Huawei OptiX OSN 7500 and Boards Datasheet

CONTENT

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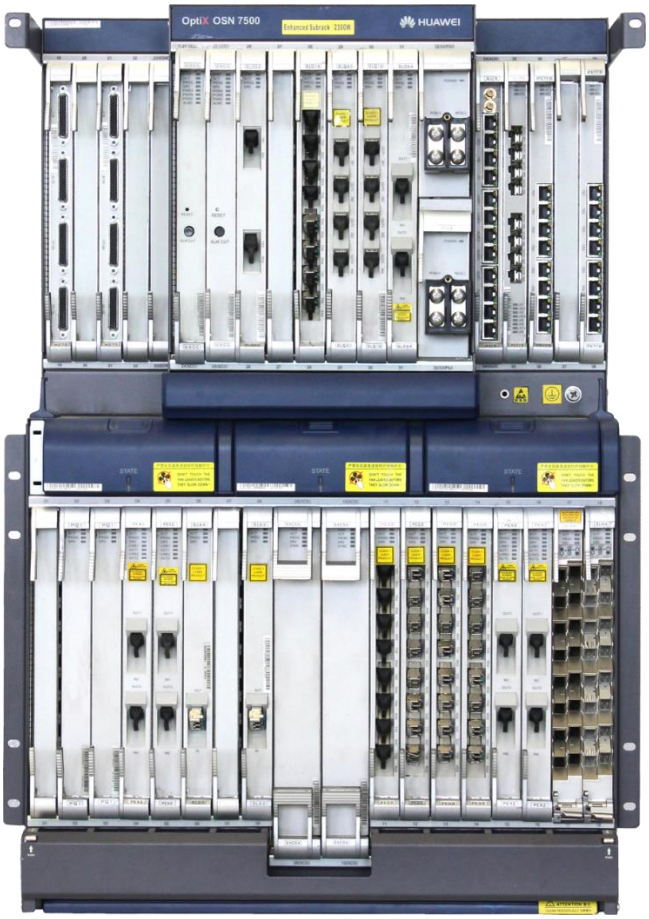
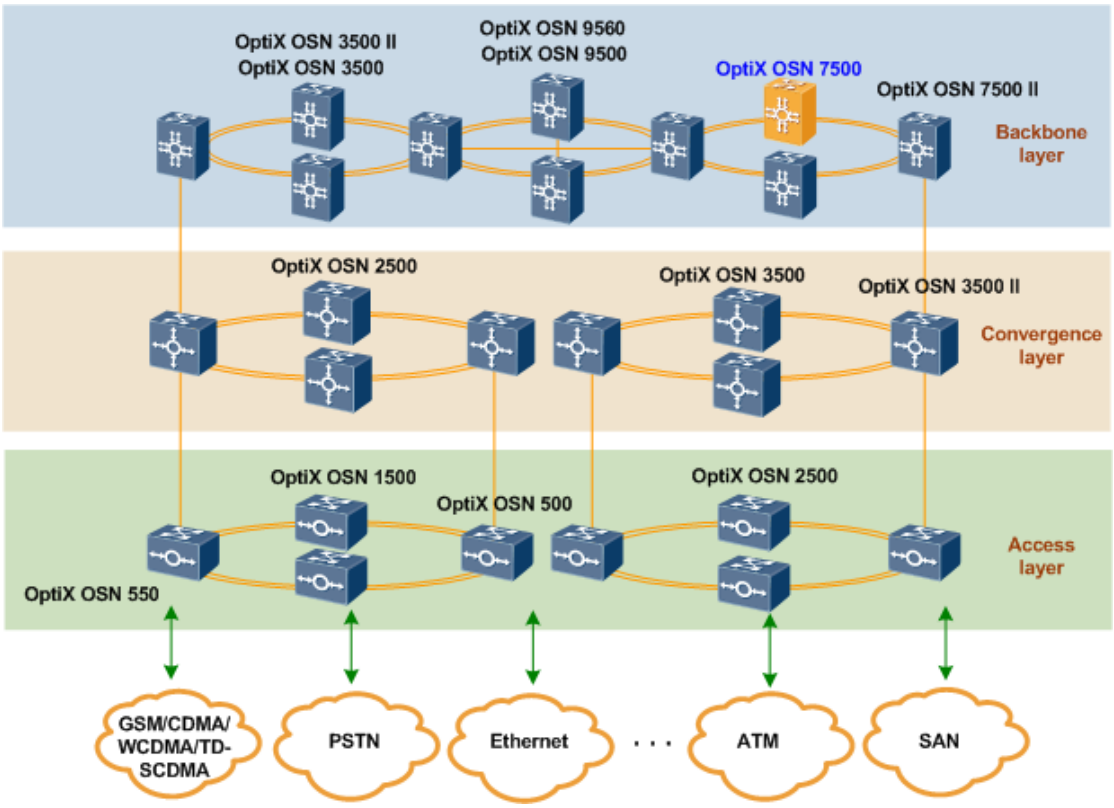
Overview

