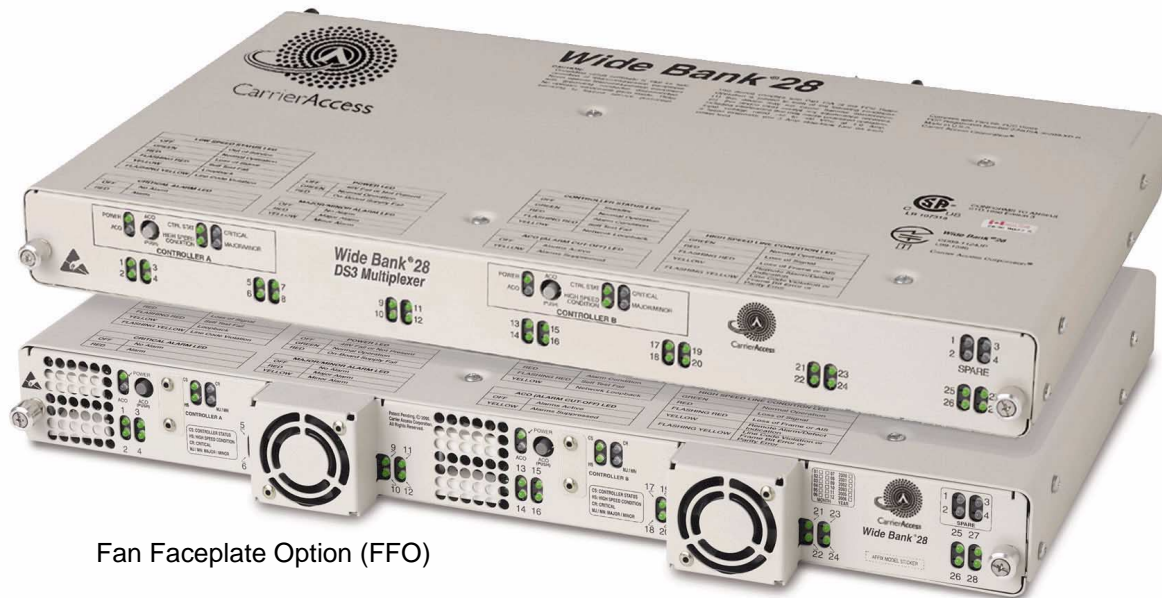


Wide Bank 28 DS3

TL1 JOB AID



Fan Faceplate Option (FFO)

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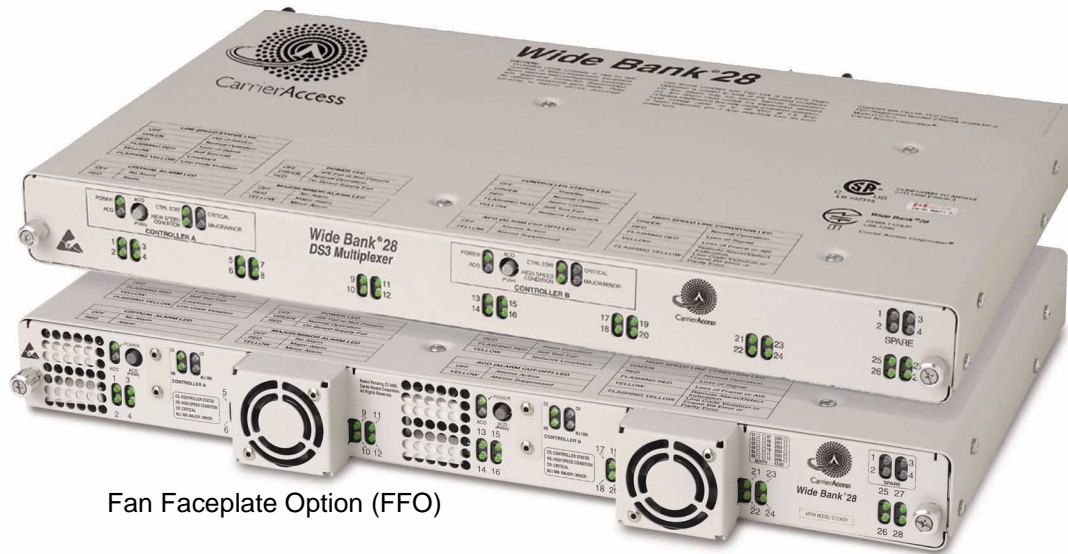
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System Overview



Fan Faceplate Option (FFO)

Carrier Access Corporation's Wide Bank 28 DS3 Multiplexer provides a standards-based M13 multiplexing function with TL1 management. This product converts a framed Digital Signal Level 3 (DS3) network connection into 28 Digital Signal Level 1 (DS1) connections to T1 facilities, or into 21 connections to E1 facilities. Each Wide Bank 28 DS3 can be equipped with DS1 cards or E1 cards, but not both.

Independent Framing and Clocking

The Wide Bank 28 DS3 does not re-frame or re-clock the low-speed inputs. It allows T1 or E1 framing to be provided independently by the connected communications equipment at both the near-end and the far-end of the DS3 line. Each T1 or E1 is also independently clocked within the M13 formatted DS3 composite. Because of the independent clocking and framing capabilities for each of the T1 or E1 connections, the Wide Bank 28 DS3 can provide asynchronous T1 or E1 to DS3 multiplexing functions.

Capacity and Protection

The Wide Bank 28 DS3 unit's modular design provides up to seven active quad DS1 (QDSX) cards or seven active triple-port E1 cards. One spare circuit card (DS1 or E1) provides software-controlled protection of low-speed interfaces on a 1 to 7 basis.

The DS3 Controller card provides all common electronic functions of power conversion, processing and management, and a single DS3 interface. An optional redundant DS3 Controller card provides protection for both electronic common equipment and a second DS3 interface for network protection.

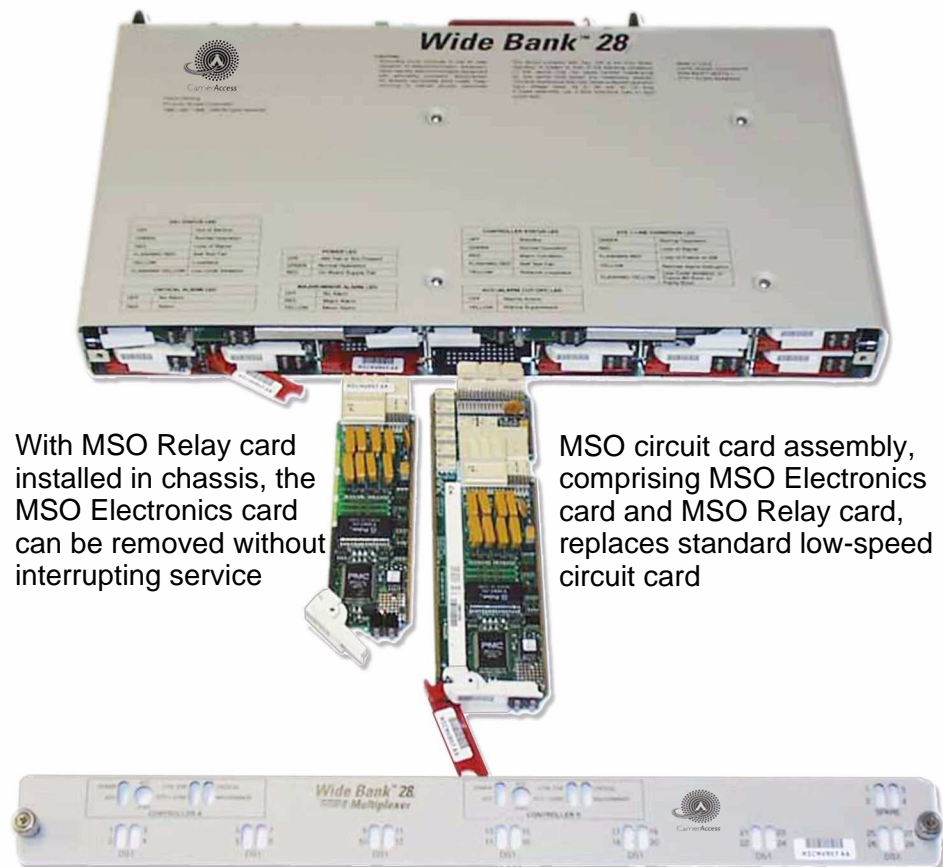
Fan Faceplate Option (FFO)

The Fan Faceplate Option provides additional cooling capacity so that Wide Bank units can be installed with no space between units. This enables up to 40 Wide Banks (1120 DS1s) to be installed in one 7-foot rack.

Maintenance Service Option (MSO)

In addition to providing the same circuit failure protection as Standard DS1 and E1 cards, the MSO DS1 and E1 cards can be replaced without interrupting service on other circuits. The TL1 Access Identifiers clearly distinguish between standard cards and MSO cards.

The MSO circuit card is made up of two separating sections called the MSO Electronics card and the MSO Relay card. By separating these sections, a customer can replace the failed DS1 or E1 electronic circuits on the MSO Electronics card while the MSO Relay card automatically maintains the four DS1 (or three E1) circuits by switching them to the spare card. Once new MSO Electronics are inserted and pass self-test, the circuits on the spare card are automatically switched back to the home circuits.



Guidelines

TL1 Command Syntax

TL1 commands are not case sensitive and may be entered using “UPPER CASE” or “lower case” characters. For simplicity, this Job Aid uses the following conventions:

- “UPPER CASE” characters denote Command words and Modifiers
- “lower case” characters denote Keywords in commands and are accompanied by a table listing permissible values. Default values in the table are shown in **bold type**.
- { } braces denote required keywords that must be present.
- [] brackets denote optional keywords that may be omitted. An accompanying table will list the default value in **bold type**.
- Target Identifier (tid) may be optional or required. The network architecture may require a tid in order to access the element. To save space in this document, the tid is not enclosed in brackets. If a tid is included in a command, it must be correct or the command will be denied.
- Correlation Tag (ctag) is usually optional. To save space in this document, the ctag is not enclosed in brackets. The ctag is an alphanumeric string that is echoed back in the response message for each command.
- Access Identifier (aid) is usually required. The aid will be enclosed in brackets only if it is optional. Refer to the accompanying tables in each command for permissible values and the default value if omitted.
- List and Range notations using single and double ampersands (& and &&) are supported for T1 and E1 aids in most commands.

List example for DS1s 1, 3, 5:

RTRV-T1:tid:DS1-1&DS1-3&DS1-5:ctag;

Range example for DS1s 5 thru 8:

RTRV-T1:tid:DS1-5&&DS1-8:ctag;

TL1 Shortcuts (Recall and Edit)

To simplify entering repetitive commands, the Wide Bank allows you to “recall” the previous ten commands entered by pressing the up and down arrow keys. You can also edit TL1 commands by using the backspace key to delete mistakes and retyping characters.

