# Alcatel-Lucent 1830 PSS-1 GBE/GBEH networks

## Introduction

The Alcatel-Lucent 1830 PSS-1 GBE/GBEH edge device is a next-generation, high-density Ethernet transport device with up to twelve 1-GbE client ports and two 10-GbE uplink ports. Each shelf also has slots reserved for SFD DWDM and SFC CWDM filter pack. The uplink ports use XFP modules to support single channel, DWDM and CWDM transportations. The Alcatel-Lucent 1830 PSS-1 GBEH/GBEH can be deployed at the customer premises for Ethernet aggregation and access.

The 11DPE12 card in 1830 PSS-32/16 provides the same functionality as Alcatel-Lucent 1830 PSS-1 GBEH and provides full interworking between 1830 PSS-1 GBEH and 1830 PSS-32/16.

## Alcatel-Lucent 1830 PSS-1 GBE/GBEH linear network

The typical Alcatel-Lucent 1830 PSS-1 GBE/GBEH topology is a standalone-linear network or a spur of 1830 PSS-32/16.

An Alcatel-Lucent 1830 PSS-1 GBE/GBEH linear network consists of a two-degree 1830 PSS-1 GBE/GBEH OADM configuration and one-degree 1830 PSS-1 terminal configuration. For details of Alcatel-Lucent 1830 PSS-1 GBE/GBEH node configurations, please refer to the .

Alcatel-Lucent 1830 PSS-1 GBE/GBEH NEs support both CWDM and black and white (B&W) linear topologies; no optical amplifier is used between the NEs. Refer to Figure 17-208, “Linear network topology” (p. 17-225) for topology examples.

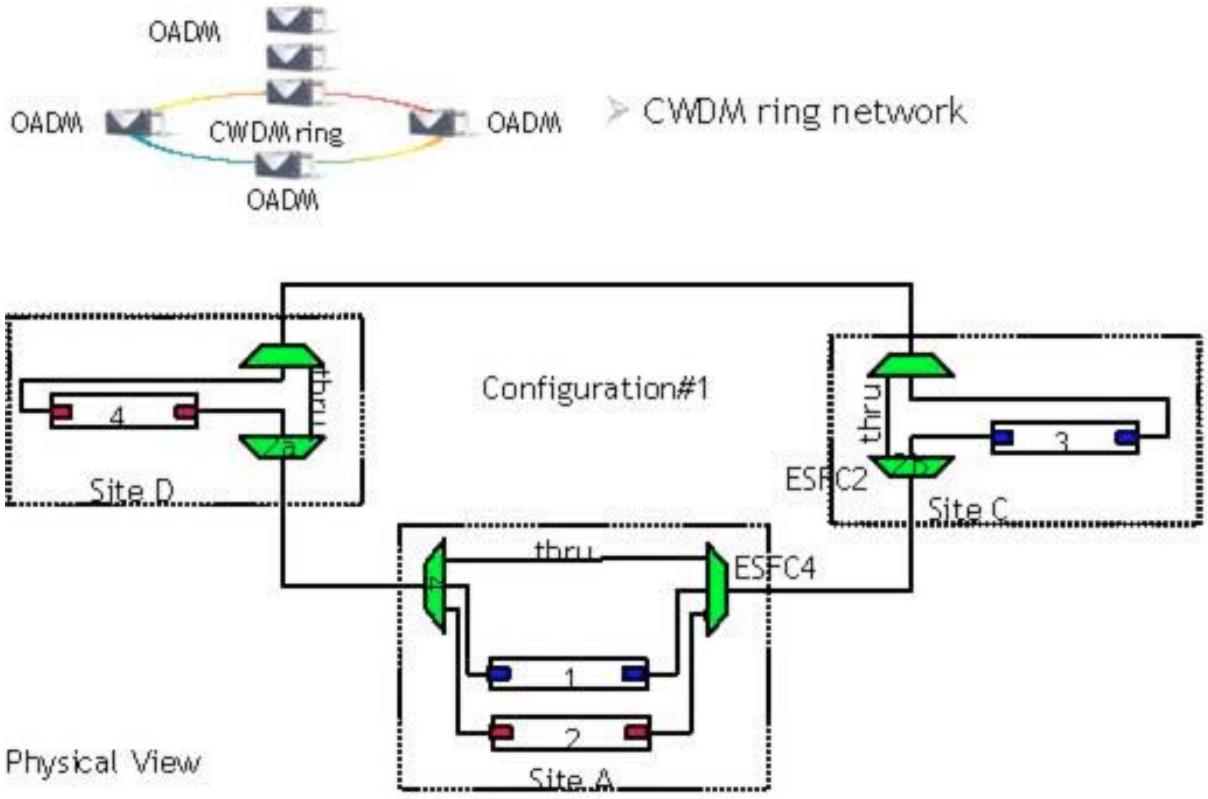
**Figure 17-208 Linear network topology**



## Alcatel-Lucent 1830 PSS-1 GBE/GBEH ring network

An Alcatel-Lucent 1830 PSS-1 GBE/GBEH ring network consists of interconnected two-degree 1830 PSS-1 GBE/GBEH OADM nodes. Figure 17-209, “Alcatel-Lucent 1830 PSS-1 GBE/GBEH ring network” (p. 17-226)shows the network and physical view of a CWDM 1830 PSS-1 GBE/GBEH ring topology.

**Figure 17-209 Alcatel-Lucent 1830 PSS-1 GBE/GBEH ring network**



# Mixed Alcatel-Lucent 1830 PSS-32/16 and Alcatel-Lucent 1830 PSS-1 networks

## Introduction

An interconnected 1830 PSS-32/16 and Alcatel-Lucent 1830 PSS-1 network configuration provides a total flexible and cost-effective edge optical network. This mixed network configuration can be accomplished by equipping the 1830 PSS-32/16 with an 11DPE12, which provides the same capabilities as an 1830 PSS-1 GBEH, or by extending one or more wavelengths from the 1830 PSS-32/16 down to the 1830 PSS-1 edge devices over single fiber pairs. The 1830 PSS-1 AHP can be used as an ILA node to support these optical connections.

In 1830 PSS Release 8.2, interconnection between 1830 PSS-32/16 and Alcatel-Lucent 1830 PSS-1 is supported as shown in Table 17-32, “1830 PSS-1/1830 PSS-32/16 interconnecting ports” (p. 17-227), including support for GCC0 (General Communications Channel 0). When equipped with various XFPs, the Alcatel-Lucent 1830 PSS-1 supports black and white (B&W), CWDM, or DWDM transportation. For more detailed information about configuring connections between the 1830 PSS-32/16 and 1830 PSS-1 in these types of networks, see the Alcatel-Lucent 1830 Photonic Service Switch (PSS) Release 8.2 User Provisioning Guide.

**Table 17-32 1830 PSS-1/1830 PSS-32/16 interconnecting ports**

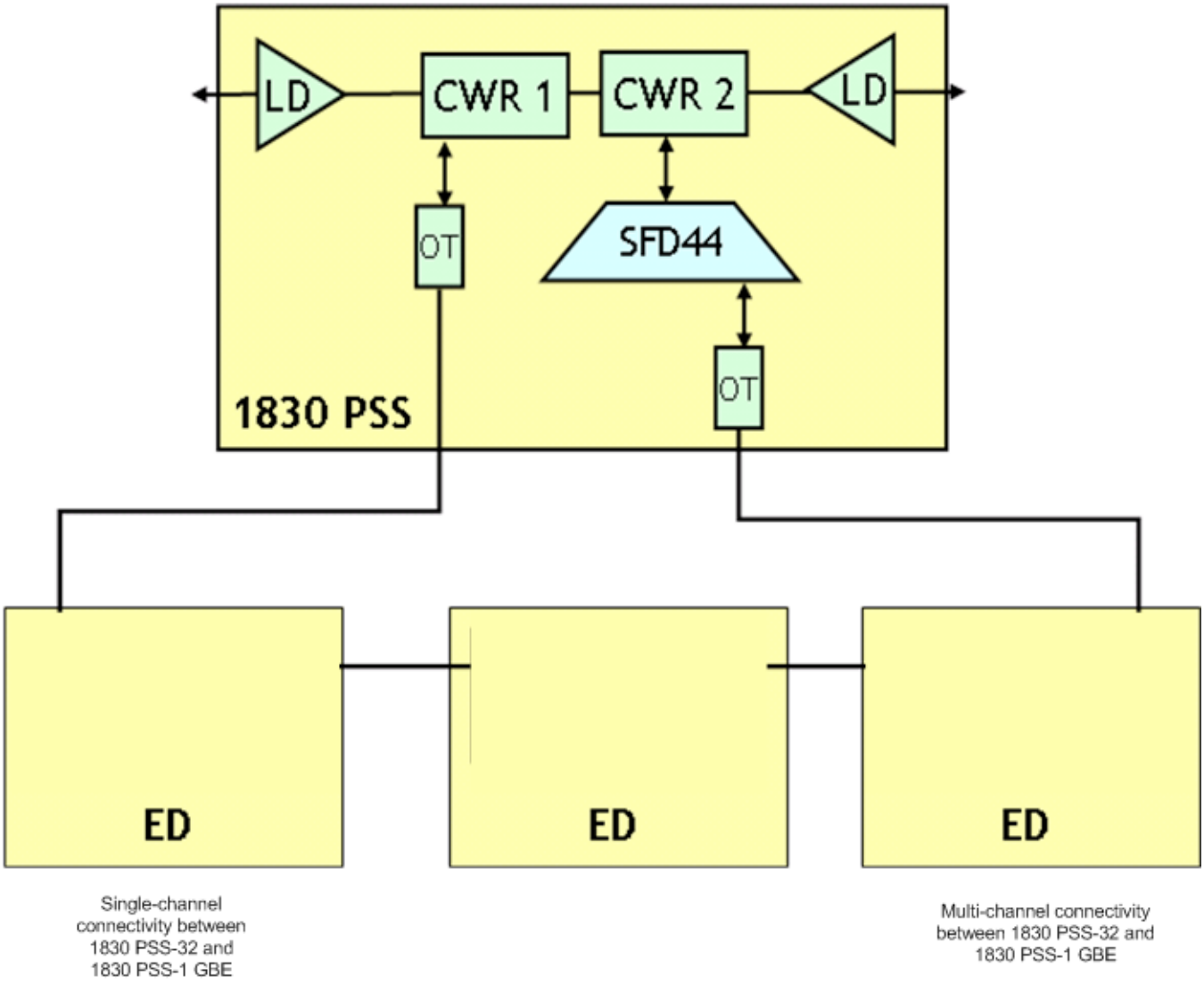
| PSS-1 port | PSS-32/16 OT port | GCC0 support |
|---|---|---|
| PSS-1 GBEH Line Port (OTU2) | 11STAR1 Client Port (OTU2) | Since R1 |
| PSS-1 GBEH Line Port (OTU2) | 11STAR1A Client Port (OTU2) | Since R5.0 |
| PSS-1 GBEH Line Port (OTU2) | 11QPA4 Client Port (OTU2) | Since R2.5.1 |
| PSS-1 GBEH Line Port (OTU2) | 11QPA4 Line Port (OTU2) | Since R2.5.1 |
| PSS-1 GBEH Line Port (OTU2) | 11DPE12 Line Port (OTU2) | Since R2.5 |
| PSS-1 GBEH Line Port (OTU2) | 11DPE12A Line Port (OTU2) | Since R5.1 |
| PSS-1 GBEH Line Port (OTU2) | 11DPE12(E) Line Port (OTU2) | Since R3.5 |
| PSS-1 MD4H Line Port (OTU1) | 11STMM10 Client Port (OTU1) | Since R2 |

**Table 17-32 1830 PSS-1/1830 PSS-32/16 interconnecting ports (continued)**

| PSS-1 port | PSS-32/16 OT port | GCC0 support |
|---|---|---|
| PSS-1 MD4H Line Port (OTU1) | 4DPA4 Line Port (OTU1) | Since R2 |
| PSS-1 MD4H Line Port (OTU1) | 11dPM12 Client Port (OTU1) | Since R3.5 |

Figure 17-210, “Alcatel-Lucent 1830 PSS interconnected with Alcatel-Lucent 1830 PSS-1 ” (p. 17-229) illustrates the physical connection between the 1830 PSS-32/16 and Alcatel-Lucent 1830 PSS-1 network via single-channel and multiple channels.

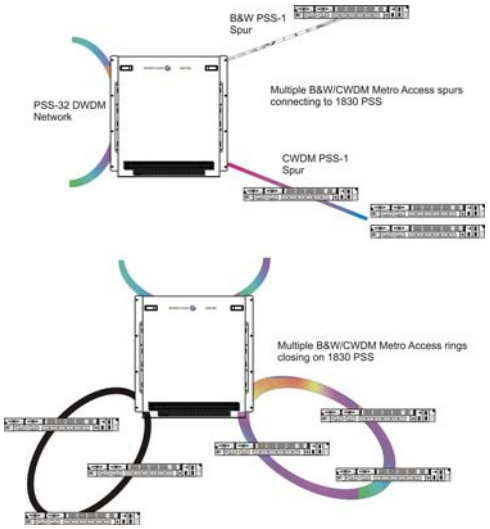
**Figure 17-210 Alcatel-Lucent 1830 PSS interconnected with Alcatel-Lucent 1830 PSS-1**




The 1830 PSS-1 Edge Device supports point-to-point, linear and ring configurations. The configuration of each node can be either a Degree-1 Line terminal or a Degree-2 OADM node (symmetrical or asymmetrical). The typical network configurations are listed as following:

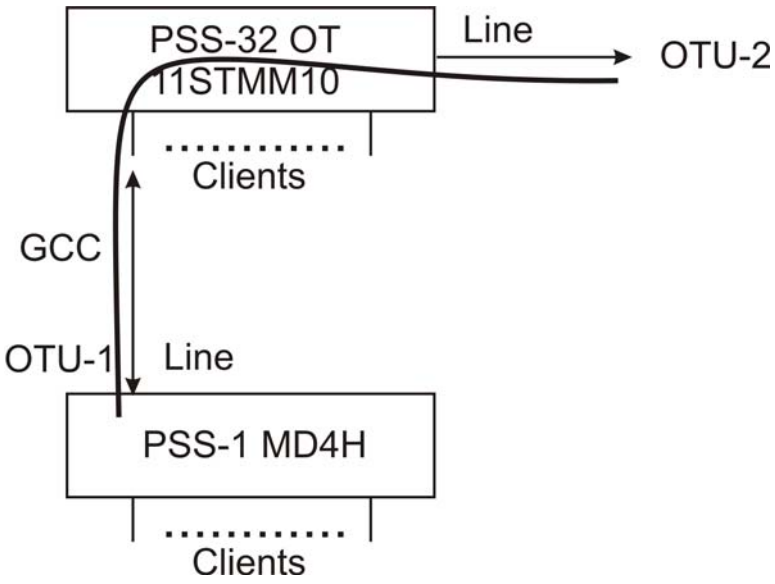
1830 PSS-32/16 and Alcatel-Lucent 1830 PSS-1 GBE mixed networks provide various flexible topologies, as illustrated in Figure 17-211, “Examples of Mixed 1830 PSS-32/1830 PSS-1 GBE topologies” (p. 17-230)

**Figure 17-211 Examples of Mixed 1830 PSS-32/1830 PSS-1 GBE topologies**




Network configuration for transition from access to core is supported between 1830 PSS-32 11STMM10 module client and 1830 PSS-1 MD4H line ports. This OTU1 interworking via GCC0 provides low cost access, and eases 1830 PSS-1 management by leveraging the OTN GCC management channel.

**Figure 17-212 1830 PSS-32/1830 PSS-1 OTU1 interworking**



# Mixed Alcatel-Lucent 1830 and Alcatel-Lucent 1696ROADM networks

## OT interworking between 1696ROADM and 1830 PSS

In this release, interworking is supported between selected 1830 PSS and 1696ROADM OTs, as shown in the following table.

**Table 17-33 Supported 1830/1696ROADM OT combinations**

| 1830 OT | 1696ROADM OT |
|---|---|
| 11STAR1 | 10GELAN |
| 11QPA4(A)[1] | 10GELAN |
| 11STGE12 | 10xGE |
| 11DPE12(E) | 10xGE |
| PSS-1 GBEH | 10xGE |

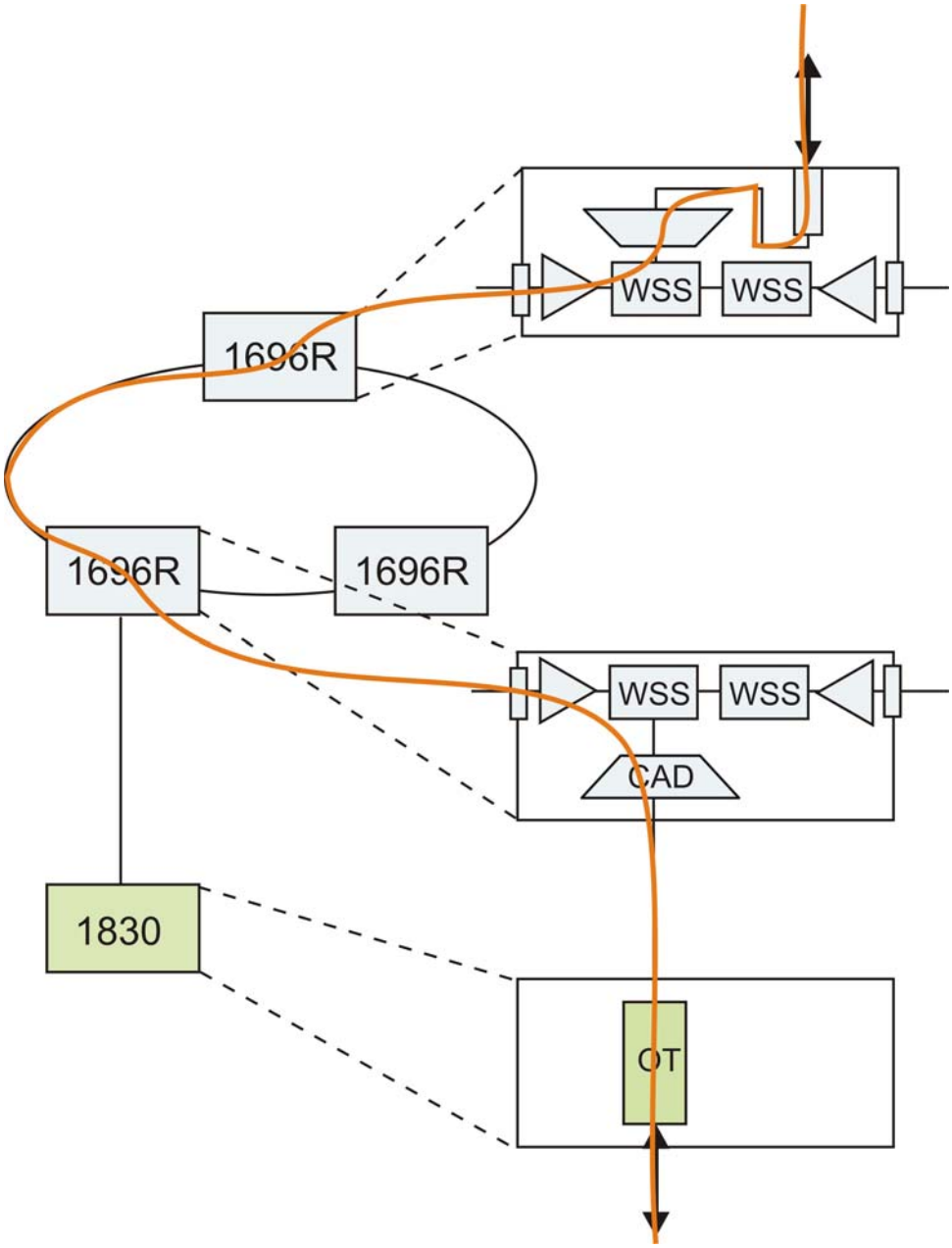
**Notes:**

1. In Release 2.5.1

**Note:** As of Release 7.0.1 any 1830 OSC interfaces being used to connect to a 1696ROADM should have their OSPF Hello value configured as 1 second and their OSPF Router Dead Interval value provisioned to 5 seconds. If this is not done there will be a **`Data Link Failure`** on the OSC and loss of communication until it is done.

Generic OT interworking scenarios are based on connecting an OT module in one NE to a compatible OT module in another type of NE within the same network. The simplest form of OT interworking is Point-to-Point configuration, providing bidirectional services between the OT connection points. Bidirectional OT Interworking is supported in unprotected Point-to-Point configuration.

**Figure 17-213 Basic 1696-1830 transponder interoperability configuration**

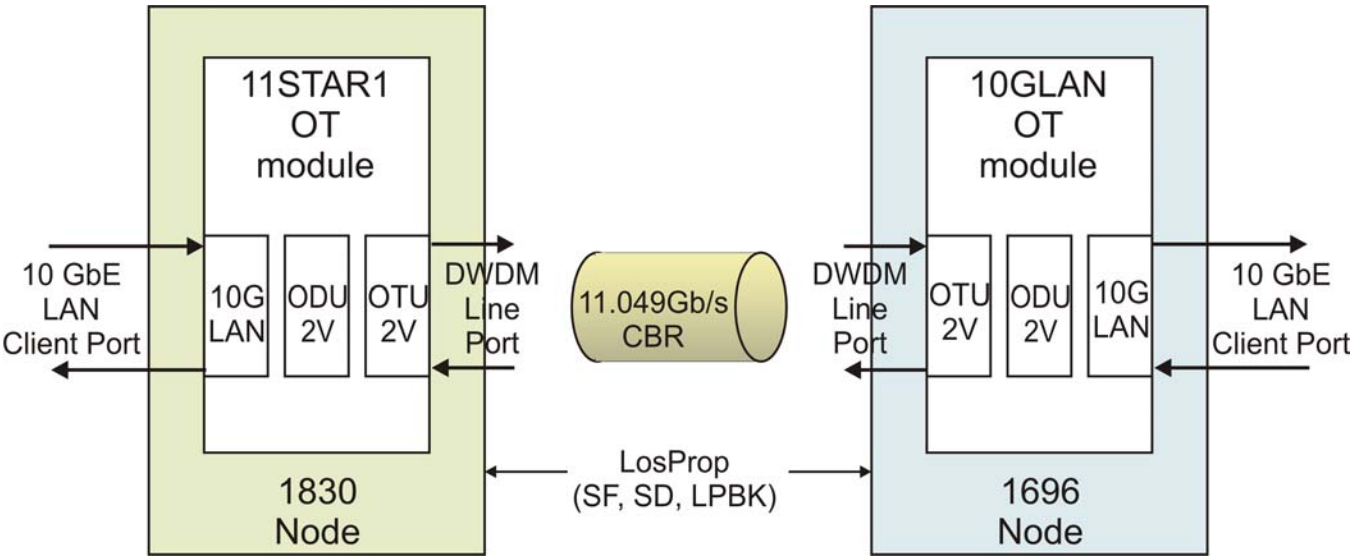



Signal digital structure on interconnected OT ports is exclusively OTU2V, with G.709 functionality and compliant digital structure with FEC field.

### 11STAR1 to 10GELAN interworking

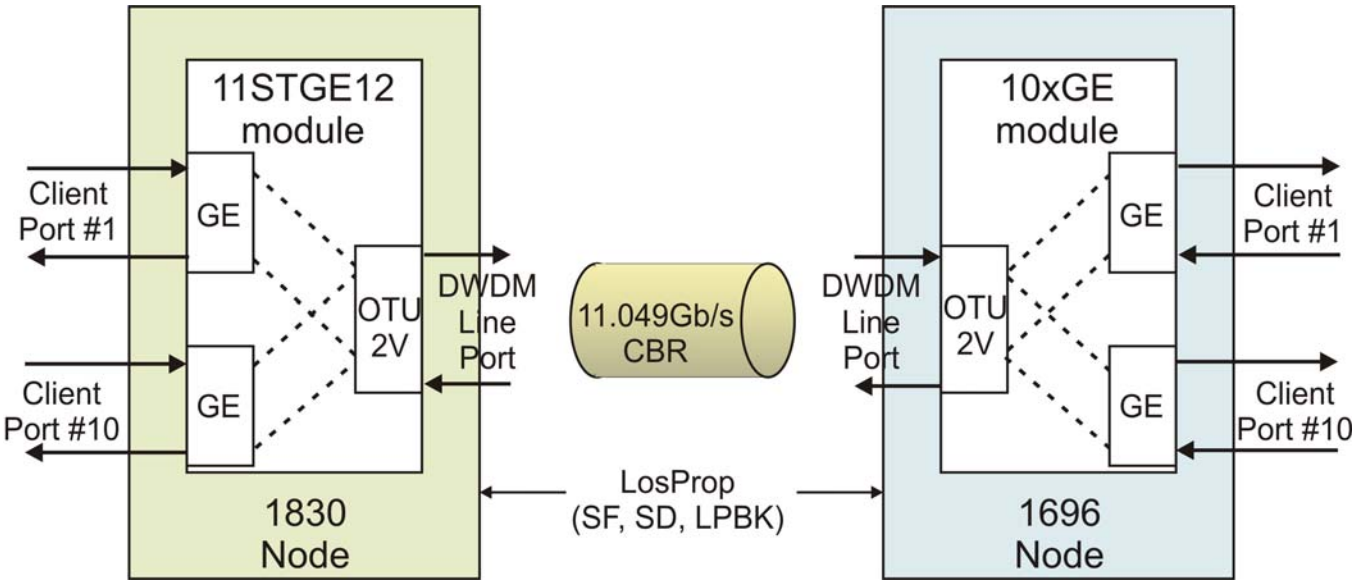
Interworking of the 11STAR1 module with 10GELAN is supported only when the client port on the 11STAR1 module is configured to 10GbE, and CBR11.049 mode is configured.

**Figure 17-214 11STAR1 to 10GELAN configuration**




### 11STGE12 to 10xGE interworking

The 11STGE12 module interworks with a 10xGE line port by supporting the HiGig 10 GbE LAN format on the line port. Line port bit rates on 11STGE12 and 10GE modules are 11.049 Gb/s. This bit rate is obtained by applying an OTU2-like structure to the base 10.3125 Gb/s stream with stuffing columns in ODU2 payload area.




11STGE12 module interworks with 10xGE on all 10 client GE ports using the following connections:

- 11STGE12 port #1 [hArr ] 10xGE port #1
- 11STGE12 port #2 [hArr ] 10xGE port #2
- Other intervening ports, in sequence
- 11STGE12 port #10 [hArr ] 10xGE port #10

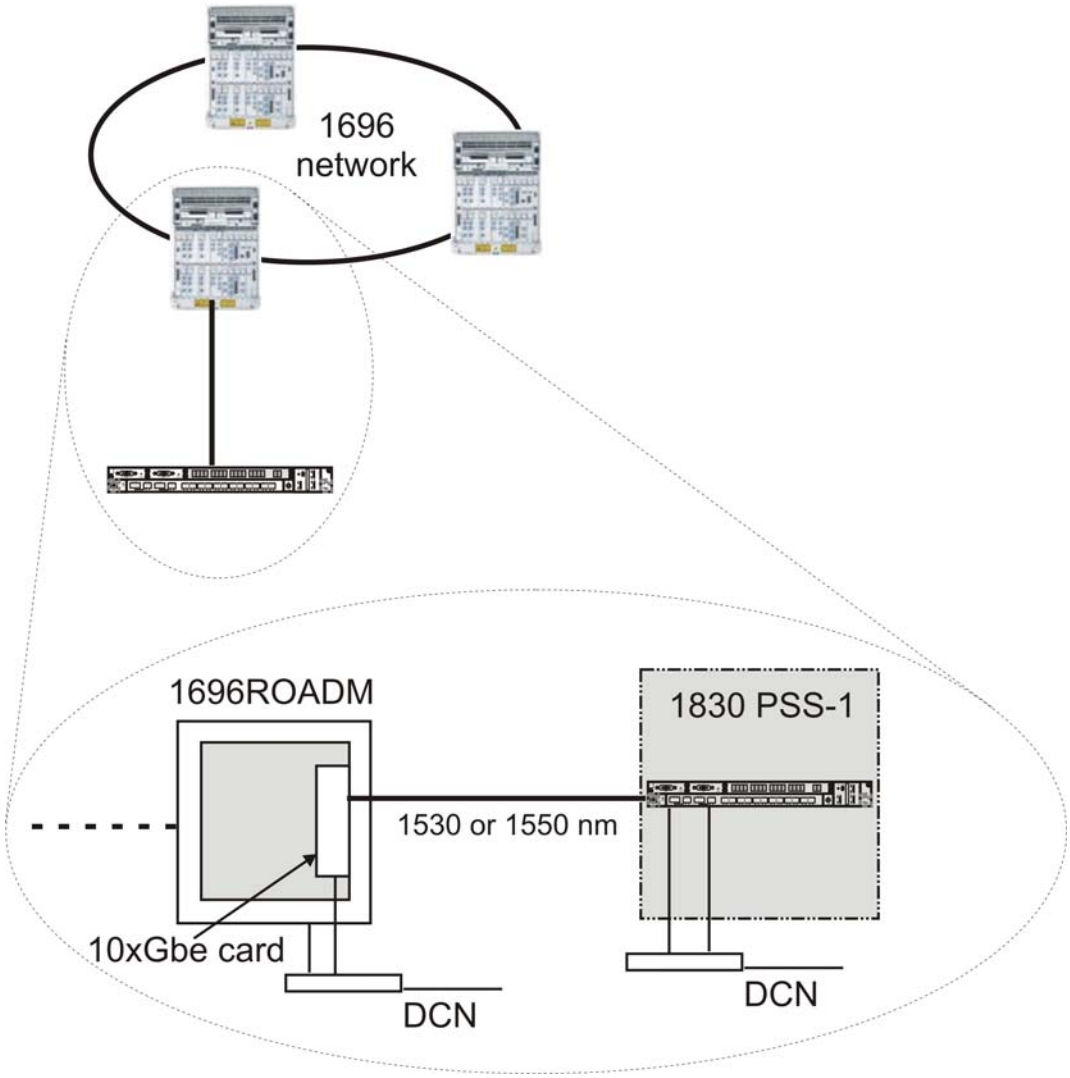
Ports 11 and 12 on 11STGE12 module are not used.

**Note:** Internal GbE flow segregation is performed using the HiGig header field named Dest port ID. Mapping between physical port IDs and HiGig Dest port ID field is identical in 1696ROADM and 1830 implementation.

### 1830 PSS-1 GBEH to 10xGbE interworking

The basic interworking scenario between a 1830 PSS-1 GBEH and a 10GE multiplexing module in a 1696ROADM shelf, is Gigabit Ethernet service aggregation over a single fiber pair from an access location to the 1696ROADM network.

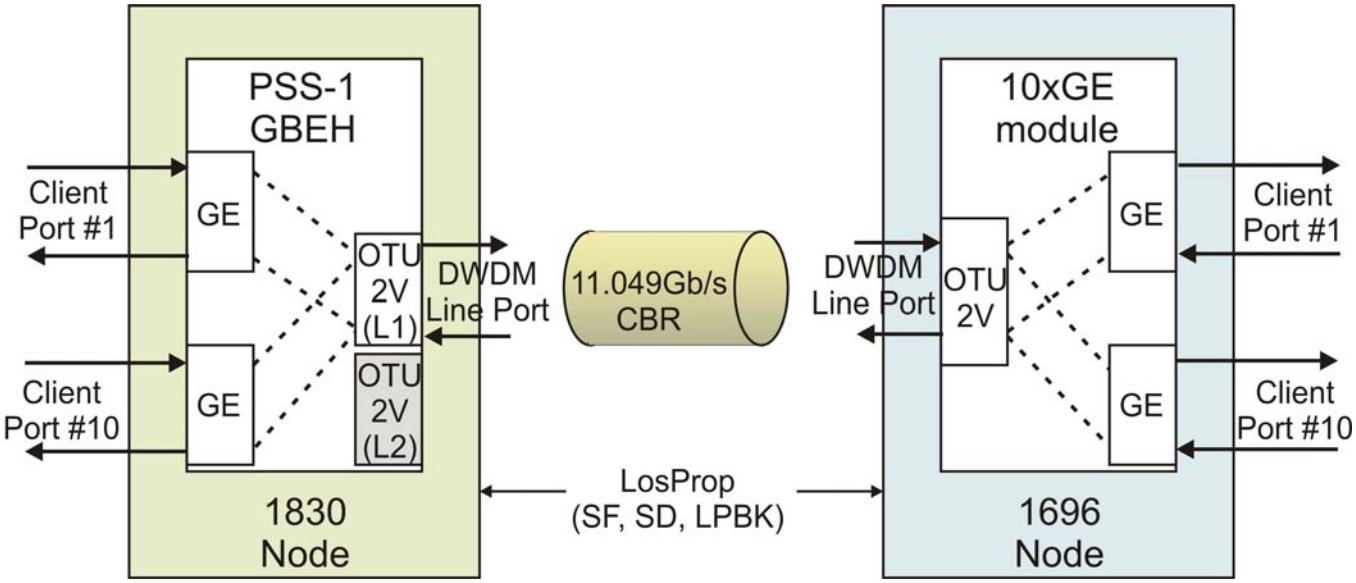
**Figure 17-215 1830 PSS-1 GBEH to 10xGE interworking scenario**




The Alcatel-Lucent 1830 PSS-1 edge device provides the ability to connect either the L1 or L2 port with the line port of a 10GE card in a 1696ROADM shelf. The digital structure and GE service processing, including individual GE time slot mapping, is compatible between the modules.

Management and communication between the 1696ROADM network and the Alcatel-Lucent 1830 PSS-1 GBEH is established by connecting DCN LAN to one of the GE services transported between the two modules. Since the Alcatel-Lucent 1830 PSS-1 GBEH supports only 1000BASE-X on client ports, the port dedicated to carrying DCN traffic cannot be directly connected to a 100BASE-X LAN interface.

**Figure 17-216 Alcatel-Lucent 1830 PSS-1 GBEH to 10xGE GE transparent service transport**




## 1830/1696 mid-span-meet configurations

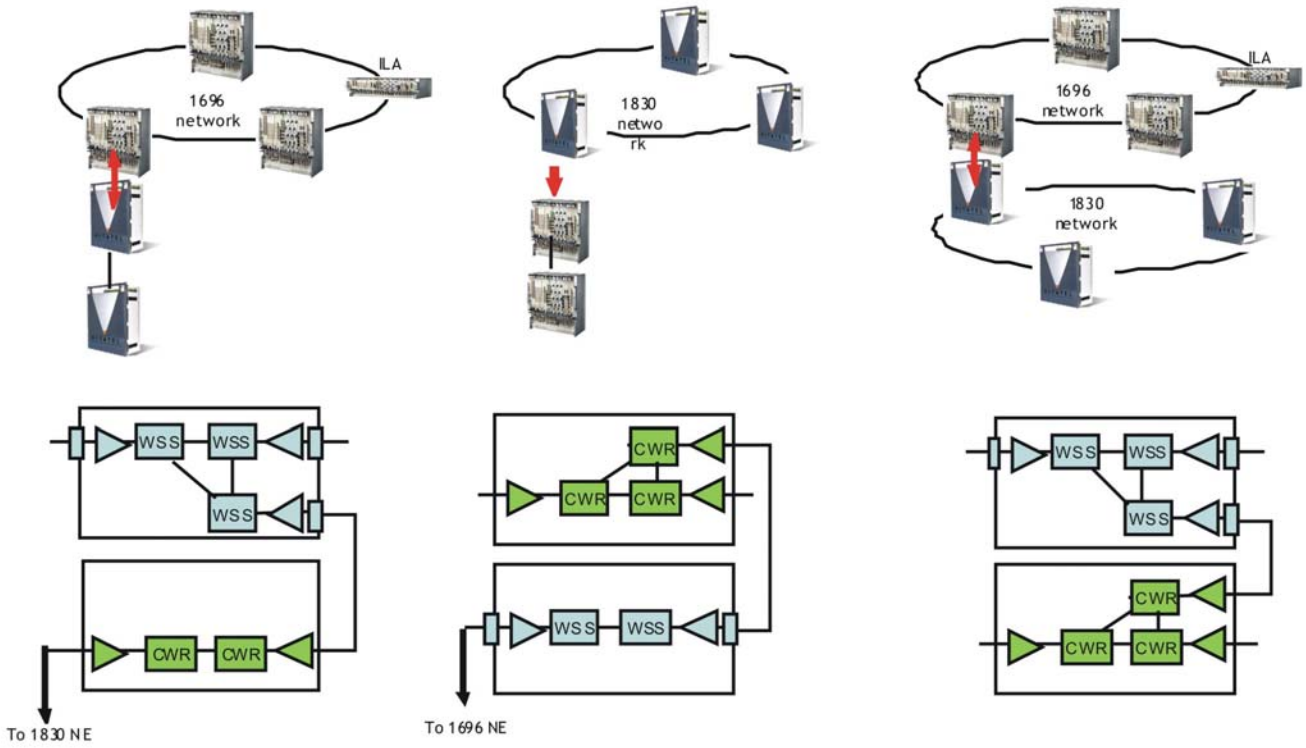
1830 PSS supports the following mid-span-meet network interconnections with 1696ROADM networks.

### Single line port interconnection

1830 PSS supports configuration of an 1830 PSS network interconnected with a 1696ROADM network by a single line port between a 1696ROADM NE and an 1830 PSS NE. The 1696ROADM NE can be a WSS-based ROADM, a blocker-based ROADM, or a static 1696ROADM node. The 1830 PSS NE can be TOADM or FOADM.

Figure 17-217, “1830/1696ROADM single line interconnections” (p. 17-237) shows the network and shelf view of the interconnection. Only WSS-based 1696ROADM and TOADM are shown. However the WSS can be replaced with blocker or filters.

**Figure 17-217 1830/1696ROADM single line interconnections**

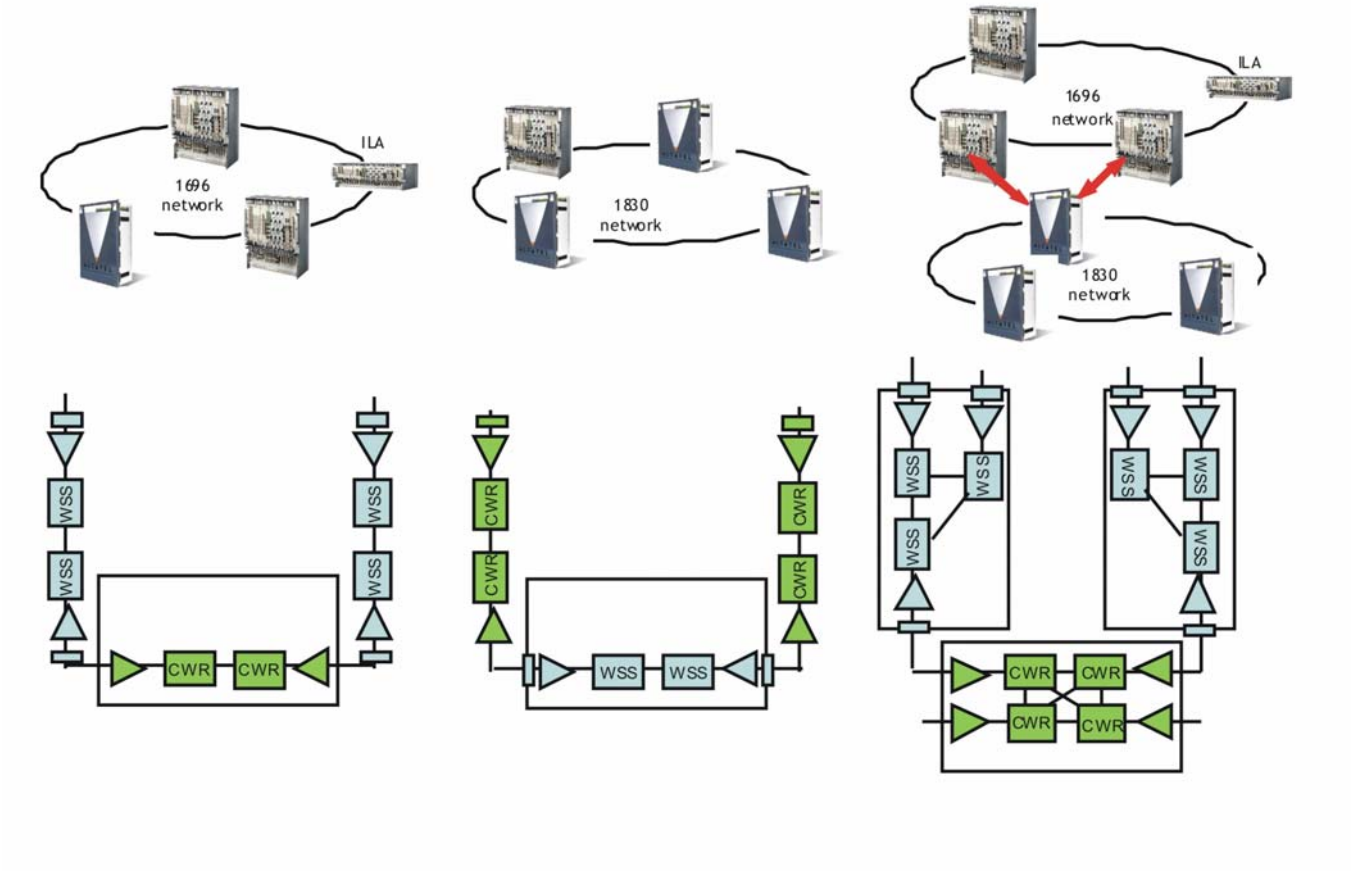



### Multi-line port interconnection

1830 PSS supports configuration of an 1830 PSS network interconnected to a 1696ROADM network by multiply line ports between a 1696ROADM and an 1830 PSS NE. The 1696ROADM NE can be a WSS-based ROADM, blocker-based ROADM, or static 1696ROADM node. The 1830 PSS NE can be TOADM or FOADM.

Figure 17-218, “1830/1696ROADM multi-line interconnections” (p. 17-238) shows the network and shelf view of the interconnection. Only WSS-based 1696ROADM and TOADM are shown. However the WSS can be replaced with blocker or filters.

**Figure 17-218 1830/1696ROADM multi-line interconnections**




### Mid-span-meet Interworking

The 1830 EPT is able to accept 1696ROADM NE as part of a nodal configuration. It is also able to provide both 1696ROADM and 1830 commissioning files that can be used for commissioning this interconnected network.

The default power-management type setting for interconnecting line ports is shown in the following table:

| | 1696 ROADM-wss | 1696 ROADM-block | 1696 Static |
|---|---|---|---|
| 1830-TOADM | Auto | Auto | Manual |
| 1830-FOADM | Manual | Manual | Manual |

The following table identifies the 42 channels in common between the 1696ROADM and 1830 PSS.

**Table 17-34 Channels common between 1696ROADM and 1830 PSS**

| 1696ROADM CMD42 Port | ITU Channel (100GHz) | Wave-length (nm) | Freq. (THz) | Band | Channel | 1930 SFD44 Port |
|---|---|---|---|---|---|---|
| 1 | 60 | 1529.55 | 196 | | | 9600 |
| 2 | 59 | 1530.33 | 195.9 | 1 | 1 | 9590 |
| 3 | 58 | 1531.12 | 195.8 | | 2 | 9580 |
| 4 | 57 | 1531.9 | 195.7 | | 3 | 9570 |
| 5 | 56 | 1532.68 | 195.6 | | 4 | 9560 |
| 6 | 55 | 1533.47 | 195.5 | | | 9550 |
| 7 | 54 | 1534.25 | 195.4 | 2 | 1 | 9540 |
| 8 | 53 | 1535.04 | 195.3 | | 2 | 9530 |
| 9 | 52 | 1535.82 | 195.2 | | 3 | 9520 |
| 10 | 51 | 1536.61 | 195.1 | | 4 | 9510 |
| 11 | 50 | 1537.4 | 195 | | | 9500 |
| 12 | 49 | 1538.19 | 194.9 | 3 | 1 | 9490 |
| 13 | 48 | 1538.98 | 194.8 | | 2 | 9480 |
| 14 | 47 | 1539.77 | 194.7 | | 3 | 9470 |
| 15 | 46 | 1540.56 | 194.6 | | 4 | 9460 |
| 16 | 45 | 1541.35 | 194.5 | | | 9450 |
| 17 | 44 | 1542.14 | 194.4 | 4 | 1 | 9440 |
| 18 | 43 | 1542.94 | 194.3 | | 2 | 9430 |
| 19 | 42 | 1543.73 | 194.2 | | 3 | 9420 |
| 20 | 41 | 1544.53 | 194.1 | | 4 | 9410 |
| 21 | 40 | 1545.32 | 194 | | | 9400 |
| 22 | 39 | 1546.12 | 193.9 | 5 | 1 | 9390 |
| 23 | 38 | 1546.92 | 193.8 | | 2 | 9380 |
| 24 | 37 | 1547.72 | 193.7 | | 3 | 9370 |
| 25 | 36 | 1548.51 | 193.6 | | 4 | 9360 |
| 26 | 35 | 1549.32 | 193.5 | | | 9350 |
| 27 | 34 | 1550.12 | 193.4 | 6 | 1 | 9340 |

**Table 17-34 Channels common between 1696ROADM and 1830 PSS (continued)**

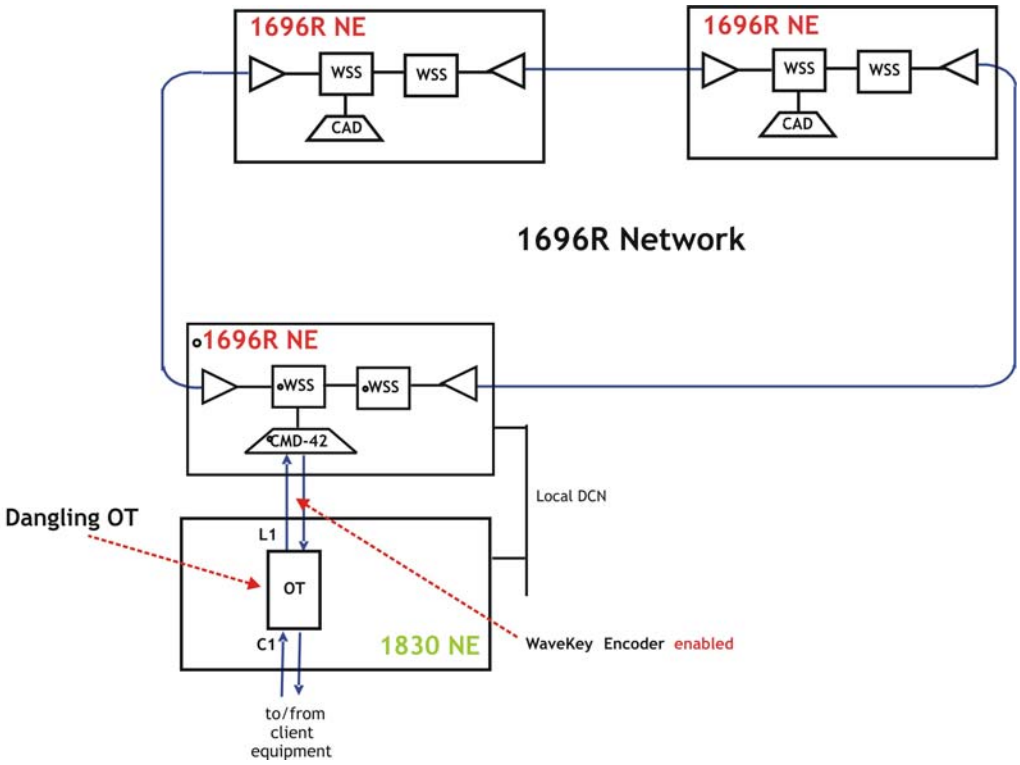
| 1696ROADM CMD42 Port | ITU Channel (100GHz) | Wave-length (nm) | Freq. (THz) | Band | Channel | 1930 SFD44 Port |
|---|---|---|---|---|---|---|
| 28 | 33 | 1550.92 | 193.3 | | 2 | 9330 |
| 29 | 32 | 1551.72 | 193.2 | | 3 | 9320 |
| 30 | 31 | 1552.52 | 193.1 | | 4 | 9310 |
| 31 | 30 | 1553.33 | 193 | | | 9300 |
| 32 | 29 | 1554.13 | 192.9 | 7 | 1 | 9290 |
| 33 | 28 | 1554.94 | 192.8 | | 2 | 9280 |
| 34 | 27 | 1555.75 | 192.7 | | 3 | 9270 |
| 35 | 26 | 1556.55 | 192.6 | | 4 | 9260 |
| 36 | 25 | 1561.42 | 192.5 | | | 9250 |
| 37 | 24 | 1558.17 | 192.4 | 8 | 1 | 9240 |
| 38 | 23 | 1558.98 | 192.3 | | 2 | 9230 |
| 39 | 22 | 1559.79 | 192.2 | | 3 | 9220 |
| 40 | 21 | 1560.61 | 192.1 | | 4 | 9210 |
| 41 | 20 | 1561.42 | 192 | | | 9200 |
| 42 | 19 | 1562.23 | 191.9 | | | 9190 |

## Dangling OT configuration

The line interface of 1830 PSS-32/16 OTs can be fibered directly to a 1696ROADM node for transport in a 1696-based network. For this application, the 1830 OT provides a signal, with WaveTracker encoding and power management, to the 1696ROADM node. The OT itself is installed in an 1830 PSS-32/16 shelf, and is managed by the 1830 node.

A dangling OT is an Alcatel-Lucent 1830 PSS optical transponder, plugged into an 1830 PSS-32/16 shelf, and managed by the Alcatel-Lucent 1830 PSS node, but connected on the line side to a 1696ROADM node. Because the line side optical ports (transmit and receive) are not fiber-connected to a CWR or Optical Multiplex/Demultiplex (OMD) pack in the Alcatel-Lucent 1830 PSS NE, this OT is characterized as a dangling OT on the 1696ROADM network.

**Figure 17-219 1830 dangling OT**




The system supports connection of the line port on the OT in the Alcatel-Lucent 1830 PSS shelf, to the 1696ROADM node through the CMD-42 card. Figure 17-219, "1830 dangling OT" (p. 17-241) shows interconnection for this application. The WaveTracker™ encoding function and power control management are enabled on the OT. The 1696ROADM and 1830 shelves each have a TID.

The following Alcatel-Lucent 1830 PSS OTs support Dangling OT interworking:

- 11STAR1
- 11STMM10
- 11STGE12
- 11DPM12
- 11QCUPC
- 11QPA4
- 43SCA1
- 43SCX4
- 43SCX4E
- 43STA1P
- 43STX4(P)

- 112SCA1
- 112SNA1
- 112SCX10
- 112SNX10
- 130SCUP
- 130SCUPB
- 130SCUPC
- 130SCX10
- 260SCX2

# DWDM extended link configurations

### Extended single span reach with 1621 submarine link extender (SLE)

The Alcatel-Lucent 1830 PSS-32 shelves are supported with a specific sub-set of modules for use with the Alcatel-Lucent 1621 SLE to provide repeater-less links up to 500 km. The 1621 SLE provides amplification on both ends of the span, and it is not part of the 1830 PSS network element. In these respects it is similar to the PB1 amplifier.

**Figure 17-220 1621 SLE**

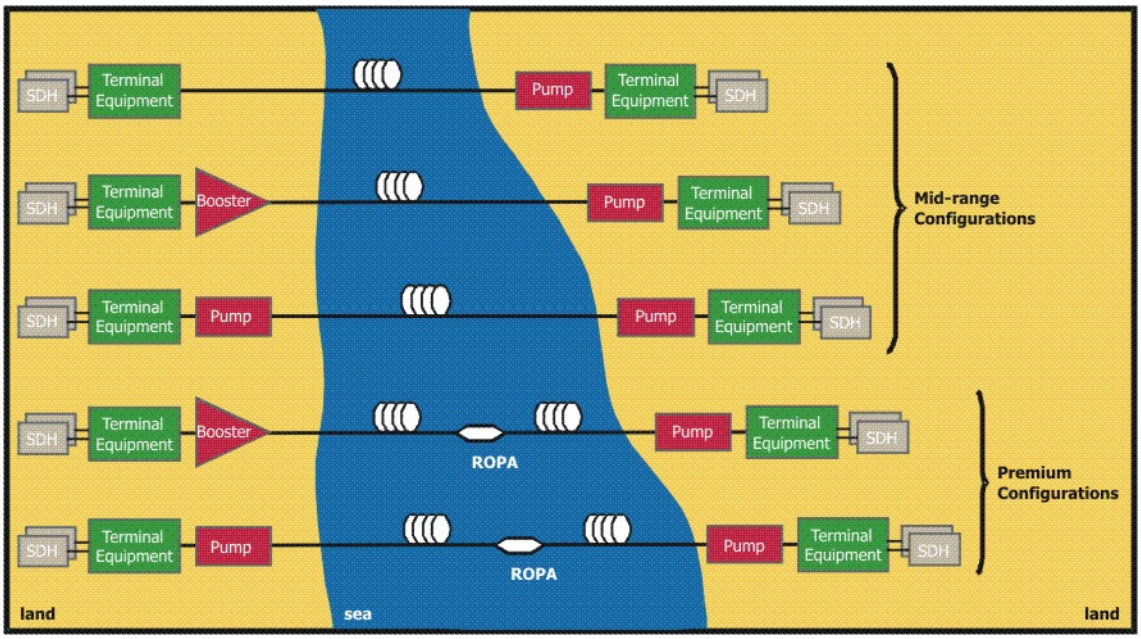


The 1621 SLE does not support all the 88 channels of the 1830 PSS channel plan. Depending on the 1621 SLE model used, 85 to 50 of the longest-wavelength channels are supported. The set of supported channels can be further reduced by the receive-side amplification.

The 1621 SLE can be managed through external DCN connectivity. DCN extension across the long span can be done through GCC0 channel configured on the Line port of an 11STAR1 card.

> **Note:** This document does not contain detailed information about the 1621 SLE. Refer to *1621 SLE Compact Shelf Technical Manual* for detailed description about 1621 SLE.

The following schematic illustrates the type of mid-range and premium extended link configurations that are supported.




### 1830 PSS supported components

The following components are supported in Alcatel-Lucent 1830 PSS-32 shelves for use with 1621 SLE applications.

- Optical transponders
  The following list of Optical Transponders are supported:
  - 11STAR1 (EFEC)
  - 11STMM10 (EFEC2)
  - 11STGE12 (EFEC2)
  - 43STA1P (AFEC)
  - 43STX4 (AFEC)
  - 43SCA1 (AFEC)
  - 112SCX10 (AFEC)
  - 112SNX10 (AFEC)
  - 112SCA1 (AFEC)
  - 112SNA1 (AFEC)
  - 130SCX10
  - 130SNX10
  - 260SCX2

    **Note:** Currently supported on 130G mode
- Amplifiers

The following Amplifiers are supported:

– AHPHG

– AHPLG

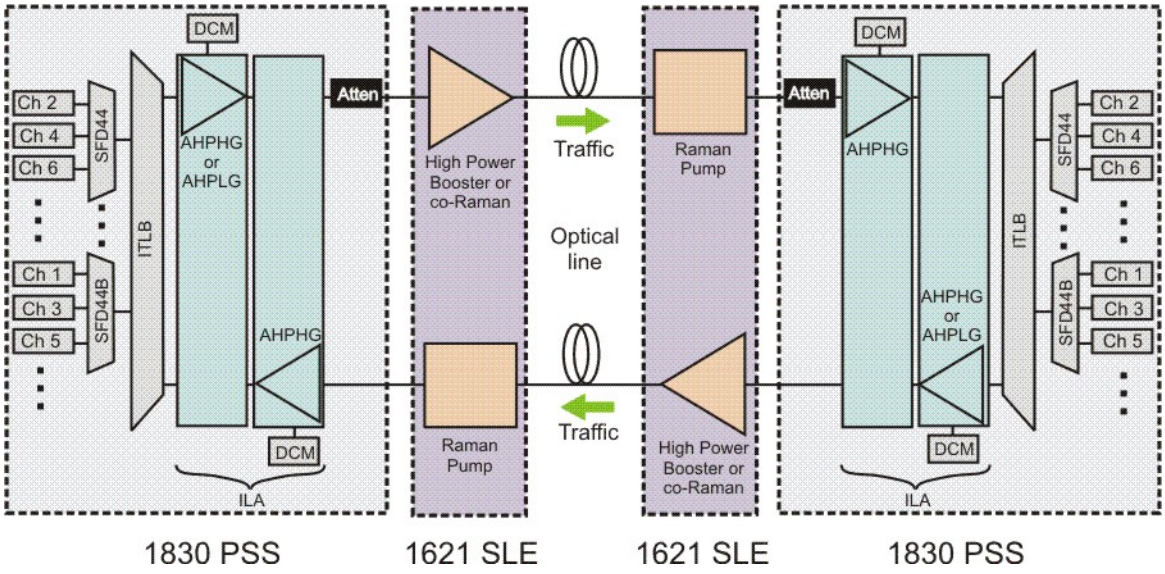
**Note:** Modular amplifiers are not included

- FOADM configurations
  – SFD44
  – SFD44B
  – ITLB

| | DCM1 | | | DCM2 | |
|---|---|---|---|---|---|
| | SMF | LEAF | | SMF | LEAF |
| DCF (km) | 120 | 120 | DCF (km) | [0;120] | [0;120] |
| FBG (km) | 240 | 480 max | FBG (km) | [0;240] | [0;480] |

G.652 and G.654 fiber types are supported. For a reach beyond 240 km DCMX FBG is required. APR must be disabled for this configuration, and it cannot be part of the GMPLS network.

**Figure 17-221 1621 SLE configuration with 1830 PSS**



# Alcatel-Lucent 1830 PSS-32 and 1830 TDMX/TDMXC networks

## Overview

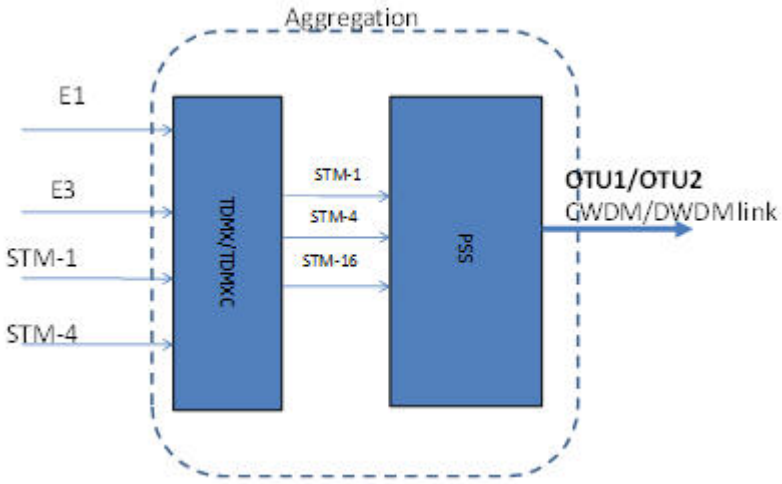
Alcatel-Lucent 1830 PSS-32 can be cascaded with 1830 TDMX/TDMXC to aggregate the TDM client services over OTN link. See Figure 17-222, “TDMX client services aggregation” (p. 17-246).

## Aggregated services

The following TDM client services can be aggregated:

- E1
- E3
- STM-1
- STM-4

**Figure 17-222 TDMX client services aggregation**




## Interworking interfaces

The following interworking interfaces between Alcatel-Lucent 1830 PSS-32 and 1830 TDMX/TDMXC are supported:

- STM-1
- STM-4
- STM-16

11DPM12 and 4DPA4 cards in Alcatel-Lucent 1830 PSS-32 are used to interwork with 1830 TDMX/TDMXC. 1830 TDMX/TDMXC and Alcatel-Lucent 1830 PSS-32 are managed with separate IP addresses.

## Management

In the gateway node, the following two types of configuration are supported:

- TDMX/TDMXC LAN ports are connected to 1830 PSS-32/PSS-16/PSS-16II/PSS-8 E1/E2 ports, Alcatel-Lucent 1830 PSS OAMP port is directly connected to DCN network. Alcatel-Lucent 1830 PSS E1/E2 subnet information is provisioned to be redistributed over DCN.
- TDMX/TDMXC LAN ports are directly connected to the DCN network.

In remote mode, Alcatel-Lucent 1830 PSS shelf is managed through GCC/OSC link, while TDMX/TDMXC RNE allows the following two types of configuration:

- TDMX/TDMXC are directly managed through DCC link. See Figure 17-223, "TDMX/TDMXC managed through DCC" (p. 17-247).
- TDMX/TDMXC are directly connected to Alcatel-Lucent 1830 PSS E1/E2 port, and it is accessed through PSS GCC/OSC channels. The Alcatel-Lucent 1830 PSS E1/E2 subnet information is provisioned to be redistributed over the GCC/OSC link. See Figure 17-224, "TDMX/TDMXC managed through PSS GCC/OSC channels" (p. 17-248).

TDMX/TDMXC GNE/RNE software download and database backup functions are supported over the 1830 PSS DCN network.

**Figure 17-223 TDMX/TDMXC managed through DCC**

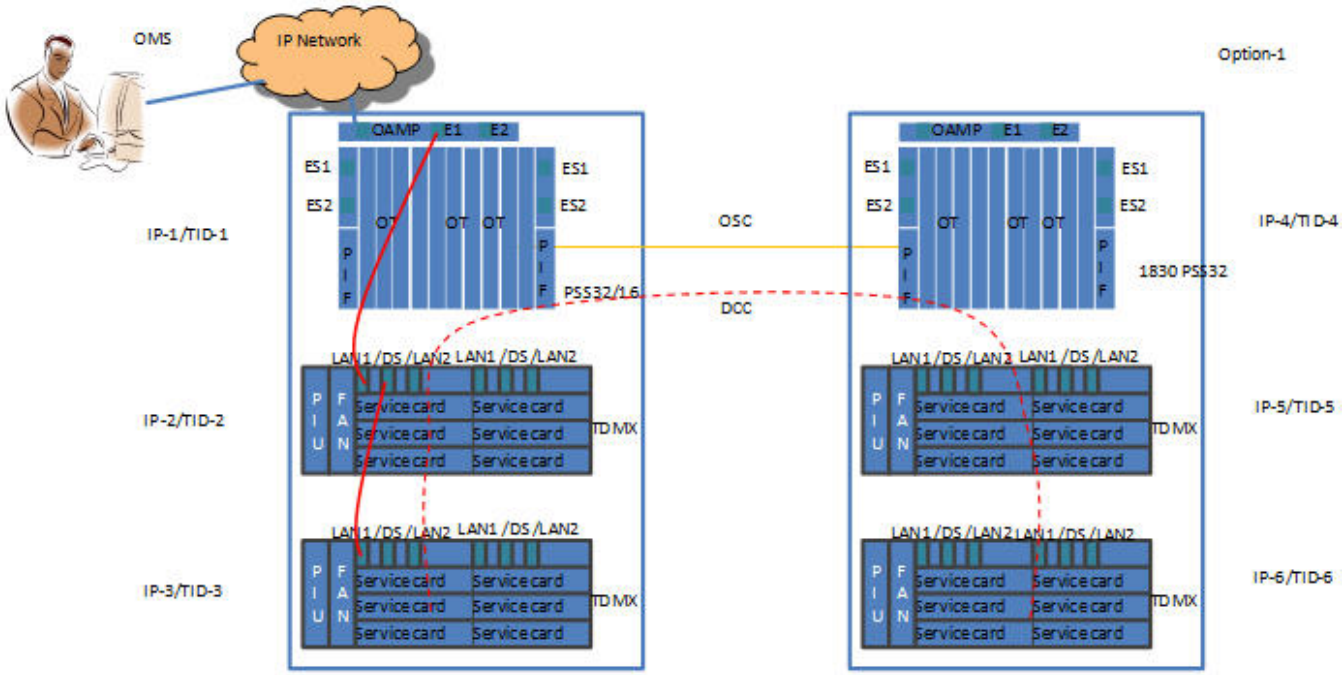
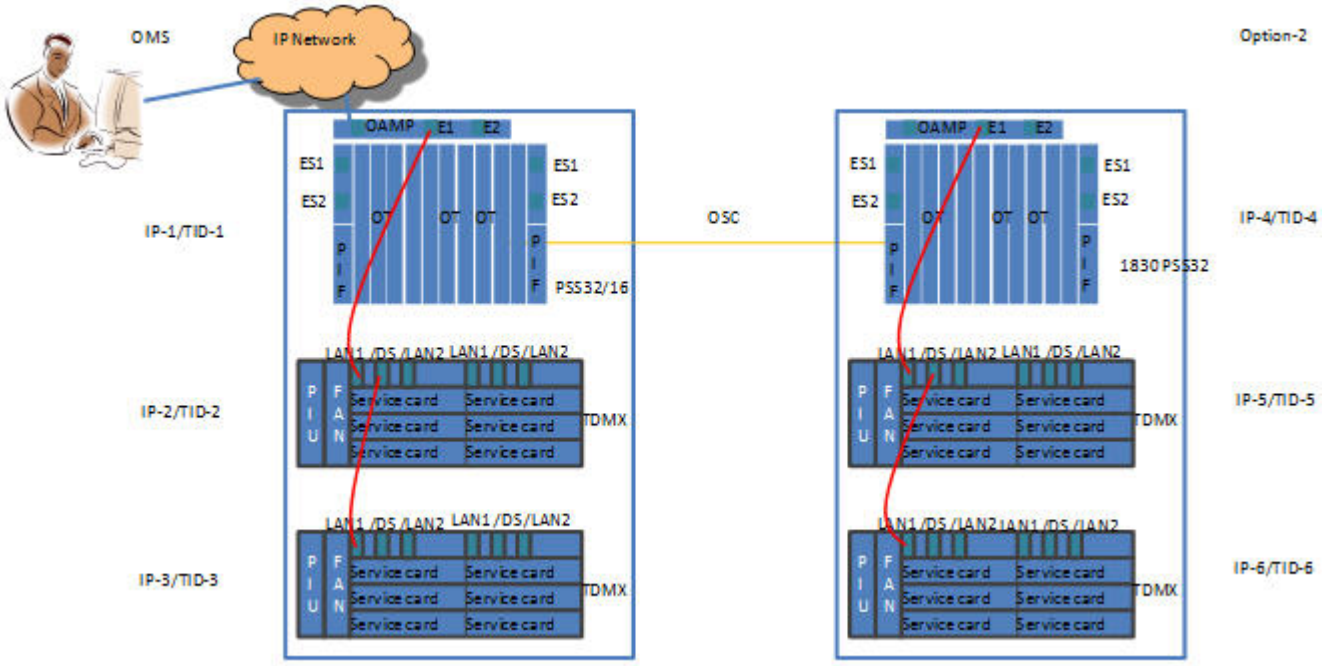


**Figure 17-224 TDMX/TDMXC managed through PSS GCC/OSC channels**




## 1830 TDMX/TDMXC drop shelf with single-node management

This feature supports the integration of an 1830 PSS-32/PSS-16/PSS-16II/PSS-8 shelf with a 1646 SM/SMC shelf.

