



TRIAx



# User Guide

## Fibre Optical Receiver

Model

**ORB 823/923 Series**

Item no.

Version

EN

[triax.com](http://triax.com)

# In the box, characteristics

1 x ORB x23 Fibre Optical Receiver

1 x User Guide (this document)

The ORB x23 is a state-of-the-art optical receiver which has been dedicated for use within FTTx applications. The receiver is fitted with an automatic gain control circuit (AGC) which adjusts the gain depending on the input optical power to hold the output signal at a substantially constant preset level.

- Designed for use in FTTx networks
- AGC
- High output level 123 dB $\mu$ V (DIN 45004-B), 110 dB $\mu$ V (42 ch. CENELEC)
- Built on GaAs Power-Doubler FET technology hybrid
- 3-color LED input optical power indicator
- Local Mains Switch Mode power supply (180-253 VAC)
- Solid, cast aluminium housing
- Low power consumption

Products in this Series:

- ORB 823, Fibre Optical Receiver (att. settings via potentiometer)
- ORB 923, Fibre Optical Receiver (settings via JxP Pads)

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# Installation

## 1.0 Environmental protection standards



This Manual provides information requisite for the correct connection, activation and use of an ORB x23 optical receiver. Should you have any queries regarding our products, please contact Triax A/S, or one of our nearest distribution representatives.

Products or packaging that are marked with such a logo may not be disposed of together with unsorted household waste but should be delivered to a specialized WEEE collection point for recycling and waste reuse. The EU member states and other European countries have different systems in place for the collection, reuse and recycling of WEEE. By keeping WEEE separate from other waste you prevent potential damage to the environment and health effects in humans. Recycling also saves natural resources. For more information regarding the recycling and reuse of waste electronic materials contained in this product, please contact your local town or municipality authorities or a local waste management facility

**WARNING! Laser emission – protect your eyes and skin from both direct and dispersed laser light.**

## 1.1 General principle of use

Prior to installation, adjustments and using the device, you should refer to this User Guide to facilitate the correct configuration and avoid any damage.

Triax endeavours to provide you with a device that is fully operational. If, however, the device becomes damaged in transport for any reason beyond the Manufacturer's control, you need to notify the Manufacturer or their sales representative of this fact and agree on how to repair the defect.

The ORB x23 optical receivers may be stored for 18 months from the date of manufacture without any deterioration of its performance. Standard storage ambient conditions are in accordance with the environmental specifications of IEC 68.1:

temperature 15...35°C, humidity 25...70%, pressure 860...1060hPa.

# Adjustments

2. 0 Forward Channel	The RF path of the optical receiver amplifies input signals received by the optical circuit. The attenuator enables adjustment of the input RF level, whilst the interstage equalizer enables pre-adjustment. Following this, the signal travels to the outputs.
2.1 Forward path amplifier	The ORB x23 optical receiver has been designed for use within FTTx networks. It consists of the Optical input stage and the GaAs FET Power-Doubler output stage, which enables the amplifier to achieve high output levels while maintaining low intermodulation distortions. Low-noise input stages feature a low noise factor and a high carrier to noise ratio (CNR).
2.2 Optical receiver adjustment	<p>The ORB x23 receiver can operate in one of the following two gain control modes:</p> <p><b>-AGC OFF</b> – The manual mode does not have the ability to maintain the output power at a constant level during variations in the optical input power. The gain control system attenuator is pre-set to provide a minimum attenuation.</p> <p><b>-AGC ON</b> – The automatic gain control mode holds the output level substantially constant despite variations in the input power from -6 to 0dBm.</p>

## WARNING!

**The automatic gain control system compensates for variations in the optical power across the range of -6...0dBm but it does not compensate for variations in the modulation factor of the optical transmitter.**

The magnitude of the optical input power is indicated by a multi-color LED indicator:

orange	$P_{IN} < -6$	dBm
green	$-6 < P_{IN} < 0$	dBm
red	$P_{IN} > 0$	dBm

Input Level range: -10dBm...+1dBm

AGC range: -6dBm...0dBm

# Settings

## 2.3

### Power Supply

ORB-x23 optical receivers are designed to be supplied from a 180...253 VAC, 50..60 Hz mains socket.

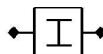
## 3.0

### Operating Tips

- To ensure appropriate ventilation, keep any items at least 5 cm away from the unit,
- The unit should not be covered with any items,
- Any sources of open flame must not be placed near the unit,
- The device is designed for use in moderate climates (and to ensure the maximum possible useful life, it should be operated indoors with ambient temperatures not exceeding 50°C, in locations where it will not be affected by humidity, dust or strong electromagnetic fields),
- Exposure to splashes or drops of water is not recommended,
- Containers with fluid should not be put on top of the device.

