DF-F500-WD ID Take-over control function User's Guide

Considerations

Before using this Disk Array management program, read safety instructions described in this guide carefully. Be sure to observe precautions in individual chapters.
Keep this guide at hand for reference at any time.

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Document Revision Level

Revision	Date	Description
	September, 2000	First edition

Preface

Thank you for purchasing the ID Take-over control function (option name : DF-F500-WD).

This guide explains procedures to install, run, and uninstall the options of the ID take-over control feature.

Notes on use:
The ID take-over control feature is installed in the DF500 disk array unit.

This guide is written for persons who manage the system including Hitachi DF500 series disk array, system engineers who configure the system including Hitachi DF500 series disk array, and field engineers trained for Hitachi DF500 series disk array.

Important Notices

- Before using the ID take-over control feature, be sure to read this guide and comprehend the operating procedures and notices. Particularly, follow the safety precautions and instructions with care.
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Safety Precautions

Read and follow the instructions below when using the ID take-over control feature.

Before starting to run the ID take-over control feature

- Only the administrators, system engineers, and field engineers of systems using Hitachi disk array units are allowed to run the ID take-over control feature.
- Be sure to read this guide for full comprehension before operating the ID take-over control feature.
- Particularly follow the instruction with the “CAUTION” mark.

CAUTION :

Failure to follow the instructions of this mark may result in serious system damage (e.g. loss of system data). Read and follow the instructions before going further.

During the operation of the ID take-over control feature

- In case and error message appears during the operation of the ID take-over control feature, read the instructions to repair the error in the maintenance guide and follow the instruction.
- When coming to an operating item with this mark, be sure to read the instructions with care and follow the instructions.

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ID Take-Over Control Function

Overview

The ID take-over control feature provides a function in which, when one controller in a dual controller configuration is blocked due to a failure, the other controller takes over the Port-ID of the blocked controller, and automatically switches the path to continue the processing.
If an array unit with the ID take-over control feature installed is operated in hot-standby mode, when a controller blockade occurs in one controller due to a failure, the other controller can continue the processing with the same performance as before the failure.
If an array unit with the ID take-over control feature installed is operated in dual-active mode (with two ports per controller attached), when a controller blockade occurs in one controller due to a failure, the other controller can also continue the processing in the same way as in hot-standby mode. When a controller blockade occurs in dual-active mode, afterward only one of the two controllers performs the processing, and hence the performance is approximately equal to that of an array unit with a single controller configuration. However, if an array unit is operated in dual-active mode, the array unit is restored to the original path condition by recovering a failed controller while the array unit is in operation, and thereby the performance of the array unit at run time can be restored to that before the failure.

Note : The ID take-over control function is effective only when a controller failure occurs. It is not effective in the event of host-side HBA (Host Bus Adapter) and cable failures (including HUB failures).

The following figure shows an outline of the ID take-over control function.

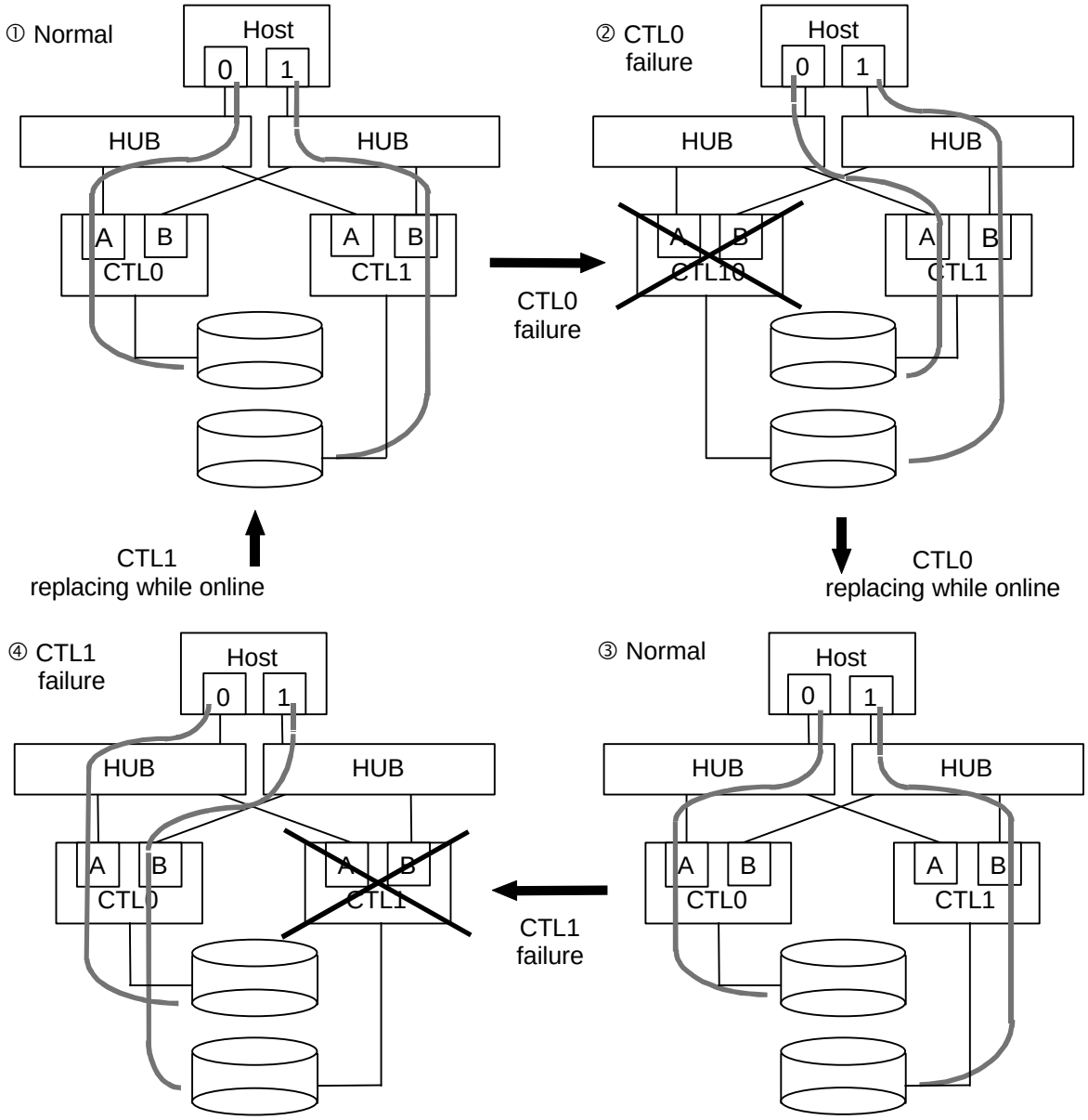


Figure 1.1 Configuration of the Port-ID Take-Over Control Function System and Transition of System Operation on Failure or Recovery

Note : If an array unit is operated in hot-standby mode, LUs are accessed from only one of the two controllers at normal operation time as well. In addition, though a blocked controller is replaced while the array unit is in operation, the processing is continued with the same path as before replacement.

