

CXX Series

User Manual

Teleste Corporation



CXE810

Fibre optic receiver

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Introduction

The CXE810 is a fibre deep optical receiver. It is designed for cases which do not need optical transmitter. It is an attractive option for areas where cost-efficiency and easy installations are prime concerns. The integrated optical receiver supports light wavelengths from 1290 nm to 1600 nm.

Alignment of this product is easy. The Optical Level Control (OLC) as well as gain and slope adjustments use electrical controls that improve the reliability of this fibre optic receiver. Plug-in accessories are not needed in normal one-output operation.

The RF output can be split easily in the field within matter of minutes, and a full range of taps/splitters are available.

Installation

Housing

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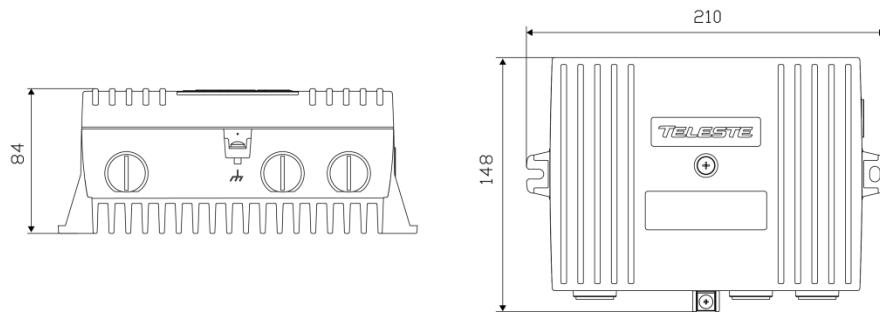


Figure 1. CXE810 housing dimensions - side and top view

The CXE810 can be installed either into a street cabinet or to a sheltered outdoor environment. **Note:** Fibre adapter is not waterproof. The class of enclosure is IP43. The amplifier should be installed in a vertical position so that the external cable connectors are underneath. At least 100 mm of free space should be left above the amplifier to ensure sufficient cooling air circulation. The housing should be grounded with at least 4 mm² grounding wire (Cu) from a proper earth to the grounding point.

The cover of the housing is closed by a single bolt. There are no hinges. Open cover is to be removed completely. Using 4 mm Allen key, the retaining bolt is fasten with a tightening torque of 2.5...3.5 Nm. Before closing the lid ensure that:

- nothing is trapped between the lid and the case
- all case gaskets are in their correct positions
- lid seats evenly on the rubber gasket

The class of enclosure is IP43 when correctly installed and tightened.

Powering

The locally powered CXE810 fibre optic receiver is connected to the main voltage of 165...255 V AC via its own power cord. The power supply is double shielded and does not require separate grounding. However, the amplifier housing has to be grounded from the grounding point. The supply voltage fuse (T3.15 A / 250 V / TR5) is located on the upper right corner of the amplifier, beneath the shroud of the power supply unit.

Interfaces

Underneath the CXE810 fibre receiver are one optical fibre port with fibre adapter and one RF output port with F-female connector. The coaxial output has a standard PG11 thread and they accept any KDC type adapter or connector. The length of centre conductor is illustrated in Figure 3.

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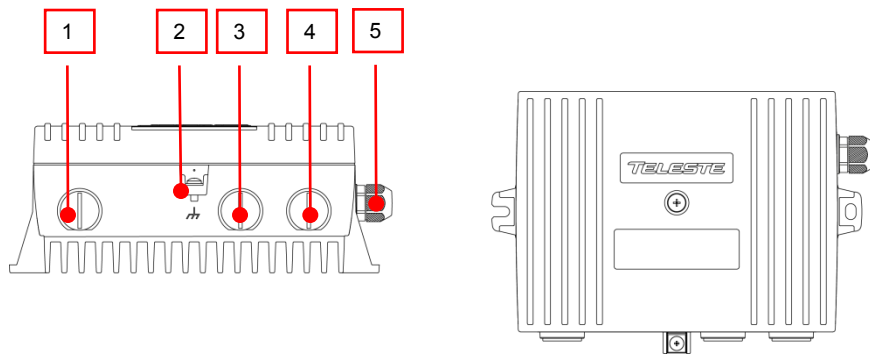


Figure 2. CXE810 Fibre Optic Receiver, 1) Optical fibre input port, 2) Ground, 3) Optional RF output port, 4) RF output port, 5) Power inlet

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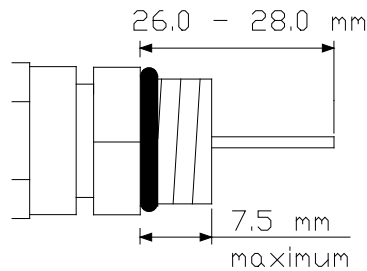


Figure 3. Centre conductor length

Fibre installation

The CXE810 fibre optic receiver comes as standard with a bulkhead mounted SC/APC adapter. Fibre installation is a critical procedure and it should be done carefully. Incorrect handling of the fibre can result in damage and degraded performance.

