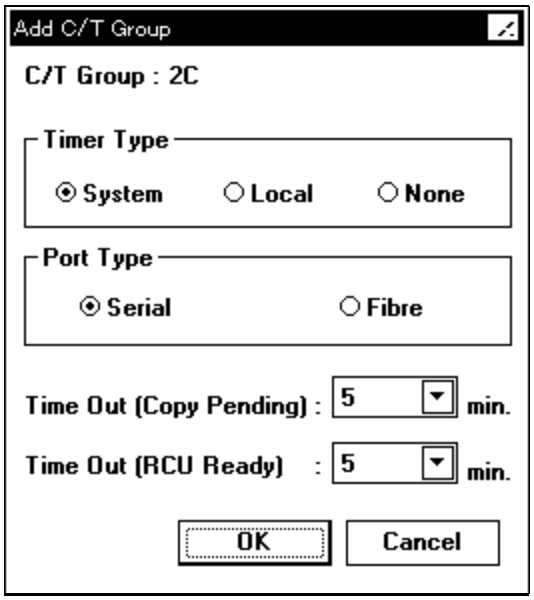
Horizontal axis... Indicates the time elapsed. A scale division on the horizontal axis indicates a sampling rate. The latest data is drawn to the right.

File Screen



Saving and deletion of operation information data.
Save .....The operation information data is saved.
Delete.....The operation information data is deleted.

4.14 Add Group/Group Option... screen



C/T Group..... Displays C/T group# (2 hexadecimal digits) selected from C/T group list.

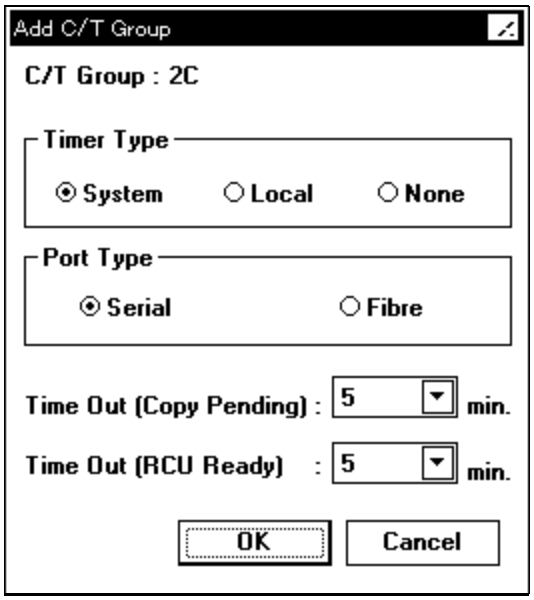
Timer Type ..... Select the timer type of the specified C/T group#.
"System"..... Use the timer of HOST.
"Local" ..... Use the timer of SVP.
"None"..... The correctness of the C/T is not guaranteed.

Port Type ..... Specifies the port type.

Time Out (Copy Pending) .... Specifies the maximum delay time of the update data.
(None, 3 ~ 15[min.])

Time Out (RCU Ready)..... Specifies the maximum waiting time for the RCU gets ready.
(None, 1 ~ 10[min.])

4.15 Group Status... screen



C/T Group..... Displays C/T group# (2 hexadecimal digits) selected from C/T group list.

CU Type..... Displays the CU type of the specified C/T group#.
"MCU" ..... MCU
"RCU" ..... RCU
"M&R" ..... MCU&RCU

Port Type ..... Displays the port type.

S/N SSID List Box ..... Displays the serial numbers and SSIDs of RCUs which are registered in the specified C/T group#.

CU:Dev List Box ..... Displays the CU# and LDEV# which belongs to the specified C/T group#.

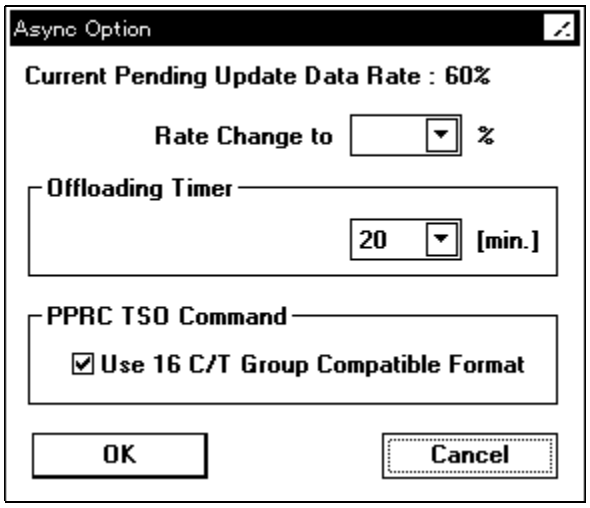
C/T ..... Displays the consistency time of the specified C/T group#.
(Note : If specified C/T group is in the SEQCHK state, "[SEQCHK]" is displayed.)
(Note : If "Overflow" is displayed, the consistency time is after 2042. If "Underflow" is displayed, the consistency time is before 1972.)

Timer Type ..... Displays the timer type of the specified C/T group#.

Time Out (Copy Pending) .... Displays the maximum delay time of the specified C/T group#.

Time Out (RCU Ready)..... Displays the maximum waiting time of the specified C/T group#.

4.16 Async Option... screen



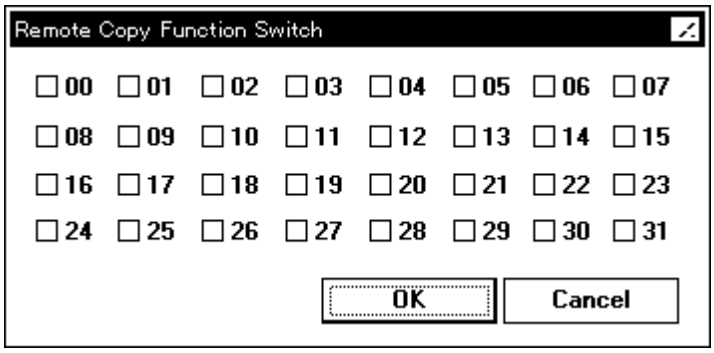
Current Pending Update Data Rate.....Displays current occupation rate of pending update data among the Record Set.

Rate Change to..... Specifies occupation rate of pending update data among the Record Set. (30 through 70)

Offloading Timer ..... Specifies monitoring time for the Record Set. (None, 1 through 20)

PPRC TSO Command ..... Specifies the format of PPRC TSO commands.
If this option is not specified, the format of PPRC TSO commands are not compatible with DKC310I, and C/T group number is available from 00 to 3F.
If this option is specified, the format of PPRC TSO commands are compatible with DKC310I, and C/T group number is available from 0 to F.
(Note: Even if this option is specified, SVP can use 64 C/T groups entirely)

4.17 Remote Copy Function Switch... screen



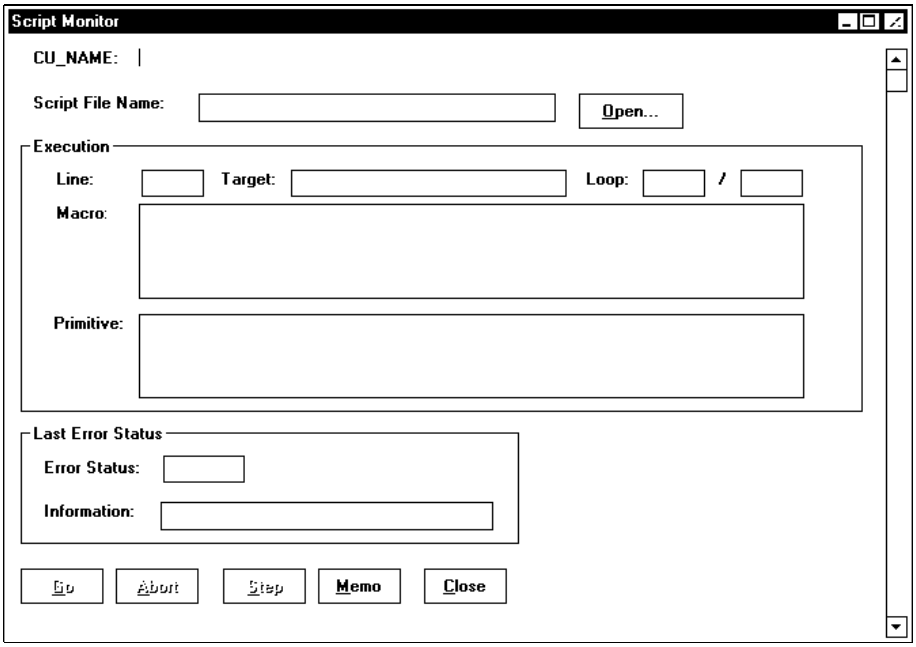
00 ~ 31 .....The specification of a present function switches is displayed.
Moreover, the function switches which want to specified/released can be set.

The function allocated in each switch is as follows.

00 : Decreases the time of Path Blockade Watch of Fibre-HRC PPRC command (ESTPATH) from 40 seconds (default) to 35 seconds.
01 : Increases the time of Path Blockade Watch of Fibre-HRC PPRC command (ESTPATH) from 40 seconds (default) to 45 seconds.
02 ~ 11 : Unused.
12 : When Add Pair or Resume Pair is operated with the Host command, only M-VOL is set up in the CFW Data option.
13 ~ 31 : Unused.

4.18 Script

4.18.1 Script Monitor screen



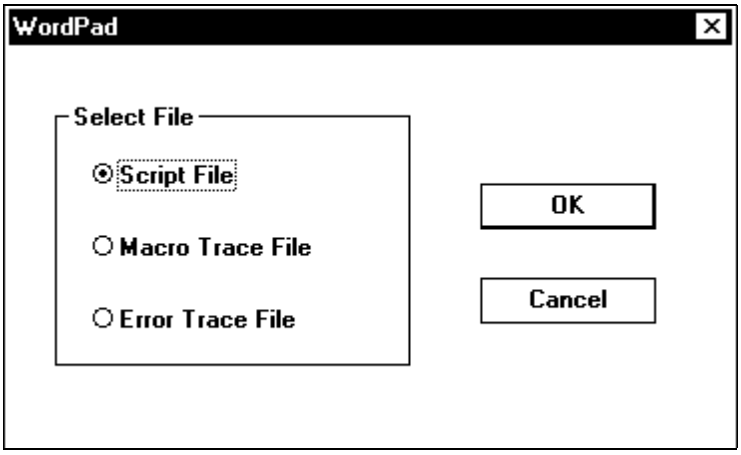
Script File Name..... Display Script File Name that is selected.

Open..... Select Script File Name from File Selection Screen. (Refer to File Selection Screen…)

Execution..... Display script execution status.
- "Line".....Display the script file line number in execution.
- "Target".....Display the target device number in execution.
- "Loop".....Display the loop counter in execution.
- "Macro".....Display the script in execution.
- "Primitive".....Display the script with the parameters in execution.

Last Error Status ..... Display the last error status of script execution.
- "Error Status".....Display the last error status of script execution. "None" is displayed when no errors occur.
- "Information".....Display the occurrence time and the line when a last error occurs.
- "GO".....Executes the script.
- "Abort".....Aborts executing the script.
- "Step".....Executes a step of the script.
- "Close".....Close the script monitor screen.
- "Memo".....Display the script file or trace information with WordPad.

4.18.2 WordPad screen



Select File ..... Select the script file or trace information file.
"Script File" ..... Select the script file.
"Macro Trace File" ..... Select the macro trace file.
"Error Trace File" ..... Select the error trace file.

OK ..... Display the select file with WordPad.

Cancel ..... Cancel

4.18.3 HRC Script method

■ Method of using a script

A script is used in the following procedures.

Definition	Define functions of a script.
Coding	Make a script file that describes a series of instructions.
Test	Test a validity of a script.
Application	Apply a script.

■ Function of HRC Script

Class	Function	Reference
HRC Pair operation	Register HRC pairs	CreateHrcPair macro
	Suspend HRC pairs	SuspendHrcPair macro
	Resume HRC pairs	ResumeHrcPair macro
	Delete HRC pairs	DeleteHrcPair macro
	Change HRC pair options	ChangeHrcOption macro
	Start remote copy	StratHrcPair macro
	Search HRC paired devices	SelectHrcDevice macro
	Refer HRC pair status	GetHrcStatus macro
Other HRC operation	Following functions are not available. ・Add/Delete RCU ・Add/Delete Path/SSID ・Change RCU options ・Refer RCU status ・Change Port type ・Monitor HRC operation status ・Connect/Disconnect a controller ・Add/Delete CT Group ・Change CT Group options ・Refer CT Group status ・Change Asynchronous options ・Refer Asynchronous options ・Clear SIM report	
Internal operation	Start script	Start macro
	End script	End macro
	Delay	Delay macro
	Execute conditionally	If macro EndIf macro
	Display a message	Message macro
	Set a value to a variable	
	Edit a string	MakeString macro
	Set items to a list	SetList macro
	Add items to a list	AddList macro
Monitor window	Open, Execute, Abort, Display(*)	

(*) For editing a script file, use Windows accessories(WordPad).

■ Definition of functions

HRC Script is described with a series of instructions(macros). In HRC Script, there is a convenient list notation for the operation of many HRC pairs. For example, a list of some HRC pair M-Vols is described as {0, 1, 2}. It may be a parameter of SuspendHrcPair macro.

There are samples for some functions.

Check a target
Create HRC pairs
Suspend/Delete HRC pairs
Resume HRC pairs
Change HRC pair options
Error handling

(1) Check a target

For protection of data from mis-operation, it is necessary to check that a target controller shall be operated by the script.
If the controller name is described, the script failed while other controller is connected.
(macro: Start)
Note; This function is available only when executing script from remote console.
If script is executed from SVP, a target controller check is canceled.

Example:
Check the target controller is MCU1.

```
Start $Script="HRC", $Svr="MCU1"
```

(2) Create HRC pairs

There are many parameters to be described in a line for registering a HRC pair. For registering many HRC pairs, the length of a line may be over the limitation.
To avoid the limitation, the parameters are preset in working variables and an instruction of registering HRC pair is described with the working variables. An instruction of starting remote copy must be described after instructions of registering HRC pair.
(macro: CreateHrcPair, StartHrcPair, SetList, AddList)

Example 1:
Create HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f) and RCU volumes (Serial Number: 12345, SSID: 0x04-0x07, CU#0, Vol#0x80-0xaf). The fence level is “Data” for all pairs. the priority of minor M-Vol# is prior to the others. Other parameters are default values.

```
// RCU : S/N = 12345, SSID = 0x04(,0x05,0x06,0x07)
// M-Vol -- - CU#0,0x00-0x2f
// R-Vol  --- CU#n,0x80-0xaf
//                --- n : depends on RCU Logical Address
// Priority--- depends on M-Vol#
//
CreateHrcPair $RcuSn="12345", $RcuSsid=0x04, $Dev=0x00, $Rdev=0x80, $Priority=1,
$Fence="Data"
CreateHrcPair $RcuSn="12345", $RcuSsid=0x04, $Dev=0x01, $Rdev=0x81, $Priority=2,
$Fence="Data"
CreateHrcPair $RcuSn="12345", $RcuSsid=0x04, $Dev=0x02, $Rdev=0x82, $Priority=3,
$Fence="Data"
   ...
   ...
CreateHrcPair $RcuSn="12345", $RcuSsid=0x04, $Dev=0x2f, $Rdev=0xaf, $Priority=48,
$Fence="Data"
StartHrcPair
```

Example 2:
Create HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f) and RCU volumes (Serial Number: 12345, SSID: 0x04-0x07, CU#0, Vol#0x80-0xaf). The fence level is “Data” for all pairs. the priority of M-Vol 0x10 - 0x1f is prior to other M-Vols. Other parameters are default values.

```
// RCU : S/N = 12345, SSID = 0x04(,0x05,0x06,0x07)
// _ilDevA = M-Vol List --- CU#0,0x00-0x2f
// _ilDevB = R-Vol List --- CU#n,0x80-0xaf
//                  --- n : depends on RCU Logical Address
// _ilPriorityA = Priority List --- 32 for CU#0,0x00-0x0f and 0x20-0x2f
//                   --- 1 for CU#0, 0x10-0x1f
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
SetList $D=_ilDevB, $S={0x80, 0x81, 0x82, 0x83, 0x84, 0x85, 0x86, 0x87, 0x88, 0x89, 0x8a,
0x8b, 0x8c, 0x8d, 0x8e, 0x8f}
AddList $D=_ilDevB, $S={0x90, 0x91, 0x92, 0x93, 0x94, 0x95, 0x96, 0x97, 0x98, 0x99,
0x9a, 0x9b, 0x9c, 0x9d, 0x9e, 0x9f}
AddList $D=_ilDevB, $S={0xa0, 0xa1, 0xa2, 0xa3, 0xa4, 0xa5, 0xa6, 0xa7, 0xa8, 0xa9, 0xaa,
0xab, 0xac, 0xad, 0xae, 0xaf}
SetList $D=_ilPriorityA, $S={32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32}
AddList $D=_ilPriorityA, $S={1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1}
AddList $D=_ilPriorityA, $S={32,32,32,32,32,32,32,32,32,32,32,32,32,32,32,32}
CreateHrcPair $Dev=_ilDevA, $RcuSn="12345", $RcuSsid=0x04, $Rdev=_ilDevB,
$Priority=_ilPriorityA, $Fence="Data"
StartHrcPair
```

(3) Suspend/Delete HRC pairs

HRC Script may suspend (or delete) specified HRC pairs. Also HRC Script may suspend (or delete) the HRC pairs searched for the specified condition.
(macro: SuspendHrcPair, DeleteHrcPair, SetList, AddList)

Example 1:
Suspend HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f). Other parameters are default values.

```
// _ilDevA = M-Vol List
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
SuspendHrcPair $Dev=_ilDevA
```

Example 2:
Search HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f) for the pair status “Duplex”, and suspend them. Other parameters are default values.

```
// _ilDevA = M-Vol List
// _ilDevB = M-Vol List filtered by "Duplex" status
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
SelectHrcDevice $DevList=_ilDevB, $Dev=_ilDevA, $PairStatus="Duplex"
SuspendHrcPair $Dev=_ilDevB
```

(4) Resume HRC pairs

HRC Script may resume specified HRC pairs. Also HRC Script may resume the HRC pairs searched for the specified condition. An instruction of starting remote copy must be described after instructions of resuming HRC pair.
(macro: ResumeHrcPair, StartHrcPair, SetList, AddList)

Example 1:
Resume HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f). Other parameters are default values.

```
// _ilDevA = M-Vol List
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
ResumeHrcPair $Dev=_ilDevA
StartHrcPair
```

Example 2:
Search HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f) for the pair status “Suspended”, and resume them. Other parameters are default values.

```
// _ilDevA = M-Vol List
// _ilDevB = M-Vol List filtered by "Suspended" status
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
SelectHrcDevice $DevList=_ilDevB, $Dev=_ilDevA, $PairStatus="Suspended"
ResumeHrcPair $Dev=_ilDevB
StartHrcPair
```

(5) Change HRC pair options
HRC Script may change HRC pair options of HRC pairs. Also HRC Script may change HRC pair options of the HRC pairs searched for the specified condition.
(macro: ChangeHrcOption, SetList, AddList)

Example:
Search HRC pairs of MCU volumes (CU#0, Vol#0x00 - 0x2f) for the fence level “Data”, and change the fence level of them to “Never”. Other parameters are default values.

```
// _ilDevA = M-Vol List
// _ilDevB = M-Vol List filtered by Fence level "Data"
SetList $D=_ilDevA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0a,
0x0b, 0x0c, 0x0d, 0x0e, 0x0f}
AddList $D=_ilDevA, $S={0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19,
0x1a, 0x1b, 0x1c, 0x1d, 0x1e, 0x1f}
AddList $D=_ilDevA, $S={0x20, 0x21, 0x22, 0x23, 0x24, 0x25, 0x26, 0x27, 0x28, 0x29,
0x2a, 0x2b, 0x2c, 0x2d, 0x2e, 0x2f}
SelectHrcDevice $DevList=_ilDevB, $Dev=_ilDevA, $Fence="Data"
ChangeHrcOption $Dev=_ilDevB, $Fence="Never"
```

(6) Error handling

HRC Script fails in executing because of following conditions. There are some steps to be taken if necessary.

Syntax error:
(Check)
Syntax validity of HRC Script is checked on the start of executing. Error message will be displayed if failed.
(Action)
Refer the List of Error Message in this section.
Search the error code from the list.
Check the line displayed in the message, and modify it.

Parameter error:
(Check)
Parameter validity of HRC Script is checked on executing each instruction. Error message will be displayed if failed.
(Action)
Refer the List of Error Message in this section.
Search the error code from the list.
Check the line displayed in the message, and modify it.

Rejection:
(Check)
Result of the execution is checked on each target device. If failed, the last error status is displayed and error flag is set in the reserved variable _Result. Also HRC Script continues to be executed.
(Action)
If you want to terminate the script or display a message of error occurrence and indication following steps, check that _Result is not 0 in HRC Script.
(macro: If, EndIf)

Skip if not executable:
(Check)
The condition of each target device is checked to be executable status. For example, a M-VOL status should be 'Simplex' to register HRC Pair. If failed, error flag is set in the reserved variable _Result. Also HRC Script continues to be executed.
(Action)
If you want to terminate the script or display a message of error occurrence and indication following steps, check that _Result is not 0 in HRC Script.
(macro: If, EndIf)

■ Coding script

HRC Script is described with a series of instructions(macros) in a text file. The text file may be generated with Windows accessory tool 'WordPad' or some text editors.
The syntax of HRC Script is described for reference in the section 'HRC Script Syntax'.
The script file will be stored in the appropriate directory(folder) of the Remote Console.

Important Notice

a. The name of HRC Script file shall be up to 8 characters with a fixed file extension '.spt'.
Ex.) Abc12345.spt

b. When you save a HRC Script file with WordPad, please select 'Text Document' from 'Save as type' list. And rename the file extension '.txt' to '.spt' with Windows Explorer.

■ Test a validity

HRC Script shall be tested about its validity of actions.

Caution

HRC Script error may cause data to be lost or jobs to be ended abnormally.

As possible, data may be backed-up and the subsystem may be off-line while testing. If you will test HRC Script while subsystem is on-line of necessity, please confirm the target volume pair of HRC Script is correct at first, back-up data, and test it.

The actions of HRC Script may be confirmed through the following way.

Class	Item
HRC Pair Status	HRC main screen
HRC Pair Operation	Last updated time of Pair Status in HRC Pair Status screen
	Last error information in HRC Script monitor screen

■ Application

HRC Script will be applied after testing. Please select and execute an appropriate HRC Script file for your application.

4.18.4 Error Code

■ Error Code System

(1) Error code
These error code are displayed when syntax error or parameter error occur.
Error code is 4 digits hexadecimal number.
Error code is shown as 'eeee' in following list.

■ List of Error Messages

Message ID	Internal code	Error message	Error Description(Recovery actions)
2338I	–	Normal End	The script execution has financed.
2339E	1102	Cannot open a file by 'Memo' command. Error Code = eeee	The 'Memo' command cannot start the Write application. (Make sure that the 'Write.exe' file exists in the Windows directory.)
2340E	1103, 1104	Invaid command line parameter. Error Code = eeee	An error is found in the startup parameter of the script monitor. (Reboot for re-operation. If the error recurs, perform reinstallation.)
2341E	1f01, 1f02	File I/O error(Parameter). Error Code = eeee	The parameter file cannot be opened. (Reboot for re-operation. If the error recurs, perform reinstallation.)
2341E	2f01, 2f02	File I/O error(Script). Error Code = eeee	The specified file is abnormal. (Check whether or not the file is normal.)
2341E	2f03 ~ 2f05, 4101, 4102	File I/O error(Temporary). Error Code = eeee	The work middle file is abnormal. (Check if the disk capacity is sufficient or the file is normal.)
2341E	6101 ~ 6105	File I/O error(Trace). Error Code = eeee	The macro trace file cannot be opened. (Check if the disk capacity is sufficient or the file is normal.)
2341E	6111 ~ 6115	File I/O error(Trace). Error Code = eeee	The error trace file cannot be opened. (Check if the disk capacity is sufficient or the file is normal.)
2342E	2101	Too long line. Line = nnnn Error Code = eeee	There is a line that exceeds the maximum length (240 characters) of one line. (Split line nnnn for correction, and then re-execute.)
2343E	2201, 2203	Illegal 'If' and 'EndIf' pair. Line = nnnn Error Code = eeee	'If' and 'EndIf' do not match. (Correct the script checking a match between 'If' and 'EndIf' near line nnnn, and then re-execute.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2344E	2202	'End' is required. Line = nnnn Error Code = eeee	'End' does not exist at the end of the script. (Add 'End' at the end of the script, and then re-execute.)
2345E	2204	'Start'is required. Line = nnnn Error Code = eeee	The script begins with other than 'Start.' (Add 'Start' at the beginning of the script, and then re-execute.)
2346E	2205	Illegal word is found. Line = nnnn Error Code = eeee	An illegal phrase is found. (Check if the script of line nnnn beginning with a macro or a defined parameter, and then re-execute after correcting the script.)
2347E	2206	List type variable is unexpected. Line = nnnn Error Code = eeee	The list type variable is described illegally. (Review the list type variable of line nnnn, and then re-execute after correcting the script.)
2348E	2207	Illegal quotation. Line = nnnn Error Code = eeee	A quotation mark is not found at the end of a string. (Check the relation of the string quotation mark, and then re-execute after correcting the script.)
2349E	2208	Required value is not found. Line = nnnn Error Code = eeee	The end of one line is "=". An error has occurred in line nnnn. (Set the value on the right side.)
2350E	2209, 220a	Illegal '('and')' pair. Line = nnnn Error Code = eeee	The parentheses are not matched. (Check that there is a matching parenthesis, and then re-execute after correcting the script.)
2351E	220b, 2303	Syntax error. Line = nnnn Error Code = eeee	An illegal word is included. An error has occurred in line nnnn. (Check whether or not the phrase can be described.)
2351E	27xx	Syntax error. Line = nnnn Error Code = eeee	Setting the parameter is invalid. An error has occurred in line nnnn. (Add "=" between the parameter identification name and the value.
2351E	29xx	Syntax error. Line = nnnn Error Code = eeee	Describing a macro is invalid. An error has occurred in line nnnn. (A description other than the parameter identification name is found after the macro.)
2351E	2axx	Syntax error. Line = nnnn Error Code = eeee	Using a comma is invalid. An error has occurred in line nnnn. (Add the comma in the appropriate location as a delimiter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2352E	220e	Illegal expression. Line = nnnn Error Code = eeee	The unavailable operator is described in (if). An error has occurred in line nnnn. (Add an available operator.)
2353E	220f	Illegal parameter. Line = nnnn Error Code = eeee	The list of the format control string and the value of the expression specified by $Item do not match in (Make String.) Or, the format control string and the expression do not match in its attribute. An error has occurred in line nnnn. (Check the match between them.)
2353E	24xx	Illegal parameter. Line = nnnn Error Code = eeee	The number of parameters is invalid. An error has occurred in line nnnn. (This error occurs when the number of parameters is too many or small. It also occurs if the instruction is described illegally when the parameter that cannot be used in the instruction is used.)
2354E	2301	Unknown parameter. Line = nnnn Error Code = eeee	An undefined reserved word (parameter) is found. An error has occurred in line nnnn. (The word that begins with "$" is a reserved one (parameter.) Only defined parameters can be used.)
2355E	2302	Unknown identifier. Line = nnnn Error Code = eeee	This is a reserved word that is not defined. An error has occurred in line nnnn. The word that begins with "_" is a reserved word. Only defined parameters can be used.)
2356E	25xx	Same parameter appears again. Line = nnnn Error Code = eeee	The same parameter is reused. An error has occurred in line nnnn. (One parameter can be described only once in a script statement.)
2357E	26xx	Required parameter is not found. Line = nnnn Error Code = eeee	A required parameter cannot be found. An error has occurred in line nnnn. (Set the required parameter to the related instruction.)
2358E	28xx	Value type mismatch. Line = nnnn Error Code = eeee	The value in the right side cannot be converted to the data in the left side. An error has occurred in line nnnn. (This error occurs when the data types in the right side and left side are different, the right side has an inappropriate value or the constant values in the right side exceed the language usage range.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2359E	1001, 4111, 4112	Internal error. Error Code = eeee	An internal error has occurred in the program. (Reboot for re-operation. If the error recurs, reinstall.)
2360E	4181	Mismatch script type. Error Code = eeee	The script types specified by the Start macro and by the execution environment file are different. (Check that they match.)
2361E	4182	Mismatch controller name. Error Code = eeee	The device names specified by the Start macro and by the execution environment file are different. (Check that they match.)
2362E	5101	Parameter value error ($Dev). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Dev parameter.)
2362E	5102	Parameter value error ($Priority). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Priority parameter.)
2362E	5103	Parameter value error ($Fence). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Fence parameter.)
2362E	5104	Parameter value error ($Sync). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Sync parameter.)
2362E	5105	Parameter value error ($SusMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $SusMode parameter.)
2362E	5106	Parameter value error ($SusReport). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $SusReport parameter.)
2362E	5107	Parameter value error ($DelMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $DelMode parameter.)
2362E	5108	Parameter value error ($OptCfw). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $0ptCfw parameter.)
2362E	5109	Parameter value error ($OptSusDfwBlk). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $0ptSusDfwblk parameter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2362E	5110	Parameter value error ($RcuSn). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $RcuSn parameter.)
2362E	5111	Parameter value error ($RcuSsid). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $RcuSsid parameter.)
2362E	5112	Parameter value error ($Rdev). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Rdev parameter.)
2362E	5113	Parameter value error ($CopyPace). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $CopyPace parameter.)
2362E	5114	Parameter value error ($CopyMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $CopyMode parameter.)
2362E	5115	Parameter value error ($PairStatus). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $PairStatus parameter.)
2362E	5116	Parameter value error ($DevAttr). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $DevAttr parameter.)
2362E	5117	Parameter value error ($OptMsg). Error Code = eeee	A internal macro parameter error is found. (Check the setting value in the $OptMsg parameter.)
2362E	5118	Parameter value error ($Unit). Error Code = eeee	A functional macro parameter error is found. ($Unit parameter is reserved for future use. Delete this parameter.)
2362E	5119	Parameter value error ($RvolUPdata) Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $RvolUpdata paramter.)
2362E	5121	Parameter value error ($RcuSn!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $RcuSn parameter as in the $Dev parameter or set one parameter.)
2362E	5122	Parameter value error ($RcuSsid!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $RcuSsid parameter as in the $Dev parameter or set one parameter.)
2362E	5123	Parameter value error ($Rdev!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $Rdev parameter as in the $Dev parameter or set one parameter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2362E	5124	Parameter value error ($CopyMode!=$Sync). Error Code = eeee	A functional macro parameter error is found. (Set the same number of elements in the $CopyMode parameter and in the $Sync parameter.)
2362E	5132	Parameter value error ($CTG). Error Code = eeee	A functional macro parameter error is found. (Set the correct CT group number in the $CTG parameter.)
2362E	5133	Parameter value error ($OptErrLv). Error Code = eeee	A functional macro parameter error is found. (Set the correct error level in the $OptErrLv parameter.)
2362E	5134	Parameter value error ($SusRange). Error Code = eeee	A functional macro parameter error is found. (Set the correct suspend range in the $SusRange parameter.)
2362E	5135	Parameter value error ($PendData). Error Code = eeee	A functional macro parameter error is found. (Set the correct peding data flag in the $PendData parameter.)
2362E	5136	Parameter value error ($DelRange). Error Code = eeee	A functional macro parameter error is found. (Set the correct delete range in the $DelRange parameter.)
2362E	5137	Parameter value error ($OptRsmRange). Error Code = eeee	A functional macro parameter error is found. (Set the correct resume range in the $OptRsmRange parameter.)
2362E	5138	Parameter value error ($Seqchk). Error Code = eeee	A functional macro parameter error is found. (Set the correct SEQCHK flag in the $Seqchk parameter.)
2362E	5139	Parameter value error ($SusComplete). Error Code = eeee	A functional macro parameter error is found. (Set the correct copy complete specification in the $SusComplete parameter.)
2995E	5201	Illegal combination ($Sync and $OptSusDfwBlk). Error Code = eeee	A functional macro parameter combination error is found. ($Sync and $OptSusDfwBlk.)
2995E	5203	Illegal combination ($Sync and $CTG). Error Code = eeee	A functional macro parameter combination error is found. ($Sync and $CTG.)
2995E	5204	Illegal combination ($Sync and $OptErrLv). Error Code = eeee	A functional macro parameter combination error is found. ($Sync and $OptErrLv.)
2996E	5301	$CTG not found. Error Code = eeee	$CTG is not described when asynchronous copy pair creation.

5 Option Install

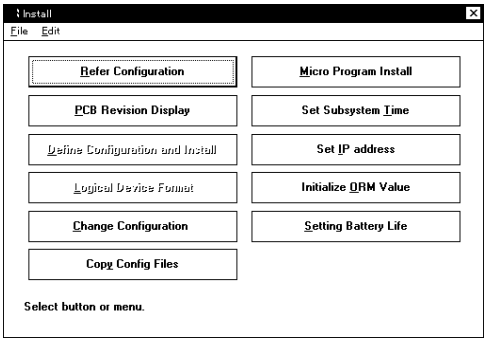
> **⚠ CAUTION**
>
> There is some possibility that “Syserr’s Clues” occurs during this operation. In this case, retry the same setting operations after SVP (PC) is rebooted. (The settings operations with “Syserr’s Clues” caused have no effects on the system.

5.1 Option install by one

(1) Select Install
Select (CL) [Install].

---

(2) Select Change Configuration
Select (CL) the [Change Configuration] menu in the ‘Install Subsystem’ window and select (CL) [OK].



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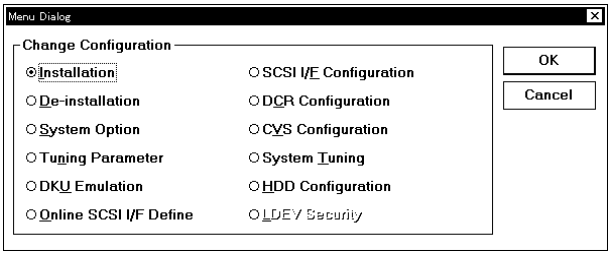
(3) Select System Option
Select (CL) [System Option] menu in the ‘Menu Dialog’ window and select (CL) [OK].



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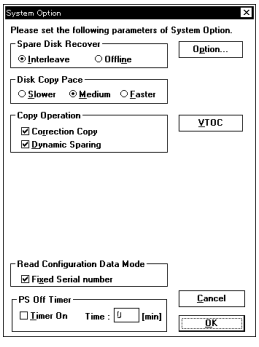
(4) Select Option
Select (CL) [Option...] menu in the ‘System Option’ window.



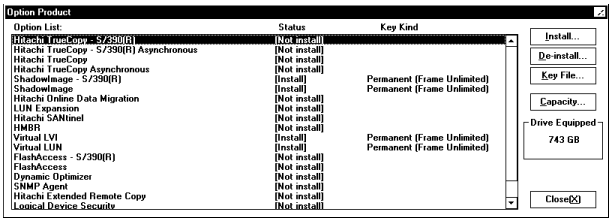
(5) Change Option

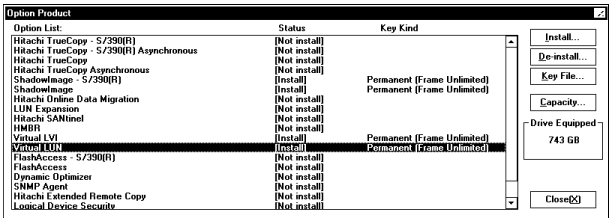
Option Install

Select (CL) option item you want to install from 'Option List' and select (CL) [Install...] button. Go to (6).

Option De-install

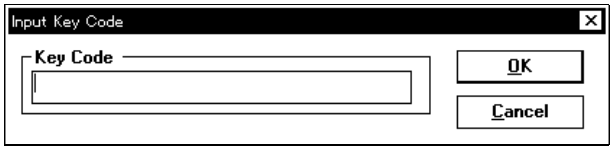
Select (CL) option item you want to de-install from the 'Option List' and select (CL) [De-install...] button. Go to (8).





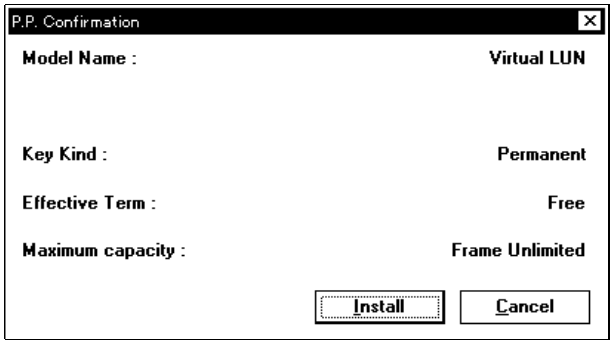
(6) Input Key Code

Input key and select (CL) [OK].

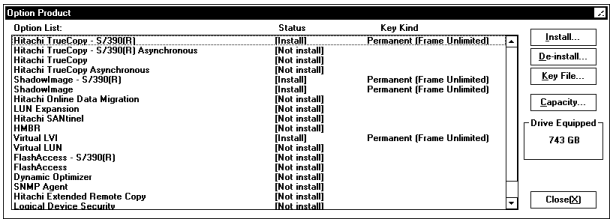


(7) Confirm option

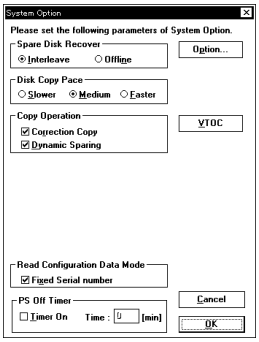
Confirm option detail and select (CL) [Install].



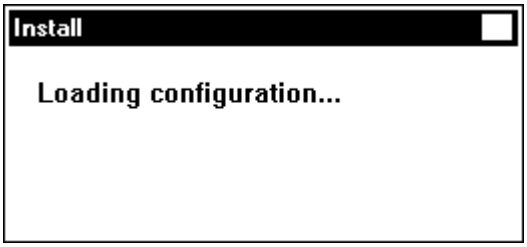
(8) Changing finish
Select (CL) [Close].



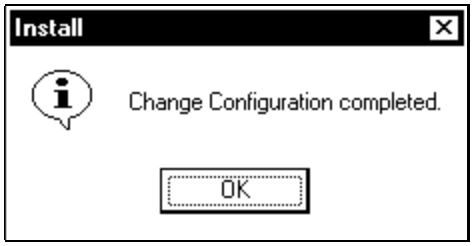
(9) Close System Option
Select (CL) [OK].



(10) Configuration down loading
The down loading message is displayed.

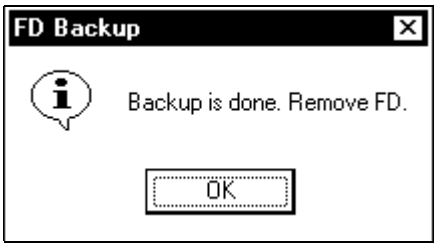


(11) Change system option is finished
The finished message is displayed. Select (CL) [OK].



(12) "Reading subsystem configuration data..." is displayed.
"Please insert config FD in FDD." is displayed.
Insert the configuration FD into FDD, select (CL) [OK].

(13) When this procedure is completed, message "Back up is done. Remove FD." is displayed.
Remove the FD, select (CL) [OK].

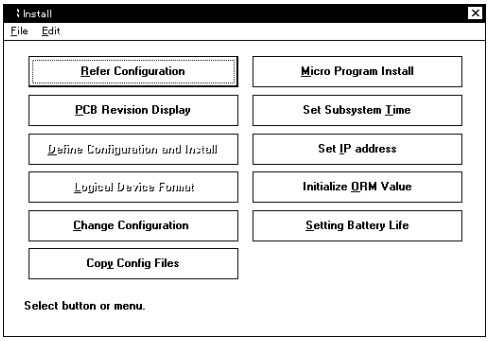


(14) Close 'Install' window

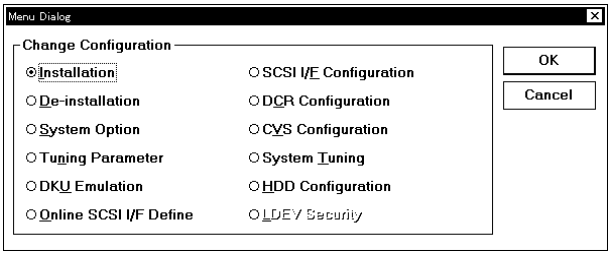
5.2 Option install with together

(1) Select Install
Select (CL) [Install].

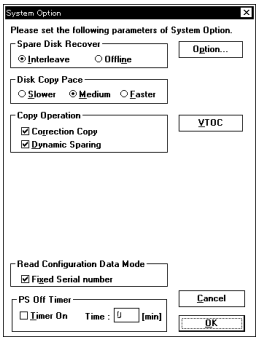
(2) Select Change Configuration
Select (CL) the [Change Configuration] menu in the 'Install Subsystem' window and select (CL) [OK].



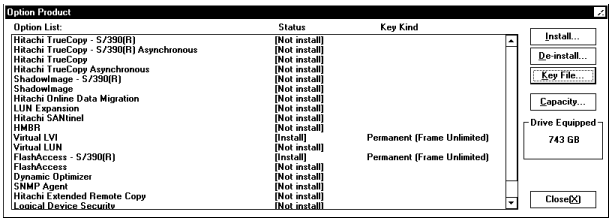
(3) Select System Option
Select (CL) [System Option] menu in the 'Menu Dialog' window and select (CL) [OK].



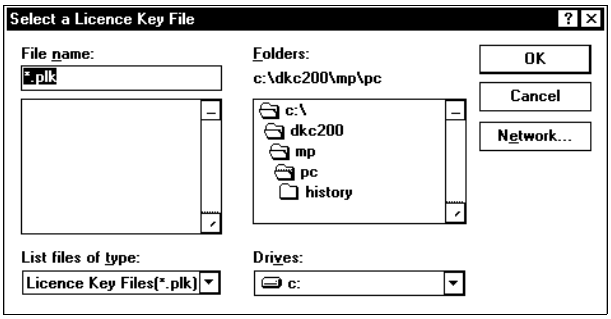
(4) Select Option
Select (CL) [Option...] menu in the 'System Option' window.



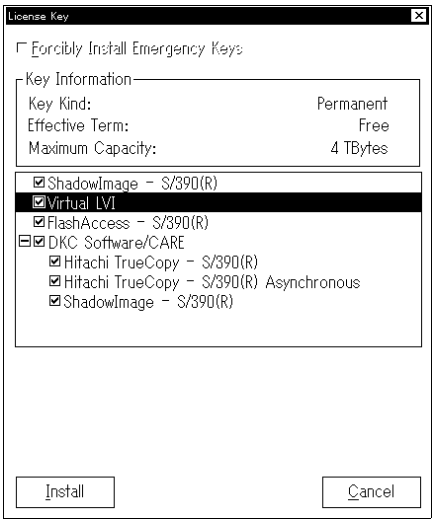
(5) Select Key File
Select (CL) [Key File].



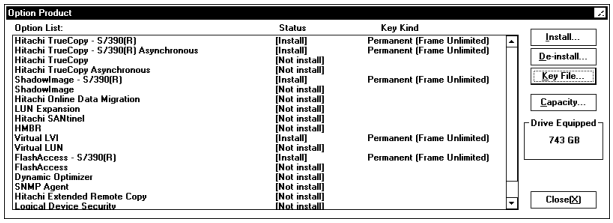
(6) Select a license Key File
Select the license key file, and select (CL) [OK].



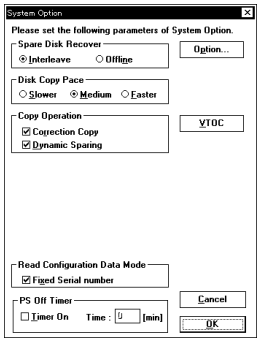
(7) Select Option
Check the option you want to install, and select (CL) [Install].



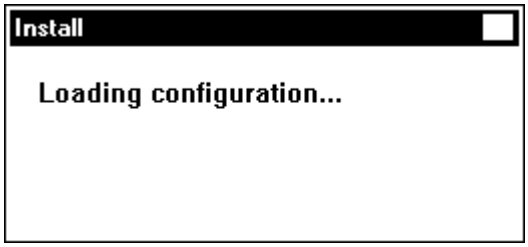
(8) Changing finish
Select (CL) [Close].



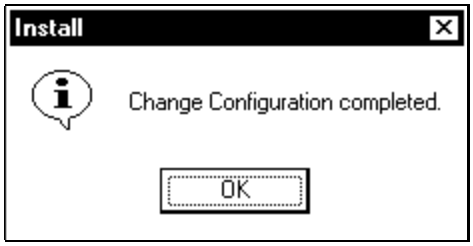
(9) Close System Option
Select (CL) [OK].



(10) Configuration down loading
The down loading message is displayed.

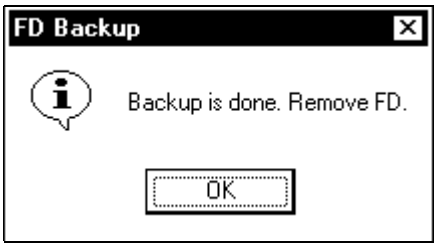


(11) Change system option is finished
The finished message is displayed. Select (CL) [OK].



(12) "Reading subsystem configuration data..." is displayed.
"Please insert config FD in FDD." is displayed.
Insert the configuration FD into FDD, select (CL) [OK].

(13) When this procedure is completed, message "Back up is done. Remove FD." is displayed.
Remove the FD, select (CL) [OK].



(14) Close 'Install' window

5.3 Details for Screen

[1] The Option Product Panel

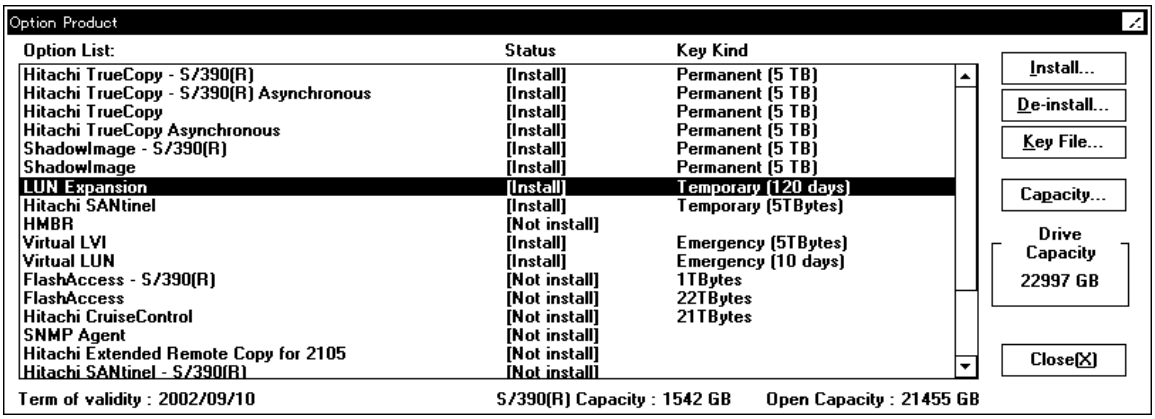


Figure 5.3.1 Option Product Panel

The Option Product panel has the following features:

- The **Option List** displays the available DKCMAIN options.
- The **Status** list shows the current status of each option (**Install** or **Not Install**).
- The **Key Kind** list displays the license type (**Temporary**, **Permanent**, **Emergency**, or **Enterprise**) and the maximum licensed capacity of the PDEVs (physical devices). If **[Frame Unlimited]** is displayed, this indicates that the licensed capacity for that option is unlimited.
- The **Install…** button allows you to install the selected option.
- The **De-install…** button deinstalls the selected option.
- The **Key File...** button opens the Select a License Key File panel, which allows you to select one or more license key file(s) for the connected 9900 subsystem.
- The **Capacity...** button opens the Option Product Capacity panel (see Figure 5.3.4), which displays the total capacity already used and the capacity licensed by specific options such as TrueCopy, ShadowImage, and Extended Remote Copy options.
- The **Drive Equipped** box shows the maximum capacity of the current subsystem.
- The **Close** button closes the Option Product panel.

Note1: If you forcibly install an emergency key to an option that has already the permanent key, the license of that option will expire in 10 days.
DKC holds the licensed capacity of the previously installed permanent key.
Install the license key for [Existing Capacity (Base Capacity) + added capacity].

Note2: Note on installation of the license key whose installed capacity is larger than the licensed capacity.
- DKC accepts the license key input.
- Through Status is [Not install], the license capacity is held.
- Install the license key for [Existing Capacity (Base Capacity) + added capacity].

Note3:
- Term of validity : The date when the License key (Temporary key, Emergency key) lapses is displayed.
- XXX expired at YYY : The date when the License key (Temporary key, Emergency key) lapsed is displayed.
  XXX : Temporary or Emergency.
  YYY : Date.

[2] The License Key Panel

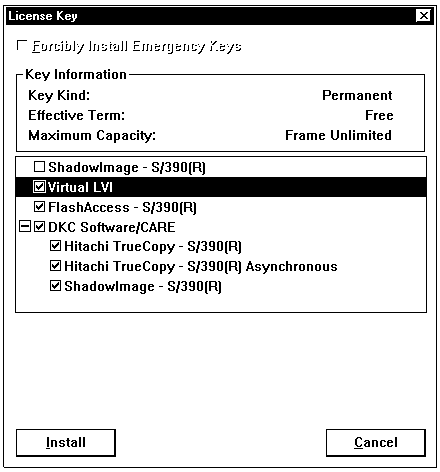


Figure 5.3.2 DKCMAIN License Key Panel

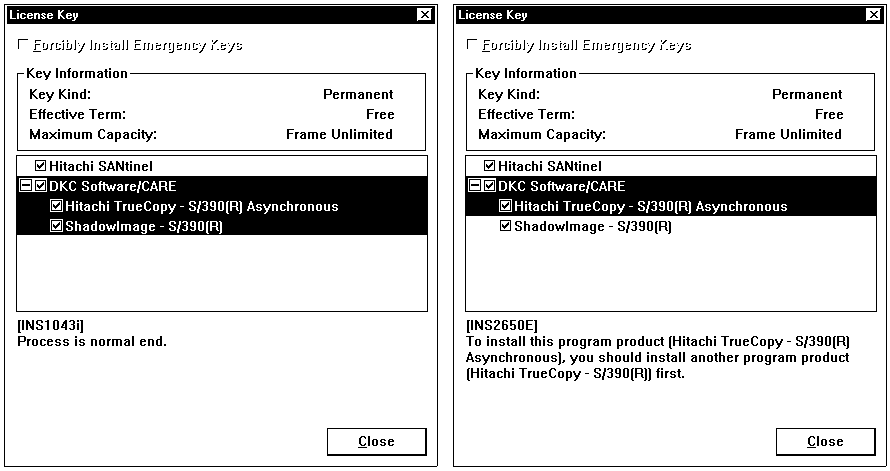


Figure 5.3.3 Examples of DKCMAIN License Key Installations

The License Key panel has the following features:

(1) On the License Key panel, check the box(es) for the desired option(s). ***Note:*** The same option may appear in more than one suite. Be sure to select each desired option only once, or an error will occur. In addition, be sure that any prerequisite options are enabled first (e.g. LUN Manager is required for LUSE).

(2) Select **Install** to continue installation, or select **Cancel** to exit the License Key panel.

(3) If an installation fails, the failed option(s) will be displayed in red. Select a failed option if you want to review the contents of the error message. Once you have reviewed the contents of the error message, select **Close** to exit the License Key panel, and then retry the installation.

(4) If the installation is complete successfully, the License Key panel closes and you are returned to the Option Product panel. The displayed status of the selected options changes from **Not install** to **Install**.

Note: You can install an emergency key to an option that has already been installed with the permanent key, by selecting the **Forcibly Install Emergency Keys** check box. However, the license of the forcibly installed option will expire in 10 days.

[3] The Option Product Capacity Panel

The Option Product Capacity panel (see Figure 5.3.4) displays the capacity already used and capacity licensed by each of the available options***1**. To access the Option Product Capacity panel, select the **Capacity…** button on the Option Product panel (see Figure 5.3.1).

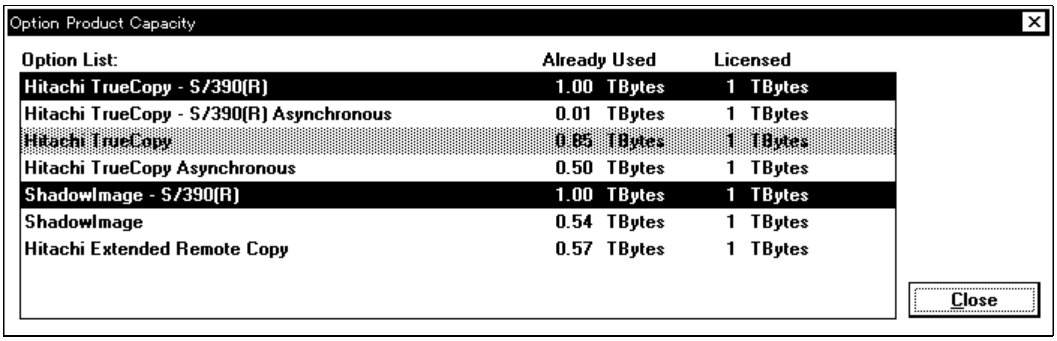


Figure 5.3.4 Option Product Capacity Panel

The Option Product Capacity panel has the following features:

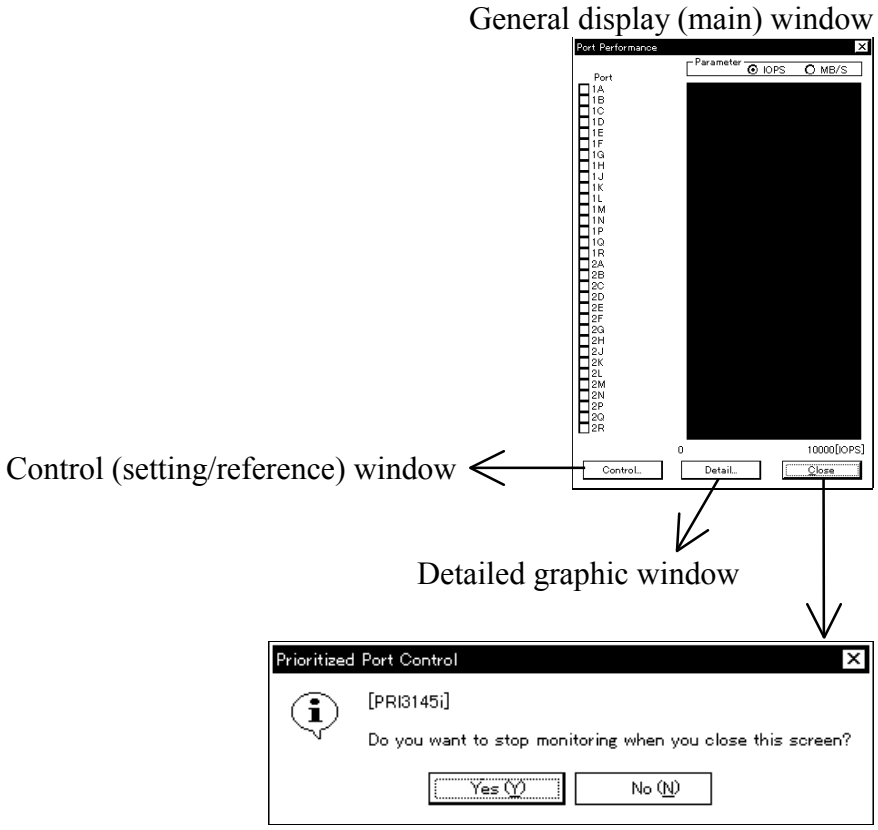
- The **Option List** displays the available DKCMAIN options***1**.
- The **Already Used** displays the total disk capacity that each option has already used.
- The **Licensed** displays the total disk capacity that the user is licensed to use.
- The **Close** button exits the Option Product Capacity panel

Note: If the capacity already used has reached 99% of the capacity licensed, the option is highlighted in red. If the capacity already used has reached 80% of the capacity licensed, the option is highlighted in yellow. It is recommended that you add your licensed capacity for the options that are highlighted in red or yellow on the Option Product Capacity panel.

Note *1: Hitachi TrueCopy - S/390®, Hitachi TrueCopy - S/390® Asynchronous, Hitachi TrueCopy, Hitachi TrueCopy Asynchronous, ShadowImage - S/390®, ShadowImage, and Hitachi Extended Remote Copy.

6 Prioritized Port Control

6.1 Window Transition



Prioritized Port Control is available in only modify mode.

<General display window (main window)>
Select [Prioritized Port Control] of the SVP (RMC) launcher.
When the main window is opened, the monitoring is started.

<Detailed graphic window>
Select (CL) [Detail] in the 'Main' window.

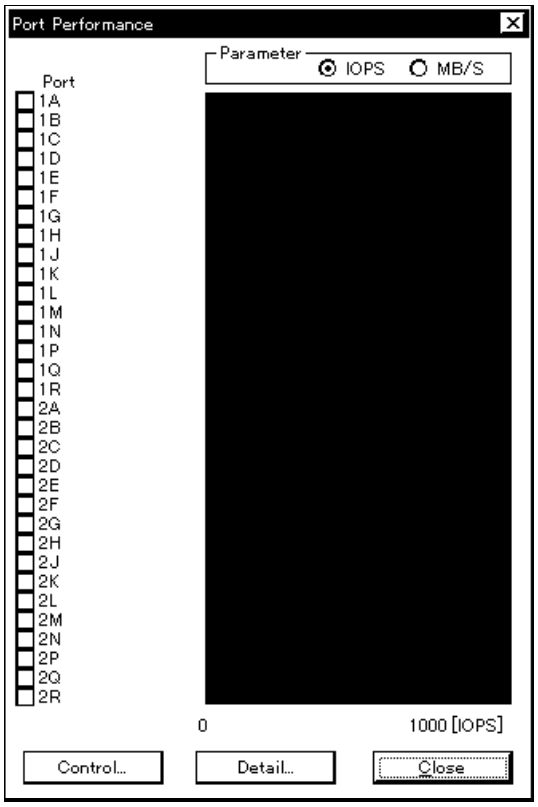
<Control (setting/reference) window>
Select (CL) [Control] in the 'Main' window.

<Exit>
Select (CL) [Close] in the 'Main' window or (CL) [close] button at the upper right.
Then the message box is displayed.

<Selection of monitoring discontinuation>
Select (CL) [Yes] in the message box.
When you do not want to discontinue but want to continue the monitoring, select [No].

6.2 Function of Each Window

6.2.1 Main Window

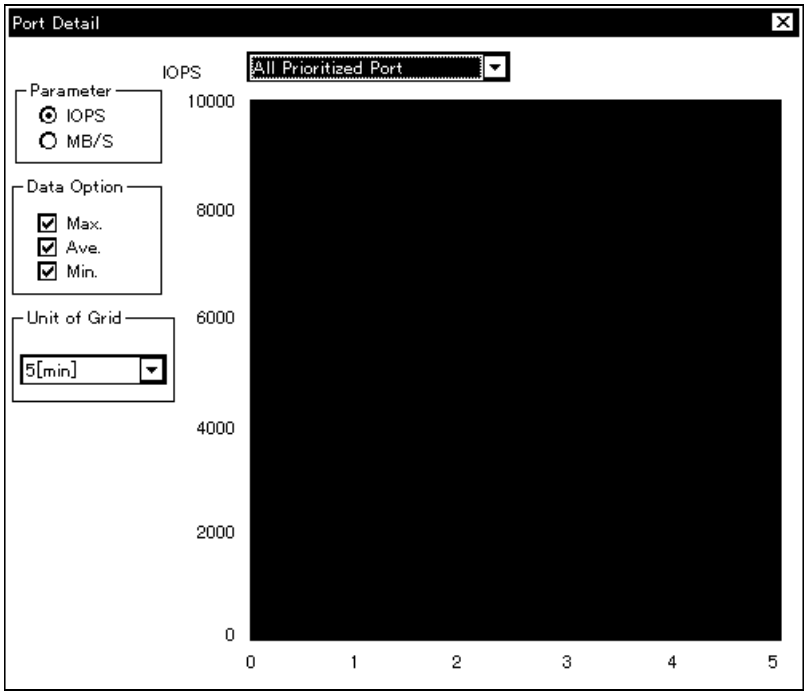


- Pressing of each button executes the following function.
  Control ------- Displays the control (setting) window.
  Detail --------- Displays the detailed graphic window.
  Close---------- Closes the window.

- Function of each radio button of Parameter is shown below.
  IOPS ---------- Displays IOPS data.
  MB/S --------- MB/S data.