Specifications

The following shows specifications of the ID take-over control function.

1. A dual controller configuration is prerequisite.
2. If an array unit is operated in dual-active mode, two ports are required for each controller.
3. The ID take-over control function is supported as follows.

Table 1.1 Supprt for the ID Take-Over Control Function

Device name	**Port specifications**	
	SCSI	**Fibre**
DF500	Support schedule by enhancement	Supported

4. Cable connections and Port-ID settings are as follows.
   The same ports of both controllers should be connected to the same loop (HUB) and given the same Port-ID.
   Figures 1.2, and 1.3 show configurations of cable connections.
   Figure 1.4 shows a configuration of the ID take-over control function prohibited system.
5. The ID Take-over control function is a licensed option (DF-F500-WD). To install this function, an option FD provided with the optional feature or the key code is required.

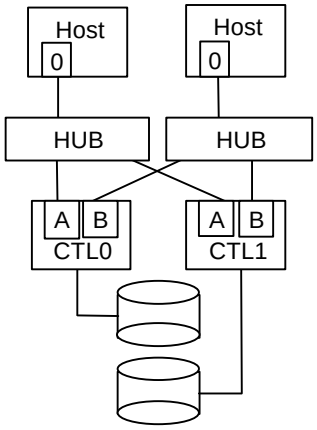


Figure 1.2 Combined System Configuration of Host Cluster Configuration and Port-ID Take-Over Control Function Configuration (two HUB)

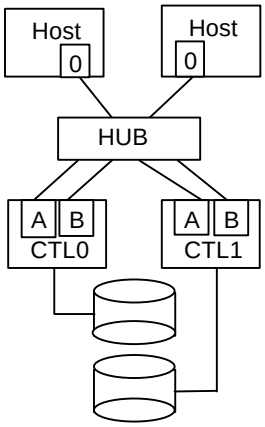


Figure 1.3 Combined System Configuration of Host Cluster Configuration and Port-ID Take-Over Control Function Configuration (one HUB)

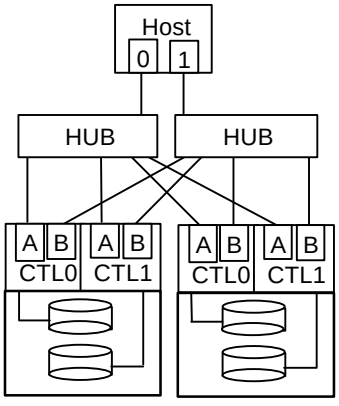


Figure 1.4 Configuration of the Port-ID Take-Over Control Function Prohibited System with a Fibre (two DF500 connected per loop)

Restrictions

The following shows the restrictions in using the ID take-over control function. Use it following the restrictions.

(1) Restrictions on configuration

- A two-ports-per-controller configuration is prerequisite for dual-active mode.
- Connection through a Fabric Switch is not available. Connection between a DF500 unit and the host is available only through a HUB to use the DF500.

(2) Restrictions on configuration setting

- Set the topology of all ports to **LOOP**.
- The Port-IDs of ports with the same port number between the two controllers are set to the same ID (an Port-ID of controller 0 is copied to that of controller 1).
- The same Port-ID should be corresponding to the same LUN.
  In addition, map an LU to a port of a controller using the LU mapping so that the mapped LU cannot be recognized by other ports of the same controller.
- The ownership of LUN should be on the active-port control side of the ports on which the LUN is mapped.
- The take-over mode cannot co-exist together with the following types of the host connection mode specified by the system parameter and each mode specified by the system start attribution.

<Host connection mode>	<System start attribution>
TRESPASS	DATA SHARE MODE=ON
WOLFPACK	
VxVM DMP	

(3) Restrictions on the host

- To change the controller accepting a command when recovering a controller, a command issued to the other controller is internally reset. Also, a failure may be recorded on a host log because a LIP is issued at the controller replacement.
- When switching on the host (server), switch on DF500 first and then switch on the host (server) after confirming that DF500 becomes READY. If this order is reversed, DF500 may not be recognized by the host.

- After switching the path, a Unit Attention factor of PS/ON reset is reported to a command from the host.

(4) Restrictions on operation

- When installing (unlocking) and uninstalling (locking) the ID take-over control function, and making and changing the setting of enable and disable, be sure to restart a disk array unit (by selecting **restart** with the Disk Array Management Program, or turning off (orderly shutdown) and then on a disk array unit)before using.

Installing and Uninstalling

Installation

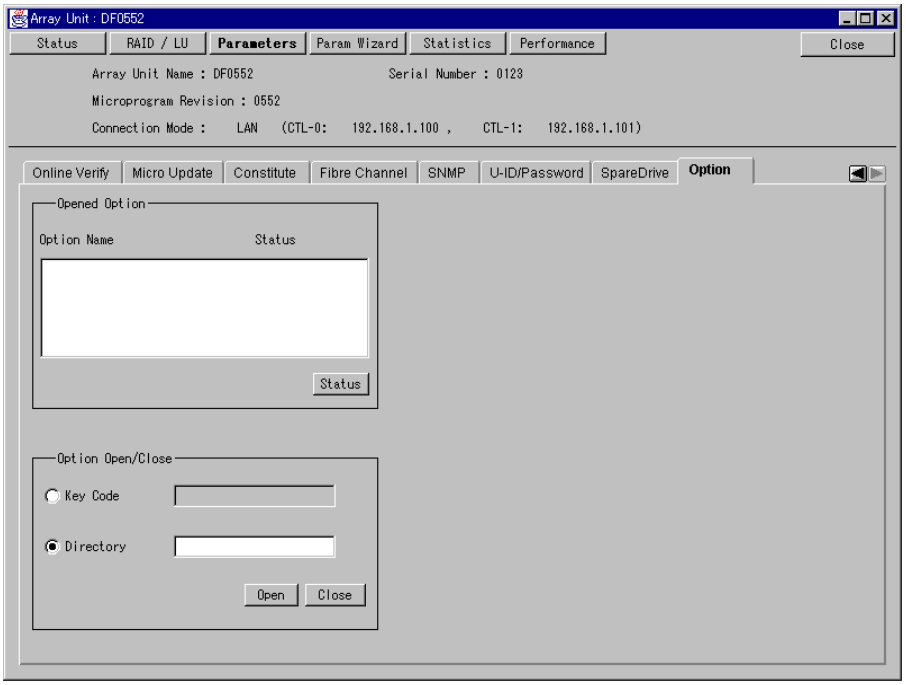
The ID take-over control function which is a kind of option is usually unselectable (closed). To make the ID take-over control function available, you must install the option of the ID Take-over control function (DF-F500-WD) and make its functions selectable (open). To install this function, an option FD provided with the optional feature or the key code is required.