Provisioning New Circuits

Configure the system parameters

- Retrieve and verify the System Identifier (see *System ID* on [page 16](#))
- Retrieve and verify the System Clock (see *System Time of Day* on [page 17](#))

Configure the first facility

- Retrieve one of the facilities to verify parameters and present state
- The present state of the T3 facility is always in service and equipped (IS-EQ)
- Check the present state of T1 and E1 facilities to verify that the facility is available
- If necessary, enter or edit the facility parameters and place the facility in service

- Retrieve the facility to verify parameters and present state
- Retrieve the facility condition to verify normal operation (see *Retrieve Condition* on page 40)
- Retrieve the facility alarms to verify normal operation (see *Retrieve Alarms* on page 41)

Configure the next facility

- Repeat the above items to configure each of the remaining facilities

Test the facilities

- Follow standard practices to test each facility
- If desired, use the *Diagnostics* on page 32 and *Loopbacks* on page 34

Provisioning Existing Circuits

Configure the first facility

- Retrieve one of the facilities to verify parameters and present state
- The present state of the T3 facility is always in service and equipped (IS-EQ)
- Check the present state of T1 and E1 facilities to verify that the facility is available
- If necessary, enter or edit the facility parameters and place the facility in service
- Retrieve the facility to verify parameters and present state
- Retrieve the facility condition to verify normal operation (see *Retrieve Condition* on page 40)
- Retrieve the facility alarms to verify normal operation (see *Retrieve Alarms* on page 41)

Configure the next facility

- Repeat the above items to configure each of the remaining facilities

Test the facilities

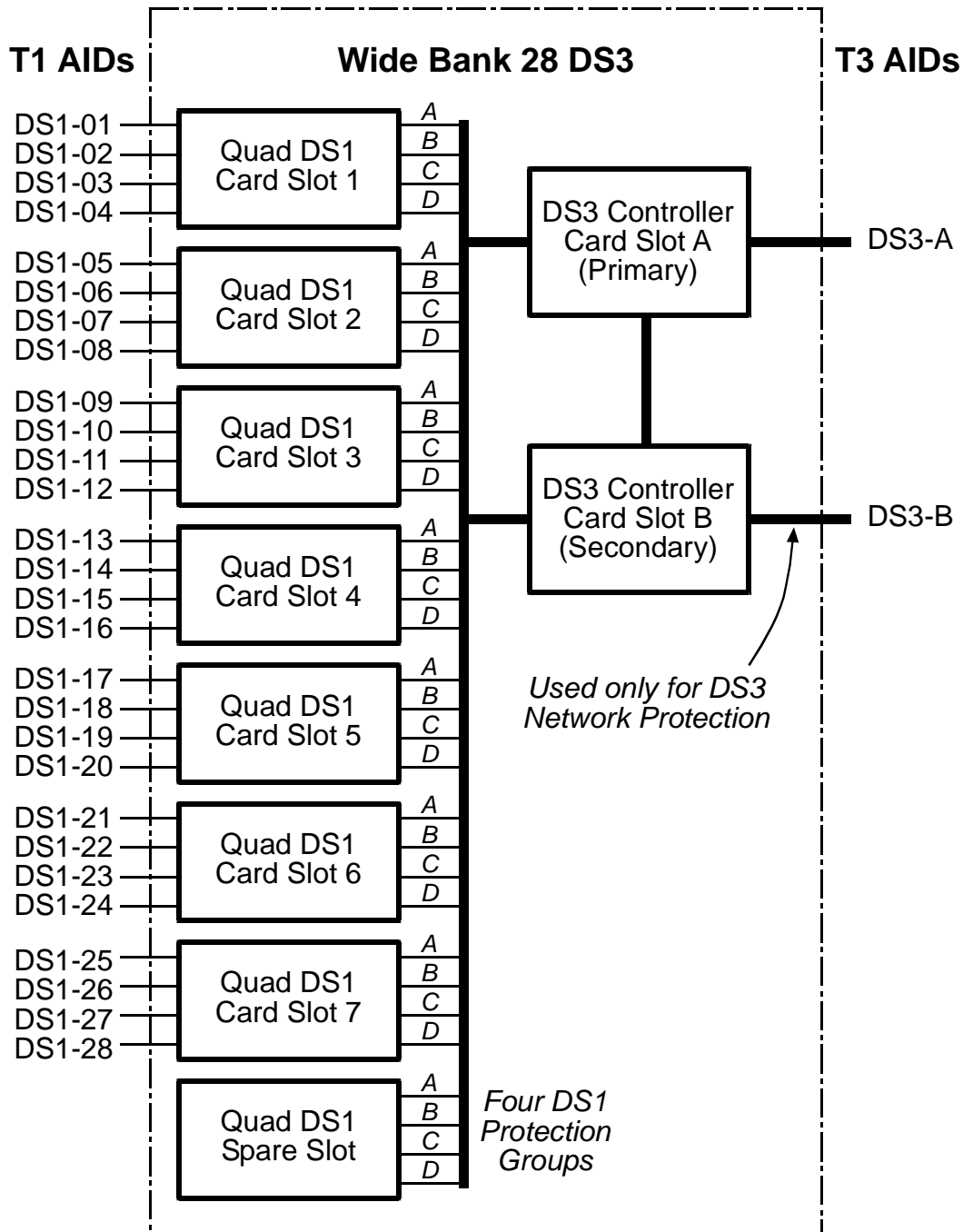
- Follow standard practices to test each facility
- If desired, use the *Diagnostics* on page 32 and *Loopbacks* on page 34.

Available Test Functions

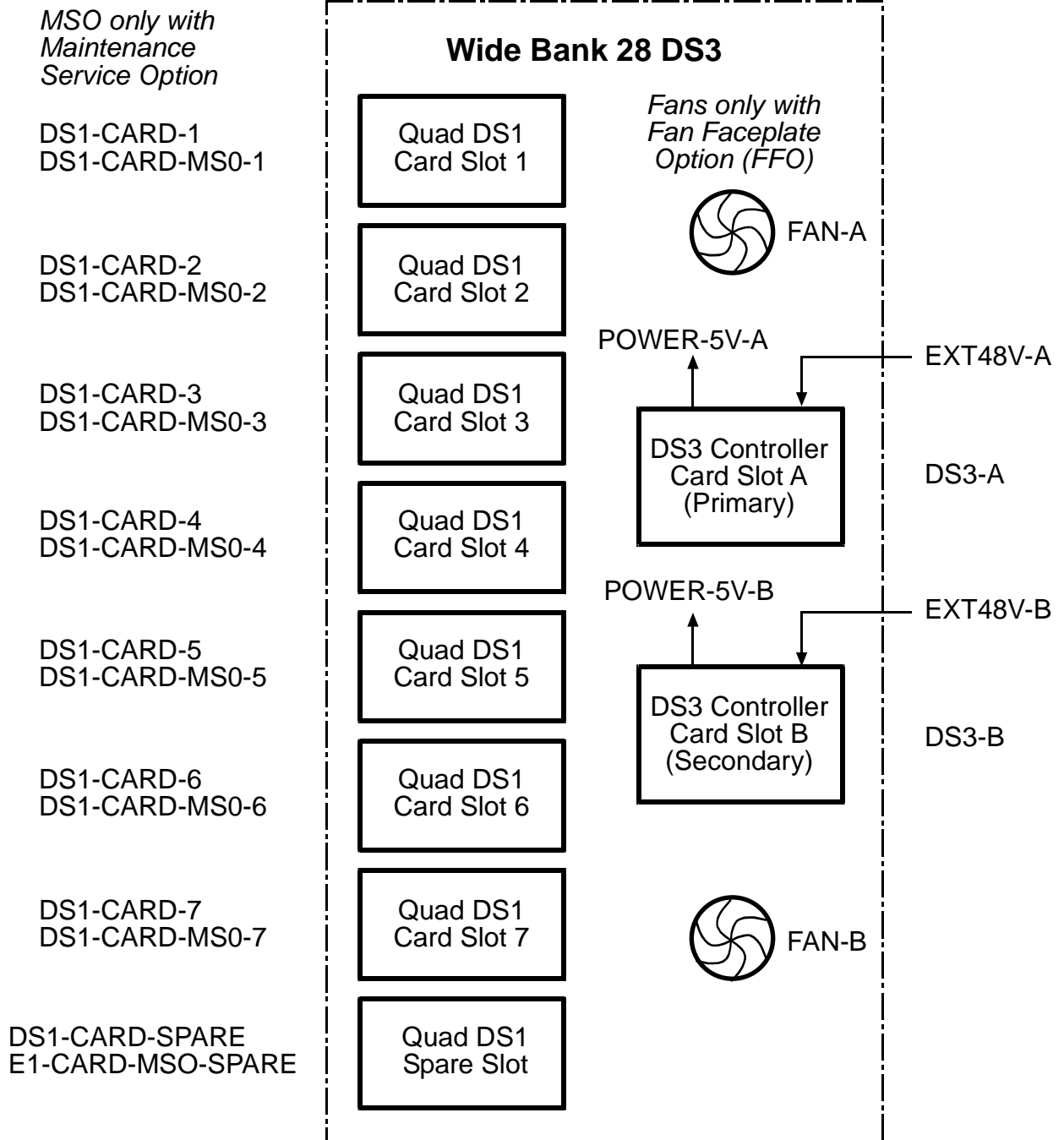
- Verify IP network connectivity to the Wide Bank with a PING command
- After login, verify normal Wide Bank response with the RTRV-HDR command
- Diagnose fans, E1, and T1 circuits with the DGN-{ENV|E1|T1} command
- Allow detection of loopback codes with the ALW-LPBK-{E1|T1|T3} command
- Send loopback codes with the CONN-LPBK-{E1|T1|T3} command
- Operate loopbacks with the OPR-LPBK-{E1|T1|T3} command