Huawei OptiX OSN 7500 intelligent optical switching system (the OptiX OSN 7500 for short) is the next-generation intelligent optical core switching (OCS) equipment and is developed by Huawei on the basis of the current situation and development trend of the metropolitan area network (MAN).The OptiX OSN 7500 is mainly used as a service scheduling node at the metropolitan backbone layer. That is, it functions as optical core switching equipment (OCS). As an intelligent optical transmission platform and core optical transmission system, the OptiX OSN 7500 is located at the metropolitan backbone layer to schedule and transmit services of different types and granularities.



OptiX OSN 7500



Application of the OptiX OSN 7500 in the transmission network

OptiX OSN 7500 Highlight:

★ Universal Switch Architecture for Multiservice Grooming

OptiX OSN equipment uses a universal switch architecture for unified grooming of packet services and TDM services. OptiX OSN equipment can work in packet mode, TDM mode, or dual-domain (packet+TDM) mode.

★ Hierarchical OAM Facilitating Fault Detection

The Hybrid MSTP equipment supports hierarchical OAM to rapidly detect and locate various faults, thereby improving network reliability. In addition, the Hybrid MSTP equipment supports distributed OAM and centralized OAM.

★ TP-Assist Solution Facilitating the O&M of Packet Services

Like the SDH equipment, Huawei Hybrid MSTP equipment supports a hierarchical operating & maintenance (O&M) system by using the TP-Assist solution, so packet services can be configured, commissioned, or maintained in an end-to-end manner.

★ Built-In WDM, Flexible Networking

The OptiX OSN equipment uses the built-in WDM technology to transmit several wavelengths over one optical fiber. In this manner, the OptiX OSN equipment can be interconnected with the WDM equipment.

Specification

Table 1. OptiX OSN 7500 Specification.

Indicator and Specifications		**OptiX OSN 7500**
Dimensions (H x W x D)		756.7 mm x 496.4 mm x 295 mm
Number of valid slots		22 for processing boards and 8 for interface boards
Equipment capacity	Packet	160 Gbit/s
	TDM	360 Gbit/s higher order cross-connections and 40 Gbit/s lower order cross-connections
	OTN	/
Service type supported		SDH, PDH, ATM, CES, Ethernet, PCM, SAN, video and others
Smart line board		HSNS3: 40 Gbit/s for a single optical port
Network topology		Point-to-point, chain, star, ring, ring with chain, intersecting rings, tangent rings
Backup and protection	Network-level protection (packet)	Tunnel 1:1/1+1 APS, PW 1:1/1+1 APS, packet linear MSP, LPT, MSTP, MRPS
	Network-level protection (TDM)	SDH protection: subnet connection protection, linear MSP, ring MSP, DNI protection, E1 SNCP, shared-fiber virtual path protection, optical-path-shared MSP EoS protection: LCAS, LPT, STP/RSTP, MSTP, ERPS, RPR, VP-Ring/VC-Ring protection

	Network-level protection (OTN)	/
	Device-level protection	Packet: LAG, MC-LAG, ETH-TRUNK TDM: TPS, BPS, PPS, LAG, DLAG, 1+1 protection for ATM boards, 1+1 protection for wavelength conversion units 1+1 hot backup for cross-connect and timing units 1+1 hot backup for SCC units 1+1 hot backup for power input units 1:N protection for +3.3 V power supply of the board Intelligent fan Board protection modes under abnormal conditions
Maintenance	MPLS OAM	CV, FFD, BDI, FDI, Ping, Traceroute
	MPLS-TP OAM	CC, RDI, AIS, LB, LT, LM (only single-ended LM), DM, TST, LCK, CSF (only PW CSF)
	ETH OAM (packet)	Ethernet service OAM: CC, LB, LT, LM (only single-ended LM), DM (only two-way DM) Ethernet port OAM: OAM auto-discovery, link performance monitoring, remote loopback, fault detection, self-loop detection
	ETH OAM (TDM)	Ethernet service OAM: CC, LB, LT, OAM_Ping Ethernet port OAM: OAM auto-discovery, link performance monitoring, remote loopback, fault detection, self-loop detection

