NETWORK AMPLIFICATION

Rack Raman co-pump sources

Forward Raman pumping options for distributed post-amplification in long fibre spans.

Applications to discuss: Optical network integration; Fibre-link engineering.

Selection points
Up to 3 W in the third-order option / Up to 2 W combined in multiplexed options / Separate signal and pump paths

Configuration options

Configuration	Signal passband	Maximum output power
Third-order co-pump	1500-1568 nm	≤3 W
Multiplexed co-pump	1500-1568 nm	≤2 W combined
Supplemented co-pump	1500-1568 nm	≤2 W combined
Extended-band multiplexed pump	1524 - 1572 nm	up to 2 W combined
Extended-band supplemented pump	1524 - 1572 nm	up to 2 W combined

Each row is a separate configuration. Limits from different rows must not be combined.

Technical details

Parameter	Specification or condition
Maximum degree of polarization	Third-order co-pump: <10%; Multiplexed co-pump, Supplemented co-pump: <4%
Maximum C-band insertion loss	Third-order co-pump: 3.2 dB; Multiplexed co-pump: 2 dB; Supplemented co-pump: 1 dB
Supervisory-channel wavelength	Third-order co-pump, Multiplexed co-pump, Supplemented co-pump: 1574 nm; Extended-band multiplexed pump, Extended-band supplemented pump: 1576 nm
Supervisory-channel optical budget, pump off	Third-order co-pump, Multiplexed co-pump, Supplemented co-pump: 86 dB
Degree of polarization	Extended-band multiplexed pump, Extended-band supplemented pump: < 4%
Maximum signal-band insertion loss	Extended-band multiplexed pump: 2 dB; Extended-band supplemented pump: 1 dB
Relative intensity-noise density	Extended-band multiplexed pump, Extended-band supplemented pump: -122 dB/Hz
Supervisory-channel optical budget	Extended-band multiplexed pump, Extended-band supplemented pump: 88 dB

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Integration and delivery

Item	Configuration detail
Format	2U rack subsystem
Control	Ethernet, web interface and SNMP; configuration-dependent management interfaces
Pump example	Third-order arrangement uses 1276 nm pump output; multiplexed arrangement uses 14xx nm pump wavelengths

Conditions and configuration notes

• A value in dBm describes optical power; a value in dB describes gain, loss or an optical budget. A link budget is not a distance in kilometres.

• Performance depends on channel loading, fibre losses and the selected operating point; family limits do not automatically apply together.

• The two multiplexed entries share a combined-power specification; they are not independently rated at that combined total.

• The third-order arrangement targets signal channels at 1542-1568 nm. Exact pump lines and seed powers need confirmation.

Configuration review

• Target wavelength or passband and input/output power

• Gain, noise, timing and polarization requirements

• Optical connections, control interface and installation conditions