

DS3 MX

CUE: M30MSPR...



STATUS LEDS

- POWER**
- OFF No power is present on the unit
 - YELLOW Unit is Out-of-Service
 - GREEN Unit is In-Service
- STATUS**
- OFF Unit is Out-of-Service, Unassigned
 - GREEN DS3 signal is present and synchronized
 - RED Local alarm or local and remote alarm condition detected
 - YELLOW Remote alarm condition detected
- TEST**
- OFF Unit is out of loopback
 - YELLOW Loopback active
- LOCKOUT**
- OFF APS enabled
 - YELLOW APS disabled due to INTRUPT
 - RED APS is locked out due to three consecutive APS events within a 24-hour period
- ONLINE**
- OFF Unit is closed by unit (Unit recovers from network that does not transmit to network)
 - GREEN Unit is on-line unit (Unit recovers from and transmits to network)

APS PUSHBUTTON

- When depressed simultaneously with the Test/Enable switch on the DS3 line unit, a protection switch is forced.
- When depressed with the Test/Enable switch on the On-line unit, it toggles APS status.

TEST/ENABLE BUTTON

- When depressed alone, turns all unit LEDs (indicator LEDs appear YELLOW).
- When depressed simultaneously with the APS switch on the DS3-line unit, a protection switch is forced.

INSTALLATION PROCEDURE

- Ensure the DS3 300M system chassis is properly oriented and wired for power (BNC Adapter Module, P/N 1010044-1, is required for DS3 operation). The adapter is mounted to connector 104 (DS3 on 107 shell), located in the lower right corner of the backplane.
- Ensure SCUB is vented and receiving power.
- Plug DS3 module into slot A or B of system chassis. Gently but firmly push the DS3 Max into one of the Max slots, A or B, to the left end of the shell. Simultaneous thumb pressure at the top (above the POWER LED) and bottom (below the Test/Enable button) of the unit will ensure a good seat of the DS3 plus into the backplane connector. Push the ejector tab up and closed against the DS3 backplane.
- Allow the self-test LED sequence to complete. The self-test should take about 40 seconds. Upon completion, the POWER LED will be YELLOW, indicating the unit is Out-of-Service and the STATUS LED will be OFF indicating the unit is in the Unassigned (DS3-MUX) state.

PROVISIONING THE DS3 MULTIPLEXOR

To provision the DS3 Max, connect a terminal emulator via the RS-232 (DS3-4) connector on the backplane of the SCUB. The terminal must be V1.100 or compatible and set for 9600 bps, 8-data bits, no parity and 1 stop bit.

- At the LOGIN screen, enter the option password. Note the default password is "PASSWORD". (User numbers and can be changed upon initial login.)
- Select Command A or Command B from the Total Access Menu.
- Select option 2, Provisioning, and press enter.

The following table lists the provisioning settings and their default values.

Options	Settings	Default
Printing	YES, C-Sec, Auto detect	Auto detect
Line Build Out	Short, Long	Short
Clock Source	Local, Loop	Loop
Service State	In Service, Out of Service, DS3-Mux	DS3-Mux
United Provisioning	Enabled, Disabled	Enabled
Line Code	8B2S (cannot be changed)	8B2S

- Provisioning - sets the DS3 framing.
- Line Build Out - set LBO to either Short or Long.
Short - cable length is less than 225 feet of 19.0A or equivalent coaxial cable or less than 100 feet of Lucent 770 or equivalent coaxial cable.
Long - cable length is greater than 225 feet of 77A or equivalent coaxial cable or greater than 100 feet of Lucent 770 or equivalent coaxial cable.
- Clock Source - selects where the transmit clock derives its timing.
Local - derives its clock from an on-board oscillator.
Loop - derives its clock from the incoming DS3 data stream.
- Service State - the following table lists the operations allowed in each state.

Service State	Reopen Alarm	Input Data	Switch to Profile Service on Fault	Allow Forced Switch into Test	TSB Data	Monitor Data	Allow Enable	Allow Pre	Allow Maint
DS3, On	N	F	N	N	LOS	DSB	Y	Y	Y
DS3, Mux	N	F	Y	Y	None	None	Y	Y	Y
In Service	F	F	Y	Y	None	None	N	N	N

- Linked Provisioning - when enabled, automatically transfers provisioning changes made to the enabled node to the other unit.
- Line Code - this value is hardwired to 8B2S and cannot be changed.

LOOPBACK INFORMATION

External Coax DS3 Loopbacks

Two types of External Coax DS3 Loopbacks can be used to isolate trouble and verify proper DS3 data path operation. For accurate isolation, this type of loopback is performed over the menu selected loopback since it checks the entire signal path and isolates the equipment at each end. An external coax loopback cannot reliably be done if the total length of coax exceeds 500 feet. Both of these types of loopback disrupt normal traffic on the coax.

■ **An External Coax DS3 Local Loopback** can be performed to verify proper DS3 data path operation by looping the DS3 transmit output to the DS3 receive input either locally with a short coax or at the DS3 cross-connection. The Line Build (L) option should be set to float from a total coax length of 0-325 feet and Long for 326-500 feet. The clock source must be local for a coaxial loopback. Verify that the STATUS LED name GREEN after about two seconds. The Status menu should show that the DS3 TX and RX Status is NORMAL. Also, status screens should be seen in the first six minutes of the DS3 QTT-History report under the Performance Monitoring menu. Select "Reset Performance Registers" if necessary to clear previously reported errors.

