

# UltraSpan Solutions for Long Links

RED-C Optical Networks' UltraSpan product family is a comprehensive portfolio of amplification equipment designed to address the challenges of ultra-long repeaterless links and long spans within multi-span links. The UltraSpan products can be used individually or in any combination to extend the span reach of existing system designs. It supports ultra-long point-to-point repeaterless links of 70 dB and beyond (corresponding to about 350 km and more), using standard transponders as well as long spans that are part of a multi-span network. It is a comprehensive and flexible solution which substantially reduces overall network cost.

The UltraSpan product line comprises a number of complementary products:

- **UltraSpan Raman** - providing up to 850 mW co- or counter-propagating Raman pump power
- **UltraSpan Power Booster** - providing up to 26 dBm output power
- **UltraSpan ROPA** - providing up to 2 W of combined counter-propagating Raman pump power and 1480 nm pump power for remote EDF pumping

## Features

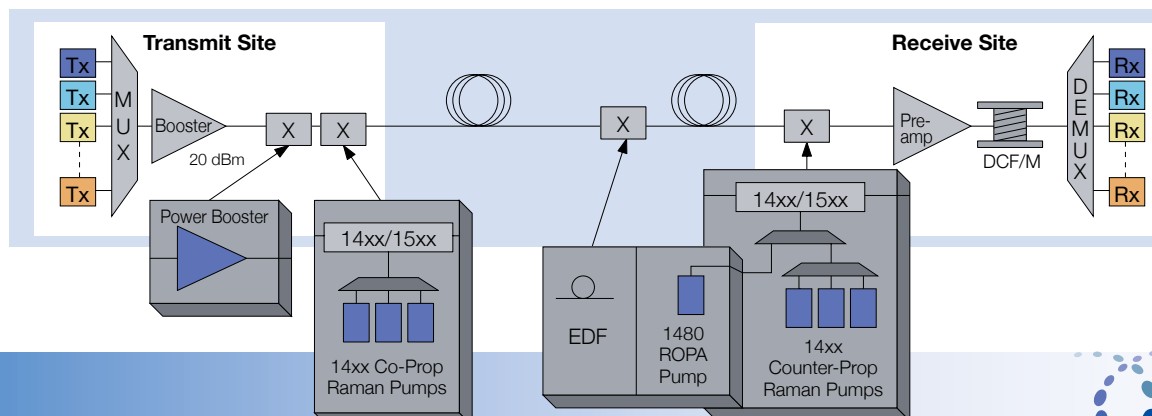
- Rack-mountable, network interfaced
- Supports SNMP for easy integration
- User-friendly web-based GUI
- Comprehensive eye safety mechanisms for Class 1M laser safety classification
- Automatic shut-down and restart
- Flattened gain spectrum
- Advanced line monitoring and gain control
- Remote management (optional OSC)
- NEBS/ETSI compliant

- **UltraSpan Submarine Terminal** – modular EDFA/Raman/ROPA unit designed for stringent low FIT (very high reliability) network applications. Provides up to 1.2 W of Raman/ROPA pump power, or 27 dBm EDFA output power
- **UltraSpan High Power Amplification Terminal** – modular EDFA/Raman/ROPA unit especially for very high power applications. Provides up to 2 W of Raman/ROPA pump power, or 28 dBm EDFA output power
- **UltraSpan Inline Amplifier** - providing remotely managed in-line EDFA capabilities for links requiring in-line amplification

All UltraSpan products are available as network interfaced units which can be integrated easily and rapidly within existing system designs. All products include RED-C's unique, patented, laser safety technology for Class 1M\* classification, and feature a standard, uniform GUI and operating procedures. The UltraSpan portfolio fully complies with Telecordia standards.

## Applications

- Long repeaterless links (e.g. island hopping, desert ranges and oil rigs)
- Low latency links (less FEC and O-E-O conversion)
- Storage area networks (SANs), remote locations, disaster recovery
- Security-sensitive applications
- Traversing challenging spans within multi-span links
- Improving OSNR in long haul and ultra-long haul links
- 100 Gb/s and 40 Gb/s transmission and/or increasing channel count to 80+ WDM channels



## UltraSpan Product Line at a Glance

Product	Key Features	Applications
<b>UltraSpan Raman</b>	Rack-mountable, 1RU network-ready, SNMP support Up to 850 mW Raman pump power Co- and counter-propagating configuration Supports two or three Raman pumps Easy to install using Installation Wizard Gain control and gain estimation Optionally available as module (up to 700 mW)	Distributed Raman amplification Long span masking OSNR improvement Long repeaterless links 100 Gb/s, 40 Gb/s and/or 80-channel systems
<b>UltraSpan Power Booster</b>	Rack-mountable 1RU, network ready, SNMP support Up to 26 dBm output power, fixed gain 6-20 dB Optionally available as module	Boost existing EDFA output power OSNR improvement Long span masking Long repeaterless links 100 Gb/s, 40 Gb/s and/or 80-channel systems
<b>UltraSpan ROPA</b>	Rack-mountable, network ready, SNMP support Up to 2 W combined Raman and 1480 nm pump power Optional optimized remote passive gain unit available 1RU option available with lower output power	Remote EDF pump + distributed Raman amplification OSNR improvement Long repeaterless links
<b>UltraSpan Submarine Terminal</b>	Rack-mountable 3RU, network ready, SNMP support Modular EDFA/Raman/ROPA platform Up to 1.5 W Raman/ROPA output power Up to 27 dBm EDFA output power	Remote terrestrial locations Defense applications Shoreline networks Island hopping
<b>UltraSpan High Power Amplification Terminal</b>	Rack-mountable 3RU, network ready, SNMP support Modular EDFA/Raman/ROPA platform Up to 2 W Raman/ROPA output power Up to 28 dBm EDFA output power	Remote terrestrial locations Defense applications Shoreline networks Island hopping
<b>UltraSpan Inline Amplifier</b>	Rack-mountable, 1RU network ready, SNMP support Supports any RED-C EDFA module Out-of-band OSC remote management Optional integrated DCM	Medium to long links (>200 km) Datacom, enterprise, defense and utility applications Cost-effective and small foot print alternative to O-E-O repeaters High loss links where Raman amplification is impractical

\* Class 1M products are not hazardous under normal circumstances, but may pose an eye hazard when the laser output is viewed with certain optical instruments (for example eye loupes, magnifiers and microscopes) within a distance of 100 mm

### About RED-C

RED-C Optical Networks Ltd. is a leading provider of state-of-the-art EDFAs, Raman amplifiers and optical monitoring devices for all network segments (long-haul, regional, metro and access) and for all network applications (telecom, cable and enterprise). Beside a broad variety of EDFA and Raman modules, RED-C offers innovative and comprehensive solutions for some of the industry's most difficult technological challenges today, such as 100 Gb/s and 40 Gb/s coherent transmission, ultra-long repeaterless links, and low latency networks.



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