Version V1.B

WDM1800 Wavelength Division Multiplexing Multi-Service Platform

Features

- Full frontal access (ETSI) Shelf
- Two rack-mountable chassis types:
  - o CHA-5U: *
    - 2 x Controller Slots
    - 2 x Power Module Slots
    - 1 x FAN Module Slot
    - 15 x Tributary Module Slots
  - o CHB-2U:
    - 2 x Controller Slots
    - 2 x Power Module Slots
    - 1 x FAN Module Slot
    - 6 x Tributary Module Slots
- Dual controller modules, dual power modules for redundancy
- Support console (RS232/USB) and Ethernet (RJ45/SFP) for local and remote management
- Support Web, Telnet, SSH, and SNMP v1/v3 management
- Compatible with SNMP-based GUI network management systems and supported by CXR iNET and CXR iNMS
- Plug-in Module Types (all are hot-pluggable)
  - o Transponder Modules
  - o Muxponder Modules*
  - o Wavelength Division Multiplexing (Mux/Demux) Modules
  - o Optical Link Protection Modules
  - o Amplifier Modules
  - o Dispersion Compensation Modules (DCM)*
- Hardened - Extended temperature range: -5 ~ + 65°C

WDM1800-CHA-5U

WDM1800-CHB-2U

Description

The WDM1800 Wavelength Division Multiplexing Multi-Service Platform is designed to deliver a number of client data services by multiplexing/demultiplexing several different wavelengths into/from an optical fiber. The WDM1800 platform provides up to 15 universal plug-in slots for mounting different modules, including Transponder, Muxponder, WDM Mux/Demux filters, Optical Link Protection (OLP) modules and amplifier modules. Compact, modular and cost –effective design of the WDM1800 platform makes it easier to select suitable modules for current needs and upgradable for future requirements. With two shelf sizes and universal pluggable slots, an initial network can be deployed with low first-in cost. Future in-service network expansion is as simple as adding and configuring new modules to realize cost-effective and pay-as-you-grow advantages.

In-service passive performance monitoring on each client data and modular redundancy, enabled when dual controller modules and dual power modules are installed in the chassis, make the WDM1800 an excellent fit for mission critical applications.

The WDM1800 supports local control and diagnostics by using a VT-100 terminal connected to the console port, and Ethernet and SFP ports for Web, Telnet, SSH, and SNMP v1/v3 management as well. Furthermore, optional Optical Supervisory Channel (OSC) can be accessed via Transponder and/or Muxponder moduleconnection for remote management. *Future Option

Ordering Information

To specify options, choose from the list below.

Model	Description	Notes
Main Unit		
5U Chassis		
WDM1800-CHA-5U	WDM1800 5U Main Chassis, with 2 controller slots, 2 power module slots and 15 tributary module slots	
2U Chassis		
WDM1800-CHB-2U	WDM1800 2U Main Chassis, with 2 controller slots, 2 power module slots and 6 tributary module slots	
CPU Modules		
WDM1800-CCA	WDM1800 Controller Module with console and Ethernet management interfaces.	
Plug-in Modules		
Single Slot Plug-in Module		
WDM1800-4TP10G3RMa	4-Port Transponder module with 10G Multi-rate Network Interface. Support 3R optical regeneration. Support multi-rate clients: • 10.3125Gbps (10GE LAN) • 10.1376G CPRI 8 • 9.8304G CPRI 7 • 6.144G CPRI 6/OBSAI • 3.072G CPRI 4 • 2.4576G CPRI 3 • 1.25G 1GE • 9.95328Gbps (STM64/OC192/10GE WIS or user defined pattern) without performance monitoring • 2.488320Gbps (STM16/OC48/10GE WIS or user defined pattern) without performance monitoring	Please order SFP optical modules from a separate SFP optical brochure.
WDM1800-7MP10Ga	Muxponder module with 7 client ports and one 10G Network Interface: • Client Data Rates: - FE/1G/10G - STM1/4/16/64 (OC3/12/48/192) - CPRI 3/4/5/7/8 • Line Data Rate: OTU2	Please order SFP optical modules from a separate SFP optical brochure.
WDM1800-4CMDBAa	4-port (8-ch) Bi-directional wavelength Mux/DeMux type A, supports CWDM where channel #1 ~ #8 stands for different wavelength. Optical Link Protection not supported	Channel wavelength List: • #1~#4 : 1270/1290/1310/1330 • #5~#8 : 1550/1570/1590/1610
WDM1800-4CMDBBa	4-port (8-ch) Bi-directional wavelength Mux/DeMux type B supports CWDM where channel #1 ~ #8 stands for different wavelength. Optical Link Protection not supported.	Channel wavelength List: • #1~#4 : 1550/1570/1590/1610 • #5~#8 : 1270/1290/1310/1330
WDM1800-4DMDBAa	4-port (8-ch) Bi-directional wavelength Mux/DeMux type A, supports DWDM where channel #1 ~ #8 stands for different wavelength. Optical Link Protection not supported.	Channel wavelength List: • #1~#4: 1530.33/1531.12/1531.90/1532.68 • #5~#8: 1554.94/1555.75/1556.55/1557.36

