



XKL's DarkStar Line Amplifier is a fully-integrated optical amplifier solution that extends the reach of a network. High gain and low noise stem from its multi-stage amplifier design. And as with the rest of the XKL product line, the DLA is based on XKL's DarkStar architecture, the foundation for addressing today's IT challenges and scalable growth.

The DLA system integrates all the required components to create a metro, regional, or long-haul optical network, including Erbium-Doped Fiber Amplifiers (EDFAs), tilt and equalization filters, as well as Dispersion Compensation Modules (DCMs). DCMs are passive, Fiber Bragg Grating (FBG) based filters that provide the necessary dispersion compensation for any customer fiber type, and are typically required for transmission systems using direct-detect transceivers.

The DLA system fits into 2 rack units (2U) of space and typically uses under 90 watts of power. Easy to integrate and operate, there is no need for specialized optical engineers to ensure network optimization. The DLA includes a Mid Stage access port on the front panel. This allows support for add/drop or North/South routes.



More about this product...

System Architecture:

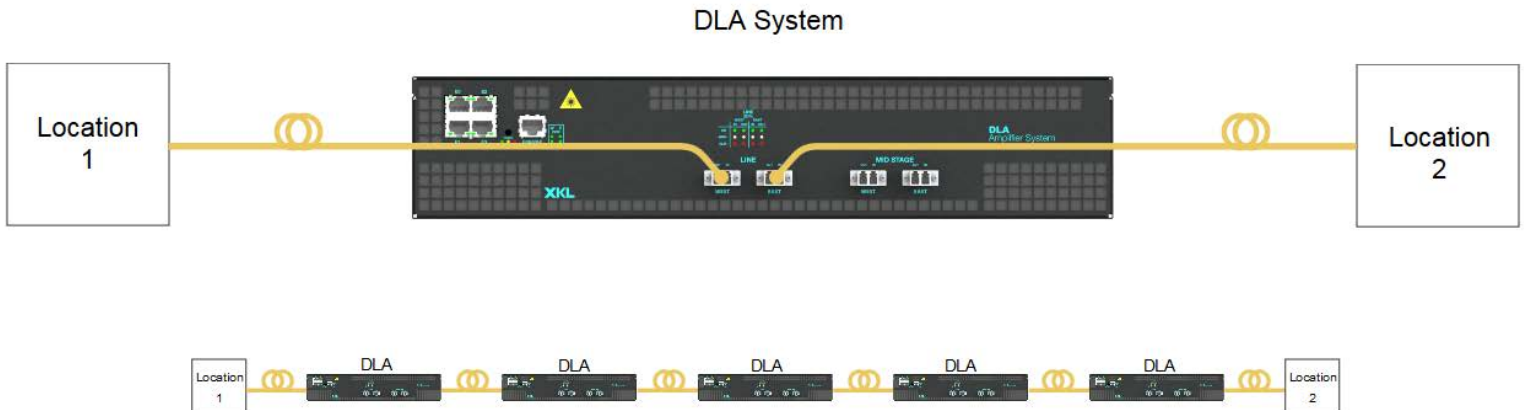
- Optical Amplifier Solution—integrated systems architecture.
- Fully integrated optical components including: EDFAs, tilt and equalizer filters, DCMs, and Optical Service Channels (OSCs).

System Level Features:

- Hot-swap components:
 - 1+1 redundant power supplies, supports AC and DC.
 - Redundant fans.
- Field-replaceable Optical Service Channel (OSC) transceivers.
- 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 Amplified Links Using DLA



**Supported Topologies**

Point-to-Point, Ring, Linear, Mesh, and Protected

Capacity

Up to 4 EDFAs

Up to 2 DCMs

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: 2**Supported Reach**

The OSC is limited to 42dB of link loss.

Supported Fiber Types

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

Product Configurations

Optionally included: Integrated OTDR, EDFA pre-amp, EDFA booster, DCM, AC/DC power supplies, tilt and equalizer filters

Optical Components/Characteristics

EDFAs (Erbium-Doped Fiber Amplifiers)

Optional integrated dispersion compensation, based on Fiber Bragg Grating (FBG) technology

C-Band: 1528.77nm - 1566.31nm, 100GHz spacing
C-Band: 1528.38nm - 1566.31nm, 50GHz spacing

EDFA signal wavelength range

C-Band: 1528.70nm - 1563.80nm
C-Band Extended: 1524.06nm - 1566.04nm (the C-Band Extended bandwidth is subjected to 3dB gain reduction)

Integrated tilt compensation filters

Integrated equalization filters

Saturated output power: +23dBm

Pre-amp and booster EDFA configuration

Minimum input power: -35dBm (reporting limit)
Optimal designed flat gain: 44dB
Noise figure: 5.52dB
Gain flatness over C-Band: 1.5dB

Optical Protection

N/A

Physical Dimensions

IEC 60297-3 Compliant

Height: 2U (3.5"/88.9mm)

Width/Depth:

16.9"/17.5" (19.5" with power supply/cable relief)

429.3mm/444.5mm (495.3mm with power supply/cable relief)

Weight, minimum: 39lbs/17.7kg (fully configured)

Power and Cooling

Power input AC: 100-240V AC, 50/60Hz

Power input DC: -48 to -60V DC

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

Power consumption, typical: 79-89 watts (175 watts maximum)

Environmental

Operating temperature: 0 to 55°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