DM4920

MUXPONDER

DATASHEET

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400G MUXPONDER WITH CAPACITY OF UP TO 1.6TBPS

Datacom's DM4920 Muxponder enables the transport of up to 1.6Tbps of data in a single modular chassis, significantly optimizing the usage of metropolitan optical fibers, providing an even more advantageous return on investment in the cabling infrastructure.

The solution consists of a four-slot chassis, offering a flexible and efficient configuration. Two of these slots are dedicated to Muxponder interface cards, while the other two slots accommodate optical amplification cards or DWDM Multiplexer cards.

DM4920 was developed for indoor operational environments, featuring a compact design of only 2U in height. Its design includes three Hot-swap ventilation modules, and its power supply is highly flexible, accepting DC or AC "full range" sources and offering support for redundancy in any desired combination.

Based on the DmOS network operating system, the DM4920 ensures robustness and high service availability on a platform supporting a range of functionalities.

Its versatility allows for various applications: it can be used to establish point-to-point links, with or without amplification, also supporting in-line regeneration. It also functions as a transponder, capable of operating in Lambda Alien applications within an existing optical layer, significantly expanding implementation and integration possibilities into already established optical networks.

- Managed Muxponder for 19" racks

- 2U Chassis

- Transport capacity of up to 16 100GE clients on 4x 400Gbps line interfaces

- 2 Slots for Muxponder interface cards

- 2 Slots for optical amplification cards or DWDM Mux + Demux cards

- EDFA Optical Amplification (Pre-Amp and Booster)

- Redundant Hot-swap AC or DC power supplies

- Hot-swap FANs

TECHNICAL SPECIFICATIONS

DM4920 - CHASSIS

The DM4920 chassis has 2U in height for installation in a 19" rack, offering two slots for Muxponder cards and two slots for optical amplification cards or Mux + Demux cards.

DM4920 comes with three hot-swappable fan modules and a "front to back" airflow design, ensuring proper heat dissipation to maintain continuous and stable operation. It also features two inputs for redundant AC or DC power supplies in a 1+1 configuration.

To facilitate configuration and management of the platform, the chassis features an RS232 console interface, a 10/100/1000BaseT management interface, and two optical supervisory channel (OSC) interfaces with SFP connectors. Additionally, there is an alarm port for monitoring and reporting potential platform issues.

Characteristics

- Managed platform, 19" with 2U height
- Transport capacity of up to 16x 100GE clients on 4 400Gbps line interfaces
- 2 slots for Muxponder cards
- 2 slots for optical amplification cards or Mux + Demux
- Redundant 1+1 AC or DC power supplies (purchased separately)
- 3 hot-swappable FAN modules (included with the product)
- Front-to-back airflow
- 1x RS232 console interface
- 1x 10/100/1000BaseT management interface
- 2x Optical supervisory channel (OSC) interfaces with SFP connectors

Physical and Environmental Specifications	
Item	Specification
Height	87,15mm
Width (with L adapters)	482mm
Width (without L adapters)	447mm
Depth	391mm
Net Weight (without accessories)	9.910 kg
Operating Temperature	0°C to 40 °C
Relative Humidity Operation	0% to 95%, uncondensed
Altitude	0 to 3000m
Storage Temperature	-10°C to 70°C
Relative Humidity Storage	0% to 95%, uncondensed