WDM1800-4DMDBBa	4-port (8-ch) Bi-directional wavelength Mux/DeMux type B supports DWDM where channel #1 ~ #8 stands for different wavelength. Optical Link Protection not supported.	Channel wavelength List: • #1~#4: 1554.94/1555.75/1556.55/1557.36 • #5~#8: 1530.33/1531.12/1531.90/1532.68
WDM1800-1BOEDFA-CBA20	1-ch EDFA amplifier as booster amplifier, support C-Band, with up to 20dB Gain	
WDM1800-1PREDFA-CBA20*	1-ch EDFA amplifier as pre-amplifier, support C-Band, with up to 20dB Gain	
Dual Slot Plug-in Module		
WDM1800-8TP10G3RMa	8-Port Transponder module with 10G Multi-rate Network Interface. Support 3R optical regeneration. Support multi-rate client interface.	Please order SFP optical modules from a separate SFP optical brochure.
WDM1800-8CMDBASWa*	8-port (16-ch) Bi-directional wavelength Mux/DeMux type A, supports CWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with built-in optical switch.	Channel wavelength List: • #1~#8 : xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx • #9~#16 : yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy
WDM1800-8CMDBBSPa*	8-port (16-ch) Bi-directional wavelength Mux/DeMux type B, supports CWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with optical splitter.	Channel wavelength List: • #1~#8 : yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy • #9~#16 : xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx
WDM1800-8DMDBASWa*	8-port (16-ch) Bi-directional wavelength Mux/DeMux type A, supports DWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with built-in optical switch.	Channel wavelength List: • #1~#8 : xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx • #9~#16 : yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy
WDM1800-8DMDBBSPa*	8-port (16-ch) Bi-directional wavelength Mux/DeMux type B, supports DWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with optical splitter.	Channel wavelength List: • #1~#8 : yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy, yyyy • #9~#16 : xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx, xxxx
WDM1800-4CMDBASWa*	4-port (8-ch) Bi-directional wavelength Mux/DeMux type A, supports CWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with built-in optical switch.	Channel wavelength List: • #1~#4 : 1270/1290/1310/1330 • #5~#8 : 1550/1570/1590/1610
WDM1800-4CMDBBSPa*	4-port (8-ch) Bi-directional wavelength Mux/DeMux type B, supports CWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with optical splitter.	Channel wavelength List: • #1~#4 : 1550/1570/1590/1610 • #5~#8 : 1270/1290/1310/1330
WDM1800-4DMDBASWa*	4-port (8-ch) Bi-directional wavelength Mux/DeMux type A, supports DWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with built-in optical switch.	Channel wavelength List: • #1~#4 : 1530.33/1531.12/1531.90/1532.68 • #5~#8 : 1554.94/1555.75/1556.55/1557.36
WDM1800-4DMDBBSPa*	4-port (8-ch) Bi-directional wavelength Mux/DeMux type B, supports DWDM where channel #1 ~ #16 stands for different wavelength. Supports Optical Link Protection with optical splitter.	Channel wavelength List: • #1~#4 : 1554.94/1555.75/1556.55/1557.36 • #5~#8 : 1530.33/1531.12/1531.90/1532.68