Access Identifiers

T3-T1 Configuration AIDs

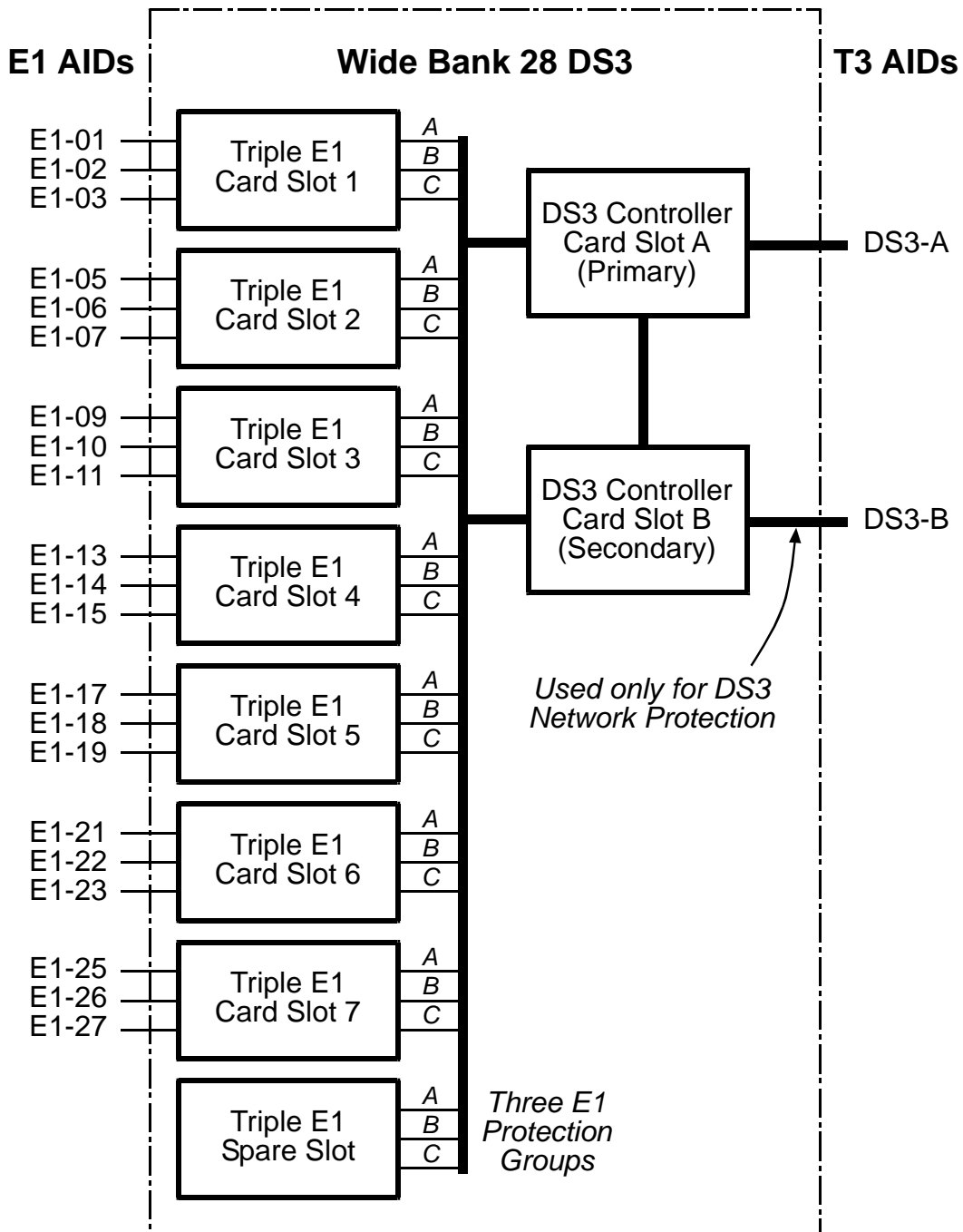


T3-T1 Equipment AIDs

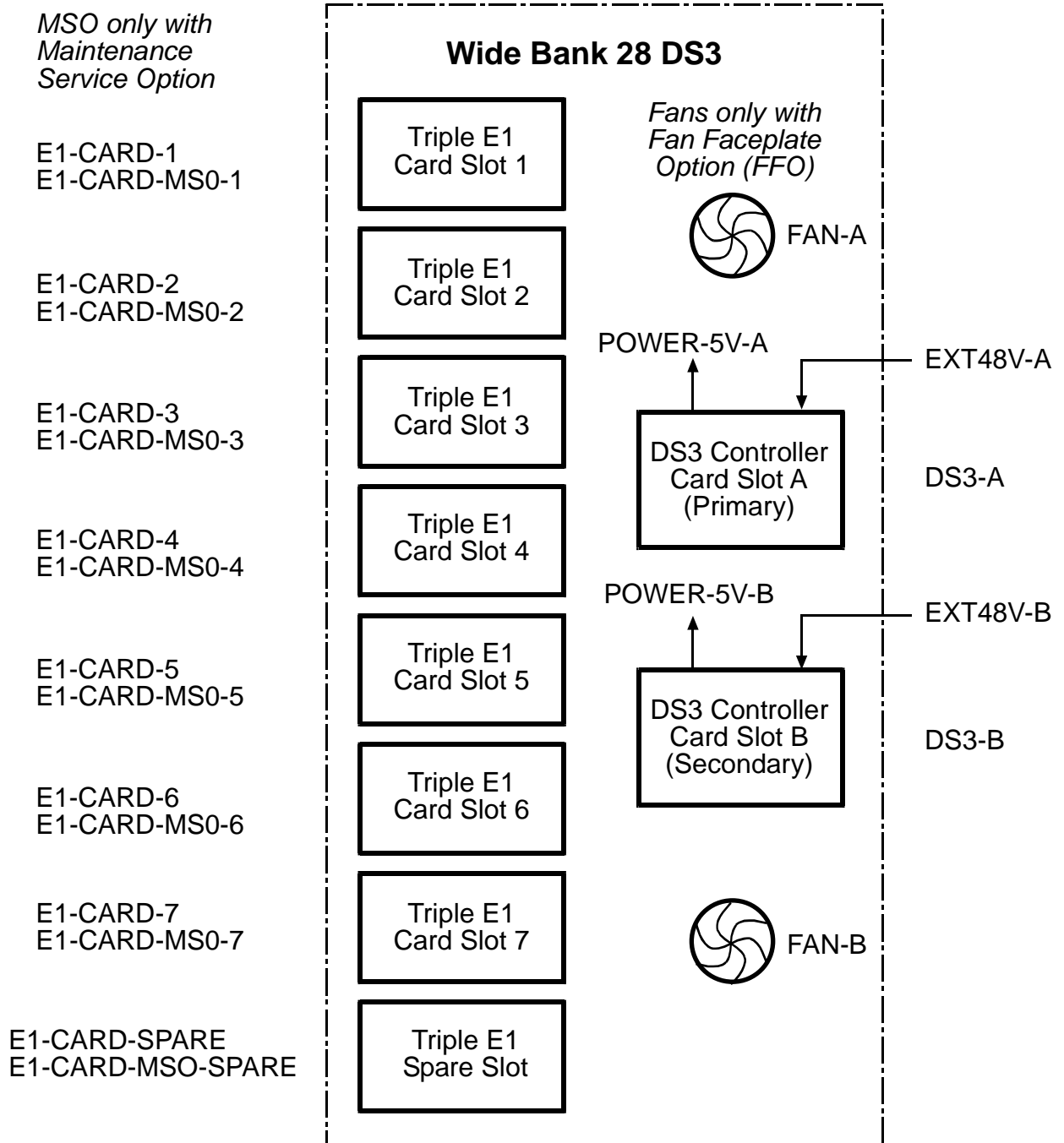


Access Identifiers

T3-E1 Configuration AIDs



T3-E1 Equipment AIDs



Log-In/Log-Out Commands

1. Activate User (Log In)

NOTE: To simplify new installations, units are normally shipped with log-in security turned off unless the customer requests that it be turned on. When security is turned on, the default user name is ADMIN and the default password is either null or TEST.

ACT-USER:tid:uid:ctag::pid;

| Keyword | Description |
|---------|--|
| pid | Private ID (password). An ASCII string up to 10 characters long with at least two non-alphabetic characters with at least one special character. Omit if no password is required. Passwords are case-sensitive |
| uid | User ID (name). An alphanumeric string up to 10 characters long. |

Example: ACT-USER:tid:JOHNDOE:ctag::SECRET-1;

NOTE: If user's name and password are valid, a normal COMPLD response will appear. Following each login, the Wide Bank automatically retrieves the current equipment configuration (RTRV-EQPT) to display the installed cards and their present status, as shown below.

Response:

```
tid 2001-12-18 15:13:21
M  ctag COMPLD
;

tid 2001-12-18 15:13:21
A  1 REPT EQPT
   "DS3-A:ACTIVE,2.40.0"
   "DS3-B:STANDBY,2.40.0"
   "DS1-CARD-1:ACTIVE,"
   "DS1-CARD-2:ACTIVE,"
   "DS1-CARD-3:ACTIVE,"
   "DS1-CARD-4:ACTIVE,"
   "DS1-CARD-5:ACTIVE,"
   "DS1-CARD-6:ACTIVE,"
   "DS1-CARD-7:ACTIVE,"
   "DS1-CARD-SPARE:ACTIVE,"
;
```

2. Edit PID (Change Password)

ED-PID:tid:uid:ctag::old-pid,new-pid;

| Keyword | Description |
|---------|---|
| uid | User ID |
| new-pid | New Private ID (password). An ASCII string up to 10 characters long with at least two non-alphabetic characters with at least one special character. Null removes password requirement. Passwords are case-sensitive. |
| old-pid | Old Private ID (password) |

Example: ED-PID:tid:name:ctag::old-1,new-1;

3. Cancel User (Log Out)

CANC-USER:tid:uid:ctag;

| Keyword | Description |
|---------|--------------------------------|
| uid | User ID (optional for log out) |

Example: CANC-USER:tid:name:ctag;

Response: tid 2001-12-18 16:07:31
M ctag COMPLD
;

4. Cancel User Session Message

The TL1 session time-out period is set by the system administrator. The default value is 31 minutes. This time-out will cancel the user session when the specified period of inactivity is exceeded. If two or more users have active sessions and one user session times out, the other users will receive a CANC message. In the following example, STEVE is the user that timed out:

Response: tid 2001-12-04 11:40:32
A atag CANC
STEVE
/* Session Timeout: STEVE */
;

Log-In/Log-Out Commands

5. Set User Session Timeout

This command is used by the system administrator to set the number of minutes before session inactivity timeout of the TL1 TCP/IP port. When the command is issued, any active sessions will be updated with the new session timeout period. Setting the tmout parameter to zero will turn off session inactivity timeouts so that sessions will never time out.

This command does not affect TL1 sessions using the TL1 RS-232 port or any CLI sessions using TCP/IP or RS-232.

SET-ATTR-SECUDFLT:tid::ctag::TMOUT=<tmout>;

| Keyword | Description |
|---------|--|
| tmout | Timeout period in minutes. <ul style="list-style-type: none">• Any positive integer value.• A zero value will disable timeout.• Default value is 31. |

Example: SET-ATTR-SECUDFLT:tid::ctag::TMOUT=15;

Present State Definitions (PST)

1. Retrieve T3 Present State

NOTE: The T3 facility's Present State value is always **in service** and **equipped** (IS-EQ).

RTRV-T3:tid:[aid]:ctag;

| Keyword | Description |
|---------|---|
| aid | Access ID (optional). If omitted, it will default to ALL. <ul style="list-style-type: none">• ALL |
| ctag | Correlation Tag (optional) |
| tid | Target ID of network element (optional) |

Example: Retrieve current DS3 configuration.

```
RTRV-T3:tid::ctag;
```

The following response shows the default DS3 configuration values (see *T3 Circuit Configuration* on page 18).

Response:

```
tid 2001-12-4 11:43:56
M ctag COMPLD
  "AISC=LOS&AISNAS&LOF , AIST=ONES , CKTID=DS3 ,
  CMDMDE=FRCD , FMT=M23 , IDLE=N , LBO=1 , LINECDE=B3ZS ,
  MCOND=LOS&RAI&AISNAS&LOF&T-ERL&RTCLK&IMPROPRMVL&
  IRR&CONTEQPT&BPV , OMODE=NORM , XBIT=PASS , XBITRCV=ALM1 ,
  XPOL=ALM1 , TMG=INT , TMGLOCK=N"
;
```

Present State Definitions (PST)

2. Retrieve T1 or E1 Present State

RTRV-T1:tid:aid:ctag;

RTRV-E1:tid:aid:ctag;

| Keyword | Description |
|---------|---|
| aid | Access ID depends on facility type: <ul style="list-style-type: none">• For T1 facility, use DS1-1 to DS1-28, or ALL• For E1 facility, use E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) Note: This command supports aid lists and ranges (&, &&). |
| ctag | Correlation Tag (optional) |
| tid | Target ID of network element (optional) |

Example: Retrieve the current configuration, including the PST and SST values, for E1 #2.


```
RTRV-E1:tid:E1-02:ctag;
```

Example: Retrieve the current configuration, including the PST and SST values, for DS1 #2.

```
RTRV-T1:tid:DS1-02:ctag;
```

The following response shows the default DS1 configuration values (see *T1 Circuit Configuration* on page 22).

```
tid 2001-12-04 11:51:58
M ctag COMPLD
"DS1-02::AISF=Y,CMDMDE=FRCD,DLCID=DS1 2,
FLMDE=BOTH,FMT=UNFR,IDLE=AIS,LBO=1,LINECDE=B8ZS,
OMODE=NORM,RVRTFLAG=UNLCKD:IS-EQ,NALMNR"
;
```



Present State Definitions (PST)

PST and SST Values

| PST Keyword | Description |
|-------------|---|
| | T1 and E1 facilities may have the following Primary State (PST) values. |
| IS-EQ | In service (enabled) and equipped |
| IS-RLY | In service with relay card only (transceiver electronics card is removed) |
| IS-UEQ | In service and unequipped |
| OOS-EQ | Out of service (disabled) and equipped |
| OOS-RLY | Out of service with relay card only (transceiver electronics card is removed) |
| OOS-UEQ | Out of service and unequipped |

| SST Keyword | Description |
|-------------|---|
| | T1 and E1 facilities may have the following Secondary State (SST) values. |
| NALMNR | The automatic in-service feature is turned on and an LOS alarm is being suppressed on this DS1 |
| NALMCD | The automatic in-service feature is turned on, a good DS1 signal exists, but it has not persisted for 2 minutes yet |

System ID

The following steps show how to set the System ID (sid) that appears as in all TL1 messages and is required as the Target ID (tid) when used in TL1 commands.

1. Retrieve Current Equipment Configuration

NOTE: The following command is executed automatically when the user logs in.

