

Selection Guide for Low-Loss Long-Distance Optical Transceivers for Field Operations



Article Overview

Choose long-distance optical transceivers based on fiber type, wavelength, power budget, compatibility, environmental tolerance, and vendor support to ensure low-loss, reliable field deployment.

1. Understand Long-Distance Transceiver Types

Long-distance transceivers are designed for single-mode fiber (SMF) and typically operate at 1310 nm or 1550 nm wavelengths to minimize attenuation over extended distances, ranging from 10 km to 120 km without signal regeneration . Common classifications include:

- LR (Long Reach): ~10 km
- ER (Extended Reach): ~40 km
- ZR/ZX: 80-120 km, often using DWDM or optical amplification These modules use narrow-linewidth lasers and sensitive receivers to maintain sufficient link margin over long spans .

2. Evaluate Optical Power Budget

The power budget is critical for low-loss transmission. It depends on:...

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