

**365-340-903**

**DACS IV-2000 (512) - Quick Reference Guide - 365-340-903 - Release 5.0**

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## 1. Functional Block Diagram

See Figures 1 and 2.

## 2. Unit Numbering

Figures 3 and 4 illustrate the physical association of bays, units (the shelf positions of interface modules), and interbay cables in a fully-equipped system with all DS3 and/or STS1 interfaces (DS3 Interface-16 or STS1 Interface-16 Modules) and DS1 interfaces, respectively for collocated arrangements. For example, using Figure 4, look at Unit 11, located in the third column of the second row of the top portion of the figure. The first label in Unit 11 is *SWIO 2-7*. This represents the Switch Input/Output (SWIO) circuit pack in the Switch Input/Output Module that is associated with Unit 11. The designation *N-Rate AM* indicates half of an N-rate cable (labeled *AM*) that connects this interface module to the Switch Input/Output Module. The number *9* indicates the DS1 Interface-Protection Module (located in Unit 9) responsible for providing protection for this interface module. Finally, the number *J-11* shows the control cable for this interface module in the bay lineup. Each unit shown in this sample configuration is labeled with the same information.

Figures 5 and 6 illustrate the physical association of bays, units (the shelf positions of interface modules), and interbay cables in a fully-equipped system with all DS3 and/or STS1 interfaces (DS3 Interface-16 or STS1 Interface-16 Modules) and DS1 interfaces, respectively for Remote Complex arrangements.

The unit numbers and control cable numbers shown in Figures 3 and 4 are the same for any DACS IV-2000 (512) configuration. The examples pictured are based on maximum configurations, but the same numbers are used for other configurations.

### 3. Commands and Messages

Command	Command	Command	Command
ABT-CMD	ED-PORT	OPR-LPBK-EC1	RTRV-DROPCRS-ST51
ACT-ECHO-LINK	ED-PRMTR-LINK	OPR-LPBK-T1	RTRV-DROPCRS-T1
ACT-USER	ED-SECU-LINK	OPR-LPBK-T3	RTRV-DROPCRS-T3
ALW-LPBK-EC1	ED-SECU-PID	OPR-LPBK-VT1	RTRV-DROPCRS-VT1
ALW-LPBK-T1	ED-SECU-USER	RLS-LPBK-EC1	RTRV-EC1
ALW-LPBK-T3	ED-STATE-EQPT	RLS-LPBK-T1	RTRV-ECHO-LINK
ALW-LPBK-VT1	ED-T1	RLS-LPBK-T3	RTRV-EQPT
ALW-MSG-EC1	ED-T3	RLS-LPBK-VT1	RTRV-FWID
ALW-MSG-VT1	ED-VT1	RLS-TSTPT-EC1	RTRV-HDR
ALW-PMREPT-EC1	ENT-AUTOCMPN-T1	RLS-TSTPT-T1	RTRV-LPBK-EC1
ALW-PMREPT-T1	ENT-CONF-ST51	RLS-TSTPT-T3	RTRV-LPBK-T1
ALW-PMREPT-T3	ENT-CONF-T1	RLS-TSTPT-VT1	RTRV-LPBK-T3
ALW-PMREPT-VT1	ENT-CONF-T3	RMV-EQPT	RTRV-LPBK-VT1
ALW-SW-EQPT	ENT-CONF-VT1	RMV-LINK	RTRV-MSG-EC1
CANC-ECHO-LINK	ENT-CRS-ST51	RST-EQPT	RTRV-MSG-VT1
CANC-USER	ENT-CRS-T1	RST-LINK	RTRV-NE
CHG-ACCMD-EC1	ENT-CRS-T3	RTRV-ALM-ALL	RTRV-PATH-ST51
CHG-ACCMD-T1	ENT-CRS-VT1	RTRV-ALM-COM	RTRV-PATH-T1
CHG-ACCMD-T3	ENT-EQPT	RTRV-ALM-EC1	RTRV-PATH-T13
CHG-ACMD-VT1	ENT-ROLL-ST51	RTRV-ALM-EQPT	RTRV-PATH-VT1
CHG-TACC-EC1	ENT-ROLL-T1	RTRV-ALM-LINK	RTRV-PM-EC1
CHG-TACC-T1	ENT-ROLL-T3	RTRV-ALM-T1	RTRV-PM-T1
CHG-TACC-T3	ENT-ROLL-VT1	RTRV-ALM-T2	RTRV-PM-T3
CHG-TACC-VT1	ENT-SECU-USER	RTRV-ALM-T3	RTRV-PM-VT1
CONN-PM-T1	ENT-TSTPT-EC1	RTRV-ALM-VT1	RTRV-PMCENFRN-T1
CONN-TACC-EC1	ENT-TSTPT-T1	RTRV-ATTR-EC1	RTRV-PMODE-EC1
CONN-TACC-T1	ENT-TSTPT-T3	RTRV-ATTR-EQPT	RTRV-PMODE-VT1
CONN-TACC-T3	ENT-TSTPT-VT1	RTRV-ATTR-T1	RTRV-PMSCHED-EC1
CONN-TACC-VT1	EX-EQPT	RTRV-ATTR-T2	RTRV-PMSCHED-T1
CPY-MEM	INH-LPBK-EC1	RTRV-ATTR-T3	RTRV-PMSCHED-T3
CPY-TH-T1	INH-LPBK-T1	RTRV-ATTR-VT1	RTRV-PMSCHED-VT1
DGN-DET-EQPT	INH-LPBK-T3	RTRV-CMD-STAT	RTRV-PORT
DISC-PM-T1	INH-LPBK-VT1	RTRV-COND-ALL	RTRV-PRMTR-LINK
DISC-TACC	INH-MSG-EC1	RTRV-COND-EC1	RTRV-PRMTR-SFTWR
DLT-CONF-ST51	INH-MSG-VT1	RTRV-COND-EQPT	RTRV-PRMTR-T3ID
DLT-CONF-T1	INH-PMREPT-EC1	RTRV-COND-LINK	RTRV-SCANTH-NE
DLT-CONF-T3	INH-PMREPT-T1	RTRV-COND-T1	RTRV-SECU-AUD
DLT-CONF-VT1	INH-PMREPT-T3	RTRV-COND-T2	RTRV-SECU-LINK
DLT-CRS-ST51	INH-PMREPT-VT1	RTRV-COND-T3	RTRV-SECU-USER
DLT-CRS-T1	INH-SW-EQPT	RTRV-COND-VT1	RTRV-STATE-EC1
DLT-CRS-T3	INIT-REG-EC1	RTRV-CONF-ST51	RTRV-STATE-EQPT
DLT-CRS-VT1	INIT-REG-T1	RTRV-CONF-T1	RTRV-STATE-T1
DLT-EQPT	INIT-REG-T3	RTRV-CONF-T3	RTRV-STATE-T3
DLT-SECU-AUD	INIT-REG-VT1	RTRV-CONF-VT1	RTRV-STATE-VT1
DLT-SECU-USER	INIT-SYS	RTRV-CRS	RTRV-SYCN
ED-DATE	LGN-USER	RTRV-CRS-ST51	RTRV-SYSID
ED-EC1	LGT-USER	RTRV-CRS-T1	RTRV-T1
ED-EQPT	OPR-ACO	RTRV-CRS-T3	RTRV-T1ID

ED-NE	OPR-ACO-ALL	RTRV-CRS-VT1	RTRV-T3
Command	Command	Autonomous Message	Autonomous Message
RTRV-T3ID	SET-ATTR-VT1	REPT ALM COM	REPT EVT T1
RTRV-TACC-EC1	SET-PMMODE-EC1	REPT ALM EC1	REPT EVT T3
RTRV-TACC-T1	SET-PMMODE-VT1	REPT ALM EQPT	REPT EVT VT1
RTRV-TACC-T3	SET-SCANTH-NE	REPT ALM LINK	REPT EXCPTN SYS
RTRV-TACC-VT1	SET-SID	REPT ALM T1	REPT FAN FILTER
RTRV-TH-EC1	SET-SYCN	REPT ALM T2	REPT LOCL IN
RTRV-TH-NE	SET-TH-EC1	REPT ALM T3	REPT PM EC1
RTRV-TH-T1	SET-TH-NE	REPT ALM VT1	REPT PM T1
RTRV-TH-T3	SET-TH-T1	REPT BKUP	REPT PM T3
RTRV-TH-VT1	SET-TH-T3	REPT CMPR MEM	REPT PM VT1
RTRV-VT1	SET-TH-VT1	REPT DBCHG	REPT RMV EQPT
SCHED-PMREPT-EC1	STA-SCANPM-T1	REPT DGNDDET EQPT	REPT RMV LINK
SCHED-PMREPT-T1	STP-SCANPM-T1	REPT DISC TACC	REPT RST EQPT
SCHED-PMREPT-T3	SW-DX-EQPT	REPT DLTCRS STS1	REPT RST LINK
SCHED-PMREPT-VT1	SW-TOPROTN-EQPT	REPT DLTCRS T1	REPT RSTCRS STS1
SET-ATTR-EC1	SW-TOWKG-EQPT	REPT DLTCRS T3	REPT RSTCRS T1
SET-ATTR-EQPT	TEST-CABLE	REPT DLTCRS VT1	REPT RSTCRS T3
SET-ATTR-T1	TEST-FIBER	REPT DROPCRS STS1	REPT RSTCRS VT1
SET-ATTR-T2	TEST-SW-CONTROL	REPT DROPCRS T1	REPT SW
SET-ATTR-T3	TEST-TRMSN-T1	REPT DROPCRS T3	REPT T1ID
	TEST-UNIT-CABLE	REPT DROPCRS VT1	REPT TRMSN T1
		REPT EVT EC1	

## 4. Facility Address (EID)

### 4.1 STS-1 Ports

The port EID (Equipment Identification) code, expressed as: {unit number}-{port number} (Unit-STS-1 Port) for the STS-1 ports, must be addressed as follows:

- o Individually or as a range:  
**For STS1 Interface-16 Modules:** {1-64}-{1-15}
- o As all ports in an STS1 Interface Module: UNIT-{1-64}

### 4.2 DS3 Ports

The port EID (Equipment Identification) code, expressed as: {unit number}-{port number} (Unit-DS3 Port) for the DS3 ports must be addressed as follows:

- o Individually or as a range:  
**For DS3 Interface-32 Modules,** only: {1-64}-{1-31}  
**For DS3 Interface-16 Modules,** only: {1-64}-{1-15}
- o As all ports in an DS3 Interface Module: UNIT-{1-64}

### 4.3 DS1 and VT1.5 Mappings

Asynchronous DACS IV-2000 to DDM-1000		Synchronous			
		DACS IV-2000		DDM-2000	
DS1 Within DS3	DS2, DS1	VT1.5 Within STS1	VT Group, VT	VT Group, VT	VT1.5 Within STS-1
1	1,1	1	1,1	1,1	1
2	1,2	2	2,1	1,2	8
3	1,3	3	3,1	1,3	15
4	1,4	4	4,1	1,4	22
5	2,1	5	5,1	2,1	2
6	2,2	6	6,1	2,2	9
7	2,3	7	7,1	2,3	16
8	2,4	8	1,2	2,4	23
9	3,1	9	2,2	3,1	3
10	3,2	10	3,2	3,2	10
11	3,3	11	4,2	3,3	17
12	3,4	12	5,2	3,4	24

13	4,1	13	6,2	4,1	4
14	4,2	14	7,2	4,2	11
15	4,3	15	1,3	4,3	18
16	4,4	16	2,3	4,4	25
17	5,1	17	3,3	5,1	5
18	5,2	18	4,3	5,2	12
19	5,3	19	5,3	5,3	19
20	5,4	20	6,3	5,4	26
21	6,1	21	7,3	6,1	6
22	6,2	22	1,4	6,2	13
23	6,3	23	2,4	6,3	20
24	6,4	24	3,4	6,4	27
25	4,4	7,1	7		
26	5,4	7,2	14		
27	6,4	7,3	21		
28	7,4	7,4	28		

For more information on DS1 and VT1.5 mappings, refer to the "Cross Connections" section in Chapter 2 of the *DACS IV-2000 (512) Release 5.0 Reference Manual* (AT&T 365-340-900).

#### 4.4 VT1.5 Ports

The port EID (Equipment Identification) code, expressed as: {unit number}-{slot number}-{port number} (Unit-STS-1 Equivalent-VT1.5 Port) for the VT1.5 ports, must be addressed as follows:

- o Individually or as a range:  
**For STS1 Interface-16 Modules, only:**  
 VT1.5 port number: {1-32}-{1-15}-{1-28}  
 VT1.5 group number: {1-32}-{1-15}-{1-7}-{1-4}
- o As an individual or a range of VT1GRPs (group of 28 VT1.5 tributaries):  
**For STS1 Interface-16 Modules, only:**  
 VT1.5 port number (only): VT1GRP-{1-32}-{1-15}
- o As all ports in an STS1 Interface Module: UNIT-{1-32}

#### 4.5 DS1 Ports

The port EID (Equipment Identification) code, expressed as: {unit number}-{slot number}-{port number} (Unit-DS3 Equivalent-DS1 Port) for the DS1 ports must be addressed as follows:

- o Individually or as a range:

**For STS1 Interface-16 Modules:**

DS1 port number: {1-32}-{1-15}-{1-28}

VT1.5 group number: {1-32}-{1-15}-{1-7}-{1-4}

**For DS3 Interface-32 Modules:** {1-32}-{1-31}-{1-28}

**For DS3 Interface-16 Modules:** {1-32}-{1-15}-{1-28}

**For DS1 Interface Modules:** {1-32}-{1-8}-{1-28}

**For DS1 Interface-P Modules:** {1-32}-{1-7}-{1-28}

- o As an individual or a range of DS1GRPs (group of 28 DS1 ports functioning as a DS3 equivalent):

**For STS1 Interface-16 Modules:**

DS1 port number (only): DS1GRP-{1-32}-{1-15}

**For DS3 Interface-32 Modules:** DS1GRP-{1-32}-{1-31}

**For DS3 Interface-16 Modules:** DS1GRP-{1-32}-{1-15}

**For DS1 Interface Modules:** DS1GRP-{1-32}-{1-8}

**For DS1 Interface-P Modules:** DS1GRP-{1-32}-{1-7}

- o As all ports in an interface module: UNIT-{1-32}

## 5. Allowable Commands for Various Main Controller States

Most system functions are not allowed when the main controller (MC) is not in service. Certain functions, however, either can be performed with the MC out of service, or require the MC to be out of service to be performed. The following lists the allowable commands for the given state of the MC:

- o **OOS-FLT state:**
  - ABT-CMD
  - DGN-DET-EQPT (on MC, and MC subentities (see Note 1) in the IS state)
  - INIT-SYS (Initialization Level 9)
  - RTRV-CMD-STAT
  - RTRV-PRMTR-SFTWR
  - RTRV-STATE-EQPT (on MC)
  - RST-EQPT (on MC)
  
- o **OOS-MTCE state:**
  - ABT-CMD
  - DGN-DET-EQPT (on MC, and MC subentities (see Note 1) in the IS state)
  - ED-EQPT (on MC, and MC subentities (see Note 2) in the IS state)
  - INIT-SYS (Initialization Level 9)
  - RTRV-CMD-STAT
  - RTRV-PRMTR-SFTWR
  - RTRV-STATE-EQPT (on the MC)
  - RST-EQPT (on the MC, PRI, and SEC)
  - RMV-EQPT (on SEC)
  - CPY-MEM (see Note 3)
  
- o **OOS-MCOND state:**
  - ABT-CMD
  - DGN-DET-EQPT (on MC, and MC subentities (see Note 1) in the IS state)
  - ED-EQPT (on MC, and MC subentities (see Note 2) in the IS state)
  - INIT-SYS (Initialization Level 9)
  - RTRV-CMD-STAT
  - RTRV-PRMTR-SFTWR
  - RTRV-STATE-EQPT (on the MC)
  - RST-EQPT (on the MC, PRI, and SEC)
  - RMV-EQPT (on the PRI and SEC)
  - RTRV-PRMTR-SFTWR
  - RTRV-SYSID
  - CPY-MEM (see Note 3)
  - SET-SID
  
- o **IS state** the following commands are **not** allowed:
  - RMV-EQPT (on the only in-service PRI)
  - CPY-MEM (see Note 3)

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- Note 1:** MC subentities include: CPU-{0,1}, UI-{0,1}, MTC-{0,1}-{1,2}, SSC-{0,1}, PRI-{1,2}, SEC, ECI-{1,2}, SCI-{0,1}-{1,2}, and CC-{0,1}
- Note 2:** MC subentities include: MTC-{0,1}-{1,2}, SSC-{0,1}, PRI-{1,2}, and SEC
- Note 3:** See CPY-MEM command entry in the *DACS IV-2000 (512) Release 5.0 Commands and Messages manual (AT&T 365-340-902)* for details.

## 6. Error Codes

Error Code	Error Condition	Error Code	Error Condition
EHNS	Equipment hierarchy not satisfied	SAIN	Status, already inhibited
ENEQ	Equipage, not equipped	SAIS	Status, already in-service
ENMB	Equipage, not a multipoint bridge	SAOP	Status, already operated
ENMD	Equipage, no media present	SAOS	Status, already out-of-service
ENRD	Equipage, not red-lined	SAPS	Status, already in protection state
ENRE	Equipage, not recognized equipage	SAPV	Status, already provisioned
ENRI	Equipage, not equipped for retrieving specified information	SARB	Status, all resources busy
ERLC	Equipage, a red-lined circuit	SARL	Status, already released
IBEX	Input, extra block	SASW	Status, already in switched state
		SAWS	Status, already in working state
IBNC	Input, block not consistent	SCAT	Status, circuit is already connected to another TAP
IDMS	Input, data missing	SCCF	Status, SEC cartridge checksum failure
IDNC	Input, data not consistent	SDNC	Status, data in input message is not consistent with the provisioned object entity
IDNV	Input, data not valid		
IICT	Input, invalid CTAG	SEIP	Status, entity is protected
IISP	Input, invalid syntax or punctuation	SIOM	Status, invalid output mode
ITA	Input, invalid target identifier (TID)	SMVF	Status, media validation failed
IPAI	Input, port address inconsistent	SNAS	Status, not assigned
ISCH	Input, syntax character error in input command	SNCC	Status, not cross-connected
		SNDA	Status, no data available
ISPC	Input, syntax punctuation error in input command	SNDB	Status, no database on the device
MRAS	Maximum reports already scheduled	SNIS	Status, not in-service
PICC	Privilege, illegal command code	SNML	Status, no monitor line established
PIOC	Privilege, illegal operations channel	SNOS	Status, not out-of-service
PIPW	Privilege, illegal password/user id code	SNPV	Status, not provisioned
		SNST	Status, execution could not be started
PIRC	Privilege, illegal record control	SNVS	Status, not in valid state
PIUI	Privilege, illegal user identity	SOSF	Status, out-of-service,

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PKOR	Pack out of range		failed
PLNA	Privilege, login not active	SOST	Status, out-of-service, testing
SAAL	Status, already allowed		
SAAS	Status, already assigned	SPFA	Status, protection entity failed
		SRIP	Status, request inconsis- tent with provisioning
SABT	Status, execution stopped abruptly before completion	SROF	Status, requested operation failed
SACC	Status, already cross-connected	SSTP	Status, execution stopped gracefully before completion
SADC	Status, already disconnected	SWFA	Status, working entity failed

## 7. Main Fuse Panels and Charts

Tables A and B relate DACS IV-2000 (512) fuses for bays, collocated interface modules, and collocated interface module shelves to their physical location on the fuse and alarm panels in the Switch Bays and Fuse and Alarm Bays (see Figures 7 and 8).

Tables C (Remote Complex Interface Bays) and D (OPEX Bay) relate DACS IV-2000 Remote Complex fuses for bays, interface modules, and fan assemblies to their physical location on the fuse and alarm panel (see Figure 9 [ED-2C940-30 Fuse and Alarm Panel] or Figure 10 [ED-9C114-30 Fuse and Alarm Panel]) at the top of the OPEX Bay.

## 8. Secondary Fuses and Fuse Charts

Tables E, F, and G relate DACS IV-2000 secondary fuses for SWIO/OSWIO, SWCS, and HCC circuit packs to their physical location on the FBK and FBM fuse boards in the Switch Power Modules (see Figure 11).

Table H relates DACS IV-2000 Remote Complex secondary fuses for OPEX Module circuit packs to their physical location on the FBA, FBB, FBC, and FBD fuse boards in the OPEX Power Module (see Figure 12).

## 9. Memory Storage Module Fuses

See Figure 13.

## 10. Remote Unit Interface Power Module Fuses

See Figure 14.

## **11. Equipment Module Diagrams**

### **11.1 Memory Storage and Synchronizer Modules**

See Figure 15.

### **11.2 High Capacity Controller Module**

See Figure 16.

### **11.3 Switch Complex Module Locations**

See Figure 17.

### **11.4 Switch Power Module (3 Modules)**

See Figure 18.

### **11.5 Switch Input/Output Module (4 Modules)**

See Figure 19.

### **11.6 Switch Center Stage Module (2 Modules)**

See Figure 20.

### **11.7 Optical Extension Power Module**

See Figure 21.

### **11.8 Auxiliary and Remote Unit Interface Power Modules**

See Figure 22.

### **11.9 Remote Unit Interface Module**

See Figure 23.

### **11.10 Optical Extension Module**

See Figure 24.

### **11.11 DS1 Interface/Interface-Protection Module**

See Figure 25.

For provisioned DS1 Interface and DS1 Interface-Protection

Modules, see minimum equipage tables on next page. For unprovisioned DS1 Interface Modules within a DS1 interface protection group associated with a provisioned DS1 Interface-Protection Module, if the DS1 Interface Module has been cabled, then all DS1IF circuit pack slots must be equipped with either BXA or DS1IF circuit packs and all SWIF circuit pack slots must be equipped with either BXA or SWIF circuit packs (that is, an DS1 Interface Module that is not cabled can be left empty). If the DS1 Interface-Protection Module within an DS1 interface protection group is unprovisioned, no circuit packs are required in any of the interface modules associated with the DS1 Interface-Protection Module, but are recommended to keep out dust and other foreign matter.

See Tables I and J.

### **11.12 DS3 Interface-32 Module**

See Figure 26 and Table K.

### **11.13 DS3 Interface-16 Module**

See Figure 27 and Tables L, M and N

### **11.14 STS1 Interface-16 Module**

See Figure 28 and Table O.