The following aspects are supported in this integration:

- DCN&Transmission interworking between 1830 PSS-8 (4DPA4, 11DPM12) and 1646 SM/SMC
- DCN&Transmission interworking between 1830 PSS-16II (4DPA4, 11DPM12) and 1646 SM/SMC
- PSS-32 11DPM8 transmission interworking with 1646 SM/SMC
- PSS-8/PSS-16II 11DPM8 transmission interworking with 1646 SM/SMC

The following 1830 PSS shelves are required to integrate with TDMX/TDMXC:

- PSS-16
- PSS-32

The following OT cards are required on 1830 PSS for interworking:

- 11DPM8 (PSS-32/PSS-8/PSS-16II)
- 4DPA4 (PSS-32/PSS-16/PSS-8/PSS-16II)
- 11DPM12 (PSS-32/PSS-16/PSS-8/PSS-16II)

# 18 WDM product description

## Overview

### Purpose

This chapter describes the basic architecture and circuit packs for Alcatel-Lucent 1830 PSS-8, PSS-16, PSS-16II, and PSS-32 for WDM applications. This also describes the VWM-CW and VWM-DW.

### Precautions



**WARNING**

**Electric-shock hazard**

*The intra-building ports of the equipment are suitable only for connection to shielded intra-building cabling that is grounded at both ends.*

*The intra-building port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 5) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.*

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| 11G Single Port Tunable GbE Mux Transponder, 12clients (11STGE12) | 18-371 |
| 11G Dual Port Pluggable GbE Mux Transponder, 12 clients (11DPE12, 11DPE12E, 11DPE12A) | 18-377 |
| 11G Dual Port Pluggable Multirate ADM Transponder, 12 clients (11DPM12) | 18-391 |
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# Parts list and ordering information

## Alcatel-Lucent 1830 PSS racks, subracks, common parts, cards, and other mechanical items

### Table 18-1 List of Alcatel-Lucent 1830 PSS items

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| **Rack** | | | | | | | | | | | |
| RACK23 | 23-inch rack support | 1AD139370001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RACK-ETSI | ETSI 300 x 600-mm rack | Per region specifications | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 23" ANSI Rack | 1AD139370001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RACK19 | 19-inch rack support | Purchase directly from ADC: www.adc.com<br>Supplier P/N PWUEF-7X19ERN | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | PSS-32 14" Integrated Bay | 8DG62671AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | OneRack, ETSI full length bulged door kit - depth with rack totals 325mm | 3AL35160AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | TRU - Top Rack Unit (PSS-8) | 3DB00734AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | OPTINEX Rack (PSS-8) | 1AD172020001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | OneRack, ETSI, No Door (PSS-8) | 8DG09121AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Shelf and Subrack kits** | | | | | | | | | | | |
| PSC1-6 | Splitter shelf; passive, one RU shelf | 8DG62413AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PSC1-6 | Install Kit | 8DG62367AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PSC1-6 | Cover | 8DG62423AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PSS8 | PSS8 shelf - PSS8 (including PSS8SHF, Shelf Panel) | 3KC48901AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| PSS8KIT | PSS8 Shelf Kit - PSS8KIT (1xPSS8, 1x8FAN, 1xAIRFLTR) | 3KC48900AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PSS16II | PSS16II- PSS16II Shelf (shelf Chassis and backpln) | 3KC48960AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16IIKIT | 16IIKIT - PSS16II shelf kit (Including PSS16II shelf, 1x16FAN2, 1x16UP2, 1xAirFilter) | 3KC49050AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| COSKITH | Main Shelf Kit - PSS32, High Capacity Fan (includes COSHF, USRPNL, FAN - high power, TIBNKx2) | 8DG59605AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| COEKIT | Extension Shelf Kit - PSS32 (includes COSHF, UPBNK, FAN, TIBNKx2 | 8DG59606AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| COEKITH | Extension Shelf Kit - PSS32, High Capacity Fan (includes COSHF, UPBNK, FAN - high power, TIBNKx2 | 8DG59606AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| EOSKIT | PSS-16 Main Shelf Kit (includes EOSHF, fan, UP) | 8DG60273AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| EOSHF | End Office Shelf RSA (includes shelf w/Backplane, air filter, shelf ID) | 8DG59859AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FST | Fiber storage tray kit | 1AD151930001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DCM-SHF19 | DCM shelf (19-inch EIA) | 8DG59417AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DCM-SHF23 | DCM shelf (ETSI/ANSI) | 8DG59417AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FLEX19 | Flex shelf (19-inch EIA) | 8DG59602AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FLEX23 | Flex shelf (23-inch ANSI WECO) | 8DG59602AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FLEX-ETSI | Flex shelf (ETSI rack) | 8DG59602AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8SP | 8SP - Shelf Panel - PSS8, temp-harden | 3KC48830AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Installation kits** | | | | | | | | | | | |
| INST19 | CO shelf NAR installation kit (EIA/ANSI) - PSS32 - ICS 03 | 8DG59604AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INST19 | KIT-PSS-32 Z25 EXT. COVER INSTALL KIT, NAR (EIA/ANSI) | 8DG59604BA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INST19E | KIT-PSS-32 Z25 EXT. COVER INSTALL KIT, (19" ETSI) | 8DG59604BD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INSTET | CO shelf installation kit (ETSI rack) | 8DG59604AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INST19E | PSS32 19" ETSI Installation Kit | 8DG59604AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8INST19 | PSS8 INST KIT-19IN EIA | 3KC49812AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 8INSTET | PSS8 INST KIT-ETSI | 3KC49813AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8INST23 | PSS8 INST KIT-23IN ANSI | 3KC49814AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16INST19 | 16INST19 - PSS16II INST KIT-19IN EIA | 3KC50012AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16INSTET | 16INSTET - PSS16II INST KIT-ETSI | 3KC50013AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16INST23 | 16INST23 - PSS16II INST KIT-23IN ANSI | 3KC50014AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | PSS-32 NAR Install Kit, 14", new power cables (no ferrite) | 8DG62767AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MSH8-FSM Install Kit | 8DG62684AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MSH8-FSM Cover Kit | 8DG62685AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Integrated Bay Raised Floor Installation Kit (PSS32/64 Integrated Bay) | 8DG62776AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | End Guard Kit, 14" (PSS32/64 Integrated Bay) | 8DG62977AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | End Guard Kit, 15" (PSS32/64 Integrated Bay-raised floor) | 8DG62977AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Bay Spacer Kit, 2.5" (PSS32/64 Integrated Bay - both standard and raised floor) | 8DG63008AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | KIT, LSA Punch block + 1RU Mounting | 8DG60464AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | LSA Punch block (26AWB Connections) | 1AB054490002 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INSTE019 | PSS-16 NAR Installation Kit (EIA/ANSI) | 8DG60266BA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | PSS16 NAR Installation Kit (EIA/ANSI) - 35A w/ Z25 EXT Cover | 8DG60266CA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| IN-STEOET | PSS-16 Installation Kit (ETSI Rack) | 8DG60266BC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| INEO19 ET | PSS-16 19" ETSI Installation Kit | 8DG60266BD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | PSS16 19" w/M6 ETSI Installation Kit - 35A w/ Z25 EXT Cover | 8DG60266CD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| OMDKIT | OMD installation kit (EIA, ANSI, or ETSI) | 8DG59603AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SFD40I KE | SFD40/SFD40B ETSI Installation Kit | 8DG60451AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SFD40I KN | SFD40/SFD40B EIA/ANSI Installation Kit | 8DG60451AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PB1IN19 | PB1 Installation Kit - 19" or 23" Rack | 8DG60162AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PB1INET | PB1 Installation Kit - ETSI Rack | 8DG60109AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RA3PIN19 | RA3P Installation Kit - 19" or 23" Rack | 8DG60098AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RA3PINET | RA3P Installation Kit - ETSI Rack | 8DG60099AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | End Guard Kit, 14" (PSS-32 and PSS-64) | 8DG62977AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | End Guard Kit, 15" (for raised floor) | 8DG62977AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 2.5" bay spacer kit | 8DG63008AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Subrack and common parts** | | | | | | | | | | | |
| COSHF | Central office shelf (shelf and backplane) | 8DG59319AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVR32EIA | CO Shelf Cover - Large (PSS-32) | 8DG59348AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| — | PSS32 ETSI Cover Kit - Extended | 8DG60129AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | KIT-PSS-32 Z25 EXT. COVER KIT, (ETSI) | 8DG60129BA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CO Shelf Cover - PSS32 - Z25 - Field replacement part | 8DG61487AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVEOK-TET | PSS16 Shelf ETSI Cover Kit | 8DG60268AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | KIT-PSS-16 Z25 EXT. COVER KIT, (ETSI) | 8DG60268BA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CO Shelf Cover - PSS16 - Z25 - Field replacement part | 8DG59957AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVR16 | Shelf Cover - Medium - (PSS-16) | 8DG59957AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CVR | PSS8 Front cover | 3KC49946AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVD-MKT19 | DCM Cover Kit (EIA) | 8DG60131AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVD-MKT23 | DCM Cover Kit (ANSI) | 8DG60131AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CVOMK-T19 | OMD Cover Kit (EIA) | 8DG60130AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVOMK-T23 | OMD Cover Kit (ANSI) | 8DG60130AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVOMK-TET | OMD Cover Kit (ETSI) | 8DG60130AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVDMK-TET | DCM Cover kit (ETSI) | 8DG60131AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CVCOK-TET | PSS32 ETSI COVER KIT | 8DG60129AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ETSI cover, 1U | 8DG09825AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ETSI cover, 2U | 8DG09826AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| - | PSS32 EIA/NAR Cover Extender Kit | 8DG60129AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FSCEIA | Flex Shelf Cover | 8DG59518AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BCEIA CO | Shelf Baffle Cover (PSS-32) | 8DG59535AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| USRPNL | User interface panel PSS-32[1] | 8DG59240AA | 1 | NA | NA | NA | 40 | NA | NA | NA | NA |
| USRPNL | User interface card PSS-16[1] | 8DG60094AA | NA | 1 | NA | NA | NA | 10 | NA | NA | NA |
| 16UP2 | 16UP2 - User Panel – PSS16II[1] | 3KC48980AA | NA | NA | 1 | NA | NA | NA | 22 | NA | NA |
| 8UP | 8UP - User Panel - PSS8, temp-harden | 3KC48840AA | NA | NA | NA | 1 | NA | NA | NA | 12 | NA |
| EC | Equipment Controller with 4G compact flash[1] | 8DG59241AB | 2 | 2 | NA | NA | 1, 18 | 2, 12 | NA | NA | NA |
| EC | Equipment Controller (16GB) | 8DG59241AD | 2 | 2 | NA | NA | 1, 18 | 2, 12 | NA | NA | NA |
| EC | EC Equipment Controller (16GB NE) | 8DG61156AA | 2 | 2 | NA | NA | 1, 18 | 2,12 | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | 16 Gb EC Flashcard Upgrade Kit (PSS-32) | 8DG60968AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 32EC2 | 32EC2 - HP Equipment Controller | 8DG62635AA | 2 | NA | 2 | NA | 1, 18 | NA | 2,12 | NA | NA |
| 8EC2 | 8EC2 - Equipment Controller - PSS8, temp-harden | 3KC48820AA | NA | NA | NA | 2 | NA | NA | NA | 6, 12 | NA |
| FAN | Fan unit[1] | 8DG59243AA | 1 | NA | NA | NA | 37 | NA | NA | NA | NA |
| FAN32H | High Output Fan Unit (PSS-32) | 8DG59243AB | 1 | NA | NA | NA | 21 | NA | NA | NA | NA |
| FAN16 | Fan unit PSS-16[1] | 8DG59912AA | NA | 1 | NA | NA | NA | 21 | NA | NA | NA |
| 16FAN2 | Fan unit PSS-16II | 3KC48990AA | NA | NA | 1 | NA | NA | NA | 21 | NA | NA |
| 8FAN | 8FAN - Fan Unit - PSS8, temp-harden | 3KC48850AA | NA | NA | NA | 1 | NA | NA | NA | 14 | NA |
| IROADMF | IROADMF–Integrated ROADM blade wFG amp | 8DG62444AA | 16 | 7[9]<br>8[13] | 8 | 4 | {2-17} | {7-9} | {3-10} | {2-5} | ROADM |
| IROADMV | IROADMV - Integrated ROADM blade wVG amp | 8DG62445AA | 16 | 7[9]<br>8[13] | 8 | 4 | {2-17} | {7-9} | {3-10} | {2-5} | ROADM |
| 8ECBNK | 8ECBNK - Equipment controller blank – PSS8 | 3KC49801AA | NA | NA | NA | 2 | NA | NA | NA | 6, 12 | NA |
| TIBNK | Timing interface blank | 8DG59421AA | 2 | NA | NA | NA | 38, 39 | NA | NA | NA | NA |
| UPBNK | User panel blank | 8DG59354AA | 1 | 1 | NA | NA | 40 | 10 | NA | NA | NA |
| AIRFLT | Air filter - PSS-32 [2] | 8DG59320AA | 1 | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| AIRFLT16 | Air filter - PSS-16 [2] | 3KC50040AA | NA | 1 | NA | NA | NA | NA | NA | NA | NA |
| 16AF2 | Air Filter - PSS16 | 8DG60080AA | NA | NA | 1 | NA | NA | NA | NA | NA | NA |
| 8AF | Air filter - PSS-8 | 3KC49926AA | NA | NA | NA | 1 | NA | NA | NA | NA | NA |
| 8AFBNK | Air filter Blank - PSS-8 | 3KC49803AA | NA | NA | NA | 1 | NA | NA | NA | NA | NA |
| SHFID | Shelf ID | 3AL79242AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RA-MAIRFL | 1RU RAMAN AIR FILTER | 3AL94515AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| RAMRE-FAN | RAMAN REPLACE-MENT FAN | 8DG60100AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Power** | | | | | | | | | | | |
| PFDC20 | DC power filter (20A) - PSS-32 | 8DG59242AD | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC20 | DC power filter (20A) - PSS-32 w/voltage monitoring | 8DG59242BD | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC30 | DC power filter (30A) - PSS-32 | 8DG59242AC | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC30 | DC power filter (30A) - PSS-32 w/voltage monitoring | 8DG59242BC | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC50 | DC power filter (50A) - PSS-32 | 8DG59242AB | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC50 | DC power filter (50A) - PSS-32 w/voltage monitoring | 8DG59242BB | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC60 | DC power filter (60A) - PSS-32 | 8DG59242AE | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC60 | DC power filter (60A) - PSS-32 w/voltage monitoring | 8DG59242BE | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC70 | DC power filter (70A) - PSS-32 | 8DG59242AA | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| PFDC70 | DC power filter (70A) - PSS-32 w/voltage monitoring | 8DG59242BA | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDCA | DC Power Filter (no circuit breaker and WT support) | 8DG60334AA | 2 | NA | NA | NA | 19, 36 | NA | NA | NA | NA |
| PFDC20K | PSS-16 DC Power Filter Managed (20A) | 8DG60175AA | NA | 2 | NA | NA | NA | 1, 11 | NA | NA | NA |
| PFDC20K | PSS-16 DC Power Filter Managed w/VM (20A) | 8DG60175BA | NA | 2 | NA | NA | NA | 1, 11 | NA | NA | NA |
| PFDC35K | PSS-16 DC Power Filter Managed (35A) | 8DG60175AB | NA | 2 | NA | NA | NA | 1, 11 | NA | NA | NA |
| PFDC35K | PSS-16 DC Power Filter Managed w/VM (35A) | 8DG60175BB | NA | 2 | NA | NA | NA | 1, 11 | NA | NA | NA |
| PDU1 | Power Distribution Unit - ETSI (2 inputs, 6 outputs) | 1AF17443AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PDU1B | Power Distribution Unit - ETSI (4 inputs, 12 outputs) | 1AF07335AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PDU1C | Power Distribution Unit - ETSI (12 inputs, 12 outputs) | 1AF11705AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PDU2 | Power Distribution Unit - NAR (2 input, 6 outputs) | 1AF07336AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| PDU2B | Power Distribution Unit - NAR (4 input, 12 outputs) | 1AF07337AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PDU2C | Power Distribution Unit - NAR (12 inputs, 12 outputs) | 1AF10889AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PDU2D | PDU - NAR Rear Access (4 inputs, 4 outputs) - isolated RTNs | 1AF10889ABAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PSS16II: PDU and ONETRU oneTRU | | | | | | | | | | | |
| TRU1 | ONETRU , ETSI Kit (12 Inputs, 12 Outputs) | 3KC35392AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| TRU2 | ONETRU , ANSI Kit (12 Inputs, 12 Outputs) | 3KC35392ABAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Power Filter cards | | | | | | | | | | | |
| 16DC65 | PSS16II DC Power Filter (63A) , with simplified timing | 3KC49010AA | NA | NA | 2 | NA | NA | NA | 1,11 | NA | NA |
| 16DCBNK | 16DCBNK - DC Power Filter blank-PSS16II | 3KC50001AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8DC30 | 8DC30 - DC Power Filter (30A) - PSS8, with simplified timing, temp-harden | 3KC48870AA | NA | NA | NA | 2 | NA | NA | NA | 1, 7 | NA |
| 8DCBNK | 8DCBNK - DC Power Filter blank-PSS-8 | 3KC49802AA | NA | NA | NA | 1 | NA | NA | NA | 1, 7 | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 8AC7 | 8AC7 - AC Power Filter (7A@110V) - PSS8, temp-harden | 3KC48880AA | NA | NA | NA | 2 | NA | NA | NA | 1, 2, 7, 8 | NA |
| BRK1A | Breaker, 1A | 1AB017500057 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK2A | Breaker, 2A | 1AB017500065 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK4A | Breaker, 4A | 1AB017500059 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK8A | Breaker, 8A | 1AB017500058 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK10A | Breaker, 10A | 1AB017500061 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK15A | Breaker, 15A | 1AB017500062 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK20A | Breaker, 20A | 1AB017500067 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK25A | Breaker, 25A | 1AB017500066 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BR301A | Breaker, 30A | 1AB017500064 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK35A | Breaker, 35A | 1AB017500081 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK40A | Breaker, 40A | 1AB017500063 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK50A | Breaker, 50A | 1AB017500072 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK60A | Breaker, 60A | 1AB017500080 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK63A | Breaker, 63A | 1AB017500078 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK70A | Breaker, 70A | 1AB017500073 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRK80A | Breaker, 80A | 1AB017500077 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRKTGL | Breaker Toggle[4] | 1AD094650001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| TRU (3DB00734AA) Circuit Breaker (PSS-16II) | | | | | | | | | | | |
| | Breaker, 40A | 1AB162710015 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 30A | 1AB162710009 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 25A | 1AB162710008 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 20A | 1AB162710007 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 15A | 1AB162710006 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 10A | 1AB162710005 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 8A | 1AB162710004 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 4A | 1AB162710003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 2A | 1AB162710002 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 1A | 1AB162710001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | Breaker, 6A | 1AB1627100017 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 16A | 1AB1627100016 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 20A, Aux | 1AB1627100013 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 15A, Aux | 1AB1627100012 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 10A, Aux | 1AB1627100011 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Breaker, 2A, Aux | 1AB1627100010 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| One TRU Breaker (PSS-16II) | | | | | | | | | | | |
| | ONETRU Circuit Breaker with aux contact (1A) | 3AL35098BJ | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (2A) | 3AL35098BP | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (4A) | 3AL35098BC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (8A) | 3AL35098BD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (10A) | 3AL35098BE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (15A) | 3AL35098BF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (20A) | 3AL35098BG | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (25A) | 3AL35098BH | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | ONETRU Circuit Breaker with aux contact (30A) | 3AL35098BK | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (35A) | 3AL35098BQ | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (40A) | 3AL35098BL | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (50A) | 3AL35098BB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (60A) | 3AL35098BR | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (63A) | 3AL35098BS | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (70A) | 3AL35098BN | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (80A) | 3AL35098BT | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | ONETRU Circuit Breaker with aux contact (100A) | 3AL35098BA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Miscellaneous installation parts and tools** | | | | | | | | | | | |
| FSBNK | Full-slot blank | 8DG59418AA | 16 | 8 | NA | 4 | 2-17 | 3-10 | NA | 2-5 | NA |
| HSBNK | Half-slot blank | 8DG59419AA | 32 | 16 | NA | 8 | 2-17, 20-35 | 3-10, 13-20 | NA | 2-5, 8-11 | NA |
| HSALD | Half-slot adapter (PSS-32, PSS-16) | 8DG59443AA | 16 | 8 | NA | NA | 2-17 | 3-10 | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| HSLADA | Half-slot adapter (PSS-32, PSS-16, PSS-8) | 8DG09811AA | 16 | 8 | NA | 4 | 2-17 | 3-10 | NA | 2-5 | NA |
| ECBNK | Equipment controller blank | 8DG59420AA | 2 | 2 | NA | NA | 1, 18 | 2, 12 | NA | NA | NA |
| PDU1 SLET | Optional PDU Slider Kit for ETSI | 8DG60224AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRDG JMP | PDU BRIDGING/ JUMPER KIT | 8DG60788AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| TOOLKIT | 1830 tool kit (includes SFPTL, LCTL, HSLADTL, HSLADDRV) | 8DG59613AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SFPTOOL | SFP tool | 3AL81728AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| HSLAD TL | Half-slot mechanical adapter tool | 8DG07796AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| HSLAD DRV | Half-slot mechanical adapter screwdriver | 1AD008610003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| LCTL | LC removal tool | 8DG59614AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Optical amplifiers** | | | | | | | | | | | |
| ALPHG | Low-power, high-gain DWDM amplifier with mid-stage access[3] | 8DG59244AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| AHPHG | High-power, high-gain DWDM amplifier with mid-stage access[3] | 8DG59245AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| | High Power High Gain DWDM Amplifier, with mid-stage access, OSC ports on the faceplate | 8DG59245AB | 16 | 7[9]<br>8[10] | | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| AHPLG | High-power, low-gain DWDM amplifier with mid-stage access[3] | 8DG59945AA | 16 | 7[9]<br>8[10] | | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| | AHPLG - HPower LGain DWDM Amplifier | 8DG59945AB | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| A2325A | Amplifier, 23dB power, variable gain, C-band, with mid-stage access[3] | 8DG60242AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| | A2325A – 23dBm VGain Amp w/ DCM access | 8DG60242AB | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, DFOADM |
| AM2125A | Medium Variable Gain Amplifier, with DCM access[3] | 8DG60566AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9 | NA | 2-5 | TOADM, ROADM, WR20-TF ROADM |
| AM2125B | Medium Variable Gain Amplifier, without DCM access[3] | 8DG60912AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9 | NA | 2-5 | TOADM, ROADM, WR20-TF ROADM |
| AM2318A | Low Variable Gain Amplifier, no mid-stage access[3] | 8DG60565AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | TOADM, ROADM, WR20-TF ROADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| A2P2125 | AMPLIFIER, HYBRID 2 PUMP RAMAN/EDFA | 8DG61230AA | 8 | 2 | NA | NA | 2-16 | 6-8 | NA | NA | ROADM |
| AM2625A | AM2625A – 26dBm VGain Uni-amp w/ DCM & LBO Kit | 3KC13447AA | 8 | 3[9]<br>4[10] | NA | NA | 2-16 | 3-8[9]<br>3-9[10] | NA | NA | ROADM, DFOADM, WR20-TF ROADM |
| AM2032A | AM2032A – 20dBm VGain Uni-amp w/ DCM access | 3KC13202AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ROADM, DFOADM |
| AA2DONW | AA2DONW – Amp 2-Direction w/o WT | 3KC13308AA | NA | NA | NA | 8 | NA | NA | NA | 2-5 | TOADM, ROADM, DFOADM |
| AAR-8A | AAR-8A Amp Array 8-amps | 8DG62497AA | 16 | NA | NA | NA | 2-17 | NA | NA | NA | ROADM CDC-F |
| ASWG | ASWG Amplifier, Switched Gain EDFA | 8DG62498AA | 16 | 7 | NA | NA | 2-17 | 3-9 | NA | NA | CDC-F ROADM, WR20-TF ROADM |
| A4PSWG | A4PSWG Hybrid Amp 4 RP + SG EDFA | 8DG62496AA | 8 | 2 | NA | NA | 2-16 | 6-9 | NA | NA | ROADM CDC-F, DGE CDC-F |
| RA2P | Long Haul - 2 pump Raman, no mid-stage access[7] | 8DG60567AA | 16 | 3 | 8 | 4 | 2-17 | 7-9 | 3-10 | 2-5 | TOADM, ROADM, DFOADM<br>WR20-TF ROADM |
| RA3P | Raman Amplifier (3 Pump)<br>(External) | 8DG59967AB | NA | NA | NA | NA | NA | NA | NA | | TOADM, ROADM, DFOADM |
| PB1 | Power Booster<br>(External EDFA) | 8DG59966AA | NA | NA | NA | | NA | NA | NA | | TOADM, ROADM, DFOADM |
| MESH4 | Mesh Extension Pack (External coupler card) | 8DG60568AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ROADM |
| **Attenuators** | | | | | | | | | | | |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| ATT-NDRW | Attenuation drawer (1U) | 1AD151940001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-1 | 1-dB attenuator | 1AB371250006 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-2 | 2-dB attenuator | 1AB371250002 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-3 | 3-dB attenuator | 1AB371250007 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-4 | 4-dB attenuator | 1AB371250001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-5 | 5-dB attenuator | 1AB371250008 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-6 | 6-dB attenuator | 1AB371250003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-7 | 7-dB attenuator | 1AB371250009 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-8 | 8-dB attenuator | 1AB371240001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| ATTEN-9 | 9-dB attenuator | 1AB371250010 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| AT-TEN-10 | 10-dB attenuator | 1AB252030001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| AT-TEN-12 | 12-dB attenuator | 1AB371250004 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| AT-TEN-14 | 14-dB attenuator | 1AB371250005 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Optical Filters and supporting cards** | | | | | | | | | | | |
| CWR8B (replaces CWR8) | 8CH ColorlessW Router | 8DG60117AA | 8 | NA | NA | NA | 2-16 | NA | NA | NA | TOADM |
| CWR8-88 | 8-channel colorless wavelength router - 88 channel | 8DG59827AA | 8 | NA | NA | NA | 2-16 | NA | NA | NA | TOADM |
| WR8-88A | 8 channel wavelength router - Add side | 8DG59827AB | 8 | 3[9]<br>4[10] | NA | 2 | 2-16 | 3-8[9]<br>3-9[10] | NA | 2-4 | ROADM |
| WR8-88AF | WR8-88AF - 8CH WL Router-Add Side Flex Grid | 8DG61223AB | 8 | 3[9]<br>4[10] | NA | NA | 2-16 | 3-8[9]<br>3-9[10] | NA | NA | ROADM |
| WR2-88 | WR2-88 1X2 OPTIMIZED ROADM - 50 GHz | 8DG60352AA | 16 | 12[9]<br>14[10] | NA | NA | 2-16, 20-34 | 3-8, 13-18[9]<br>3-9, 13-19[10] | NA | NA | ROADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| WR20-TF | 1x20 WSS-based Wavelength Router with FlexGrid | 8DG61839AA | 8 | 3 | NA | NA | 2-16 | 3-8[9]<br>3-9[10] | NA | NA | WR20-TF ROADM |
| WR20-TFM | WR20-TFM Twin 1x20 w/ MPO Connectors | 8DG62519AA | 8 | NA | NA | NA | 2-16 | NA | NA | NA | ROADM CDC-F, DGE CDC-F |
| MSH8-FSM | MSH8-FSM Mesh 8-deg Fiber Shuffle | 8DG61406AA | 1 | NA | NA | NA | NA | NA | NA | NA | ROADM CDC-F, DGE CDC-F |
| MCS8-16 | MCS8-16 MultiCastSwitch 8-deg 16-ports | 8DG62474AA | 16 | NA | NA | NA | 2-17 | NA | NA | NA | ROADM CDC-F |
| OTDR | OTDR for fiber characterization | 8DG62504AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ROADM CDC-F, DGE CDC-F |
| MON-OTDR | MON-Optical time domain reflectometer card | 8DG63264AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17<br>20-35 | 3-9<br>13-19 | NA | NA | TOADM, ROADM,<br>DFOADM, WR20-TF ROADM |
| SFD2 [A-I, L-R] | Static filter DWDM 2-channel | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD4 [A-H] | Static filter DWDM 4-channel (A variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD4B | Static filter DWDM 4-channel (B variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD4C | Static filter DWDM 4-channel (C variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD4D | Static filter DWDM 4-channel (D variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| SFD4E | Static filter DWDM 4-channel (E variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4F | Static filter DWDM 4-channel (F variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4G | Static filter DWDM 4-channel (G variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4H | Static filter DWDM 4-channel (H variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD5A | Static filter DWDM 5-channel (A variant) | 8DG59437AA | 32 | 14[9] 16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9] 3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5B | Static filter DWDM 5-channel (B variant) | 8DG59437AB | 32 | 14[9] 16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9] 3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5C | Static filter DWDM 5-channel (C variant) | 8DG59437AC | 32 | 14[9] 16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9] 3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5D | Static filter DWDM 5-channel (D variant) | 8DG59437AD | 32 | 14[9] 16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9] 3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5E | Static filter DWDM 5-channel (E variant) | 8DG59437AE | 32 | 14[9] 16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9] 3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| SFD5F | Static filter DWDM 5-channel (F variant) | 8DG59437AF | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5G | Static filter DWDM 5-channel (G variant) | 8DG59437AG | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD5H | Static filter DWDM 5-channel (H variant) | 8DG59437AH | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| SFD8A | Static filter DWDM 8-channel (A variant) | 8DG60210AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD8B | Static filter DWDM 8-channel (B variant) | 8DG60210AB | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD8C | Static filter DWDM 8-channel (C variant) | 8DG60210AC | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD8D | Static filter DWDM 8-channel (D variant) | 8DG60210AD | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5<br>See[12] | TOADM, ROADM, DFOADM |
| SFD40 | 40-Channel Optical mux/demux - 50 GHz offset, even channels | 8DG60368AA | NA | NA | NA | NA | NA | NA | NA | NA | TOADM, ROADM, DFOADM |
| SFD40B | 40 Channel Optical mux/demux - 50 GHz offset, odd channels | 8DG60367AA | Unit is mounted external to the shelves. | | | | | | | | TOADM, ROADM, DFOADM |
| SFD44 | 44-channel optical mux/demux | 8DG59248AA | Unit is mounted external to the shelves. | | | | | | | | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| SFD44B | 44-channel Optical mux/demux - 50 GHz offset | 8DG59857AA | Unit is mounted external to the shelves. | | | | | | | | TOADM, ROADM, DFOADM |
| SFC2A | Static filter CWDM 2-channel (A variant) | 8DG59440AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC2B | Static filter CWDM 2-channel (B variant) | 8DG49440AB | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC2C | Static filter CWDM 2-channel (C variant) | 8DG49440AC | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC2D | Static filter CWDM 2-channel (D variant) | 8DG49440AD | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC4A | Static filter CWDM 4-channel (A variant) | 8DG59441AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC4B | Static filter CWDM 4-channel (B variant) | 8DG59441AB | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | CFOADM |
| SFC8 | Static filter CWDM 8-channel | 8DG59442AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | CFOADM |
| **SFC/SFDs from 1830 VWM for PSS-8** | | | | | | | | | | | |
| SFC4A | Static filter CWDM 4-channel (A variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5<br>See[12] | CFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| SFC4B | Static filter CWDM 4-channel (B variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | CFOADM |
| SFC8 | Static filter CWDM 8-channel | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | CFOADM |
| SFD4A | Static filter DWDM 4-channel (A variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4B | Static filter DWDM 4-channel (B variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4C | Static filter DWDM 4-channel (C variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4D | Static filter DWDM 4-channel (D variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4E | Static filter DWDM 4-channel (E variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4F | Static filter DWDM 4-channel (F variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4G | Static filter DWDM 4-channel (G variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD4H | Static filter DWDM 4-channel (H variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD8A | Static filter DWDM 8-channel (A variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| SFD8B | Static filter DWDM 8-channel (B variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD8C | Static filter DWDM 8-channel (C variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| SFD8D | Static filter DWDM 8-channel (D variant) | - | NA | NA | NA | 4 | NA | NA | NA | 2-5 See[12] | TOADM, ROADM, DFOADM |
| **Supporting cards** | | | | | | | | | | | |
| ITLB | 88 Channel Interleaver | 8DG59841AA | Unit is mounted external to the shelves. | | | | | | | | TOADM, DFOADM |
| ITLU | 88 Channel Interleaver (unidirectional) | 8DG59841AB | Unit is mounted external to the shelves. | | | | | | | | ROADM |
| SVAC | Single port variable attenuator card | 8DG59561AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| MVAC | Multiple variable attenuator card keyed | 8DG59561AB | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| MVAC8B | 8-Port Bi Dir Variable Attenuation Card | 8DG60999AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9<br>3-10[10] | NA | NA | TOADM, ROADM, DFOADM |
| OSCT | Optical Supervisory Card with Total Power Monitoring Unkeyed | 8DG59829AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | DFOADM |
| WTOCM | Wavelength Tracker Optical Channel Monitoring card | 8DG60323AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM<br>WR20-TF ROADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| WTOCMA | WTOCM supporting OSNR measurements | 8DG61483AA | 32 | 14[9]<br>16[10] | 8 | 4 | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | 2-5 | TOADM, ROADM, DFOADM<br>WR20-TF ROADM |
| WTOCM-F | WTOCM-F - WTOCM w/ Flex Capability | 8DG61330AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | ROADM CDC-F, DGE CDC-F<br>WR20-TF ROADM |
| MON-OCM | MON-OCM - Line Monitor used w/WTOCM | 8DG62753AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9<br>13-19 | 3-10<br>13-20 | NA | TOADM, ROADM, DFOADM, WR20-TF ROADM |
| PTPIO | PTPIO IEEE1588v2 PTP Interface Card | 3KC13159AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| PTPCTL | PTPCTL IEEE1588v2 Controller Card | 3KC13156BA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| **Optical transponders** | | | | | | | | | NA | | |
| 4DPA4 | MSC - 4G Dual Port Pluggable AnyRate (4 clients) | 8DG59713AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | | All |
| 4DPA2 | 4G Dual Port Pluggable AnyRate (2 client) | 8DG60158AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | DFOADM, CFOADM |
| D5X500 | 500G Muxponder/Uplink | 8DG62538AA | 6<br>5 for 16QAM-250G mode | NA | 4 | NA | 2-9, 11-16 | NA | 3-9 | NA | CDC-F<br>100GHz FOADM<br>CWR8 |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 11STAR1 | 11G Single Port Tunable AnyRate (1 client) | 8DG59249AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | All |
| 11STAR1A | 11G SPT AnyRate (1 client) 2nd Generation | 8DG60763AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | All |
| 11STGE12 | 11G Single Port Tunable GBE Mux (12 client) | 8DG59339AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17, 20-35 | 3-9[9]<br>3-10[10] | NA | NA | TOADM, ROADM, DFOADM |
| 11DPE12 | 11G Dual Port Tunable GBE Mux (12 client) | 8DG59340AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ALL |
| 11DPE12E | 11G Dual Port Tunable GBE Mux (12 client) enhanced | 8DG59340AB | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ALL |
| 11DPE12A | 11DPE12A - 11G DPPLUG-GABLE GBE MUX (12C) – ENH2 | 8DG59340AC<br>8DG59340AD[8] | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | ALL |
| 11DPM12 | 11G Dual Pluggable 12-anyrate Mux OT | 8DG59828AA | 16 | 7[9]<br>8[10] | NA | 4 | 2-17 | 3-9[9]<br>3-10[10] | NA | 2-5 | ALL |
| 11DPM8 | 11DPM8 - 8xAny Muxponder | 3KC13310AA | 16 | NA | NA | 4 | 2-17 | NA | NA | 2-5 | ALL |
| 11STMM10 | 11G Single Port Tunable Multirate Mux (10 universal clients) | 8DG59251AA | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | TOADM, ROADM, DFOADM |
| 11QPA4 | 11G Quad Port Pluggable AnyRate HARDENED (4 client) | 8DG60349AA | 16 | 7[9]<br>8[10] | 8 | 4 | 2-17 | 3-9[9]<br>3-10[10] | 3-10 | 2-5 | All |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 11QPA4A | 10G, Quad port, any rate module with four client interfaces | 8DG60349AB | 16 | 7[9]<br>8[10] | NA | NA | 2-17 | 3-9[9]<br>3-10[10] | NA | NA | All |
| 11QPEN4 | SAN ENC Kit (11QPEN4 + SWL for 1-port)[5] [7] | 8DG61458AA | 16 | 3 | 8 | 4 | 2-17 | 7-9 | 3-10 | 2-5 | All |
| 11QPE24 | 11G Quad Port Pluggable GBE Mux Transponder (24 clients) | 8DG61044AA | 8 | 6[9]<br>7[10] | NA | NA | 2-16 | 3-8[9]<br>3-9[10] | NA | NA | All |
| 11QCE12X | 11QCE12X-Carrier Ethernet MuxOT, 4x10GbE/OTU2e Lines, 12x1GbE Clients | 8DG61581AA | 8 | 3 | 8 | 4 | 2-17 | 7-9 | 3-10 | 2-5 | All |
| 11OPE8 | 11OPE8-Carrier Ethernet MuxOT, 8x10GbE/OTU2e Line&Clients | 8DG61285AB | 16 | 3 | 8 | 4 | 2-17 | 7-9 | 3-10 | 2-5 | All |
| 12P120 | 12P120 10G, 12 Prog Ports, 6 RTUs | 3KC49161AB | 16 | NA | NA | 4 | 2-17 | NA | NA | 2-5 | TOADM, ROADM, DFOADM |
| 43STX4 | Multirate Multiprotocol MUX Tunable Transponder (44 channels, 4 universal clients, C-band) | 8DG59831AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 43STX4P | Multirate Multiprotocol MUX Tunable Transponder (88 channels, 4 universal clients, C-band, DPSK) | 8DG60237AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 43SCX4 | 40G Single Port Tunable MUX coherent (4 Client) transponder[7] | 8DG60320AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 43SCX4E | Single Port Tunable Coherent Mux Transponder, enhanced (4 clients)[7] | 8DG60992AA | 8 | NA | NA | NA | 2-16 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 43STA1PB | 40G SPT AnyRate C-Band PDPSK Enhanced | 8DG60230AB | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 43SCA1 | 40G single port tunable anyrate coherent 1 client Add/Drop transponder[7] | 8DG60317AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 43SCGE1 | Single Port Tunable Coherent GBE Transponder (1 client)[7] | 8DG61131AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 112SCX10 | 112SCX10 100G Mux, 10CL, Coherent[7] | 8DG17121AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 112SNX10 | 112SNX10 100G Mux, 10CL, ER Coherent[7] | 8DG60977AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 112SCA1 | 112SCA1 100G A/D, 1CL, Coherent[7] | 8DG60008AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 112SNA1 | 112SNA1 100G, A/D 1CL, ER Coherent[7] | 8DG60987AA | 5 | NA | NA | NA | 2-15 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 112SDX11 | 112SDX11 100G Metro Mux Pluggable | 8DG62446AA | 16 | 3 | NA | NA | 2-17 | 7-9 | NA | NA | DFOADM |
| 130SCX10 | 130SCX10 100G Mux, 10CL, SDFEC Coherent | 8DG61279AA | 7 See [6] | NA | NA | 2 | 2-16 | NA | NA | 2-4 | TOADM, ROADM, DFOADM |
| 130SNX10 | 130SNX10 100G Mux 10CL, Flex Coherent | 8DG62039AA 8DG62039AC | 7 | NA | NA | 2 | 2-16 | NA | NA | 2-4 | TOADM, ROADM, DFOADM |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 130SNQ10 | 130SNQ10 100G Mux, QSFP, Low Noise | 8DG62741AA | 7 | NA | NA | NA | 2-16 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 130SCA1 | 130SCA1 100G A/D, SDFEC COHERENT | 8DG62229AA | 8 | NA | NA | NA | 2-16 | NA | NA | NA | TOADM, ROADM, DFOADM |
| 20P200 | 20x10G Multirate I/O Module | 8DG62471AA | NA | NA | 8 | 4 | NA | NA | 3-10 | 2-5 | TOADM, ROADM, DFOADM |
| 1UD200 | 1UD200 100/200G Uplink Card | 8DG62549AA | NA | NA | 8 | 4 | NA | NA | 3-10 | 2-5 | TOADM, ROADM, DFOADM |
| | 1UD200 100G Uplink Card | 8DG62549AB | | | | | | | | | |
| 260SCX2 | 260SCX2 100G A/D, Flex Coherent | 8DG62184AA | 8 | NA | 8 | 2 | 2-16 | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| | 260SCX2 100G A/D, Flex Coherent Enh Perf | 8DG62184AB | 8 | NA | 8 | 2 | 2-16 | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| | 260SCX2 200G Mux 2CL, Flex Coherent | 8DG62185AA | 8 | NA | 8 | 2 | 2-16 | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| | 260SCX2 200G Mux 2CL, Flex Coherent Enh Perf | 8DG62185AB | 8 | NA | 8 | 2 | 2-16 | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| | 260SCX2 100G/200G, Flex Coherent | 8DG62186AA | 8 | NA | 8 | 2 | 2-16 | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| | 260SCX2 100G/200G, Flex Coherent Enh Perf | 8DG62186AB | 8 | NA | 8 | 2 | NA | NA | 3-9 | 2-4 | TOADM, ROADM, DFOADM |
| D5X500 | D5X500 500G Mux/uplink | 8DG62538AA | 6 | NA | 4 | 2 | 2-9<br>12-16 | NA | 3-9 | 2-4 | CDC ROADM,<br>CWR8 ROADM |
| **Dispersion Compensation Modules** | | | | | | | | | | | |
| DMSMF 010 | DCM-SMF 10 km | 8DG59423AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| DMSMF 020 | DCM-SMF 20 km | 8DG59424AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 030 | DCM-SMF 30 km | 8DG59425AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 040 | DCM-SMF 40 km | 8DG59426AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 050 | DCM-SMF 50 km | 8DG59427AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 060 | DCM-SMF 60 km | 8DG59428AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 070 | DCM-SMF 70 km | 8DG59429AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 080 | DCM-SMF 80 km | 8DG59430AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 090 | DCM-SMF 90 km | 8DG59431AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 100 | DCM-SMF 100 km | 8DG59432AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 110 | DCM-SMF 110 km | 8DG59433AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 120 | DCM-SMF 120 km | 8DG59434AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 130 | DCM-SMF 130 km | 8DG59435AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMSMF 140 | DCM-SMF 140 km | 8DG59436AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 010 | DCM-Fiber Bragg SMF 10 km | 8DG59423AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 020 | DCM-Fiber Bragg SMF 20 km | 8DG59424AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 030 | DCM-Fiber Bragg SMF 30 km | 8DG59425AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 040 | DCM-Fiber Bragg SMF 40 km | 8DG59426AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 050 | DCM-Fiber Bragg SMF 50 km | 8DG59427AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| DMBSM 060 | DCM-Fiber Bragg SMF 60 km | 8DG59428AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 070 | DCM-Fiber Bragg SMF 70 km | 8DG59429AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 080 | DCM-Fiber Bragg SMF 80 km | 8DG59430AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 090 | DCM-Fiber Bragg SMF 90 km | 8DG59431AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 100 | DCM-Fiber Bragg SMF 100 km | 8DG59432AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 110 | DCM-Fiber Bragg SMF 110 km | 8DG59433AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 120 | DCM-Fiber Bragg SMF 120 km | 8DG59434AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 140 | DCM-Fiber Bragg SMF 140 km | 8DG59436AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 160 | DCM-Fiber Bragg SMF 160 km | 8DG60766AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 180 | DCM-Fiber Bragg SMF 180 km | 8DG60767AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 200 | DCM-Fiber Bragg SMF 200 km | 8DG60768AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 220 | DCM-Fiber Bragg SMF 220 km | 8DG60769AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBSM 240 | DCM-Fiber Bragg SMF 240 km | 8DG60770AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMTWR 020 | DCM-TWRS 20 km | 8DG59424AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMTWR 040 | DCM-TWRS 40 km | 8DG59426AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| DMTWR 060 | DCM-TWRS 60 km | 8DG59428AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMTWR 080 | DCM-TWRS 80 km | 8DG59430AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMTWR 100 | DCM-TWRS 100 km | 8DG59432AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMTWR 120 | DCM-TWRS 120 km | 8DG59434AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 020 | DCM-ELEAF 20 km | 8DG59424AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 040 | DCM-ELEAF 40 km | 8DG59426AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 060 | DCM-ELEAF 60 km | 8DG59428AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 080 | DCM-ELEAF 80 km | 8DG59430AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 100 | DCM-ELEAF 100 km | 8DG59432AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMLEF 120 | DCM-ELEAF 120 km | 8DG59434AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 040 | DCM- Fiber Bragg ELEAF 40 km | 8DG59426AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 060 | DCM- Fiber Bragg ELEAF 60 km | 8DG59428AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 080 | DCM- Fiber Bragg ELEAF 80 km | 8DG59430AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 100 | DCM- Fiber Bragg ELEAF 100 km | 8DG59432AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 120 | DCM- Fiber Bragg ELEAF 120 km | 8DG59434AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 140 | DCM- Fiber Bragg ELEAF 140 km | 8DG59436AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 160 | DCM- Fiber Bragg ELEAF 160 km | 8DG60766AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| DMBLE 180 | DCM- Fiber Bragg ELEAF 180 km | 8DG60767AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 200 | DCM- Fiber Bragg ELEAF 200 km | 8DG60768AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 220 | DCM- Fiber Bragg ELEAF 220 km | 8DG60769AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DMBLE 240 | DCM- Fiber Bragg ELEAF 240 km | 8DG60770AF | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Protection** | | | | | | | | | | | |
| OPSA | Enhanced optical protection switch pack | 8DG59247AA | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| OPSB | Enhanced OPS Pack, Non-latching | 8DG59247AB | 32 | 14[9]<br>16[10] | NA | NA | 2-17, 20-35 | 3-9, 13-19[9]<br>3-10, 13-20[10] | NA | NA | TOADM, ROADM, DFOADM |
| YSMFV | Protection Y-cable splitter (SMF) - vertical orientation | 1AB215120040 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| YSMFH | Protection Y-cable splitter (SMF) - horizontal orientation | 1AB215120039 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| YMMF 62V | Protection Y-cable splitter (MMF 62.5/125 µm) - vertical orientation | 1AB215120043 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| YMMF 62H | Protection Y-cable splitter (MMF 62.5/125 µm) - horizontal orientation | 1AB215120044 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| YMMF 50V | Protection Y-cable splitter (MMF 50/125 µm) - vertical orientation | 1AB215120041 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| YMMF 50H | Protection Y-cable splitter (MMF 50/125 µm) - horizontal orientation | 1AB215120042 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Cables and jumpers** | | | | | | | | | | | |
| 8CA_DC | CA-DC POWER CABLE_DC 3.6M_ANGLED (PSS-8) | 3KC49822AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CA_DC | CA-DC POWER CABLE_DC 10M_ANGLED (PSS-8) | 3KC49822ABAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CA_DC | CA-DC POWER CABLE_DC 20M_ANGLED (PSS-8) | 3KC49822ACAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-AC Power Supply_China (PSS-8) | 3KC05127AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-AC Power Supply_North America (PSS-8) | 3KC05127ABAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-AC Power Supply_ Continental Europe (PSS-8) | 3KC05127ACAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-AC Power Supply_ UK/Ireland (PSS-8) | 3KC05127ADAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-AC Power Supply_ Australia (PSS-8) | 3KC05127AEAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CA-RLP2N | CA-RACK LAMP Cable (NAR) 2.8M | 8DG08358AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-RLP2E | CA-RACK LAMP Cable (ETSI) 2.8M | 8DG90079AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | RACK LAMP CABLE (NAR) - PSS-16 | 8DG60416AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP3 | CA-AUX CH/HK CABLE (NAR), 3M | 8DG60495AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP15 | CA-AUX CH/HK CABLE (NAR), 15M, SHIELDED, 13 PR, 25 PIN D-SUB | 8DG08387AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP30 | CA-AUX CH/HK CABLE (NAR), 30M, SHIELDED, 13 PR, 25 PIN D-SUB | 8DG08388AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP45 | CA-AUX CH/HK CABLE (NAR), 45M, SHIELDED, 13 PR, 25 PIN D-SUB | 8DG08389AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP60 | CA-AUX CH/HK CABLE (NAR), 60M, SHIELDED, 13 PR, 25 PIN D-SUB | 8DG08390AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-HKP100 | CA-AUX CH/HK CABLE (NAR), 100M, SHIELDED, 13 PR, 25 PIN D-SUB | 8DG08391AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| 16CHK15 | CA-HOUSEKEEPING CABLE (NAR),PSS-16, 15M | 8DG60419AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CHK30 | CA-HOUSEKEEPING CABLE (NAR),PSS-16, 30M | 8DG60419AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CHK45 | CA-HOUSEKEEPING CABLE (NAR),PSS-16, 45M | 8DG60419AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CHK60 | CA-HOUSEKEEPING CABLE (NAR),PSS-16, 60M | 8DG60419AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CHK100 | CA-HOUSEKEEPING CABLE (NAR),PSS-16, 100M | 8DG60419AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-HOUSEKEEPING CABLE (PSS-8) | 3KC12949AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | 3KC12949AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | 3KC12949AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | 3KC12949AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | 3KC12949AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-RA15 | CA-RACK ALM CABLE (NAR), 15M, SHIELDED, 26AWG, 8 PR, 15 PIN D-SUB | 8DG08400AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-RA30 | CA-RACK ALM CABLE (NAR), 30M, SHIELDED, 26AWG, 8 PR, 15 PIN D-SUB | 8DG08400AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CA-RA45 | CA-RACK ALM CABLE (NAR), 45M, SHIELDED, 26AWG, 8 PR, 15 PIN D-SUB | 8DG08400AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-RA60 | CA-RACK ALM CABLE (NAR), 60M, SHIELDED, 26AWG, 8 PR, 15 PIN D-SUB | 8DG08400AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-RA100 | CA-RACK ALM CABLE (NAR), 100M, SHIELDED, 26AWG, 8 PR, 15 PIN D-SUB | 8DG08400AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CRA15 | CA-RACK ALARM CABLE (NAR), PSS-16, 15M | 8DG60417AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CRA30 | CA-RACK ALARM CABLE (NAR), PSS-16, 30M | 8DG60417AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CRA45 | CA-RACK ALARM CABLE (NAR), PSS-16, 45M | 8DG60417AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CRA60 | CA-RACK ALARM CABLE (NAR), PSS-16, 60M | 8DG60417AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16CRA100 | CA-RACK ALARM CABLE (NAR), PSS-16, 100M | 8DG60417AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CA-RALARM | CA-RACK ALARM CABLE | 3KC49823AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CA-RLAMP | CA-RACK LAMP CABLE | 3KC49824AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8CA-CRAFT | CA-CRAFT | 3KC49825AAAA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CA-LAN2 | CA-LAN CABLE (NAR), 2M, SHIELDED CAT5, PVC | 8DG08368AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN5 | CA-LAN CABLE (NAR), 5M, SHIELDED CAT5, PVC | 8DG08351AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN10 | CA-LAN CABLE (NAR), 10M, SHIELDED CAT5, PVC | 8DG08352AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN20 | CA-LAN CABLE (NAR), 20M, SHIELDED CAT5, PVC | 8DG08353AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN30 | CA-LAN CABLE (NAR), 30M, SHIELDED CAT5, PVC | 8DG08354AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN40 | CA-LAN CABLE (NAR), 40M, SHIELDED CAT5, PVC | 8DG08355AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN50 | CA-LAN CABLE (NAR), 50M, SHIELDED CAT5, PVC | 8DG08356AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-LAN60 | CA-LAN CABLE (NAR), 60M, SHIELDED CAT5, PVC | 8DG08357AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV2 | CA-INVENTORY CABLE (NAR) (2.3M), SHIELDED CAT5E | 8DG08359AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CA-INV5 | CA-INVENTORY CABLE (NAR) (5.5M), SHIELDED CAT5E | 8DG08360AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV7 | CA-INVENTORY CABLE (NAR) (7M), SHIELDED CAT5E | 8DG08361AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV11 | CA-INVENTORY CABLE (NAR) (11M), SHIELDED CAT5E | 8DG08361AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | CA-INVENTORY CABLE (NAR) (.92M), SHIELDED CAT5E | 8DG08361AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV1E | CA-INVENTORY CABLE (ETSI) (.92M), SHIELDED CAT5E | 8DG62461AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV2E | CA-INVENTORY CABLE (ETSI) (2.3M), SHIELDED CAT5E | 8DG62461AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV5E | CA-INVENTORY CABLE (ETSI) (5.5M), SHIELDED CAT5E | 8DG62461AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| CA-INV7E | CA-INVENTORY CABLE (ETSI) (7M), SHIELDED CAT5E | 8DG62461AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-INV11E | CA-INVENTORY CABLE (ETSI) (11M), SHIELDED CAT5E | 8DG62461AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-CR3ET | CA-CRAFT CABLE (3M), (ETSI), HAL-FREE | 3AL89583AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CA-USB100CM | CA-USB Cable (1830 VWM Power and control cable) | 1AB076760094 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CAT5-2PAIR | CABLE 2 PAIR SHIELDED (ETSI) | 1AC043850003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| CAT5-4PAIR | CABLE 4 PAIR SHIELDED | 1AC016760003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| FOADM-INV | FOADM Inventory Cable Adapter for SFD44 | 8DG59724AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Tamper Resistant Label Kit | 8DG61510AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ-45, 10m | 3KC13130CA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ-45, 50m | 3KC13130CB | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ-45, 100m | 3KC13130CC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Coaxial cable for 2MHz/E1 and twisted pair cable for 1PPS&ToD, RJ-45, 10m | 3KC13130AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Coaxial cable for 2MHz/E1 and twisted pair cable for 1PPS&ToD, RJ-45, 50m | 3KC13130AE | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Coaxial cable for 2MHz/E1 and twisted pair cable for 1PPS&ToD, RJ-45, 100m | 3KC13130AG | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | RA3P ETSI HOUSEKEEPING CABLE KIT | 8DG60426AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SF40RJ2 | SFD40/SFD40B HK RJ45 Cable (2M) | 8DG60494AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SF40RJ5 | SFD40/SFD40B HK RJ45 Cable (5M) | 8DG60494AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SF40RJ10 | SFD40/SFD40B HK RJ45 Cable (10M) | 8DG60494AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SF40RJ20 | SFD40/SFD40B HK RJ45 Cable (20M) | 8DG60494AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| BRDG JMP | PDU Bridging/jumper Kit (only for PDU1C and PDU2C) | 8DG60788AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| DUJM SMN3 | Duplex jumper (3.5m) - NAR (SM for internal connections) | 1AB215120038 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DUJM SME3 | Duplex jumper (3.5m) - ETSI (SM for internal connections) | 1AB215120056 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SIMJ SMN2 | Simplex jumper 2.350m) - NAR - SM for LD when no DCM present | 1AB215120057 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SIMJ SME2 | Simplex jumper 2.350m) - ETSI - SM for LD when no DCM present | 1AB215120050 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DUJM MMN3 | Duplex Jumper (3.5m) - NAR - MM (50µm) for OTs for regen. application | 1AB215120058 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DUJM MME3 | Duplex Jumper (3.5m) - ETSI - MM (50µm) for OTs for regen. application | 1AB215120059 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 10LC to MPO fanout cable, multi-mode, ETSI | 8DG62692AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 10LC to MPO fanout cable, multi-mode, ANSI | 8DG62693AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Duplex Jumper (7m) - NAR - SM | 1AB215120081 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Duplex Jumper (10m) - NAR - SM | 1AB215120080 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Duplex Jumper (15m) - NAR - SM | 1AB215120079 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | Duplex Jumper (7m) - ETSI - SM | 1AB215120084 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Duplex Jumper (10m) - ETSI - SM | 1AB215120083 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Duplex Jumper (15m) - ETSI - SM | 1AB215120082 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SHJVOA | Short Jumper (140mm) - VOA application | 1AB215120071 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SHJVOA 34 | Short Jumper (230mm) - 11QPA4: L2 with VOA2, L3 with VOA3,L4 with VOA4 | 1AB215120075 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SHJVOA 12 | Short Jumper (155mm) - 11QPA4: L1 with VOA1 | 1AB215120076 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SIMJ SMN3 | Simplex Jumper (3.5m) - NAR | 1AB215120077 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| SIMJ SME3 | Simplex Jumper (3.5m) - ETSI | 1AB215120078 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| JLCD EOSC | Jumper, LC Duplex, 140mm, for External OSC (HH LD) | 1AB155630001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ANSI, 3.5M | 8DG62646AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ANSI, 7M | 8DG62646AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO=MPO APC JUMPER-ANSI, 10M | 8DG62646AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | MPO-MPO APC JUMPER-ANSI, 15M | 8DG62646AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ETSI, 3.5M | 8DG62667AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ETSI, 7M | 8DG62667AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ETSI, 10M | 8DG62667AC | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-MPO APC JUMPER-ETSI, 15M | 8DG62667AD | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO APC SHORT JUMPER-ANSI, 180mm | 8DG62734AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO APC SHORT JUMPER-ANSI, 900mm | 8DG62734AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO APC SHORT JUMPER-ETSI, 180mm | 8DG62735AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO APC SHORT JUMPER-ETSI, 900mm | 8DG62735AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | MPO-APC LOOPBACK JUMPER | 8DG62736AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | LC-LC Loopback Plug | 1AB433770001 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | LC-LC APC SIMPLEX JUMPER-ANSI, 3.5M | 8DG62768AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | LC-LC APC SIMPLEX JUMPER-ANSI, 7M | 8DG62768AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 18-1 List of Alcatel-Lucent 1830 PSS items (continued)**

| Abbreviation | Description | Part number | Max. per PSS-xx shelf | | | | PSS-xx card slots | | | | OADM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 32 | 16 | 16II | 8 | 32 | 16 | 16II | 8 | |
| | LC-LC APC SIMPLEX JUMPER-ETSI, 3.5M | 8DG62769AA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | LC-LC APC SIMPLEX JUMPER-ETSI, 7M | 8DG62769AB | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ.5, 5m | 3KC13205BA | 32 | 14[9]<br>16[10] | | 14[9]<br>16[10] | 2-17, 20-35 | 3-9, 13-19 | | 14[9]<br>16[10] | TOADM, ROADM, DFOADM |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ.5, 20m | 3KC13205BB | 32 | 14[9]<br>16[10] | | 14[9]<br>16[10] | 2-17, 20-35 | 3-9, 13-19 | | 14[9]<br>16[10] | TOADM, ROADM, DFOADM |
| | Twisted pair cable (120Ohm) for 2MHz/E1/DS1 and 1PPS&ToD, RJ.5, 50m | 3KC13205BC | 32 | 14[9]<br>16[10] | | 14[9]<br>16[10] | 2-17, 20-35 | 3-9, 13-19 | | 14[9]<br>16[10] | TOADM, ROADM, DFOADM |
| | Twisted pair cable for 2MHz/E1/DS1 and 1PPS&ToD, RJ.5, 100m | 3KC13205BD | 32 | 14[9]<br>16[10] | | 14[9]<br>16[10] | 2-17, 20-35 | 3-9, 13-19 | | 14[9]<br>16[10] | TOADM, ROADM, DFOADM |

**Notes:**

1. At least 1 of this specific card is required for operation of the shelf.
2. The air filter can be cleaned instead of replaced by a new one. For the cleaning procedure, refer to the *Alcatel-Lucent 1830 PSS Maintenance and Trouble-Clearing Guide*.
3. At least one ingress LD per degree is required.
4. Required for toggle operation of circuit breakers, not included with breaker.
5. The 11QPEN4 (8DG60996AA) is sold in kit 8DG61458AA: SAN ENC Kit (which includes 11QPEN4 [8DG60996AA] + SWL for 1-port [8DG61457AAAA]).
6. See "Application: Using Eight 130SCX10 cards in a Alcatel-Lucent 1830 PSS-32 shelf" (p. 18-502).

7. To ensure sufficient thermal management, the following cards require high-power fan (FAN32H) to be used in the Alcatel-Lucent 1830 PSS-32 shelf as enforced by the Engineering and Planning Tool (EPT): 260SCX2, 130SCA1, 130SCX10, 130SNX10, 112SCA1, 112SNA1, 112SCX10, 112SNX10, 112SDX11, 11QPEN4, 11OPE8, 11QCE12X, 43SCA1, 43SCGE1, 43SCX4, 43SCX4E, D5X500, RA2P, A2P2125 and A4PSWG. This note applies to 112SA1L, 112SX10L, and 43SCX4L in the Alcatel-Lucent 1830 PSS-32 shelf as a high speed OT drop shelf configuration.
8. 8DG59340AD is supported from Release 7.0.4 onwards.
9. Alcatel-Lucent 1830 PSS-16 main shelf
10. Alcatel-Lucent 1830 PSS-16 non-main shelf
11. When ordered as a spare part - otherwise included in installation kit.
12. This is reused from the 1830 VWM.
13. Alcatel-Lucent 1830 PSS-16II non-main shelf

### Note on APNs

Table 18-1, "List of Alcatel-Lucent 1830 PSS items" (p. 18-5) lists the orderable part numbers for equipment. For circuit packs, 10-digit orderable APNs are listed.