The shielding cover of the node provides a protective enclosure for optical fibres and components.

Warning: The SC/APC adapter is connected to the integrated fibre receiver through a short length of fibre on the rear side of the bulkhead. To avoid damage to the fibre, take care not to rotate the adapter when installing or removing the fibre connector.

Cleaning fibre connectors

- For correct optical operation ensure that all optical connectors are cleaned immediately before mating using a suitable optical connector cleaning kit.
 - If a cleaning kit is not available, wipe the end of the connector using pure isopropyl alcohol (99%) and a lint-free wipe. Dry it with filtered compressed air. Wait until dry to insert connector into the adapter.
 - When fibre optic connectors are unmated, the optical fibre end faces must be protected from contamination using suitable dust caps. Contamination of fibre end faces will reduce the performance of the optical fibre and could ultimately cause failure of the system. Contamination could also damage the fibre end faces when the connectors are mated.
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Front panel

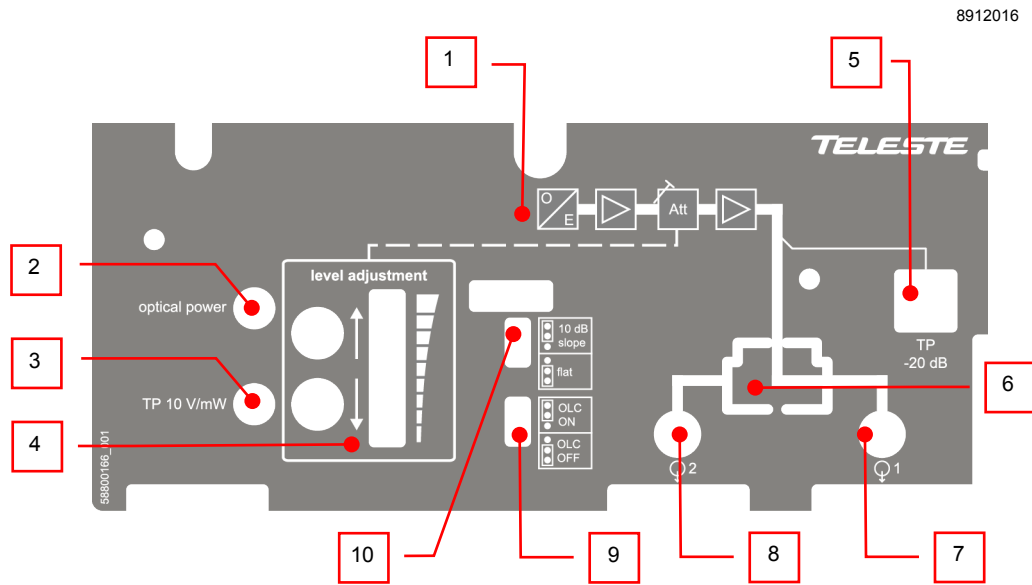


Figure 4. CXE810 front panel

- | | |
|--|----------------------------|
| 1) Integrated optical receiver | 6) Output module |
| 2) Indicator for optical input power | 7) RF output port 1 |
| 3) Optical power DC voltage test point | 8) RF output port 2 |
| 4) Level adjustment | 9) OLC mode jumper |
| 5) Output test point, -20 dB directional coupler | 10) Slope selection jumper |

OLC mode jumper (Figure 4 pos. 9)		Slope selection jumper (Figure 4 pos. 10)	
OLC ON		10 dB slope	
OLC OFF		flat	

Figure 5. Jumper configurations

The front panel contains up/down push buttons for output level adjustment and a vertical 9 segment LED light bar with corresponding adjustment indication. The level adjustment range from 0 dB to -16 dB in 1 dB steps. Even dB values are indicated by a single LED and odd values with two LEDs. The adjustment value can be marked on the front panel with a permanent marker for later reference.


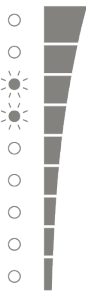

Output level adjusted to 0 dB	Output level adjusted to -5 dB	Output level adjusted to -16 dB
		

Table 1. CXE810 optical receiver, output level adjustment indicator.

Features

Forward path / Optical receiver

The optical receiver is integrated within the CXE810 and will accept both 1310 and 1550 nm wavelength optical inputs. The optical receiver provides both LED indicator and DC voltage test point for received optical power to quickly determine status of the unit.

The output stage uses a GaAs MESFET output amplifier to improve RF performance over the entire 47 to 1006 MHz passband.