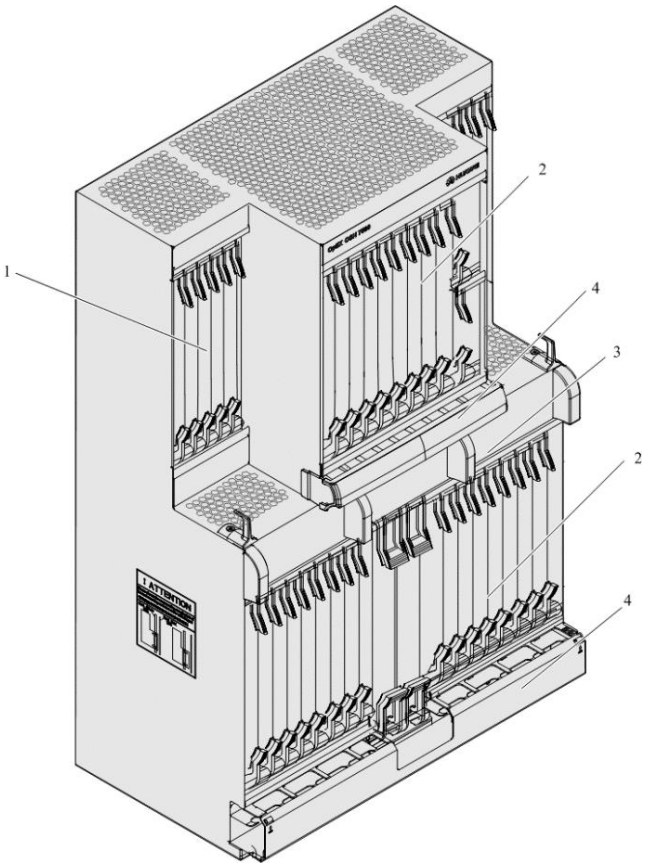
Synchronization	Packet	Physical-layer clock Synchronous Ethernet IEEE 1588v2 CES ACR
	TDM	Physical-layer clock
	OTN	/
DCN	Outband DCN	HWECC, IP over DCC, OSI over DCC
	Inband DCN	HWECC, IP
TP-Assist		Service configuration: supports end-to-end service configuration and automatic deployment of alarm management. Service commissioning: supports the one-click service connectivity test, one-click service performance test, and automatic test without any instrument. Routine maintenance: supports performance statistics and monitoring and E-Line and E-LAN service path visualization. Fault diagnosis: supports intelligent fault locating, IP ping initiation response, and service loopback detection.
Standard working voltage		If the standard voltage of the input power is -48 V, the power voltage ranges from -38.4 V to -57.6 V. If the standard voltage of the input power is -60 V, the power voltage ranges from -48 V to -72 V.
Installation method		ETSI cabinet
	Subrack temperature	Long-time operation: 0ºC to 45ºC

Equipment running environment		Short-time operation: -5ºC to +55ºC
	Subrack humidity (relatively)	Long-time operation: 5-85% Short-time operation: 5-95%
Reliability specifications	System availability	0.999997487
	Mean time to resolution (MTTR)	1 h
	Mean time between failures (MTBF)	45.42 years

Hardware Description

Structure

An OptiX OSN 7500 subrack has a two-layer structure. The subrack consists of an interface board area, a processing board area, a fan area, and a cable routing area.



1. Interface board area	2. Processing board area
3. Fan area	4. Cable routing area

The functions of the areas are as follows:

Interface board area: This area houses the interface boards of the OptiX OSN 7500.

Upper-layer processing board area and lower-layer processing board area: These areas house the processing boards of the OptiX OSN 7500.