DM4900 LC-800 Muxponder

DM4900 LC-800 interface card is a component that combines multiplexing and transponder functions. It features 2 400Gbps line ports and 8x 100GE client ports. The line interfaces are available in QSFP-DD format and are tunable across the entire ITU C-band. They also feature Forward Error Correction (FEC - oFEC) and can multiplex up to 4x 100GE clients per line interface (400Gbps).
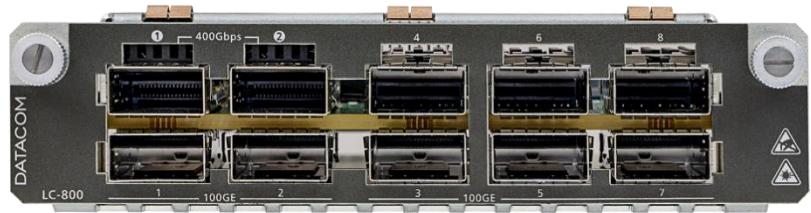
The client interfaces, on the other hand, are available in QSFP-28 format and are compatible with DAC cables or conventional optical modules. They support 100GE with or without FEC CL.91, providing flexibility and options for users.

The following table presents the characteristics of the transponders available in the LC-800:

		Standard Transponder	High Power Transponder
Models and Part Numbers		810.4229.xx – LC-800 1x 400G 810.4230.xx – LC-800 2x400G	810.4288.xx – LC-800 1x400G HP 810.4289.xx – LC-800 2x 400G HP
Tunable Range		C Band, 13 to 61 channels, grid 50GHz and 100GHz	
TX Power		-12dBm to -8dBm	-12dBm to 1dBm
Chromatic Dispersion Tolerance		9000 ps/nm	
Sensitivity / OSNR	400Gbps	-20 to 0dBm @ OSNR 34dB	-20 to 0dBm @ OSNR 34dB
		-12 to 0dBm @ OSNR 24dB	-12 to 0dBm @ OSNR 24dB
	300Gbps	-	-15 to 0dBm @ OSNR 21dB
	200Gbps	-	-18 to 0dBm @ OSNR 16dB
	100Gbps	-	-18 to 0dBm @ OSNR 12,5dB
Modulation	400Gbps	DP-16QAM	DP-16QAM
	300Gbps	-	DP-8QAM
	200Gbps	-	DP-QPSK
	100Gbps	-	DP-QPSK

DM4900 LC-OAC20 AND DM4900 LC-2xOAC20

The DM4900 LC-OAC20 and LC-2xOAC20 interface cards are Erbium Doped Fiber Amplifiers (EDFA) designed to operate as booster or pre-amplifiers. They are capable of amplifying optical signals with a maximum output power of up to 20 dBm.

DM4900 LC-OAC20 and LC-2xOAC20 modules have two operating modes: AGC (Automatic Gain Control) and APC (Automatic Power Control). The AGC mode is used when the input power is variable, while the APC mode is used when the input power is fixed. This allows the card to adapt to variations in input power and maintain a stable and high-quality output signal.

The card also has 1510nm supervisory channel (OSC) input and output ports. The OSC signal DROP is performed before the EDFA input and the OSC ADD is performed after the amplified section. This allows the service provider to manage the optical link in an out-of-band manner.

Additionally, the modules feature a monitoring port for network analysis without interrupting traffic. This port carries a signal identical to the one transmitted at the output of the EDFA, attenuated by 20dB, allowing the network administrator to monitor the optical signal without disrupting the data flow.

It features LC/PC connectors, which are low-loss optical connectors. These connectors offer a high level of precision and reliability in optical connections, ensuring that the network operates efficiently and reliably.

Characteristics

- Card with 1 or 2 EDFA interfaces
- Erbium Doped Fiber Amplifier (EDFA)
- Operating modes: AGC (Automatic Gain Control) or APC (Automatic Power Control)
- Maximum output power: 20dBm
- Input and output ports for supervisory channel (OSC) 1510nm.
- Monitoring port for network analysis without traffic interruption. This port carries a signal identical to the one transmitted at the output of the EDFA, attenuated by 20dB.
- LC/PC connectors

Item	LC-OAC20	LC-2xOAC20
Amplifiers	1	2
Operating Modes	Booster, Pre-Amp, Regenerator	
Amplification Modes	Gain or Power	
Usable Range	1525nm to 1565nm	
Input Power	Booster: -25 to 10dBm / P.A.: -30* to -5dBm	
Output Power	-5 to 20dBm	
Monitoring Interface	1% of signal	
OSC Channel Range	1504nm to 1516nm	

(*) Very low signal levels at reception affect OSNR and can make signal regeneration impractical. For 400Gbps rates, maintain the input signal level of the P.A. above -30dBm.