The WebUI displays four additional digits (11-14) for circuit packs. The 11th–14th digits are in bold in the example: 8DG59561AB**AA 01**.

- The 11th and 12th digits are the Realization Variants (RV) and are not necessary for ordering. RVs are coexistent items which provide the same functionality with a different realization. APNs with different RVs are interchangeable.

  Example of two RVs for 8DG59561AB: 8DG59561AB**AA** and 8DG59561AB**AB**.
- The 13th and 14th digits indicate the Item Change Status (ICS). APNs with different ICS values are interchangeable.

  Example of two ICSs for 8DG59561AB: 8DG59561ABAA**01** and 8DG59561ABAA**02**.

In addition to the 10-digit orderable number, the circuit pack faceplates display the ICS. The RV is not visible on the circuit pack faceplates.

Example: 8DG59561AB 01

### PSS-8 Installation kits

The following tables provide the list of contents for the 3KC49812AA, 3KC49813AA, 3KC49814AA Installation kits.

**Table 18-2 3KC48900AA Shelf kit details**

| Qty | APN | Item description |
|---|---|---|
| | 3KC48900AA | PSS8 Shelf Kit - PSS8KIT |
| 1 | 3KC48850AA | Fan Unit - PSS8, temp-harden |

**Table 18-2 3KC48900AA Shelf kit details (continued)**

| Qty | APN | Item description |
|---|---|---|
| 1 | 3KC48901AA | RSA-PSS8 SHELF (including PSS8SHF, Shelf Panel) |
| 1 | 3KC49926AA | MA-AIR FILTER |

**Table 18-3 3KC49812AA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| 2 | 3KC49807AAAA | MA-MOUNTING BRACKET 19 INCH_PSS8 |
| 2 | 3KC49948AAAA | MA-FRONT COVERADAPTOR_PSS8 |
| 1 | 3KC49943AAAA | MA-CABLING BRACKETLEFT_PSS8 |
| 1 | 3KC49944AAAA | MA-CABLING BRACKETRIGHT_PSS8 |
| 1 | 3KC49946AAAA | MA-FRONT COVER_PSS8 |
| 20 | 1AD009040012 | SCREW_CSK-HD_XR-PH_M3_SS_NORMAL_AS-END_ NM3_SSNORMAL_AS-END_NONE |
| 4 | 1AD133730002 | Screw, Pan head, torx drive, with washer M4_8mm_ST NORMAL_AS-END_NI - |
| 4 | 1AD139920001 | SCREW_HEX-HD_XR-PH_12-24_ST_NORMAL_CHAM_ 12-24_STNORMAL_CHAM_ZNCRYE |
| 1 | 3AL81728AA | KIT- ESTRATTORE MOD. SFPKIT ESTRATTORE MOD. SFP E |
| 1 | 1AB051530050 | LUG*PIN*SCREW_UNINSULUNINSUL- |
| 2 | 1AB051530072 | LUG*PIN*SCREW_UNINSUL*4.11mm/ 4.66mm*6.35UNINSUL*4.11mm/4.66mm*6>- |
| 6 | 1AB051530005 | LUG*PIN*SCREW_ UNINSUL*360um/400um*6.35mmUNINSUL*360um/ 400um*6.3>- |
| 4 | 1AD009150001 | SCREW_HEX-HD-WF_HEX/SLTD_M6_12mm_SS_NORMM6_ 12mm_SSNORMAL_CHAM_NONE- |
| 7 | 3AN49331AAAA | MPP - 11 X 45 LABEL |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40)ETICHETTA ADESIVA |

**Table 18-4 3KC49813AA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| 2 | 3KC49939AAAA | MA-MOUNTING BRACKET ETSI_PSS8 |
| 1 | 3KC49989AAAA | MA-CABLING BRACKET LEFT_PSS8 ETSI APP |
| 1 | 3KC49990AAAA | MA-CABLING BRACKET RIGHT_PSS8 ETSI APP |
| 1 | 3KC49946AAAA | MA-FRONT COVER_PSS8 |
| 12 | 1AD009040012 | SCREW_CSK-HD_XR-PH_M3_S S_NORMAL_AS-END_ N M3_SS |
| 2 | 1AD133730002 | Screw, Pan head, torx drive, with washer M4_8mm_ST NORMAL_AS-END_NI - |
| 4 | 1AD009150001 | SCREW_HEX-HD-WF_HEX/SLTD_M6_12mm_SS_NORMM6_ 12mm_SSNORMAL_CHAM_NONE- |
| 1 | 3AL81728AA | KIT- ESTRATTORE MOD. SFPKIT ESTRATTORE MOD. SFP E |
| 6 | 1AB051530005 | LUG*PIN*SCREW_ UNINSUL*360um/400um*6.35mmUNINSUL*360um/ 400um*6.3>- |
| 4 | 3AN49331AAAA | MPP - 11 X 45 LABEL |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40)ETICHETTA ADESIVA |

**Table 18-5 3KC49814AA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| 2 | 3KC49810AAAA | MPP-MOUNTING BRACKET 23 INCH_PSS8 |
| 2 | 3KC49948AAAA | MA-FRONT COVER ADAPTOR_PSS8 |
| 1 | 3KC49943AAAA | MA-CABLING BRACKET LEFT_PSS8 |
| 1 | 3KC49944AAAA | MA-CABLING BRACKET RIGHT_PSS8 |
| 1 | 3KC49946AAAA | MA-FRONT COVER_PSS8 |
| 20 | 1AD009040012 | SCREW_CSK-HD_XR-PH_M3_SS_NORMAL_AS-END_ NM3_SSNORMAL_AS-END_NONE- |
| 4 | 1AD133730002 | Screw, Pan head, torx drive, with washer M4_8mm_ST NORMAL_AS-END_NI |
| 4 | 1AD139920001 | SCREW_HEX-HD_XR-PH_12-24_ST_NORMAL_CHAM_ 12-24_STNORMAL_CHAM_ZNCRYE - |
| 1 | 3AL81728AA | KIT- ESTRATTORE MOD. SFPKIT ESTRATTORE MOD. SFP E |

**Table 18-5 3KC49814AA Installation kit contents (continued)**

| Qty | APN | Item description |
|---|---|---|
| 1 | 1AB051530050 | LUG*PIN*SCREW_UNINSULUNINSUL- |
| 2 | 1AB051530072 | LUG*PIN*SCREW_UNINSUL*4.11mm/ 4.66mm*6.35UNINSUL*4.11mm/4.66mm*6>- |
| 1 | 3KC49992AAAA | MPP-AIR BAFFLE_LEFT 23" APP |
| 1 | 3KC49993AAAA | MPP-AIR BAFFLE_RIGHT 23" APP |
| 12 | 1AD003150003 | SCREW_PAN-HD_XR-POZ_M3_6 mm_SS(A2-70)_NOR M3_6mm_SS(A2-70) NORMAL_CHAM_PASSIV |
| 6 | 1AB051530005 | LUG*PIN*SCREW_ UNINSUL*360um/400um*6.35mmUNINSUL*360um/ 400um*6.3>- |
| 7 | 3AN49331AAAA | MPP - 11 X 45 LABEL |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40)ETICHETTA ADESIVA |

### PSS-16II Installation kits

The following tables provide the list of contents for the 3KC50012AAAA, 3KC50013AAAA and 3KC50014AAAA Installation kits.

**Table 18-6 3KC50012AAAA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| | 3KC50012AAAA | 16INST19 - PSS16II INST KIT-19IN EIA |
| 4 | 1AB051530026 | LUG*PIN*SCREW_UNINSUL*3.95mm/4.15mm*6.25 |
| 1 | 1AB051530050 | LUG*PIN*SCREW_UNINSUL |
| 2 | 1AB051530072 | LUG*PIN*SCREW_UNINSUL*4.11mm/4.66mm*6.35 |
| 12 | 1AD003150036 | SCREW_PAN-HD_XR-POZ_M5_6mm_SS(A2-70)_NOR |
| 8 | 1AD009150001 | SCREW_HEX-HD-WF_HEX/SLTD_M6_12mm_SS_ NORM |
| 2 | 1AD100030002 | SCREW_CH-HD_XR-PH/WS_M5_-_8mm_SS_NORMAL_ |
| 4 | 1AD133730002 | Screw, Pan head, torx drive, with washer |
| 8 | 1AD139920001 | SCREW_HEX-HD_XR-PH_12-24_ST_NORMAL_CHAM_ |
| 1 | 3AL81728AAAA | KIT- ESTRATTORE MOD. SFP |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40) |
| 2 | 3KC50007AAAA | MPP-ADAPTER 19INCH PSS16II |
| 2 | 3KC50120AAAA | MA-BRACKET FOR CABLING |

**Table 18-6 3KC50012AAAA Installation kit contents (continued)**

| Qty | APN | Item description |
|---|---|---|
| 1 | 3KC50122AAAA | MA-FRONT COVER_PSS16II |
| 1 | 3KC50156AAAA | MPP-CABLING BRACKET left_PSS16II |
| 1 | 3KC50157AAAA | MPP-CABLING BRACKET right_PSS16II |

**Table 18-7 3KC50013AAAA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| | 3KC50013AAAA | PSS16II INST KIT-ETSI |
| 4 | 1AB051530026 | LUG*PIN*SCREW_UNINSUL*3.95mm/4.15mm*6.25 |
| 1 | 1AB051530050 | LUG*PIN*SCREW_UNINSUL |
| 1 | 1AB051530072 | LUG*PIN*SCREW_UNINSUL*4.11mm/4.66mm*6.35 |
| 6 | 1AD003150036 | SCREW_PAN-HD_XR-POZ_M5_6mm_SS(A2-70)_NOR |
| 8 | 1AD009150001 | SCREW_HEX-HD-WF_HEX/SLTD_M6_12mm_SS_ NORM |
| 2 | 1AD100030002 | SCREW_CH-HD_XR-PH/WS_M5_-_8mm_SS_NORMAL_ |
| 4 | 1AD133730002 | Screw, Pan head, torx drive, with washer |
| 1 | 3AL81728AAAA | KIT- ESTRATTORE MOD. SFP |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40) |
| 1 | 3KC50114AAAA | MA-ADAPTER ETSI LEFT PSS16II |
| 1 | 3KC50118AAAA | MA-ADAPTER ETSI RIGHT PSS16II |
| 1 | 3KC50122AAAA | MA-FRONT COVER_PSS16II |
| 1 | 3KC50156AAAA | MPP-CABLING BRACKET left_PSS16II |
| 1 | 3KC50157AAAA | MPP-CABLING BRACKET right_PSS16II |

**Table 18-8 3KC50014AAAA Installation kit contents**

| Qty | APN | Item description |
|---|---|---|
| | 3KC50014AAAA | PSS16II INST KIT-23IN ANSI |
| 4 | 1AB051530026 | LUG*PIN*SCREW_UNINSUL*3.95mm/4.15mm*6.25 |
| 1 | 1AB051530050 | LUG*PIN*SCREW_UNINSUL |
| 2 | 1AB051530072 | LUG*PIN*SCREW_UNINSUL*4.11mm/4.66mm*6.35 |
| 12 | 1AD003150036 | SCREW_PAN-HD_XR-POZ_M5_6mm_SS(A2-70)_NOR |

**Table 18-8 3KC50014AAAA Installation kit contents (continued)**

| Qty | APN | Item description |
|---|---|---|
| 2 | 1AD100030002 | SCREW_CH-HD_XR-PH/WS_M5_-_8mm_SS_NORMAL_ |
| 4 | 1AD133730002 | Screw, Pan head, torx drive, with washer |
| 8 | 1AD139920001 | SCREW_HEX-HD_XR-PH_12-24_ST_NORMAL_CHAM_ |
| 1 | 3AL81728AAAA | KIT- ESTRATTORE MOD. SFP |
| 1 | 3AN44672AAAA | MPP-ADHESIVE LABEL (85X40) |
| 1 | 3KC50009AAAA | MPP-ADAPTER 23INCH PSS16II |
| 1 | 3KC50120AAAA | MA-BRACKET FOR CABLING |
| 1 | 3KC50122AAAA | MA-FRONT COVER_PSS16II |
| 1 | 3KC50146AAAA | MA-ADAPTER_23INCH-left |
| 1 | 3KC50156AAAA | MPP-CABLING BRACKET left_PSS16II |
| 1 | 3KC50157AAAA | MPP-CABLING BRACKET right_PSS16II |

## PTM optics for WDM optical transponders

An array of PTM optics are available that support interfaces on the optical transponders. The following lists identify the SFPs, XFPs, and PTMs used for WDM optical transponders with their part numbers. The cards and ports on which the specific PTM modules are supported are also identified. (B&W refers to the “black and white” non-WDM wavelengths.)

**Note:** Where both ETR and non-ETR PTMs are supported for a particular interface, this information is shown. Where-ever ETR capability is not shown, it is not supported, and only a non-ETR PTM is supported.

**Note:** 1AB375380007 has been replaced by a compatible pluggable 3AL82045AA.

**Table 18-9 4DPA2 SFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-16/OC-48<br>(S-16.1/IR-1)<br>GbE<br>(1000BASE-LX) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 |

**Table 18-9 4DPA2 SFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-16/OC-48<br>(SL-16.1) | SL-16.1 | 1AB376370003<br>(non-ETR) | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 |
| Client:<br>GbE<br>(1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |
| Client:<br>GbE<br>(1000BASE-SX) | 1000B-SX | 1AB376720001 | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 |
| Client:<br>GbE<br>(1000BASE-LX) | 1000B-LX | 1AB376720002 | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 |
| Client or Line:<br>STM-16/OC-48<br>GbE<br>(SS-16.2C) | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008<br>(non-ETR) | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM) | 1471 - 1611<br>(in increments of 20) |
| Client or Line:<br>STM-16/OC-48<br>GbE<br>(SL-16.2C) | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008<br>(non-ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT | 1471 - 1611<br>(in increments of 20) |
| Line:<br>STM-16/OC-48<br>GbE<br>(SL-16.2D-{9170-9605}) | SL-16.2D | 1AB377220003<br>-thru-<br>1AB377220046<br>(non-ETR) | SFP DWDM (DWDM [2400 ps/nm] DDM) | 191.70 - 196.05 THz<br>(in increments of .05) |

**Table 18-10 4DPA4 SFPs (FlexMux)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(S-1.1) | SS-1.1 | 1AB376350001 | SFP S-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [S-1.1/IR-1]) | 1310 nm |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.2) | SL-1.2 | 1AB376350003 | FP L-1.2 -40/+85 (B&W STM-1/OC-3 DDM 1550nm [L-1.2/LR-2]) | 1550 nm |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.1) | SL-1.1 | 1AB376350002 | SFP L-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [L-1.1/LR-1]) | 1310 nm |
| Client:<br>STM-4/OC-12<br>(SL-4.1) | SL-4.1 | 1AB376360002 | SFP L-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [L-4.1/LR-1]) | 1310 nm |
| Client:<br>STM-4/OC-12<br>(SS-4.1) | SS-4.1 | 1AB376360001 | SFP S-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [S-4.1/IR-1]) | 1310 nm |
| Client:<br>STM-4/OC-12<br>(SL-4.2) | SL-4.2 | 1AB376360003 | SFP L-4.2 -40/+85 (B&W STM-4/OC-12 DDM 1550nm [L-4.2/LR-2]) | 1550 nm |
| (SI-16.1) | SI-16.1 | 1AB376370001 | SFP I-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [I-16.1/SR-1]) | 1310 nm |

**Table 18-10 4DPA4 SFPs (FlexMux) (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC-3<br>STM-4/OC-12<br>STM-16/OC-48<br>GbE<br>FC-100<br>FC-200<br>HDSDI<br>SDSDI<br>DVBASI<br>Line:<br>OTM-0.1<br>(SS-16.1A) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 nm |
| Client:<br>STM16/OC48<br>Line:<br>OTM-0.1<br>(SL-16.1) | SL-16.1 | 1AB376370003<br>(non-ETR)<br>1AB376370007<br>(ETR) | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1])<br>SFP L-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 nm |
| Client:<br>FE (100BLX10) | 100BLX10 | 1AB382180001 | SFP 100BASE-LX10 | 1310 nm |
| Client:<br>FE (100BASE-T) | SFEBTEE | 1AB310140001 | SFP FE 100Base-T EL w/Ext temp | NA |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |

**Table 18-10 4DPA4 SFPs (FlexMux) (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM16/OC-48<br>(SL-16.2) | SL-16.2 | 1AB376370004<br>(non-ETR)<br>1AB376370008<br>(ETR) | SFP L-16.2 -5/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2])<br>SFP L-16.2 -40/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2]) | 1550 nm |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001 | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 nm |
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002 | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 nm |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003 | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 nm |
| Client:<br>FC-100<br>FC-200<br>FC-400 | 4FCSN-1 | 1AB379640001<br>(non-ETR)<br>1AB379640003<br>(ETR) | SFP FC/2FC/4FC 850NM (B&W 1G/2G/4G Fibre Channel DDM 850nm [SN-I]) HARDENED | 850 nm |
| Client:<br>FC-100 (100SM-LC-L)<br>FC200 (200-SM-LC-L)<br>FC400 (400-SM-LC-L) | 4FCLC-L | 1AB379640002 | SFP FC/2FC/4FC 1300NM (B&W 1G/2G/4G Fibre Channel DDM 1310nm [LC-L]) | 1310 nm |

**Table 18-10 4DPA4 SFPs (FlexMux) (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC-3<br>STM1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>HDSDI, SDSDI, DVBASI, GbE<br>Line:<br>OTM-0.1 | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008 | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |
| Client:<br>STM-1/OC-3<br>STM-1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>HDSDI, SDSDI, DVBASI, GbE<br>Line:<br>OTM-0.1 | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008<br>(non-ETR)<br>1AB377200009<br>-thru-<br>1AB377200016<br>(ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT<br>ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) IT | 1471 - 1611<br>(in increments of 20) |
| Client:<br>OC-12/STM-4<br>GbE<br>(GE-BX20U) | GE-BX20U | 1AB393080005 | SFP 1000BX / STM-4 20KM UPSTREAM | 1260-1360 (TX)<br>1480-1500 (RX) |
| Client:<br>OC-12/STM-4<br>GbE<br>(GE-BX20D) | GE-BX20D | 1AB393080006 | SFP 1000BX / STM-4 20KM DOWNSTREAM | 1260-1360 (RX)<br>1480-1500 (TX) |
| Client:<br>STM-1/FE-FC (40km) | FE-BX40U | 1AB393080007 | 100 BASE-BX40-U (FE/STM1, 40km) (Tx 1260÷1360nm) | 1310 nm<br>1490 nm |

**Table 18-10 4DPA4 SFPs (FlexMux) (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/FE-FC (40km) | FE-BX40D | 1AB393080008 | 100 BASE-BX40-D (FE/STM1, 40km) (Tx 1480÷1580nm) | 1310 nm<br>1490 nm |
| Client:<br>OC-12/STM-4 GbE<br>(GE-BX40U) | GE-BX40U | 1AB393080009 | SFP 1000BX / STM-4 40KM UPSTREAM | 1310 nm<br>1490 nm |
| Client:<br>OC-12/STM-4 GbE<br>(GE-BX40D) | GE-BX40D | 1AB393080010 | SFP 1000BX / STM-4 40KM DOWNSTREAM | 1310 nm<br>1550 nm |
| Client:<br>HDSDI<br>SDSDI | 3GSDI-SH | 1AB300320001 | SFP CWDM, 3G-SDI-SH (14Km) | 1310 nm |
| Client:<br>HDSDI<br>SDSDI | 3GSDI-MH | 1AB300320002 | SFP CWDM, 3G-SDI-MH (20Km) | 1310 nm |
| Client:<br>SD-SDI | 3GSDI-EC | 1AF25240AAAA<br>See 2 | SD-SDI/HD-SDI/3G-SDI eSFP | NA |
| Client:<br>HD-SDI<br>3G-SDI | 3GSDI-EC | 3AL81845AA | SD-SDI/HD-SDI/3G-SDI eSFP | NA |
| Line:<br>OTM-0.1<br>(SL-16.2D-{9170-9605}) | SL-16.2D | 1AB377220003<br>-thru-<br>1AB377220046 | SFP DWDM (DWDM [2400 ps/nm] DDM) | 1563.863 - 1529.163 |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

(DualTran supported in future software release).

**Table 18-11 4DPA4 SFPs (DualTran)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>FC-400 (4FCSN-1) | 4FCSN-1 | 1AB379640001 (non-ETR)<br>1AB379640003 (ETR) | SFP FC/2FC/4FC 850NM (B&W 1G/2G/4G Fibre Channel DDM 850nm [SN-I]) HARDENED | 850 |
| Client:<br>FC-400 (4FCLC-L) | 4FCLC-L | 1AB379640002 | SFP FC/2FC/4FC 1300NM (B&W 1G/2G/4G Fibre Channel DDM 1310nm [LC-L]) | 1310 |
| Line:<br>OTM-0.1 (4FC-OC 1471-1611) | 4FC-OC (1471)<br>4FC-OC (1611) | 1AB155070001<br>-thru-<br>1AB155070008 | OE-TRX-SFP*STM-16/<br>OC48*CWDM*<br>TTL--5/+75<br>C*1.471um*<br>DFB*PIN-SI*<br>-26dBm<br>OE-TRX-SFP*STM-16/OC48*CWDM<br>*TTL--5/+75<br>C*1.611um*DFB<br>*PIN-SI*-26dBm | 1471 - 1611 (in increments of 20) |
| Line:<br>OTM-0.1 (4FC-OD {9170-9600 even channels}) | 4FC-OD (9600)<br>4FC-OD (9170) | 1AB383360003<br>-thru-<br>1AB383360046 | ALU SFP 4FC DWDM CH 600<br>ALU SFP 4FC DWDM CH 170 | 1563.863 - 1529.163 |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Table 18-12 11DPE12 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>GbE<br>(1000B-LX) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001 | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 |
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002 | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003 | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 |
| Client:<br>FE (100BASE-FX) | 100BFXS | 1AB382180006 | SFP 100BASE FX with built-in PHY industrial temperature range (1310nm) | 1310 |
| Client:<br>GbE<br>(SS-16.2C) | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008<br>(non-ETR) | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |

**Table 18-12 11DPE12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>GbE<br>(SL-16.2C) | SL16.2C | 1AB377200001<br>-thru-<br>1AB377200008<br>(non-ETR)<br>1AB377200009<br>-thru-<br>1AB377200016<br>(ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT<br>ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) IT | 1471 - 1611<br>(in increments of 20) |
| Line:<br>OTM-0.2<br>(P1I1-2D1)<br>10G LAN PHY<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/10GBASE-LX]) DDM (1310nm) | 1310 |
| Line:<br>OTM-0.2<br>(P1I1-2D1) | 10G MR XFP<br>(XI-64.1) | 1AB375380007<br>(ETR) | B&W STM-64/OC-192/OTU2/10GbE (I64.1/SR-1/ 10GBASE-LX) | 1310 |
| Line:<br>OTM-0.2<br>(P1S1-2D2b)<br>10G LAN PHY<br>(SC-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX]) DDM (1550nm) | 1550 |
| Line:<br>OTM-0.2<br>(P1S1-2D2b) | IR2 MR XFP<br>XS-64.2b | 1AB375380005<br>(ETR) | B&W STM-64-OC-192/OTU2/ 10GbE (S64.2b/IR-2/10GBASE-EX) | 1550 |
| Line:<br>10GBASE-SR<br>OTM-0.2 | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR) DDM (850nm) | 850 |

**Table 18-12 11DPE12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-SH 40km | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR)<br>1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM<br>(40km) 10G DDM<br>XFP CWDM<br>(40km) 10G DDM<br>IT | 1471 - 1611 |
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-LH 70km | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016<br>(ETR) | XFP CWDM<br>(70km) 10G DDM<br>XFP CWDM<br>(70km) 10G DDM<br>IT | 1471 - 1611 |
| Line:<br>10G LAN PHY<br>OTM-0.2 DWDM | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044<br>(non-ETR) | XFP DW100U<br>(DWDM (1600<br>ps/nm) DDM) | 1563.863 -<br>1529.163 |
| Line:<br>OTM-0.2<br>P1L1-2D2<br>10GB-ZR | 10GB-ZR | 1AB375380004<br>(non-ETR)<br>1AB375380008<br>(ETR) | XFP<br>P1L1-<br>2D2/10GBASE-Z<br>(OE-TRX XFP<br>P1L1-2D2<br>CT_XFP*STM-<br>64*B&W*LVDS*SM_-5/+70<br>C*1.55um*DFB*2dBm*)<br>ALU XFP<br>P1L1-2D2/10GBE<br>BASE-Z -40/+85 | 1550 |
| Line:<br>OTM-0.2<br>10G LAN PHY | XL-64TU | 1AB375650046 | XFP DWDM<br>Tunable CT<br>(50GHz 10G XFP) | 1563.863 -<br>1529.163 |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |

**Table 18-12 11DPE12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Table 18-13 11DPM12 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SS-1.1) | SS-1.1 | 1AB376350001 | SFP S-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [S-1.1/IR-1]) | 1310 |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.1) | SL-1.1 | 1AB376350002 | SFP L-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [L-1.1/LR-1]) | 1310 |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.2) | SL-1.2 | 1AB376350003 | FP L-1.2 -40/+85 (B&W STM-1/OC-3 DDM 1550nm [L-1.2/LR-2]) | 1550 |
| Client:<br>STM-4/OC-12<br>(SS-4.1) | SS-4.1 | 1AB376360001 | SFP S-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [S-4.1/IR-1]) | 1310 |
| Client:<br>STM-4/OC-12<br>(SL-4.1) | SL-4.1 | 1AB376360002 | SFP L-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [L-4.1/LR-1]) | 1310 |
| Client:<br>STM-4/OC-12<br>(SL-4.2) | SL-4.2 | 1AB376360003 | SFP L-4.2 -40/+85 (B&W STM-4/OC-12 DDM 1550nm [L-4.2/LR-2]) | 1550 |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM16/OC-48<br>OTM-0.1<br>2G5<br>(SI-16.1) | SI-16.1 | 1AB376370001 | SFP I-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [I-16.1/SR-1]) | 1310 |
| Client:<br>STM-1/OC3<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>GbE<br>FC-100<br>FC-200<br>HDSDI<br>SDSDI<br>(SS-16.1A) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 |
| Client:<br>STM16/OC48<br>OTM-0.1<br>2G5<br>(SL-16.1) | SL-16.1 | 1AB376370003 (non-ETR)<br>1AB376370007 (ETR) | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1])<br>SFP L-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM16/OC-48<br>OTM.1<br>2G5<br>(SL-16.2) | SL-16.2 | 1AB376370004<br>(non-ETR)<br>1AB376370008<br>(ETR) | SFP L-16.2 -5/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2])<br>SFP L-16.2 -40/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2]) | 1550 |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001<br>(ETR) | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 |
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002<br>(ETR and non-ETR) | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003<br>(ETR and non-ETR) | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 |
| Client:<br>FC-100<br>FC-200<br>FC-400<br>(4FCSN-1) | 4FCSN-1 | 1AB379640001<br>(non-ETR)<br>1AB379640003<br>(ETR) | SFP FC/2FC/4FC 850NM (B&W 1G/2G/4G Fibre Channel DDM 850nm [SN-I]) HARDENED | 850 |
| Client:<br>FC-100<br>FC-200<br>FC-400<br>(4FCLC-L) | 4FCLC-L | 1AB379640002<br>(ETR and non-ETR) | SFP FC/2FC/4FC 1300NM (B&W 1G/2G/4G Fibre Channel DDM 1310nm [LC-L]) | 1310 |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC-3<br>STM1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>HDSDI<br>SDSDI<br>GbE<br>(SS-16.2C) | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008<br>(non-ETR) | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |
| Client:<br>STM-1/OC-3<br>STM1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>HDSDI<br>SDSDI<br>GbE<br>(SL-16.2C) | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008<br>(non-ETR)<br>1AB377200009<br>-thru-<br>1AB377200016<br>(ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT<br>ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) IT | 1471 - 1611<br>(in increments of 20) |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |
| Client:<br>FE (100BLX10) | 100BLX10 | 1AB382180001 | SFP 100BASE-LX10 | 1310 |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GEU20I) | GE-BX20U | 1AB393080005 | SFP 1000BX / STM-4 20KM UPSTREAM | 1260-1360 (TX)<br>1480-1500 (RX) |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GED20I) | GE-BX20D | 1AB393080006 | SFP 1000BX /<br>STM-4 20KM<br>DOWNSTREAM | 1260-1360 (RX)<br>1480-1500 (TX) |
| Client:<br>STM-1/FE-FC<br>(40km) | FE-BX40U | 1AB393080007 | 100 BASE-BX40-U<br>(FE/STM1, 40km)<br>(Tx 1260÷1360nm) | 1310 nm<br>1490 nm |
| Client:<br>STM-1/FE-FC<br>(40km) | FE-BX40D | 1AB393080008 | 100 BASE-BX40-D<br>(FE/STM1, 40km)<br>(Tx 1480÷1580nm) | 1310 nm<br>1490 nm |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GEU40I) | GE-BX40U | 1AB393080009 | SFP 1000BX /<br>STM-4 40KM<br>UPSTREAM | 1310/1490 |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GED40I) | GE-BX40D | 1AB393080010 | SFP 1000BX /<br>STM-4 40KM<br>DOWNSTREAM | 1310/1550 |
| Client:<br>3GSDI<br>HDSDI<br>SDSDI | 3GSDI-SH | 1AB300320001 | SFP CWDM,<br>3G-SDI-SH<br>(14Km) | 1310 |
| Client:<br>3GSDI<br>HDSDI<br>SDSDI | 3GSDI-MH | 1AB300320002 | SFP CWDM,<br>3G-SDI-MH<br>(20Km) | 1310 |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OC-192<br>OTU2<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR)<br>1AB375380007<br>(ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm])<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192 /OTU2/ 10GBASE-LX] DDM [1310nm]) HARDENED | 1310 |
| Line:<br>OTU2<br>(XS-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR)<br>1AB375380005<br>(ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm])<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM 1550nm HARDENED | 1550 |
| Line: 10G DWDM fixed wavelength | XL-64FUD | 1AB243510001<br>-thru-<br>1AB243510088 | XFP DWDM 50 Ghz 196.05 to 191.70 THz CT, -5/+70 | 196.05 CT<br>-thru-<br>191.70 CT |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>10G-SR-1471<br>-thru-<br>10G-SR-1611<br>(XS-64.2C) | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM (40km) 10G DDM | 1471 - 1611 |
| Line:<br>10G-SR-1471<br>-thru-<br>10G-SR-1551 | XS-64.2C | 1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM (40km) 10G DDM IT | 1471 - 1551 |
| Line:<br>10G-LR-1471<br>-thru-<br>10G-LR-1611 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016<br>(ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 |
| Line:<br>10G-LR | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044<br>(non-ETR) | XFP DW100U (DWDM [1600 ps/nm] DDM) | 1563.863 - 1529.163 |
| Line:<br>P1L1-2D2 | 10GB-ZR | 1AB375380004<br>(non-ETR)<br>1AB375380008<br>(ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*<br>LVDS*SM_-5/+70<br>C*1.55um*<br>DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 |

**Table 18-13 11DPM12 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>DN50U-2AxC(F) - Tunable<br>(XL-64TU) | XL-64TU | S-EFEC, A-EFEC, GFEC:<br>1AB375650046<br>NOFEC:<br>1AB375650047[1] | XFP DWDM Tunable CT (50GHz 10G XFP)<br>T-XFP Low latency (FEC on/off option) | 1563.863 - 1529.163 |
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/OTM-0.2 DWDM | XS-64.2D | 3AL82001AA ~ 3AL82001AR | XFP DWDM (40km) 10G (100GHz) spacing) (-40/+85) | |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562 nm<br>1563.863 - 1529.163 |
| Client:<br>SD-SDI | 3GSDI-EC | 1AF25240AAAA<br>See [2] | SD-SDI/HD-SDI/3G-SDI eSFP | NA |
| Client:<br>HD-SDI<br>3G-SDI | 3GSDI-EC | 3AL81845AA | SD-SDI/HD-SDI/3G-SDI eSFP | NA |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |
| Client:<br>STM-1e | S1E | 1AK05176AAAA | EL TRX SFP STM-1EL | NA |
| Client: | 100BT-MC | 1AB377330002 | 100 BASE-T Copper | NA |

**Notes:**

1. Introduced in Release 5.1
2. 1AF25240AAAA is supported on 11DPM12/4DPA4 in user defined mode.

**Table 18-14 11DPM8 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SS-1.1) | SS-1.1 | 1AB376350001 | SFP S-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [S-1.1/IR-1]) | 1310 |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.1) | SL-1.1 | 1AB376350002 | SFP L-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [L-1.1/LR-1]) | 1310 |
| Client:<br>STM1/OC-3<br>STM1-Aggregator (21/42 E1)<br>(SL-1.2) | SL-1.2 | 1AB376350003 | FP L-1.2 -40/+85 (B&W STM-1/OC-3 DDM 1550nm [L-1.2/LR-2]) | 1550 |
| Client:<br>STM-4/OC-12<br>(SS-4.1) | SS-4.1 | 1AB376360001 | SFP S-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [S-4.1/IR-1]) | 1310 |
| Client:<br>STM-4/OC-12<br>(SL-4.1) | SL-4.1 | 1AB376360002 | SFP L-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [L-4.1/LR-1]) | 1310 |
| Client:<br>STM-4/OC-12<br>(SL-4.2) | SL-4.2 | 1AB376360003 | SFP L-4.2 -40/+85 (B&W STM-4/OC-12 DDM 1550nm [L-4.2/LR-2]) | 1550 |
| Client:<br>STM16/OC-48<br>OTM-0.1<br>2G5<br>(SI-16.1) | SI-16.1 | 1AB376370001 | SFP I-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [I-16.1/SR-1]) | 1310 |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC3<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>GbE<br>FC-100<br>FC-200<br>HDSDI<br>SDSDI<br>(SS-16.1A) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 |
| Client:<br>STM16/OC48<br>OTM-0.1<br>2G5<br>(SL-16.1) | SL-16.1 | 1AB376370003 (non-ETR)<br>1AB376370007 (ETR) | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1])<br>SFP L-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 |
| Client:<br>STM16/OC-48<br>OTM.1<br>2G5<br>(SL-16.2) | SL-16.2 | 1AB376370004 (non-ETR)<br>1AB376370008 (ETR) | SFP L-16.2 -5/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2])<br>SFP L-16.2 -40/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2]) | 1550 |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001 (ETR) | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002<br>(ETR and non-ETR) | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003<br>(ETR and non-ETR) | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 |
| Client:<br>STM-1/OC-3<br>STM1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>HDSDI<br>SDSDI<br>GbE<br>(SS-16.2C) | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008<br>(non-ETR) | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |
| Client:<br>STM-1/OC-3<br>STM1-Aggregator (21/42 E1)<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>HDSDI<br>SDSDI<br>GbE<br>(SL-16.2C) | SL-16.2C | 1AB377200009<br>-thru-<br>1AB377200016<br>(ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD (<2.7G) DDM) IT | 1471 - 1611<br>(in increments of 20) |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |
| Client:<br>FE (100BLX10) | 100BLX10 | 1AB382180001 | SFP 100BASE-LX10, 10km | 1260-1360 |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GEU20I) | GE-BX20U | 1AB393080005 | SFP 1000BX / STM-4 20KM UPSTREAM | 1260-1360 (TX)<br>1480-1500 (RX) |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GED20I) | GE-BX20D | 1AB393080006 | SFP 1000BX / STM-4 20KM DOWNSTREAM | 1480-1500 (TX)<br>1260-1360 (RX) |
| Client:<br>STM-1/FE-FC (40km) | FE-BX40U | 1AB393080007 | SFP 100BASE-BX40-U, 40km UPSTREAM | 1260-1360 (TX)<br>1480-1500 (RX) |
| Client:<br>STM-1/FE-FC (40km) | FE-BX40D | 1AB393080008 | SFP 100 BASE-BX40-D, 40km DOWNSTREAM | 1480-1500 (TX)<br>1260-1360 (RX) |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GEU40I) | GE-BX40U | 1AB393080009 | SFP 1000BX / STM-4, 40KM UPSTREAM | 1260-1360 (TX)<br>1480-1500 (RX) |
| Client:<br>OC-12/STM-4<br>GbE<br>(SB1GED40I) | GE-BX40D | 1AB393080010 | SFP 1000BX / STM-4, 40KM DOWNSTREAM | 1480-1500 (TX)<br>1260-1360 (RX) |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>STM-64/OC-192<br>OTU2<br>10GbE<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR)<br>1AB375380007<br>(ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm])<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) HARDENED | 1310 |
| Line:<br>STM-64/OC-192<br>OTU2<br>10GbE<br>(XS-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR)<br>1AB375380005<br>(ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm])<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM 1550nm HARDENED | 1550 |
| Line:<br>10G-SR-1471<br>-thru-<br>10G-SR-1611<br>(XS-64.2C) | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM (40km) 10G DDM | 1471 - 1611 |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>10G-SR-1471<br>-thru-<br>10G-SR-1551 | XS-64.2C | 1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM (40km) 10G DDM IT | 1471 - 1551 |
| Line:<br>10G-LR-1471<br>-thru-<br>10G-LR-1611 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016<br>(ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 |
| Line:<br>10G-LR | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044<br>(non-ETR) | XFP DW100U (DWDM [1600 ps/nm] DDM) | 1563.863 - 1529.163 |
| Line:<br>P1L1-2D2 | 10GB-ZR | 1AB375380004<br>(non-ETR)<br>1AB375380008<br>(ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 |
| Line:<br>DN50U-2AxC(F) - Tunable<br>(XL-64TU) | XL-64TU | S-EFEC, A-EFEC, GFEC:<br>1AB375650046<br>NOFEC:<br>1AB375650047 | XFP DWDM Tunable CT (50GHz 10G XFP)<br>T-XFP Low latency (FEC on/off option) | 1563.863 - 1529.163 |

**Table 18-14 11DPM8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/<br>OTM-0.2 DWDM | XS-64.2D | 3AL82001AA ~<br>3AL82001AR | XFP DWDM<br>(40km) 10G<br>(100GHz) spacing)<br>(-40/+85) | |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |
| Line: | XL-64TU | 1AB375650048 | XFP DWDM<br>Tunable CT<br>(50GHz 10G XFP) | |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001<br>(ETR/non-ETR) | SFP GBE SX<br>-40/+85 (B&W<br>1GbE DDM 850nm<br>[1000BASE-SX]) | 850 |
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002<br>(ETR/non-ETR) | SFP GBE LX<br>-40/+85 (B&W<br>1GbE DDM<br>1310nm<br>[1000BASE-LX]) | 1310 |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003<br>(ETR and<br>non-ETR) | SFP GBE ZX<br>-40/+85 (B&W<br>1GbE DDM<br>1550nm<br>[1000BASE-ZX]) | 1550 |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002[3] | EL TRX SFP<br>10/100/1000BASE-T<br>-40/+85 | NA |
| Client:<br>GBE<br>FE<br>(1000BASE-T2) | 1000B-T2 | 1AB359780003<br>(ETR and<br>non-ETR) | EL TRX SFP<br>10/100/1000BASE-T<br>-40/+85 P4 | NA |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Client:<br>GbE<br>(SL-16.2C) | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008<br>(non-ETR)<br>1AB377200009<br>-thru-<br>1AB377200016<br>(ETR) | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT<br>ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) IT | 1471 - 1611<br>(in increments of 20) |
| Client:<br>GbE<br>(SS-16.2C) | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008<br>(non-ETR) | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |
| Client:<br>GbE<br>(SS-16.1A) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 |
| Client:<br>GbE[1]<br>(GE-BX20U) | GE-BX20-U | 1AB393080005 | SFP 1000BX / STM-4 20KM UPSTREAM | 1260-1360 (TX),<br>1480-1500 (RX) |
| Client:<br>GbE[1]<br>(GE-BX20D) | GE-BX20D | 1AB393080006 | SFP 1000BX / STM-4 20KM DOWNSTREAM | 1260-1360 (RX),<br>1480-1500 (TX) |
| Client:<br>GbE[1]<br>(GE-BX40U) | GE-BX40U | 1AB393080009 | SFP 1000BX / STM-4 40KM UPSTREAM | 1260-1360 (TX),<br>1480-1500 (RX) |
| Client:<br>GbE[1]<br>(GE-BX40D) | GE-BX40D | 1AB393080010 | SFP 1000BX / STM-4 40KM DOWNSTREAM | 1260-1360 (RX),<br>1480-1500 (TX) |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Client:<br>FE (100BLX10) | 100BLX10 | 1AB382180001 | SFP<br>100BASE-LX10 | 1310 nm |
| 155M TSOP<br>(S-1.1/IR-1) SFP[5] | SG-S-1.1 | 1AB407440021<br>See [4] | TSOP Smart SFP<br>155M STM-1/OC-3<br>(S-1.1) | 1310 nm |
| 155M TSOP<br>(L-1.1/LR-1) SFP[5] | SG-L-1.1 | 1AB407440022<br>See [4] | TSOP Smart SFP<br>155M STM-1/OC-3<br>(L-1.1) | 1310 nm |
| 622M TSOP<br>(S-4.1/IR-1) SFP[5] | SG-S-4.1 | 1AB407440024<br>See [4] | TSOP Smart SFP<br>622M<br>STM-4/OC-12<br>(S-4.1) | 1310 nm |
| 622M TSOP<br>(L-4.1/LR-1) SFP[5] | SG-L-4.1 | 1AB407440025<br>See [4] | TSOP Smart SFP<br>622M<br>STM-4/OC-12<br>(L-4.1) | 1310 nm |
| E1 | - | 3AL82042AA<br>See "TPoP/CSoP Smart SFPs - TDM CES" (p. 15-68) | TPOP Smart SFP,<br>E1 (120 Ohm<br>balanced, RJ45) | - |
| STM-1/OC3 | - | 3AL82041AA<br>See "TPoP/CSoP Smart SFPs - TDM CES" (p. 15-68) | CSOP Smart SFP,<br>STM-1/OC-3 over<br>GBE,<br>E1-Channelize | 1310nm |
| **VOA SFP** | | | | |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |
| **Line or Client XFP** | | | | |
| Client:<br>10GBASE-SR | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR<br>(B&W<br>10G-BASE-SR<br>DDM (850nm) | 850 |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Line:<br>OTU2<br>(XI-64.1)<br>Client:<br>10GbE<br>(10GBASE-LR) | XI-64.1 | 1AB375380013 (non-ETR)<br>1AB375380007 (ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192 /OTU2/ 10GBASE-LX] DDM [1310nm])<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) HARDENED | 1310 nm |
| Line:<br>OTU2<br>(XS-64.2b)<br>Client:<br>10GbE<br>(10GBASE-ER) | XS-64.2b | 1AB375380003 (non-ETR)<br>1AB375380005 (ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm])<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm]) HARDENED | 1550 nm |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Line:<br>OTU2<br>Client:<br>10GbE<br>(10G-SR-1471<br>-thru-<br>10G-SR-1611) | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM<br>(40km) 10G DDM | 1471 - 1611 |
| Line:<br>OTU2<br>Client:<br>10GbE<br>(10G-SR-1471<br>-thru-<br>10G-SR-1611) | XS-64.2C | 1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM<br>(40km) 10G DDM<br>IT | 1471 - 1551 |
| Line:<br>OTU2<br>Client:<br>10GbE<br>(10GBASE-ZR) | 10GB-ZR | 1AB375380004<br>(non-ETR)<br>1AB375380008<br>(ETR) | XFP<br>P1L1-<br>2D2/10GBASE-Z<br>(OE-TRX XFP<br>P1L1-2D2<br>CT_XFP*STM-<br>64*B&W*LVDS<br>*SM_-5/+70<br>C*1.55um*<br>DFB*2dBm*)<br>-40/+85 | 1550 nm |
| Line:<br>OTU2<br>(XS-64.2C) | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008 | XFP CWDM<br>(40km) 10G DDM | 1471 — 1611 |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Line:<br>OTM-0.2 CWDM-LH 70km<br>Client:<br>10GbE<br>(10G-LR-1471<br>-thru-<br>10G-LR-1611) | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>1AB378370009<br>-thru-<br>1AB378370016 (ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 |
| Line:<br>OTM-0.2<br>Client:<br>DW100U-2AxC - 9170 to DW100U-2AxC - 9600 in increments of 10 | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 | XFP DW100U (DWDM [1600 ps/nm] DDM) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2<br>Client:<br>DN50U-2AxC(F) - Tunable | XL-64TU | 1AB375650046<br>1AB375650048[2] | XFP DWDM Tunable CT (50GHz 10G XFP)<br>XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003<br>See [6] | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562 nm<br>1563.863 - 1529.163 |
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/OTM-0.2 DWDM | XS-64.2D | 3AL82001AA ~ 3AL82001AR | XFP DWDM (40km) 10G (100GHz) spacing) (-40/+85) | |

**Table 18-15 11DPE12E, 11DPE12A, 11QPE24 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Client SFP** | | | | |
| Line: 10G DWDM fixed wavelength | XL-64FUD | 1AB243510001<br>-thru-<br>1AB243510088<br>See [3] | XFP DWDM 50Ghz 196.05 to 191.70 THz CT, -5/+70 | 196.05 CT<br>-thru-<br>191.70 CT |
| 10GBASE-R/OTM-0.2 DWDM Tunable | XL-64 TU | 1AB375650047<br>See [6] | T-XFP Low latency (FEC on/off option) | 1529-1562 nm<br>1563.863 - 1529.163 |

**Notes:**

1. Supported on 11DPE12A and 11QPE24; not supported on 11DPE12E.
2. Supported on 11DPE12A only; not supported on 11DPE12E or 11QPE24.
3. Supported on 11DPE12A and 11DPE12E; not supported on 11QPE24.
4. Supported on 11QPE24 only; not supported on 11DPE12A or 11DPE12E
5. Refer to "Thermal concerns with TSoP SFPs" (p. 18-424) for the TSoP thermal concerns.
6. Supported on 11DPE12A and 11QPE24; not supported on 11DPE12E.
7. 3AL82042AA and 3AL82041AA are supported on 11QPE24 and they are supported only in USER MODE.

**Table 18-16 11QCE12X SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| **Line or Client XFP (10GbE/OTU2e)** | | | | |
| 10GBASE-SR/OTM-0.2 | 10GB-SR | 1AB375380001 | B&W 10GbE<br>-5/+70 | 850 nm |
| 10GBASE-LR/OTM-0.2 (P1I1-2D1) | XI-64.1 | 1AB375380007 | B&W STM-64/OC-192/ OTU2/10GbE (I64.1/SR-1/10GBASE-LR) ETR<br>-40/+85 | 1310 nm |
| 10GBASE-LR/OTM-0.2 (P1I1-2D1) | XI-64.1 | 1AB375380013 | B&W STM-64/OC-192/ OTU2/10GbE (I64.1/SR-1/10GBASE-LR)<br>-5/+70 | 1310 nm |

**Table 18-16 11QCE12X SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 10GBASE-ER/OTM-0.2 (P1S1-2D2b) | XS-64.2b | 1AB375380003 | B&W STM-64/OC-192/ OTU2/10GbE (S64.2b/IR-2/10GBASE-ER)<br>-5/+70 | 1550 nm |
| 10GBASE-ER/OTM-0.2 (P1S1-2D2b) | XS-64.2b | 1AB375380005 | B&W STM-64/OC-192/ OTU2/10GbE (S64.2b/IR-2/10GBASE-ER) ETR<br>-40/+85 | 1550 nm |
| 10GBASE-ZR/OTM-0.2 (P1L1-2D2) | 10GB-ZR | 1AB375380004 | XFP P1L1-2D2/10GBASE-Z<br>-5/+70 | 1550 nm |
| 10GBASE-ER/OTM-0.2 CWDM-SH 40km | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008 | XFP 10G CWDM-SH<br>-5/+70 | 1471-1611 nm (increment of 20) |
| 10GBASE-ER/OTM-0.2 CWDM-SH 40km | XS-64.2C | 1AB379240009<br>-thru-<br>1AB379240013 | XFP 10G CWDM-SH ETR<br>-40/+85 | 1471-1611 nm (increment of 20) |
| 10GBASE-ZR/OTM-0.2 CWDM-LH 70km | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008 | XFP 10G CWDM-LH<br>-5/+70 | 1471-1611 nm (increment of 20) |
| 10GBASE-ZR/OTM-0.2 CWDM-LH 70km | XL-64.2C | 1AB378370009<br>-thru-<br>1AB378370016 | XFP 10G CWDM-LH (ETR)<br>-40/+85 | 1471-1611 nm (increment of 20) |
| 10GBASE-ZR/OTM-0.2 DWDM | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 | XFP DW100U (Anyrate up to 11G)<br>-5/+70 | 1529-1562 nm (191.7 THz-196.0 THz) |
| 10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TU | 1AB375650046 | XFP 10G DWDM Tunable (50GHz spaced full C+ band)<br>-5/+70 | 1529-1562 nm (191.7 THz-196.05 THz) |

**Table 18-16 11QCE12X SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70<br>-5/+70 | 1529-1562 nm (192.1 THz-196.05 THz) |
| DW100U-2AxC(F)-S | XS-64.2D | 3AL82001AA ~3AL82001AR | XFP 10G DWDM fixed wavelength (100GHz spaced C band)<br>-40/+85 | 1546-1561 nm |
| 10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TU | 1AB375650047 | XFP 10G DWDM Tunable negative chirped No FEC, low latency<br>-5/+70 | 1529-1562 nm (191.7 THz-196.05 THz) |
| **VOA SFP** | | | | |
| NA | VOA | 1AB156220001 | Slow eVOA SFP | NA |
| NA | VOA | 1AB396080001 | Fast eVOA SFP | NA |
| **Client SFP (1GbE/FE)** | | | | |
| 1000BASE-SX | 1000B-SX | 1AB376720001 | B&W GbE (1000BASE-SX/550m)<br>-40/+85 | 850 nm |
| 1000BASE-LX | 1000B-LX | 1AB376720002 | B&W GbE (1000BASE-LX/10km)<br>-40/+85 | 1310 nm |
| 1000BASE-ZX | 1000B-ZX | 1AB376720003 | B&W GbE (1000BASE-ZX/80km)<br>-40/+85 | 1550 nm |
| 100/1000BASE-T (Global) | 1000B-T2 | 1AB359780003 | EL TRX SFP 10/100/1000BASE-T<br>-40/+85 | NA |
| 1000BASE-EX CWDM | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008 | CWDM 2G5 MR multirate ≤ 2.7 Gbps (40 km)<br>-5/+70 | 1471-1611 nm (increment of 20) |

**Table 18-16 11QCE12X SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 1000BASE-ZX CWDM | SL-16.2C | 1AB377200001 -thru- 1AB377200008 | CWDM 2G5 MR multirate ≤ 2.7 Gbps (80 km) 0/+70 | 1471-1611 nm (increment of 20) |
| 1000BASE-ZX CWDM | SL-16.2C | 1AB377200009 -thru- 1AB377200016 | CWDM 2G5 MR multirate ≤ 2.7 Gbps (80 km) I-Temp -40/+85 | 1471-1611 nm (increment of 20) |
| 1000BASE-BX10 | 2C-BX10U | 3AL81920AA | 1000BASE-BX10 2CH BiDi CSFP (upstream, 1310 nm) -40/+85 | 1310 nm |
| 1000BASE-BX10 | 2C-BX10D | 3AL81921AA | 1000BASE-BX10 2CH BiDi CSFP (downstream, 1490 nm) -40/+85 | 1490 nm |
| 100BASE-LX10 | 100BLX10 | 1AB382180001 | Fast Ethernet SFP -40/+85 | 1310 nm |
| 1000BASE-BX20-U | GE-BX20U | 1AB393080005 | SFP 1000BX / STM-4 20 Km Upstream -40/+85 | 1310 nm |
| 1000BASE-BX20-D | GE-BX20D | 1AB393080006 | SFP 1000BX / STM-4 20 Km Downstream -40/+85 | 1490 nm |
| 1000BASE-BX40-U | GE-BX40U | 1AB393080009 | SFP 1000BX / STM-4 40 Km Upstream -40/+85 | 1310 nm |
| 1000BASE-BX40-D | GE-BX40D | 1AB393080010 | SFP 1000BX / STM-4 40 Km Downstream -40/+85 | 1490 nm |
| TSOP S-1.1 | SG-S-1.1 | 1AB407440021 See [1] | TSOP Smart SFP 155M STM-1/OC-3 (S-1.1) -40/+85 | 1310 nm |

**Table 18-16 11QCE12X SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| TSOP L-1.1 | SG-L-1.1 | 1AB407440022<br>See [1] | TSOP Smart SFP 155M STM-1/OC-3 (L-1.1)<br>-40/+85 | 1310 nm |
| TSOP S-4.1 | SG-S-4.1 | 1AB407440024<br>See [1] | TSOP Smart SFP 622M STM-4/OC-12 (S-4.1)<br>-40/+85 | 1310 nm |
| TSOP L-4.1 | SG-L-4.1 | 1AB407440025<br>See [1] | TSOP Smart SFP 622M STM-4/OC-12 (L-4.1)<br>-40/+85 | 1310 nm |
| E1 | - | 3AL82042AA<br>See [2] | TPoP Smart SFP, E1 (120 Ohm balanced, RJ45)<br>-40/+85 | - |
| STM-1/OC3 | - | 3AL82041AA<br>See [2] | CSoP Smart SFP, STM-1/OC-3 over GbE, E1-channelize<br>-40/+85 | - |

**Notes:**

1. Refer to "Thermal concerns with TSoP SFPs" (p. 18-424) for the TSoP thermal concerns.
2. 3AL82041AA and 3AL82042AA are supported on 11QCE12X only in USER MODE.

**Table 18-17 11QPE24, 11QCE12X Smart SFP™ modules**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 1GbE | SG-LXE | 1AB407440001 | 1GbE Smart SFP 1000BASE-LX10 - EFM OAM | 1310 nm |
| 1GbE | SG-ZXE | 1AB407440003 | 1GbE Smart SFP 1000BASE-ZX - EFM OAM | 1550 nm |
| 1GbE | SG-B20UE | 1AB407440009 | 1GbE Smart SFP 1000BASE-BX20-U - EFM OAM | 1310 TX<br>1490 RX |

**Table 18-17 11QPE24, 11QCE12X Smart SFP™ modules (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 1GbE | SG-B40UE | 1AB407440013 | 1GbE Smart SFP 1000BASE-BX40-U - EFM OAM | 1310 TX<br>1490 RX |
| 1GbE | SG-B20DE | 1AB407440010 | 1GbE Smart SFP 1000BASE-BX20-D - EFM OAM | 1490 TX<br>1310 RX |
| 1GbE | SG-B40DE | 1AB407440014 | 1GbE Smart SFP 1000BASE-BX40-D - EFM OAM | 1490 TX<br>1310 RX |
| 1GbE | SG-LXC | 1AB407440002 | 1GbE Smart SFP 1000BASE-LX10 - CFM OAM | 1310 nm |
| 1GbE | SG-ZXC | 1AB407440004 | 1GbE Smart SFP 1000BASE-ZX - CFM OAM | 1550 nm |
| 1GbE | SG-B20UC | 1AB407440011 | 1GbE Smart SFP 1000BASE-BX20-U - CFM OAM | 1310 TX<br>1490 RX |
| 1GbE | SG-B40UC | 1AB407440015 | 1GbE Smart SFP 1000BASE-BX40-U - CFM OAM | 1310 TX<br>1490 RX |
| 1GbE | SG-B20DC | 1AB407440012 | 1GbE Smart SFP 1000BASE-BX20-D - CFM OAM | 1490 TX<br>1310 RX |
| 1GbE | SG-B40DC | 1AB407440016 | 1GbE Smart SFP 1000BASE-BX40-D - CFM OAM | 1490 TX<br>1310 RX |

**Table 18-18 11QPA4(A) XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2 (P1I1-2D1)<br>STM-64-OC192 (SR-1/VSR2000-2R1)<br>10G LAN PHY (10GBASE-LR)<br>10G WAN PHY (10GBASE-LW)<br>10GFC (1200-SM-LL-L)<br>Line:<br>STM-64-OC192 (SR-1/VSR2000-2R1)<br>OTU2/10GbE<br>(I64.1/SR-1/10GBASE-LX) | XI-64.1 | 1AB375380013 (Non-ETR)<br>1AB375380007 (ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310 nm)<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310 nm) HARDENED | 1310 nm |
| Client:<br>OTM-0.2 (P1S1-2D2b)<br>STM-64/OC-192 (IR-2/S-64.2b)<br>10G LAN PHY (10GBASE-ER)<br>10G WAN PHY (10GBASE-EW)<br>Line:<br>STM-64-OC192 (P1S1-2D2b [IR-2])<br>OTU2/10GbE<br>(S64.2b/IR-2/10GBASE-EX) | XS-64.2b | 1AB375380003 (Non-ETR)<br>1AB375380005 (ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G(STM64/OC-192/ OTU2/10GBASE-EX) DDM (1550 nm)<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G(STM64/OC-192/ OTU2/10GBASE-EX) DDM 1550 nm) HARDENED | 1550 nm |

**Table 18-18 11QPA4(A) XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10G LAN PHY (10GBASE-SR)<br>10GFC (1200-MX-SN-I) | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM (850nm) | 850 nm |
| Client:<br>FC-800<br>(800-SM-LC-L)<br>DDR<br>1x-DDR-LX) | X8FCLC-L | 1AB375380009 | XFP I-64.1/8.5GFC IT (8G FC XFP SM) | 1310 nm |
| Client:<br>FC-800<br>(800-MX-SN-1) | X8FCSN-I | 1AB375380011 | 8G FC XFP MM | 850 nm |
| Client:<br>STM-64/OC-192<br>10GFC<br>10G LAN PHY<br>10G WAN PHY<br>Client or Line:<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008 (non-ETR)<br>1AB379240009<br>-thru-<br>1AB379240013 (ETR) | XFP CWDM (40km) 10G DDM<br>XFP CWDM (40km) 10G DDM IT | 1471 - 1611 nm |
| Client:<br>STM-64/OC-192 (P1L1-2D2)<br>10G LAN PHY (10GBASE-ZR)<br>10G WAN PHY (10GBASE-ZW)<br>Client or Line:<br>OTM-0.2 (P1L1-2D2) | 10GB-ZR | 1AB375380004 (Non-ETR)<br>1AB375380008 (ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |

**Table 18-18 11QPA4(A) XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-64/OC-192<br>10GFC<br>10G LAN PHY<br>10G WAN PHY)<br>Client or Line:<br>OTM-0.2 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008 (non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016 (ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 nm |
| Client:<br>10GbE<br>STM64<br>OC192<br>OTU2/OTU2e | XL-64TU | 1AB375650048 | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2<br>(XL-64.2D) | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 (non-ETR) | XFP DW100U (DWDM (1600 ps/nm) DDM) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2<br>(XL-64TU) | XL-64TU | S-EFEC, A-EFEC, GFEC:<br>1AB375650046<br>NOFEC:[1] | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2 | XL-64 TU | 1AB375650047<br>XFP 10G DWDM Tunable negative chirped No FEC, low latency | T-XFP Low latency (FEC on/off option) | 1563.863 - 1529.163 |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1563.863 - 1529.163 |
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/OTM-0.2 DWDM | XS-64.2D | 3AL82001AA ~3AL82001AR | XFP DWDM (40km) 10G (100GHz) spacing) (-40/+85) | |

**Table 18-18 11QPA4(A) XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line: 10G DWDM fixed wavelength | XL-64FUD | 1AB243510001<br>-thru-<br>1AB243510088 | XFP DWDM 50 Ghz 196.05 to 191.70 THz CT, -5/+70 | 1563.863 - 1529.163 |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Notes:**

1. NOFEC transmission for line rate up to 10.709 Gbps
2. Introduced in R5.1

**Table 18-19 11QPEN4 XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>1G LAN PHY (10GBASE-LR)<br>10GFC<br>Client or Line:<br>OTM-0.2<br>(P1I1-2D1) | XI-64.1 | 1AB375380013 (non-ETR)<br>1AB375380007 (ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310nm)<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310nm) HARDENED | 1310 nm |

**Table 18-19 11QPEN4 XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10G LAN PHY (10GBASE-ER)<br>Client or Line:<br>OTM-0.2 (P1S1-2D2b) | XS-64.2b | 1AB375380003 (non-ETR)<br>1AB375380005 (ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM (1550nm)<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM 1550nm) HARDENED | 1550 nm |
| Client: 10G LAN PHY (10GBASE-SR)<br>10GFC (1200-MX-SN-I) | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM (850nm) | 850 nm |
| Client:<br>FC-800 | X8FCLC-L | 1AB375380009 | XFP I-64.1/8.5GFC IT (8G FC XFP SM) | 1310 nm |
| Client:<br>FC-800 | X8FCSN-I | 1AB375380011 | 8G FC XFP MM | 850 nm |
| Client:<br>10G LAN PHY (10GBASE-ZR)<br>Client or Line:<br>OTM-0.2 (P12L1-2D2) | 10GB-ZR | 1AB375380004 (non-ETR)<br>1AB375380008 (ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |

**Table 18-19 11QPEN4 XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10GFC<br>10G LAN PHY<br>Client or Line:<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008 (non-ETR<br>1AB379240009<br>-thru-<br>1AB379240013 (PSS-4 ETR) | XFP CWDM (40km) 10G DDM<br>XFP CWDM (40km) 10G DDM IT | 1471 - 1611 |
| Client:<br>10GFC<br>10G LAN PHY<br>Client or Line:<br>OTM-0.2 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008 (non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016 (ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 |
| Line:<br>OTM-0.2<br>(XL-64.2D) | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 (non-ETR) | XFP DW100U (DWDM (1600 ps/nm) DDM) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2<br>(XL-64TU) | XL-64TU | S-EFEC, A-EFEC, GFEC:<br>1AB375650046<br>NOFEC:[1] | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2 | XL-64 TU (no FEC) | 1AB375650047<br>XFP 10G DWDM Tunable negative chirped No FEC, low latency | T-XFP Low latency (FEC on/off option) | 1563.863 - 1529.163 |
| Line:<br>10GBASE-R/ OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562 nm<br>1563.863 - 1529.163 |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Notes:**

1. NOFEC transmission for line rate up to 10.709 Gbps

**Table 18-20 11OPE8 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2 | 10GB-SR | 1AB375380001 | XFP 10BASE-SR (B&W 10G-BASE-SR DDM (850nm) | 850 nm |
| Line:<br>OTM-0.2<br>P1I1-2D1<br>(XI-64.1) | 10G MR XFP | 1AB375380007(ETR) | B & W STM-64/OC-192/ OTU2/10GbE (I64.1/SR-1/10GBASE-LR)<br>Distance: 10 km | 1310 nm |
| Line:<br>OTM-0.2<br>P1I1-2D1<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>See [1] | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310nm) | 1310 nm |
| Line:<br>OTM-0.2<br>P1S1-2D2b<br>(XS-64.2b) | XS-64.2b | 1AB375380003<br>1AB375380005(ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM (1550nm)<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM 1550nm) HARDENED | 1550 nm |

**Table 18-20 11OPE8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2<br>P12L1-2D2 | 10GB-ZR | 1AB375380004 | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |
| Line:<br>OTM-0.2<br>10G-SR-1471<br>-thru-<br>10G-SR-1611 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>1AB379240009<br>-thru-<br>1AB379240013<br>(ETR, 1471 nm to 1551 nm) | XFP CWDM (40km) 10G DDM<br>XFP CWDM (40km) 10G DDM IT | 1471-1611nm<br>(increment of 20) |
| Line:<br>OTM-0.2<br>10G-LR-1471<br>-thru-<br>10G-LR-1611 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>1AB378370009 (ETR)<br>-thru-<br>1AB378370016 (ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471-1611nm<br>(increment of 20) |
| Line:<br>OTM-0.2<br>10G-LR | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 | XFP DW100U (DWDM (1600 ps/nm) DDM) | 1529-1562nm<br>(191.7THz-196.0THz) |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64 TU | 1AB375650046 | XFP DWDM Tunable CT (50GHz 10G XFP) | 1529-1562nm<br>191.7THz-196.05THz |