The optional RF output can be set up for a variety of output configurations. Refer to the 'Table 1. Output modules'.

Output module	Attenuation at 1000 MHz	
	RF output port 1	RF output port 2
AC6112	1.8 dB	12.5 dB
AC6116	1.0 dB	16.0 dB
AC6119	1.0 dB	20.0 dB
AC6124	4.0 dB	4.0 dB
AC6128	2.0 dB	8.9 dB

Table 2. Output modules.

Optical input power

Optical input power can be measured from the optical power DC voltage test point (Figure 4 pos. 3). The test point DC voltage is directly proportional to optical input power in mW e.g. 10 V corresponds to 1.0 mW average optical power for 1310 nm. Chart below shows the correct measurements at the test point using a 1310 nm or 1550 nm transmitter.

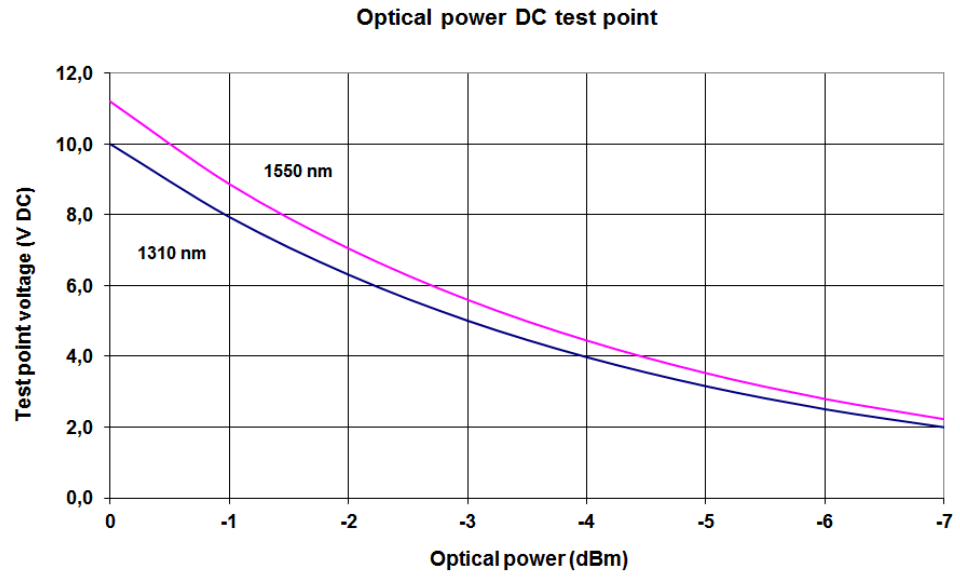


Chart 1. CXE810 optical receiver, expected levels.

Do not connect any voltage to the test point or short circuit it to ground. Use a voltage meter with an input resistance higher than 100 k Ω .

The mainboard provides also a LED indicator (Figure 4 pos. 2) which gives a visual indication of the optical input power.

Optical power LED	Condition
Yellow	Optical input power is below -7 dBm
Green	Optical input power is within the nominal range (-7...0 dBm)
Red	Optical input power exceeds 0 dBm

Table 3. LED indicator for optical input power on CXE810.

Forward path adjustment

The following are instructions to be used for a normal adjustment procedure.

1. Test the optical input power present on the fibre service cable using an optical power meter. The CXE810 integrated optical input power range is from -7 dBm to 0 dBm.
2. Apply the power
3. Optical Level Control (OLC) circuitry provides gain control that compensates for changes in input level caused by external variations. The available gain reserve is factory-set for optimum operation. If needed the output level can be adjusted with the midstage attenuator. If OLC is disabled with the internal jumper (Figure 4 pos. 9) the CXE810 optical receiver can be operated at full gain for applications that do not require gain stabilization.
4. Use the level adjustment keys to get wanted output level. The LEDs will indicate the output level. The network plan should specify exact signal levels. Refer to the Table 5 or Table 6.

Output level without OLC (dBμV)	Level adjustment (dB]
120	0
119	-1
118	-2
117	-3
116	-4
...	...

Table 4. Level adjustment without OLC when input power is -2 dBm at 4 % OMI.

Output level with OLC (dB μ V)	Level adjustment (dB)
115	0
114	-1
113	-2
112	-3
111	-4
...	...

Table 5. Level adjustment with OLC when input power is between 0...-7 dBm at 4 % OMI.

5. Use the response mode jumper (Figure 4 pos. 10) to select the midstage slope. Available options are "flat" or "10 dB sloped".
 6. Connect the fibre connector to the bulkhead adapter.
 7. The adjustment value can be marked on the front panel with a permanent marker for later reference.
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European Conformity

This equipment conforms to all applicable regulations and directives of European Union which concern it and has gone through relevant conformity assessment procedures.



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