- Function of each Port is shown below.
  - A bar graph is displayed for each port.
  - The check box on the left of each port name shows which of the prioritized port or non-prioritized port is set.
    Not checked------The prioritized port is set.
    Checked ----------The non-prioritized port is set.

6.2.2 Detailed Graphic Window



• Port selection combo box.
All the prioritized ports, all the non-prioritized ports, or an individual port can be selected. When a port or a set of ports is selected from the combo box, the detailed graph of the port(s) is displayed.

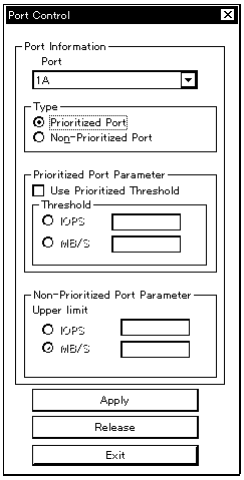
• Parameter
IOPS ---------- The IOPS data is displayed.
MB/S --------- The MB/S data is displayed.
When the window is opened, the [IOPS] has been selected.

• Data option
Max ---------- The maximum value data is displayed.
Ave ---------- The average value data is displayed.
Min ---------- The minimum value data is displayed.

• Limit of Grid
The data of the selected period is displayed in the graph. The period can be selected from five minutes, a day, and a week.

Note : When the port is not installed, the value 0 is displayed.

6.2.3 Control (Setting/Reference) Window



- Port selection combo box
  Information on all the prioritized ports or an individual port is displayed.
  Only one piece of information can be set for the one port.
- Type
  Prioritized Port---------- Priority setting and the Prioritized Port Parameter are validated.
  Non Prioritized Port---------- Non-priority setting and the Non-Prioritized Port Parameter are validated.
- Prioritized Port Parameter
  Use Prioritized Threshold ------- The threshold value is used.
  IOPS ---------- Sets the threshold value of the IOPS.
  MB/S ---------- Sets the threshold value of the MB/S.
- Non-Prioritized Port Parameter
  IOPS ---------- Sets the upper limit value of the IOPS.
  MB/S --------- Sets the upper limit value of the MB/S.

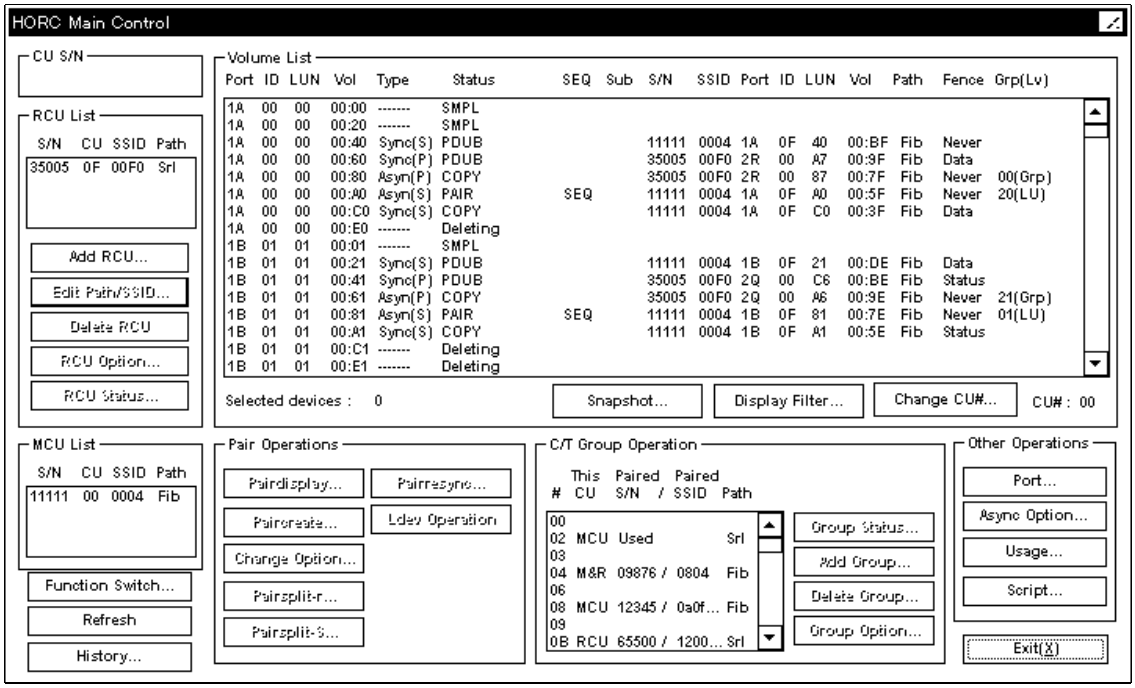
Table of Setting Items

Port	Type	Parameter	
Port Selection (combo box)	Priority setting (Prioritized Port)	The threshold value is not used. (The check box of the Use Prioritized Threshold is left blank.)	
		The threshold value is used. (The check box of the Use Prioritized Threshold is checked off.)	Setting for the IOPS (IOPS).
			Setting for the MB/S (MB/S).
	Non-priority setting (Non-Prioritized Port)	Setting for the IOPS (IOPS).	
		Setting for the IOPS (IOPS).	

- Apply button ------ Apply the parameters .
- Release button ---- Reset the prioritized port control by the prioritized port and no threshold.

7 References for HORC Operation Screen (for OPEN VOL)

7.1 HORC Main screen



RCU List.....This List Box displays Controllers as RCU(Remote disk Control Unit).
"XXXXX XX XXXX XXX"
Serial Number CU SSID Path Type

MCU List.....This List Box displays Controllers as MCU(Main disk Control Unit).
(Only volume pairing is established.)
"XXXXX XX XXXX XXX"
Serial Number CU SSID Path Type

Volume List .....This List Box displays valid OPEN VOL (open volume) and the Pairdisplay.

"XX XX XX XX:XX XXX(X) XXXXXXX XXX XXXXX XXXX XX
① ② ③ ④ ⑤ ⑥ ⑦ ⑨ ⑩ ⑪ ⑫
XX XX XX:XX X X X(XXX)"
⑬ ⑭ ⑮ ⑯ ⑰ ⑱

① #OPEN VOL:PORT.... PORT Number of OPEN VOL
② #OPEN VOL:ID..... SCSI ID Number of OPEN VOL
③ #OPEN VOL:LUN..... LUN Number of OPEN VOL
④ #CU:#LDEV ..... CU address:LDEV top address of OPEN VOL
⑤ Copy Mode..... "Sync" : Synchronous
"Asyn" : Asynchronous
" - " : SMPL Volume
⑥ Volume Type..... "P" : Primary Volume
"S" : Secondary Volume
" - " : SMPL Volume
⑦ Status..... Volume Pairdisplay
"SMPL" : SMPL
"PAIR" : PAIR
"COPY" : COPY
"PSUS/PSUE" : Suspend
"Suspending" : Suspending
"Deleting" : Deleting
"PDUB" : PDUB
⑨ Sub Status ..... Suspend sub status.
"GRP" : The consistency time of the volume is corresponding to the C/T group's.
"LU" : The consistency time of the volume is not corresponding to the C/T group's.
"OFF" : The volume is suspended by MCU P/S off.
⑩ Serial Number ..... Serial Number of Destination Controller.
⑪ SSID ..... SSID of destination Controller.
⑫ #OPEN VOL:PORT.... PORT Number of OPEN VOL on the destination Controller.
⑬ #OPEN VOL:ID..... SCSI ID Number of OPEN VOL on the destination Controller.
(Group Number if destination Controller is DKC460I.)
⑭ #OPEN VOL:LUN..... LUN Number of OPEN VOL on the destination Controller.
⑮ #CU:#LDEV ..... CU address on the destination Controller :LDEV top address of OPEN VOL on the destination Controller.
⑯ Path ..... Path Type
"Srl" : Serial path
"Fib" : Fibre path

⑰ Fence Level ..... OPEN VOL Fence Level
⑱ Grp. (Lv) ..... C/T group#(Error Level)
Note: When the pair is in transition to the SMPL state, the brank might be displayed in the volume list, except Port, ID, LUN, Vol, Status, Please refresh the screen.

Snapshot .....Output HORC pair status into a next file.

Change CU# .....Specifies CU address (CU#) to display the RCU List, the MCU List and the Volume List concerned with the CU.

Port Operation

Port .....Changes the serial port type between LCP and RCP. Changes the fibre port type to Initiator/Target/RCU Target.
When the MCU is connected to the RCU with serial port, the MCU side port type must be set to RCP.
When the MCU is connected to the RCU with fibre port, the MCU side port type must be set to initiator.

Path Operation

Add RCU .....Establishes the path between the MCU and the RCU. When establishing the path, the MCU must register the object RCU first. This function registers the object RCU and establishes the path at a time. When the MCU registers the object RCU successfully, the RCU is added to the RCU list. (Up to 4 RCU units can be registered for one MCU.)

Edit Path/SSID...Adds/reduces the number of paths or SSIDs to an RCU selected from the RCU list.

Delete RCU.....Deletes an RCU selected from the RCU list and the path(s) to the RCU at a time. Before executing this function, all the units paired with the RCU must be set to SMPL status.

RCU Option.....Changes the option for connection to an RCU selected from the RCU list. The connection option can also be specified when the RCU is registered, but this function is used to change the option during operation.

RCU Status .....Displays the status of an RCU selected from the RCU list. This function can also display the status of each path to the RCU.

Pair Operation

(Note: All pair operations are disabled if the synchronous copy pair(s) and asynchronous copy pair(s) are selected at the same time.)

Pairdisplay..... Displays the status of a volume selected from the volume list. This function is disabled if two or more volumes are selected from the volume list.

Paircreate ..... Creates the HORC pair(s) by making the SMPL volume(s) selected from the volume list become the P-VOL(s). Before executing this function, the CU that includes the S-VOL(s) must be registered as the RCU(s). This function is disabled if the volume(s) selected include(s) the volume(s) in the status other than SMPL.

Change Option ... Changes the pair option of the volume(s) (not in the SMPL status) selected from the volume list. The pair option can also be specified when the pair is created, but this function is used to change the option during the operation. This function is disabled if any volume(s) selected include(s) the SMPL, suspending, deleting and Secondary Volume(s).

Pairsplit-r ..... Suspends the pair(s) of the volume(s) selected from the volume list. This function is disabled if any volume(s) selected include(s) the SMPL, PSUS, PSUE suspending, and deleting volume(s).

Pairsplit-S ..... Deletes the pair of the volume(s) selected from the volume list.

Pairresync..... Resume the pair of the volume(s) (in the suspend status) selected from the volume list. This function is enabled if the selected volume(s) is(are) suspended P-VOL(s).

C/T Group Operation

C/T Group List... X XXX XXXXX / XXXX ... XXX
① ② ③ ④ ⑤ ⑥ ⑦

① C/T group# (00 - 3F)
② Type of own CU.
MCU : Own CU is MCU for the paired CU.
RCU : Own CU is RCU for the paired CU.
M&R : Own CU and the paired CU are the same.
③ S/N of the paired CU.
If "Used" is displayed, the paired CU is not exist.
④ Slash.
⑤ SSID of the paired CU.
⑥ If "..." is displayed, own CU have two or more paired CU.
⑦ Type of the path
"Srl" : Serial path
"Fib" : Fibre path

Group Status ..... Displays the status of a C/T group selected from C/T group list.

Add Group. ..... Assigns the C/T group selected from C/T group list. This function is disabled if the specified C/T group has already assigned.

Delete Group..... Releases the C/T group selected from C/T group list. This function is enabled if the CU type of the specified C/T group is "MCU" (Displayed "MCU" on the C/T group list).

Group Option ..... Changes the option parameters of the C/T group selected from C/T group list. This function is disabled if the CU type of the specified C/T group is "RCU" (Displayed "RCU" on the C/T group list). Also, the specified C/T group is not assigned, too.

Async Option Operation

Async Option ..... Changes the option parameters of the asynchronous function.

Other Functions

Ldev Operation .. Displays HORC Sub Main Screen of OPEN VOL selected from Volume List of HORC Main screen.

Usage. ..... Displays HORC operation control information.

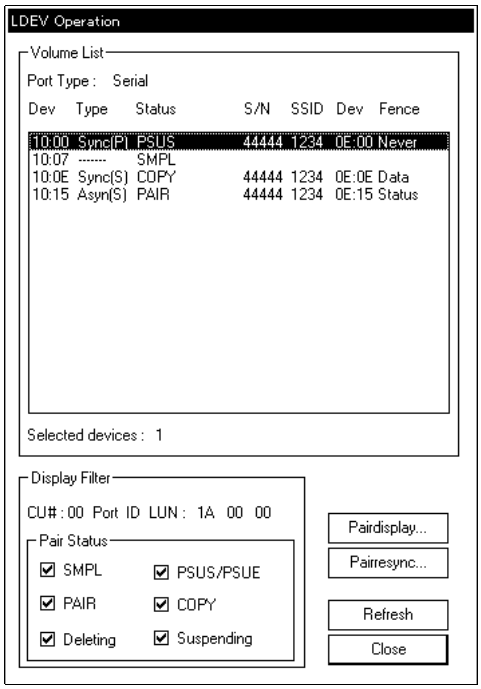
Script..... Executes HORC Script.

Refresh. ..... Updates information displayed on the screen. Information displayed on the screen is kept as is until this function is executed.

History..... Refferring the History window.

Exit..... Exits the operation screen.

7.2 LDEV Operation screen



Port Type .....Displays the port type which concerned LU uses.

Volume List .....This list box displays valid LDEV of OPEN VOL and the Pairdisplay.

"XX:XX XXXX(X) XXXXXXX XXXXX XXXX XX:XX X"

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① #CU:#LDEV..... CU address:LDEV address

② Copy Type ..... Sync : Synchronous copy pair
Asyn : Asynchronous copy pair
"---" : SMPL Volume

③ Volume Type..... "P" : Primary Volume
"S" : Secondary Volume
"-" : SMPL Volume

④ Pairdisplay..... Volume Pairdisplay
"SMPL" : SMPL
"PAIR" : PAIR
"COPY" : COPY
"PSUS/PSUE" : Suspend
"Suspending" : Suspending
"Deleting" : Deleting

⑤ Serial Number of Destination Controller

⑥ SSID of Destination Controller

⑦ #CU:#LDEV..... CU address on the destination Controller
:LDEV address on the destination Controller

⑧ Fence Level ..... LDEV Fence Level

Display Filter .....Display filter of the Volume List.

Pair Operation

Pairdisplay..... Displays the status of a volume selected from the volume list. This function is disabled if two or more volumes are selected from the volume list.

HORC Pair Operation

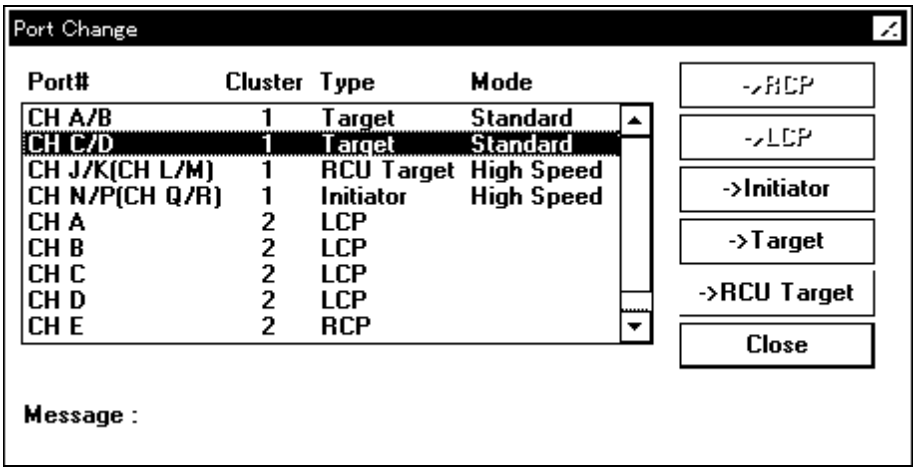
Pairresync..... Resume the pair of the volume(s) (in the suspend status) selected from the volume list. This function is disabled if the volume(s) selected include(s) a asynchronous copy pair(s).
If all the pair of the volume(s) (in the suspend status) are not resumed, PDUB is displayed at this OPEN VOL in the HORC Main screen.

Other Functions

Refresh..... Updates information displayed on the screen. Information displayed on the screen is kept as is until this function is executed.

Close ..... Close the operation screen.

7.3 Port...screen



List.....Displays the list of usable serial channels.

CH X X XXX XXX
① ② ③ ④

① Channel ID
Example display by type of the port type.
CH A.....Serial or 2 port fibre (standard)
CH A/B.....4 port fibre (standard)
CH A(CH C).....2 port fibre (high speed)
CH A/B(CH C/D).....4 port fibre (high speed)
② Cluster ID (1 or 2)
③ Channel type (LCP, RCP, Initiator, Target, RCU Target)
④ Speed (Standard or High Speed, fibre port only)

-> RCP.....Changes the channel type selected from the list to the RCP.

-> LCP .....Changes the channel type selected from the list to the LCP.

-> Initiator.....Changes the channel type selected from the list to the initiator.

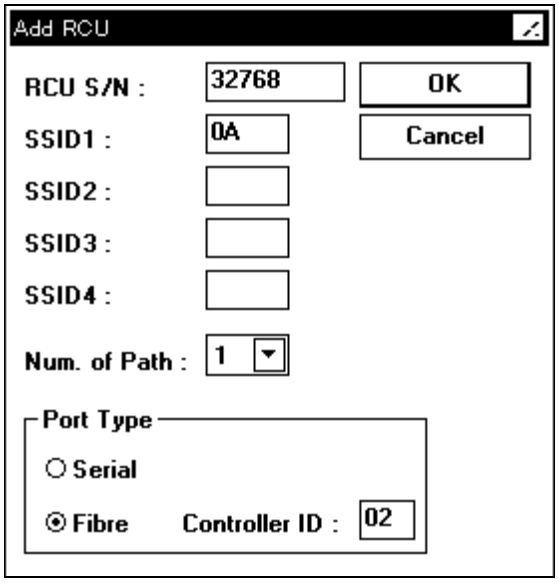
-> Target .....Changes the channel type selected from the list to the target.

-> RCU Target.....Changes the channel type selected from the list to the RCU target.

Message .....Displays the progress of each changing process when the Changing function is started.
Checking port# CH X[CL Y] ...
Blocking port# CH X[CL Y] ...
Setting port# CH X[CL Y] ...
Restoring port# CH X[CL Y] ...

7.4 Add RCU... screen

• Specify RCU parameter.



RCU S/N..... Input the Serial number of RCU.
"XXXXX".....5 characters.

SSID1 - 4 ..... Input the SSID of RCU. (Note)
"XXXX".....4 hexadecimal digits number.

Num. Of Path..... Specifies the number of path between MCU & RCU.(1 - 8)

Port Type... ..... Specifies the port type (Serial or Fibre).

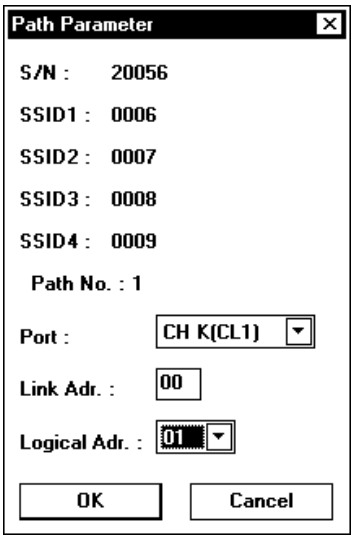
Controller ID..... The Controller identification used in WWN.
It is effective only when Fibre is specified for Port Type.

Note: How to Set Up HORC of DKC410I.

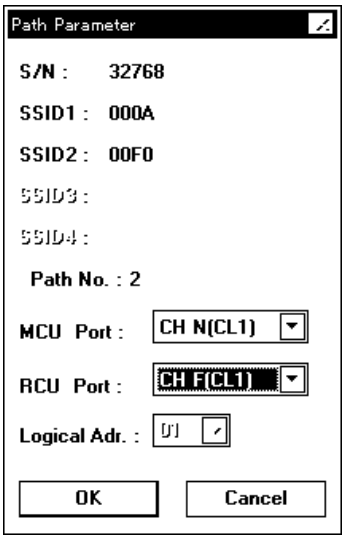
1. Setting SSIDs
   DKC410I can have different SSIDs for each 64 boundary of LDEV#.

   It is possible for DKC410I to have independent SSIDs for each 64 boundary of LDEV#.

• Specify PATH parameter.
Input the RCU parameter, then input the path parameter for each specified path.



(Serial)



(Fibre)

Port (Serial).....Specify the port using as RCP in the Combo Box.

Link Adr. (Serial)....Input the destination link address.
"XX" ..... 2 characters of hexadecimal number. ("00" through "fd")
If RCU is connected to MCU directly without ESCD, specified "00" at the [Link Adr.].
If RCU is connected to MCU with ESCD, specified destination link address at the [Link Adr.].

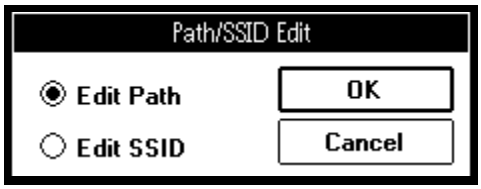
MCU Port (Fibre)....Specify the port using as initiator in the Combo Box.

RCU Port (Fibre).....Specify the port using as RCU target on the RCU side.

Logical Adr. .....Specify logical address of the destination DKC.
Please select a logical address which is defined as CU images in the RCU.
CU images are:
00 through 0F for Serial
00 through 1F for Fibre

7.5 Edit Path/SSID

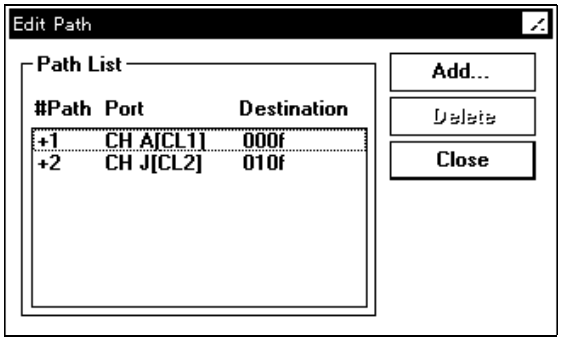
7.5.1 Path/SSID Edit... screen



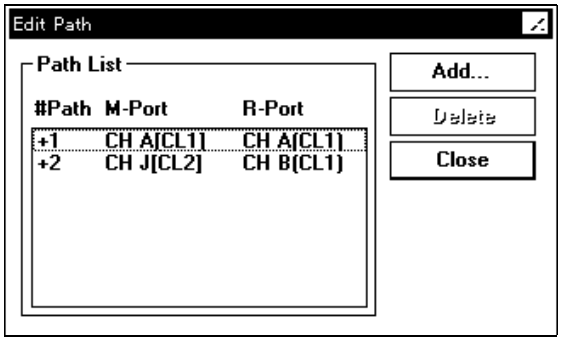
Edit Path ...Adding/reducing the number of paths.

Edit SSID..Adding/reducing the number of SSIDs.

7.5.2 Edit Path... screen



(Serial)



(Fibre)

Path List....Display current path's information.

Serial: "X CH X(CL X) XXXX"
① ② ③ ④

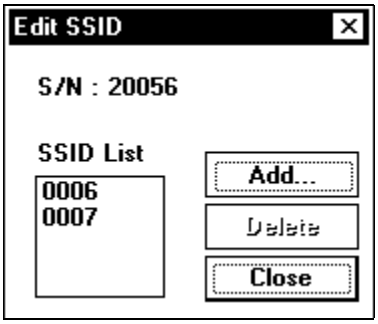
Fibre: "X CH X(CL X) CH X(CL X)"
① ② ③ ④ ⑤

① #Path.....Status(+:Normal -:Abnormal) and Path No. (1 ~ 8)
② #Port.....Port# of path creating on MCU side. (CH A ~ CH R)
③ #Cluster.....Cluster# of Concerned port on MCU side. (CL1 ~ CL4)
④ Destination (Serial) ...Link address (2 hexadecimal numbers) + Logical address (2 hexadecimal numbers)
④ #Port (Fibre).....Port# of path creating on RCU side.
⑤ #Cluster(Fibre).....Cluster# of concerned port on RCU side. (CL1 ~ CL4)

Add... .....Adding new path.(Refer to Add.. RCU-Specified Path Parameter)

Delete.....Deleting the path selected in the Path List.

7.5.3 Edit SSID... screen

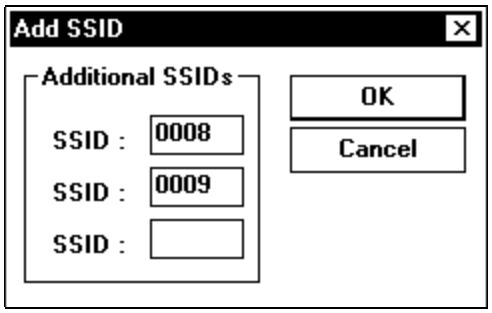


SSID List ..Display current SSIDs information.

Add .....Adding new SSIDs.

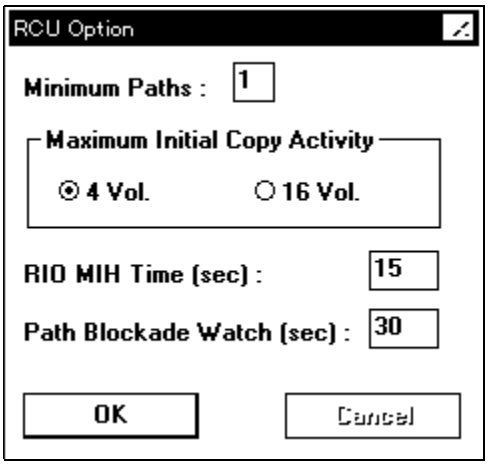
Delete.....Deleting the SSIDs selected in the SSID List.

7.5.4 Add SSID... screen



Additional SSIDs.....To add the SSIDs, input 4 hexadecimal digits numbers.

7.6 RCU Option... screen



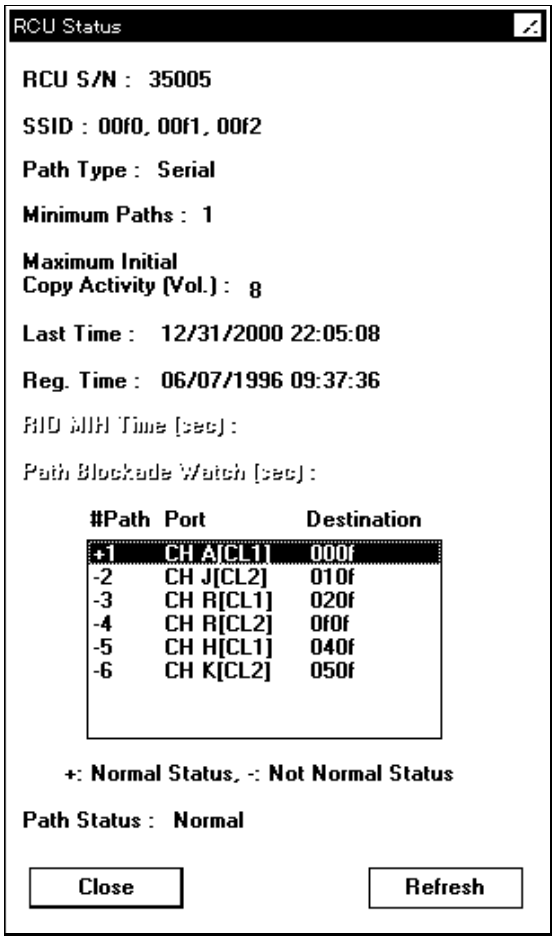
Minimum Paths ..... Specifies lowest number of paths needed for continuation of HORC. Defined between 1 to 8.

Maximum Initial Copy Activity .. Specifies maximum number of Initial copy execution. (First group of defined HORC volume pairs.)
Defined 4 or 16.
Notice: On the case of Multiplatform configuration, the parameter must be the default value 4 when you create HRC pairs in the same DKC as one that has HORC remote paths.

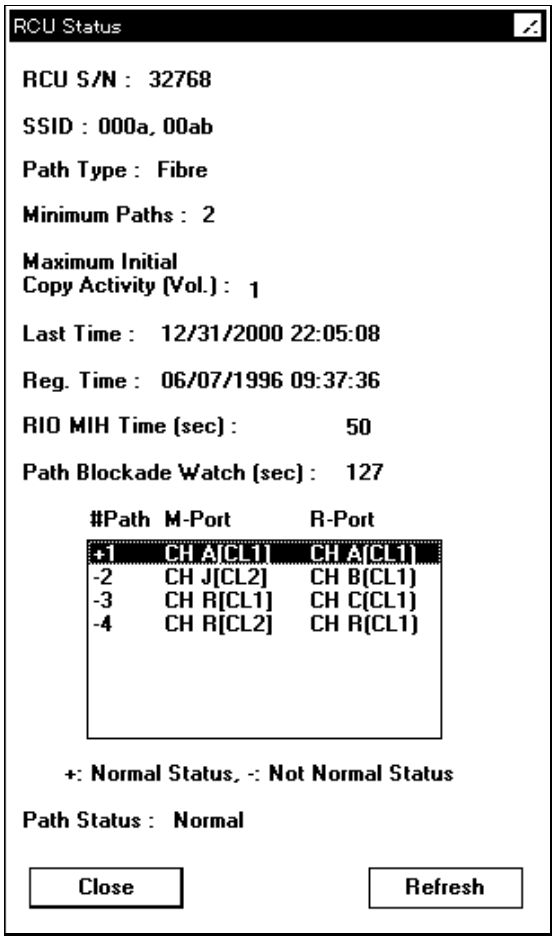
RIO MIH Time ..... Specifies RIO MIH time. (10 through 100, default is 15)

Path Blockade Watch..... Specifies the time to watch the blockade of fibre path. (0 through 45, default is 40)
This parameter can be specified only for fibre path.

7.7 RCU Status... screen



(Serial)



(Fibre)

RCU s# .....Display Serial number of the RCU.
"XXXXX" ..... 5 decimal digits.

SSID.....Display SSID of the RCU.
"XXXX" ..... 4 hexadecimal digits.

Path Type.....Display the path type. (Serial or Fibre)

Minimum Paths .....Display lowest number of paths necessity for continuation of HORC.

Maximum Initial.....Display maximum number of Initial copy execution.

Last Time.....Display last update time & date of the RCU.

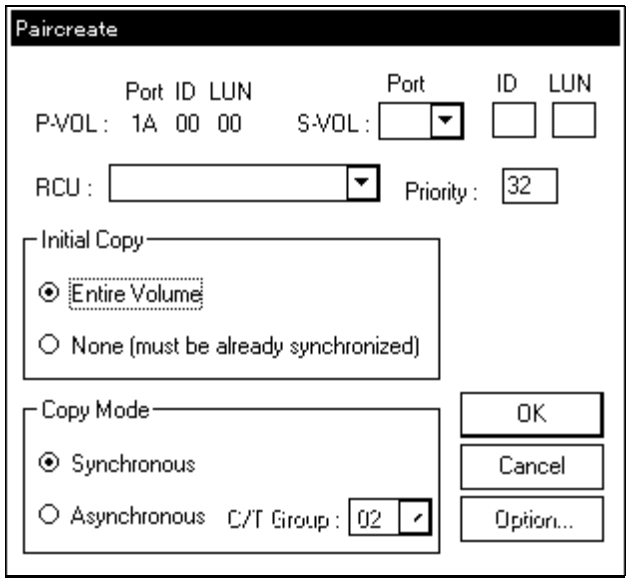
Reg. Time .....Display registration time & date of the RCU.

Path Status .....Display status of path that selected in list.
If it isn't "Normal", do the recovery action according to TRBL06-290 "Recovery Action of Path Status Error".

"Nothing" ..... No established.
"Normal" ..... The status of path is normal.
"Initialization Failed" ..... Error has occurred in the path initialization.
"Communication Time Out"..... Communication between MCU and RCU time out.
"Resource Shortage(MCU)"..... Resource at the MCU is short.
"Resource Shortage(RCU)"..... Resource at the RCU is short.
"Serial Number Mismatch" ..... Specified serial number is mismatch.
"Invalid Port" ..... Specified port is invalid.
"RCU Port Number Mismatch"..... Specified port of the RCU is mismatch.
"RCU does not support Fibre Remote Copy".... RCU does not support Fibre Remote Copy function.
"Communication Failed" ..... The communication failed.

Refresh.....Refresh displayed information.

7.8 Paircreate... screen



P-VOL ..... Display volume(OPEN VOL) that is MCU side.
PORT.....Display PORT Number of OPEN VOL.
ID.....Display SCSI ID Number of OPEN VOL.
LUN.....Display LUN Number of OPEN VOL.

S-VOL ..... Specifies volume(OPEN VOL) that is RCU side.
PORT.....Specifies PORT Number of OPEN VOL that is RCU side.
ID.....Specifies SCSI ID Number of OPEN VOL that is RCU side.
(Specifies Group Number if destination Controller is DKC460I.)
LUN.....Specifies LUN Number of OPEN VOL that is RCU side.
"XX".....2 hexadecimal digits.

Priority ..... Specifies priority of initial copy execution.

RCU ..... Select RCU from the Combo Box.
The list of RCUs currently registered will appear.

XXXXX XX XXXX XXX
① ② ③ ④

① Serial number of RCU.
② CU# of RCU.
③ SSID of RCU.
④ Type of the path.
"Srl" ..... Serial
"Fib" ..... Fibre

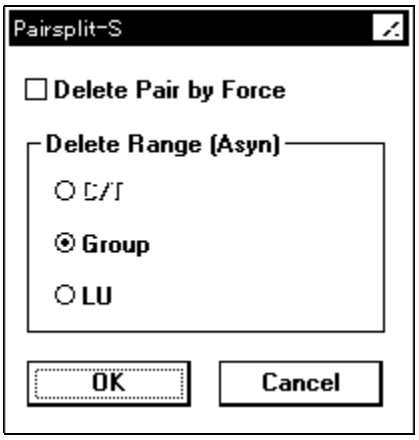
Initial Copy ..... Specifies initial copy type. (Valid only for the remote dual copy function.)
"Entire Volume"..... Specifies all cylinders.
"None"..... Nothing

Copy Mode ..... Specifies copy mode.
"Synchronous"..... Specifies synchronous copy.
"Asynchronous"..... Specifies asynchronous copy.

C/T Group..... Select C/T group# from the combo box.
The list of C/T group currently assigned will appear, except the CU type of the C/T group is not RCU (Displayed as "RCU" in the C/T group list).
This combo box is displayed effectively if the "Asynchronous" is specified.

Option... ..... Specifies pair option item. (Refer to Pair Option...)

7.9 Pairsplit-S... screen

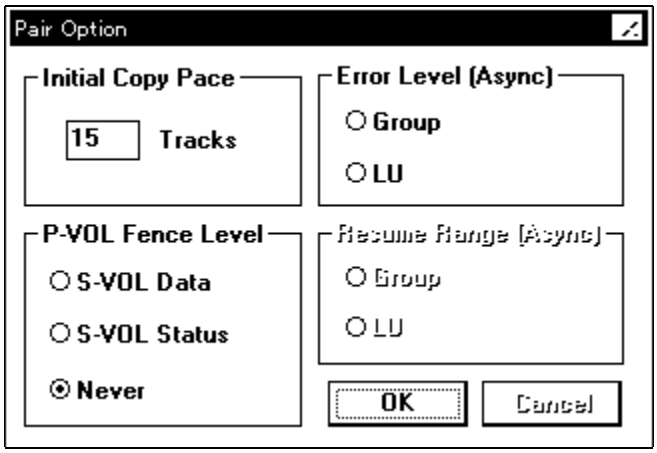


Delete Pair by Force ....Specified forcibly delete mode.
The Pairdisplay is deleted even when the communication with the CU is disabled. In the case of asynchronous copy pairs, “Delete Pair by Force” can be specified if the Delete Range is “Group”.

Delete Range(Asyn)..... Select the kind of deletion. (Effective only asynchronous copy pair. Fixed “LU” if 2 or more volume are specified.)

- C/T .....All pair(s) will be deleted which have the same C/T as the specified pair. (Displayed effectively if the specified pair(s) is(are)) :
  - S-VOL
  - Neither “Suspending” status nor “Deleting” status
- Group ...All pair(s) will be deleted which are assigned to the same C/T group as the specified pair.
- LU .....Only specified pair(s) will be deleted.

7.10 Pair Option... screen



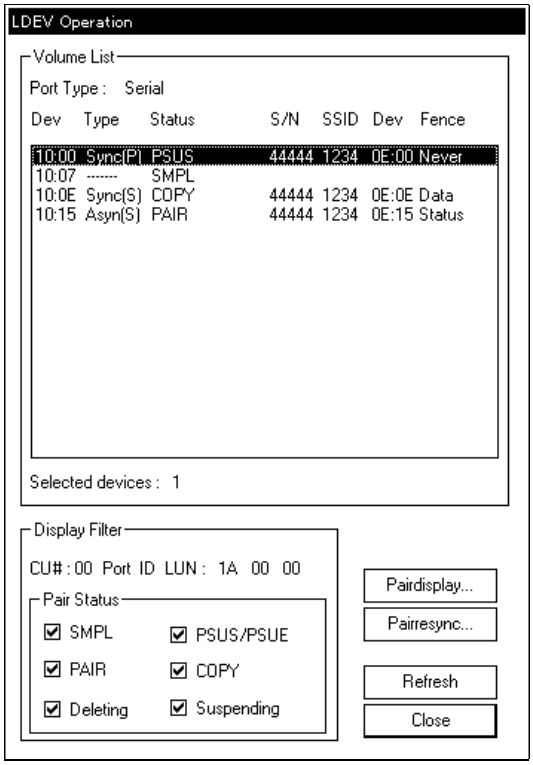
Initial Copy Pace..... Specifies Initial copy pace.
"NN" ..... Decimal number within a range of 1 to 15.

P-VOL Fence Level..... P-VOL fence level
"S-VOL Data"..... P-VOL fence when data is unmatched
"S-VOL Status"..... P-VOL fence when status can not be changed.
"Never" ..... Never fence
(Note: Fixed "Never" when asynchronous copy pairing)

Error Level (Async)..... The suspension kind when asynchronous pairing is failed. Displayed effectively if the specified volume is asynchronous copy volume.
"Group"..... All asynchronous copy volumes under the same C/T group as the specified volume(s) will be suspended.
"LU"..... Only specified volume(s) will be suspended.

Resume Range (Async) ... The resumption kind of suspended asynchronous copy volume. Displayed effectively when asynchronous copy pair resuming.
"Group"..... All asynchronous copy volumes under the same C/T group as the specified volume(s) will be resumed.
"LU"..... Only specified volume(s) will be resumed.

7.11 Pairdisplay... screen (of OPEN VOL)



P-VOL ..... Displays volume(OPEN VOL) (MCU side).
PORT... Display PORT Number of OPEN VOL.
ID..... Display SCSI ID Number of OPEN VOL.
LUN..... Display LUN Number of OPEN VOL.
VOL..... Display LDEV top address of OPEN VOL.

S-VOL ..... Displays volume(OPEN VOL) (RCU side).
PORT... Display PORT Number of OPEN VOL.
ID..... Display SCSI ID Number of OPEN VOL.
LUN..... Display LUN Number of OPEN VOL.
VOL..... Display LDEV top address of OPEN VOL.

RCU S/N..... Displays serial number of the RCU.

SSID..... Displays SSID of the RCU.

Port Type ..... Displays port type of OPEN VOL.

Initial Copy Pace..... Displays Initial copy pace. (Remote Dual Copy)
"NN"..... Decimal number within a range of 1 to 15.

Initial Copy Priority..... Displays priority of initial copy execution.

P-VOL Emulation Type..... Displays P-VOL device emulation type and volume size (OPEN VOL).

S-VOL Emulation Type..... Displays S-VOL device emulation type and volume size (OPEN VOL).

Update Copy ..... Displays pair synchronous mode.

Pair Synchronized..... Displays progress of initial copy.
(Note: There is a possibility to be displayed as “Not Valid(Initial copy not complete)” when agreeing with undermentioned condition.
• The specified volume is S-VOL.
• The specified volume is asynchronous copy pair.
• The specified volume is in the suspended state.)

Pair status..... Displays Pairdisplay information.
“SMPL”
“PDUB”
“COPY”
“PAIR”
“PSUS(P-VOL by Operator)”
“PSUS(S-VOL by Operator)”
“PSUS(by MCU)”
“PSUE(by RCU)”
“PSUS(Delete pair to RCU)”
“PSUE(S-VOL failure)”
“PSUE(MCU IMPL)”
“PSUE(Initial Copy Failed)”
“PSUS(Sidefile Overflow)”
“Suspending”
“Deleting”
“PSUE(MCU P/S OFF)”

Pair Sub Status..... Displays pair sub status information.
“Warning in SMPL”
“Warning in PSUE”
“Warning in PAIR”

Last Updated..... Displays last update time of Pairdisplay.

Pair Established ..... Displays registration time the volume pair.

Pair Suspended ..... Displays suspension time of the volume pair.

S-VOL write ..... Display whether to enable S-VOL to read/write.

C/T Group..... Displays the C/T group# (‘00’ - ‘3F’) of the volume.
(Displayed effectively if the volume is asynchronous copy volume.)

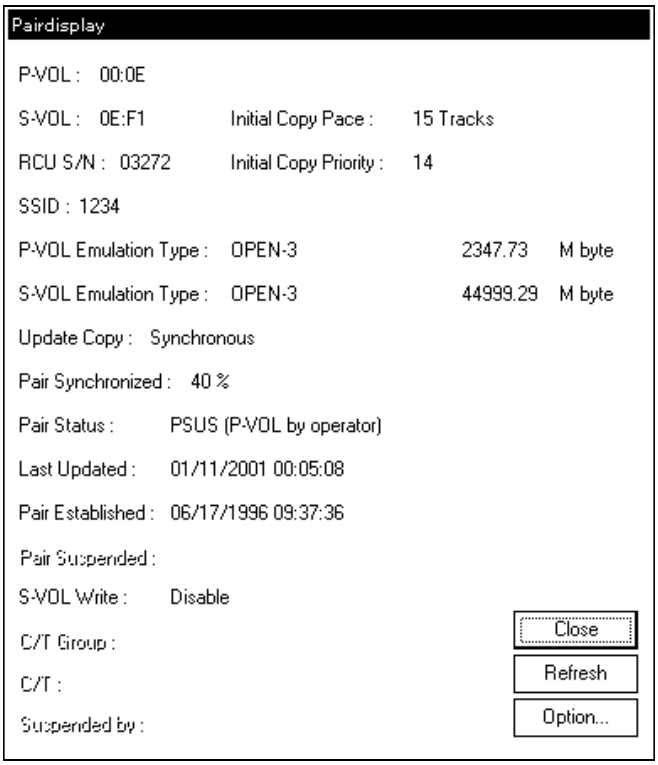
Suspended by..... Displays the C/T status the volume.
(Displayed effectively when agreeing with undermentioned condition.)
• The volume is S-VOL.
"Group" .... The consistency time of the volume correspond to the C/T group's which the volume belongs to.
"LU" ..... The consistency time of the volume is different from the C/T group's which the volume belongs to.

Option... ..... Displays pair option item. (Same to Pair Option...)

Refresh..... Refresh displayed information.

Ldev Operation ..... Displays HORC Sub Main screen of OPEN VOL, and resuming operation for LDEV can be performed.

7.12 Pairdisplay... screen (of LDEV)



P-VOL ..... Displays volume(LDEV) (MCU side).

S-VOL ..... Displays volume(LDEV) (RCU side).

RCU S/N..... Displays serial number of the RCU.

SSID..... Displays SSID of the RCU.

Initial Copy Pace..... Displays Initial copy pace. (Remote Dual Copy)
"NN"..... Decimal number within a range of 1 to 15.

Initial Copy Priority..... Displays priority of initial copy execution.

P-VOL Emulation Type..... Displays P-VOL device emulation type and volume size.

S-VOL Emulation Type..... Displays S-VOL device emulation type and volume size.

Update Copy..... Displays pair synchronous mode.

Pair Synchronized..... Displays progress of initial copy(Remote Dual Copy).
(Note: There is a possibility to be displayed as "Not Valid(Initial copy not complete)" when agreeing with undermentioned condition.
- The specified volume is S-VOL.
- The specified volume is asynchronous copy pair.
- The specified volume is in the suspended state.)

Pair status ..... Displays Pairdisplay information.
"SMPL"
"PDUB"
"COPY"
"PAIR"
"PSUS(P-VOL by Operator)"
"PSUS(S-VOL by Operator)"
"PSUS(by MCU)"
"PSUE(by RCU)"
"PSUS(Delete pair to RCU)"
"PSUE(S-VOL failure)"
"PSUE(MCU IMPL)"
"PSUE(Initial Copy Failed)"
"PSUS(Sidefile Overflow)"
"Suspending"
"Deleting"
"PSUE(MCU P/S OFF)"

Last Updated ..... Displays last update time of Pairdisplay.

Pair Established..... Displays registration time the volume pair.

Pair Suspended..... Displays suspension time of the volume pair.

S-VOL write..... Display whether to enable S-VOL to read/write.

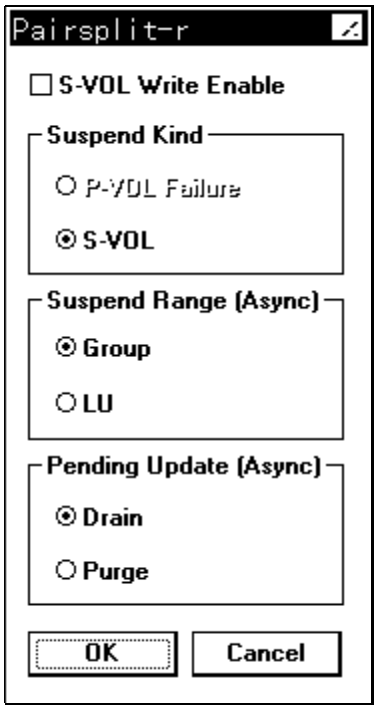
C/T Group ..... Displays the C/T group# ('00' - '3F') of the volume.
(Displayed effectively if the volume is asynchronous copy volume.)

Suspended by ..... Displays the C/T status the volume.
(Displayed effectively when agreeing with undermentioned condition.)
• The volume is S-VOL.
"Group" .... The consistency time of the volume correspond to the C/T group's which the volume belongs to.
"LU" ..... The consistency time of the volume is different from the C/T group's which the volume belongs to.

Option... ..... Displays pair option item. (Same to Pair Option...)

Refresh ..... Refresh displayed information.

7.13 Pairsplit-r... screen



S-VOL Write Enable..... Specifies whether to enable S-VOL write.
If you want to use this parameter, select “S-VOL” in Suspend Kind parameter.

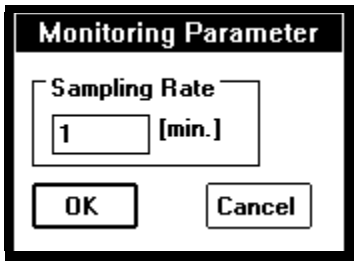
Suspend Kind..... Specifies suspended type.
“P-VOL Failure” .... P-VOL suspension reported as P-VOL failure.,
“S-VOL”..... S-VOL suspension
(Note: “P-VOL Failure” cannot be specified for asynchronous copy pair.)

Suspend Range (Async)... Specifies suspension kind of asynchronous copy pair(s).
Displayed effectively when asynchronous copy pair(s) suspension.
“Group” .....All asynchronous copy pair which belong to the same C/T group as the specified volumes will be suspended.
“LU” .....Only specified volume(s) will be suspended.
(Note: If 2 or more volume pairs are specified, fixed to “LU”.)

Pending update (Async)... Specifies releasing method of the Record Set.
Displayed effectively when asynchronous copy pair(s) suspension.
“Drain” .....The pair volume(s) of the specified volume(s) will be updated with pending data in the Record Set.
“Purge” .....The pair volume(s) of the specified volume(s) will be not updated.

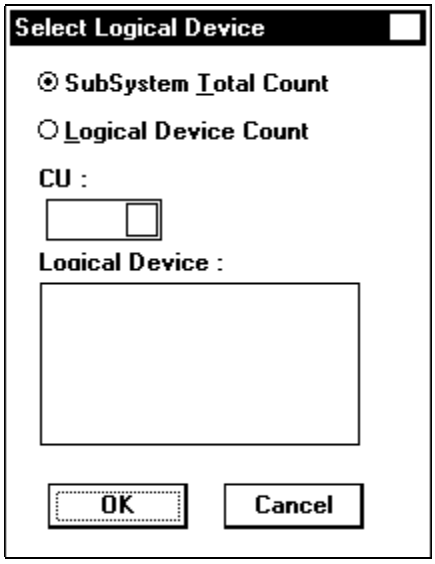
7.14 Usage... screen

Monitoring Parameter



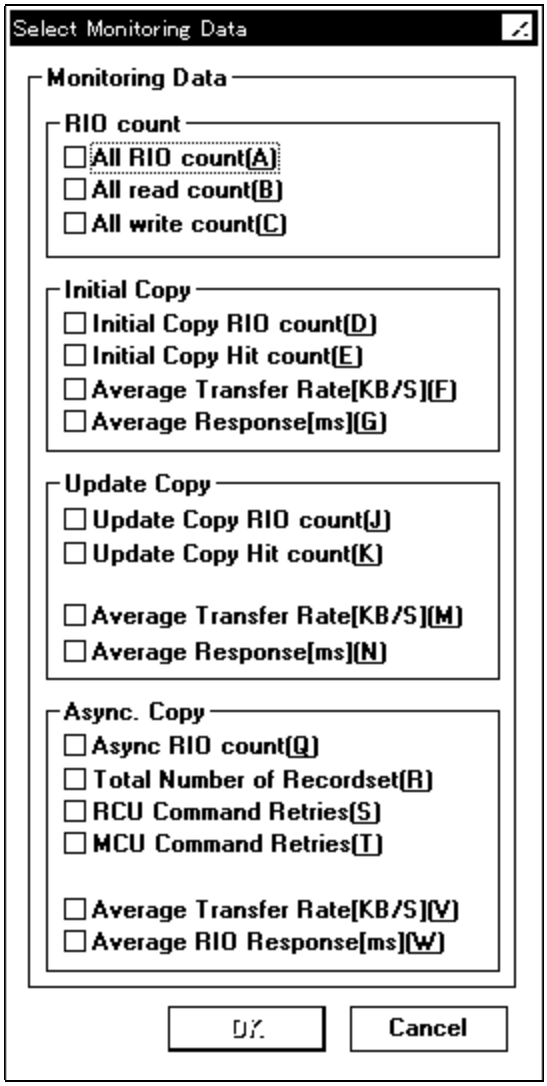
Sampling Rate.... Sets the sampling rate of operation control information within a range of 1 to 546 in steps of a minute.

Select Logical Device



Logical Device:.. Displays the list of logical devices valid in the subsystem. Select the device from the list to display its operation information. To display the operation information of the whole subsystem, select "Sub System".

Select Monitoring Data



RIO count.....Specifies the read/write count concerning the HORC.

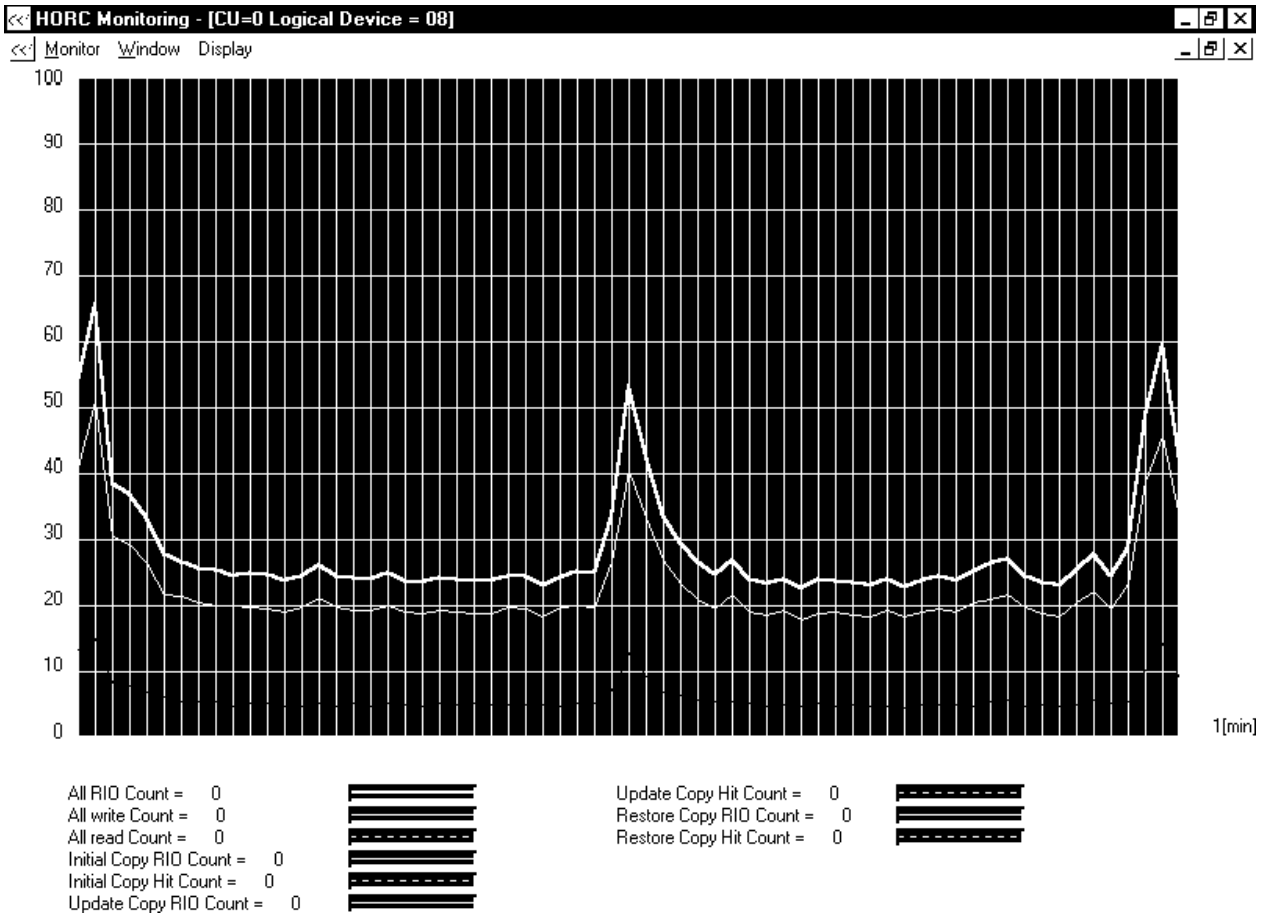
Initial Copy .....I/O count for the initial copy

Update Copy .....I/O count for renewal copy

Restore Copy.....Count for recovering copy

Async. Copy.....I/O count for Asynchronous Remote Copy

Remote Copy Monitoring Screen



Monitor Menu .... Start.....Displays another Remote Copy Monitoring screen.
EXit.....Closes the Remote Copy Monitoring screen.

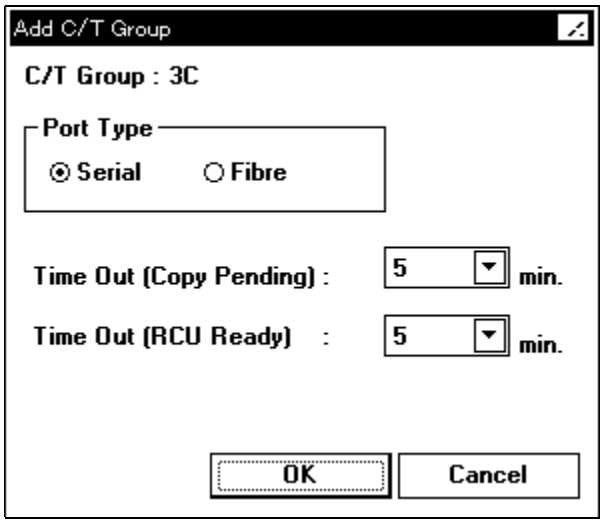
Window Menu ... Cascade (C)....Displays Remote Copy Monitoring windows side by side.
Tile (T).....Displays lined-up Remote Copy Monitoring windows.
Icon (I) .....Lines up Remote Copy Monitoring window icons.
All close (A) ..Closes all the Remote Copy Monitoring windows.

Display Menu..... Line Model ....Displays or hides the explanation of lines.

Vertical Axis ..... Indicates the count number.

Horizontal axis... Indicates the time elapsed. A scale division on the horizontal axis indicates a sampling rate. The latest data is drawn to the right.

7.15 Add Group/Group Option... screen



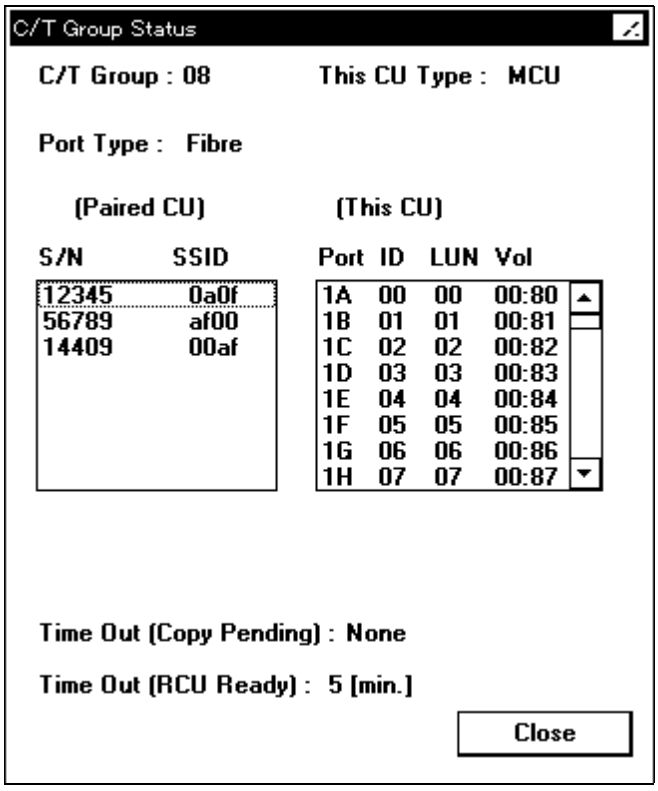
C/T group..... Displays C/T group# selected from C/T group list.

Port Type ..... Specifies the port type.

Time Out (Copy Pending) .... Specifies the maximum delay time of the update data.
(None, 1 ~ 15 [min.])

Time Out (RCU Ready)..... Specifies the maximum waiting time for the RCU gets ready.
(None, 1 ~ 10 [min.])

7.16 Group status... screen



C/T group..... Displays C/U group# selected from C/T group list.

CU Type..... Displays the CU type of the specified C/T group#.
"MCU" .....MCU
"RCU" .....RCU
"M&R" .....MCU&RCU

Port Type ..... Displays the port type.

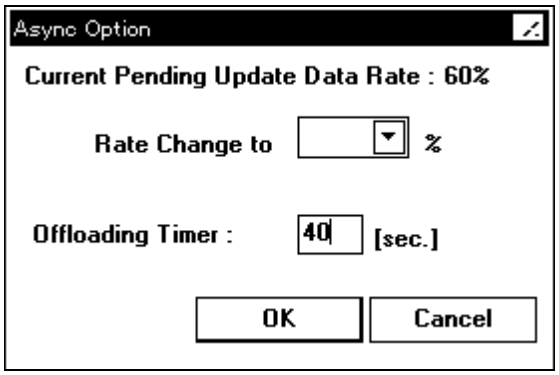
S/N SSID List Box ..... Displays the serial numbers and SSIDs of paired CUs which are registered in the specified C/T group#.

Port ID LUN Vol ..... Displays the LUN#(Port, ID, LUN) and Vol# which belongs to the specified C/T group#

Time Out (Copy Pending) .... Display the maximum delay time of the specified C/T group#.

Time Out (RCU Ready)..... Display the maximum waiting time of the specified C/T group#.