## 12. Circuit Pack Cross-Reference

Module	Circuit Pack	Code/Part No.	System Address
HCC Module	CPU3	ERA2	CPU-{0,1}
	ECI6	ERA1	ECI-{1,2}
	MTC4	ERA9	MTC-{0,1}-{1,2}
	SCI4	ERA8	SCI-{0,1}-{1,2}
	SSC4	ERA7	SSC-{0,1}
	STPNL2	ED-9C138-30,G2	STPNL
	UI3/OUI1	ERA10/ERT1	UI-{0,1}
MEM Module	FBJ	ERE2	--
	FBL	ERE3	--
	PRI4	ERB2	PRI-{1,2}
	PWRG	428AB	PWRG-{1,2}
	SEC4	ERB3	SEC
SYNC Module	DPLL1/DPLL2	AWP9B/AWP15	DPLL-{0,1}
	DS1TX1/DS1TX2	AWS5/AWS9	TX-{0,1}
	TBS31/TBS32	AWS3/AWS8	TB-{0,1}
	AWS-type filler	846960664	--
SWIO Module	SWIO2/OSWIO1	ERA4/ERY1	SWIO-{1-4}-{1-16}
	Apparatus blank	847055563	--
SWCS Module	SWCS3	ERA5	SWCS-{1,2}-{1-16}
	CLKGN4	ERA6B	CLKGN-{0,1}
SW Power Module	FBK	ERD1	--
	FBM	ERD2	--
	PWRJ	568A/568B	PWRJ-{1-3}-{1-6}
RUI Module	BXC1	AWP20	--
	RCI1	AWP19	RCI-{1,2}-{1,2}
	SCI3	AWR2C	RSCI-{1,2}
	STPNL1	ED-9C049-30	RSTPNL-{1,2}
	UIA1	ERW1	RUIA-{1,2}
	UIB1	ERW2	RUIB-{1,2}
RUI Power Module	FBF	ED-9C051-30	--
	FBG	ED-9C052-30	--
	FBH	ED-9C053-30,G2	--
	FBI	ED-9C055-30	--
	PWRF	427AA/427AB	RPWRF-{1,2}-{1,2}
OPEX Module	CLKGN3	AWR11	RCLKGN-{1,2}
	OPEX1 AWR-type filler	ERW3 846103760	OPEX-{1-4}-{1-16}
			--

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OPEX Power Module	FBA	ED-2C962-30	--
	FBB	ED-2C960-30	--
	FBC	ED-2C963-30	--
	FBD	ED-2C961-30	--
	PWRA1/PWRA2	552A/566A	RPWRA-{1,2}-{1-4}
AUX Power Module	PWRE3	556C	RPOWERE-SW-{1,2}-{1,2}
DS1 Interface Modules	CLKDR2	AKM90	CLKDR-{1-64}-{1,2}
	DS1IF1	AKM46/AKM46B	DS1IF-{1-64}-{1A-8B}
	DS1IP1	AKM47	DS1IP-{1-64}-{PA,PB}
	DS1RY1	AKM48	DS1RY-{1-64}-{1-4}
	PMGR1	AKM66	SWIF-{1-64}-{1-8}
	SWIF1/SWIF2	AKM49/AKM50	SWIF-{16-4}-{1-8,P}
	UC4/UC4B	AKM88/AKM88B	UC-{1-64}
	PWRE3	556C	PWRE-{1-64}-{1,2}
	BXA1	AKM64	--
DS3 Interface Modules	CLKDR2	AKM90	CLKDR-{1-64}-{1-4}
	DS3PM2	AKM89	DS3PM-{1-64}
	MUX1/MUX2/MUX3	AKM52/AKM68B/ AKM91	MUX-{1-64}-{1-31}
	MUXP1/MUXP2/MUXP3	AKM55/AKM70B/ AKM92	MUXP-{1-64}
	MUXPS1	AKM53	MUXPS-{1-64}
	PMGR1	AKM66	MUX-{1-64}-{1-31}
	UC4/UC4B	AKM88/AKM88B	UC-{1-64}
	PWRE3	556C	PWRE-{1-64}-{1-2}
	BXA1	AKM64	--
STS1 Interface Modules	CLKDR2	AKM90	CLKDR-{1-64}-{1,2}
	SMUX1	AKM84	SMUX-{1-64}-{1-15}
	SMUXP1	AKM85	SMUXP-{1-64}
	MUXPS1	AKM53	MUXPS-{1-64}
	UC4/UC4B	AKM88/AKM88B	UC-{1-64}
	PWRE3	556C	PWRES-{1-64}-{1,2}
	BXA1	AKM64	--

**13. Expendable Equipment Cross-Reference**

Equipment (Location)	Part Number	Expected Life
Optical Drive Lens Cleaning Kit	406935346	N/A
Optical Cartridge Emergency	406923292	N/A
Eject Tool Cleaning Kit Refill	406646851	N/A
Filter, Fan Assembly ED2C816-30,G1 (SW Bay)	405056078	N/A
Filter, Fan Assembly ED2C906-30 (SW Bay)	405470808	3-6 Months
Filter, Fan Assembly ED-9C130, G1/G2	WP-92310,L4A	3-6 Months
Filter, Fan Assembly WP-92310,L4	WP-92310,L100	3-6 Months
LEDs, Fan Assembly ED-9C130,G1/G2 or WP-92310,L4 (Order from McLean Engineering, Inc., Princeton-Junction, NJ)	N/A	N/A
Blank Optical Disk Cartridge	J98786SL-3, List 3	N/A
Fuse Extractor Tool	WP-90247,L201	N/A
Fuses (Switch Complex and Fuse and Alarm Bays):		
20A Main Fuse (Main Fuse Panels)	KS-19780,L4	N/A
10A Main Fuse (Main Fuse Panels)	KS-19780,L2	N/A
0.5A 70G Indication Fuse (Main Fuse Panels)	100203389	N/A
15A SW PWR MOD 77E Fuse (FBK)	KS-23543L77E	N/A
7.5A SW PWR MOD 77J Fuse (FBK)	KS-23543L77J	N/A
4A SW PWR MOD 77H Fuse (FBK)	KS-23543L77H	N/A
15A SW PWR MOD 78E Fuse (FBM)	KS-23543L78E	N/A
4A SW PWR MOD 78H Fuse (FBM)	KS-23543L78H	N/A
5A MEM MOD 77C Fuse (FBJ)	KS-23543L77C	N/A
3A MEM MOD 77B Fuse (FBJ and FBL)	KS-23543L77B	N/A
2A MEM MOD 77G Fuse (FBJ and FBL)	KS-23543L77G	N/A
1.25A MEM MOD 77A Fuse (FBJ and FBL)	KS-23543L77A	N/A
2A MEM MOD 78G Fuse (FBJ and FBL)	KS-23543L78G	N/A
1.25A MEM MOD 78A Fuse (FBJ and FBL)	KS-23543L78A	N/A

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Fuses (Remote Complexes):		
2 A Main Fuse (ED-9C114-30 Fuse Panel)	WP91768.L07	N/A
10 A Main Fuse (ED-9C114-30 Fuse Panel)	WP91766,L114	N/A
12 A Main Fuse (ED-9C114-30 Fuse Panel)	WP91768,L115	N/A
12 A Main Fuse (ED-2C940-30 Fuse Panel)	KS19780,L8	N/A
10 A Main Fuse (ED-2C940-30 Fuse Panel)	KS19780,L2	N/A
5 A 70D Indicator Fuse (ED-2C940-30 Fuse Panel)	100203355	N/A
2 A 70B Indicator Fuse (ED-2C940-30 Fuse Panel)	100203330	N/A
0.5 A 70G Indicator Fuse (ED-2C940-30 Fuse Panel)	100203389	N/A
10 A OPEX PWR MOD 77D Fuse (FBA and FBB)	KS-23543L77D	N/A
7.5 A OPEX PWR MOD 78J Fuse (FBC and FBD)	KS-23543L78J	N/A
7.5 A RUI PWR MOD Fuse (FBI)	WP-90247L314	N/A
5 A RUI PWR MOD Fuse (FBF, FBG, and FBH)	WP-90247L313	N/A
2 A RUI PWR MOD Fuse (FBH and FBI)	WP-90247L309	N/A
1 A RUI PWR MOD Fuse (FBF and FBG)	WP-90247L306	N/A
0.5 A RUI PWR MOD Fuse (FBI)	WP-90247L303	N/A

## 14. Provisioning Sequence

Table P shows the provisioning sequence for the Switch Complex and collocated interface bays. When Remote Complexes are used, Table Q shows the additional sequence used to provisioned the Remote Complex.

## 15. Loopbacks

The DACS IV-2000 provides DS1 signal loopback, DS3 line loopback, STS-1 signal loopback, and VT1.5 wideband (terminal) loopback features that can be used to facilitate testing and trouble isolation. DS1 facilities and DS1 tributaries on DS3 facilities and EC-1 facilities can be looped back. STS-1 and VT1.5 loopbacks are performed through EC-1 facilities only. Figure 29 shows examples of the possible loopback features available in the DACS IV-2000. The following is a list of the different loopback types available:

- o DS1 Loopbacks -- can be operated on a specified DS1 port or range of DS1 ports, towards the facility, towards the switch, or through the switch fabric of a DS1 Interface, a DS3 Interface (tributary of a DS3), or an STS1 Interface (as a VT1.5 tributary) Module within the system. DS1 loopbacks can be one of the following four types:
  - LPBKL (Line Loopback) -- loops the signal from the input port to the output port (towards the facility) at the DS1 Interface Module.
  - LPBKT (Terminal Loopback) -- loops the signal from the input port to the output port (through the switch matrix) in the Switch Module. DS1 terminal loopbacks are valid for near-end on DS1 interface (DS1IF), DS3 interface (MUX, MUX2, or MUX3), or SONET interface (SMUX) circuit packs.
  - LPBKI (Internal Loopback) -- loops the signal from the output port to the input port (towards the switch) at the DS1 Interface Module.
  - LPBKM (DS1 Tributary Loopback) -- loops a DS1 tributary signal within a DS3 interface (MUX2 or MUX3) circuit pack from the input port to the output port (towards the facility) at the DS3 Interface Module. DS1 tributary loopbacks are valid for either near-end or far-end on MUX2 or MUX3 circuit packs only.
- o DS3 Loopbacks -- can be operated on a specified DS3 port or range of DS3 ports, towards the facility (MUX2 or MUX3 circuit pack only) or through the switch matrix (MUX3 circuit pack only) of a DS3 Interface Module within the system. DS3 loopbacks can be one of the following two types:
  - LPBKL (Line Loopback) -- loops the incoming DS3 signals directly to the outgoing direction of the same port. This loopback happens directly in the MUX2 or MUX3 circuit pack. The DS3 line loopback is supported

in both clear-channel and DS1 modes for MUX3 circuit packs. This keeps the signal from entering the switch matrix and thus keeps the amount of hardware encountered to a minimum. Because the signal is not demultiplexed, it retains all its control bits, overhead bits, and bipolar violations, and preserves the timing of the looped back signal. The only modification of the DS3 signal occurs when the system regenerates the signal to meet the specifications for an outgoing DS3 signal.

- LPBKT (Terminal Loopback) [MUX3 circuit pack only] -- loops the DS3 signal from the input port to the output port (through the switch fabric) in the Switch Module when the MUX3 circuit pack is provisioned for clear-channel mode. Bipolar violations are not preserved for DS3 terminal loopbacks.
- o STS-1 Loopbacks -- can be operated on a specified STS-1 port or range of STS-1 ports, either towards the facility or through the switch fabric of an STS1 Interface Module. STS-1 loopbacks can be one of the following two types:
  - LPBKL (Line Loopback) -- loops the signal from the input port to the output port (towards the facility) at the STS1 Interface Module.
  - LPBKT (Terminal Loopback) -- loops the signal from the input port to the output port through the switch fabric in the Switch Module. STS-1 terminal loopbacks are valid for near-end on SMUX circuit packs.
- o VT1.5 Wideband (Terminal) Loopbacks -- can be operated on a specified VT tributary of an STS-1 signal as a terminal loopback (LPBKT), which loops the VT1.5 signal from the input port to the output port through the switch fabric in the Switch Module.

## 16. Test Access

### 16.1 General

When working with test access connections, you need to be familiar with terms such as E-End, F-End, and A and B direction (see Figure 30). The E-End and F-End are arbitrarily designated for a one-way or a two-way cross-connection. For example, the E-End can be designated to correspond to a *short haul* transmission path to a piece of equipment (for example, a DACS III-2000) within the same Central Office and the F-End can be designated to correspond to a *long haul* transmission path to another Central Office (see Note). The E-End and F-End signals are terminated at DS1, DS3, or STS1 Interface Modules. Test access can be established at either the E-End or the F-End through a test access port (TAP). As signals travel through the frame, the path through the frame from the E-End to the F-End is referred to as the A direction and the path from the F-End to the E-End is the B direction. In a one-way cross-connection, the signal travels in the A direction. The In and Out designations indicate the direction to/from the E-End and F-End. After selecting designations of E-End and F-End, these designations must not change during the test access session.

**Note:** Traditionally E-End and F-End mean equipment and facility end, respectively. However, you can designate any port as E-End or F-End.

There are ten modes of test access in the DACS IV-2000. These modes are:

MONE	SPLTE
MONF	SPLTF
MONEF	SPLTEF
SPLTA	LOOPE
SPLTB	LOOPF

Each mode is described in the following sections.

## 16.2 Monitor Test Access Connections

### 16.2.1 MONE Mode

The MONE mode (Figure 31) of test access monitors the E-End of an idle port, a one-way cross-connection, or a two-way cross-connection. It reads the incoming signal in direction A.

### 16.2.2 MONF Mode

The MONF mode (Figure 32) of test access monitors the F-End of a two-way cross-connection. It reads the incoming signal in

direction B.

### **16.2.3 MONEF Mode**

The MONEF mode (Figure 33) of test access monitors both directions of a two-way cross-connection. This mode of test access requires two TAPs. It reads the incoming signals in directions A and B.

## **16.3 Split Test Access Connections**

### **16.3.1 SPLTA Mode**

The SPLTA mode (Figure 34) of test access splits the E-End (to TAP) to F-End (from TAP) connection of a one-way or two-way cross-connection to allow testing in the A direction.

### **16.3.2 SPLTB Mode**

The SPLTB mode (Figure 35) of test access splits the F-End (to TAP) to E-End (from TAP) connection of a two-way cross-connection to allow testing in the B direction.

### **16.3.3 SPLTE Mode**

The SPLTE mode (Figure 36) of test access splits the E-End to F-End of an idle port, a one-way cross-connection, or a two-way cross-connection to allow testing at the E-End. The incoming signal in the A direction goes to the input of the TAP, and the output of the TAP is sent in the B direction.

For DS1 SPLTE test access, the output mode of the F-End output port, along with any other output ports the E-End is transmitting to, is automatically set to the QRSS mode (if the ports are on DS1 and DS3 interface circuit packs and a QRSS source has been provisioned for the system) or to the IDLE mode. For VT1.5, STS-1, and DS3 SPLTE test access, the output mode of the F-End output port, along with any other output ports the E-End is transmitting to, is automatically set to the IDLE mode sending-path AIS.

### **16.3.4 SPLTF Mode**

The SPLTF mode (Figure 37) of test access splits the F-End to E-End of a two-way cross-connection to allow testing at the F-End. The incoming signal in the B direction goes to the input of the TAP and the output of the TAP is sent in the A direction.

For DS1 SPLTF test access, the output mode of the E-End output port, along with any other output ports the F-End is transmitting to, is automatically set to the QRSS mode (if the ports are on DS1 and DS3 interface circuit packs and a QRSS source has been provisioned for the system) or to the IDLE mode. For VT1.5, STS-1, and DS3 SPLTF test access, the output mode of

the E-End output port, along with any other output ports the F-End is transmitting to, is automatically set to the IDLE mode sending-path AIS.

### **16.3.5 SPLTEF Mode**

The SPLTEF mode (Figure 38) of test access splits both directions of a two-way cross-connection to allow testing at both the E-End and the F-End. This mode of test access requires two TAPs. The incoming signal in the A direction goes to the input of TAP-1 and the output of TAP-1 is sent in the B direction. The incoming signal in the B direction goes to the input of TAP-2 and the output of TAP-2 is sent in the A direction.

## **16.4 Loopback Test Access Connections**

### **16.4.1 LOOPE Mode**

The LOOPE mode (Figure 39) of test access establishes a terminal loopback on the E-End port and monitors the loopback signal. It reads the incoming signal in the A direction.

For DS1 LOOPE test access, the output mode of the F-End output port, along with any other output ports the E-End is transmitting to, is automatically set to the QRSS mode (if the ports are on DS1 and DS3 interface circuit packs and a QRSS source has been provisioned for the system) or to the IDLE mode. For VT1.5, STS-1, and DS3 LOOPE test access, the output mode of the F-End output port, along with any other output ports the E-End is transmitting to, is automatically set to the IDLE mode sending-path AIS.

### **16.4.2 LOOPF Mode**

The LOOPF mode (Figure 40) of test access establishes a terminal loopback on the F-End port and monitors the loopback signal. It reads the incoming signal in the B direction.

For DS1 LOOPF test access, the output mode of the E-End output port, along with any other output ports the F-End is transmitting to, is automatically set to the QRSS mode (if the ports are on DS1 and DS3 interface circuit packs and a QRSS source has been provisioned for the system) or to the IDLE mode. For VT1.5, STS-1, and DS3 LOOPF test access, the output mode of the E-End output port, along with any other output ports the F-End is transmitting to, is automatically set to the IDLE mode sending-path AIS.

## **17. Performance Monitoring**

### **17.1 DS1 Performance Monitoring Parameters**

See Tables R, S, T, U, V and W.

### **17.2 Maximum Allowable PMGR Circuit Packs**

See Table X.

### **17.3 DS3 Performance Monitoring Parameters**

See Table Y.

### **17.4 SONET Performance Monitoring Parameters**

See Tables Z and AA.

**List of Tables**

**Table A: Fuse Chart for Switch Bays (Bays 11 and 13)**

Switch Power Module PWRJ Circuit Pack						
SW PWR						
Module	PWRJ-1	PWRJ-2	PWRJ-3	PWRJ-4	PWRJ-5	PWRJ-6
3	AD2	BD2	AD3	BD3	AD4	BD4
2	AC2	BC2	AC3	BC3	AC4	BC4
1	AB2	BB2	AB3	BB3	AB4	BB4
MEM Module PWRG Circuit Packs				Fan Assemblies		
PWR Circuit Pack	Fuse		Bay	Main	Auxilia	
PWRG-1	AA2		11	AA4	BA4	
PWRG-2	BA2		12	AA6	BA6	
			13	AA5	BA5	

Note: All load fuses for the PWRJ circuit packs are 20 A and load fuses for PWRG circuit packs and fan assemblies are 10 A. All indicator fuses are 0.5 A.

**Table B: Fuse Chart for Fuse and Alarm Bays (Bay 5, 10, 14, and 19)**

Shelf	PWR Circuit Pack	Fuse Panel in Bay 5				Fuse Panel in Bay 10			
		Bay 1	Bay 2	Bay 3	Bay 4	Bay 6	Bay 7	Bay 8	Bay 9
4	PWRE-2	BD2	BC3	BD4	BC5	BD2	BC3	BD4	BC5
	PWRE-1	AD2	AC3	AD4	AC5	AD2	AC3	AD4	AC5
3	PWRE-2	BC2	BD3	BC4	BD5	BC2	BD3	BC4	BD5
	PWRE-1	AC2	AD3	AC4	AD5	AC2	AD3	AC4	AD5
2	PWRE-2	BB2	BA3	BB4	BA5	BB2	BA3	BB4	BA5
	PWRE-1	AB2	AA3	AB4	AA5	AB2	AA3	AB4	AA5
1	PWRE-2	BA2	BB3	BA4	BB5	BA2	BB3	BA4	BB5
	PWRE-1	AA2	AB3	AA4	AB5	AA2	AB3	AA4	AB5
Fan	Main	AD6	AC6	AB6	AA6	AD6	AC6	AB6	AA6
	Auxiliary	BD6	BC6	BB6	BA6	BD6	BC6	BB6	BA6
Shelf	PWR Circuit Pack	Fuse Panel in Bay 14				Fuse Panel in Bay 19			
		Bay 15	Bay 16	Bay 17	Bay 18	Bay 20	Bay 21	Bay 22	Bay 23
4	PWRE-2	BC5	BD4	BC3	BD2	BC5	BD4	BC3	BD2
	PWRE-1	AC5	AD4	AC3	AD2	AC5	AD4	AC3	AD2
3	PWRE-2	BD5	BC4	BD3	BC2	BD5	BC4	BD3	BC2
	PWRE-1	AD5	AC4	AD3	AC2	AD5	AC4	AD3	AC2
2	PWRE-2	BA5	BB4	BA3	BB2	BA5	BB4	BA3	BB2
	PWRE-1	AA5	AB4	AA3	AB2	AA5	AB4	AA3	AB2
1	PWRE-2	BB5	BA4	BB3	BA2	BB5	BA4	BB3	BA2
	PWRE-1	AB5	AA4	AB3	AA2	AB5	AA4	AB3	AA2
Fan	Main	AA6	AB6	AC6	AD6	AA6	AB6	AC6	AD6
	Auxiliary	BA6	BB6	BC6	BD6	BA6	BB6	BC6	BD6

Note: All load fuses are 10 A and all indicator fuses are 0.5 A.

**Table C: Fuse Chart Remote Complex Interface Bays (Bays 1-4 and 6-9)**

Shelf	PWR Circuit Pack	Bay 1	Bay 2	Bay 3	Bay 4	Bay 6	Bay 7	Bay 8	Bay 9
Standard Power (ED-2C940-30 Fuse Panel)									
4	PWRE-2	C17	D14	D4	D10	C12	D6	B15	C19
	PWRE-1	A17	C15	B4	C10	B12	B6	C8	A19
3	PWRE-2	D16	D13	C4	B10	D12	C6	B8	D18
	PWRE-1	A16	A14	A4	A10	A12	A6	A8	C18
2	PWRE-2	B18	C14	D3	C9	D11	D5	C7	D19
	PWRE-1	A15	B17	C3	B9	B11	C5	B7	A18
1	PWRE-2	D15	C13	B3	D9	C11	B5	D7	D17
	PWRE-1	C16	A13	A3	A9	A11	A5	A7	B19
Fan	Main		A16	B18	A17	C19	D17	D19	
	Auxiliary		D16	D15	C17	C19	D17	D19	

Note: All load fuses are 10A and all indicator fuses are 0.5A.

Duplex Power (ED-9C114-30 Fuse Panel)

4	PWRE-2	F4	D14	D4	D10	D12	D6	D17	F8
	PWRE-1	E4	B14	B4	B10	B12	B6	B8	E8
3	PWRE-2	F3	C14	C4	C10	C12	C6	C8	F7
	PWRE-1	E3	A14	A4	A10	A12	A6	A8	E7
2	PWRE-2	D15	D13	D3	D9	D11	D5	D7	D18
	PWRE-1	B15	B13	B3	B9	B11	B5	B7	B18
1	PWRE-2	F2	C13	C3	C9	C11	C5	C7	F6
	PWRE-1	E2	A13	A3	A9	A11	A5	A7	E6
Fan	Main	E1	A15	A16	B16	B19	A19	A18	E5
	Auxiliary	F1	C15	C16	D16	D19	C19	C18	F5

Note: All fuses are 10A with a red alarm lamp to indicate failure.

**Table D: Fuse Chart OPEX Bay (Bay 5)**

Standard Power (ED-2C940-30 Fuse Panel)							
Auxiliary Power PWRE		OPEX Power PWRA				Fan Assembly	
1	2	1	2	3	4	Main	Auxiliary
B14	D8	A2	B2	C2	D2	E6	B13-2

Note: Fuses A2-1, B2-1, C2-1, and D2-1 are 12A and fuses B14-1 and D8-1 are 10A. Fuses A2-2, B2-2, B14-2, C2-2, D2-2, and D8-2 (indicator fuses) are 0.5A. The fan assembly fuses E6 and B13-2 are indicator fuses rated at 5A.