RTRV-EQPT:tid:[ALL]:ctag;

Example: RTRV-EQPT:tid:ALL:ctag;

Response: tid 2002-01-05 11:21:39
M ctag COMPLD
"DS3-A:ACTIVE,2.40.0"
"DS3-B:STANDBY,2.40.0"
"DS1-CARD-1:ACTIVE,"
"DS1-CARD-2:ACTIVE,"
"DS1-CARD-3:ACTIVE,"
"DS1-CARD-4:ACTIVE,"
"DS1-CARD-5:ACTIVE,"
"DS1-CARD-6:ACTIVE,"
"DS1-CARD-7:ACTIVE,"
"DS1-CARD-SPARE:ACTIVE,"
;

2. Set System ID

SET-SID:tid::ctag::sid;

Example: Change System Equipment ID from tid to MUX-1.

SET-SID:tid::ctag::MUX-1;

Response: tid 2002-01-05 11:23:48
M ctag COMPLD
;

The first response following the SET-SID command will display the original tid so that the response can be matched to the command. Subsequent commands and responses will use the new tid.

| Keyword | Description |
|---------|---|
| sid | System ID: Up to 20 alphanumeric or hyphen characters |

The following steps show how to reset the Wide Bank system clock.

NOTE: The Wide Bank system clock must be reset after a power interruption. The clock date and time are used to time-stamp all alarms, events, and logs. Following a power interruption, the date and time will restart at 2001-01-01 01:00:00.

1. Retrieve Time of Day

RTRV-TOD:tid::ctag;

Example: RTRV-TOD:tid::ctag;

Response: tid 2001-01-01 11:51:46
M ctag COMPLD
"2001,01,01,11,51,46"
;

2. Edit Time of Day

ED-DAT:tid::ctag::yy-mm-dd,hh-mm-ss;

Example: Set date to 2001 December 5 and time to 11:20:00 a.m.

ED-DAT:tid::ctag::01-12-05,11-20-00;

Response: tid 2001-12-05 11:20:00
M ctag COMPLD
;

| Keyword | Description |
|----------|--|
| yy-mm-dd | Date: <ul style="list-style-type: none">• yy – Last 2 digits of year• mm – Month: 01 to 12• dd – Day: 01 to 31 |
| hh-mm-ss | Time: <ul style="list-style-type: none">• hh – Hours: 00 to 23• mm – Minutes: 00 to 59• ss – Seconds: 0 to 59 |

T3 Circuit Configuration

The following steps show how to configure the T3 (DS3) facility.

NOTE: The Wide Bank T3 facility is always **In Service** and **Equipped** (IS-EQ).

1. Retrieve Current T3 Configuration

RTRV-T3:tid:[aid]:ctag;

| Keyword | Description |
|---------|---|
| aid | Access ID (optional). If omitted, it will default to ALL. <ul style="list-style-type: none">• ALL |

Example: Retrieve the current DS3 configuration.

RTRV-T3:tid:ALL:ctag;

The following response shows the default configuration.

NOTE: The response may include current alarms and inhibits.

Response: tid 2001-12-4 11:43:56
M ctag COMPLD
 "AISC=LOS&AISNAS&LOF ,AIST=ONES ,CKTID=DS3 ,
 CMDMDE=FRCD ,FMT=M23 ,IDLE=N ,LBO=1 ,LINECDE=B3ZS ,
 MCOND=LOS&RAI&AISNAS&LOF&T-ERL&RTCLK&IMPROPRMVL&
 IRR&CONTEQPT&BPV ,OMODE=NORM ,XBIT=PASS ,XBITRCV=ALM1 ,
 XPOL=ALM1 ,TMG=INT ,TMGLOCK=N"
 ;

2. Edit T3 Configuration

ED-T3:tid:aid:ctag:::[CKTID=ctid],[FMT=fmt],[LBO=lbo],[OMODE=omode],
[TMG=tmg],[TMGLOCK=tmglock];

| Keyword | Description |
|---------|---|
| aid | Access ID <ul style="list-style-type: none">• ALL |

Example: Set DS3 frame format to C-bit.

ED-T3:tid:ALL:ctag:::FMT=CBIT;

T3 Configuration Parameters

| Keyword | Description |
|----------|--|
| aid | Access ID. Required for ED-T3 command. <ul style="list-style-type: none"> • ALL |
| AISC= | Specifies conditions on the input (receive) side of a connection under which AIS will be generated on the output (transmit) side of a connection. Hard-coded to LOS&AISNAS&LOF. |
| AIST= | Indicates the type of the AIS signal to be generated/transmitted, and the AIS signal mode expected on input should a failure condition exist. Hard-coded to ONES . |
| CKTID= | The circuit identification parameter contains the Common Language Circuit ID or other alias of the channel being provisioned. This is an ASCII string limited to 32 characters. |
| CMDMDE= | Indicates command execution mode. Hard-coded to FRCD , meaning that commands may override existing parameter settings in order to execute. |
| FMT= | Indicates DS3 digital signal format. Values are: <ul style="list-style-type: none"> • CBIT • M23 |
| IDLE= | Indicates DS3 idle signal is used or not used. Hard-coded to N . |
| LBO= | Indicates line build out setting. Values are: <ul style="list-style-type: none"> • 1 – short connections (less than 50') • 2 – long connections (50' or longer) |
| LINECDE= | Indicates DS3 line code. Hard coded to B3ZS . |
| MCOND= | Specifies conditions to be monitored on the input side of the connection. Hard-coded to: LOS&RAI&AISNAS&LOF&T-BERL&RTCLK&IMPROPRMVL&INT &PWR&INTERR&CONTEQPT&BPV |
| OMODE= | Specifies what will be transmitted from the DS3 output port. Values are: <ul style="list-style-type: none"> • NORM – normal • AIS – Alarm Indication Signal |
| TMG= | Timing Source. Applies only to T3 modifier. Values are: <ul style="list-style-type: none"> • INT – Internal Stratum 4E clock • EXT – External Clock (44.736 Mbps) • LINE – Slave to DS3 Line |
| TMGLOCK= | Timing Lock. Applies only to T3 modifier. Indicates whether provisioned timing source is to be locked to disable automatic source switching. Values are: <ul style="list-style-type: none"> • Y – yes • N – no |
| XBIT= | Indicates how the X-bits are handled for this particular channel. Hard-coded to PASS , meaning it will pass the X-bits with no modification. |
| XBITRCV= | Indicates the usage of the outgoing X-bits. Hard-coded to ALM1 , meaning all the X-bits equal to 1 for indicating incoming remove alarm. |
| XPOL= | Indicates the value/polarity to which the outgoing X-bits are forced. Hard-coded to ALM1 , meaning the Wide Bank will set X-bits to one for indicating alarm. |

T3 Protection and Revertive Configuration

The following steps show how to retrieve the current DS3 equipment configuration and condition, and how to change the DS3 protection and revertive properties. The unit can also provide automatic protection switching (APS) if it has two DS3 lines as well as two DS3 controller cards.

1. Retrieve Current T3 Equipment Configuration

This will show the status of the DS3 controller cards and whether the unit can provide high-speed protection.

RTRV-EQPT:tid:[ALL]:ctag;

Example: RTRV-EQPT:tid:ALL:ctag;

Response:

```
tid 2001-08-04 05:08:45
M ctag COMPLD
  "DS3-A:ACTIVE,2.40.0"
  "DS3-B:STANDBY,2.40.0"
  "DS1-CARD-1:ACTIVE,"
  "DS1-CARD-2:ACTIVE,"
  "DS1-CARD-3:ACTIVE,"
  "DS1-CARD-4:ACTIVE,"
  "DS1-CARD-5:ACTIVE,"
  "DS1-CARD-6:ACTIVE,"
  "DS1-CARD-7:ACTIVE,"
  "DS1-CARD-SPARE:ACTIVE,"
;
```

Status of DS3 controller cards. Unit can provide high-speed protection if one DS3 is ACTIVE and one is STANDBY.

T3 Equipment Status Values

| Equipment | Status | Description |
|---------------|-------------|--|
| DS3 -A, DS3-B | Active | Controller card is installed and in active mode (DS3 circuit is active) |
| | Standby | Controller is installed and in standby mode |
| | Not Present | Controller is not installed |
| | Not Ready | Controller is present, but is not communicating with the active card for unknown reasons |
| | Fail | Controller hardware failure |

T3 Protection and Revertive Configuration

2. Retrieve Current T3 Condition

RTRV-COND-T3:tid::ctag;

Example: RTRV-COND-T3:tid::ctag;

Response:

```
tid 2001-08-04 05:05:51
M ctag COMPLD
"DS3-A,T3:PROTNA,NSA,,,,,\\"Protection Unit not Available\\"
"DS3-A,T3:IHNSWPR,NSA,,,,,\\"DS3 Facility Protection not Enabled\\"
"DS3-A,T3:INHAUTORSTEQPT,NSA,,,,,\\"DS3 Revertive Off\\"
;
```

If T3:PROTNA appears, protection is not available, either because the second controller is not installed or has failed.

3. Determine T3 Protection and Revertive Choices

| If DS3 condition is | Your choice is |
|--|---|
| T3 : IHNSWPR | Allow DS3 automatic protection switching: ALW-SWTOWKG-T3:tid:ALL:ctag; |
| T3 : IHNSWPR (does not appear) | Inhibit DS3 automatic protection switching: INH-SWTOWKG-T3:tid:ALL:ctag; |
| T3 : INHAUTORSTEQPT | Allow DS3 revertive switching to DS3-A: ALW-AUTORST:tid::ctag::DS3EQPT; |
| T3 : INHAUTORSTEQPT (does not appear) | Inhibit DS3 revertive switching: INH-AUTORST:tid::ctag::DS3EQPT; |

4. To Switch T3 to Protection or Working Controller

The following commands will forcibly move the T3 circuit between the working (DS3-A) and protection (DS3-B) controllers for testing or maintenance. Switching will be denied only if the equipment status (RTRV-EQPT) of the other controller is NOT PRESENT (not equipped) or UNKNOWN (equipped but status unknown).

CAUTION! THESE COMMANDS MAY AFFECT SERVICE. BEFORE SWITCHING CONTROLLERS, IT IS ADVISABLE TO PERFORM A RTRV-ALM-T3 TO VERIFY THAT THERE ARE NO EXISTING DS3 ALARMS ON THE OTHER CONTROLLER.

NOTE: If you switch DS3 controllers, your current TL1 session will be terminated. When you start another TL1 session, you will be logging into the newly active controller.

SW-TOPROTN-T3:tid:ALL:ctag;

SW-TOWKG-T3:tid:ALL:ctag;

T1 Circuit Configuration

1. Retrieve Current T1 Configuration

RTRV-T1:tid:aid:ctag;

Example: Retrieve current configuration for DS1 #2.

RTRV-T1:tid:DS1-02:ctag;

Response: tid 2001-12-04 11:51:58
 M ctag COMPLD
 "DS1-02::AISF=Y,CMDMDE=FRCD,DLCID=DS1 2,
 FLMDE=BOTH,FMT=UNFR,IDLE=AIS,LBO=1,LINECDE=B8ZS,
 OMODE=NORM,RVRTFLAG=UNLCKD:IS-EQ,NALMNR"
 ;

| AIDType | AID |
|---------|--|
| T1 | DS1-1 to DS1-28, or ALL Note: Most T1 commands support lists and ranges |

PST

2. Determine T1 Configuration Choices

| If PST= | Your choice is |
|------------------------------|--|
| IS-EQ IS-RLY IS-UEQ | Edit a parameter while in service: ED-T1:tid:aid:ctag:::t1_parameters]; Place a facility out of service: RMV-T1:tid:aid:ctag; |
| OOS-EQ OOS-RLY OOS-UEQ | Edit a parameter while out of service: ED-T1:tid:aid:ctag:::t1_parameters]; Enter (grow) a facility and place in service: ENT-T1:tid:aid:ctag:::t1_parameters]; |

3. To Edit T1 Configuration

ED-T1:tid:aid:ctag:::[DLCID=dlcid],[LBO=lbo],[LINECDE=linecde],[OMODE=omode];

Example: Set DS1 #8 Line Code to AMI.