Accessories

Power Module		
WDM1800-SDA-5U*	WDM1800 -48Vdc (-36 to -72Vdc, 150W) Power Module	• Works with WDM1800-CHA-5U • Order two for redundancy
WDM1800-SDB-2U	WDM1800 -48Vdc (-36 to -72Vdc, 150W) Power Module	• Works with WDM1800-CHB-2U • Order two for redundancy • Can achieve redundancy with WDM1800-SAB-2U

WDM1800-SAB-2U	WDM1800 100~240Vac Power Module	• Works with WDM1800-CHB-2U • Order two for redundancy • Can achieve redundancy with WDM1800-SDB-2U
SFP Optical Modules		
Please place your order using the 5-digit alphanumeric codes listed in the separate SFP Optical Module Brochure. **NOTE:** Non-CXR SFP modules are not guaranteed to work with our equipment. It is strongly recommended to buy CXR logo SFP modules.		
Blank Panels(All blank panels are RoHS compliant)		
30.002553.A00	Blank Panel for Power Supply Slot (flat)	For WDM1800-CHA-5U
30.002705.A00	Blank Panel for Power Supply Slot (flat)	For WDM1800-CHB-2U
30.002552.A00	Blank Panel for Controller Slot and Tributary Slot(flat)	
Fan Tray		
WDM1800-FAN-5U*	WDM1800 FAN Module for 5U chassis	One required for each WDM1800-CHA-5U
WDM1800-FAN-2U	WDM1800 FAN Module for 2U chassis	One required for each WDM1800-CHB-2U

*Future option

Product Specifications

CCA Controller

Connector	RJ45 for twisted pair GbE, LC for optical GbE,
Alarm Relay	Max. Current: 1A for 24VDC, 0.625A for 48VDC Critical, major, minor, info alarms, IRIG time code*
Management	
Console	DB9, RS232, Micro USB Connector
Ethernet	10/100/1000Base T, SNMPv1/v3, Telnet/SSH/Web
System Configuration Parameters	Active Configuration, Stored Configuration, and Default Configuration (Stored in Non-volatile Memory)
Performance Monitoring	
Alarm Queue	To record alarms by type, location, date and time
Front Panel	Controller LED indicators (Power, ACTIVE, ALARM)

Physical/Electrical

Chassis	CHB-2U	CHA-5U *
Dimensions (W × H × D)	W442xH88xD224.7mm	W442xH220xD224.7mm
Power	Single/Dual DC: -48 Vdc (-36 to -72 Vdc), 150 Watts max. Single/Dual AC: 100 to 240 Vac, 50/60 Hz	Single/Dual DC: -48 Vdc (-36 to -72 Vdc), 150 Watts max
Operating Temperature	-5 ~ + 65°C (Must apply with standard SFP module)	N/A
Net Weight	7.5 Kg (16.53 lbs)	N/A
Humidity	0-80% RH (non-condensing)	N/A
Mounting	Desk-top stackable, 19” /23” rack mountable	
Total Power Consumption	Varies depending on the number and types of modules used. Please refer to the table below for the power consumption of each module	

Module	Power Consumption (Watt)
Controller (CCA)	3.45
4-Port Transponder (without SFP modules)	8.1
8-Port Transponder (without SFP modules)	14.1
SFP (No link)	0.75
SFP (Linked up)	1.28
Mux/demuxponder (without SFP modules)	2.05
CWDM Type A	2.1
CWDM Type B	2.1
DWDM Type A	2.1
DWDM Type B	2.1

AC power (SDA-5U)	1
DC power (SDB-2U)	1
Unprotected Fan tray (FAN-2U)	6.5
Protected Fan tray (FAN-2U)	4

Transponder (TP)

Number of client/network ports	8-TP: 8 4-TP: 4
Port for remote management	8-TP: 4, 8
Data Rate	1.25G ~ 10G
CPRI	Options 3 (2.4576 Gbps), 7 (9.8304 Gbps), 8 (10.1376 Gbps)
OBSAI	3.072 Gbps, 6.144 Gbps
Ethernet	1G/10G
Type	SFP+
3R Regeneration	Re-Amplification, Re-Shaping, and Re-timing
Performance Monitoring	CV, ES, BES, SES, UAS on Client and Network Ports
SyncE and 1588v2	Transparent transport
Maximum round-trip latency	2.5 μs
Transmitter power range Transmitter wavelength range Receiver wavelength range Receiver dynamic range	Vary depending on the SFP+ module used. Please refer the separate SFP Optical Module Brochure for details.