DM936 D8CH33 MUX/DEMUX DWDM

The DM936 D8CH33 Mux/Demux DWDM interface card is a passive device that enables the multiplexing and demultiplexing of signals across 8 channels of the ITU grid (channels 33 to 40, 100GHz grid). With a total insertion loss of the Mux + Demux below 3.8dB, the device provides efficient data transfer.

Additionally, the DM936 D8CH33 Mux/Demux DWDM features an expansion port (EXP) that can be used for cascading or for adding a supervisory channel at 1510nm (OSC). Its compact form factor allows for installation in an empty slot of the DM4920 or externally in a 19-inch rack with the MA-26 adapter.

Characteristics

- Passive 8-channel Mux + Demux
- ITU channels 33 to 40, 100GHz grid
- Low insertion loss: less than 3.8dB total for Mux + Demux
- Expansion port for cascading or 1510nm supervisory channel
- Compact form factor allows installation in empty slot of DM4920 or externally in 19-inch rack with MA-26 adapter
- EXP ports can operate as expansion for another DWDM aggregate or for extracting OSC supervisory channel
- LC/PC connectors

Specification	D8CH33
Channel Range	CH33 to CH40
Insertion Loss (mux + demux)	3,8dB
Insertion Loss EXP Port	2,5dB

POWER SUPPLY

The DM4920 chassis has two slots for PSU 800 power supplies. The power supplies are provided separately. There are two available models, as shown in the table below:

PSU Model	PSU 800 DC-F	PSU 800 AC-F
Input Power	-48 / -60 Vdc	100 / 240 Vac (50/60Hz)
Nominal Input Current	22,5 A @ -48Vdc 18 A @ -60Vdc	10 A @ 100Vac 5 A @ 240Vac
Maximum Input Current	30 A @ 36Vdc	10 A @ 100Vac
Maximum Power	800W	800W

DM4920 – DᴍOS Sᴏғᴛᴡᴀʀᴇ

The DM4920 comes embedded with DmOS software, which features a modular architecture and layer division that allows for independent development of software modules, making them more robust, resilient, flexible, scalable, and portable.

Its flexibility enables portability and reuse in products such as DWDM Muxponders, GPON OLTs, small-scale Ethernet switches, and even high-availability modular switches, while maintaining a consistent user experience.

To check the product functionalities, refer to the DmOS Datasheet.

STANDARDS AND REGULATIONS

ANATEL

Decree No. 14468 (December 5, 2017)

Technical requirements for evaluating the conformity of data network equipment products.

Decree No. 1120 (February 19, 2018)

Technical requirements for electromagnetic compatibility assessment of telecommunication products.

ETSI E IEC

Directive 2014/30/EU Electromagnetic Compatibility

- ETSI EN 300 386 - Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements; Harmonised Standard covering the essential requirements of the Directive 2014/30/EU
- EN 55032 - Electromagnetic compatibility of multimedia equipment - Emission requirements
- EN 61000-4-6 - Immunity to conducted disturbances, induced by radio-frequency fields
- EN 61000-4-2 - Electrostatic discharge immunity test
- EN 61000-4-4 - Electrical fast transient/burst immunity test
- EN 61000-4-5 - Surge immunity test
- EN 61000-4-3 - Radiated, radio-frequency, electromagnetic field immunity test
- EN 61000-3-2 - Limits for harmonic current emissions
- EN 61000-3-3 - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems

Directive 2014/35/EU Low Voltage

- EN 60825-1 - Safety of LASER products
- EN 60950-1 - Information technology equipment – Safety – Part 1: General requirements