ED-T1:tid:DS1-08:ctag:::LINECDE=AMI;

4. To Enter T1 Configuration and Put In Service

ENT-T1:tid:aid:ctag:::[DLCID=dlcid],[LBO=lbo],[LINECDE=linecde],[OMODE=omode];

Example: Create DS1 #8 with Line Code set to AMI and place in service.

ENT-T1:tid:DS1-08:ctag:::LINECDE=AMI;

5. To Remove T1 From Service

CAUTION! REMOVING A T1 WILL DISRUPT SERVICE.

RMV-T1:tid:aid:ctag;

Example: Place DS1 #8 out of service.

RMV-T1:tid:DS1-08:ctag;

T1 Configuration Parameters

| Keyword | Description |
|-----------|--|
| AISF= | Indicates whether failed signal from upstream should be replaced by AIS. Hard-coded to Y . |
| CMDMDE= | Indicates command execution mode. Hard-coded to FRCD . This means that existing parameter settings may be overridden in order to execute the command. |
| DLCID= | The DS1 digital loop carrier system identifier. This is a string of ASCII characters and has a maximum length of 32 characters. |
| FLMDE= | Indicates the fault locate mode. Hard-coded to BOTH . |
| FMT= | Indicates DS1 digital signal format. Hard-coded to UNFR . |
| IDLE= | Indicates the signal inserted for idle DS1. Hard-coded to AIS . |
| LBO= | Indicates the line buildout setting. Values are 1-6. <ul style="list-style-type: none"> • 1 – DSX(0’-110’) • 2 – DSX(110’-220’) • 3 – DSX(220’-330’) • 4 – DSX(330’-440’) • 5 – DSX(440’-550’) • 6 – DSX(550’-660’) |
| LINECDE= | Indicates DS1 line code. Values are: <ul style="list-style-type: none"> • AMI – Alternate mark inversion • B8ZS – Bipolar with 8-zero substitution |
| OMODE= | Specifies what will be transmitted from the DS1 output port. Values are: <ul style="list-style-type: none"> • NORM – Normal • AIS – Alarm Indication Signal |
| RVRTFLAG= | <ul style="list-style-type: none"> • UNLCKD – Unlocked. DS1 will revert to home. • LOCKED – Indicates if the DS1 is locked onto the spare due to repeated unsuccessful attempts at reverting to the working card (three attempts in 24 hours). The DS1 will remain on the spare until this flag is cleared, the DS1 card is replaced, or the DS1 is manually moved home (SW-TOWKG-T1). |

E1 Circuit Configuration

1. Retrieve Current E1 Configuration

RTRV-E1:tid:aid:ctag;

Example: Retrieve configuration for E1 #1.

RTRV-E1:tid:E1-01:ctag;

Response: tid 2001-08-04
 11:47:18
 M ctag COMPLD
 "E1-01::AISF=Y,CMDMDE=FRCD,DLCID=E1 1,
 FLMDE=BOTH,FMT=UNFR,IDLE=AIS,LINECDE=HDB3,
 OMODE=NORM,RVRTFLAG=UNLCKD:IS-EQ,NALMNR"
 ;

| AIDType | AID |
|---------|---|
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |

PST

2. Determine E1 Configuration Choices

| If PST= | Your choice is |
|------------------------------|--|
| IS-EQ IS-RLY IS-UEQ | Edit a parameter while in service. ED-E1:tid:aid:ctag:::[DLCID=dlcid],[OMODE=omode]; |
| | Place a facility out of service. RMV-E1:tid:aid:ctag; |
| OOS-EQ OOS-RLY OOS-UEQ | Edit a parameter while out of service ED-E1:tid:aid:ctag:::[DLCID=dlcid],[OMODE=omode]; |
| | Enter (grow) a facility and place in service (ENT-E1) RMV-E1:tid:aid:ctag; |

3. To Edit E1 Configuration

ED-E1:tid:aid:ctag:::[DLCID=dlcid],[OMODE=omode];

Example: Set E1 #3 Circuit ID to WB6-E1-03.

ED-E1:tid:E1-03:ctag:::DLCID=WB6-E1-03;

4. To Enter E1 Configuration and Put In Service

ENT-E1:tid:aid:ctag:::[DLCID=dlcid],[OMODE=omode];

Example: Create E1 #3 with Circuit ID set to WB6-E1-03 and place in service.

ENT-E1:tid:E1-03:ctag:::DLCID=WB6-E1-03;

5. To Remove E1 From Service

CAUTION! REMOVING AN E1 WILL DISRUPT SERVICE.

RMV-E1:tid:aid:ctag;

Example: Place DS1 #3 out of service.

RMV-E1:tid:E1-03:ctag;

E1 Configuration Parameters

E1 facilities are hardcoded to HDB3 line code and no line buildout.

| Keyword | Description |
|-----------|---|
| AISF= | Indicates whether failed signal from upstream should be replaced by AIS. Hard-coded to Y . |
| CMDMDE= | Indicates command execution mode. Hard-coded to FRCD . This means that existing parameter settings may be overridden in order to execute the command. |
| DLCID= | The E1 digital loop carrier system identifier. This is a string of ASCII characters and has a maximum length of 32 characters. |
| FLMDE= | Indicates the fault locate mode. Hard-coded to BOTH . |
| FMT= | Indicates E1 digital signal format. Hard-coded to UNFR . |
| IDLE= | Indicates the signal inserted for idle E1. Hard-coded to AIS . |
| LINECDE= | Indicates E1 line code. E1 is always HDB3 (high density bipolar 3). |
| OMODE= | Specifies what will be transmitted from the E1 output port. The Wide Bank supports: <ul style="list-style-type: none">• NORM – Normal• AIS – Alarm Indication Signal |
| RVRTFLAG= | <ul style="list-style-type: none">• UNLCKD – Unlocked. E1 will revert to home.• LOCKED – Indicates if the E1 is locked onto the spare due to repeated unsuccessful attempts at reverting to the working card (three attempts in 24 hours). The E1 will remain on the spare until this flag is cleared, the E1 card is replaced, or the E1 is manually moved home (SW-TOWKG-E1). |

T1/E1 Protection and Revertive Configuration

The following steps show how to retrieve the current T1/E1 equipment configuration and condition, and how to change the T1/E1 protection and revertive properties.

1. Retrieve Current T1/E1 Equipment Configuration

This will show the status of the DS1/E1 spare card and whether the unit can provide circuit protection.

RTRV-EQPT:tid:[ALL]:ctag;

Example: RTRV-EQPT:tid:ALL:ctag;

Response: tid 2001-08-04 05:08:45
M ctag COMPLD
"DS3-A:ACTIVE,2.40.0"
"DS3-B:STANDBY,2.40.0"
"DS1-CARD-1:ACTIVE,"
"DS1-CARD-2:ACTIVE,"
"DS1-CARD-3:ACTIVE,"
"DS1-CARD-4:ACTIVE,"
"DS1-CARD-5:ACTIVE,"
"DS1-CARD-6:ACTIVE,"
"DS1-CARD-7:ACTIVE,"
"DS1-CARD-SPARE:ACTIVE,"
;

↙ ↘
Status of working cards

└───┘
Status of spare card.
Unit can provide low-speed protection if
spare card is ACTIVE or MSO ACTIVE.

T1/E1 Protection and Revertive Configuration

T1/E1 Equipment Status Values

| Equipment | Status | Description |
|-------------------|----------------------------------|---|
| DS1/E1 Card | Active | DS1/E1 card is installed and active, but individual DS1/E1 circuits may have failed and be on Spare card |
| | Not Present | DS1/E1 card is not installed |
| | MSO Active | DS1/E1 MSO card (relay and electronics) is installed and active, but individual DS1/E1 circuits may have failed and be on Spare card |
| | MSO Relay Only Active on Spare | DS1/E1 MSO relay card is installed, but electronics card is missing. Circuits have been switched to Spare card. |
| | MSO Relay Only Not Active | DS1/E1 MSO relay card is installed, but electronics card is missing. Circuits have been switched to Spare card. |
| | MSO Relay Only Conflict On Spare | DS1/E1 MSO relay card is installed, but electronics card is missing. Multiple MSO card removals prevent switching circuits to Spare. |
| | MSO Relay Only Spare Not Present | DS1/E1 MSO relay card is installed, but electronics card is missing. Circuits cannot be switched because Spare card is not installed. |
| | Wrong Card for Mode | System mode is set to DS1 when E1 card is installed, or vice versa. Status applies to both MSO and non-MSO card types. |
| DS1/E1 Card Spare | Active | DS1/E1 card is installed and active, but individual DS1/E1 circuits may have failed |
| | Not Present | DS1/E1 card is not installed |
| | MSO Active | DS1/E1 MSO card (relay and electronics) is installed and active, but individual DS1/E1 circuits may have failed |
| | MSO Relay Only Spare Not Present | DS1/E1 MSO relay card is installed, but electronics card is missing. Circuits cannot be switched without spare electronics. |
| | Conflict | Multiple MSO card removals prevent switching circuits to Spare |
| | Wrong Card for Mode | System mode is set to DS1 when E1 card is installed, or vice versa. Status applies to both MSO and non-MSO card types. |

T1/E1 Protection and Revertive Configuration

2. Retrieve Current T1/E1 Condition

RTRV-COND-T1:tid::ctag;

RTRV-COND-E1:tid::ctag;

Example: RTRV-COND-T1:tid:DS1-1:ctag;

Response:

```
tid 2001-08-04 05:05:51
M ctag COMPLD
"DS1-01,T1:INHAAUTORSTEQPT,NSA,,,,,\ "DS1 Revertive Off\ "
"DS1-01,T1:INHAAUTORSTEQPT,NSA,,,,,\ "DS1 Facility Protection Not Enabled\ "
;
```

If T1:PROTNA or E1:PROTNA appears, protection is not available because the unit is not equipped with a spare card.

3. Determine T1/E1 Protection and Revertive Choices

| If DS1/E1 condition is | Your choice is |
|--|--|
| T1 : IHNSWPR E1 : IHNSWPR | Allow DS1/E1 automatic protection switching: ALW-SWTOWKG-T1:tid:ALL:ctag; ALW-SWTOWKG-E1:tid:ALL:ctag; |
| (if these do not appear) T1 : IHNSWPR E1 : IHNSWPR | Inhibit DS1/E1 automatic protection switching: ALW-SWTOWKG-T1:tid:ALL:ctag; ALW-SWTOWKG-E1:tid:ALL:ctag; Note: The above commands will also reset a revertive lockout and allow any circuits locked onto the spare card to switch back to their home card if the home circuit is healthy. |
| T1 : INHAAUTORSTEQPT E1 : INHAAUTORSTEQPT | Allow DS1/E1 revertive switching from spare to home circuit: ALW-AUTORST:tid::ctag::DS1EQPT; ALW-AUTORST:tid::ctag::E1EQPT; |
| (if these do not appear) T1 : INHAAUTORSTEQPT E1 : INHAAUTORSTEQPT | Inhibit DS1/E1 revertive switching: INH-AUTORST:tid::ctag::DS1EQPT; INH-AUTORST:tid::ctag::E1EQPT; |

T1/E1 Protection and Revertive Configuration

4. To Switch T1/E1 to Protection or Working Card

The following commands will forcibly move a T1/E1 circuit between the protection (spare) and working (home) cards for testing or maintenance. Switching will be denied only if the equipment status (RTRV-EQPT) of the other card is NOT PRESENT (not equipped) or UNKNOWN (equipped but status unknown).