Follow the instructions below to install the ID Take-over control function (DF-F500-WD).
The ID take-over control function is installed and uninstalled using the Disk Array Management Program. For operating procedures of the Disk Array Management Program, refer to the *Disk Array Management Program (for GUI) User's Guide*.

Note : Before installing and uninstalling, make sure that an array unit which to operate is normal. If a failure such as a controller blockade has occurred, installing and uninstalling operations cannot be performed.

The following describes installation procedures performed by using the Disk Array Management Program via GUI.

1. Starts the Disk Array Management Program and switches the mode of operating to **Management Mode**. Registers an array unit in which to install the ID take-over control function and connects to the registered array unit. A unit window for the connected array unit will be displayed.
2. Clicks the **Parameters** button, then the **Option** tab.



3. Unlocks the optional feature using the key FD or the key code.

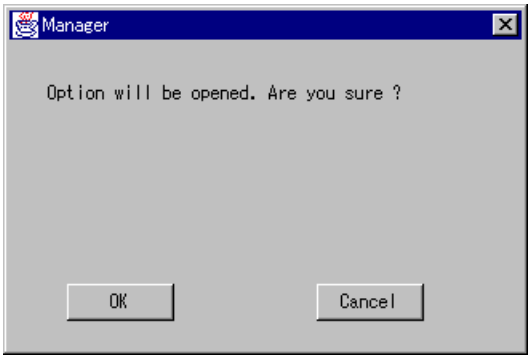
- Unlocking with the key FD

  (a) Inserts the key FD into the FDD of a machine in which the manager has been installed.

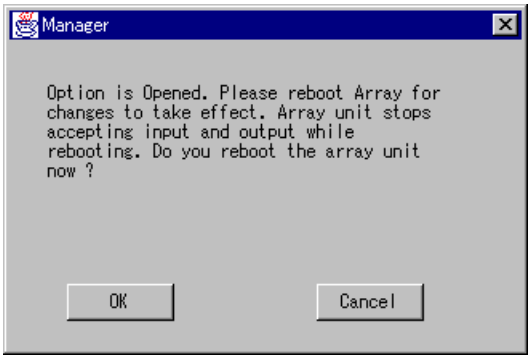
  (b) Clicks the **Directory** radio button to set in the text box a path to the FD.

  (c) Clicks the **Open** button.

  (d) A screen for confirming that you want to unlock the ID take-over control function will be displayed, so clicks the **OK** button.



  (e) A message indicating that the priced optional feature has been unlocked will be displayed. A message confirming your request for restarting will be displayed, so clicks the **OK** button when restarting.



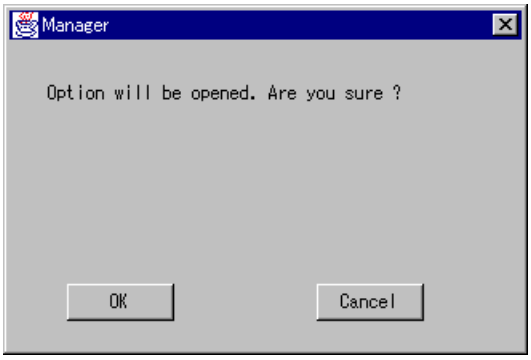
Note: To set effective the unlocking of the optional feature that you have operated, restart the array unit. The feature is not yet unlocked until restarting. When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

- Unlocking with the key code

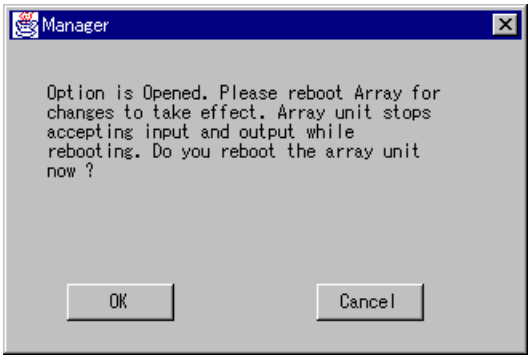
  (a) Clicks the **Key Code** radio button to set in the text box a key code.

  (b) Clicks the **Open** button.

(c) A screen for confirming that you want to unlock the ID take-over control function will be displayed, so clicks the **OK** button.

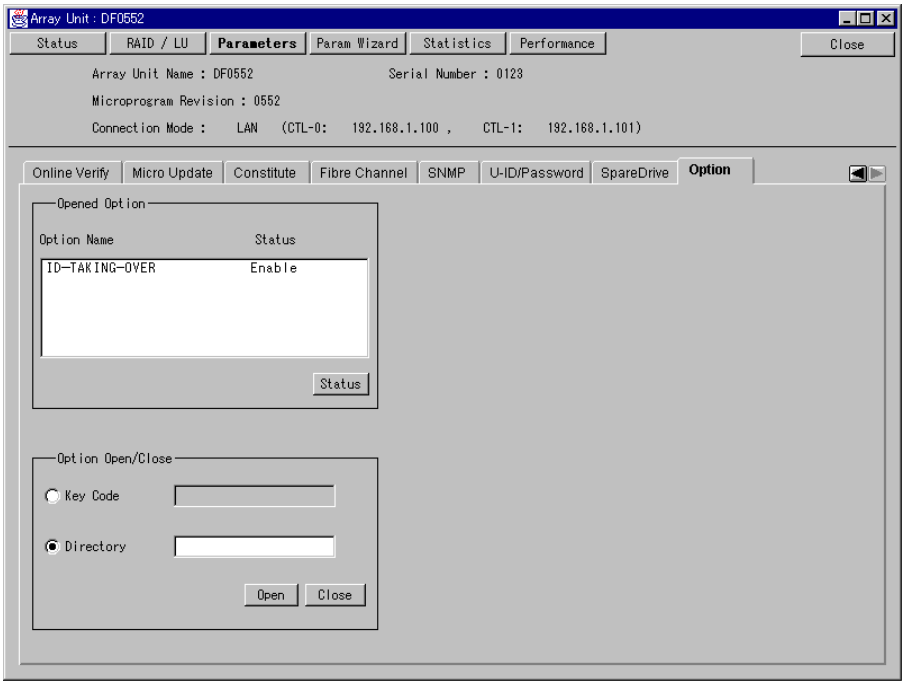


(d) A message indicating that the priced optional feature has been unlocked will be displayed. A message confirming your request for restarting will be displayed, so clicks the **OK** button when restarting.