■ **An External Coax DS3 Line Loopback** can be performed to verify proper far-end equipment DS3 data operation by looping the DS3 transmit coax from the far-end to the receive coax, either locally near the Total Access shelf or at the DS3 cross-connection. The far-end clock source must be local for a coaxial loopback. The far-end equipment Line Build (L) option must be set for the length of coax present. The far-end equipment must be checked for receive DS3 status screen and no errors.

Menu Selected DS3 Loopbacks

■ **A Max Menu Selected DS3 Line Loopback** can be used to verify that the far-end equipment can talk to itself over the entire length of coax with the OM LINE Max receiving and then re-transmitting the same data. All loopbacks will disrupt any normal traffic on the coax. The DS3 receive line indicator will perform this loopback. It performs receive clock and data recovery and B3DS-framing/timing before re-transmitting the data.

■ **A Max Menu Selected DS3 Local Loopback** should not be used to verify the DS3 data path since it does not test the entire DS3 data path. A Local Loopback should be used only to internally loopback the DS3 signal on the Max to verify Access card T3/E1/T1 data paths.

TROUBLESHOOTING INFORMATION

1. POWER LED ON RED continuously.

- Equipment fault.
- 1. Momentarily unseat and then reseat the Max to clear LED.
- 2. Replace Max if trouble persists.

2. POWER LED OFF and Power LEDs of all other cards in shelf are ON.

- -40V bias on Max is blown.
- 1. Replace the Max. Bias is not field replaceable.

3. POWER LED is ON YELLOW, Status LED is OFF and Max does not pass traffic.

- Max is provisioned for Cross-Downlink.
- 1. Provision Max to be in Service.

4. No status screens are ON in Max and it does not pass traffic.

- The DS3 channels are not mapped to access card slots.
- 1. Provision each channel to the desired slot.

5. LEDs do not turn ON when pushing Test/Enable buttons.

- There is an equipment fault.
- 1. If Max is still On-line, force switch to the other Max.
- 2. Momentarily unseat and reseat the Max to clear trouble.
- 3. Replace Max if trouble persists.

6. Status LED is ON RED in Max A and B and Status menu shows DS3 RX LOS.

- DS3 receive signal is not present.
- 1. Check for correct RX coax connection. Ensure TX and RX coaxes are not reversed.
- 2. Check for faulty coax or coax connector.
- 3. Check for end equipment for proper TX signal. Perform External Coax DS3 Line Loopback.
- 4. Perform an External Coax DS3 Local Loopback to verify that Max units and shelf are OK.

7. STATUS LED is on red in Max A and B and Status menu shows DS3 RX OK.

- Receive DS3 signal is present but valid DS3 framing is not being received.
- 1. Check for correct TX LBO setting on far-end equipment.
- 2. Check for end equipment for proper TX signal. Perform External Coax DS3 Line Loopback.
- 3. Perform an External Coax DS3 Local Loopback to verify that Max units and shelf are OK.

8. Errors (framing format) for both units in the same.

- Check to ensure the clock source is not identical at both ends (i.e., both ends set to Local or both ends set to Long).

9. Status LED is ON RED in one Max only OR, No status LEDs on in either Max but receives DS3 PM errors occur on one Max.

- Faulty Max BGA receiver.
- 1. If this Max is still ON LINE, force a protection switch to the other Max.
- 2. Momentarily unseat and then plug in Max to use if trouble clears.
- 3. Replace Max if trouble persists.

TROUBLESHOOTING CONT.

10. No alarms are active in either Max but receive DS3 PM errors occur in both Max units.

- Mismatch DS3 receive signal.
- 1. Check for correct TX LBO setting on far-end equipment.
- Total length of coax cable > 500 feet (720A or 734A).
- 1. Before cable length to < 500 feet.
- AC current is flowing in RF coax shield due to a loose ground potential difference at ends of cable.
- 1. Improve grounding or isolate one end of coax shield from frame ground.
- Check to ensure the clock source is not identical at both ends (i.e., both ends set to Local or both ends set to Long).

11. Status LED is ON YELLOW in one or both Max units.

- Mismatch DS3 receive signal or far-end equipment.
- 1. Check for correct TX LBO setting on both Max units.
- No ends receive DS3 signal is lost.
- 1. Force a Max protection switch. If the trouble clears, the Max which is now Off-line has a bad DS3 TX output.
- 2. Unseat and reseat the now Off-line unit.
- 3. Force the Off-line Max back Online and see if the trouble clears.
- 4. Replace Max if trouble persists.
- Check to ensure the clock source is not identical at both ends (i.e., both ends set to Local or both ends set to Long).

12. DS3 PM errors occurring and/or DS3 status indicates OK.

- Check to ensure the clock source is not identical at both ends (i.e., both ends set to Local or both ends set to Long).
- 1. Change clock source to keep if the current clock source is local or vice-versa.

COMPLIANCE REQUIREMENTS

- This product is intended for installation in a restricted access location in a Type "B" or "C" enclosure only.

CODE	INPUT	OUTPUT
Power Code (PC)	F	C
Telecommunication Code (TC)		
Installation Code (IC)	A	

WARRANTY

Mercury® by Carrier Networks products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. in ten (10) years. For a complete copy of ADTRAN's U.S. Carrier Networks Equipment Warranty statement, call 877-457-9877, Document #314.