



400G 4-12 Channel DWDM Transponder

DarkStar DQT400 Series

The DQT400 is part of XKL's DarkStar DWDM Transponder family of products, and is based on XKL's DarkStar architecture, the foundation for addressing today's IT challenges and scalable growth.

These systems enable 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 DQT400 utilizes the latest pluggable coherent technologies to enable metro and long-haul connectivity for high-speed data networks.

DQT400 systems install in under 30 minutes and are available in a 1 rack unit (1U) configuration. The DQT400 utilizes the DarkStar DMD Mux/Demux in order to aggregate up to 48 channels at 400G per channel, or 96 channels at 100G per channel, on a single fiber pair. Alternatively, the DQT400 can provide alien wave injection into an existing customer network. The DQT400 systems are fully tunable and allow for a customer to grow their network to 19.2Tb in 5U of rack space. A 12-channel DQT400, transporting 4.8Tb of bandwidth, uses only 470W.

Network administrators can deploy and commission these systems 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.

More about this product...

Integrated System Architecture:

- DWDM Solution.
- Tunable system (based on ITU grid).
- 100GE - 400GE.
- QPSK, 16QAM.

System Level Features:

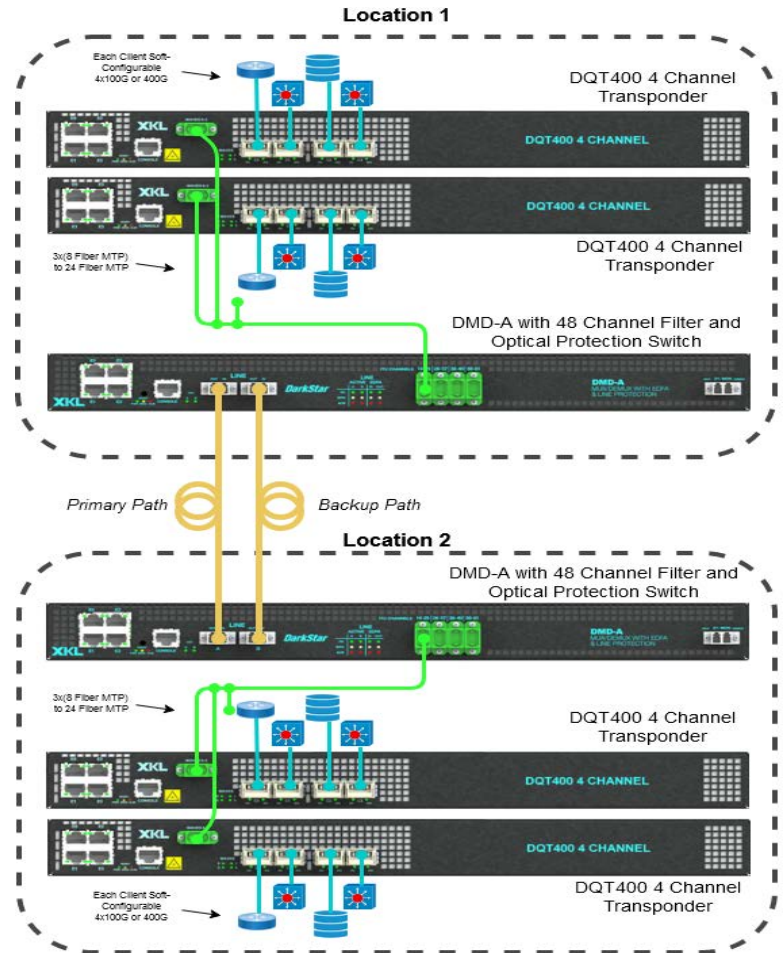
- Hot-swap components:
 - 1+1 redundant power supplies, supports AC and DC.
 - Redundant fans.
 - Optical transceivers: QSFP28, QSFP-DD.
- Field-replaceable C-Band Tunable OSFP transceivers; 400G ZR and 400G ZR+ transceivers supported.
- Dual flash storage modules; one is write-protected.
- Hitless software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

Also see "Technical Specifications" on back.



Typical Use Case

8 Channel Protected Point-to-Point





Supported Topologies

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

Capacity/Growth

A DQT400 system has 4 or 12 DWDM channels, depending on the model. Each DWDM channel can be configured for 100G or 400G operation. In 400G mode, a DQT400 4-channel supports 1.6Tb of capacity, while a DQT400 12-channel supports 4.8Tb.

Each client port supports a variety of QSFP28 or QSFP-DD transceivers. The client ports are also soft-configurable, supporting 100GE, 2x100GE, 3x100GE, 4x100GE, and 400GE operation. A 4-port DQT400 can support 16 100GE services, 4 400GE services, or a combination of 100GE and 400GE services. Similarly, a 12-port DQT400 supports 48 100GE services, 12 400GE services, or a combination of 100GE and 400GE services.

A network of DQT400 systems can grow to 48 channels at 400G per channel, or 96 channels at 100G per channel. When using 400G channels, the DarkStar DMD 48-channel mux/demux enables up to 192 100GE client services or 48 400GE client services, or a mix of both 100GE and 400GE.

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, 200G, 300G, or 400G. (0.25dB/km of fiber loss).

Supported Fiber Types

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

Product Configurations

DQT400-4 (4 port)
DQT400-12 (12 port)
Optionally included: various client interfaces, AC/DC power supplies

Optical Components/Characteristics

Client-side Optics: QSFP28, QSFP-DD

Line-side Optics: Tunable DWDM: OSFP-DCO (C Band: 1533.47nm-1561.42nm) with 100GHz spacing

Optical Protection

Optical Protection available via the DMD-A.

Services

(All services are soft configurable.)

Ethernet: 100GE, 400GE

Client Interfaces

Number of client-side ports per system:

4 (QSFP28/QSFP-DD) - Up to 1.6Tb client-side services
12 (QSFP28/QSFP-DD) - Up to 4.8Tb client-side services

Line Interfaces

Number of line-side ports per system:

4 (OSFP) - Up to 1.6Tb (400G per port)
12 (OSFP) - Up to 4.8Tb (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)

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):

DQT400-4 (4 port): 224W
DQT400-12 (12 port): 472W

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 60950-1(ed.1), IEC 60825-1:2007 (2nd Edition)

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

CE: EN55024 (1998 w/A1: 01 & A2: 03, EN61000-3-2 (2006), EN61000-3-3 (1995 w/A1:01 & A2:06), EN55022 (2006) Class A & CISPR 22 (2005) Class A