User Manual

TORT-1550 Optical Rack Transmitter - 1550nm

Article		Article no.
TORT-1550	Optical Rack Transmitter - 1550nm	307916

Version	V2.0	Date	2025/06	EN

triax.com

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1 Safety Instructions

Read these instructions carefully before connecting the unit

ATTENTION

- Failure to comply with the specified precautionary measures may cause serious injury to persons or damage to property.
- The assembly, installation, additional electrical wiring, servicing and commissioning may only be performed by suitably qualified persons, technicians or installers in compliance with safety regulations.
- Damage due to improper installation and commissioning, defective connectors on cables or any other incorrect handling will void the warranty.

CAUTION

- The safety requirements are according to the standards EN 62368-1 resp. EN 60728-11 and must be observed, especially concerning equipotential bonding and earthing.
- Observe the relevant country-specific standards, regulations and guidelines on the installation and operation of antenna systems.
- Before starting installation or service work disconnect the receiving system from mains.
- Installation or service work should NEVER be undertaken during electrical / thunderstorms.
- Avoid short circuits!
- To ensure electromagnetic compatibility, make sure all connections are tight and that the covers are screwed on securely.
- Take action to prevent static discharge when working on the device!
- Due to the risk of fires caused by lightning strikes, we recommend that all mechanical parts (e.g. distributor, equipotential bonding rail, etc.) be mounted on a non-combustible base. Wood panelling, wooden beams, plastic covered panels and plastic panels are all examples of combustible bases.

⚠ To prevent fire, short circuit or shock hazard:

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water.
- Do not expose it to dripping or splashing.
- Do not place objects filled with liquids, such as vases, on the apparatus.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.

⚠ To avoid any risk of overheating:

- Install the unit in a well aired location and keep a minimum distance of 5 cm around the apparatus for sufficient ventilation.
- Do not place any items such as newspapers, tablecloths, curtains, on the unit that might cover the ventilation holes.
- Do not place any naked flame sources, such as lit candles, on the apparatus.
- Do not install the product in a dusty place.
- Use the apparatus only in moderate climates (not in tropical climates).
- Respect the minimum and maximum temperature specifications.

⚠ To avoid any risk of electrical shocks:

- Connect apparatus only to a power socket with a protective earth connection.
- The mains plug shall remain readily operable.
- Pull out power plug to make the different connections of cables.
- To avoid electrical shock, do not open the housing of the product.

⚠ Warning

To avoid exposure to laser radiation from optical fibre or active optical devices like transmitters or receivers which pose a hazard to your health, you should:

- Never look into an exposed end of an optical fibre or mirror surfaces that could reflect light from an open optical fibre.
- Never look into an optical fibre connected with the radiation source with optical instruments (magnifying glass, microscope, etc…).
- Use an approved fibre optic cable to maintain conformity with applicable laser safety requirements.

Concerning fibre optic cables:

- Wearing protective goggles is recommended.
- You should handle fibre optic cables with extreme caution, particularly when unbundling or terminating a cable. The internal glass core of a fibre optic cable is brittle when the shielding and buffer material is removed. It will easily disintegrate into small pieces which may cause injury to the human body.
- Remove all filings immediately using tweezers, place them in a tightly sealed dustbin and dispose in accordance with local regulations.

Maintenance

⚠ Only use a dry soft cloth to clean the cabinet.

⚠ Do not use solvent.

⚠ For repairing and servicing, refer to qualified personnel.

Dispose according your local authority's recycling processes

Electronic devices should never be disposed of in the household rubbish. In accordance with directive 2002/96/EC of the European Parliament and the European Council from January 27, 2003 which addresses old electronic and electrical devices, such devices must be disposed of at a designated collection facility. At the end of its service life, please take your device to one of these public collection facilities for proper disposal.

2 Introduction

2.1 Product description

The TRIAX TORT-1550 is a Rack mount 1550nm Optical Transmitter to carry CATV &/or one band of IF satellite to your EDFA/EYDFA for larger optical networks. Use with TRIAX TOFA range of EYDFA and TOMR-CATV optical CATV/IF receiver. Supports TRIAX TDmH & TDcH headend fibre distribution.

- 47-2400MHz (RF + Sat) 1550nm Optical 1U rack Transmitter 5dBm
- 1550nm EDFA/ EYDFA compatible
- LCD Front Panel display for easy status monitoring
- Front Panel operation of basic functions with key lock
- RF Test Port on front panel
- Remote SNMP & Web Supported
- Dual hot plug power supply
- Intuitive GUI Management

2.2 Detailed features

TORT-1550 is compatible with any FTTx PON technology to realize multi networks integration of CATV (Analog & Digital), satellite TV (DVB-S/S2) and terrestrial TV.

- Single input, frequency 47～862MHz & 950~2400MHz
- Predistortion circuit ensuring CTB and CSO performances in high standard CNR value
- Built-in APC and ATC control circuits ensure the long life and reliability of the laser
- High linear RF/IF driving amplifying circuit with AGC function to ensure high-quality transmission of analogue TV and digital TV (DVB-S/S2, DVB-C, DVB-T)
- All signals in a single fibre
- OMI can be adjusted and optimized to support different networks
- Automatic temperature control, fans starting to work when rack temperature reaches 30°C
- Built-in dual backup power supply, hot plug and automatic switch supported
- Working parameters of the transmitter are controlled by microprocessor
- LCD status display on the front panel has many functions such as laser status monitoring, parameter display, fault alarm, network management, etc…
- If the working parameters of the laser deviate from the allowed range set by the software, the system will alarm promptly
- Standard RJ45 interface supporting SNMP and WEB remote network management and remote adjustment of AGC, OMI and other functions