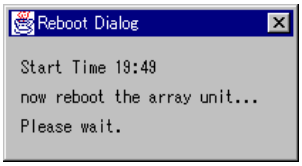


Note: To set effective the unlocking of the optional feature that you have operated, restart the array unit. The feature is not yet unlocked until restarting. When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

4. When not restarting an array unit, a screen will be displayed with the set-up priced optional feature being updated.

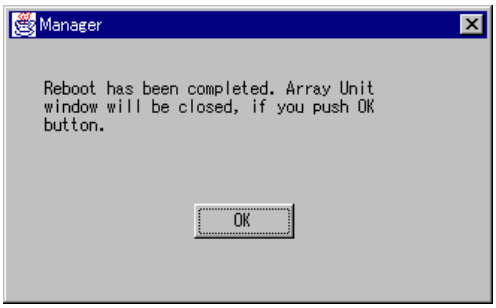


When instructing to restart an array unit, the time the restarting has began is displayed. The restarting takes about two to six minutes.



Note: It may take time for an array unit to respond, depending on the condition of the array unit. If it does not still respond after 10 minutes or more pass, check the condition of the array unit.

A message indicating that the restarting has terminated is displayed, so clicks the **OK** button. When clicking the **OK** button, the unit window is closed. To perform other operations, select again on the main window an array unit which to operate, and open the unit window.

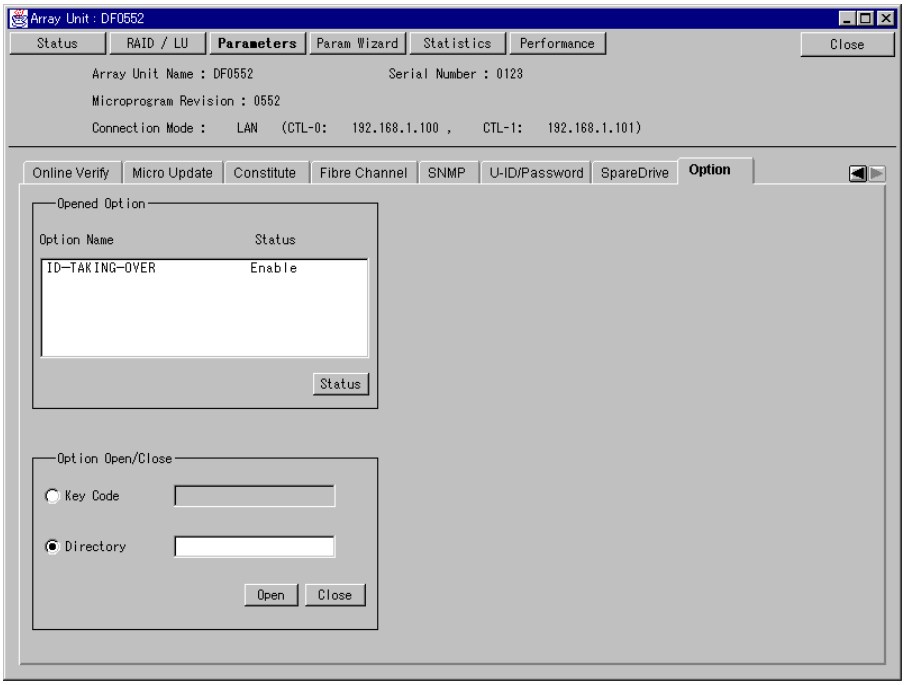


Uninstallation

Follow the instructions below to uninstall the ID take-over control function. When the ID take-over control function is uninstalled, the ID take-over control function is not available (locked) until it is opened by the Option floppy disk or the key code.
To uninstall the ID take-over control function, the key FD provided with the ID take-over control function feature or the key code described in the key FD is required.

Follow the instructions below to uninstall the ID Take-over control function (DF-F500-WD).

1. Starts the Disk Array Management Program and switches the mode of operating to **Management Mode**. Registers an array unit in which to uninstall the ID take-over control function and connects to the registered array unit. A unit window for the connected array unit will be displayed.
2. Clicks the **Parameters** button, then the **Option** tab.



3. Locks the optional feature using the key FD or the key code.

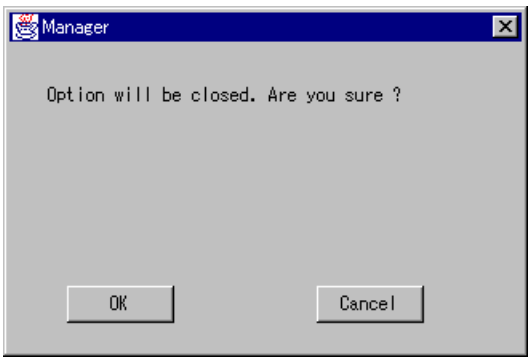
- Locking with the key FD

  (a) Inserts the key FD into the FDD of a machine in which the manager has been installed.

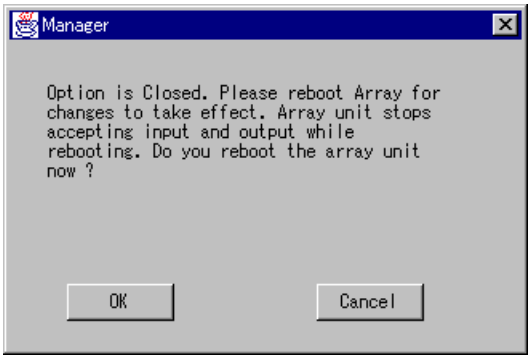
  (b) Clicks the **Directory** radio button to set in the text box a path to the FD.