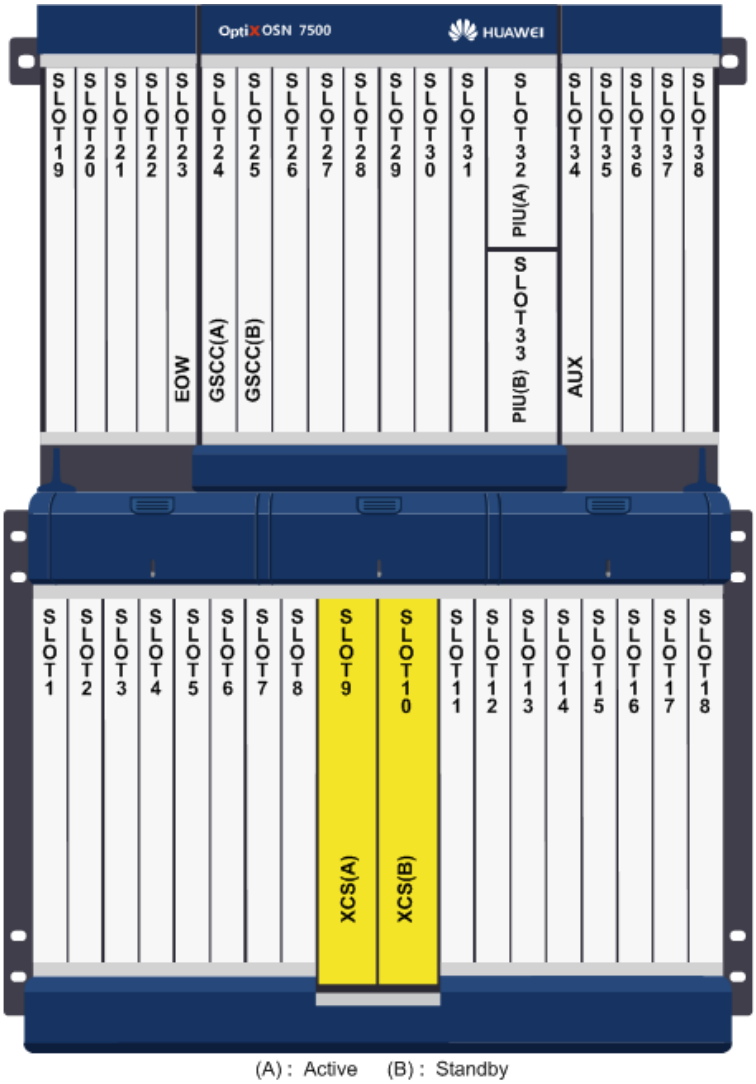
Fan area: This area houses three fan modules, which dissipate heat generated by the equipment.

Cable routing area: This area houses fiber jumpers in a subrack.

NOTE:

An interface board is also called an access board or a transit board. An interface board provides physical interfaces for optical signals and electrical signals, and transmits the optical signals or electrical signals to the corresponding processing board.

An OptiX OSN 7500 subrack consists of an upper layer and a lower layer. The upper layer has 20 slots and the lower layer has 18 slots.



The slots in an OptiX OSN 7500 subrack are allocated as follows:

- Slots for service interface boards: slots 19-22 and 35-38

- Slot for an orderwire interface board: slot 23

- Slot for an auxiliary interface board: slot 34

- Slots for service processing boards: slots 1-8, 11-18, and 26-31

- Slots for cross-connect and timing boards: slots 9-10

- Slots for power interface boards: slots 32-33

- Slots for system control and communication boards: slots 24-25

NOTE:

If the system control and cross-connect board is T2PSXCSA, packet processing boards and dual-domain bridging boards can only be installed in slots 1-8 and slots 11-18.

