

The widest range of
mission-critical interconnect
technologies in the world

Glenair Photonics Technology for Free-Space-Optical (FSO) Communications

Ron Logan, VP and CTO



EPIC Online Technology Meeting on Free Space Optical
Communication and LiFi

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Agenda

- Glenair Overview
- New Glenair components for Free Space Optical (FSO) links
 - DWDM Transceiver
 - Optical Amplifiers
 - High-power capable optical connectors
- Discussion



Glenair Company Overview

- Privately-held, founded in 1956
- Wide array of rugged interconnect products for aerospace and harsh environment applications
 - Copper, Fibre Optic connectors and cable assemblies
 - Rugged Photonics and Electronics communication modules
- >1000 employees in UK and Europe, >3000 worldwide
- Manufacturing locations in
 - Mansfield, UK
 - Salem, Germany
 - Bologna, Italy



New Glenair Products for FSO Terminals

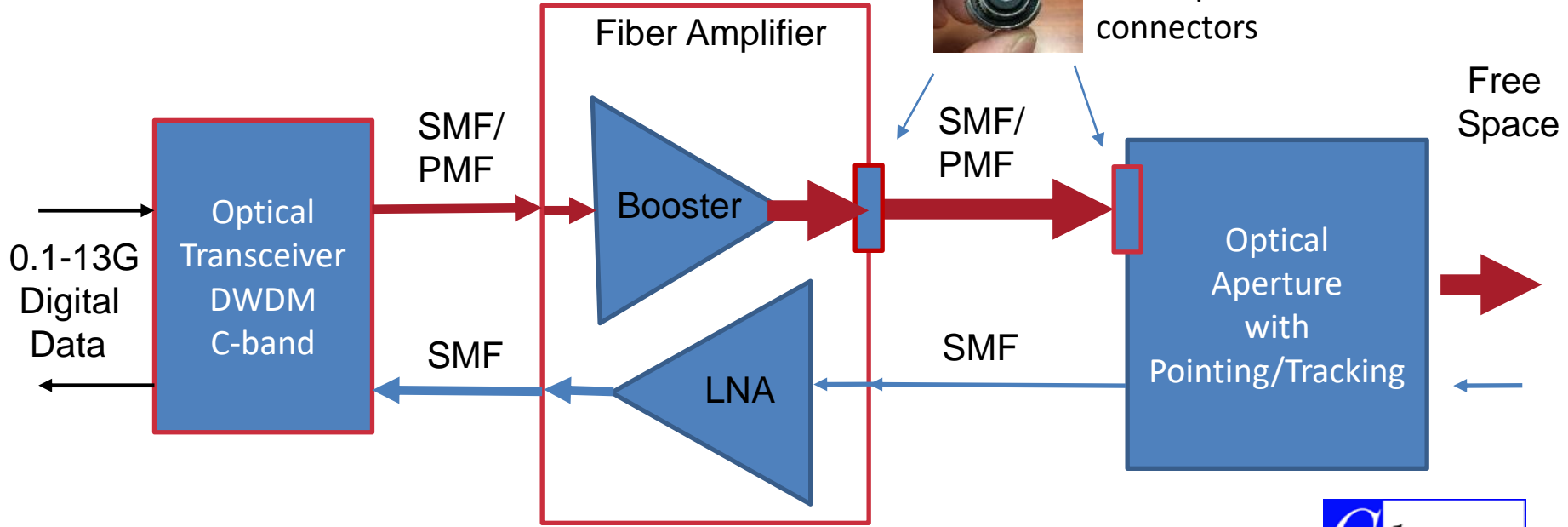
Rugged transceivers for space applications



Fibre-optic amplifiers



High-power fibre-optic connectors



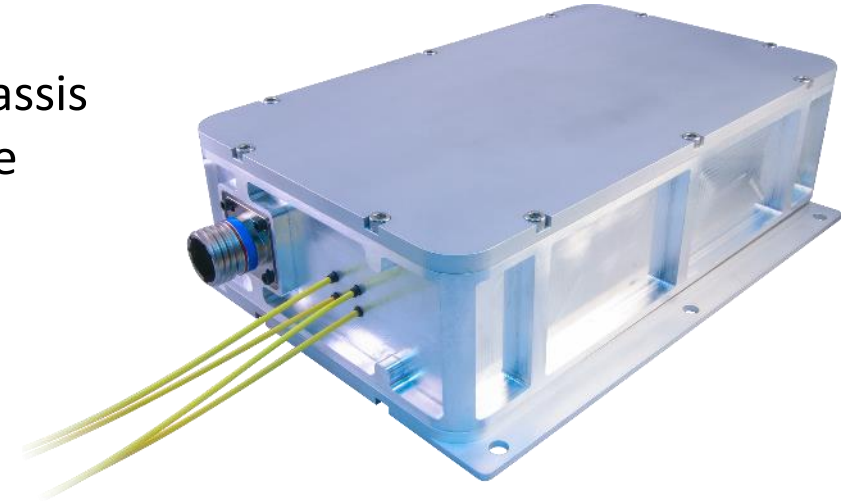
Glenair DWDM transceiver

- DFB-EML rugged PCB-mount transceiver
- ITU grid 100 GHz channel spacing
- 1G, 10.3G, 11.3G, 12.5G capable
- SFF-8472 monitoring and memory map
- Extensive adjustability via I2C and GUI to optimize performance in optically-amplified systems
 - RX bit rate/sensitivity
 - TX zero-crossing
 - RX decision threshold/slicing level
 - Wavelength fine adjust
- -40 to +85C, radiation testing imminent



Glenair optical amplifier overview

- 5W ErYb booster and Er LNA in single chassis
- Conduction-cooled for operation in space
- COTS components for low cost
- Flexible design supports 2 modes:
 - With TECs: -40 to +85C
 - Uncooled pumps: -5 to +60C
- >900 hours TVAC testing completed
- LEO radiation tested
- 25W power consumption (uncooled version)
- Other form-factors/configurations available



High power handling optical connectors

- 5W power handling at 1550nm demonstrated from -40C to 85C
- Expanded beam optical termini incorporated into D38999 connector shells
- < 0.5 dB fiber-to-fiber losses



What can Glenair do for others?

- Widest range of harsh environment and ruggedised photonic and fibre optic connectivity solutions.
 - DWDM fibre optic transceivers
 - Fibre optic amplifier technology
 - High-power-handling optical connectors
- => Class-leading transmission solution for free space optical inter-satellite and ground link laser communication terminals.
- Extensive development, testing and qualification capabilities
 - Glenair can fine tune these solutions to fit your precise needs.

What can others do for Glenair?

- We are looking to you to
 - **Define** your optical transmission needs
 - **Evaluate** our photonic components
 - Undertake **system level testing**
 - **Collaborate** to fine tune the optical transmission building blocks you need

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