Wavelength-Division Multiplexing (WDM)

Number of Client Channel	8
Number of Network Channel	2 (with OLP protection)
Insertion Loss	≤ 2.2 (Connector is not included)
Directivity	Bidirectional
Polarization Dependent Loss	≤ 0.2 dB
Optical Return Loss	≥ 45 dB
Optical Transmission power	≤ 500 mW
Isolation (Adjacent Group)	≥ 30 dB
Isolation (Non-Adjacent Group)	≥ 40 dB
Optical connector type	LC

Erbium-Doped Fiber Amplifier (EDFA)

Parameter		Symbol	Min	Typ	Max	Unit
Wavelength		λc	1529	1550	1564	nm
Saturated output power (1)		Po	-	-	20	dBm
Input power	**Booster**	Pi	-10	-	+6	dBm
	Inline		-25	-	-10	
	Pre		-35	-	-25	
Gain		G	10	20	23	dB
Multi-wavelength gain flatness		GF	-	-	1.5	dB
Noise Figure (2)		NF	-	4.5	-	dB
Output power stability		ΔPo	-	±0.05	±0.1	dB
Return loss		RL	-	-	-45	dB
Polarization dependent gain		PDG	-	-	0.3	dB
Polarization mode dispersion		PMD	-	-	0.5	ps

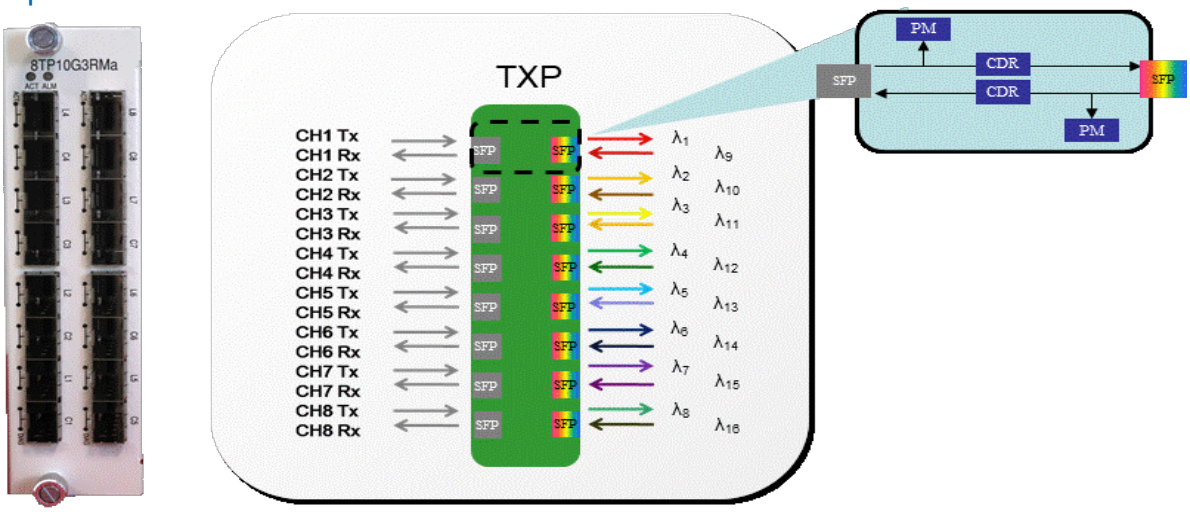
Certification

EN55032 Class A, EN50024, FCC Part 15 Class A, EN62368-1, EN62368-1, VCCI Class A