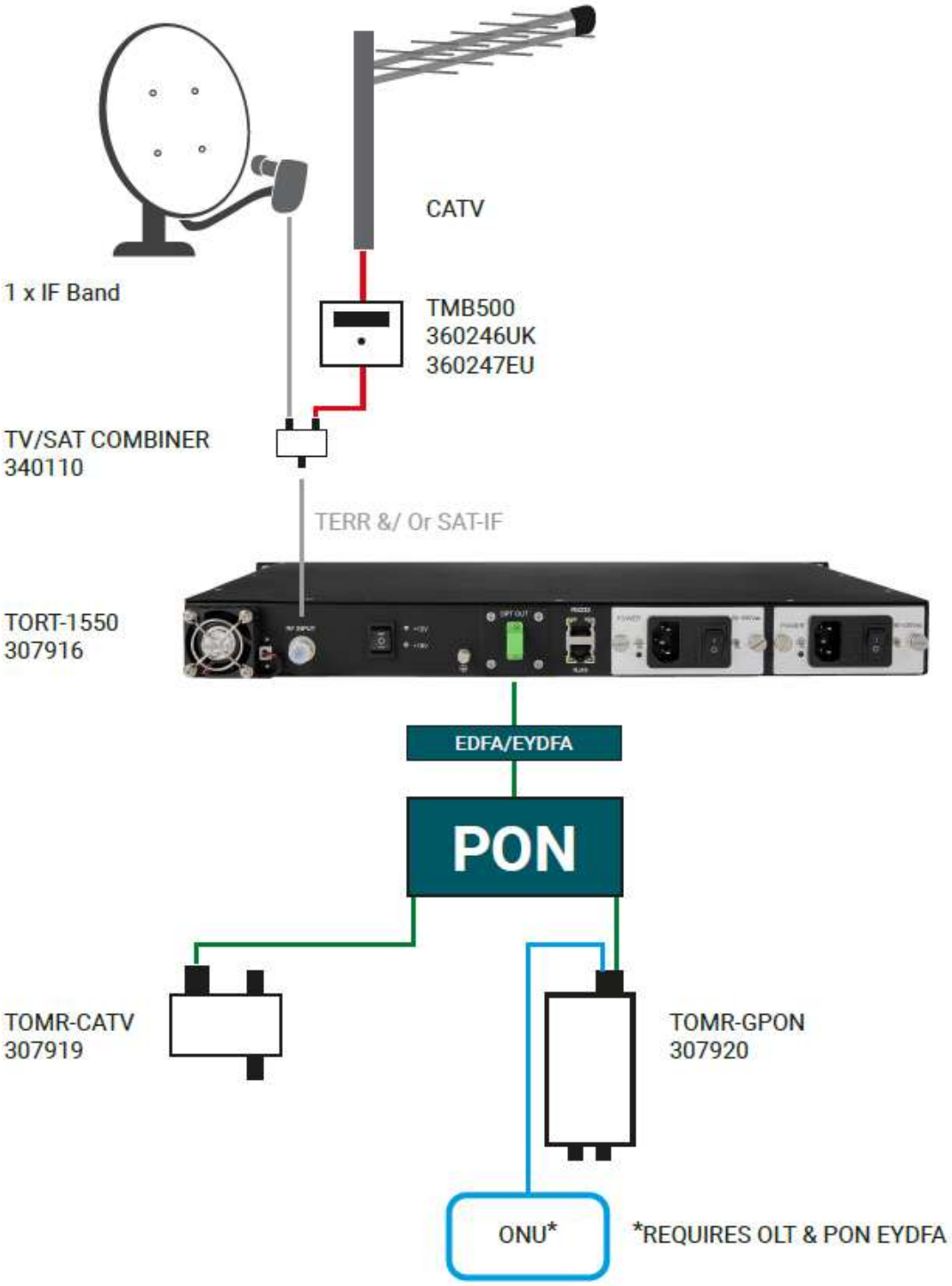
2.3 Installation

Preparation before installation:

- **Observe instructions given at chapter 1**
- Install the unit in a well aired location and keep a minimum distance of 5 cm around the transmitter for sufficient ventilation. Please don’t block the cooling holes of the device
- Connect the transmitter only to a power socket with protective earth connection
- Please make sure the key is turned to OFF before connecting the power supply
- Please ensure the interface of the fibre is clean before connecting the fibre
- Fibre connector should be SC/APC (green), if needed clean the connector with the right tool
- Only connect RF input after approximately two minutes when the device is in a stable status

- **RF input level should not be too high, otherwise the laser will be overloaded and damaged**
- Inside the transmitter there is a static-sensitive laser, please note that electrostatic protection should be applied in the storage of the transmitter and it should not be stored with corrosive material. The storage temperature should be between -40°C and +85°C.

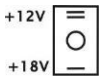
2.4 Installation schematic example



2.5 Front panel

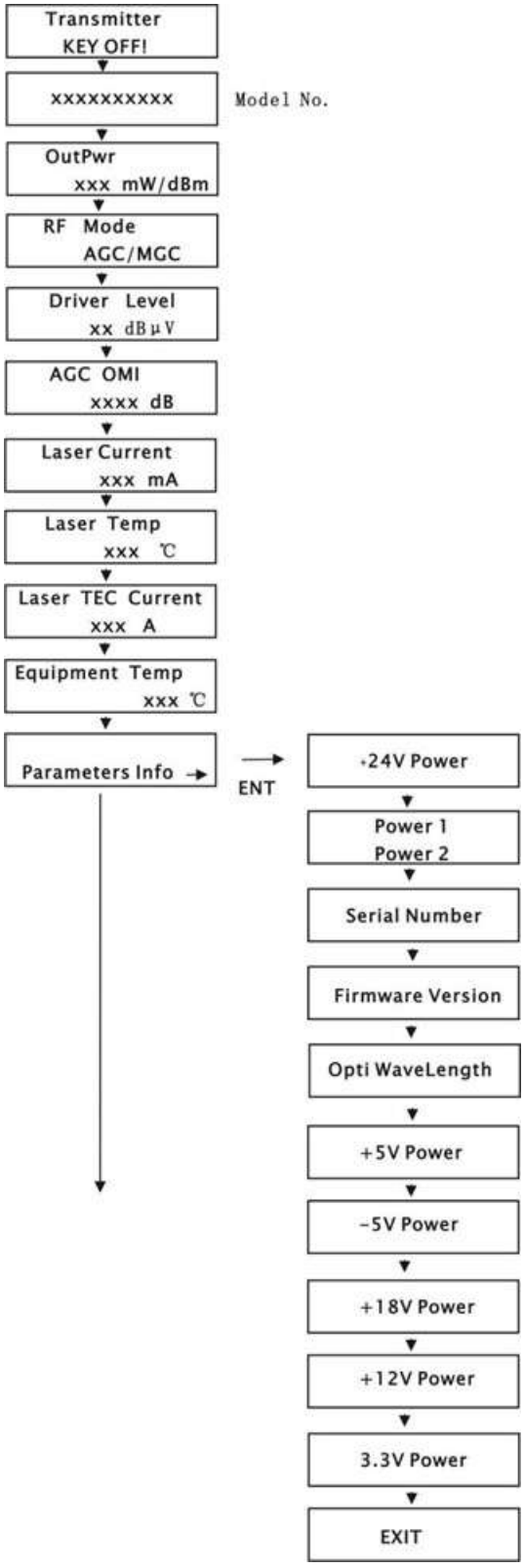
Identification	Item	Remark
LCD	LCD display	To display the transmitter's parameters
STATUS	Transmitter working status	Green: transmitter is operating Red: transmitter faulty or alarm
LASER	Laser output	Green: Output within normal range Red: Output out of normal range
RF	RF input	Green: input within nominal range Yellow: no signal or input out of nominal range
POWER	Power supply	Green: dual power supply working Yellow: single power supply working
▲▼	Buttons (arrows)	Start menu page turning and set the transmitter
ENT	Enter	Confirmation after menu page turning and device setting
OFF/ON	Key	ON: Laser ON OFF: Laser OFF
RF TEST	RF test point	RF input level -20dB