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Duplex Power (ED-9C114-30 Fuse Panel)							
Auxiliary Power PWRE		OPEX Power PWRA				Fan Assembly	
1	2	1	2	3	4	Main	Auxiliary
B14	D8	A2	B2	C2	D2	A17	C17

RUI Power Module PWRF Circuit Packs	Header Designation Assembly Fuse	
PWR Circuit	Fuse	
PWRF-1	A1	D1
	C1	

Note: Fuses A1, A2, B2, C1, C2, and D2 are 12A, fuses B14 and D8 are 10A, fuses A17 and C17 are 5A, and fuse D1 is 2A. All fuses have a red alarm lamp to indicate failure.

**Table E: Secondary Fuse Chart for SW PWR MOD 1 (Bottom of Bay 12)**

Type 77H (4A), Type 77J (7.5A), and Type 77E (15A) Fuses for +5V Supply				
Location	FBK-1	FBK-2	FBK-3	FBK-4
P	SWIO-1-14 (77J)	PWRJ-1-1 [2] (SNSEPAX)	NC (77J)	NC (77E)
N	SWIO-1-13 (77J)	PWRJ-1-2 [2] (SNSEPBX)	NC (77J)	NC (77H)
M (77H)	SWIO-1-12 (77J)	SWIO-1-16 (77J)	SWIO-3-16 (77J)	+5V STPNL [3]
L	SWIO-1-11 (77J)	SWIO-1-15 (77J)	SWIO-3-15 (77J)	+5V LED[1] (77H)
K	SWIO-1-10 (77J)	+5V SYNC-0 (77J)	SWIO-3-14 (77J)	MTC-0-2 (77J)
J	SWIO-1-9 (77J)	NC (77J)	SWIO-3-13 (77J)	MTC-0-1 (77J)
H	SWIO-1-8 (77J)	NC (77J)	SWIO-3-12 (77J)	UI-0 (77E)
G	SWIO-1-7 (77J)	NC (77J)	SWIO-3-11 (77J)	SCI-0-2 (77E)
F	SWIO-1-6 (77J)	SWIO-3-6 (77J)	SWIO-3-10 (77J)	SCI-0-1 (77E)
E	SWIO-1-5 (77J)	SWIO-3-5 (77J)	SWIO-3-9 (77J)	CPU-0 (77J)
D	SWIO-1-4 (77J)	SWIO-3-4 (77J)	SWIO-3-8 (77J)	SSC-0 (77J)
C	SWIO-1-3 (77J)	SWIO-3-3 (77J)	SWIO-3-7 (77J)	ECI-1 (77E)
B	SWIO-1-2 (77J)	SWIO-3-2 (77J)	NC (77J)	PWRJ-1-6 [2] (SNSEPBY)
A	SWIO-1-1 (77J)	SWIO-3-1 (77J)	NC (77J)	PWRJ-1-5 [2] (SNSEPAZ)
Type 78H (4A) Fuses for -5V Supply				
Location	FBM-1	FBM-2	FBM-3	
P	SWIO-1-14 (78H)	NC (78H)	NC (78H)	
N	SWIO-1-13 (78H)	NC (78H)	NC (78H)	
M	SWIO-1-12 (78H)	SWIO-1-16 (78H)	SWIO-3-16 (78H)	
L	SWIO-1-11 (78H)	SWIO-1-15 (78H)	SWIO-3-15 (78H)	
K	SWIO-1-10 (78H)	-5V SYNC-0 (78H)	SWIO-3-14 (78H)	
J	SWIO-1-9 (78H)	NC (78H)	SWIO-3-13 (78H)	
H	SWIO-1-8 (78H)	NC (78H)	SWIO-3-12 (78H)	
G	SWIO-1-7 (78H)	NC (78H)	SWIO-3-11 (78H)	
F	SWIO-1-6 (78H)	SWIO-3-6 (78H)	SWIO-3-10 (78H)	
E	SWIO-1-5 (78H)	SWIO-3-5 (78H)	SWIO-3-9 (78H)	
D	SWIO-1-4 (78H)	SWIO-3-4 (78H)	SWIO-3-8 (78H)	
C	SWIO-1-3 (78H)	SWIO-3-3 (78H)	SWIO-3-7 (78H)	
B	SWIO-1-2 (78H)	SWIO-3-2 (78H)	PWRJ-1-4 [2] (SNSEPBY)	

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A	SWIO-1-1 (78H)	SWIO-3-1 (78H)	PWRJ-1-3 [2] (SNSEPAY)
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[1] Provides fused power to LEDs of CC-0 circuit packs

[2] Power sensory strap (does not carry load voltages, only sensory voltages). These straps must not be extracted. The sensory straps are provided by a Type 77H fuse.

[3] CC-0 status panel fuse

NC - Not Connected (Spare)

**Table F: Secondary Fuse Chart for SW PWR MOD 2 (Middle of Bay 12)**

Type 77H (4A) and Type 77J (7.5A) Fuses for +5V Supply				
Location	FBK-1	FBK-2	FBK-3	FBK-4
P	SWCS-1-13 (77J)	PWRJ-2-1 [2] (SNSEPAK)	PRI-1 (77H)	NC (77J)
N	SWCS-1-12 (77J)	PWRJ-2-2 [2] (SNSEPBZ)	SEC (77H)	NC (77J)
M	SWCS-1-11 (77J)	SWCS-1-16 (77J)	NC (77H)	NC (77J)
L	SWCS-1-10 (77J)	SWCS-1-15 (77J)	SWCS-2-16 (77J)	NC (77J)
K	SWCS-1-9 (77J)	SWCS-1-14 (77J)	SWCS-2-15 (77J)	NC (77J)
J	SWCS-1-8 (77J)	NC (77H)	SWCS-2-14 (77J)	NC (77J)
H	SWCS-1-7 (77J)	SWCS-2-7 (77J)	SWCS-2-13 (77J)	NC (77J)
G	SWCS-1-6 (77J)	SWCS-2-6 (77J)	SWCS-2-12 (77J)	NC (77J)
F	SWCS-1-5 (77J)	SWCS-2-5 (77J)	SWCS-2-11 (77J)	NC (77J)
E	SWCS-1-4 (77J)	SWCS-2-4 (77J)	SWCS-2-10 (77J)	NC (77J)
D	SWCS-1-3 (77J)	SWCS-2-3 (77J)	SWCS-2-9 (77J)	NC (77H)
C	SWCS-1-2 (77J)	SWCS-2-2 (77J)	SWCS-2-8 (77J)	NC (77H)
B	SWCS-1-1 (77J)	SWCS-2-1 (77J)	+5V LED[1] (77H)	PWRJ-2-6 [2] (SNSEPBZ)
A	CLKGN-0 (77H)	CLKGN-1 (77H)	PRI-2 (77H)	PWRJ-2-5 [2] (SNSEPAZ)
Type 78H (4A) and Type 78E (15A) Fuses for -5V Supply				
Location	FBM-1	FBM-2	FBM-3	
P	SWCS-1-13 (78H)	NC (78E)	NC (78H)	
N	SWCS-1-12 (78H)	NC (78H)	NC (78H)	
M	SWCS-1-11 (78H)	SWCS-1-16 (78H)	NC (78H)	
L	SWCS-1-10 (78H)	SWCS-1-15 (78H)	SWCS-2-16 (78H)	
K	SWCS-1-9 (78H)	SWCS-1-14 (78H)	SWCS-2-15 (78H)	
J	SWCS-1-8 (78H)	NC (78H)	SWCS-2-14 (78H)	
H	SWCS-1-7 (78H)	SWCS-2-7 (78H)	SWCS-2-13 (78H)	
G	SWCS-1-6 (78H)	SWCS-2-6 (78H)	SWCS-2-12 (78H)	
F	SWCS-1-5 (78H)	SWCS-2-5 (78H)	SWCS-2-11 (78H)	
E	SWCS-1-4 (78H)	SWCS-2-4 (78H)	SWCS-2-10 (78H)	
D	SWCS-1-3 (78H)	SWCS-2-3 (78H)	SWCS-2-9 (78H)	
C	SWCS-1-2 (78H)	SWCS-2-2 (78H)	SWCS-2-8 (78H)	
B	SWCS-1-1 (78H)	SWCS-2-1 (78H)	PWRJ-2-4 [2] (SNSEPBZ)	
A	CLKGN-0 (78E)	CLKGN-1 (78E)	PWRJ-2-3 [2] (SNSEPAY)	

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- [1] Provides fused power to LEDs of Memory Module circuit packs
  - [2] Power sensory strap (does not carry load voltages, only sensory voltages). These straps must not be extracted. The sensory straps are provided by a Type 77H fuse.
- NC - Not Connected (Spare)

**Table G: Secondary Fuse Chart for SW PWR MOD 3 (Top of Bay 12)**

Type 77H (4A), Type 77J (7.5A), and Type 77E (15A) Fuses for +5V Supply				
Location	FBK-1	FBK-2	FBK-3	FBK-4
P	SWIO-2-14 (77J)	PWRJ-3-1 [2] (SNSEPAK)	NC (77J)	NC (77E)
N	SWIO-2-13 (77J)	PWRJ-3-2 [2] (SNSEPBZ)	NC (77J)	NC (77H)
M (77H)	SWIO-2-12 (77J)	SWIO-2-16 (77J)	SWIO-4-16 (77J)	+5V STPNL [3]
L	SWIO-2-11 (77J)	SWIO-2-15 (77J)	SWIO-4-15 (77J)	+5V LED[1] (77H)
K	SWIO-2-10 (77J)	+5V SYNC-1 (77J)	SWIO-4-14 (77J)	MTC-1-2 (77J)
J	SWIO-2-9 (77J)	NC (77J)	SWIO-4-13 (77J)	MTC-1-1 (77J)
H	SWIO-2-8 (77J)	NC (77J)	SWIO-4-12 (77J)	UI-1 (77E)
G	SWIO-2-7 (77J)	NC (77J)	SWIO-4-11 (77J)	SCI-1-2 (77E)
F	SWIO-2-6 (77J)	SWIO-4-6 (77J)	SWIO-4-10 (77J)	SCI-1-1 (77E)
E	SWIO-2-5 (77J)	SWIO-4-5 (77J)	SWIO-4-9 (77J)	CPU-1 (77J)
D	SWIO-2-4 (77J)	SWIO-4-4 (77J)	SWIO-4-8 (77J)	SSC-1 (77J)
C	SWIO-2-3 (77J)	SWIO-4-3 (77J)	SWIO-4-7 (77J)	ECI-2 (77E)
B	SWIO-2-2 (77J)	SWIO-4-2 (77J)	NC (77J)	PWRJ-3-6 [2] (SNSEPBZ)
A	SWIO-2-1 (77J)	SWIO-4-1 (77J)	NC (77J)	PWRJ-3-5 [2] (SNSEPAZ)
Type 78H (4A) Fuses for -5V Supply				
Location	FBM-1	FBM-2	FBM-3	
P	SWIO-2-14 (78H)	NC (78H)	NC (78H)	
N	SWIO-2-13 (78H)	NC (78H)	NC (78H)	
M	SWIO-2-12 (78H)	SWIO-2-16 (78H)	SWIO-4-16 (78H)	
L	SWIO-2-11 (78H)	SWIO-2-15 (78H) -5V	SWIO-4-15 (78H)	
K	SWIO-2-10 (78H)	SYNC-1 (78H)	SWIO-4-14 (78H)	
J	SWIO-2-9 (78H)	NC (78H)	SWIO-4-13 (78H)	
H	SWIO-2-8 (78H)	NC (78H)	SWIO-4-12 (78H)	
G	SWIO-2-7 (78H)	NC (78H)	SWIO-4-11 (78H)	
F	SWIO-2-6 (78H)	SWIO-4-6 (78H)	SWIO-4-10 (78H)	
E	SWIO-2-5 (78H)	SWIO-4-5 (78H)	SWIO-4-9 (78H)	
D	SWIO-2-4 (78H)	SWIO-4-4 (78H)	SWIO-4-8 (78H)	
C	SWIO-2-3 (78H)	SWIO-4-3 (78H)	SWIO-4-7 (78H)	
B	SWIO-2-2 (78H)	SWIO-4-2 (78H)	PWRJ-3-4 [2] (SNSEPBZ)	
A	SWIO-2-1 (78H)	SWIO-4-1 (78H)	PWRJ-3-3 [2] (SNSEPAY)	

- 
- [1] Provides fused power to LEDs of CC-1 circuit packs
  - [2] Power sensory strap (does not carry load voltages, only sensory voltages). These straps must not be extracted.
  - [3] CC-1 status panel fuse
- NC - Not Connected (Spare)

Table H: Secondary Fuse Chart for Remote Complex

Type 77D (10A) Fuse for +5V Supply					
Location	FBA	FBB-1	FBB-2	FBB-3	FBB-4
P	OPEX-11	NA	NA	OPEX-21	NA
N	OPEX-10	NA	NA	OPEX-20	NA
M	OPEX-9	NA	NA	OPEX-19	OPEX-32
L	NA	NA	NA	OPEX-18	OPEX-31
K	OPEX-8	NA	NA	OPEX-17	OPEX-30
J	OPEX-7	NA	NA	NA	OPEX-29
H	OPEX-6	NA	NA	NA	OPEX-28
G	OPEX-5	NA	NA	NA	OPEX-27
F	OPEX-4	NA	NA	NA	OPEX-26
E	OPEX-3	OPEX-16	NA	NA	OPEX-25
D	OPEX-2	OPEX-15	NA	NA	CLKGN
C	OPEX-1	OPEX-14	NA	NA	OPEX-24
B	-	OPEX-13	NA	NA	OPEX-23
A	-	OPEX-12	NA	NA	OPEX-22
Type 78J (7.5A) Fuse for -5V Supply					
Location	FBC	FBD-1	FBD-2	FBD-3	FBD-4
P	OPEX-11	NA	NA	OPEX-21	NA
N	OPEX-10	NA	NA	OPEX-20	NA
M	OPEX-9	NA	NA	OPEX-19	OPEX-32
L	NA	NA	NA	OPEX-18	OPEX-31
K	OPEX-8	NA	NA	OPEX-17	OPEX-30
J	OPEX-7	NA	NA	NA	OPEX-29
H	OPEX-6	NA	NA	NA	OPEX-28
G	OPEX-5	NA	NA	NA	OPEX-27
F	OPEX-4	NA	NA	NA	OPEX-26
E	OPEX-3	OPEX-16	NA	NA	OPEX-25
D	OPEX-2	OPEX-15	NA	NA	CLKGN
C	OPEX-1	OPEX-14	NA	NA	OPEX-24
B	-	OPEX-13	NA	NA	OPEX-23
A	-	OPEX-12	NA	NA	OPEX-22

OPEX circuit pack physical locations are mapped into software as follows:  
 OPEX-{1-16} to OPEX-{1,3}-{1-16} and OPEX-{17-32} to OPEX-{2,4}-{1-16}.

**Table I: DS1 Interface-Protection Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	2
DS1RY1	AKM48	4
DS1IP1	AKM47	2
DS1IF1	AKM46	2
SWIF1/SWIF2	AKM49/AKM50	2
BXA1	AKM64	19
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote)	ERA4 ERY1/ERW3	2 or 2/2
PWRE3	556C	2

Note: PMGR circuit packs (AKM66), when used, replace SWIF circuit packs associated with interface groups (not the protection group). Refer to Table [REF. 1] for maximum allowable PMGR circuit packs. BXA circuit packs must be inserted into unused interface group circuit pack (DS1IF and SWIF) slots and the slot between CLKDR-1 and SWIF-2 only, and must not be inserted in any other circuit pack slot (for example, DS1RY slots must never contain BXA circuit packs).

[REF. 1] X

**Table J: DS1 Interface Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	2
DS1RY1	AKM48	4
DS1IF1	AKM46	2
SWIF1/SWIF2	AKM49/AKM50	1
BXA1	AKM64	22
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote	ERA4 ERY1/ERW3	2 or 2/2
PWRE3	556C	2

Note: PMGR circuit packs (AKM66), when used, replace SWIF circuit packs. Refer to Table [REF. 1] for maximum allowable PMGR circuit packs. BXA circuit packs must be inserted into unused interface group circuit pack (DS1IF and SWIF) slots and the slot between CLKDR-1 and SWIF-2 only, and must not be inserted in any other circuit pack slot (for example, DS1RY slots must never contain BXA circuit packs).

[REF. 1] X

**Table K: DS3 Interface-32 Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	4
MUXPS1	AKM53	1
MUXP1/MUXP2	AKM55/AKM70	1
MUX1/MUX2	AKM52/AKM68B	1
BXA1	AKM64	31
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote Complex)	ERA4 ERY1/ERW3	4 or 4/4
PWRE3	556C	2

Note: PMGR circuit packs (AKM66), when used, replace MUX1/MUX2 circuit packs. Refer to Table [REF. 1] for maximum allowable PMGR circuit packs. BXA circuit packs must be inserted into unused MUX or DS3PM2 circuit pack slots only, and must not be inserted in any other circuit pack slot (for example, MUXPS slots must never contain BXA circuit packs). An optional DS3PM2 circuit pack (AKM89) can be used in any collocated DS3 Interface-32 Module. Interface modules ordered without the DS3PM2 circuit pack come with a BXA circuit pack in the DS3PM2 slot.

[REF. 1] X

**Table L: DS3 Interface-16 Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	2
MUXPS1	AKM53	1
MUXP1/MUXP2	AKM55/AKM70	1
MUX1/MUX2	AKM52/AKM68B	1
BXA1	AKM64	15
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote Complex)	ERA4 ERY1/ERW3	2 or 2/2
PWRE3	556C	2

Note: PMGR circuit packs (AKM66), when used, replace MUX1/MUX2 circuit packs. Refer to Table [REF. 1] for maximum allowable PMGR circuit packs. BXA circuit packs must be inserted into unused MUX or DS3PM2 circuit pack slots only, and must not be inserted in any other circuit pack slot (for example, MUXPS slots must never contain BXA circuit packs). An optional DS3PM2 circuit pack (AKM89) can be used in any collocated DS3 Interface-16 Module. Interface modules ordered without the DS3PM2 circuit pack come with a BXA circuit pack in the DS3PM2 slot.

[REF. 1] X

**Table M: Enhanced DS3 Interface-16 Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	2
MUXPS1	AKM53	1
MUXP3	AKM92	1
MUX2/MUX3	AKM68B/AKM91	1
BXA1	AKM64	15
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote Complex)	ERA4 ERY1/ERW32/2	2 or
PWRE3	556C	2

Note: BXA circuit packs must be inserted into unused MUX or DS3PM2 circuit pack slots only, and must not be inserted in any other circuit pack slot (for example, MUXPS slots must never contain BXA circuit packs). PMGR circuit packs are not allowed in Enhanced DS3 Interface-16 Modules. An optional DS3PM2 circuit pack (AKM89) can be used in any collocated Enhanced DS3 Interface-16 Module. Interface modules ordered without the DS3PM2 circuit pack come with a BXA circuit pack in the DS3PM2 slot.

**Table N: DS3 Clear-Channel Interface-16 Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AKM88 AKM88B	1 or 1
CLKDR2	AKM90	2
MUXPS1	AKM53	1
MUXP3	AKM9	1
MUX3	AKM91	1
BXA1	AKM64	15
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote Complex)	ERA4 ERY1/ERW3	2 2/2
PWRE3	556C	2

Note: BXA circuit packs must be inserted into unused MUX or DS3PM2 circuit pack slots only, and must not be inserted in any other circuit pack slot (for example, MUXPS slots must never contain BXA circuit packs). PMGR circuit packs are not allowed in DS3 Clear-Channel Interface-16 Modules. An optional DS3PM2 circuit pack (AKM89) can be used in any collocated DS3 Clear-Channel Interface-16 Module. Interface modules ordered without the DS3PM2 circuit pack come with a BXA circuit pack in the DS3PM2 slot.

**Table O: STS1 Interface-16 Module Minimum Equipage**

Functional Name	Circuit Pack Code	Minimum Quantity
UC4 (collocated) or UC4B (Remote Complex)	AMK88	1 or
	AKM88B	1
CLKDR2	AKM90	2
MUXPS1	AKM53	1
SMUXP1	AKM85	1
SMUX1	AKM84	1
BXA1	AKM64	15
SWIO2 (collocated) or OSWIO1/OPEX1 (Remote Complex)	ERA4	2 or
	ERY1/ERW3	2/2
PWRE3	556C	2

Note: BXA circuit packs must be inserted into unused SMUX circuit pack slots only, and must not be inserted in any other circuit pack slot (for example, MUXPS slots must never contain BXA circuit packs).

**Table P: Provisioning Sequence for Switch Complex and Collocated Interface Bays**

Entity	Number of Circuit Packs Required	Supporting Entity
CC[1]	2	none
PRI [2]	2	none
SEC	1	none
SYNC	2	none
CLKGN (Auto provisionable)	2	none or SYNC [8]
ECI [2]	2	CC
SWCS [7]	32	CLKGN, CC
SWIO/OSWIO [3]	2	SWCS
UNIT[5]	1	SWIO
DS3PM	1	UNIT
CLKDR [3]	2 or 4[4]	UNIT, SWIO
PMGR[9]	1	CLKDR
MUXP	1	CLKDR
MUX	1	MUXP
SMUXP	1	CLKDR
SMUX	1	SMUXP
DS1RY	1	UNIT
SWIF-P	1	CLKDR
SWIF	1	SWIF-P
DS1IP	1	SWIF-P, DS1RY
DS1IF	2	SWIF, DS1IP[6]

[1] Must be in-service as a group (CPU, MTC (slot 1), MTC (slot 2), SCI (slot 1), SCI (slot 2), SSC, UI/OUI). If a remote complex is to be provisioned, the circuit pack occupying the UI slot(s) must be an OUI circuit pack. If both controller sides are not in-service, an alarm is raised.

[2] If one or both ECI circuit packs, one or both PRI disk drives, or the SEC are not in-service, one or more alarms are raised.

[3] Must be provisioned in pairs. If a remote complex is to be provisioned, the circuit packs occupying the SWIO slots must be OSWIO circuit packs.

[4] Depending on the type of interface module.

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- [5] DS1 Interface Module requires supporting DS1 Interface-Protection Module.
- [6] The supporting DS1IP circuit pack can be in another DS1 Interface Module.
- [7] Thirty-two SWCS circuit packs are assumed to be present and are therefore required before any interface module provisioning can take place.
- [8] SYNC is required if SMUX circuit pack is present or if MUX3 circuit pack is provisioned for gateway cross-connect.
- [9] PMGR is not supported in Enhanced DS3-16, Enhanced DS3-32, DS3-16 Clear-Channel, and DS3-32 Clear-Channel Interface Modules.

**Table Q: Provisioning Sequence for Remote Complexes**

Entity	Number of Circuit Packs Required	Supporting Entity
RX[1]	1	Switch Complex Dependency
RUI [2]	1	RX
OPEX [3]	2	OSWIO
UNIT[5]	1	OPEX
CLKDR [7]	2 or 4[4]	UNIT, OSWIO/OPEX
PMGR [7]	1	CLKDR
MUXP	1	CLKDR
MUX	1	MUXP
SMUXP	1	CLKDR
SMUX	1	SMUXP
DS1RY	1	UNIT
SWIF-P	1	CLKDR
SWIF	1	SWIF-P
DS1IP	1	SWIF-P, DS1RY
DS1IF	2	SWIF, DS1IP[6]

[1] The RX can be provisioned into the database only if the following Switch Complex criteria have been met: OUI circuit packs in place of UI circuit packs and new PWRJ (568B) circuit packs in place of PWRJ (568A) circuit packs in Switch Power Modules 1 and 3. Also the circuit packs occupying the SWIO slots must be OSWIO circuit packs.