**Table 18-20 11OPE8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562nm<br>191.7THz-196.05THz |
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/OTM-0.2 DWDM | XS-64.2D | 3AL82001AA<br>~3AL82001AR | XFP DWDM (40km) 10G (100GHz) spacing) (-40/+85) | |
| 10GBASE-R/OTM-0.2 DWDM Tunable | XL-64 TU | 1AB375650047 | T-XFP Low latency (FEC on/off option) | 1529-1562nm<br>191.7THz-196.05THz |
| Client:<br>10GBASE-SR | S10GB-SR | 1AB390930004 | SFP+ 10GBASE-SR/10G FC MMF -5/+85 | 850 nm |
| Client:<br>10GBASE-LR | S10GB-LR | 1AB390930002 | SFP+ 10GBASE-LR –LW_1200-SM-LL-L (10km, Single-Mode, 1310nm) (-5/+85) | 1310 nm |
| Client:<br>10GBASE-LR/OTM-0.2 (P1I1-2D1) | SXI64.1 | 1AB390930013 | SFP+ P1I1-2D1/SR1/10GBASE-LR(W) /10GFC SMF -5/85 | 1310 nm |
| Client:<br>10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b) | SXS64.2b | 1AB390930014 | 10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b), SMF 1550nm 40km (-5/+85) | 1550 nm |
| Client:<br>10GBASE-CWDM-OTM-0.2/e/f SH | SXS64.2C | 3AL82018AA<br>-thru-<br>3AL82018AH | SFP+ 10GBASE-CWDM- OTM-0.2/e/f SH (-5/+85) | 1471 - 1561 nm |
| Line: | XL-64.TU | 1AB375650046 | XFP DWDM Tunable CT (50GHz 10G XFP) | |

**Table 18-20 11OPE8 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2 | XL-64 TU | 1AB375650047<br>XFP 10G DWDM Tunable negative chirped No FEC, low latency | T-XFP Low latency (FEC on/off option) | 191.70 THz -196.05 THz |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Notes:**

1. Sumitomo I64.1 XFP is excluded from vendor list due to potential traffic hit in Y-cable protection setup.

**Table 18-21 11STAR1(A) XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY<br>10GFC | XI-64.1 | 1AB375380013 | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-LX) DDM (1310nm) | 1310 nm |
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY | XS-64.2b | 1AB375380003 (non-ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM (1550nm) | 1550 nm |
| Client:<br>10G LAN PHY<br>10GFC | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM (850nm) | 850 nm |

**Table 18-21 11STAR1(A) XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY | XS-64.2b | 1AB217280001 | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G (STM64/OC-192/ OTU2/10GBASE-EX) DDM (1550nm) | 1550 nm |
| Client:<br>STM-64/OC-192<br>10GFC<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008 | XFP CWDM (40km) 10G DDM | 1471 - 1611 |
| Client:<br>STM-64/OC-192<br>10GFC<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008 | XFP CWDM (70km) 10G DDM | 1471 - 1611 |
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY | 10GB-ZR | 1AB375380004 | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |
| Client:<br>FC-800 | X8FCLC-L | 1AB375380009<br>(11STAR1A only) | XFP I-64.1/8.5GFC IT (8G FC XFP SM) | 1310 nm |
| Client:<br>FC-800 | X8FCSN-I | 1AB375380011 | 8G FC XFP MM | 850 nm |

**Table 18-22 11STGE12 SFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>GbE<br>(1000Base-LX) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 nm |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |
| Client:<br>GbE (1000B-SX) | 1000B-SX | 1AB376720001 | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 nm |
| Client:<br>GbE (1000B-LX) | 1000B-LX | 1AB376720002 | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 nm |
| Client:<br>GbE (1000B-ZX) | 1000B-ZX | 1AB376720003 | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 nm |
| Client:<br>GbE<br>(SL-16.2C) | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008 | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT | 1471 - 1611<br>(in increments of 20) |

**Table 18-23 11STMM10 SFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC-3<br>(SL-1.1) | SL-1.1 | 1AB376350002 | SFP L-1.1 -40/+85 (B&W STM-1/OC-3 DDM 1310nm [L-1.1/LR-1]) | 1310 nm |

**Table 18-23 11STMM10 SFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-4/OC-12<br>(SS-4.1) | SS-4.1 | 1AB376360001 | SFP S-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [S-4.1/IR-1]) | 1310 nm |
| Client:<br>STM-4/OC-12<br>(SL-4.1) | SL-4.1 | 1AB376360002 | SFP L-4.1 -40/+85 (B&W STM-4/OC-12 DDM 1310nm [L-4.1/LR-1]) | 1310 nm |
| Client:<br>STM16/OC-48<br>OTM-0.1<br>2G5<br>(SI-16.1) | SI-16.1 | 1AB376370001 | SFP I-16.1 -40/+85 (B&W STM-16/OC-48 DDM 1310nm [I-16.1/SR-1]) | 1310 nm |
| Client:<br>STM1/OC-3<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>GbE<br>FC-100<br>FC-200<br>(SS-16.1A) | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY RATE -40/+85 (B&W STM-16/OC-48 Multirate [< 2.7G] DDM 1310nm [S-16.1/IR-1]) | 1310 nm |
| Client:<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>(SL-16.1) | SL-16.1 | 1AB376370003 | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 nm |

**Table 18-23 11STMM10 SFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM16/OC-48<br>OTM-0.1<br>2G5<br>(SL-16.2) | SL-16.2 | 1AB376370004 | SFP L-16.2 -5/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2]) | 1550 nm |
| Client:<br>GbE | 1000B-SX | 1AB376720001 | SFP GBE SX -40/+85 (B&W 1GbE DDM 850nm [1000BASE-SX]) | 850 nm |
| Client:<br>GbE | 1000B-LX | 1AB376720002 | SFP GBE LX -40/+85 (B&W 1GbE DDM 1310nm [1000BASE-LX]) | 1310 nm |
| Client:<br>GbE | 1000B-ZX | 1AB376720003 | SFP GBE ZX -40/+85 (B&W 1GbE DDM 1550nm [1000BASE-ZX]) | 1550 nm |
| Client:<br>FC-100<br>FC-200<br>FC-400 | 4FCSN-1 | 1AB379640001 | SFP FC/2FC/4FC 850NM (B&W 1G/2G/4G Fibre Channel DDM 850nm [SN-I]) | 850 nm |
| Client:<br>FC-100<br>FC-200<br>FC-400 | 4FCLC-L | 1AB379640002 | SFP FC/2FC/4FC 1300NM (B&W 1G/2G/4G Fibre Channel DDM 1310nm [LC-L]) | 1310 nm |
| Client:<br>FC-100<br>FC-200<br>FC-400 | 4FCSN-I | 1AB379640003 | SFP FC/2FC/4FC 850NM (B&W 1G/2G/4G Fibre Channel DDM 850nm [SN-I]) HARDENED | 850 nm |

**Table 18-23 11STMM10 SFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-1/OC-3<br>STM-4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>GbE | SS-16.2C | 1AB377160001<br>-thru-<br>1AB377160008 | SFP CWDM-SH (CWDM 2.5G Multirate PIN [<2.7G] DDM ) | 1471 - 1611<br>(in increments of 20) |
| Client:<br>STM1/OC3<br>STM4/OC-12<br>STM-16/OC-48<br>OTM-0.1<br>2G5<br>GbE | SL-16.2C | 1AB377200001<br>-thru-<br>1AB377200008 | ALU SFP CWDM-LH (CWDM 2.5G Multirate APD [<2.7G] DDM) CT | 1471 - 1611<br>(in increments of 20) |
| Client:<br>STM-16/OC-48<br>OTM-0.1<br>2G5 | L-16.1DDM | 1AB196370008 | SFP L-16.1 -5/+85 (B&W STM-16/OC-48 DDM 1310nm [L-16.1/LR-1]) | 1310 nm |
| Client:<br>STM-16/OC-48<br>OTM-0.1<br>2G5 | SL16.2 | 1AB196370009 | SFP L-16.2 -5/+85 (B&W STM-16/OC-48 DDM 1550nm [L-16.2/LR-2]) | 1550 nm |
| Client:<br>GbE (1000B-T) | 1000B-T | 1AB359780002 | EL TRX SFP 10/100/1000BASE-T -40/+85 | NA |

**Table 18-24 12P120 SFP/SFP+/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2<br>(P1I1-2D1)<br>10G LAN PHY<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) | 1310 |
| Line:<br>OTM-0.2<br>(P1I1-2D1) | 10G MR XFP<br>(XI-64.1) | 1AB375380007<br>(ETR) | B&W STM-64/OC-192/ OTU2/10GbE (I64.1/SR-1/10GBASE-LX) | 1310 |
| Line:<br>OTM-0.2<br>(P1S1-2D2b)<br>10G LAN PHY<br>(SC-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm]) | 1550 |
| Line:<br>OTM-0.2<br>(P1S1-2D2b) | IR2 MR XFP<br>XS-64.2b | 1AB375380005<br>(ETR) | B&W STM-64-OC-192/ OTU2/10GbE (S64.2b/IR-2/10GBASE-EX) | 1550 |
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-SH 40km | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR)<br>1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM (40km) 10G DDM<br>XFP CWDM (40km) 10G DDM IT | 1471 - 1611 |

**Table 18-24 12P120 SFP/SFP+/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-LH 70km | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008 (non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016 (ETR) | XFP CWDM (70km) 10G DDM<br>XFP CWDM (70km) 10G DDM IT | 1471 - 1611 |
| Line:<br>10G LAN PHY<br>OTM-0.2 DWDM | XL-64.2D | 1AB375650001<br>-thru-<br>1AB375650044 (non-ETR) | XFP DW100U (DWDM [1600 ps/nm] DDM) | 1563.863 - 1529.163 |
| Line:<br>OTM-0.2<br>P1L1-2D2<br>10GB-ZR | 10GB-ZR | 1AB375380004 (non-ETR)<br>1AB375380008 (ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 |
| Line:<br>DN50U-2AxC(F) - Tunable<br>(XL-64TU) | XL-64TU | S-EFEC, A-EFEC, GFEC:<br>1AB375650046<br>NOFEC:<br>1AB3756500471<br>1AB3756500482 | XFP DWDM Tunable CT (50GHz 10G XFP)<br>T-XFP Low latency (FEC on/off option)<br>XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| Client:<br>10GBASE-LR | S10GB-LR | 1AB390930002 | SFP+ 10GBASE-LR –LW_1200-SM-LL-L (10km, Single-Mode, 1310nm) (-5/+85) | 1310 nm |

**Table 18-24 12P120 SFP/SFP+/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10GLANPHY<br>(10GBASE-SR) | S10GB-SR | 1AB390930004 | SFP+<br>10GBASE-SR/10G FC MMF -5/+85 | 850 nm |
| Client:<br>10GBASE-LR/OTM-0.2 (P1I1-2D1) | SXI64.1 | 1AB390930013 | SFP+<br>P1I1-2D1/SR1/10GBASE-LR(W)/10GFC SMF -5/85 | 1310 nm |
| Client:<br>10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b) | SXS64.2b | 1AB390930014 | 10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b), SMF 1550nm 40km (-5/+85) | 1550 nm |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562 nm<br>1563.863 - 1529.163 |
| Line:<br>OTU2e, 10GbE<br>10GBASE-R/OTM-0.2 DWDM | XS-64.2D | 3AL82001AA<br>-thru-<br>3AL82001AR | XFP DWDM (40km) 10G (100GHz) spacing) (-40/+85) | |
| Client:<br>10GBASE-CWDM-OTM-0.2/e/f SH | SXS64.2C | 3AL82018AA<br>-thru-<br>3AL82018AH | SFP+<br>10GBASE-CWDM-OTM-0.2/e/f SH (-5/+85) | 1471 - 1561 nm |
| VOA | eVOA_P | 1AB156220001 | Slow eVOA SFP | NA |
| VOA | eVOA_P | 1AB396080001 | Fast eVOA SFP | NA |

**Table 18-25 43STX4(P) XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client::<br>OTM-0.2<br>STM-64-OC192<br>10G LAN PHY<br>10G WAN PHY<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) | 1310 nm |
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY<br>(XS-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm]) | 1550 nm |
| Client:<br>10GbE LAN PHY | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM [850nm]) | 850 nm |
| Client:<br>STM-64/OC-192<br>10GbE<br>10G WAN PHY<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM (40km) 10G DDM | 1471 - 1611 |
| Client:<br>STM-64/OC-192<br>10GbE<br>10G WAN PHY<br>OTM-0.2 | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR) | XFP CWDM (70km) 10G DDM | 1471 - 1611 |

**Table 18-25 43STX4(P) XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY | 10GB-ZR | 1AB375380004 | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |

**Table 18-26 43SCX4(E) Client XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2 (P1I1-2D1)<br>STM-64/OC-192 (SR-1/VSR2000 - 2R1)<br>10GBASE-LR (LAN PHY)<br>10GBASE-LW (WAN PHY) | XI-64.1 | 1AB375380013 (non-ETR)<br>1AB375380007 (ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm])<br>XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) HARDENED | 1310 nm |

**Table 18-26 43SCX4(E) Client XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>OTM-0.2 (P1S1-2D2b, IR-2)<br>STM-64/OC-192 (IR-2/S-64.2b)<br>10GBASE-ER (LAN PHY)<br>10GBASE-EW (WAN PHY) | XS-64.2b | 1AB375380003 (non-ETR)<br>1AB375380005 (ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm])<br>XFP S-64.2B/10GBE BASE-E (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm]) HARDENED | 1550 nm |
| Client:<br>10GbE LAN PHY | 10GB-SR | 1AB375380001 (non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM [850nm]) | 850 nm |
| Client:<br>FC-800 | X8FCLC-L | 1AB375380009 | XFP I-64.1/8.5GFC IT (8G FC XFP SM) | 1310 nm |
| Client:<br>FC-800 | X8FCSN-I | 1AB375380011 | 8G FC XFP MM | 850 nm |
| Client:<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2<br>(XS-64.2C) | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM (40km) 10G DDM | 1471 - 1611 |

**Table 18-26 43SCX4(E) Client XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>STM-64/OC-192<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2<br>(XL-64.2C) | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR) | XFP CWDM (70km) 10G DDM | 1471 - 1611 |
| Client:<br>OTM-0.2 (P1L1-2D2)<br>STM-62/OC-192 (P1L1-2D2)<br>10G LAN PHY (10GBASE-ZR)<br>10G WAN PHY (10GBASE-ZW) | 10GB-ZR | 1AB375380004 (non-ETR)<br>1AB375380008 (ETR)<br>(non-ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 nm |

**Table 18-27 43SCGE1 Client CFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 40GBASE-LR4:<br>40G LAN PHY | C43G4C | 1AB402160011 | 4x10 CFP | 4 wavelengths -<br>1271<br>1291<br>1311<br>1331 |

**Table 18-28 112SCA1 and 112SNA1 Client CFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 100GBASE-LR4:<br>100G LAN PHY | C113G4C | 1AB402160012 | CFP 100GBASE LR4 (4x25G) Single Rate 100GE (with HS or faceplate adapter) | 4 wavelengths -<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |

**Table 18-28 112SCA1 and 112SNA1 Client CFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 100 BASE-LR4:<br>OTM-0.4<br>100G LAN PHY | C113G4CD | 1AB402160001 | CFP 100GBASE LR4 (4x25G) Dual Rate 100GE/OTU4 w/HeatSink | 4 wavelengths -<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |
| 100GBASE-LR10:<br>OTM-0.4<br>100G LAN PHY | C113G10C | 1AB402160010 | CFP 100GBASE LR10 (10x10G) Dual Rate 100GE/OTU4 w/HeatSink | 10 wavelengths - see the following note |
| 100GBASE-SR10:<br>100G LAN PHY | C113S10 | 1AB402160017 | CFP 100GBASE-SR10 (10x10G) Single Rate 100GE (with faceplate adapter)<br>Requires the usage of the Z25 cover (bumped covers) in all instances. | 850 nm |
| 100GBASE- LR4:<br>100G LAN PHY | C113G4C | 1AB402160018 | CFP 100GBASE LR4 (4x25G) Single Rate 100GE (GEN2 with faceplate adapter) | 4 wavelengths -<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |

**Note:** The 10x10G CFPs support the following channels with associated center wavelengths

- Ch 1: 1523 nm
- Ch 2: 1531 nm
- Ch 3: 1539 nm
- Ch 4: 1547 nm
- Ch 5: 1555 nm
- Ch 6: 1563 nm
- Ch 7: 1571 nm
- Ch 8: 1579 nm

- Ch 9: 1587 nm
- Ch 10: 1595 nm

**Table 18-29 130SCA1 Client CFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 100GBASE-LR4:<br>100G LAN PHY | C113G4C | 1AB402160012 | CFP 100GBASE LR4 (4x25G) Single Rate 100GE (with HS or faceplate adapter) | 4 wavelengths:<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |
| 100GBASE-LR4:<br>100G LAN PHY | C113G4CD | 1AB402160001 | 4x25 Signals<br>Dual rate CFP with heatsink | 4 wavelengths:<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |
| 100GBASE- LR4:<br>100G LAN PHY | C113G4C | 1AB402160018 | CFP 100GBASE LR4 (4x25G) Single Rate 100GE (GEN2 with faceplate adapter) | 4 wavelengths:<br>1295.56<br>1300.05<br>1304.58<br>1309.14 |
| 100GBASE-SR10:<br>100G LAN PHY | C113S10 | 1AB402160017 | CFP 100GBASE-SR10 (10x10G) Single Rate 100GE (with faceplate adapter)<br>Requires the usage of the Z25 cover (bumped covers) in all instances. | 850 nm |

**Table 18-30 112SCX10, 112SNX10, 130SCX10, and 130SNX10 Client XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| P1I1-2D1:<br>OTM-0.2<br>SR-1/VSR2000-2R1:<br>STM-64/OC-192<br>10GBASE-LR:<br>10G LAN PHY<br>10GBASE-LW:<br>10G WAN PHY | XI-64.1 | 1AB375380013<br>(non-ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) | 1310 nm |
| P1S1-2D2b:<br>OTM-0.2<br>IR-2/S-64.2b:<br>STM-64/OC-192<br>10GBASE-ER:<br>10G LAN PHY<br>10GBASE-EW:<br>10G WAN PHY | XS-64.2b | 1AB375380003<br>(non-ETR) | XFP S-64.2B/10GBE BASE-EX (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-EX] DDM [1550nm]) | 1550 nm |
| 10GbE LAN PHY | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR (B&W 10G-BASE-SR DDM [850nm]) | 850 nm |
| OTM-0.2<br>(P1L1-2D2)<br>STM-64/OC-192<br>(P1L1-2D2)<br>10G LAN PHY<br>(10GBASE-ZR)<br>10G WAN PHY<br>(10GBASE-ZW) | 10GB-ZR | 1AB375380004<br>(non-ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM -5/+70 C*1.55um*DFB*2dBm*) | 1550 nm |
| FC-800 | X8G5M101<br>X8FCLC-L | 1A375380009<br>(ETR, and non-ETR) | XFP I-64.1/8.5GFC IT (8G FC XFP SM) | 1310 nm |

**Table 18-30 112SCX10, 112SNX10, 130SCX10, and 130SNX10 Client XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| FC-800 | X8FCSN-I | 1AB375380011<br>(ETR, and non-ETR) | 8G FC XFP MM | 1310 nm |
| 50GHz 10G XFP | XL-64TU | 1AB375650046 | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 nm<br>(191.7 THz-196.05 THz) |
| 10GbE<br>OTU2<br>OC192/STM64 | XL-64TU | 1AB375650047 | T-XFP Low latency (FEC on/off option) | 1529-1562 nm (191.7 THz-196.05 THz) |
| Client: 10GbE STM64<br>OC192<br>OTU2/OTU2e | XL-64TU | 1AB375650048 | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 |
| 50GHz 10G XFP | XL-64TU | 3AL81776AA | XFP DWDM Tunable CT (50GHz 10G XFP) | 1563.863 - 1529.163 nm<br>(191.7 THz-196.05 THz) |
| 10G-SR-1471 – 10G-SR-1611:<br>STM-64/oc-192<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR) | XFP CWDM (40km) 10G DDM | 1471–1611 |
| STM-64/OC-192<br>FC-800<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XL-64.2C | 1AB378370001<br>thru<br>1AB378370008 | XFP CWDM (70km) 10G DDM | 1471–1611 |

**Table 18-30 112SCX10, 112SNX10, 130SCX10, and 130SNX10 Client XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| STM-64/OC-192<br>FC-800<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XL-64.2C | 1AB378370009<br>thru<br>1AB3783700016 | XFP CWDM (70km) 10G DDM IT | 1471–1611 |
| STM-64/OC-192<br>FC-800<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XS-64.2C | 1AB379240001<br>thru<br>1AB379240008 | XFP CWDM (40km) 10G DDM | 1471–1611 |
| STM-64/OC-192<br>FC-800<br>10G LAN PHY<br>10G WAN PHY<br>OTM-0.2 | XS-64.2C | 1AB379240009<br>thru<br>1AB379240013 | XFP CWDM (40km) 10G DDM IT | 1471–1551 |

**Notes:**

1. 112SCX10 and 112SNX10 do not support DWDM T-XFPs 1AB375650046 and 1AB375650047.

**Table 18-31 130SNQ10 SFP/XFPs**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2<br>(P1I1-2D1)<br>10G LAN PHY<br>(XI-64.1) | XI-64.1 | 1AB375380013<br>(non-ETR) | XFP I-64.1/10GBE BASE-L (B&W Multirate 11G [STM64/OC-192/ OTU2/ 10GBASE-LX] DDM [1310nm]) | 1310 |
| Line:<br>OTM-0.2<br>(P1I1-2D1) | 10G MR XFP<br>(XI-64.1) | 1AB375380007<br>(ETR) | B&W STM-64/OC-192/ OTU2/10GbE (I64.1/SR-1/10GBASE-LX) | 1310 |

**Table 18-31 130SNQ10 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2<br>(P1S1-2D2b)<br>10G LAN PHY<br>(SC-64.2b) | XS-64.2b | 1AB375380003<br>(non-ETR) | XFP<br>S-64.2B/10GBE<br>BASE-EX (B&W<br>Multirate 11G<br>[STM64/OC-192/<br>OTU2/<br>10GBASE-EX]<br>DDM [1550nm]) | 1550 |
| Line:<br>OTM-0.2<br>(P1S1-2D2b) | IR2 MR XFP<br>XS-64.2b | 1AB375380005<br>(ETR) | B&W<br>STM-64-OC-192/<br>OTU2/10GbE<br>(S64.2b/IR-<br>2/10GBASE-EX) | 1550 |
| Line:<br>10GBASE-SR<br>OTM-0.2 | 10GB-SR | 1AB375380001<br>(non-ETR) | XFP 10BASE-SR<br>(B&W<br>10G-BASE-SR)<br>DDM (850nm) | 850 |
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-SH 40km | XS-64.2C | 1AB379240001<br>-thru-<br>1AB379240008<br>(non-ETR)<br>1AB379240009<br>-thru-<br>1AB379240013<br>(ETR) | XFP CWDM<br>(40km) 10G DDM<br>XFP CWDM<br>(40km) 10G DDM<br>IT | 1471 - 1611 |
| Line:<br>10G LAN PHY<br>OTM-0.2<br>CWDM-LH 70km | XL-64.2C | 1AB378370001<br>-thru-<br>1AB378370008<br>(non-ETR)<br>1AB378370009<br>-thru-<br>1AB378370016<br>(ETR) | XFP CWDM<br>(70km) 10G DDM<br>XFP CWDM<br>(70km) 10G DDM<br>IT | 1471 - 1611 |

**Table 18-31 130SNQ10 SFP/XFPs (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Line:<br>OTM-0.2<br>P1L1-2D2<br>10GB-ZR | 10GB-ZR | 1AB375380004 (non-ETR)<br>1AB375380008 (ETR) | XFP P1L1-2D2/10GBASE-Z (OE-TRX XFP P1L1-2D2 CT_XFP*STM-64*B&W*LVDS*SM_-5/+70 C*1.55um*DFB*2dBm*)<br>ALU XFP P1L1-2D2/10GBE BASE-Z -40/+85 | 1550 |
| Line:<br>10GBASE-R/OTM-0.2 DWDM Tunable | XL-64TCW | 1AB394040003 | ALU XFP DWDM Tunable Z-Chirp −5/+70 | 1529-1562 nm<br>1563.863 - 1529.163 |

**Table 18-32 112SDX11 CFPs/QSFPs/SFP+s**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>FC-400<br>(400-SM-LC-L)<br>FC-800<br>(800-SM-LC-L)<br>FC-1600<br>(1600-SM-LC-L) | 16GFCLC-L | 1AB390930009 | SFP+ 4/8/16G FC 10KM SMF -5/+85 | 1310 nm |
| Client:<br>FC-400<br>(400-SM-LC-L)<br>FC-800<br>(800-SM-LC-L)<br>DDR<br>SDR | S8FCLC-L | 1AB390930007 | SFP+ 2/4/8G FC 10KM SMF IB SDR/DDR -5/+85 | 1310 nm |

**Table 18-32 112SDX11 CFPs/QSFPs/SFP+s (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10GLANPHY<br>(10GBASE-SR) | S10GB-SR | 1AB390930004 | SFP+<br>10GBASE-SR/10G FC MMF -5/+85 | 850 nm |
| Client:<br>10GBASE-LR(W) | SXI64.1 | 1AB390930013 | SFP+<br>P1I1-2D1/SR1/10GBASE-LR(W)/10GFC SMF -5/85 | 1310 nm |
| Client:<br>40GBASE-SR4 | Q40GSR4 | 1AB392040001 | QSFP+<br>40GBASE-SR4<br>-5/+70 | |
| Client:<br>40GBASE-LR4 | Q40GLR4 | 1AB392040002 | QSFP+<br>40GBASE-LR4/C4S1-2D1 (OTU3) -5/+70 | |
| Line:<br>OTL4.4 | C113G4T | 1AB402160016 | CFP 4x28G Tunable DWDM ODB (with flat top) | |
| Line<br>OTL4.4 | C113G4Cd<br>Line OTU4 is supported on 112SDX11 L1 with C113G4Cd. | 1AB402160022 | 100G BASE LR4 (4x25G) Dual Rate 100GE/OTU4 (GEN2 with flat top) | |

**Table 18-33 260SCX2 CFP2**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>100GBASE-LR4 | C2CLR4e | 1AB426470001 | CFP2<br>100GBASE-LR4 (4x25G) Single Rate 100GE (with flat top) | 1295.56 nm<br>1300.05 nm<br>1304.58 nm<br>1309.14 nm |
| 100GBASE-SR10 | C2CLR4d | 3AL82021AA | CFP2<br>100GBASE-SR10 (10x10G) Dual Rate 100GE/OTU4 | 840-860 nm |

**Table 18-33 260SCX2 CFP2 (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| 100GBASE-ER4 | C2CER4e | 3AL82022AA | CFP2 100G BASE-ER4 (4X25G) Single Rate 100GE | 1295.56 nm<br>1300.05 nm<br>1304.58 nm<br>1309.14 nm |
| Client:<br>100GBASE-LR4, OTM-0.4, 100G LAN PHY | C2CLR4d | 3AL81820AA | CFP2 LR4 (4X25G) Dual Rate 100GE/OTU4 | 1295.56 nm<br>1300.05 nm<br>1304.58 nm<br>1309.14 nm |
| Client:<br>100GBASE-SR10 | C2CSR10e | 1AB426470002 | CFP2 100GBASE-SR10 (10x10G) Single Rate 100GE (with flat top) | 840-860 nm |

**Table 18-34 20P200 SFP+s**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10GBASE-SR | S10GB-SR | 1AB390930004 | SFP+ 10GBASE-SR/10G FC MMF -5/+85 | 850 nm |
| Client:<br>10GBASE-LR | S10GB-LR | 1AB390930002 | SFP+ 10GBASE-LR –LW_1200-SM-LL-L (10km, Single-Mode, 1310nm) (-5/+85) | 1310 nm |
| Client:<br>10GBASE-LR/OTM-0.2 (P1I1-2D1) | SXI64.1 | 1AB390930013 | SFP+ P1I1-2D1/SR1/10GBASE-LR(W) /10GFC SMF -5/85 | 1310 nm |
| Client:<br>10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b) | SXS64.2b | 1AB390930014 | 10GBASE-ER(W) - OTM-0.2/e/f (P1S1-2D2b), SMF 1550nm 40km (-5/+85) | 1550 nm |

**Table 18-34 20P200 SFP+s (continued)**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>10GBASE-CWDM-OTM-0.2/e/f SH | SXS64.2C | 3AL82018AA<br>-thru-<br>3AL82018AH | SFP+ 10GBASE-CWDM- OTM-0.2/e/f SH (-5/+85) | 1471 - 1561 nm |

**Table 18-35 D5X500 CFP4**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| Client:<br>CFP4 | C4CLR4d | 3AL82023AA | CFP4 100GBASE-LR4/ OTU4 (4x25G) Dual Rate 100GE/OTU4 (-5/+75) | 1295.56 nm<br>1300.05 nm<br>1304.58 nm<br>1309.14 nm |
| CFP4 | C4CLR4e | 3AL82020AA | CFP4 100GBASE-LR4 (4x25G) Single Rate 100GE (-5/+75) | 1295.56 nm<br>1300.05 nm<br>1304.58 nm<br>1309.14 nm |

**Table 18-36 IROADMF/IROADMV SFPs**

| Interface | Acronym | APN | Description | Wave-length |
|---|---|---|---|---|
| Client: | SS-16.2O | 1AB373110001 | SFP CWDM PIN w/ DDM CH51 (40KM) OSC | 1510 nm |
| Client: | SL-16.2O | 1AB373120001 | SFP CWDM APD w/ DDM CH51 (70KM) OSC | 1510 nm |
| Client: | SUL-1.2O | 1AB373120002<br>See [1] | SFP CWDM APD ULH w/ DDM CH51 (150KM) OSC | 1510 nm |

**Notes:**

1. 1AB373120002 is supported only on IROADMV.

### PTM optics for PTPCTL card

The following table provides the PTM optics supported on PTPCTL card.

**Table 18-37 PTM optics supported on PTPCTL card**

| Interface | Acronym | APN | Description | Wavelength |
|---|---|---|---|---|
| P1-P6<br>FE | 100BLX10<br>See [1] | 1AB382180001 | SFP<br>100BASE-LX10 | 1310 nm |
| P1-P6<br>GE | 1000B-SX | 1AB376720001 | SFP GBE SX<br>-40/+85 (B&W<br>1GbE DDM 850nm<br>(1000BASE-SX)) | 850 nm |
| P1-P6<br>GE | 1000B-LX | 1AB376720002 | SFP GBE LX<br>-40/+85 (B&W<br>1GbE DDM<br>1310nm<br>(1000BASE-LX)) | 1310 nm |
| P1-P6<br>GE | 1000B-ZX | 1AB376720003 | SFP GBE ZX<br>-40/+85 (B&W<br>1GbE DDM<br>1550nm<br>(1000BASE-ZX) | 1550 nm |
| P1-P6<br>GE | SS-16.1A | 1AB376370005 | SFP S-16.1 ANY<br>RATE -40/+85<br>(B&W<br>STM-16/OC-48<br>Multirate (< 2.7G)<br>DDM 1310nm<br>(S-16.1/IR-1)) | 1310 nm |

**Notes:**

1. For ports connected to the PTPIO card, the 100BASE-LX10 SFP will be used.

# OT compatibility

## Overview

An end-to-end service on 1830 PSS nodes must have OTs on the end points with the same types of ports. Both ends must have either tunable transceiver modules, fixed channel SFP/XFPs, tunable XFPs, or CFPs.

The following tables specify compatible originating and terminating OTs for an end-to-end service.

## Ethernet OTs

**Table 18-38 L2 cards interworking**

| L2 Interworking | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Card** | **11STGE12** | **11DPE12** | **11DPE12E** | **11DPE12A** | **11QPE24** | **11QCE12X** | **11OPE8** |
| 11STGE12 | Yes | Yes | No | No | No | No | No |
| 11DPE12 | Yes | Yes | Yes | Yes<br>See [1] | No | No | No |
| 11DPE12E | No | Yes | Yes | Yes<br>See [1] | No | No | No |
| 11DPE12A | No | Yes<br>See [1] | Yes<br>See [1] | Yes | No | No | No |
| 11QPE24 | No | No | No | No | Yes | Yes | Yes |
| 11QCE12X | No | No | No | No | Yes | Yes | Yes |
| 11OPE8 | No | No | No | No | Yes | Yes | Yes |

**Notes:**

1. 11DPE12A is not compatible with 11DPE12/11DPE12E, if the following features are provisioned: IEEE 1588v2, Y.1731, LAG.

**Table 18-39 L2 Cards shelf support**

| Shelf Support, Max Number cards per shelf | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Card** | **PSS-4** | **PSS-8** | **PSS-16** | **PSS-16II** | **PSS-32** | **PSS-36** | **PSS-64** |
| 11STGE12 | - | - | 8 | - | 16 | 0 | 0 |
| 11DPE12 | 2 | - | 8<br>See [2] | - | 16 | | |
| 11DPE12E | 2 | - | 8<br>See [2] | - | 16 | | |
| 11DPE12A | 2 | - | 8<br>See [2] | - | 16 | | |
| 11DPM12 | 2 | 4 | 8 | - | 16 | | |
| 11QPA4 | 2 | 4 | 8 | 8 | 16 | | |
| 11QPEN4 | 2 | 4 | 8 | 8 | 16 | | |
| 11QPE24 | 1 | - | 2 | - | 4 | | |
| 11QCE12X | 2 | 4 | 3<br>See [2]<br>See [3] | 8 | 4<br>See [3]<br>See [4] | | |
| 11OPE8 | 1<br>See [1] | 4 | 3<br>See [2]<br>See [3] | 8 | 4<br>See [3]<br>See [4] | | |

**Notes:**

1. Only one per PSS-4 shelf due to shelf power consumption limitation
2. Without protection since no mate interface in backplane of PSS-16
3. Requires 16G EC, not supported in 4G EC load
4. More than four supported but only with smaller DB configuration

## AnyRate OTs

**Table 18-40 11DPM12**

| Client type | 112SCX10<br>112SNX10<br>130SCX10<br>130SNX10 | 11DPM12 | 11QPA4 | 11QPEN4 | 4DPA4<br>PSS1MD4 | 43SCX4<br>43SCX4E |
|---|---|---|---|---|---|---|
| 1GbE | OTU2 | 1GbE | OTU2 | OTU2 | No | OTU2 |
| 3GSDI | OTU2 | 3GSDI | OTU2 | OTU2 | No | OTU2 |
| FC100 | OTU2 | FC100 | OTU2 | OTU2 | No | OTU2 |
| FC200 | OTU2 | FC200 | OTU2 | OTU2 | No | OTU2 |
| FC400 | OTU2 | FC400 | OTU2 | OTU2 | No | OTU2 |
| FE | OTU2 | FE | OTU2 | OTU2 | No | OTU2 |
| HDSDI | OTU2 | HDSDI | OTU2 | OTU2 | No | OTU2 |
| OC3/STM1 | OTU2 | OC3/STM1 | OTU2 | OTU2 | No | OTU2 |
| OC12/STM4 | OTU2 | OC12/STM4 | OTU2 | OTU2 | No | OTU2 |
| OC48/STM16 | OTU2 | OC48/STM16 | OTU2 | OTU2 | No | OTU2 |
| OTU1 | OTU2 | OTU1 | OTU2 | OTU2 | All clients (FlexMux) | OTU2 |
| SDSDI | OTU2 | SDSDI | OTU2 | OTU2 | No | OTU2 |

**Table 18-41 11STMM10, 4DPA2, 4DPA4**

| OT | Client type | 11DPM12 | 11STAR1<br>11STAR1A | 11STMM10 | 4DPA2 | 4DPA4/<br>PSS1MD4 |
|---|---|---|---|---|---|---|
| 11STMM10 | 1GbE | No | OTU2 | 1GbE | No | No |
| | CBR2G5 | No | OTU2 | CBR2G5 | No | No |
| | FC100 | No | OTU2 | FC100 | No | No |
| | FC200 | No | OTU2 | FC200 | No | No |
| | FC400 | No | OTU2 | FC400 | No | No |
| | OC3/STM1 | No | OTU2 | OC3/STM1 | No | No |
| | OC12/STM4 | No | OTU2 | OC12/STM4 | No | No |
| | OC48/STM16 | No | OTU2 | OC48/STM16 | No | No |
| | OTU1 | No | OTU2 | OTU1 | No | All clients (FlexMux) |

**Table 18-41 11STMM10, 4DPA2, 4DPA4 (continued)**

| OT | Client type | 11DPM12 | 11STAR1 11STAR1A | 11STMM10 | 4DPA2 | 4DPA4/ PSS1MD4 |
|---|---|---|---|---|---|---|
| 4DPA2 | 1GbE | No | No | No | 1GbE | No |
| | OC48/STM16 | No | No | No | OC48/STM16 | No |
| 4DPA4/ PSS1MD4 | 1GbE | OTU1 | No | OTU1 | No | 1GbE |
| | DVBASI | OTU1 | No | OTU1 | No | DVBASI |
| | FC100 | OTU1 | No | OTU1 | No | FC100 |
| | FC200 | OTU1 | No | OTU1 | No | FC200 |
| | FC400 | No | No | No | No | FC400 |
| | FE | OTU1 | No | OTU1 | No | FE |
| | HDSDI | OTU1 | No | OTU1 | No | HDSDI |
| | OC3/STM1 | OTU1 | No | OTU1 | No | OC3/STM1 |
| | OC12/STM4 | OTU1 | No | OTU1 | No | OC12/STM4 |
| | OC48/STM16 | OTU1 | No | OTU1 | No | OC48/STM16 |
| | SDSDI | OTU1 | No | OTU1 | No | SDSDI |

## 10G OTs

**Table 18-42 10G OTs compatibility**

| OT | Client Type | 11QPA4 | 11QPEN4 | 11STAR1 | 11STAR1A | 12P120 |
|---|---|---|---|---|---|---|
| 11QPA4 | 10GbE | 10GbE | x | 10GbE | x | 10GbE |
| | DDR | DDR | x | x | x | x |
| | FC800 | FC800 | x | x | x | x |
| | FC1200 | FC1200 | x | FC1200 | x | x |
| | OC192/ STM64 | OC192/ STM64 | x | OC192/ STM64 | x | x |
| | OTU2 | OTU2 | x | OTU2 | x | OTU2 OTU2e |

**Table 18-42 10G OTs compatibility (continued)**

| OT | Client Type | 11QPA4 | 11QPEN4 | 11STAR1 | 11STAR1A | 12P120 |
|---|---|---|---|---|---|---|
| 11QPEN4 | 10GbE | x | 10GbE | x | x | x |
| | DDR | x | DDR | x | x | x |
| | FC800 | x | FC800 | x | x | x |
| | FC1200 | x | FC1200 | x | x | x |
| | OTU2 | x | OTU2 | x | x | x |
| 11STAR1 | 10GbE | 10GbE | x | 10GbE | 10GbE | x |
| | FC1200 | FC1200 | x | FC1200 | FC1200 | x |
| | OC192/ STM64 | OC192/ STM64 | x | OC192/ STM64 | OC192/ STM64 | x |
| | OTU2 | OTU2 | x | OTU2 | OTU2 | x |
| 11STAR1A | 10GbE | x | x | 10GbE | 10GbE | x |
| | FC800 | x | x | x | FC800 | x |
| | FC1200 | x | x | FC1200 | FC1200 | x |
| | OC192/ STM64 | x | x | OC192/ STM64 | OC192/ STM64 | x |
| | OTU2 | x | x | OTU2 | OTU2 | x |
| 12P120 | 10GbE | 10GbE | x | x | x | 10GbE |
| | x | x | x | x | x | x |
| | OTU2 | OTU2 | x | x | x | OTU2 |
| | OTU2e | OTU2 | x | x | x | OTU2e |

**Table 18-43 11QPA4**

| Client type | 112SNX10 130SCX10 130SNX10 | 11DPM12 | 11DPE12 11DPE12A 11DPE12E | 11QPA4 | 11QPE24 | 11QPEN4 | PSS1GBE |
|---|---|---|---|---|---|---|---|
| 10GbE | No | No | No | 10 GbE OTU2 | No | No | No |
| DDR | No | No | No | DDR OTU2 | No | No | No |
| FC800 | No | No | No | FC800 OTU2 | No | No | No |

**Table 18-43 11QPA4 (continued)**

| Client type | 112SNX10<br>130SCX10<br>130SNX10 | 11DPM12 | 11DPE12<br>11DPE12A<br>11DPE12E | 11QPA4 | 11QPE24 | 11QPEN4 | PSS1GBE |
|---|---|---|---|---|---|---|---|
| FC1200 | No | No | No | FC1200<br>OTU2 | No | No | No |
| OC192/<br>STM64 | No | No | No | OC192/<br>STM64<br>OTU2 | No | No | No |
| OTU2 | No | All Clients | All Clients | OTU2<br>All clients | All Clients | All Clients | 1GbE |

**Table 18-44 11QPE24, 11QCE12X, and 11OPE8**

| Client type | 112SNX10<br>130SCX10<br>130SNX10 | 11DPM12 | 11DPE12<br>11DPE12A<br>11DPE12E | 11QPA4 | 11QPE24 | 11QPEN4 | PSS1GBE |
|---|---|---|---|---|---|---|---|
| 10GbE | No | No | No | 10 GbE<br>OTU2 | No | No | No |
| OTU2 | No | All Clients | All Clients | OTU2<br>All clients | All Clients | All Clients | 1GbE |

**Table 18-45 11QPEN4**

| Client type | 112SNX10<br>130SCX10<br>130SNX10 | 11DPM12 | 11DPE12<br>11DPE12A<br>11DPE12E | 11QPA4 | 11QPE24 | 11QPEN4 | PSS1GBE |
|---|---|---|---|---|---|---|---|
| 10GbE | OTU2 | No | No | OTU2 | No | 10GbE | No |
| FC800 | OTU2 | No | No | OTU2 | No | FC800 | No |
| FC1200 | OTU2 | No | No | OTU2 | No | FC1200 | No |
| OTU2 | OTU2 | All Clients | All Clients | OTU2 | No | OTU2 | 1GbE |

**Table 18-46 11STAR1, 11STAR1A**

| OT | Client type | 11STAR1 | 11STAR1A | 11STGE12 | 11STMM10 | PSS1GBE |
|---|---|---|---|---|---|---|
| 11STAR1 | 10GbE | 10GbE<br>OTU2 | 10GbE<br>OTU2 | No | No | No |
| | FC1200 | FC1200<br>OTU2 | FC1200<br>OTU2 | No | No | No |
| | OC192/<br>STM64 | OC192/<br>STM64<br>OTU2 | OC192/<br>STM64<br>OTU2 | No | No | No |
| | OTU2 | OTU2<br>All clients | OTU2<br>All Clients | 1GbE | All Clients | 1GbE |
| 11STAR1A | 10GbE | 10GbE<br>OTU2 | 10GbE<br>OTU2 | No | No | No |
| | FC800 | OTU2 | FC800<br>OTU2 | No | No | No |
| | FC1200 | FC1200<br>OTU2 | FC1200<br>OTU2 | No | No | No |
| | OC192/<br>STM64 | OC192/<br>STM64<br>OTU2 | OC192/<br>STM64<br>OTU2 | No | No | No |
| | OTU2 | OTU2<br>All clients | OTU2<br>All Clients | 1GbE | All Clients | 1GbE |

### 40G OTs

**Table 18-47 43SCA1, 43SCGE1, 43STA1P**

| OT | Client type | 43SCA1 | 43SCGE1 | 43STA1P |
|---|---|---|---|---|
| 43SCA1 | OC768/STM256 | OC768/STM256<br>OTU3 | No | No |
| | OTU3 | OC768/STM256<br>OTU3 | No | No |
| 43SCGE1 | 40GbE | No | 40GbE | No |

**Table 18-47 43SCA1, 43SCGE1, 43STA1P (continued)**

| OT | Client type | 43SCA1 | 43SCGE1 | 43STA1P |
|---|---|---|---|---|
| 43STA1P | OC768/STM256 | No | No | OC768/STM256 |
| | OTU3 | No | No | OC768/STM256<br>OTU3 |

**Table 18-48 43SCX4/43SCX4E, 43STX4, 43STX4P**

| OT | Client type | 11DPM12 | 43SCX4/<br>43SCX4E | 43STX4 | 43STX4P |
|---|---|---|---|---|---|
| 43SCX4/<br>43SCX4E | 10GbE | No | 10GbE<br>OTU2 | No | No |
| | FC800 | No | FC1200<br>OTU2 | No | No |
| | OC192/<br>STM64 | No | OC192/<br>STM64<br>OTU2 | No | No |
| | OTU2 | All Clients | OTU2<br>All Clients | No | No |
| 43STX4 | 10GbE | No | No | 10GbE<br>OTU2 | No |
| | OC192/<br>STM64 | No | No | OC192/<br>STM64<br>OTU2 | No |
| | OTU2 | No | No | OTU2<br>All Clients | No |
| 43STX4P | 10GbE | No | No | No | 10GbE<br>OTU2 |
| | OC192/<br>STM64 | No | No | No | OC192/<br>STM64<br>OTU2 |
| | OTU2 | All Clients | No | No | OTU2<br>All Clients |

### 100G OTs

The entries is the following table describe, which client settings (in column 2) when provisioned on the OT (column 1) can be terminated on the OT (column 3).

**Table 18-49 112SDX11**

| OT | Client type | 112SDX11 |
|---|---|---|
| 112SDX11 | 10GbE | 10GbE |
| | 40GbE | 40GbE |
| | CBR10G3 | CBR10G3 |
| | DDR | DDR |
| | FC400 | FC400 |
| | FC800 | FC800 |
| | FC1600 | FC1600 |
| | OTU1F | OTU1F |
| | OTU2 | OTU2 |
| | OTU2E | OTU2E |

The client settings (in column 2) when provisioned on the OT (column 1) can be terminated on the OT (in columns 3 to 5). For 11DPM12, all of its client ports are mapped into OTU2, and OTU2 is transported through the 112SCX10/112SNX10.

## Table 18-50 All other 100G OTs - Part 1

| OT | Client Type | 112SCA1 | 112SNA1 | 130SCA1 | 260SCX2 |
|---|---|---|---|---|---|
| 112SCA1 | 100GbE | 100GbE | 100GbE | 100GbE | 100GbE |
| | OTU4 | OTU4 | OTU4 | x | x |
| 112SNA1 | 100GbE | 100GbE | 100GbE | 100GbE | 100GbE |
| | OTU4 | OTU4 | OTU4 | x | x |
| 130SCA1 | 100GbE | 100GbE | 100GbE | 100GbE | 100GbE |
| | OTU4 | OTU4 | OTU4 | x | x |
| 260SCX2 | 100GbE | 100GbE | 100GbE | 100GbE | 100GbE |
| | OTU4 | OTU4 | OTU4 | x | OTU4 |
| 112SCX10 | 10GbE | x | x | x | x |
| | FC800 | x | x | x | x |
| | OC192/ STM64 | x | x | x | x |
| | OTU2 | x | x | x | x |
| 112SNX10 | 10GbE | x | x | x | x |
| | FC800 | x | x | x | x |
| | OC192/ STM64 | x | x | x | x |
| | OTU2 | x | x | x | x |
| 130SCX10 | 10GbE | x | x | x | x |
| | FC800 | x | x | x | x |
| | OC192/ STM64 | x | x | x | x |
| | OTU2 | x | x | x | x |
| 130SNQ10 | 10GbE | x | x | x | x |
| | OC192/ STM64 | x | x | x | x |

**Table 18-50 All other 100G OTs - Part 1 (continued)**

| OT | Client Type | 112SCA1 | 112SNA1 | 130SCA1 | 260SCX2 |
|---|---|---|---|---|---|
| 130SNX10 | 10GbE | x | x | x | x |
| | FC800 | x | x | x | x |
| | OC192/ STM64 | x | x | x | x |
| | OTU2 | x | x | x | x |
| 112SDX11 | 10GbE | x | x | x | x |
| | 40GbE | x | x | x | x |
| | CBR10G3 | x | x | x | x |
| | DDR | x | x | x | x |
| | FC400 | x | x | x | x |
| | FC800 | x | x | x | x |
| | FC1200 | x | x | x | x |
| | FC1600 | x | x | x | x |
| | OTU1f | x | x | x | x |
| | OTU2 | x | x | x | x |
| | OTU2e | x | x | x | x |

**Table 18-51 All other 100G OTs - Part 2**

| OT | Client Type | 112SCX10 | 112SNX10 | 130SCX10 | 130SNQ10 | 130SNX10 | 112SDX11 |
|---|---|---|---|---|---|---|---|
| 112SCA1 | 100GbE | x | x | x | x | x | x |
| | OTU4 | x | x | x | x | x | x |
| 112SNA1 | 100GbE | x | x | x | x | x | x |
| | OTU4 | x | x | x | x | x | x |
| 130SCA1 | 100GbE | x | x | x | x | x | x |
| | OTU4 | x | x | x | x | x | x |

## Table 18-51 All other 100G OTs - Part 2 (continued)

| OT | Client Type | 112SCX10 | 112SNX10 | 130SCX10 | 130SNQ10 | 130SNX10 | 112SDX11 |
|---|---|---|---|---|---|---|---|
| 260SCX2 | 100GbE | x | x | x | x | x | x |
| | OTU4 | x | x | x | x | x | x |
| 112SCX10 | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | x |
| | FC800 | FC800 | FC800 | FC800 | x | FC800 | x |
| | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | x |
| | OTU2 | OTU2 | OTU2 | OTU2 | x | OTU2 | x |
| 112SNX10 | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | x |
| | FC800 | FC800 | FC800 | FC800 | x | FC800 | x |
| | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | x |
| | OTU2 | OTU2 | OTU2 | OTU2 | x | OTU2 | x |
| 130SCX10 | 10GbE | 10GbE | 10GbE | 10GbE | x | 10GbE | x |
| | FC800 | FC800 | FC800 | FC800 | x | FC800 | x |
| | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | x | OC192/ STM64 | x |
| | OTU2 | OTU2 | OTU2 | OTU2 | x | OTU2 | x |
| 130SNQ10 | 10GbE | 10GbE | 10GbE | x | 10GbE | 10GbE | x |
| | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | x | OC192/ STM64 | OC192/ STM64 | x |
| 130SNX10 | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | 10GbE | x |
| | FC800 | FC800 | FC800 | FC800 | x | FC800 | x |
| | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | OC192/ STM64 | x |
| | OTU2 | OTU2 | OTU2 | OTU2 | x | OTU2 | x |

**Table 18-51 All other 100G OTs - Part 2 (continued)**

| OT | Client Type | 112SCX10 | 112SNX10 | 130SCX10 | 130SNQ10 | 130SNX10 | 112SDX11 |
|---|---|---|---|---|---|---|---|
| 112SDX11 | 10GbE | x | x | x | x | x | 10GbE |
| | 40GbE | x | x | x | x | x | 40GbE |
| | CBR10G3 | x | x | x | x | x | CBR10G3 |
| | DDR | x | x | x | x | x | DDR |
| | FC400 | x | x | x | x | x | FC400 |
| | FC800 | x | x | x | x | x | FC800 |
| | FC1200 | x | x | x | x | x | FC1200 |
| | FC1600 | x | x | x | x | x | FC1600 |
| | OTU1f | x | x | x | x | x | OTU1f |
| | OTU2 | x | x | x | x | x | OTU2 |
| | OTU2e | x | x | x | x | x | OTU2e |

The client settings (in column 2) when provisioned on the OT (column 1) can be terminated on the OT (in columns 3 to 10). For 11DPM12, all of its client ports are mapped into OTU2, and OTU2 is transported through the 112SCX10/112SNX10.

**Table 18-52 Cascaded OT support**

| Client OT | Client Type | Line OT | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 112SCX10 | 112SNX10 | 130SCX10 | 130SNX10 | 112SCA1 | 112SNA1 | 130SCA1 | 260SCX2 |
| 11DPM12 | All | OTU2 | OTU2 | OTU2 | OTU2 | | | | |
| 11QPEN4 | 10GE | OTU2 | OTU2 | OTU2 | OTU2 | | | | |
| | FC800 | | | | | | | | |
| | OTU2 | | | | | | | | |
| 112SDX11 | All | No | No | No | No | No | No | No | OTU4 |
| 11OPE8 | 10GE | OTU2 | OTU2 | OTU2 | OTU2 | | | | |
| 11QPE24 | 1GE | OTU2 | OTU2 | OTU2 | OTU2 | | | | |

**Table 18-52 Cascaded OT support (continued)**

| Client OT | Client Type | Line OT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 112SCX10 | 112SNX10 | 130SCX10 | 130SNX10 | 112SCA1 | 112SNA1 | 130SCA1 | 260SCX2 |
| 11QCE12X | 1GE | OTU2 | OTU2 | OTU2 | OTU2 | | | | |

# Alcatel-Lucent 1830 PSS-8 subrack

## Introduction

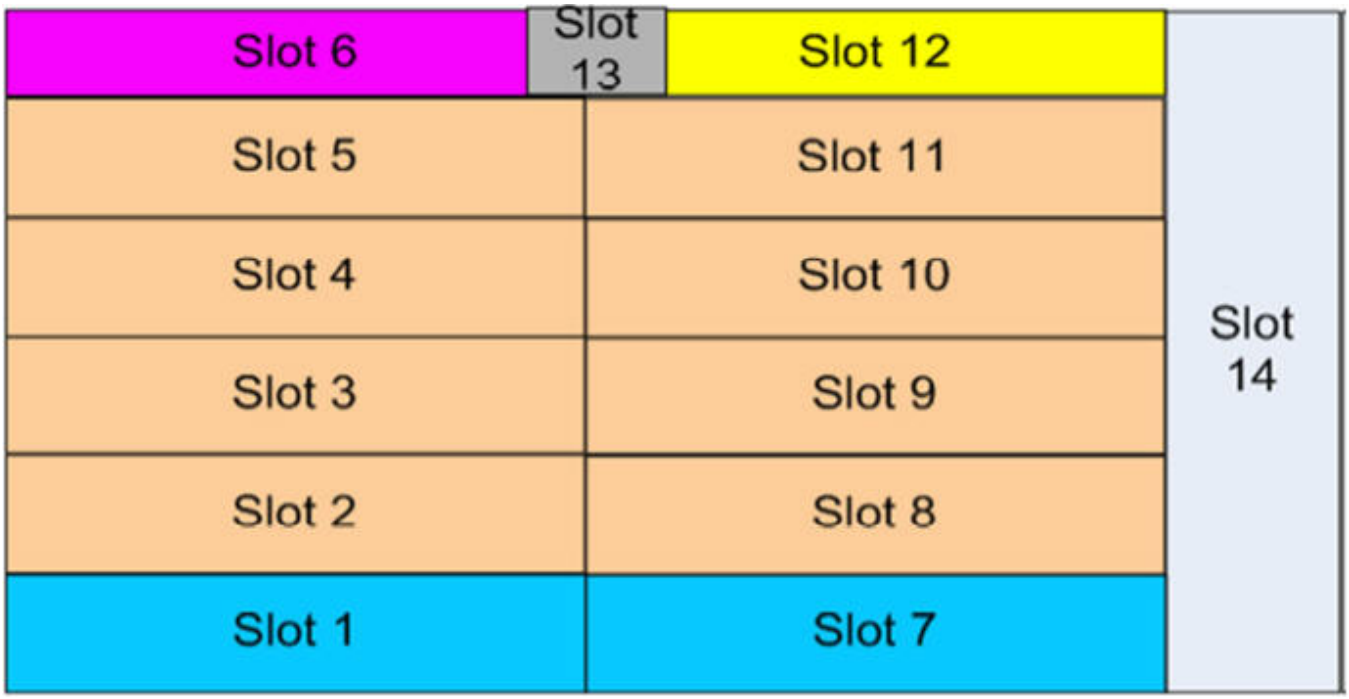
The Alcatel-Lucent 1830 PSS-8 shelf has an overall depth, including cabling, fibers, and optional shelf cover of 325 mm (12.79 in.). It is 3 RU high. An extended cover kit is available that increases the overall depth of the 1830 PSS-8 shelf from 259 mm to 325 mm. This cover creates more space when needed, to allow the use of LBOs on the face plates of the circuit packs. The backplane provides for control, management, power, and transponder-transponder communication in support of O-SNCP.

All application card slots on the Alcatel-Lucent 1830 PSS-8 support provide two card interfaces per slot, allowing them to accept two half height cards in each slot, when that slot is also equipped with a half-slot adapter (HSLAD). Alcatel-Lucent 1830 PSS-8 can support up to four full-height (slots 2-5) or up to eight half-height universal I/O cards (slots 2-5, 8-11). The top of the shelf houses two Integrated Shelf controllers (EC - slots 6 and 12) and a Shelf panel (slot 13). Slot 12 can also be used for User panel card when the protection EC is not installed in the master shelf.

The Alcatel-Lucent 1830 PSS-8 subrack is partitioned into the following slot types:

- 8 paired half height application cards, or 4 full height application cards
- 2 equipment controllers (EC)
- 2 redundant power input filters
- 1 Shelf panel
- 1 fan unit and dust filter

**Figure 18-1 Alcatel-Lucent 1830 PSS-8 subrack slot layout**




### Rack mounting options

The following rack types are supported:

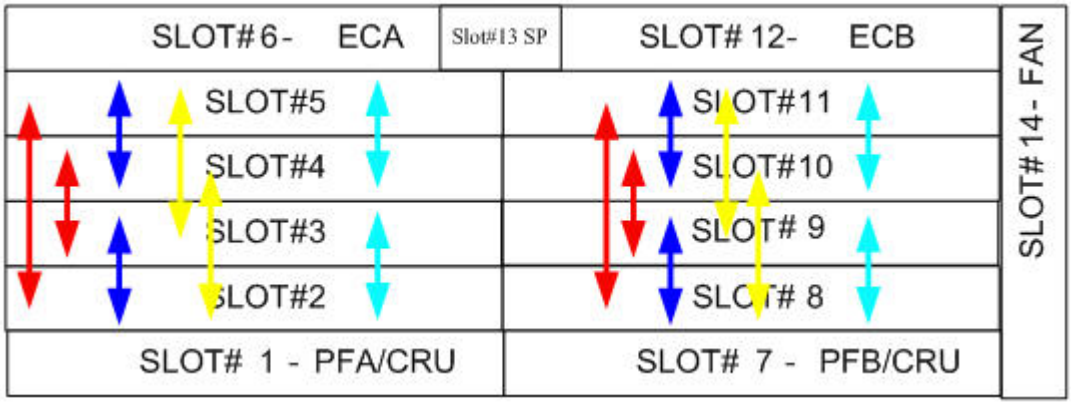
- 19-inch EIA rack
- ETSI rack
- 23-inch ANSI rack

### Backplane

The PSS-8 backplane delivers 100Gb/s of transmission bandwidth from each I/O slot to the correlative slots in the shelf. Controllers on the EC cards are connected to the I/O slots by 100Mb/s Ethernet links configured in a redundant star network. Various serial buses complete the control plane to handle the infrastructure functions.

The PSS-8 backplane is compatible with the current PSS32/16 and hence all cards on PSS32/16 shelf can be supported on PSS-8/16II).

**Figure 18-2 PSS-8 backplane high-speed connection**




Each vertical half slot connectivity has a bi-directional 12xlanes@15.6Gbps and it has 4 full /8 half-height service slots. All existing PSS32/16 backplane service slots connections are kept in PSS-8/16II) design except HWC and ISPB bus.

The SPI bus provides access to particular devices on peripheral cards to enable basic operations such as power on/off, alarm read back and generic I/O. Each EC function has one SPI bus to the peripheral devices.

The I2C-FAN bus connects each of the shelf control functions to the FAN tray. The I2C-Shelf Panel bus connects each of the shelf control functions to the Shelf Panel card.

# Alcatel-Lucent 1830 PSS-16 subrack

## Introduction

The Alcatel-Lucent 1830 PSS-16 subrack has an overall depth of 280mm (11.02 in.). It is 8 RU (355.6 mm [14 in.]) high and 439 mm (17/28 in.) wide. All fibering and maintenance can be performed at the front of the chassis, allowing back-to-back installation in ETSI 300mm cabinets.

The shelf supports redundant control, redundant power, 16 universal slots, and all office interfaces (management, maintenance, synchronization, and alarm) required for an end-office application. The 16 universal slots are arranged in two rows of 8, on either side of each other. There are 21 total slots, including slots for Equipment Controllers, Power Filters, and fans.

The Alcatel-Lucent 1830 PSS-16 subrack is partitioned into the following slot types:

- 16 paired half height application cards, or 8 full height application cards
- 2 equipment controllers (EC)
- 2 redundant power input filters
- 1 user panel (occupies one of the paired application card slots)
- 1 fan unit

## Rack mounting options

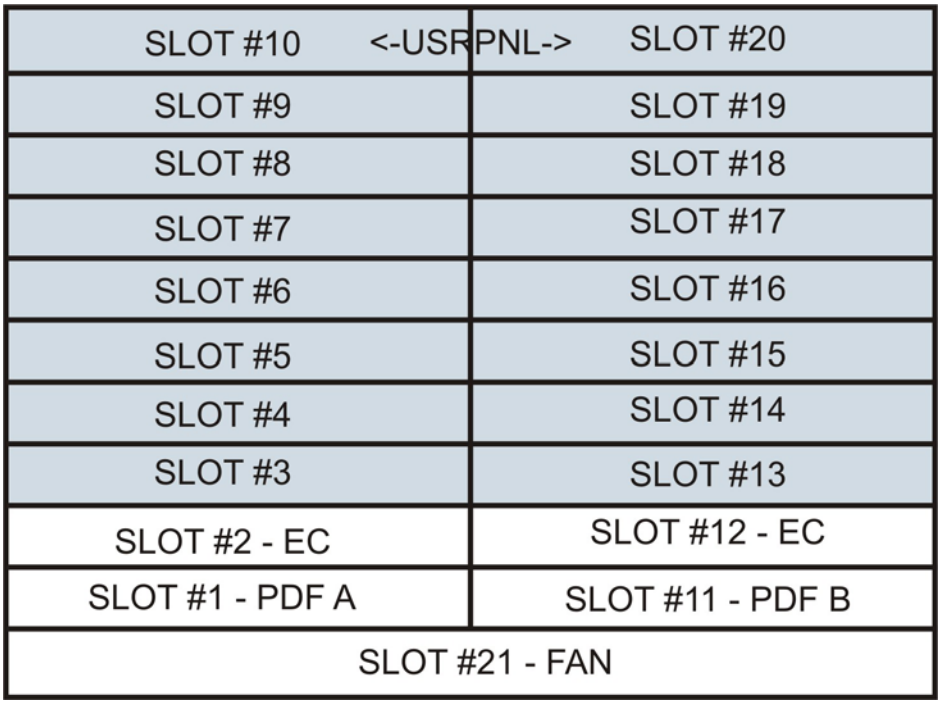
The following rack types are supported:

- 300-mm ETSI One Rack (ETSI market): 2200 mm (7.2 ft) × 600 mm (23.6 in) × 300 mm (11.8 in) (H × W × D)
- 7-feet Seismic Network Bay frame rack (ANSI market): 2133.6 mm (7 ft) × 584.2 mm (23 in) × 304.8 mm (12 in) (H × W × D)
- 19-inch ADC rack: 2133.6 mm (7 ft) × 490.2 mm (19 in) × 304.8 mm (12 in) (H × W × D)

## Slot numbering

The layout of the Alcatel-Lucent 1830 PSS-16 subrack and physical slot numbering are shown in the following figure

**Figure 18-3 Alcatel-Lucent 1830 PSS-16 Subrack slot layout**



# Alcatel-Lucent 1830 PSS-16II subrack

## Introduction

The Alcatel-Lucent 1830 PSS-16II subrack has an overall depth of 325 mm (12.79 in.). It is 8 RU (354.8 mm [13.96 in.]) high and 439 mm (17.32 in.) wide. The 1830 PSS-16II has 22 slots. It can support up to 8 full-height or up to 16 half-height universal I/O cards. The shelf has two slots (1 and 11) dedicated for Power Filter modules, and two slots (2 and 12) dedicated for Integrated Shelf Controllers (EC). There are sixteen half-slots (3-10, 13-20) capable of supporting universal I/O cards. Two half-slots (left and right) can be combined into a single full-height slot by removing the removable divider that separates the left slot from the right slot. Slot 21 is for FAN and Slot 22 is for User panel.