CAUTION! THESE COMMANDS MAY AFFECT SERVICE. BEFORE SWITCHING A T1 OR E1 TO A WORKING OR PROTECTION CIRCUIT, IT IS ADVISABLE TO PERFORM A RTRV-ALM-T1 OR RTRV-ALM-E1 TO VERIFY THAT NO ALARMS EXIST ON THE DESTINATION CIRCUIT.

NOTE: The Wide Bank 28 DS3 uses the circuits on the T1/E1 spare card to protect the circuits on up to seven working cards. The working circuits are arranged in protection groups (see diagrams for *T3-T1 Configuration AIDs* on [page 6](#) and *T3-E1 Configuration AIDs* on [page 8](#)). Only one circuit in a protection group can be switched to the protection circuit.

SW-TOPROTN-T1:tid:aid:ctag;

SW-TOPROTN-E1:tid:aid:ctag;

SW-TOWKG-T1:tid:aid:ctag;

SW-TOWKG-E1:tid:aid:ctag;

NOTE: The SW-TOWKG command will move a circuit to the working (home) card, but will not clear a revertive lockout on that circuit. A revertive lockout can only be cleared by the ALW-AUTORST command or by physically removing and replacing the card.

T1/E1 Auto In-Service Detection (LOS Inhibit)

The following steps show how to use the Wide Bank's automatic in-service detection feature to provision T1 or E1 circuits before facilities are available to properly terminate the circuits. After enabling the automatic in-service detection, the unterminated circuits can then be put in service and the Wide Bank will inhibit LOS alarms on each circuit until a valid termination has been established for the specified delay time.

NOTE: Automatic in-service detection is applied on a channel-by-channel basis. If service is discontinued on a channel, automatic in-service detection can be reapplied to that channel by simply placing it out of service and then back in service.

NOTE: To quickly provision Automatic in-service detection when turning up a new Wide Bank, first turn on Automatic in-service detection and then place all (aid = ALL) E1s or T1s out of service and then back in service.

1. Retrieve Current Automatic In-Service Detection State

RTRV-ARC-T1:tid::ctag;

RTRV-ARC-E1:tid::ctag;

| Keyword | Description |
|---------|-------------------------------|
| QI | Qualified Inhibition |
| delay | Delay time in hours, 1 to 168 |

Example: RTRV-ARC-T1:tid::ctag;

Response Format:

```
tid yyyy-mm-dd hh:mm:ss
M ctag COMPLD
  "ALL,T1:QI,delay"
;
```

The following response shows that automatic in-service detection is turned on and that the delay time is 12 hours. If detection is turned off, the response will be a simple COMPLD with no data block.

Response:

```
tid 2002-01-04 11:23:15
M ctag COMPLD
  "ALL,T1:QI,12"
;
```


T1/E1 Auto In-Service Detection (LOS Inhibit)

2. Determine Automatic In-Service Choices

| Status | Your choice is |
|-------------------------------|--|
| Auto In-Service is turned Off | Turn on T1 automatic in-service detection and apply to T1s by placing T1s out of service and then back in service. 1. OPR-ARC-T1:tid::ctag; 2. RMV-T1:tid:aid:ctag; 3. ENT-T1:tid:aid:ctag; |
| | Turn on E1 automatic in-service detection and apply to E1s by placing E1s out of service and then back in service. 1. OPR-ARC-E1:tid::ctag; 2. RMV-E1:tid:aid:ctag; 3. ENT-E1:tid:aid:ctag; |
| Auto In-Service is turned On | Apply automatic in-service detection to T1 channels by placing T1s out of service and then back in service. 1. RMV-T1:tid:aid:ctag; 2. ENT-T1:tid:aid:ctag; |
| | Apply automatic in-service detection to E1 channels by placing E1s out of service and then back in service. 1. RMV-E1:tid:aid:ctag; 2. ENT-E1:tid:aid:ctag; |
| | Change automatic in-service detection delay time for T1 channels, where delay is the number of hours, 1 to 168 (1 week). ENT-T1:tid:aid:ctag::Ql,delay; |
| | Change automatic in-service detection delay time for E1 channels, where delay is the number of hours, 1 to 168 (1 week). ENT-E1:tid:aid:ctag::Ql,delay; |
| | Turn off T1 automatic in-service detection. RLS-ARC-T1:tid::ctag; |
| | Turn off E1 automatic in-service detection. RLS-ARC-E1:tid::ctag; |

| AIDType | AID |
|---------|---|
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-1 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |

Diagnostics

The following demonstrates how to perform self-test diagnostics.

CAUTION! FACILITIES MUST BE REMOVED FROM SERVICE BEFORE DIAGNOSTICS CAN BE USED. DGN-T1 AND DGN-E1 WILL DISRUPT SERVICE ON THE SELECTED FACILITIES. DGN-T3 AND DGN-ALL WILL INTERRUPT SERVICE ON ALL FACILITIES.

NOTE: A T3 can not actually be removed from service. The purpose of the RMV-T3 command is to allow the active T3 to be tested.

1. Place Facility Out of Service

RMV-T3:tid:aid:ctag;

RMV-T1:tid:aid:ctag;

RMV-E1:tid:aid:ctag;

Example: RMV-T3:tid:ALL:ctag;

Example: RMV-T1:tid:DS1-03:ctag;

| AIDType | AID |
|---------|--|
| T3 | ALL |
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |
| ENV | FAN-A, FAN-B, or ALL |
| ALL | ALL (tests all above AIDs) |

2. Perform Diagnostic Test

DGN-T3:tid:aid:ctag;

DGN-T1:tid:aid:ctag;

DGN-E1:tid:aid:ctag;

DGN-ENV:tid:aid:ctag;

DGN-ALL:tid:ALL:ctag;

Example: DGN-T1:tid:DS1-03:ctag;

Response: tid 2002-01-18 11:51:58
M ctag COMPLD
"DS1-03:Pass,, "
;

Each diagnostic result is reported as Pass, Fail, or Not Present (unequipped).

3. Place Facility In Service

RST-T3:tid:aid:ctag;

RST-T1:tid:aid:ctag;

RST-E1:tid:aid:ctag;

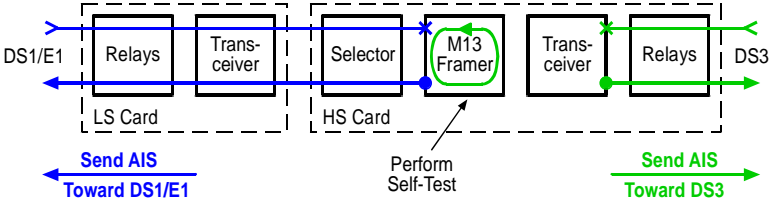
Example: RST-T3:tid:ALL:ctag;

Example: RST-T1:tid:DS1-03:ctag;

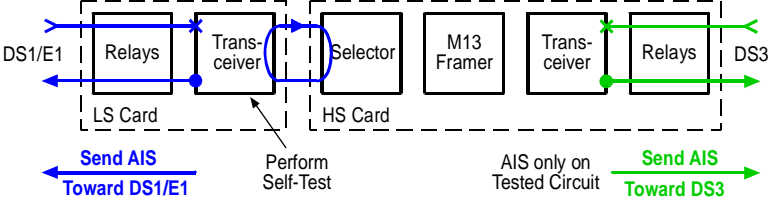
Self-Test Diagrams

LS = low speed card (DS1 or E1). HS = high speed controller card (DS3).

T3 Self-Test



T1/E1 Self-Test



Loopbacks

The following steps show how to perform various loopbacks.

CAUTION! A LOOPBACK WILL AFFECT SERVICE.

1. Near-End Loop Code Detection

The following commands allow or inhibit the detection of received NIU loop codes. The Wide Bank 28 DS3 responds only to line loop codes. Each T3, T1, and E1 facility has its own loop code pattern.

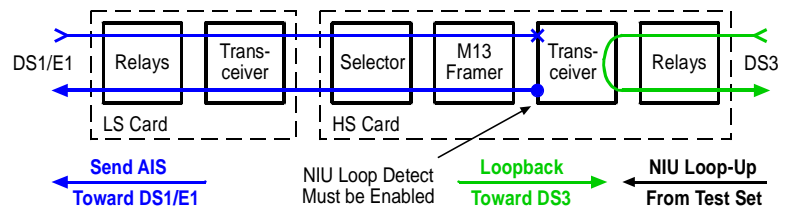
- ALW-LPBK-T3:tid:aid:ctag;**
- ALW-LPBK-T1:tid:aid:ctag;**
- ALW-LPBK-E1:tid:aid:ctag;**
- ALW-LPBK-ALL:tid:ALL:ctag;**
- INH-LPBK-T3:tid:aid:ctag;**
- INH-LPBK-T1:tid:aid:ctag;**
- INH-LPBK-E1:tid:aid:ctag;**
- INH-LPBK-ALL:tid:ALL:ctag;**

| Facility | AID |
|----------|--|
| T3 | ALL |
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |
| ALL | ALL |

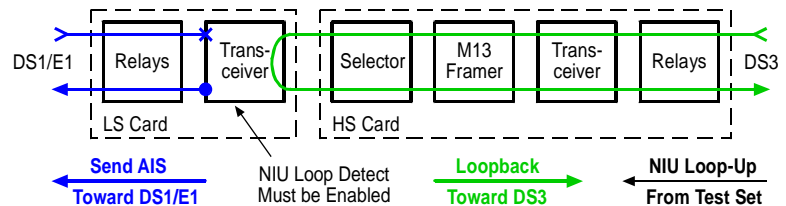
| Example | Command |
|---|-----------------------------|
| Allow loop code detection on DS3 | ALW-LPBK-T3:tid:ALL:ctag; |
| Allow loop code detection on DS1 #1 | ALW-LPBK-T1:tid:DS1-1:ctag; |
| Inhibit loop code detection on all DS1 facilities | INH-LPBK-T1:tid:ALL:ctag; |
| Inhibit loop code detection on all facilities | INH-LPBK-ALL:tid:ALL:ctag; |

Loopback Diagrams

T3 NIU Loopup



T1/E1 NIU Loopup



2. Far-End Loopbacks

The following commands connect or disconnect far-end loopbacks by sending code patterns to the far-end network element.

NOTE: DS3 far-end loopbacks require the DS3 facility to be configured for C-bit framing.

CONN-LPBK-T3:tid:aid:ctag::lpsig;

CONN-LPBK-T1:tid:aid:ctag::lpsig;

CONN-LPBK-E1:tid:aid:ctag::lpsig;

DISC-LPBK-T3:tid:aid:ctag;

DISC-LPBK-T1:tid:aid:ctag;

DISC-LPBK-E1:tid:aid:ctag;

| Example | Command |
|---|-----------------------------------|
| Activate a line loopback at far-end of DS3 | CONN-LPBK-T3:tid:ALL:ctag::A-C; |
| Release a line loopback at far-end of DS3 | CONN-LPBK-T3:tid:ALL:ctag::R-C; |
| Disconnect loopback at the far-end of DS3 | DISC-LPBK-T3:tid:ALL:ctag; |
| Send loopup request on network side of DS1 #1 | CONN-LPBK-T1:tid:DS1-1:ctag::A-2; |
| Disconnect loopback on DS1 #1 | DISC-LPBK-T1:tid:DS1-1:ctag; |

| Facility | AID | LPSIG (Looping Signal) |
|----------|---|--|
| T3 | ALL | A-C – Activate a line loopback at the far-end network element R-C – Release a line loopback at the far-end network element |
| T1 | DS1-1 to DS1-28, or ALL | A-1 – Send CSU loopup request on line side R-1 – Send CSU loopdown request on line side A-2 – Send NIU loopup request on network side R-2 – Send NIU loopdown request on network side A-3 – Send NIU loopup request on line side R-3 – Send NIU loopdown request on line side |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) | A-1 – Send CSU loopup request on line side R-1 – Send CSU loopdown request on line side A-2 – Send NIU loopup request on network side R-2 – Send NIU loopdown request on network side A-3 – Send NIU loopup request on line side R-3 – Send NIU loopdown request on line side |

Loopbacks

3. Near-End Loopbacks

The following commands operate or release near-end loopbacks.