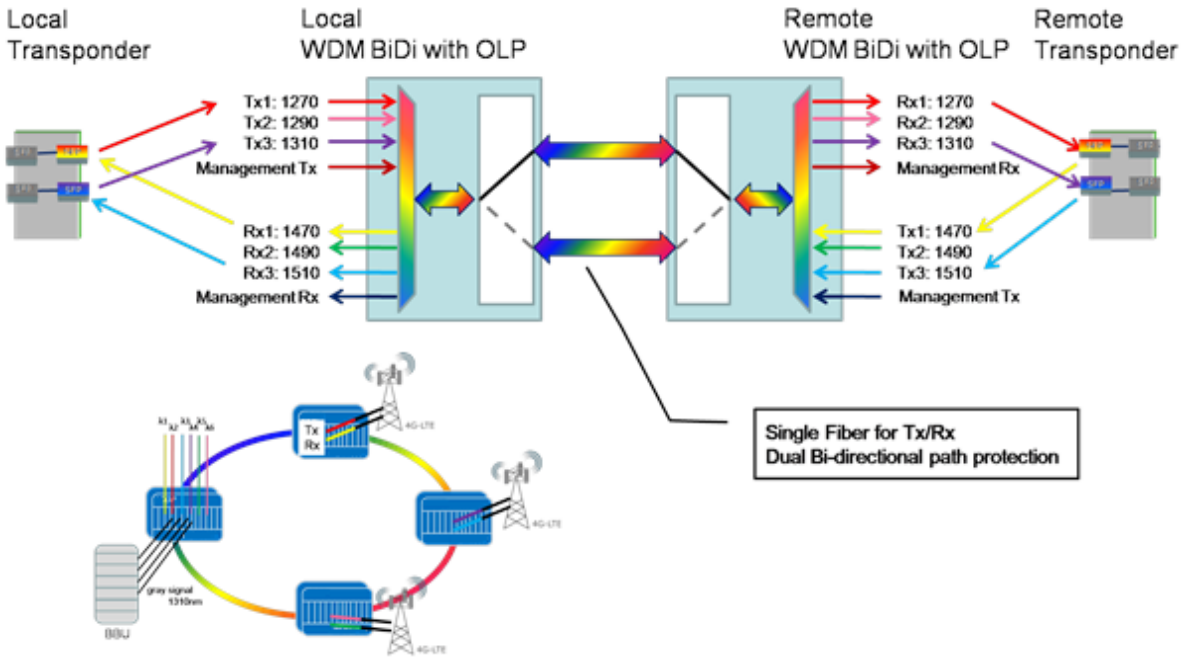
*Future option

Application Illustration

Transponder

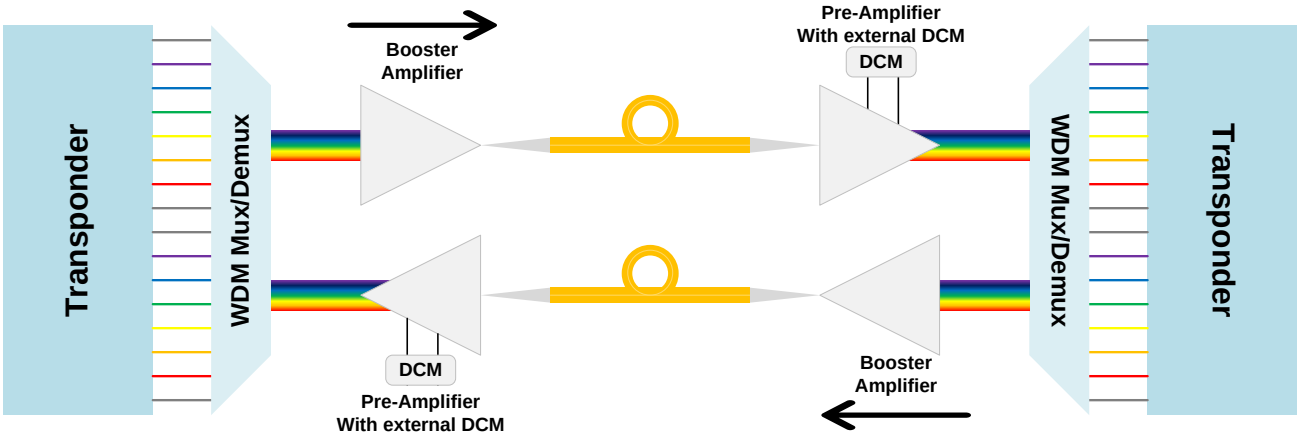


WDM modules with OLP



Booster Amplifer and Pre-Amplifer EDFA

Booster Amplifier and Pre-Amplifier EDFA: Depending on the link budge (i.e. optical transceiver type, fiber type, reach distance and etc), none, one or both of these amplifiers may be required. External Dispersion Compensation Module (DCM) may or may not be required as well.



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