7.17 Async Option... screen



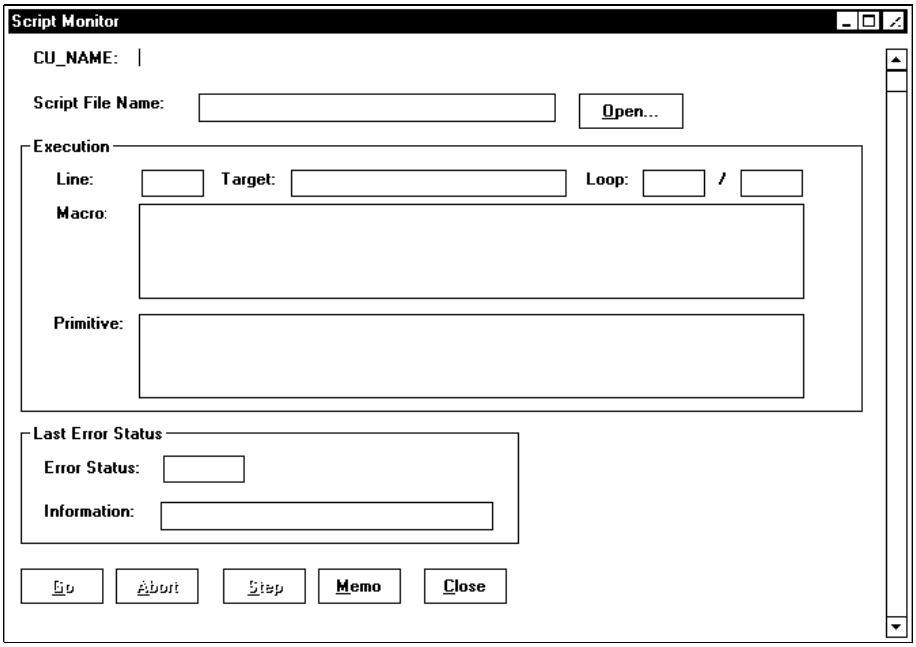
Current Pending Update Data Rate..... Displays current occupation rate of pending update data among the Record Set.

Rate Change to..... Specifies occupation rate of pending update data among the Record Set. (30 - 70)
(Note: If the C/T group(s) which is(are) assigned by HORC is(are) exist, the rate can not be changed.)

Offloading Timer ..... Specifies monitoring time for the Record Set. (0 - 255)

7.18 Script

7.18.1 Script Monitor screen



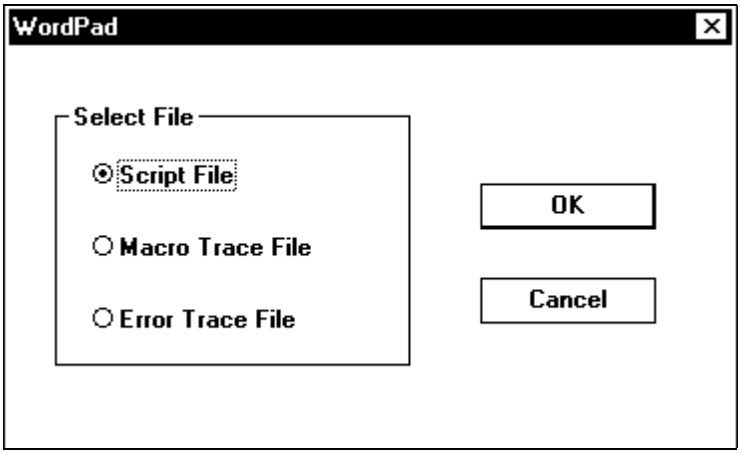
Script File Name..... Display Script File Name that is selected.

Open..... Select Script File Name from File Selection Screen. (Refer to File Selection Screen…)

Execution..... Display script execution status.
- "Line".....Display the script file line number in execution.
- "Target".....Display the target device number in execution.
- "Loop".....Display the loop counter in execution.
- "Macro".....Display the script in execution.
- "Primitive".....Display the script with the parameters in execution.

Last Error Status ..... Display the last error status of script execution.
- "Error Status".....Display the last error status of script execution. "None" is displayed when no errors occur.
- "Information".....Display the occurrence time and the line when a last error occurs.
- "GO".....Executes the script.
- "Abort".....Aborts executing the script.
- "Step".....Executes a step of the script.
- "Close".....Close the script monitor screen.
- "Memo".....Display the script file or trace information with WordPad.

7.18.2 WordPad screen



Select File ..... Select the script file or trace information file.
"Script File" ..... Select the script file.
"Macro Trace File" ..... Select the macro trace file.
"Error Trace File" ..... Select the error trace file.

OK ..... Display the select file with WordPad.

Cancel ..... Cancel

7.18.3 HORC Script method

■ Method of using a script

A script is used in the following procedures.

Definition	Define functions of a script.
Coding	Make a script file that describes a series of instructions.
Test	Test a validity of a script.
Application	Apply a script.

■ Function of HORC Script

Class	Function	Reference
HORC Pair operation	Register HORC pairs	CreateHorcPair macro
	Suspend HORC pairs	SuspendHorcPair macro
	Resume HORC pairs	ResumeHorcPair macro
	Delete HORC pairs	DeleteHorcPair macro
	Change HORC pair options	ChangeHorcOption macro
	Start remote copy	StratHorcPair macro
	Search HORC paired devices	SelectHorcDevice macro
	Refer HORC pair status	GetHorcStatus macro
Other HORC operation	Following functions are not available. ・Add/Delete RCU ・Add/Delete Path/SSID ・Change RCU options ・Refer RCU status ・Change Port type ・Monitor HORC operation status ・Connect/Disconnect a controller ・Add/Delete C/T groups ・Change C/T group options ・Refer C/T group status ・Change asynchronous options ・Refer asynchronous options	
Internal operation	Start script	Start macro
	End script	End macro
	Delay	Delay macro
	Execute conditionally	If macro EndIf macro
	Display a message	Message macro
	Set a value to a variable	
	Edit a string	MakeString macro
	Set items to a list	SetList macro
	Add items to a list	AddList macro
Monitor window	Open, Execute, Abort, Display(*)	

(*) For editing a script file, use Windows accessories(WordPad).

■ Definition of functions

HORC Script is described with a series of instructions(macros). In HORC Script, there is a convenient list notation for the operation of many HORC pairs. For example, a list of some HORC pair P-Vols' PORT ID is described as {0, 1, 2}. It may be a parameter of SuspendHorcPair macro.
Note: If the destination Controller is DKC460I, regard S-Vol's (SCSI) ID as Group.

There are samples for some functions.

Check a target
Create HORC pairs
Suspend/Delete HORC pairs
Resume HORC pairs
Change HORC pair options
Error handling

(1) Check a target

For protection of data from mis-operation, it is necessary to check that a target controller shall be operated by the script.
If the controller name is described, the script failed while other controller is connected.
(macro: Start)
Note; This function is available only when executing script from remote console.
If script is executed from SVP, a target controller check is canceled.

Example:
Check the target controller is MCU1.

```
Start $Script="HORC", $Svr="MCU1"
```

(2) Create HORC pairs

There are many parameters to be described in a line for registering a HORC pair. For registering many HORC pairs, the length of a line may be over the limitation.
To avoid the limitation, the parameters are preset in working variables and an instruction of registering HORC pair is described with the working variables. An instruction of starting remote copy must be described after instructions of registering HORC pair.
(macro: CreateHorcPair, StartHorcPair, SetList, AddList)

Example 1:
Create HORC pairs of MCU 2 volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00 and PORT#=0x00, SCSI ID#=0x00,LUN#=0x01) and RCU 2 volumes (Serial Number: 12345, SSID: 0x04-0x07, PORT#=0x00, SCSI ID#0x01, Lun#=0x02 and PORT#=0x00, SCSI ID#0x01, LUN#=0x03). The fence level is “Data” for all pairs. the priority of minor P-Vol# is prior to the others. Other parameters are default values.

```
// RCU : S/N = 12345, SSID = 0x04(,0x05,0x06,0x07)
// P-Vol -- - Port# = 0x00, Id# = 0x00, Lun# = 0x00
//              Port# = 0x00, Id# = 0x00, Lun# = 0x01
// S-Vol  ---  Port# = 0x00, Id# = 0x01, Lun# = 0x02
//              Port# = 0x00, Id# = 0x01, Lun# = 0x03
// Priority--- depends on P-Vol#
//
CreateHorcPair $RcuSn="12345", $RcuSsid=0x04, $Port=0x00, $Id=0x00, $Lun=0x00,
$Rport=0x00, $Rid=0x01, $Rlun=0x02, $Priority=1, $Fence="Data"
CreateHorcPair $RcuSn="12345", $RcuSsid=0x04, $Port=0x00, $Id=0x00, $Lun=0x01,
$Rport=0x00, $Rid=0x01, $Rlun=0x03, $Priority=2, $Fence="Data"
   ...
   ...
StartHorcPair
```

Example 2:
Create HORC pairs of MCU volumes (PORT#=0x00, SCSI ID=#0x00, LUN#=0x00 - 0x07) and RCU volumes (Serial Number: 12345, SSID: 0x04-0x07, PORT#=0x01, SCSI ID=#0x01, LUN#=0x00 - 0x07). The fence level is “Data” for all pairs. the priority of P-Vol’s LUN 0x00 - 0x03 is prior to other P-Vols. Other parameters are default values.

```
// RCU : S/N = 12345, SSID = 0x04(,0x05,0x06,0x07)
// _ilPortA = P-Vol PORT List --- 0x00
// _ilIdA    = P-Vol SCSI ID List --- 0x00
// _ilLunA = P-Vol LUN List --- 0x00-0x07
// _ilPortB = S-Vol PORT List --- 0x01
// _ilIdB    = S-Vol SCSI ID List --- 0x01
// _ilLunB = S-Vol LUN List --- 0x00-0x07
// _ilPriorityA = Priority List --- 32 for PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x03
//                                  --- 1 for PORT#=0x00, SCSI ID#=0x00, LUN#=0x04-0x07
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SetList $D=_ilPortB, $S={0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01}
SetList $D=_ilIdB, $S={0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01}
SetList $D=_ilLunB, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SetList $D=_ilPriorityA, $S={32,32,32,32,1,1,1,1}
CreateHorcPair $Port=_ilPortA, $Id=_ilIdA, $Lun=_ilLunA, $RcuSn="12345",
$RcuSsid=0x04, $Rport=_ilPortB, $RId=_ilIdB, $Rlun=_ilLunB, $Priority=_ilPriorityA,
$Fence="Data"
StartHorcPair
```

(3) Suspend/Delete HORC pairs
HORC Script may suspend (or delete) specified HORC pairs. Also HORC Script may suspend (or delete) the HORC pairs searched for the specified condition.
(macro: SuspendHorcPair, DeleteHorcPair, SetList, AddList)

Example 1:
Suspend HORC pairs of MCU volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x07). Other parameters are default values.

```
// _ilPortA = P-Vol PORT List
// _ilIdA = P-Vol SCSI ID List
// _ilLunA = P-Vol LUN List
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SuspendHorcPair $Port=_ilPortA, $Id=_ilIdA, $Lun=_ilLunA
```

Example 2:
Search HORC pairs of MCU volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x07) for the pair status “PAIR”, and suspend them. Other parameters are default values.

```
// _ilPortA = P-Vol PORT List
// _ilIdA = P-Vol SCSI ID List
// _ilLunA = P-Vol LUN List
// _ilPortB = P-Vol PORT List filtered by "PAIR" status
// _ilIdB = P-Vol SCSI ID List filtered by "PAIR" status
// _ilLunB = P-Vol LUN List filtered by "PAIR" status
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SelectHorcDevice $PortList=_ilPortB, $IdList=_ilIdB, $LunList=_ilLunB, $Port=_ilPortA,
$Id=_ilIdA, $Lun=_ilLunA, $PairStatus="Duplex"
SuspendHorcPair $Port=_ilPortB, $Id=_ilIdB, $Lun=_ilLunB
```

(4) Resume HORC pairs

HORC Script may resume specified HORC pairs. Also HORC Script may resume the HORC pairs searched for the specified condition. An instruction of starting remote copy must be described after instructions of resuming HORC pair.
(macro: ResumeHorcPair, StartHorcPair, SetList, AddList)

Example 1:
Resume HORC pairs of MCU volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x07). Other parameters are default values.

```
// _ilPortA = P-Vol PORT List
// _ilIdA = P-Vol SCSI ID List
// _ilLunA = P-Vol LUN List
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
ReumeHorcPair $Port=_ilPortA, $Id=_ilIdA, $Lun=_ilLunA
StartHorcPair
```

Example 2:
Search HORC pairs of MCU volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x07) for the pair status “PSUS” or “PSUE”, and resume them. Other parameters are default values.

```
// _ilPortA = P-Vol PORT List
// _ilIdA = P-Vol SCSI ID List
// _ilLunA = P-Vol LUN List
// _ilPortB = P-Vol PORT List filtered by "PSUS" / "PSUE" status
// _ilIdB = P-Vol SCSI ID List filtered by "PSUS" / "PSUE" status
// _ilLunB = P-Vol LUN List filtered by "PSUS" / "PSUE" status
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SelectHorcDevice $PortList=_ilPortB, $IdList=_ilIdB, $LunList=_ilLunB, $Port=_ilPortA,
$Id=_ilIdA, $Lun=_ilLunA, $PairStatus="Suspended"
ResumeHorcPair $Port=_ilPortB, $Id=_ilIdB, $Lun=_ilLunB
StartHorcPair
```

(5) Change HORC pair options
HORC Script may change HORC pair options of HORC pairs. Also HORC Script may change HORC pair options of the HORC pairs searched for the specified condition.
(macro: ChangeHorcOption, SetList, AddList)

Example:
Search HORC pairs of MCU volumes (PORT#=0x00, SCSI ID#=0x00, LUN#=0x00-0x07) for the fence level “Data”, and change the fence level of them to “Never”. Other parameters are default values.

```
// _ilPortA = P-Vol PORT List
// _ilIdA = P-Vol SCSI ID List
// _ilLunA = P-Vol LUN List
// _ilPortB = P-Vol PORT List filtered by Fence level "Data"
// _ilIdB = P-Vol SCSI ID List filtered by Fence level "Data"
// _ilLunB = P-Vol LUN List filtered by Fence level "Data"
SetList $D=_ilPortA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilIdA, $S={0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00}
SetList $D=_ilLunA, $S={0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07}
SelectHorcDevice $PortList=_ilPortB, $IdList=_ilIdB, $LunList=_ilLunB, $Port=_ilPortA,
$Id=_ilIdA, $Lun=_ilLunA, $Fence="Data"
ChangeHorcOption $Port=_ilPortB, $Id=_ilIdB, $Lun=_ilLunB, $Fence="Never"
```

(6) Error handling

HORC Script fails in executing because of following conditions. There are some steps to be taken if necessary.

Syntax error:
(Check)
Syntax validity of HORC Script is checked on the start of executing. Error message will be displayed if failed.
(Action)
Refer the List of Error Message in this section.
Search the error code from the list.
Check the line displayed in the message, and modify it.

Parameter error:
(Check)
Parameter validity of HORC Script is checked on executing each instruction. Error message will be displayed if failed.
(Action)
Refer the List of Error Message in this section.
Search the error code from the list.
Check the line displayed in the message, and modify it.

Rejection:
(Check)
Result of the execution is checked on each target device. If failed, the last error status is displayed and error flag is set in the reserved variable _Result. Also HORC Script continues to be executed.
(Action)
If you want to terminate the script or display a message of error occurrence and indication following steps, check that _Result is not 0 in HORC Script.
(macro: If, EndIf)

Skip if not executable:
(Check)
The condition of each target device is checked to be executable status. For example, a P-VOL status should be 'SMPL' to register HORC Pair. If failed, error flag is set in the reserved variable _Result. Also HORC Script continues to be executed.
(Action)
If you want to terminate the script or display a message of error occurrence and indication following steps, check that _Result is not 0 in HORC Script.
(macro: If, EndIf)

■ Coding script

HORC Script is described with a series of instructions(macros) in a text file. The text file may be generated with Windows accessory tool 'WordPad' or some text editors.
The script file will be stored in the appropriate directory(folder) of the Remote Console.

Important Notice

a. The name of HORC Script file shall be up to 8 characters with a fixed file extension '.spt'.
Ex.) Abc12345.spt

b. When you save a HORC Script file with WordPad, please select 'Text Document' from 'Save as type' list. And rename the file extension '.txt' to '.spt' with Windows Explorer.

■ Test a validity

HORC Script shall be tested about its validity of actions.

Caution

HORC Script error may cause data to be lost or jobs to be ended abnormally.

As possible, data may be backed-up and the subsystem may be off-line while testing. If you will test HORC Script while subsystem is on-line of necessity, please confirm the target volume pair of HORC Script is correct at first, back-up data, and test it.

The actions of HORC Script may be confirmed through the following way.

Class	Item
HORC Pair Status	HORC main screen
HORC Pair Operation	Last updated time of Pair Status in HORC Pair Status screen
	Last error information in HORC Script monitor screen

■ Application

HORC Script will be applied after testing. Please select and execute an appropriate HORC Script file for your application.

7.18.4 Error Code

■ Error Code System

(1) Error code
These error code are displayed when syntax error or parameter error occur.
Error code is 4 digits hexadecimal number.
Error code is shown as 'eeee' in following list.

■ List of Error Messages

Message ID	Internal code	Error message	Error Description(Recovery actions)
2338I	–	Normal End	The script execution has financed.
2339E	1102	Cannot open a file by 'Memo' command. Error Code = eeee	The 'Memo' command cannot start the Write application. (Make sure that the 'Write.exe' file exists in the Windows directory.)
2340E	1103, 1104	Invaid command line parameter. Error Code = eeee	An error is found in the startup parameter of the script monitor. (Reboot for re-operation. If the error recurs, perform reinstallation.)
2341E	1f01, 1f02	File I/O error(Parameter). Error Code = eeee	The parameter file cannot be opened. (Reboot for re-operation. If the error recurs, perform reinstallation.)
2341E	2f01, 2f02	File I/O error(Script). Error Code = eeee	The specified file is abnormal. (Check whether or not the file is normal.)
2341E	2f03~ 2f05, 4101, 4102	File I/O error(Temporary). Error Code = eeee	The work middle file is abnormal. (Check if the disk capacity is sufficient or the file is normal.)
2341E	6101~ 6105	File I/O error(Trace). Error Code = eeee	The macro trace file cannot be opened. (Check if the disk capacity is sufficient or the file is normal.)
2341E	6111~ 6115	File I/O error(Trace). Error Code = eeee	The error trace file cannot be opened. (Check if the disk capacity is sufficient or the file is normal.)
2342E	2101	Too long line. Line = nnnn Error Code = eeee	There is a line that exceeds the maximum length (240 characters) of one line. (Split line nnnn for correction, and then re-execute.)
2343E	2201, 2203	Illegal 'If' and 'EndIf' pair. Line = nnnn Error Code = eeee	'If' and 'EndIf' do not match. (Correct the script checking a match between 'If' and 'EndIf' near line nnnn, and then re-execute.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2344E	2202	'End' is required. Line = nnnn Error Code = eeee	'End' does not exist at the end of the script. (Add 'End' at the end of the script, and then re-execute.)
2345E	2204	'Start'is required. Line = nnnn Error Code = eeee	The script begins with other than 'Start.' (Add 'Start' at the beginning of the script, and then re-execute.)
2346E	2205	Illegal word is found. Line = nnnn Error Code = eeee	An illegal phrase is found. (Check if the script of line nnnn beginning with a macro or a defined parameter, and then re-execute after correcting the script.)
2347E	2206	List type variable is unexpected. Line = nnnn Error Code = eeee	The list type variable is described illegally. (Review the list type variable of line nnnn, and then re-execute after correcting the script.)
2348E	2207	Illegal quotation. Line = nnnn Error Code = eeee	A quotation mark is not found at the end of a string. (Check the relation of the string quotation mark, and then re-execute after correcting the script.)
2349E	2208	Required value is not found. Line = nnnn Error Code = eeee	The end of one line is "=". An error has occurred in line nnnn. (Set the value on the right side.)
2350E	2209, 220a	Illegal '('and')' pair. Line = nnnn Error Code = eeee	The parentheses are not matched. (Check that there is a matching parenthesis, and then re-execute after correcting the script.)
2351E	220b, 2303	Syntax error. Line = nnnn Error Code = eeee	An illegal word is included. An error has occurred in line nnnn. (Check whether or not the phrase can be described.)
2351E	27xx	Syntax error. Line = nnnn Error Code = eeee	Setting the parameter is invalid. An error has occurred in line nnnn. (Add "=" between the parameter identification name and the value.
2351E	29xx	Syntax error. Line = nnnn Error Code = eeee	Describing a macro is invalid. An error has occurred in line nnnn. (A description other than the parameter identification name is found after the macro.)
2351E	2axx	Syntax error. Line = nnnn Error Code = eeee	Using a comma is invalid. An error has occurred in line nnnn. (Add the comma in the appropriate location as a delimiter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2352E	220e	Illegal expression. Line = nnnn Error Code = eeee	The unavailable operator is described in (if). An error has occurred in line nnnn. (Add an available operator.)
2353E	220f	Illegal parameter. Line = nnnn Error Code = eeee	The list of the format control string and the value of the expression specified by $Item do not match in (Make String.) Or, the format control string and the expression do not match in its attribute. An error has occurred in line nnnn. (Check the match between them.)
2353E	24xx	Illegal parameter. Line = nnnn Error Code = eeee	The number of parameters is invalid. An error has occurred in line nnnn. (This error occurs when the number of parameters is too many or small. It also occurs if the instruction is described illegally when the parameter that cannot be used in the instruction is used.)
2354E	2301	Unknown parameter. Line = nnnn Error Code = eeee	An undefined reserved word (parameter) is found. An error has occurred in line nnnn. (The word that begins with "$" is a reserved one (parameter.) Only defined parameters can be used.)
2355E	2302	Unknown identifier. Line = nnnn Error Code = eeee	This is a reserved word that is not defined. An error has occurred in line nnnn. The word that begins with "_" is a reserved word. Only defined parameters can be used.)
2356E	25xx	Same parameter appears again. Line = nnnn Error Code = eeee	The same parameter is reused. An error has occurred in line nnnn. (One parameter can be described only once in a script statement.)
2357E	26xx	Required parameter is not found. Line = nnnn Error Code = eeee	A required parameter cannot be found. An error has occurred in line nnnn. (Set the required parameter to the related instruction.)
2358E	28xx	Value type mismatch. Line = nnnn Error Code = eeee	The value in the right side cannot be converted to the data in the left side. An error has occurred in line nnnn. (This error occurs when the data types in the right side and left side are different, the right side has an inappropriate value or the constant values in the right side exceed the language usage range.)

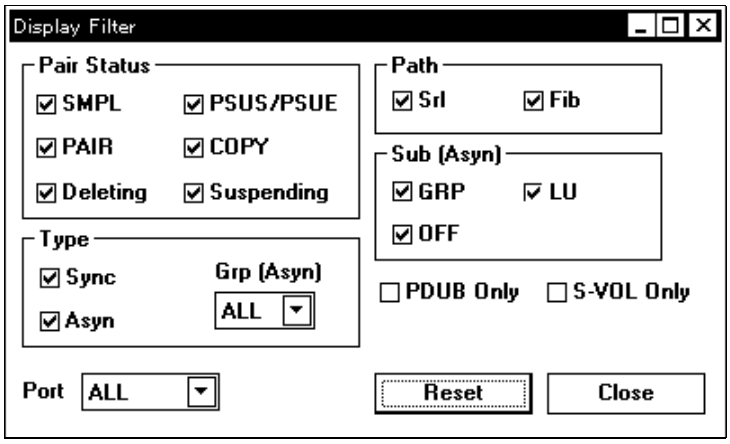
Message ID	Internal code	Error message	Error Description(Recovery actions)
2359E	1001, 4111, 4112	Internal error. Error Code = eeee	An internal error has occurred in the program. (Reboot for re-operation. If the error recurs, reinstall.)
2360E	4181	Mismatch script type. Error Code = eeee	The script types specified by the Start macro and by the execution environment file are different. (Check that they match.)
2361E	4182	Mismatch controller name. Error Code = eeee	The device names specified by the Start macro and by the execution environment file are different. (Check that they match.)
2362E	5101	Parameter value error ($Dev). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Dev(or $Port, $Id, $Lun) parameter.)
2362E	5102	Parameter value error ($Priority). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Priority parameter.)
2362E	5103	Parameter value error ($Fence). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Fence parameter.)
2362E	5104	Parameter value error ($Sync). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Sync parameter.)
2362E	5105	Parameter value error ($SusMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $SusMode parameter.)
2362E	5106	Parameter value error ($SusReport). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $SusReport parameter.)
2362E	5107	Parameter value error ($DelMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $DelMode parameter.)
2362E	5108	Parameter value error ($OptCfw). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $0ptCfw parameter.)
2362E	5109	Parameter value error ($OptSusDfwBlk). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $0ptSusDfwblk parameter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2362E	5110	Parameter value error ($RcuSn). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $RcuSn parameter.)
2362E	5111	Parameter value error ($RcuSsid). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $RcuSsid parameter.)
2362E	5112	Parameter value error ($Rdev). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Rdev (or $Rport, $Rlid, $Rlun)parameter.)
2362E	5113	Parameter value error ($CopyPace). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $CopyPace parameter.)
2362E	5114	Parameter value error ($CopyMode). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $CopyMode parameter.)
2362E	5115	Parameter value error ($PairStatus). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $PairStatus parameter.)
2362E	5116	Parameter value error ($DevAttr). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $DevAttr parameter.)
2362E	5117	Parameter value error ($OptMsg). Error Code = eeee	A internal macro parameter error is found. (Check the setting value in the $OptMsg parameter.)
2362E	5118	Parameter value error ($Unit). Error Code = eeee	A functional macro parameter error is found. ($Unit parameter is reserved for future use. Delete this parameter.)
2362E	5121	Parameter value error ($RcuSn!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $RcuSn parameter as in the $Dev parameter or set one parameter.)
2362E	5122	Parameter value error ($RcuSsid!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $RcuSsid parameter as in the $Dev parameter or set one parameter.)
2362E	5123	Parameter value error ($Rdev!=$Dev). Error Code = eeee	A functional macro parameter error is found. (Set the same element in the $Rdev(or $Rport, $Rid, $Rlun) parameter as in the $Dev(or $Port, $Id, $Lun) parameter or set one parameter.)
2362E	5124	Parameter value error ($CopyMode!=$Sync). Error Code = eeee	A functional macro parameter error is found. (Set the same number of elements in the $CopyMode parameter and in the $Sync parameter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2362E	5125	Parameter value error ($Susopt). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Susopt parameter.)
2362E	5126	Parameter value error ($Port). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Port parameter.)
2362E	5127	Parameter value error ($Id). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Id parameter.)
2362E	5128	Parameter value error ($Lun). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Lun parameter.)
2362E	5129	Parameter value error ($Rport). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Rport parameter.)
2362E	5130	Parameter value error ($Rid). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Rid parameter.)
2362E	5131	Parameter value error ($Rlun). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $Rlun parameter.)
2362E	5132	Parameter value error ($CTG). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $CTG parameter.)
2362E	5133	Parameter value error ($OptErrLv). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $OptErrLv parameter.)
2362E	5134	Parameter value error ($SusRange). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $SusRange parameter.)
2362E	5135	Parameter value error ($PendData). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $PendData parameter.)
2362E	5136	Parameter value error ($DelRange). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $DelRange parameter.)
2362E	5137	Parameter value error ($OptRsmRange). Error Code = eeee	A functional macro parameter error is found. (Check the setting value in the $OptRsmRange parameter.)

Message ID	Internal code	Error message	Error Description(Recovery actions)
2995E	5201	Illegal combination ($Sync and $OptSusDfwBlk). Error Code = eeee	A Combination of a functional macro parameter is illegal. (Check the setting value in the $Sync and $OptSusDfwBlk parameter.)
2995E	5203	Illegal combination ($Sync and $CTG). Error Code = eeee	A Combination of a functional macro parameter is illegal. (Check the setting value in the $Sync and $CTG parameter.)
2995E	5204	Illegal combination ($OptErrLv). Error Code = eeee	A Combination of a functional macro parameter is illegal. (Check the setting value in the $OptErrLv parameter.)
2996E	5301	$CTG not found. Error Code = eeee	$CTG parameter is indispensable for asynchronous pair creation. (Add a postscript of $CTG parameter to the CreatHorcPair functional macro.)

7.19 Display Filter… screen



Display Filter ..... Display filter of the Volume List.

• Pair Status

"SMPL" ~ "Deleting" check box

..... LDEVs whose status are selected by check box are displayed.
(Note: If "PSUS/PSUE" check box is not selected, "GRP" ~ "LU" check box are displayed ineffectively.)

• Type

"Sync" ~ "Asyn" check box

..... LDEVs whose synchronous mode are selected by check box are displayed.
(Note: If "Asyn" check box is not selected, "Deleting", "Suspending", "GRP", "OFF", "LU" check box and "Grp(Asyn)" combo box are displayed ineffectively.)

"Grp (Asyn)" combo box

..... LDEVs whose C/T group# is selected by combo box is displayed. ("ALL" displays all C/T groups.)

• Path

"Srl" ~ "Fib" check box

..... LDEVs whose path are selected by check box are displayed.

• Sub (Asyn)

"GRP" ~ "LU" check box

..... LDEVs whose sub status are selected by check box are displayed.

"PDUB Only" check box

..... Only Warning OPEN VOLs are displayed.

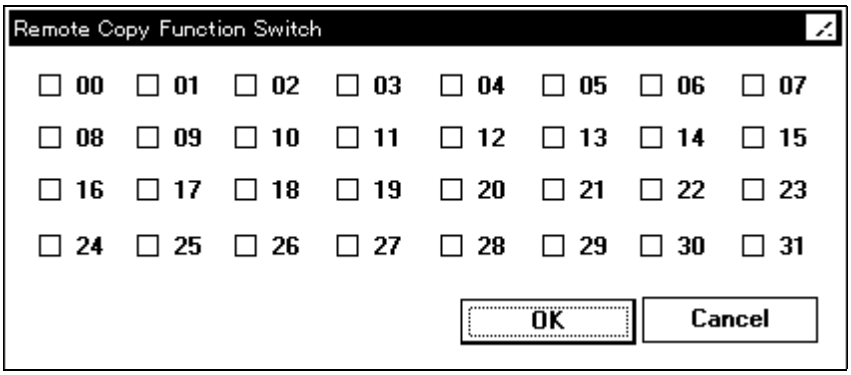
"S-VOL Only" check box

..... Displays only S-VOL pairs.
"SMPL" check box are displayed ineffectively.

"Port" combo box... LDEVs whose port is selected by combo box are displayed.
("ALL" displays all fibre Port(s).)

Reset ..... The specification of the filter is reset like displaying all the volumes.

7.20 Remote Copy Function Switch… screen



00 ~ 31.....The specification of a present function switches is displayed.
Moreover, the function switches which want to specified/released can be set.

The function allocated in each switch is as follows.

00 : Decreases the time of Path Blockade Watch of Fibre-HRC PPRC command (ESTPATH) from 40 seconds (default) to 35 seconds.

01 : Increases the time of Path Blockade Watch of Fibre-HRC PPRC command (ESTPATH) from 40 seconds (default) to 45 seconds.

02 ~ 31 : Unused.

8 Details of the HMRCF Operation Screen

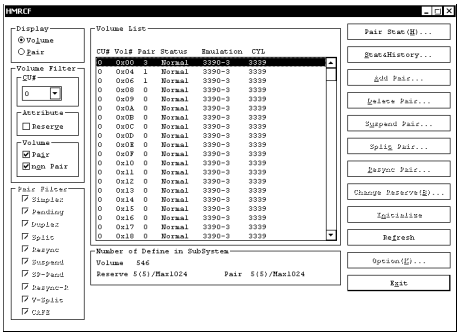
[0] Display HMRCF main screen

(1) Select the mode View or Modify.
View Mode: Only confirming the volume status is available.
Modify Mode: All operation and confirming the volume status are available.

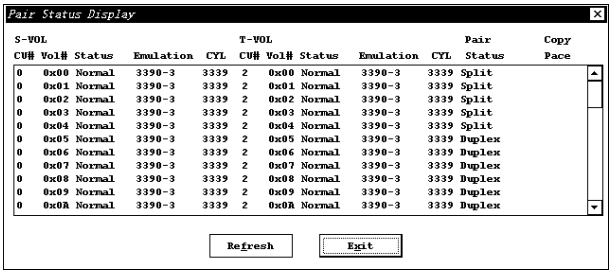
(2) Click the [HMRCF] button on the svp window.
After reading some configuration and HMRCF information.
The HMRCF main screen comes out.

[1] Procedure for confirming the volume status

(1) Select the volumes whose statuses you want to confirm, then click the [Pair Stat...] button.

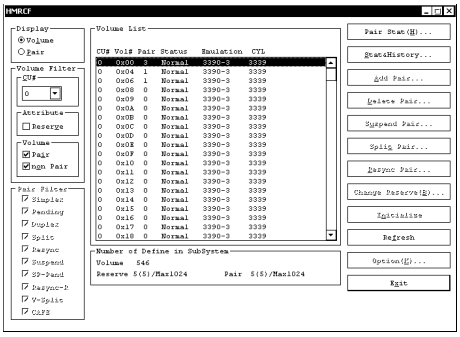


(2) The statuses of the volumes you selected are displayed. To update the displayed information to the latest one, click the [Refresh] button. The screen can be closed by clicking the [Exit] button.

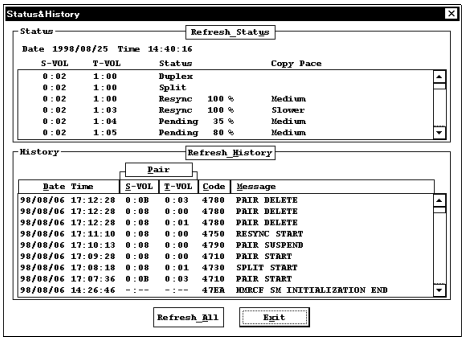


[2] Procedure for confirming Status & History

(1) Click the [Stat&History] button of HMRCF main screen.

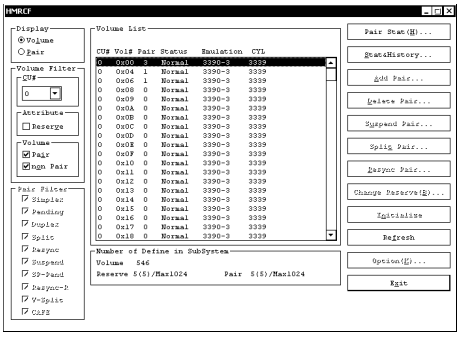


(2) The status situation of the present pairs are displayed in the Status frame. To update the displayed information of the side of Status to the latest one, click the [Refresh_Status] button.
The one to have sorted a condition transfer history by the time series is displayed in the History frame. When sorting in the time series, click the [Date Time] button. When sorting in the number of S-VOL series, click the [S-VOL] button. When sorting in the number of T-VOL series, click the [T-VOL] button. When sorting in the Message Code series, click the [Code] button. When sorting in the Message series, click the [Message] button. When sorting in the Pair series, click the [Pair] button. When updating the history of the condition transfer of the pair, click the [Refresh_History] button.
When updating the all information, click the [Refresh_All] button. The screen can be closed by clicking the [Close] button.



[3] Procedure for creating a volume pair

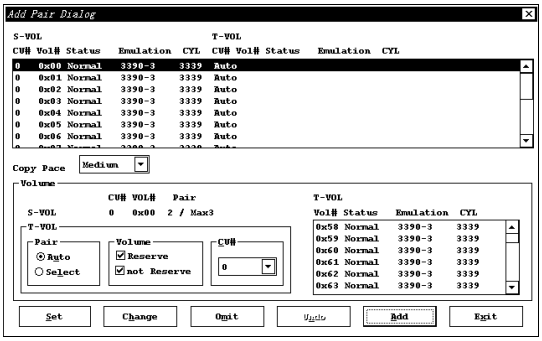
(1) Don't check the display attribute to "Reserve" on the HMRCF main screen, select a volume with which you want to create a volume pair, then click the [Add Pair...] button.



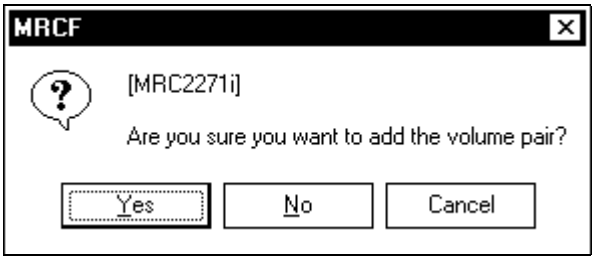
⚠ NOTICE

To create a volume pair, reserve volume must be defined. Refer to SVP08-80 and define reserve volume.

(2) A T-VOL is automatically selected for the S-VOL that you selected. When you add the T-VOL, select it on the screen, then click the [Set] button. To delete a pair from the Pair Volume list, select the pair you want to delete from the Pair Volume list and click the [Omit] button.
When you create a volume pair using the reserve volume displayed, click the [Add] button.
To stop the pairing, click the [Exit] button.



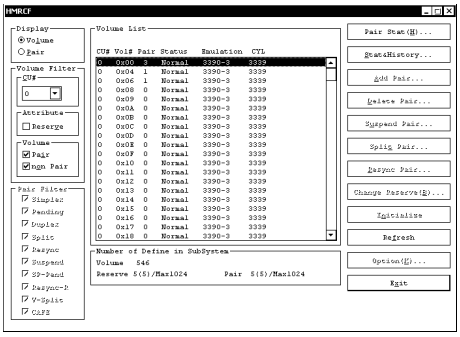
(3) A message box asking for confirmation whether to execute the pairing appears. To execute the pairing with the selected volumes, click the [Yes] button. To stop the pairing, click the [No] button. When you click the [Cancel] button, the screen for creating volume pairs returns.



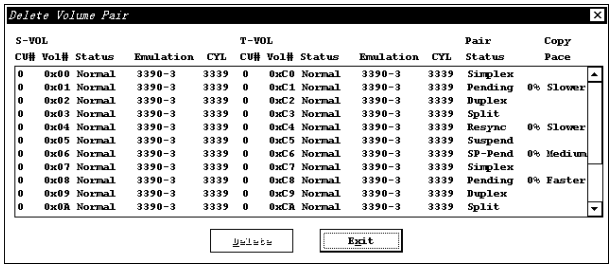
(4) When indicating the making of a pair, a status display screen is displayed. It confirms that status of pair which referred to SVP08-10 and indicated making becomes duplex.

[4] Procedure for parting a volume pair

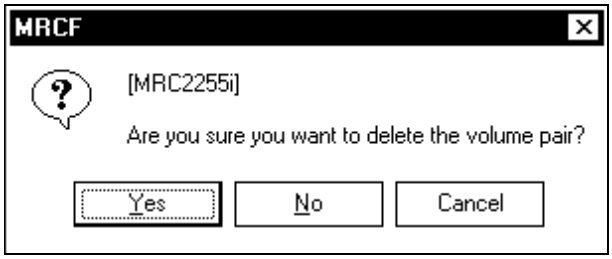
(1) Don't check the display attribute to "Reserve" on the HMRCF main screen, select a volume that you want to part the pair, then click the [Del Pair...] button.



(2) Select a volume pair that you want to part from the Pairs displayed and click the [Delete] button. To stop the parting, click the [Exit] button.



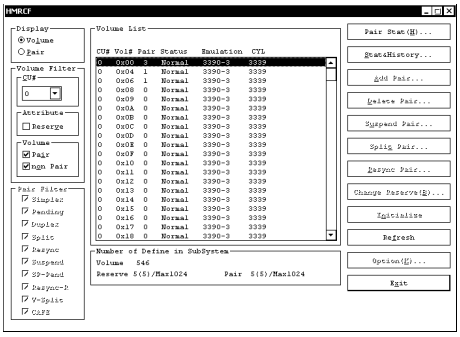
(3) A message box asking for confirmation whether to execute the parting appears. To actually part the selected volume pair, click [Yes] button. To stop the parting, click [No] button. When you click the [Cancel] button, the screen for parting volume pairs returns.



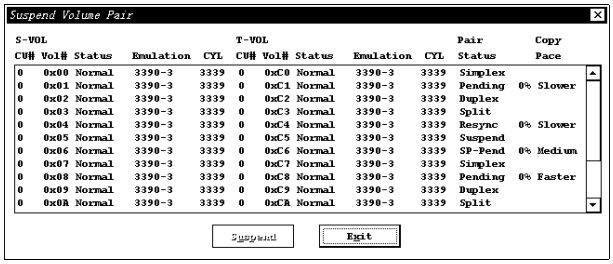
(4) When indicating the partition of the pair, it confirms that the pair which was specified by the HMRCF main screen is partitioned. When the pair status is displayed with Simplex, concerned pair is in the transition condition of the pair partition. Push [Refresh] button with the HMRCF main screen and confirm that concerned pair is partitioned.

[5] Procedure for suspending a volume pair

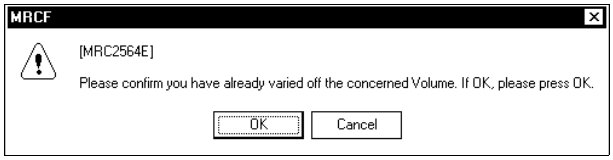
(1) Don't check the display attribute to "Reserve" on the HMRCF main screen, select a volume that you want to suspend, then click the [Suspend Pair...] button.



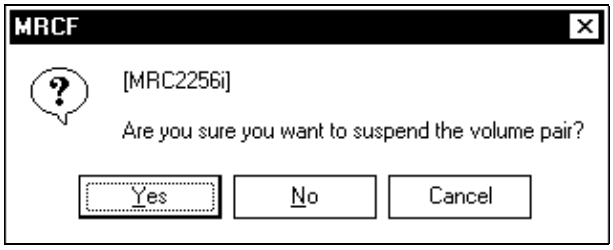
(2) Select a volume pair that you want to suspend from the pairs displayed and click the [Suspend] button. To stop the suspension, click the [Exit] button.



(3) The message to confirm that concerned Volume is an off line is displayed. It pushes [OK] button if confirming that concerned Volume is an off line. When you click the [Cancel] button, the screen for suspending volume pairs returns.



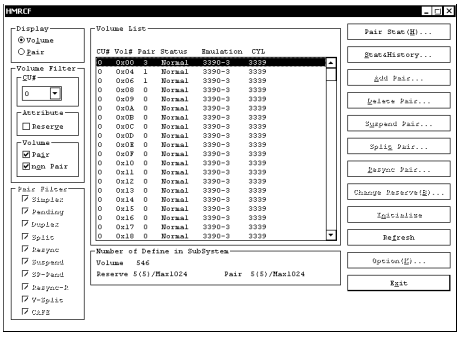
(4) A message box asking for confirmation whether to execute the suspension appears. To actually suspend the selected volume pair, click the [Yes] button. To stop the suspension, click the [No] button. When you click the [Cancel] button, the screen for suspending volume pairs returns.



(5) When indicating suspend of pair, status display screen is displayed. It confirms that status of pair which referred to SVP08-10 and indicated making becomes suspend.

[6] Procedure for splitting a volume pair

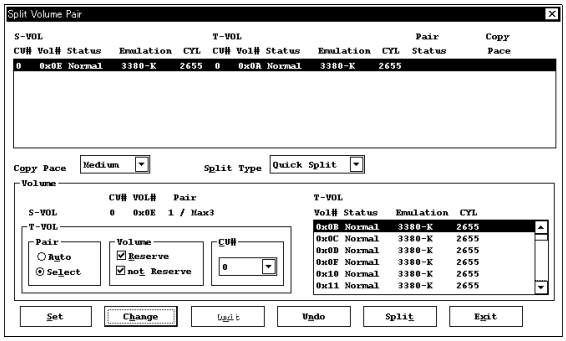
(1) Don't check the display attribute to "Reserve" on the HMRCF main screen, select a volume that you want to split, then click the [Split Pair...] button.



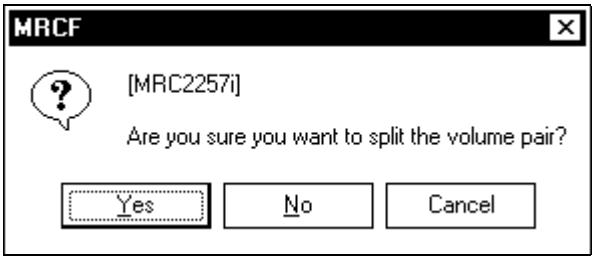
⚠ NOTICE

To splitting a volume pair newly, reserve volume must be defined. Refer to SVP08-80 and define reserve volume.

(2) A T-VOL is automatically selected for the S-VOL that you selected. When you add the T-VOL, select it on the screen, then click the [Set] button. To delete a pair from the Pair Volume list, select the pair you want to delete from the Pair Volume list and click the [Omit] button.
When you split a volume pair using the reserve volume displayed, click the [Split] button.
To stop the splitting, click the [Exit] button.



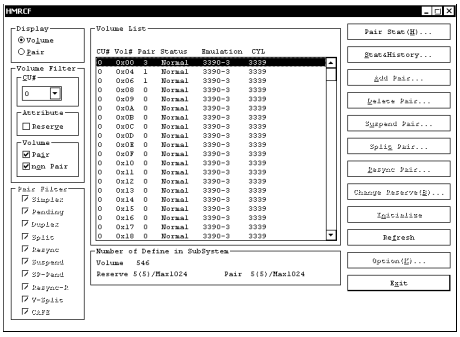
(3) A message box asking for confirmation whether to execute the splitting of the volume pair appears. To actually split the selected volume pair, click [Yes] button. To stop the splitting, click the [No] button. When you click the [Cancel] button, the screen for splitting volume pairs returns.



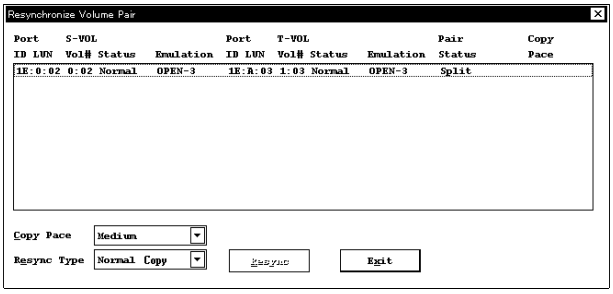
(4) When indicating split of pair, status display screen is displayed. It confirms that status of pair which referred to SVP08-10 and indicated making becomes split.

[7] Procedure for resynchronizing a volume pair

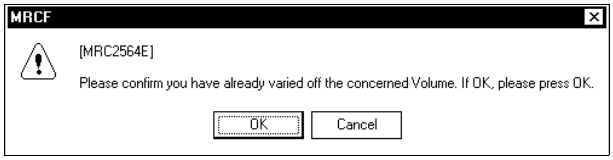
(1) Don't check the display attribute to "Reserve" on the HMRCF main screen, select a volume that you want to resynchronize, then click the [Resync Pair...] button.



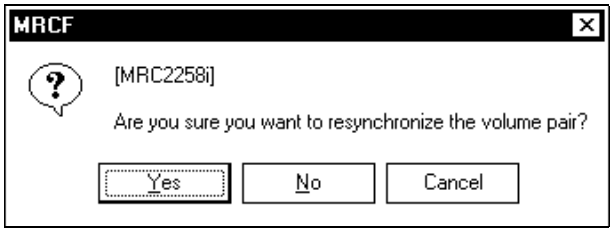
(2) Select a volume pair that you want to resynchronize from the pairs displayed and click the [Resync] button. To stop the resynchronization, click the [Exit] button.



(3) The message to confirm that concerned Volume is an off line is displayed. It pushes [OK] button if confirming that concerned Volume is an off line. When you click the [Cancel] button, the screen for resynchronizing volume pairs returns.



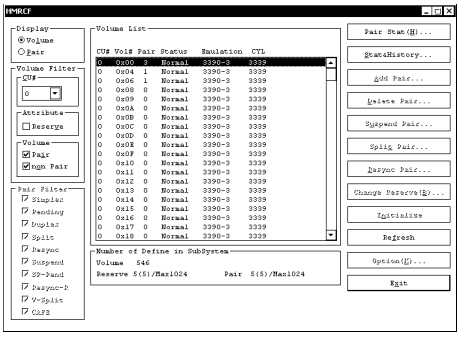
(4) A message box asking for confirmation whether to execute the resynchronization appears. To actually resynchronize the selected volume pair, click the [Yes] button. To stop the synchronization, click the [No] button. When you click the [Cancel] button, the screen for resynchronizing volume pairs returns.



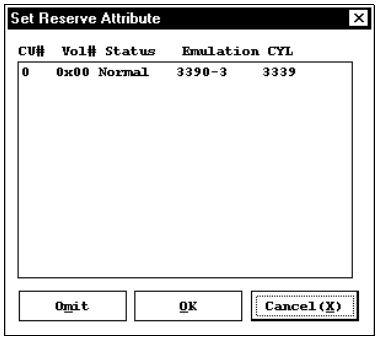
(5) When indicating making in resynchronization of pair, status display screen is displayed. It confirms that status of pair which referred to SVP08-10 and indicated making becomes duplex.

[8] Procedure for changing volume attribute

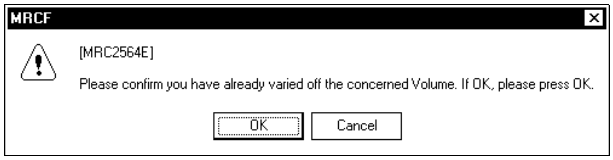
(1) Select the volumes whose attribute you want to change, then click the [Change Reserve...] button.



(2) When there are some volumes whose attributes you want to left unchanged, select the volumes and click the [Omit] button. To change the attributes of the selected volumes, click the [OK] button. To stop the attribute change, click the [Cancel] button.



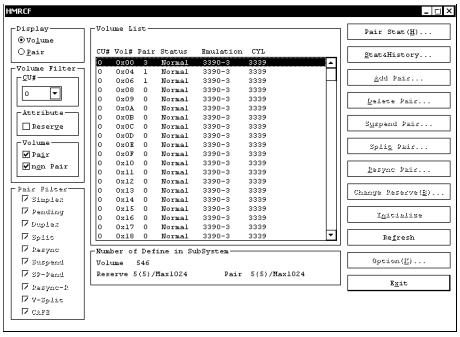
(3) When set the reserve attribute, the message to confirm that concerned Volume is an off line is displayed. It pushes [OK] button if confirming that concerned Volume is an off line. When you click the [Cancel] button, the screen for set volume attribute returns.



(4) When indicating the attribute change of the volume, it confirms that an attribute with the volume which was specified by the HMRCF main screen is changed.

[9] Procedure for initializing a Volume pair

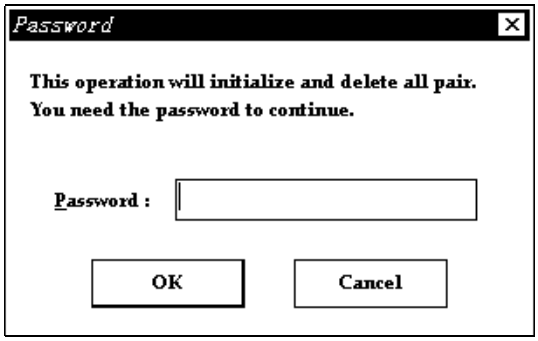
(1) On the HMRCF main screen, click the [Initialize] button.



⚠ NOTICE

All the pairs of HMRCF are deleted by this operation.

(2) "This operation will initialize and delete all pair. You need the password to continue." is displayed. Enter the password and select [OK] button.



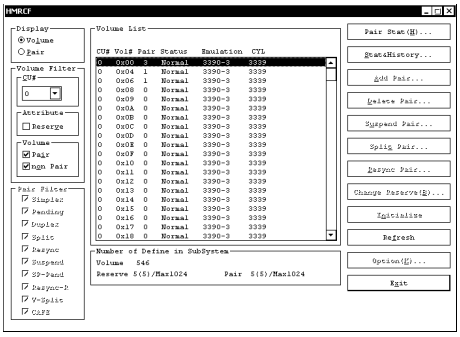
⚠ NOTICE

This is a special (exceptional) operation and requires an input of a password. Ask the technical support center about the appropriateness of the operation and input the password after getting an approval of executing the operation.

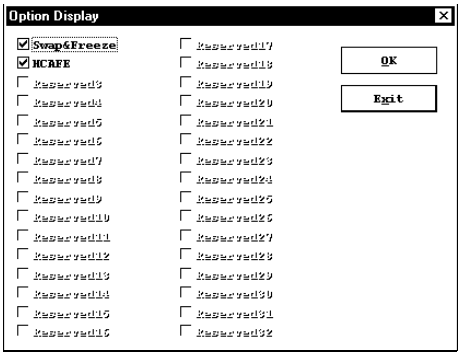
(3) When indicating the compulsion initialization of the pair, it confirms that all pairs are initialized with the HMRCF main screen.

[10] Procedure for Option Setting

(1) Select [Option] on main panel of HMRCF.

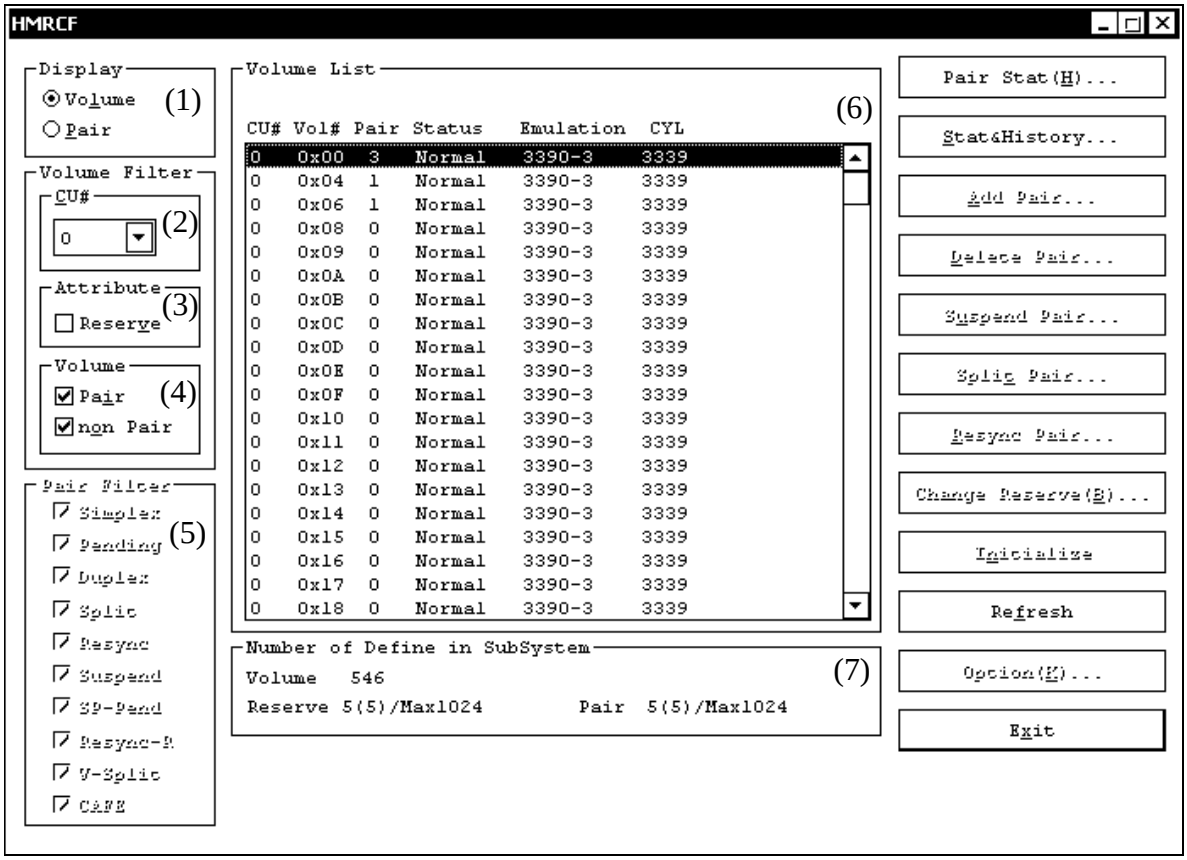


(2) The check box indicating all kind of option on it show the status of option setting.
Check the check box you want to set on Option Display panel. Release the check box you do not want to set.
Select [OK] on the Option Display panel. If you want execute the option setting
Select [Exit] on the Option Display panel. If you want to go back to the main panel of HMRCF.



8.1 Details for Screen

HMRCF main screen



(1) : Specifies the classification to display.
Volume : Displays Volume
Pair : Displays Pair

(2) : Specifies the CU# to which volumes to be displayed belong.
However, this specification is not valid when “Pair” is selected in step (1).

(3) : Display Filter Attribute
When the check box is checked, volumes with “Reserve” attribute are displayed. When the check box is not checked, volumes with attributes other than “Reserve” are displayed.
However, this specification is not valid when “Pair” is selected in step (1).

(4) : Display Filter Volume
Pair : Volumes with paired are Display
non Pair : Volumes with not paired are Display
However, this specification is not valid when “Pair” is selected in step (1).

(5) : Pair Filter
Simplex : Pair with Simplex are Display
Pending : Pair with Pending are Display
Duplex : Pair with Duplex are Display
Split : Pair with Split are Display
Resync : Pair with Resynchronization are Display
Suspend : Pair with Suspend are Display
SP-Pend : Pair with SP-Pend are Display
Resync-R : Pair with Reverse Resynchronization are Display
V-Split : Pair with V-Split are Display
CAFE : Pair with CAFE are Display
However, this specification is not valid when “Volume” is selected in step (1).

(6) : Volume List box
“Volume” is selected in step (1).
CU# : Number of the CU to which the volume concerned belongs
Vol# : Number of the volume concerned
Pair : Number of pairs of the volume concerned
Status : Status of the volume concerned
Emulation : Emulation type of the volume concerned
CYL : Number of cylinders that contain the volume concerned
“Pair” is selected in step (1).
S-VOL Vol# : Number of CU:Volume of S-VOL
S-VOL Status : Status of S-VOL
T-VOL Vol# : Number of CU:Volume of T-VOL
T-VOL Status : Status of T-VOL
Pair Status : Status of the volume pair concerned

(7) : Displays information concerning the volumes.
Volume : Number of volumes defined in the whole subsystem
Reserve : Number of reserves defined in the whole subsystem
Pair : Number of volume pairs defined in the whole subsystem

(8) : Displays a name of the screen for displaying the statuses of the volumes selected in step (6).

(9) : Displays a name of the screen for displaying the statuses of the all pair and pair history.

(10) : Displays a name of the screen for specifying the pairing of the volume selected in step (6).

(11) : Displays a name of the screen for specifying the parting of the volume pair selected in step (6).

(12) : Displays a name of the screen for specifying the suspension of the volume selected in step (6).

(13) : Displays a name of the screen for specifying the splitting of the volume pair selected in step (6).

(14) : Displays a name of the screen for specifying the resynchronization of the volume pair selected in step (6).

(15) : Displays a name of the screen for specifying the attribute change of the volumes selected in step (6).

(16) : Initialize the all pairs.
All HMRCF/HOMRCF/HIHSM pairs will be initialized and deleted by force. This operation needs password.

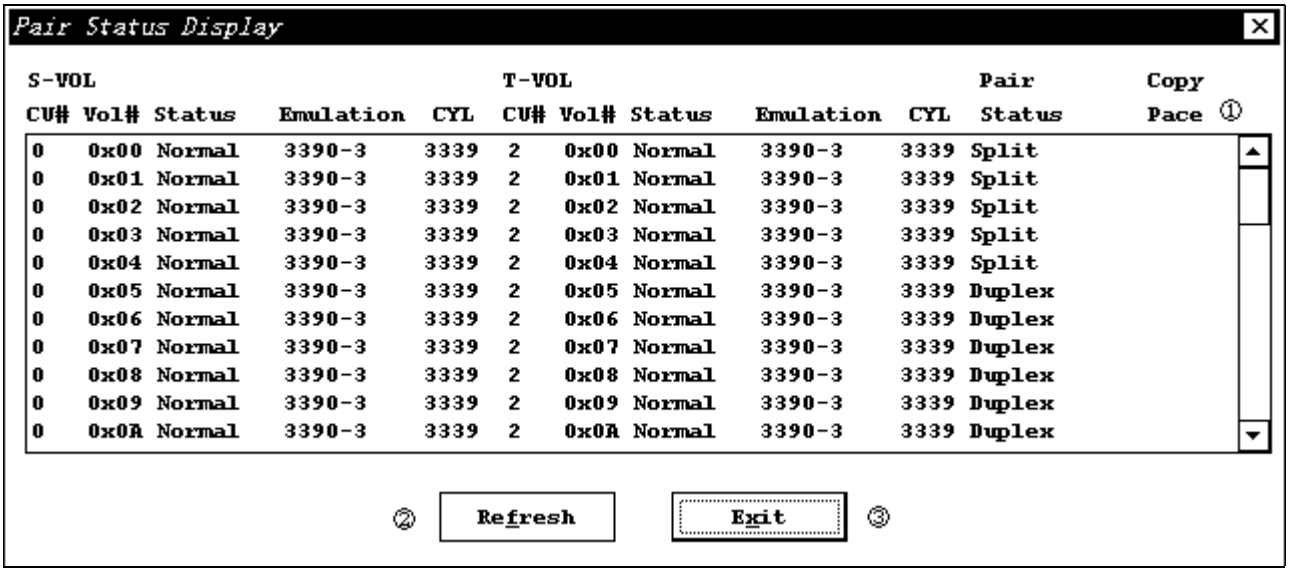
(17) : Updates the displayed information to the latest one.