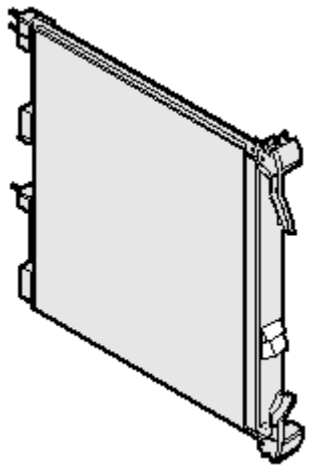
Mapping between slots for interface boards and slots for processing boards	
Slot for Processing Board	Slot for Interface Board
Slot 2	Slots 19-20
Slot 3	Slots 21-22
Slot 17	Slots 35-36
Slot 18	Slots 37-38

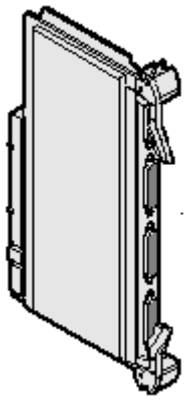
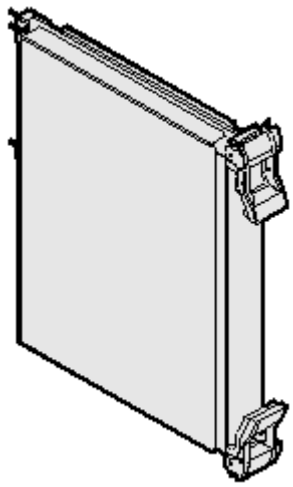
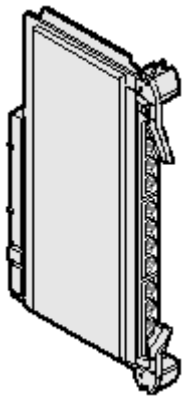
Paired slots: If overhead bytes pass through the backplane bus between two slots, the two slots are called paired slots. Paired slots achieve automatic transparent transmission of overhead bytes such as K bytes, D bytes, and E1 overhead bytes. This improves multiplex section protection (MSP) switching performance and protects orderwire and DCC communication with other NEs even after the system control board on the local NE cannot be detected.	
Slot	Paired Slot
Slot 1	Slot 18
Slot 2	Slot 17
Slot 3	Slot 16
Slot 4	Slot 15
Slot 5	Slot 14
Slot 6	Slot 13

Slot 7	Slot 12
Slot 8	Slot 11
Slot 26	Slot 27
Slot 28	Slot 29
Slot 30	Slot 31

Boards Description

Table 2. Appearances and dimensions of the boards used on the OptiX OSN 7500.

Board Appearance	Board Name	Number of Slots Per Board	Height (mm)	Depth (mm)	Width (mm)
	SL16	1	261.4	235.2	25.4