The Alcatel-Lucent 1830 PSS-16II subrack is partitioned into the following slot types:

- 16 paired half height application cards, or 8 full height application cards
- 2 equipment controllers (EC)
- 2 redundant power input filters
- 1 user panel
- 1 fan unit with dust filter

## Rack mounting options

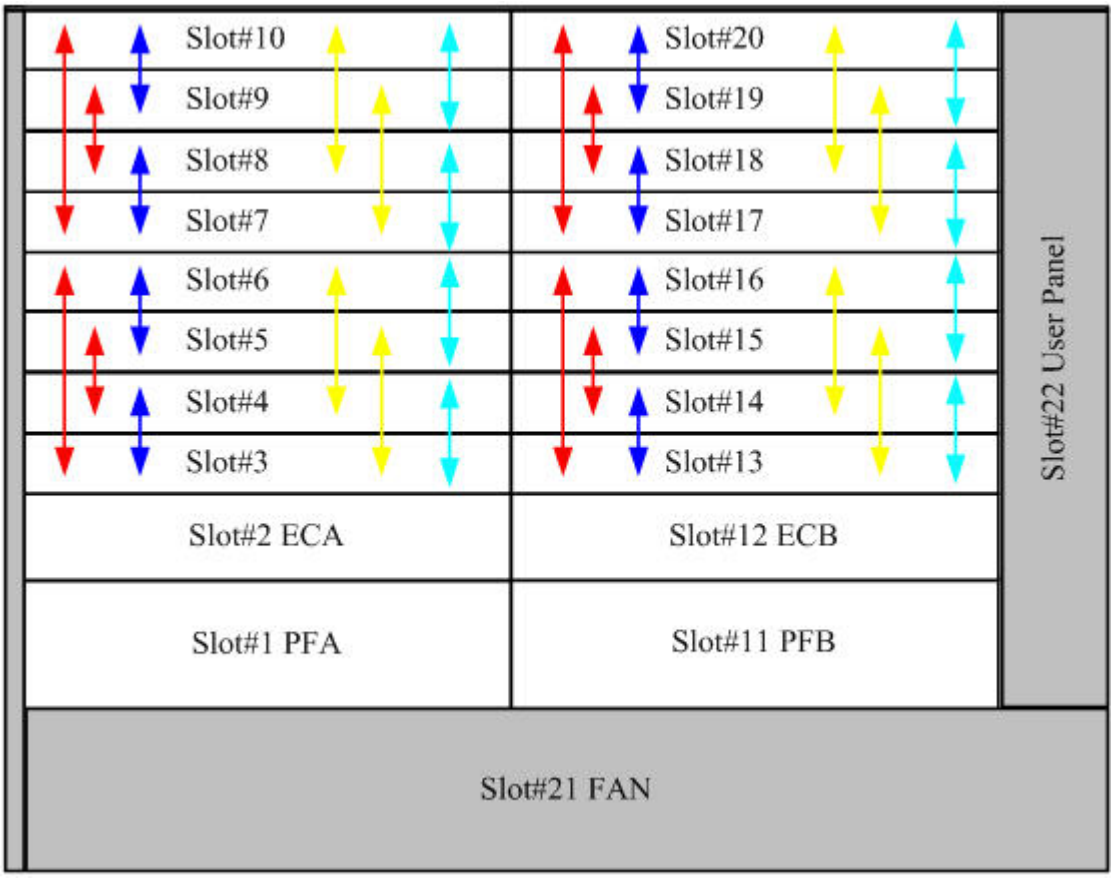
The following rack types are supported:

- 19-inch EIA rack
- ETSI rack
- 23-inch ANSI rack

## Back plane

The PSS-16II backplane consists of two QUADs; four slots in one QUAD are fully interconnected by 2x100G. The backplane delivers 100Gb/s of transmission bandwidth from each half I/O slot to the correlative slots within each quad.

**Figure 18-4 PSS-16II backplane high speed connectivity**




The controllers on the EC cards are connected to the I/O slots by 100Mb/s Ethernet links configured in a redundant star network. The PSS-16II backplane is compatible with the current PSS32/16 and hence all cards on PSS32/16 shelf can be supported on PSS-16II.

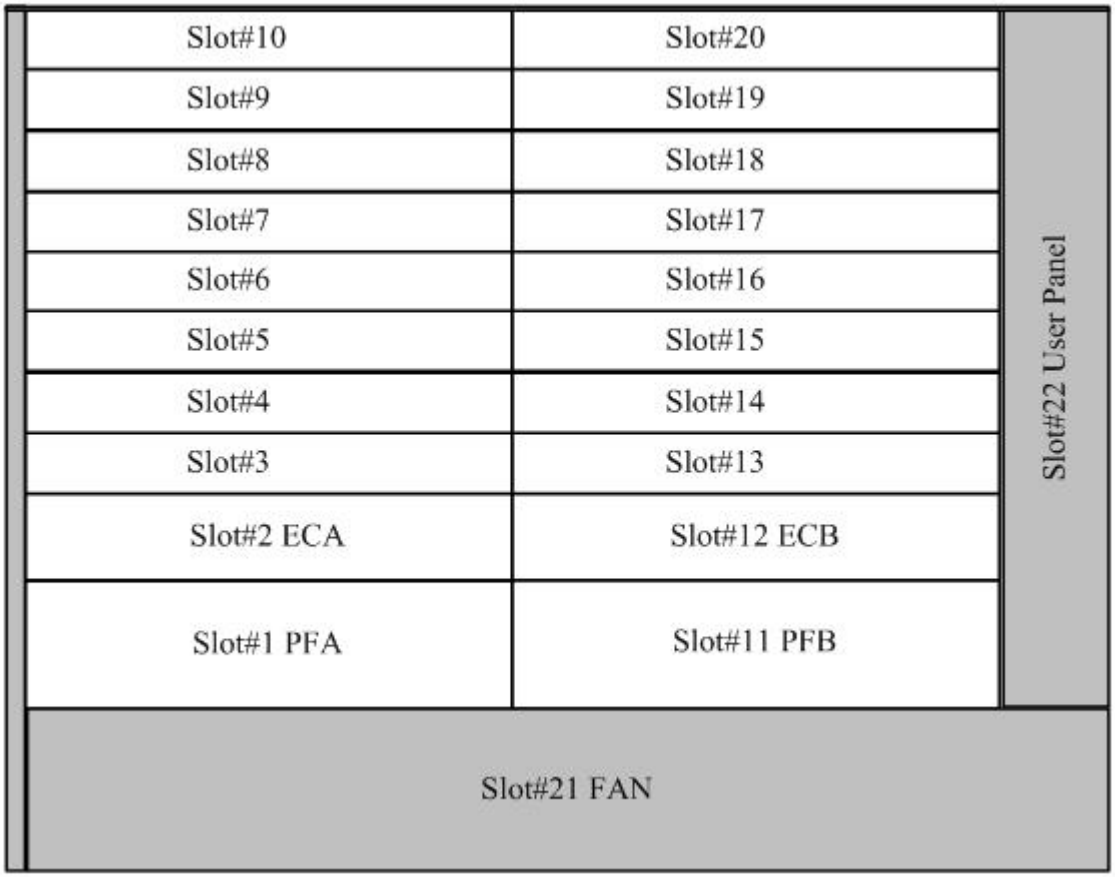
For PSS-16II shelf, within each quad, there are extra different reserved connections between any two vertical half-height service slots besides the high speed traffic connections - 2 bi-directional differential lanes (or 4 uni-directional differential pairs) for high speed OHI (HS_OHI) with a speed up to 6.25 Gbps. Service power V3.6 is provided to all slots on the shelf. Each PF contains a 3.3V DC/DC converter that provides the V3.6 service voltage that is distributed by the backplane.

**Note:** There is no connection between two horizontal half slots. 11DPM4M and 11DPM4E need the connectivity between horizontal half slots, so they are not supported in PSS8 or PSS-16II platform due to connector conflict.

## Slot numbering

The layout of the Alcatel-Lucent 1830 PSS-16II subrack and physical slot numbering are shown in the following figure:

**Figure 18-5 Alcatel-Lucent 1830 PSS-16II Subrack slot layout**



# Alcatel-Lucent 1830 PSS-32 subrack

## Introduction

The Alcatel-Lucent 1830 PSS-32 shelf has an overall depth, including cabling, fibers, and optional shelf cover of 300mm (12 in.). It is 14 RU (621.8 mm [24.48 in.]) high. An extended cover kit is available that increases the overall depth of the 1830 PSS-32 shelf from 300mm to 330mm. This cover creates more space when needed, to allow the use of LBOs on the face plates of the circuit packs. The backplane provides for control, management, power, and transponder-transponder communication in support of O-SNCP.

In addition to the slots for the two power filters and two controller cards, the Alcatel-Lucent 1830 PSS-32 shelf supports 32 function card slots. The top of the shelf houses a fan unit for cooling, a customer interface panel, and two timing interface cards that provide a redundant connection to synchronization references. All application card slots on the 1830 PSS-16 and 1830 PSS-32 support provide two card interfaces per slot, allowing them to accept two half height cards in each slot, when that slot is also equipped with a half-slot adapter (HSLAD)

The Alcatel-Lucent 1830 PSS-32 subrack is partitioned into the following slot types:

- 32 paired half height application cards, or 16 full height application cards
- 2 equipment controllers (EC)
- 2 redundant power input filters
- 1 user panel
- 1 fan unit

## Rack mounting options

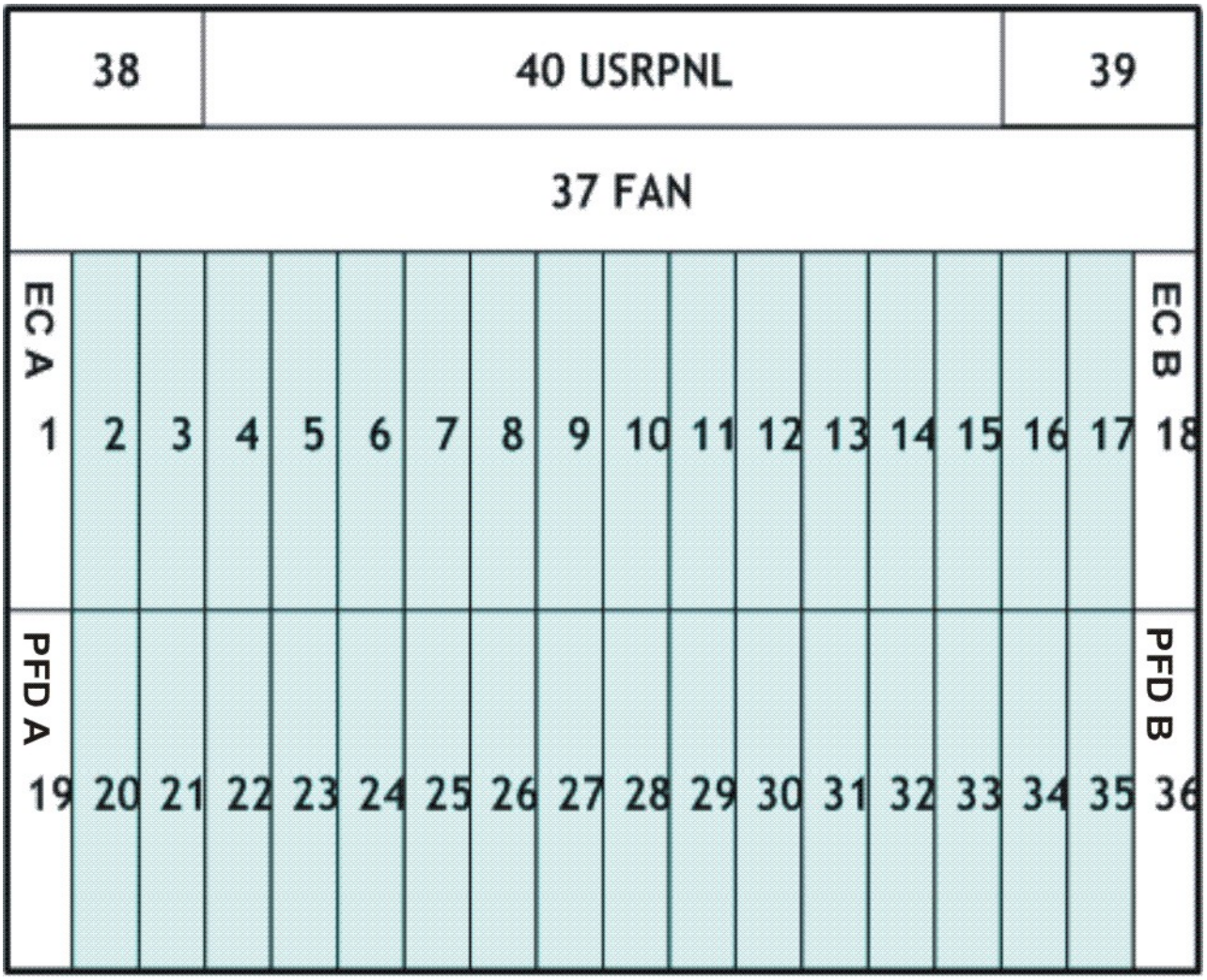
The following rack types are supported:

- 300-mm ETSI One Rack (ETSI market): 2200 mm (7.2 ft) × 600 mm (23.6 in) × 300 mm (11.8 in) (H × W × D)
- 7-feet Seismic Network Bay frame rack (ANSI market): 2133.6 mm (7 ft) × 584.2 mm (23 in) × 304.8 mm (12 in) (H × W × D)
- 19-inch ADC rack: 2133.6 mm (7 ft) × 490.2 mm (19 in) × 304.8 mm (12 in) (H × W × D)

## Slot numbering

The layout of the Alcatel-Lucent 1830 PSS-32 subrack and physical slot numbering are shown in the following figure

**Figure 18-6 Alcatel-Lucent 1830 PSS-32 Subrack slot layout**



# DCM shelf overview

## Description

A DCM shelf can hold a maximum of 8 DCM modules when used with ETSI or 23-inch ANSI racks, or 4 DCM modules when used with 19-inch EIA racks. The system models each DCM module as a separate shelf. The inventory port of a DCM module can be connected to an inventory port on an LD module. If connected, the inventory port must be connected to the same LD as the Line to which it is connected. A DCM may also be daisy-chained with other shelves. Since it only has one inventory port, the DCM must be at the end of the daisy chain. The DCM shelf can be user-provisioned or auto-detected.

**Note:** The distance limit of the serial electrical inventory wire is short enough that some customers will need to locate the DCM beyond the distance limit. In order to accommodate a user's need to mount the DCM shelf outside the range of electrical inventory monitoring cable, Alcatel-Lucent 1830 PSS supports non-managed DCM shelves.

Table 18-53, “1820 PSS-32/PSS-16 DCMs” (p. 18-149) lists the DCMs that 1830 PSS-32 supports.

**Table 18-53 1820 PSS-32/PSS-16 DCMs**

| Acronym | DCM/Range | DCM Height[1] |
|---|---|---|
| DMSMF010 | DCM010(SSMF)<br>10 km DCM | 18.5 mm |
| DMSMF020 | DCM020(SSMF)<br>20 km DCM | 18.5 mm |
| DMSMF030 | DCM030(SSMF)<br>30 km DCM | 18.5 mm |
| DMSMF040 | DCM040(SSMF)<br>40 km DCM | 18.5 mm |
| DMSMF050 | DCM050(SSMF)<br>50 km DCM | 41 mm |
| DMSMF060 | DCM060(SSMF)<br>60 km DCM | 41 mm |
| DMSMF070 | DCM070(SSMF)<br>70 km DCM | 41 mm |
| DMSMF080 | DCM080(SSMF)<br>80 km DCM | 41 mm |

**Table 18-53 1820 PSS-32/PSS-16 DCMs (continued)**

| Acronym | DCM/Range | DCM Height[1] |
|---|---|---|
| DMSMF090 | DCM090(SSMF)<br>90 km DCM | 41 mm |
| DMSMF100 | DCM100(SSMF)<br>100 km DCM | 41 mm |
| DMSMF110 | DCM110(SSMF)<br>110 km DCM | 63.5 mm |
| DMSMF120 | DCM120(SSMF)<br>120 km DCM | 63.5 mm |
| DMSMF130 | DCM130(SSMF)<br>130 km DCM | 63.5 mm |
| DMSMF140 | DCM140(SSMF)<br>140 km DCM | 63.5 mm |
| DMBSM010 | DCM - Fiber Bragg SMF 10 km | 18.5 mm |
| DMBSM020 | DCM - Fiber Bragg SMF 20 km | 18.5 mm |
| DMBSM030 | DCM - Fiber Bragg SMF 30 km | 18.5 mm |
| DMBSM040 | DCM - Fiber Bragg SMF 40 km | 18.5 mm |
| DMBSM050 | DCM - Fiber Bragg SMF 50 km | 18.5 mm |
| DMBSM060 | DCM - Fiber Bragg SMF 60 km | 18.5 mm |
| DMBSM070 | DCM - Fiber Bragg SMF 10 km | 18.5 mm |
| DMBSM0810 | DCM - Fiber Bragg SMF 80 km | 18.5 mm |
| DMBSM090 | DCM - Fiber Bragg SMF 90 km | 18.5 mm |
| DMBSM100 | DCM - Fiber Bragg SMF 100 km | 18.5 mm |
| DMBSM110 | DCM - Fiber Bragg SMF 110 km | 18.5 mm |

**Table 18-53 1820 PSS-32/PSS-16 DCMs (continued)**

| Acronym | DCM/Range | DCM Height[1] |
|---|---|---|
| DMBSM120 | DCM - Fiber Bragg SMF 120 km | 18.5 mm |
| DMBSM140 | DCM - Fiber Bragg SMF 140 km | 41 mm |
| DMBSM160 | DCM - Fiber Bragg SMF 160 km | 41 mm |
| DMBSM180 | DCM - Fiber Bragg SMF 180 km | 41 mm |
| DMBSM200 | DCM - Fiber Bragg SMF 200 km | 41 mm |
| DMBSM220 | DCM - Fiber Bragg SMF 220 km | 41 mm |
| DMBSM240 | DCM - Fiber Bragg SMF 240 km | 41 mm |
| DMTWR020 | DCM020(TWRS)<br>20 km DCM | 18.5 mm |
| DMTWR040 | DCM040(TWRS)<br>40 km DCM | 18.5 mm |
| DMTWR060 | DCM060(TWRS)<br>60 km DCM | 18.5 mm |
| DMTWR080 | DCM080(TWRS)<br>80 km DCM | 18.5 mm |
| DMTWR100 | DCM100(TWRS)<br>100 km DCM | 18.5 mm |
| DMTWR120 | DCM120(TWRS)<br>120 km DCM | 18.5 mm |
| DMLEF020 | DCM020(ELEAF)<br>20 km DCM | 41 mm |
| DMLEF040 | DCM040(ELEAF)<br>40 km DCM | 41 mm |
| DMLEF060 | DCM060(ELEAF)<br>60 km DCM | 41 mm |

**Table 18-53 1820 PSS-32/PSS-16 DCMs (continued)**

| Acronym | DCM/Range | DCM Height[1] |
|---|---|---|
| DMLEF080 | DCM080(ELEAF)<br>80 km DCM | 41 mm |
| DMLEF100 | DCM100(ELEAF)<br>100 km DCM | 41 mm |
| DMLEF120 | DCM120(ELEAF)<br>120 km DCM | 41 mm |
| DMBLE040 | DCM - Fiber Bragg ELEAF 40 km | 18.5 mm |
| DMBLE060 | DCM - Fiber Bragg ELEAF 60 km | 18.5 mm |
| DMBLE080 | DCM - Fiber Bragg ELEAF 80 km | 18.5 mm |
| DMBLE100 | DCM - Fiber Bragg ELEAF 100 km | 18.5 mm |
| DMBLE120 | DCM - Fiber Bragg ELEAF 40 km | 18.5 mm |
| DMBLE140 | DCM - Fiber Bragg ELEAF 140 km | 18.5 mm |
| DMBLE160 | DCM - Fiber Bragg ELEAF 160 km | 18.5 mm |
| DMBLE180 | DCM - Fiber Bragg ELEAF 180 km | 18.5 mm |
| DMBLE200 | DCM - Fiber Bragg ELEAF 200 km | 18.5 mm |
| DMBLE220 | DCM - Fiber Bragg ELEAF 220 km | 18.5 mm |
| DMBLE240 | DCM - Fiber Bragg ELEAF 240 km | 18.5 mm |

**Notes:**

1. DCM width and depth are 245 mm (W) x 238 mm (D) for all units.

# CWDM and DWDM xWDM filter shelves

## Introduction

The xWDM filter shelves supported on Alcatel-Lucent 1830 PSS-8 are a part of the 1830 Versatile WDM Module (VWM). The supported shelf names include VWM-DW for DWDM xWDM Filter and VWM-CW for CWDM xWDM Filter.

Both CWDM and DWDM xWDM Filter shelves are managed and powered by USB link connected on the Alcatel-Lucent 1830 PSS-8 EC faceplate.

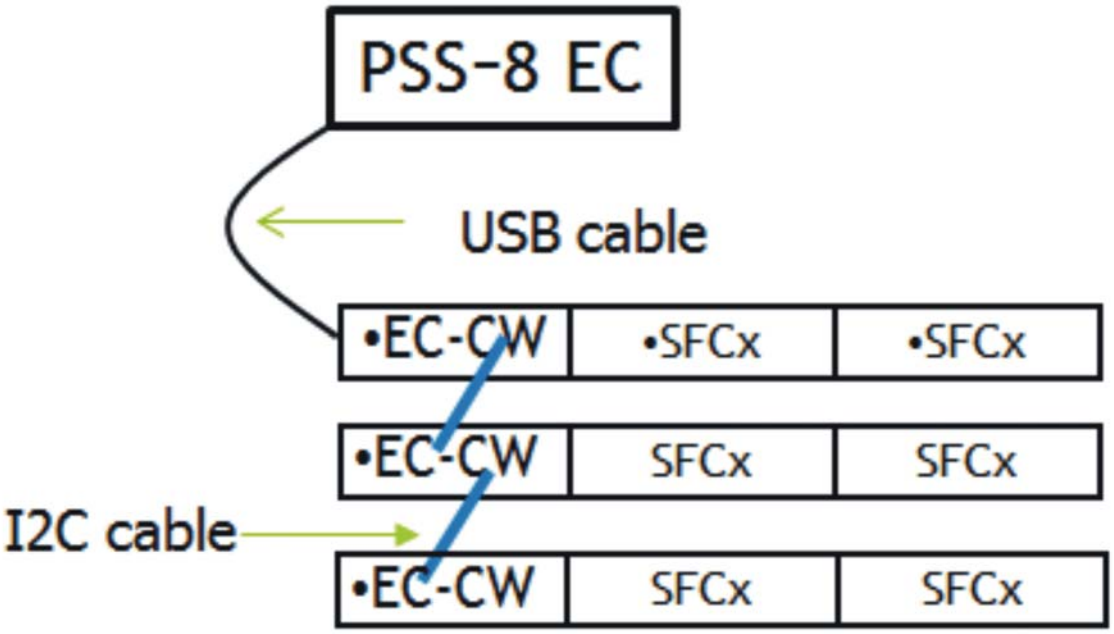
## CWDM xWDM Filter

A single Alcatel-Lucent 1830 PSS-8 EC can subtend up to three CWDM xWDM Filter shelves through USB interface. Thus for a Alcatel-Lucent 1830 PSS-8 shelf with redundant ECs, up to two CWDM xWDM Filter chains can be supported.

Connection between CWDM xWDM Filter and Alcatel-Lucent 1830 PSS-8 is performed via USB cable, while the connections between subtended CWDM xWDM Filter boxes are performed via I2C link.

For a CWDM xWDM Filter shelf, there are 3 slots, slot#1 is for EC-CW, slot#2 and slot#3 are for SFCx. The required SFCx on xWDM Filter include SFC4x/SFC8x.Those SFCx have the same physical size but are mechanically different from SFC on other universal shelves, thus can only be used on xWDM Filter CWDM shelf.

**Figure 18-7 CWDM xWDM Filter**




For a detailed description of the 1830 VWM unit, please refer to the corresponding parts in Alcatel-Lucent 1830 Versatile WDM Module (VWM) Release 6.0 Product Information and Planning Guide (3KC42940AAAATQZZA).

### DWDM xWDM Filter

One DWDM xWDM Filter shelf has five slots, slot#1 and slot#2 are for EC-DW, slot#3 and slot#4 are for SFDx, and the last slot #5 is for FAN/1wire. **Note:** Fan card and 1-wire adapter are not required, so typically slot #5 is left blank.

SFDx on DWDM xWDM Filter include SFD2, SFD4, and SFD8, while in the Alcatel-Lucent 1830 PSS-8 shelf only SFD5 and SFD8 are supported. **Note:** The SFDs on xWDM Filter shelf have different mechanical size compared to SFD on other universal shelves, thus cannot be inserted in other universal shelves.

There is a rotary shelf_ID switch located on the EC card, which specifies the order of the shelf in the chain. The two EC-DW of the same xWDM Filter shelf must have the same shelf_ID.

For one DWDM xWDM Filter shelf, it is suggested to have one EC card and leave the other EC slot as blank. In such a configuration the EC is without protection.

- Such a configuration can subtend up to three xWDM Filter shelves
- ECs on each xWDM Filter box can reside in either slot#1 or slot#2

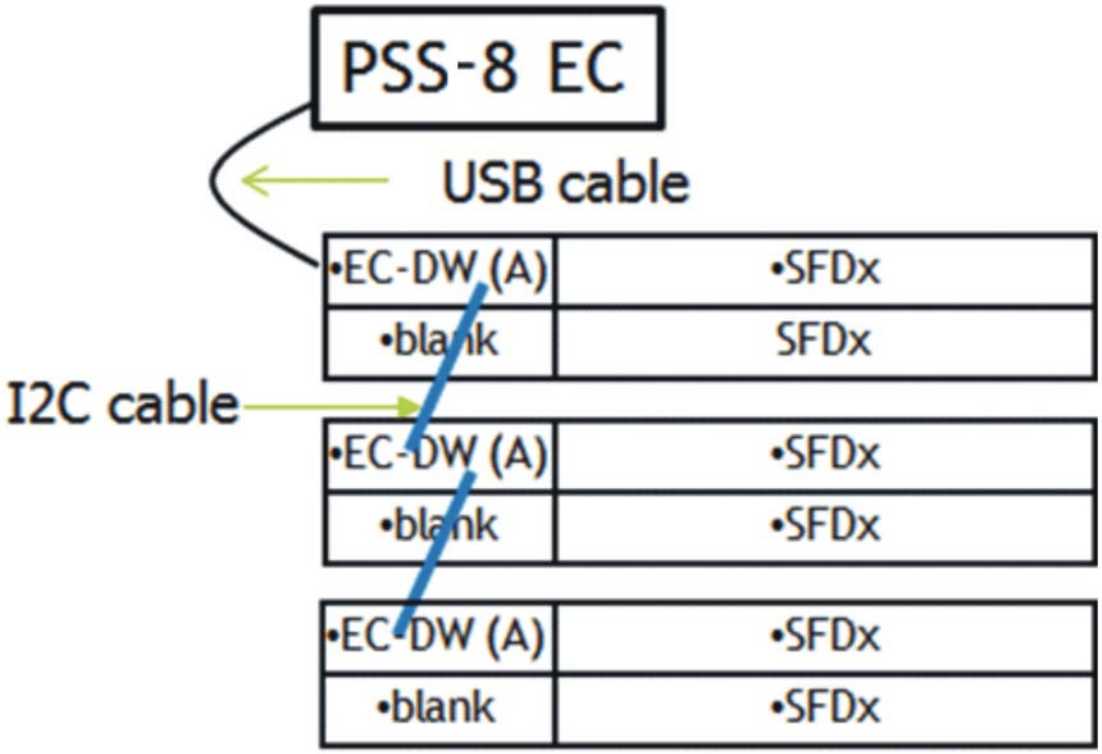
Cards supported on Alcatel-Lucent 1830 PSS-8 DWDM xWDM Filter are EC-DW; SFD2x/SFD4x/SFD8x. **Note:** These SFDx are manual SFD versions in 1830 VWM.

One USB link to Alcatel-Lucent 1830 PSS-8 is supported for one xWDM Filter stack.

**Table 18-54 DWDM shelf slot allocation**

| | | |
|---|---|---|
| Slot #1<br>Power & Control | Slot #3<br>Filter: SFD2x/4x/8x | Slot #5<br>blank |
| Slot #2<br>Power & Control | Slot #4<br>Filter: SFD2x/4x/8x | |

**Figure 18-8 DWDM without EC protection**




## xWDM Filter shelf common provisioning

A Alcatel-Lucent 1830 PSS-8 system models the xWDM Filter as standalone shelves, with their own dedicated slots and cards. CWDM xWDM Filter cannot be mixed with DWDM xWDM Filter in one chain/group, but they can be subtended to the same type in separated chains for Alcatel-Lucent 1830 PSS-8 USB management.

xWDM Filter shelf ID assignment follows the same rule as DCM/ITL/SFD44 and others, with valid shelfID from 25 to 64.

Both CWDM/DWDM xWDM Filter shelves and the SFD/SFC can be auto provisioned and pre-provisioned.

A parameter in the shelf properties specifies the associated Alcatel-Lucent 1830 PSS-8 EC AID (to which EC this xWDM Filter shelf chain is connected); up to three xWDM Filter shelves can be associated with the same EC card.

Both EC-CW and EC-DW can be manually reset either via a command or via the reset push-button on the faceplate.

The system retrieves xWDM Filter EC/SFD/SFC RI EEPROM data via the EC USB ports on Alcatel-Lucent 1830 PSS-8. The retrieved data is listed with the AID of each card. The RI EEPROM info includes: Card type; SW/FW load, mnemonic name, part number, CLEI code, date and serial number.

The SFDx on DWDM xWDM Filter have no build in PD to detect the power, which is similar to SFD44.

The supported xWDM Filter circuit packs are listed in the following table.

**Table 18-55 xWDM Filter circuit pack list with name translations for Alcatel-Lucent 1830 PSS-8**

| Channel (Lambda) | xWDM Filter mnemonic | Card name | AID prefix |
|---|---|---|---|
| - | EC-CW | EC-CW | ECCW |
| 1471 - 1531 | SFC4A-D | SFC4A | SFC |
| 1551 - 1611 | SFC4E-H | SFC4B | |
| 1471 - 1611 | SFC8 | SFC8 | |
| - | EC-DW | EC-DW | ECDW |
| CH(20,21) | SFD2A | SFD2A | SFD |
| CH(22,23) | SFD2B | SFD2B | |
| CH(25,26) | SFD2C | SFD2C | |
| CH(27,28) | SFD2D | SFD2D | |
| CH(30,31) | SFD2E | SFD2E | |
| CH(32,33) | SFD2F | SFD2F | |
| CH(35,36) | SFD2G | SFD2G | |
| CH(37,38) | SFD2H | SFD2H | |
| CH(42,43) | SFD2I | SFD2I | |

**Table 18-55 xWDM Filter circuit pack list with name translations for Alcatel-Lucent 1830 PSS-8 (continued)**

| Channel (Lambda) | xWDM Filter mnemonic | Card name | AID prefix |
|---|---|---|---|
| CH(44,45) | SFD2L | SFD2L | |
| CH(47,48) | SFD2M | SFD2M | |
| CH(49,50) | SFD2N | SFD2N | |
| CH(52,53) | SFD2O | SFD2O | |
| CH(54,55) | SFD2P | SFD2P | |
| CH(57,58) | SFD2Q | SFD2Q | |
| CH(59,60) | SFD2R | SFD2R | |
| CH(20,21,22,23) | SFD4A | SFD4A | |
| CH(25,26,27,28) | SFD4B | SFD4B | |
| CH(30,31,32,33) | SFD4C | SFD4C | |
| CH(35,36,37,38) | SFD4D | SFD4D | |
| CH(42,43,44,45) | SFD4E | SFD4E | |
| CH(47,48,49,50) | SFD4F | SFD4F | |
| CH(52,53,54,55) | SFD4G | SFD4G | |
| CH(57,58,59,60) | SFD4H | SFD4H | |
| CH(20,21,22,23,25,26,27,28) | SFD8A | SFD8A | |
| CH(30,31,32,33,35,36,37,38) | SFD8B | SFD8B | |
| CH(42,43,44,45,47,48,49,50) | SFD8C | SFD8C | |
| CH(52,53,54,55,57,58,59,60) | SFD8D | SFD8D | |

### Configuration of SFD/SFC

SFD/SFC on xWDM Filter shelves can be used as a replacement or extension of SFC/SFD on Alcatel-Lucent 1830 PSS-8. Thus in terms of topology, the xWDM Filter SFD/SFC must have the same property compared to SFC/SFD cards in the Alcatel-Lucent 1830 PSS-8 shelf.

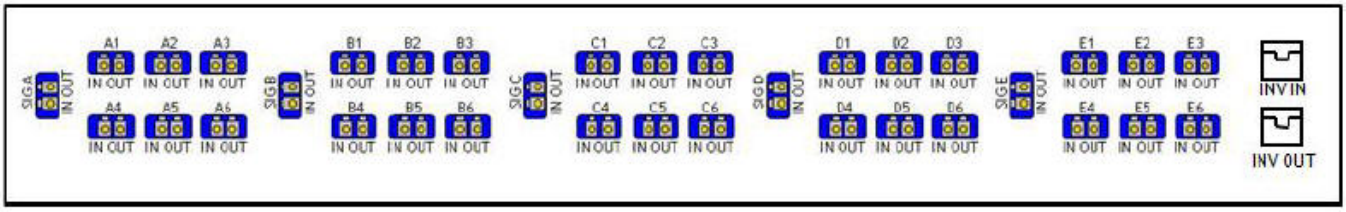
xWDM Filter SFDx have one more physical port “PC” compared to SFDx in universal shelf, this port is for an additional attenuation kit, which is not supported by Alcatel-Lucent 1830 PSS-8. The user should loopback the PC port with fiber jumper manually.

# PSC1-6 shelf

## PSC1-6 splitter shelf

The PSC1-6 splitter shelf is a passive, one RU shelf.

**Figure 18-9 Faceplate diagram of PSC1-6 shelf**




**Note:** There is no flex SW needed to manage this card as this is a passive card.

The PSC1-6 contains five pairs of 1:6 splitters and combiners plus two INV ports. The 1:6 splitter/combiner is needed to support various configurations ranging from directional colorless system, to fixed color any-direction system, to any-color and any-direction variants. The INV ports provide 1-wire interfaces for providing inventory information of the shelf, and for daisy-chaining to additional shelves. The INV is connected through intermediate PSC1-6 shelves, to a WR20-TF.

The PSC1-6 will comply with the following:

- support 5 groups of 1:6 splitter/combiner
- is totally passive (externally rack mountable and 1RU high)
- allows daisy chaining of up to 4 PSC1-6 shelves, thereby supporting 30x4 = 120 possible OT ports

The EEPROM stores inventory information, and the maximum insertion loss over the full wavelength range of each port at 25 degree C.

# PSS-8 Fan Unit (8FAN)

## Introduction

In the Alcatel-Lucent 1830 PSS-8 the fan unit is located in slot 14 of the shelf. The 1830 PSS-8 fan unit contains twelve powerful FAN modules, each individually monitored and speed-controlled by network element (NE) software.

## Control

The Fan Unit which is used in an Alcatel-Lucent 1830 PSS-8 subrack is controlled by the active equipment controller (EC) through backplane links. The EC provisions the speed of the fan motors on the fan unit. A local microcontroller configures and monitors its associated fan motor.

Besides controlling the fan motor speed, the microcontrollers also collect locally generated alarms. Additionally, all of the microcontrollers have integrated temperature sensors, which provide additional thermal inputs to the ECs.

At normal room temperature the fans run at a reduced speed. With increasing air temperature, the fan speed increases linearly to the maximum (100 %) speed. With decreasing air temperature, the fan speed decreases accordingly.

If any one of the fan motors fails, the remaining fan motors operate at full speed. If local micro controllers on fan unit fail then the associated motor goes to full speed automatically.

### Fan alarms

The fan speed is supervised constantly. Any malfunctioning (including degrading of fan function) of an individual fan element is reported to the user. This includes malfunctioning where no degradation of transmission functionality is expected and malfunctioning where the transmission operation is expected to be degraded or interrupted. The alarm contains information about the degradation of fan functionality, if the system can still operate normal or not and the failure localization.

### Fan unit replacement

When replacing the fan unit in an Alcatel-Lucent 1830 PSS-8 subrack, the only fan unit that supplies cooling air for the subrack is removed. The fan unit replacement is a simple procedure that can be accomplished in as little as 15 seconds.

If the Alcatel-Lucent 1830 PSS-8 subrack is equipped with circuit packs that dissipate:

- <100W per slot and the ambient temperature is ≤25°C (77°F), the fan unit replacement should be completed within 4 minutes.
- <100W per slot and the ambient temperature is >25°C (77°F), the fan unit replacement should be completed within 1 minute.

- 100W≤pack<150W per slot and the ambient temperature is ≤25°C (77°F), the fan unit replacement should be completed within 3 minutes.
- 100W≤pack<150W per slot and the ambient temperature is >25°C (77°F), the fan unit replacement should be completed within 45 seconds.
- ≥150W per slot and the ambient temperature should be ≤40°C (104°F), the fan unit replacement should be completed within 30 seconds.

Preparation time and reinstallation time (for loosening/tightening mounting screws) are not included in the time intervals stated.

Refer to the *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Release 8.2 Maintenance and Trouble-Clearing Guide* for detailed instructions.

### Air filter

Air for cooling the Alcatel-Lucent 1830 PSS-8 is drawn through fans at the side of the shelf, passed through an air filter on the right side of the shelf, across any installed cards, and exhausted on the left side of the chassis. The air filter on the right side of the chassis is replaceable from the front of the shelf.

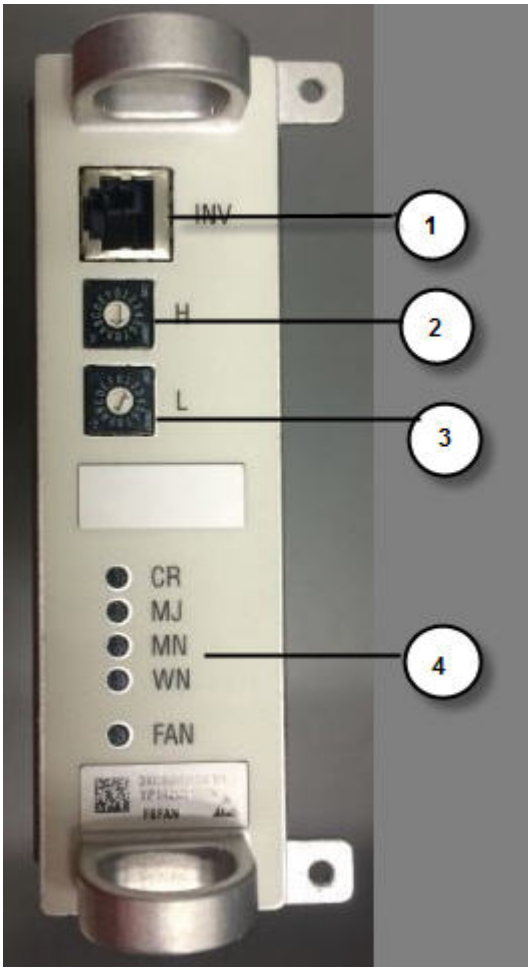
**Figure 18-10 Air filter**



The recommended cleaning or replacement interval for the air filter in central offices with air conditioning and filtering is three months if the dust concentration is lower than 0.02 $mg/m^3$ and the product is not permanently operated at maximum ambient temperature and hence at maximum air flow rate. Measured values of dust concentration in the central office allow an exact determination of the actually possible cleaning or replacement interval per product and applied filter type.

## Front view

**Figure 18-11 Alcatel-Lucent 1830 PSS-8 fan unit**




**Legend:**

| | |
|---|---|
| 1 | RJ-11 wire interface to manage external boxes like SFD44/44B, for remote inventory read out. |
| 2 | Rotary Switch for shelf ID. (High order 4-digit) |
| 3 | Rotary Switch for shelf ID. (Low order 4-digit) |

| | |
|---|---|
| 4 | System LEDs: "CR", "MJ", "MN" and "WN", to respectively indicate system alarms Critical, Major, Minor and Warning alarms.<br>Pack status LED: "FAN" to indicate FAN status |

### Visual indications

For information on the LED on the front panel of the FAN unit, see "LEDs of the Fan Unit" (p. 9-6).

### Location

The Fan Unit (8FAN) is mounted at the slot 14 of the Alcatel-Lucent 1830 PSS-8 subrack.

### FAN control and protection

Noise level generated by PSS-8 shelf varies based on the card types equipped in the shelf. SW algorithm automatically adjusts the FAN speed to achieve the required air flow needed to properly cool the specific set of modules inserted in the shelf while keeping the noise generated by FAN module to a minimum level. As a result, cards that dissipate less power (<150W per slot) will require lower FAN speed and subsequently generate lower noise level than cards which exceed 150W of power dissipation.

PSS-8 noise level complies with ETSI or GR-63 standards for configurations which include low power consumption cards (<150W power consumption per slot). For configurations with high power consumption card (power>150W), noise level will exceed the noise standard threshold. For further information of high level power consumption configurations and noise levels, contact Alcatel Lucent.

In actual deployment, FAN rotation speed will be adjusted according to the ambient temperature and power consumption of the system. SW algorithm continuously adjusts the FAN operation to minimize the noise level while achieving sufficient air flow and properly take away the heat dissipated by the inserted modules.

PSS-8 FAN has 12 FAN units. Each FAN unit is powered separately. PSS8 FAN can support M+1 FAN unit protection scheme. When there is one FAN motor unit failure, the system can continue working without heat dissipation issue; however, all FAN units will run in the highest rotation speed. The noise level will reach its summit.

# PSS-16 Fan Unit (FAN16)

## Introduction

In the Alcatel-Lucent 1830 PSS-16 the fan unit is located at the bottom of the shelf. The 1830 PSS-16 fan unit contains 5 powerful FAN modules, each individually monitored and speed-controlled by network element (NE) software.

## Control

The Fan Units which are used in an Alcatel-Lucent 1830 PSS-16 subrack are controlled by the active equipment controller (EC) through backplane links. The EC provisions the speed of the fan motors on the fan unit. A local microcontroller configures and monitors its associated fan motor.

Besides controlling the fan motor speed, the microcontrollers also collect locally generated alarms. Additionally, all of the microcontrollers have integrated temperature sensors which provide additional thermal inputs to the ECs.

At normal room temperature the fans run at a reduced speed. With increasing air temperature, the fan speed increases linearly to the maximum (100 %) speed. With decreasing air temperature, the fan speed decreases accordingly.

If one of the three fan motors fails, the remaining fan motors operate at full speed. If local micro controllers on fan unit fail then the associated motor goes to full speed automatically.

### Fan alarms

The fan speed is supervised constantly. Any malfunctioning (including degrading of fan function) of an individual fan element is reported to the user. This includes malfunctioning where no degradation of transmission functionality is expected and malfunctioning where the transmission operation is expected to be degraded or interrupted. The alarm contains information about the degradation of fan functionality, if the system can still operate normal or not and the failure localization.

### Fan unit replacement

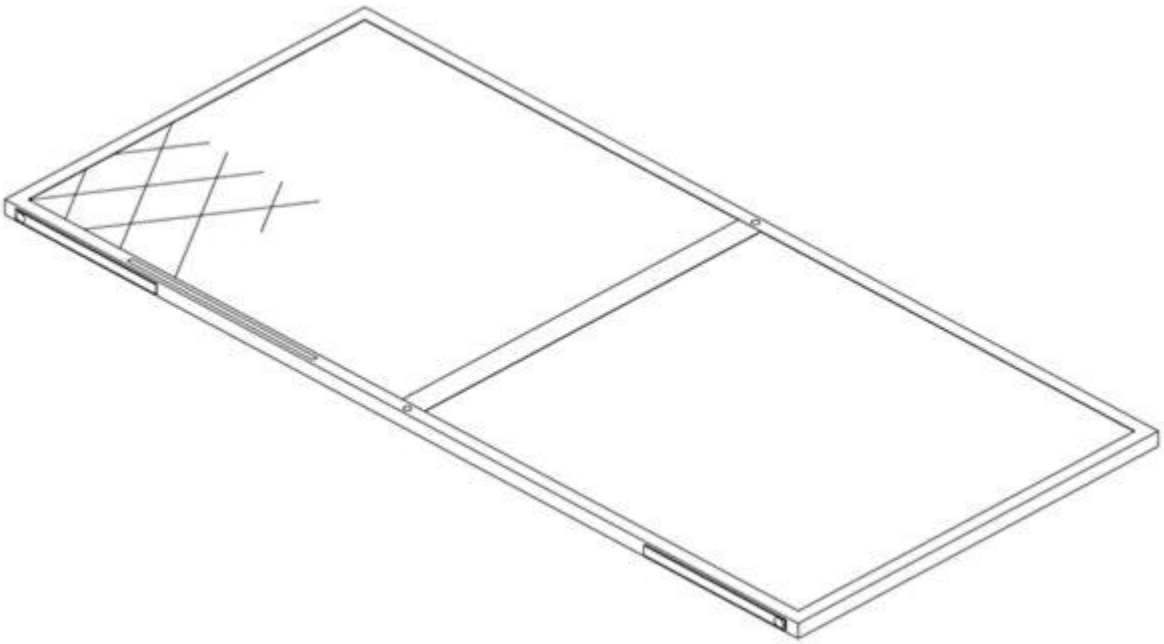
When replacing the fan unit in an Alcatel-Lucent 1830 PSS-16 subrack, the only fan unit that supplies cooling air for the subrack is removed. The fan unit replacement is a simple procedure that can be accomplished in as little as 10 seconds. The fan unit replacement should be completed within 60 seconds.

Refer to the *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Release 8.2 Maintenance and Trouble-Clearing Guide* for detailed instructions.

## Air filter

Air for cooling the Alcatel-Lucent 1830 PSS-16 is drawn through fans at the bottom of the shelf, passed through an air filter on the right side of the shelf, across any installed cards, and exhausted on the left side of the chassis. The air filter on the right side of the chassis is replaceable from the front of the shelf.

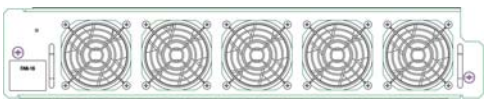
**Figure 18-12 Air filter**



The recommended cleaning or replacement interval for the air filter in central offices with air conditioning and filtering is three months if the dust concentration is lower than 0.02 $mg/m^3$ and the product is not permanently operated at maximum ambient temperature and hence at maximum air flow rate. Measured values of dust concentration in the central office allow an exact determination of the actually possible cleaning or replacement interval per product and applied filter type.

## Front view

**Figure 18-13 1830 PSS-16 fan unit**



### Visual indications

For information on the LED on the front panel of the FAN unit, see "LEDs of the Fan Unit" (p. 9-6).

### Location

The Fan Unit (FAN16) is mounted at the position 21 just below the user panel at the top PDF units at the bottom of the Alcatel-Lucent 1830 PSS-16 subrack.

# PSS-16II Fan Unit (16FAN2)

## Overview

The PSS-16II FAN card provides the power that the FAN motors needed and the related control signals. A local microcontroller configures and monitors its associated fan motor.

## Control

At normal room temperature the fans run at a reduced speed. With increasing air temperature, the fan speed increases linearly to the maximum (100 %) speed. With decreasing air temperature, the fan speed decreases accordingly.

If any one of the fan motors fails, the remaining fan motors operate at full speed. If local micro controllers on fan unit fail then the associated motor goes to full speed automatically.

### Fan alarms

The fan speed is supervised constantly. Any malfunctioning (including degrading of fan function) of an individual fan element is reported to the user. This includes malfunctioning where no degradation of transmission functionality is expected and malfunctioning where the transmission operation is expected to be degraded or interrupted. The alarm contains information about the degradation of fan functionality, if the system can still operate normal or not and the failure localization.

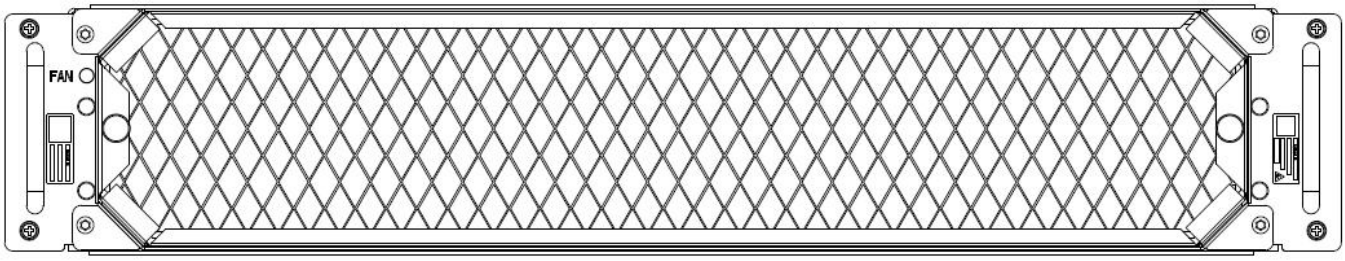
### Fan unit replacement

When replacing the fan unit in an Alcatel-Lucent 1830 PSS-16II subrack, the only fan unit that supplies cooling air for the subrack is removed. The fan unit replacement is a simple procedure that can be accomplished in as little as 15 seconds.

Refer to the *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Release 8.2 Maintenance and Trouble-Clearing Guide* for detailed instructions.

## Front view

**Figure 18-14 PSS-16II Fan unit faceplate**



### Visual indications

For information on the LED on the front panel of the FAN unit, see "LEDs of the Fan Unit" (p. 9-6).

### Location

The Fan Unit (16FAN2) is mounted at the slot 21 of the Alcatel-Lucent 1830 PSS-16II subrack.

### PSS-16II FAN noise, control and protection

Noise level generated by PSS-16II shelf varies based on the card types equipped in the shelf. SW algorithm automatically adjusts the FAN speed to achieve the required air flow needed to properly cool the specific set of modules inserted in the shelf while keeping the noise generated by FAN module to a minimum level. As a result cards that dissipate less power (<150W per slot) will require lower FAN speed and subsequently generate lower noise level than cards which exceed 150W of power dissipation.

PSS-16II noise level complies with ETSI or GR-63 standards for configurations which include low power consumption cards (<150W power consumption per slot). For configurations with high power consumption card (power>150W), noise level will exceed the noise standard threshold. For further information of high level power consumption configurations and noise levels, contact Alcatel Lucent.

In actual deployment, FAN rotation speed will be adjusted according to the ambient temperature and power consumption of the system. SW algorithm continuously adjusts the FAN operation to minimize the noise level while achieving sufficient air flow and properly take away the heat dissipated by the inserted modules.

PSS-16II FAN has 10 FAN units. Each FAN unit is powered separately. PSS-16II FAN can support M+1 FAN unit protection scheme. When there is one FAN motor unit failure, the system can continue working without heat dissipation issue; however, all FAN units will run in the highest rotation speed. The noise level will reach its summit.

# PSS-32 Fan Units (FAN and FAN32H)

## Introduction

In the Alcatel-Lucent 1830 PSS-32 the fan unit is located directly above the function card slots. The 1830 PSS-32 fan unit contains three powerful FAN modules, each individually monitored and speed-controlled by network element (NE) software.

## Control

The Fan Units which are used in an Alcatel-Lucent 1830 PSS-32 subrack are controlled by the active equipment controller (EC) through backplane links. The EC provisions the speed of the fan motors on the fan unit. A local microcontroller configures and monitors its associated fan motor.

Besides controlling the fan motor speed, the microcontrollers also collect locally generated alarms. Additionally, all of the microcontrollers have integrated temperature sensors which provide additional thermal inputs to the ECs.

At normal room temperature the fans run at a reduced speed. With increasing air temperature, the fan speed increases linearly to the maximum (100 %) speed. With decreasing air temperature, the fan speed decreases accordingly.

If one of the three fan motors fails, the remaining fan motors operate at full speed. If local micro controllers on fan unit fail then the associated motor goes to full speed automatically.

### Fan alarms

The fan speed is supervised constantly. Any malfunctioning (including degrading of fan function) of an individual fan element is reported to the user. This includes malfunctioning where no degradation of transmission functionality is expected and malfunctioning where the transmission operation is expected to be degraded or interrupted. The alarm contains information about the degradation of fan functionality, if the system can still operate normal or not and the failure localization.

### Fan unit replacement

When replacing the fan unit in an Alcatel-Lucent 1830 PSS-32 subrack, the only fan unit that supplies cooling air for the subrack is removed. The fan unit replacement is a simple procedure that can be accomplished in as little as 10 seconds.

If the Alcatel-Lucent 1830 PSS-32 subrack is equipped with circuit packs that dissipate:

- ≤100W per slot, the fan unit replacement should be completed within 2 minutes.
- >100W per slot and the ambient temperature is ≤25°C (77°F), the fan unit replacement should be completed within 60 seconds.
- >100W per slot and the ambient temperature is >25°C (77°F), the fan unit replacement should be completed within 30 seconds.

**Note:** Preparation time and reinstallation time (for loosening/tightening mounting screws) are not included in the time intervals stated.

Refer to the Max column in Table 22-80, “Weight and power consumption for Alcatel-Lucent 1830 PSS” (p. 22-106) for the power consumption specifications per circuit pack.

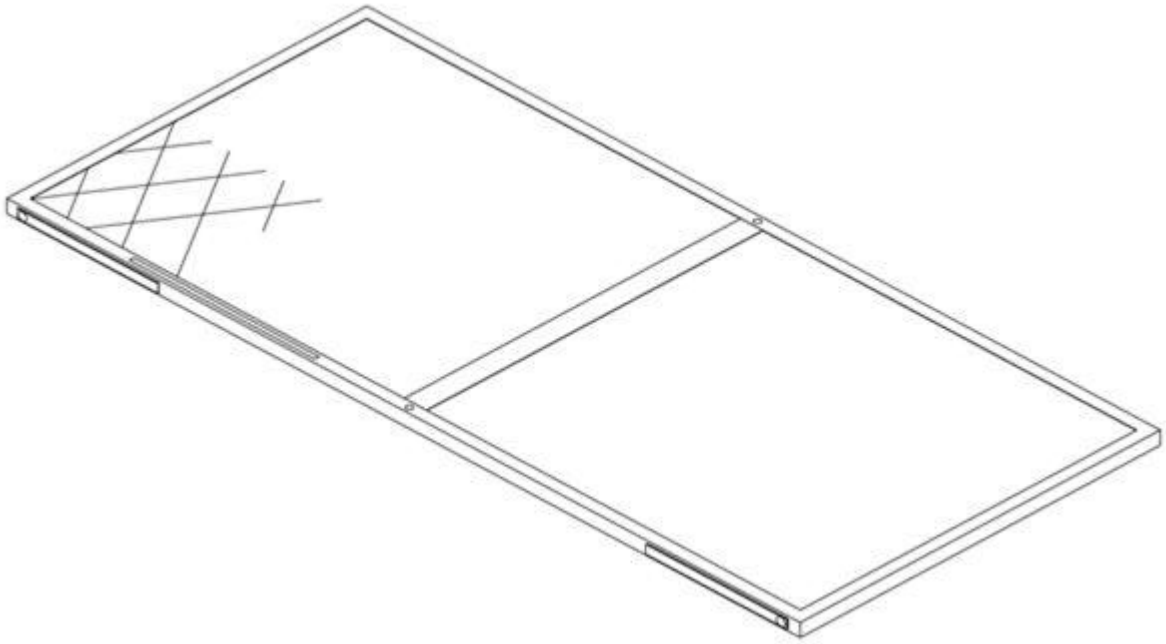
**Note:** Some circuit packs occupy more than one slot.

Refer to the *Alcatel-Lucent 1830 Photonic Service Switch (PSS) Release 8.2 Maintenance and Trouble-Clearing Guide* for detailed instructions.

## Air filter

Air for cooling theAlcatel-Lucent 1830 PSS-32 is drawn through an air filter as it enters the bottom of the shelf. The air filter is located below the fiber tray and is replaceable from the front of the shelf.

**Figure 18-15 Air filter**



The recommended cleaning or replacement interval for the air filter in central offices with air conditioning and filtering is three months if the dust concentration is lower than 0.02 $mg/m^3$ and the product is not permanently operated at maximum ambient temperature and hence at maximum air flow rate. Measured values of dust concentration in the central office allow an exact determination of the actually possible cleaning or replacement interval per product and applied filter type.

### Front view

**Figure 18-16 1830 PSS-32 fan unit**




### High capacity fan requirement

A high capacity fan unit, FAN32H (PN 8DG59606AB), is available for the 1830 PSS-32, and must be installed in the shelf, if one or more of the following packs are installed in the shelf:

- 11QPEN4 OT
- 11OPE8 OT
- 11QCE12X OT
- 43SCA1 OT
- 43SCX4 OT
- 43SCX4E OT
- 43SCGE1 OT
- 112SCA1 OT
- 112SNA1 OT
- 112SCX10 OT
- 112SNX10 OT
- 112SDX11 OT
- 130SCX10 OT
- 130SNX10 OT
- 260SCX2 OT
- 130SCA1 OT
- D5X500
- A2P2125 Hybrid amplifier module
- A4PSWG Switched gain hybrid amplifier module
- RA2P Raman amplifier module

  **Note:** The system enforces the installation of FAN32H with the above listed cards in a Shelf, though an alarm. The alarm `FAN32HRQD` indicates that a card is installed in the shelf that requires FAN32H and FAN32H is not installed.

### Visual indications

For information on the LED on the front panel of the FAN unit, see "Common LEDs of WDM cards" (p. 19-12).

### Location

The Fan Unit (FAN or FAN32H) is mounted at the positions 37 just below the user panel at the top of the Alcatel-Lucent 1830 PSS-32 subrack.

# PSS-8 Power filter cards (PFDs)

## Introduction

The PSS-8 shelf supports both AC and DC Power filter cards.

### PF-DC

The PSS-8 Power filter card 8DC30 comes with a simplified CRU (S-CRU) capability. The PF-DC card accepts DC input and provides power supply to other parts of the shelf.

The power supplies are available with, or without, voltage monitoring ports. Power filters with input power monitoring are compatible with the power filters of the same size without input power monitoring.

The PF-DC card supports the LOW VOLTAGE CUT-OFF (LVCO) function. Each PF-DC card monitors the absolute value of the input battery voltage. When the PF detects an input voltage is below a pre-defined threshold (-39V+/-0.5V) for more than 100 ms, the PF will open-circuit its LVCO output.

The normal service voltage range for the -48 Vdc system is from -40.0 Vdc to -57.0 Vdc. The normal service voltage range for the -60 Vdc system is from -50.0 Vdc to -72.0 Vdc.

The current rating of 8DC30 is 30.7A and the breaker at TRU is recommended to be 35A as maximum.

### PF-AC

The PSS-8 Power filter card 8AC7 comes with a simplified CRU (S-CRU) capability. The PF-AC card accepts AC input and provides power supply to other parts of the shelf.

**Note:** 8AC7 can provide only upto 700W output.

## External interfaces

The PF-DC card has the following external interfaces on the faceplate:

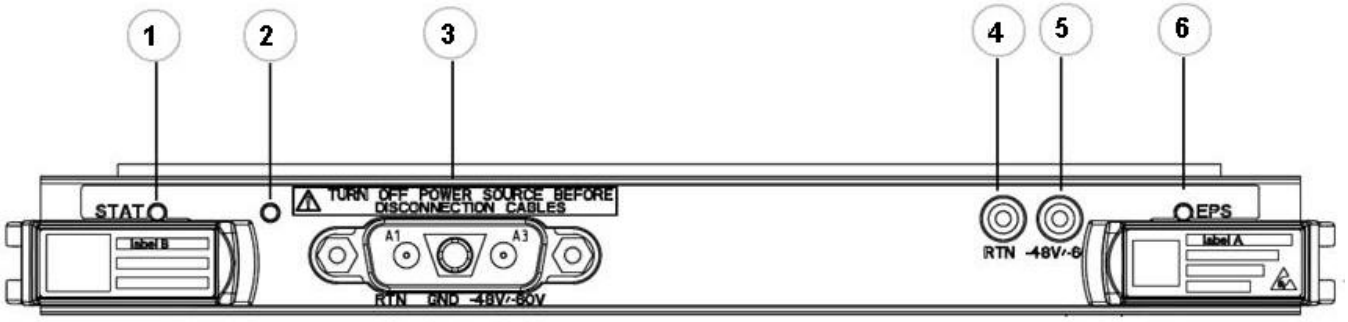
- Power connector: DB3
- Card status LED
- Power present LED (>35 V) and its label
- Voltage measurement points and its label

Appropriate cables are provided with ETSI and ANSI installation kits. The details are shown in the *Alcatel-Lucent 1830 PSS Installation and System Turn-Up Guide (ITG)*.

### PFDs (PF-DC and PF-AC) front view

The faceplates of PSS-8 Power Filter Cards (PF-DC and PF-AC) without voltage monitoring capability are shown in the following figures:

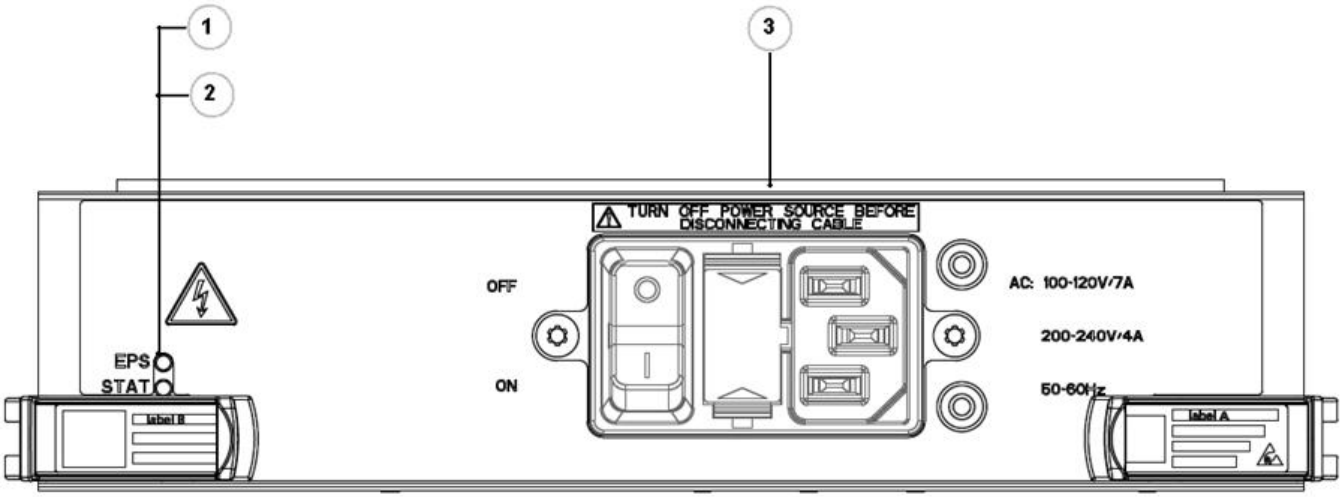
**Figure 18-17 PF-DC faceplate (without voltage monitoring)**




**Legend:**

| | |
|---|---|
| 1 | Card status LED |
| 2 | Power present LED (> 35V) |
| 3 | DB3 Power connector |
| 4 and 5 | Voltage measurement points |
| 6 | EPS LED: for active/standby indication of the timing card |

**Figure 18-18 PF-AC faceplate**



**Legend:**

| | |
|---|---|
| 1 | EPS LED: for active/standby indication of the timing card |
| 2 | Card status LED |
| 3 | AC power connector with integrated ON/OFF switch |

## Location

In the Alcatel-Lucent 1830 PSS-8 subrack, the Power Filter Cards (PFD) are mounted in slots 1 (PFD_A) and 7 (PFD_B), at the bottom of the subrack.