(18) : Displays and setup of an option are performed.

(19) : Quits the HMRCF screen.

And choice maximum number is 512 at once time in Volume List box.

[2] Screen displaying pair status



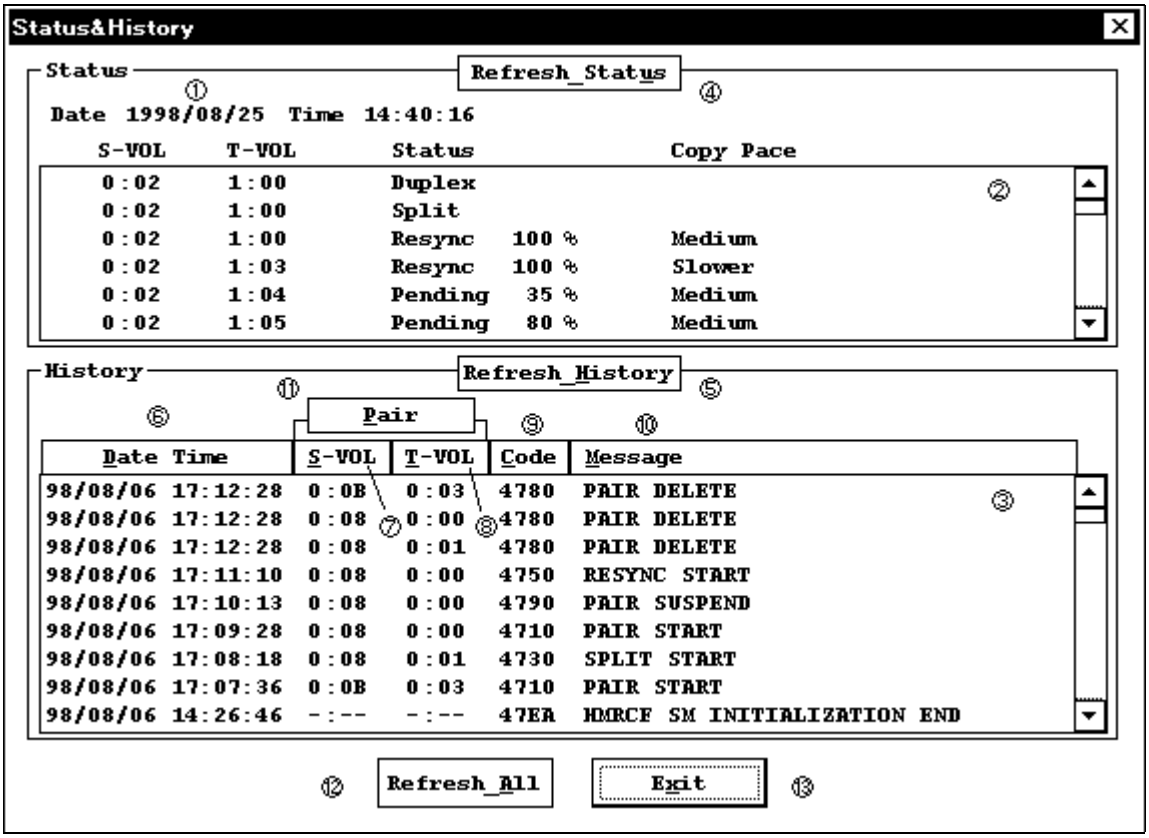
(1) : Status information list box

S-VOL CU#	: Number of the CU to which the S-VOL belongs
S-VOL Vol#	: Number of the S-VOL
S-VOL Status	: Status of the S-VOL
S-VOL Emulation	: Emulation type of the S-VOL
S-VOL CYL	: Number of cylinders that contain the S-VOL
T-VOL CU#	: Number of the CU to which the T-VOL belongs
T-VOL Vol#	: Number of the T-VOL
T-VOL Status	: Status of the T-VOL
T-VOL Emulation	: Emulation type of the T-VOL
T-VOL CYL	: Number of cylinders that contain the T-VOL
Pair Status	: Status of the volume pair concerned
Copy Pace	: Copy pace of the volume pair

(2) : Updates the displayed information to the latest one.

(3) : Closes the screen.

[3] Status & History Screen



(1) : It displays the time when the present pairs status was acquired.

(2) : The present pair status display list box
- S-VOL : Number of the CU of S-VOL (Left) Number of the Volume (Right)
- T-VOL : Number of the CU of T-VOL (Left) Number of the Volume (Right)
- Status : The present pairs of volume concerned.
- Copy Pace : Copy pace of the volume pair.

(3) : History of the condition transfer of the pairs display list box.
- Date Time : The time which history SIM occurred to.
- S-VOL : Number of the CU of S-VOL (Left) Number of the Volume (Right)
- T-VOL : Number of the CU of T-VOL (Left) Number of the Volume (Right)
- Code : Reference Code.
- Message : The message which corresponded to Reference Code.

(4) : Updates the status to the latest one.

(5) : Updates the history to the latest one.

(6) : It sorts with the key with time.

(7) : It sorts with the key with S-VOL.

(8) : It sorts with the key with T-VOL.

(9) : It sorts with the key with code.

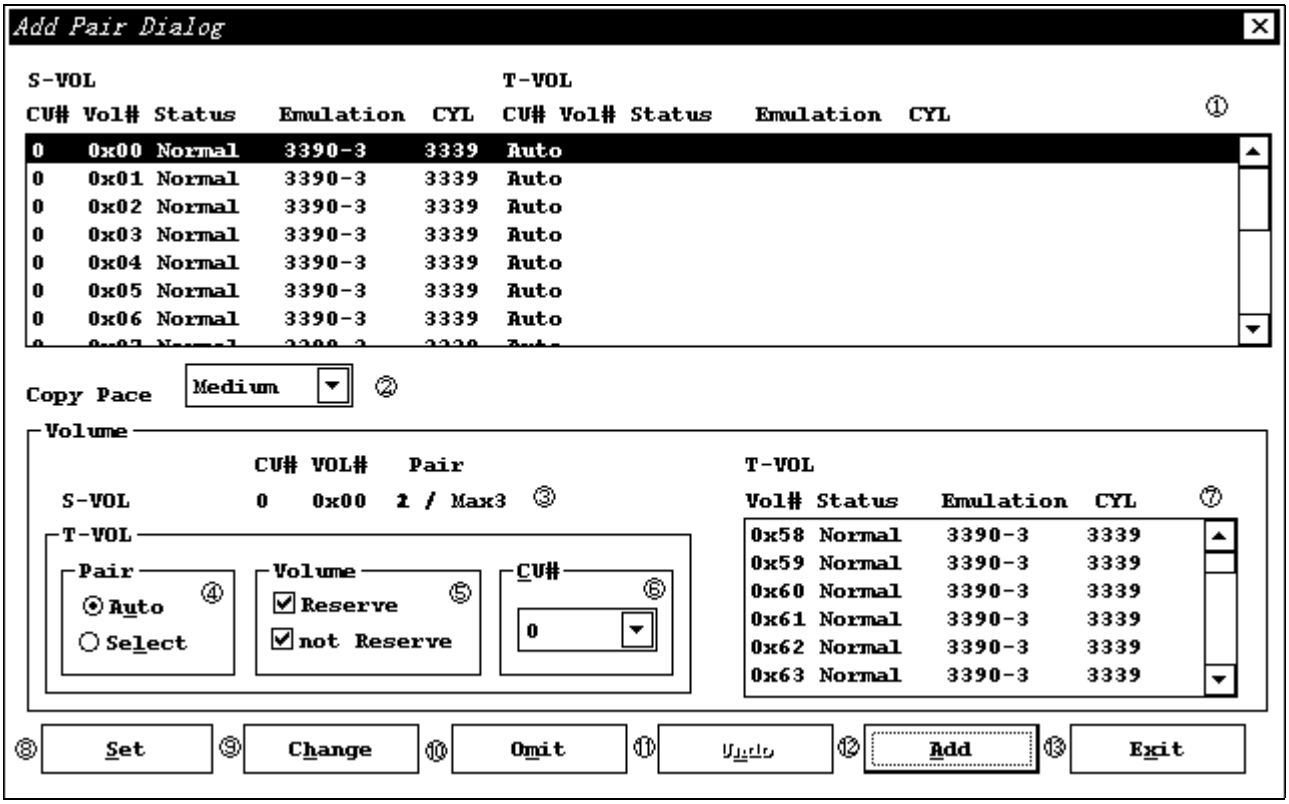
(10) : It sorts with the key with message.

(11) : It sorts with the key with pair.

(12) : Updates the displayed information to the latest one.

(13) : Quits the Screen.

[4] Screen for specifying pairing



(1) : Volume information list box
- S-VOL CU# : Number of the CU to which the S-VOL belongs
- S-VOL Vol# : Number of the S-VOL
- S-VOL Status : Status of the S-VOL
- S-VOL Emulation : Emulation type of the S-VOL
- S-VOL CYL : Number of cylinders that contain the S-VOL
- T-VOL CU# : Number of the CU to which the T-VOL belongs
- T-VOL Vol# : Number of the T-VOL
- T-VOL Status : Status of the T-VOL
- T-VOL Emulation : Emulation type of the T-VOL
- T-VOL CYL : Number of cylinders that contain the T-VOL

When "AUTO" is specified for the T-VOL, the DKC automatically selects the T-VOL.

(2) : Specifies a copy pace.

(3) : S-VOL information
- CU# : Number of the CU to which the S-VOL belongs
- VOL# : Number of the S-VOL
- Pair : Number of pairs of the S-VOL

(4) : Specifies the method to select the T-VOL.
- Auto : Selects a T-VOL automatically.
- Select : Specifies a T-VOL for selection.

(5) : Specifies T-VOL to display
Reserve : Display volume of the reserve attribute.
not Reserve : Display volume of the non-reserve attribute.

(6) : Specifies a CU# from which the T-VOL is selected.

(7) : Information of the T-VOL to be paired
Vol# : Number of the T-VOL
Status : Status of the T-VOL
Emulation : Emulation type of the T-VOL
CYL : Number of cylinders that contain the T-VOL

(8) : Adds the selected T-VOL as a volume to be paired.

(9) : Changes into T-VOL which chose T-VOL which is set at present.

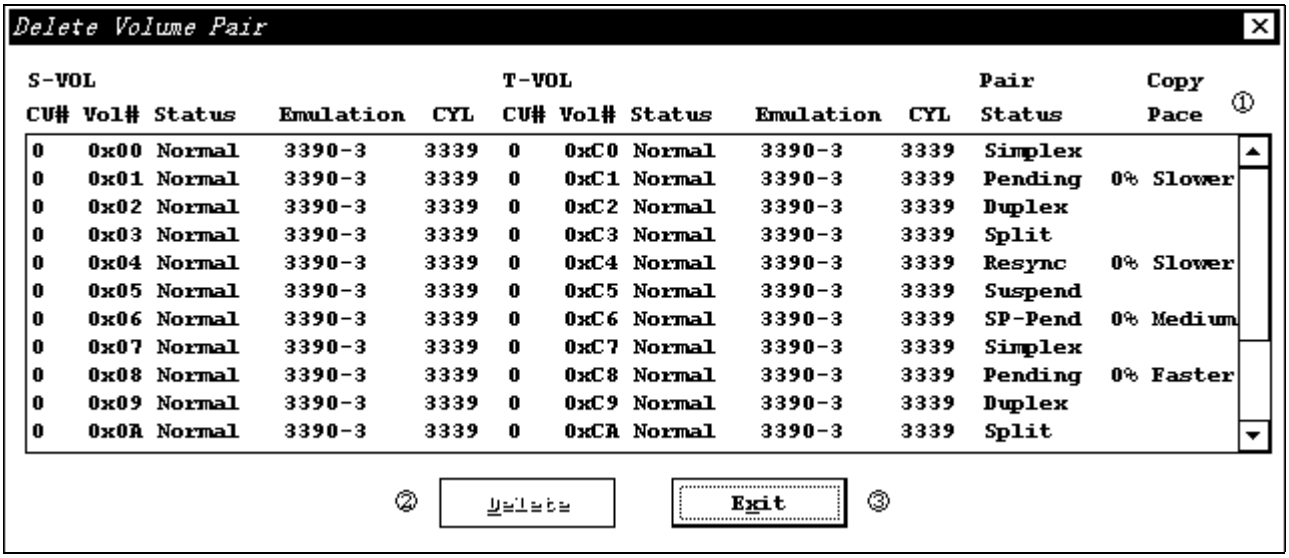
(10) : Deletes the selected T-VOL from the volumes to be paired.

(11) : Returns 1 step of operation done by (8), (9) or (10).

(12) : Execute the pairing.

(13) : Stops the pairing.

[5] Screen for specifying paring of volume pair



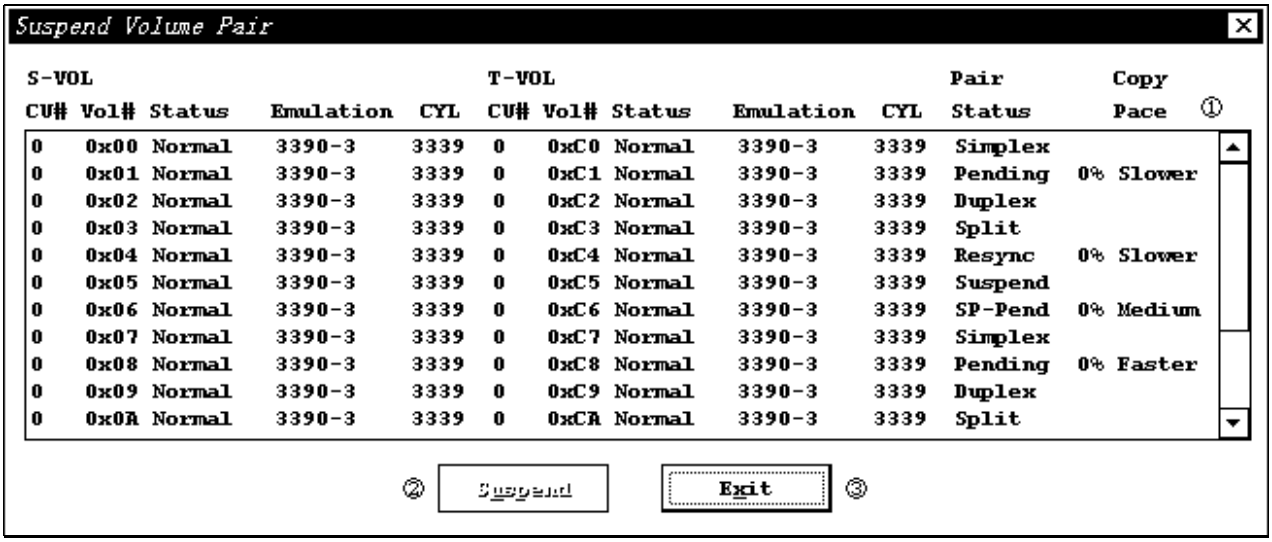
(1) : Volume pair information list box

S-VOL CU#	: Number of the CU to which the S-VOL belongs
S-VOL Vol#	: Number of the S-VOL
S-VOL Status	: Status of the S-VOL
S-VOL Emulation	: Emulation type of the S-VOL
S-VOL CYL	: Number of cylinders that contain the S-VOL
T-VOL CU#	: Number of the CU to which the T-VOL belongs
T-VOL Vol#	: Number of the T-VOL
T-VOL Status	: Status of the T-VOL
T-VOL Emulation	: Emulation type of the T-VOL
T-VOL CYL	: Number of cylinders that contains the T-VOL
Pair Status	: Status of the volume pair
Copy Pace	: Copy pace of the volume pair.

(2) : Executes an parting of the volume pair.

(3) : Stops parting of the volume pair.

[6] Screen for specifying pair suspension

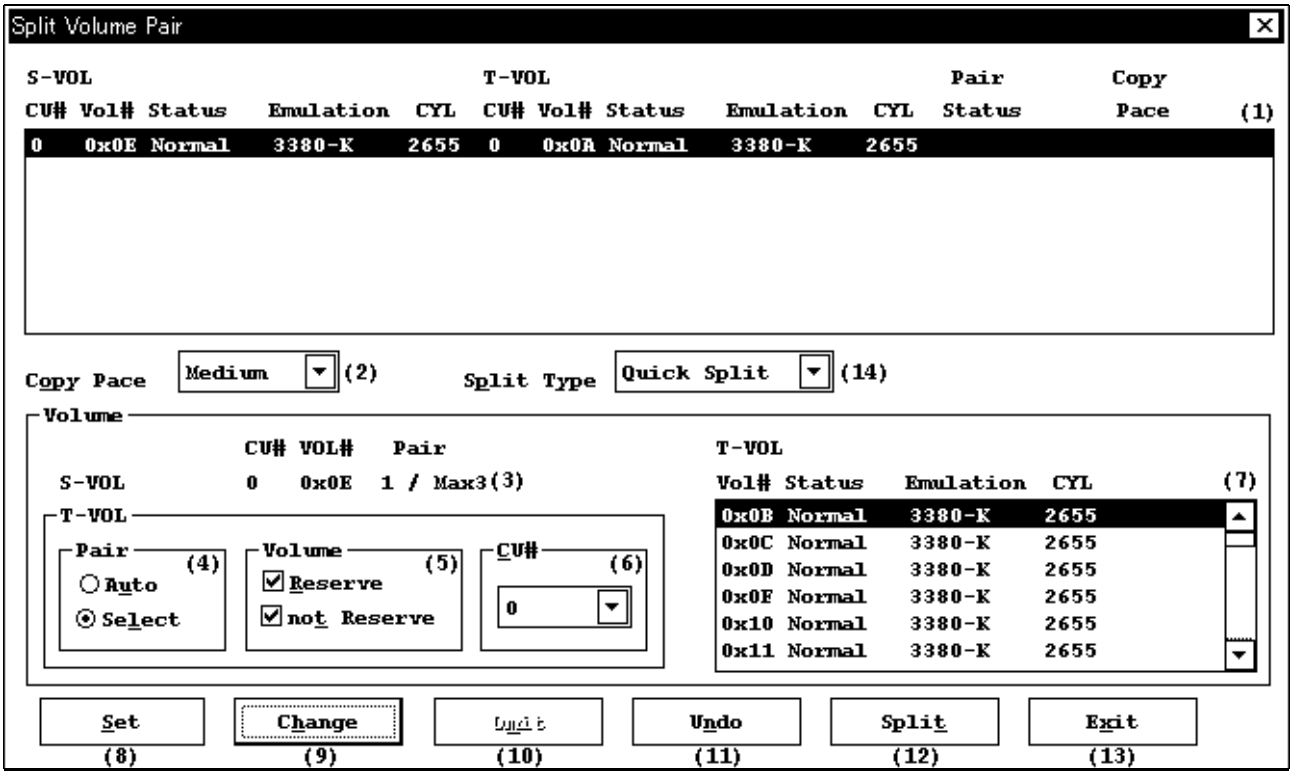


(1) : Volume pair information list box
- S-VOL CU# : Number of the CU to which the S-VOL belongs
- S-VOL Vol# : Number of the S-VOL
- S-VOL Status : Status of the S-VOL
- S-VOL Emulation : Emulation type of the S-VOL
- S-VOL CYL : Number of cylinders that contain the S-VOL
- T-VOL CU# : Number of the CU to which the T-VOL belongs
- T-VOL Vol# : Number of the T-VOL
- T-VOL Status : Status of the T-VOL
- T-VOL Emulation : Emulation type of the T-VOL
- T-VOL CYL : Number of cylinders that contain the T-VOL
- Pair Status : Status of the volume pair concerned
- Copy Pace : Copy pace of the volume pair.

(2) : Executes a suspension of the volume pair.

(3) : Stops a suspension of the volume pair.

[7] Screen for specifying pair splitting



(1) : Volume pair information list box
- S-VOL CU# : Number of the CU to which the S-VOL belongs
- S-VOL Vol# : Number of the S-VOL
- S-VOL Status : Status of the S-VOL
- S-VOL Emulation : Emulation type of the S-VOL
- S-VOL CYL : Number of cylinders that contain the S-VOL
- T-VOL CU# : Number of the CU to which the T-VOL belongs
- T-VOL Vol# : Number of the T-VOL
- T-VOL Status : Status of the T-VOL
- T-VOL Emulation : Emulation type of the T-VOL
- T-VOL CYL : Number of cylinders that contain the T-VOL
- Pair Status : Status of the volume pair
- Copy Pace : Copy pace of the volume pair.

When “Auto” is specified for the T-VOL, the DKC automatically selects the T-VOL.

(2) : Specifies a copy pace.

(3) : S-VOL information
- CU# : Number of the CU to which the S-VOL belongs
- Vol# : Number of the S-VOL
- Pair : Number of volume pairs

(4) : Specifies the method to select the T-VOL.
- Auto : Selects a T-VOL automatically.
- Select : Specifies a T-VOL for selection.

(5) : Specifies T-VOL to display
- Reserve : Display volume of the reserve attribute.
- not Reserve : Display volume of the non-reserve attribute.

(6) : Specifies a CU# from which the T-VOL is selected.

(7) : Information of the T-VOL to be paired
- Vol# : Number of the T-VOL
- Status : Status of the T-VOL
- Emulation : Emulation type of the T-VOL
- CYL : Number of cylinders that contain the T-VOL

(8) : Adds a selected T-VOL as the one to be paired.

(9) : Changes into T-VOL which chose T-VOL which is set at present.

(10) : Deletes a selected T-VOL from the ones to be paired.

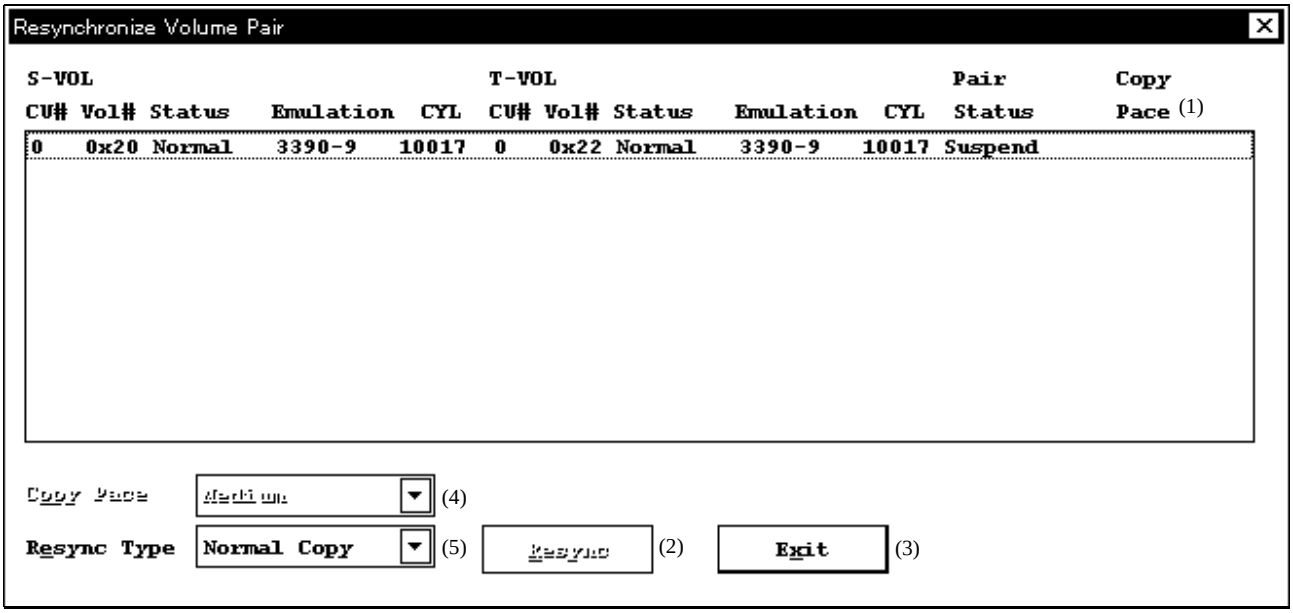
(11) : Returns 1 step of operation done by (8), (9) or (10).

(12) : Execute a splitting of the volume pair.

(13) : Stops a splitting of the volume pair.

(14) : Specifies a split type.

[8] Screen for specifying pair resynchronization



(1) : Volume pair information list box
- S-VOL CU# : Number of the CU to which the S-VOL belongs
- S-VOL Vol# : Number of the S-VOL
- S-VOL Status : Status of the S-VOL
- S-VOL Emulation : Emulation type of the S-VOL
- S-VOL CYL : Number of cylinders that contain the S-VOL
- T-VOL CU# : Number of the CU to which the T-VOL belongs
- T-VOL Vol# : Number of the T-VOL
- T-VOL Status : Status of the T-VOL
- T-VOL Emulation : Emulation type of the T-VOL
- T-VOL CYL : Number of cylinders that contain the T-VOL
- Pair Status : Status of the volume pair concerned
- Copy Pace : Copy pace of the volume pair.

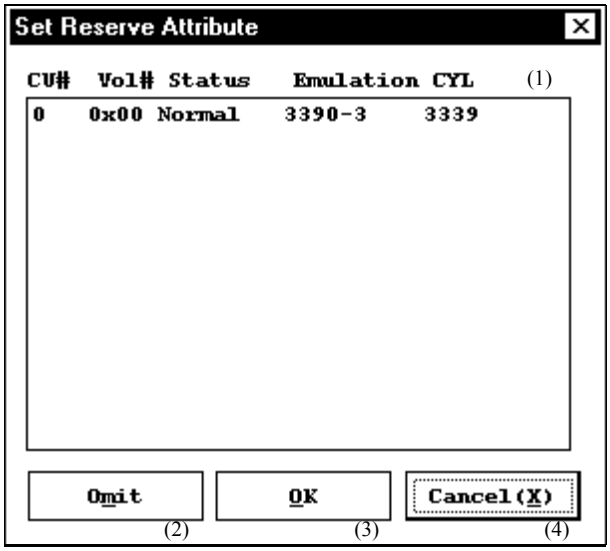
(2) : Execute a resynchronization of the volume pair.

(3) : Stops a resynchronization of the volume pair.

(4) : Specifies a copy pace.

(5) : Resync Type
Specifies the resynchronization type used when the resynchronization is executed.
When executing the resynchronization, the resynchronization is applied to all the pairs.
- Normal Copy : Displays the Normal Resync
- Quick Resync : Displays the Quick Resync
- Reverse Copy : Displays the Reverse Resync
- Quick Restore : Displays the Quick Restore

[9] Screen specifying volume attribute change



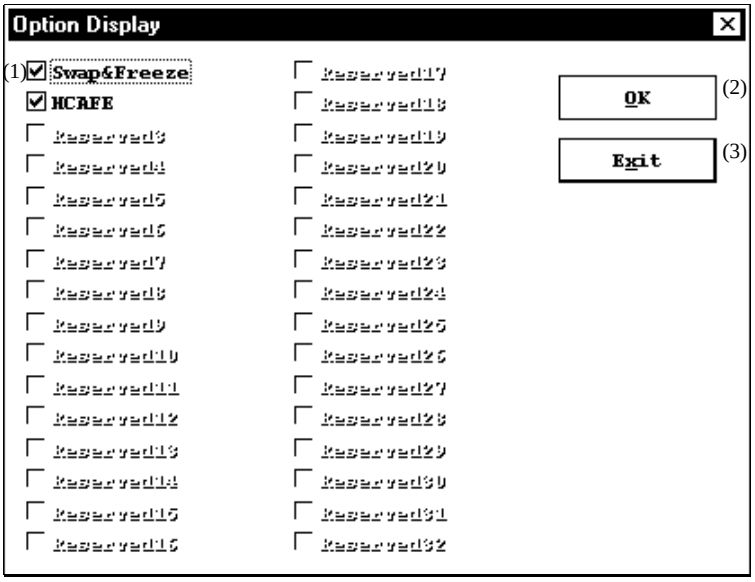
(1) : Volume information list box
- CU# : Number of the CU to which the volume belongs
- Vol# : Number of the volume
- Status : Status of the volume
- Emulation : Emulation type of the volume
- CYL : Number of cylinders that contain the volume

(2) : Removes the volume selected in step (1) from the ones whose attribute is to be changed.

(3) : Changes the attribute of the volume.

(4) : Stops changing the attribute of the volume.

[10] Screen Option Display



(1) : Option Setting check box
Swap & Freeze : Swap & Freeze Function is enabled
HCAFE : HCAFE Function is enabled

(2) : Executes the Option Setting

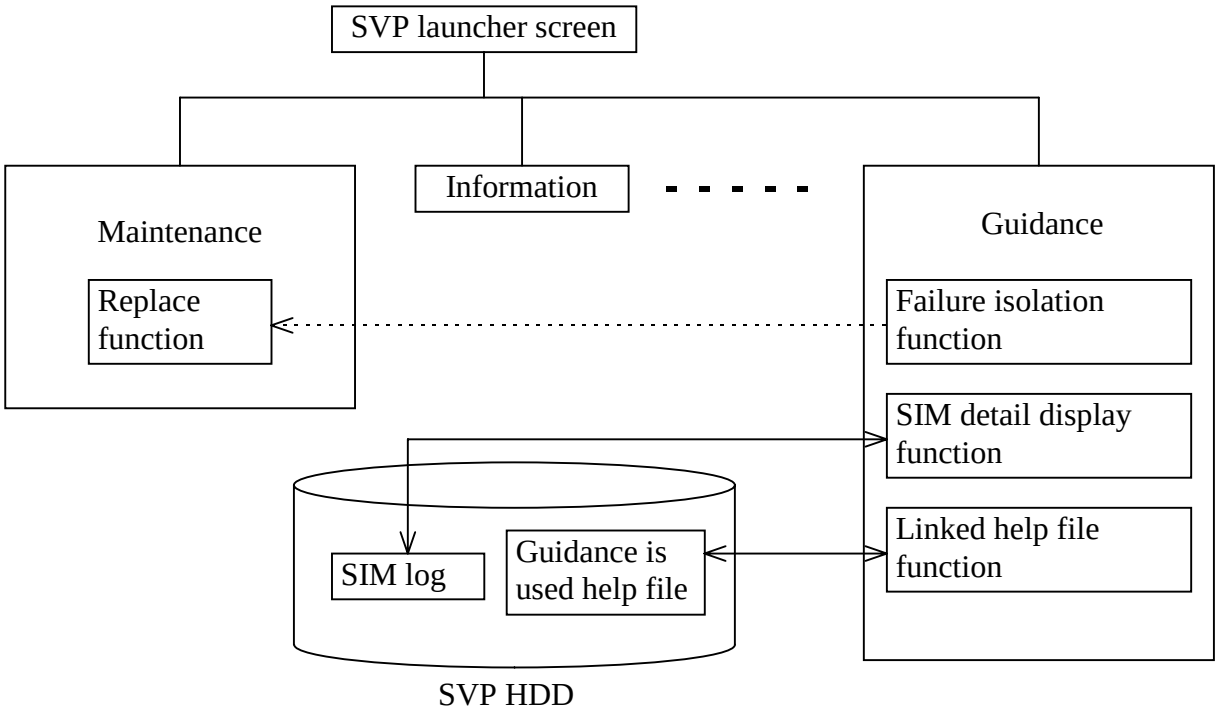
(3) : Stop the Option Setting and close the screen

Message	Status
Reading configuration...	Update of configuration information
CU? Attribute Reading...	Reading of the attribute of all volumes belong to the CU?
Reading pair status...	Reading of the status of all volumes
Creating pair...	During pair making request
Deleting pair...	During pair deletion request
Suspending pair...	During pair suspend request
Splitting pair...	During pair split request
Resynchronizing pair...	During Pair Resynchronization request
Attribute Changing...	During volume attribute change request
Command Executing...	During maximum pair number extension request
Initializing pairs...	During pair forcing initialization request
Refreshing status...	Reading of the status of pairs volumes
Refreshing history...	Updating of condition transfer history
Sorting...	Sorting of condition transfer history
Option Information Setting...	Setting of Option Information
Option Information Getting...	Getting of Option Information

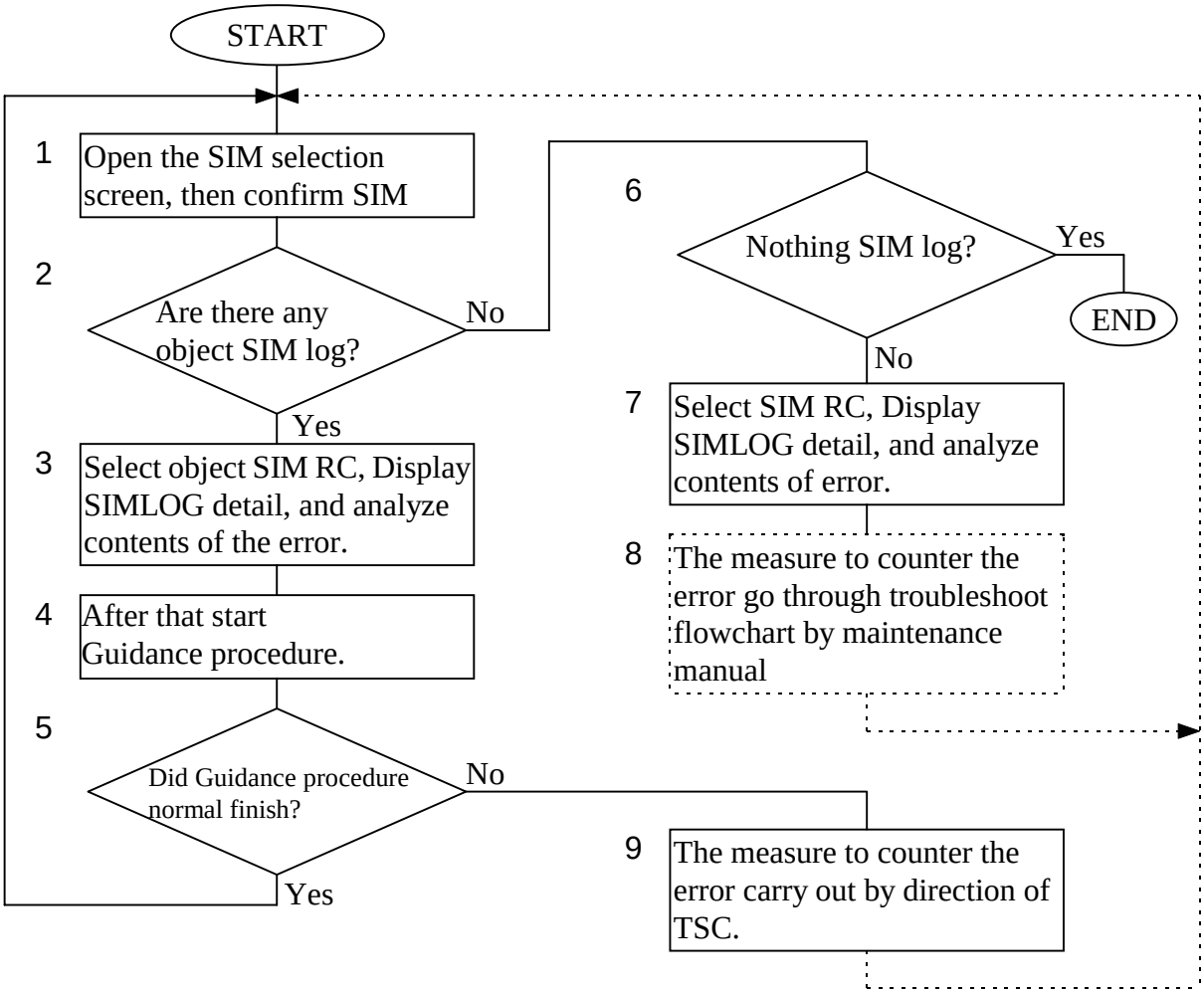
9 Guidance Operation Screen

9.1 Operation Manual of Guidance Function

Guidance Function is placed the same as Maintenance, Information and so on under the SVP launcher screen.



9.2 Outline Of Countermeasure By Guidance



9.3 Object SIM RC for Guidance Function

When the following SIM RC occurred, Guidance function will be able to execute.

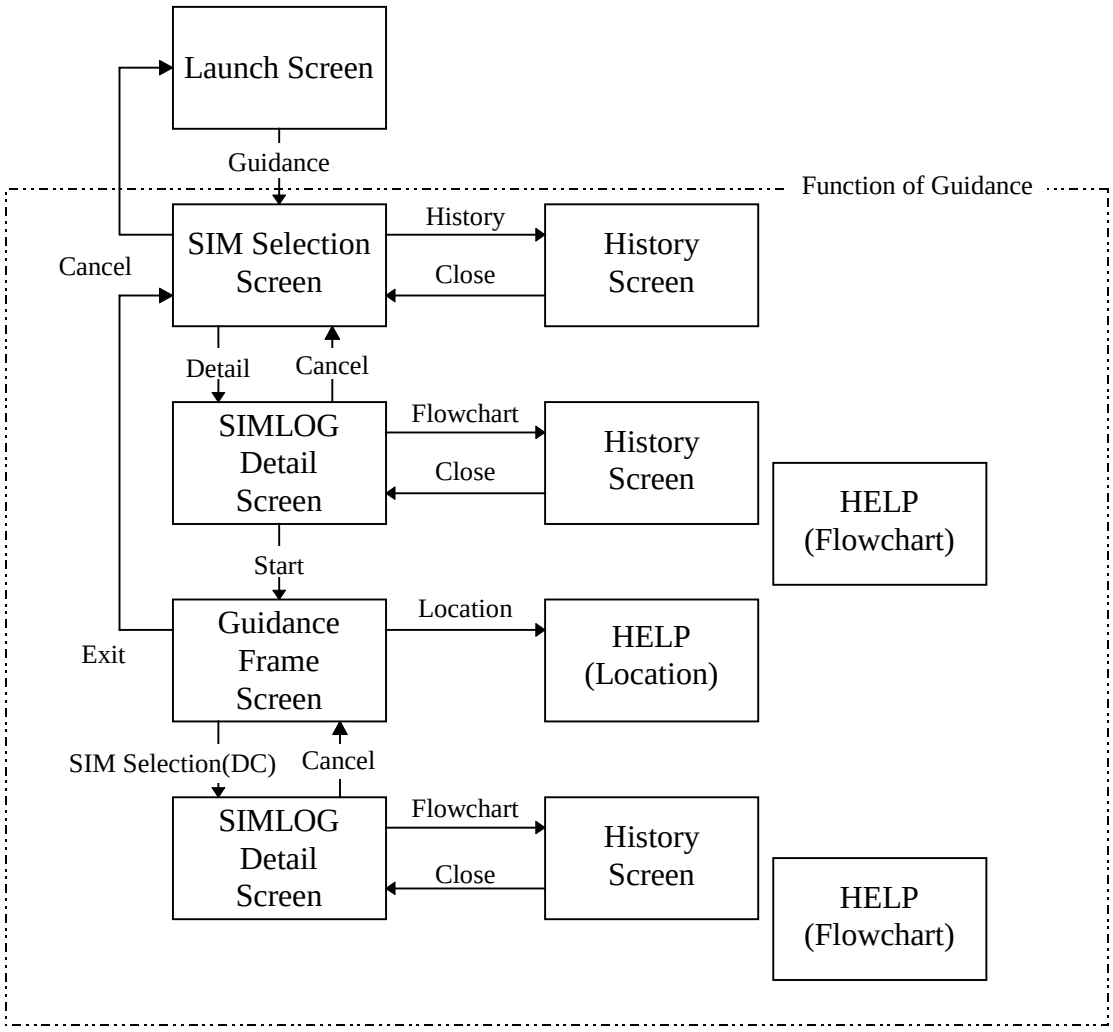
List of object SIM RC for Guidance function (1/2)

SIM RC	Name of failure	trouble ID	Guidance function
BF4XXX	P/S warning error	01	Guidance function can be measure to counter these failure as well as Troubleshoot in the maintenance manual.
BF2XXX	Voltage alarm	02	
BFA1XX	Environment disagreement error	03	
DF6XXX	Recovery procedure for common Fibre loop error	04	When the failure part can isolate to the specific drive, location of the Disk drive will be displayed. Can't isolate specific drive, refer to the troubleshoot in the Maintenance manual. In case of replacement, you can use the Replace function in the Maintenance Window.
DF7XXX			
DF8XXX			
DF9XXX			
CF90XX	Recovery procedure for LDEV blocking	05	Guidance function can not cope with these failure situation. Refer to the troubleshoot and finish Guidance.
EF9XXX			
DFAXXX			
DFBXXX			
XXXXXX	Replace	06	In this case, depends on Replace procedure by maintenance screen.
2180XX	RIO PATH closed	07	Guidance function can not cope with these failure situation. Refer to the troubleshoot and finish Guidance.
2190XX	AL_PA value conflict	08	
3993XX	Replace failure	09	
3D93XX			
399FXX	CHT PCB type inconsistency	0a	
FFE3XX	Shared memory failure	0b	TSC CALL message will be display and finish Guidance.
FFD3XX		0c	
FFDEXX		0d	Refer to the troubleshoot and finish Guidance.

List of object SIM RC for Guidance function (2/2)

SIM RC	Name of failure	trouble ID	Guidance function
D40XXX ~ D45XXX, D48XXX, D4DXXX ~ D4FXXX, DB0XXX ~ DB5XXX, DBDXXX ~ DBFXXX	HRC/HODM/HORC failure	0e	Guidance function can not cope with these failure situation. Refer to the troubleshoot in the maintenance manual.
47DXXX	HMRCF/HOMRCF failure	0f	Guidance function can not cope with these failure situation. Refer to the troubleshoot in the maintenance manual.
47FXXX	HIHSM failure	10	Guidance function can not cope with these failure situation. Refer to the troubleshoot in the maintenance manual.

9.4 Guidance Change of Screen

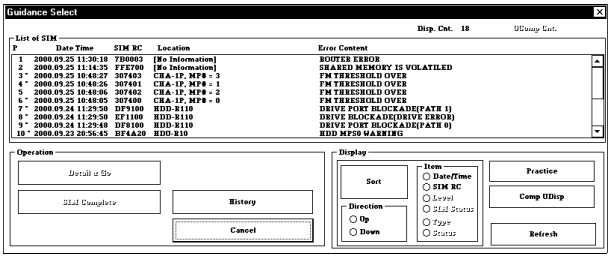


9.5 Operation of Guidance

[1] Start of Guidance

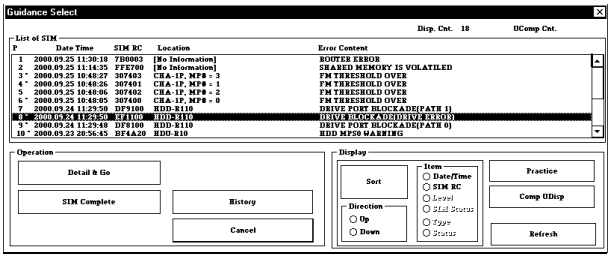
(1) Select (CL) [Guidance].

(2) Displayed SIM selection screen.
(Initial screen of Guidance function.)

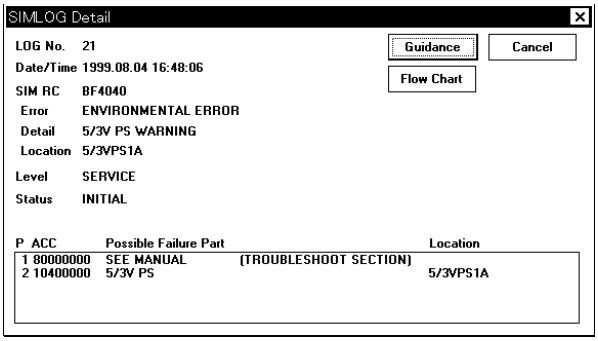


[2] SIMLOG Detail Screen

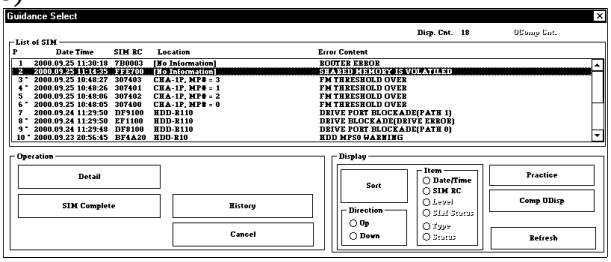
(1) When the SIM RC (SIM status is available) is selected.
When the Guidance function will be able to execute, [Detail & Go] button is displayed.
After that Select (CL) [Guidance] button.



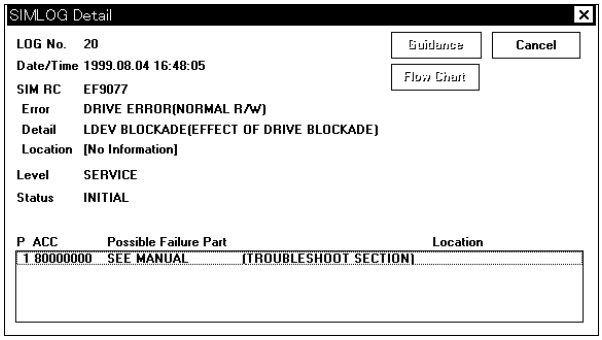
Displayed SIMLOG detail dialog box.



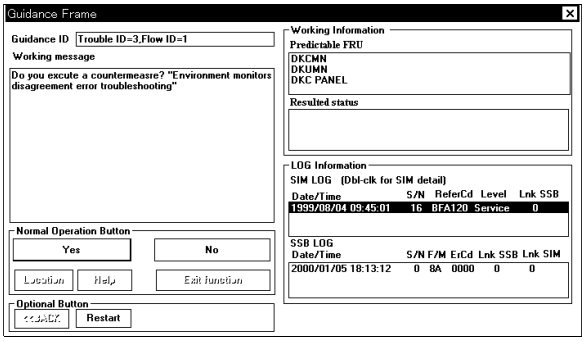
(2) When the SIM RC (SIM status is not available) is selected.
When the Guidance function is disable situation, (when the Guidance status is not available in the practice screen) as a result, [Detail] button is displayed.



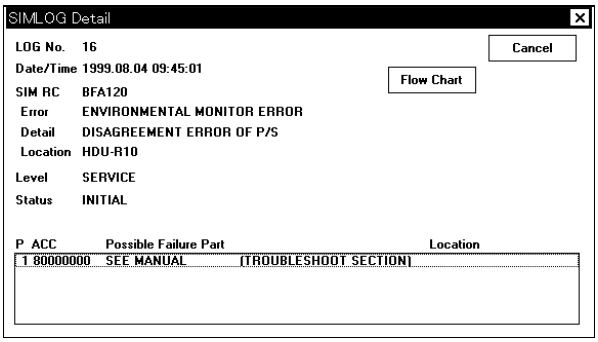
The Guidance function is disable, [Guidance] button is not displayed.



(3) When the Guidance function is running.
Select (DC) SIMLOG in the list box.

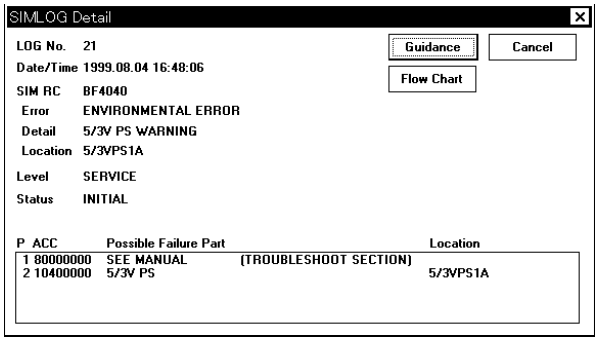


The Guidance function is running, [Guidance] button is not displayed.

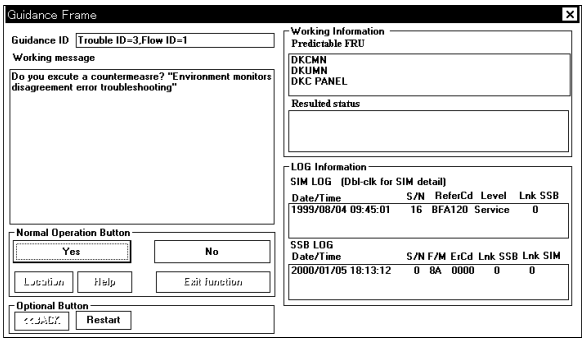


[3] Start troubleshoot

(1) Select (CL) [Guidance] button.

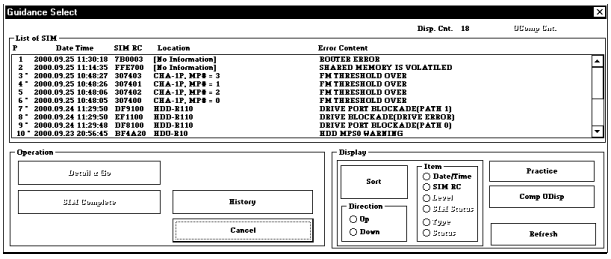


Displayed a Guidance frame screen.

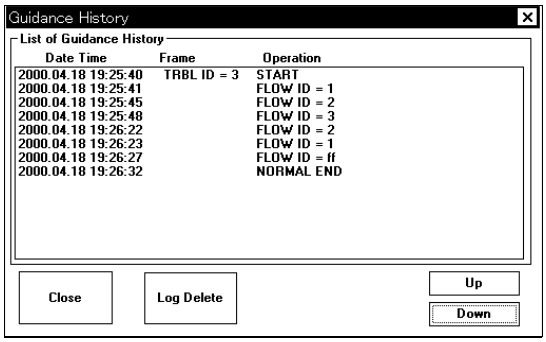


[4] History screen

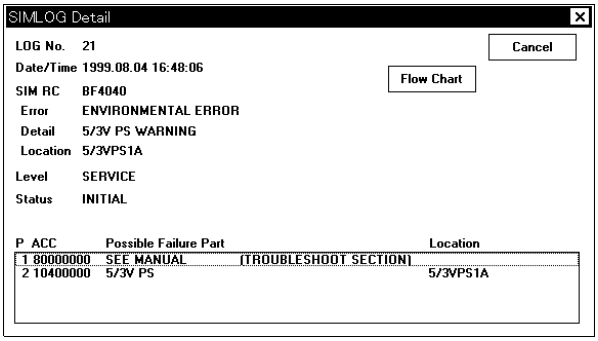
(1) Start from SIM selection screen.
(initial Guidance screen)
Select (CL) [HISTORY] button.



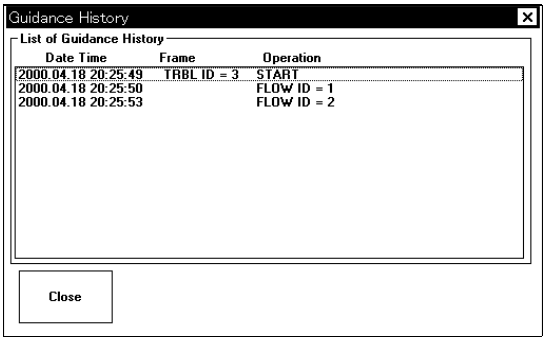
This dialog box can refer to all of the Guidance history and log delete, Displayed [Up], [Down] and [Log Delete] button.



(2) Start from SIMLOG detail screen.
Select (CL) [Flow Chart] button.

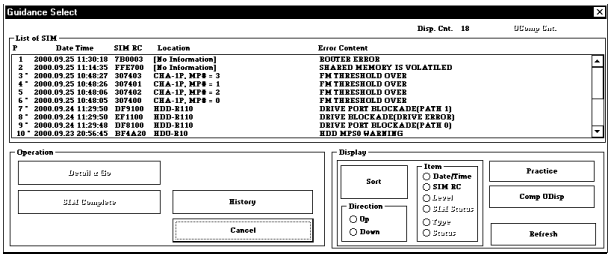


not Displayed [Up], [Down] and [Log Delete] button.

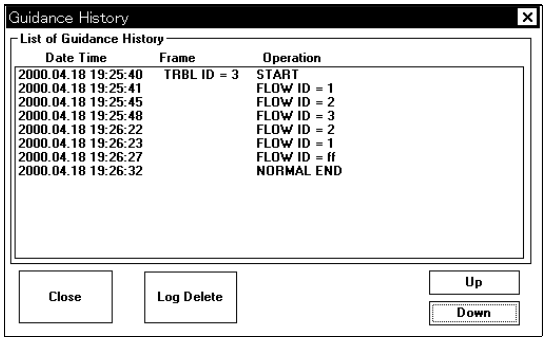


[5] Delete history

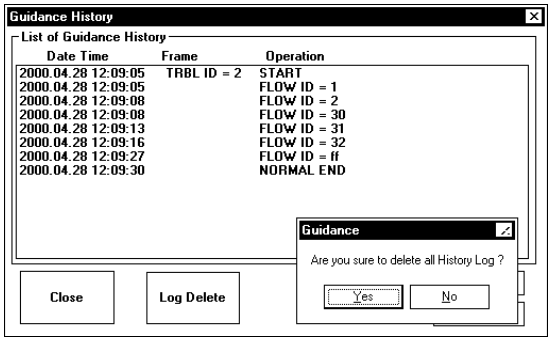
(1) Select (CL) [HISTORY] button.



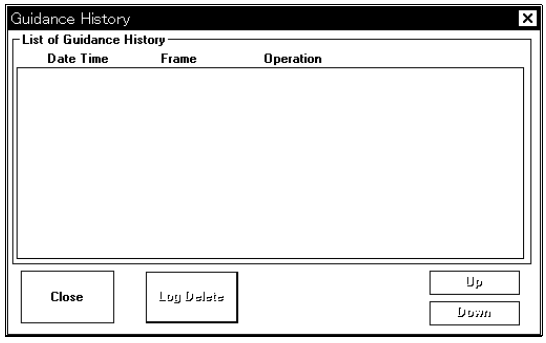
(2) Select (CL) [Log Delete] button.



(3) Displayed confirmation message,
Select (CL) [Yes] button.

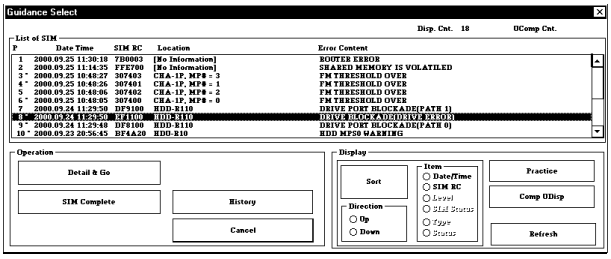


(4) Display Cleared log.

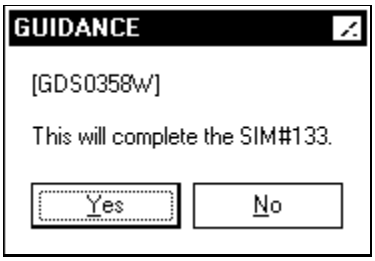


[6] SIM Complete

(1) Select (CL) SIM RC in the list box,
Select (CL) [SIM Complete] button.



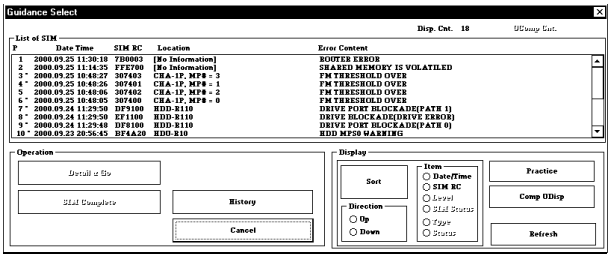
(2) Select (CL) [Yes] button.



[7] Change of SIM selection screen

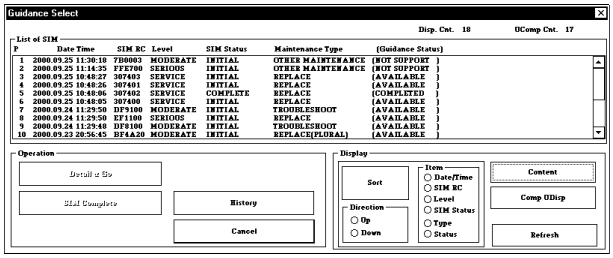
(1) ‘CONTENT’ screen.
(SIMLOG information)

Select (CL) [Practice] button.



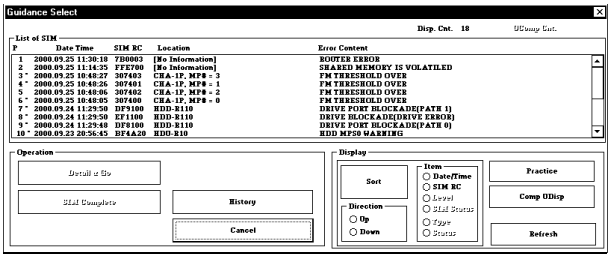
(2) ‘PRACTICE’ screen.
(Guidance information)

Select (CL) [Practice] button.



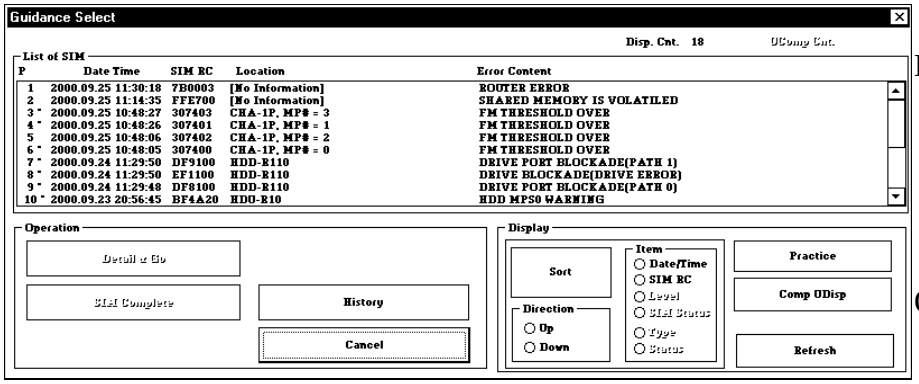
[8] End of Guidance

(1) Select (CL) [Cancel] button.



9.6 Detail of Screen

[1] SIM selection screen 1



Display part

Operation part

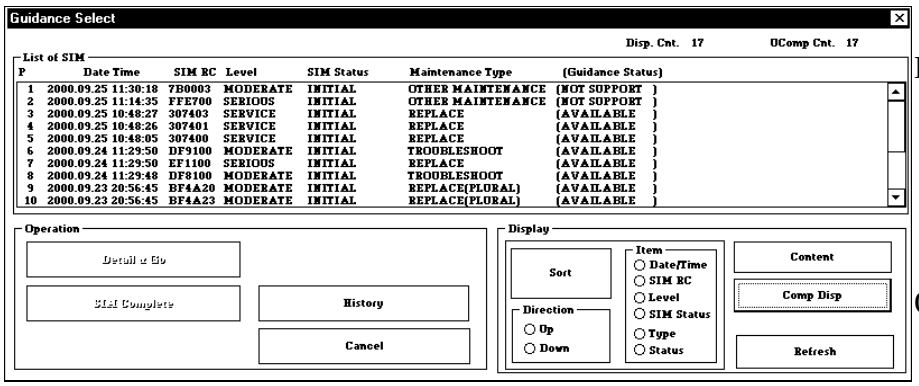
(1) Display part

Disp Cnt : number of SIMLOGs
UComp Cnt : number of uncomplete SIMLOGs
List of SIM : P: item number
Date Time : Time stamp of generated SIMLOG.
SIM RC : SIM RC (SSB22, 23, 13)
Location : Display location Information by edited SIM RC.
(This is the same as Location of Information screen.)
Error Content : Display contents of error by edited SIM RC.
(This is the same as Detail of Information screen.)

(2) Operation part

Detail & Go : Execute SIMLOG detail display screen.
SIM Complete : Complete SIMLOG.
HISTORY : Execute History display screen.
Cancel : Finish a Guidance function.
Sort : Sort item in the list box.
Direction : Sort in order (Up, Down)
Item : Sort key (Date/Time, SIM RC Level, SIM Status, Type, Status)
Practice : Change screen to PRACTIE (Guidance Information).
Comp UDisp : Change display mode to SIMLOG Complete.
Refresh : Reload SIMLOG data and renew the data in list box.