	D75S	1	261.4	125.2	22.0
	PSXCSA	1	261.4	293.0	40.0
	AUX	1	261.4	125.2	25.4

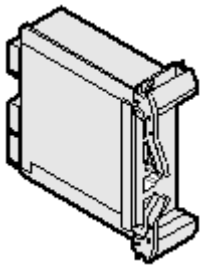
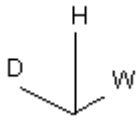
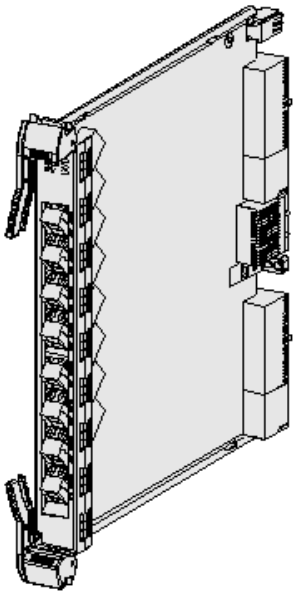
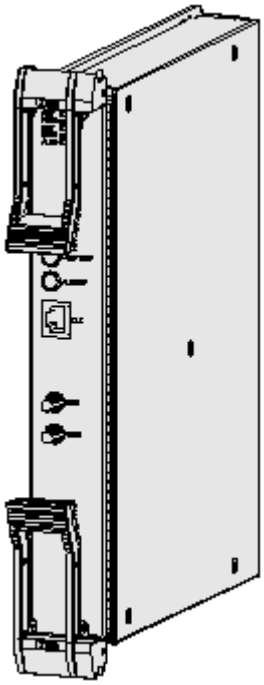
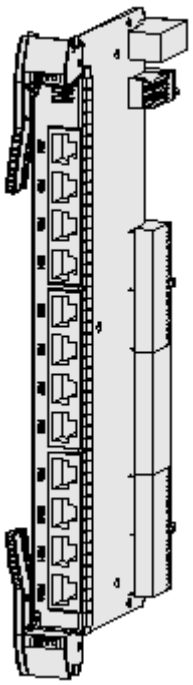
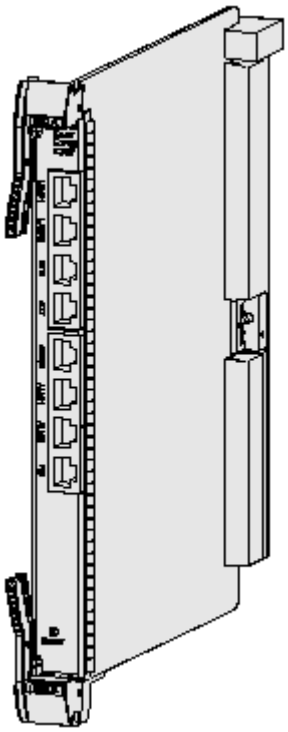
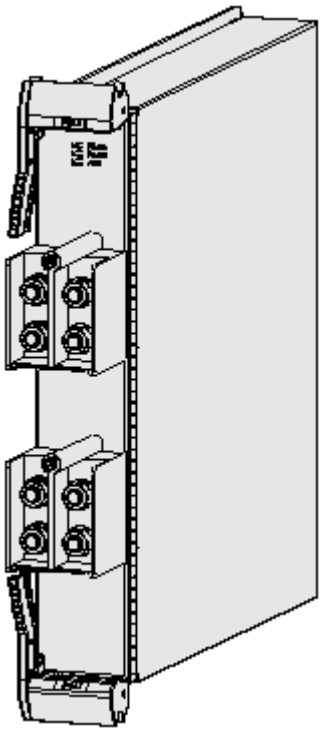
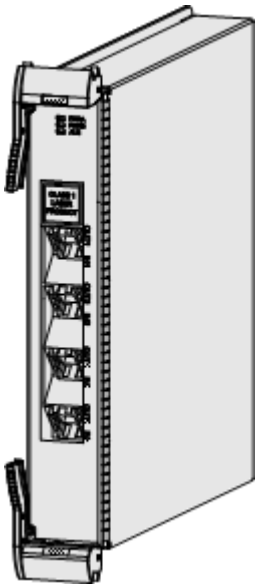
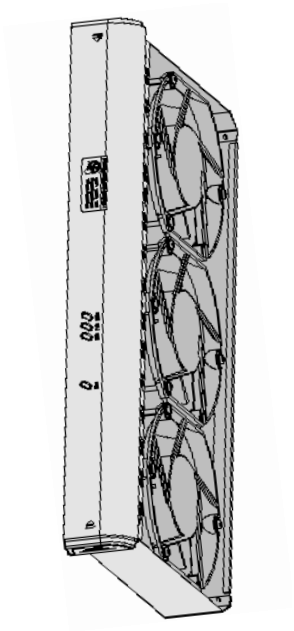
	PIU	1	128.0	235.2	44.0
 Note: The figure in the right cell shows the three dimensions. "H" and "W" indicate the height and width of the front panel respectively and "D" indicates the depth of the printed circuit board (PCB).					

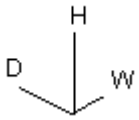
Table 3. Appearances and dimensions of the boards used on the OptiX OSN 7500

Board Appearance	Board Name	Number of Slots Per Board	Height (mm)	Depth (mm)	Width (mm)
	EG8	1	261.4	235.2	25.4

	PSXCS	1	261.4	235.2	40.0
	ETMC	1	261.4	125.2	22.0

	SCA	1	261.4	235.2	22.0
	PIU	1	261.4	235.2	40.0

	HUNQ2	2	261.4	235.2	50.3
	FAN	1	263.8	492.0	61.2



Note: The figure in the right cell shows the three dimensions. "H" and "W" indicate the height and width of the front panel respectively and "D" indicates the depth of the printed circuit board (PCB).

Basic Ordering Information

Table 4. Ordering information of Huawei OptiX OSN 7500 chassis.

Model	Description
Huawei Optix OSN 7500	Huawei OptiX OSN 7500 intelligent optical switching system, the next-generation intelligent optical core switching (OCS) equipment on the basis of the current situation and development trend of the metropolitan area network (MAN)

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Sources

https://support.huawei.com/enterprise/en/transmission-network/optix-osn-7500-pid-16245