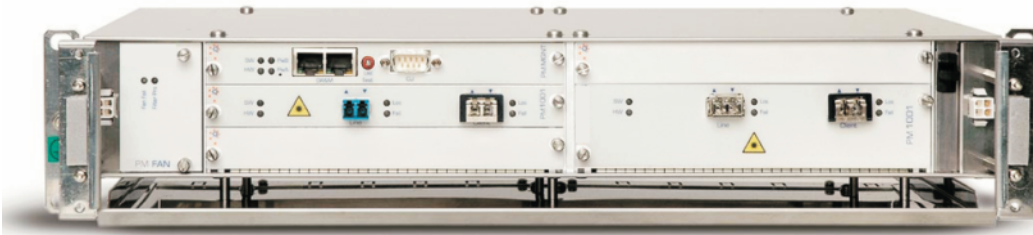


Multi-protocol 10G transponder > PM Series 1001

Overview

The PM 1001 transponders are part of the ConRep Series and are used as 10G or OC-192 signal repeaters, long haul extenders and as DWDM transponders. In addition, they have the unique capability of converting between the different 10G standards and can convert from 10GbE LAN PHY to 10GbE WAN PHY.



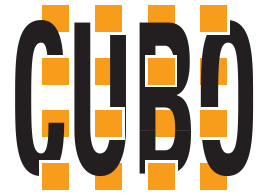
The PM 1001 supports all 10G protocols from 9.95 Gb/s to 10.709 Gb/s, including 10GbE LAN PHY, 10GbE WAN PHY, OC-192/STM-64 and 10G Fiber Channel. PM 1001 modules have two types of optical interfaces. They can be ordered with two standard XFP ports for greater service flexibility or with OTX, fixed, long-haul transceiver. OTX optics are available in both grey (1310nm & 1550nm) and DWDM wavelengths and are designed for link distances of 40km & 80km. Combined with optical amplifiers, OTX optics achieve link distances of up to 200km. The PM 1001 modules can be configured with two XFP interfaces or two OTX interfaces or a combination of both. In a typical application the access port will have an XFP interface and the line port will have an OTX interface. Some modules may be configured to have OTX optics for both the access and line parts, ideal for long haul repeater applications. To further enhance long haul performance, some models include Forward Error Correction (FEC).

Another available option, for all modules, is the inband 10Mb/s Data Communication Channel (DCC). This allows inserting a 10Mb/s channel from an Ethernet switch and transporting it in the 10Gbs line signal. The DCC is typically used for transporting SNMP information for remote management. The PM 1001 modules can be fully monitored and managed through SNMP, CLI or HTML-based Craft Terminal GUI interface. Complete performance monitoring and management is provided, including transceiver shut off, local and remote loop back for facilitating maintenance operations and for conducting fault isolation. The advanced programmable board design allows easy in-service upgrades and maintenance of each module's operating microcode. Digital Diagnostics Management (DDM) is supported for both XFP and OTX interfaces. This includes link status reporting, transmit (TX) and receive (RX) signal power monitoring, and operational temperature, as well as manufacturer and transceiver model information essential for inventory management.

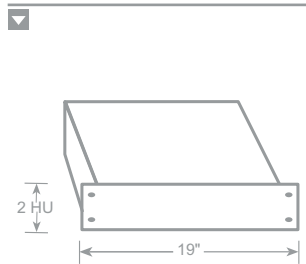
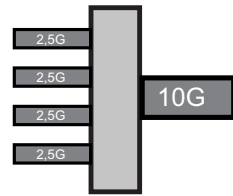
Additional components according to your specifications on request! Please contact Cube Optics for further details.

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Repeating & Conversion made simple.



Features

- Support for 10GbE LAN PHY, 10GbE WAN PHY, OC-192/STM-64, 10GFC and G709
- Performans full 3R (retime, reshape and re-amplification) signal regeneration
- XFP pluggable interfaces - use grey or DWDM optics as needed
- OTX interfaces - grey or DWDM available, link distances up to 80km
- DDM suport for optical interfaces
- Link distances up to 200km with OTX and optical amplifier
- ITU-T G.709 compatible line transmission with optional Forward Error Correction (FEC)
- Complete performance monitoring and management via SNMP, CLI and HTML-based Craft Terminal GUI
- Wire speed performance with low latency an jitter
- Hot swappable, Plug-n-Play operation
- Optional integrated 10Mb/s Ethernet channel for remote management
- Innovative programmable architecture for greater flexibility and easy in-service upgrades

Applications

- 10G or OC-192, signal repeaters
- Long haul extenders
- DWDM transponders
- 10GbE LAN PHY to 10GbE WAN PHY converter

PM 1001 models

PM 1001RR

The PM 1001RR is a one slot repeater module designed to provide full 3R signal regeneration for any 10G data signal. The PM 1001RR comes standard with XFP interfaces for both the access and line ports. For long haul applications the PM 1001RR can be ordered with OTX optics on either the line port or for both the line and access ports.

PM 1001LH

The PM 1001LH is a 10G transponder designed for long haul applications. It includes Forward Error Correction [FEC] capability and can extend 10G signals to distances of up to 200km without inline amplifiers and up-to 700km with inline amplifiers. The 2-slot module is capable of accepting either a 10GbE LAN or OC-192/STM-64 or 10GbE WAN PHY (SONET/SDH). Typically PM 1001LH comes with an XFP access port and an OTX optical interface on the line port but can be ordered with any interface combination.