[2] Must be provisioned as a group (RUIA, RUIB, RSCI, RCLKGN).

[3] Must be provisioned in pairs.

[4] Depending on the type of interface module.

[5] DS1 Interface Module requires supporting DS1 Interface-Protection Module.

[6] The supporting DS1IP circuit pack can be in another DS1 Interface Module.

[7] PMGR is not supported in Enhanced DS3-16, Enhanced DS3-32, DS3-16 Clear-Channel, and DS3-32 Clear-Channel Interface Modules.

**Table R: DS1 Performance Parameters**

Parameter	Definition	Parameter	Definition
CVP	Path Code Violation	CVL	Line Code Violations
OOFS	Out-of-Frame Second	ESL	Line Errored Seconds
ESP	Path Errored Seconds	SESL	Line Severely Errored Seconds
BESP	Path Bursty Errored Seconds	SEFS	Severely Errored Frame Seconds
SESP	Path Severely Errored Seconds	CSS	Controlled Slipped Seconds
UAS	Unavailable Seconds		

**Table S: DS1 Performance Monitored Parameters**

Location	Monitored Parameter	Full-Time			Camp-On			Scan		
		ESF	SF	UNF	ESF	SF	UNF	ESF	SF	UNF
Near-End	CVL	*	*	*	*	*	*	*	*	-
	ESL	*	*	*	*	*	*	*	*	-
	SESL	*	*	*	*	*	*	*	*	-
	CVP	*	*	-	*	*	-	*	*	-
	ESP	*	*	-	*	*	-	*	*	-
	BESP	*	*	-	*	*	-	-	-	-
	SESP	*	*	-	*	*	-	*	*	-
	OOFs	*	*	-	*	*	-	*	*	-
	UAS	*	-	-	*	-	-	-	-	-
CSS	*	-	-	-	-	-	-	-	-	
Far-End	SEFS	*	-	-	*	-	-	*	-	-
	ESP	*	-	-	*	-	-	*	-	-
	SESP	*	-	-	*	-	-	*	-	-
	CVP	*	-	-	*	-	-	-	-	-
	BESP	*	-	-	*	-	-	-	-	-
	UAS	*	-	-	*	-	-	-	-	-
	CSS	*	-	-	-	-	-	-	-	-

Note: \* denotes parameter being monitored for the given performance monitoring option and line format.

**Table T: Default Thresholds for Full-Time, Camp-On, and Line DS1 Performance Monitoring**

Monitored Parameters		DS1 Framing Format							
		Extended Super Frame							
		Far-End[1]		Near-End		Super Frame		Unframed	
15 Min and Hourly		Daily	15 Min and Hourly		Daily	15 Min and Hourly		Daily	
Full Time (SWIF2/MUX3 Based) and Camp-on (PMGR Based)									
CVP	53184	132960	53184	132960	6615	16540	-	-	-
ESP	259	648	259	648	38	95	-	-	-
BESP	100	6000	100	600	19	90	-	-	-
SESP	40	100	40	100	11	27	-	-	-
Oofs	-	-	7	17	7	17	-	-	-
UAS	10	10	10	10	10	10	-	-	-
SEFS	7	17	-	-	-	-	-	-	-
CSS[3]	7	17	7	17	-	-	-	-	-
Line (DS1IF Based)									
CVL[2]	-	-	53360	133400	53360	133400	53360	133400	133400
ESL[2]	-	-	259	648	259	648	259	648	648
SESL[2]	-	-	40	100	40	100	40	100	100

DM (degraded minutes) is no longer supported as of DACS IV-2000 (512) Release 5.0.

[1] Far-end parameters are only applicable to Extended Super Frame (ESF) DS1 signals with ports provisioned for FENDNTE = ANSI.

[2] Only applicable for DS1 signals terminating on DS1Interface Modules.

[3] CSS (Controlled Slipped Seconds) was formerly known as SLS (Slipped Seconds).

**Table U: Default Thresholds for Scan (PMGR Based) DS1 Performance Monitoring**

Monitored Parameter	DS1 Framing Format					
	Extended Super Frame					
	Far-End[1]		Near-End		Super Frame	
	15 Min and Hourly	Daily	15 Min and Hourly	Daily	15 Min and Hourly	Daily
CVP	-	-	1772	4432	177	443
ESP	8	21	8	21	1	3
SESP	1	3	1	3	1	3
OOFS	-	-	1	2	1	2
SEFS	1	2	-	-	-	-

[1] Far-end parameters are only applicable to Extended Super Frame (ESF) DS1 signals with ports provisioned for FENDNTE = ANSI.

**Table V: Threshold Value Ranges for Full-Time, Camp-On, and Line DS1 Performance Monitoring**

Monitored Parameter	Far-End[1]			Near-End		
	15 Min	Hourly	Daily	15 Min	Hourly	Daily
Full Time (SWIF2/MUX3 Based) and Camp-on (PMGR Based)						
CVP	0-2097152	0-8388608	0-134217728	0-2097152	0-8388608	0-134217728
ESP	0-900	0-3600	0-65535	0-900	0-3600	0-65535
BESP	0-900	0-3600	0-65535	0-900	0-3600	0-65535
SESP	0-900	0-3600	0-65535	0-900	0-3600	0-65535
Oofs	-	-	-	0-900	0-3600	0-65535
UAS	0-900	0-3600	0-65535	0-900	0-3600	0-65535
SEFS	0-900	0-3600	0-65535	-	-	-
CSS[3]	0-900	0-3600	0-65535	0-900	0-3600	0-65535
Line (DS1IF Based)						
CVL[2]	-	-	-	0-58981500	0-235926000	0-4294967295
ESL[2]	-	-	-	0-900	0-3600	0-65535
SESL[2]	-	-	-	0-900	0-3600	0-65535

DM (degraded minutes) is no longer supported as of DACS IV-2000 (512) Release 5.0.

[1] Far-end parameters are only applicable to Extended Super Frame (ESF) DS1 signals with ports provisioned for FENDNTE = ANSI.

[2] Only applicable for DS1 signals terminating on DS1Interface Modules.

[3] CSS (Controlled Slipped Seconds) was formerly known as SLS (Slipped Seconds).

**Table W: Threshold Value Ranges for Scan (PMGR Based) DS1 Performance Monitoring**

Monitored Parameter	Far-End[1]			Near-End		
	15 Min	Hourly	Daily	15 Min	Hourly	Daily
CVP[1]	-	-	-	0-65535	0-65535	0-65535
ESP	0-900	0-3600	0-65535	0-900	0-3600	0-85535
SESP	0-900	0-3600	0-65535	0-900	0-3600	0-85535
OOF5	-	-	-	0-900	0-3600	0-85535
SEFS[1]	0-900	0-3600	0-65535	-	-	-

[1] Far-end parameters are only applicable to Extended Super Frame (ESF) DS1 signals with ports provisioned for FENDNTE = ANSI.

**Table X: Maximum Allowable PMGR Circuit Packs per Interface Module**

Interface Module Type	Performance Monitoring Mode	
	Full-Time/Camp-On	Scan
DS3 Interface-32	16	0
	8	1
	2	2
DS3 Interface-16	15	0
	8	1
DS1 Interface	8	0
	7	1/0 [1]
DS1 Interface-Protection	7	0
	6	1/0 [2]

[1] Zero if there is a SCAN performance monitoring PMGR circuit pack in the associated DS1 Interface-Protection Module.

[2] Zero if there is a SCAN performance monitoring PMGR circuit pack in the associated DS1 Interface Module.

Table Y: Threshold Values for DS3 Performance Monitoring

Parameter Range	Interval		Current 1 Hour* and Last 24 1-Hour Intervals		Current Day and Last 7 Day Totals
	Default	Range	Default	Range	Default
PSET#1 (CB149)					
Number of Block Errors (BEC)* 0-811987200	4000	0-8458200	-	-	386500
Errored Seconds A (TPA) 0-65535	30	0-900	-	-	90
Errored Seconds B (TPB) 0-65535	30	0-900	-	-	90
Errored Seconds C (TPC) 0-65535	20	0-900	-	-	60
Out-of-Frame Seconds (OOFs) 0-65535	10	0-900	-	-	30
Unavailable Seconds (UAS) 0-65535	30	0-900	-	-	39
PSET#2 (TR820)					
Coding Violations (CVL/CVP) 0-611987200	4000	0-8458200	16100	0-33832800	386500
Errored Seconds (ESL/ESP) 0-65535	40	0-900	40	0-3600	90
Severely Errored Seconds (SESL/SESP) 0-65535	20	0-900	20	0-3600	60
Out-of-Frame Seconds (OOFs) 0-65535	10	0-900	10	0-3600	30
Unavailable Seconds (UAS) 0-65535	30	0-900	30	0-3600	90

\* Current hour is the sum of 15-minute intervals beginning on the hour and current day is the sum of hourly intervals beginning at midnight.

Table Z: STS-1 and VT1.5 Performance Monitored Parameters

Monitored Parameter	STS-1			VT1.5
	Section	Line	Path	Path
Near-End	Severely Errored Frame Seconds (SEFS)	*	-	-
	Loss-of-Signal Seconds (LOSS)	*	-	-
	Coding Violations (CV)	-	*	*
	Errored Seconds (ES)	-	*	*
	Errored Seconds A (ESA)	-	*	*
	Errored Seconds B (ESB)	-	*	*
	Severely Errored Seconds (SES)	-	*	*
	AIS Seconds (AISS)	-	*	-
	AIS/Loss-of-Pointer Seconds (ALS)	-	-	*
	Unavailable Seconds (UAS)	-	*	*
	Far-End	Coding Violations (CV)	-	-
Errored Seconds (ES)		-	-	*
Errored Seconds A (ESA)		-	-	*
Errored Seconds B (ESB)		--	-	*
Severely Errored Seconds (SES)		-	-	*
Unavailable Seconds (UAS)		-	-	*

Note: \* means monitoring is available for the parameter specified.

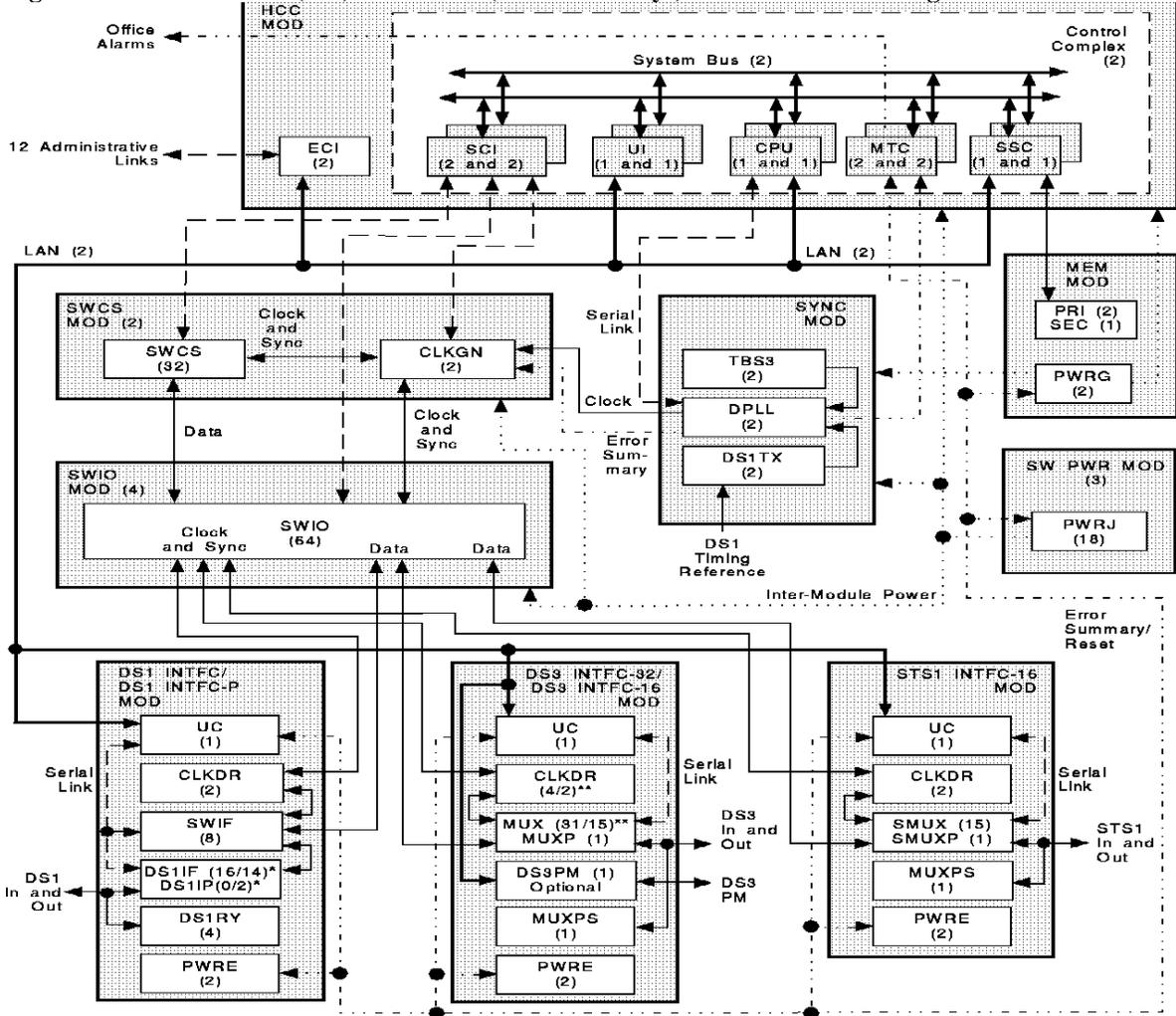
Table AA: Threshold Values for STS-1 and VT1.5 Performance Monitoring

Parameter Name	Accumulation Interval			
	15 Min		Day	
	Default	Range	Default	Range
STS-1 Section Performance Monitoring Parameters (Near-End)				
SEFS	10	0-900	100	0-86400
LOSS	10	0-900	100	0-86400
STS-1 Path and Line Performance Monitoring Parameters (Near-End)				
CV	4666	0-46660	447900	0-447900
ES	65	0-900	648	0-86400
ESA	65	0-900	648	0-86400
ESB	65	0-900	648	0-86400
SES	10	0-900	100	0-86400
AISS (line only)	10	0-900	100	0-86400
ALS (path only)	10	0-900	100	0-86400
UAS	10	0-900	100	0-86400
STS-1 Path Performance Monitoring Parameters (Far-End)				
CV	4666	0-46660	447900	0-447900
ES	65	0-900	648	0-86400
ESA	65	0-900	648	0-86400
ESB	65	0-900	648	0-86400
SES	10	0-900	100	0-86400
UAS	10	0-900	100	0-86400
VT1.5 Path Performance Monitoring (Near-End)				
CV	156	0-16383	14930	0-1048575
ES	65	0-900	648	0-86400
ESA	65	0-900	648	0-86400
ESB	65	0-900	648	0-86400
SES	10	0-900	100	0-86400
ALS	10	0-900	100	0-86400
UAS	10	0-900	10	0-86400



# List of Figures

Figure 1: DACS IV-2000 (512) Release 5.0 (Collocated Bays) Functional Block Diagram



**Notes:**

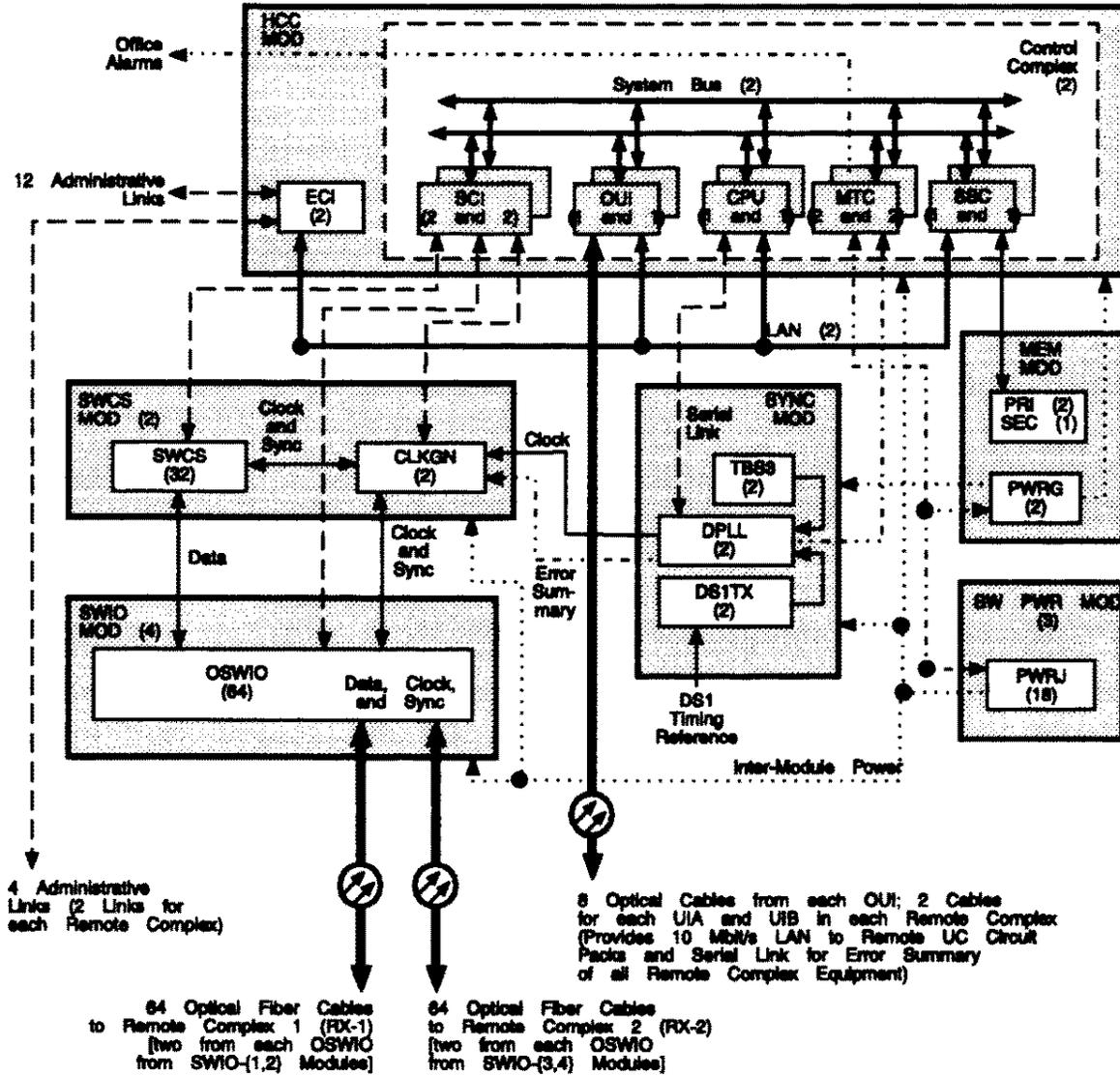
- Numbers in parentheses indicate the quantity of the specified entity.
- \* X/Y (X = DS1 INTFC, Y = DS1 INTFC-P)
- \*\* X/Y (X = DS3 INTFC-32, Y = DS3 INTFC-16)

**Legend:**

- Transmission/Data
- - - Control
- ..... Inter-Module Power
- Alarm/Reset/Error

Figure 2: DACS IV-2000 (512) Release 5.0 (Remote Complexes) Functional Block Diagram

Display 1



Notes:

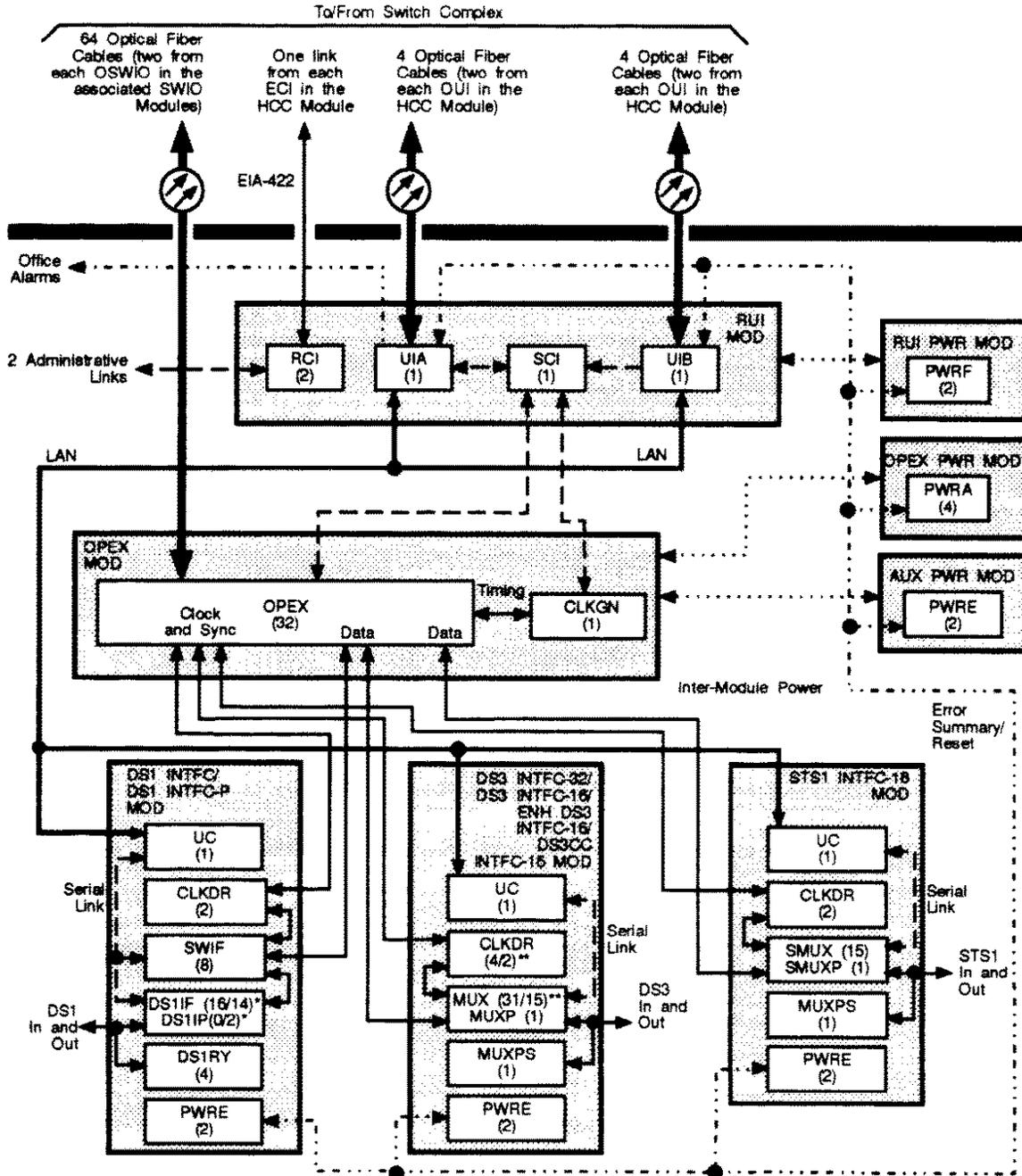
Numbers in parentheses indicate the quantity of the specified entity.