  (c) Clicks the **Close** button.

(d) A screen for confirming that you want to lock the ID take-over control function will be displayed, so clicks the **OK** button.



(e) A message indicating that the priced optional feature has been locked will be displayed. A message confirming your request for restarting will be displayed, so clicks the **OK** button when restarting.



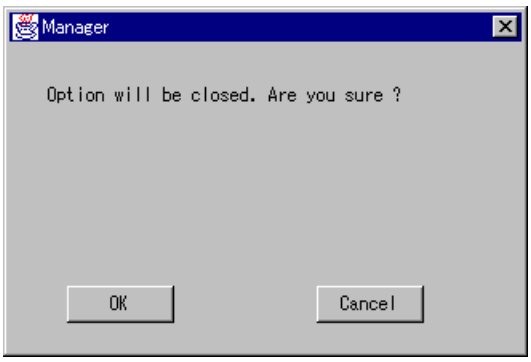
Note: To set effective the locking of the optional feature that you have operated, restart the array unit. The feature is not yet locked until restarting. When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

- Locking with the key code

  (a) Clicks the **Key Code** radio button to set in the text box a key code.

  (b) Clicks the **Close** button.

(c) A screen for confirming that you want to lock the ID take-over control function will be displayed, so clicks the **OK** button.



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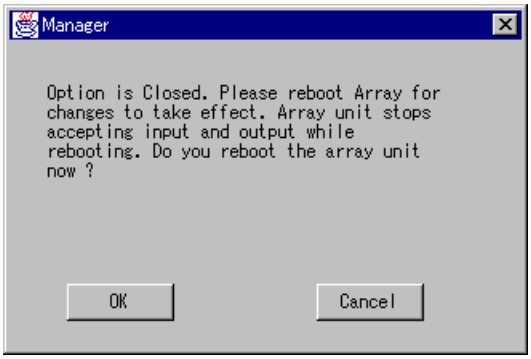
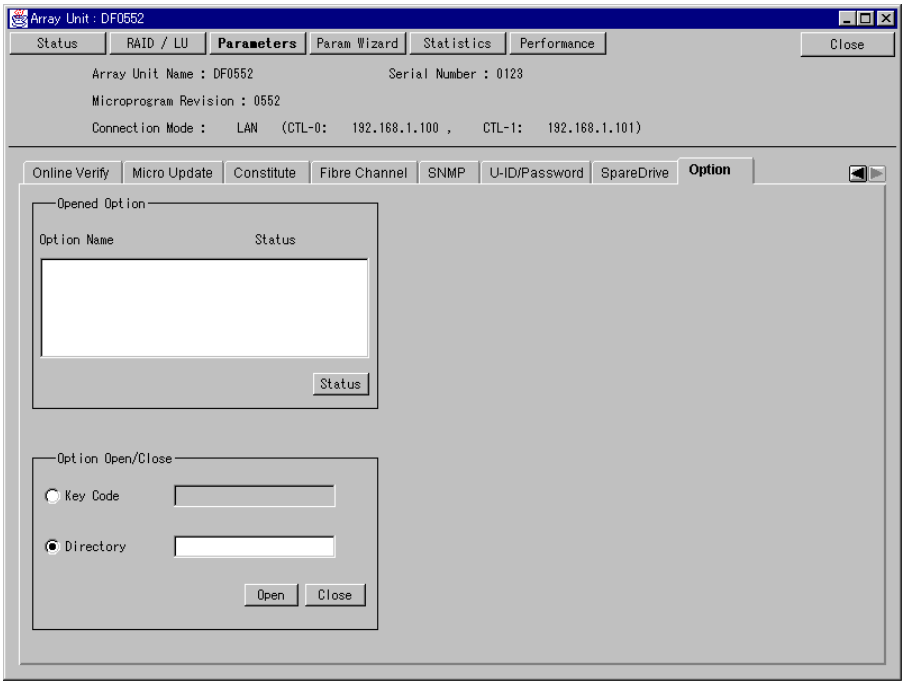
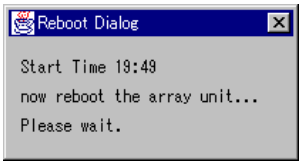


Note: To set effective the locking of the optional feature that you have operated, restart the array unit. The feature is not yet locked until restarting. When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

4. When not restarting an array unit, a screen will be displayed with the set-up priced optional feature being updated.

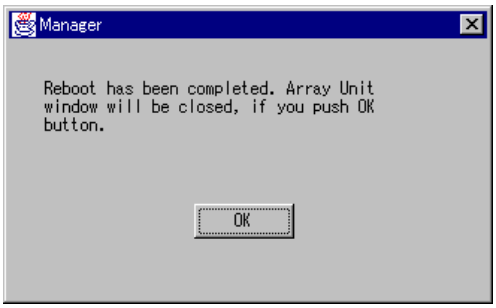


When instructing to restart an array unit, the time the restarting has began is displayed. The restarting takes about two to six minutes.



Note: It may take time for an array unit to respond, depending on the condition of the array unit. If it does not still respond after 10 minutes or more pass, check the condition of the array unit.

A message indicating that the restarting has terminated is displayed, so clicks the **OK** button. When clicking the **OK** button, the unit window is closed. To perform other operations, select again on the main window an array unit which to operate, and open the unit window.