PM 1001PC

The PM 1001PC is a 2-slot module designed for protocol conversion of 10GbE LAN PHY to a 10GbE WAN PHY. The 10GbE LAN traffic payload of the access port is mapped into an OC-192/STM-64 framing format and transported out across the line port at wire speed. The module incorporates a flow control mechanism and if the LAN traffic exceeds the capacity of the OC-192/STM-64 link, it will generate MAC pause frames to the source device accordingly. The PM 1001PC comes with standard XFP interfaces for both the access and line ports. For long haul applications the PM 1001PC can be ordered with OTX optics on the line port.

Additional components according to your specifications on request! Please contact Cube Optics for further details.

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PM Series

The PM Series is a cost-effective, scalable multi-service aggregation and transport platform designed for service provider's fiber optic networks. The PM platform is NEBS Level 3 compliant, rack-mountable and fully managed. Requiring only 2U of space, the chassis holds up to five hot-swappable pluggable modules (PM) slots. Each service module provides a unique optical transport solution and includes transponders and TDM aggregation modules. The platform can be deployed to provide a specific aggregation or extension function or as a complete CWDM or DWDM solution using the available optical multiplexers (Mux/DeMux), optical add/drop multiplexers (OADM), and optical amplifiers (OA).

Specifications

	PM 1001LH	PM 1001PC	PM 1001RR
Line interface			
Protocol	G709 line rate & frame format	10 GbE WAN (9,953 Gb/s)	OC-192/STM-64/10GbE WAN (9,953 Gb/s) 10 GbE LAN (10,3125 Gb/s) 10 GFC (10,518 Gb/s) G709 (10,70 Gb/s)
Optical	XFP/OTX	XFP/OTX	XFP/OTX
Client interfaces			
Protocol	10 GbE LAN (10,3125 Gb/s) OC-192/STM-64 (9,953 Gb/s)	10 GbE LAN (10,3125 Gb/s)	OC-192/STM-64/10GbE WAN (9,953 Gb/s) 10 GbE LAN (10,3125 Gb/s) 10 GFC (10,518 Gb/s) G709 (10,70 Gb/s)
Optical	XFP/OTX	XFP/OTX	XFP/OTX
OTX Transmitter specifications			
Tx Power	0 dBm typ	0 dBm typ	0 dBm typ
Chromatic Dispersion	OTX-40: 800ps/nm OTX-60: 1600 ps/nm OTX-80: 1600 ps/nm	OTX-40: 800ps/nm OTX-60: 1600 ps/nm OTX-80: 1600 ps/nm	OTX-40: 800ps/nm OTX-60: 1600 ps/nm OTX-80: 1600 ps/nm
Wavelength	1529,55 to 1563,5 nm 100 GHz grid	1529,55 to 1563,5 nm 100 GHz grid	1529,55 to 1563,5 nm 100 GHz grid
OTX Receiver specifications			
Sensitivity	OTX-40: -17 dBm typ OTX-60: -20dBm typ OTX-80: -26dBm typ	OTX-40: -17 dBm typ OTX-60: -20dBm typ OTX-80: -26dBm typ	OTX-40: -17 dBm typ OTX-60: -20dBm typ OTX-80: -26dBm typ
Management			
MIB	SNMP V2c private MB	SNMP V2c private MB	SNMP V2c private MB
Remote Management	10M Ethernet DCC	10M Ethernet DCC	none

Additional components according to your specifications on request! Please contact Cube Optics for further details.

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Specifications

	PM 1001LH	PM 1001PC	PM 1001RR
Physical specifications			
Optical connector	Dual LC (client and line)	Dual LC (client and line)	Dual LC (client and line)
Power consumption	24,5 W typical	23,5 W typical	12 W typical
Size	two slots	two slots	one slots
Operating Temperature	-5/+50°C	-5/+50°C	-5/+50°C
Storage Temperature	-20/+70°C	-20/+70°C	-20/+70°C
Indicators			
PM1001 status	HW ready, SW ready	HW ready, SW ready	HW ready, SW ready
Alarm	Loss of incoming signal (line and client) Transceiver Fail (XFP/OTX, line and client)	Loss of incoming signal (line and client) Transceiver Fail (XFP/OTX, line and client)	Loss of incoming signal (line and client) Transceiver Fail (XFP/OTX, line and client)
Reference standards	XFP MSA rev 4.0 ITU-T G707 12/2003 edition ITU-T G709 03/2003 edition Telcordia GR253 issue 3 IEEE 802.3-2002 IEEE 803.3ae-2002 Fiber Channel 10GFC Rev 3.5		

Ordering Information

Indicate your requirements by selecting one option from each configuration table. Please write the corresponding codes in the available boxes to form your part number. For more information on this or other products and their availability, please contact Cube Optics AG at +49-6131-69851-0 or via e.mail at sales@cubeoptics.com, or visit our website at www.cubeoptics.com.

	Product Code	Description
Pluggable Module (PM)	PM 1001RR	10G Repeater
	PM 1001LH	10G Long-Haul Extender
	PM 1001PC	10G Protocol Converter
Options	900	10M Ethernet DCC
	610	FEC
	201	XFP SR1/64.1 (10kms) with DDM
	205	intermediate reach 40kms B&W OTX10G
	206	intermediate reach 40kms WDM OTX10G
	207	medium reach 60kms B&W OTX10G
	208	medium reach 60kms WDM OTX10G
	210	long reach 80kms B&W OTX10G
	211	long reach 80kms 100 GHz WDM OTX10G
	301	XFP SR1/S64.1 (10kms) with DDM
	305	intermediate reach 40kms B&W OTX10G
	306	intermediate reach 40kms WDM OTX10G
	307	medium reach 60kms B&W OTX10G
	308	medium reach 60kms WDM OTX10G
	310	long reach 80kms B&W OTX10G
	311	long reach 80kms 100 GHz WDM OTX10G
Chassis	C200	Modular Chassis 2U

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