OPR-LPBK-T3:tid:aid:ctag::,,lpbktype;

OPR-LPBK-T1:tid:aid:ctag::,,lpbktype;

OPR-LPBK-E1:tid:aid:ctag::,,lpbktype;

RLS-LPBK-T3:tid:aid:ctag::,,lpbktype;

RLS-LPBK-T1:tid:aid:ctag::,,lpbktype;

RLS-LPBK-E1:tid:aid:ctag::,,lpbktype;

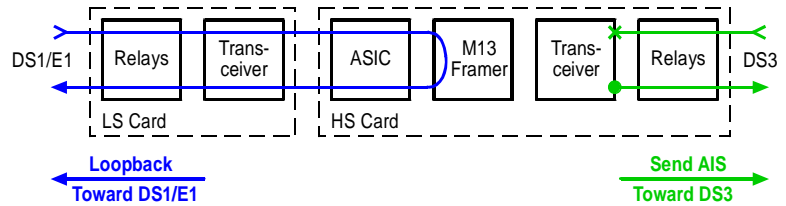
RLS-LPBK-ALL:tid:ALL:ctag;

| Example | Command |
|-----------------------------------|---|
| Operate DS1 #1 equipment loopback | OPR-LPBK-T1:tid:DS1-1:ctag::,,EQUIPMENT; |
| Release DS1 #1 equipment loopback | RLS-LPBK-T1:tid:DS1-1:ctag::,,EQUIPMENT; |
| Operate DS1 #1-4 line loopback | RLS-LPBK-T1:tid:DS1-1&&DS1-04:ctag,,LINE; |
| Release DS1 #1 loopback | RLS-LPBK-T1:tid:DS1-1:ctag; |
| Release all DS1 loopbacks | RLS-LPBK-T1:tid:ALL:ctag; |
| Release all loopbacks | RLS-LPBK-ALL:tid:ALL:ctag; |

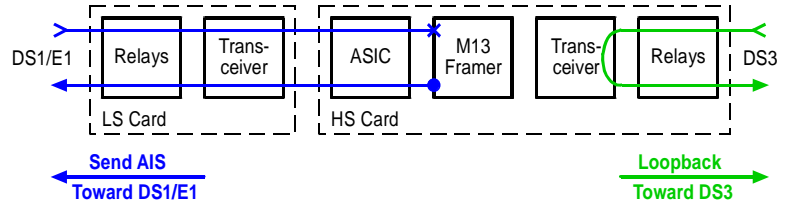
| Facility | AID | LPBKTYPE (Loopback Type) |
|----------|--|--|
| T3 | ALL Note: refers to the Active Controller | EQUIPMENT LINE PAYLOAD |
| T1 | DS -01 to DS -28 | EQUIPMENT LINE METALLIC Note: Metallic loopbacks can only be applied to four DS1s, one DS1 per protection group (see <i>T3-T1 Configuration AIDs</i> on page 6). |
| | ALL | EQUIPMENT LINE |
| E1 | E1-01 to E -27 | EQUIPMENT LINE METALLIC Note: Metallic loopbacks can only be applied to three E1s, one E1 per protection group (see <i>T3-E1 Configuration AIDs</i> on page 8). |
| ALL | ALL (optional) | |

Near-End Loopback Diagrams

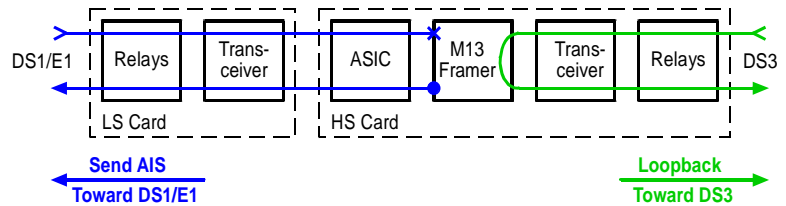
T3 Equipment Loopback



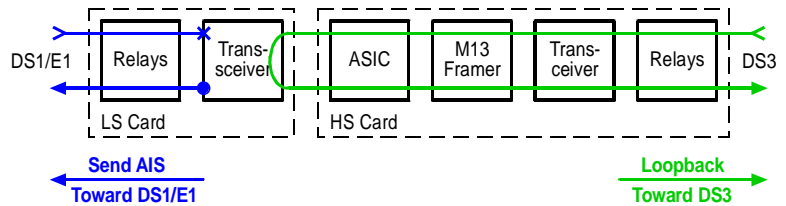
T3 Line Loopback



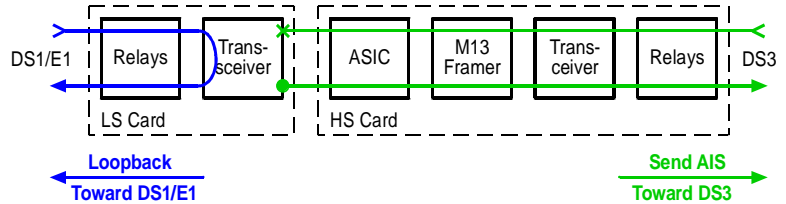
T3 Payload Loopback



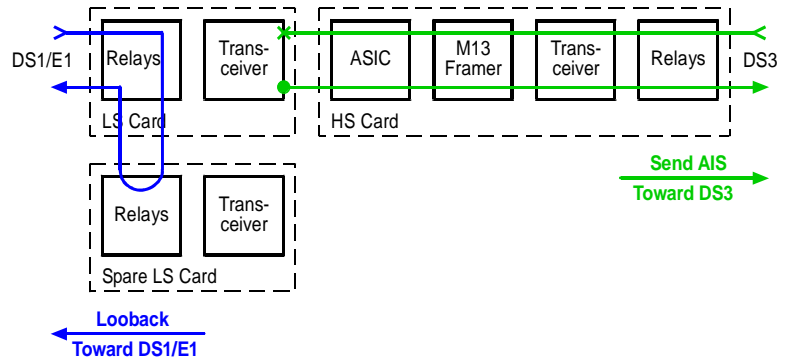
T1/E1 Equipment Loopback



T1/E1 Line Loopback



T1/E1 Metallic Loopback



PM Reports

The following steps show how to configure and retrieve performance monitoring reports.

1. Allow or Inhibit PM Reports

```
ALW-PMREPT-T3:tid:aid:ctag;  
ALW-PMREPT-T1:tid:aid:ctag;  
ALW-PMREPT-E1:tid:aid:ctag;  
ALW-PMREPT-ALL:tid:ALL:ctag;  
  
INH-PMREPT-T3:tid:aid:ctag;  
INH-PMREPT-T1:tid:aid:ctag;  
INH-PMREPT-E1:tid:aid:ctag;  
INH-PMREPT-ALL:tid:ALL:ctag;
```

| Facility | AID |
|----------|---|
| T3 | DS3-A, DS3-B, or ALL |
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |
| ALL | ALL |

2. Retrieve PM Reports

```
RTRV-PM-E1:tid:aid:ctag::[montype],[monlev],[locn],[tmper],[mondat],[montm];  
RTRV-PM-T1:tid:aid:ctag::[montype],[monlev],[locn],[tmper],[mondat],[montm];  
RTRV-PM-T3:tid:aid:ctag::[montype],[monlev],[locn],[tmper],[mondat],[montm];
```

Example: Retrieve PM report for DS1 #5 at 15-minute intervals.
RTRV-PM-T1:tid:DS1-05::,,,,,15-MIN,;

3. Retrieve PM Schedule

```
RTRV-PMSCHED-T3:tid:aid:ctag;  
RTRV-PMSCHED-T1:tid:aid:ctag;  
RTRV-PMSCHED-E1:tid:aid:ctag;  
RTRV-PMSCHED-ALL:tid:aid:ctag;
```

4. Schedule PM Reports

```
SCHED-PMREPT-T3:tid:ALL:ctag::[repinvl],[reptstatm],[numrept],[monlev],  
[locn],[mper],[tmofst];  
SCHED-PMREPT-T1:tid:ALL:ctag::[repinvl],[reptstatm],[numrept],[monlev],  
[locn],[mper],[tmofst];  
SCHED-PMREPT-E1:tid:ALL:ctag::[repinvl],[reptstatm],[numrept],[monlev],  
[locn],[mper],[tmofst];
```

Example: Schedule ten T1 Performance Reports at 15-minute intervals.
SCHED-PMREPT-T1:tid:ALL::15-MIN,,10,,,,,15-MIN;

PM Report Parameters

| Keyword | Description |
|-----------|---|
| locn | Location (optional): <ul style="list-style-type: none"> • NEND – near end and far end |
| monlev | Monitor Level (optional) specifies the discriminating level for the requested monitored parameter. The Wide Bank currently supports the following: <ul style="list-style-type: none"> • 1-UP – report all performance statistics that do not have a value of zero |
| numrept | The number of reports the user would like scheduled (optional). A value of zero turns reports off. Otherwise, reports are sent every reporting interval and the number of reports is decremented. Even if reporting is inhibited, the number will continue to decrement. If the numrept value is omitted from the command, the Wide Bank will report every reporting interval indefinitely until another schedule command is issued. <ul style="list-style-type: none"> • null – report all intervals • 0 – no reports • <i>integer</i> – number of reports |
| reptinvl | Reporting Interval (optional). Specifies how often reports are to be generated and sent: <ul style="list-style-type: none"> • 15-MIN • 1-HR • 1-DAY |
| reptstatm | Reporting Start Time (optional). Specifies the time when the reports should start being generated. All selections will start reports at end of current reporting interval. <ul style="list-style-type: none"> • null • 0-0 • 00-00 |
| tmofst | Time Offset (optional). The Wide Bank will accept the following values, but the time offset will always be zero: <ul style="list-style-type: none"> • null • 0-1-0 |
| tmper | Time Period (optional): <ul style="list-style-type: none"> • 15-MIN • 1-HR • 1-DAY} <p>Note: tmper must be equal to reptinvl or omitted.</p> |

Retrieve Condition

The following shows how to retrieve the current condition of a facility.