Legend:

- Transmission/Data
- - - Control
- ..... Inter-Module Power
- ..... Alarm/Reset/Error

Switch Complex

Display 2



Notes:

- Numbers in parentheses indicate the quantity of the specified entity.
- \* X/Y (X = DS1 INTFC, Y = DS1 INTFC-P)
- \*\* X/Y (X = DS3 INTFC-32, Y = DS3 INTFC-16)

Legend:

- Transmission/Data
- - - - Control
- ..... Inter-Module Power
- · - · - Alarm/Reset/Error

Remote Complex

**Figure 3: Physical Associations of Bays, Units, and Interbay Cables in a Maximum Configuration of DS3 or STS1 Interface-16 Modules (Collocat**

20 SWIO 2-{15,16} N-Rate AS (J-16) J-20	24 SWIO 2-{7,8} N-Rate AM (J-12) J-24	28 SWIO 1-{15,16} N-Rate AH (J-8) J-28	32 SWIO 1-{7,8} N-Rate AD (J-4) J-32							36 SWIO 3-{7,8} N-Rate BD (J-64) J-36	40 SWIO 3-{15,16} N-Rate BH (J-60) J-40	44 SWIO 4-{7,8} N-Rate BM (J-56) J-44	48 SWIO 4-{15,16} N-Rate BS (J-52) J-48
19 SWIO 2-{13,14} N-Rate AR (J-15) J-19	23 SWIO 2-{5,6} N-Rate AL (J-11) J-23	27 SWIO 1-{13,14} N-Rate AG (J-7) J-27	31 SWIO 1-{5,6} N-Rate AC (J-3) J-31	Fuse and Alarm Bay	Switch Bay 1	Main Controller Bay	Switch Bay 2	Fuse and Alarm Bay	35 SWIO 3-{5,6} N-Rate BC (J-63) J-35	39 SWIO 3-{13,14} N-Rate BG (J-59) J-39	43 SWIO 4-{5,6} N-Rate BL (J-55) J-43	47 SWIO 4-{13,14} N-Rate BR (J-51) J-47	
18 SWIO 2-{11,12} N-Rate AP (J-14) J-18	22 SWIO 2-{3,4} N-Rate AK (J-10) J-22	26 SWIO 1-{11,12} N-Rate AF (J-6) J-26	30 SWIO 1-{3,4} N-Rate AB (J-2) J-30						34 SWIO 3-{3,4} N-Rate BB (J-62) J-34	38 SWIO 3-{11,12} N-Rate BF (J-58) J-38	42 SWIO 4-{3,4} N-Rate BK (J-54) J-42	46 SWIO 4-{11,12} N-Rate BP (J-50) J-46	
17 SWIO 2-{9,10} N-Rate AN (J-13) J-17	21 SWIO 2-{1,2} N-Rate AJ (J-9) J-21	25 SWIO 1-{9,10} N-Rate AE (J-5) J-25	29 SWIO 1-{1,2} N-Rate AA (J-1) J-29						33 SWIO 3-{1,2} N-Rate BA (J-61) J-33	37 SWIO 3-{9,10} N-Rate BE (J-57) J-37	41 SWIO 4-{1,2} N-Rate BJ (J-53) J-41	45 SWIO 4-{9,10} N-Rate BN (J-49) J-45	
6	7	8	9	10	11	12	13	14	15	16	17	18	
Bay Position													

**Note:** The J-cable IDs shown in parentheses indicate the control cable for the optional DS3PM circuit pack (DS3 Interface Module only). In the above figure, the J-cable IDs for DS3PM circuit packs are shown for a fully configured frame with all DS3 Interface Modules.

**Figure 4: Physical Associations of Bays, Units, and Interbay Cables in a Maximum Configuration of DS1 Interface Modules (Collocated)**

4 SWIO 2-16 N-Rate AS 1 J-4	8 SWIO 2-12 N-Rate AP 5 J-8	12 SWIO 2-8 N-Rate AM 9 J-12	16 SWIO 2-4 N-Rate AK 13 J-16		20 SWIO 1-16 N-Rate AH 17 J-20	24 SWIO 1-12 N-Rate AF 21 J-24	28 SWIO 1-8 N-Rate AD 25 J-28	32 SWIO 1-4 N-Rate AB 29 J-32			
3 SWIO 2-15 N-Rate AS 1 J-3	7 SWIO 2-11 N-Rate AP 5 J-7	11 SWIO 2-7 N-Rate AM 9 J-11	15 SWIO 2-3 N-Rate AK 13 J-15	Fuse and Alarm Bay	19 SWIO 1-15 N-Rate AH 17 J-19	23 SWIO 1-11 N-Rate AF 21 J-23	27 SWIO 1-7 N-Rate AD 25 J-27	31 SWIO 1-3 N-Rate AB 29 J-31	Fuse and Alarm Bay	Switch Bay 1	Main Controller Bay
2 SWIO 2-14 N-Rate AR 1 J-2	6 SWIO 2-10 N-Rate AN 5 J-6	10 SWIO 2-6 N-Rate AL 9 J-10	14 SWIO 2-2 N-Rate AJ 13 J-14		18 SWIO 1-14 N-Rate AG 17 J-18	22 SWIO 1-10 N-Rate AE 21 J-22	26 SWIO 1-6 N-Rate AC 25 J-26	30 SWIO 1-2 N-Rate AA 29 J-30			
1 SWIO 2-13 N-Rate AR 1 J-1	5 SWIO 2-9 N-Rate AN 5 J-5	9 SWIO 2-5 N-Rate AL 9 J-9	13 SWIO 2-1 N-Rate AJ 13 J-13		17 SWIO 1-13 N-Rate AG 17 J-17	21 SWIO 1-9 N-Rate AE 21 J-21	25 SWIO 1-5 N-Rate AC 25 J-25	29 SWIO 1-1 N-Rate AA 29 J-29			
1	2	3	4		5	6	7	8			
Bay Position											

Switch Bay 2	Fuse and Alarm Bay	36 SWIO 3-4 N-Rate BB 33 J-36	40 SWIO 3-8 N-Rate BD 37 J-40	44 SWIO 3-12 N-Rate BF 41 J-44	48 SWIO 3-16 N-Rate BH 45 J-48	Fuse and Alarm Bay	52 SWIO 4-4 N-Rate BK 49 J-52	56 SWIO 4-8 N-Rate BM 53 J-56	60 SWIO 4-12 N-Rate BP 57 J-60	64 SWIO 4-16 N-Rate BS 61 J-64
		35 SWIO 3-3 N-Rate BB 33 J-35	39 SWIO 3-7 N-Rate BD 37 J-39	43 SWIO 3-11 N-Rate BF 41 J-43	47 SWIO 3-15 N-Rate BH 45 J-47		51 SWIO 4-3 N-Rate BK 49 J-51	55 SWIO 4-7 N-Rate BM 53 J-55	59 SWIO 4-11 N-Rate BP 57 J-59	63 SWIO 4-15 N-Rate BS 61 J-63
		34 SWIO 3-2 N-Rate BA 33 J-34	38 SWIO 3-6 N-Rate BC 37 J-38	42 SWIO 3-10 N-Rate BE 41 J-42	46 SWIO 3-14 N-Rate BG 45 J-46		50 SWIO 4-2 N-Rate BJ 49 J-50	54 SWIO 4-6 N-Rate BL 53 J-54	58 SWIO 4-10 N-Rate BN 57 J-58	62 SWIO 4-14 N-Rate BR 61 J-62
		33 SWIO 3-1 N-Rate BA 33 J-33	37 SWIO 3-5 N-Rate BC 37 J-37	41 SWIO 3-9 N-Rate BE 41 J-41	45 SWIO 3-13 N-Rate BG 45 J-45		49 SWIO 4-1 N-Rate BJ 49 J-49	53 SWIO 4-5 N-Rate BL 53 J-53	57 SWIO 4-9 N-Rate BN 57 J-57	61 SWIO 4-13 N-Rate BR 61 J-61
13	14	15	16	17	18	19	20	21	22	23
Bay Position										

**NOTE:** Units 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, and 61 are all DS1 interface-Protection Modules. All other units are DS1 interface Modules.

Figure 5: Maximum DS3 or STS1 Interface-16 Configuration (Remote Complexes)

12 SWIO 1-{15,16} N-Rate AH J-8	16 SWIO 1-{7,8} N-Rate AD J-4	External Misc T/S Fuse & Alarm Optical Extension Power Module		20 SWIO 2-{7,8} N-Rate AM J-20	24 SWIO 2-{15,16} N-Rate AS J-24
11 SWIO 1-{13,14} N-Rate AG J-7	15 SWIO 1-{5,6} N-Rate AC J-3	RUI Pwr Mod	Aux Pwr Mod	19 SWIO 2-{5,6} N-Rate AL J-19	23 SWIO 2-{13,14} N-Rate AP J-23
10 SWIO 1-{11,12} N-Rate AF J-6	14 SWIO 1-{3,4} N-Rate AB J-2	Optical Extension Module		18 SWIO 2-{3,4} N-Rate AK J-18	22 SWIO 2-{11,12} N-Rate AP J-22
9 SWIO 1-{9,10} N-Rate AE J-5	13 SWIO 1-{1,2} N-Rate AA J-1			Fan Assembly	
3	4	5	6	7	

Remote Complex 1 (RX-1) Bay Position (Units 1-32)

44 SWIO 3-{15,16} N-Rate BH J-8	48 SWIO 3-{7,8} N-Rate BD J-4	External Misc T/S Fuse & Alarm Optical Extension Power Module		52 SWIO 4-{7,8} N-Rate BM J-20	56 SWIO 4-{15,16} N-Rate BS J-24
43 SWIO 3-{13,14} N-Rate BG J-7	47 SWIO 3-{5,6} N-Rate BC J-3	RUI Pwr Mod	Aux Pwr Mod	51 SWIO 4-{5,6} N-Rate BL J-19	55 SWIO 4-{13,14} N-Rate BR J-23
42 SWIO 3-{11,12} N-Rate BF J-6	46 SWIO 3-{3,4} N-Rate BB J-2	Optical Extension Module		50 SWIO 4-{3,4} N-Rate BK J-18	54 SWIO 4-{11,12} N-Rate BP J-22
41 SWIO 3-{9,10} N-Rate BE J-5	45 SWIO 3-{1,2} N-Rate BA J-1			Fan Assembly	
3	4	5	6	7	

Remote Complex 2 (RX-2) Bay Position (Units 33-64)



Figure 6: Maximum DS1 Configuration (Remote Complexes)

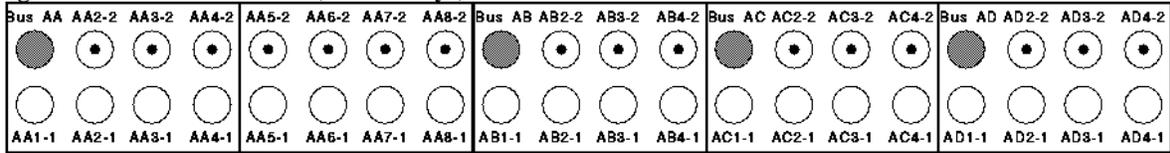
4 SWIO 1-16 N-Rate AH 1 J-16	8 SWIO 1-12 N-Rate AF 5 J-12	12 SWIO 1-8 N-Rate AD 9 J-8	16 SWIO 1-4 N-Rate AB 13 J-4	External Misc T/S		20 SWIO 2-4 N-Rate AK 17 J-20	24 SWIO 2-8 N-Rate AM 21 J-24	28 SWIO 2-12 N-Rate AP 25 J-28	32 SWIO 2-16 N-Rate AS 29 J-32
				Fuse & Alarm					
				Optical Extension Power Module					
9 SWIO 1-15 N-Rate AH 1 J-15	7 SWIO 1-11 N-Rate AF 5 J-11	11 SWIO 1-7 N-Rate AD 9 J-7	15 SWIO 1-3 N-Rate AB 13 J-3	RUI Pwr Mod	Aux Pwr Mod	19 SWIO 2-3 N-Rate AK 17 J-19	23 SWIO 2-7 N-Rate AM 21 J-23	27 SWIO 2-11 N-Rate AP 25 J-27	31 SWIO 2-15 N-Rate AS 29 J-31
				Remote Unit Interface Module					
2 SWIO 1-14 N-Rate AG 1 J-14	6 SWIO 1-10 N-Rate AE 5 J-10	10 SWIO 1-6 N-Rate AC 9 J-6	14 SWIO 1-2 N-Rate AA 13 J-2	Optical Extension Module		18 SWIO 2-2 N-Rate AJ 17 J-18	22 SWIO 2-6 N-Rate AL 21 J-22	26 SWIO 2-10 N-Rate AN 25 J-26	30 SWIO 2-14 N-Rate AR 29 J-30
1 SWIO 1-13 N-Rate AG 1 J-13	5 SWIO 1-9 N-Rate AE 5 J-9	9 SWIO 1-5 N-Rate AC 9 J-5	13 SWIO 1-1 N-Rate AA 13 J-1			Fan Assembly		17 SWIO 2-1 N-Rate AJ 17 J-17	21 SWIO 2-5 N-Rate AL 21 J-21
1	2	3	4	5		6	7	8	9

Remote Complex 1 (RX-1) Bay Position (Units 1-32)

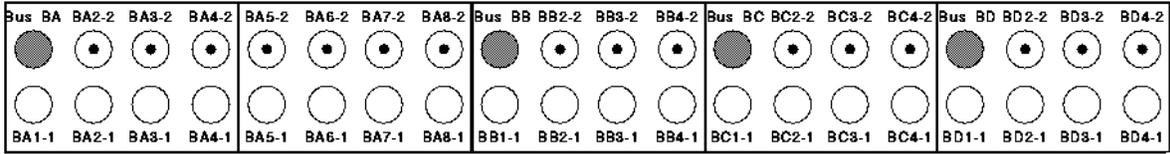
36 SWIO 3-16 N-Rate BH 33 J-16	40 SWIO 3-12 N-Rate BF 37 J-12	44 SWIO 3-8 N-Rate BD 41 J-8	48 SWIO 3-4 N-Rate BB 45 J-4	External Misc T/S		52 SWIO 4-4 N-Rate BK 49 J-20	56 SWIO 4-8 N-Rate BM 53 J-24	60 SWIO 4-12 N-Rate BP 57 J-28	64 SWIO 4-16 N-Rate BS 61 J-32
				Fuse & Alarm					
				Optical Extension Power Module					
35 SWIO 3-15 N-Rate BH 33 J-15	39 SWIO 3-11 N-Rate BF 37 J-11	43 SWIO 3-7 N-Rate BD 41 J-7	47 SWIO 3-3 N-Rate BB 45 J-3	RUI Pwr Mod	Aux Pwr Mod	51 SWIO 4-3 N-Rate BK 49 J-19	55 SWIO 4-7 N-Rate BM 53 J-23	59 SWIO 4-11 N-Rate BP 57 J-27	63 SWIO 4-15 N-Rate BS 61 J-31
				Remote Unit Interface Module					
34 SWIO 3-14 N-Rate BG 33 J-14	38 SWIO 3-10 N-Rate BE 37 J-10	42 SWIO 3-6 N-Rate BC 41 J-6	46 SWIO 3-2 N-Rate BA 45 J-2	Optical Extension Module		50 SWIO 4-2 N-Rate BJ 49 J-18	54 SWIO 4-6 N-Rate BL 53 J-22	58 SWIO 4-10 N-Rate BN 57 J-26	62 SWIO 4-14 N-Rate BR 61 J-30
33 SWIO 3-13 N-Rate BG 33 J-13	37 SWIO 3-9 N-Rate BE 37 J-9	41 SWIO 3-5 N-Rate BC 41 J-5	45 SWIO 3-1 N-Rate BA 45 J-1			Fan Assembly		49 SWIO 4-1 N-Rate BJ 49 J-17	53 SWIO 4-5 N-Rate BL 53 J-21
1	2	3	4	5		6	7	8	9

Remote Complex 2 (RX-2) Bay Position (Units 33-64)

**Figure 7: Main Fuse Panels (Switch Bays)**



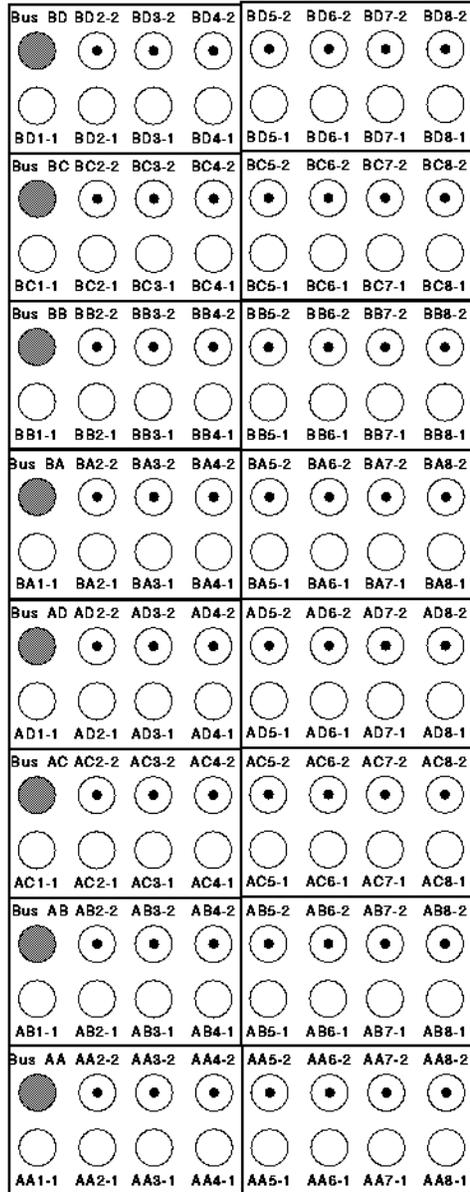
**A. Fuse Panel in Bay Position 11**



**B. Fuse Panel in Bay Position 13**

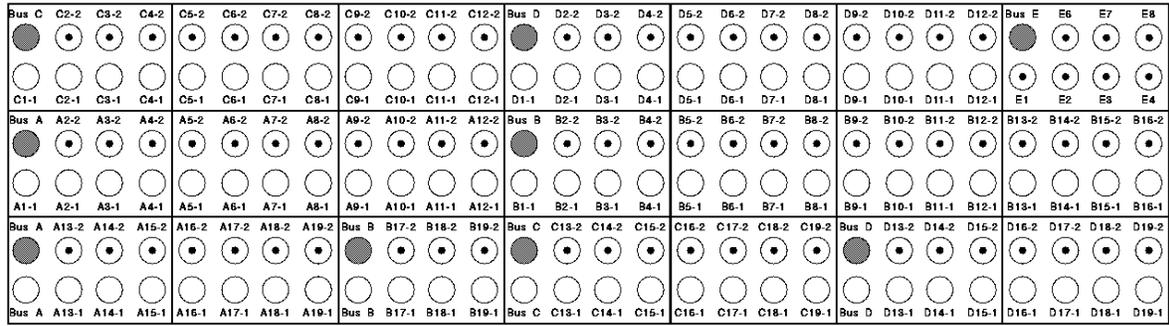
**Note:** Fuses for all power buses come in pairs with the load fuse labeled with -1 and the indicator fuse labeled with -2.

Figure 8: Main Fuse Panel (Fuse and Alarm Bays)



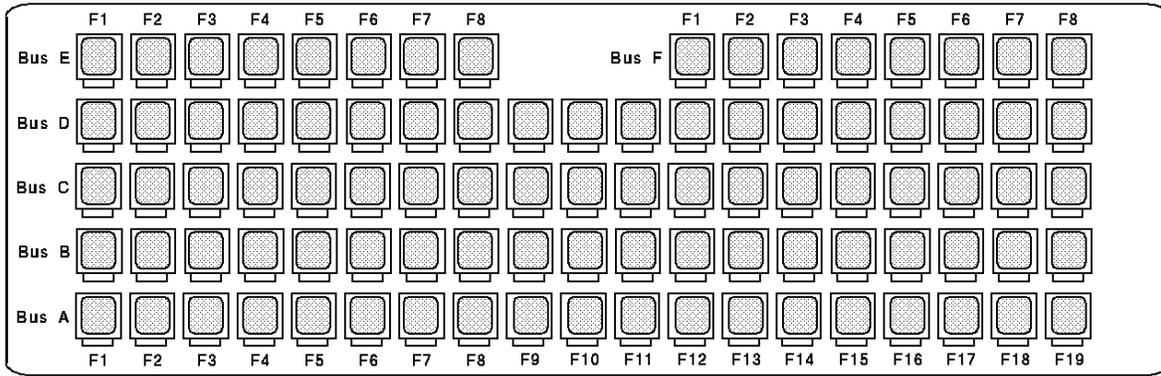
**Note:** Fuses for all power buses come in pairs with the load fuse (10A) labeled with -1 and the indicator fuse (0.5A) labeled with -2.

Figure 9: ED-2C940-30 Fuse and Alarm Panel (OPEX Bay)



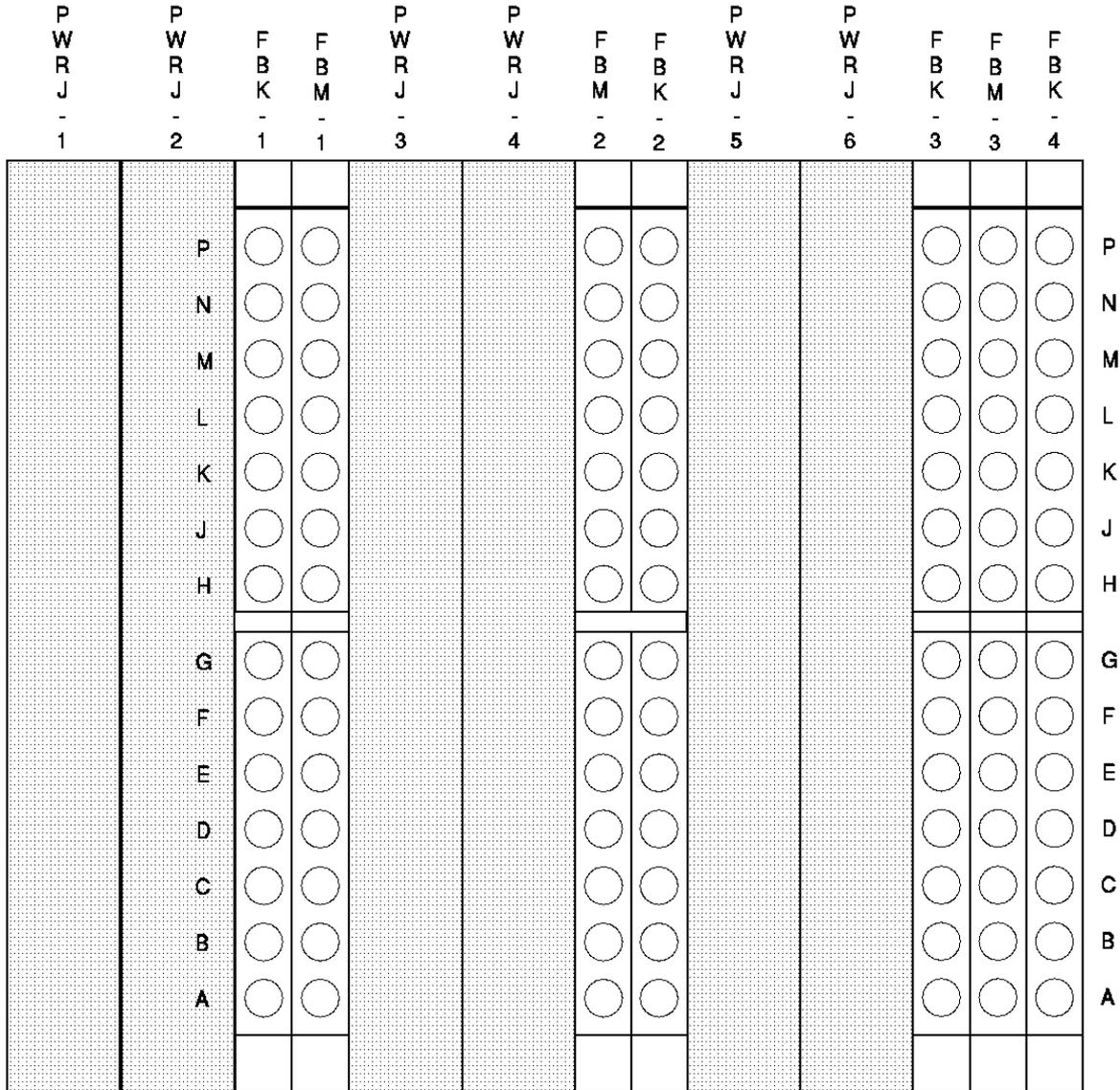
**Note:** Fuses for power buses A, B, C, and D come in pairs, the load fuse labeled -1 and the indicator fuse labeled -2. Fuses for power bus E are not paired (one load and one indicator); they are all indicator fuses.