Each AC card 8AC7 occupies 2 slots: 1 and 2, or 7 and 8.

# PSS-16II Power filter cards (PFDs)

## Overview

The PSS-16II shelf supports DC Power filter cards.

### PF-DC

The PSS-16II Power filter card 16DC65 accepts DC input and provides power supply to other parts of the shelf.

The power supplies are available with, or without, voltage monitoring ports. Power filters with input power monitoring are compatible with the power filters of the same size without input power monitoring.

The PF-DC card supports the LOW VOLTAGE CUT-OFF (LVCO) function. Each PF-DC card monitors the absolute value of the input battery voltage. When the PF detects an input voltage is below a pre-defined threshold (-39 V+/-0.5 V) for more than 100 ms, the PF will open-circuit its LVCO output.

The normal service voltage range for the -48 Vdc system is from -40.5 Vdc to -57.0 Vdc. The normal service voltage range for the -60 Vdc system is from -50.0 Vdc to -72.0 Vdc.

**Note:** The maximum current rating of the PSS-16II DC power filter (16DC65) is 63A.

## External interfaces

The PF-DC card has the following external interfaces on the faceplate:

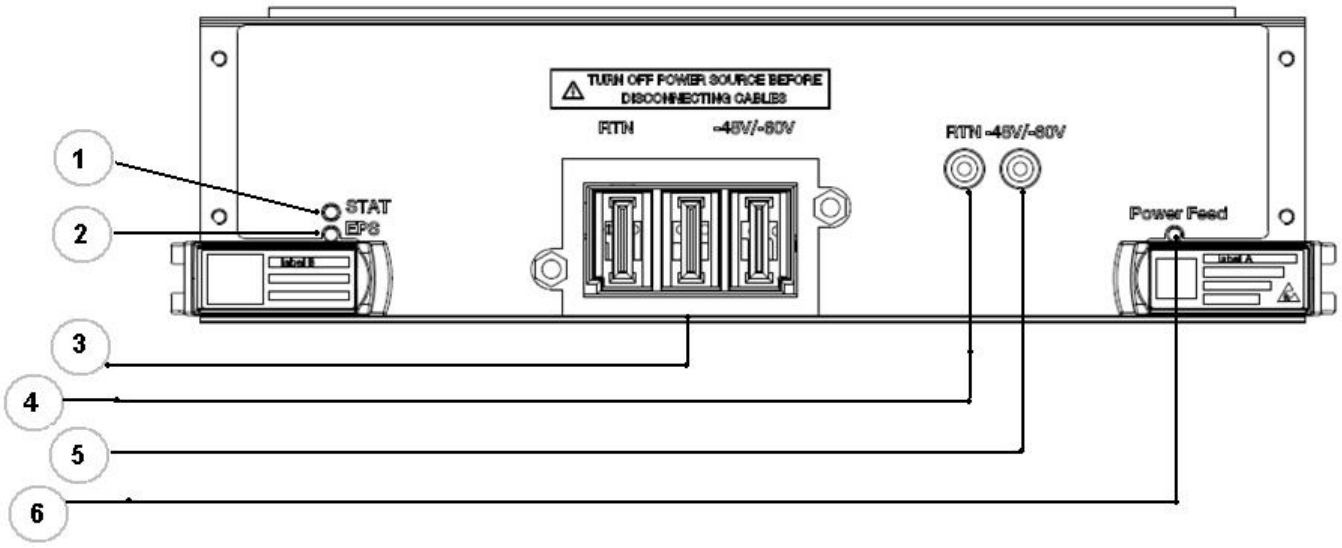
- Power connector: DB5
- Card status LED
- Power present LED (>35 V) and its label.
- Voltage measurement points and its label.

Appropriate cables are provided with ETSI and ANSI installation kits. The details are shown in the *Alcatel-Lucent 1830 Photonic Service Switch 16II (PSS-16II) Release 8.2 Installation and System Turn-Up Guide*.

## PFD (PF-DC) front view

The faceplate of PSS-16II Power Filter card (PF-DC) without voltage monitoring capability are shown in the following figure:

**Figure 18-19 PF-DC faceplate (without voltage monitoring)**




**Legend:**

| | |
|---|---|
| 1 | Card Status LED |
| 2 | EPS LED |
| 3 | Power connector DB5 |
| 4 and 5 | Voltage measurement points and its label |
| 6 | Power feed LED |

## Location

In the Alcatel-Lucent 1830 PSS-16II subrack, the Power Filter Cards (PFD) are mounted in slots 1 (PFD_A) and 11 (PFD_B), at the bottom of the subrack.

# PSS-32 and PSS-16 Power filter cards (PFDs)

## Introduction

Battery plant redundant feeds are brought into Alcatel-Lucent 1830 PSS-32 and Alcatel-Lucent 1830 PSS-16 shelves through two redundant power filter (PFD) modules. External (typically, battery generated) DC voltages are filtered by the two PFDs and distributed within the shelf by a copper power plane. Each PFD provides the 3.6V service voltage that is distributed by the backplane. PFDs also provide power to the USRPNL panel in the main shelf.

The PFD contains a circuit breaker on its faceplate that protects the battery feed. The PFD module is also the source of a shared (Stratum 3 accuracy, +4.6 ppm) precision clock source that is used to generate the Wavelength Tracker modulation and serve as a high precision clock source for other transmission-related services.

**Note:** The PFDCA is the only power filter that does not include a circuit breaker or Wavelength Tracker capability.

Point-to-point connections from each PF slot to all function slots, as well as the controller slots, carry this clock signal. Providing these clock sources on the PF eliminates the need to add highly stable 4.6-ppm oscillators on every circuit card that provides a Wavelength Tracker encode or decode function. The PF module also contains a temperature sensor that measures inlet air temperature which is then used to provide input into FAN control algorithm (adjusting FAN speed based on inlet temperature).

The power supplies are available with, or without, voltage monitoring ports. Power filters with input power monitoring are compatible with the power filters of the same size without input power monitoring.

Power filters are available with or without voltage monitoring that provide the following current capacities:

- Alcatel-Lucent 1830 PSS-32
  - 20A
  - 30A
  - 50A
  - 60A
  - 70A
- Alcatel-Lucent 1830 PSS-16
  - 20A
  - 35A

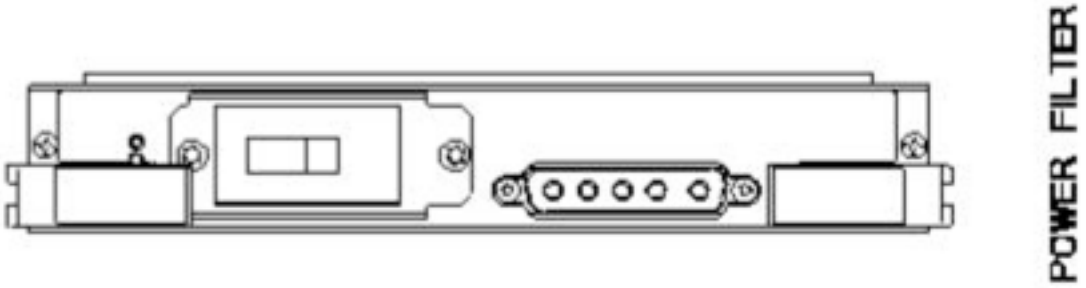
## External interfaces

The power filters (PFDs) for the Alcatel-Lucent 1830 PSS-32 and Alcatel-Lucent 1830 PSS-16 subracks have a single power cable connector on the faceplate. Appropriate cables are provided with ETSI and ANSI installation kits. The details are shown in the *Alcatel-Lucent 1830 PSS Installation and System Turn-Up Guide (ITG)*.

## Front view

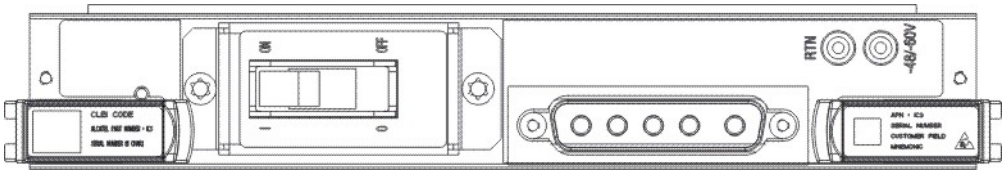
The front of a PSS-32 and PSS-16 Power Filter Card (PFD) without voltage monitoring capability is shown in the following figure:

**Figure 18-20 PFD faceplate (without voltage monitoring)**




The front of the PSS-32 and PSS-16 Power Filter Card (PFD) with voltage monitoring capability is shown in the following figure:

**Figure 18-21 PFD faceplate (with voltage monitoring)**




## Location

In the Alcatel-Lucent 1830 PSS-32 subrack, the Power Filter Cards (PFD) are mounted in slots 19 (PFD_A) on the left side and 36 (PFD_B) on the right side of the subrack.

In the Alcatel-Lucent 1830 PSS-16 subrack, the Power Filter Cards (PFD) are mounted in slots 1 (PFD_A) and 11 (PFD_B) just above the fan unit, at the bottom of the subrack.

# PSS-8 Equipment Controller (EC)

## Introduction

The Equipment Controller (EC) module provides the main processing and communication function in an Alcatel-Lucent 1830 PSS-8 shelf and provides system storage resource when the EC is located in the main shelf.

## Functional overview

In addition to system processing and communication for the shelf, the main Equipment Controller module provides monitors the status of active and standby modules, maintains a database of all cards installed in the shelf, supports communications interfaces and LED indicators on the User Interface Panel, and communicates with sub-tending shelves.

## Equipment protection

Each Alcatel-Lucent 1830 PSS-8 shelf contains at least one active EC. A standby EC can be configured (and equipped) to provide controller redundancy. The NE can operate normally (without alarms) with a single EC in each Alcatel-Lucent 1830 PSS-8 shelf.

EC protection provides both automatic switch and user-initiated switch capability.

When both EC modules are present in the shelf and they take Active or Standby relationship:

- Active EC: This EC is responsible for all runtime EC operations in the system.
- Standby EC (when present): This EC is responsible for monitoring the operation of the Active

### Active main EC

The Active Main EC performs the following functions.

- Maintains a “heartbeat” mechanism with its companion EC
- Provides the external LAN interface for management of all shelves in a multi-shelf node
- Terminates and or generates all communications with the management system. This includes communications intended to/from the Sub-tending shelves. It forwards information intended for a Sub-tending shelf to the proper EC.
- Maintains persistent database and configures all shelves and packs in the node using data in the persistent database.
- Maintains the power state of all cards in the local shelf and monitors voltage from the power filters in the same shelf.
- Monitors the health of all packs in the same shelf and monitors the health of all shelves in the node.

- Monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage
- Manages two xWDM Filter shelves through EC faceplate USB port with 1 Ampere current output.
- Supports the management of the CWDM and DWDM xWDM Filter shelves.
- Supports the ability to manage Lamp test and ACO (and its LED) on the optional User Panel in protection EC slot (in master shelf) through SPI interface
- Supports the ability to manage Housekeeping (6*HK in and 4* HK out) on User Panel in protection EC slot (in master shelf) through SPI interface.
- Supports the ability to manage the Remote Alarm (URG,NURG,ORC, INT, IND) and Rack Lamp (URG, NURG, ATTD [MEM], CH [BUZ]) on User panel in protection EC slot (in master shelf) through SPI interface.
- Supports the ability to manage the Expansion1 Fast Ethernet Ports on User panel in protection EC slot (in master shelf) through the LAN switch FE link.
- Supports the ability to manage the external SFD44/44B through the 1-wire Interface on FAN faceplate by IIC.

**Sub-tending EC**

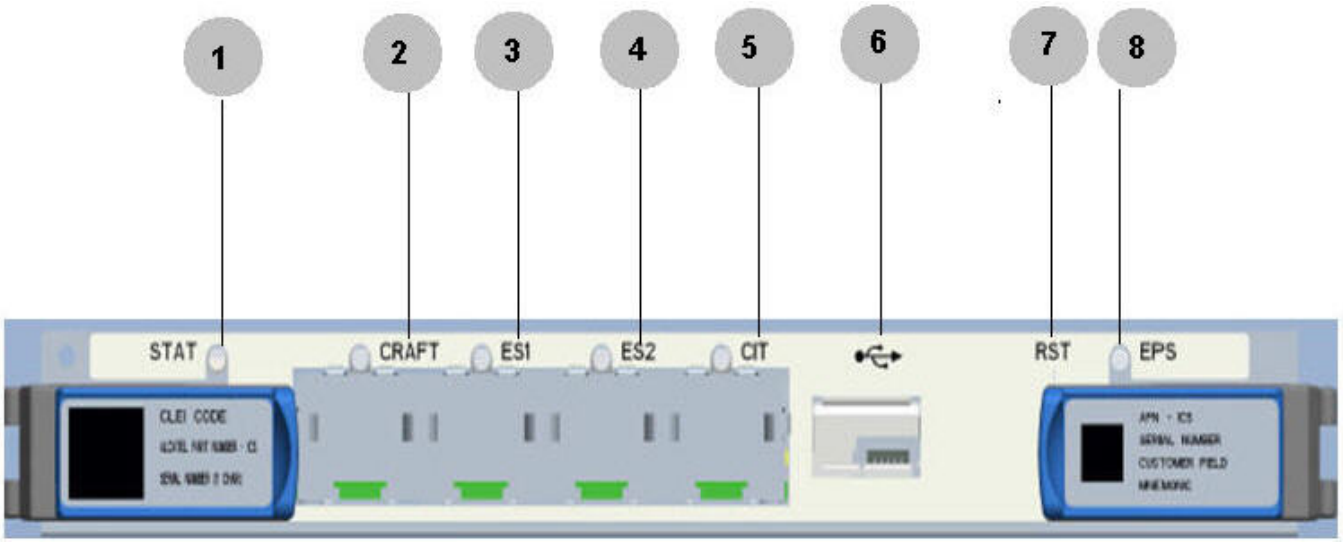
The Sub-tending EC performs the following functions.

- Provides protected communication with the EC in the main shelf (Main EC for a node)
- The Active Sub-tending EC maintains the power state of all local cards in the Alcatel-Lucent 1830 PSS-8 shelf and monitors the voltage output from the power filters in the that shelf.
- The Active Sub-tending EC monitors the health of all packs in the local shelf and forwards fault, and performance information to the Active Main EC.
- The Active Sub-tending EC monitors all services performed by a shelf and forwards fault, and performance information to the Active Main EC.
- The Active Sub-tending EC coordinates all communication within a shelf and communication to the main shelf.
- The Active Sub-tending EC stores LC application images in its local mass storage and provides the application images from its mass storage unit to the LC cards in the same shelf at boot time (when an LC card is reset or on request from the Main EC).
- The Standby Sub-tending EC monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage.

## Front view

The front view of the Equipment Controller for 1830 PSS-8 is shown in the following figure:

**Figure 18-22 Front view of the 1830 PSS-8 EC**




**Legend:**

| | |
|---|---|
| 1 | LED “STATUS” |
| 2 | “CRAFT” interface |
| 3 | “ES 1” interface |
| 4 | “ES 2” interface |
| 5 | “CIT” interface |
| 6 | USB interface |
| 7 | “RST” button |
| 8 | LED “EPS” |

## Visual indications

For information about the visual LED indication of this card, see “LEDs of the Equipment Controller (EC)” (p. 19-8).

## Location

The Alcatel-Lucent 1830 PSS-8 ECs are inserted into the non-standard slots 6 (EC_A) and 12 (EC_B) of the Alcatel-Lucent 1830 PSS-8 subrack.

# PSS-16II Equipment Controller (EC)

## Introduction

The Equipment Controller (EC) module provides the main processing and communication function in an Alcatel-Lucent 1830 Photonic Service Switch (PSS-16II) shelf and provides system storage resource when the EC is located in the main shelf.

**Note:** PSS-16II supports only 32EC2, the controller module which is introduced in R8.1.

## Functional overview

In addition to system processing and communication for the shelf, the main Equipment Controller module monitors the status of active and standby modules, maintains a database of all cards installed in the shelf, supports communications interfaces and LED indicators on the User Panel, and communicates with sub-tending shelves.

The EC hosts and controls following functions for the 1830 PSS-16II shelf:

- Ethernet switch – connects shelf controller to every slot, the user panel, and several external ports
- SPI bus – low level control of the slots
- Card missing – detects insertion and removal of circuit packs
- Mass storage – non-volatile storage of application code and other files
- Duplex controller arbitration – determines active versus standby controller.

In addition to these functions, the EC supports SW upgrade through USB interface. The EC can also manage two xWDM Filter shelves through USB port. The EC can manage both CWDM and DWDM xWDM Filter shelves.

## Equipment protection

Each Alcatel-Lucent 1830 Photonic Service Switch (PSS-16II) shelves contain at least one active EC. A standby EC can be configured (and equipped) to provide controller redundancy. The NE can operate normally (without alarms) with a single EC in each Alcatel-Lucent 1830 Photonic Service Switch (PSS-16II) shelves.

EC protection provides both automatic switch and user-initiated switch capability.

When both EC modules are present in the shelf and they take Active or Standby relationship:

- Active EC: This EC is responsible for all runtime EC operations in the system.
- Standby EC (when present): This EC is responsible for monitoring the operation of the Active

### Active main EC

The Active Main EC performs the following functions.

- Maintains a “heartbeat” mechanism with its companion EC
- Provides the external LAN interface for management of all shelves in a multi-shelf node
- Terminates and or generates all communications with the management system. This includes communications intended to/from the Sub-tending shelves. It forwards information intended for a Sub-tending shelf to the proper EC.
- Maintains persistent database and configures all shelves and packs in the node using data in the persistent database.
- Maintains the power state of all cards in the local shelf and monitors voltage from the power filters in the same shelf.
- Monitors the health of all packs in the same shelf and monitors the health of all shelves in the node.
- Monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage

### Sub-tending EC

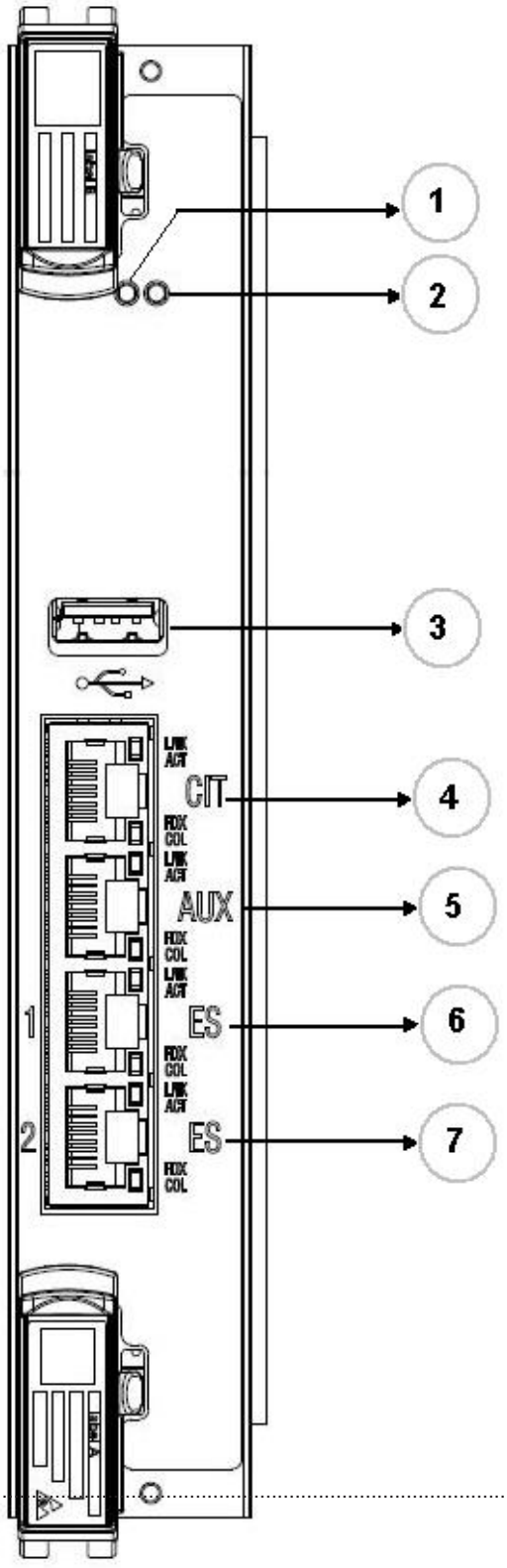
The Sub-tending EC performs the following functions.

- Provides protected communication with the EC in the main shelf (Main EC for a node)
- The Active Sub-tending EC maintains the power state of all local cards in the Alcatel-Lucent 1830 PSS-32 or 1830 PSS-16 shelf and monitors the voltage output from the power filters in the that shelf.
- The Active Sub-tending EC monitors the health of all packs in the local shelf and forwards fault, and performance information to the Active Main EC.
- The Active Sub-tending EC monitors all services performed by a shelf and forwards fault, and performance information to the Active Main EC.
- The Active Sub-tending EC coordinates all communication within a shelf and communication to the main shelf.
- The Active Sub-tending EC stores LC application images in its local mass storage and provides the application images from its mass storage unit to the LC cards in the same shelf at boot time (when an LC card is reset or on request from the Main EC).
- The Standby Sub-tending EC monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage.

## Front view

The front view of the Equipment Controller for 1830 PSS-16II is shown in the following figure:

**Figure 18-23 Front view of the 1830 PSS-16II EC**



**Legend:**

| | |
|---|---|
| 1 | LED “STATUS” |
| 2 | LED “EPS” |
| 3 | USB interface |
| 4 | “CIT” interface |
| 5 | “AUX” interface |
| 6 | “ES 1” interface |
| 7 | “ES 2” interface |

## Visual indications

For information about the visual LED indication of this card see “LEDs of the Equipment Controller (EC)” (p. 19-8).

## Location

The Alcatel-Lucent 1830 PSS-16II ECs are inserted into the non-standard slots 2 (EC_A) and 12 (EC_B) of the Alcatel-Lucent 1830 PSS-16II subrack.

# PSS-32/16 Equipment Controller (EC)

## Introduction

The Equipment Controller (EC) module provides the main processing and communication function in an Alcatel-Lucent 1830 Photonic Service Switch (PSS-32) or Alcatel-Lucent 1830 Photonic Service Switch (PSS-16) shelf and provides system storage resource when the EC is located in the main shelf.

## Functional overview

In addition to system processing and communication for the shelf, the main Equipment Controller module monitors the status of active and standby modules, maintains a database of all cards installed in the shelf, supports communications interfaces and LED indicators on the User Panel, and communicates with sub-tending shelves.

The EC hosts and controls following functions for the 1830 PSS-32/16 shelf:

- Ethernet switch – connects shelf controller to every slot, the user panel, and several external ports
- SPI bus – low level control of the slots
- Card missing – detects insertion and removal of circuit packs
- Mass storage – non-volatile storage of application code and other files
- Duplex controller arbitration – determines active versus standby controller.

In addition to these functions, the EC supports SW upgrade through USB interface. The EC can also manage two xWDM Filter shelves through USB port. The EC can manage both CWDM and DWDM xWDM Filter shelves.

The High Performance EC supports the following for a 24 shelf system:

- NMS access/control and ready for traffic after cold restart: 10 minutes
- NMS access/control after cold restart: 5 minutes
- NMS access/control after warm restart: 5 minutes
- NMS access/control after EC sideswitch: 5 minutes
- Software download time through ethernet LAN: 15 minutes
- NMS access/control and ready for traffic after software upgrade: 10 minutes (does not include the time to download image to all cards in the system)
- FTP based NE Discovery: 5 minutes
- DCN throughput: Wire-speed FTP over OSC

## Equipment protection

Each Alcatel-Lucent 1830 Photonic Service Switch (PSS-32) or Alcatel-Lucent 1830 Photonic Service Switch (PSS-16) shelves contain at least one active EC. A standby EC can be configured (and equipped) to provide controller redundancy. The NE can operate normally (without alarms) with a single EC in each Alcatel-Lucent 1830 Photonic Service Switch (PSS-32) or Alcatel-Lucent 1830 Photonic Service Switch (PSS-16) shelves.

EC protection provides both automatic switch and user-initiated switch capability.

When both EC modules are present in the shelf and they take Active or Standby relationship:

- Active EC: This EC is responsible for all runtime EC operations in the system.
- Standby EC (when present): This EC is responsible for monitoring the operation of the Active

### Active main EC

The Active Main EC performs the following functions.

- Maintains a “heartbeat” mechanism with its companion EC
- Provides the external LAN interface for management of all shelves in a multi-shelf node
- Terminates and or generates all communications with the management system. This includes communications intended to/from the Sub-tending shelves. It forwards information intended for a Sub-tending shelf to the proper EC.
- Maintains persistent database and configures all shelves and packs in the node using data in the persistent database.
- Maintains the power state of all cards in the local shelf and monitors voltage from the power filters in the same shelf.
- Monitors the health of all packs in the same shelf and monitors the health of all shelves in the node.
- Monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage

### Sub-tending EC

The Sub-tending EC performs the following functions.

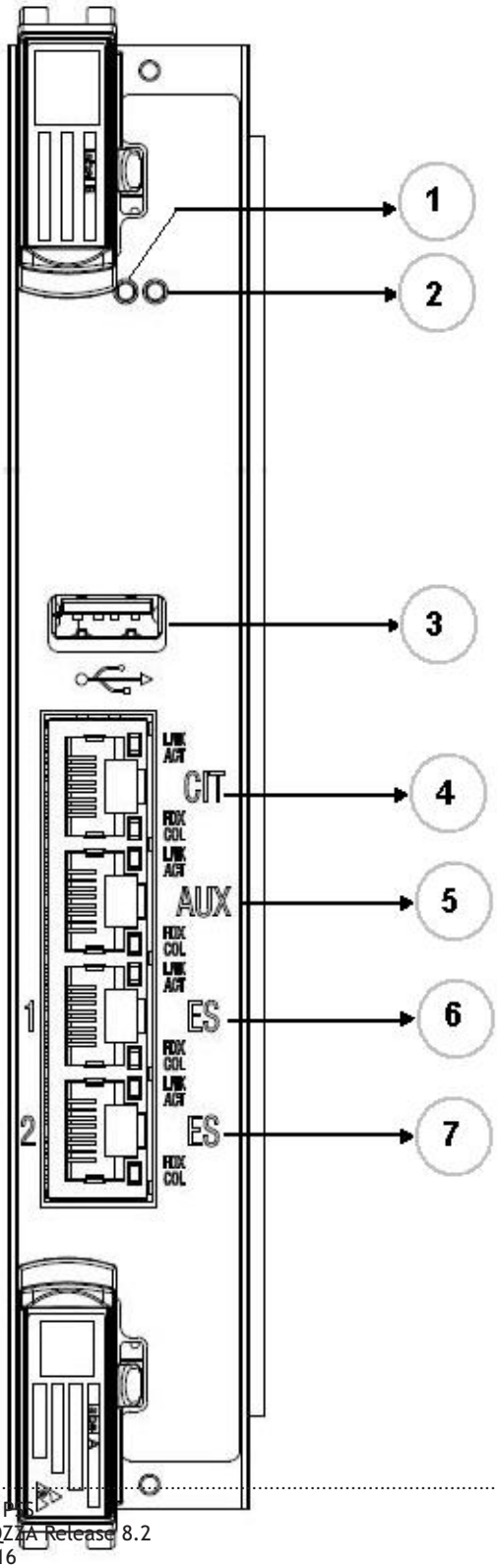
- Provides protected communication with the EC in the main shelf (Main EC for a node)
- The Active Sub-tending EC maintains the power state of all local cards in the Alcatel-Lucent 1830 PSS-32 or 1830 PSS-16 shelf and monitors the voltage output from the power filters in the that shelf.
- The Active Sub-tending EC monitors the health of all packs in the local shelf and forwards fault, and performance information to the Active Main EC.

- The Active Sub-tending EC monitors all services performed by a shelf and forwards fault, and performance information to the Active Main EC.
- The Active Sub-tending EC coordinates all communication within a shelf and communication to the main shelf.
- The Active Sub-tending EC stores LC application images in its local mass storage and provides the application images from its mass storage unit to the LC cards in the same shelf at boot time (when an LC card is reset or on request from the Main EC).
- The Standby Sub-tending EC monitors the operation of the Active EC, provides access to all shared resources, and updates its own persistent storage.

## Front view

The front view of the Equipment Controller for 1830 PSS-32/16 is shown in the following figure:

**Figure 18-24 Front view of the 1830 PSS-32/16 EC**



**Legend:**

| | |
|---|---|
| 1 | LED “STATUS” |
| 2 | LED “EPS” |
| 3 | USB interface |
| 4 | “CIT” interface |
| 5 | “AUX” interface |
| 6 | “ES 1” interface |
| 7 | “ES 2” interface |

## Visual indications

For information about the visual LED indication of this card, see “LEDs of the Equipment Controller (EC)” (p. 19-8).

## Location

The Alcatel-Lucent 1830 PSS-16 ECs are inserted into the non-standard slots 2 (EC_A) and 12 (EC_B) of the Alcatel-Lucent 1830 PSS-16 subrack.

The Alcatel-Lucent 1830 PSS-32 ECs are inserted into the non-standard slots 1 (EC_A) and 18 (EC_B) of the Alcatel-Lucent 1830 PSS-32 subrack.

## Summary of Equipment Controllers

| Label | Part number | Description | Compatible system(s) |
|---|---|---|---|
| EC | 8DG59241AB | Equipment Controller with 4G compact flash<br>With respect to R8.0.0, the 4G EC supports only the SWP 1830PSS R8.0-0 load (8DG-63166-AAAA) which is intended only for installed systems with 4GB EC, and does not support L0 GMPLS nor the following circuit packs: 112SDX11, 11OPE8, 11QCE12X, WR20-TFM, WTOCM-F, OTDR, MCS8-16, ASWG, A4PSWG, AAR-8A, MSH8-FSM. | PSS-16, PSS-32 |
| EC | 8DG59241AD | Equipment Controller with 16G compact flash, for all PSS-16 and PSS-32 configurations | PSS-16, PSS-32 |
| EC | 8DG61156AA | Similar to 8DG59241AD, but no encryption capabilities | PSS-16, PSS-32 |
| 32EC2 | 8DG62635AA | High Performance Equipment Controller for PSS-16II. Starting in R8.2, it is also compatible with and recommended for the master shelf of 1830 PSS-16 and PSS-32 NEs with 4 or more degrees or 10 or more shelves.<br>Temperature hardened when used in PSS-16II. | PSS-16, PSS-16II, PSS-32 |

| Label | Part number | Description | Compatible system(s) |
|---|---|---|---|
| 8EC2 | 3KC48820AA | Equipment Controller for PSS-8; temperature hardened | PSS-8 |

# PSS-8 Shelf panel and User panel (USRPNL)

## Introduction

The User panel card is an optional card that will be installed in the protection EC slot in Alcatel-Lucent 1830 PSS-8 master shelf. The User panel provides Housekeeping Interface, Rack Lamp, Rack Alarm, Lamp test, ACO function and expansion Ethernet port.

**Note:** The User panel card cannot be used for EC 1+1 configuration.

The Shelf panel is a mandatory card that will be installed in slot 13 of the PSS-8 shelf. The Shelf panel provides OAMP and Timing interfaces (BITS and ToD).

## USRPNL front view

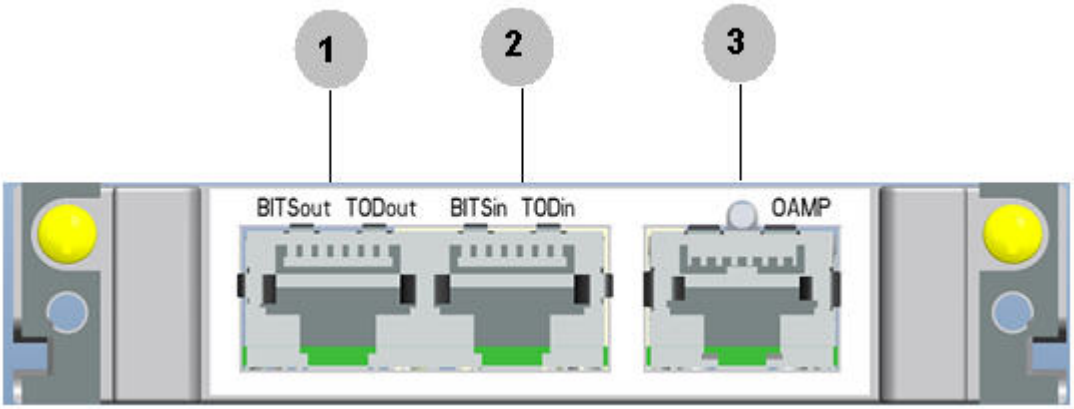
**Figure 18-25 1830 PSS-8 USRPNL faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “LAMP TEST” button |
| 3 | “Expansion (FE)” RJ-45 interface |
| 4 | “HOUSEKEEPING1” interface |
| 5 | “HOUSEKEEPING2” interface |
| 6 | “ALARM” interface |
| 7 | “RACK LAMP” interface |
| 8 | Alarm cut-off button (ACO) |
| 9 | LEDs “ATTENDED” |

## Shelf panel front view




**Legend:**

| | |
|---|---|
| 1 | “BITS out and TOD out” RJ-45 interface |
| 2 | “BITS in and TOD in” RJ-45 interface |
| 3 | “OAMP” RJ-45 interface |

## External interfaces

### Table 18-56 USRPNL front panel interfaces

| | |
|---|---|
| HOUSEKEEPING | Two (3*HK IN + 2*HK OUT) RJ-45s |
| ALARM | RJ-45 for alarm indications |
| EXP and VOIP | “Expansion (FE)” RJ-45 interface<br>VOIP LAN interface to connect an IP phone to an IP managed DCN |
| RACK LAMP | RJ-45 interface for rack lamp control |

### Table 18-57 Shelf panel front panel interfaces

| | |
|---|---|
| OAMP | Fast Ethernet RJ-45 interface |
| BITS in/out and TOD in/out | Two RJ-45 interface that supports 1588 (TOD and 1PPS) and BITS interface connected to CRU_A and CRU_B. |

The details of these interfaces, for example, the pin assignment are shown in the *Alcatel-Lucent 1830 Photonic Service Switch 8 (PSS-8) Release 8.2 Installation and System Turn-Up Guide*.

### Visual indications

For information on the LEDs on the front panel of the USRPNL, see "LEDs of the User Panel" (p. 19-9).

### Location

The Alcatel-Lucent 1830 PSS-8 user panel (USRPNL) is mounted on slot 12 of the Alcatel-Lucent 1830 PSS-8 subrack.

The Alcatel-Lucent 1830 PSS-8 Shelf panel is mounted on slot 13 of the Alcatel-Lucent 1830 PSS-8 subrack.

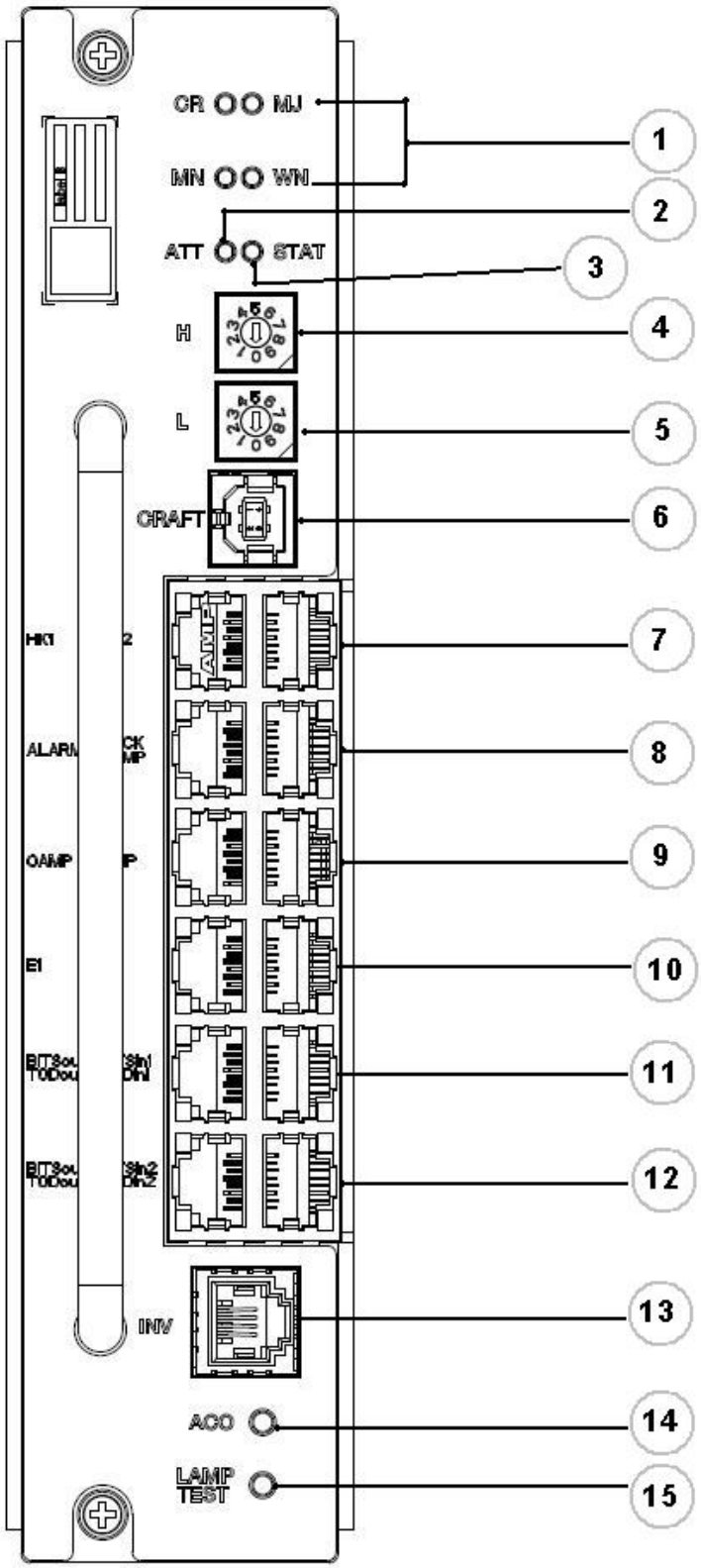
# PSS-16II User panel (USRPNL)

## Introduction

The User panel card on the Alcatel-Lucent 1830 PSS-16II master shelf provides air guide function and shelf management functions. The User panel provides LAMP Test, ACO, Housekeeping, Rack Alarm, Rack Lamp, Craft, OAMP, EXP1 (E1), EXP2 (E2), VOIP, shelf-ID, 1-wire INV, Timing interface (BITS/1588).

## USRPNL front view

**Figure 18-26 1830 PSS-16II USRPNL faceplate**



**Legend:**

| | |
|---|---|
| 1 | LEDs “Alarms status” |
| 2 | LEDs “ATTENDED” |
| 3 | LEDs “STATUS” |
| 4 | 2*Shelf-ID Rotary<br>Shelf-ID Rotary "H" |
| 5 | Shelf-ID Rotary "L" |
| 6 | 1* Type B USB interface<br>Craft: Craft Port (USB signal) |
| 7 | “HOUSEKEEPING1” interface<br>“HOUSEKEEPING2” interface |
| 8 | ALARM: RACK ALARM<br>RACK LAMP |
| 9 | OAMP: OAMP (GbE) and its LED<br>VOIP: VOIP and its LED |
| 10 | 2*RJ-45 interface<br>Expansion 1 ( FE) and its LED EXP1<br>Expansion 2 ( FE) and its LED EXP2 |
| 11 | 2*RJ-45 interface<br>BITSin1 TODin1: BITS and 1pps and ToD IN1<br>BITSout1 TODout1: BITS and 1pps and ToD OUT1 |
| 12 | 2*RJ-45 interface<br>BITSin2 TODin2: BITS and 1pps and ToD IN2<br>BITSout2 TODout2: BITS and 1pps and ToD OUT2 |
| 13 | RJ-11 interface (INV): 1-wire connection to SFD44 |
| 14 | Alarm cut-off button (ACO) |
| 15 | “LAMP TEST” button |

## External interfaces

### Table 18-58 USRPNL front panel interfaces

| | |
|---|---|
| HOUSEKEEPING | Two (6*HK IN + 4*HK OUT) RJ-45s |
| ALARM | RJ-45 for alarm indications |
| EXP and VOIP | “Expansion (FE)” RJ-45 interface<br>VOIP LAN interface to connect an IP phone to an IP managed DCN |
| RACK LAMP | RJ-45 interface for rack lamp control |

The details of these interfaces, for example, the pin assignment are shown in the *Alcatel-Lucent 1830 Photonic Service Switch 16II (PSS-16II) Release 8.2 Installation and System Turn-Up Guide*.

### Visual indications

For information on the LEDs on the front panel of the USRPNL, see "LEDs of the User Panel" (p. 19-9).

### Location

The Alcatel-Lucent 1830 PSS-16II user panel (USRPNL) is mounted on slot 22 of the Alcatel-Lucent 1830 PSS-16II subrack.

# PSS-32/16 User panel (USRPNL)

## Introduction

USRPNL is a module that is installed in the Alcatel-Lucent 1830 PSS-16 or Alcatel-Lucent 1830 PSS-32 main shelf in a network element (NE) to provide the following functions:

- Visual status indication (node LED indication)
- Management and communication physical access points
- External Input/Output access points
- Miscellaneous interactive buttons

## USRPNL Front views

**Figure 18-27 1830 PSS-16 USRPNL faceplate**

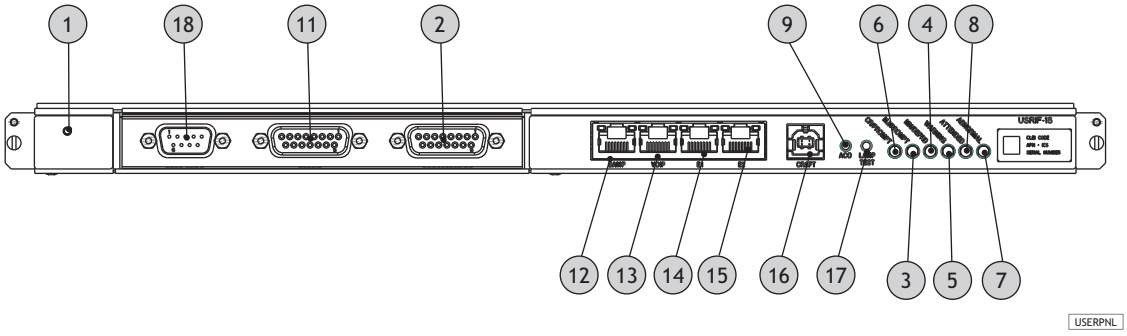
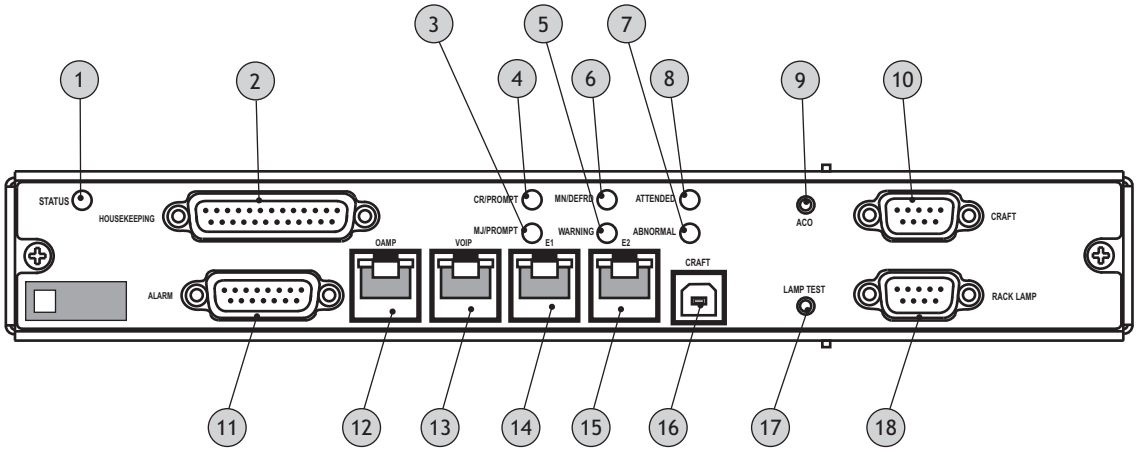


**Figure 18-28 1830 PSS-32 USRPNL faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “HOUSEKEEPING” interface |
| 3 | LEDs “MJ/PROMPT” |
| 4 | LEDs “CR/PROMPT” |
| 5 | LEDs “WARNING” |
| 6 | LEDs “MN/DEFRD” |
| 7 | LEDs “ABNORMAL” |
| 8 | LEDs “ATTENDED” |
| 9 | Alarm cut-off button (ACO) |
| 10 | “CRAFT” interface (PSS-32 USRPNL only) |
| 11 | “ALARM” interface |
| 12 | “OAMP” interface |
| 13 | “VOIP” interface |
| 14 | “E1” interface |
| 15 | “E2” interface |
| 16 | “CRAFT” USB connecto |
| 17 | “LAMP TEST” button |
| 18 | “RACK LAMP” interface |

## External interfaces

**Table 18-59 USRPNL front panel interfaces**

| | |
|---|---|
| HOUSEKEEPING | DB-25 (PSS-32) or DB-15 (PSS-16) connector associated with four relay contacts used as controlled outputs and eight (PSS-32) or 6 (PSS-16) miscellaneous external inputs. |
| CRAFT | DB9 connector supporting RS-232C serial interface (support setting: 38,400 baud, 1 stop bit, no parity) for connection to craft terminal via a serial link. |
| ALARM | DB-15 connector for alarm indications |
| OAMP | OAMP LAN port to connect NE to the External Management System (EMS) |
| VOIP | VOIP LAN interface to connect an IP phone to an IP managed DCN |
| E1 | E1 LAN extension subrack connection |
| E2 | E2 LAN extension subrack connection |
| CRAFT | USB connector supporting RS-232C serial interface (support setting: 38,400 baud, 1 stop bit, no parity) for connection to craft terminal via a serial link. |
| RACK LAMP | DB-9 connector for rack lamp control |

The details of these interfaces, for example, the pin assignment are shown in the *Alcatel-Lucent 1830 Photonic Service Switch 16/32 (PSS-16/PSS-32) Release 8.2 Installation and System Turn-Up Guide*.

## Visual indications

For information on the LEDs on the front panel of the USRPNL, see “LEDs of the User Panel” (p. 19-9).

## Location

The Alcatel-Lucent 1830 PSS-16 user panel (USRPNL) is mounted at the position 10 at the top of the Alcatel-Lucent 1830 PSS-16 subrack.

The Alcatel-Lucent 1830 PSS-32 user panel (USRPNL) is mounted at the position 40 at the top of the Alcatel-Lucent 1830 PSS-32 subrack.

# DWDM 88 channel interleavers (ITLB, ITLU)

## Overview

The ITLB and ITLU interleaver modules are designed to be used in combination with the SFD44 and SFD44B. The SFD44 and SFD44B each combine and demux 44 wavelength signals at 100GHz spacing. However, the signals of the SFD44B are offset 50GHz from the signals of the SFD44. The 44 wavelengths of the SFD44 are referred to as the 'even' group of signals, and the wavelengths of the SFD44B are referred to as the 'odd' group of signals.

## Descrption

The interleaver combines and demuxes the odd and even sets of signals into a single group of 88-channel group of signals with 50GHz spacing. Add/Drop capability for the 88 signals is provided by the CWR8-88. With the ITLB, even numbered channels are available at the E port and odd numbered channels are available at the O port. With the ITLU even numbered channels are available at the EOUT port and odd numbered channels are available at the OOUT port. The ITLU is for uni-directional applications.

The Interleaver is a passive module that is installed in the same shelf as the DCMs.

**Figure 18-29 ITLB block diagram**

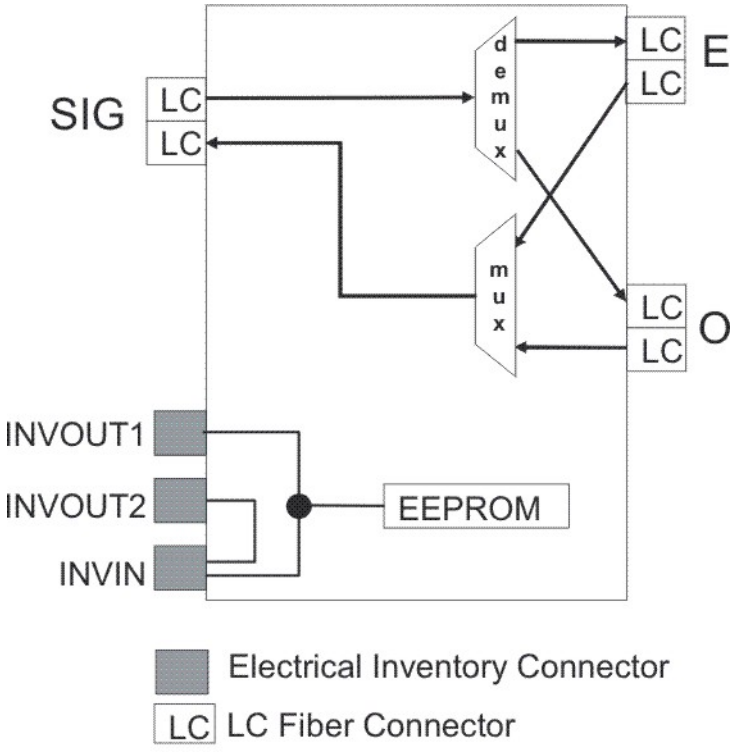


**Figure 18-30 ITLU block diagram**

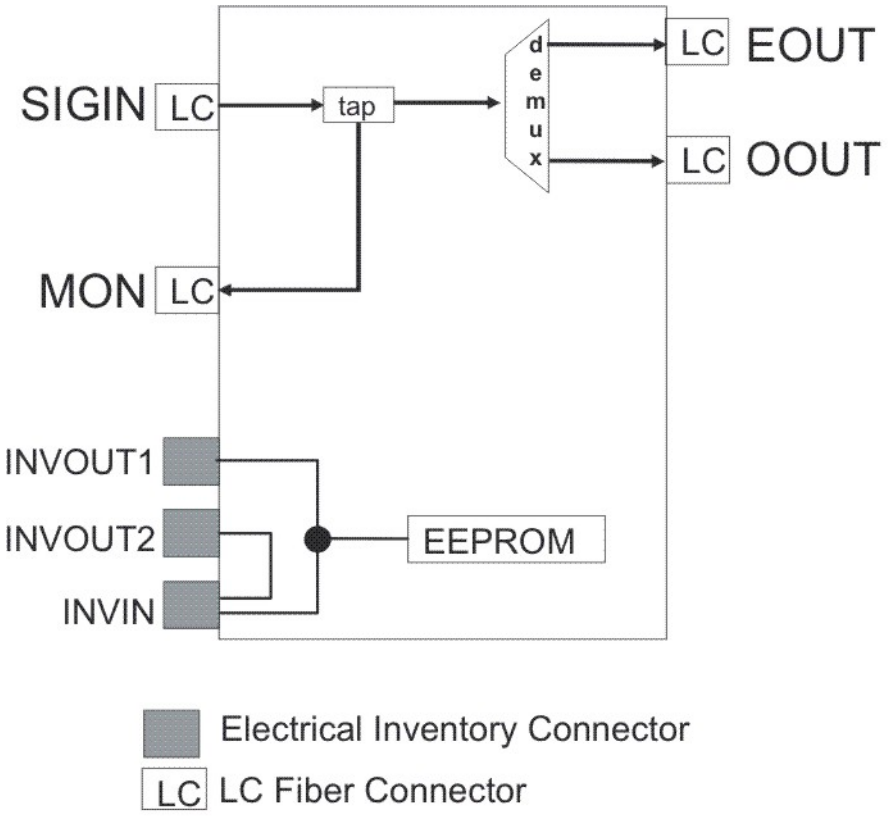
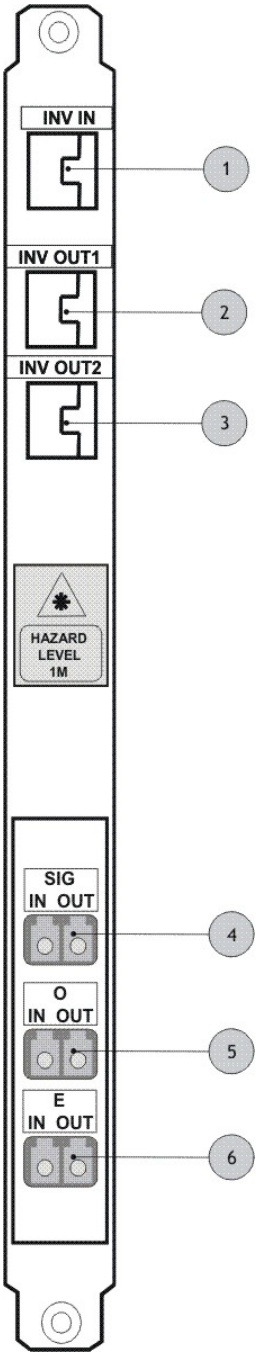


**Figure 18-31 ITLB faceplate view**

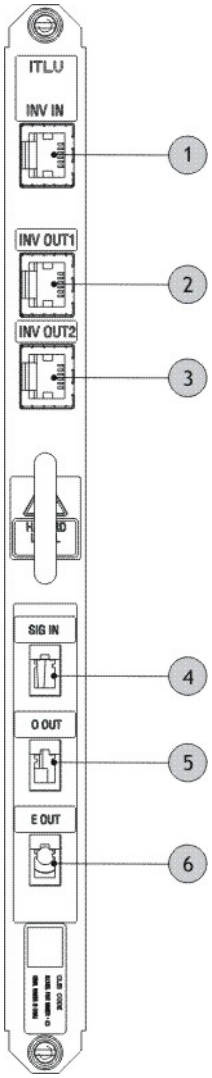



**Legend:**

| | |
|---|---|
| 1 | INV IN |
| 2 | INV OUT1 |
| 3 | INV OUT2 |

| | |
|---|---|
| 4 | SIG (IN & OUT) |
| 5 | O (IN & OUT) |
| 6 | E (IN & OUT) |

**Figure 18-32 ITLU faceplate view**




**Legend:**

| | |
|---|---|
| 1 | INV IN |
| 2 | INV OUT1 |
| 3 | INV OUT2 |
| 4 | SIG IN |

| | |
|---|---|
| 5 | O OUT |
| 6 | E OUT |

### Interleaver ports

- Input

  The ITLB has a bi-directional SIG port, and the ITLU has a uni-directional SIGIN port.

- Output

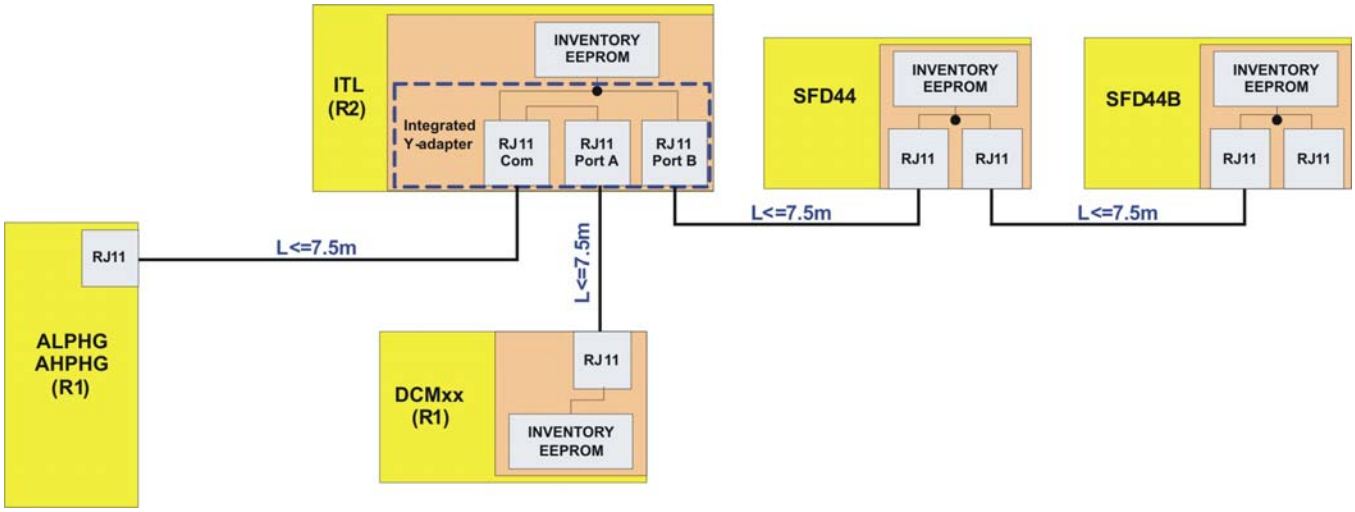
  The ITLB has a bi-directional E port for even channels, and a bi-directional O port for odd channels.

  The ITLU has a uni-directional EOUT port for even channels, and a uni-directional OOUT port for odd channels.

- Inventory

  It has an inventory “IN” port that can be connected to the inventory port of a CWR8-88 or LD card. It also has two inventory “OUT” ports that can serve as an inventory hub for a DCM, and one end of an SFD44/SFD44B, as shown in Figure 18-33, “Interleaver inventory port application” (p. 18-207).

**Figure 18-33 Interleaver inventory port application**



# DWDM filter modules (SFD5, SFD8)

## Overview

Static Filter DWDM modules perform the following functions.

- The optical multiplexer function receives the colored optical signal from the transponder subsystem, multiplexes the signal (together with other bands) into a WDM signal, and launches the WDM signal directly to the OTS line (with or without an amplification). Depending upon application, the signal may be sent to the colorless port of CWR8, or through an ITLB to a CWR8-88 module.
- Optical demultiplexer function: receives the WDM line signal, demultiplexes this signal, and sends the individual optical channels to the transponder subsystem.

Alcatel-Lucent 1830 PSS supports two types of internal DWDM Static Filter modules.

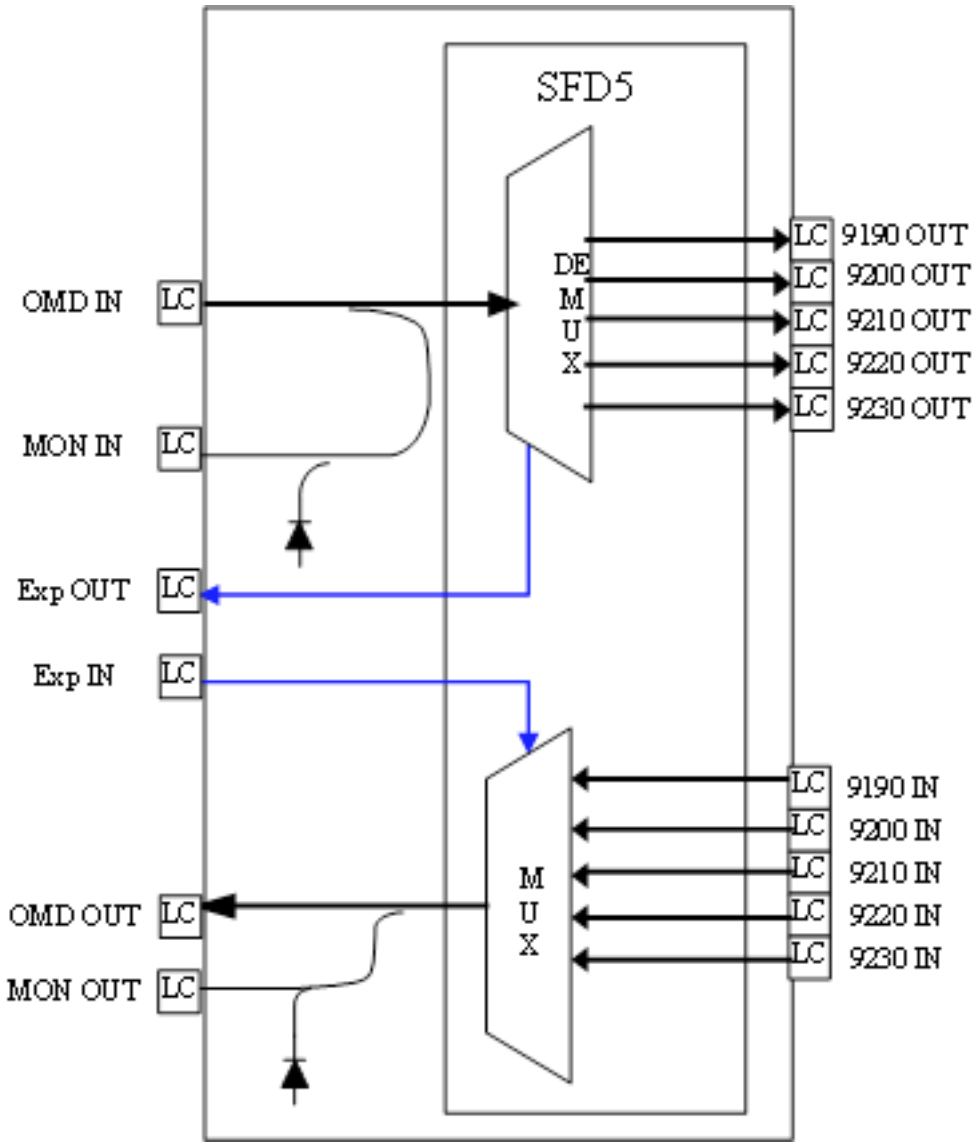
- Static Filter DWDM 5 channel (SFD5) module which can be inserted in one half-height, single-width slot of the Alcatel-Lucent 1830 PSS shelf.
- Static Filter DWDM 8 channel (SFD8) module, which can be inserted in one half-height, single-width slot of the Alcatel-Lucent 1830 PSS shelf.

## SFD5 modules

SFD5 modules support set of five DWDM wavelengths from C-band. To cover the whole C-band spectrum, eight types of SFD5 modules are supported: SFD5A, SFD5B, SFD5C, SFD5D, SFD5E, SFD5F, SFD5G, and SDF5H.

The SFD5 card performs optical wavelength multiplex/demultiplex operations for five consecutive ITU channels to/from an optical band. In addition, the SFD5 performs a pass-through of all other bands from the SFD ingress port to the SFD egress port.

**Figure 18-34 SFD5 block diagram**

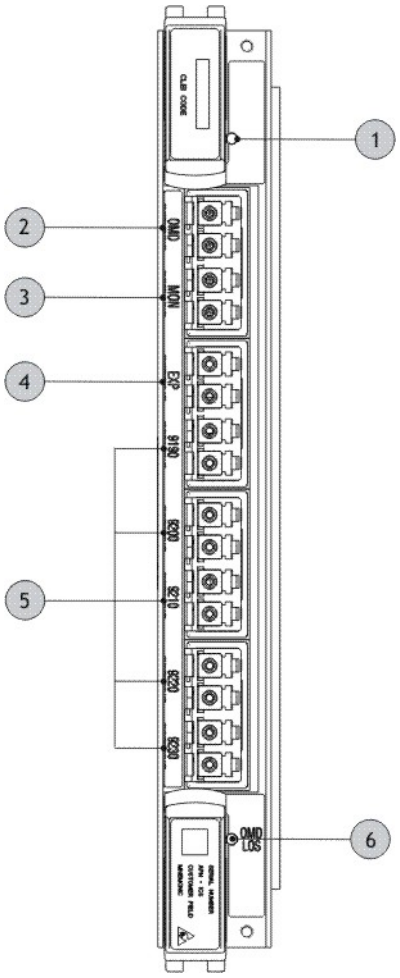



**Note:** Individual MUX/DEMUX wavelength frequencies are dependent upon SFD5 model.

### Front view

The SFD5 module includes five bidirectional DWDM ports. These ports add designated wavelengths to the DWDM line, to the multiplexed OMD port, to the Expansion port (EXP), and to the monitoring port. The OMD port is connected to a CWR8 or LD in order to access the DWDM line. The expansion port cascades multiple SFD5 modules to extend the multiplexing/demultiplexing port range.

