User Manual

TOFA-822W 8 Port 1550nm High Power PON EYDFA

Article				Article no.
TOFA-822W	8 Port 1550nm high power PON EYDFA			308551
Version	V2.1	**Date**	2025/08	**EN**

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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 respectively 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 the power supply.
- 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 electric 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 to 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 TOFA-822W Series 1550nm fibre amplifier combines low-noise EDFA and high-power EYDFA. The total output optical power can reach 37dBm, Optical power of 1550nm per output port not less than 19 dBm/22dBm (optical power level selectable), replacing multiple EDFA units. Each output port has built in CWDM to multiplex CATV signal and OLT PON Data flow. Ideal for FTTH applications. The TOFA-822W offers excellent performance and reliability and supports network management and power redundancy.

2.2 Detailed features

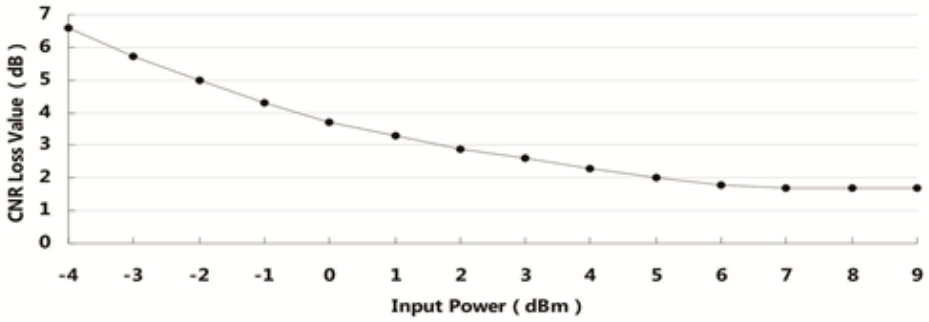
- Uses top-brand pump laser for superior performance and double cladding active fibre
- Each output port has built in CWDM
- Compatible with any FTTx PON: EPON, GPON, 10GPON
- Advanced APC, ACC and ATC optical circuit design ensures low noise, high output and high reliability of the device in the whole operating band (1545 ~ 1565nm)
- Automatic laser shutdown protection on low or no optical input. When the input optical power is lower than the set value, the laser will automatically shut down to protect the operating safety of the device
- Adjustable output power range: 0 to -4 dBm
- CATV/PON dual fibre inputs
- Fast switching time of optical switch with low loss (automatic and manual)
- Built-in dual power supply, automatically switched and hot plug supported
- The operating parameters of the TOFA-822W are controlled by a microprocessor, and the LCD status display on the front panel has many functions such as laser status monitoring, parameter display, fault alarm, network management. Once the operating parameters of the laser deviate from the range set in the software by the user, the system will issue an alarm
- Standard RJ45 interface is provided, supporting SNMP and WEB remote network management

2.3 Installation

Preparation before installation:

- **Observe instructions given at chapter 1**
- Install the unit in a well-ventilated location and keep a minimum distance of 5 cm around the EYDFA for sufficient ventilation. Please don’t block the cooling holes of the device
- Connect the EYDFA only to a power socket with a protective earth connection
- Please make sure the power supply button on the rear panel is turned to OFF before the power supply cable is connected
- Please make sure the key is turned to OFF before connecting the power supply
- As the output power of EYDFA is high, please do not turn on the power supply before the EYDFA is connected to the PON Network or without the output ports being equipped with protection sleeves
- Please ensure the interface of the fibre is clean before connecting the fibre
- If needed clean the fibre connector with the correct tool
- Do not plug in/out a patch cord when the device is working, or it may damage the output interface, resulting in a decrease of the output power
- A static-sensitive pump laser is used in the EYDFA, please note that electrostatic protection should be applied in the storage of the EYDFA and it should not be stored with corrosive material, and the storage temperature should be between – 40°C and + 85°C
- For high power EYDFA, it is easy to burn the fibre output interface and decrease the output power, so the recommended value on each port is below 19dBm
- Please don’t test the EYDFA repeatedly, otherwise the fibre connector interface may be damaged, and the output power decreased

