

O3-12D1DN

OC3 TO DS1 MULTIPLEXER



ETL LISTED
CONFORMS TO
UL STD 60950-1

U.S. Patents 6,868,219; 7,359,410;
7,379,481; 8,027,337; 8,345,672

CLEI™ Code SOOMAEZ



DANGER

O3-12D1DN units employ Class 1 laser products. To avoid injury, do not look directly into the optical transceiver or into the fiber cable. Note that the light is invisible; the optical signal cannot be detected by the eye.

WARNINGS

1. Use appropriate electrostatic discharge (ESD) handling procedures.
2. Follow procedures for covering and cleaning optical appropriate connections.
3. Use a 15 dB optical attenuator when connecting an O3-12D1DN optical output to the input. This precaution is not necessary if an Engenuity/ Pulsecom SFP-OC3-1310-19 transceiver is installed.
4. Use a 15 dB optical attenuator in the OC3 path when connecting to OC3 test equipment. This precaution is not necessary if an Engenuity/Pulsecom SFP-OC3-SF13-13, or SFP-OC3-SF15-13 transceiver is installed.

Installation Procedure

1	Use proper ESD practices.
2	Reset the unit to factory defaults by changing the position of switch S2-1. Note that the initial position of S2-1 is not important. The O3-12D1DN detects a <i>change</i> in the position of S2-1 during power-up as an instruction to restore parameters to their default values. See Figure 1.
3	Plug the O3-12D1DN into an Engenuity/Pulsecom shelf. UNIT LED will be red.
4	Access the Craft port and follow the appropriate Turn-up Procedure for the application <ul style="list-style-type: none"> • Bookend Operation with NO remote management – Page 3 • Bookend Operation WITH remote management – Page 3 • Single Ended Operation – Page 4
5	Insert SFP OC3 transceiver from its container. UNIT LED should be green.
6	Plug in the OC3 fiber cables equipped with LC male connectors.
7	Terminate the DS1 cable. For CPM-12DS1X bulkhead cable kit see Practice Section 1634. For AMP-MBL/U50Sxxx see Practice Section 1635.
8	Verify that front-panel indicators as described in Table 1.