[2] SIM selection screen 2



Display part

Operation part

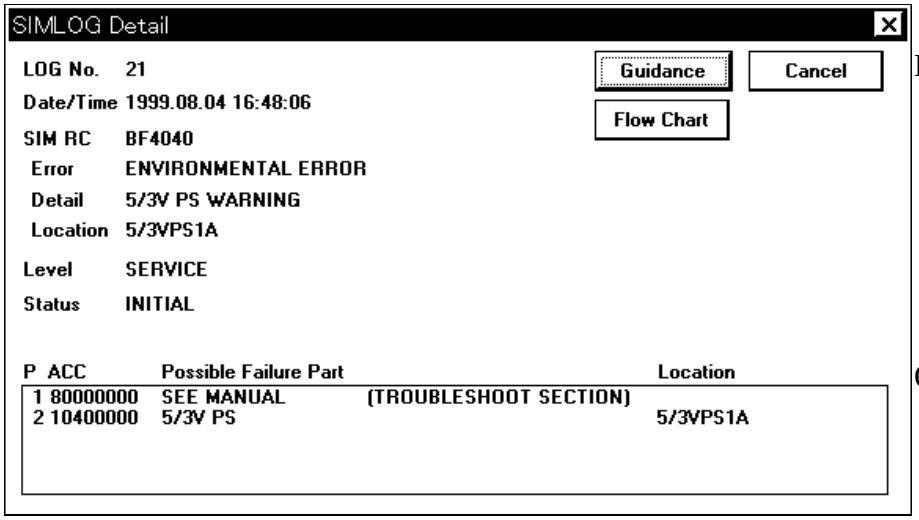
(1) Display part

Disp Cnt : number of SIMLOGs
UComp Cnt : number of uncomplete SIMLOGs
List of SIM : P: item number
- Date Time : Time stamp of generated SIMLOG.
- SIM RC : SIM RC (SSB22, 23, 13)
- Level : SIM alert level (Acute, Serious, Moderate, Service)
- SIM Status : SIM condition (Initial, Complete, Pending)
- Maintenance Type : Kind of Maintenance (Guidance, Replace, Others, Nothing)
- Guidance Status : Guidance condition (Available, Not Available, Not Supported, Completed)

(2) Operation part

Detail : Execute SIMLOG detail display screen.
SIM Complete : Complete SIMLOG.
HISTORY : Execute History display screen.
Cancel : Finish a Guidance function.
Sort : Sort item in the list box.
Direction : Sort in order (Up, Down)
Item : Sort key (Date/Time, SIM RC Level, SIM Status, Type, Status)
Content : Change screen to CONTENT (SIMLOG Information) display screen.
Comp Disp : Change undisplay mode to SIMLOG Complete.
Refresh : Reload SIMLOG data and renew the data in list box.

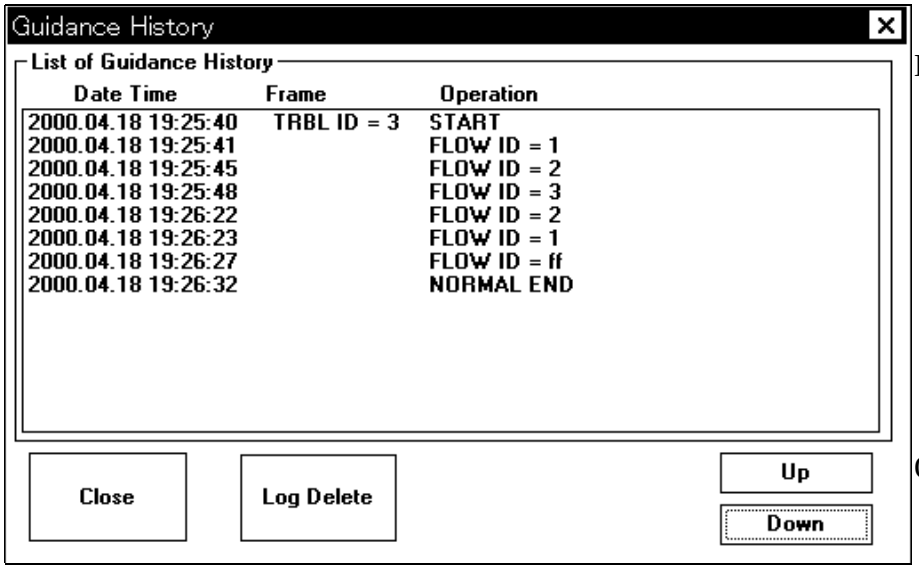
[3] SIMLOG detail screen



(1) Display part
This part is the same as Information screen.

(2) Operation part
Guidance : Execute a Guidance function.
Cancel : Return to previous screen.
Flow Chart : Display flow chart for Guidance function.

[4] History screen



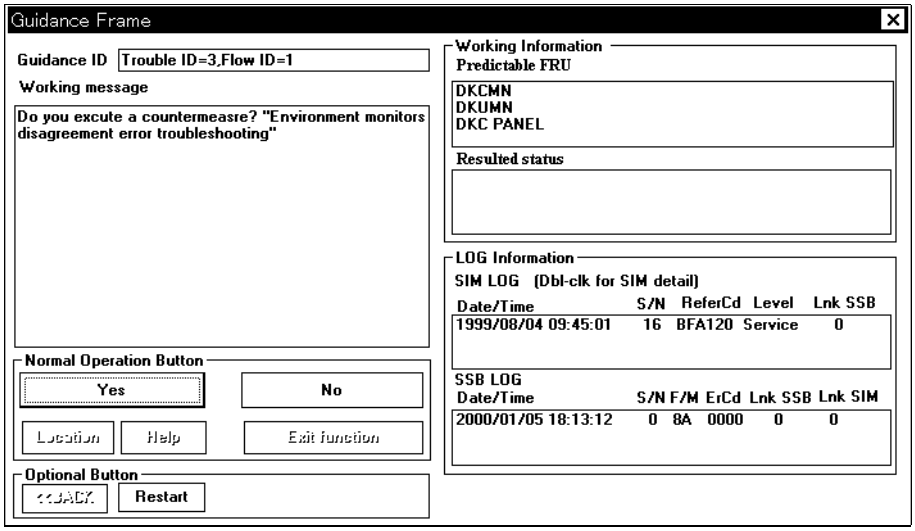
Display part

Operation part

(1) Display part
- Date/Time : Time stamp of executed guidance function.
- Frame : Display troubleshoot ID.
- Operation : Display result execution.

(2) Operation part
- Close : Close History screen.
- Log Delete : Delete History Log.
- Up : Display newer log than current log.
- Down : Display older log than current log.

[5] Guidance frame screen



Guidance ID	: Display trouble ID, flow ID on the current procedure.
Working Message	: Display contents of next procedure (or current procedure).
Yes/No button	: Refer to Working Message, you choose (CL) [Yes]/[No] button.
Location button	: Display replace part, location on the help screen linked Working Message.
Help button	: Display additional information on the help screen.
Exit function button	: When a Guidance function finished, (CL) [Exit function] button according to Working Message.
BACK button	: Back to the previous condition ID.
Restart/Force Exit button	: Restart : quit procedure and restart with initial procedure. Force Exit : Forced end of guidance function.
Predictable FRU	: Display predicted FRU when the Guidance will be executed.
Resulted status	: Display replaced part or Guidance resulted status.
SIM LOG	: Display object SIM LOG (Select (DC) SIM LOG, You can display SIM detail screen). : If the content of SIM LOG is abnormal, “SIM LOG is invalid.” is displayed. When the Lnk SSB is invalid, Lnk SSB number is not displayed. (Space)
SSB LOG	: Displays SSB LOG linked SIM LOG. When the linked SSB or the linked SIM is invalid, each number is not displayed. (Space) Depending on the first SSB LOG, the following messages are displayed. (The second or later SSB LOGs are not displayed.)

① Related SSB do not exist. : Linked SSB in the SIM LOG is invalid.
② Related SSB can not read. : In case of the related SSB can not read.
(Retry Restart Guidance) (Guidance can be continued. If you obtain the same result when you make another attempt, it means that the related SSB does not exist.)
③ Related SSB is invalid. : SSB LOG content is abnormal.

9.7 Message of T.S.C CALL

MSG NO	ID NO	TRBL NO	Message
01	0x0101	1	The ACC data exists except for 3VPS, 5/3VPS, SUBPS, MPS to which ACC part of the SIM “BF4XXX”.
02	0x0102	2	The wrong data exists on the Byte13 of the SIM “BF2XYY”.
03	0x0103	2	The wrong data exists on the Byte23 of the SIM “BF2XYY”.
04	0x0104	2	You can’t measure because of the failed cluster is now active.
05	0x0105	2	Measured the failed cluster, but still the voltage alarm is detected.
06	0x0106	2	You can’t measure because of the failed cluster is now active.
07	0x0107	2	You can’t measure because of the failed HDU is now active.
08	0x0108	2	Measured the failed HDU, but still the voltage alarm is detected. Pxx-1 pin5 and pin6 is short-circuit. Passed Flow-ID = 3E
09	0x0109	2	Measured the failed HDU, but still the voltage alarm is detected. Pxx-1 pin7 and pin8 is short-circuit. Passed Flow-ID = 5A
0A	0x010A	2	Measured the failed HDD, but still the voltage alarm is detected.
0B	0x010B	2	Measured the failed DKUMN, but still the voltage alarm is detected.
0C	0x010C	2	Performed short-circuit check PCB of the failed cluster, but can’t isolate the cause of the failure. SIMRC byte13 ≠ 10 Passed Flow-ID = 87
0D	0x010D	2	Performed short-circuit check PCB of the failed cluster, but can’t isolate the cause of the failure. SIMRC byte13 =10 Passed Flow-ID = 8E
0E	0x010E	3	Replaced PCB of the failed cluster, but still the voltage alarm is detected.
0F	0x010F	3	Replaced the failed DKCMN, but still the environment monitors disagreement error is detected.
10	0x0110	3	Replaced the failed DKCMN, DKC PANEL, but still the environment monitors disagreement error is detected.
11	0x0111	3	Can’t isolate the cause of the environment monitors disagreement error. DKCMN, DKUMN are not blinking. Passed Flow-ID = 41
12	0x0112	3	Can’t isolate the cause of the environment monitors disagreement error. Replaced DKUMN, but DKUMN is blinking. Passed Flow-ID = 47
13	0x0113	3	Can’t isolate the cause of the environment monitors disagreement error. Can’t execute PSOFF. Passed Flow-ID = 5A
14	0x0114	3	Can’t isolate the cause of the environment monitors disagreement error. DKUMN is not blinking. Passed Flow-ID = 60
15	0x0115	3	Replaced the failed DKUMN, but still the environment monitors disagreement error is detected.
16	0x0116	3	Can’t isolate the cause of the environment monitors disagreement error. Blinking either DKCMN or DKUMN. Passed Flow-ID = 76
17	0x0117	3	Can’t isolate the cause of the environment monitors disagreement error. Blinking either DKCMN or DKUMN. Passed Flow-ID = 7C
18	0x0118	3	Replaced the failed DKC PANEL, but still the environment monitors disagreement error is detected.
19	0x0119	3	Can’t isolate the cause of the environment monitors disagreement error. Blinking DKCMN. Passed Flow-ID = 90

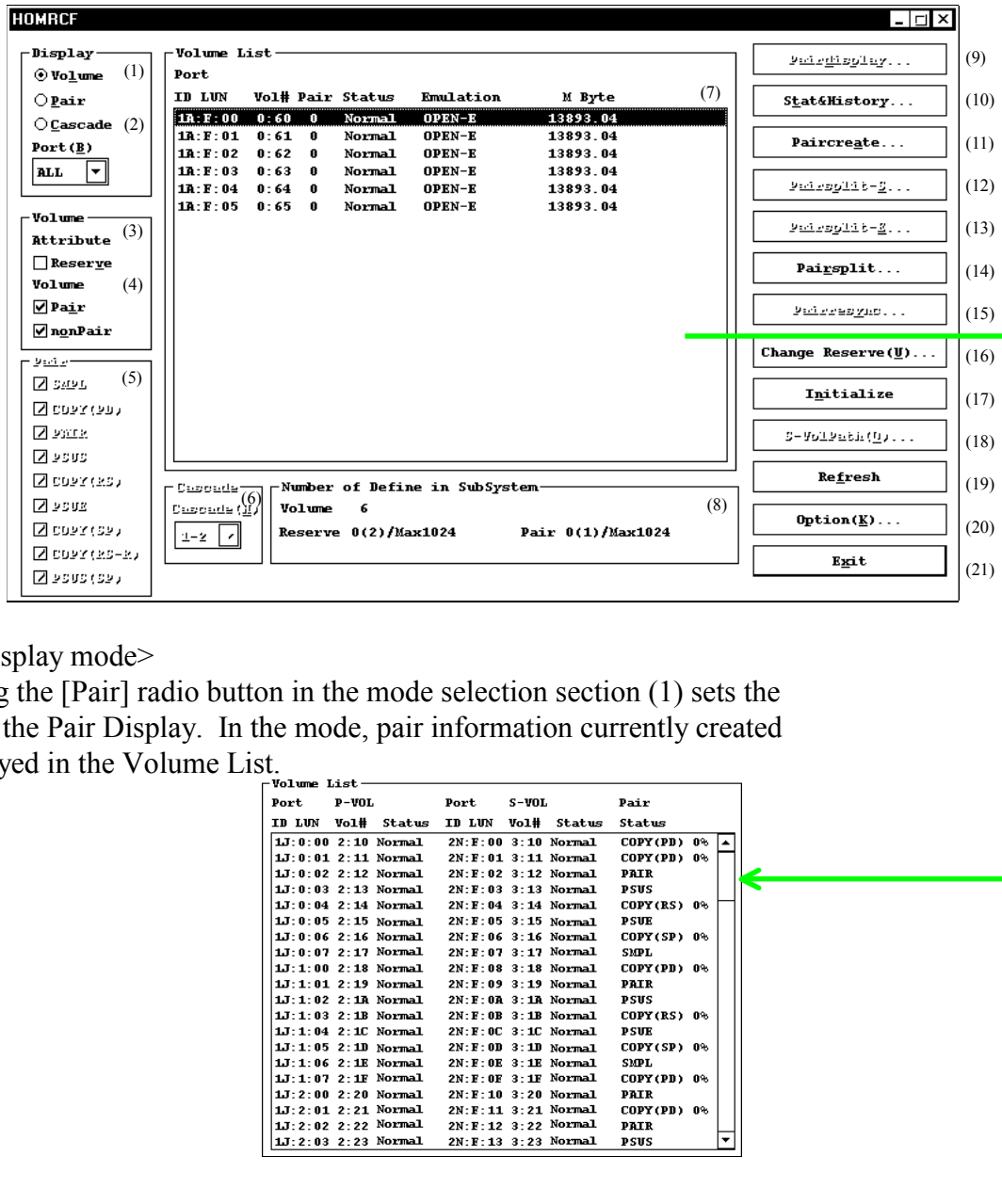
MSG NO	ID NO	TRBL NO	Message
1A	0x011A	3	Replaced the failed DKCPANEL, DKUMN, but still the environment monitors disagreement error is detected.
1B	0x011B	5	LDEV Blocking (SIM = CF90XX, DFAXXX, DFBXXX, EF9XXX) can't execute for Guidance.
1C	0x011C	4	Common Fiber Error (SIM = DF6XXX, DF7XXX, DF8XXX, DF9XXX) can't execute for Guidance.
1D	0x011D	7	RIO PATH Closed (SIM = 2180XX) can't execute for Guidance.
1E	0x011E	8	AL_PA value conflict (SIM = 2190XX) can't execute for Guidance.
1F	0x011F	9	Replace failure (SIM = 3993XX, 3D93XX) can't execute for Guidance.
20	0x0120	0a	CHT PCB type inconsistency (SIM = 399FX0) can't execute for Guidance.
21	0x0121	0b	Shared Memory (Real memory size inconsistent) failure (SIM = FFE3XX) can't execute for Guidance.
22	0x0122	0c	Shared Memory failure (SIM = FFD3XX) can't execute for Guidance.
23	0x0123	0d	Shared Memory (Loss of duplicated information) failure (SIM = FFDEXX) can't execute for Guidance.
24	0x0124	0e	HRC/HODM/HORC failure can't execute for Guidance.
25	0x0125	0f	HMRCF/HOMRCF failure (SIM = 47DXXX) can't execute for Guidance.
26	0x0126	—	The Guidance function was force finished for FORCEEND button, after performed replace etc.
27	0x0127	10	HIHSM failure (SIM = 47FXXX) can't execute for Guidance.

10 Details of the HOMRCF Operation Screen

10.1 Operation of HOMRCF

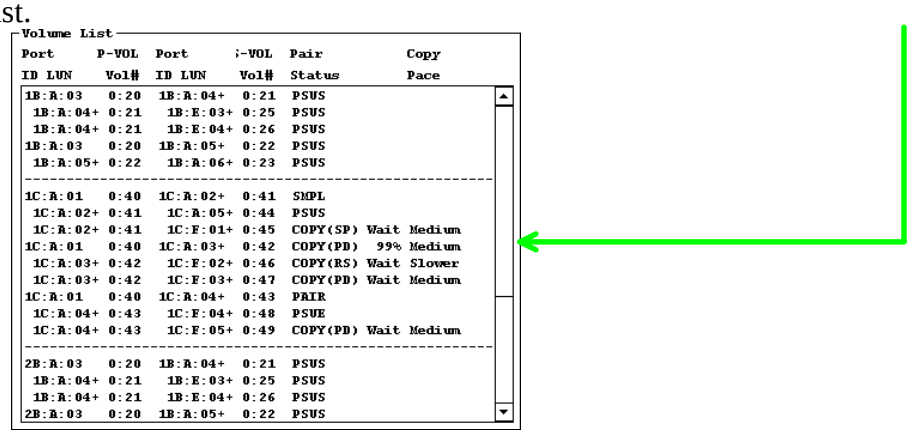
■ HOMRCF Main screen

The HOMRCF main screen has three display modes, Volume Display mode, Pair Display mode and Cascade Display mode.
<Volume Display mode>
Selecting the [Volume] radio button in the mode selection section (1) sets the mode to the Volume Display. In the mode, volume information is displayed in the Volume List. The cascade display mode, it displays matching information in the form of cascade.



<Pair Display mode>
Selecting the [Pair] radio button in the mode selection section (1) sets the mode to the Pair Display. In the mode, pair information currently created is displayed in the Volume List.

<Cascade Display mode>
Selecting the [Cascade] radio button in the mode selection section (1) sets the mode to the Cascade Display. In the mode, pair information currently created is displayed in the Volume List.



(1) : Display
Selection of the display mode
- Volume : Display in units of volume
- Pair : Display in units of pair
- Cascade : Display in units of Cascade

(2) : Port
Specifies a port number (Cluster and Channel number) to which the volumes to be displayed belong.
When specifying 'ALL', it specifies all port.
When the [Pair] is selected in (1), the port of the P-VOL (Primary Volume) is specified.

(3) : Display Filter Attribute
This specification is valid when [Volume] is selected in step (1).
Reserved volumes mean that they are reserved as target volumes when adding pairs are executed.
When the check box is checked, volumes with *Reserve* attribute are displayed.
When the check box is not checked, volumes with attributes other than *Reserve* are displayed.

(4) : Display Filter Volume
This item is valid only when the [Volume] is selected in (1).
- Pair : Displays paired volumes.
- non Pair : Displays volumes not paired.

(5) : Pair Filter
This item is valid only when the [Pair] is selected in (1).
- SMPL : When checked, displays pairs in the SMPL status.
- COPY(PD) : When checked, displays pairs in the COPY(PD) status.
- PAIR : When checked, displays pairs in the PAIR status.
- PSUS : When checked, displays pairs in the PSUS status.
- COPY(RS) : When checked, displays pairs in the COPY(RS) status.
- PSUE : When checked, displays pairs in the PSUE status.
- COPY(SP) : When checked, displays pairs in the COPY(SP) status.

COPY(RS-R) : When checked, displays pairs in the COPY(RS-R) status.
PSUS(SP) : When checked, displays pairs in the PSUS(SP) status.

(6) : Cascade

This specification is valid when [Cascade] is selected in step (1).

1 : It displays only L1-Pair.
1-2 : It displays L1-Pair and L2-Pair.

(7) : Volume List box

When the [Volume] is selected in (1)

Port : Displays the port number (Cluster and Channel number) of the volume concerned.
ID : Displays the Target(SCSI) ID of the volume concerned.
LUN : Displays the LUN of the volume concerned.
Vol# : Displays the volume concerned using its CU number: volume number.
Pair : Displays a number of pairs in the volume concerned.
Status : Displays the status of the volume concerned.
Emulation : Displays the emulation type of the volume concerned.
M Byte : Displays the size of the volume concerned.

When the [Pair] is selected in (1)

P-VOL Port : Display the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID : Display the Target(SCSI) ID of the P-VOL.
P-VOL LUN : Display the LUN of the P-VOL.
P-VOL Vol# : Display the P-VOL using its CU number: volume number.
P-VOL Status : Displays the status of the P-VOL.
S-VOL Port : Displays the port number (Cluster and Channel number) of the S-VOL (Secondary Volume).
S-VOL ID : Displays the ID of the S-VOL.
S-VOL LUN : Displays the LUN of the S-VOL.
S-VOL Vol# : Displays the S-VOL using its CU number: volume number.
S-VOL Status : Displays the status of the S-VOL.
Pairdisplay : Displays the status of the pairs.

When [+] is displayed after LUN, it shows that SCSI pass is defined in addition to being displayed, too.

When the [Cascade] is selected in (1)

P-VOL Port : Display the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID : Display the Target(SCSI) ID of the P-VOL.
P-VOL LUN : Display the LUN of the P-VOL.
P-VOL Vol# : Display the P-VOL using its CU number: volume number.
S-VOL Port : Displays the port number (Cluster and Channel number) of the S-VOL (Secondary Volume).
S-VOL ID : Displays the Target (SCSI) ID of the S-VOL.
S-VOL LUN : Displays the LUN of the S-VOL.
S-VOL Vol# : Displays the S-VOL using its CU number: volume number.
Pairdisplay : Displays the status of the pairs.

Copy Status : Displays the pace of the copy.
When [+] is displayed after LUN, it shows that SCSI pass is defined in addition to being displayed, too.

(8) : Number of Define Subsystem
Displays information concerning the volumes.

Volume : Displays a number of volumes where SCSI path is defined in the whole subsystem.

Reserve : Displays a number of Reserve volumes defined in the HOMRCF. Also displays a total number of Reserve logical volumes defined in both the HMRCF and HOMRCF in parentheses.

Pair : Displays a number of pairs defined in the HOMRCF. Also displays a total number of pairs of logical volumes defined in both the HMRCF and HOMRCF in parentheses. The maximum number of pairs is the total number of HMRCF/ HOMRCF/ HIHSM pairs and that is 1024 pairs or 2048 pairs. But the number will not be reflected when the pairs are used by HIHSM so that HOMRCF could not make more pairs if the HIHSM has some pairs.

(9) : Pairdisplay ...
Displays a name of the screen for displaying the statuses of the volumes (pairs) selected in (7).

(10) : Stat & History ...
Displays a name of the screen for displaying the statuses of all the pairs and histories of the pair status transitions of them.

(11) : Paircreate ...
Displays a name of the screen for instructing the pairing of the volumes selected in (7).

(12) : Pairsplit-S ...
Displays a name of the screen for instructing the pair deletion of the volumes selected in (7).

(13) : Pairsplit-E ...
Displays a name of the screen for instructing the pair suspension of the volumes selected in (7).

(14) : Pairsplit ...
Displays a name of the screen for instructing the pair splitting of the volumes selected in (7).

(15) : Pairresync ...
Displays a name of the screen for instructing the pair resynchronization of the volumes selected in step (7).

(16) : Change Reserve ...
Displays a name of the screen for instructing the attribute change of the volumes selected in (7).

(17) : Initialize
It initializes all pairs. (HMRCF/HOMRCF/HIHSM pairs)

(18) : S-VOL Path ...
Displays a name of the screen for referring to the SCSI path defined for the S-VOL of the pair selected in (7).

(19) : Refresh
Updates the displayed information to the latest one.

(20) : Option...
Displays and setup of an option are performed.

(21) : Exit
Quits the HOMRCF screen.

When the [Pair] or [Cascade] is selected in (1), the selectable buttons vary depending on the pair status. Combinations of the pair statuses and the selectable buttons are shown in the following Table 10-1.

Table 10-1 Enable buttons

Pair Status / Button	SMPL	COPY (PD)	PAIR	COPY (SP)	PSUS	PSUS (SP)	COPY (RS)	COPY (RS-R)	PSUE
Pairsplit-E	x	OK	OK	OK	OK	OK	OK	OK	x
Pairresync	x	x	x	x	OK	OK	x	x	OK
Pairsplit-S	x	OK	OK	OK	OK	x	OK	OK	OK
Pairsplit	x	OK	OK	x	x	x	x	x	x

OK: Select the button x: Could not select the button

When two or more pairs are selected in (7), only the buttons operable for all the pairs become selectable.
When [Cascade] is selected in (1), the pair gets for the choice of the [Paircreate] button only when it is possible to add to be possible.

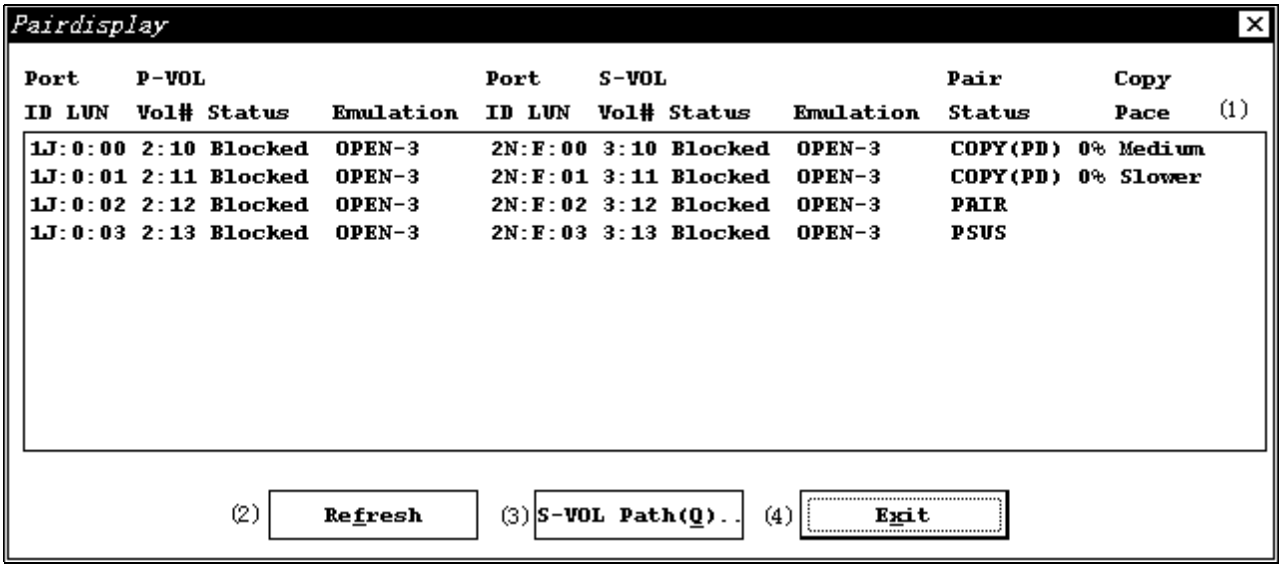
In the following Table 10-2, items of Volume Status in the (7) Volume list box are shown.

Table 10-2 Volume Status in the Volume List box

Item	Volume Status
Normal	The Volume is normal.
Blocked	The Volume is blocked.
Format	The Volume is formatting now.
Correct	The Volume is under correction access by HDD error.
Copying	The Volume is under correction copy by recovering HDD error.
Unknown	Status of the volume is unknown.

And choice maximum number is 512 at once time in Volume List box.

■ **Pairdisplay screen**



(1) : Status information display list box

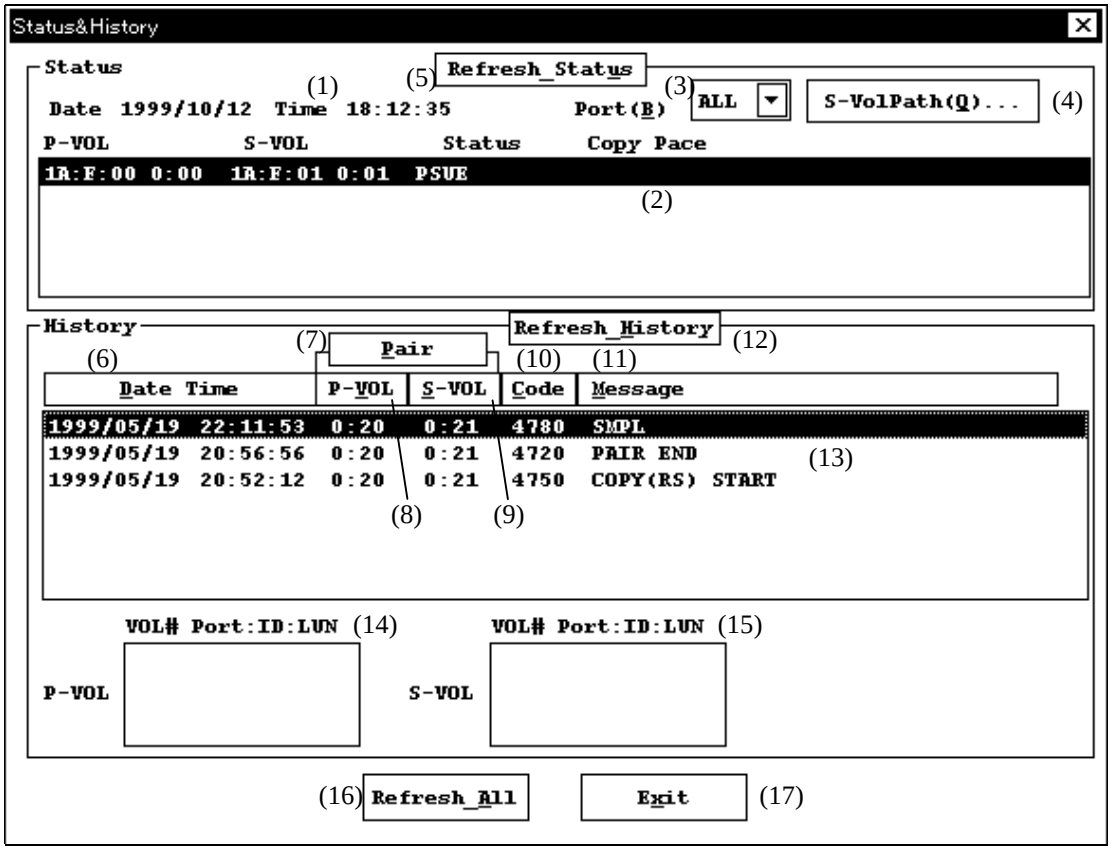
P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.
Pairdisplay	:	Displays the status of the pair concerned.
Copy Pace	:	Displays a copy pace.

(2) : Refresh
Updates the displayed information to the latest one.

(3) : S-VOL Path ...
Displays a name of the screen for referring to the SCSI path defined for the S-VOL.

(4) : Exit
Closes the screen.

■ Status & History screen



(1) : Date, Time
Displays the time when the current pair status was acquired.

(2) : List box displaying the current pair statuses at the (1).
- P-VOL : Displays the Port number (Cluster and Channel number), Target (SCSI) ID, LUN, CU number: volume number of the P-VOL.
- S-VOL : Displays the Port number (Cluster and Channel number), Target (SCSI) ID, LUN, CU number: volume number of the S-VOL.
- Status : Displays the status of the pair concerned.
- Copy Pace : Displays a copy pace of the pair concerned.

(3) : Port (B)
Specifies the port of the P-VOL of the pair (Cluster and Channel number) to be displayed.

(4) : S-VOL Path ...
Displays a name of the screen for referring to the Port number (Cluster and Channel number), Target (SCSI) ID, LUN defined for the S-VOL of the selected pair.

(5) : Refresh_Status
Updates the information displayed in the pair status display list box to the latest one.

(6) : Date Time
Sorts according to the data and time.

(7) : Pair
Sorts according to the pair.

(8) : P-VOL
Sorts according to the P-VOL.

(9) : S-VOL
Sorts according to the S-VOL.

(10) : Code
Sorts according to the code. Codes and messages are shown as Table 10-3 List of Reference Codes and Messages.

(11) : Message
Sorts according to the message type.

(12) : Refresh_History
Updates the displayed history to the latest one.

(13) : List box displaying pair status transition history

Date Time	: Displays the time when the history SIM was issued.
P-VOL	: Displays the CU number: volume number of the P-VOL.
S-VOL	: Displays the CU number: volume number of the S-VOL.
Code	: Displays the reference code.
Message	: Displays the message corresponding to the reference code.

List of the reference codes and messages is shown below.

Table 10-3 List of Reference Codes and Messages

Reference Code	Message	contents
4710 - 471F	PAIR START	Pairing was started.
4720 - 472F	PAIR END	Pairing was completed
4730 - 473F	PSUS START	Pair splitting was started.
4740 - 474F	PSUS END	Pair splitting was completed.
4750 - 475F	COPY(RS) START	Pair resynchronization was started.
	COPY(RS-R) START	Pair reverse resynchronization was started.
4760 - 476F	COPY(RS) END	Pair resynchronization was completed.
	COPY(RS-R) END	Pair reverse resynchronization was completed.
4780 - 478F	SMPL	Pair deletion was completed.
4790 - 479F	PSUS	Pair suspension
47A0 - 47AF	COPY WARNING END	Copy terminated with a warning given.
47B0 - 47BF	COPY ABNORMAL END (PVOL BLOCKADE)	The copy terminated abnormally (owing to the P-VOL blockade).
47C0 - 47CF	COPY ABNORMAL END (SVOL BLOCKADE)	The copy terminated abnormally (owing to the S-VOL blockade).
47D0 - 47DF	COPY ABNORMAL END	The copy terminated abnormally (owing to a reason other than the above).
47E7	COMPULSION PAIR SUSPEND	Pair was Compulsion Suspend.
47E9	HOMRCF SM INITIALIZATION START	Initialization of the HMRCF/HOMRCF extension table was started.
47EA	HOMRCF SM INITIALIZATION END	Initialization of the HMRCF/HOMRCF extension table was completed.
47EB	HOMRCF SM INITIALIZATION FAILED	Initialization of the HMRCF/HOMRCF extension table failed.
FFFF	Reference Code unknown	The reference code is unknown.

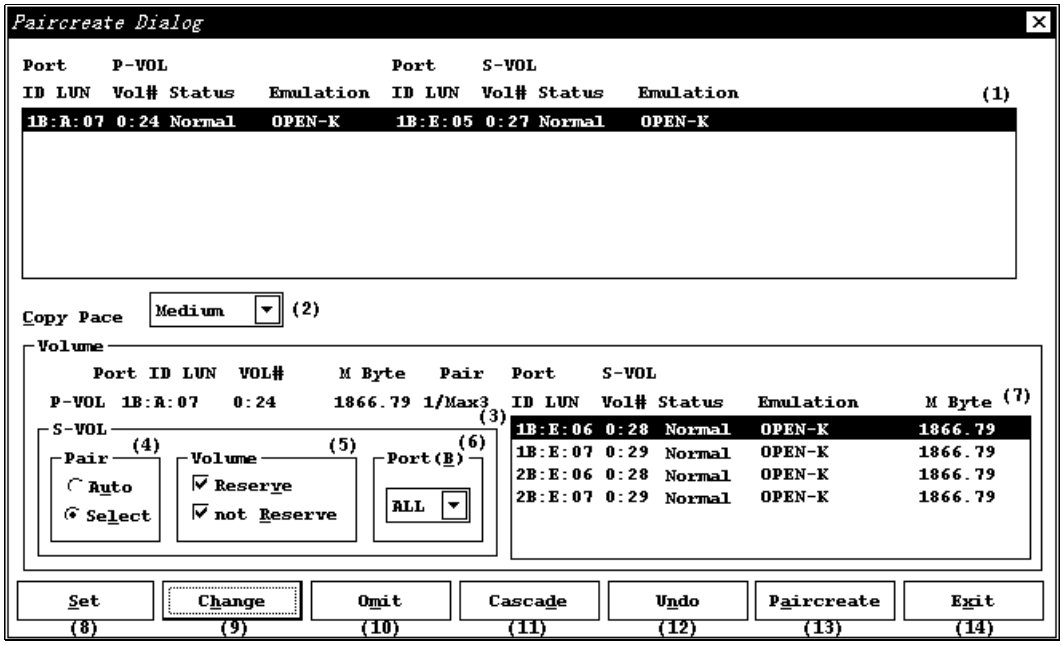
(14) : Displays the CU number: volume number and Port number (Cluster and Channel number), Target (SCSI) ID, LUN of the selected P-VOL.

(15) : Displays the CU number: volume number and Port number (Cluster and Channel number), Target (SCSI) ID, LUN of the selected S-VOL.

(16) : Refresh_All
Updates the displayed information of both the pair statuses and the histories.

(17) : Exit
Close the screen.

■ Pair addition screen



(1) : Volume Pair information display list box

P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.

(Notice) When the "AUTO" is specified for the way to select the S-VOL, the DKC selects the S-VOL from the reserved volumes automatically.

(2) : Copy Pace

Specifies a copy pace

When executing the pairing, the copy pace (Faster/Medium/Slower) specified in (2) is applied to all the selected pairs.

(3) : P-VOL information display area

Port	: Displays the port number (Cluster and Channel number) of the P-VOL.
ID	: Displays the Target(SCSI) ID of the P-VOL.
LUN	: Displays the LUN of the P-VOL.
Vol#	: Displays the P-VOL using its CU number: volume number.
M Byte	: Displays the size of the P-VOL.
Pair	: Displays a number of the pairs.

(4) : Specifies the way to select the S-VOL.

Auto	: Selects the S-VOL automatically.
Select	: Specifies the S-VOL to be selected.

(5) : S-VOL Volumes

Reserve	: Displays the volumes with the Reserve attribute in the S-VOL information display list box.
not Reserve	: Displays the volumes with the attributes other than Reserve.

(6) : Specifies the port.

Specifies the port number (Cluster and Channel number) to be displayed in the S-VOL information display list box.

(7) : S-VOL information display list box

Port	: Displays the port number (Cluster and Channel number) of the S-VOL.
ID	: Displays the Target(SCSI) ID of the S-VOL.
LUN	: Displays the LAN of the S-VOL.
Vol#	: Displays the S-VOL using its CU number: volume number.
Status	: Displays the status of the S-VOL.
Emulation	: Displays the emulation type of the S-VOL.
M Byte	: Displays the size of the S-VOL.

(8) : Set

Adds the selected S-VOL in the pair information display list box as the volume to be paired.

(9) : Change

Changes the S-VOL to the one selected.

(10) : Omit

Deletes the S-VOL from the volumes to be paired.

(11) : Cascade

Changes into S-VOL which chose S-VOL which is set at present.

Only when all of the following conditions are met, the concerned button becomes possible to be selected.

- An L1-Pair is selected.
- An S-VOL is selected by optional specification.
- It is possible to add an L2-Pair.

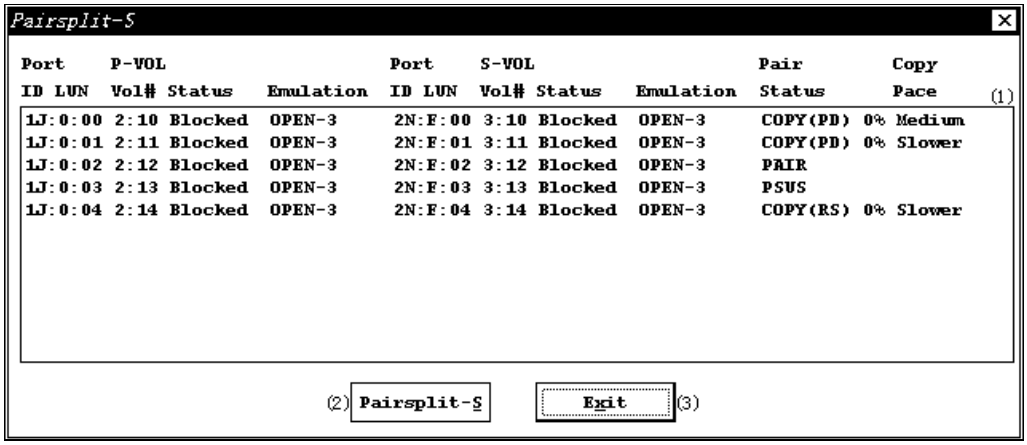
(12) : Undo

Returns the operation from step (8), (9), (10) or (11) by one step.

(13) : Paircreate
Executes the pairing according to the pair information display list.

(14) : Exit
Stops the pairing and closes the screen.

■ **Pair deletion instructing screen**



(1) : Volume pair information display list box

P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.
Pairdisplay	:	Displays the status of the pair concerned.
Copy Pace	:	Displays a copy pace (Faster/Medium/Slower).

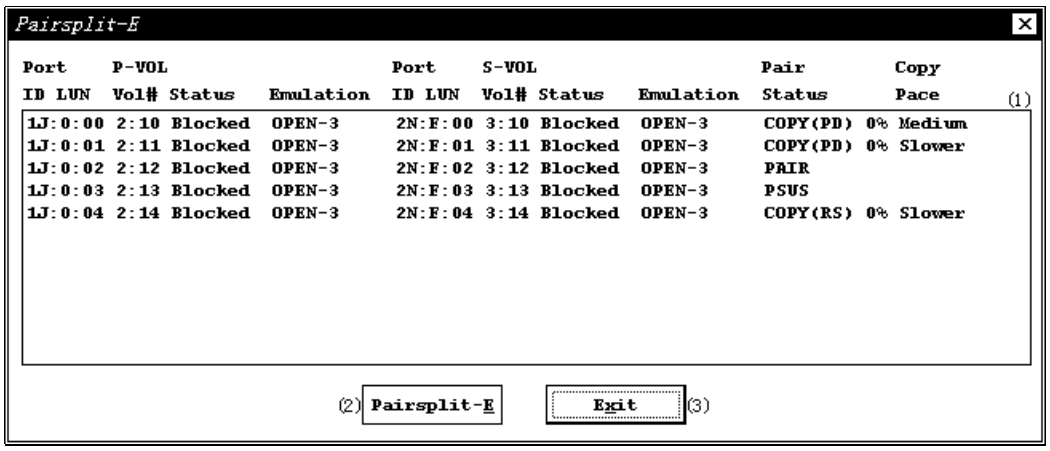
(2) : Pairsplit-S

Executes the pair deletion of the pairs selected in the volume pair information display list box.

(3) : Exit

Stops the pair deletion and closes the screen.

■ **Pair suspension instructing screen**



(1) : Volume pair information display list box

P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.
Pairdisplay	:	Displays the status of the pair concerned.
Copy Pace	:	Displays a copy pace (Faster/Medium/Slower).

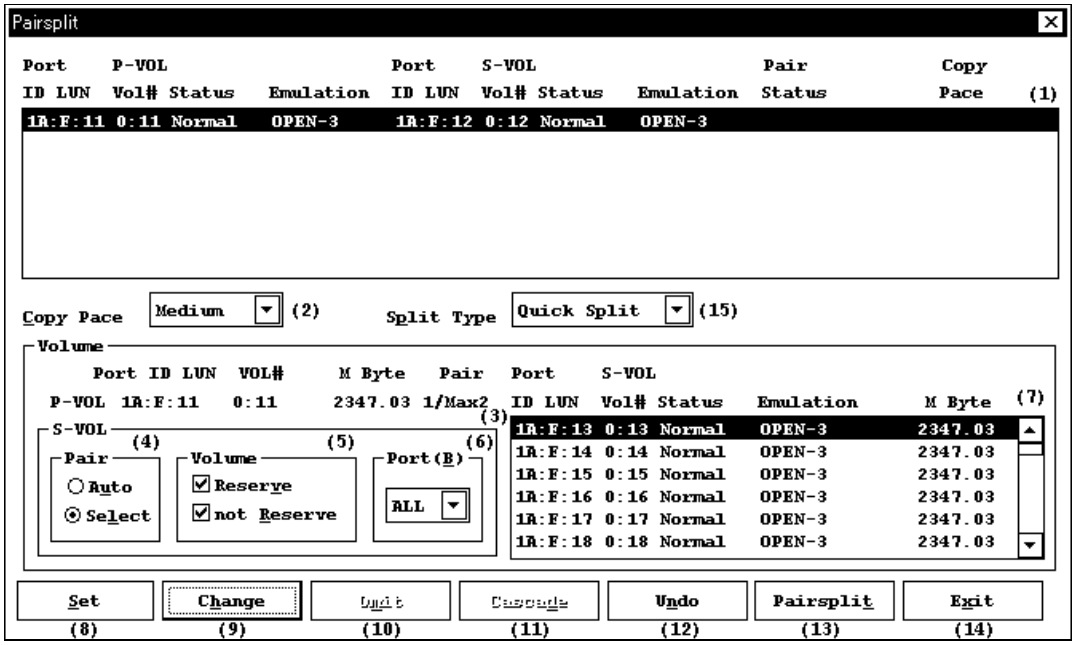
(2) : Pairsplit-E

Executes the pair suspension of the pairs selected in the volume pair information display list box.

(3) : Exit

Stops the pair suspension and closes the screen..

■ **Pair splitting instructing screen**



(1) : Volume Pair information display list box

P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.
Pairdisplay	:	Displays the status of the pair concerned.
Copy Pace	:	Displays a copy pace (Faster/Medium/Slower).

(Notice) When the "AUTO" is specified for the way to select the S-VOL, the DKC selects the S-VOL from the reserved volumes automatically.

(2) : Copy Pace of Pair splitting
Specifies the copy pace.
When executing the pairing, the copy pace specified in (2) is applied to all the pairs.

(3) : P-VOL information display area

Port	: Displays the port number (Cluster and Channel number) of the P-VOL.
ID	: Displays the Target(SCSI) ID of the P-VOL.
LUN	: Displays the LUN of the P-VOL.
Vol#	: Displays the P-VOL using its CU number: volume number.
M Byte	: Displays the size of the P-VOL.
Pair	: Displays a number of the pairs.

(4) : Specifies the way to select the S-VOL.

Auto	: Selects the S-VOL automatically.
Select	: Specifies the S-VOL to be selected.

(5) : S-VOL Volumes

Reserve	: Displays the volumes with the Reserve attribute in the S-VOL information display list box.
not Reserve	: Displays the volumes with the attributes other than Reserve.

(6) : Port

Specifies a port number (Cluster and Channel number) which are displayed in the S-VOL list box.

(7) : S-VOL information display list box

Vol#	: Displays the S-VOL using its CU number: volume number.
Status	: Displays the status of the S-VOL.
Emulation	: Displays the emulation type of the S-VOL.
M Byte	: Displays the size of the S-VOL.

(8) : Set

Adds the selected S-VOL to the pair list as the volume to be splitted.

(9) : Change

Changes the S-VOL to the one selected.

(10) : Omit

Deletes the selected pair from the pairs to be splitted.

(11) : Cascade

Changes into P-VOL which chose S-VOL which is set at present.
It chooses when making L1-Pair and L2-Pair at the same time.
Only when all of the following conditions are met, the concerned button becomes possible to be selected.

- An L1-Pair is selected.
- An S-VOL is selected by optional specification.
- It is possible to add an L2-Pair.

When there is L1-Pair already and it adds only L2-Pair, the concerned button can not be chosen.

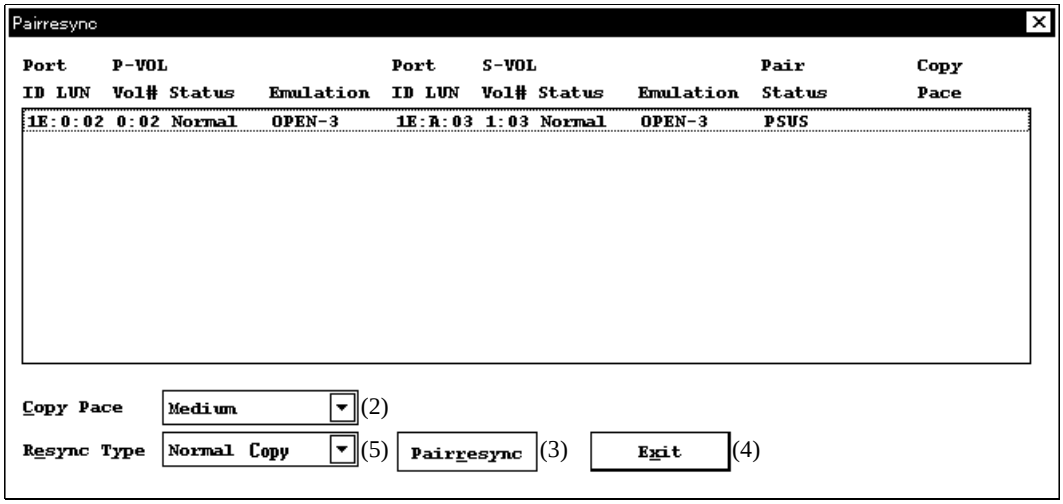
(12) : Undo
Returns the operation from step (8), (9), (10) or (11) by one step.

(13) : Pairsplit
Executes the splitting according to the pair list.

(14) : Exit
Stop the pair splitting and close the screen.

(15) Split Type of Pair splitting
Specifies the split type.
When executing the pairing, the split type specified in (15) is applied to all the pairs.

■ **Pair resynchronization instructing screen**



(1) : Volume pair information display list box

P-VOL Port	:	Displays the port number (Cluster and Channel number) of the P-VOL.
P-VOL ID	:	Displays the Target(SCSI) ID of the P-VOL.
P-VOL LUN	:	Displays the LUN of the P-VOL.
P-VOL Vol#	:	Displays the P-VOL using its CU number: volume number.
P-VOL Status	:	Displays the status of the P-VOL.
P-VOL Emulation	:	Displays the emulation type of the P-VOL.
S-VOL Port	:	Displays the port number (Cluster and Channel number) of the S-VOL.
S-VOL ID	:	Displays the Target(SCSI) ID of the S-VOL.
S-VOL LUN	:	Displays the LAN of the S-VOL.
S-VOL Vol#	:	Displays the S-VOL using its CU number: volume number.
S-VOL Status	:	Displays the status of the S-VOL.
S-VOL Emulation	:	Displays the emulation type of the S-VOL.
Pairdisplay	:	Displays the status of the pair concerned.
Copy Pace	:	Displays a copy pace (Faster/Medium/Slower).

(2) : Copy Pace
Specifies the copy pace used when the resynchronization is executed.
When executing the resynchronization, the copy pace specified in (2) is applied to all the pairs.

(3) : Pairresync
Executes the resynchronization of the pairs selected in the pair list box.

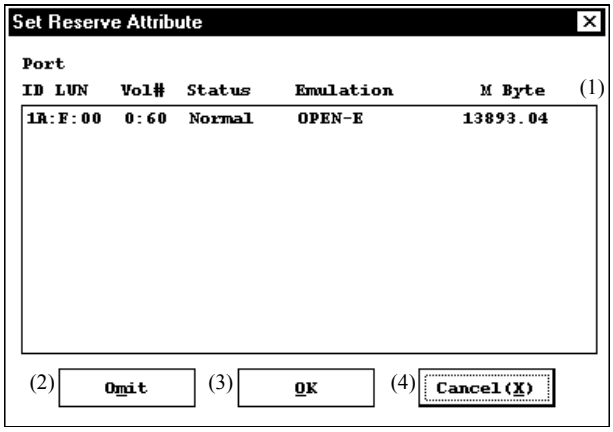
(4) : Exit
Stop the pair resynchronization and close the screen.

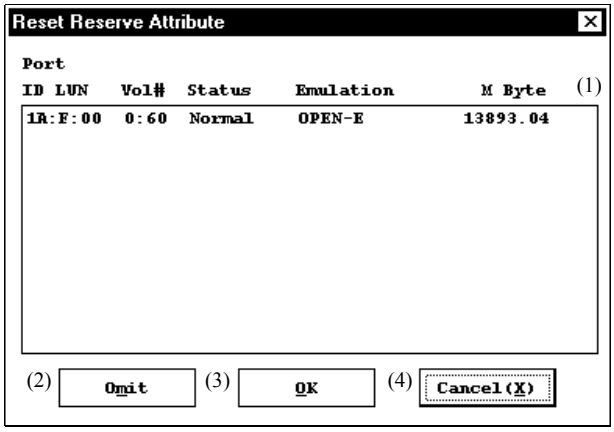
(5) : Resync Type

Specifies the resynchonization type used when the resynchronization is executed.
When executing the resynchronization, the resynchronization in (5) is applied to all the pairs.

Normal Copy	: Displays the Normal COPY
Quick Resync	: Displays the Quick Resync
Reverse Copy	: Displays the Reverse-COPY
Quick Restore	: Displays the Quick Restore

■ Volume attribute change instructing screen





(1) : Volume information display list box

Port	:	Display the port number (Cluster and Channel number) of the object volume.
ID	:	Display the Target(SCSI) ID of the object volume.
LUN	:	Display the LUN of the object volume.
Vol#	:	Display the object volume using its CU number: volume number.
Status	:	Display the status of the object volume.
Emulation	:	Display the emulation type of the object volume.
M Byte	:	Display the size of the object volume.

(2) : Omit

Deletes the volume selected in (1) from the volumes whose Reserve attributes are to be specified/canceled.

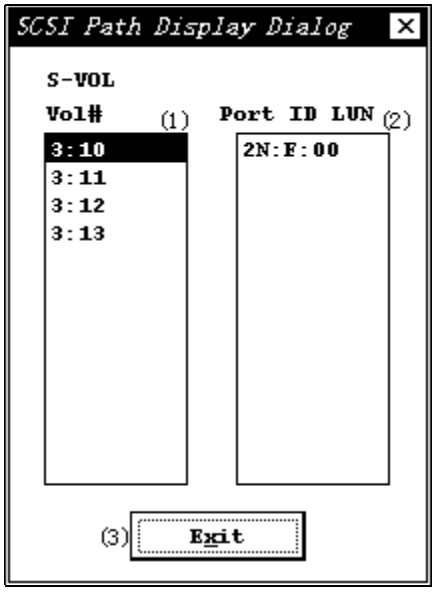
(3) : OK

Specify/cancel the Reserve attribute of the volume.

(4) : Cancel

Abort the specification/cancellation of the Reserve attribute of the volume and close the screen.

■ **S-VOL SCSI pass reference screen**



(1) : S-VOL information display list box

Vol# : Displays the selected S-VOL using its CU number and volume number.

(2) : SCSI path information display list box

Port : Displays the port number (Cluster and Channel number) of the selected S-VOL.

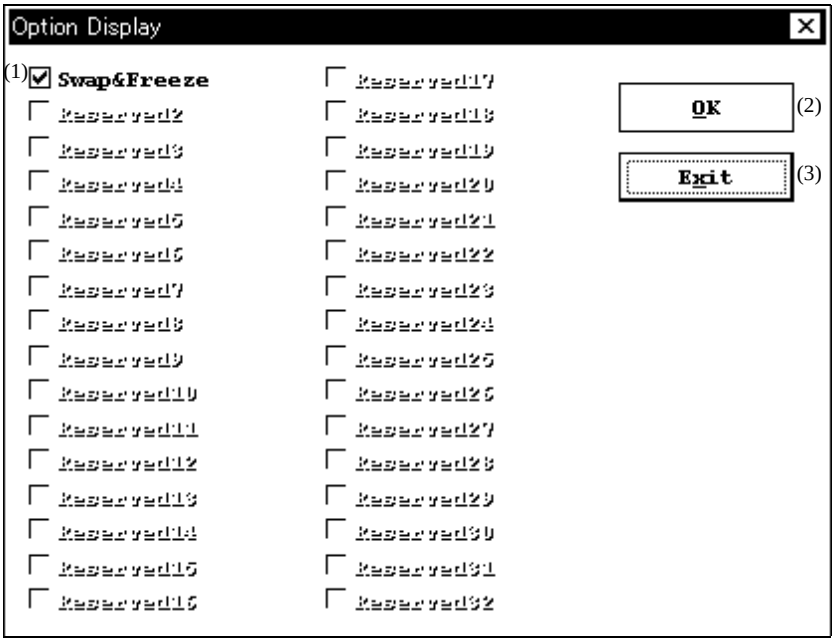
ID : Displays the Target(SCSI) ID of the selected S-VOL.

LUN : Displays the LUN of the selected S-VOL.

(3) : Exit

Closes the screen.

■ Option setting screen

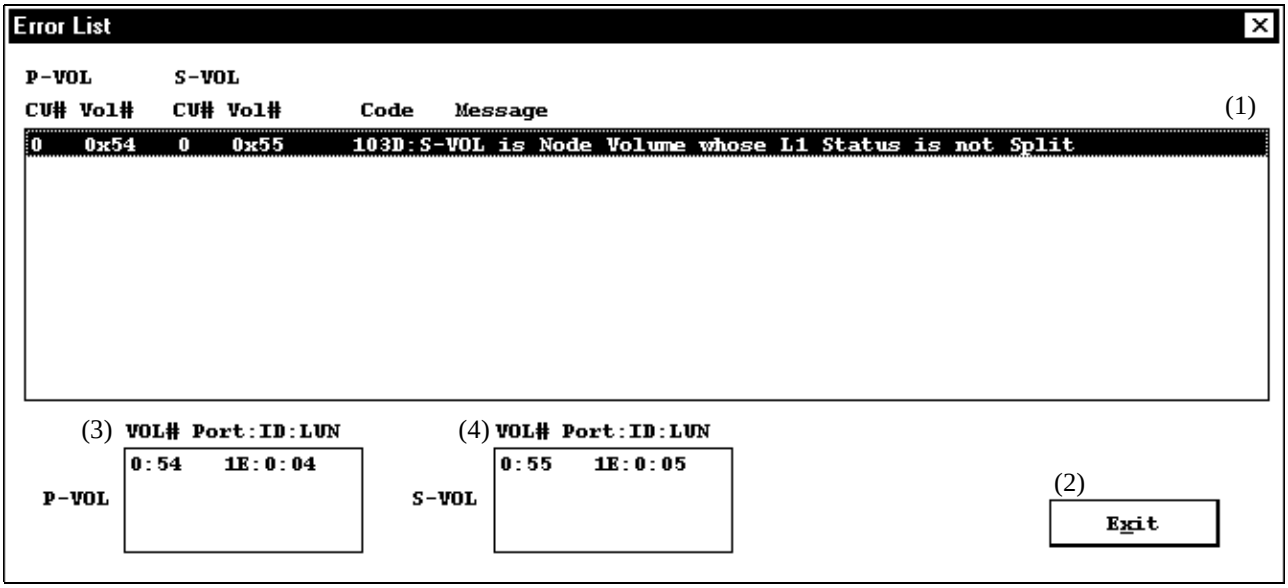


(1) : Option setting check box
Swap & Freeze : Swap & Freeze function is enabled.

(2) : OK
Executes the Option setting.

(3) : Exit
Stop the Option Setting and close the screen.

■ Error display screen



(1) : Information display list box

P-VOL CU#	: Displays the CU number of the P-VOL.
P-VOL Vol#	: Displays the volume number of the P-VOL.
S-VOL CU#	: Displays the CU number of the S-VOL.
S-VOL Vol#	: Displays the volume number of the S-VOL.
Code	: Displays an error code.
Message	: Displays a meaning of the error code.

(2) : Exit

Closes the screen

The list of the error codes is shown on the next and the following pages.

(3) : Path define of P-VOL

VOL#	: CU number: Displays the Volume number
Port	: Displays the Cluster and Channel number
ID	: Displays the Target (SCSI) ID
LUN	: Displays the discriminate number of Logical Unit

(4) : Path define of S-VOL

VOL#	: CU number : Displays the Volume number
Port	: Displays the Cluster and Channel number
ID	: Displays the Target (SCSI) ID
LUN	: Displays the discriminate number of Logical Unit

Error Code	Description	Action to copy with an error
0401	A locking time-out was detected during an internal processing. (A retry may result in a normal termination.)	Retry about five seconds later.
0402	A command (Paircreate, Pairsplit, or reserved volume setting command) could not received because it was not in the SMPL status internally. (A retry may result in a normal termination.)	Retry about five seconds later.
0801	The HMRCF/HOMRCF could not be used.	Install the PP or the HMRCF/HOMRCF.
080B	Request could not be accepted.	Retry about one minute later.
0810	The specified command cannot be accepted in this status. (The command was rejected.) ① The specified command cannot be executed for the selected pair. ② The specified command cannot be executed for the selected volume. ③ The quick restore operation cannot be executed for the pair that consists of the Normal volume and the CVS volume.	For ① and ②: Check the pair and volume status, and make sure the pair and volume status is correct for the desired command. If the status is incorrect, wait until the status changes or change the status, and then retry the operation. For ③: Retry by performing the reverse resync operation.
0811	The issued command is treated as an NOP.	The issued command is treated as an NOP.
0812	A pair cannot be created because a path group is set with S-VOL.	Disconnect from the host or cancel the Remote Copy path.
0813	The Pairsplit command was issued to the pair in the PSUS status.	The Pairsplit command cannot be issued because the pair is already in the PSUS status.
0814	The Paircreate command was issued to the pair in the PAIR status.	The Paircreate command cannot be issued because the pair is already in the PAIR status.
0815	The Pairsplit command with Quisce specification was issued to an S-VOL.	Issue the command without specifying Quisce, or if issue it with the Quisce specification, change the volume to a P-VOL.
0816	A command with the PRIMA specification was issued to an S-VOL.	Issue the command without specifying the PRIMA, or if issue it with the PRIMA specification, change the volume to a P-VOL.
0817	A Reserve volume cannot be set because a path group is set.	Disconnect the volume to be a Reserved volume from the host, or cancel the Remote Copy path.
0818	The Pairresync command or the Pairsplit-E command cannot be issued because a path group is set.	Disconnect the S-VOL or cancel the Remote Copy path.
081F	Command Reject. P-VOL is used from HOST or Remote Copy volume.	Disconnect from the host or Cancel the Remote Copy path.
0823	Too Many Cylinder Number (Reserve Volume)	Decrease the number of cylinder.
0824	Too Many Cylinder Number (P-VOL)	Decrease the number of cylinder.
0825	Too Many Cylinder Number (S-VOL)	Decrease the number of cylinder.
0830	A pair cannot be created because the track format is different.	Check if the emulation types of the P-VOL and the S-VOL are the same.
0831	A pair cannot be created because a number of slots is different.	Check if the capacities of the P-VOL and the S-VOL are the same.