The input optical power level has a great influence on CNR. The higher the input power, the higher the CNR, the lower the input power, the lower the CNR, as shown in the following figure:



CNR loss value/Input Power

2.4 Special notes

When inserting or plugging in a patch cord to a working device, a protection function that senses a rapid drop of 6dB, is applied to protect the fibre core. The output power is then reduced by 6dB instead of turning off the power supply. This will not cause a large area to go out of service but will result in a short-term drop in the output signal level.

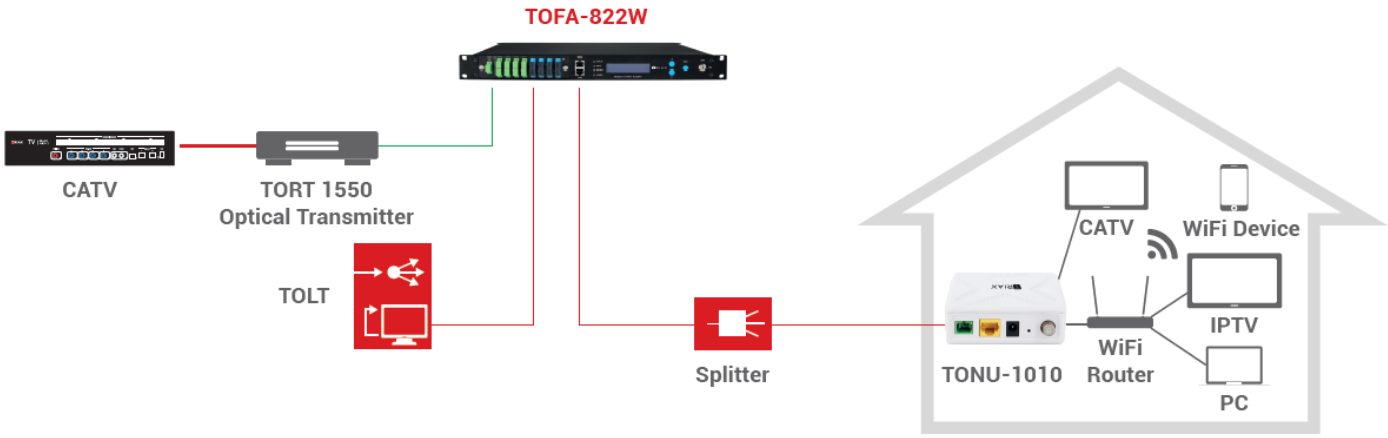
The fibre core protection function operates:

- After an input signal level drop of 6dBm, the output power per port is reduced to ≤18dBm, this level allows a patch cord to be connected or disconnected without damaging or burning the fibre core of the patch cord
- The unit will then promptly return to its original working status after performing any maintenance

2.5 Ordering information

Product Name	Article No.	Product Description	Output Power	Power Configuration
TOFA-822W	308551	8*SC/APC (Output) 8*SC/UPC (PON Input) 1*SC/APC (CATV Input)	8*22dBm	2*AC