Table 1: O3-12D1DN Connectors and Indicators

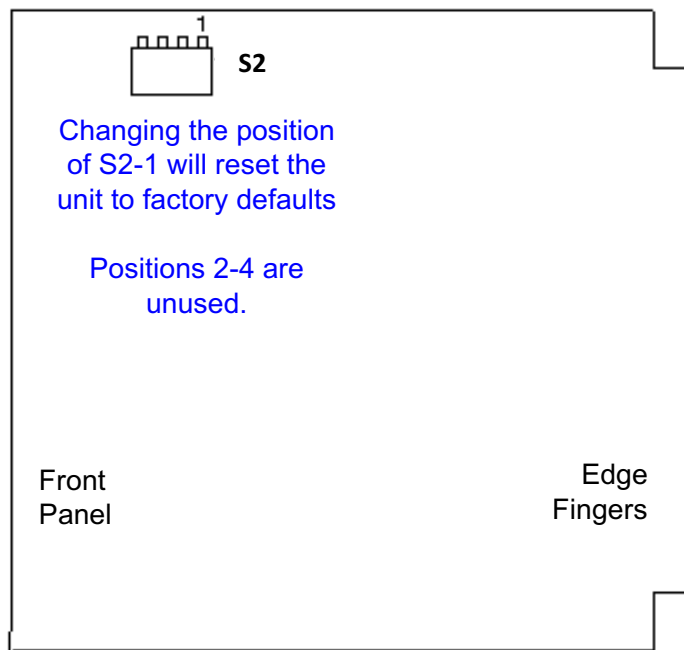


Figure 1. Switch Positions

Connector	Function
DS1	50-position, female, AMP™ CHAMP™ connector with 12 DS1 interfaces; use Engenuity/Pulsecom unterminated cable (AMP-MBL/U50Sxxx, where xxx = cable length in feet) or use Engenuity/Pulsecom bulkhead cable kit (CPM-12DS1X) in 3O3D3-CPL2C installations or in 2O3D3-19A installations with BP-19/BP-23 rack-mounted bulkhead plates.
RX	OC3 input (receive) LC optical connector.*
TX	OC3 output (transmit) LC optical connector.*
MGMT	RJ45 Ethernet management port for access to Network Monitoring and Analysis (NMA)/transaction language 1 (TL1) messages via connection to a CO router.
CRAFT RS-232	DB-9 female port for access to PC running HyperTerminal or other VT-100 emulation program; 9600 baud with 8 bits of data, no parity, no flow control, and 1 stop bit; used to set IP Address of MGMT port and to locally provision the unit.
Indicator	Function
UNIT	Lights green to show normal unit operation. Lights red to show unit/configuration failure or no SFP optical module installed. Lights yellow to show an equipment temperature alarm or MGMT port failure.
OC3	Lights green to show that the OC3 signal is connected and operating properly. Flashes green to show that the OC3 loopback has been activated. Lights red to show loss of signal (LOS), loss of framing, loss of pointer, or out of frame; also shows SFP optical module failure. Lights yellow to show far-end trouble for the associated OC3, a non-OC3 transceiver installed, an optical receive level below the SFP minimum, or an unrecognized OC3 transceiver (optional). Turns OFF to show no SFP optical module installed.
DS1	Lights green to show that all enabled DS1s are operating properly. Flashes green to show that one or more DS1 loopbacks have been activated. Lights red to show a loss of signal on one or more enabled DS1s. Lights yellow to show that a DS1 alarm indication signal [AIS (unframed all ones)] or Remote Alarm Indication (RAI) has been detected or if bipolar violations exceed 10 ⁻⁴ on any of the DS1s. Turns OFF to show all DS1 ports are set to disabled.
RJ45 LED	Lights green (on MGMT connector) to show Ethernet activity.
*Only one fiber connection exists if a bidirectional (single-fiber) SFP is being used.	

Turn-up Procedures

Bookend Operation NO Remote Management	
1	Establish communication with the craft port using HyperTerminal or similar terminal emulation software and available COM port. The craft port communicates at 9600 bits per second with 8 data bits, no parity, 1 stop bit, and no flow control (essential for PuTTY). The User Name is root (lower case), and the Password is root (lower case).
2	Provision each end locally as needed. Refer to Table 4 for Unit Type, OC3, and DS1 settings. NOTE: Ensure the Unit Type for the CO unit is provisioned as CO.
Note: Select Apply Settings<ENTER>before leaving a menu or changes will be lost.	

Bookend Operation WITH Remote Management		
	CO UNIT	Remote UNIT
1	Establish communication with the craft port using HyperTerminal or similar terminal emulation software and available COM port. The craft port communicates at 9600 bits per second with 8 data bits, no parity, 1 stop bit, and no flow control (essential for PuTTY). The User Name is root (lower case), and the Password is root (lower case).	Establish communication with the craft port using HyperTerminal or similar terminal emulation software and available COM port. The craft port communicates at 9600 bits per second with 8 data bits, no parity, 1 stop bit, and no flow control (essential for PuTTY). The User Name is root (lower case), and the Password is root (lower case).
2	From the Configuration Manager>Unit Provisioning menu, set Unit Type as CO.	Unit Type Default is Remote. No action required.
3	From the Configuration Manager> DCC Provisioning menu, select TID and enter up to 20 characters to establish a unique target ID for this O3-12D1DN.	From the Configuration Manager> DCC Provisioning menu, select TID and enter up to 20 characters to establish a unique target ID for this O3-12D1DN.
4	Provision OC3 and DS1 settings as needed. Refer to Table 4.	Provision OC3 and DS1 settings as needed. Refer to Table 4.
5	From the Configuration Manager>MGMT Port Provisioning menu, change the IP Address, Netmask, and Gateway as needed.	No IP Address, Netmask or Gateway needed. No action required.
6	From the Configuration Manager>MGMT Port Provisioning menu, select PEER TID and enter the TID for O3-12D1DN used at the far-end of the circuit.	From the Configuration Manager>MGMT Port Provisioning menu, select PEER TID and enter the TID for O3-12D1DN used at the far-end of the circuit.
7	Connect the MGMT port to a 100BT, Full Duplex port on a CO router using standard intra-office Ethernet crossover cable or using the crossover adapter (included) with a straight-through cable. See Table 2 for pin assignments.	No action required.
Note: Select Apply Settings<ENTER>before leaving a menu or changes will be lost.		