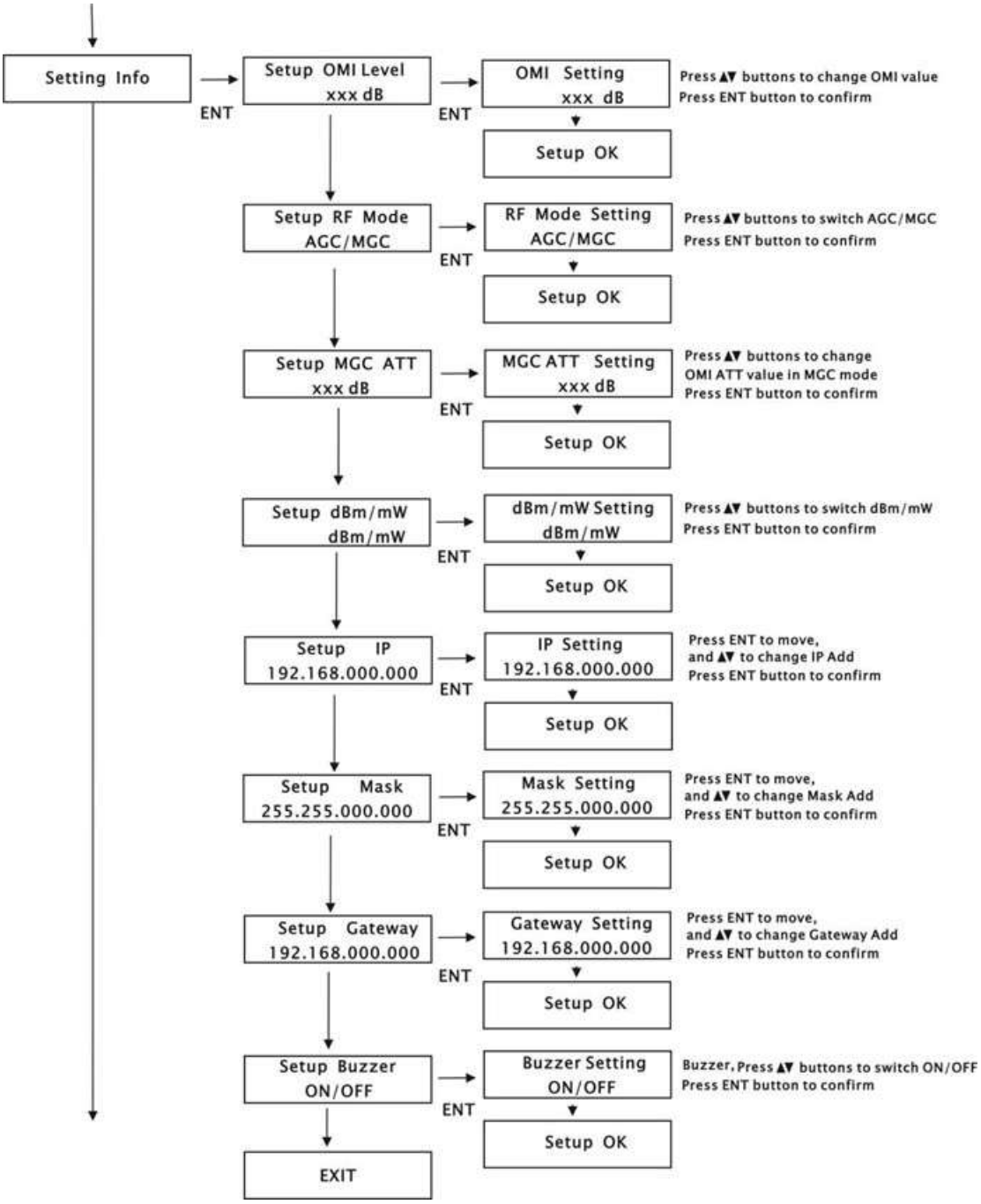
2.6 Rear panel

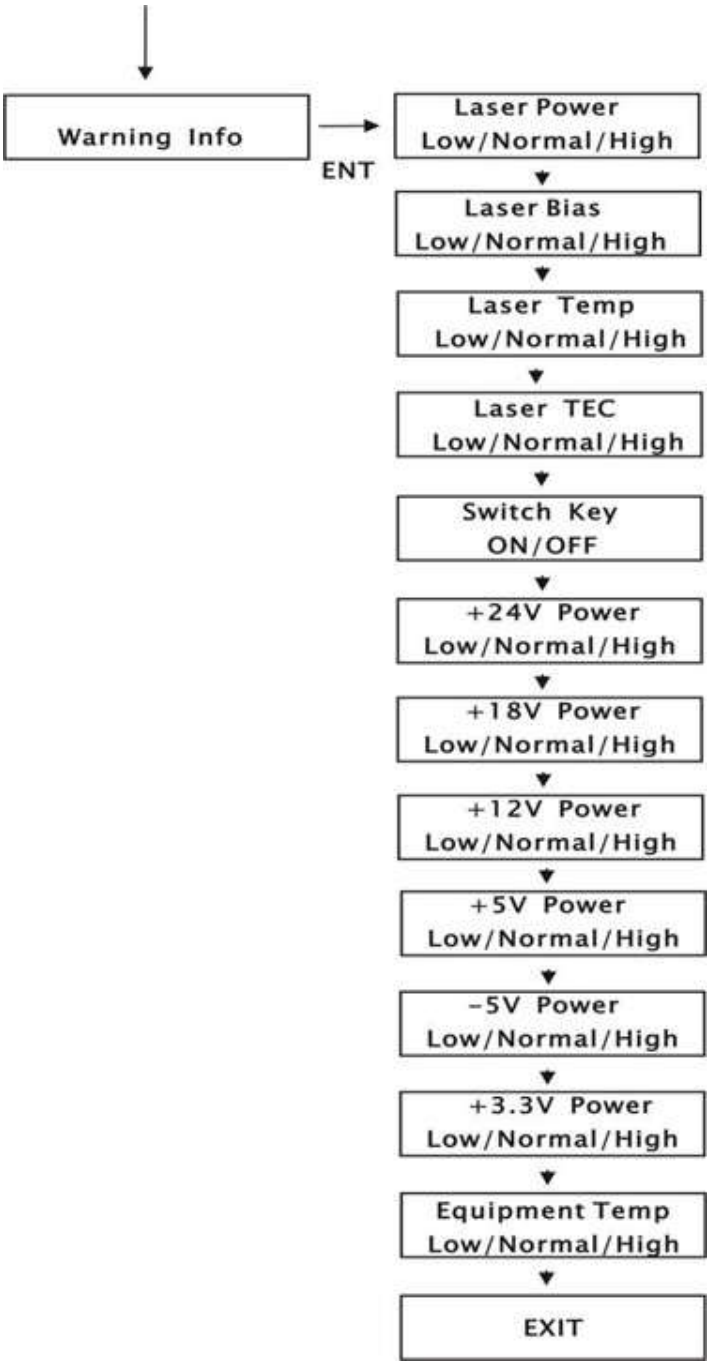
Identification	Item	Remark
Fan	Fan	Starts working when rack temperature reaches 30°C
RF INPUT	RF INPUT	Input for CATV &/or single band SAT-IF
	LNB voltage switch	+12V: to receive vertical polarization IF signal O: LNB Voltage OFF +18V: to receive Horizontal polarization IF signal
	Grounding Port	For Grounding
OPT OUT	Fibre output	
RS232	RS232 Port	Local programming
RJ45	RJ45 Port	Remote SNMP and WEB support
Power1	Power Socket1	Hotplug supported
Power2	Power Socket 2	Hotplug supported

2.7 Navigating through the menu

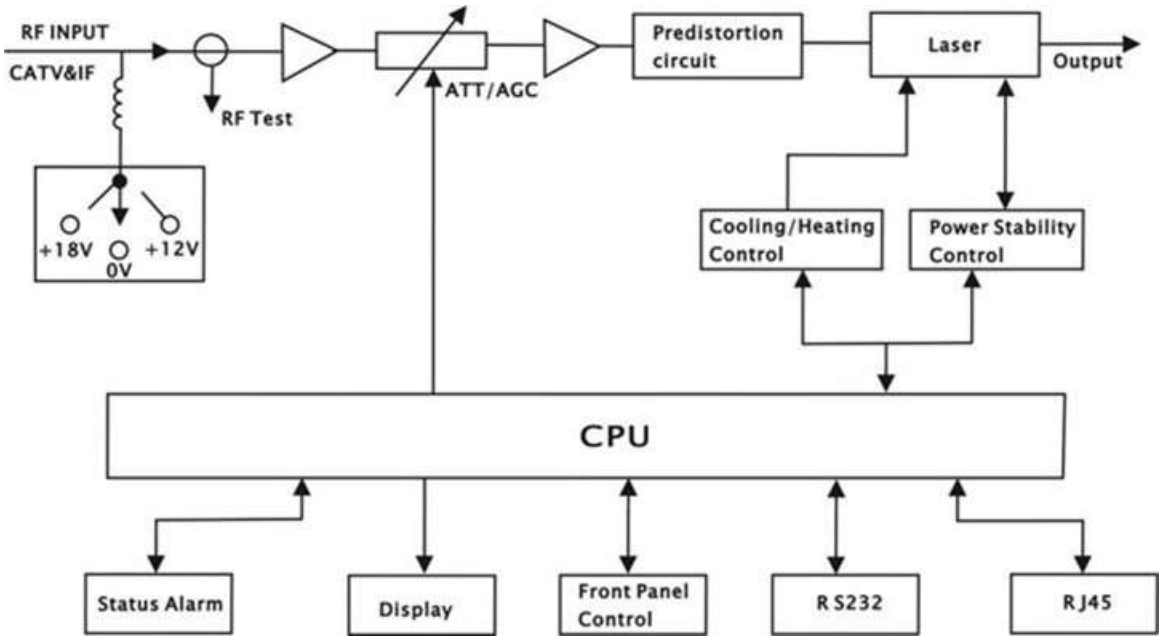
Press the ▼ to display the following menu and press the ▲ to display the previous menu