2.6 Installation schematic example



2.7 Front panel

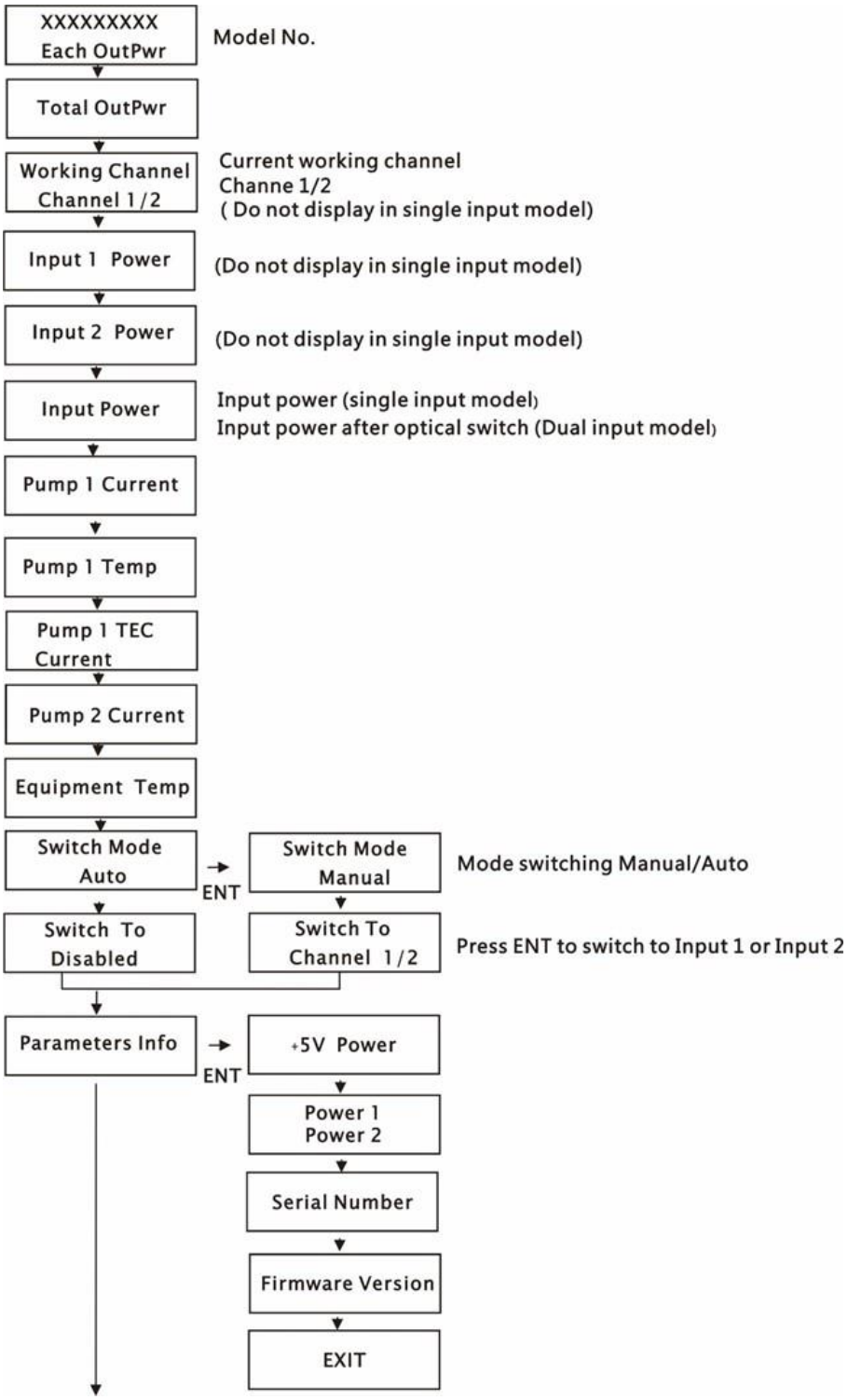
Identification	Name	Remarks
LCD	LCD Display	To display the parameters of the device
STATUS	Device Status	LED GREEN, device working LED RED, device alarming or faulty
INPUT	Fibre Input	LED GREEN, input within required range LED RED, no input or outside of the required range
OUTPUT	Fibre Output	LED GREEN, fibre output is within normal range LED RED, fibre output is outside of normal range
POWER	Power Supply	LED GREEN, dual power supply working LED YELLOW, single power supply working
CATV IN	CATV input	1550nm fibre input
OLT IN	OLT Input	OLT input
OUT	Fibre Output	Fibre output
Arrow UP/DOWN	Buttons	Start menu page turning and set the device
ENT	Enter	Confirmation after menu page turning and device setting
OFF/ON	Key	ON pump laser on, OFF pump laser off
RF TEST	RF test point	Output level 78～82dBμV
RS232	RS232 Port	Local programming
RJ45	RJ45 Port	Remote SNMP and WEB supported