Directive 2011/65/EU Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)

- EN 50581:2012 - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Directive 2012/19/EU Waste Electrical & Electronic Equipment (WEEE)

- EN 300 019-1-1, Class 1.2 - Environmental Conditions for storage
- EN 300 019-1-2, Class 2.3 - Environmental Conditions for Transport

Ordering Information

Product	Code	Description
DM4920 Chassis	800.5299.xx	DM4920 Chassis - Muxponder with a height of 2U, features two slots for Muxponder interface cards, two slots for optical amplification cards or Mux + Demux cards, two slots for redundant AC or DC power supplies in a 1+1 configuration (purchased separately), and three slots for hot-swappable ventilation modules (included with the product).
PSU 800 DC-F	743.6006.xx	DC power supply with input range of -48 to -60VDC and capacity to provide 800W of power. It features forced ventilation with airflow exiting the supply. It supports hot-swap and redundant operation mode with another PSU 800 DC-F supply or with the PSU 800 AC-F supply.
PSU 800 AC-F	743.6000.xx	AC power supply with input range of 100-240VAC and 50/60Hz and capacity to provide 800W of power. It features forced ventilation with airflow exiting the supply. It supports hot-swap and redundant operation mode with another PSU 800 AC-F supply or with the PSU 800 DC-F supply.
DM4900 LC-800 1x400G	810.4229.xx	DM4900 LC-800 1x400G - Interface card for the DM4900 line multiplexer, containing 8x 100GE client interfaces (QSFP28) and 2 400Gbps line interfaces (QSFP-DD). It contains one (1) QSFP-DD 400Gbps transponder module. Other QSFP28/QDFP-DD modules must be purchased separately.
DM4900 LC-800 2x400G	810.4230.xx	DM4900 LC-800 2x400G - Interface card for the DM4900 line multiplexer, containing 8x 100GE client interfaces (QSFP28) and 2x 400Gbps line interfaces (QSFP-DD). It contains two (2) QSFP-DD 400Gbps transponder modules. Other QSFP28 modules must be purchased separately.
DM4900 LC-800 1x400G HP	810.4288.xx	DM4900 LC-800 1x400G HP - Interface card for the DM4900 line multiplexer, containing 8x 100GE client interfaces (QSFP28) and 2x 400Gbps line interfaces (QSFP-DD). It contains one (1) QSFP-DD 400Gbps High Power transponder module. Other QSFP28/QDFP-DD modules must be purchased separately.
DM4900 LC-800 2x400G HP	810.4289.xx	DM4900 LC-800 2x400G HP - Interface card for the DM4900 line multiplexer, containing 8x 100GE client interfaces (QSFP28) and 2x 400Gbps line interfaces (QSFP-DD). It contains two (2) QSFP-DD 400Gbps High Power transponder modules. Other QSFP28 modules must be purchased separately.
DM4900 LC-OAC20	800.5302.xx	DM4900 LC-OAC20 - EDFA Amplifier card featuring a configurable amplifier for Booster / Pre-amp / In-Line operation modes, with a gain of up to 33dB and maximum output optical power of 20dBm. It includes ADD and DROP for OSC 1510nm and MON output for monitoring.
DM4900 LC-2xOAC20	800.5303.xx	DM4900 LC-2xOAC20 - Dual EDFA Amplifier card featuring two configurable amplifiers for Booster / Pre-amp / In-Line operation modes, with a gain of up to 33dB and maximum output optical power of 20dBm each. They include ADD and DROP for OSC 1510nm and MON outputs for monitoring.
DM936 D8CH33	815.4501.xx	DM936 Wavelength Division Multiplexer and Demultiplexer for DWDM systems, 8 channels.
DM-Q56DD-OZR	377.1504.00	400Gbps Standard Transponder Module
DM-Q56DD-OZR-HPMR	377.1508.00	400Gbps High Power Transponder Module

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