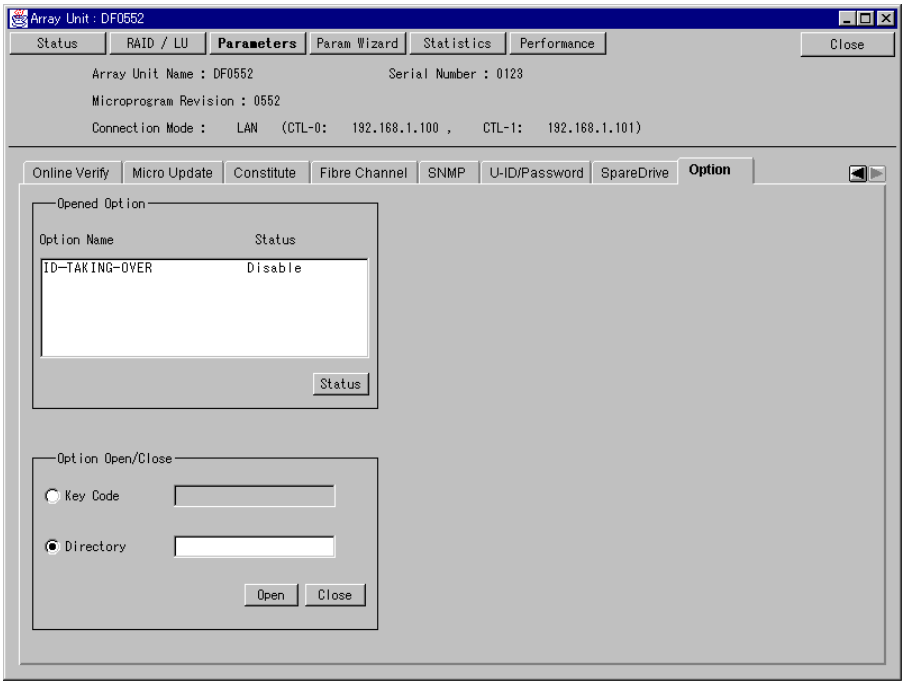
Setting to Enable or Disable

For the ID take-over control function feature, the ID take-over control function can be set to Disable or Enable under the condition in which the feature has been installed.

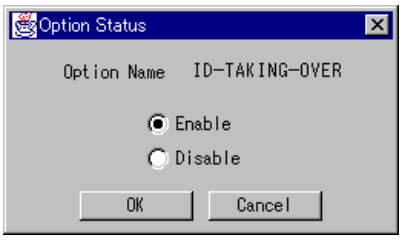
The following describes a procedure for setting the function to Disable or Enable while the ID take-over control function feature stays in an unlocked state.

The following describes setting procedures performed by using the Disk Array Management Program via GUI.

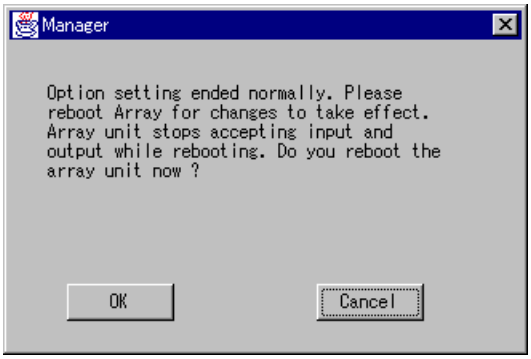
1. Starts the Disk Array Management Program and switches the mode of operating to **Management Mode**. Registers an array unit in which to set the ID take-over control function and connects to the registered array unit. A unit window for the connected array unit will be displayed.
2. Clicks the **Parameters** button, then clicks the **Option** tab.



3. Clicks on **ID-TAKING-OVER** in the **Option Name** text box, and then clicks **Status** button.
4. The **Option Status** screen will be displayed, so selects **Enable** or **Disable** with a radio button, and clicks the **OK** button.

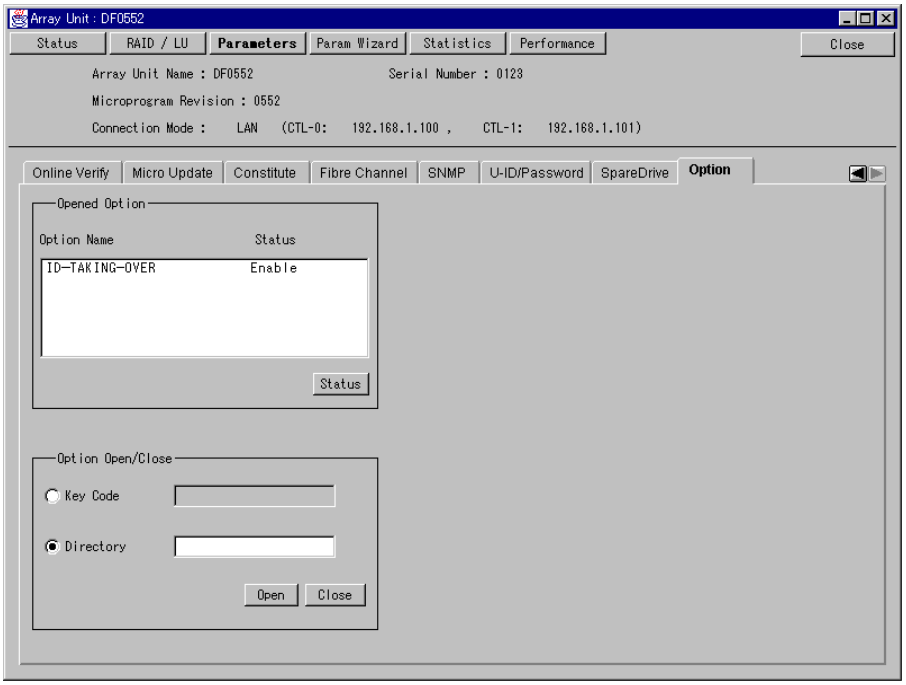


5. A message indicating that the priced optional feature has been set will be displayed. A message confirming your request for restarting will be displayed, so clicks the **OK** button when restarting.



Note: To set effective the setting of the optional feature that you have operated, restart the array unit. The feature is not yet set until restarting. When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

6. When not restarting an array unit, a screen will be displayed with the set-up priced optional feature being updated.



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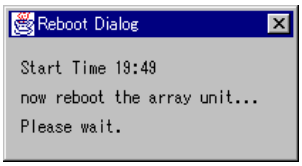
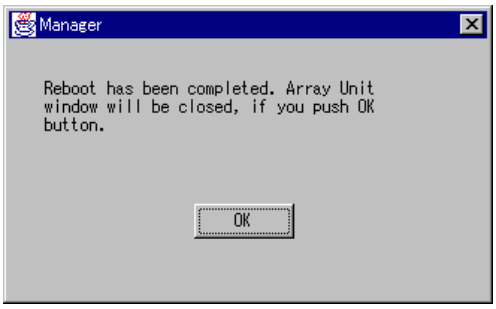


Note: It may take time for an array unit to respond, depending on the condition of the array unit. If it does not still respond after 10 minutes or more pass, check the condition of the array unit.

A message indicating that the restarting has terminated is displayed, so clicks the **OK** button. When clicking the **OK** button, the unit window is closed. To perform other operations, select again on the main window an array unit which to operate, and open the unit window.