RTRV-COND-T3:tid:aid:ctag::[typereq];
RTRV-COND-T1:tid:aid:ctag::[typereq];
RTRV-COND-E1:tid:aid:ctag::[typereq];
RTRV-COND-EQPT:tid:aid:ctag::[typereq];
RTRV-COND-ENV:tid:aid:ctag::[typereq];
RTRV-COND-ALL:tid:ALL:ctag::[typereq];

| Example | Command |
|---|-------------------------------|
| Retrieve T3 facility | RTRV-COND-T3:tid::ctag; |
| Retrieve E1 facility 5 | RTRV-COND-E1:tid:E1-05:ctag; |
| Retrieve T1 facility 3 | RTRV-COND-T1:tid:DS1-03:ctag; |
| Retrieve All T1 facilities Note: Expect a delay while information is being prepared. | RTRV-COND-T1:tid::ctag; |
| Retrieve EQPT facility | RTRV-COND-EQPT:tid::ctag; |
| Retrieve ENV facility | RTRV-COND-ENV:tid::ctag; |
| Retrieve ALL facilities Note: expect a delay while information is being prepared. | RTRV-COND-ALL:tid::ctag; |

| Facility | AID |
|----------|---|
| EQPT | ALL |
| ENV | ALL |
| T3 | DS3-A, DS3-B, or ALL |
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |
| ALL | ALL |

| Keyword | Description |
|---------|--|
| typereq | Type of condition or state to be retrieved (optional). If omitted, the value defaults to ALL . To retrieve specific condition type values, see <i>Alarm and Event Message Parameters</i> on page 43 . |

The following shows how to retrieve the current alarms for a facility.

```

RTRV-ALM-EQPT:tid:aid:ctag::[ntfcncde],[condtype];
RTRV-ALM-ENV:tid:aid:ctag::[ntfcncde],[condtype];
RTRV-ALM-E1:tid:aid:ctag::[ntfcncde],[condtype];
RTRV-ALM-T1:tid:aid:ctag::[ntfcncde],[condtype];
RTRV-ALM-T3:tid:aid:ctag::[ntfcncde],[condtype];
RTRV-ALM-ALL:tid:aid:ctag::[ntfcncde],[condtype]
    
```

| Example | Command |
|--------------------------|-------------------------|
| Retrieve ALL alarms | RTRV-ALM-ALL; |
| Retrieve T3 major alarms | RTRV-ALM-T3:tid:::MJ,; |
| Retrieve T1 #3 alarms | RTRV-ALM-T1:tid:DS1-03; |
| Retrieve EQPT alarms | RTRV-ALM-EQPT; |

| Facility | AID |
|----------|---|
| EQPT | ALL |
| ENV | ALL |
| T3 | DS3-A, DS3-B, or ALL |
| T1 | DS1-1 to DS1-28, or ALL |
| E1 | E1-01 to E1-27, or ALL (see <i>T3-E1 Configuration AIDs</i> on page 8) |
| ALL | ALL |

| Keyword | Description |
|----------|--|
| ntfcncde | Severity or class of alarm, event or condition (optional). If omitted, the default is ALL. Values are: <ul style="list-style-type: none"> • CR – Critical Alarm • MJ – Major Alarm • MN – Minor Alarm • CL – Condition Cleared • NA – Not Alarmed • NR – Not Reported • ALL |
| condtype | Type of condition or state to be retrieved (optional). If omitted, the value defaults to ALL. To retrieve specific condition type values, see <i>Alarm and Event Message Parameters</i> on page 43 . |

Retrieve Logs

The following shows how to retrieve the security and event logs for the Wide Bank 28 DS3.

RTRV-LOG:tid:ALL:ctag::lognm;

| Example | Command |
|-----------------------|----------------------------------|
| Retrieve Security Log | RTRV-LOG:tid:ALL:ctag::SECURITY; |
| Retrieve Event Log | RTRV-LOG:tid:ALL:ctag::EVT; |

| Keyword | Description |
|---------|--|
| lognm | Name of Log. Values are: <ul style="list-style-type: none">• SECURITY – Log where Security Events are Logged• EVT – Event Log |

Alarm and Event Message Parameters

| Access Identifier | Report Message Type | Interface Type | Default Notification Code * | Service or Condition Effect Code | Condition Type | Condition Description | |
|--|---------------------------------------|----------------|-----------------------------|----------------------------------|----------------|---|-------------------------------------|
| DS3-{A,B} <aiddet>= ACTIVE | REPT ALM | EQPT | CR | SA | CONTEOPT | Control Equipment Failure | |
| | | | MN | SA | INT | Internal Hardware Fault or Failure | |
| | | | MJ | NSA | IMPROPRMVL | Improper Removal | |
| | | | CR | SA | TRMT | Transmitter Failure | |
| | | | MN | NSA | PROGFLT | Software Version Mismatch Between Controllers | |
| | REPT ALM | T3 | CR | SA | LOS | Loss of Signal | |
| | | | CR | SA | LOF | Loss of Frame | |
| | | | CR | NSA | SYNCPRI | DS3 Loss of Designated Clock | |
| | DS3-{A,B} <aiddet>= STANDBY | REPT ALM | EQPT | MN | NSA | CONTEOPT | Control Equipment Failure |
| MN | | | | NSA | INT | Internal Hardware Fault or Failure | |
| MN | | | | NSA | IMPROPRMVL | Improper Removal | |
| MN | | | | NSA | TRMT | Transmitter Failure | |
| REPT ALM | | T3 | MN | SA | LOS | Loss of Signal | |
| | | | MN | SA | LOF | Loss of Frame | |
| | | | MN | NSA | SYNCPRI | DS3 Loss of Designated Clock | |
| DS3-{A,B} FAR END (C-bit framing only) | | REPT EVT | T3 | | SC | RAI | Far-end DS3 Equipment Failure (NSA) |
| | | | | | | | Far-end DS3 Equipment Failure (SA) |
| | Far-end DS3 Loss of Signal | | | | | | |
| | Far-end DS3 Out of Frame | | | | | | |
| | Far-end DS3 Receive AIS | | | | | | |
| | Far-end DS3 Receive IDLE | | | | | | |
| | Far-end DS1 Equipment Failure (NSA) | | | | | | |
| | Far-end DS1 Equipment Failure (SA) | | | | | | |
| | Far-end Multiple DS1 LOS | | | | | | |
| | Far-end Single DS1 LOS | | | | | | |

Alarm and Event Message Parameters

| Access Identifier | Report Message Type | Interface Type | Default Notification Code * | Service or Condition Effect Code | Condition Type | Condition Description | |
|-------------------|---------------------|----------------------------------|-----------------------------|----------------------------------|----------------|-----------------------|---|
| DS3-{A,B} | REPT ALM | T3 | MJ | SA | BER-SF | Signal Fail | |
| | | | MN | NSA | BER-SD | Signal Degrade | |
| | REPT EVT | T3 | | | | WKSWPR | Working Unit Switched to Protect Unit |
| | | | | | | WKSWBK | Working Unit Switched Back to Working |
| | REPT EVT | T3 | | | SC | AISNAS | Alarm Indication Signal - North American Standard |
| | | | | | | RAI | Remote Alarm Indication |
| | REPT EVT | T3 | | | TC | T-CVL | Threshold Violation - CV Line |
| | | | | | | T-CVP-P | Threshold Violation - CV Path p-parity |
| | | | | | | T-ESL | Threshold Violation - Errored seconds line |
| | | | | | | T-ESP-P | Threshold Violation - Errored seconds path p-parity |
| | | | | | | T-LOSS-L | Threshold Violation - Loss of signal seconds line |
| | | | | | | T-SESL | Threshold Violation - Severely errored seconds line |
| | | | | | | T-SESCP-P | Threshold Violation - Severely errored seconds path |
| | | | | | | Not Reported | |
| | PROTNA | Protection unit is not available | | | | | |
| | LPBKEOPT | Equipment loopback | | | | | |
| | LPBKLINE | Line loopback | | | | | |
| | LPBKPAYLOAD | Payload loopback | | | | | |
| | INHAUTORSTEQPT | Revertive Off | | | | | |
| | INHAUTORSTSYNC | DS3 clockrevert Off | | | | | |
| | INHLPBK | Loopdetect Off | | | | | |
| | INHSWPR | Facility protection not enabled | | | | | |
| | INHSWWKG | Equipment protection not enabled | | | | | |

Alarm and Event Message Parameters

| Access Identifier | Report Message Type | Interface Type | Default Notification Code * | Service or Condition Effect Code | Condition Type | Condition Description | |
|--------------------|---------------------|----------------|-----------------------------|----------------------------------|----------------|------------------------------------|--|
| DS1-{01-28} | REPT ALM | EQPT | MN | NSA | INT | Internal Hardware Fault or Failure | |
| | REPT ALM | T1 | MN | NSA | BER-SD | Signal Degrade | |
| | | | MJ | SA | BER-SF | Signal Fail | |
| | | | MJ | SA | FAILTOSW | Failed to Switch | |
| | | | MJ | SA | LOS | Loss of Signal | |
| | REPT EVT | T1 | | | | T-CVL | Threshold Violation - CV Line |
| | | | | | | T-ESL | Threshold Violation - Errored seconds line |
| | | | | | | WKSWPR | Working Unit Switched to Protect Unit |
| | | | | | | WKSWBK | Working Unit Switched Back to Working |
| | Not Reported | | | | | ACTLPBK | Loopback send code is Active |
| | | | | | | INHLPBK | Loopdetect Off |
| | | | | | | INHSWPR | Facility protection not enabled |
| | | | | | | INHSWWKG | Equipment protection not enabled |
| | | | | | | LPBKEQPT | Equipment loopback |
| | | | | | | LPBKLINE | Line loopback |
| | | | | | | LPBKMETALLIC | Metallic loopback |
| PROTNA | | | | | | Protection unit is not available | |
| DS1-CARD-{1-7} | REPT ALM | EQPT | MJ | SA | IMPROPRMVL | Improper Removal | |
| DS1-CARD-SPARE | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |
| DS1-CARD-MSO-{1-7} | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |
| DS1-CARD-MSO-SPARE | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |

Alarm and Event Message Parameters

| Access Identifier | Report Message Type | Interface Type | Default Notification Code * | Service or Condition Effect Code | Condition Type | Condition Description | |
|-------------------|---------------------|----------------|-----------------------------|----------------------------------|----------------|------------------------------------|--|
| E1-{01-27} | REPT ALM | EQPT | MN | NSA | INT | Internal Hardware Fault or Failure | |
| | REPT ALM | E1 | MN | NSA | BER-SD | Signal Degrade | |
| | | | MJ | SA | BER-SF | Signal Fail | |
| | | | MJ | SA | FAILTOSW | Failed to Switch | |
| | | | MJ | SA | LOS | Loss of Signal | |
| | REPT EVT | E1 | | | | T-CVL | Threshold Violation - CV Line |
| | | | | | | T-ESL | Threshold Violation - Errored seconds line |
| | | | | | | WKSWPR | Working Unit Switched to Protect Unit |
| | | | | | | WKSWBK | Working Unit Switched Back to Working |
| | Not Reported | | | | | ACTLPBK | Loopback send code is Active |
| | | | | | | INHLPBK | Loopdetect Off |
| | | | | | | INHSWPR | Facility protection not enabled |
| | | | | | | INHSWWKG | Equipment protection not enabled |
| | | | | | | LPBKEOPT | Equipment loopback |
| | | | | | | LPBKLINE | Line loopback |
| | | | | | | LPBKMETALLIC | Metallic loopback |
| PROTNA | | | | | | Protection unit is not available | |
| E1-CARD-{1-7} | REPT ALM | EQPT | MJ | SA | IMPROPRMVL | Improper Removal | |
| E1-CARD-SPARE | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |
| E1-CARD-MSO-{1-7} | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |
| E1-CARD-MSO-SPARE | REPT ALM | EQPT | MN | NSA | IMPROPRMVL | Improper Removal | |

Alarm and Event Message Parameters

| Access Identifier | Report Message Type | Interface Type | Default Notification Code * | Service or Condition Effect Code | Condition Type | Condition Description |
|-----------------------|---------------------|----------------|-----------------------------|----------------------------------|---------------------|---------------------------|
| EXT48V-{A,B} | REPT ALM | ENV | MN | | PWR-48 | Power -48V Fail or Low |
| FAN-{A,B} | REPT ALM | ENV | MJ | | CLFAN | Cooling Fan Fail |
| FAN-A&FAN-B | REPT ALM | ENV | MJ | | CLFAN | Fan Faceplate Not Present |
| POWER-5V-{A,B} | REPT ALM | EQPT | MN | NSA | PWR | Power +5V Fail |
| SECURITY | REPT ALM | SECU | MJ | NSA | LOGBUFR90-SECULOG | TL1 Security Log 90% Full |
| | | | MJ | NSA | LOGBUFROVFL-SECULOG | TL1 Security Log Full |
| TEMP-{A,B} | REPT ALM | ENV | MN | | HITEMP | High Temp |
| Unit Identifier <uid> | | SECU | MN | NSA | INTRUSION | |

* This table lists default values for the alarm severity Notification Codes. Many of the Condition Types can be assigned a different alarm severity with the SET-ATTR-{T3|T1|E1|ENV} command. See *Wide Bank 28 DS3 User Manual* for additional information.

Alarm and Event Message Parameters