Error Code	Description	Action to cope with an error
0834	The emulation type of the specified P-VOL is not supported by the HOMRCF.	Check if the emulation type of the P-VOL is supported by the HOMRCF.
0835	The emulation type of the specified S-VOL is not supported by the HOMRCF.	Check if the emulation type of the S-VOL is supported by the HOMRCF.
0836	The pair can not be created.	Confirms whether the emulation type of P-VOL, S-VOL is equal.
0840	Logical contradiction	Call the service personnel.
0841	Logical contradiction	Call the service personnel.
0842	Logical contradiction	Call the service personnel.
0848	Logical contradiction	Call the service personnel.
0849	Logical contradiction	Call the service personnel.
084A	Logical contradiction	Call the service personnel.
084B	Logical contradiction	Call the service personnel.
0852	Command Reject. P-VOL and S-VOL are used from HOST or Remote Copy volume.	Disconnect from the host or Cancel the Remote Copy path.
0880-08FF	Logical contradiction	Call the service personnel.
0C70	A P-VOL is not installed.	Volumes not installed are not included in the object to be processed.
0C71	The P-VOL cannot be used.	Call the service personnel to make the P-VOL status normal.
0C72	The P-VOL is being formatted.	Wait until the formatting of the P-VOL completes.
0C80	The S-VOL is not installed.	Volumes not installed are not included in the object to be processed.
0C81	The S-VOL cannot be used.	Call the service personnel to make the P-VOL status normal.
0C82	The S-VOL is being formatted.	Wait until the formatting of the S-VOL completes.
0C90	The Volume specified to be a Reserve volume is not installed.	Volumes not installed are not included in the object to be processed.
0C91	The Volume specified to be a Reserve volume cannot be used.	Call the service personnel to make the volume specified to be a Reserve volume normal.
0C92	The Volume specified to be a Reserve volume is being formatted.	Wait until the formatting of the volume specified to be a Reserve volume completes.
1001	Logical contradiction	Call the service personnel.
1002	Logical contradiction	Call the service personnel.
1003	Logical contradiction	Call the service personnel.
1004	Logical contradiction	Call the service personnel.
1005	Logical contradiction	Call the service personnel.
1007	Logical contradiction	Call the service personnel.

Error Code	Description	Action to cope with an error
1009	The multiplicity of the HMRCF/HOMRCF exceeded its limit.	Delete some of the pairs.
1010	Logical contradiction	Call the service personnel.
1011	The number of the Volume specified to be a Reserve volume has already been used for a Reserve volume.	Change the Volume number for specifying a Reserve volume.
1012	The number of the Volume specified to be a Reserve volume has already been used for a primary Volume of the HOMRCF.	Change the Volume number for specifying a Reserve volume.
1013	The number of the Volume specified to be a Reserve volume has already been used for a source volume of the hierarchical control.	Change the Volume number for specifying a Reserve volume.
1014	The number of the Volume specified to be a Reserve volume has already been used for a destination volume of the hierarchical control.	Change the Volume number for specifying a Reserve volume.
1015	The Volume specified to be a Reserve volume is not set as a Reserve volume.	Check the volume status.
1016	The Volume can appropriately be allocated as an S-VOL does not exist among Reserve volumes.	Delete any Reserve volume which can be allocated as an S-VOL.
1017	A Reserve volume cannot be set because the number of Reserve volumes allocated for them was exceeded.	Delete any of the Reserve volumes.
101E	The Reserve volume itself does not exist in the system.	Set (a) Reserve volume(s).
1026	It is impossible to make a pair any more because the volume which was specified as P-VOL is root volume already.	It delete some of the pairs of Root Volume.
1027	It is impossible to make a pair any more because the volume which was specified as P-VOL is node volume already.	It delete some of the pairs of Node Volume.
1028	It is impossible to make a pair because the volume which was specified as P-VOL is Leaf volume already.	It confirms a pair condition.
1029	It is impossible to make a pair because the volume which was specified as S-VOL is Leaf volume already.	It confirms a pair condition.
102A	The volume pair which exceeded the license capacity was created.	Check the capacity of License key being installed. If you need to create more pairs, the License key which can use a bigger capacity.
102E	P-VOL is used as Source Volume for HIHSM.	Confirms a matching condition.
102F	P-VOL is used as Destination Volume for HIHSM.	Confirms a matching condition.

Error Code	Description	Action to cope with an error
1030	The specified P-VOL number does not exist.	Retry after refreshing the screen.
1031	The specified P-VOL has been set as a Reserve volume.	Check the pair status.
1032	No more pair can be created for the specified P-VOL.	Delete any of the pairs formed by the P-VOL.
1033	The specified P-VOL is not really a P-VOL.	Check the pair status.
1037	The specified P-VOL has been set as an S-VOL of the HOMRCF.	Check the pair status.
1038	The specified P-VOL has been set as a M-VOL of the HODM.	Delete the pair of the HODM. (*1)
103A	The Pairresync command was issued to the device in the SMPL status.	Check the pair status.
103B	It is impossible to make a pair because Volume which was specified as S-VOL is Root Volume already	It confirms a pair condition.
103C	It is impossible to make a pair because Volume which was specified as S-VOL is Node Volume already	It confirms a pair condition.
103D	It is impossible for L2 pair to require a split because L1 Pair is not in the split condition.	After making L1 Pair a split condition, it reexecutes.
103E	A new pair was created with a P-VOL forming the Remote Copy cooperation pattern.	Place the pair in the SMPL status, or place the Remote Copy pair which uses the S-VOL as a P-VOL in the SMPL status.
103F	A pair status cannot be changed to form the Remote Copy cooperation pattern.	Place the Remote Copy pair which uses the S-VOL as a P-VOL in the PSUE or SMPL status.
1040	The specified S-VOL does not exist.	Set (a) Reserve volume(s).
1042	S-VOL is used as Destination Volume for HIHSM.	Confirms a matching condition.
1043	The specified S-VOL number has been used as that of an S-VOL.	Check the pair status.
1044	The specified S-VOL is not an S-VOL of the HOMRCF.	Check the pair status.
1046	The specified secondary HDEV is used as a P-VOL of the Remote Copy.	Delete the Remote Copy pair.
1047	The specified secondary Volume is used as an S-VOL of the Remote Copy.	Delete the Remote Copy pair.
1048	The specified secondary Volume is used as a M-VOL of the HODM.	Delete the HODM pair.
104A	The specified secondary Volume is used as a P-VOL of the HOMRCF.	Check the pair status.
104B	S-VOL is used as Source Volume for HIHSM.	Confirms a matching condition.

Error Code	Description	Action to cope with an error
104C	The Volume specified as a Reserve volume is being used as a M-VOL of the HODM.	Delete the HODM pair. (*1)
104D	The Volume specified as a Reserve volume is being used as an R-VOL of the HODM.	Delete the HODM pair. (*1)
104E	The Volume specified as a Reserve volume is being used as a P-VOL of the Remote Copy.	Delete the Remote Copy pair.
104F	The Volume specified as a Reserve volume is being used as an S-VOL of the Remote Copy.	Delete the Remote Copy pair.
1050	The specified P-VOL and S-VOL are not a pair of the HOMRCF.	Check the pair status.
1051	The Volume numbers of the specified P-VOL and S-VOL are the same.	Retry after refreshing the screen.
1053	Request could not be accepted.	Confirms a matching condition.
1054	Request could not be accepted.	Confirms a matching condition.
1058	S-VOL is Node Volume whose L2 status is COPY(SP).	Confirms a matching condition.
1070	The status mode specification (status modec) in the Status Check command is incorrect.	Call the service personnel.
1071	The status classification (statusindc) in the Status Check command is incorrect.	Call the service personnel.
1072	The CU number specified by the Status Check command (volume status) does not exist.	Call the service personnel.
1084	Volume was used for Reserve volume of HIHSM.	Check the volume or Cancel the Reserve volume of HIHSM.
1085	P-VOL was used for Reserve volume of HIHSM.	Check the P-VOL or Cancel the Reserve volume of HIHSM.
1086	S-VOL was used for Reserve volume of HIHSM.	Check the S-VOL or Cancel the Reserve volume of HIHSM.
1087	P-VOL is used as Source Volume for HIHSM.	Confirms a matching condition.
1095	Request could not be accepted because status of pair who shared with P-VOL was Reverse-Copy.	Confirms a matching condition.
1096	Request could not be accepted because L1 pair status was Reverse-Copy.	Confirms a matching condition.
1097	Request could not be accepted because L2 pair status was Reverse-Copy.	Confirms a matching condition.
1098	Reverse-Copy could not be accepted because pair status was not PSUS.	Confirms a matching condition.
1099	Reverse-Copy to L2 pair could not be accepted because status of pair who shred with P-VOL was neither PSUS nor PSUE.	Confirms a matching condition.

Error Code	Description	Action to cope with an error
109A	Reverse-Copy could not be accepted because P-VOL was shared with Remote Copy P-VOL whose status was not PSUE.	Confirms a matching condition.
109B	Reverse-Copy could not be accepted because P-VOL was shared with Remote Copy S-VOL whose status was not PSUE.	Confirms a matching condition.
109C	Reverse-Copy could not be accepted because S-VOL was shared with Remote Copy P-VOL.	Confirms a matching condition.
10C0	Swap & Freeze Option cannot to be Setup.	Deterrence of Quick Restore function is canceled.
10C1	HCAFE Option cannot to be Setup.	Installs PP for HMRCF.

(*1) These error codes are displayed only when HODM function is installed.

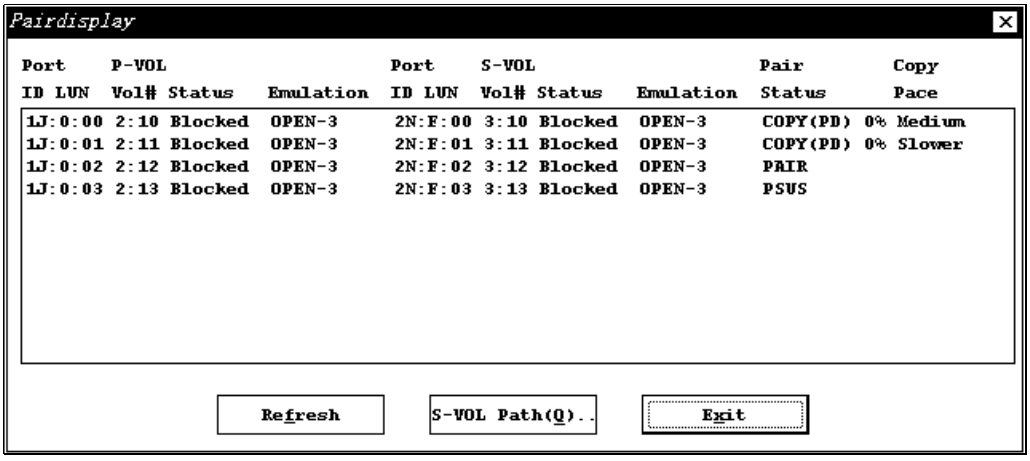
10.2 Procedure for confirming pair status

■ Procedure for confirming pair status

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting an object volume(s)
Select a volume(s) whose status(es) you want to confirm from the volume list on the HOMRCF main screen. When you want to select sequential volumes, select them while pushing the [Shift] key. When you want to select volumes at random (not sequentially), select them while pressing the [Ctrl] key.
Select the volumes whose statuses you want to confirm, then click the [Pairdisplay...] button.

(3) Displaying the pair status(es)
The status(es) of the volume(s) you selected is displayed on the Pairdisplay screen. To update the displayed information to the latest one, click the[Refresh] button. To close the screen click the [Exit] button.



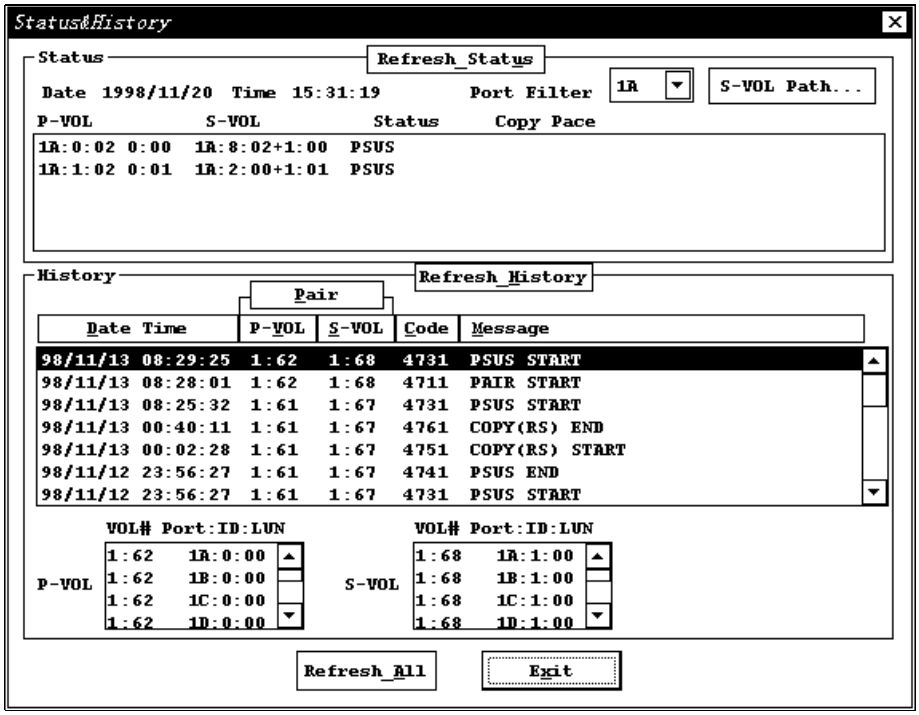
Procedure for confirming status and history

■ Procedure for confirming status and history

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting [Status & History]
Click the [Stat&History] button on the HOMRCF main screen. The Status & History screen is displayed.

(3) Displaying the status and history
The status(es) of the current pair(s) is displayed in the Status frame. To update the displayed information of the status(es) of the current pair(s) to the latest one, click the [Refresh_Status] button. The history of the status transitions is displayed in the History frame. When you want to sort the displayed transitions in the history according to the time, P-VOL number, S-VOL number, or message code, select the [Date Time] button, [P-VOL] button, [S-VOL] button, or [Code] button respectively.
When updating the status transition history of the pair(s), click the [Refresh_History] button.
When updating all the information, click the [Refresh_All] button.
The screen can be closed by clicking the [Exit] button.



Procedure for changing volume attribute

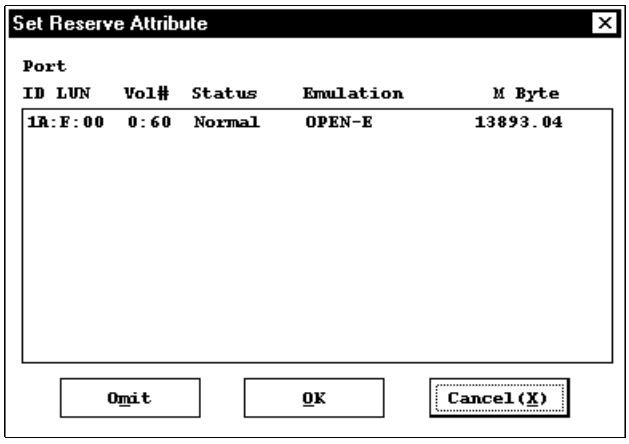
■ Procedure for changing volume attribute

In this section, how to set/delete the attribute "Reserve" which defines that a volume is ready to be an S-VOL.

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting an object volume(s)
When setting the volume attributes to Reserve, delete check mark in the check box of [Reserve] of Volume Attribute on the HOMRCF main screen. A list of volumes whose reserve attributes are not Reserve is displayed.
When deleting the volume attribute Reserve, check the [Reserve] check box. A list of volumes whose attributes are Reserve is displayed.
Select a volume(s) whose attribute you want to change, then click the [Change Reserve...] button. If you want to select sequential volumes, select them while pressing the [Shift] key. If you want to select them at random, select them while pressing the [Ctrl] key.
When setting the attribute to Reserve, the Set Reserve Attribute screen is displayed and when deleting attribute Reserve, the Reset Reserve Attribute screen is displayed.

(3) Changing the volume attribute
When there are some volumes whose attributes you want to left unchanged, select the volumes and click the [Omit] button. Then, they are deleted from the list. When you want to delete the sequential volumes, select them while pressing the [Shift] key. When you want to delete the volumes at random (not sequentially), select them while pressing the [Ctrl] key.
To execute the attribute change for the volumes displayed in the list, click the [OK] button. To stop the attribute change, click the [Cancel] button.



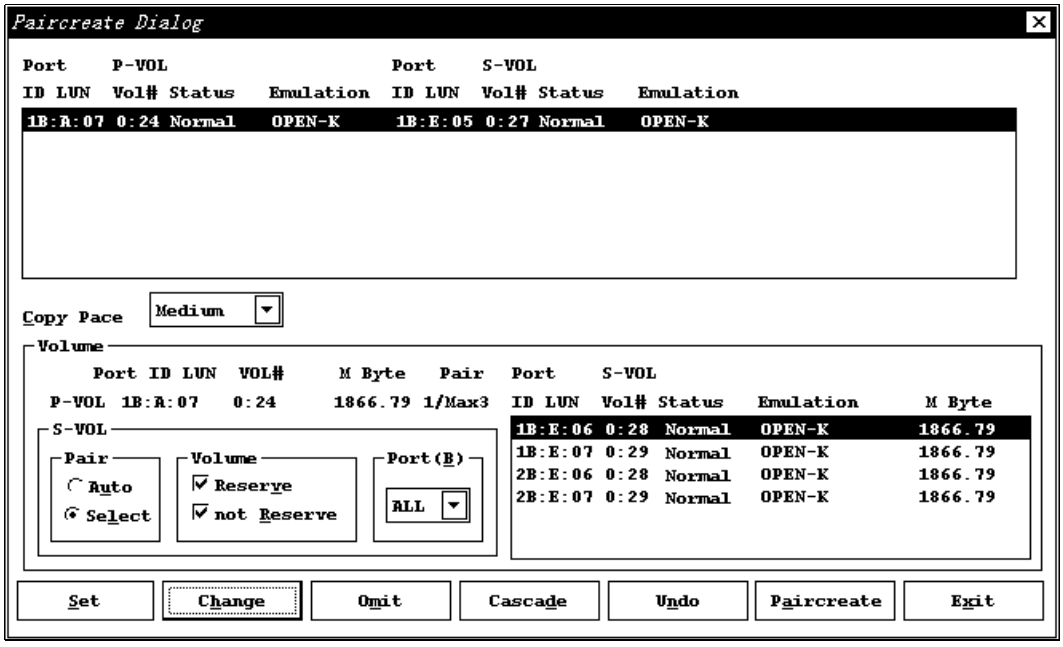
Procedure for creating/parting pair

■ Procedure for creating pair

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting a Source Volume(s) (P-VOL).
Select the [Volume] radio button on the HOMRCF main screen and set the display mode to the Volume Display.
Delete a check mark in the check box of [Reserve] and display a volume(s) whose attribute is not Reserve on the volume list.
Select a volume with which you want to create a pair and select the [Paircreate...] button.
When selecting sequential volumes, select them while pressing the [Shift] key. When selecting volumes at random (not sequentially), select them while pressing the [Ctrl] key.
The Paircreate Dialog screen is displayed.

(3) Editing a pair(s)
Select an S-VOL(s) for the selected P-VOL(s).
In default setting, the S-VOL(s) is automatically selected. (The [Auto] radio button is displayed in the state that it is selected.)
The specific operation procedures including changing of the S-VOL are explained below.



⚠ NOTICE

To create a pair by specifying the S-VOL automatically, a reserved volume must have been defined. Define the reserved volume by referring to the volume attribute changing procedure.
Create the pairs for all the pairs displayed in the object volume list on the Paircreate Dialog screen. Delete volumes for which you do not want to create pairs from the object volume list by selecting the [Omit] button after selecting them in the object volume list.
The volume specified as an S-VOL by optional selection or data in the reserved volume which has been set as an S-VOL beforehand is all replaced with the contents of the P-VOL after the pair creation. Before creating a pair, be sure to back up the existing data.

<Select Target Volume (S-VOL)>

(A) When you want to specify an S-VOL by optional selection
After a P-VOL is selected, select the [Select] radio button in [S-VOL] frame on the Paircreate Dialog screen.
Select an S-VOL from the S-VOL list and select the [Change] button.

(B) When you want to specify an S-VOL by automatic selection
After a P-VOL is selected, select the [Auto] radio button in [S-VOL] frame on the Paircreate Dialog screen and select the [Change] button.

(C) When you want to create two or more pairs for one P-VOL by one instruction by specifying S-VOLs using optional selection
After a P-VOL is selected, select the [Select] radio button in [S-VOL] frame on the Paircreate Dialog screen. Select an S-VOL from the S-VOL list and select the [Set] button. Repeat this operation as many times as the pairs to be created at the same time.

(D) When you want to create two or more pairs for one P-VOL by one instruction by specifying S-VOLs using automatic selection
After a P-VOL is selected, select the [Auto] radio button in [S-VOL] frame on the Paircreate Dialog screen and select the [Set] button. Repeat this operation as many times as the pairs to be created at the same time.

<In case of selecting wrong pairs>
When you want to delete a pair from the object pair volume list, select the [Omit] button after selecting the pair.

<Specification of the cascade>
Click [Cascade] button after choice in L1 Pair and S-VOL of L2 Pair.
Only when all of the following conditions are met, the concerned button becomes possible to be selected.
- An L1-Pair is split pair.
- An L1-Pair is selected.
- An S-VOL is selected by optional specification.
- It is possible to add an L2-Pair.

When there is L1-Pair except split pair already and it adds only L2-Pair, the concerned button can not be chosen.

<Execute adding pairs>
If you want to delete pairs, please select those pairs and select [Omit].
If you want to add pairs against all pairs in the Pair Volume list, please select [Paircreate]. Remote Console will add pairs and display the result. If you want to stop adding pairs, please select [Exit] button. The screen will be back to the HMRCF main screen.

It is able to specify “Not Reserve”, “Reserve” when choosing S-VOL.

Copy pace is available these three mode [Slower] [Medium] [Faster].
[Faster] mode should be used in offline environment.

(4) Confirming pair status
Confirm the pair status on the HOMRCF main screen. When the [Refresh] button is selected, the latest status can be confirmed.
Select the [Stat & History] button to display the Status & History screen and confirm the status.
For the detailed procedure, see step (3) in "Procedure for confirming pair status".

■ **Procedure for deleting pair**

⚠ NOTICE

When a pair in the PAIR status is deleted, there is a possibility that the contents of the P-VOL and the S-VOL do not coincide with each other. When deleting the pair, put it into the PSUS status beforehand.

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting a Volume/Pair/Cascade
There are two ways to delete a pair(s); one is by selecting a volume(s) and the other is by selecting a pair(s).
<When delete a pair(s) by selecting a volume(s)>
Select the [Volume] radio button on the HOMRCF main screen and set the display mode to Volume Display.
Delete a check mark in the check box of [Reserve] and display a volume(s) whose attribute is not Reserve in the volume list.
Select a volume whose pair you want to delete and select the [Pairsplit-S...] button. When selecting sequential volumes, specify them while pressing the [Shift] key. When selecting volumes at random (not sequentially), select them while pressing the [Ctrl] key.
The Delete Volume Pair screen is displayed.
<When delete a pair(s) by selecting a pair(s)>
Select the [Pair] or [Cascade] radio button on the HOMRCF main screen and set the display mode to Pair Display.
Select a pair you want to delete and select the [Pairsplit-S...] button. The Delete Volume Pair screen is displayed.

Depending on the status of the selected pair, the [Pairsplit-S...] button may not be selected. The statuses of the pair in which the [Pairsplit-S...] button can be selected are shown in the following Table 10-4.

Table 10-4 Statuses Allow Selection of [Pairsplit-S...] Button

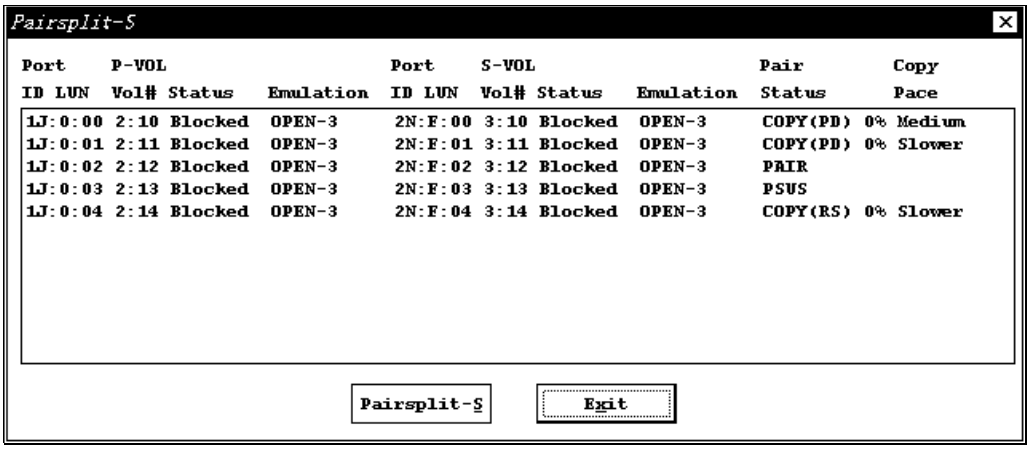
Pair Status / Button	SMPL	COPY (PD)	PAIR	COPY (SP)	PSUS	PSUS (SP)	COPY (RS)	COPY (RS-R)	PSUE
Pairsplit-S	x	OK	OK	OK	OK	x	OK	OK	OK

OK: Select the button x: Could not select the button

(3) Execution of deleting pairs

Select a pair(s) you want to delete from the pairs displayed on the Pairsplit-S screen and select the [Pairsplit-S] button. If you want to select sequential pairs, select them while pressing the [Shift] key. If you want to select them at random (not sequentially), select them while pressing the [Ctrl] key.

To stop the deletion, select the [Exit] button.



(4) Confirming pair status(es)

Confirm the pair status on the HOMRCF main screen. When the [Refresh] button is selected, the latest status can be confirmed.

Select the [Stat & History] button to display the Status & History screen and confirm the status. For the detailed procedure, see step (3) in "Procedure for confirming pair status".

Procedure for suspending/splitting/resynchronize pair

■ Procedure for suspending pair

This procedure is performed when stopping a copy of a pair temporarily, etc.

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting a Volume/Pair/Cascade
There are two ways to suspend a pair; one is by selecting a volume and the other is selecting a pair.
<When suspend a pair(s) by selecting a volume(s)>
Select the [Volume] radio button on the HOMRCF main screen and set the display mode to Volume Display.
Delete a check mark in the check box of [Reserve] and display a volume(s) whose attribute is not Reserve in the volume list. Select a volume whose pair you want to suspend and select the [Pairsplit-E...] button.
The PSUE Volume Pair screen is displayed.
<When suspend a pair(s) by selecting a pair(s)>
Select the [Pair] or [Cascade] radio button on the HOMRCF main screen and set the display mode to Pair Display.
Select a pair you want to suspend and select the [Pairsplit-E...] button.
The Pairsplit-E screen is displayed.

When selecting sequential volumes or pairs, select them while pressing the [Shift] key. When selecting volumes or pairs at random (not sequentially), select them while pressing the [Ctrl] key.

In the Pair Display mode, the [Pairsplit-E...] button may not be selected depending on the status of the selected pair. The statuses of the pair in which the [Pairsplit-E...] button can be selected are shown in the following Table 10-5.

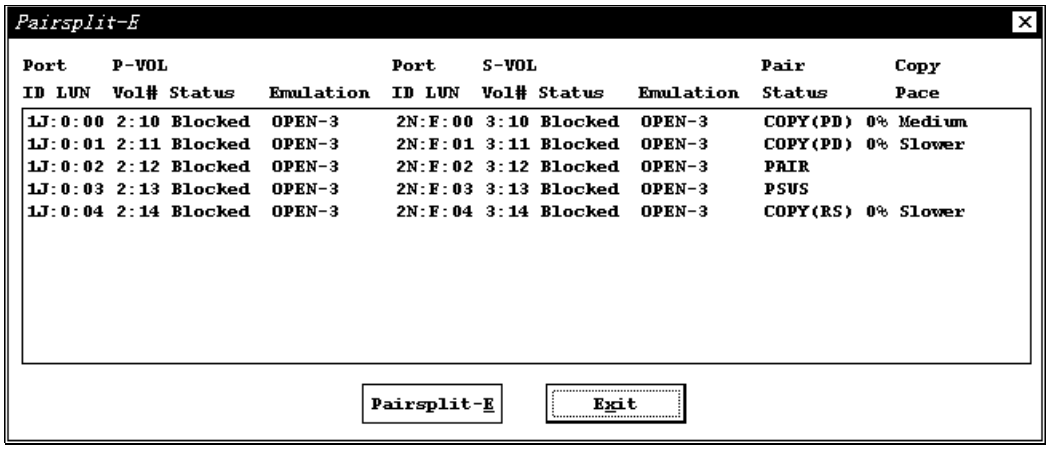
Table 10-5 Statuses Allow Selection of [Pairsplit-E...] Button

Pair Status / Button	SMPL	COPY (PD)	PAIR	COPY (SP)	PSUS	PSUS (SP)	COPY (RS)	COPY (RS-R)	PSUE
Pairsplit-E	x	OK	OK	OK	OK	OK	OK	OK	x

OK: Select the button x: Could not select the button

(3) Execution of suspending pairs

Select a pair(s) you want to suspend from the pairs displayed on the Pairsplit-E screen and select the [Pairsplit-E] button. If you want to select sequential pairs, select them while pressing the [Shift] key. If you want to select them at random (not sequentially), select them while pressing the [Ctrl] key. The suspension is executed and the result is displayed. To stop the suspension, select the [Exit] button. The screen is returned to the HOMRCF main screen.



(4) Confirming pair status(es)

Confirm the pair status on the HOMRCF main screen. When the [Refresh] button is selected, the latest status can be confirmed.

Select the [Stat & History] button to display the Status & History screen and confirm the status. For the detailed procedure, see step (3) in "Procedure for confirming pair status".

■ **Procedure for splitting pair**

This operation is performed when using a P-VOL and an S-VOL separately after a pair is created.

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting a Volume/Pair/Cascade
There are two ways to split a pair; one is by displaying a volume and the other is displaying a pair.
<When split a pair by displaying a volume>
Select the [Volume] radio button on the HOMRCF main screen and set the display mode to Volume Display.
Delete a check mark in the check box of [Reserve].
Select a pair you want to split and select the [Pairsplit...] button. The Pairsplit screen is displayed.
<When split a pair by displaying a pair>
Select the [Pair] radio button on the HOMRCF main screen and set the display mode to Pair Display.
Select the pair you want to split and select the [Pairsplit...] button. The Pairsplit screen is displayed.
Depending on the status of the selected pair, the [Pairsplit...] button may not be selected when the Pair Display mode is selected. The statuses of the pair for which the [Pairsplit...] button can be selected are shown in the following Table 10-6.

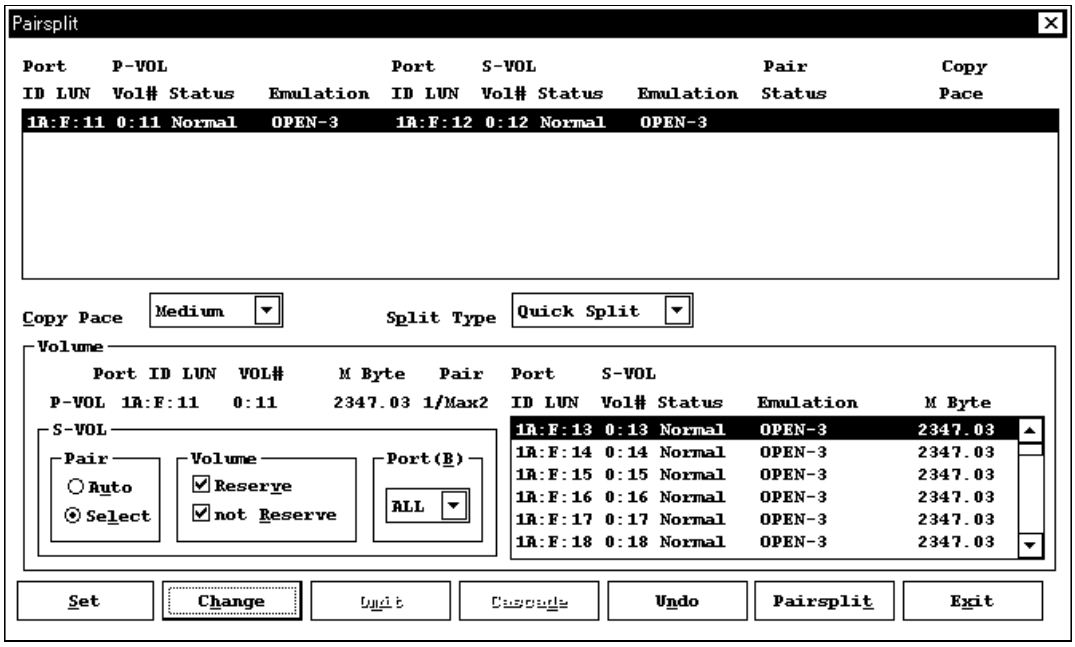
Table 10-6 Statuses Allow Selection of [Pairsplit...] Button

Pair Status / Button	SMPL	COPY (PD)	PAIR	COPY (SP)	PSUS	PSUS (SP)	COPY (RS)	COPY (RS-R)	PSUE
Pairsplit	OK	OK	OK	x	x	x	x	x	x

OK: Select the button x: Could not select the button

(3) Editing a pair

When no pair is created for the selected P-VOL, select an S-VOL. In default setting, the S-VOL is selected automatically. (The [Auto] radio button is displayed in the state that it is selected.)
When a pair has been created for the selected P-VOL, the created pair is displayed.
The specific operation procedures including changing of the S-VOL which P-VOL does not have any pairs are explained below.



⚠ NOTICE

To select and split a volume in the SMPL status, the reserved volume must have been defined. Define a reserved volume by referring to the volume attribute changing procedure.
Split all the pairs displayed in the object volume list on the Pairsplit screen. Delete pairs you do not want to split from the object volume list by selecting the [Omit] button after selecting them in the object volume list.

<Select Target Volume (S-VOL)>

(A) When you want to specify an S-VOL by optional selection
After a P-VOL is selected, select the [Select] radio button in [S-VOL] frame on the Paircreate screen. Select an S-VOL from the S-VOL list and select the [Change] button.

(B) When you want to specify an S-VOL by automatic selection
After a P-VOL is selected, select the [Auto] radio button in [S-VOL] frame on the Paircreate screen and select the [Change] button.

(C) When you want to create two or more pairs for one P-VOL by one instruction by specifying S-VOLs using optional selection
After a P-VOL is selected, select the [Select] radio button in [S-VOL] frame on the Paircreate screen. Select an S-VOL from the S-VOL list and select the [Set] button. Repeat this operation as many times as the pairs to be created at the same time.

(D) When you want to create two or more pairs for one P-VOL by one instruction by specifying S-VOLs using automatic selection
After a P-VOL is selected, select the [Auto] radio button in [S-VOL] frame on the Paircreate screen and select the [Set] button. Repeat this operation as many times as the pairs to be created at the same time.

<In case of selecting wrong pairs>
When you want to delete a pair from the object pair volume list, select the [Omit] button after selecting the pair.

<Specification of the cascade>
Click [Cascade] button after choice in L1 Pair and S-VOL of L2 Pair.
Only when all of the following conditions are met, the concerned button becomes possible to be selected.
- An L1-Pair is split pair.
- An L1-Pair is selected.
- An S-VOL is selected by optional specification.
- It is possible to add an L2-Pair.

When there is L1-Pair except split pair already and it adds only L2-Pair, the concerned button can not be chosen.

<Execute splitting the pairs>
If you want to delete pairs, please select those pairs and select [Omit].
If you want to split pairs against all pairs in the Pair Volume list, please select [Pairsplit]. Remote Console will add pairs and display the result. If you want to stop splitting pairs, please select [Exit] button. The screen will be back to the HOMRCF main screen.

It is able to specify “Not Reserve”, “Reserve” when choosing S-VOL.

Copy pace is available these three mode [Slower] [Medium] [Faster].
[Faster] mode should be used in offline environment.

Split type is available these two mode [Quick Split] [Steady Split].

(4) Confirming pair status
Confirm the pair status on the HOMRCF main screen. When the [Refresh] button is selected, the latest status can be confirmed.
Select the [Stat & History] button to display the Status & History screen and confirm the status. For the detailed procedure, see step (3) in "Procedure for confirming pair status".

■ **Procedure for resynchronizing pair**

This operation places a pair splitted once in the PAIR status again or it places a pair in the PSUE status into the PAIR status.

(1) Displaying the HOMRCF main screen
Select the [HOMRCF] button on the remote console function selection screen. The HOMRCF main screen is displayed.

(2) Selecting a Volume/Pair/Cascade
There are two ways to resynchronize a pair; one is by selecting a volume and the other is selecting a pair.
<When resynchronize a pair(s) by selecting a volume(s)>
Select the [Volume] radio button on the HOMRCF main screen and set the display mode to Volume Display.
Delete a check mark in the check box of [Reserve] and display a volume(s) whose attribute is not Reserve in the volume list. Select a volume whose pair you want to resynchronize and select the [Pairresync...] button.
The Pairresync screen is displayed.
<When resynchronize a pair(s) by selecting a pair(s)>
Select the [Pair] or [Cascade] radio button on the HOMRCF main screen and set the display mode to Pair Display.
Select a pair you want to resynchronize and select the [Pairresync...] button.
The Pairresync screen is displayed.

When selecting sequential volumes or pairs, select them while pressing the [Shift] key. When selecting volumes or pairs at random (not sequentially), select them while pressing the [Ctrl] key.

In the Pair Display mode, the [Pairresync...] button may not be selected depending on the status of the selected pair. The statuses of the pair in which the [Pairresync...] button can be selected are shown in the following Table 10-7.

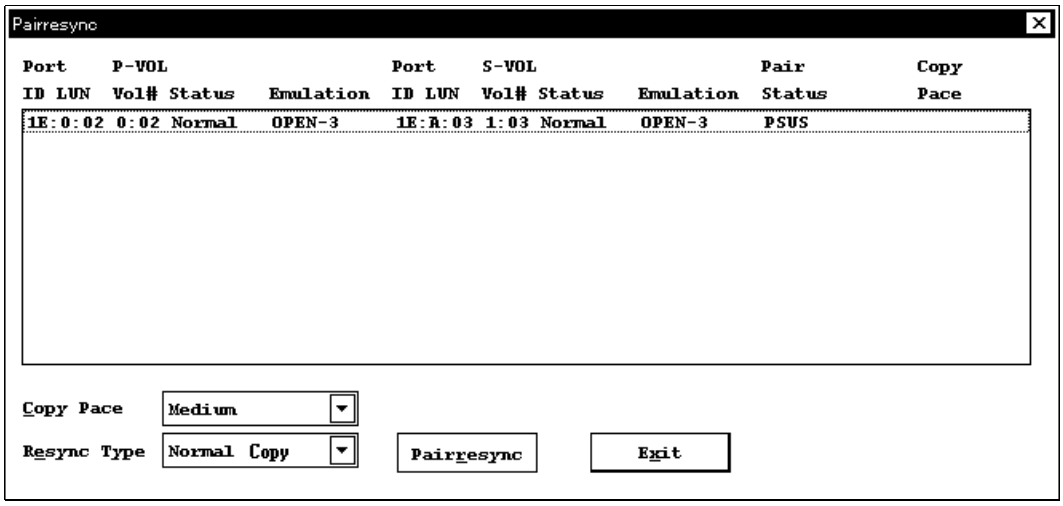
Table 10-7 Statuses Allow Selection of [Pairresync...] Button

Pair Status / Button	SMPL	COPY (PD)	PAIR	COPY (SP)	PSUS	PSUS (SP)	COPY (RS)	COPY (RS-R)	PSUE
Pairresync	x	x	x	x	OK	OK	x	x	OK

OK: Select the button x: Could not select the button

(3) Execution of resynchronizing pair

Select a pair(s) you want to re-synchronize from the pairs displayed and select the [Pairresync] button. If you want to select sequential volumes, select them while pressing the [Shift] key. If you want to select them at random (not sequentially), select them while pressing the [Ctrl] key. The re-synchronization is executed and the result is displayed. To stop the re-synchronization, select the [Exit] button. The screen is returned to the HOMRCF main screen.



Copy pace is available these three mode [Slower] [Medium] [Faster].
[Faster] mode should be used in offline environment.

Specifies the re-synchronization type used when the re-synchronization is executed.
When executing the re-synchronization, the re-synchronization is applied to all the pairs.

Normal Copy : Displays the Normal Copy
Quick Resync : Displays the Quick Resync
Reverse Copy : Displays the Reverse Copy
Quick Restore : Displays the Quick Restore

⚠ CAUTION

Be careful in the selection of Resync Type.
If you mistake the selection, customer's DATA is LOST.

(4) Confirming pair status(es)

Confirm the pair status on the HOMRCF main screen. When the [Refresh] button is selected, the latest status can be confirmed.
Select the [Stat & History] button to display the Status & History screen and confirm the status.
For the detailed procedure, see step (3) in "Procedure for confirming pair status".

■ **Procedure for initializing a Volume pair**

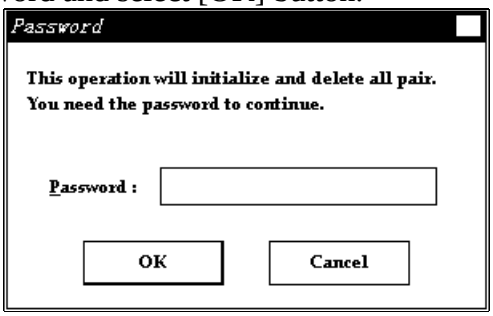
It initializes all Pair of HMRCF/HOMRCF.

(1) Display of HOMRCF main screen
Click the [HOMRCF] button on SVP function screen, the HOMRCF main screen comes out.

(2) Initialization
In the HOMRCF main screen, it pushes [Initialize] button.

> **⚠ NOTICE**
> All Pair of HMRCF/HOMRCF are deleted by this operation.

(3) Inputs a password.
"This operation will initialize and delete all pair. You need the password to continue." is displayed. Enter the password and select [OK] button.

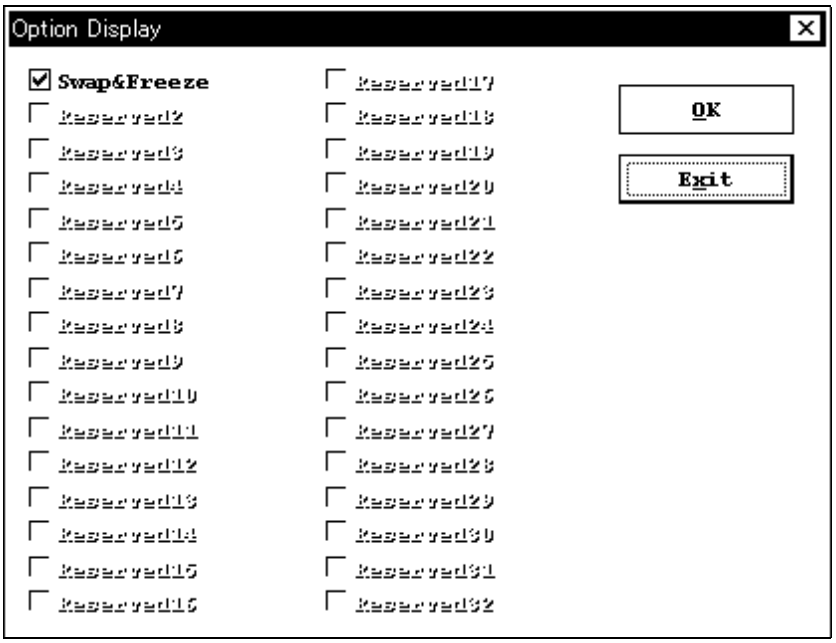


> **⚠ NOTICE**
> This is a special (exceptional) operation and requires an input of a password. Ask the technical support center about the appropriateness of the operation and input the password after getting an approval of executing the operation.

(4) Confirms an execution result
When indicating the compulsion initialization of Pair, it confirms that all Pair are deleted with the HOMRCF Main screen.

■ Procedure for Option Setting

You can execute the option setting on the Option Display panel.
Select [Option] on main panel of HOMRCF, then the Option Display panel appears.



You need to check the applicable check boxes on the Option Display to make the Opting setting.

The procedures for option setting include:

(1) When the [Option] button on the main panel of HOMRCF is valid.
Select [Option] on main panel of HOMRCF, then open the Option Display panel.

(2) When the Option Display panel appears, the check boxes indicating all kinds of options on it show the status of option setting. Only the check boxes available for setting are shown validly, the check boxes unavailable for setting are grayed out.

(3) Check the check boxes you want to set on Option Display panel. Release the check boxes you do not want to set.

(4) After finishing checking the check boxes, select [OK] on the Option Display panel if you want to execute the option setting.

(5) After finishing setting, select [Exit] on the Option Display panel if you want to go back to the main panel of HOMRCF.

10.3 Notice about HOMRCF operation

■ **Restrictions on maintenance**

Dynamic Sparing/ Automatic collection copy : Even if a Dynamic Sparing or an automatic collection copy is performed in a PDEV concerning a pair, it does not affect a pairing status.

PDEV maintenance work : The maintenance of each PDEV does not affect a pair but when it affects a logical volume, it is restricted in the same way as the following LDEV maintenance work.

LDEV maintenance work : The LDEV maintenance work cannot be done when a pair exists.
(1) LDEV blockade : It is required to delete a pair and cancel the “Reserve” specification.
(2) LDEV formatting : Because an LDEV must be blocked, it is required to perform the above operation beforehand.

Cache maintenance work : In the case of cache maintenance under heavy I/O load, pair may be suspended.
So you should reduce I/O load before cache maintenance.

■ **When a failure occurs**

When a failure which prevents a copy among the logical volumes occurs, it places a pair in the “Suspend” status.

When an LDEV failure occurs : It places a pair in the “Suspend” status.
When a PDEV failure occurs : A pairing status is not changed owing to a collection access (single PDEV blockade).

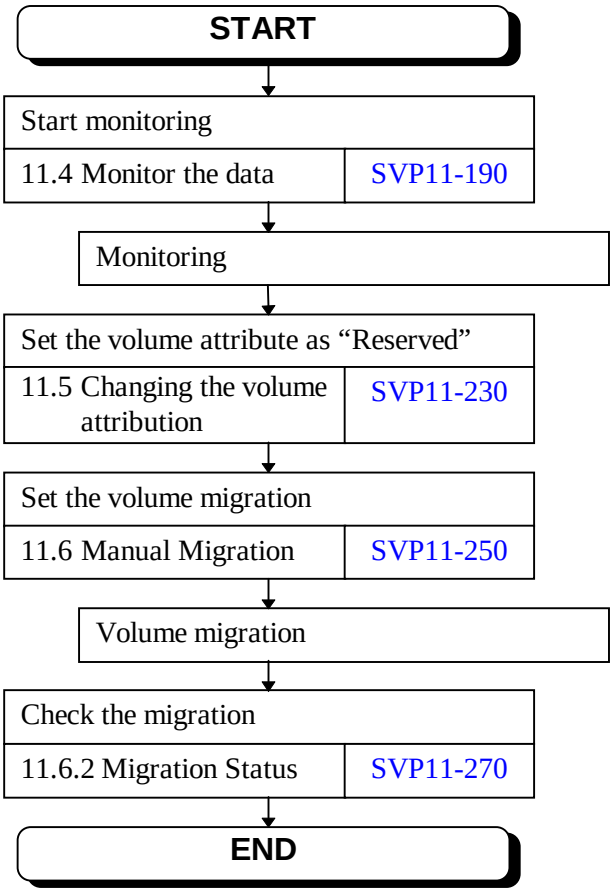
11 HIHSM

11.1 Flowchart of HIHSM operations

11.1.1 Basic Operations

HIHSM (Hitachi Internal Hierarchy Storage Management) is a function that plans and does the volumes migration by the monitoring data. There are two methods about the volume migrations, one is by hand (it is called manual operations) and the other is by automatic (automatic operations) of preset function.
In the case of the manual operations, the program immediately execute the volume migrations. In the case of the automatic operations, the program set the migration schedule and execute the migrations by the schedule.

(1) Manual Operations
We'd like to describe the flowchart of HIHSM's manual operations in the following diagram.



Note

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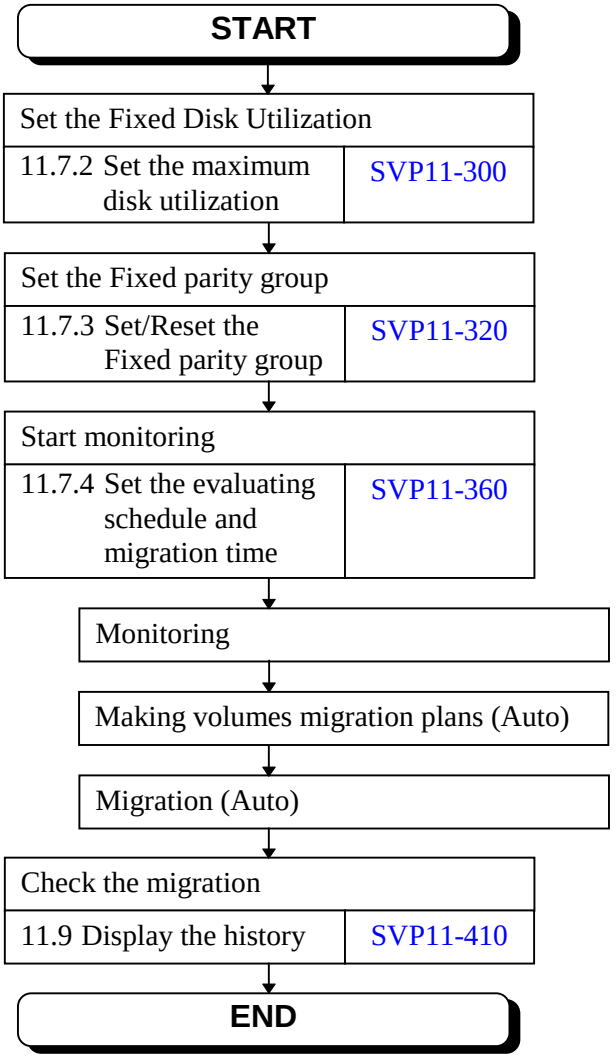
(2) Automatic Operations



Note

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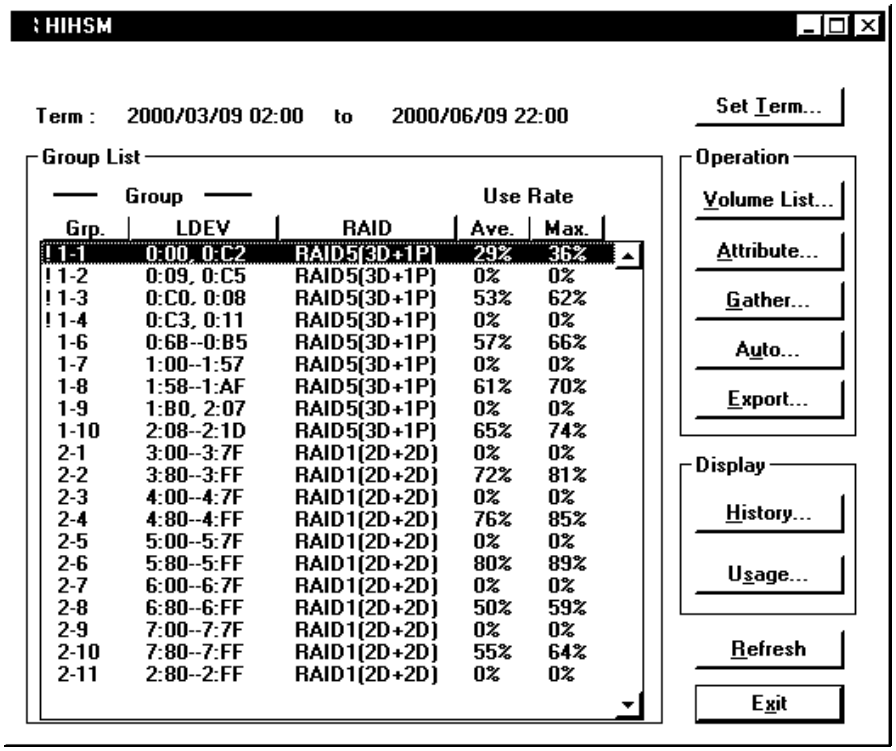
11.2 HIHSM Screens

11.2.1 Main Screen



This screen will be displayed after selecting [HIHSM] button in the function launcher.

(1) Term
Monitoring term which the program displays in this screen. Users can specify the term by selecting [Set Term...].

(2) Group List
Displays the monitoring data by each parity group.
You can sort each information by pushing each button.

Grp. (*1)	Number of the parity group
LDEV	Logical volume number
RAID	RAID type
Ave. (*2)(*3)	Average usage rate in the parity group during the term.
Max. (*3)	Maximum usage rate in the parity group during the term.

(*1) If the precision of the volume usage rate is likely to be low (e.g., volumes in the group have been migrated by HIHSM, the configuration has been changed by CVS, or the volumes in the group have been moved by HMRCF/HOMRCF (the Shadow Image operations)), an exclamation mark (!) is displayed before the CU number (at the far left end of the row).

(*2) After volume migration, precision of the old data before migration will be low.
(*3) The indication of usage rate is as follows.
"+0%" -------- Maximum usage rate is not zero, but average usage rate is zero.
"00%"--------- Both maximum and average usage rate are zero.
"--%"---------- It can't calculate usage rate.

(3) Operation buttons

[Volume List...]	To operate volume migration by manual (manual operations). After selecting this button, the program will displays the Manual Migration Main screen.
[Attribute...]	To change the volume attribute. After selecting this button, the program will display the Change Attribute screen.
[Gather...]	To set or reset the execution of gathering monitoring data. After selecting this button, the program will display Data Gathering screen.
[Auto...]	To operate volume migration by automatic (Automatic operations). After selecting this button, the program will display Automatic Migration Main screen.
[Export...]	To save the monitor data files. After selecting this button, the program will display File Operation screen.

(4) Display buttons

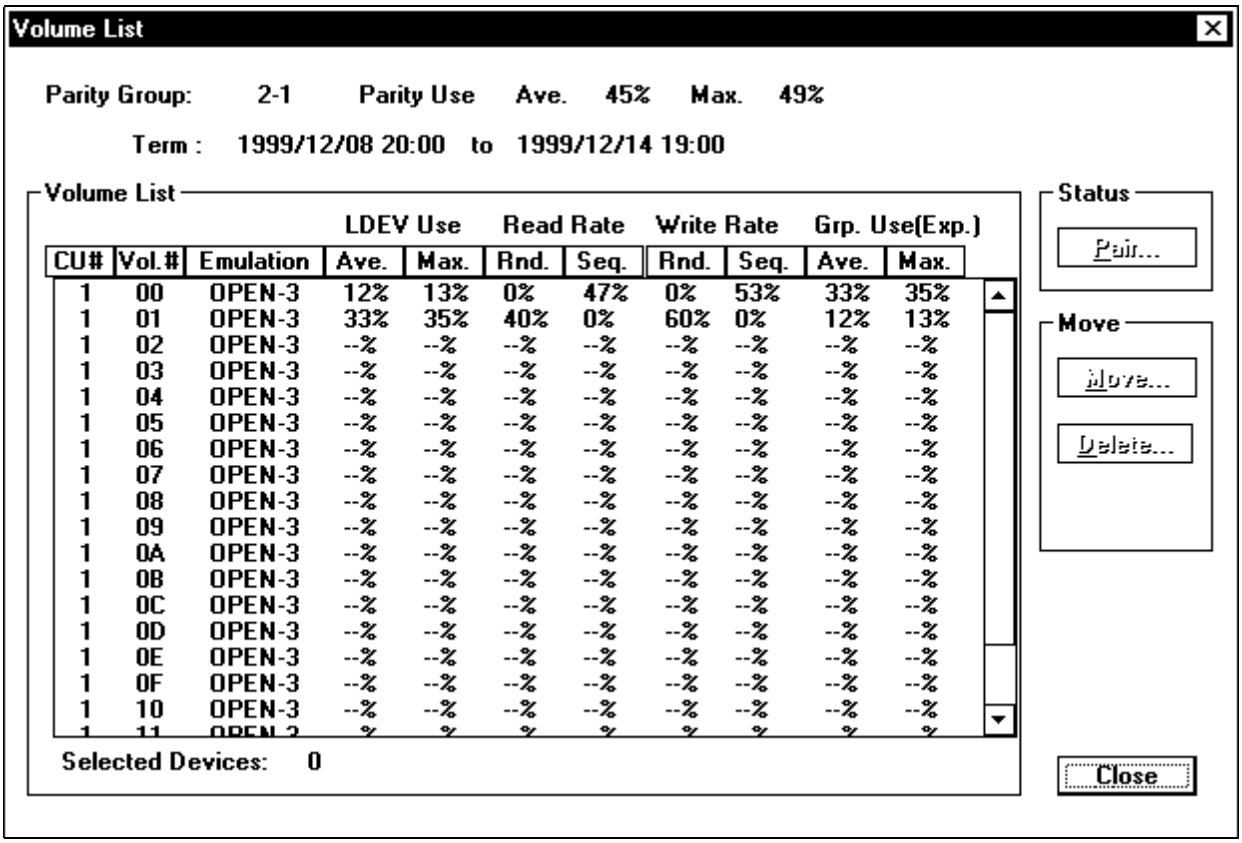
[History...]	To display the operations history. After selecting this button, the program will display History screen.
[Usage...]	To display the processor usage rate, and DRR usage rate, starnet usage rate. After selecting this button, the program will display Usage screen.

(5) Other buttons

[Set Term...]	To set the data term to display. After selecting this button, the program will display Data Term screen.
[Refresh]	To refresh the display data to read the configuration data. After selecting this button, the program will display the last group list.
[Exit]	To exit the main screen.

11.2.2 Manual Migration Main Screen

This screen is Manual Migration Main Screen to operate by manual operations.



This screen will be displayed after you select one of the parity group and push [Volume List...] button in the main screen. The program will displays the information about your selected parity group.

(1) Information of the parity group

"Parity Group"	Number of the parity group.
"Parity Use"	Usage rate of the parity group.
"Ave."	Average rate of the usage in the parity group.
"Max."	Maximum rate of the usage in the parity group.

(2) Term

Sampling term which the monitoring data is displayed.

(3) Volume List

In this list, the following information of the volumes in the parity group is displayed.
You can sort the each information by pushing each button.

"CU#" (*1)(*2)	CU number.
"Vol.#"	Logical volume number in the parity group.
"Emulation"	Emulation type of the volume.
"LDEV Use"	Usage rate of the volume.
"Ave."	Average rate of the volume usage.
"Max."	Maximum rate of the volume usage.
"Read Rate"	Read I/O rate.
"Rnd."	Read access rate in Random Mode.
"Seq."	Read access rate in Sequential Mode.
"Write Rate"	Write I/O rate.
"Rnd."	Write access rate in Random Mode.
"Seq."	Write access rate in Sequential Mode.
"Grp.Use(Exp.)	Usage rate of the parity group in the case of that the volume is not installed.
"Ave."	Average rate of the volume usage.
"Max."	Maximum rate of the volume usage

(4) Status button

[Pair...]	To display the status of the volume migration. After selecting this button, the program will display Pair Status screen.