Setting Info
ENT
Setup OMI Level
xxx dB
ENT
OMI Setting
xxx dB
Press ▲▼ buttons to change OMI value
Press ENT button to confirm
Setup OK
Setup RF Mode
AGC/MGC
ENT
RF Mode Setting
AGC/MGC
Press ▲▼ buttons to switch AGC/MGC
Press ENT button to confirm
Setup OK
Setup MGC ATT
xxx dB
ENT
MGC ATT Setting
xxx dB
Press ▲▼ buttons to change
OMI ATT value in MGC mode
Press ENT button to confirm
Setup OK
Setup dBm/mW
dBm/mW
ENT
dBm/mW Setting
dBm/mW
Press ▲▼ buttons to switch dBm/mW
Press ENT button to confirm
Setup OK
Setup IP
192.168.000.000
ENT
IP Setting
192.168.000.000
Press ENT to move,
and ▲▼ to change IP Add
Press ENT button to confirm
Setup OK
Setup Mask
255.255.000.000
ENT
Mask Setting
255.255.000.000
Press ENT to move,
and ▲▼ to change Mask Add
Press ENT button to confirm
Setup OK
Setup Gateway
192.168.000.000
ENT
Gateway Setting
192.168.000.000
Press ENT to move,
and ▲▼ to change Gateway Add
Press ENT button to confirm
Setup OK
Setup Buzzer
ON/OFF
ENT
Buzzer Setting
ON/OFF
Buzzer, Press ▲▼ buttons to switch ON/OFF
Press ENT button to confirm
Setup OK
EXIT


Warning Info
ENT
Laser Power
Low/Normal/High
Laser Bias
Low/Normal/High
Laser Temp
Low/Normal/High
Laser TEC
Low/Normal/High
Switch Key
ON/OFF
+24V Power
Low/Normal/High
+18V Power
Low/Normal/High
+12V Power
Low/Normal/High
+5V Power
Low/Normal/High
-5V Power
Low/Normal/High
+3.3V Power
Low/Normal/High
Equipment Temp
Low/Normal/High
EXIT

3 Block diagram



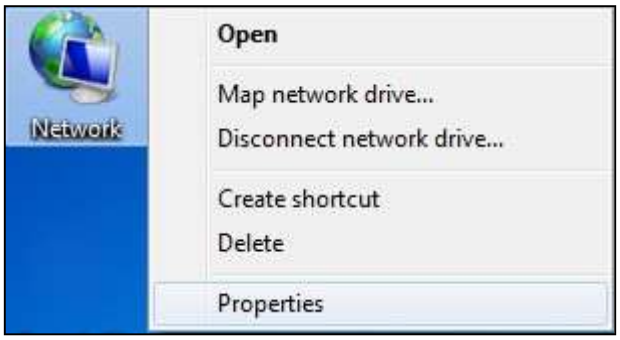
4 Technical Specifications

Category	Items	Unit	Value Min.	Value Typ.	Value Max.	Remarks
Optical	Laser wavelength	nm	1540	1550	1550	1550nm compatible with ITU wavelength
	No. of output ports	-	-	1	-	-
	Output power per port	dBm	-	5	-	1550nm
	Laser linewidth	MHz	-	0.65	1.0	-
	SMSR	dB/Hz	45	50	-	-
	RIN	dB	-	-	-160	RIN (20-2600MHz)
	Optical return loss	dB	50	-	-	-
	Fibre connector	-	SC/APC			-
IF	Operating bandwidth	MHz	47	-	2400	-
	Input level	dBm	-40	-	-25	-
	Flatness	dB	-2.0	-	+2.0	@ 950 - 2400MHz
	Return loss	dB	10	-	-	-
	Input impedance	Ω	-	75	-	-
	RF connector	-	F type			-
	Number of test channels	-	-	36	-	-
	CNR	dB	28	-	-	-
	CTB	dB	36	-	-	-
	CSO	dB	36	-	-	-
	LNB voltage	V	0/13/18			Switchable
	LNB current	mA	-	-	300	-
General	Network management interface	-	SNMP, WEB supported			-
	Power supply	V	90	-	265	AC
	Frequency	Hz		50/60		
	Power consumption	W	-	-	30	Dual power supply, 1+1 standby
	Operating temperature	°C	-5	-	+65	Auto case temp control
	Storage temperature	°C	-40	-	+85	-
	Operating relative humidity	%	5	-	95	-
	Altitude operation	m	Max. 2000 meters above sea level			-
	Dimension	mm	370 × 483 × 44			D x W x H
	Weight	Kg	3.8			-

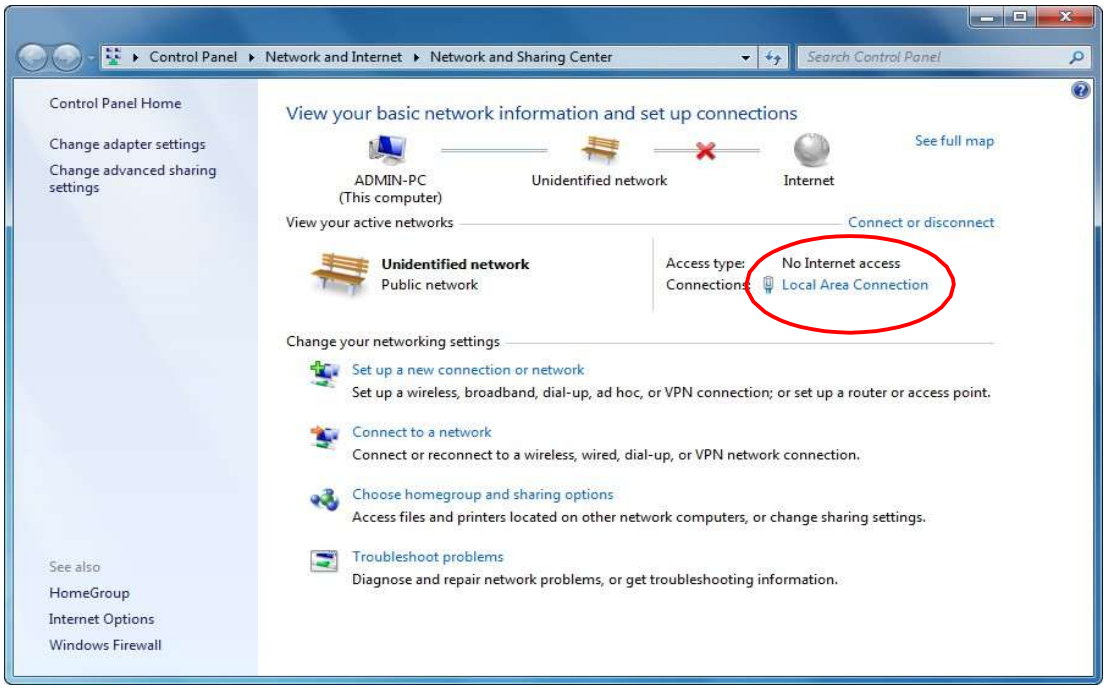
5 Web server

An SNMP Web server is built in. Users can directly view the basic operating parameters and network parameters of the transmitter through web browsers like IE Microsoft IE, Google Chrome, Mozilla Firefox, software ASA's opera, etc. The built-in SNMP web server supports these browsers. The following screenshots are illustrated by opera browser.

