



# 12-36 Channel DWDM Transponders

## DarkStar DQT10 Series

The DQT10 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 1G - 10G services, including optical amplifiers for extending network reach, protection solutions, and other optical components that are required for any optical network.

An extension of the DQM10 family of DWDM systems, the DQT10 muxes waves outside of XKL's typical integrated chassis, thereby allowing network growth to 96 channels and augmentation of existing networks via alien wave injection.

The DQT10 systems are factory configured for 120G, 240G, or 360G of transport, making them ideal for point-to-point applications, data center interconnect, as well as for those who are unsure about future bandwidth requirements.

DQT10 systems install in under an hour and are available in 1 rack unit (1U) or 2 rack unit (2U) configurations. A typical DQT10 (i.e., 12 DWDM channels) uses 90 watts of power, and has a data propagation latency of 20 nanoseconds (ns) per system.

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. All the complexities of building an optical network are handled by the DQT10 system, leaving network administrators with confidence in their deployments.

### More about this product...

#### Integrated System Architecture:

- DWDM Solution.
- No layer 2/3 protocol processing, no data buffering. This is both a reliability and security feature; impossible to access transport data through management network.

#### System Level Features:

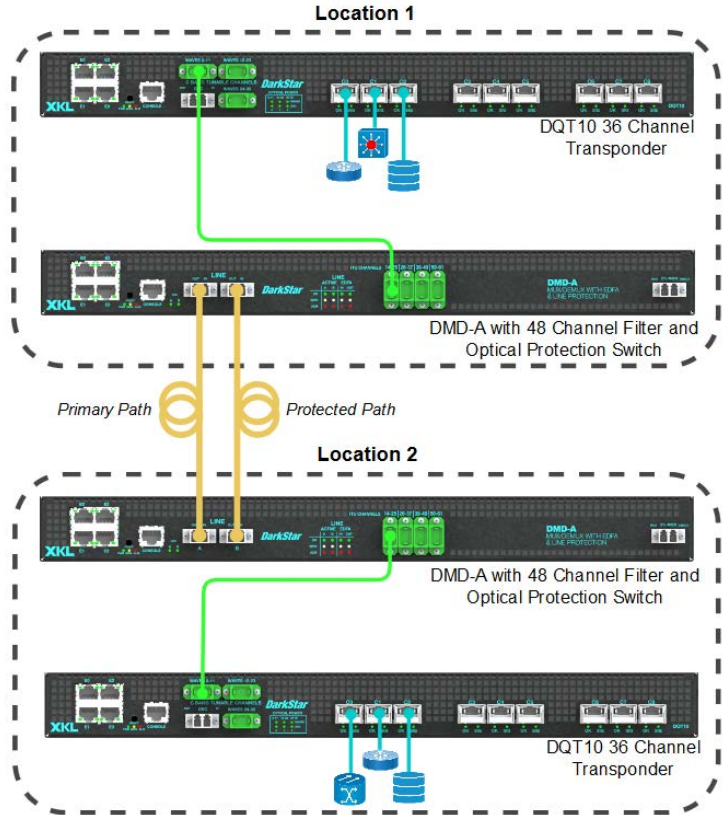
- Hot-swap components:
  - 1+1 redundant power supplies, supports AC and DC.
  - Redundant fans.
  - Laser transceivers: C-Band Tunable SFP+, QSFP+, and Optical Service Channel (OSC).
- Field-replaceable dual flash storage modules; one is write-protected.
- Hitless software upgrades—no customer data loss.
- System-wide watchdog timer to ensure software response.

Also see "Technical Specifications" on back.



### Typical Use Case

#### 12 Channel Protected Point-to-Point with Growth to 48 Channels





### Supported Topologies

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

### Capacity/Growth

120G, 240G, or 360G per chassis. Grows to 960G by using the DarkStar DMD.

### 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.

#### Optical Service Channel: No

### Supported Reach

Links up to 80km, 2000km with DarkStar DLA systems (0.25dB/km of fiber loss).

### Supported Fiber Types

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

### Product Configurations

12 Channel (120G)  
24 Channel (240G)  
36 Channel (360G)  
Optionally included: various client interfaces, AC/DC power supplies, 1U or 2U chassis.

### Optical Components/Characteristics

**Wavelengths:** Tunable ITU Grid Channels: Each DWDM laser can be tuned to any ITU grid, 50GHz-spaced channel: 14-61.5.

#### Wavelengths per System:

12 Channel: 12 wavelengths  
24 Channel: 24 wavelengths  
36 Channel: 36 wavelengths

**Client-side Optics:** QSFP+: 40GBase-SR4 (4 x 850nm), 40GBase-PSM4 (4 x 1310nm), 40GBase-LR4 (CWDM: 1271nm, 1291nm, 1311nm, 1331nm)

**Line-side Optics:** 1528.38nm-1564.27nm with 50GHz spacing

### Optical Protection

Optical Protection available via the DMD-A.

### Services

(All services are soft configurable.)

**Ethernet:** 1GE, 10GE, 10GE + FEC, 40GE (4 wavelengths), 100GE (10 wavelengths)

**SONET:** OC48/STM16, OC192/STM64, OC192 + FEC (OTU3)

**Fiber Channel:** 2G, 4G, 8G, 10G

### Client Interfaces

#### Number of client-side ports per system:

12 Channel: 3 x QSFP+  
24 Channel: 6 x QSFP+  
36 Channel: 9 x QSFP+

### Line Interfaces

#### Number of line-side ports per system:

12 Channel: 12 x tunable SFP+  
24 Channel: 24 x tunable SFP+  
36 Channel: 36 x tunable SFP+

### Physical Dimensions

IEC 60297-3 Compliant

**Height:** 1U (1.75"/44.5mm)/2U (3.5"/88.9mm)

#### Width/Depth:

1U: 16.9"/27.3" (29.5" with cable relief)  
429.3mm/693mm (749.3mm with cable relief)  
2U: 16.9"/17.5" (19.8" with cable relief)  
429.3mm/444.5mm (502.9mm with cable relief)

**Weight, minimum:** 32lbs/14.5kg

### 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:

12 channel: 90W  
24 channel: 140W  
36 channel: 190W

### Environmental

**Operating temperature:** 0 to 50°C

**Storage temperature:** -40 to 70°C

**MTBF:** 87,600 hours

**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