Turn-up Procedures cont.

Single-ended Operation	
1	Establish communication with the craft port using HyperTerminal or similar terminal emulation software and available COM port. The craft port communicates at 9600 bits per second with 8 data bits, no parity, 1 stop bit, and no flow control (essential for PuTTY). The User Name is root (lower case), and the Password is root (lower case).
2	From the Configuration Manager> MGMT Port Provisioning menu, change Bookend Mode to Disabled.
3	From the Configuration Manager> DCC Provisioning menu, select TID and enter up to 20 characters to establish a unique target ID for this O3-12D1DN.
4	From the Configuration Manager> DCC Provisioning menu, select Data Link Layer LAPD and ensure setting is User . Note: Higher order mux MUST be set to Network.
5	Provision OC3 and DS1 settings as needed. Refer to Table 4.
Note: Select Apply Settings<ENTER>before leaving a menu or changes will be lost.	

NOTE:

Detailed information on the O3-12D1DN can be found in Practice Section 1704.

Refer to Practice Section 1707 for complete description of TL1 commands supported by O3-12D1DN.

Table 4: Craft Port Provisioning

Feature	Option and Description	Default
Unit Provisioning		
Unit State	In service or out of service.	In Service
Unit Type	Remote or CO: Remote is generally used when the O3-12D1DN is at the subscriber site. CO is used when the O3-12D1DN is located on the central office side of the circuit, even though the O3-12D1DN may be physically installed in a remote terminal cabinet and connected via fiber to a downstream O3-12D1 Series unit at a subscriber site.	Remote
Unrecognized SFP Alarm	Enabled or Inhibited. If Enabled the O3-12D1DN will generate a minor alarm if an unrecognized SFP is installed.	Enabled
DCC Provisioning		
DCC State	Enable or disable.	Enable
TID	The Target Identifier can be manually provisioned (as is typically required in <u>single-ended</u> applications). For normal <u>bookend</u> operation, O3-12D1DN units have a default TID (all capital letters) that can be changed as described in Turn-up procedures. NOTE: Changing a unit from Remote to CO or from CO to Remote causes the TID to be changed to its corresponding default.	PULSECOM2 for Remote-mode units and PULSECOM for CO-mode units
Data Link Layer LAPD	The Link Access Procedure D-Channel (LAPD) sets the unit for DCC connectivity. Both units in a Bookend operation can't be set the same. In Single-ended applications, the higher order mux must be Network.	USER for Remote-mode units; NETWORK for CO-mode units
OC3 Provisioning		
OC3 State	In service or out of service.	In Service
Response to OC3 Loss of Signal	Send AIS to each DS1 or turn off DS1 transmitter.	Send AIS to DS1
OC3 Loopback Timeout	1, 2, 4, 8, 60 minutes or No TimeOut.	60 minutes
DS1 Provisioning		
Name	Permits assigning a 12-character name to each DS1.	DS1 # (1–12)
State	Disable, enable (in service), or maintenance (out of service).	Disabled
Framing Format	Superframe (SF), extended superframe (ESF), or unframed.	ESF
Line Coding	Bipolar with 8-zero substitution (B8ZS) or alternate mark inversion (AMI).	B8ZS
Line Build Out	0–133 ft., 134–266 ft., 267–399 ft., 400–533 ft., 534–655 ft., OR 0, 7.5, or 15 dB.	0 to 133 feet