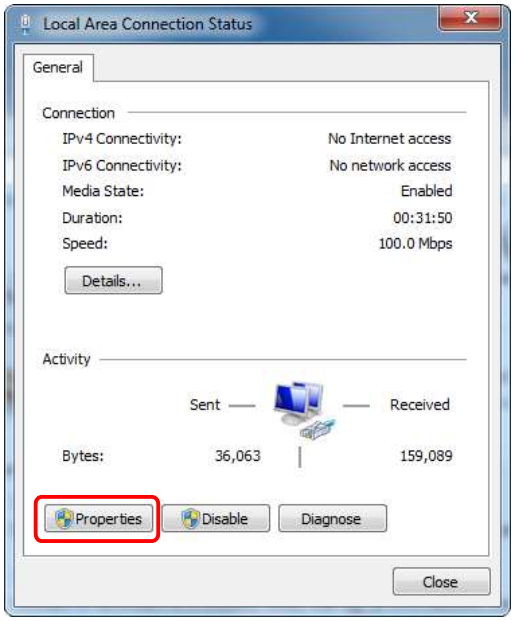
First, find the IP address of the transmitter in the LCD panel menu. The default IP address is 192.168.0.22. Set the IP address of the computer to the same network segment as the device, find the "network" icon on the desktop of windows system, select the icon, right-click the mouse, and select "properties" in the pop-up menu

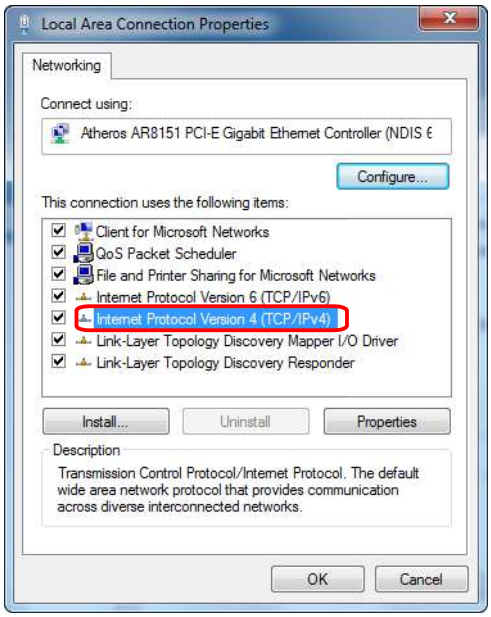


Click "Local Area Connection" in the pop-up version

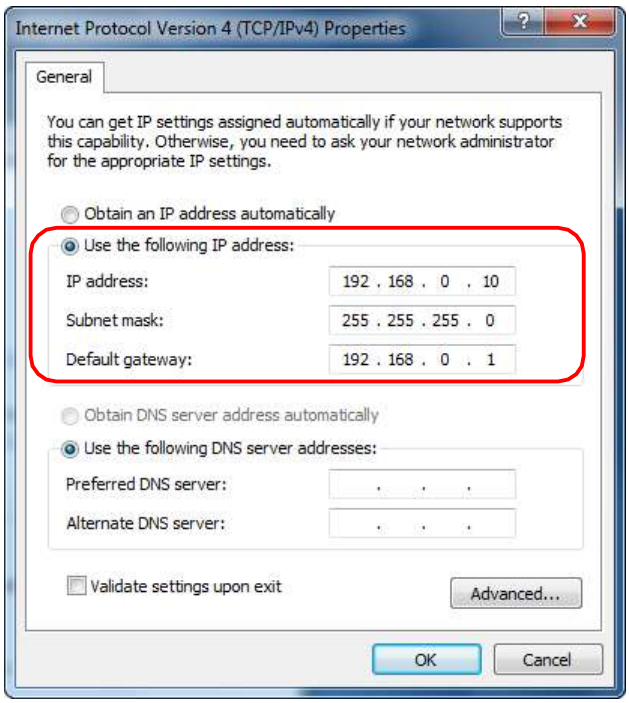


In the “Local Area Connection Status” menu, select “Properties”, and then double-click “Internet Protocol Version 4 (TCP / IPv4)”.

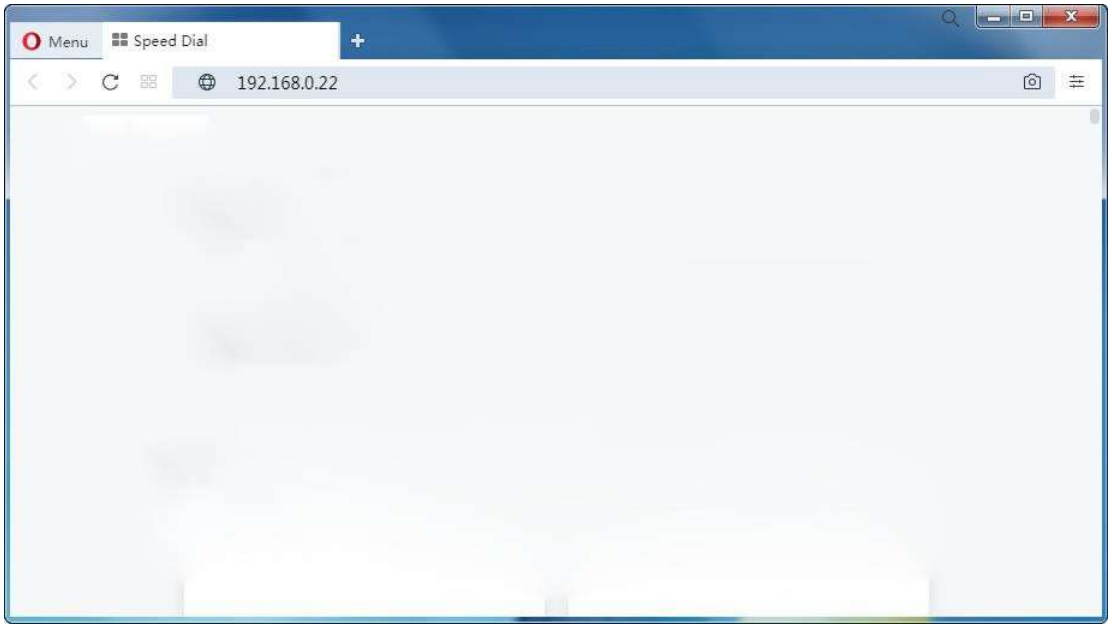




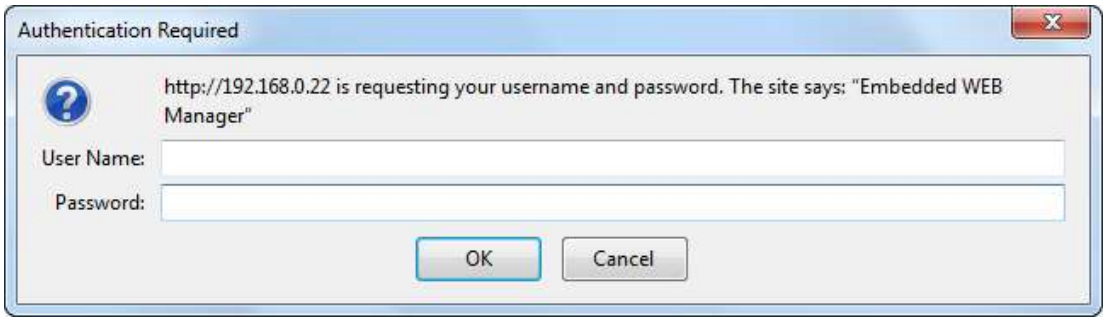
Set the IP address of your PC to be in the same network segment as the device, so that the computer can access the GUI.