**Figure 18-35 SFD5 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LED “STATUS” |
| 2 | “OMD” interface |
| 3 | “MON” interface |
| 4 | “EXP” interface |
| 5 | Individual DWDM channel interfaces (dependent upon SFD5 model) |
| 6 | LED “OMD LOS” |

## Location

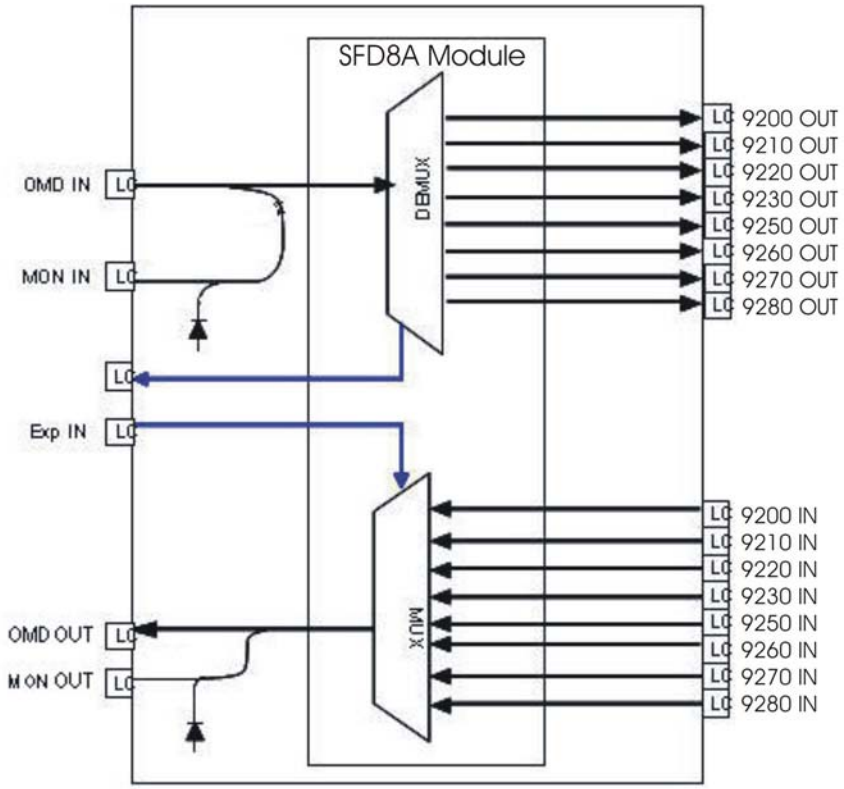
SFD5 modules can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 9 and 13 to 19, and Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

## SFD8 module

SFD8 modules support set of eight DWDM wavelengths from C-band. To cover the whole C-band spectrum, four types of SFD8 modules are supported: SFD8A, SFD8B, SFD8C and SFD8D.

The SFD8 card performs optical wavelength multiplex/demultiplex operations for eight consecutive ITU channels to/from an optical band. In addition, the SFD8 performs a pass-through of all other bands from the SFD ingress port to the SFD egress port.

**Figure 18-36 SFD8 functional diagram**

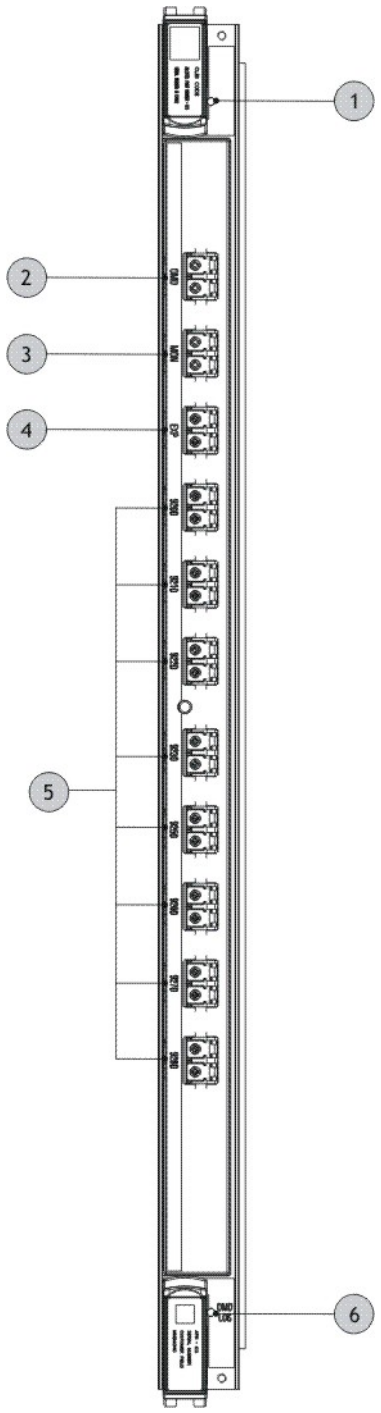



**Note:** Individual MUX/DEMUX wavelength frequencies are dependent upon SFD8 model.

### Front view

The SFD8 module includes eight bidirectional DWDM ports. These ports add designated wavelengths to the DWDM line, to the multiplexed OMD port, to the Expansion port (EXP), and to the monitoring port. The OMD port is connected to a CWR8 or LD in order to access the DWDM line. The expansion port cascades multiple SFD8 modules to extend the multiplexing/demultiplexing port range.

**Figure 18-37 SFD8 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LED “STATUS” |

| | |
|---|---|
| 2 | “OMD” interface |
| 3 | “MON” interface |
| 4 | “EXP” interface |
| 5 | Individual DWDM channel interfaces (dependent upon SFD8 model) |
| 6 | LED “OMD LOS” |

### Location

SFD8 modules can be installed in Alcatel-Lucent 1830 PSS-8 slots 2 to 5, Alcatel-Lucent 1830 PSS-16 slots 3 to 9, and Alcatel-Lucent 1830 PSS-32 slots 2 to 17.

# DWDM external filters (SFD40, SFD40B, SFD44, SFD44B)

## Overview

Static Filter DWDM modules perform the following functions.

- Optical multiplexers receive colored optical signals from the transponder subsystem, multiplex the signal (together with other bands) into a WDM signal, and launch the WDM signal directly to the OTS line (with or without amplification). Or, depending upon application, the signal may be sent to the colorless port of CWR8, or through an ITLB to a CWR8-88 module.
- Optical demultiplexers receive the WDM line signal, demultiplex the signal, and send the individual optical channels to the transponder subsystem.

Alcatel-Lucent 1830 PSS supports four Static DWDM filters as external shelves that can be used with the Alcatel-Lucent 1830 PSS shelf. Two smaller filters are supported as internal modules that can be installed in slot of the Alcatel-Lucent 1830 PSS shelf.

- Static Filter DWDM 40 channel (SFD40) module is implemented as an external module, mounted in a rack outside the universal shelf. The inventory port of the SFD40 is connected to the inventory port on a WR2-88 or, in the case of a FOADM node, a LD or OSCT card. The inventory port should be connected to the same WR/LD/OSCT as the Line to which it is connected.
- Static Filter DWDM 40 channel (SFD40B) module, with 40 optical channels at 50GHz offset from SFD40, is implemented as an external module, mounted in a rack outside the universal shelf. The inventory port of the SFD40B may be connected to an inventory port on a WR2-88 or, in the case of a FOADM node, a LD or OSCT card. The inventory port is connected to the same WR/LD/OSCT as the Line to which it is connected.
- Static Filter DWDM 44 channel (SFD44) module is implemented as a passive module mounted in a rack outside the Alcatel-Lucent 1830 PSS-32 shelf. The inventory port of the SFD44 may be connected to the inventory port on a CWR8, CWR8-88, WR2-88, WR8-88A or WR8-88AF card or, in the case of a FOADM node, a LD or OSCT card. The inventory port should be connected to the same CWR/WR/LD/OSCT as the Line to which it is connected..

  The SFD44 may also be daisy-chained with other non-universal shelves. Since it only has one inventory port, the SFD44 must be at the end of the daisy chain.
- Static Filter DWDM 44 channel (SFD44B) module, with 44 optical channels at 50GHz offset from SFD44, is implemented as a passive module mounted in a rack outside the Alcatel-Lucent 1830 PSS-32 shelf. The inventory port of the SFD44B may be connected to an inventory port on a CWR8-88, WR2-88, WR8-88A or WR8-88AF card or, in the case of a FOADM node, a LD or OSCT card. The inventory port should be connected to the same CWR/WR/LD/OSCT as the Line to which it is connected.

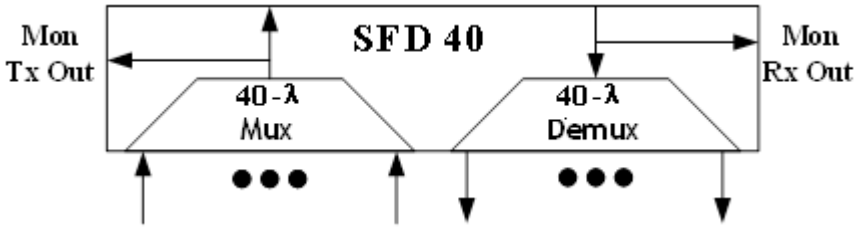
The SFD44B may also be daisy-chained with other non-universal shelves. Unlike the SFD44, the SFD44B has 2 inventory ports, and may be located at the end or in the middle of the daisy chain.

### SFD40 module

The SFD40 is a unit, which multiplexes and de-multiplexes up to 40 C-band DWDM channels onto a single fiber. The SFD40 is a 1RU device, containing thermal AWGs, and mounted externally to the Alcatel-Lucent 1830 PSS-32 shelf. The SFD40 requires electrical power for internal heaters that maintain a target temperature within the device. When used with other hardware to support an 88 channel environment, the SFD40 channels are referred to as the “even” channels.

Remote inventory information (EEPROM data such as module name, part number, serial number) is monitored by the CWR8 or LD module that belongs to DWDM optical line to which SFD40 is connected. Presence of an SFD40 module is monitored by an electrical inventory connection to a WR, OSCT, or LD module.

**Figure 18-38 SFD40 module diagram**



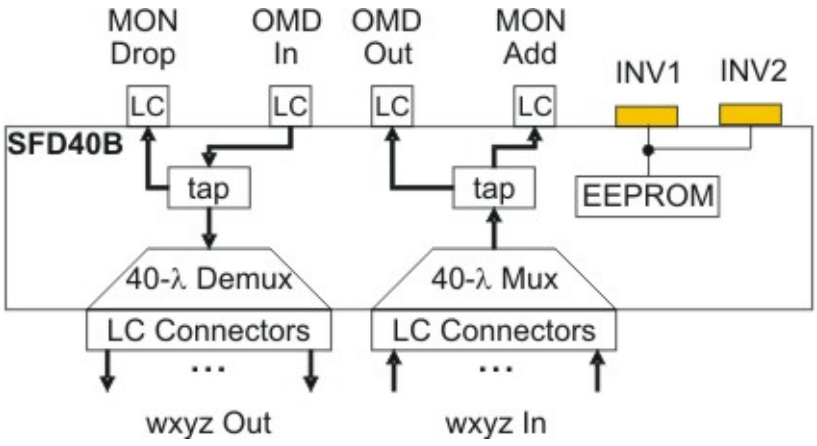

### SFD40B module

The SFD40B is a unit, which multiplexes and de-multiplexes up to 40 C-band DWDM channels onto a single fiber. These channels are offset 50GHz from the channels of the SFD40. The SFD40 is a 1RU device, containing thermal AWGs, mounted externally to the Alcatel-Lucent 1830 PSS-32 shelf.

The SFD40B is designed for use with the SFD40 and an interleaver (ITLB), to support 80 DWDM channels at 50GHz spacing. In this environment, the channels of the SFD40B are referred to as the “odd” channels.

Refer to Figure 18-39, “SFD40B module diagram” (p. 18-216)for an illustration.

**Figure 18-39 SFD40B module diagram**

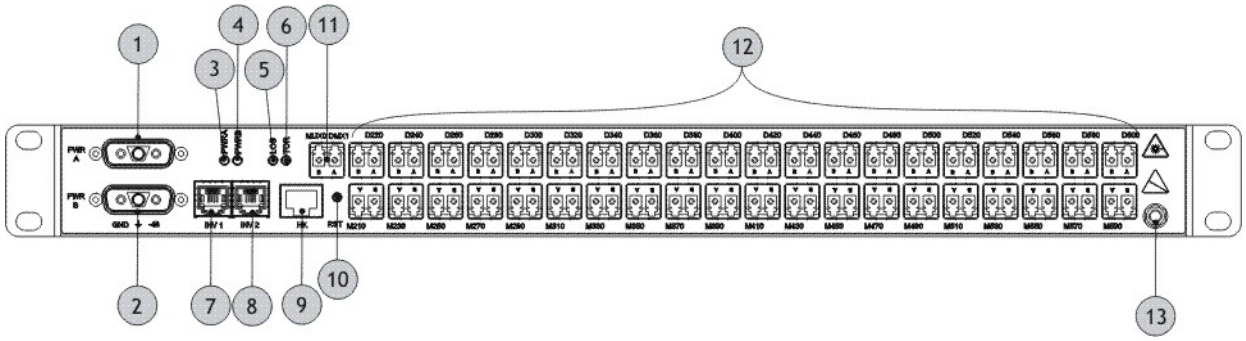



Remote inventory information (EEPROM data such as module name, part number, serial number) is monitored by CWR8-88 (required for 50GHz spacing) or LD module that belongs to DWDM optical line to which ITLB is connected.

The presence of the modules is monitored by electrical inventory connection to a WR, OSCT, or LD module. This connection can be daisy-chained through the SFD40/40B and ITLB. See Figure 18-33, “Interleaver inventory port application” (p. 18-207).

The SFD40 can be used with a companion SFD40B and other hardware to support up to 80 channels at 50GHz spacing.

**Figure 18-40 SFD40/SFD40B faceplate**




**Legend:**

| | |
|---|---|
| 1 | “PWR A” interface |
| 2 | “PWR B” interface |
| 3 | LEDs “PWRA” |

| | |
|---|---|
| 4 | LEDs “PWRB” |
| 5 | LEDs “LOS” |
| 6 | LEDs “TOR” |
| 7 | “INV 1” interface |
| 8 | “INV 2” interface |
| 9 | “HK” interface |
| 10 | “RST” switch |
| 11 | “MUX/DMX1” interface |
| 12 | Individual DWDM interface (SFD40: 192200-195900 or SFD40B: 192250-195950) |
| 13 | ESD grounding point |

### Visual indications

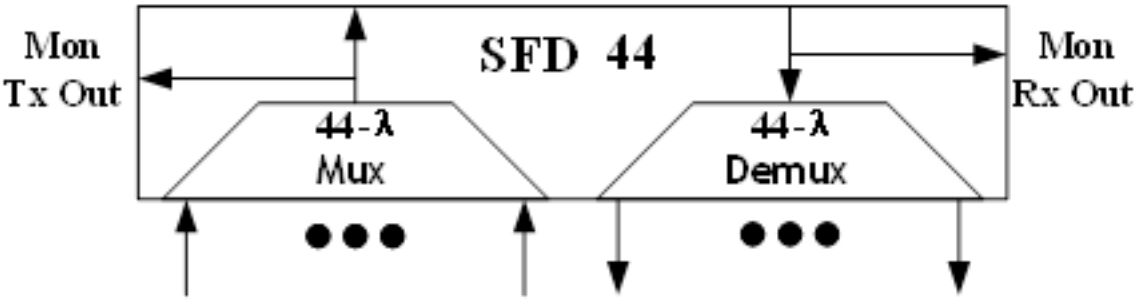
See “LEDs of the SFD40/SFD40B” (p. 19-11), for information about the visual indications of the LEDs.

## SFD44 module

The SFD44 is a unit which multiplexes and de-multiplexes up to 44 C-band DWDM channels onto a single fiber at 100GHz spacing. The SFD44 is a passive device mounted externally to the Alcatel-Lucent 1830 PSS shelf in its own 2RU (two rack unit height) OMD shelf. When used with other hardware to support an 88 channel environment, the SFD44 channels are referred to as the “even” channels.

Remote inventory information (EEPROM data such as module name, part number, serial number) is monitored by a CWR, WR, OSCT, or LD module that belongs to DWDM optical line to which SFD44 is connected. Configuration of SFD44 without amplifiers is allowed. However, without an amplifier, OSCT or WSS, there is no port for connection of the inventory cable from the SFD44. Therefore an SFD44 without amplifier cannot be managed by the NMS.

**Figure 18-41 SFD44 module diagram**



**Note:** The INV1 port is the active inventory port on the SFD44. Some SFD44 filters display an INV2 port, which is unused.

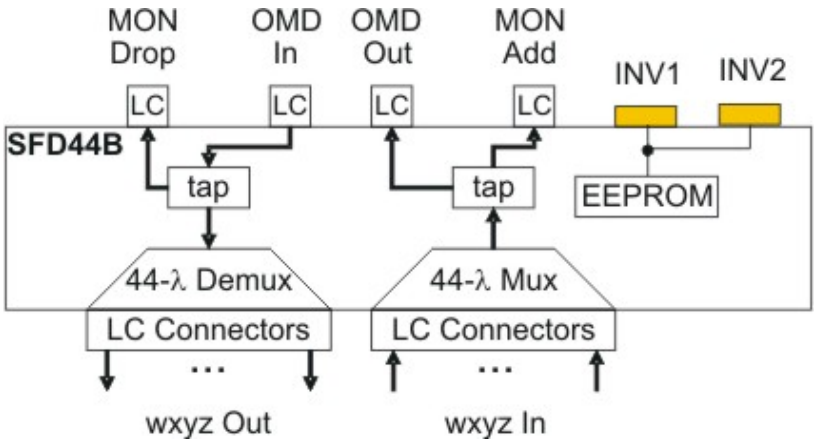
### SFD44B module

The SFD44B is a unit which multiplexes and de-multiplexes up to 44 C-band DWDM channels onto a single fiber. These channels are also at 100 GHz spacing, but are offset 50GHz from the channels of the SFD44. The SFD44B is a passive device mounted externally to the Alcatel-Lucent 1830 PSS shelf in its own 2RU (two rack unit height) OMD shelf.

The SFD44B is designed for use with the SFD44 and an interleaver (ITLB) that combines the two sets of 44 channels to support 88 DWDM channels at 50GHz spacing. In this environment, the channels of the SFD44B are referred to as the “odd” channels.

Refer to Figure 18-41, “SFD44 module diagram” (p. 18-217) for an illustration.

**Figure 18-42 SFD44B module diagram**

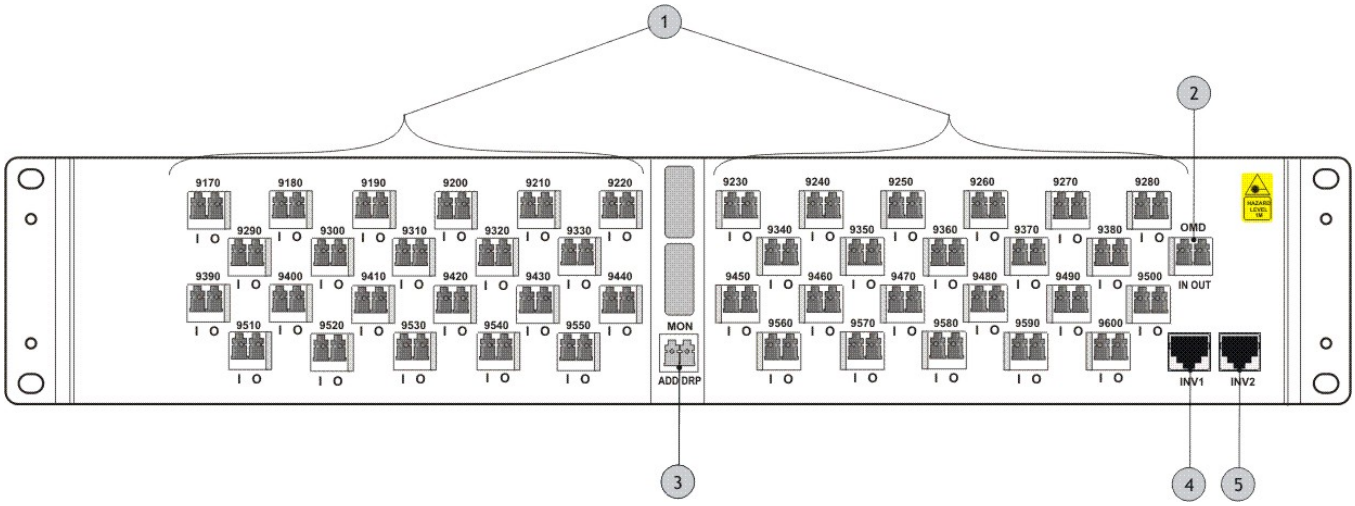



Remote inventory information (EEPROM data such as module name, part number, serial number) is monitored by CWR8-88 (required for 50GHz spacing), WR, OSCT, or LD module that belongs to DWDM optical line to which ITLB is connected. Configuration of SFD44B without amplifiers is allowed. However, without an amplifier, OSCT or WSS, there is no port for connection of the inventory cable from the SFD44B. Therefore an SFD44B without amplifier cannot be managed by the NMS.

The presence of the passive modules is monitored by electrical inventory connection to the CWR, WR, OSCT, LD module. This passive connection can be daisy-chained through the SFD44B and ITLB. See Figure 18-33, “Interleaver inventory port application” (p. 18-207).

The SFD40 can be used with a companion SFD40B and other hardware to support up to 80 channels at 50GHz spacing.

**Figure 18-43 SFD44/SFD44B faceplate**




**Legend:**

| | |
|---|---|
| 1 | Individual DWDM interface (SFD44: 191700-196000 or SFD44B: 191750-196050) |
| 2 | “OMD” interface |
| 3 | “MON” interface |
| 4 | “INV 1” interface |
| 5 | “INV 2” interface |

# CWDM filter modules (SFC2, SFC4, SFC8)

## Overview

SFC2, SFC4, and SFC8 modules have two, four, or eight bidirectional CWDM ports, respectively, for adding designated wavelengths to the CWDM line, multiplexed OMD port, and to the expansion port (EXP) port. OMD port is connected to the outside plant CWDM line while Expansion port is used for cascading multiple SFC modules to extend the multiplexing/de-multiplexing port range. SFC2 & 4 are implemented as half-height modules. SFC8 is a full-height universal slot module.

## Module descriptions

The Static Filter CWDM (SFC) 2/4/8 cards perform optical wavelength multiplex/demultiplex operations for 2, 4, or 8 consecutive ITU coarse channels out of the total eight channels. There are 4 SFC2 variants, 2 SFC4 variants, and one SFC8. In addition, the SFC2 and SFC4 perform a pass-through of all other channels from the OMD In port to the OMD Out port (and reverse).

**Figure 18-44 SFC2 block diagram**

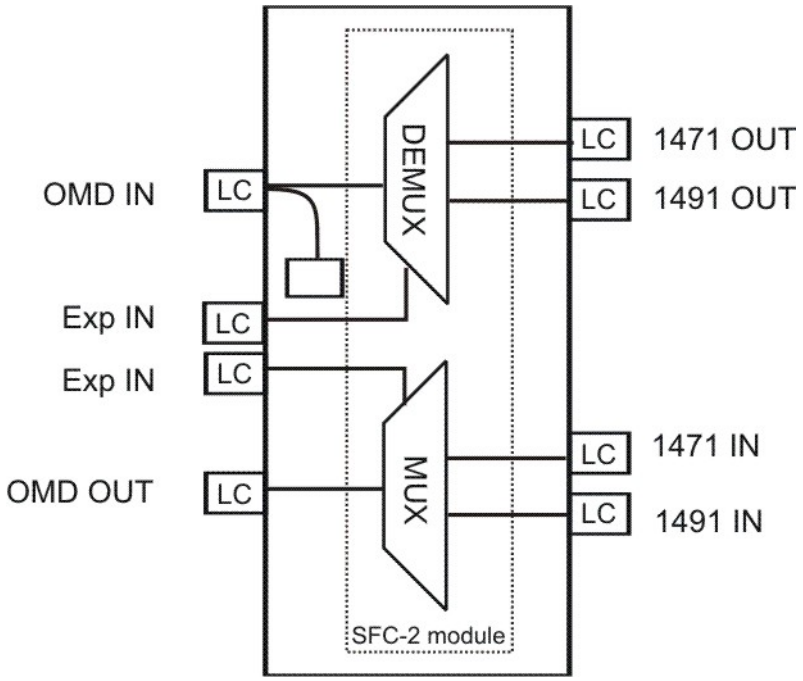


**Figure 18-45 SFC4 block diagram**

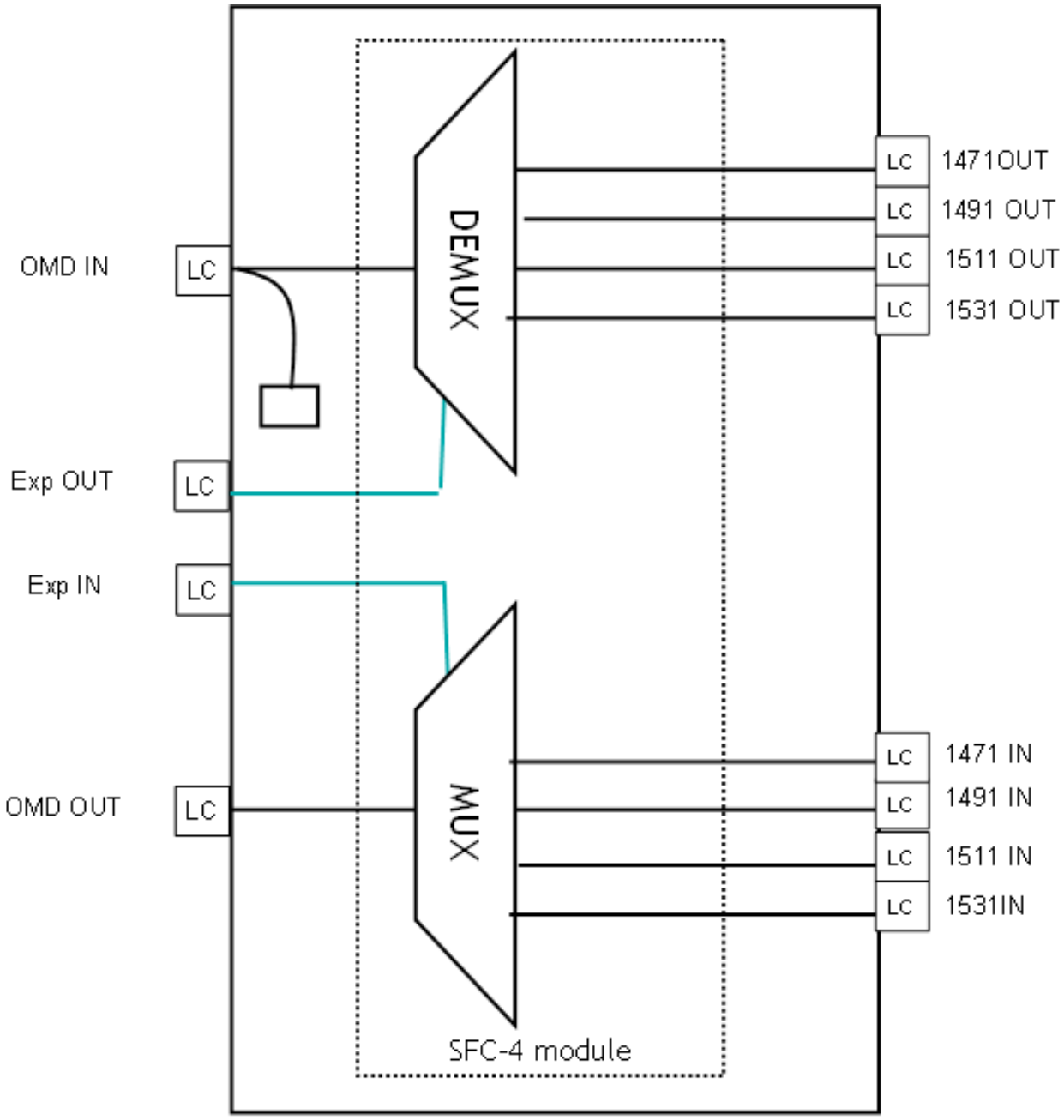
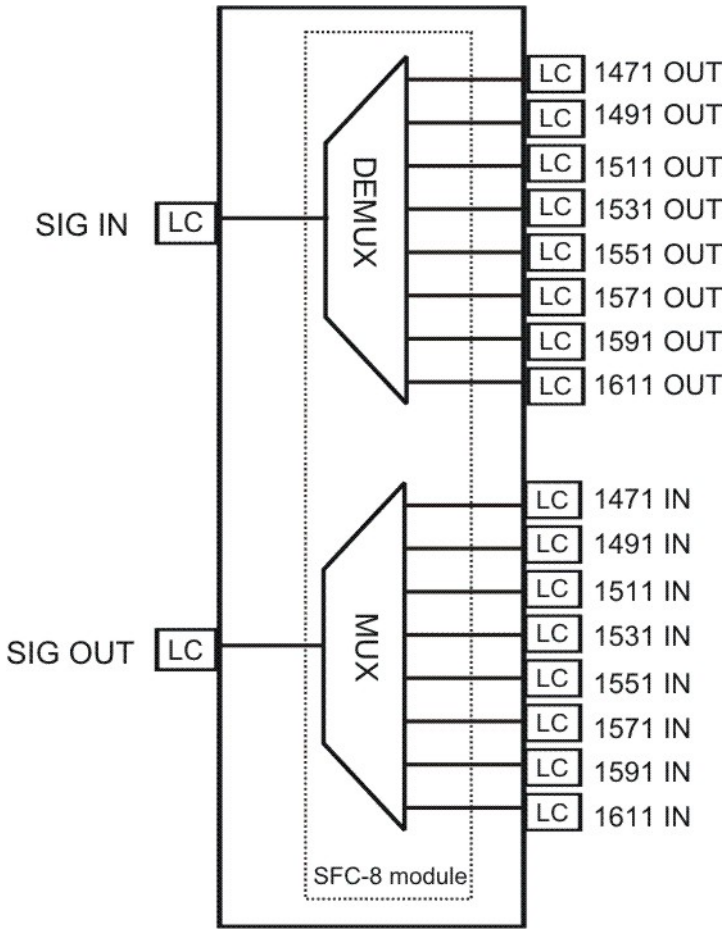


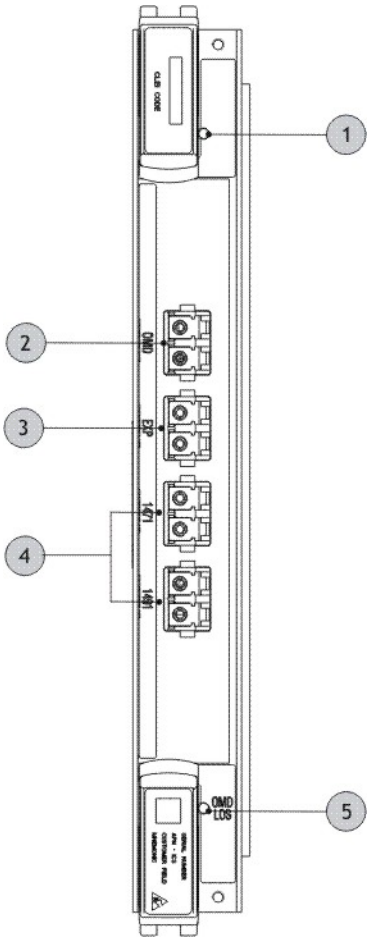
**Figure 18-46 SFC8 block diagram**




## Front views

The following illustrations provide front views of the faceplates of the SFC2, SFC4, and SFC8 CWDM filter modules.

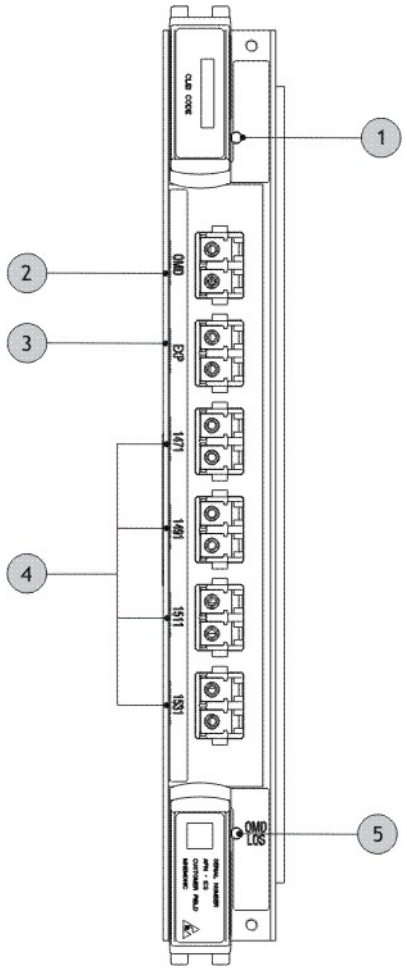
**Figure 18-47 SFC2 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “OMD” interface |
| 3 | “EXP” interface |
| 4 | Individual CWDM wavelength interfaces (specific wavelengths dependent on SFD2 model) |
| 5 | LEDs “OMD LOS” |

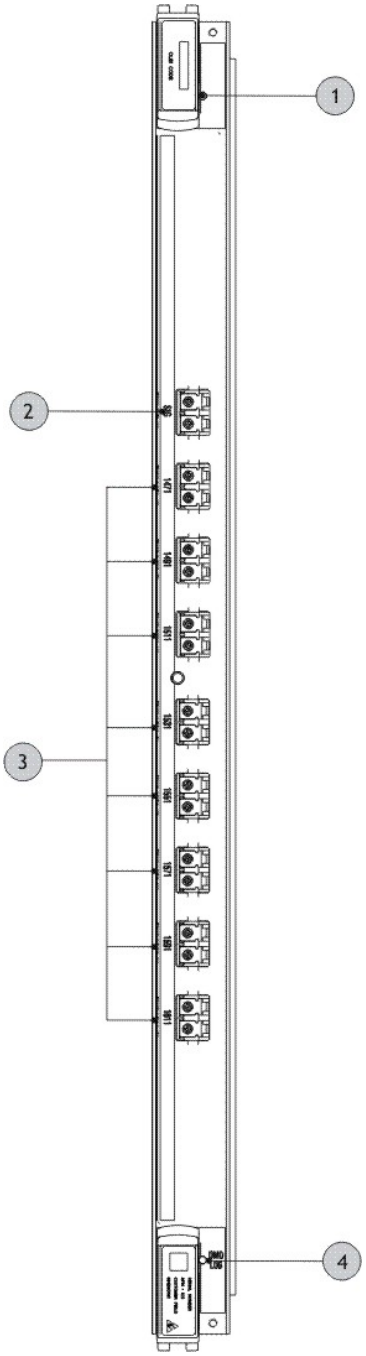
**Figure 18-48 SFC4 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “OMD” interface |
| 3 | “EXP” interface |
| 4 | Individual CWDM wavelength interfaces (specific wavelengths dependent on SFD4 model) |
| 5 | LEDs “OMD LOS” |

**Figure 18-49 SFC8 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “SIG” interface |
| 3 | Individual CWDM wavelength interfaces |

| | |
|---|---|
| 4 | LEDs “OMD LOS” |

## Locations

The SFC2 and SFC4 modules can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and 13 to 20, and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

The SFC8 module can be installed in Alcatel-Lucent 1830 PSS-8 slots 2 to 5, Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17.

The SFC8 module can also be installed in any I/O card slot of Alcatel-Lucent 1830 PSS-36 and Alcatel-Lucent 1830 PSS-64, thus supporting a basic FOADM configuration within a shelf of the switching compound.

# Wavelength routers (CWR8, CWR8-88, WR8-88A, WR8-88AF, WR2-88, WR20-TF, WR20-TFM)

## Introduction

Alcatel-Lucent 1830 PSS TOADM configurations are based on the 8-channel Colorless Wavelength Router (CWR8 and CWR8-88). This configuration supports colorless add/drop, with automated commission, power control, optical monitoring provision and in-service upgrade.

Alcatel-Lucent 1830 PSS ROADM configurations are based on the 88-channel Wavelength Router (WR8-88A/WR8-88AF). The WR8-88A/WR8-88AF provides increased performance and can be used for Anydirection configurations. The WR8-88A/WR8-88AF does not support colorless ports. Like TOADM configuration, this configuration also supports automated commissioning, power control, optical monitoring provision and in-service upgrade.

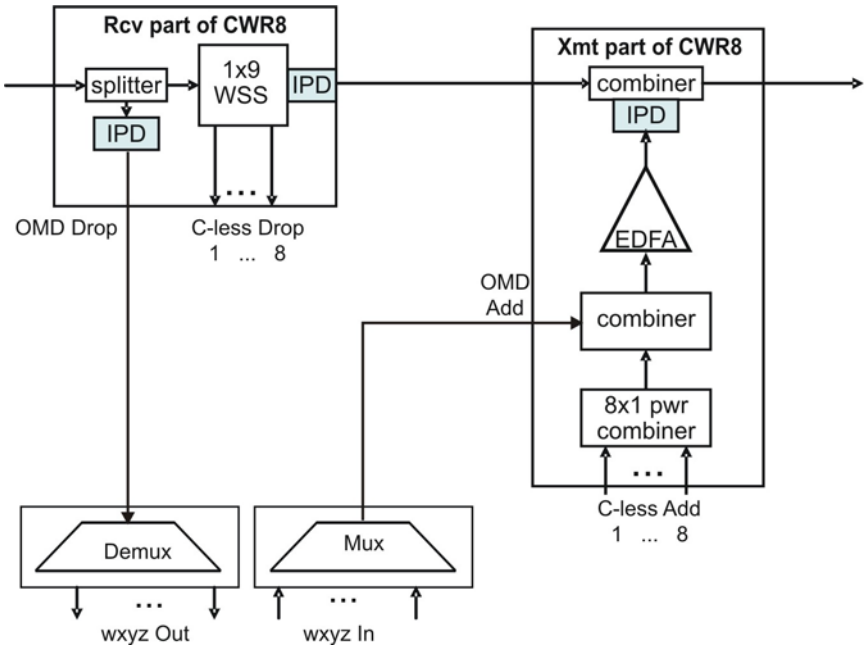
Alcatel-Lucent 1830 PSS ROADM CDC-F configurations are based on the 88-channel per degree add and drop capability. The WR20-TFM supports the ROADM CDC-F configurations.

## Colorless wavelength router (CWR8)

The Colorless Wavelength Router (CWR8) module provides one of the major functions among the core optics packs which involves routing of optical channels (single configurable wavelength or a set of configurable wavelengths) between OTS lines and Colorless Add/Drop points. CWR8 module provides essential function for tunable optical add/drop (TOADM) architecture. The main sub-module of the CWR8 is 1x9 Wavelength Selective Switch (WSS), which allows configurable add/drop of selected wavelength(s).

As shown in the following illustration, WSS is positioned in the ingress optical flow of the CWR8 module, while egress optical flow consists of combiners and EDFA.

**Figure 18-50 Functional diagram of CWR8 module within an optical line**

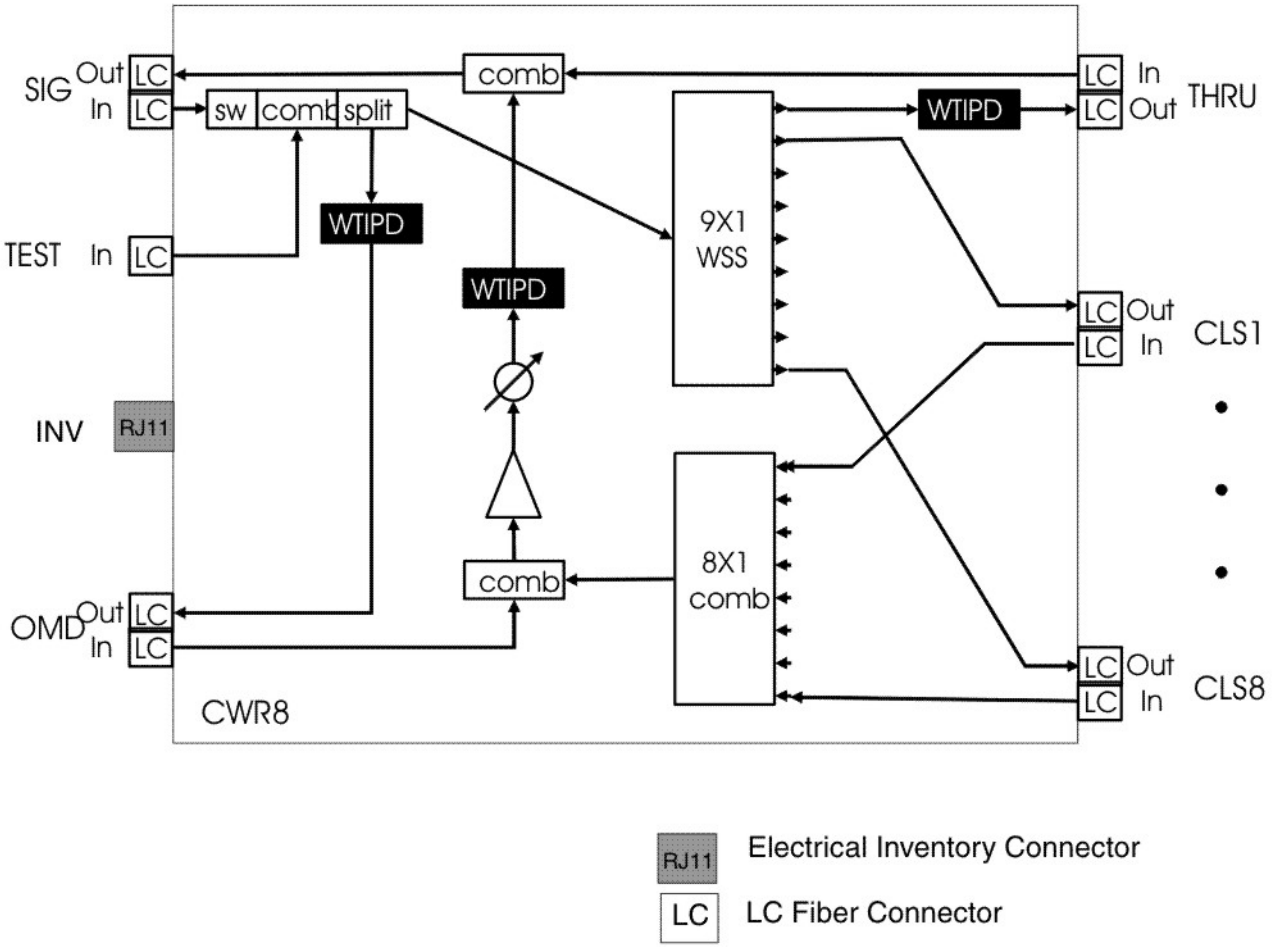



Colorless 8-channel Wavelength Router (CWR8) packs support drop, through, and add path.

- Incoming channels go through the first coupler, and part of the signal goes to broadband drop port that connects to the demux port of the SFD44/10/5 for colored drop.
- Signal can connect to a test port at the input to verify the connectivity during commission.
- Up to eight (8) colorless drops are routed to service ports 1-8 of the 1x9 WSS. When mesh is supported, one or more of these ports become mesh output ports. No limitation exists on which of colorless ports are being used as mesh from optical architecture point of view.
- Through channels are routed to through port 9 of the 1x9 WSS.
- The WSS has adjustable per-channel attenuation for equalizing drop and through channels.
- Colorless add channel comes into the CWR8 from the OT through an 8x1 combiner and are coupled with the colored add channel that comes from the SFD before the add-amplifier.
- The add-amplifier is a fixed gain C-band EDFA. The output of this amplifier goes through a VOA and is then combined with the through channel on a single fiber to feed into the LD.

In addition to optical ports, the CWR8 module includes an electrical port that is used to monitor remote passive module inventory (SFD-44 modules). For additional optical port information see "Optical filter and router insertion loss specifications" (p. 22-7).

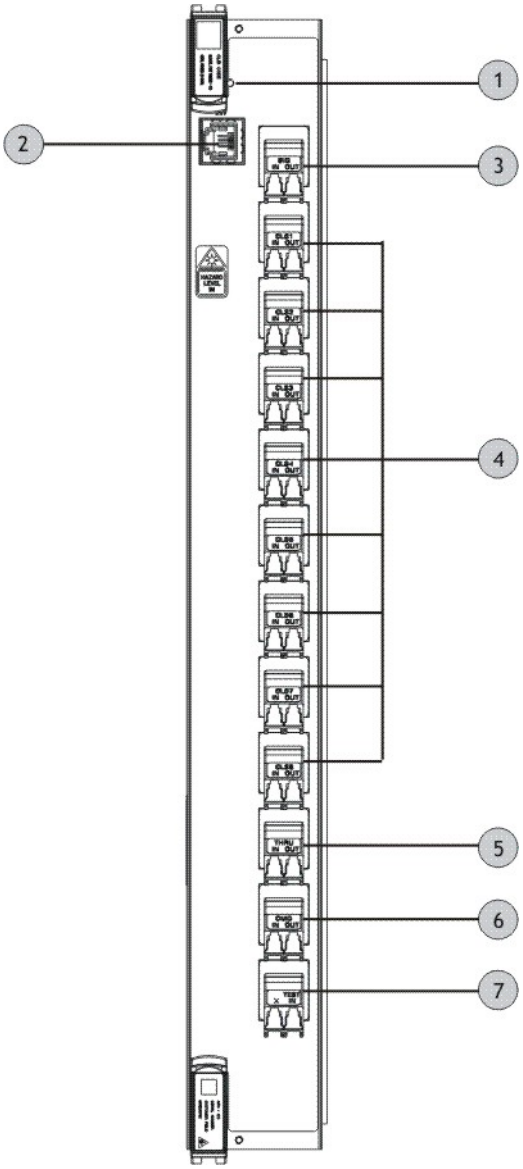
**Figure 18-51 CWR8 block diagram**



### Front view

The following illustration is a front view of the faceplate of the CWR8 Colorless 8-channel Wavelength Router.

**Figure 18-52 CWR8 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “CLS1”-“CLS8” interfaces |

| | |
|---|---|
| 5 | "THRU" interface |
| 6 | "OMD" interface |
| 7 | "TEST" interface |

### Location

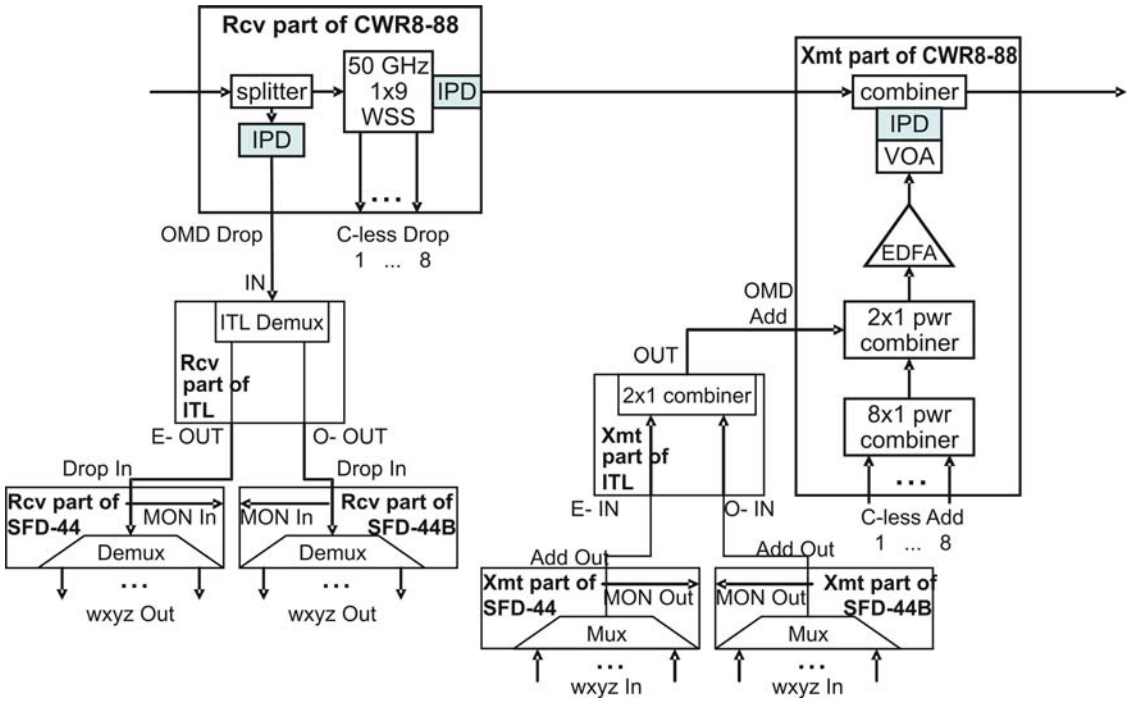
The Colorless 8-channel Wavelength Router (CWR8) can be installed in Alcatel-Lucent 1830 PSS-32 slots 2 to 16.

## 88-channel colorless wavelength router (CWR8-88)

The CWR8-88 routes optical channels (a single configurable wavelength or a set of configurable wavelengths) between OTS lines and Colorless Add/Drop points. Like the CWR8, the CWR8-88 is a full-height module that plugs into 2 slots of space in the 1830 PSS-32 chassis. However, the CWR8-88 provides 88 channel support, with 50 GHz spacing, for tunable optical add/drop (TOADM) architecture. The main sub-module of the CWR8-88 is 1x9 Wavelength Selective Switch (WSS-50G), which allows configurable add/drop of selected wavelength(s) at 50 GHz spacing.

As shown in the following illustration, the WSS-50G is positioned in the ingress optical flow of the CWR8-88 module, while egress optical flow consists of combiners and EDFA.

**Figure 18-53 Functional diagram of CWR8-88 module within an optical line**

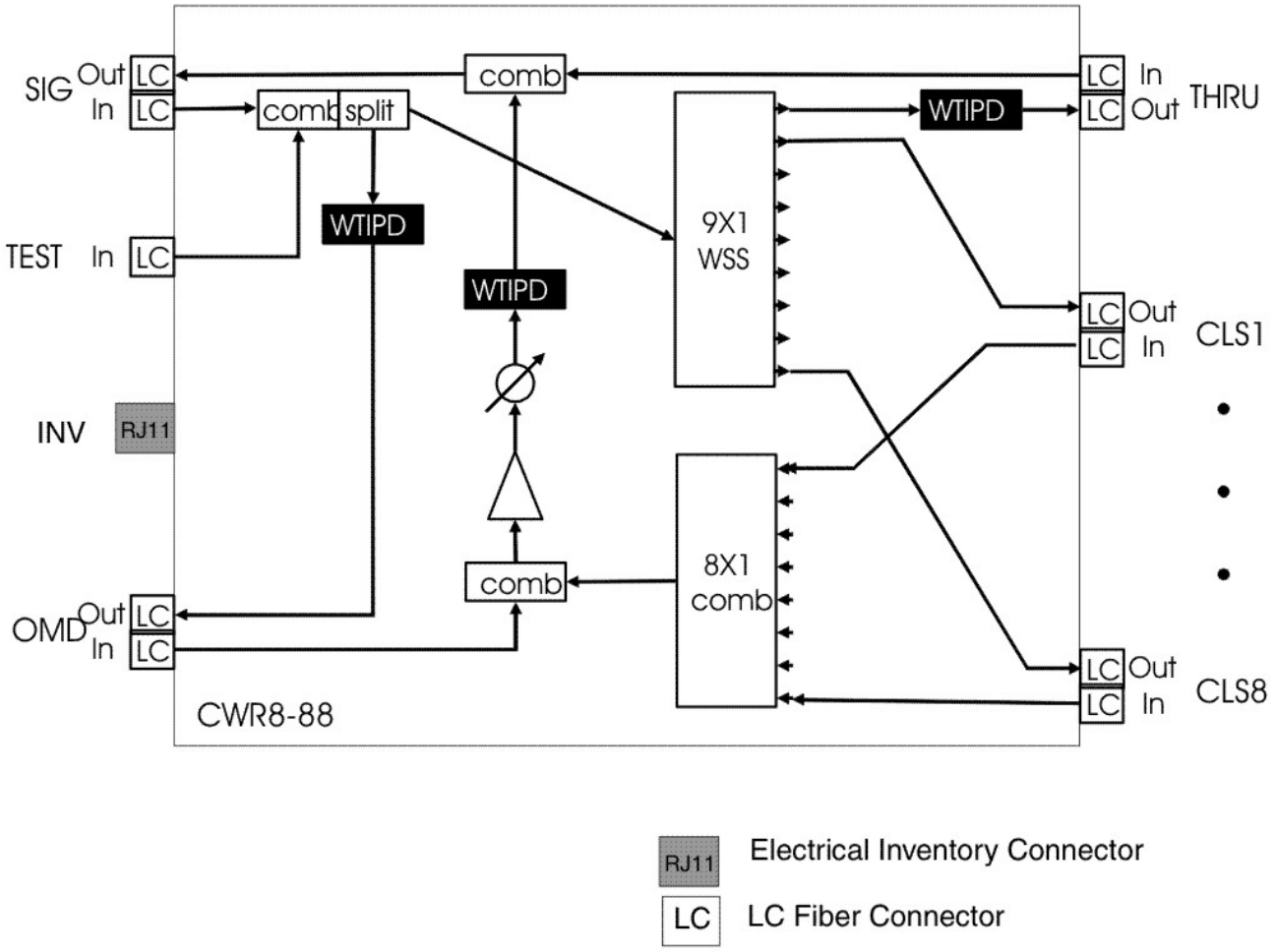


Colorless 8-channel Wavelength Router (CWR8-88) packs support drop, through, and add path.

- Incoming channels go through the first coupler, and part of the signal goes to broadband drop port that connects to the IN port of the ITLB for colored drop.
- Signal can connect to a test port at the input to verify the connectivity during commission.
- Up to eight (8) colorless drops are routed to service ports 1-8 of the 1x9 WSS-50G. When mesh is supported, one or more of these ports become mesh output ports. No limitation exists on which of colorless ports are being used as mesh from optical architecture point of view.
- Through channels are routed to through port 9 of the 1x9 WSS-50G.
- The WSS-50G has adjustable per-channel attenuation for equalizing drop and through channels.
- A colorless add channel comes into the CWR8-88 from the OT through an 8x1 combiner and is coupled with the colored add channel that comes from the SFD before the add-amplifier.
- The add-amplifier is a fixed gain C-band EDFA. The output of this amplifier goes through a VOA and is then combined with the through channel on a single fiber to feed into the LD.
- CWR8-88 also contains three IPDs that are integrated with WTD for optical channel monitoring.

In addition to optical ports, the CWR8-88 module includes an electrical port that is used to monitor remote passive module inventory (SFD44 , SFD44B, and ITLB modules). For additional optical port information see “Optical filter and router insertion loss specifications” (p. 22-7).

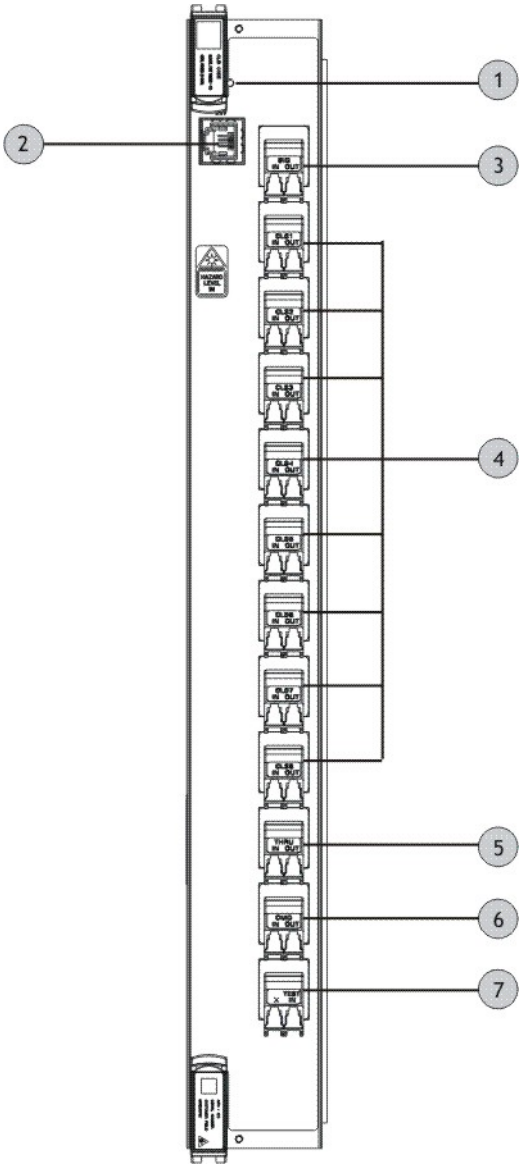
**Figure 18-54 CWR8-88 block diagram**



### CWR8-88 front view

The following illustration is a front view of the faceplate of the CWR8-88.

**Figure 18-55 CWR8-88 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “CLS1”-“CLS8” interfaces |
| 5 | “THRU” interface |

| | |
|---|---|
| 6 | “OMD” interface |
| 7 | “TEST” interface |

### Location

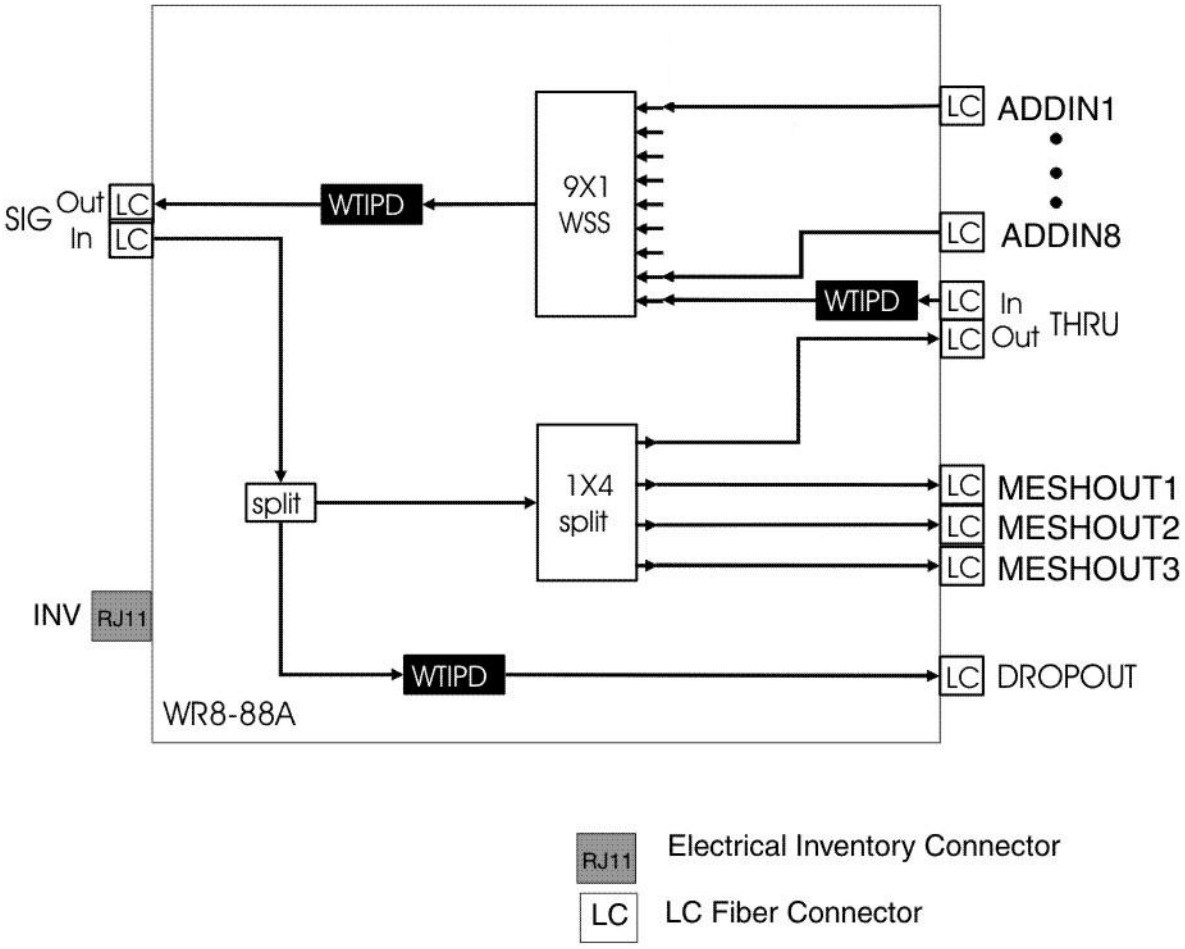
The CWR8-88 can be installed in Alcatel-Lucent 1830 PSS-32 slots 2 to 16.

## 88-channel 8 degree Wavelength Router (WR8-88A, WR8-88AF)

The 88-channel, 8 degree wavelength router, WR8-88A or WR8-88AF, is used in a ROADM to provide bi-directional transmission of the optical signals. In the current release, the WR8-88A and WR8-88AF support the same functionality. All requirements in this document for WR8-88A are also applicable for WR8-88AF.

The WR8-88A(F) broadcasts all received channels to the DROP Out port and the three (3) MESH OUT ports by passing the OMS signal received on the SIG port from the optical line to the MESH OUT 1-3 ports, the DROPOUT port, and the THRU port in the drop direction. In the add direction, the WR8-88A(F) selects channels from the eight (8) ADD IN ports and combines with signal input to the THRU through the WSS onto a single outgoing fiber connected to the LD Type Pack. The WR8-88A(F) will support eight optical lines and 88 channels from the 88 channel grid. The WR8-88AF is hardware ready to support flex grid application.

