



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), Raman Amplifiers, active or passive tilt and equalization filters, OTDR, 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:**

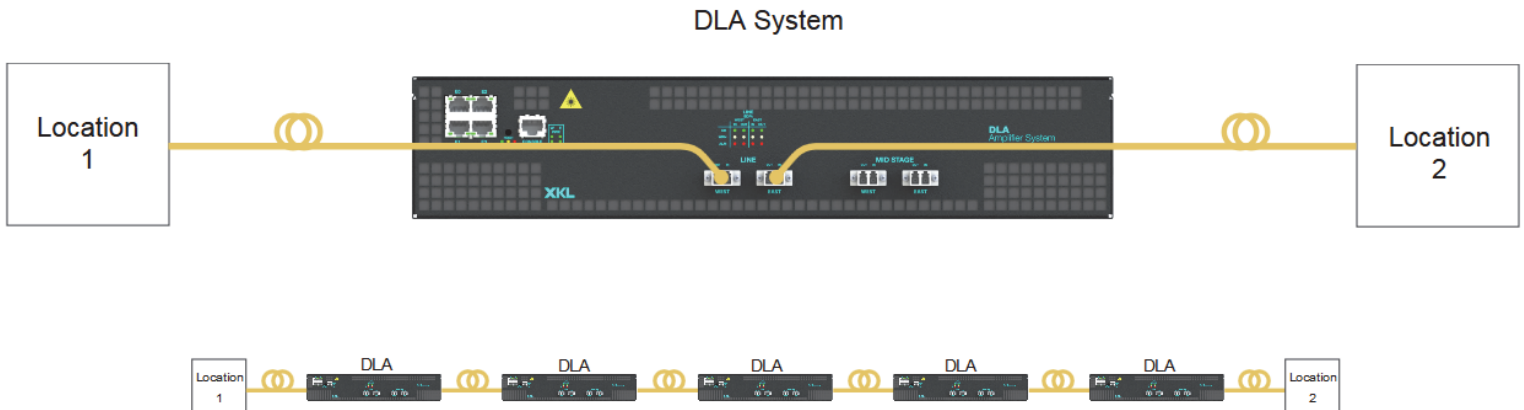
- Optical Amplifier Solution—integrated systems architecture.
- Fully integrated optical components including: EDFAs, Raman Amplifiers, active or passive equalizers, OTDR, DCMs, and Optical Service Channels (OSCs).

**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 Raman Amplifiers

**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 for the West and East Line ports: Input & Output EDFAs, Input Raman, integrated OTDR, DCM, Passive or Active tilt and equalizer filters, AC/DC power supplies.

**Optical Components/Characteristics**

EDFAs (Erbium-Doped Fiber Amplifiers)

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)

Saturated output power: +23dBm

Input and Output EDFA configuration

Minimum input power: -35dBm (reporting limit)

Optimal designed flat gain: 44dB

Noise figure: 5.52dB

Gain flatness over C-Band: 1.5dB

Raman Amplifier: 650mW Output Power

Class 1M Eye-Safe Operation

Up to 14dB signal gain (fiber type dependent)

Improved overall Noise Figure

Active or passive tilt and equalizer filters

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

**Optical Protection**

N/A

**Physical Dimensions**

IEC 60297-3 Compliant

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

**Width/Depth:**

16.9 / 18.8" (19.8" with cable relief)

429.3 / 477.5mm (502.9mm with 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:** 56 - 68 watts (92 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 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