Open the web browser and enter the IP address of the device in the address bar of the browser, such as 192.168.0.22

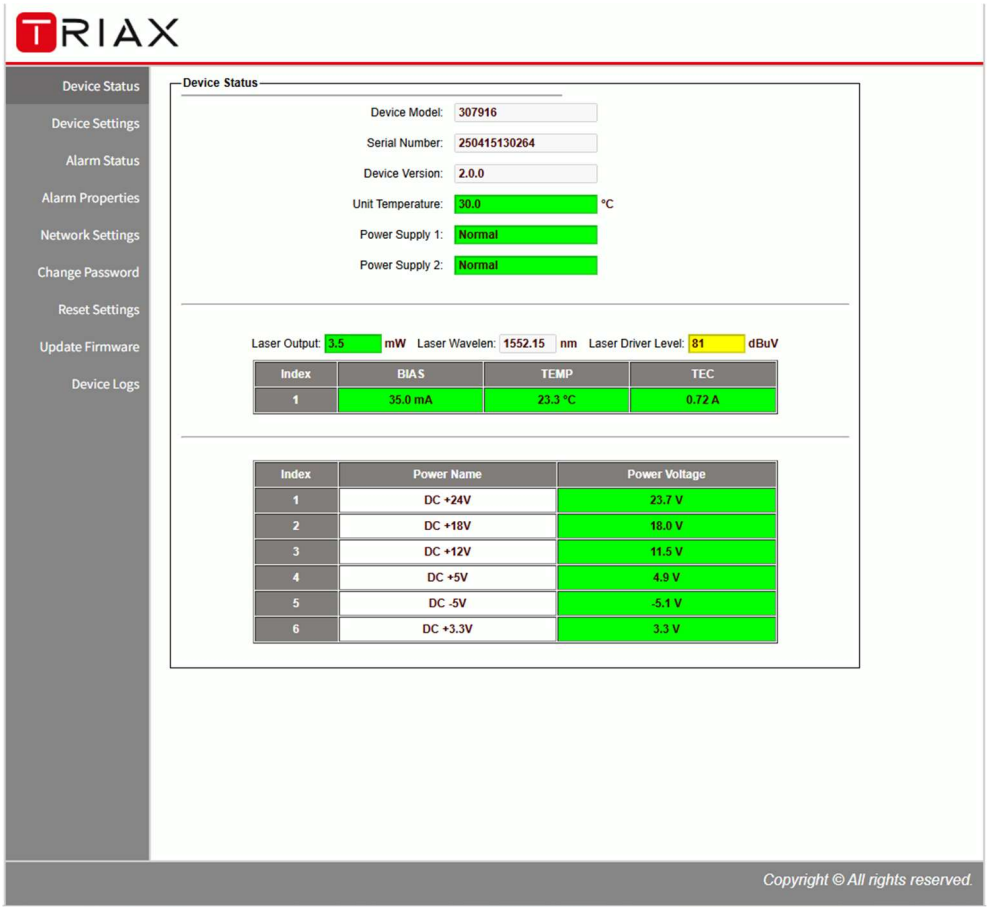


The browser will pop up a login box



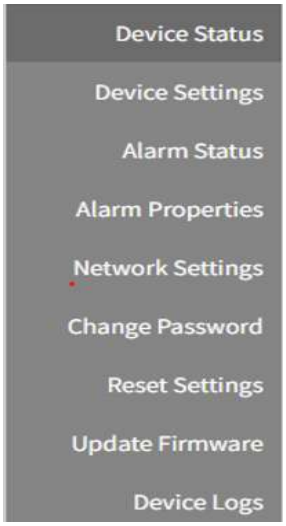
In the pop-up login username box, enter User Name: "admin" (Note: all lowercase letters), Password: "123456", and then enter.

The browser displays the device status page by default

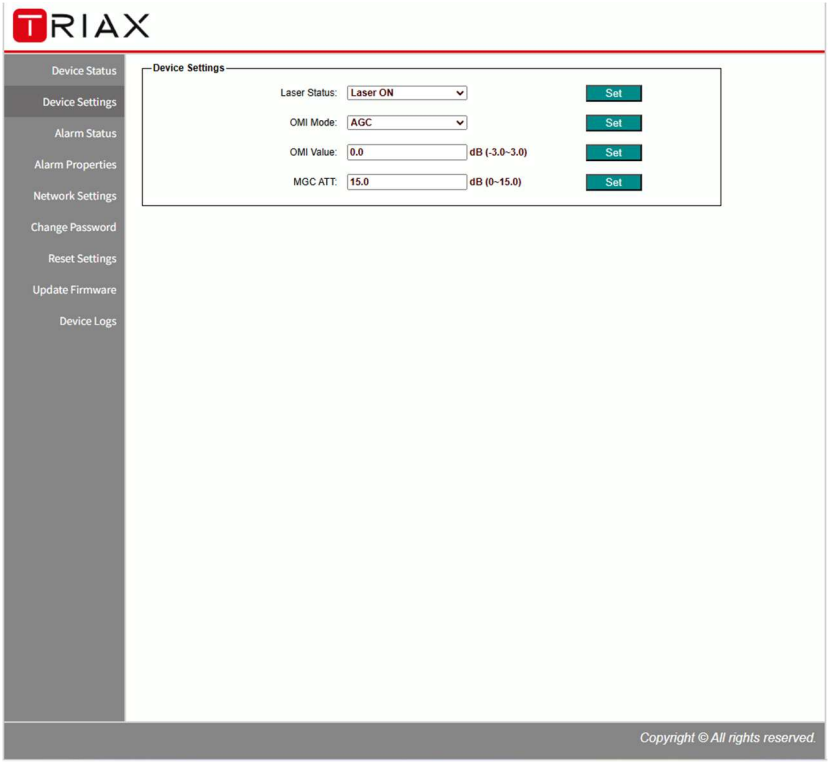


Real Time Device Status Page

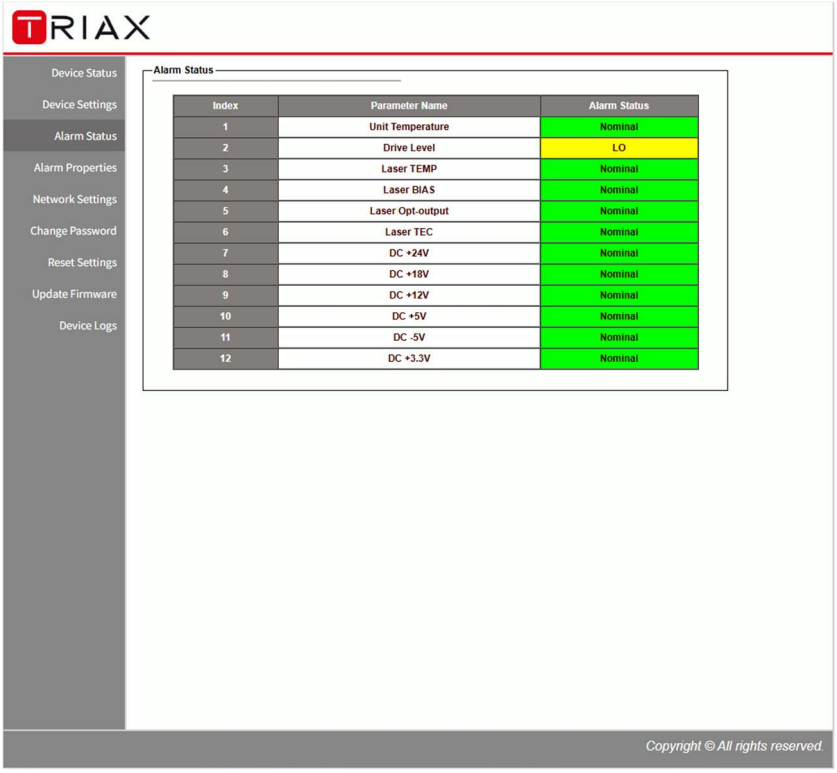
The left side of the page is the menu navigation bar. Click to enter the corresponding menu page