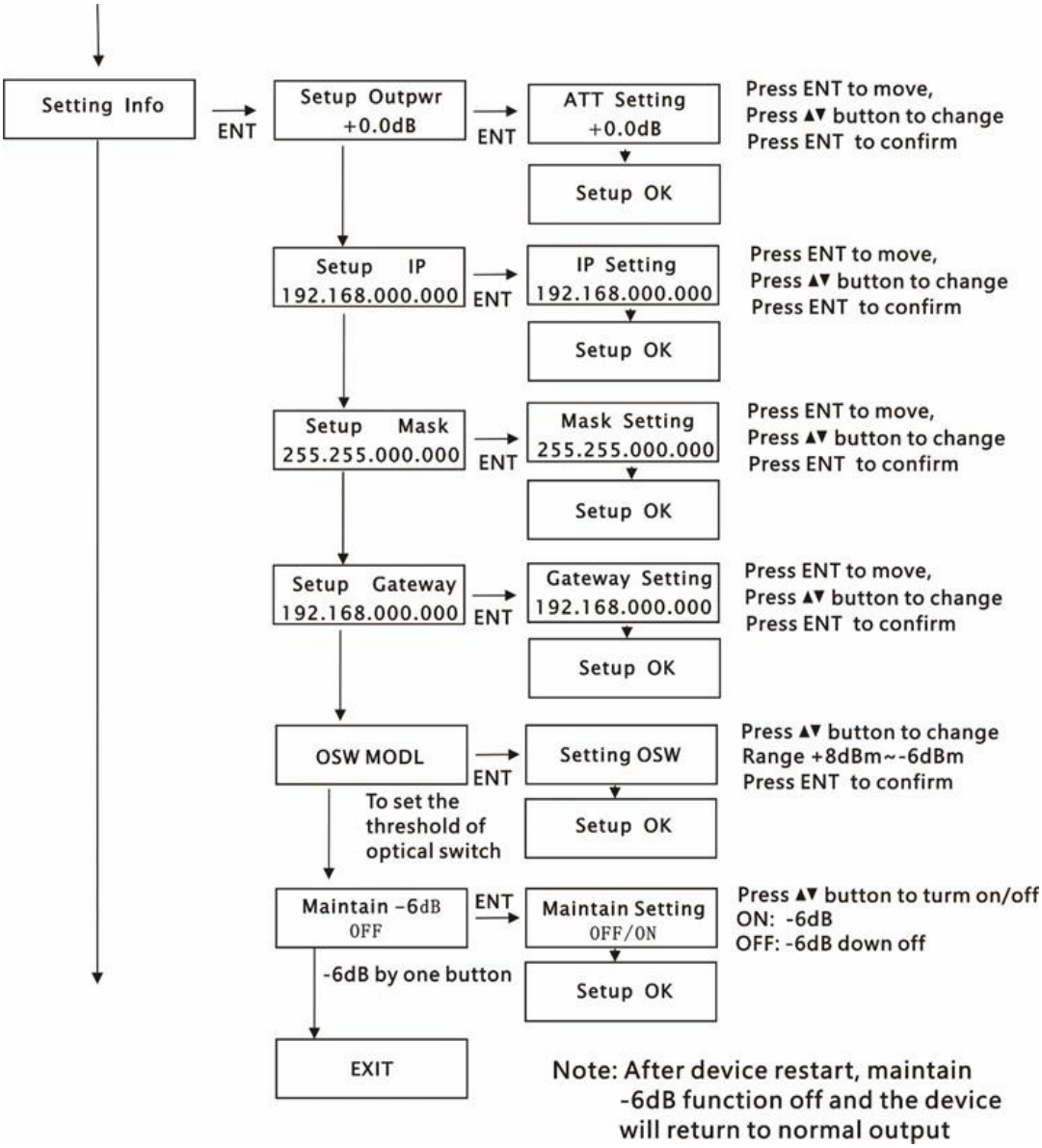
2.8 Rear panel

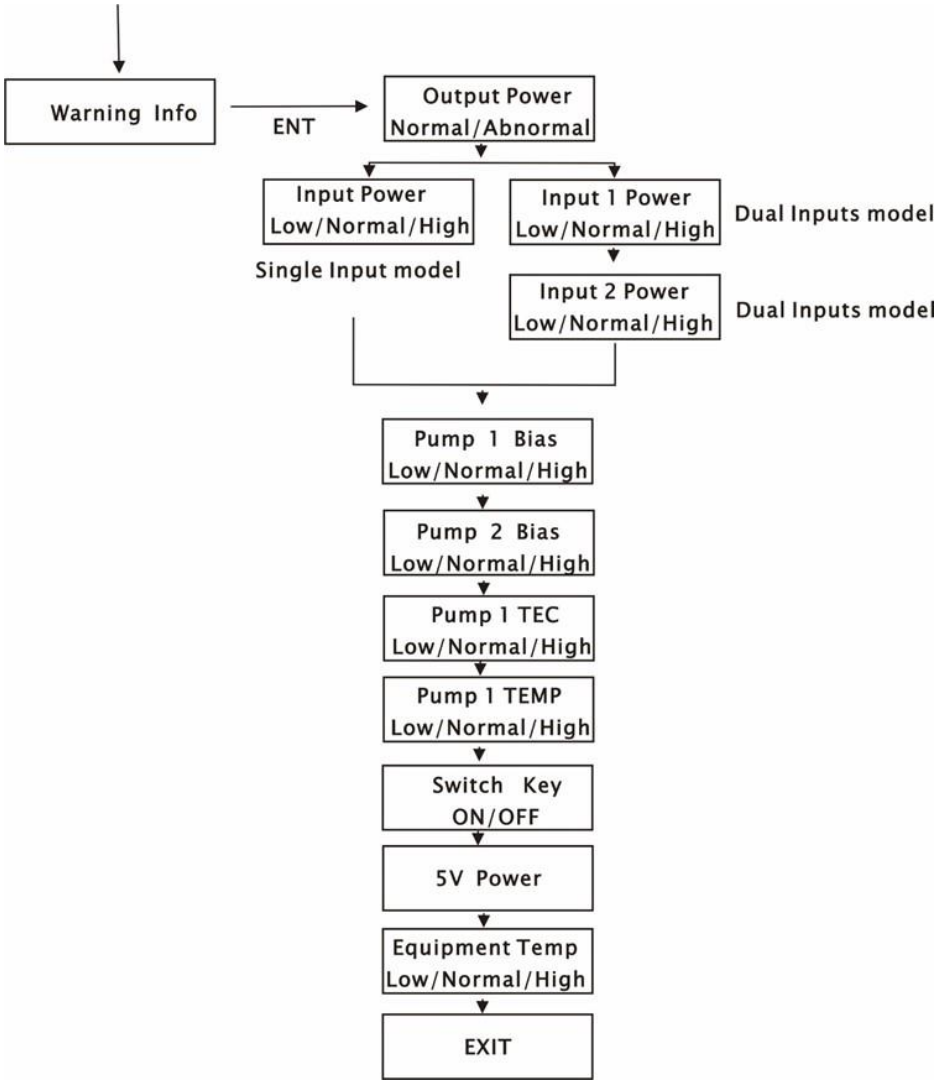
Identification	Name	Remarks
Fan	Fan	For the cooling of the device
⏚	Grounding Port	For Grounding
Power 1	Power Socket 1	Hot plug supported
Power 2	Power Socket 2	Hot plug supported