(5) Move button

[Move...]	To migrate the volume. After selecting this button, the program will display Manual Migration Setting screen.
[Delete...]	To stop the volume migration. After selecting this button, the program will display Delete Pair Confirmation screen.

(6) Close button

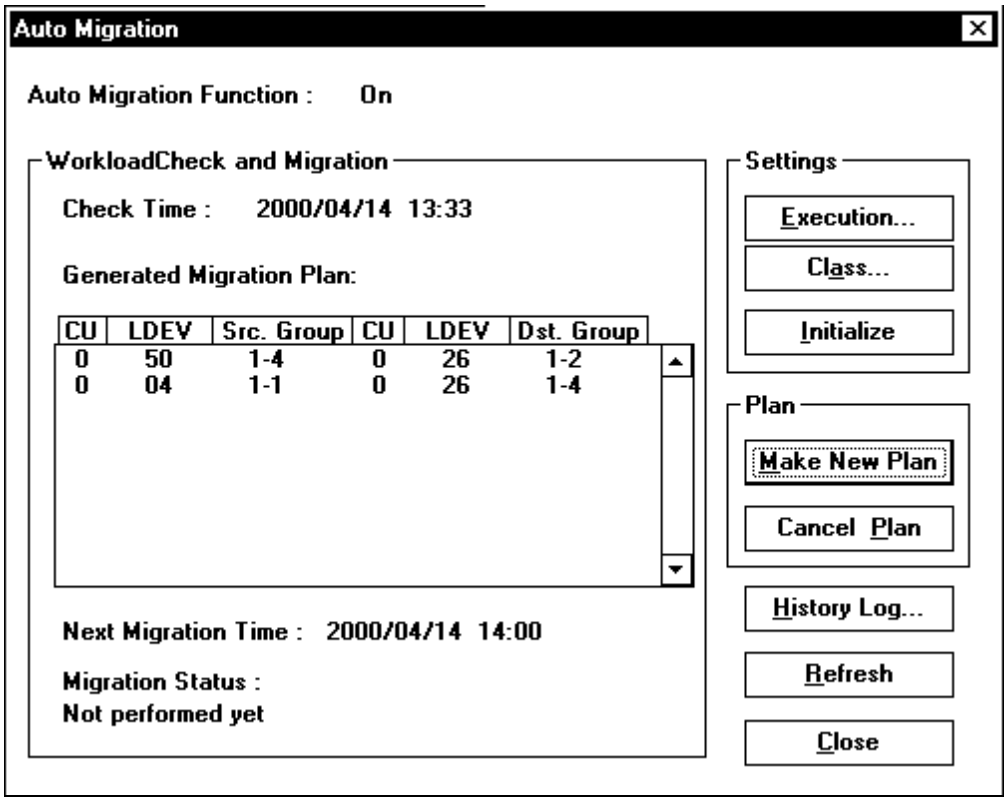
[close]	To exit this screen. After selecting this button, the program will display Main screen.

(*1) If the precision of the volume usage rate is likely to be low (e.g., volumes in the group have been migrated by HIHSM, the configuration has been changed by CVS, or the volumes in the group have been moved by HMRCF/HOMRCF (the Shadow Image operations)), an exclamation mark (!) is displayed before the CU number (at the far left end of the row).

(*2) If the volume is migrating, it is displayed "*" character in the left side.

11.2.3 Automatic Migration Main Screen

This screen is Automatic Migration Main screen for automatic operations.



This screen will be displayed after selecting [Auto...] button in the main screen. And, this screen is to operate automatic migration.

(1) Function availability flag

"Auto Migration Function" To set the function to be available(ON) or not available(OFF). After selecting [Execution...] button, the program will display the Automatic Migration Setting screen so that you can set the flag in that screen.

(2) WorkloadCheck and Migration

The screen is displayed the setting status of automatic migration.

"Check Time" The next check time to determine the volume migration plan.

"Generated Migration Plan" Volume migration plan.

- "CU" CU number of the source volume.
- "LDEV" Logical volume number of the source volume.
- "Src. Group" Parity group number which the source volume belongs to.
- "CU" CU number of the target volume.
- "LDEV" Logical volume number of the target volume.
- "Dst. Group" Parity group number which the target volume belongs to.

"Next Migration Time" The time to execute volume migration.
"Migration Status" The status whether the above migration plan is done.
Not planed yet : No plan was made.
Not peformed yet : Plan has been made but not be executed.
Failed to make plan : Could not make a plan.
Under migration : HIHSM is migration the volumes.
Last migration has canceled (Please see log file) :
HIHSM canceled the migration plan.
Migration successfully ended. Plan has done :
Plan has executed.

(3) Setting button

[Execution...] To set the detail parameters for volume migration. After selecting this button, the program will display Automatic Migration Setting screen.

[Class...] To display the class attribution in each parity group. There are three classes according to the installed drive type. After selecting this button, the program will display the Class List screen.

[Initialize] To reset the detail parameters for volume migration as default value.

(4) Plan button

[Make New Plan] To make new migration plan. After selecting this button, the program will make a new migration plan and display the plan in the "Generated Migration Plan" (The program will delete the remain plans). If "Migration Status" is "Under migration", don't make plan.

[Cancel Plan] To delete the migration plans in the "Generated Migration Plan".

(5) History button

[History Log...] To display Automatic migration history screen.

(6) Refresh button

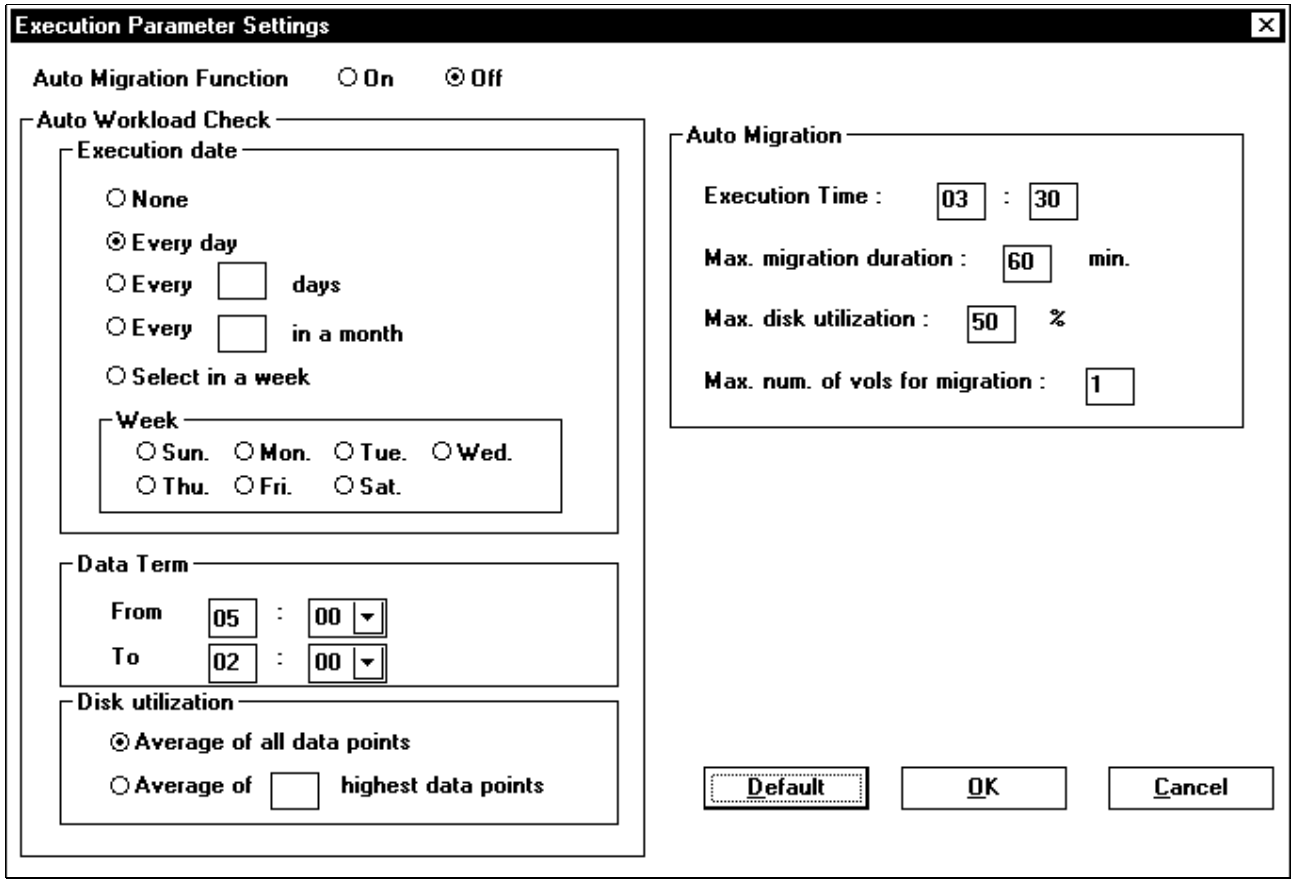
[Refresh] To refresh the status to read configuration information.

(7) Close button

[Close] To exit this screen. After selecting it, the program will display the main screen.

Notice: Generated migration plan will be executed at the setting time. Though you delete the plan by selecting [Cancel plan] during the planed migration, the program will not cancel that executing migration.
If you want to cancel those migrations, you should cancel the volume migrations one by one manually.

11.2.4 Automatic Migration Setting Screen



This screen is to set the automatic migration function (Preset function). After selecting [Execution...] button in the Automatic Migration main screen, this screen will be appeared.
Notice: You should set the monitoring switch to ON before using this function.

(1) Auto Migration Function
To set the automatic migration function to be available or not.
ON : Available to execute automatic migration.
OFF : Not available to execute automatic migration.

(2) Auto Workload Check
To set the monitoring term. The monitor data will be used whether the migration will be executed or not. The following three data you should set.
(a) Execution date
(b) Data Term
(c) Disk Utilization

Notice: If the automatic migration function set to be not available.
It was not executing auto migration and making migration plan.

(a) Execution date

To set date to make a plan. The next "Data Term" is the monitoring term which the program uses to make a plan, and you can set the hours in this day.

None	: Not making a plan. If old plan is remain, the program will execute the migration using by the plan.
Every day	: Execute in every day.
Every [x]days	: Execute in every other x days. You should input x. (Value: 2 – 31days)
Every [y] in a month	: Execute in every y day in a month. You should input y. (Value: 1 – 31days)
Select in a day of the week	: Execute in a day of the week. If you check it, please select a day of the week.

(b) Data Term

To set the hour of the day which monitoring data the program uses to make a plan. (*1)

From	Starting time of monitor data to make a plan. (Value: 0 – 23; 0, 15, 30, 45)
To	Ending time of monitor data to make a plan. (Value: 0 – 23; 0, 15, 30, 45)

(c) Disk Utilization

To set the determination point to make a plan. If the program determine to execute migration at that point, the program will make a plan.

Average of all data points	: To determine by using average usage rate against all sampling points.
Average of [x] highest data points	: To determine by using the average of the [x]th highest usage.

(3) Auto Migration

To set the migration schedule to execute migration.

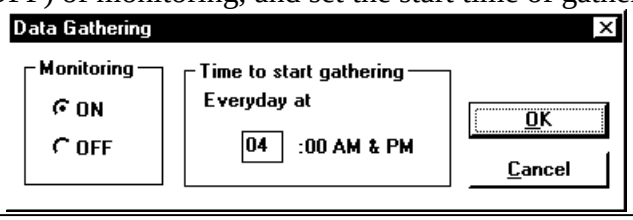
Execution Time (*2)	: Starting time of migration. (Program executes at the same time in every day)
Max. migration duration	: Your available migration term. If the program could not finish migrating during this duration, the program will stop migrating. (Value: 10 – 120 min)
Max. disk utilization	: To set the maximum disk usage rate. If the usage is over the Maximum disk utilization during migration, the program will stop the migration. (Value: 10 – 100%)
Max. num. of vols for migration	: To set the number of the migration volumes at the same migration term. (Value: 1 – 40 vols)

(*1) Automatic reboot or automatic data gathering should not be set in the following duration.
  (i) from the end of the target term to an hour.

(*2) (a) Automatic reboot or automatic data gathering should not be set in the following duration.
  (i) 30 minutes before starting time of migration
  (ii) 15 minutes+Max. Migration duration after starting time of migration
(b) Execution time should not be set in the following duration
  (i) 15 minutes+Max. Migration duration before start of time the target term
  (ii) One hour after end of the target term

11.2.5 Data Gathering Screen

This screen will be displayed when you select [Gather...] button in the main screen. In this screen, you can select mode (ON or OFF) of monitoring, and set the start time of gathering monitoring data.

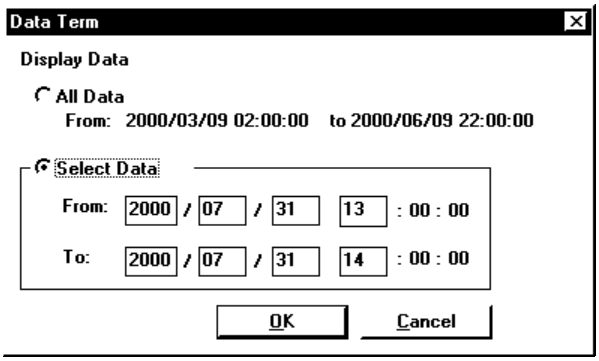


NOTICE

1. During data gathering, “Statistics Data Reading...” is displayed.
2. When maintenance is done during data gathering or data gathering starts during maintenance operation, maintenance is executed prior to data gathering. Then SVP stops data gathering temporarily but it will retry 15 minutes later. All the time “Statistics Data Reading...” remains displayed.

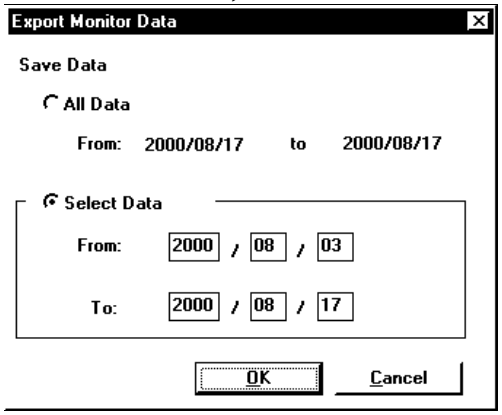
11.2.6 Data Term Screen

This screen will be displayed after selecting [Set Term...] button in the main screen.
You can set the term to display the monitoring data.
When you will set the same time to From and To, it is displayed “--%” at the usage rate in the HIHSM main screen and usage rate screen.



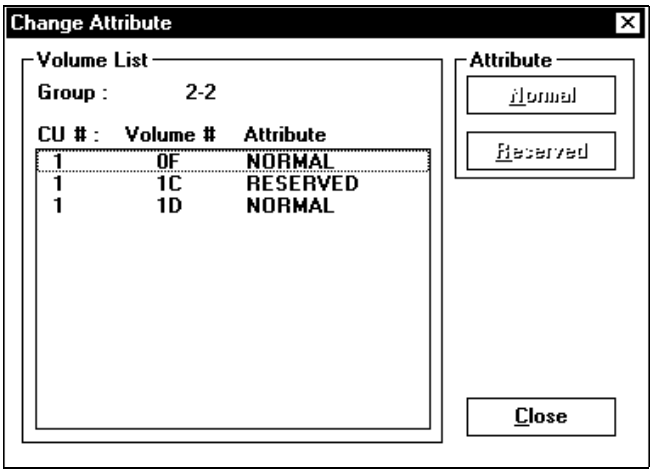
11.2.7 File Operation Screen

This screen will be displayed after selecting [Export...] button in the main screen.
You can save the monitoring data into the FD.
When you will set the same date to From and To, it is saved the monitoring data for one days.



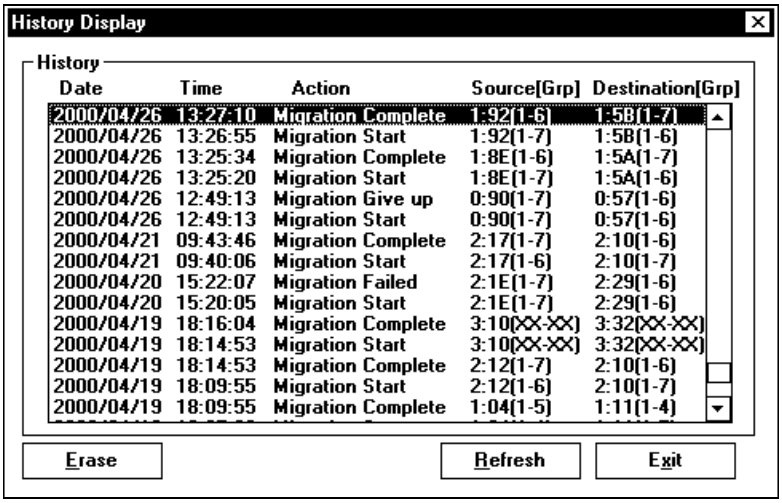
11.2.8 Change Attribute Screen

This screen will be displayed after selecting one of the parity group and pushing [Attribute...] button. You can change the volume attribution.



11.2.9 History Screen

This screen will be displayed after selecting [History...] button in the main screen. You can refer to the previous operations in this screen.



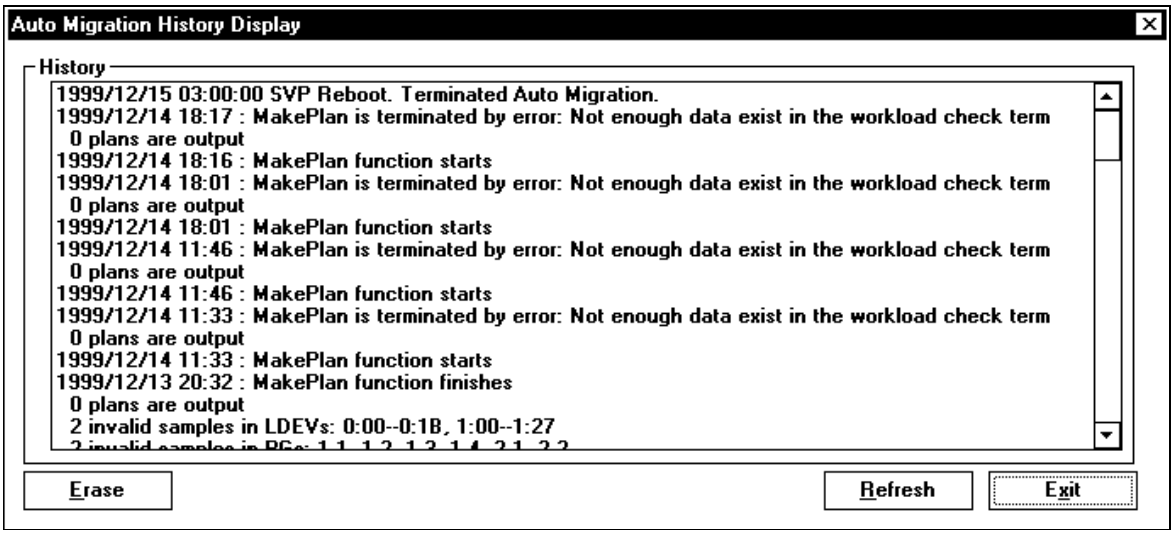
The following items are displayed in the Action.

- Migration Start : Started migrating volumes.
- Migration Complete : Migration was finished.
- Migration Cancel : Migration was canceled.
- Migration Failed : Migration was failed.
- Migration Give Up : Migration was gave up.

Notice: Some parity groups that was de-installed will be displayed as “XX-XX”.

11.2.10 Automatic Migration History Screen

This screen is to display a history for automatic function and displayed by selecting [History Log...] button in the Automatic Migration Main Screen.



(1) Normal end of migration

"Migration Complete (CU:LDEV->CU:LDEV) Start:yyyy/mm/dd hh:min:sec->End:yyyy/mm/dd hh:min:sec"
(a) (b) (c) (d)

(a) Original logical device (source volume)
(b) Target logical device (target volume)
(c) Migration start time
(d) Migration end time

(2) Cancel the migration (over the limit duration)

"Migration Canceled (CU:LDEV->CU:LDEV) Start:yyyy/mm/dd hh:min:sec->Cancel:yyyy/mm/dd hh:min:sec"
(a) (b) (c) (d)

(a) Original logical device (source volume)
(b) Target logical device (target volume)
(c) Migration start time
(d) Migration cancel time

(3) Cancel the migration (other reason)

"Migration Stopped (CU:LDEV->CU:LDEV) yyyy/mm/dd hh:min:sec (XXXXXXXXXXXX)"
(a) (b) (c) (d)

(a) Original logical device (source volume)
(b) Target logical device (target volume)
(c) Canceled time
(d) Reason :

No Reserve Volume	: No reserved volume is set. Please make the other plan again.
Reserve Volume Emulation is different	: The reserved volume's emulation type is different.
Utilization Check	: The usage rate is over the limited rate. Or there is no monitoring data
Migration failed. Error Code:XXXX	: The indication of the migration was failed For further information on the Dynamic Optimizer error codes, please see Table in section 11.9.2.
Reserve Volume Size is different	: Reserve volume size is different.
Reserve Volume emulation is not supported	: The emulation type of reserved volume is not supported.
Utilization Check failed	: The check of the utilization rate finished abnormally.
Reserve Volume Check failed.	: The check of the reserved volume finished abnormally.

(4) Cancel the migration (Invalid Parity Group)

"Migration Canceled (CU:LDEV (X-X)->CU:LDEV (X-X)) yyyy/mm/dd hh:min:sec (Invalid Parity Group)"
(a) (b) (c) (d) (e)

(a) Original logical device (source volume)
(b) Parity group including the source volume.
(c) Target logical device (target volume)
(d) Parity group including the target volume.
(e) Canceled time.

(5) Deleted the migration plan (A migration plan was deleted because the previous plan had been deleted.)

"Migration Plan deleted (CU:LDEV->CU:LDEV) yyyy/mm/dd hh:min:sec (Pre-Plan is deleted)"
(a) (b) (c)

(a) Original logical device (source volume)
(b) Target logical device (target volume)
(c) Canceled time

(6) Making plan

(i) Start making a plan

"yyyy/mm/dd hh:min : MakePlan function starts"
(a)

The program starts making a plan
(a) Start time

(ii) End making a plan

"yyyy/mm/dd hh:min : MakePlan function finishes"
(a)

The program ends making a plan
(a) End time

(iii) The number of made plans

"X plans are output"
(a)

The program outputs the x number of plans.
(a) The number of output plans

(iv) Contents of made plan

"PlanXXX: Src LDEV CU:LDEV in Grp X-X, Dst LDEV CU:LDEV in Grp X-X"
(a) (b) (c) (d) (e)

The program made the plan.
(a) Plan number
(b) Original volume (source volume)
(c) Parity group including the source volume
(d) Target volume
(e) Parity group including the source volume

(7) Failed making the plan

(i) Failed making the plan.

"yyyy/mm/dd hh:min : MakePlan is terminated by error: XXXXXXXXXX"
(a) (b)

The program failed to make plans.
(a) End time
(b) Failed reason (Refer to the following items)

Cannot make a proper plan
[Message] Cannot make proper migration plan by this function
[Contents] The program could not make a proper migration plan.
[Action] Check the number of the reserved volumes and their locations.
Check the limit number of disk utilization and change if necessary.

Lack of data
[Message] Not enough HIHSM data in the workload check term
[Contents] The program did not have enough data to make the plan in the target term.
[Action] Check the monitored data and gather them again if necessary.
Check the workload check term.

Failed to get the information
[Message] Failed to get XXXXXXXXXX
(c)
[Contents] The program failed to get the information or data to make a plan.
(c) The kind of information or data.
[Action] In the case of information : Make the initial value again by selecting [Initialize].
In the case of data : Check the status of gathered data and get them again.

Failed to write the information.
[Message] Failed to write to XXXXXXXXXX
(c)
[Contents] The program failed to write the information to make a plan.
(c) The kind of information.

Invalid information / data
[Message] Invalid XXXXXXXXXX
(c)
[Contents] The program need the information to make the plan , but could not use it because the information was invalid.
(c) The kind of information / data
[Action] In the case of information : Make the initial value again by selecting [Initialize].
In the case of data : Check the status of gathered data and get them again.

Failed to allocate the memory
[Message] Memory allocation error
[Contents] The program failed to allocate the memory to make the plan.

(ii) Initialization file detection failure

"c:\dkc200\others\hihsmatm.ini does not exist."

Because there was no "hihsmatm.ini", it couldn't be done make plan. Please make plan again after you push a [Initialize] button.

(8) Report the additional information

(i) history that the plan could not be made

"Cannot make plan: Class X Grp X-X"
(a) (b)

The plan of a certain group in the indicated class could not be made.
(a) Class
(b) Parity Group

(ii) Some samples were invalidated

"X samples are invalidated because of migration"
(a)

To reduce the influence of migration in the workload check term, the program made a plan without some samples.
(a) The number of invalidated samples

(iii) Add some volumes.

"new entries are added for following HDEVs: CU:LDEV, CU:LDEV, ..."
(a)

According to changing the volume configuration, the program added the information against those added volumes.
(a) Added volumes

(iv) Invalid data

"too many invalid data: invalidated all data"
The contents of data in the indicated group or volumes is invalid. The program made a plan without those data.

(9) Check the migrating volumes.

(i) Failed to check the volume utilization.

"Utilization Check failed"
The program failed to check the volume utilization because it could not get the necessary data in this check. Please get the data again.

(ii) Failed to check the reserved volumes

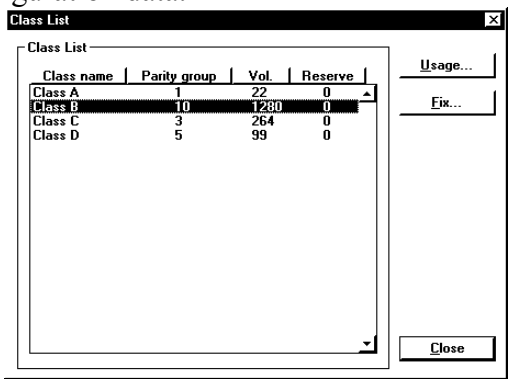
"Reserve volume Check failed"
The program failed to check the volume attributions. The program could not get the necessary information.

Notice: Auto Migration History function displays to record whether the Auto Plan is executed or not.
If you want to see the actual migration history, please refer to Main History.

11.2.11 Class List Screen

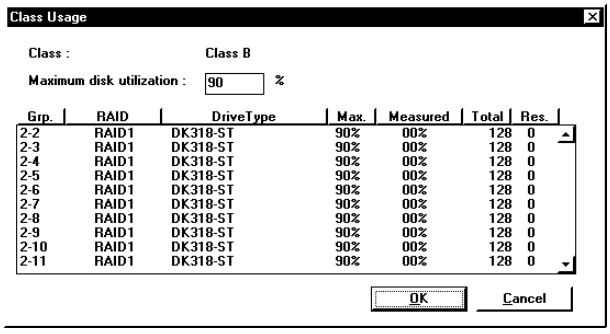
This screen will be displayed after you push [Class...] button in the Automatic Migration Main screen.

Notice: You should be push the [Initialize] button to setting default values of migration parameters for use the latest configuration data.



11.2.12 Class Detail Screen

This screen will be displayed after you select one of the class name and push [Usage...] button in the Class List screen.



(1) Class
Displays the Class Name which your select in the Class List screen.

(2) Maximum disk utilization
You can set the maximum disk usage rata for this class.

(3) Group List
Displays the volume information by each parity group.

Grp	Number of the parity group.
RAID	RAID type.
Drive Type	Drive type of the parity group.
Max.	Maximum disk usage rate.
Measured	Measured usage value for specified monitor data term.

Notice: It is displayed “--%” character before making migration plan.

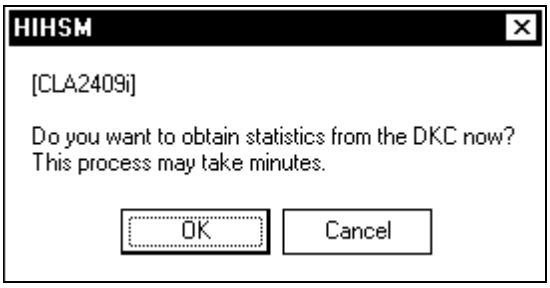
Total	Total number of logical volumes in the parity group.
Res.	Number of reserved volumes in the parity group.

11.3 Start HIHSM

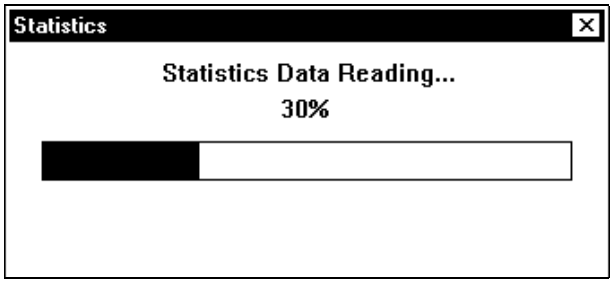
You can start "HIHSM" function to select "HIHSM" button in the Function Launcher screen. After selecting the button, the program will display a message about a monitoring data. If you have already started monitoring function, you can get those monitoring data. Please refer to "Monitor the data" for more detail description.

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

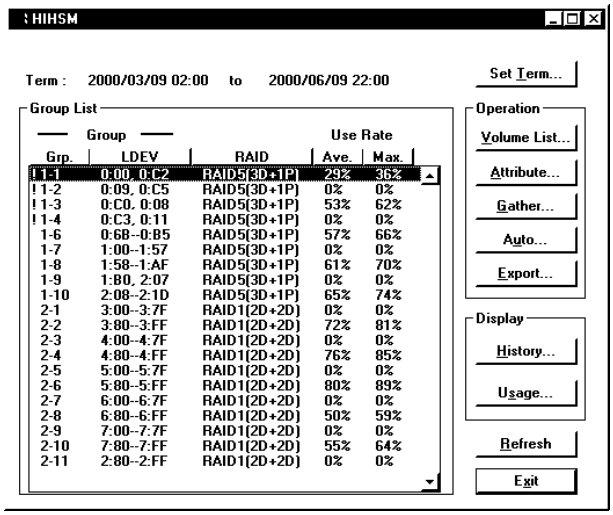
(2) Display a message
The program will display the following message. If you have already started monitoring, please select [OK]. The program will start gathering the monitoring data. If you do not start, please select [Cancel]. You can go to the HIHSM's main screen.



(3) Gathering the data
The program is gathering the data. After finishing, the HIHSM's main screen will be displayed.



(4) Display HIHSM's main screen
The prgraom will display the main screen.

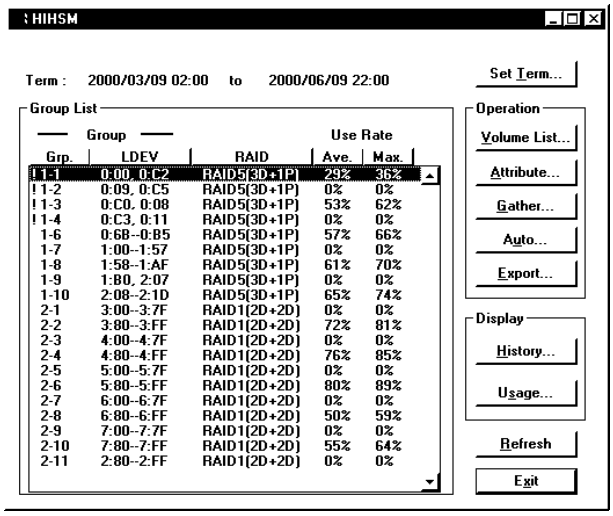


11.4 Monitor the data

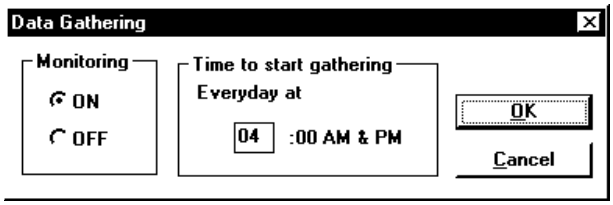
11.4.1 Start monitoring

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen
Select [Gather...] button in the main screen.



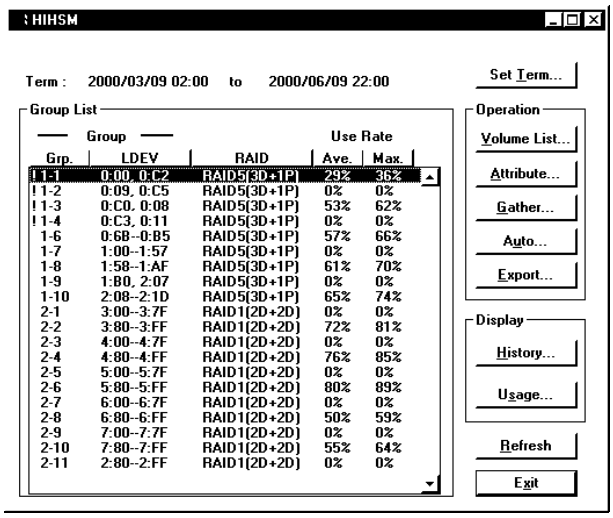
(3) Operation in the Data Gathering screen
Select [On] in the Data Gathering screen and input the time to gather the data. After, select [OK].
Data gathering is executed twice a day at the set time of A.M. and P.M.



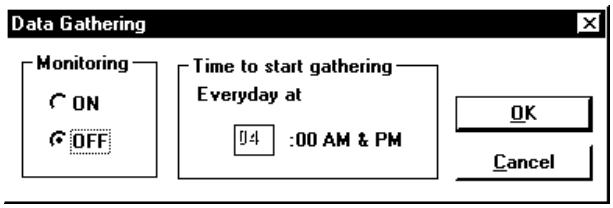
11.4.2 Stop monitoring

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen
Select [Gather...] button in the main screen.



(3) Operation in the Data Gathering screen
Select [Off:] in the Data Gathering screen and select [OK].

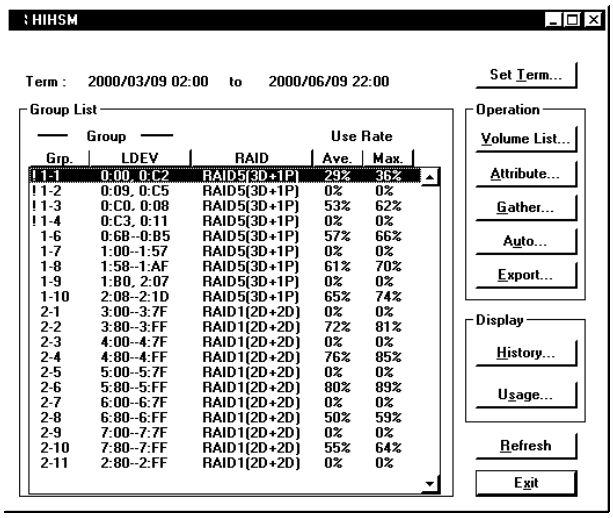


Notice: If you select [Off], the monitoring data which has not be read will be deleted. If you need these data, please exit this HIHSM function and restart again.

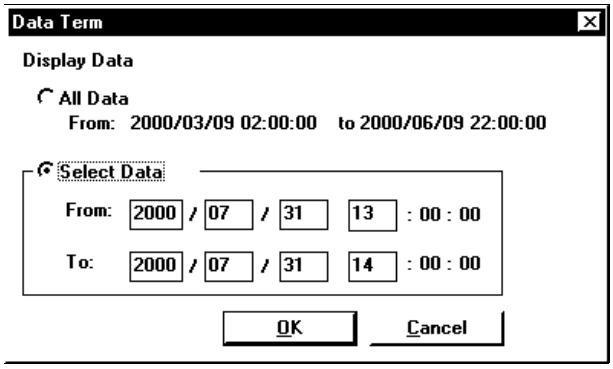
11.4.3 Set the term to display the monitoring data

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen
Select [Set Term...] button in the main screen.



(3) Set the term to display the monitoring data
Data Term Screen is displayed. You can do one of the following operations.
(a) If you want to display all monitoring data
Please select “All Data” and select [OK]. The program will display the all monitoring data.
(b) If you want to display some monitoring data
Please select “Limit” and input the term which is From data and To data.
After inputting the term, please select [OK].
The program will display your inputted term of monitoring data.

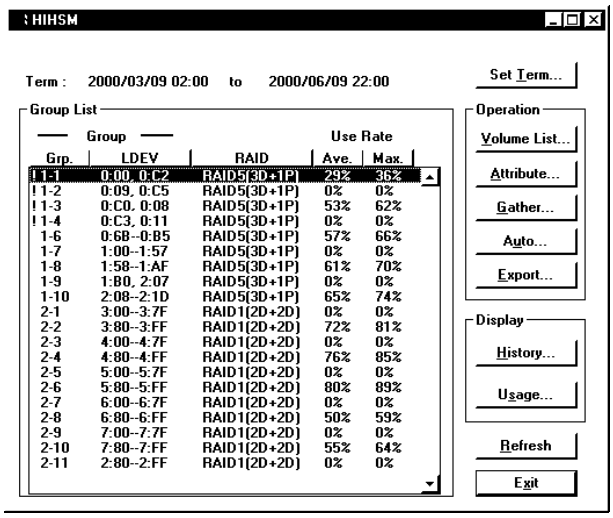


Notice: If you specify over a wide range of monitor data term (for Select Data), the screens related to manual migration operations thereafter will become slower (i.e., the drawing speed of the screens will decrease).
Therefore, you should specify the range as narrow as possible to keep a normal. screen speed.

11.4.4 Save monitoring data to FD

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

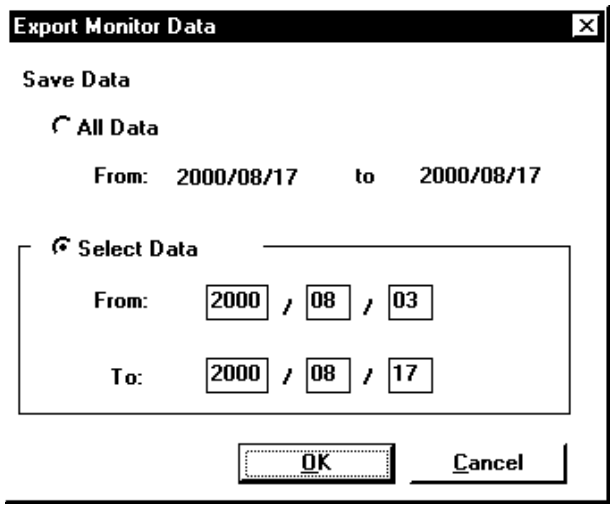
(2) Operation in the main screen
Select [Export...] button in the main screen.



(3) Operation in the File Operation screen
File Operation Screen is displayed. You can select one of the operations.

(a) If you want to save all monitoring data
Please select “All Data” and select [OK]. The program will save the all monitoring data into the FD.

(b) If you want to save some of the all monitoring data
- Select “Select Data” and input “From” date and “To” date
- Select [OK]. The program will save your selected monitoring data into the FD.



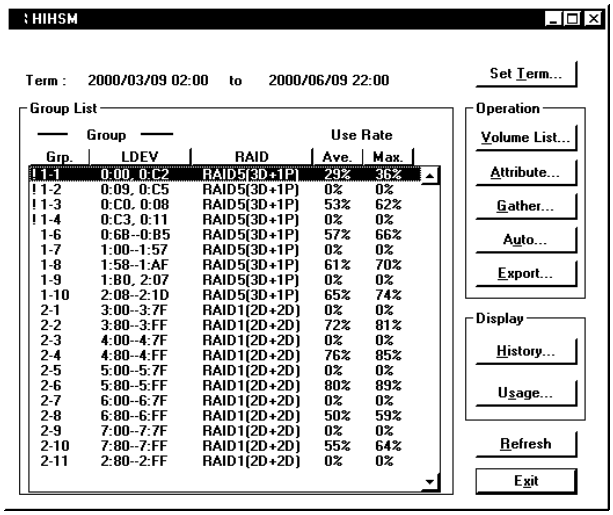
11.5 Changing the volume attribution

11.5.1 Changing the volume attribution to “Reserved”

There are “Normal” and “Reserved” attributions. The normal volumes has the “Normal” attribution. Before executing the volume migration, you should decide the target volumes changing the volume attributions as “Reserved”.
In this section, the operation to change the attribute will be described.

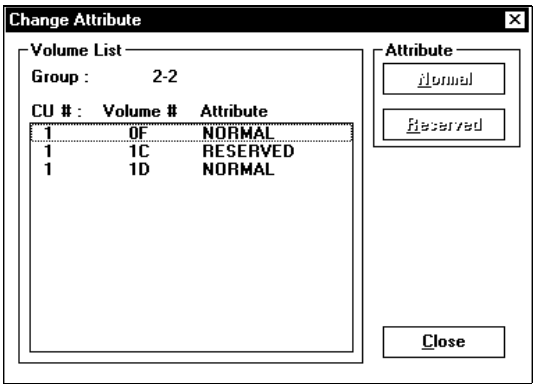
(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

(2) Select parity group
Select one of the parity group in the Group List and push [Attribute...].

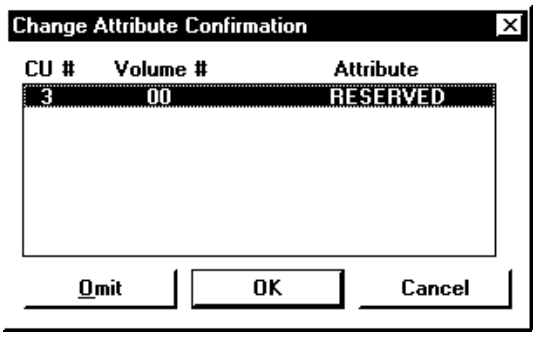


(3) Set the attribute as “Reserved”
Change Attribute screen is displayed.
Select the volume in the Volume List and push [Reserved] button.

Notice : When you selected a volume that was already used for another function, that volume is not displayed on the Change Attribute panel.

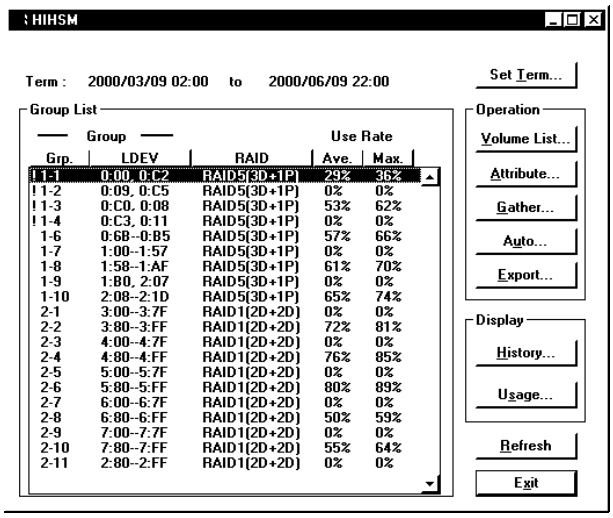


(4) Confirm the attribution
The program displays the list of your setting attribution.
If you want to set, please the select [OK].
If you want to delete one of then, please select it in the list and select [Omit]. The program will delete it from the list.
If you want to cancel, please select [Cancel].



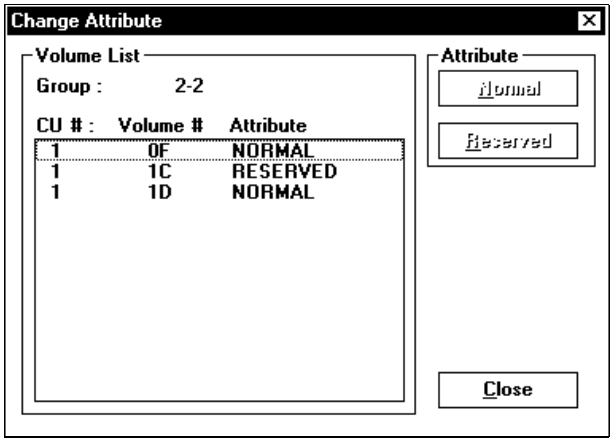
11.5.2 Changing the volume attribute to “Normal”

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

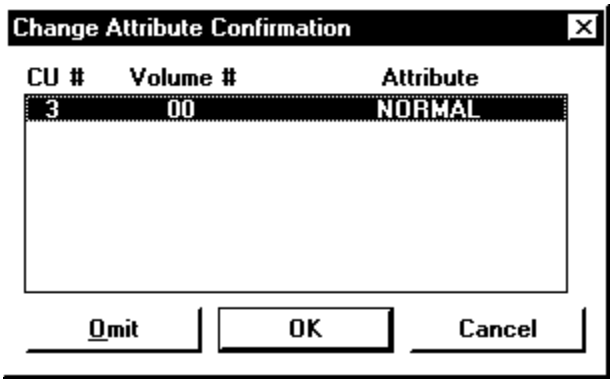


(2) Select parity group
Select one of the parity group in the main screen and push [Attribute...] button.

(3) Set the attribute
Change Attribute screen is displayed.
Select the volume in the Volume List and push [Normal] button.



(4) Confirm the attribution
The program displays the list of your setting attribution.
If you want to set, please the select [OK].
If you want to delete one of then, please select it in the list and select [Omit]. The program will delete it from the list.
If you want to cancel, please select [Cancel].

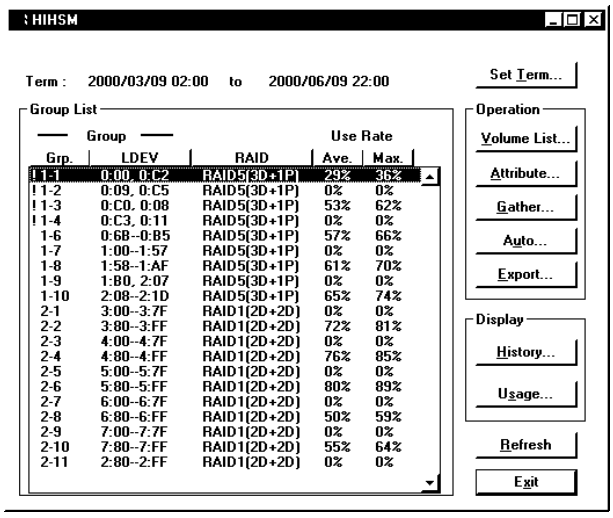


11.6 Manual Migration

Notice: If you want to refer the migrate LDEV number in the group after finishing the volume migration by SVP or Remote Console, you should refer to “Refer Configuration” in “Install” function to get the latest configuration information.

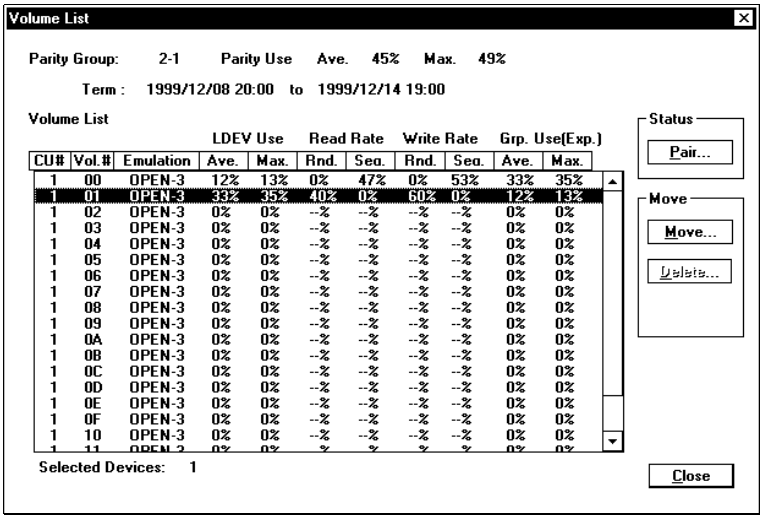
11.6.1 Manual Migration

(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.

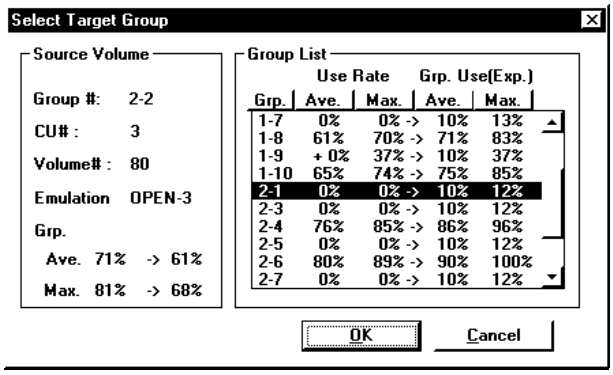


(2) Operation in the main screen
Select one of the parity group which you want to migrate, and push [Volume List...] button in the main screen.

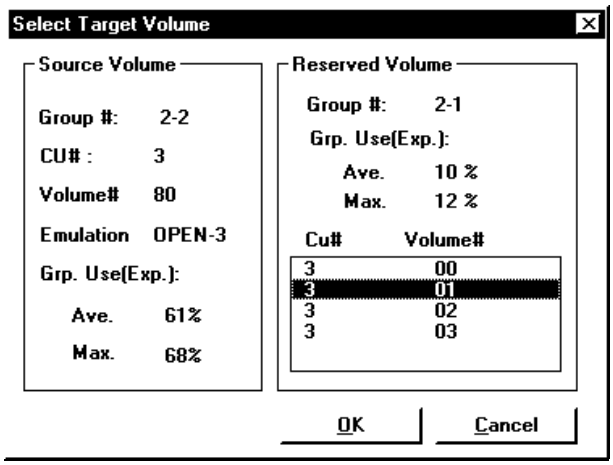
(3) Select the volume
Manual Migration Main screen will be displayed.
Select a volume and push [Move...].



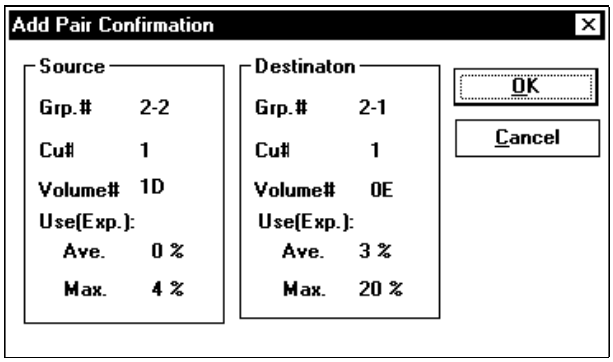
(4) Select the target parity group
Manual Migration Setting screen will be displayed. In this screen, the actual volume usage rate and the estimated volume usage after migration are displayed.
Please check the estimated rate.
Select the target parity group and push [OK].



(5) Select the target volume
The program displays the reserved volume list.
Select the target volume from the reserved volume list and push [OK].



(6) Confirm the migration
The program displays the source volume and the target volume with the usage rate.
Please confirm them and select [OK]. The program will start executing the migration. If you do not want to execute, select [Cancel].

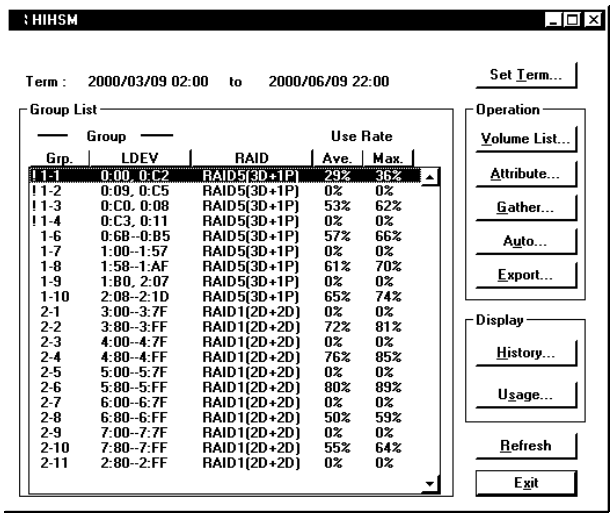


(7) Check during the migration
If you want to check the migration status, please refer to “Migration Status” section.

Notice: If you want to request to do sequential manual migration, please check the target parity group information.

11.6.2 Migration Status

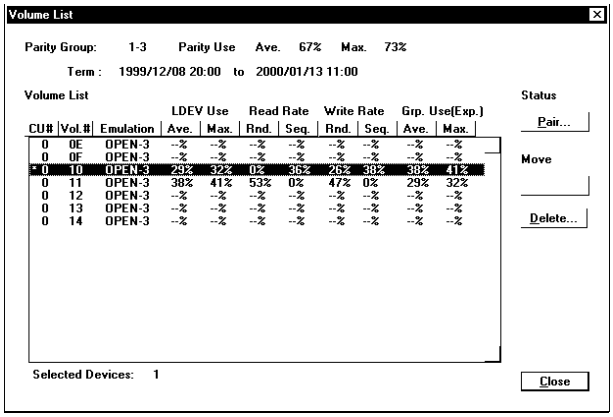
(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.



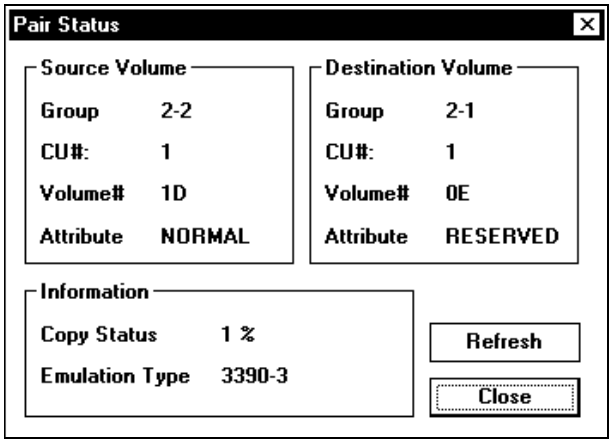
(2) Select parity group
Select one of the parity group which you want to refer to volume migration, and push [Volume List...] button in the main screen.

(3) Select volume
Manual Migration Main screen is displayed. Select one of the volume and push [Pair...] button.

Notice: Migration volumes are indicated as "*" in the left side.

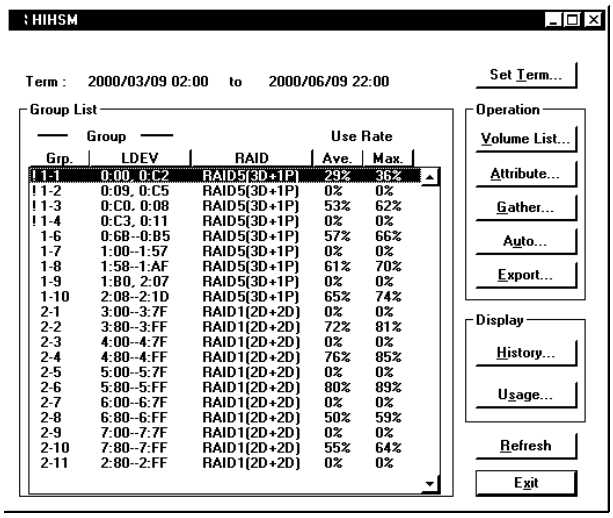


(4) Check the status
The source and target volumes are displayed with the migration status. Please continue selecting [Refresh] to get the last status.



11.6.3 Stop migration

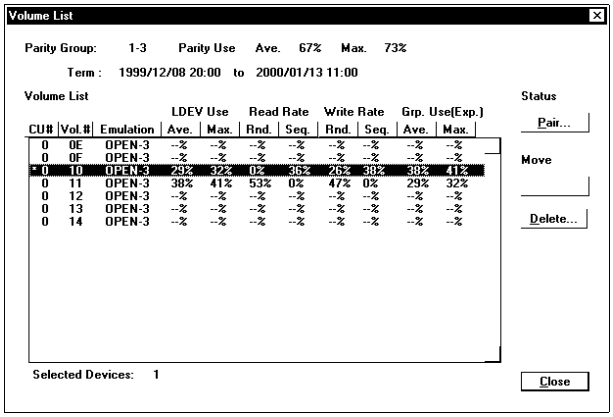
(1) Start HIHSM
Select [HIHSM] button in the Function Launcher screen.



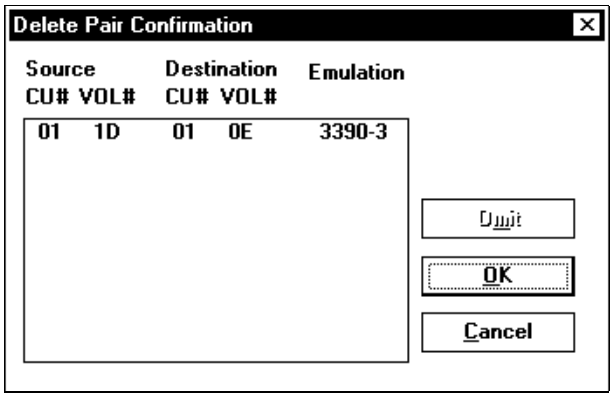
(2) Select parity group
Select one of the parity group which you want to refer to volume migration, and push [Volume List...] button in the main screen.

(3) Select volume
Manual Migration Main screen is displayed. Select one of the volume and push [Delete...] button.

Notice: Migration volumes are indicated as "*" in the left side.



(4) Confirmation
Your selected volumes which you want to stop the migration are displayed in the volume list. Please confirm them.
If you want to stop the migration, please select [OK]. If you do not want, please select [Cancel].
If you want to remove the volumes from the volume list, please select the volumes and push [Omit]. The volume is deleted from the volume list ,which means that your omitted volume does not stop the migration. After selecting [OK], the program will stop the migration against the volumes in the list.



11.7 Automatic Migration

In the case of this automatic migration, the program automatically selects the volumes to migrate by using the following maximum disk utilization value.
The idea of these threshold control are described in the "Preset function". Please refer to it more detailed description.

11.7.1 Classification according to each disk type

The program automatically classifies according to each disk type. The following table are described the detailed desk type classification.

(1) Desk type classification
The program determines a class by the disk type (disk performance).

Disk Type	Order
DKS2B	0
DKS2A	1
DKS2C-72	2
DKS2C-146	3
DKR2E	4
DKR2D	5
DKR2C	6
DKR2B	7
DKR1C	8
DKR1B	9
DKS1A	10

high performance

low performance

(2) Relationship between the installed disk types and those classes
The program assigns the highest performance disk type as Class A, and the lower performance type as Class B,C,D,E,F. The program assigns several classes according to the disk types. But these classes are depend on the installed disk types. The following tables are examples of these classified result.

Example 1

Installed type	Order	Assigned Class
DKR2B	0	Class A
DKR1C	1	Class B
DKR1B	2	Class C

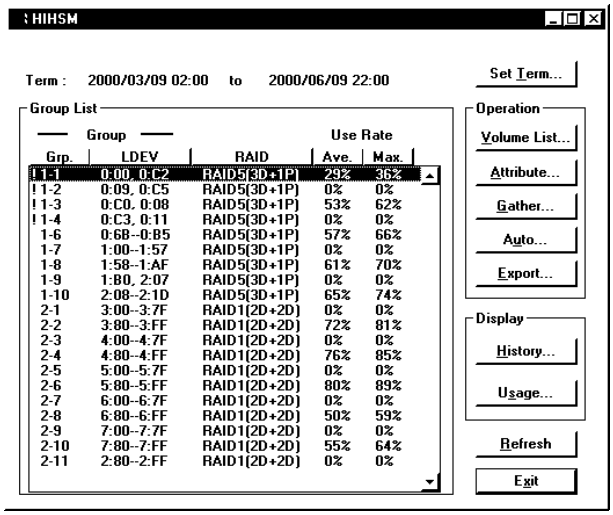
Example 2

Installed type	Order	Assigned Class
DKR2B	0	Class A
DKR1B	2	Class B

11.7.2 Set the maximum disk utilization

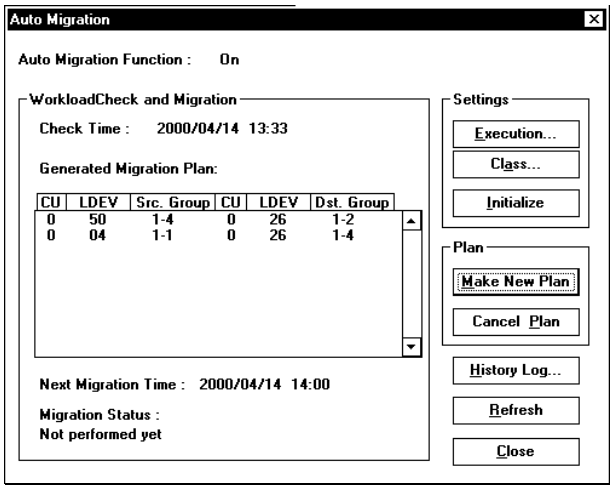
Set the maximum disk utilization for each class

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

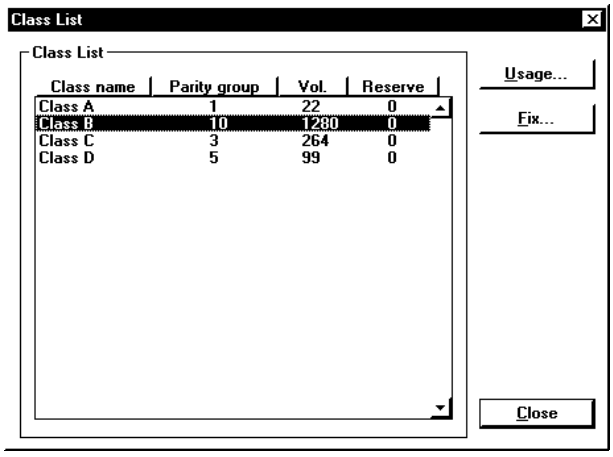


(2) Operation in the main screen
Select [Auto...] button in the main screen.