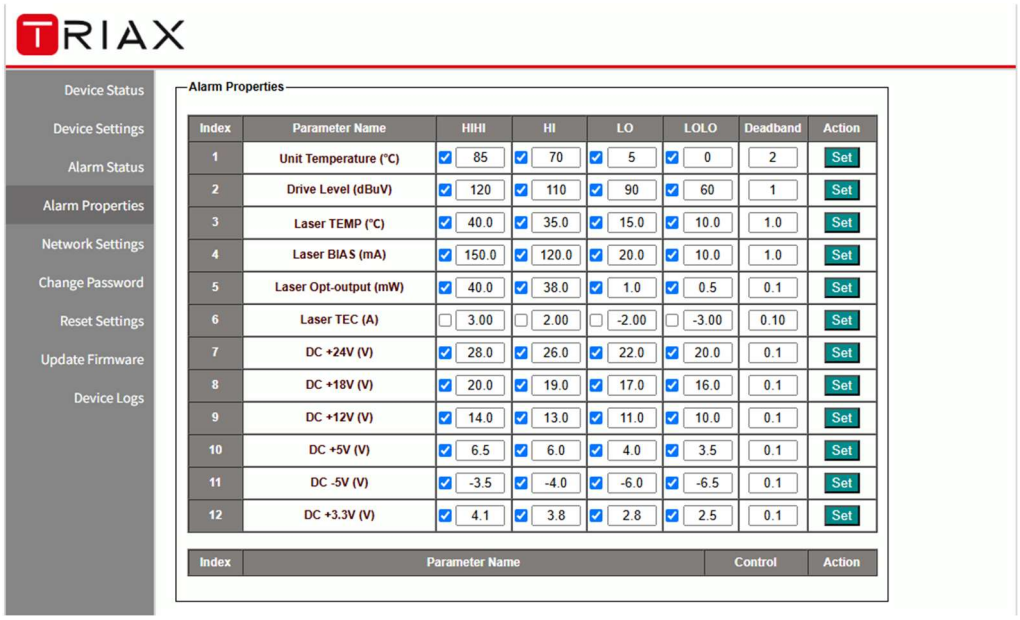
Menu Navigation Bar



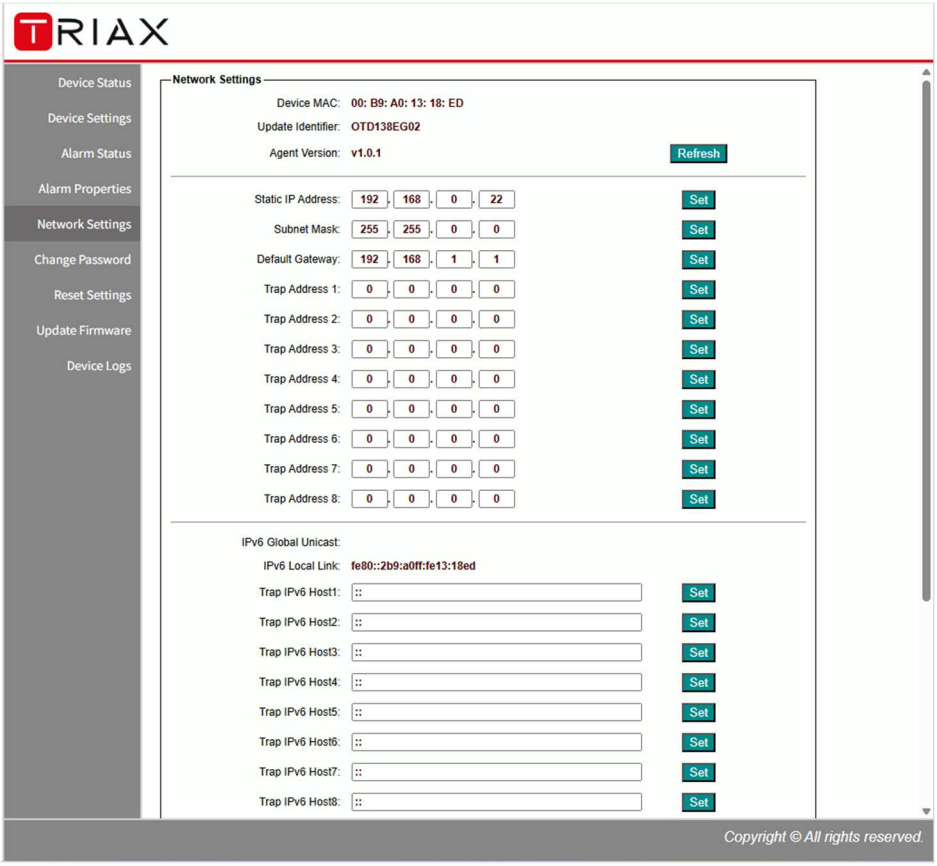
Device Settings Page



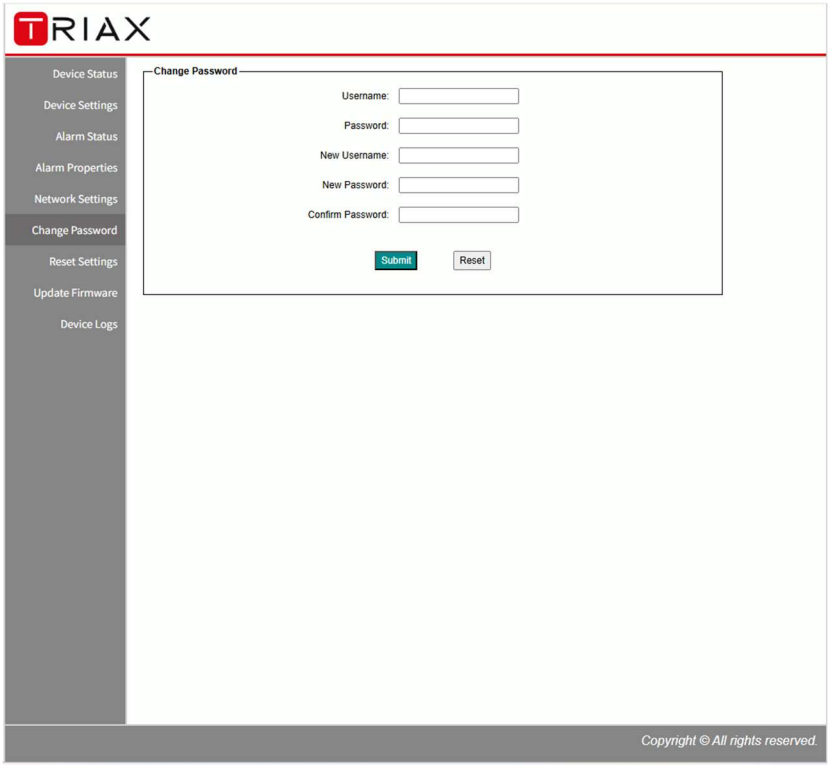
Alarm Status Page



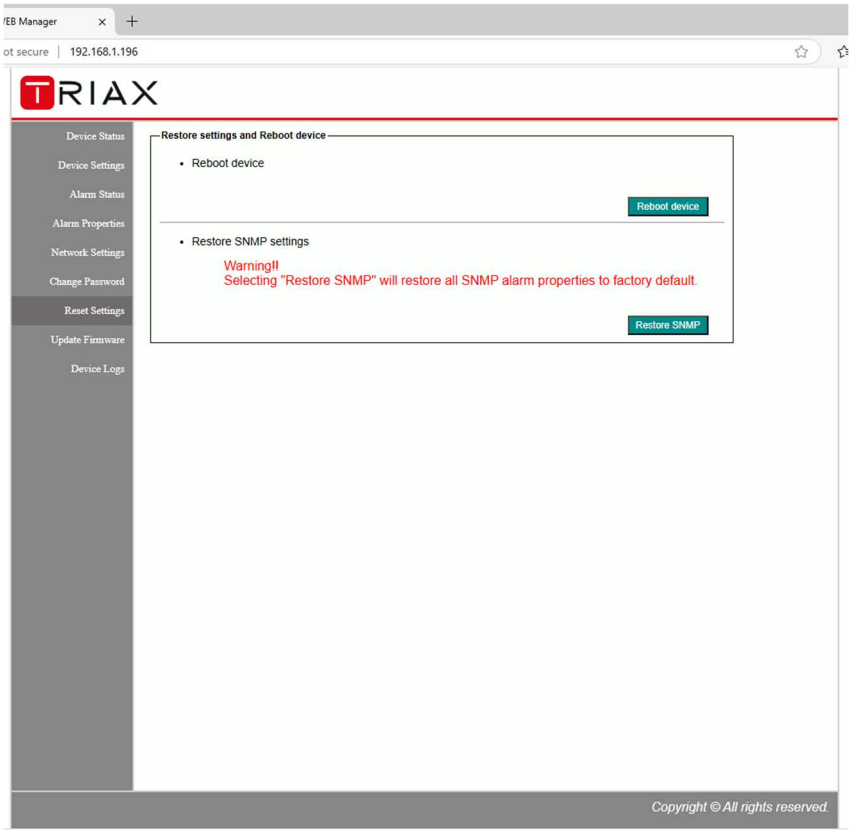
Alarm Properties Setting Page



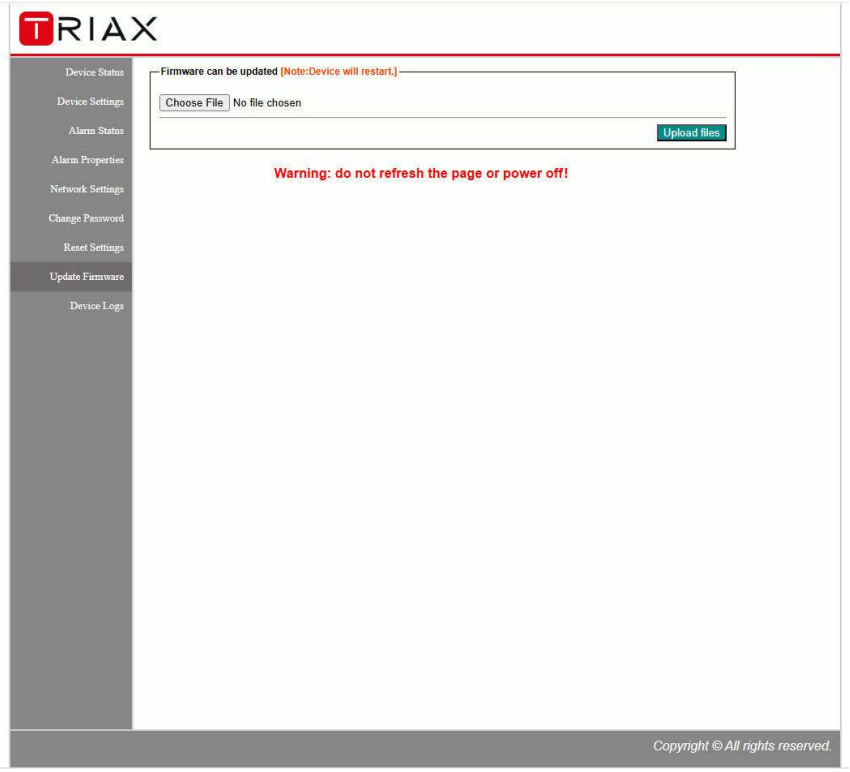
Network Settings Page



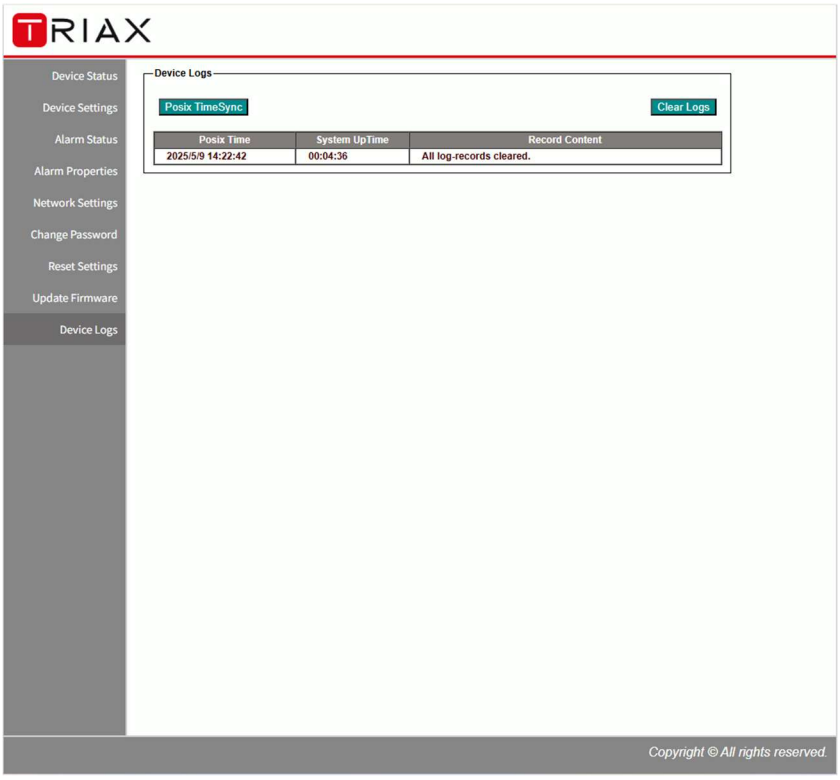
Page to Change Username and Password



Restore Page



Firmware update page



Device logs page

6 Resolution of common issues

S/N	Phenomenon	Possible reason	Solution
1	Power LED YELLOW	Only one power supply is working	Connect another power supply
2	Status LED GREEN Laser LED GREEN RF LED RED POWER LED YELLOW	No RF Input	Connect RF signal at the Input
3	Status LED RED Laser LED RED RF LED RED LCD Display "KEY OFF"	The key is turned to OFF	Turn the key to ON
4	Output power LCD displays normal value, but optical power meter displays low value	Output interface of patch cord is dirty or	Clean the output interface
		Power meter error	Change power meter

7 EU Declaration of Conformity

The product Declaration of Conformity can be downloaded from the product page at www.triax.com

8 Conditions of warranty

TRIAX UK warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty, the product proves defective, under normal use, due to defective materials or workmanship, TRIAX UK, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation.

THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:

- Misuse or use of the product outside of its specifications,
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used,
- Use of non-suitable accessories (power supply, adapters...),
- Installation in a defective system,
- External cause beyond the control of TRIAX UK such as drop, accidents, lightning, fire, …

THE WARRANTY IS NOT APPLIED IF

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

NOTE

Date of production can be found in the product's serial number code. The format is "YYWW123456 (YEAR, WEEK, 123456 product unique number), e.g. 2532000020 = year 2025 week 32, product No.20 of this batch.