Figure 10: ED-9C114-30 Fuse and Alarm Panel (OPEX Bay)



**Note:** Fuses A1, A2, B2, C1, C2, and D2 are rated at 12A, fuse D1 is rated at 2A, and all other fuses are rated at 10A. All fuses have a red alarm lamp to indicate failure. Fuse B1 is not connected.

Figure 11: Switch Power Module Secondary Fuses (FBK and FBM)



**Note:** A blown fuse is indicated by a lit red LED.

Figure 12: OPEX Power Module Secondary Fuses (FBA, FBB, FBC, and FBD)

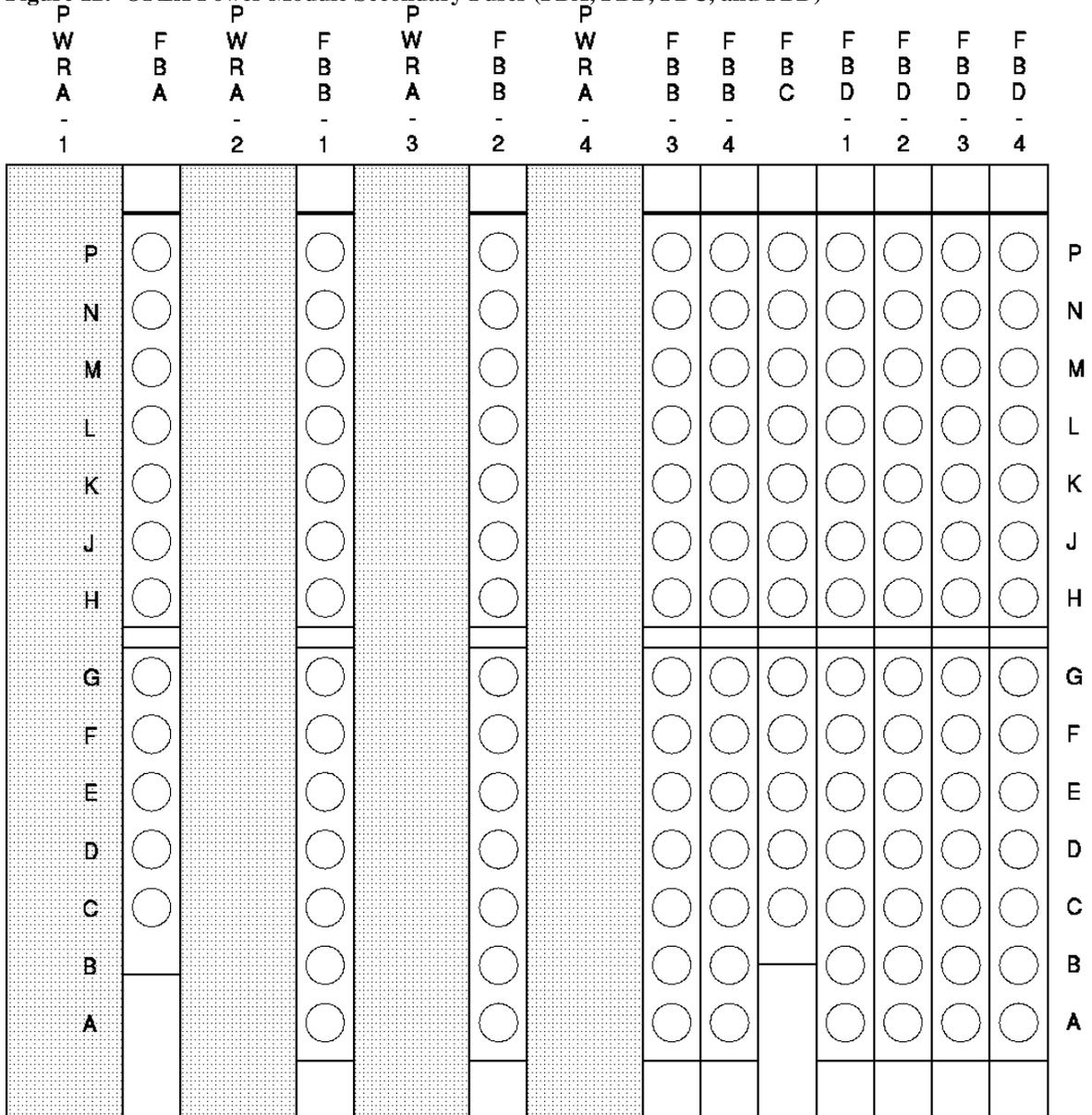
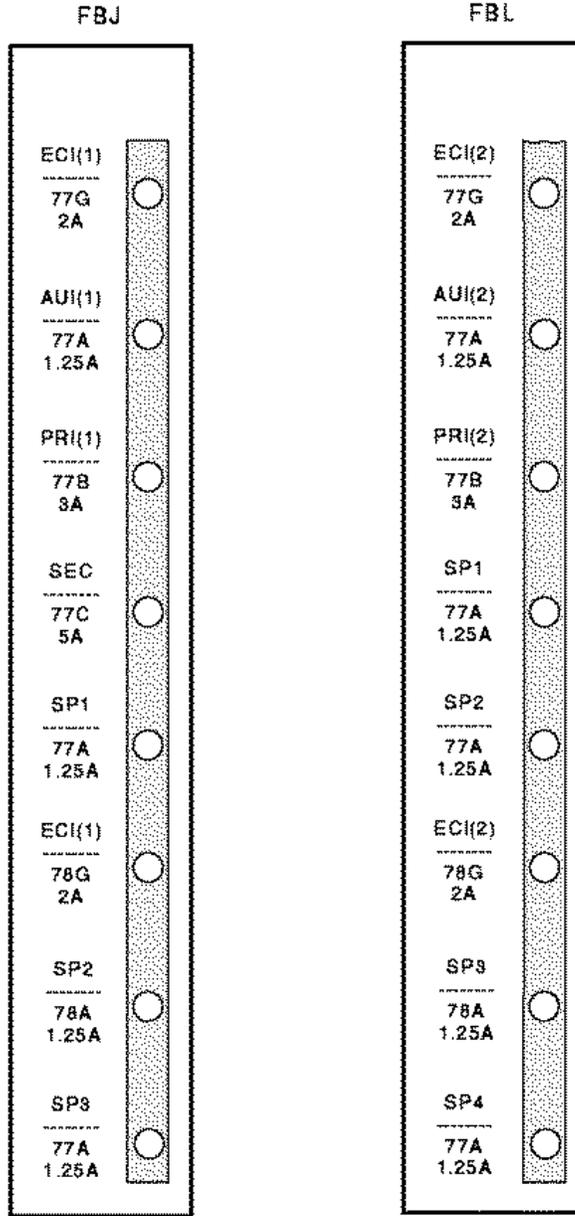


Figure 13: Memory Storage Module Fuses (FBJ and FBL)

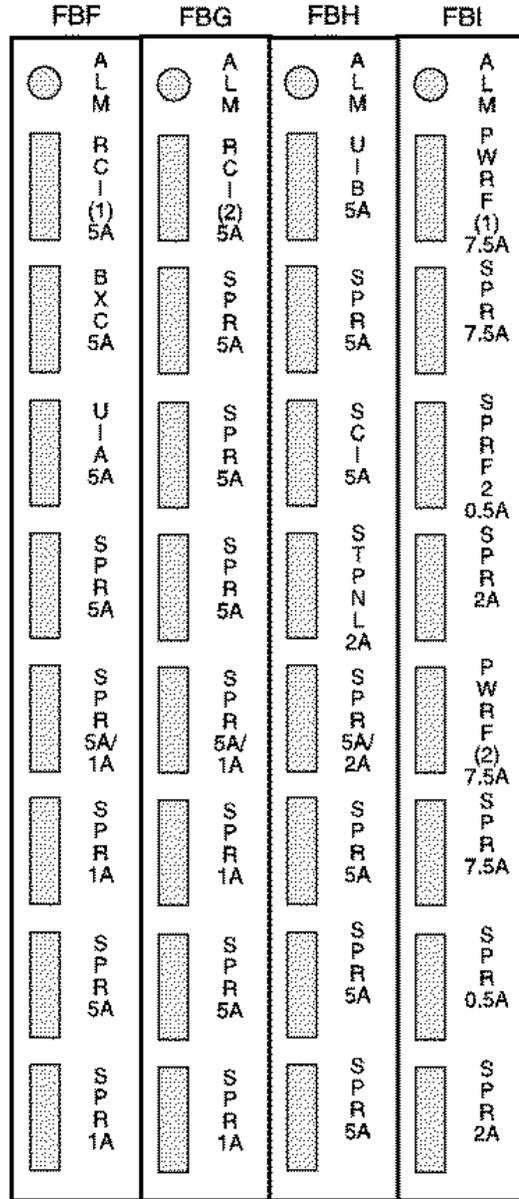


**Notes:**

- Numbers in parentheses are circuit pack position numbers in the High-Capacity and Memory Storage Modules. Fuse ratings are listed below the circuit pack identifier and fuse type (77X or 78X label).
- The 2A fuses associated with the ECI circuit packs are for +12V and -12V supplied to the CILINKs. When these fuses blow, communication with the CILINKs can be interrupted.
- The 5A fuse for the SEC disk drive is for the +12V supply.
- The 3A fuses for the PRI disk drives are for the +12V supply.
- The labels SP1, SP2, SP3, and SP4 denote spare fuses that are not connected to any circuit pack.



**Figure 14: RUI Power Module Fuses (FBF, FBG, FBH, and FBI)**

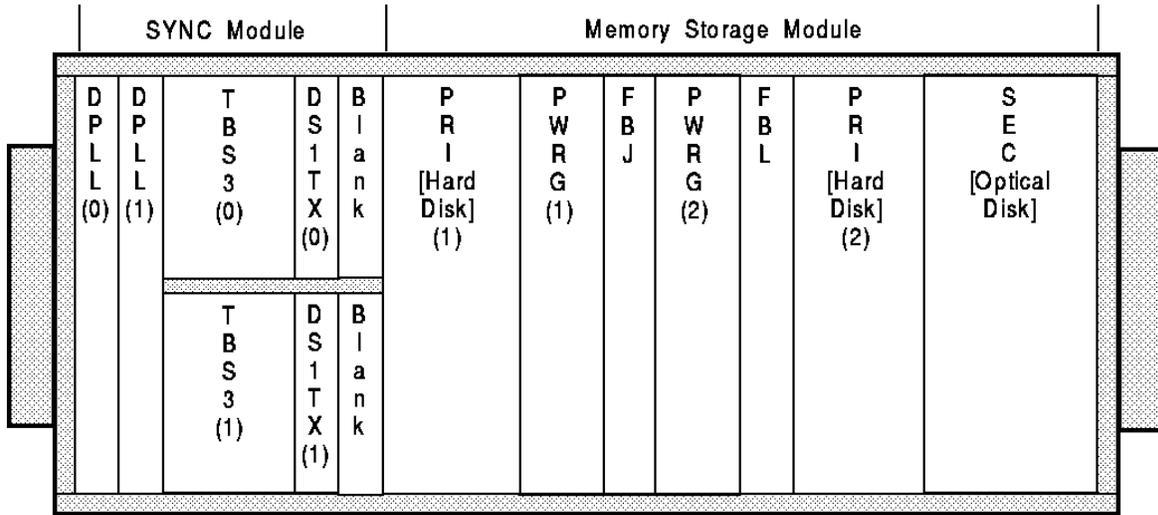


**Notes:**

- Numbers in parentheses are circuit pack position numbers in the High-Capacity and Memory Storage Modules. Fuse ratings are listed below the circuit pack identifier and fuse type (77X or 78X label).
- The 2A fuses associated with the ECI circuit packs are for +12V and -12V supplied to the CILINKs. When these fuses blow, communication with the CILINKs can be interrupted.
- The 5A fuse for the SEC disk drive is for the +12V supply.
- The 3A fuses for the PRI disk drives are for the +12V supply.
- The labels SP1, SP2, SP3, and SP4 denote spare fuses that are not connected to any circuit pack.

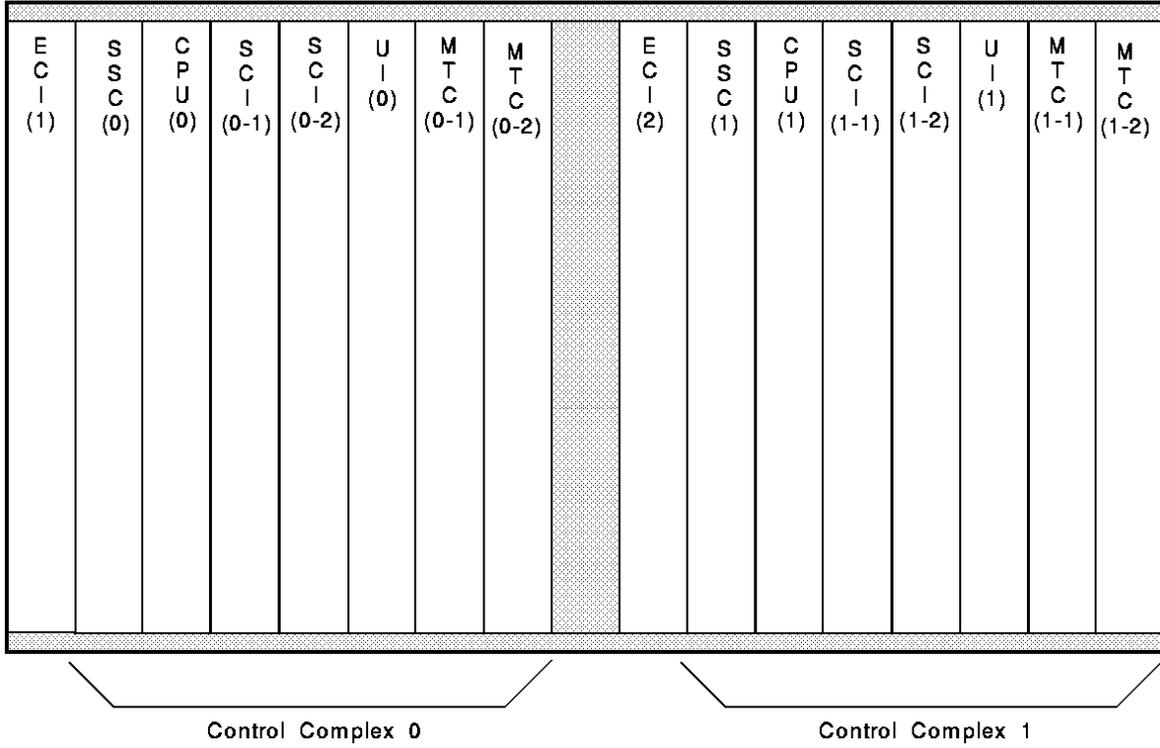


Figure 15: Memory Storage and Synchronizer Modules



**Note:** Number in parentheses is circuit pack position in module.

Figure 16: High Capacity Controller Module



Note: Number in parentheses is circuit pack position in module.

Figure 17: Switch Complex Module Locations

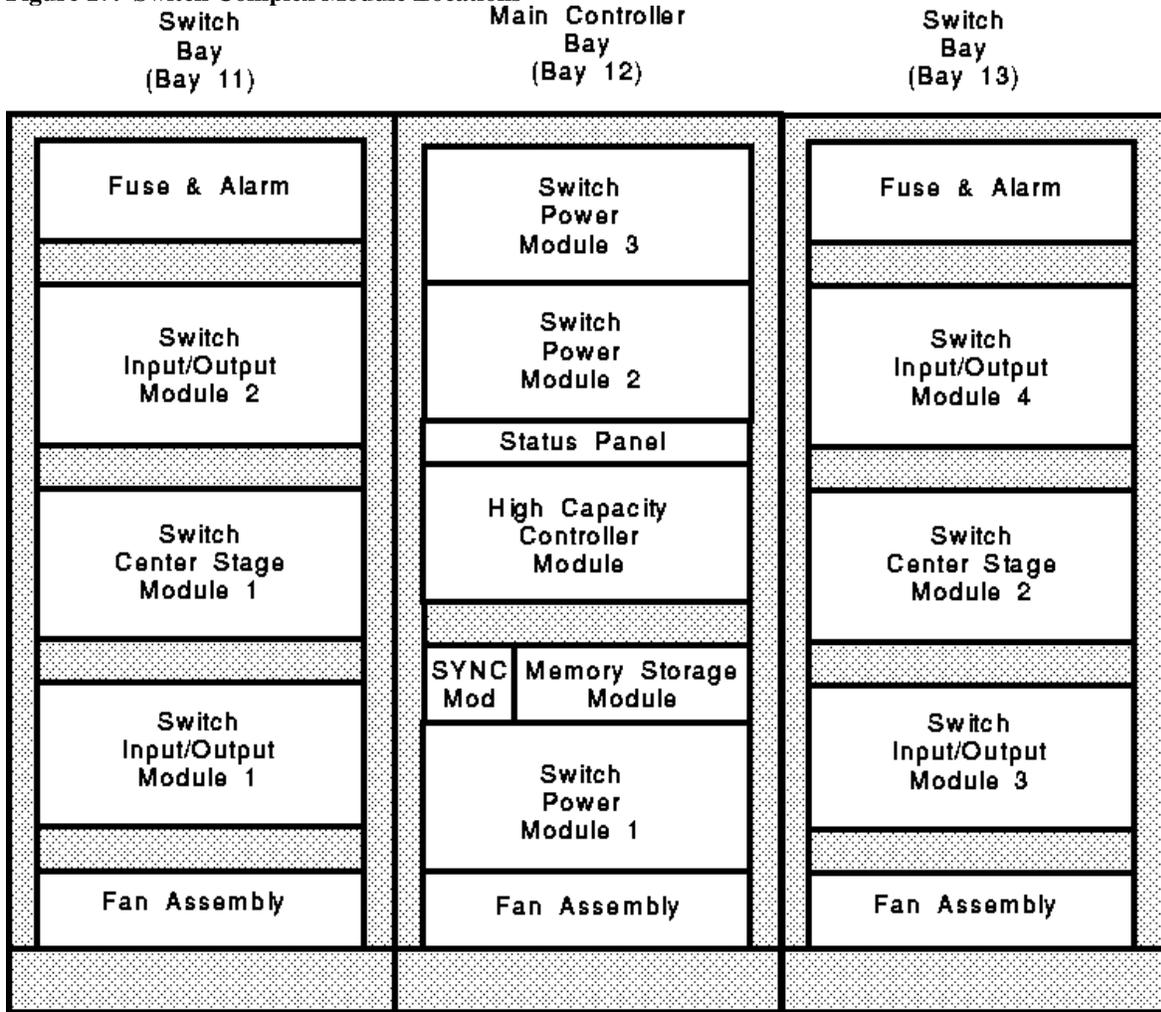
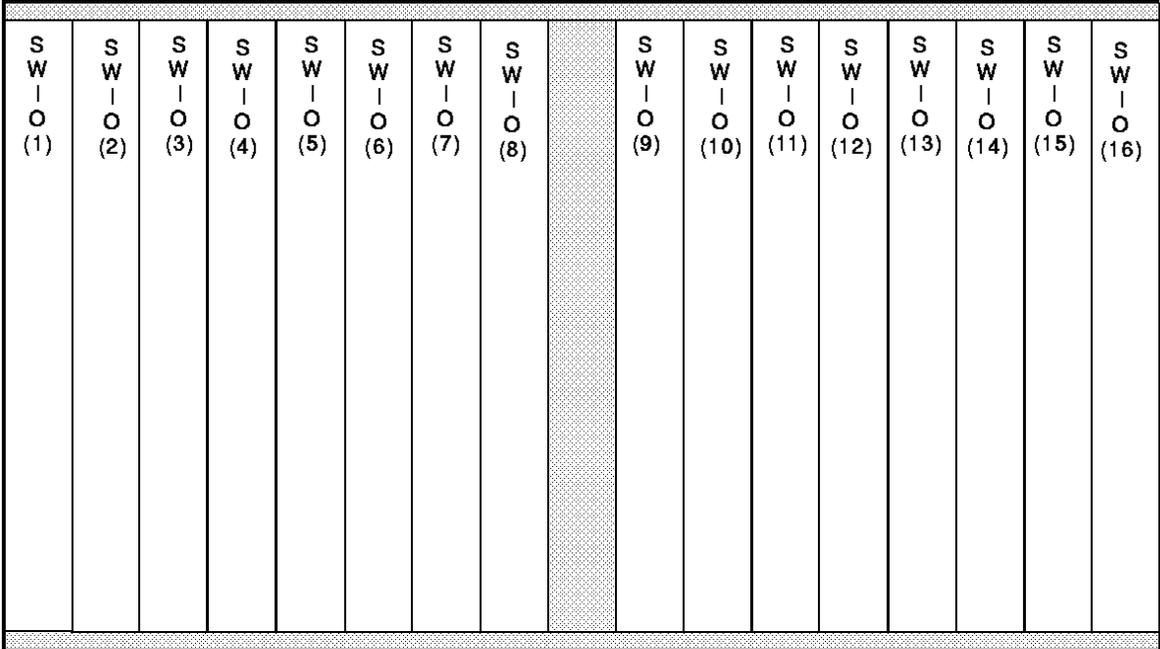


Figure 18: Switch Power Module (3 Modules)

P W R J (1)	P W R J (2)	F B K (1)	F B M (1)	P W R J (3)	P W R J (4)	F B M (2)	F B K (2)	P W R J (5)	P W R J (6)	F B K (3)	F B M (3)	F B K (4)
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Note: Number in parentheses is circuit pack position in module.

