

OBA-3

Optical Bidirectional Amplifier for fiber optic time and frequency distribution system

Introduction and key features

Fiber optic systems used to transfer or distribute metrological signals (optical frequency, radio frequency or time) require symmetry for optical signals propagating in both, forward and backward, directions. When the attenuation of the fiber connecting the endpoints of the link exceeds some limit signal regeneration starts to be necessary. The most versatile and simple option is to employ an optical amplifier. The OBA-3 optical bidirectional amplifiers are designed especially to extend the operation distance on the links showing more than 25 dB of attenuation (i.e. the distance exceeding about 50 to 100 km).

The OBA-3 amplifiers are fully compatible with the OSTT series of time and frequency distribution system and optical frequency distribution systems.

The unique feature of the OBA-3 amplifier is that the optical gain is kept constant independent of the type, number and any specific modulation of the amplified signals.

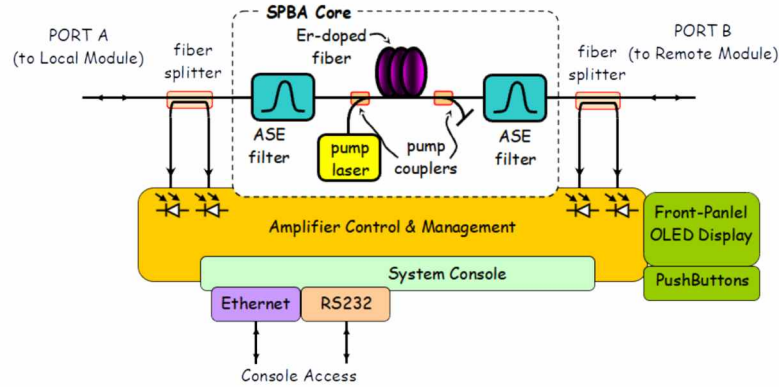
Key specification

- Optical ports: for singlemode fiber of any type (e.g. G.652, G.655).
- Optical connectors: FC/APC with 8 deg polishing.
- Optical gain: specified by the user in the range 0-25 dB.
- Monitoring of input and output powers in both directions.
- Optical bandwidth: 5.8 nm, compatible with OSTT time and frequency fiber optic distribution system and optical frequency distribution systems.
- Control: remote via Ethernet 10/100 or RS-232 ports, or manual via front panel push buttons.
- Power supply: 48 V DC. A 12 V / 2 A option is also available.
- Power consumption: less than 15 W.



True constant gain and principle of operation

OBA-3 is based on a single-path bidirectional optical amplifier (SPBA) core, featuring perfect symmetry of propagation conditions between the forward and backward directions. The construction of amplifier guarantees that the gain received by the optical signal is kept constant on the value set by the user. It is completely independent of the input powers and of the specific modulation that is applied to the signal.



Block diagram of the OBA-3 amplifier

Interfaces description

Location of connectors and control ports.



1. Optical bidirectional port A, FC-APC type.
2. Optical bidirectional port B, FC-APC type.
3. Display showing OBA-3 parameters.
4. Pushbuttons for setting OBA-3 optical gain.
5. Remote control and monitoring ports.
6. Fuse socket (at the rear panel).
7. Power supply connector (at the rear panel).
8. Protective earthing conductor (PE) connected with the metal case of the amplifier.

Display

The optical powers entering and leaving the OBA-3 bidirectional amplifier and other parameters are represented on the display installed on the front panel. Available display views are presented below.