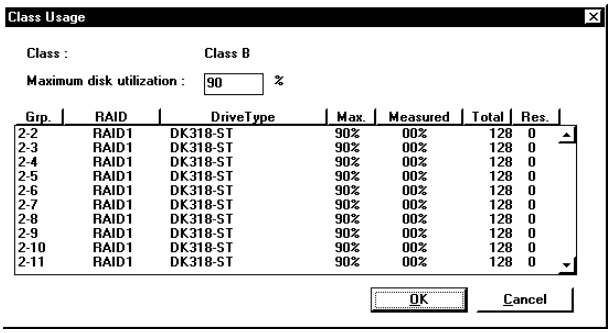
(3) Operation in Auto Migration screen
Select [Class...] button in the Auto Migration screen.



(4) Operation in Class list screen.
Class list screen is displayed.
Select one of the class and push [Usage...] button.



(5) Set the maximum disk utilization
In the Class Detail screen, input the value in the "Maximum disk utilization" field.
After inputting, select [OK].



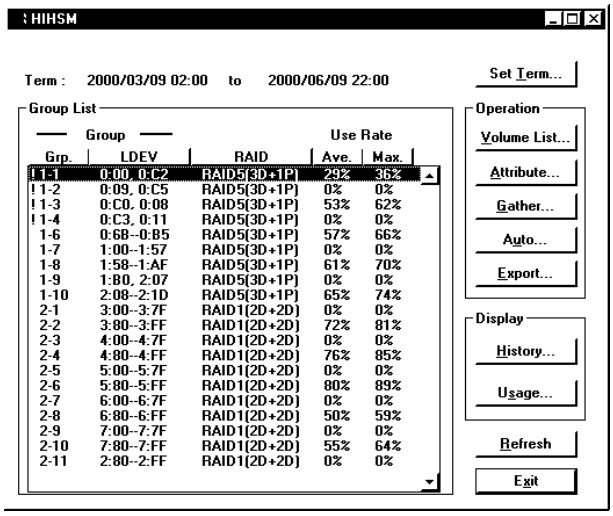
11.7.3 Set/Reset the Fixed parity group

Fixed parity group is the volume group that is not selected as the automatic volume migration. If you want to remove some parity group from the automatic volume migration, you should set them as the fixed parity group before executing automatic migration.

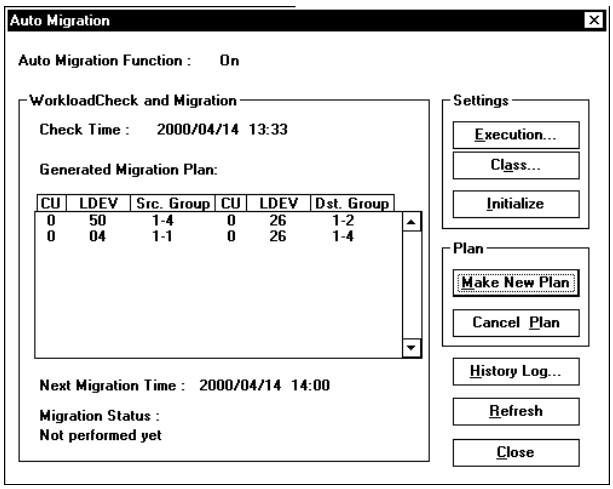
Set the fixed parity group.

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

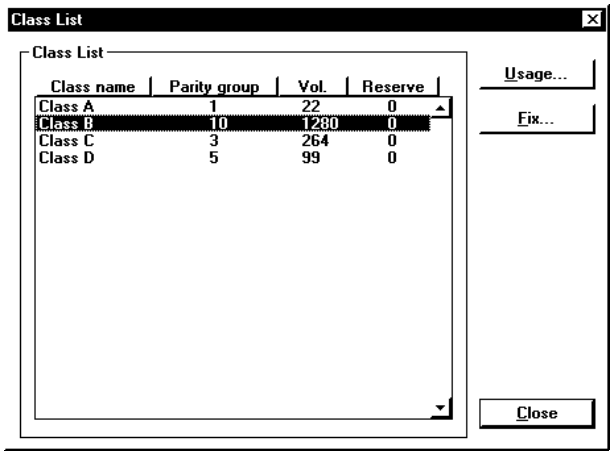
(2) Operation in the main screen
Select [Auto...] button in the main screen.



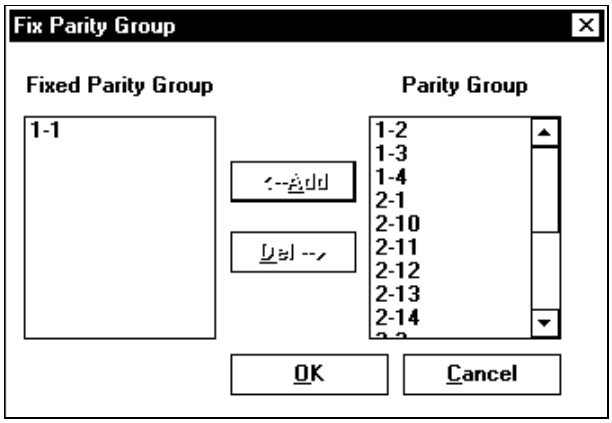
(3) Operation in the Automatic Migration Main screen
Automatic Migration Main screen is displayed.
Please select [Class...] button.



(4) Operation in the Class List screen
Select [Fix...] button in the Class List screen.



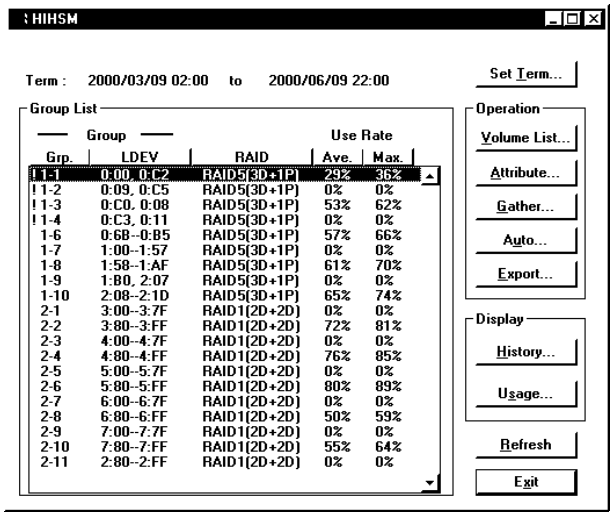
(5) Select Fixed parity group
Select the group which you want to fix from the Parity Group list and [<-Add] button. After selecting, the selected parity group will move to the Fixed Parity Group list.
If you want to reset the fixed parity group, please select the group from the Fixed Parity Group and push [Del->] button. After selecting, the selected parity group will move to Parity Group list.
If you want to set, please select [OK]. The program will set the group in the Fixed Parity Group list as the Fixed parity group.



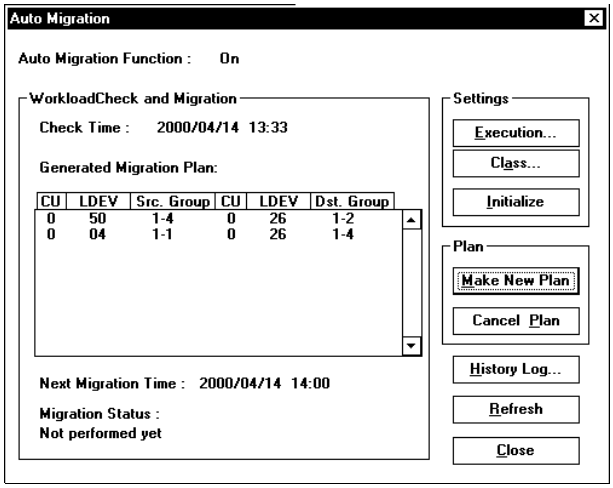
Reset the fixed parity group.

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

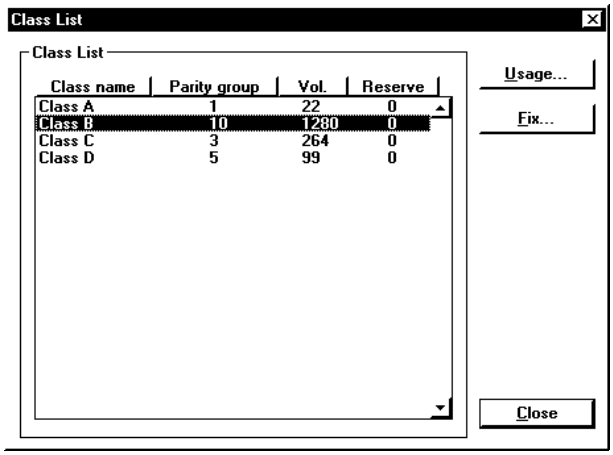
(2) Operation in the main screen
Select [Auto...] button in the main screen.



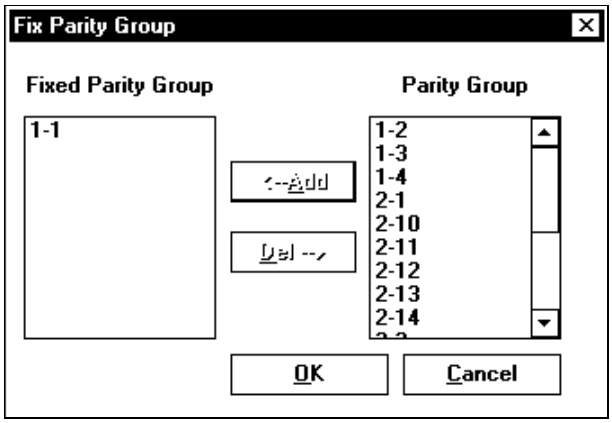
(3) Operation in the Automatic Migration Main screen
Automatic Migration Main screen is displayed.
Please select [Class...] button.



(4) Operation in the Class List screen
Select [Fix...] button in the Class List screen.



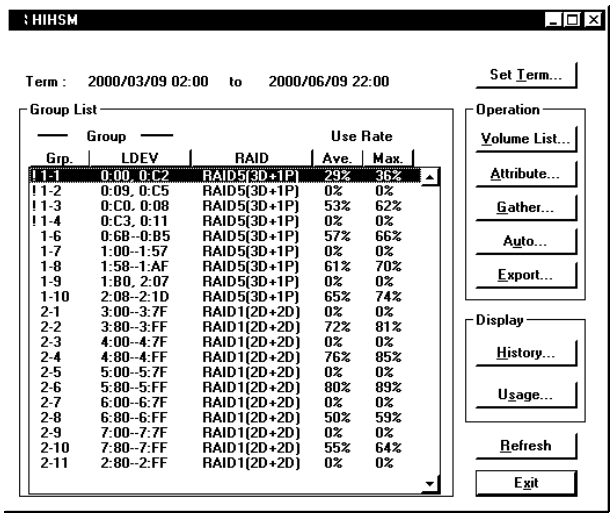
(5) Select the fixed parity group
Select the group which you want to reset the fixed parity group from the Fixed Parity Group list and [Del->] button. After selecting, the selected parity group will move to the Parity Group list.
If you want to set the parity group as Fixed, please select the group from the Parity Group and push [<-Add] button. After selecting, the selected parity group will move to Fixed Parity Group list.
If you want to set, please select [OK]. The program will set the group in the Parity Group list as the usual parity group.



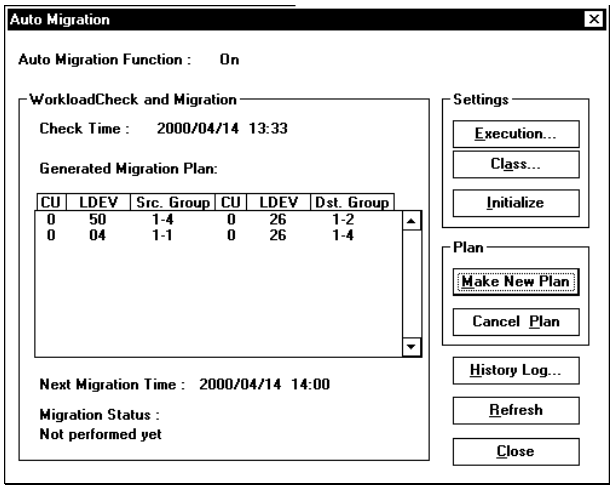
11.7.4 Set the evaluating schedule and migration time

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen
Select [Auto...]button in the main screen.

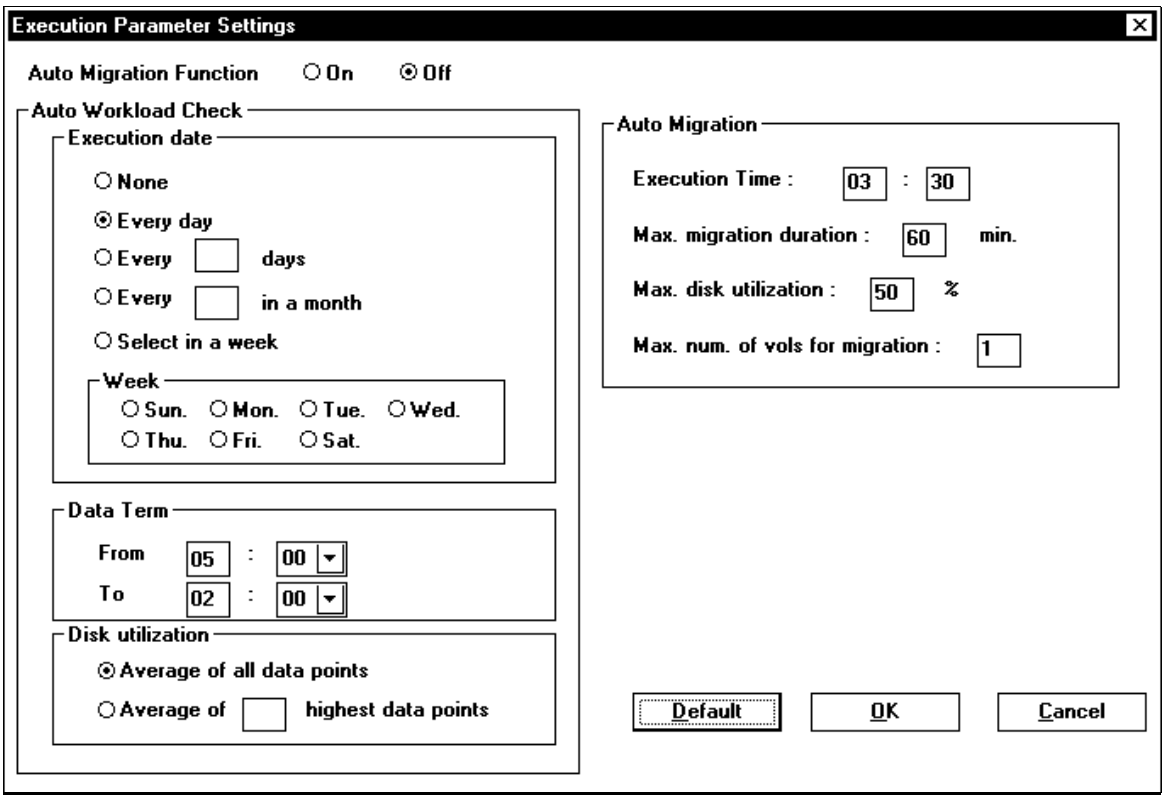


(3) Operation in the screen
Automatic Migration Main screen is displayed.
Please select [Execution...] button.



(4) Set the parameter
Automatic Migration Setting screen is displayed. This screen is to set the check schedule migration time to execute automatic migration.
Notice: You should set the monitoring switch to ON before using this function.

Notice: You should set the monitoring switch to “ON” before using this function.



(a) Set Auto Migration Function
Select "On" at the Auto Migration Function.

(b) Execution date
Set the date to make a plan. Please select one of the following three items, "Every day", "Every x days", "Every x in a month", "Select in a week", or "None".

(i) In the case of selecting "Every x days"
Input the days. If you input "3" for example, the program will check every three days.

(ii) In the case of selecting "Select in a week"
Select one of the week.

(iii) In the case of selecting "None"
The program will not make a plan. But the program will execute the volume migration if the other old plans remain.

(iv) In the case of selecting "Every x in a month"
Input the date, the program will check the date.

(c) Data Term
Input the term which monitoring data the program uses to make a plan.
From : Input the start time of monitor data to make a plan.
To : Input the end time of monitor data to make a plan.
In these term, the program will execute monitoring.

(d) Disk Utilization

Select one of the following two kinds of determination points.

(i) Average of all data points

Program calculates average usage from all data points to determine the migration.

(ii) Average of [x] highest data points

Program calculates the average usage from the highest value to the x highest value. You should input the number [x].

(e) Auto Migration

Input the migration schedule.

(i) Execution Time : Input the start time (Program executes at that time in every day)

(ii) Max. migration duration : Input the minutes. This value is a duration that you permits to execute migration. For example, if you input "90", the available duration is 90 minutes and if the migration could not finish in this duration, the program will stop the migration. (Value: 10 – 120 min)

(iii) Max. disk utilization

The available disk utilization rate during the migration. Input the maximum available rate (%). For example, if you input "60" and the disk utilization is higher than 60 %, the migration will be stopped. (Value: 10 – 100%)

(iv) Max. num. of vols for migration

To set the number of the migration volumes at the same time. (Value: 1 – 40 vols)

(5) Confirm the parameter

Confirm your inputted parameter again, and select [OK].

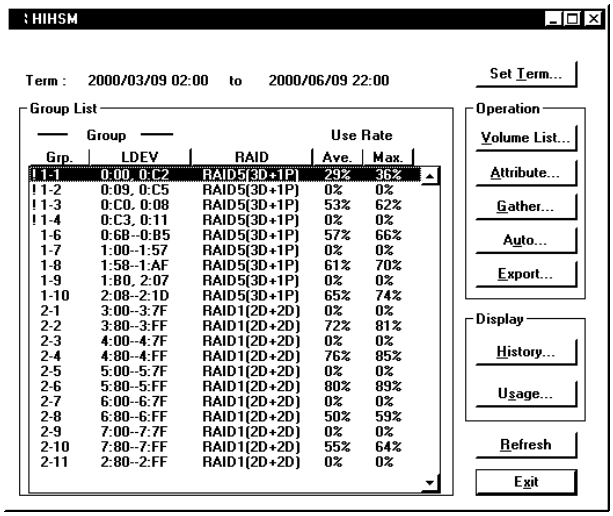
Notice: If SVP reboots during auto migration, HIHSM will display as "SVP Reboot" in the History screen but will not record the migration result. Please refer to the main history.
HIHSM remains the old plans before SVP rebooting in the Auto plan, and displays as "Under Migration" in the Status. Please cancel those "Under Migration" volumes.

11.7.5 Make the migration plan

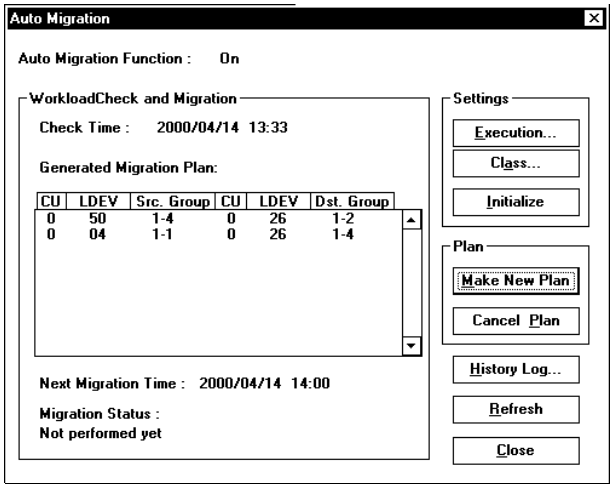
After monitoring the disk usage according to the evaluating schedule, the migration plan will be made.
HIHSM usually make these plan automatically. But you can make them by the following operations.

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen
Select [Auto...]button in the main screen.



(3) Make plan
Automatic Migration Main screen is displayed. To make the migration plan, please select [Make New Plan] button. The program will display new plans in the "Generated Migration Plan".
The program will execute the volume migration according to the generated migration plans at the time which are displayed in the "Next Migration Time".



Notice: HIHSM sometimes does not make a plan as the result of "Make New Plan". Please refer to "History".

(4) Review the plans
Please check the generated plan. If you cannot agree this plan, please select [Cancel Plan].

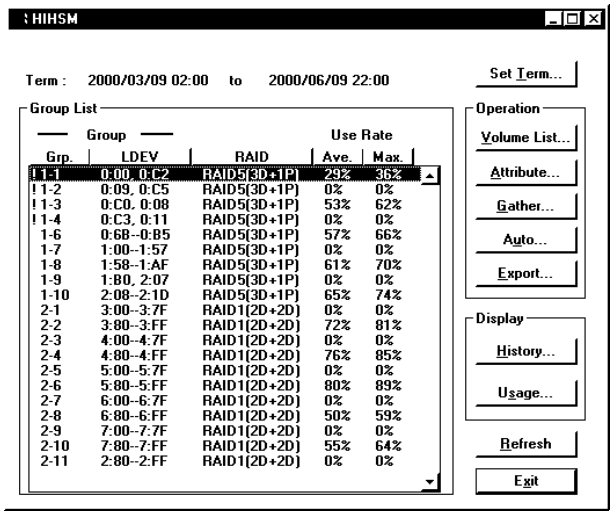
Notice: HIHSM will delete plans made after the specified migration plan according to the migration order. You can not delete one of these plans.

11.8 Display the volume usage rate

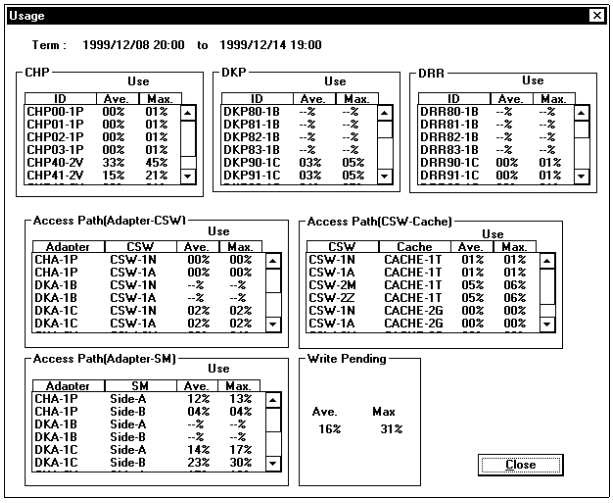
This screen is to display the physical volume usage rate.

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen.
Select [Usage...] button in the main screen.



(3) Display the rate
The program will display the usage rate of each processor, DRR, Access Paths and Write Pending. After you check them, please select [Close] button to exit this screen.

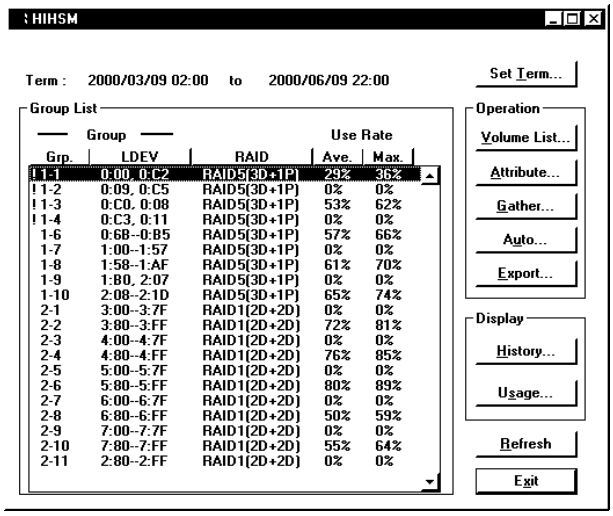


11.9 Display the history

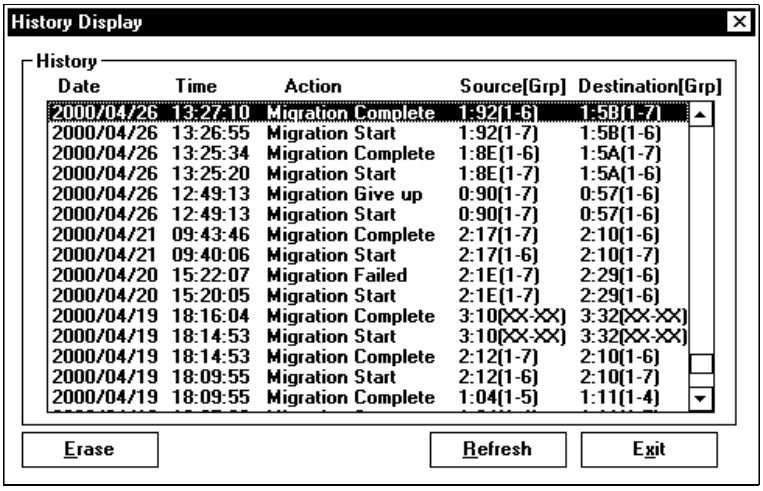
11.9.1 History Screen

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

(2) Operation in the main screen.
Select [History...] button in the main screen.



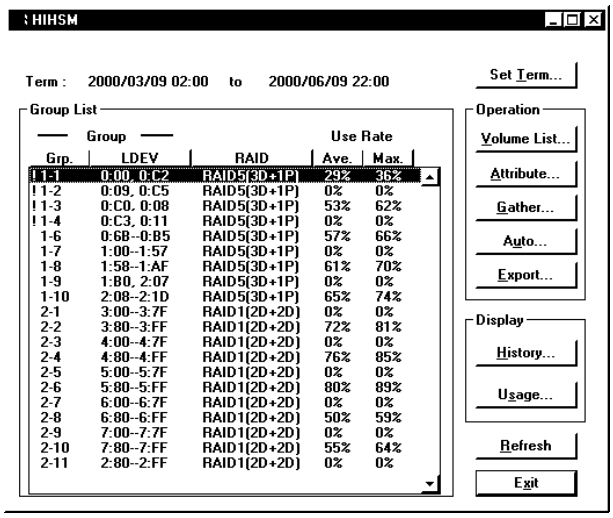
(3) History
History Screen is displayed.
If you want to delete the history, please select [Erase] button.
After checking, please select [Exit] to close this screen.



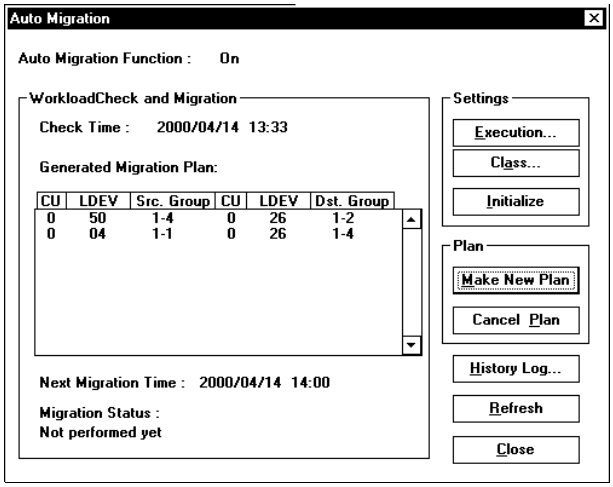
11.9.2 Display the history for automatic migration function

(1) Start HIHSM function
Select [HIHSM] button in the Function Launcher screen.

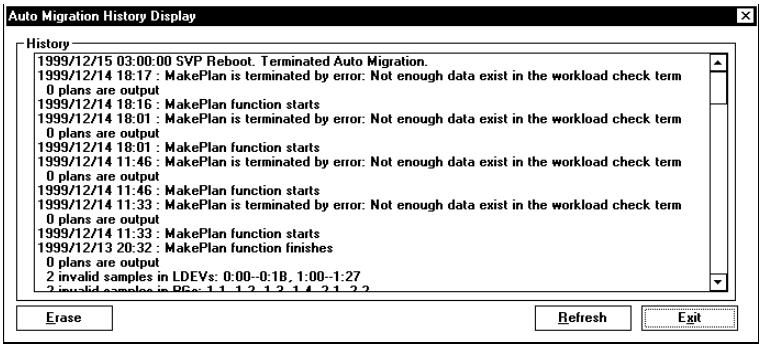
(2) Operation in the main screen
Select [Auto...] button in the main screen.



(3) Operation in the Automatic Migration Main screen
Select [History Log...] button.



(3) History
Automatic Migration History Screen is displayed.
If you want to delete the history, select [Erase] button.
After checking, select [Exit] to close this screen.
Sometimes an error code may be displayed.
Please refer to the next page which is described about those error.



Error Code	Description	Action to cope with an error
0401	A locking time-out was detected during an internal processing. (A retry may result in a normal termination.)	Retry about five seconds later.
0801	The HIHSM could not be used.	Install the PP or the HIHSM.
0810	The issued command cannot accepted in this status. (The command was rejected.)	Check the pair status and confirm whether the command is allowed to be issued.
0811	The issued command is treated as an NOP.	The issued command is treated as an NOP.
0830	A pair cannot be created because the track format is different.	Check if the emulation types of the source and the target volume are the same.
0831	A pair cannot be created because a number of slots is different.	Check if the capacities of the source and the target volume are the same.
0834	The emulation type of the specified source volume is not supported by the HIHSM.	Check if the emulation type of the source volume is supported by the HIHSM
0835	The emulation type of the specified target volume is not supported by the HIHSM	Check if the emulation type of the target is supported by the HIHSM.
0836	The pair can not be created.	Confirms whether the emulation type of the source and the target volume are the same.
0C70	An the source volume is not installed.	Volumes not installed are not included in the object to be processed.
0C71	The source volume cannot be used.	Call the service personnel to make the source volume status normal.
0C72	The source volume is being formatted.	Wait until the formatting of the source volume is completes.
0C73	The source volume is command device.	The command device does not execute HIHSM function
0C80	The target volume is not installed.	Volumes not installed are not included in the object to be processed.
0C81	The target volume cannot be used.	Call the service personnel to make the target volume status normal.
0C82	The target volume is being formatted.	Wait until the formatting of the target volume completes.
0C83	The target volume is command device.	The command device does not execute HIHSM function.
0C90	The HDEV specified to be a Reserve volume is not installed.	Volumes not installed are not included in the object to be processed.
0C91	The HDEV specified to be a Reserve volume cannot be used.	Call the service personnel to make the volume specified to be a Reserve volume normal.
0C92	The HDEV specified to be a Reserve volume is being formatted.	Wait until the formatting of the volume specified to be a Reserve volume completes.
0C93	The HDEV specified to be a Reserve volume is command device.	The command device does not execute HIHSM function.

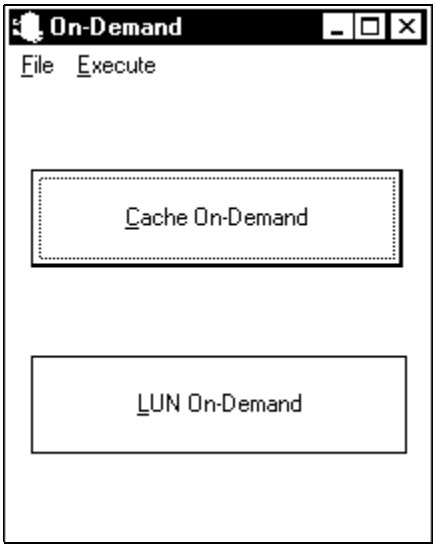
Error Code	Description	Action to cope with an error
1009	The multiplicity of the HIHSM exceeded its limit.	Delete some of the pairs.
1011	The number of the HDEV specified to be a Reserve volume has already been used for a Reserve volume.	Change the HDEV number for specifying a Reserve volume.
1012	The number of the HDEV specified to be a Reserve volume has already been used for a primary HDEV of the HMRCF/HOMRCF.	Change the HDEV number for specifying a Reserve volume.
1013	The number of the HDEV specified to be a Reserve volume has already been used for a source volume of the hierarchical control.	Change the HDEV number for specifying a Reserve volume.
1014	The number of the HDEV specified to be a Reserve volume has already been used for a destination volume of the hierarchical control.	Change the HDEV number for specifying a Reserve volume.
1015	The HDEV specified to be a Reserve volume is not set as a Reserve volume.	Check the volume status.
1017	A Reserve volume cannot be set because the number of Reserve volumes allocated for them was exceeded.	Delete any of the Reserve volumes
102B	The specified volume as the “Reserved” has been set as the HMRCF/HOMRCF target volume.	Check the volume status.
102C	The specified source volume has been set as the HRC/HORC source volume.	Check the volume status.
102D	The specified target volume has been set as the HRC/HORC target volume.	Check the volume status.
102F	The specified source volume has been set as the HIHSM source volume.	Check the volume status.
1030	The specified source volume number does not exist.	Retry after refreshing the screen.
1031	The specified source volume has been set as a Reserve volume.	Check the pair status.
1034	The specified source volume has been set as other source volume.	Check the pair status.
1036	The specified source volume has been set as the HMRCF/HOMRCF source volume.	Delete the pair of the HMRCF/HOMRCF.
1037	The specified source volume has been set as a target volume of the HMRCF/HOMRCF.	Delete the pair of the HMRCF/HOMRCF.
1038	The specified source volume has been set as a M-VOL of the HODM.	Delete the pair of the HODM. (*1)
103B	It is impossible to make a pair because Volume which was specified as a target volume is Root Volume already	It confirms a pair condition.

Error Code	Description	Action to cope with an error
103C	It is impossible to make a pair because Volume which was specified as a target volume is Node Volume already	It confirms a pair condition.
1040	The specified target volume does not exist.	Execute "Refresh" and do again.
1041	The specified target volume does not set as the Reserve volume.	Check the volume status.
1042	The specified target volume has been used as other HIHSM target volume.	Check the volume status.
1043	The specified target volume has been used as HMRCF/HOMRCF target volume.	Delete pair of HMRCF/HOMRCF
1046	The specified secondary HDEV is used as an M-VOL of the HORC.	Delete the HORC pair.
1047	The specified secondary HDEV is used as an R-VOL of the HORC.	Delete the HORC pair.
1048	The specified secondary HDEV is used as an M-VOL of the HODM.	Delete the HORC pair.
104A	The specified secondary HDEV is used as an source volume of the HMRCF / HOMRCF.	Delete the HMRCF/HOMRCF pair.
104B	The specified target volume has been used as other HIHSM source volume.	Check the volume status.
104C	The HDEV specified as a Reserve volume is being used as an M-VOL of the HODM.	Delete the HODM pair. (*1)
104E	The HDEV specified as a Reserve volume is being used as an M-VOL of the HRC/HORC.	Delete the HRC/HORC pair.
104F	The HDEV specified as a Reserve volume is being used as an R-VOL of the HRC/HORC.	Delete the HRC/HORC pair.
1051	The HDEV numbers of the specified source and the target volumes are the same.	Retry after refreshing the screen.
1085	The source volume was used for Reserve volume of HIHSM.	Check the source volume or Cancel the Reserve volume of HIHSM.
1088	The specified reserve volume has been set as DCR.	Reset the DCR.
1089	The specified source volume has been set as DCR	Reset the DCR
108A	The specified target volume has been set as DCR.	Reset the DCR
108B	The specified reserve volume has been constructed as LUSE.	Reset the LUSE.
108C	The specified reserve volume has been set as HMRCF/HOMRCF reserved volume.	Check the pair status.

(*1) These error codes are displayed only when HODM function is installed.

12 On-Demand

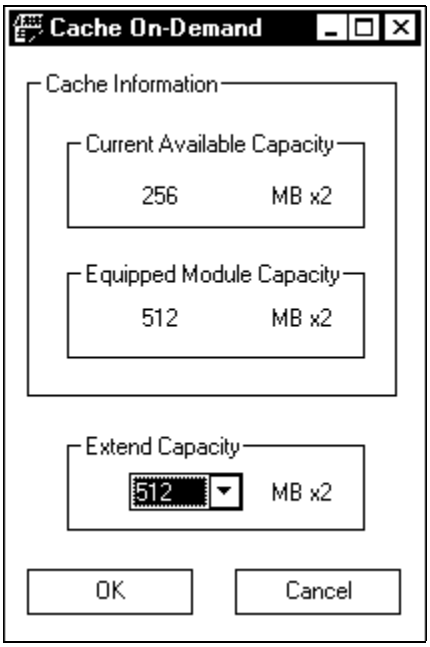
12.1 Main Screen



- [Cache On-Demand]
  Open the Cache On-Demand screen.

- [LUN On-Demand]
  Open the LUN On-Demand screen.

12.2 Cache On-Demand Screen



- Current Available Capacity
  Display the current available module capacity.

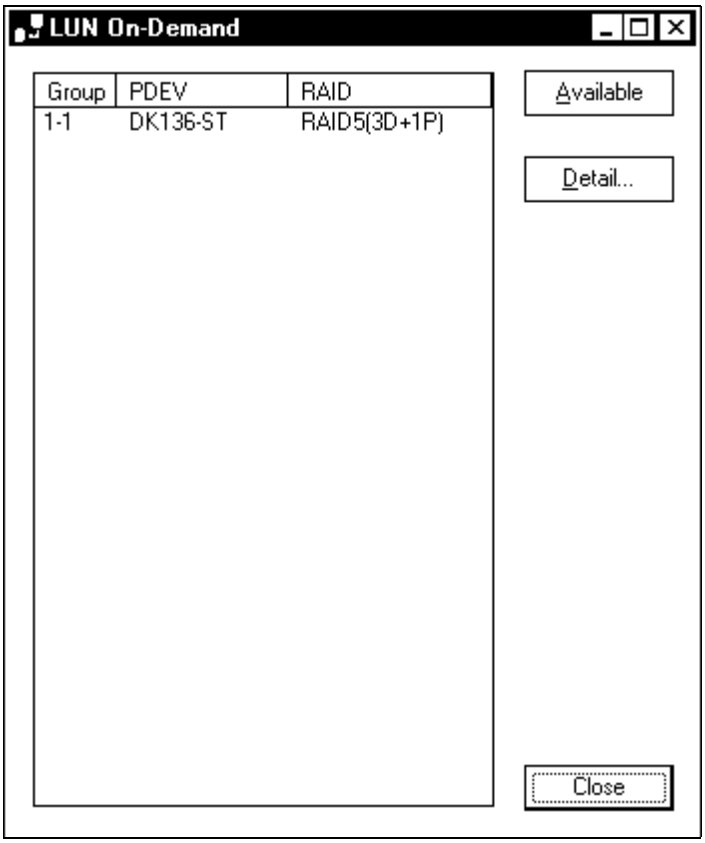
- Equipped Module Capacity
  Display the equipped module capacity.

- Extend Capacity
  Select extend module capacity.

- [OK]
  Extend ‘Current Available Capacity’ to selected capacity of ‘Extend Capacity’.

- [Cancel]
  Close the screen.

12.3 LUN On-Demand Screen



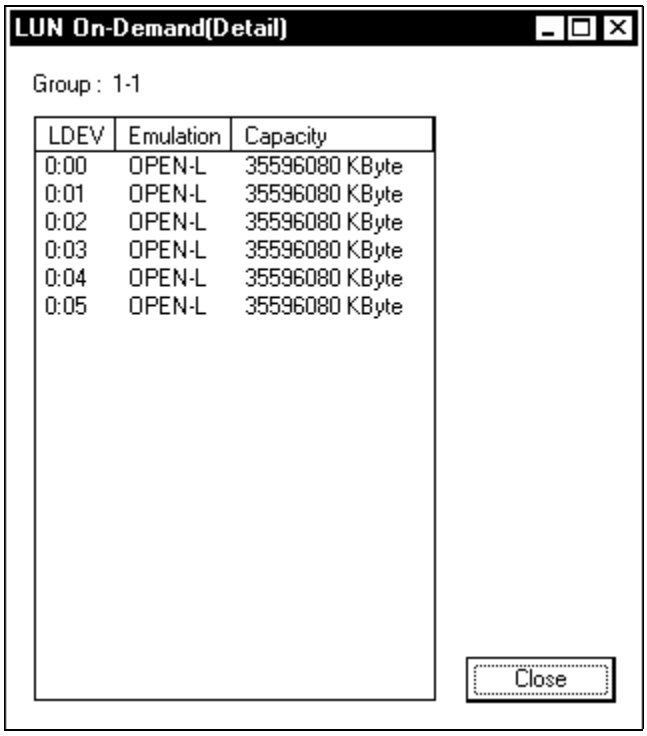
- ECC Group List box
  Display the ECC Group List in On-Demand status.
  Contents of this list.
  Group : Display the ECC group number.
  PDEV : Display the PDEV Model of the ECC group.
  RAID : Display the RAID Level of the ECC group.

- [Available]
  Reset the On-Demand status of the selected ECC group.
  ECC group will be available.

- [Detail]
  Display the detail information of the selected ECC group.

- [Close]
  Close the screen.

12.4 LUN On-Demand (Detail) Screen



- LDEV List Box
  Display the detail information of the selected ECC group from LUN On-Demand screen.
  Contents of this list.
  LDEV : Display the LDEV number.
  Emulation : Display the emulation type of the LDEV.
  Capacity : Display the size of the LDEV.

- [Close]
  Close the screen.

13 HPAV Operations

13.1 HPAV Main Panel

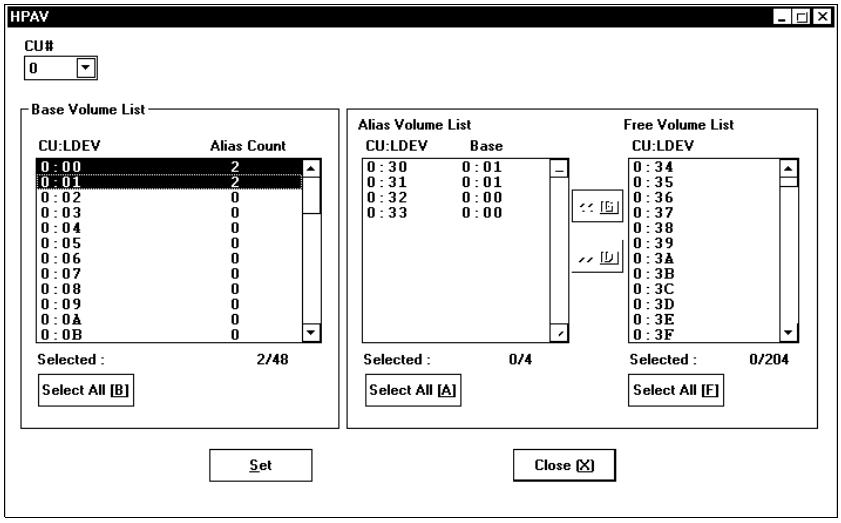


Fig. 13.1 HPAV Main Panel

The HPAV main panel has the following features:

- The **CU#** drop-down list lets you select a CU (control unit).
- The **Base Volume List** box lists logical devices (LDEVs) that are currently used in the selected CU. The term *base volumes* refers to base devices. When you assign aliases to a device, you select the device from this list box.
  - The **CU:LDEV** column indicates the CU number and the LDEV number of base volumes.

- The **Alias Count** column indicates the number of aliases for each base volume.
- On the right of the **Selected** label appears information indicating how many base volumes are being selected. For example, if 2/73 is displayed, two base volumes are being selected out of 73 base volumes.
- The **Select All** button lets you select all the base volumes in the list box.

- The **Alias Volume List** box lists aliases for the base volumes selected in the Base Volume List box. The term *alias volumes* refers to alias devices.
  - The **CU:LDEV** column indicates the CU number and the LDEV number of alias volumes.
  - The **Base** column indicates the CU number and the LDEV number of the base volumes that correspond to the alias volumes.
  - On the right of the **Selected** label appears information indicating how many alias volumes are being selected. For example, if 2/73 is displayed, two alias volumes are being selected out of 73 alias volumes.
  - The **Select All** button lets you select all the alias volumes in the list box.

- The **Free Volume List** box lists LDEVs that are currently unused in the selected CU. From this list box you select one or more devices that you want to use as aliases. The term *free volumes* refers to the unused LDEVs that are listed in the **Free Volume List**.
  - The **CU:LDEV** column indicates the CU number and the LDEV number of alias volumes.
  - On the right of the **Selected** label appears information indicating how many free volumes are being selected. For example, if 2/73 is displayed, two free volumes are being selected out of 73 free volumes.
  - The **Select All** button lets you select all the free volumes in the list box.
  - The **<<** button moves the selected free volumes to the **Alias Volume List** box. After this button moves free volumes, each of the volumes is paired with a base volume and is specified as an alias of the base volume.
    If the number of selected free volumes is larger than the number of selected base volumes, this button attempts to allocate the free volumes equally to the base volumes. For example, if six free volumes and two base volumes are selected, this button allocates three free volumes to each of the base volumes.
    To apply settings with this button to the DKC, you must click the **Set** button.
  - The **>>** button moves selected alias volumes to the **Free Volume List** box.
    To apply settings with this button to the DKC, you must click the **Set** button.

- The **Set** button applies settings made in this panel to the DKC. When you click this button, the following message appears. This message asks you if you want to apply settings to the DKC.

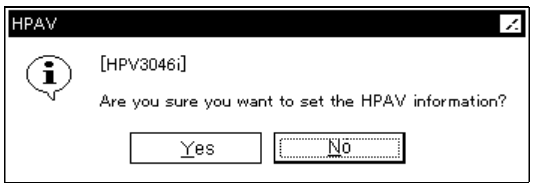


Fig. 13.2 Message that Appears When You Click the Set Button

To apply settings to the DKC, click **Yes**. If you do not want to apply settings to the DKC, click **No**.

- The **Close** button closes the HPAV main panel.

13.2 Assigning and Canceling Aliases

13.2.1 Assigning Aliases

You can assign up to 15 aliases to a single LDEV.

To assign aliases:

1. In the HPAV main panel, select a CU number from the **CU#** drop-down list.

2. The Base Volume List box displays a list of LDEVs used in the selected CU.
   The Free Volume List box displays a list of LDEVs that are not being used in the selected CU.

3. From the Base Volume List box, select one or more LDEVs to which you want to assign aliases (see Fig. 13.3).

4. From the Free Volume List box, select one or more LDEVs (see Fig. 13.3).

5. Click **<<**.
   The selected free volumes are specified as aliases. The Alias Volume List box displays the CU number and the LDEV number for each alias (see Fig. 13.4).
   HPAV assigns aliases in a way that one base volume is assigned as many aliases as any other base volume. For example, if two base volumes and four free volumes are selected, HPAV assigns two aliases for each base volume.

6. If you want to assign aliases to other LDEVs in the currently selected CU, repeat steps 3 to 5.
   If you want to assign aliases to LDEVs in other CUs, repeat steps 1 to 5.

7. Click **Set**.
   A message appears (see Fig. 13.2).

8. Click **Yes**.
   The settings you have made are applied to the DKC.

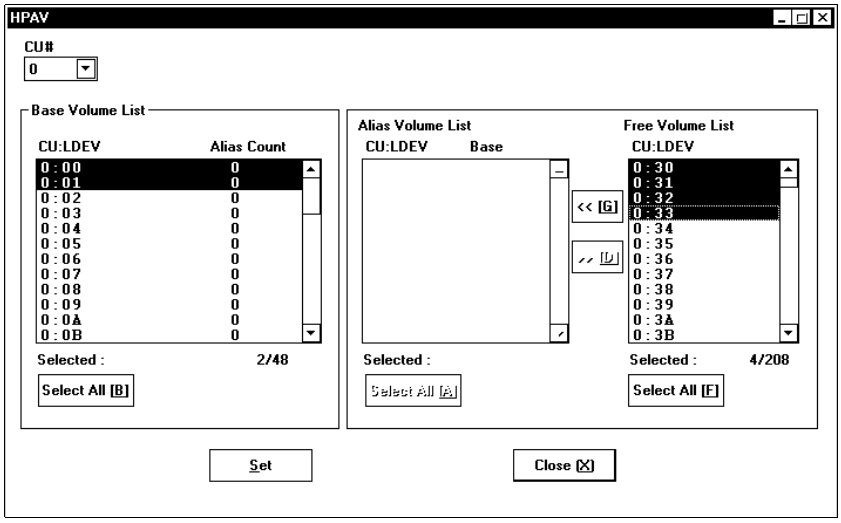


Fig. 13.3 HPAV main panel
(Multiple base volumes and multiple free volumes are selected)

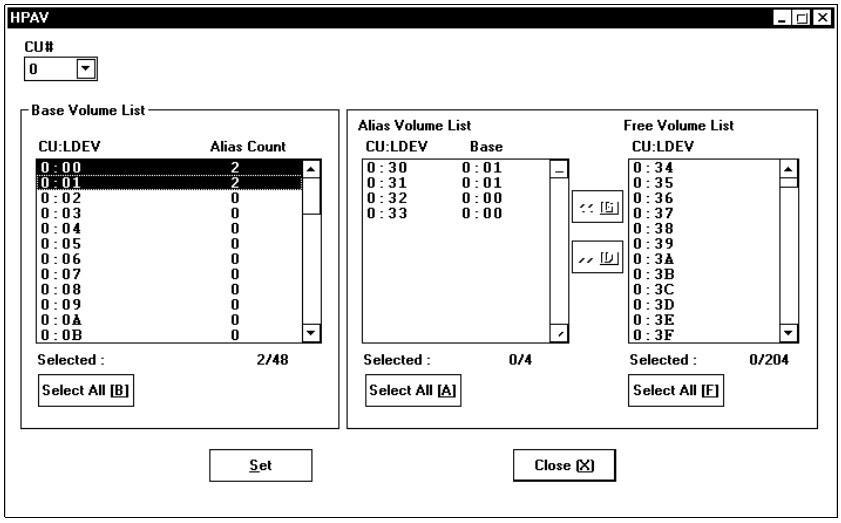


Fig. 13.4 HPAV main panel
(The same number of aliases will be assigned to each LDEV)

13.2.2 Canceling Aliases

To cancel one or more aliases:

1. In the HPAV main panel, select a CU number from the **CU#** drop-down list.

2. The Base Volume List box displays a list of LDEVs used in the selected CU.

3. From the Base Volume List box, select one or more LDEVs to which the desired alias(es) is assigned.
   The Alias Volume List box displays a list of aliases assigned to the selected LDEV(s).

4. From the Alias Volume List box, select the desired alias(es). (See Fig. 13.5)

5. Click >>.
   The selected aliases are removed from the Alias Volume List box.

6. If you want to cancel other aliases in the currently selected CU, repeat steps 3 to 5.
   If you want to cancel aliases in other CUs, repeat steps 1 to 5.

7. Click **Set**.
   A message appears (see Fig. 13.2).

8. Click **Yes**.
   The settings you have made are applied to the DKC.

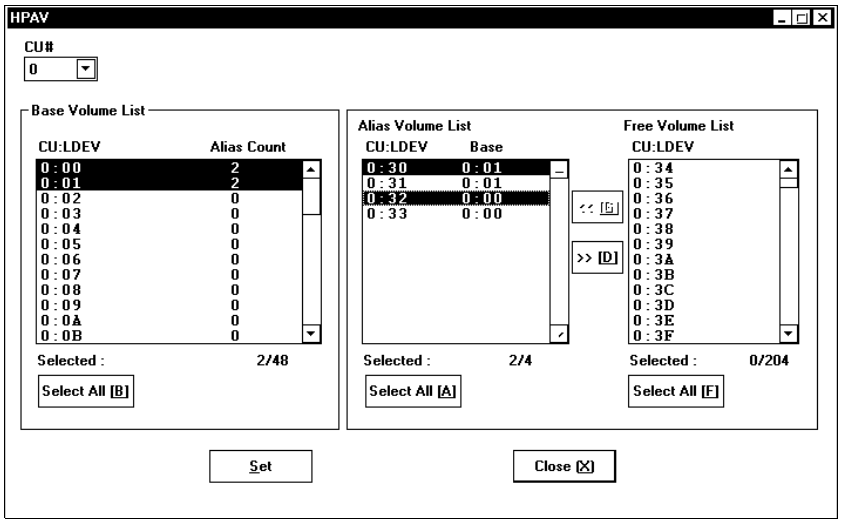


Fig. 13.5 HPAV main panel (Multiple aliases will be canceled)

13.3 Viewing a List of Aliases

13.3.1 Viewing a List of Aliases for a Specified Device

If you want to check the number of aliases assigned to an LDEV and to view a list of the aliases, take the following steps.

To check the number of aliases for an LDEV and to view a list of the aliases:

1. In the HPAV main panel, select a CU number from the **CU#** drop-down list.

2. The Base Volume List box displays a list of LDEVs.

3. In the Base Volume List box, look for the desired LDEV and then select the LDEV.
   On the right of the LDEV number is displayed the number of aliases assgined to the LDEV.
   When you select the LDEV, the Alias Volume List box displays a list of aliases for the selected LDEV (see Fig. 13.6). In the Base column appear the CU number and the LDEV number of the base volume corresponding to the alias.

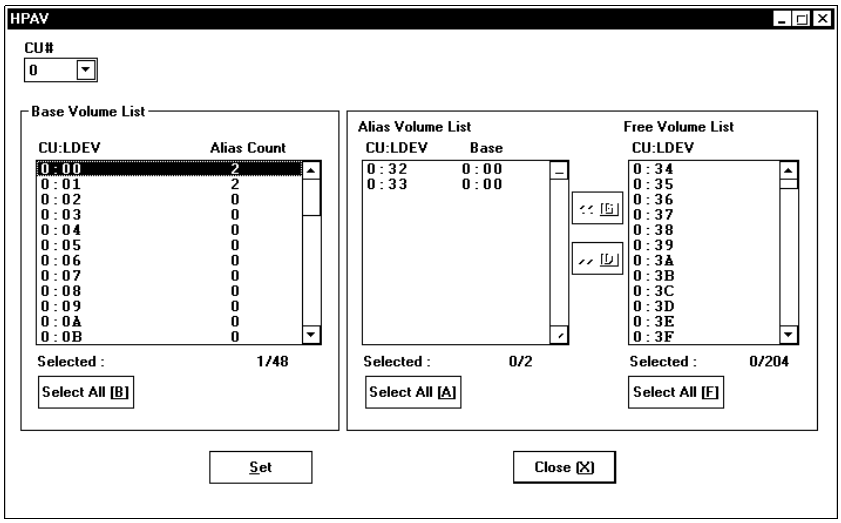


Fig. 13.6 HPAV main panel (A list of aliases for the specified LDEV is displayed)

13.3.2 Viewing a List of Aliases in the Specified CU

If you want to view a list of all the aliases in a CU, take the following steps.

To view a list of aliases in a CU:

1. In the HPAV main panel, select a CU number from the **CU#** drop-down list.

2. The Base Volume List box displays a list of LDEVs used in the selected CU.

   Note: If you want to check the number of aliases for each LDEV, check the **Alias Count** column on the right of the LDEV number.

3. From the Base Volume List box, click **Select All** to select all the base volumes.
   The Alias Volume List box displays a list of aliases in the selected CU (see Fig. 13.7). In the Base column appear the CU number and the LDEV number of the base volume corresponding to the alias.

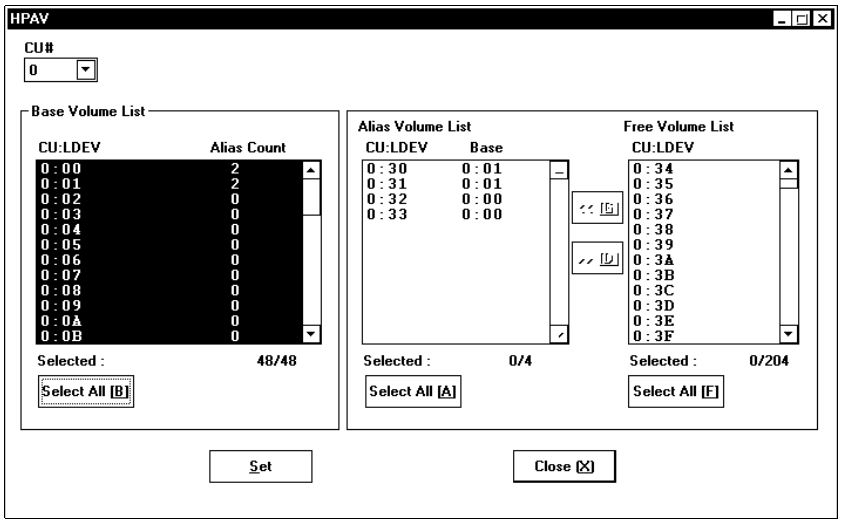


Fig. 13.7 HPAV main panel (A list of aliases in the specified CU is display)

14 LDEV Guard Operations

14.1 LDEV Guard Main Panel

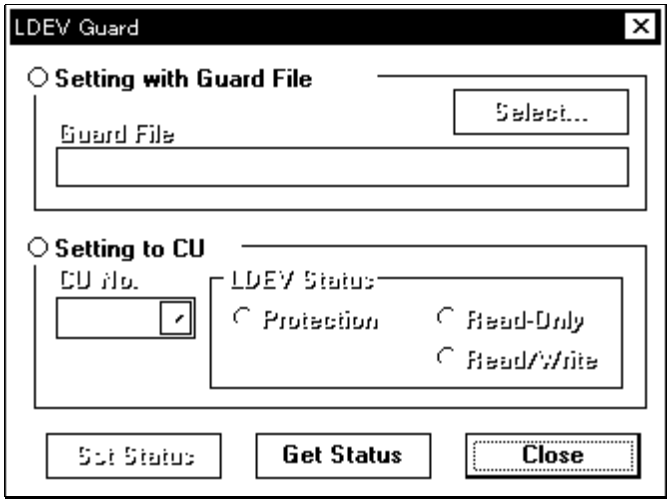


Fig.14.1 LDEV Guard Main Panel

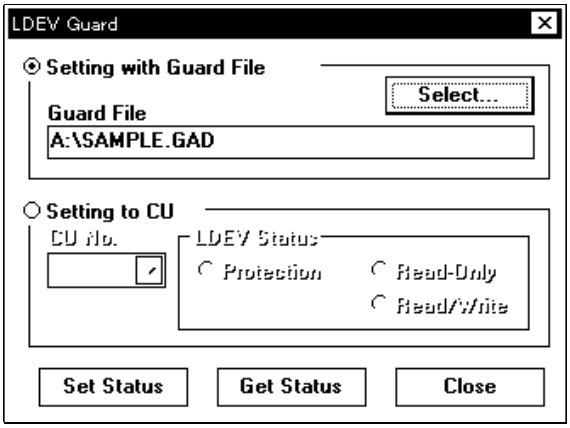
- Setting with Guard File
  The guard of LDEVs is set based on the guard file (*.gad) made with Remote Console.

- Setting to CU
  The guard of LDEVs is set by CUs.

14.2 Guard setting based on the guard file

① Select “Setting with Guard File”.

② Input the guard file(*.gad) name.
Select (CL) [Select…] button, Select the guard file(*.gad).



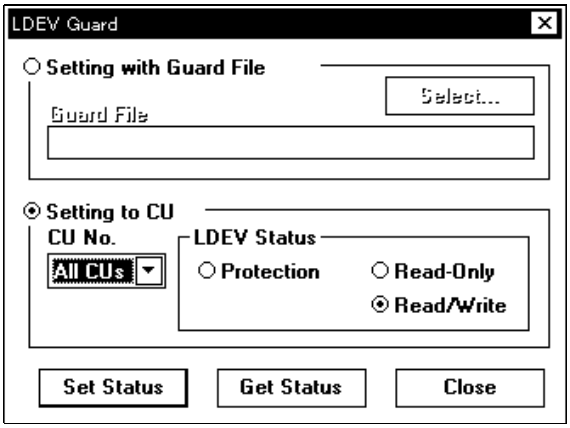
③ Select(CL) [Set Status] button.

14.3 Guard setting by CUs

① Select (CL) “Setting to CU”.

② Select CU No. of the target CUs.
When “All CUs” is selected, the guard is set to all of the mounted CU.

③ Select a radio-button of [LDEV Status] to specify the status of LDEV s.
The guard status of each CU is specified as follow.
- Protection Read/Write operations will not be accepted.
- Read-Only Only Read operations will be accepted.
- Read/Write Read/Write operations will be accepted..



④ Select (CL) [Set Status] button.

14.4 Reference of LDEV guard status

① Select (CL) [Get Status] button

② The LDEV Status panel is displayed.
Select CU the guard status of which you want to refer, and confirm icons corresponding to status of LDEVs included in the CU.