Figure 19: Switch Input/Output Module (4 Modules)



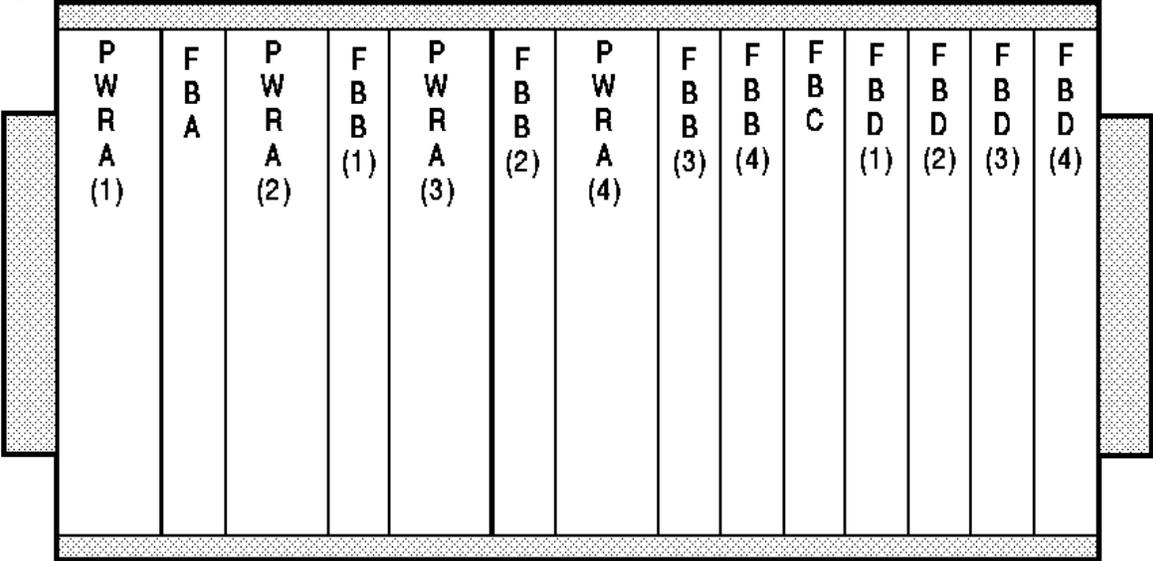
Note: Number in parentheses is circuit pack position in module.

Figure 20: Switch Center Stage Module (2 Modules)

S W C S (1)	S W C S (2)	S W C S (3)	S W C S (4)	S W C S (5)	S W C S (6)	S W C S (7)	S W C S (8)	C L K G N	S W C S (9)	S W C S (10)	S W C S (11)	S W C S (12)	S W C S (13)	S W C S (14)	S W C S (15)	S W C S (16)
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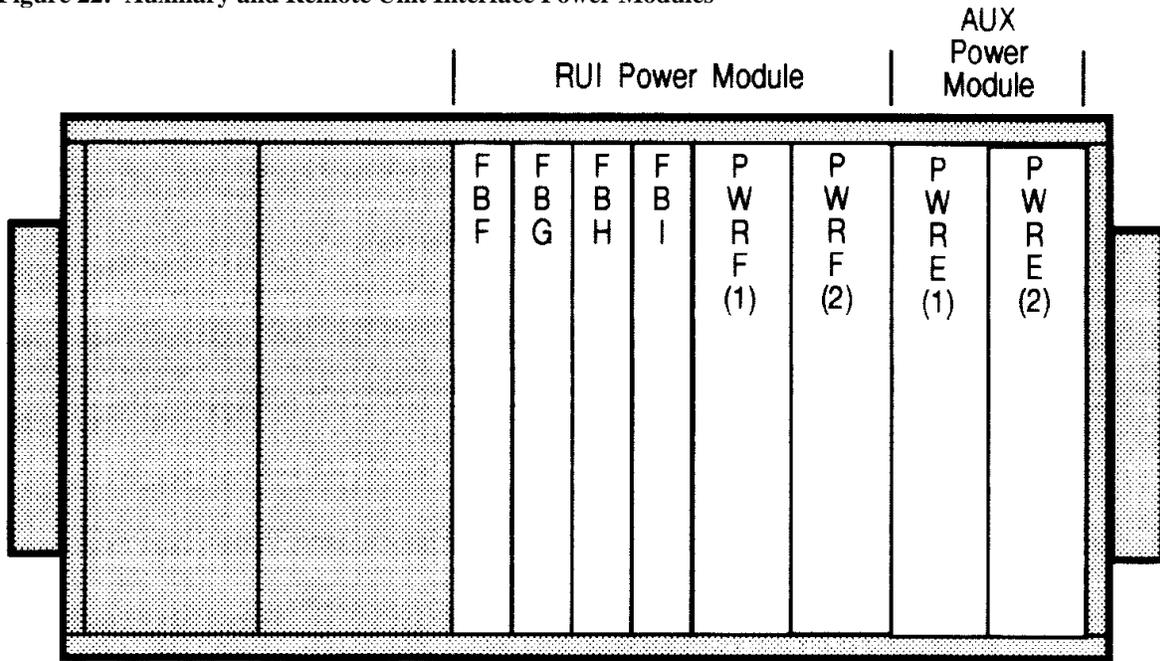
Note: Number in parentheses is circuit pack position in module.

Figure 21: Optical Extension Power Module



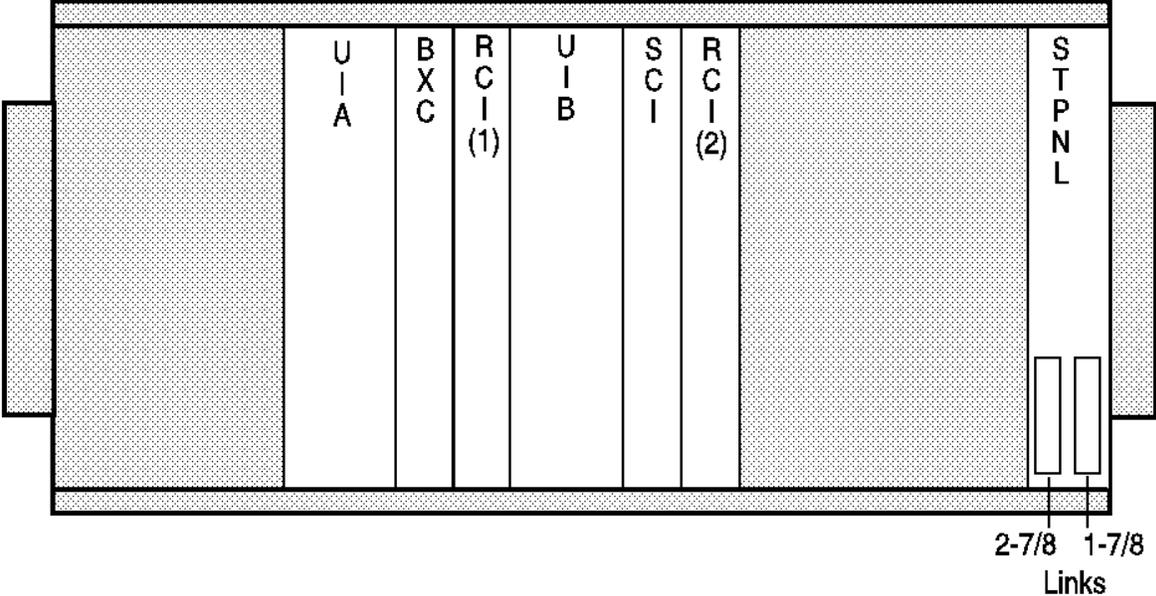
**Note:** Number in parentheses is circuit pack position in module.

Figure 22: Auxiliary and Remote Unit Interface Power Modules



**Note:** Number in parentheses is circuit pack position in module.

Figure 23: Remote Unit Interface Module



Note: Number in parentheses is circuit pack position in module.

Figure 24: Optical Extension Module

OPEX (17) [2-1]	OPEX (18) [2-2]	OPEX (19) [2-3]	OPEX (20) [2-4]	OPEX (21) [2-5]	OPEX (22) [2-6]	OPEX (23) [2-7]	OPEX (24) [2-8]	CLKGN [1]	OPEX (25) [2-9]	OPEX (26) [2-10]	OPEX (27) [2-11]	OPEX (28) [2-12]	OPEX (29) [2-13]	OPEX (30) [2-14]	OPEX (31) [2-15]	OPEX (32) [2-16]
Assembly Cover																
OPEX (1) [1-1]	OPEX (2) [1-2]	OPEX (3) [1-3]	OPEX (4) [1-4]	OPEX (5) [1-5]	OPEX (6) [1-6]	OPEX (7) [1-7]	OPEX (8) [1-8]		OPEX (9) [1-9]	OPEX (10) [1-10]	OPEX (11) [1-11]	OPEX (12) [1-12]	OPEX (13) [1-13]	OPEX (14) [1-14]	OPEX (15) [1-15]	OPEX (16) [1-16]

Remote Complex 1 [RX-1]

OPEX (17) [4-1]	OPEX (18) [4-2]	OPEX (19) [4-3]	OPEX (20) [4-4]	OPEX (21) [4-5]	OPEX (22) [4-6]	OPEX (23) [4-7]	OPEX (24) [4-8]	CLKGN [2]	OPEX (25) [4-9]	OPEX (26) [4-10]	OPEX (27) [4-11]	OPEX (28) [4-12]	OPEX (29) [4-13]	OPEX (30) [4-14]	OPEX (31) [4-15]	OPEX (32) [4-16]
Assembly Cover																
OPEX (1) [3-1]	OPEX (2) [3-2]	OPEX (3) [3-3]	OPEX (4) [3-4]	OPEX (5) [3-5]	OPEX (6) [3-6]	OPEX (7) [3-7]	OPEX (8) [3-8]		OPEX (9) [3-9]	OPEX (10) [3-10]	OPEX (11) [3-11]	OPEX (12) [3-12]	OPEX (13) [3-13]	OPEX (14) [3-14]	OPEX (15) [3-15]	OPEX (16) [3-16]

Remote Complex 2 [RX-2]

**Note:** Numbers within brackets indicate the software location; numbers in parentheses indicate the actual physical location.



Figure 25: DS1 Interface/Interface-Protection Module

S W I F F (5)	D S I F (5A)	D S I F (5B)	D S I R Y (3)	D S I I F / D S I I P (6/P) (A)	D S I I F / D S I I P (6/P) (B)	S W I F (6/P)	U C	C L K D R (2)	S W I F (7/6)	D S I I F (7/6) (A)	D S I I F (7/6) (B)	D S I R Y (4)	D S I I F (8/7) (A)	D S I I F (8/7) (B)	S W I F (8/7)	P W R E (2)
S W I F (1)	D S I F (1A)	D S I F (1B)	D S I R Y (1)	D S I I F (2A)	D S I I F (2B)	S W I F (2)	B X A	C L K D R (1)	S W I F (3)	D S I I F (3A)	D S I I F (3B)	D S I R Y (2)	D S I I F (4A)	D S I I F (4B)	S W I F (4)	P W R E (1)

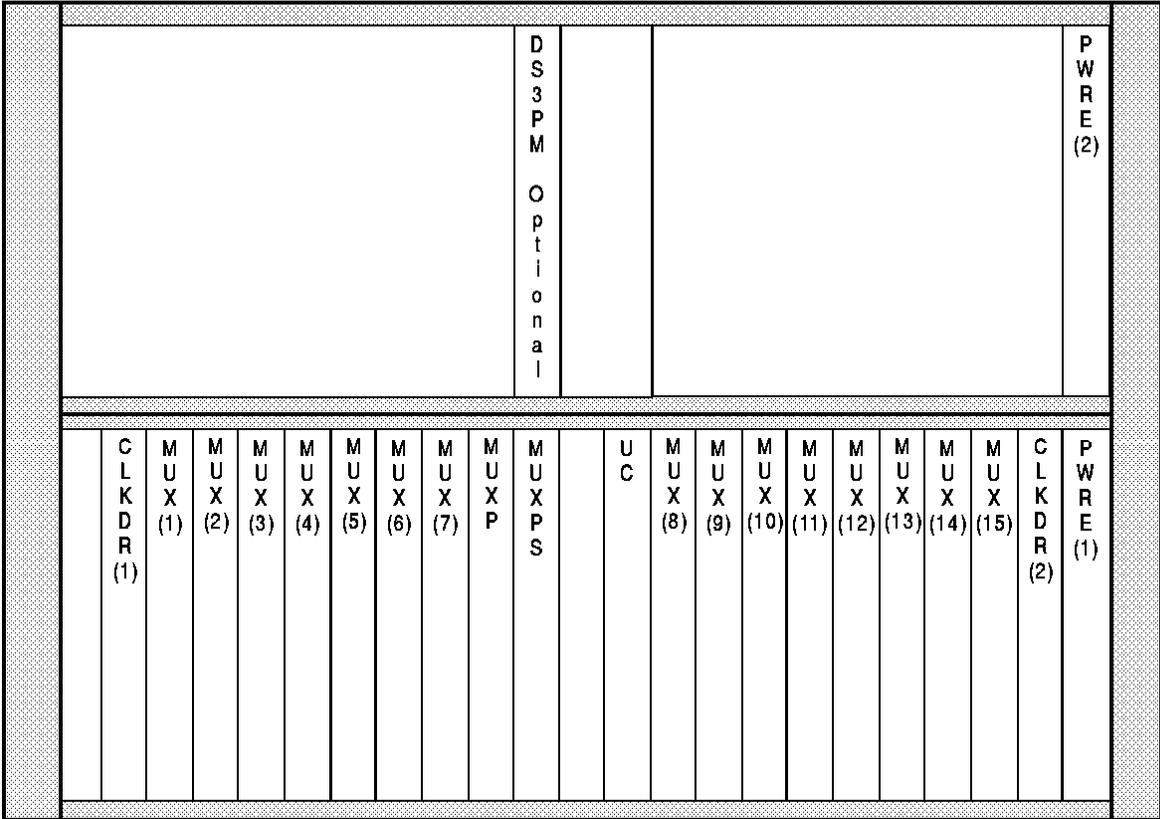
**Note:** Number in parentheses is circuit pack position in module. For entries with slashes (/), the entry before the slash corresponds to the DS1 Interface Module and the entry after the slash corresponds to the DS1 Interface-Protection Module.

Figure 26: DS3 Interface-32 Module

CLKDR (3)	MUX (16)	MUX (17)	MUX (18)	MUX (19)	MUX (20)	MUX (21)	MUX (22)	MUX (23)	DS3 PM		MUX (24)	MUX (25)	MUX (26)	MUX (27)	MUX (28)	MUX (29)	MUX (30)	MUX (31)	CLKDR (4)	PWR E (2)	
									Optional												
CLKDR (1)	MUX (1)	MUX (2)	MUX (3)	MUX (4)	MUX (5)	MUX (6)	MUX (7)	MUX P	MUX PS		UC	MUX (8)	MUX (9)	MUX (10)	MUX (11)	MUX (12)	MUX (13)	MUX (14)	MUX (15)	CLKDR (2)	PWR E (1)

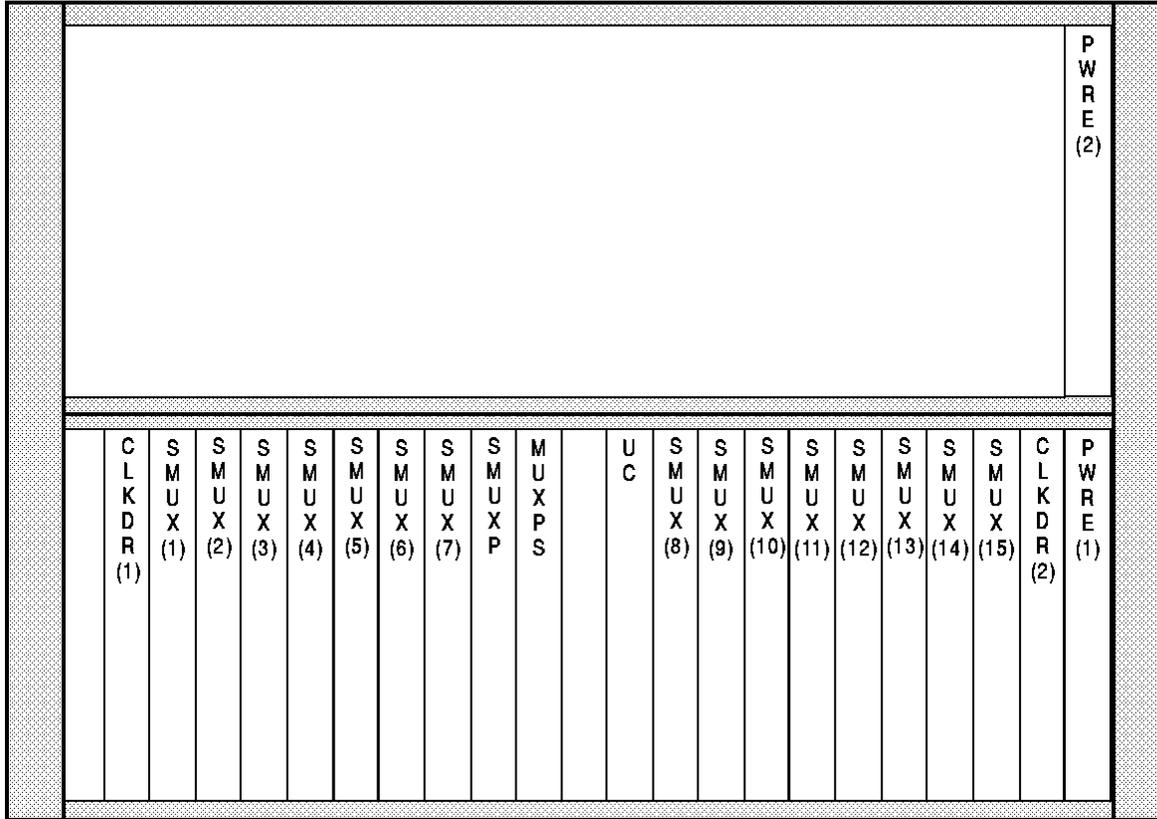
Note: Number in parentheses is circuit pack position in module.

Figure 27: DS3 Interface-16 Module



Note: Number in parentheses is circuit pack position in module.