Procedure of Setting and Canceling the ID Take-Over Control Function

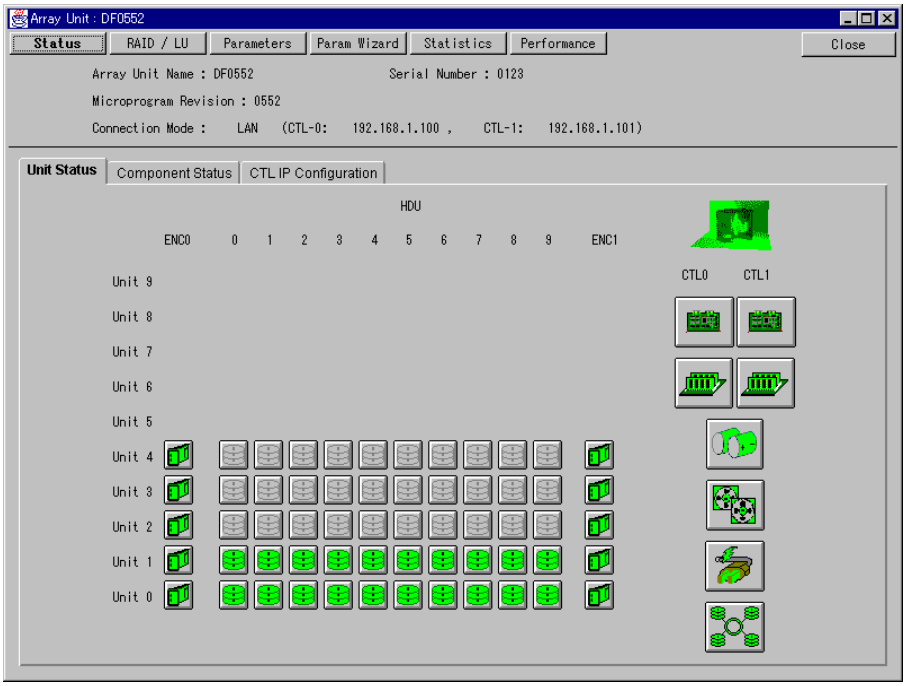
The ID take-over control function is set up using the Disk Array Management Program. The following describes set up procedures performed by using the Disk Array Management Program.

The system parameter the disk array unit is set in the wizard format.

Note: Before setting the system parameter of ID take-over control function, you must install the option of the ID Take-over control function (DF F500-WD) and make its functions selectable (open). (See *Installing and Uninstalling*)

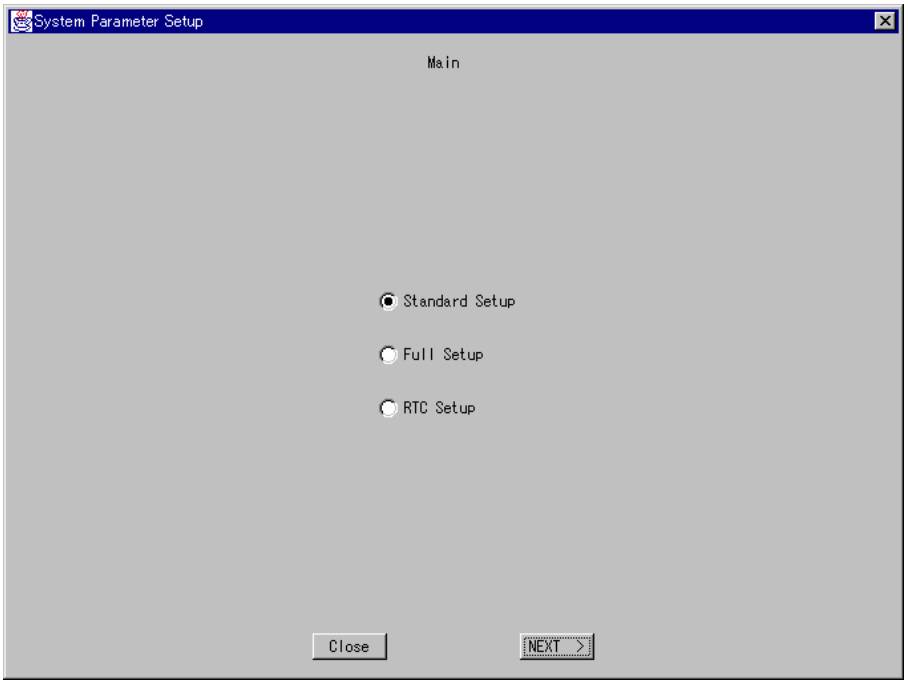
If one of the controllers is blocked when connecting to the dual system, you cannot set the system parameter. Check that the disk array unit is in the warning state before setting.
When you set the dual system though RS232C, be sure to do so from the controller 0 side.

1. Starts the Disk Array Management Program and switches the mode of operating to **Management Mode**. Registers an array unit in which to uninstall the ID take-over control function and connects to the registered array unit. A unit window for the connected array unit will be displayed.
   Clicks on the **Param Wizard** button in the main window of Disk Array Management Program.

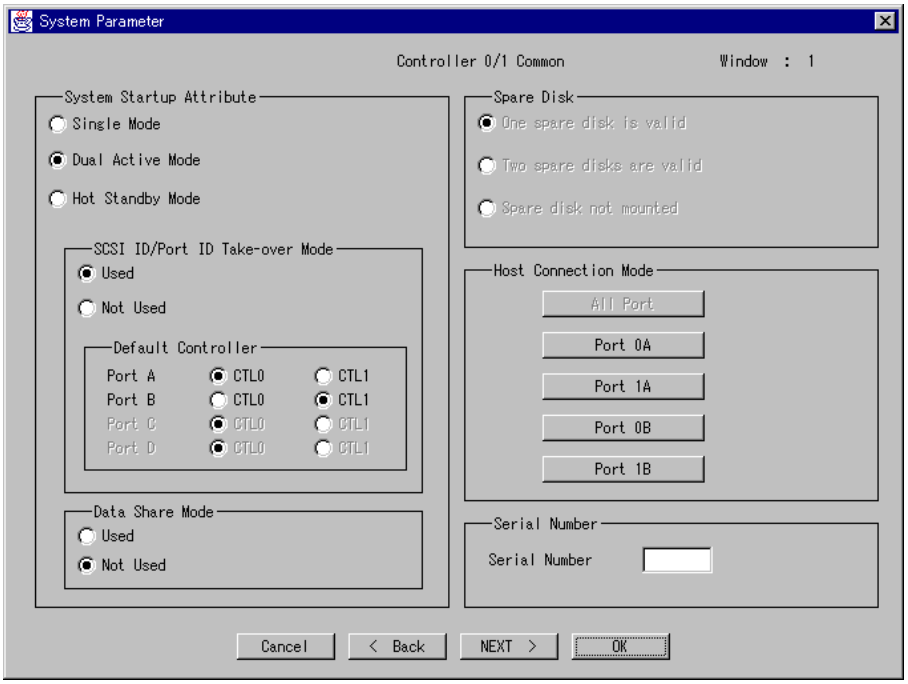


The **Param Wizard** button can be operated regardless of the unit window currently displayed.

