



400G 1, 2, 3, 4 or 12 Channel DWDM

DarkStar DQM400 Series

The DQM400 is part of XKL's DarkStar DWDM Muxponder family of products, and is based on XKL's DarkStar architecture, the foundation for addressing today's IT challenges and scalable growth.

This system enables customers to soft-configure the aggregation of 100GE and 400GE services. Network managers only need to swap the client optics in order to migrate from 100GE to 400GE. There are no licensing fees or additional costs to enable the 400G channels.

The DQM400 utilizes the latest pluggable coherent technologies to enable metro and long-haul connectivity for high-speed data networks.

The DQM400 system installs in under 30 minutes and is available in 1 rack unit (1U) or 2 rack unit (2U) configurations.

A network based on DQM400-1 systems, 1 400G channel, can grow to 12 channels. Growth starts by adding 3 more client and DWDM transceivers to the DQM400-1, making it a DQM400-4. Growth to 12 channels is accomplished by stacking DQM400-4 systems, and cabling to the expansion ports of the DQM400-4. The DQM400-4 contains the Mux/Demux filters and amplifiers that are shared with the DQM400-4 systems.

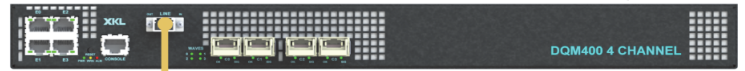
Network administrators can deploy and commission this system in a fraction of the time it takes to deploy traditional optical transport equipment. Setting up the management network, as well as configuring services, are done in minutes.



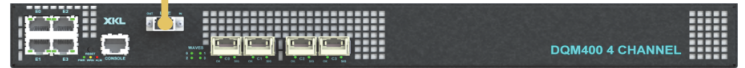
Typical Use Case

4 Channel Point-to-Point

DQM400 4 Channel Muxponder



DQM400 4 Channel Muxponder



More about this product...

Integrated System Architecture:

- DWDM Solution.
- 100GE - 400GE.
- QPSK, 16QAM.
- Input and Output EDFAs
- Mux/Demux filter

System Level Features:

- Hot-swap components:
 - 1+1 redundant power supplies, supports AC and DC.
 - Redundant fans.
 - Optical transceivers: QSFP28, QSFP-DD.
- Field-replaceable C-Band Tunable OSFP transceivers; 400G ZR and 400G ZR+ transceivers supported.
- Dual flash storage modules; one is write-protected.
- Hitless software upgrades—no customer data loss.
- System-wide watchdog timer to ensure software response.

Also see "Technical Specifications" on back.

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400G 1, 2, 3, 4 or 12 Channel DWDM

Technical Specifications — DarkStar DQM400 Series

Supported Topologies

Point-to-Point, Ring, Linear, and Protected (using DMD-A)

Capacity/Growth

The DQM400-4 system has 1, 2, 3, or 4 DWDM channels. Each DWDM channel can be configured for 100G or 400G operation. In 400G mode, a DQM400 4-channel supports 1.6Tb of capacity. Each client port supports a variety of QSFP28 or QSFP-DD transceivers. The client ports are also soft-configurable, supporting 100GE, 4x100GE, and 400GE operation. A DQM400-1, 1 port system, can grow to a DQM400-4, 4 port system. Additional growth is accomplished by stacking DQM400-4 systems and using the expansion ports of the DQM400.

Network Management and Control Plane

Command line interface (CLI):

RS-232 serial console port
TELNET and SSH

Dedicated management network:

4x 10BASE-T/100BASE-TX Ethernet ports
IPv4/IPv6 dual stack
IPv4 forwarding, RIP routing
DHCP boot client, BOOTP relay
DHCP server

Security:

Simple password
Local account database
RADIUS and TACACS+ client
Host-based Access Control Lists (ACLs)

Monitoring:

Network Syslog, Local event log
SNMP versions 1 and 2C
RFC1213-MIB, SNMPv2-MIB, IF-MIB, XKL-MIB

Administration:

SNTP time synchronization client
TFTP file transfer client
Telnet remote command-line client
Reboot and upgrade management operating system without interrupting customer data.

Supported Reach

Links up to 2000km using DarkStar DLA (in-line amplification) systems, and depending on the line-side modulation scheme: 100G or 400G. (0.25dB/km of fiber loss).

Supported Fiber Types

G.652, G.654, G.655 (others supported on demand)

Product Configuration

DQM400-4 (4 port)
Optionally included: various client interfaces, Integrated OTDR, AC/DC power supplies, Input and Output EDFAs

Optical Components/Characteristics

Client-side Optics: QSFP28, QSFP-DD

Line-side Optics: Tunable DWDM: OSFP-DCO (C Band: 1528.77nm -

Optical Protection

Optical Protection is optionally integrated.

Services

(All services are soft configurable.)

Ethernet: 100GE, 400GE

Client Interfaces

Number of client-side ports per system:

1, 2, 3, 4 (QSFP28/QSFP-DD) - Up to 1.6Tb client-side services

Line Interfaces

Number of line-side ports per system:

1, 2, 3, 4 (OSFP) - Up to 1.6Tb (400G per port)

Physical Dimensions

IEC 60297-3 Compliant

Height: 1U (1.75"/44.5mm)

Width/Depth:

1U: 16.9"/27.3" (29.5" with cable relief)
429.3mm/693mm (749.3mm with cable relief)
2U: 16.9"/18.8" (19.8" with cable relief)
429.3mm/477.5mm (502.9mm with cable relief)

Weight, minimum: TBD

Power and Cooling

Power input AC: 90-264V AC, 50/60Hz

Power input DC: -40 to -75V DC

(1+1 redundant AC or DC, or both)

Power consumption, typical (400G channels):

DQM400-4 (4 port): 191W, 265W max.

DQM400-12 (12 port): 483W, 550W max.

Environmental

Operating temperature: 0 to 50°C

Storage temperature: -40 to 70°C

MTBF: TBD

Non-operating (Shock and Vibration): ISTA-2A,

IEC60068-2-6,

60068-2-64, 60068-2-27

Laser Safety Classification

Class 1

Regulatory Compliance

UL: IEC 62368-1:2014(ed.2), IEC 60825-1:2014(ed.3)

FCC: Conducted and Radiated Emissions, Part 15 Subpart B
Sections 15.107 and 15.109 Class B

CE/UKCA: EN 55032 (2015) +A11, EN55035 (2017) +A11,

EN 61000-3-2 (2014), EN 61000-3-3 (2013),

CISPR 32 Class B, ICES-003 Issue 7