Figure 28: STS1 Interface-16 Module



**Note:** Number in parentheses is circuit pack position in module.

Figure 29: DS1, DS3, STS-1, and VT1.5 Loopbacks

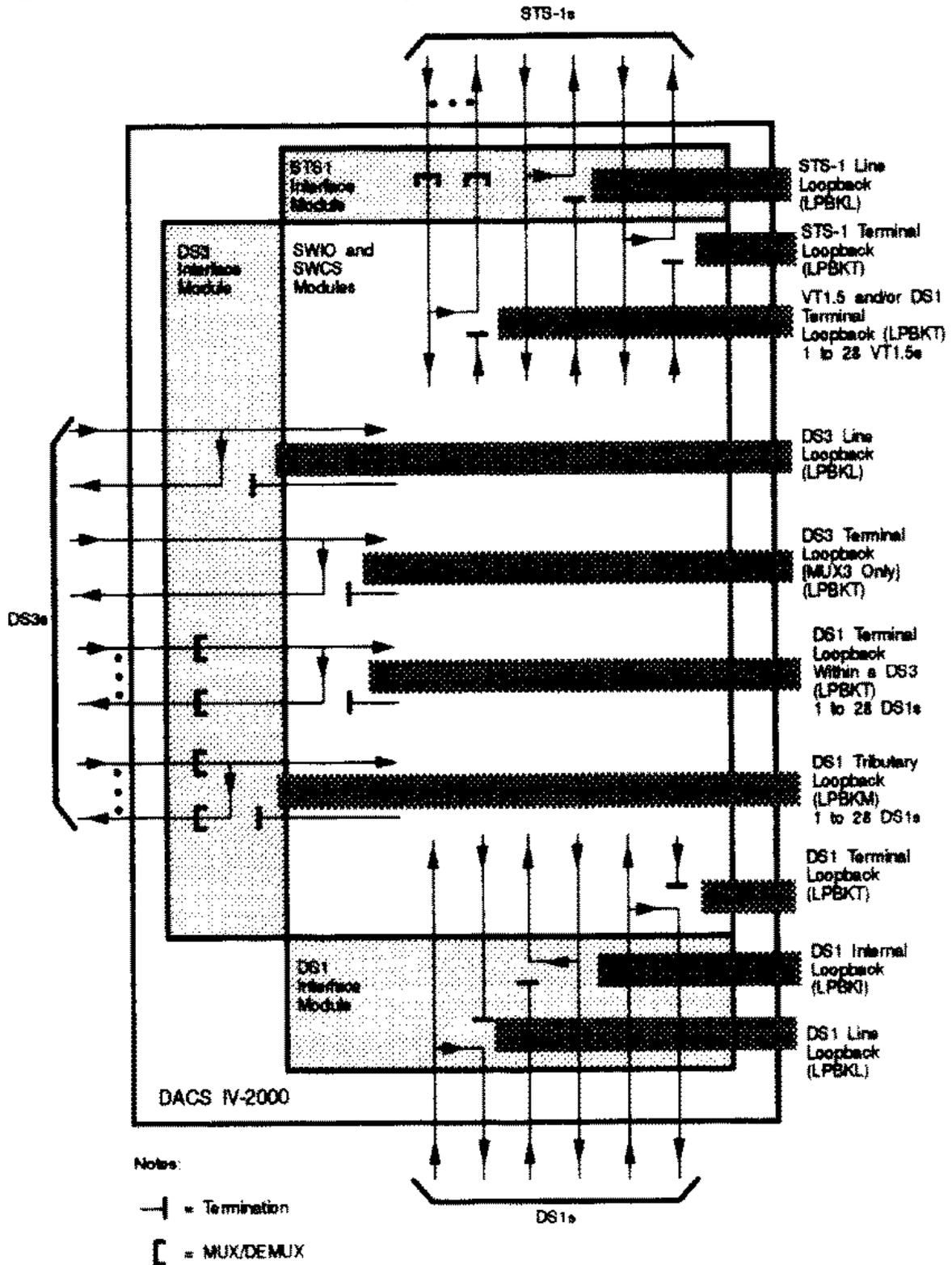


Figure 30: Test Access Conventions

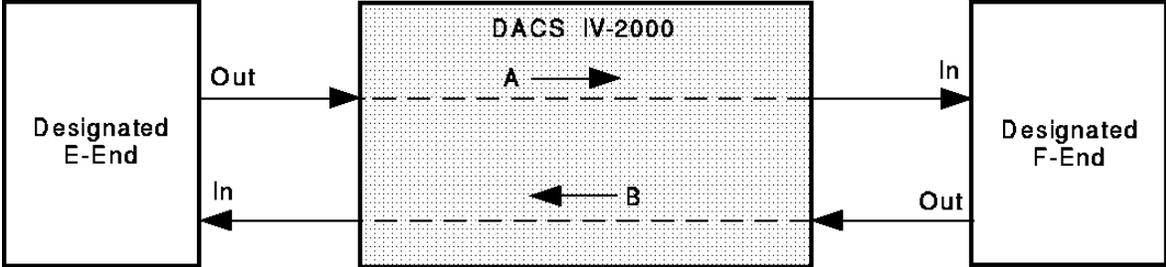
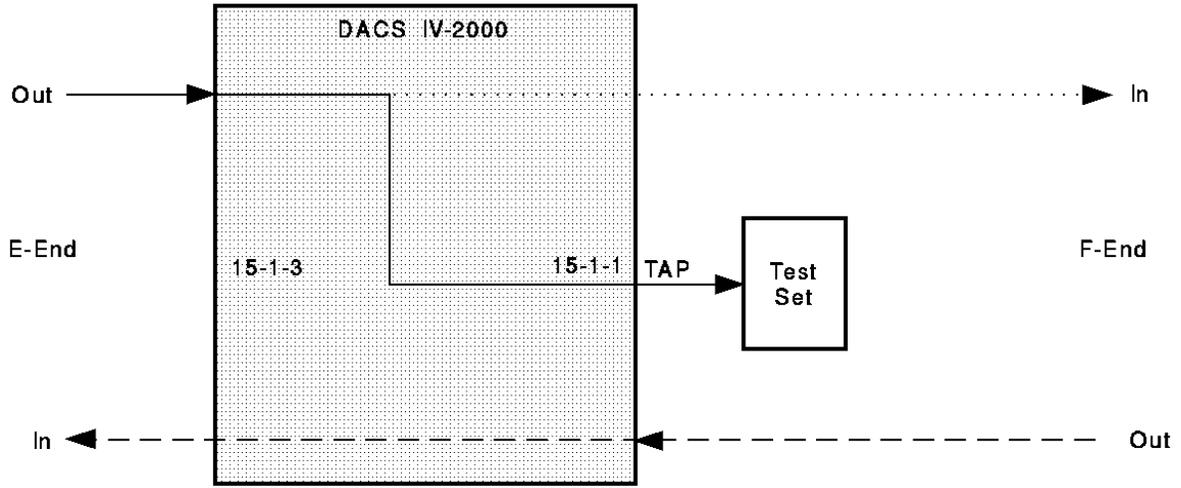
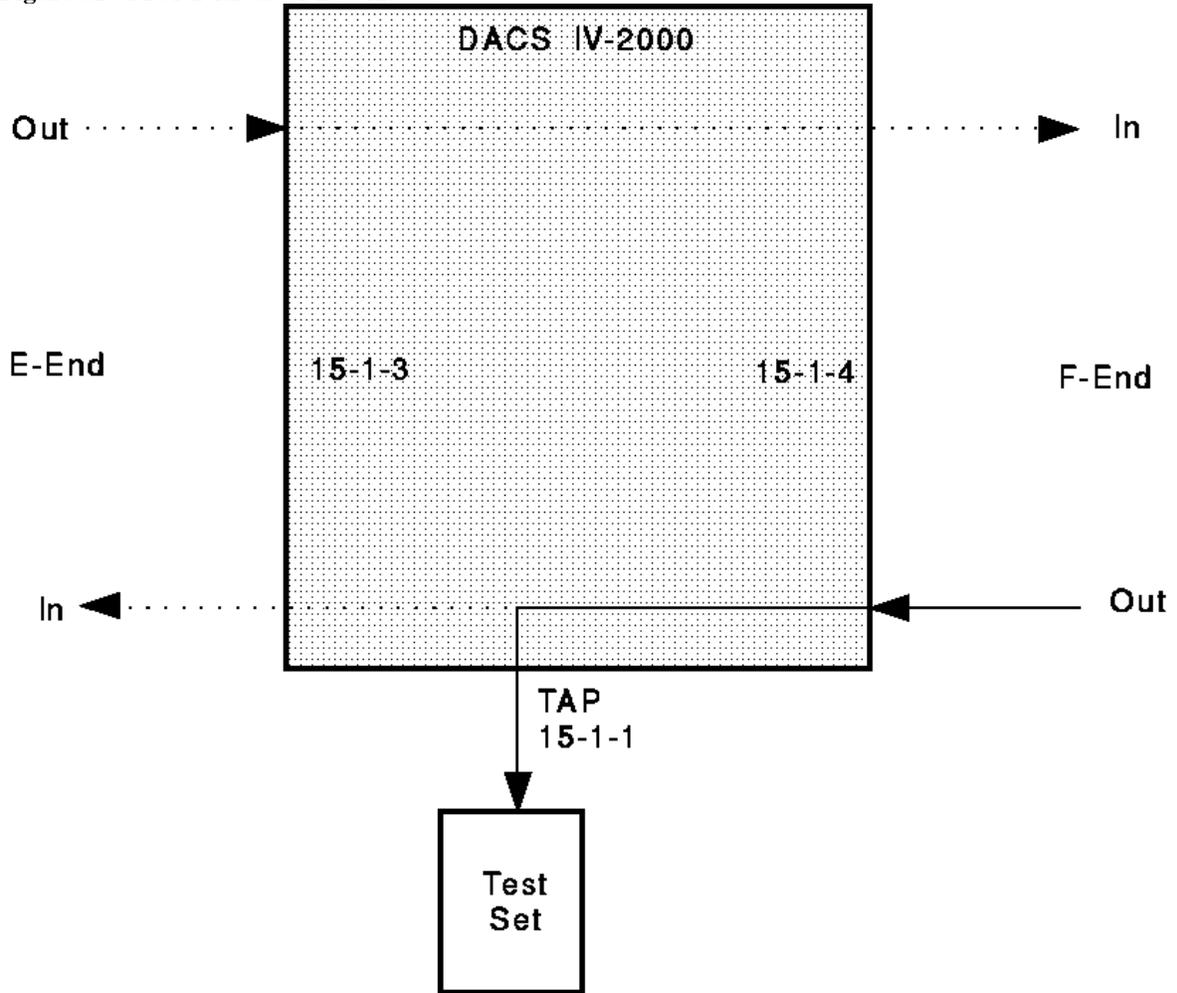


Figure 31: MONE Mode of Test Access



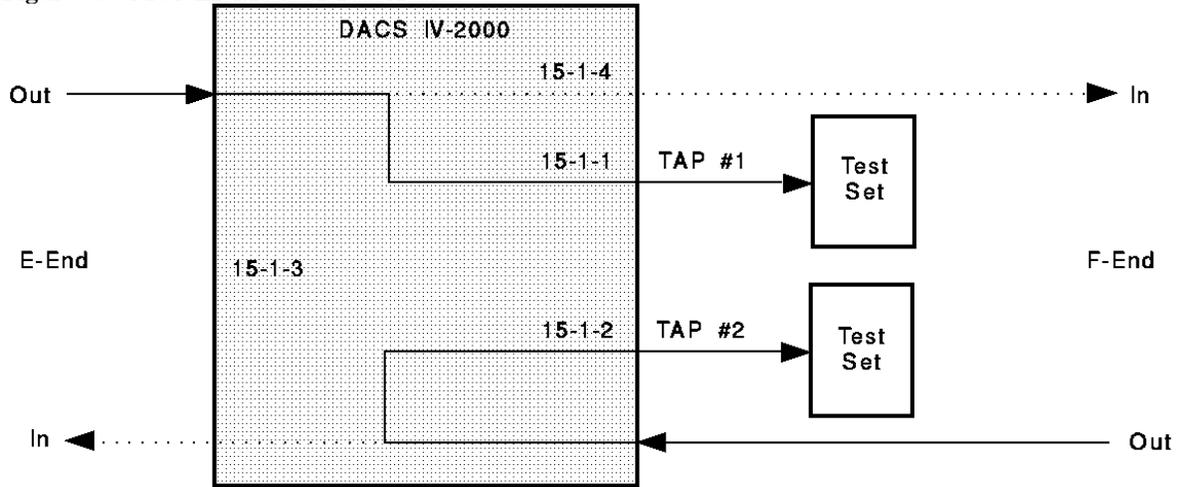
CONN-TACC-T1::15-1-1,15-1-3,:::MONE;

Figure 32: MONF Mode of Test Access



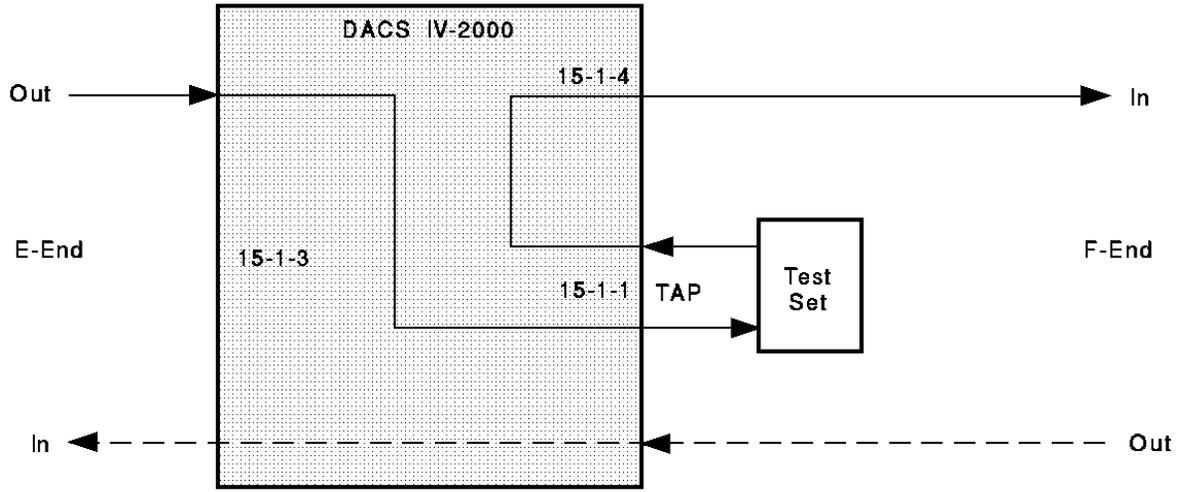
CONN-TACC-T1::15-1-1,15-1-3,15-1-4:::MONF;

Figure 33: MONEF Mode of Test Access



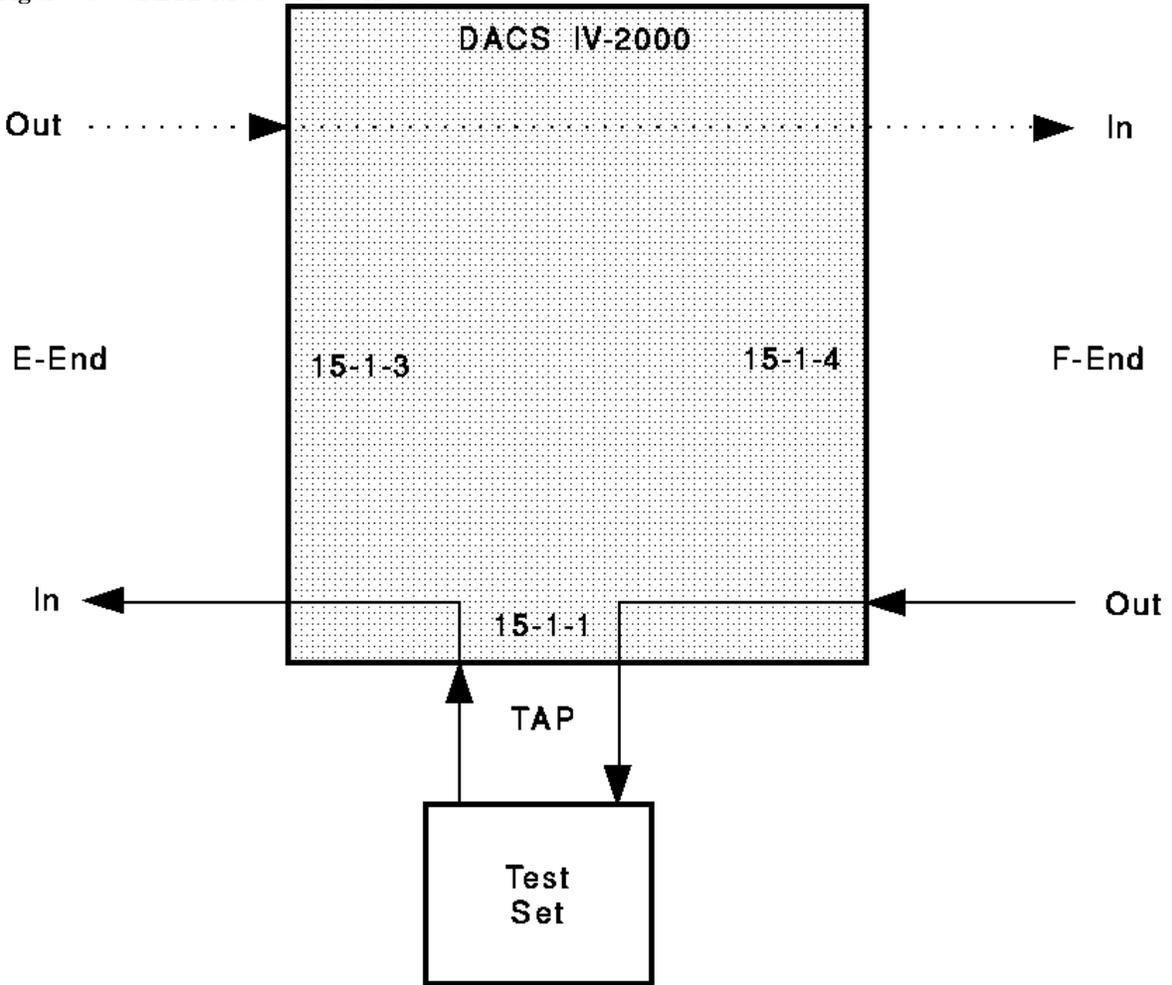
CONN-TACC-T1::15-1-1,15-1-3,15-1-4:::MONEF;

Figure 34: SPLTA Mode of Test Access



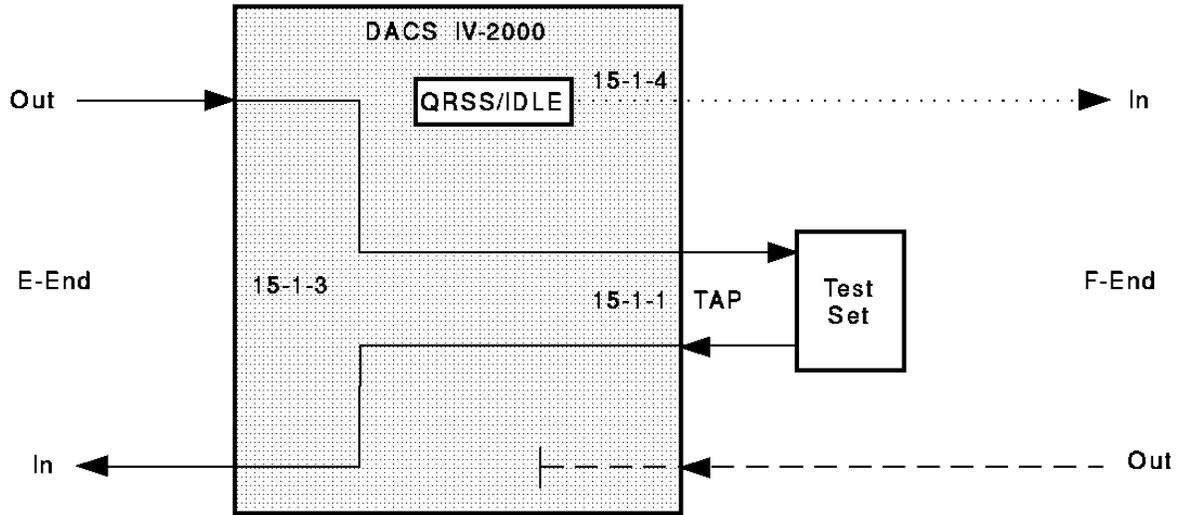
CONN-TACC-T1::15-1-1,15-1-3,15-1-4:::SPLTA;

Figure 35: SPLTB Mode of Test Access



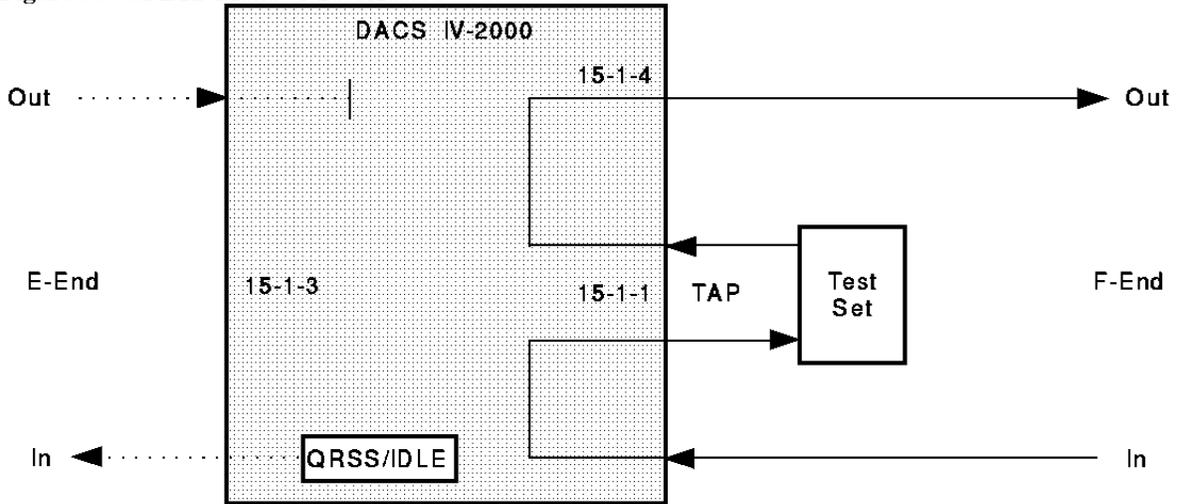
CONN-TACC-T1::15-1-1,15-1-3,15-1-4:::SPLTB;

Figure 36: SPLTE Mode of Test Access



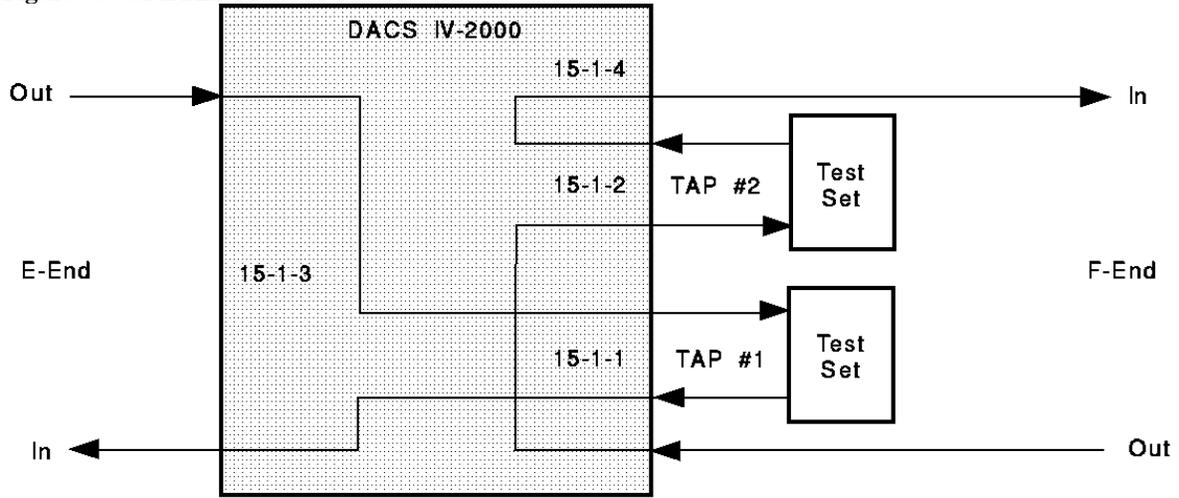
CONN-TACC-T1::15-1-1,15-1-3,15-1-4::SPLTE;

Figure 37: SPLTF Mode of Test Access



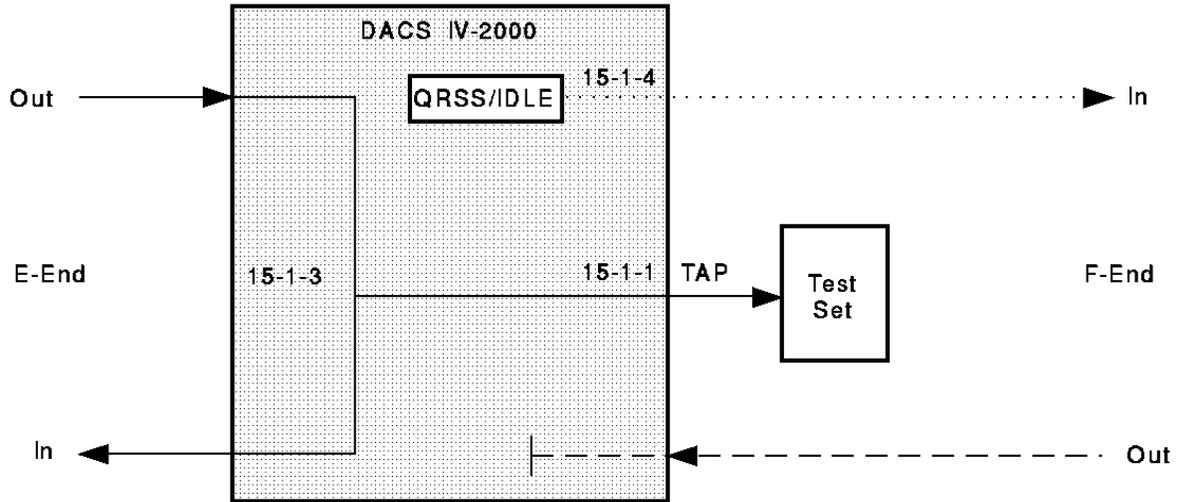
CONN-TACC-T1::15-1-1,15-1-3,15-1-4::SPLTF;

Figure 38: SPLTEF Mode of Test Access



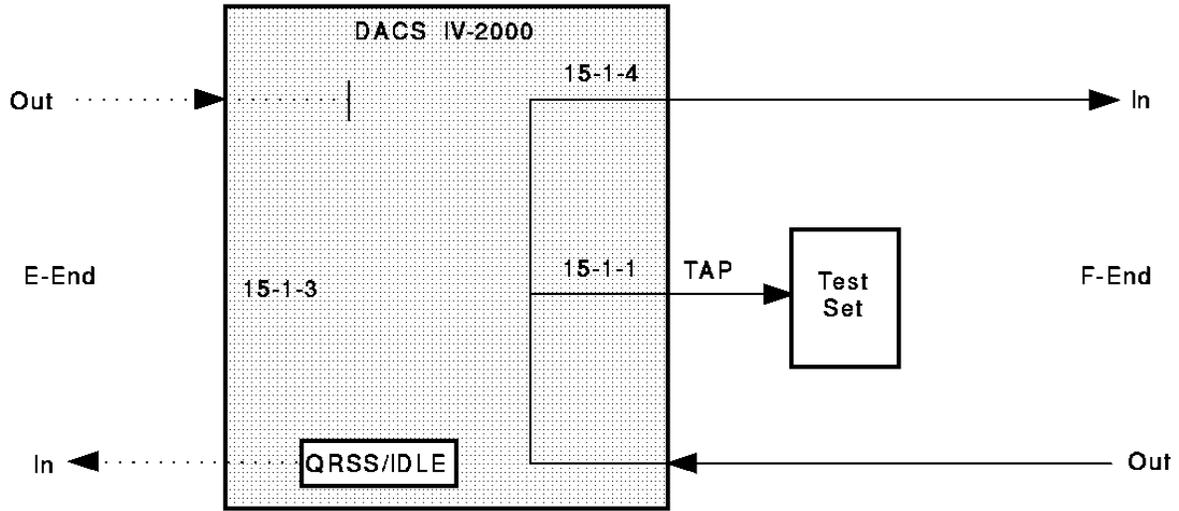
CONN-TACC-T1:::15-1-1,15-1-3,15-1-4:::SPLTEF;

Figure 39: LOOPE Mode of Test Access



CONN-TACC-T1::15-1-1,15-1-3,15-1-4::LOOPE;

Figure 40: LOOPF Mode of Test Access



CONN-TACC-T1::15-1-1,15-1-3,15-1-4::LOOPF;