



## DarkStar™ DRA & DBA Amplification Systems Datasheet

### Stretch distance and economy of enterprise networking with the DarkStar amplification systems

Connect DXM optical transport systems with any mix of traffic, such as 1 and 10 gigabit ethernet, OC48/OC192, or fibre channel, separated by up to 2000km. Grow metro networks into regional networks easily and economically. Control with a familiar command line interface and integrated management network using standard TCP/IP protocols. Rest easy with carrier-class redundancy and extreme reliability.

#### Redundant, Flexible Power and Cooling

Dual hot-swap power supplies (AC/AC, DC/DC, AC/DC). Dual hot-swap cooling units with environment-aware auto fan control.

#### Regional Range DWDM Delivery

Extend range between DXM optical transport systems to 2000km. Build national networks for less cost than traditional solutions. Take advantage of superior Raman noise figure.

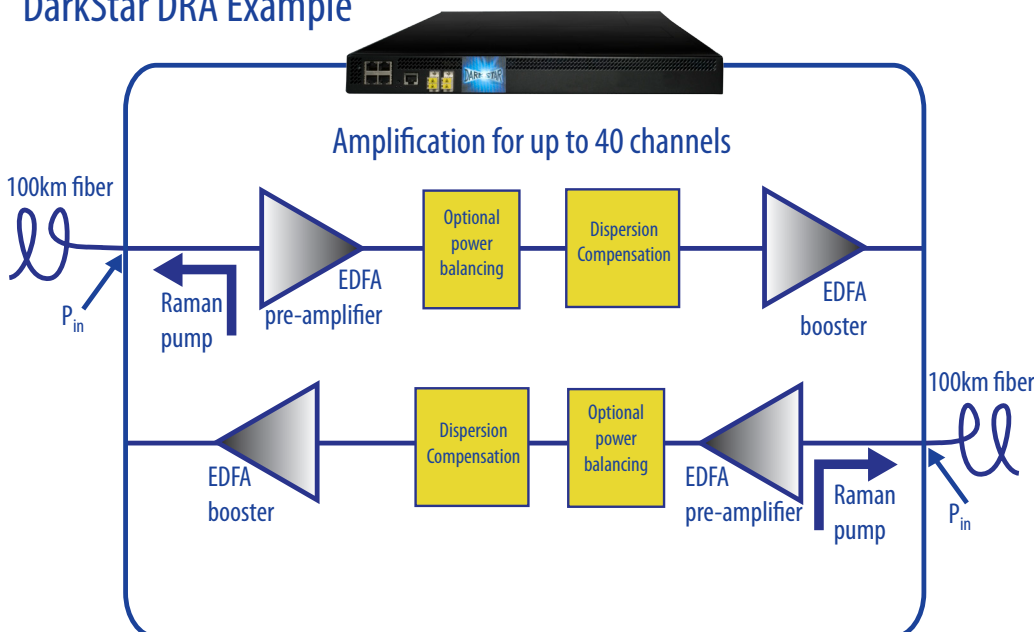
#### Remote and Local Management

Familiar router-like command line interface. Local standard serial console. Integrated facility-separated management based on standard TCP/IP protocols. SNMP and Syslog support.

#### Flexible Configurations

Suitable at mid-span or endpoints of networks. Selection of dispersion compensation integrated into each system. Optional power balancing that provides carrier grade service while maintaining a 1RU footprint and ease of use.

### DarkStar DRA Example



## FEATURES & BENEFITS

### DarkStar In-Line Fiber Amplifiers Go The Distance

Today's networks tolerate data getting there fashionably late. XKL's new DarkStar in-line fiber amplifiers deliver unprecedented low latency for businesses with time-sensitive data needs.

### Designed To Optimize Next Gen Optical Modulation Formats

DarkStar amplification systems are designed to provide superior optical physics with an eye towards complex modulation formats of the future.

### Yes...Size Matters

DarkStar amplification systems are space-saving with their 1RU integrated package.

### It's So Easy Being Green

DarkStar amplification systems save energy at <90 watts per unit.

### Out of Box & Online...Same Day

Fully deploy in under 1 hour.

### Reduced OPEX

No optical engineering expertise required.

### Future Proof Your CAPEX

DarkStar amplification systems provide up to 400 Gbps of scalable capacity to meet your bandwidth needs of today and tomorrow.

### A Legacy Of Quality & Reliability

Unlike most new products, all DarkStar products have been designed to be the last gear standing. Designed, engineered and manufactured by the same team that changed the way networks connected a generation ago.

**XKL is bringing fundamental change to worldwide telecommunications**

Visit us at [www.xkl.com](http://www.xkl.com), or call us at 866.802.2777 (USA toll free) or +1.425.497.6590 to design a solution that best fits your bandwidth needs



# Technical Specifications



## Physical Dimensions

Width.....	16.9"
Height.....	1RU
Depth.....	27.25" (29.5" including power supply/cable relief)
Weight.....	39lbs (fully configured DRA, 2 Raman amplifiers, 4 EDFAs, 2 DCM)

## Power Requirements

Power input AC.....	100-240V AC, 50/60Hz
Power input DC.....	-48 to -60V DC
Power consumption.....	79-89 watts typical configurations (117 watts maximum)*

## Environmental Characteristics

Operating Temp.....	0 to 55 C
Storage Temp.....	-40 to 70 C
Non Operating (Shock and Vibration).....	ISTA-2A, IEC60068-2-6, 60068-2-64, 60068-2-27

\*Typical DBA has 4 EDFAs and fans running at nominal speed. Typical DRA has 2 Raman amplifiers, 2 EDFAs, and fans running at nominal speed.

## Network Management

- Familiar router-style command line interface
- Password protected RS-232 console management port
- Integrated Optical Service Channel for remote management
- 4 x 10BaseT/100BaseTX local Ethernet ports
- RIP routed TCP/IP management network
- SSH and Telnet agents for remote management
- Both local and RADIUS based user authentication
- SNMP remote monitoring
- SNMP trap and Syslog event services
- Internal event logging
- Synchronized time stamps via SNTP
- TFTP support for remotely saved configuration files
- DHCP client support for remote initial configuration
- DHCP server support for directly connected devices
- Software upgradeable without interrupting optical transport
- Watchdog timer to ensure software health
- Password protected configuration mode

## Redundancy, Availability, and Scalability

- Dual, hot-swap power supplies
- Dual, hot-swap fans
- Dual flash storage modules, one is write protected
- System-wide watchdog timer to ensure software response
- Optical transport uninterrupted during software reset and upgrade

## Architecture and Features

- Integrated systems architecture
- Optical engineering credentials unnecessary for successful deployment

## Optical Wavelengths

- 40 Channels
- C Band: 1530.33nm – 1561.42nm, 100GHz spacing
- Integrated Dispersion Compensation for various fiber types

### DRA

- Up to 4 EDFAs and 2 Raman Amplifiers per 1RU
- Pin = -44\* dBm/channel
- NF = 5.527 (optimum gain and power settings)
- Max. gain = 53dB\*
- Gain flatness = +/- 2dB
- \* For fiber type OFS TRUEWAVE® RS

### DBA

- Up to 8 EDFAs per 1RU
- Pin = -31dBm/channel (for OSNR > 20.5dB)
- NF = 5.527 (optimum gain and power settings)
- Max. gain = 40dB
- Gain flatness = +/- 1.5dB

## Standards Compliance

- UL: IEC 60950-1
- FCC: Conducted and Radiated Emissions, Part 15, Subpart B, Section 15.107 and 15.108 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