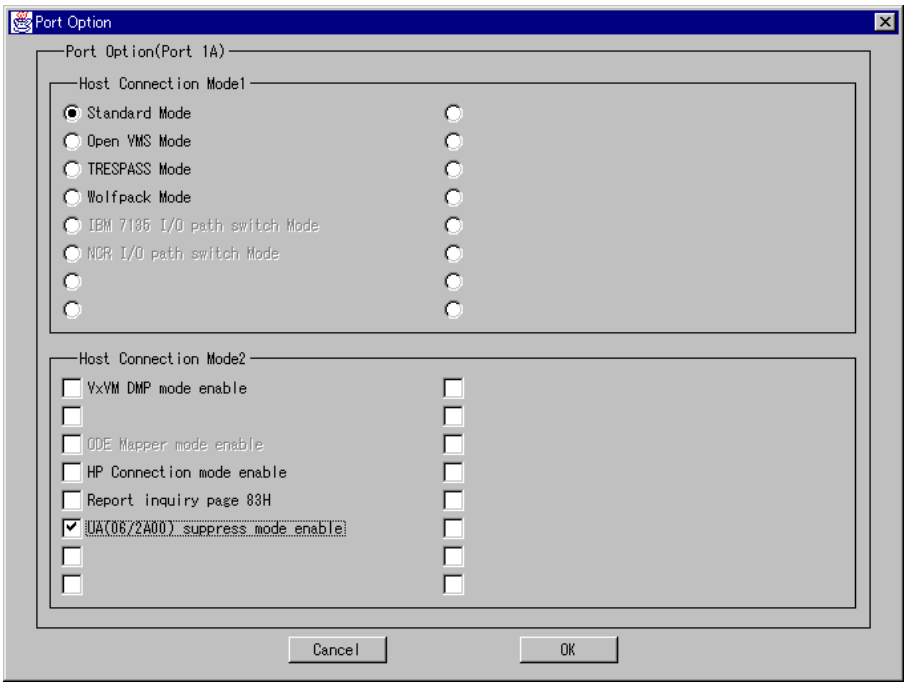
2. Clicks the **Standard Setup** radio button as shown in the following figure and then clicks on the **NEXT >** button.



The following system parameter setting window is displayed.



3. Clicks the **Dual Active Mode** or **Hot Standby Mode** radio button in the **System Startup Attribute** settings of the system parameter setting window.
   In **SCSI ID/Port ID Take-over Mode**, clicks the **Used** radio button.
4. If an array unit is operated in dual active mode, select a controller which to set active in individual ports for the **Default Controller** setting item on the system parameter setting screen, by clicking the **CTL0** or **CLT1** radio button.
5. The following operation differs depending on the host system connected. Therefore, follow the appropriate operation according to the host system connected.
   - When connecting to the RS/6000 (AIX) host system
     Clicks the **Port xx** (**xx** is port number of connecting to the RS/6000) button in the system parameter setting window and then go to procedure 6.
   - When connecting to the host system other than RS/6000 (AIX)
     Clicks the **OK** button in the system parameter setting window and then go to procedure 7.
6. On the next screen, clicks the check box of the **UA(06/2A00) suppress mode enable** option for the **Host Connection Mode2** setting item, and next clicks the **OK** button.

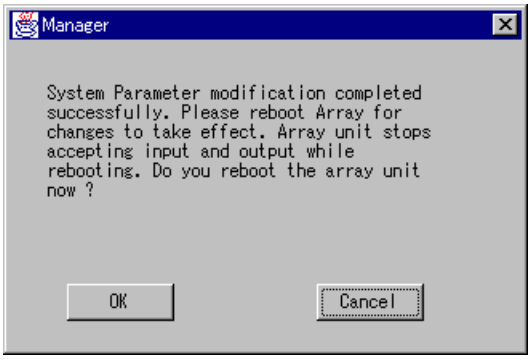


Set up all ports with which an RS/6000 is connected in the same way as described above.

7. Clicks the **Yes** radio button in the **FD Backup** settings in the following window and then makes sure that a backup FD has been inserted in the FDD of the array unit, and then clicks the **OK** button.

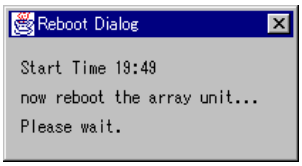
FD Backup: The system parameter information is saved in the backup FD for the disk array unit. When the setting is changed, reserving is required. Therefore, be sure to select **Yes**.

8. When the setting ends, the following message is displayed. Clicks the **OK** button. When clicking the **OK** button, the array unit will be restarted, and the set system parameter will be validated.



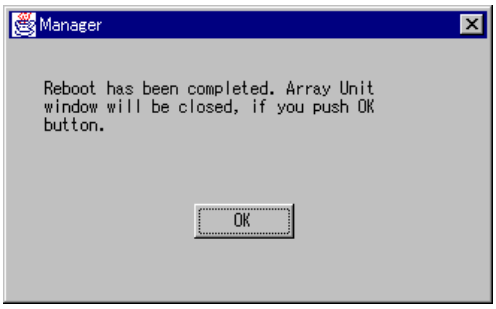
Note: To make a changed system parameter valid, restart the array unit. A part of host command or Disk Array Management Program function cannot be executed until the unit is restarted.

When instructing to restart an array unit, the time the restarting has began is displayed. The restarting takes about two to six minutes.



Note: It may take time for an array unit to respond, depending on the condition of the array unit. If it does not still respond after 10 minutes or more pass, check the condition of the array unit.

A message indicating that the restarting has terminated is displayed, so clicks the **OK** button. When clicking the **OK** button, the unit window is closed. To perform other operations, select again on the main window an array unit which to operate, and open the unit window.



This is the end of the setting of the ID take-over control function.
When setting change is required, conduct the setting operation again.

DF-F500-WD ID Take-over control function
User's Guide

First edition : September, 2000

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