## 4.0

### Interchangeable Jumpers for use with ORB x23 receivers



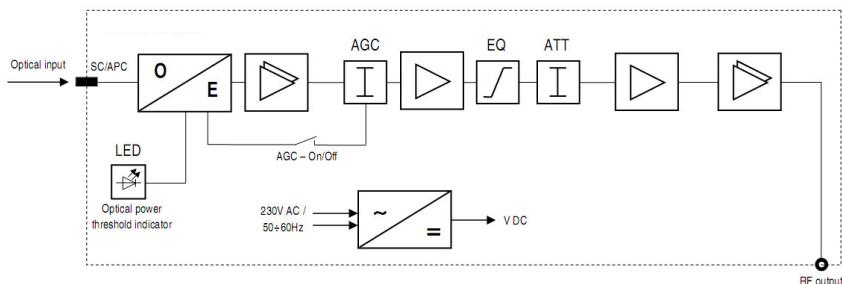
*Fixed attenuator module JXP*

Type	Frequency range	Attenuation
JXP-XX	5...1000 MHz	0...20dB,co 1 dB

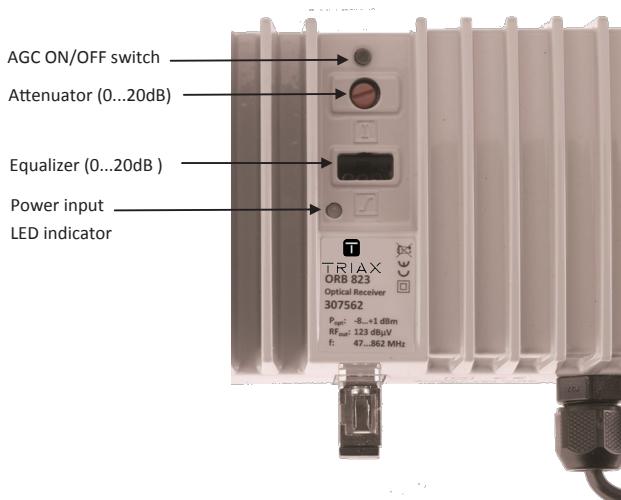
- ORB 823, Fibre Optical Receiver Node (att. setting via potentiometer)
- ORB 923, Fibre Optical Receiver Node (both settings via JxP Pads)

# Technical Specifications

## 5.0 Block Diagrams



## 5.1 Adjustment elements on the units (ORB 823 shown)



## 6.0 Maintenance/ Service

Repair only by an Authorized Technician and Service Center.  
Please refer to Your Sales Representative for more info.

## 7.0

You must adhere to the Legal Requirements and precautions that applies to your local Area for Recycling this product



8.0 Technical Specifications	TYPE	ORB 823	ORB 923	Unit
	Item Number	307562	307563	
	<b>Optical parameters</b>			
	Input Level range ( $P_{IN}$ )	-8...+1		dBm
	AGC Range	-6...0		dBm
	Optical return loss	>40		dB
	Optical input wavelength	1100...1650		nm
	Max. optical input level (no damage of photo diode)	+3		dBm
	Optical power indicator range (3-color LED display)	orange green red	$P_{IN} < -6$ $-6 < P_{IN} < 0$	dBm
	Equivalent input noise current	8		$pA/(Hz)^{1/2}$
	Optical connector	SC/APC		
	<b>RF Parameters</b>			
	Frequency Range	47...862		MHz
	Gain flatness	±0.75		dB
	Max. Output Level (DIN 45004B)	123		dB $\mu$ V
	Max. Output Level (42. Ch. CENELEC)	CTB < 60 dBc	110	
	9 dB slope, 3.5% OMI	CSO < 60 dBc	110	
	RF Output stability in AGC Range	±1		dB
	Attenuator	Adjustable 0...20	JxP plug-in 0...20	dB
	Equalizer	JxP plug-in 0...20	JxP plug-in 0...20	dB
	Return Loss at RF output	>18 (40 MHz) -1.5dB/octave		dB
	Output Test Point	-20		dB
	<b>OTHER</b>			
	Operating Voltage	180...253 / 50-60		VAC / Hz
	Power Consumption	5.5		W
	Output connector	F-female		
	Protection Class	IP 40		
	Operating Temperature Range	-20...+55		°C
	Weight	0.76		Kg
	Dimensions	155 x 56 x 96		mm

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