Fibre Optic Transceiver, 1310/1550nm
Part number J1601001

Description

This is an integrated Fibre Optic Transceiver Card consisting of a 1310nm TX Laser Diode coupled via a Wavelength Division Multiplexer to a 1550nm RX PIN Diode for wide-band RF over Fibre distribution systems.

The TX path modulates RF on to a constant power optical carrier for transmission over 9/125um single mode fibre to a remote location. The transmitter has a temperature compensated feedback circuit to ensure constant laser power over a wide operating temperature range. A power monitoring circuit is used to provide a TX alarm if abnormal operating conditions are detected.

The RX path utilises a photodiode to recover RF from an incoming optical signal. The receiver consists of a number of gain stages to provide recovery amplification and compensation for up to 10dB of Optical path loss. A detector is provided to measure incoming optical power level.

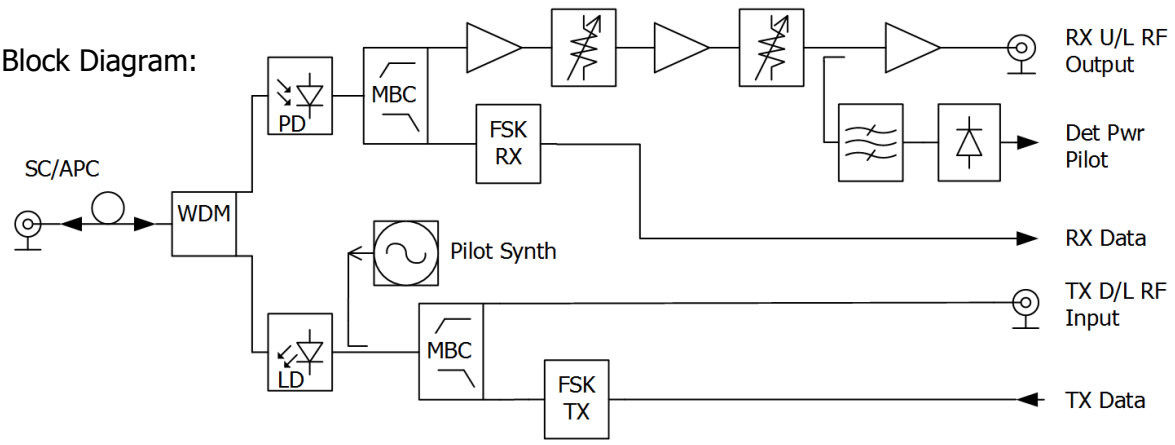
A switchable calibrated RF pilot tone is provided to enable gain adjustment in the TX direction.
A Pilot tone detector is provided in the RX enabling automatic gain adjustment of the system RF path loss. An internal HF FSK Modem allows 2 way data communication over the Fibre link. Remote Link Adjustment is possible by this method.

The unit is housed in a 3U Eurocard style submodule (Screened Aluminium case), 3U by 5HE with a mixed signal DIN41612 connector for RF input, RF output and DC/Control Lines. The Fibre Optic connection (bi-directional TX and TX) is via an SC/APC connector on the front panel.

Each unit contains a PIC processor which handles Pilot Tone Control and Monitoring of TX & RX status. A proprietary RS485 protocol enables multiple J16010012 modules to communicate with a Master Controller which allows supervision by RS232, Ethernet or optionally via a PSTN or Radio Modem. A matching rack and backplane is available to house Qty. 6, J16010012 Fibre Modules, the Controller and PSU making a complete Optical Master Unit (OMU). Duplicated PSU is available as an Option.

Status/Alarms are indicated locally on the front panel via LEDs or via the Master Controller and the Axell RMC program when actual operating values are displayed.

Simplified Block Diagram:



Specification

Performance (Based upon a 1m fibre link from TX to RX optical ports)

Parameters	Specification
Frequency Range	88 MHz to 2700 MHz
Link Loss	16 dB
Link Flatness	±2.5 dB p-p Max
In / Out RL	10 dB Min
Input 3rd Order Intercept	32.5 dBm (typical)
Optical Transmit Power	+5.5 ± 0.3 dBm
Optical return Loss	>40 dB
Optical wavelength TX	1310 nm
Optical wavelength RX	1510-1570 nm
RF Input Power	+10 dBm Max
Optical Input Power	+5.5 dBm Max
DC Voltage Input	Vdc1, 15V - 20mA Typ
	Vdc2, 6.45V - 400mA Max
Storage temperature	-40°C to +80°C
Operating temperature	-25°C to +55°C
Overall dimensions	193.1 x 128.6 x 24.8 mm
Weight	420 g

General Outline