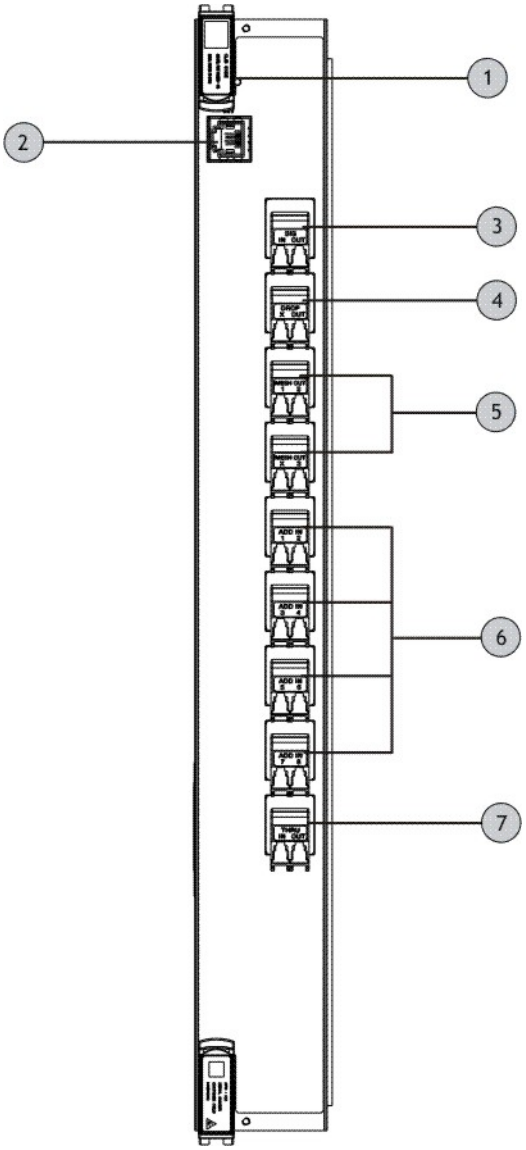
**Figure 18-56 WR8-88A(F) block diagram**




### WR8-88A(F) front view

The following figure is an illustration of the front view of the faceplate of the WR8-88A(F)

**Figure 18-57 WR8-88A(F) faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “DROP” interface |
| 5 | “MESH” interfaces (MESH 1, 2, & 3) |
| 6 | “ADD IN” interfaces (ADD IN 1 - 8) |
| 7 | “THRU” interface |

### Visual indications

For information about the LED on the front panel, see "Card Status LED" (p. 19-12)

### Location

| Pack | PSS-8 slots | PSS-16 slots | PSS-32 slots | PSS-16 subtending shelf slots |
|---|---|---|---|---|
| WR8-88A | 2-4 | 3-8 | 2-16 | 3-9 |
| WR8-88AF | NA | 3-8 | 2-16 | 3-9 |

## 88-channel 2 degree Wavelength Router (WR2-88)

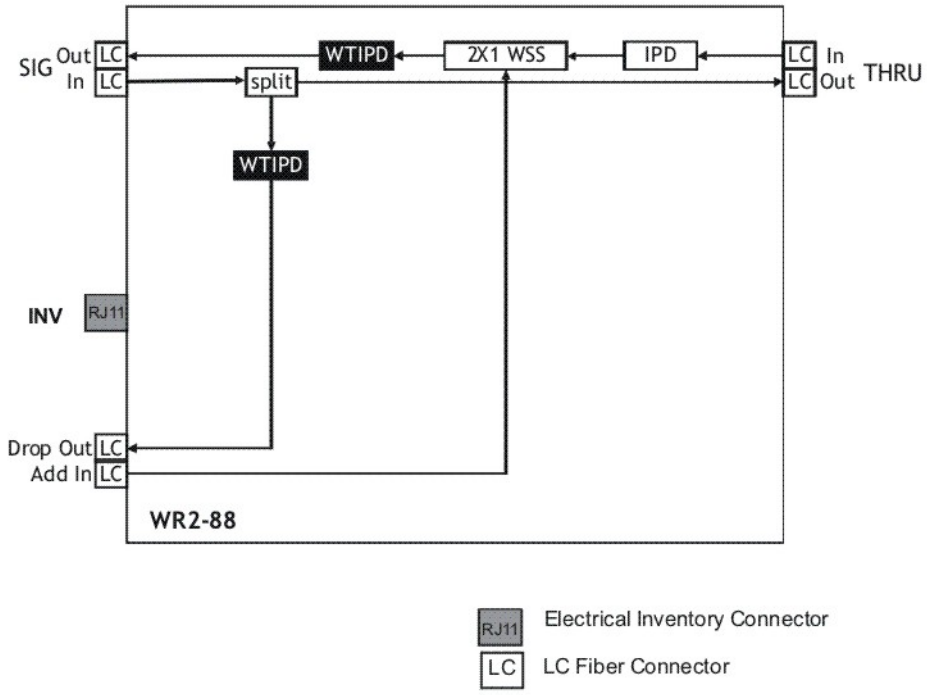
The WR2-88 is a lower-cost 2-degree wavelength router. WR2-88 cards provide increased performance and can be used for Anydirection configurations.

The WR2-88 is a pack that, in the drop direction, passes the OMS signal received from the optical line to the OMD port, and switches individual channels in the OMS signal to the THRU port. In the add direction, WR2-88 circuit packs combine the signals input to the THRU and OMD ports. The signals entering the OMS and THRU ports are combined.

The WR2-88 supports 88 channels on a 50 GHz grid. The thru path always has 50 GHz channel spacing, though a user may choose to use the add/drop port for 50 GHz or 100 GHz spaced channels. For 50 GHz channel spaced add/drop, an ITLB is required. For 100 GHz channel spaced add/drop, an ITLB is not required.

OTs with fixed channel XFPs may not be used with a WR2-88.

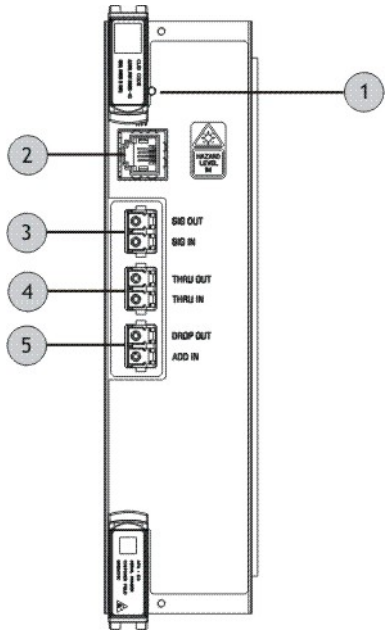
**Figure 18-58 WR2-88 block diagram**




### WR2-88 front view

The following figure is an illustration of the front view of the faceplate of the WR2-88

**Figure 18-59 WR2-88 faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “THRU” interface |
| 5 | “DROP/ADD” interface |

### Visual indications

For information about the LED on the front panel, see “Card Status LED” (p. 19-12)

### Location

| Pack | PSS-16 slots | PSS-32 slots | PSS-16 subtending shelf slots |
|---|---|---|---|
| WR2-88 | 3-8, 13-18 | 2-16, 20-34 | 3-9, 13-19 |

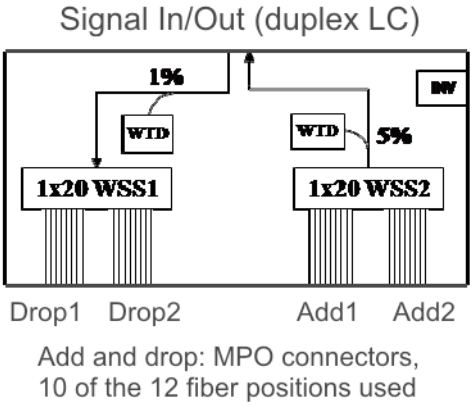
## Wavelength router 1x20 flex-grid (WR20-TFM)

WR20-TFM supports 88 channels on a 50 GHz grid. The WR20-TFM is hardware ready to support 96 channels on a 50 GHz grid and flex grid application.

Incoming channels are routed by a 20-port WSS to drop ports or to other degrees of the ROADM. Outgoing channels, either locally added or expressed through the ROADM, are combined in a second WSS onto a single fiber connected to the egress LD pack. WR20-TFM is currently used in the CDC-F configuration.

One WR20-TFM is used per degree. The connections for the add/drop/thru ports are realized with MPO connectors. The signal port connections to the ingress and egress LDs use LC connectors.

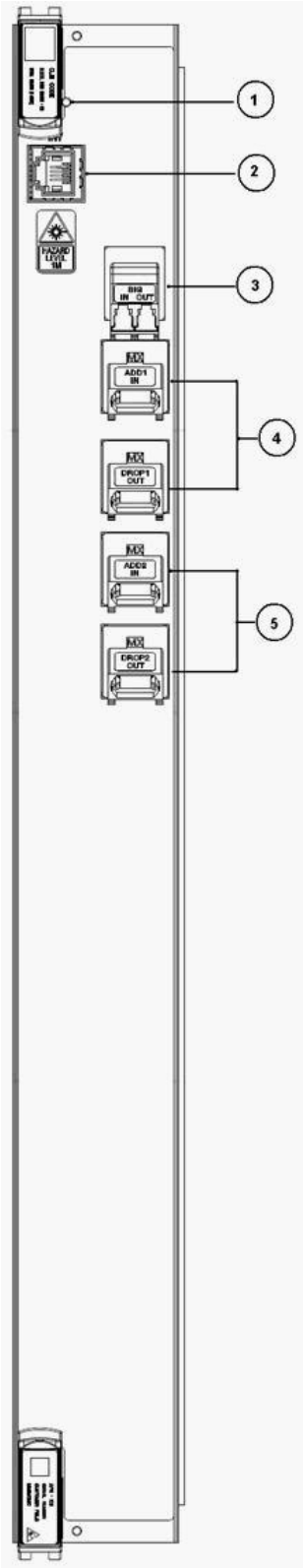
**Figure 18-60 WR20-TFM block diagram**




### WR20-TFM front view

The following figure is an illustration of the front view of the faceplate of the WR20-TFM.

**Figure 18-61 WR20-TFM faceplate**



**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “ADD1/DROP1” interface |
| 5 | “ADD2/DROP2” interface |

### Visual indications

For information about the LED on the front panel, see “Card Status LED” (p. 19-12)

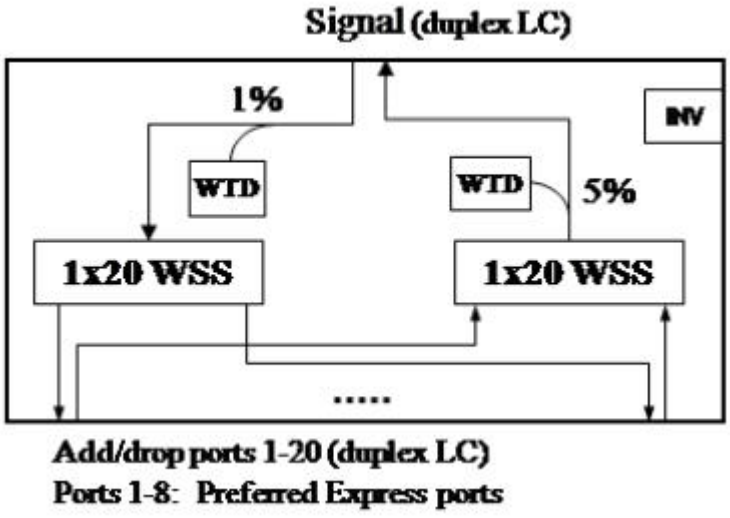
### Location

| Pack | PSS-32 slots |
|---|---|
| WR20-TFM | 2-16 |

## Wavelength router 1x20 flex-grid (WR20-TF)

WR20-TF uses the same internal optics as WR20-TFM, but only LC faceplate connectors are used. Like WR20-TFM, WR20-TF supports 88 channels on a 50 GHz grid, and is hardware ready to support 96 channels on a 50 GHz grid and flex grid application. WR20-TF is currently used with PSC1-6 in a colorless, directed ROADM configuration.

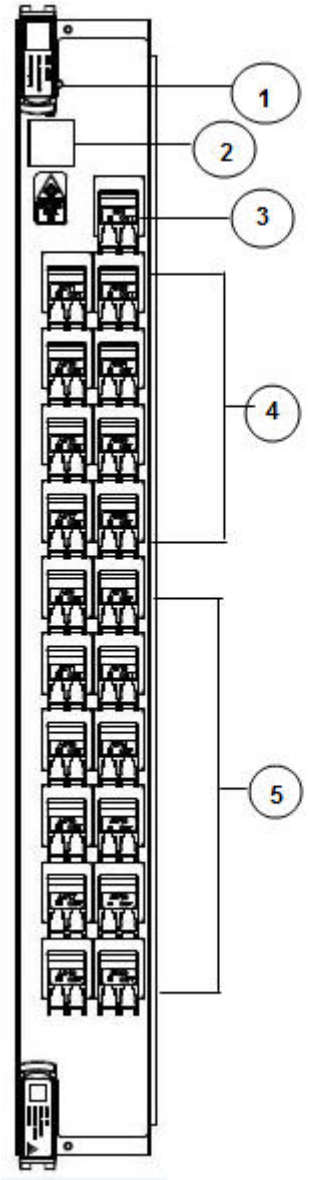
**Figure 18-62 WR20-TF block diagram**




### WR20-TF front view

The following figure is an illustration of the front view of the faceplate of the WR20-TF.

**Figure 18-63 WR20-TF faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “SIG” interface |
| 4 | “Add/Drop/Through” interface |
| 5 | “IN and OUT” interface |

### Location

| Pack | PSS-16 slots | PSS-32 slots | PSS-16 subtending shelf slots |
|---|---|---|---|
| WR20-TF | 3-8 | 2-16 | 3-9 |

# Optical supervisory card total power (OSCT)

## OSCT card

The Optical Supervision Channel (OSC) Total power transmission pack (OSCT) is an LD type pack that provides total power monitoring in both directions and can manage the optical supervisory channel (OSC) signal. The OSCT circuit pack is used on short spans that do not require amplification.

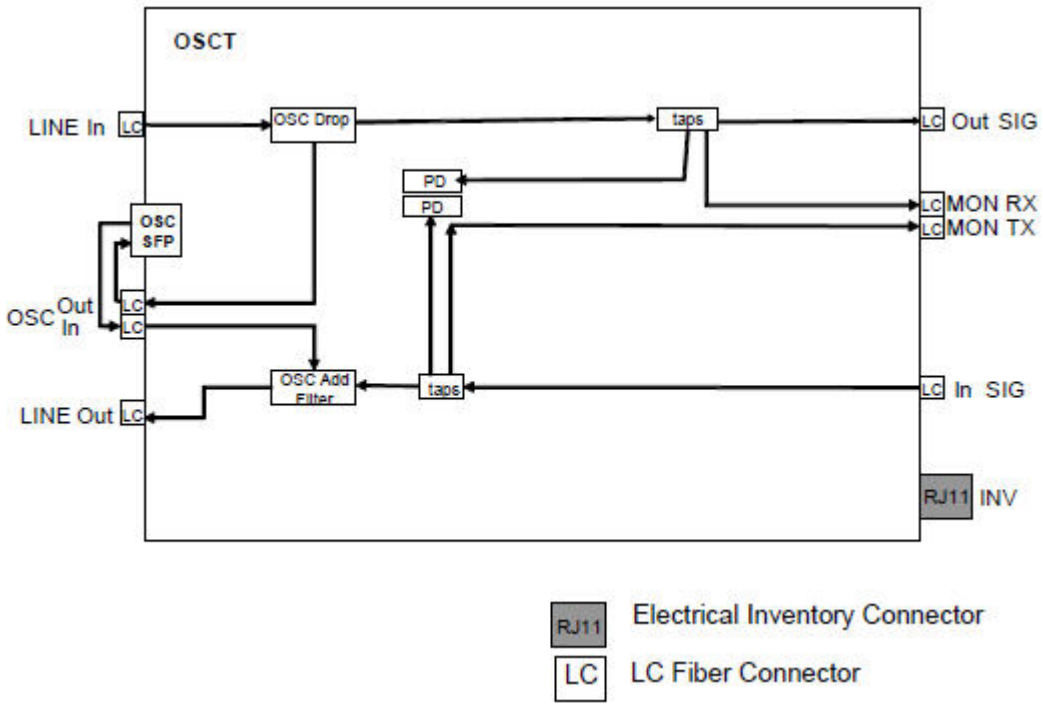
OSCT is a half height single slot card that has the following SW managed ports:

- SIG
- INV
- OSC
- LINE
- OSCSFP

The following ports are also available on the OSCT pack:

- LAN
- MON

**Figure 18-64 OSCT block diagram**



The OSCT card terminates the OSC channel for OAM&P data transmission on lines not requiring amplification. It provides an OC3/Ethernet link between adjacent nodes for inter-node communications.

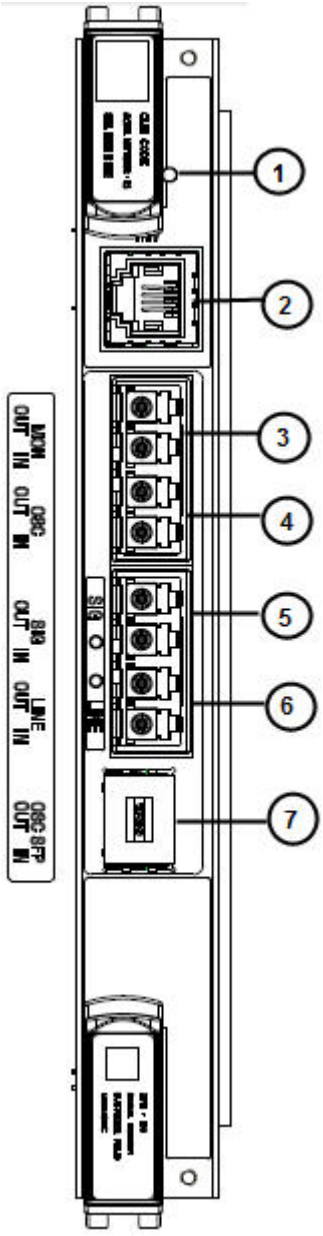
The OSCT cards do not provide full support for APR. They should not be used in configurations that include amplifiers with output powers that can exceed class 1M. OSCT cards may also not be suitable for use by customers that require APR shutdowns, even when safety standards can be met without APR.

The OSCT card supports interworking between the 1696 and 1830 through the optical supervisory channel in the same manner as the ALPHG/AHPHG pack. In this application, the OSC format must be set to 100BASE-FX to interwork with 1696.

### OSCT front view

The following figure illustrates a front view of the faceplate of the OSCT card:

**Figure 18-65 OSCT card faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “LAN” interface |
| 3 | “MON” interface |
| 4 | “OSC” interface |
| 5 | “SIG” interface |

| | |
|---|---|
| 6 | “LINE” interface |
| 7 | “OSCSFP” interface |

### Visual Indications

For information about the LEDs on the front panel, see “Card Status LED” (p. 19-12) and “Port Status LED” (p. 19-12).

### Location

The OSCT card can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and 13 to 20, and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

# Variable attenuator cards (SVAC, MVAC, MVAC8B)

## Introduction

Variable Attenuator Card (VAC) type packs are used to control the power level and insert WaveTracker keys onto optical signals from client equipment.

- The Single Variable Attenuator Card (SVAC) contains a fast optical VOA and WaveTracker encoder to condition a single alien wavelength to pass through the TOADM system. The SVAC is a bidirectional pack.
- The Multiple Variable Attenuator Card (MVAC) contains an array of eight fast optical VOA and WaveTracker encoders to condition up to eight alien wavelengths to pass through the TOADM system. The MVAC is a unidirectional pack.
- The Multiple Variable Attenuator Card (MVAC8B) contains an array of eight fast optical VOA and WaveTracker encoders to condition up to eight alien wavelengths to pass through the TOADM system. The MVAC8B is a bidirectional pack.

## SVAC

The single port variable attenuation card is used as a bridge by the compatible wavelength transponders into Alcatel-Lucent 1830 PSS DWDM domain.

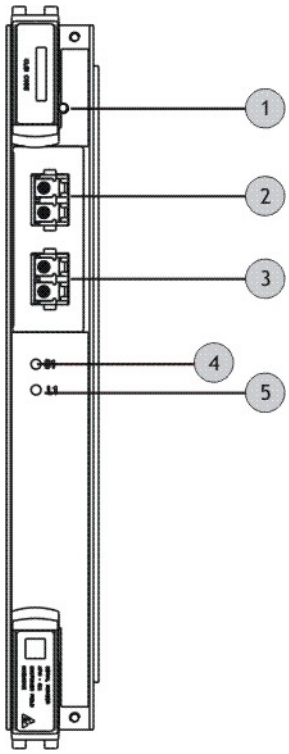
The following are the basic functions provided by SVAC as demarcation and adaptation for so-called “alien” (foreign wavelength) channel.

- Encodes the Wavelength Tracker wave keys onto the optical channel.
- Automatically adjusts a variable optical attenuator (VOA) on each channel to set the channel output optical power to the target level determined by NE SW
- Monitors incoming alien wavelength optical power level and appropriate alarming.

### Front view

The following illustration shows a front view of the faceplate of the SVAC.

**Figure 18-66 SVAC faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “L1” interface |
| 3 | “C1” interface |
| 4 | LEDs “C1” |
| 5 | LEDs “L1” |

### Location

SVAC is implemented as a half-height module that can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and 13 to 20, and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

## MVAC

The Multiple Variable Attenuator Card (MVAC) contains an array of eight fast optical VOA and WaveTracker 32 encoders to condition eight alien wavelengths to pass through the TOADM system. The MVAC is a unidirectional pack with 8 ports for adding and dropping alien wavelengths.

For unidirectional topologies, the MVAC supports unidirectional (single-strand) connections to and from its ports, as shown in the figure below. The alien wavelength passes through the MVAC when added to the network for Wavelength Tracker encoding and monitoring. When the wavelength is dropped from the network, it does not go through the MVAC.

As of Release 6.0.6 MVAC supports the option for selecting between two modes of operation, Power Mode or Attenuation Mode. Power mode is the mode of operation that has been supported in previous releases. Under power mode, VOA output power.is constant. Under attenuation mode, VOA attenuation is constant. The mode can be changed between power and attenuation when the port is administratively placed into the “down” or “maintenance” modes.

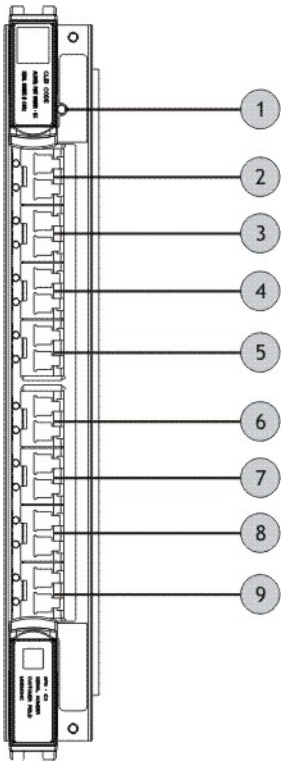
In attenuation mode, when the port administratively placed into the “down” or “maintenance” modes, the current attenuation is kept. Different ports on the same MVAC card can work independently under power or attenuation modes. However, only slow VOA is allowed with attenuation mode.

The MVAC is implemented as a half-height module that can be configured in the 1830 PSS-32 or 1830 PSS-16 shelves. MVAC ports do not support bidirectional connections.

### MVAC front view

The following illustration shows a front view of the faceplate of the MVAC.

**Figure 18-67 MVAC faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2-9 | “G1”-“G8” interfaces |

### Visual Indications

For information about the LEDs on the front panel, see “Card Status LED” (p. 19-12) and “Port Status LED” (p. 19-12).

### Location

The MVAC can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and 13 to 20, and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

## MVAC8B

This card is based on the MVAC design and adds an egress direction monitoring capability to provide a more robust point of demarcation for so called alien wavelengths. An alien wavelength is a signal whose transmitter is outside of the control of 1830 PSS

network element, so the optical power must be controlled at a point of demarcation. The WaveLength Tracker™ optical overhead must also be applied at the point of demarcation so that network level power control and fault processing systems can recognize the signal.

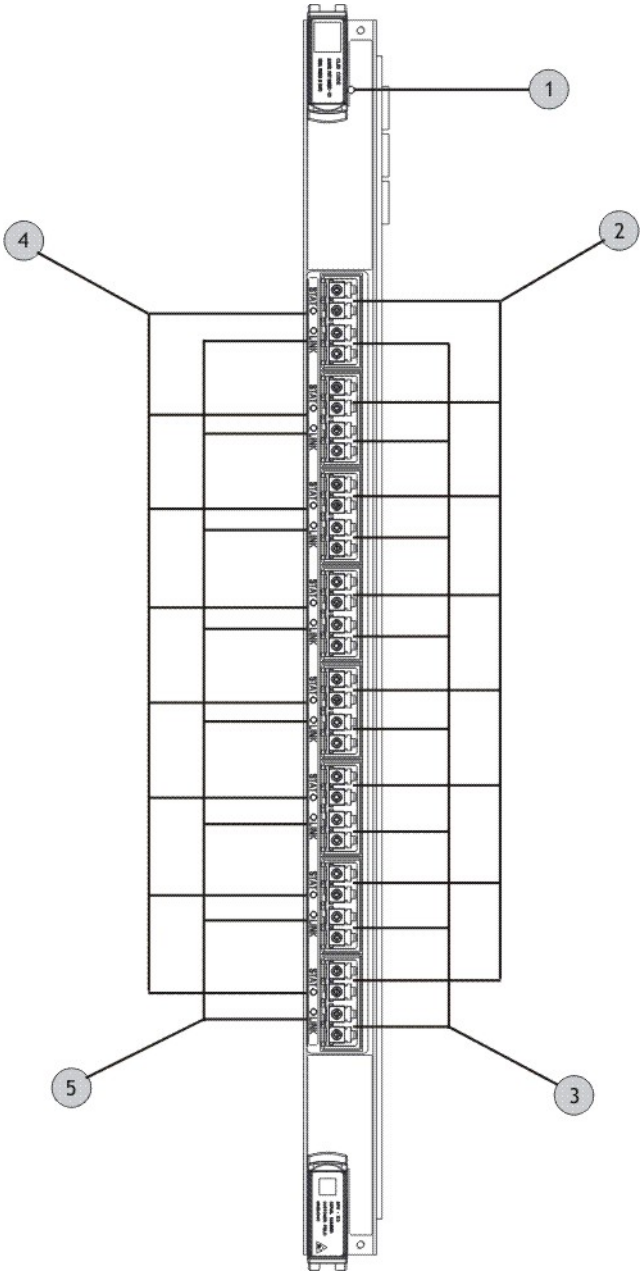
Eight independent point of demarcation functions are implemented in this plug-in card. Each function provides:

- Optical power control for the ingress signal through an optical attenuator
- Fail-safe shutter to block optical power in the absence of an electrical power supply
- WaveKey modulation can be applied to the ingress signal
- Egress optical power is monitored
- WaveKey de-modulation and recognition is provided on the egress signal.

### MVAC8B front view

The following illustration shows a front view of the faceplate of the MVAC8B.

**Figure 18-68 MVAC8B faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “L1”-“L8” interfaces |
| 3 | “C1”-“C8” interfaces |
| 4 | LEDs “STAT” |

| | |
|---|---|
| 5 | LEDs “LINK” |

### Visual Indications

For information about the LEDs on the front panel, see “Card Status LED” (p. 19-12) and “Port Status LED” (p. 19-12).

### Location

The MVAC8B can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10, and Alcatel-Lucent 1830 PSS-32 slots 2 to 17.

# Wavelength Tracker Optical Channel Monitor (WTOCM, WTOCMA)

## Overview

The WTOCM and WTOCMA are single-slot, half-height packs that provide per-channel power measurements, and WT decoding for long-haul spans. They provide the ability to measure channels that do not carry WT modulation, such as alien wavelengths. They control channel power by looking directly at the power of the channel. The WTOCM/WTOCMA uses a tunable filter to detect the power levels of individual channels.

The WTOCMA circuit pack also provides an OSNR measurement function. It performs enhanced WaveTracker key detection, power per channel measurement and OSNR per channel measurement of 4 input ports for network configurations where the WaveTracker monitors built into LD packs would have impaired performance. Optical Signal to Noise Ratio (OSNR) is a measure of the quality of the channel. A high OSNR means that the channel will have little to no bit error, while a low OSNR means that the channel may suffer signal degradation and high bit errors.

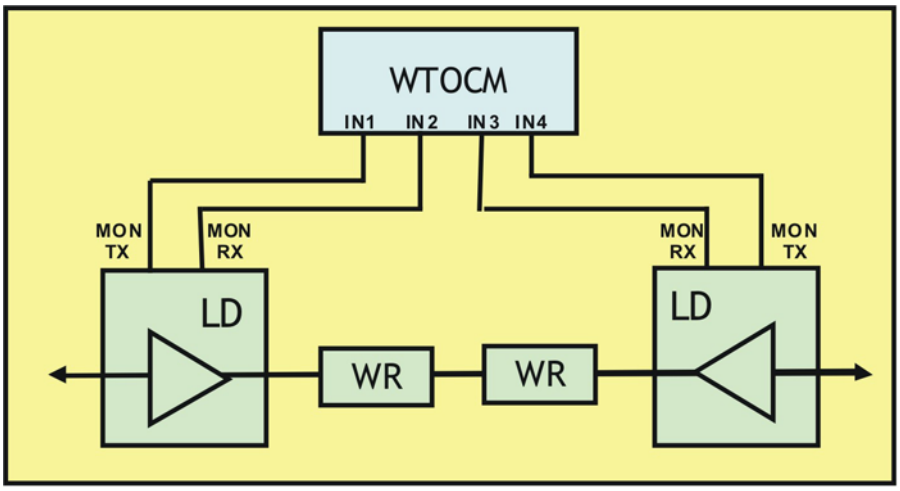
**Note:** In order for the WTOCMA board to provide good power and OSNR measurements, the channels under test must be centered at the proper ITU frequency.

## WTOCM/WTOCMA functional description

The Alcatel-Lucent 1830 PSS supports both "standard" Wavelength Tracker (WT), for regional applications, and Long-Haul Wavelength Tracker (LH-WT). Long-Haul Wavelength Tracker is supported by the WTOCM/WTOCMA card, which is connected to the external facing LD on an optical line. In long-haul applications with the presence of SRS (stimulated RAMAN scattering), Wavelength Tracker WTOCM/WTOCMA is required to accurately control power levels.

The connectivity between a WTOCM/WTOCMA IN port and a LD MON RX or TX port is specified as an attribute(s) on the WTOCM/WTOCMA port. Topological links are not created for this connection.

The MON TX and MON RX on an LD must connect to the same WTOCM/WTOCMA. Once a connection has been provisioned between a LD MON port and a WTOCM IN port, software will not allow connection of the second MON port to a different WTOCM/WTOCMA card.




Each line within an optical node, and each endpoint on an OMS span, must be configured with the same WT capability, either long haul (with WTOCM/WTOCMA), or standard (without WTOCM/WTOCMA).

**Note:** For additional Wavelength Tracker configurations see, "Long Haul Wavelength Tracker (WTOCM/WTOCMA) configurations" (p. 17-215).

The WTOCM or WTOCMA is used on the following node types for long haul configurations:

- TOADM
- ROADM
- Anydirection
- FOADM end-terminal with DGE in path

The WTOCM or WTOCMA is optional for the following node types:

- 2D+ FOADM
- FOADM end-terminal, with no DGE in path
- ILA

Within an optical node, WTOCM and WTOCMA can exist together. But classic Wavelength Tracker can not exist together with WTOCM or WTOCMA.

**Note:** Switch-over from WTD-only monitored network to a WTOCM/WTOCMA monitored network must be done carefully. The procedure for an in-service upgrade to WTOCM is detailed in Appendix C of the *Alcatel-Lucent 1830 Photonic Service Switch 16/32 (PSS-16/PSS-32) Release 8.2 Installation and System Turn-Up Guide*. Failure to follow this procedure could result in impacts to services.

For additional information about Wavelength Tracker, WTOCM/WTOCMA support for unkeyed services, and network upgrades to WTOCM/WTOCMA, see "Wavelength Tracker" (p. 14-68).

### WTOCM/WTOCMA comparison

The WTOCMA is an enhanced version of the WTOCM. The WTOCMA includes an OSNR detection mechanism that is not present in the WTOCM. This OSNR detection mechanism is meant to provide a quick view to the operator of the overall optical channel performance, i.e. to provide a "rough gauge" for network performance. Therefore, the accuracy of these periodically scanned OSNR values should not be used as definitive performance metrics.

**Figure 18-69 WTOCM/WTOCMA block diagrams (1 of 2)**

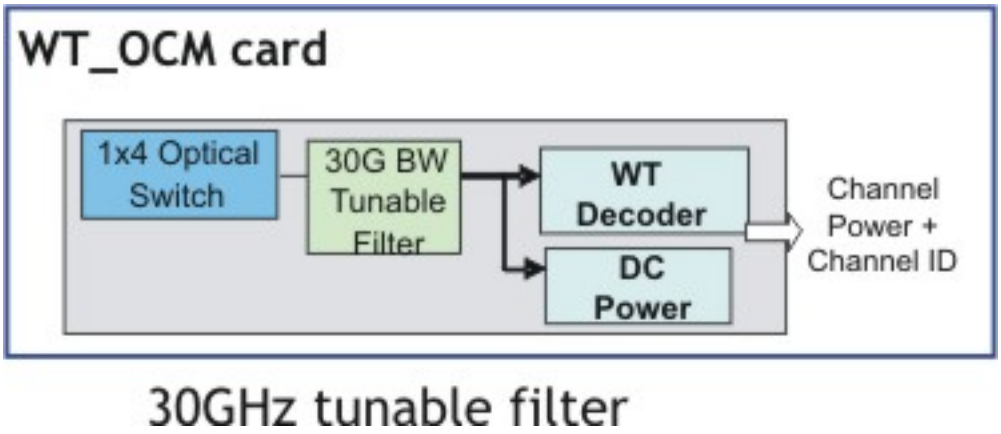



**Figure 18-69 WTOCM/WTOCMA block diagrams (2 of 2)**

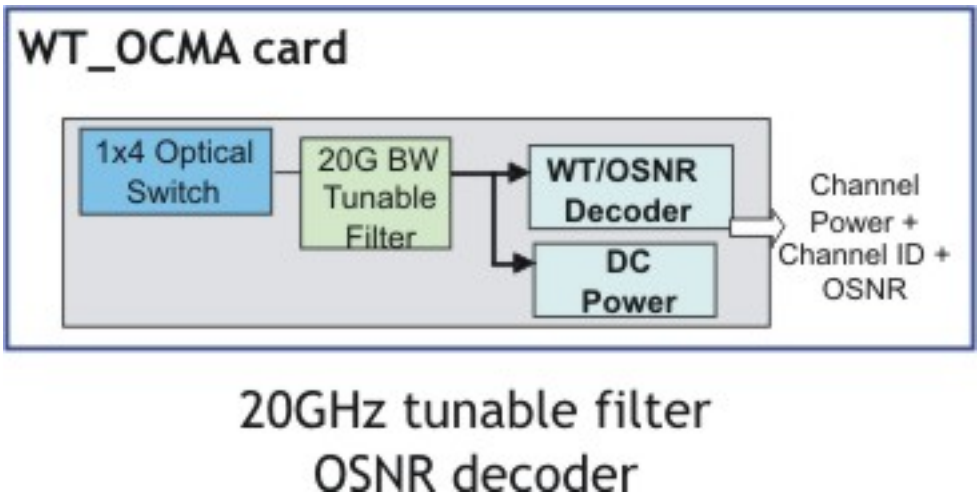
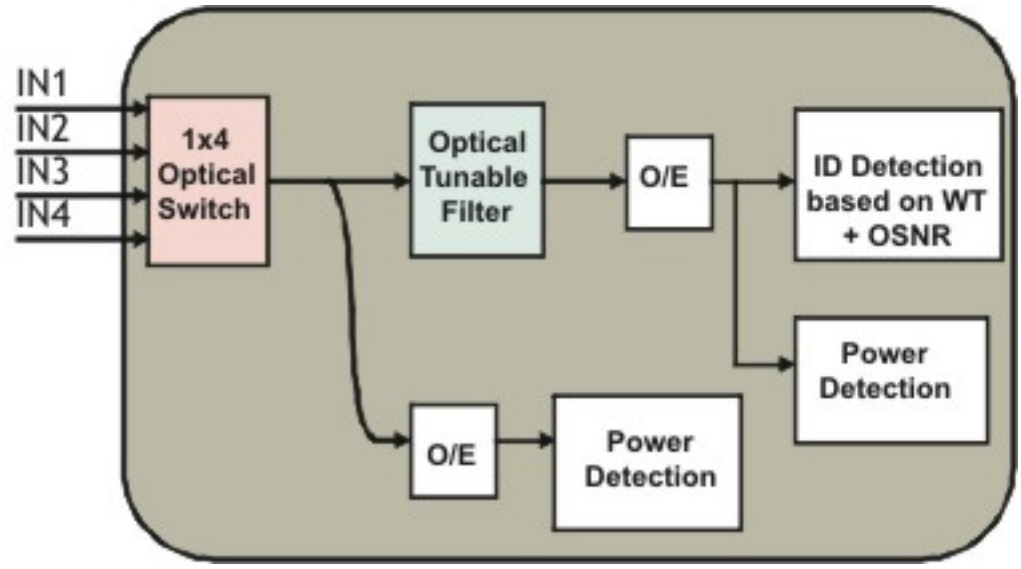


**Figure 18-70 WTOCMA detailed block diagram**




### OSNR on WTOCMA

The WTOCMA supports per-channel power measurements and WT decoding for channel recognition for long-haul spans as supported with WTOCM. In addition, it supports per channel Optical Signal to Noise Ratio (OSNR) measurement. This function can be activated to monitor system aging. WTOCMA is able to monitor up to 4 optical lines. When the OSNR function is activated, the WTOCMA performs 2 additional scans to obtain measurements for per channel OSNR. The first scan is done with the filter set at the center of the target channel and the second scan is done with the filter slightly de-tuned from center. By comparing the two sets of measurements, an in-band OSNR measurement is obtained. **Note:** The in-band OSNR measurement gives direct measurements between the signal itself and the ASE within the channel and provides true optical signal to ASE noise in contrast to an out-of-band OSNR measurement providing only the relative optical power for the channel.

WTOCMA currently supports 3 OSNR scanning modes:

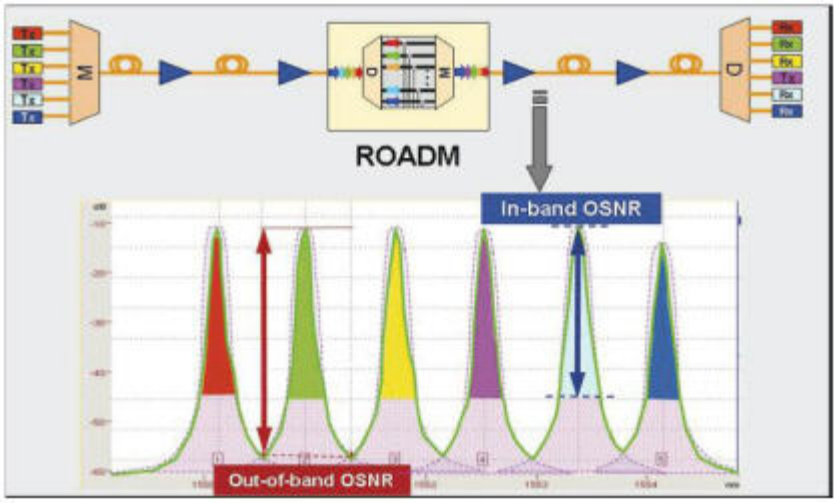
1. OSNR measurement on each IN ports can be disabled: In this mode, the WTOCMA card does not process any OSNR measurement for those expected channels. Under this scenario, the WTOCMA functions the same as WTOCM. This OSNR measurement disable/enable can be provisioned on per-port basis. OSNR measurement can be disabled on one port while it is enabled on another. The OSNR measurement on each port is disabled by default.
2. Once the OSNR measurement has been enabled on a port, the system will measure OSNR for all validated channels.
3. On-demand OSNR measurement mode. With this mode, at least one port of WTOCMA should have OSNR measurement enabled. Any channel can be selected from any OSNR enabled port for on-demand OSNR scan. For the selected channels, an OSNR measurement will be initiated. No OSNR measurements will occur on un-selected channels while the on-demand scan is in-progress.

OSNR measurement is supported for 100G, 40G, or 10G channels. The PM data are recorded within 15-minute bin and 24-hour bin. The 24-hour bin should be monitored to provide more complete information of errors over a greater period of time than is provided by the 15-minute bin.

### OSNR accuracy limitations

Unlike traditional OSNR measurement tools which measure the relative signal to noise via an out-of- band method, the WTOCMA supports in-band OSNR measurements for all supported channels carried on the Alcatel-Lucent 1830 PSS. In-band measurements provide a better indication of the actual signal strength because it considers the filtered accumulated noise, i.e. the signal itself could be sitting on top of a lot of ASE (amplified spontaneous emission) noise. Thus, even though a channel may show a strong signal, its true OSNR may be low due to the large accumulation of noise propping up the channel.

**Figure 18-71 Out-of-band versus in-band OSNR measurements**




Because the WTOCMA provides in-band OSNR measurement, there will be larger uncertainties when the actual OSNR value is high (> 20 dB). OSNR accuracy limitations are due to the inherent nature of the OSNR detection mechanism. The in-band nature of the measurement limits the accuracy. Alcatel-Lucent 1830 PSS offers in-band OSNR, which is a very difficult measurement because it assumes the signal is sitting on top of ASE noise floor, as illustrated in Figure 18-71, " Out-of-band versus in-band OSNR measurements" (p. 18-262). When the actual OSNR is very high, there is very little noise, which skews the uncertainty in measurements. The performance is limited by the optical bandwidth (BW) of the tunable filter module used on the WTOCMA. **Note:** The current filter used on the WTCOMA is the narrowest filter on the market.

On occasion, anomalous values may be seen. For example, when the actual signal to noise is very high, the accuracy of this measured OSNR becomes more uncertain. This is not indicative of a failed pack; rather, it is due to the OSNR algorithm compensating for some uncertainties in its readings. If the customer sees values for a particular channel that may be suspicious, the customer should perform on-demand scans of the suspected channel to obtain a more accurate reading. Averaging multiple measurements provides the best results. However, even with multiple on-demand scans, the accuracy will be limited, depending on the actual signal to noise of the channel. **Note:** It may take a few seconds to perform an OSNR scan for the specified channel. The higher the number of scans requested, the longer it will take to provide the averaged result.

**Table 18-60 Accuracy of the WTOCMA**

| Item | WTOCMA |
|---|---|
| Channel spacing | 50G ITU grid spacing |

**Table 18-60 Accuracy of the WTOCMA (continued)**

| Item | WTOCMA |
|---|---|
| Power detection accuracy | ±1.5 dB |
| Mean OSNR detection accuracy | ±1.5 dB (OSNR in 10–15) |
| | ±1.5 dB (OSNR in 15–20 |
| | ±2.0 dB (OSNR in 20–24) |
| | ±2.5 dB (OSNR >24) |
| Center wavelength detection accuracy | ±0.1 nm |
| Working wavelength range | 1529–1563 nm |
| Working wavelength range | 1529–1563 nm |

Thus, the values reported from a WTOCMA scan may show high uncertainties when the actual OSNR of the signal is > 20dB. It should not be surprising to see 3 dB differences or more in the scanned values when the actual OSNR is over 24 dB, for example.

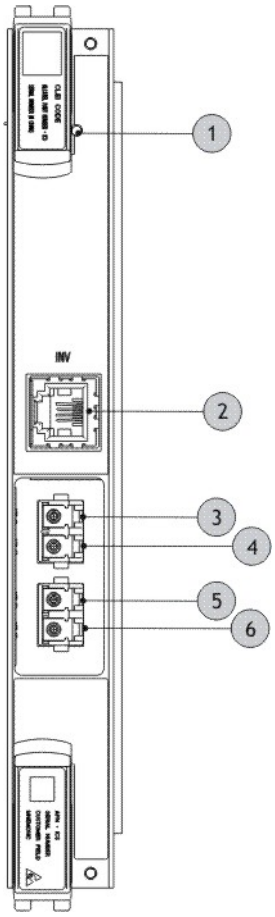
**Recommendation**

If there is doubt on the OSNR values reported by the WTOCMA scans, the operator should perform on-demand scans to verify the accuracy. The on-demand scans provide a way to manually determine, on-the-fly, the instantaneous OSNR value of any given suspect channel (or given set of channels). Thus, when an anomaly occurs, the operator may want to manually investigate the stability and/or actual performance of the channel(s) in question.

### WTOCM/WTOCMA front view

The following figure illustrates a front view of the faceplate of the WTOCM card.

**Figure 18-72 WTOCM/WTOCMA faceplate**




**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “INV” interface |
| 3 | “IN 1” interface |
| 4 | “IN 2” interface |
| 5 | “IN 3” interface |
| 6 | “IN 4” interface |

## Visual Indications

For information about the LED on the front panel, see “Card Status LED” (p. 19-12).

## Location

The WTOCM/WTOCMA can be installed in Alcatel-Lucent 1830 PSS-16 slots 3 to 10 and 13 to 20, and in Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

# Wavelength Tracker optical channel monitor flex (WTOCM-F)

## Overview

The WTOCM-F is the next evolution of Wave-Tracker Optical Channel Monitoring, capable of supporting FlexGrid architecture. The WTOCM-F card is a 4 port optical channel monitor card, with WaveKey decode capability.

## WTOCM-F functional description

Similar to the WTOCM card, WTOCM-F can report WT and OCM information of every channel supported on standard fixed ITU 50GHz grid. In addition, WTOCM-F is capable of supporting channels that are off the standard grid, as long as the channels follow the ITU-T recommendation G.694.1. The WTOCM-F can monitor up to 4 optical lines via separate optical taps. It utilizes an OCM component that can operate under fixed grid or FlexGrid. The WTOCM-F is a single width, half height card supported on 1830 PSS-32 and PSS-16 shelves.

The WTOCM-F is used on the following node types:

- ROADM CDC-F
- ROADM WR8-88AF based

## WTOCM-F front view

The following figure illustrates a front view of the faceplate of the WTOCM-F card.

**Figure 18-73 WTOCM-F faceplate**



# Optical channel monitor (MON-OCM)

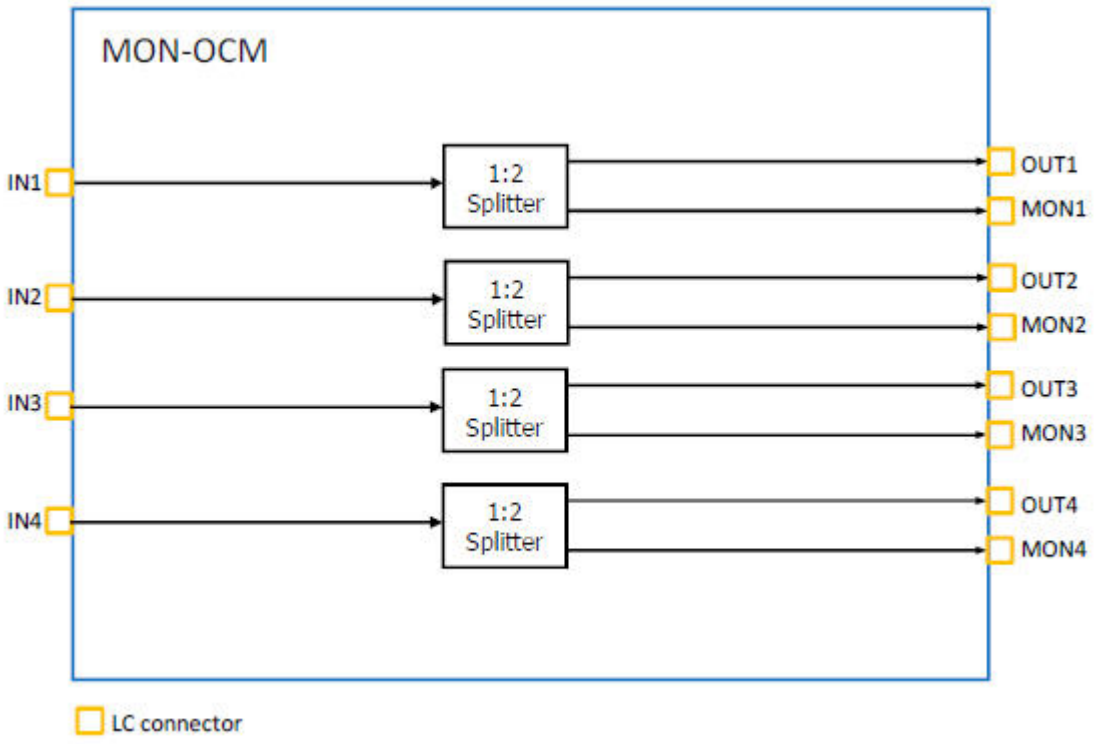
## Overview

The MON-OCM is a single width, half height card supported on Alcatel-Lucent 1830 PSS-32 shelves. The MON-OCM splits the monitored DWDM optical signal from the MON port of an LD into two paths; one path goes to the WTOCM-type card for optical channel monitoring by the node; the other path goes to customer monitoring equipment. There are Four input ports provided on the faceplate.

## MON-OCM functional description

The MON-OCM consists of: Four optical splitters packed into one module, each taking an input signal and splitting at 50% to an output port and 50% to a monitor port. See Figure 18-74, “MON-OCM functional block diagram” (p. 18-268).

**Figure 18-74 MON-OCM functional block diagram**

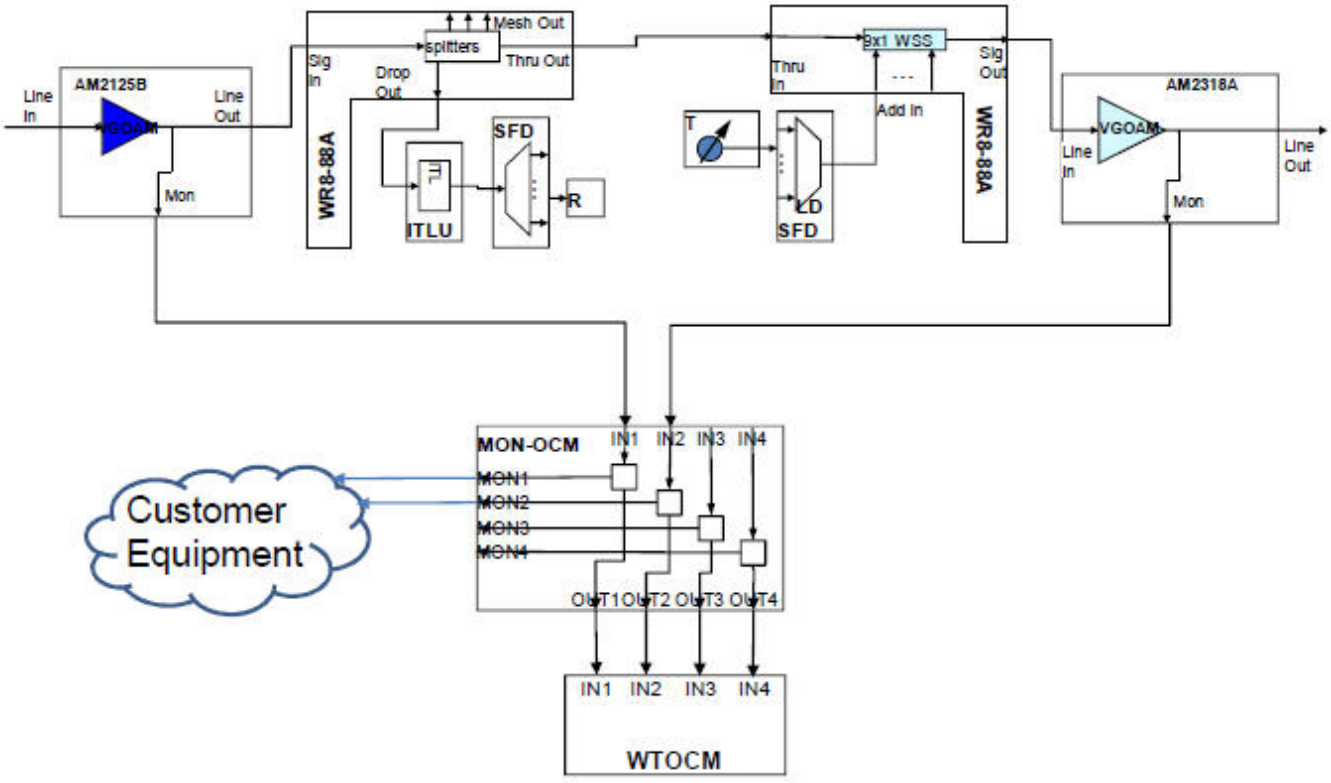



Each MON-OCM IN port splits the signal to its corresponding OUT port and MON port. The IN port connects to a monitor port on an LD. The OUT port connects to any of the WTOCM cards (WTOCM, WTOCMA, WTOCM-F) input ports. The MON port connects to customer equipment. Due to the positioning of the MON-OCM, it is not in the signal path of the channels in transmission. The MON-OCM increases optical insertion loss

between the LD MON port and the WTOCM IN port, however the additional insertion loss is accommodated by (already existing) restrictions on the channel power levels at the line LD port, for the set of LDs supported. See Figure 18-75, “Example of MON-OCM configuration” (p. 18-269). SNMP is used to manage the card and its ports.

There are no node configuration restrictions for usage of MON-OCM.

**Figure 18-75 Example of MON-OCM configuration**



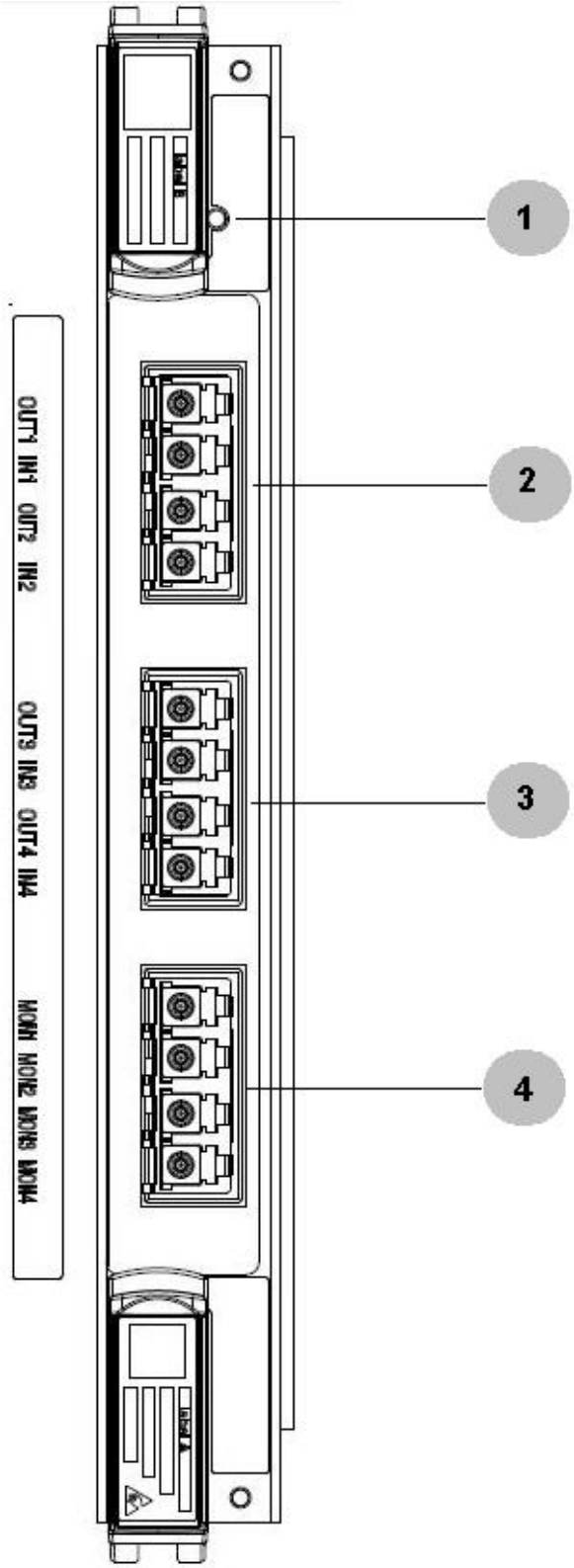

The MON-OCM supports connecting to the following LD types:

- AM2125A
- AM2125B
- AM2318A

### MON-OCM front view

The following figure illustrates a front view of the faceplate of the MON-OCM card.

**Figure 18-76 MON-OCM faceplate**



**Legend:**

| | |
|---|---|
| 1 | LEDs “STATUS” |
| 2 | “Optical Splitters” |
| 3 | “Optical Splitters” |
| 4 | “Monitoring port” |

## Visual indications

For information about the LED on the front panel, see “Card Status LED” (p. 19-12).

## Location

The MON-OCM card can be installed in Alcatel-Lucent 1830 PSS-16II slots 3-10 and 13-20, Alcatel-Lucent 1830 PSS-16 slots 3-10 and 13-20, and Alcatel-Lucent 1830 PSS-32 slots 2 to 17 and 20 to 35.

# Integrated Metro ROADM cards (iROADMF, iROADMV)

## Overview

The iROADMx is an integrated Metro ROADM card with built-in variable gain amplifiers, 1xN WSS, and so on in a single card. The metro space demands a cheap ROADM solution. The iROADMx cards allow the user to deploy a small ROADM network with the smallest footprint and lowest initial cost. Typical deployment scenarios in this metro/regional space will be multi spans, 200 km - 500 km reach target, and supporting up to 88 channels. The ideal solution using iROADMx cards is to enable ROADM capability on a single PSS-8 or PSS-16II shelf. The supported channels may be a mix of 10G and coherent.

The iROADMV makes use of a variable gain in the ingress amplifier, and fixed gain on the egress. The iROADMV is a single slot, full height card. The iROADMV also has a mid-stage access for DCM on the ingress side.

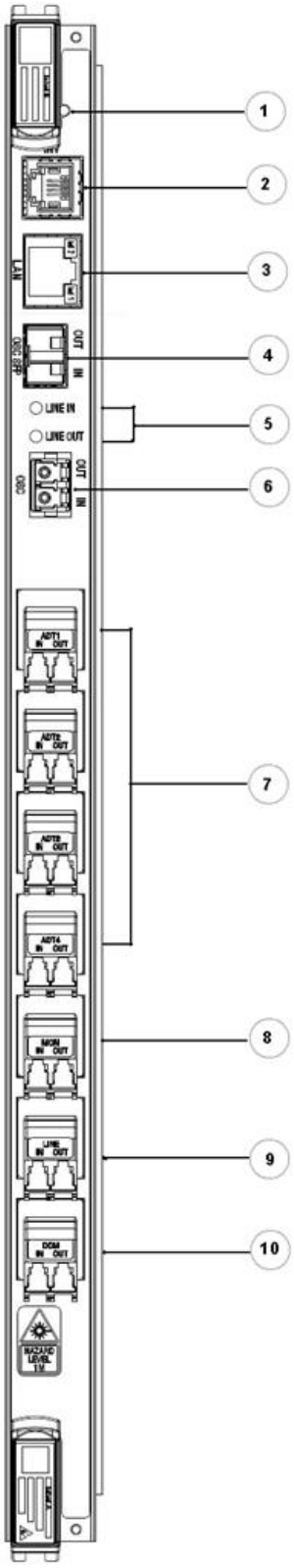
The iROADMF makes use of fixed gain amps for both the ingress and egress side. The iROADMF is a single slot, full height card. The iROADMF has no mid-stage access. Since its gain is fixed, it has different E-rules when compared to iROADMV.

## iROADMx physical design

The iROADMF/iROADMV is a single-slot, full height circuit pack that provides one INV interface, one LAN interface, one OSC SFP and one OSC interface, one Line interface, one MON interface, and four ADT ports. In addition to this one DCM interface is present only in iROADMV card.

## iROADMx front view

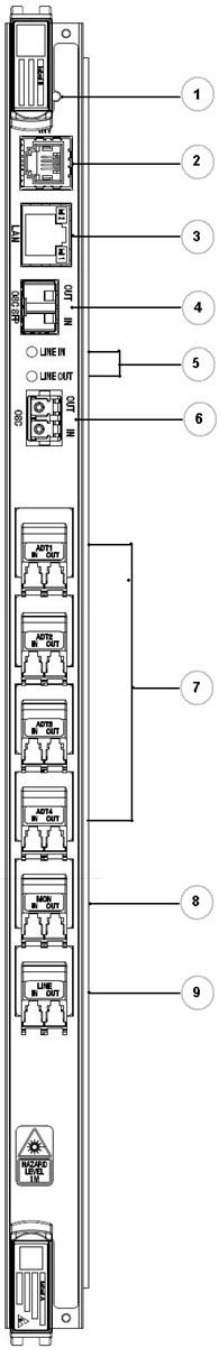
**Figure 18-77 iROADMV faceplate**



**Legend:**

| | |
|---|---|
| 1 | Card status LED |
| 2 | INV interface |
| 3 | RJ-45 LAN interface |
| 4 | OSC interface SFP |
| 5 | Line status LEDs |
| 6 | OSC interface |
| 7 | Add-drop thru (ADT) ports 1 to 4 |
| 8 | MON interface |
| 9 | Line interface L1 |
| 10 | DCM interface |

**Figure 18-78 iROADMF faceplate**




**Legend:**

| | |
|---|---|
| 1 | Card status LED |
| 2 | INV interface |
| 3 | RJ-45 LAN interface |

| | |
|---|---|
| 4 | OSC interface SFP |
| 5 | Line status LEDs |
| 6 | OSC interface |
| 7 | ADT ports 1 to 4 |
| 8 | MON interface |
| 9 | Line interface L1 |

### Visual indications

For information about the LEDs on the front panel, see "Common LEDs of WDM cards" (p. 19-12).

### IROADM pluggable modules

See Table 18-36, "IROADMF/IROADMV SFPs" (p. 18-123) for information about the pluggable modules supported by iROADMF/iROADMV cards.

### Location

The iROADMF/iROADMV cards can be installed in Alcatel-Lucent 1830 PSS-8 slots 2 to 5, Alcatel-Lucent 1830 PSS-16II slots 3 to 10, Alcatel-Lucent 1830 PSS-16 slots 7 to 9, and Alcatel-Lucent 1830 PSS-32 slots 2 to 17.

# Optical time domain reflectometer (OTDR)

## Overview

The OTDR pack is a single slot, full height pack with 8 optical ports. It is used to characterize fiber spans. An OTDR may be used to (1) characterize a fiber span prior to turning on service, especially to see if it is suitable for Raman amplification, and (2) to determine the location of a fiber break. These two applications are performed before services are turned up on a fiber. A third application of OTDR is to monitor the fiber while services are running. These in-service scans can provide a record of how the fiber span's loss and reflectivity vary over time.

## OTDR functional description

The pack contains an embedded optical time domain reflectometer (EOTDR) module to perform scans, and an 8 x 1 optical switch to allow the pack to be shared among up to 8 fiber spans. Each scan returns information on the background loss of the fiber and on localized areas of unusually high loss or high reflection. The OTDR pack monitors both ends of the fiber (transmit and receive) to pin-point exact location of failure.

The optical faceplate connectors are angle polished LC (LC APC) connectors.

**Note:** Angle polished connectors are used to provide very low reflections. They must be used with LC APC fiber jumpers, and not with the standard LC PC jumpers that are used with other ports. If LC PC jumpers are used with LC APC faceplate connectors, the resulting connection can have very high loss and high reflectivity.

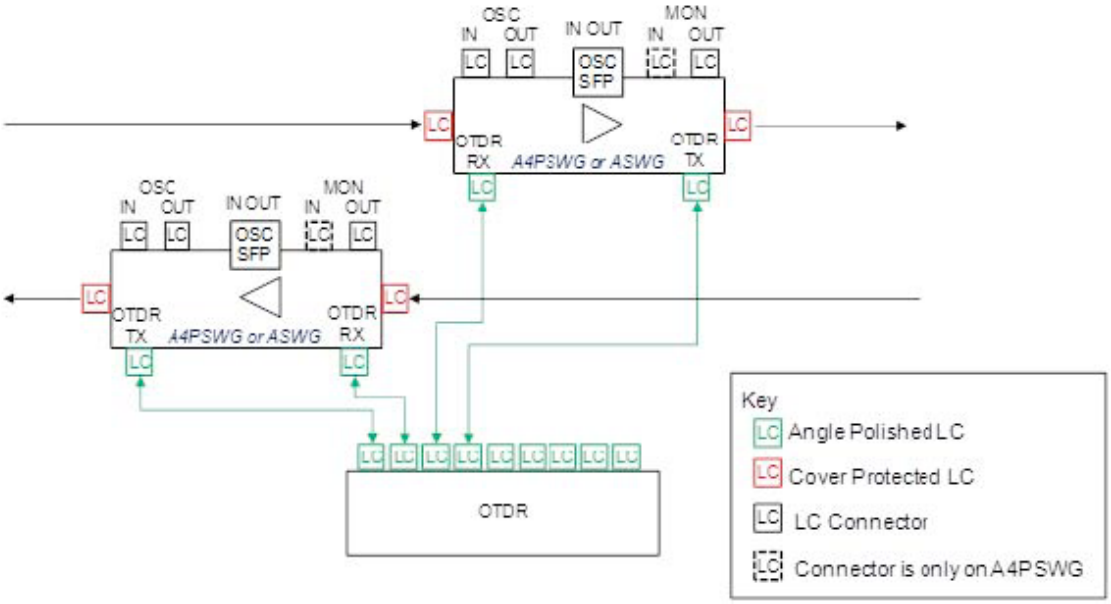
The OTDR pack can monitor up to four degrees and may be used with LD (line amplifier) cards that contain OTDR ports. These cards are:

- ASWG
- A4PSWG

With the use of the MON-OTDR, OTDR can also be used with legacy LD cards.

The following figure illustrates the use of the OTDR on an ILA.

**Figure 18-79 OTDR on ILA node**




The following figure illustrates the use of the OTDR pack on a degree-2 ROADM or a DGE.

**Figure 18-80 OTDR on degree-2 ROADM or DGE node**