Feature	Option and Description	Default
DS1 Provisioning cont.		
DS1 Loopback	Enable or disable.	Enable*
DS1 Loopback Timeout	1, 2, 4, 8, 60 minutes, or No TimeOut.	60 minutes*
Response to DS1 Loss of Signal	Send AIS to OC3 (i.e., toward the CO when the O3-12D1DN is at the subscriber site) or initiate loopback. NOTE: When AIS-CI is enabled and the O3-12D1DN is provisioned as a Remote unit, an AIS-CI will be sent toward the CO for a subscriber DS1 LOS.	Send AIS (or AIS-CI) to OC3
Loopdown on AIS	Yes or no.	No*
NOTE: Press the n key (next page) to see the following four options.		
AIS-CI Generation	Alarm indication signal — customer installation enable or disable.	Enable*
RAI-CI Generation	Remote alarm indication — customer installation enable or disable.	Enable*
NPRM Generation	Network performance report messages enable or disable.	Enable*
SPRM Generation	Supplemental performance report messages enable or disable.	Enable*
Management Port Provisioning		
IP Address**	The Internet Protocol Address of the MGMT Ethernet port. The telnet port number for the CO unit is 23 and for the Remote unit is 24. These port numbers cannot be changed.	192.0.2.1
Netmask**	The Netmask of the MGMT Ethernet port.	255.255.255.0
Gateway**	The Gateway used by the MGMT Ethernet port.	0.0.0.0
Peer TID	The Target Identifier of the far-end unit. NOTE: Changing a unit from Remote to CO or from CO to Remote causes the Peer TID to be changed to its corresponding default. This setting does not apply to single-ended configurations.	PULSECOM2 when viewed from the CO-mode unit; PULSECOM when viewed from the Remote-mode unit
Command Echo	Enables or disables command echoing on the MGMT TL1 connections (disabled recommended when unit is connected to an automated NMA system).	Disable
Bookend Mode	Enables or disables bookend (unit type CO to Remote) configuration mode. Disable for integrated mode.	Enable
*This feature functions only when units are provisioned as Remote; feature is not applicable to units provisioned as CO.		
**If this setting is changed, any existing TL1 sessions will be terminated. The user will need to start a new session after the parameters have been updated. These settings only apply to bookend configurations.		
Note: Changes made to Global DS1 settings can affect enabled circuits.		

Table 2: MGMT Port Pin Assignments

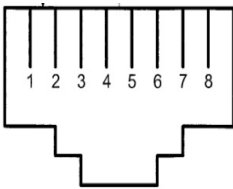
RJ45 view	Pin	Function (as-is)	Function with adapter installed
	1	RX Data +	TX Data +
	2	RX Data —	TX Data —
	3	TX Data +	RX Data +
	4	No Connection	No Connection
	5	No Connection	No Connection
	6	TX Data —	RX Data —
	7	No Connection	No Connection
	8	No Connection	No Connection

Table 3: Loopback Codes

The O3-12D1DN can recognize in-band and extended superframe data link loopback codes. Loopbacks can be set via DCC TL1 commands or from NMA.	
A. SF Configuration	
In-Band Loopback Code	Binary
Activate (Network)	11000 (2 in 5)
Deactivate (Network)	11100 (3 in 5)
AIS (Deactivate)*	All Ones
B. ESF Configuration	
In-Band Loopback Code	Binary
Activate (Network)	11000 (2 in 5)
Deactivate (Network)	11100 (3 in 5)
AIS (Deactivate)*	All Ones
ESF Data Link Loopback Code	Binary
Activate (Line)	00001110 11111111
Deactivate (Line)	00111000 11111111
Universal Deactivate	00100100 11111111
AIS (Deactivate)*	All Ones
*When unit is provisioned for "Loopdown on AIS=YES"	

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