2.9 Navigating through the menu

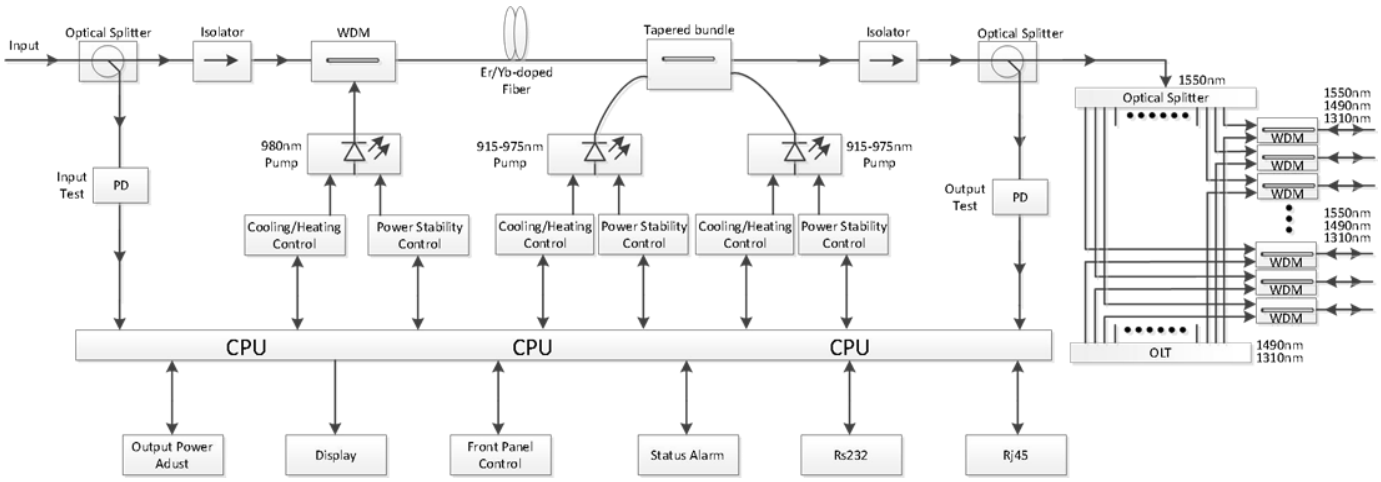
Press the ▼to display the following menu and press the ▲to display the previous menu




Setting Info
ENT
Setup Outpwr
+0.0dB
ENT
ATT Setting
+0.0dB
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup IP
192.168.000.000
ENT
IP Setting
192.168.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup Mask
255.255.000.000
ENT
Mask Setting
255.255.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup Gateway
192.168.000.000
ENT
Gateway Setting
192.168.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
OSW MODL
ENT
Setting OSW
Setup OK
Press ▲▼ button to change
Range +8dBm~-6dBm
Press ENT to confirm
To set the
threshold of
optical switch
Maintain -6dB
OFF
ENT
Maintain Setting
OFF/ON
Setup OK
Press ▲▼ button to turm on/off
ON: -6dB
OFF: -6dB down off
-6dB by one button
EXIT
Note: After device restart, maintain
-6dB function off and the device
will return to normal output


Warning Info
ENT
Output Power
Normal/Abnormal
Input Power
Low/Normal/High
Single Input model
Input 1 Power
Low/Normal/High
Dual Inputs model
Input 2 Power
Low/Normal/High
Dual Inputs model
Pump 1 Bias
Low/Normal/High
Pump 2 Bias
Low/Normal/High
Pump 1 TEC
Low/Normal/High
Pump 1 TEMP
Low/Normal/High
Switch Key
ON/OFF
5V Power
Equipment Temp
Low/Normal/High
EXIT

3 Block diagram



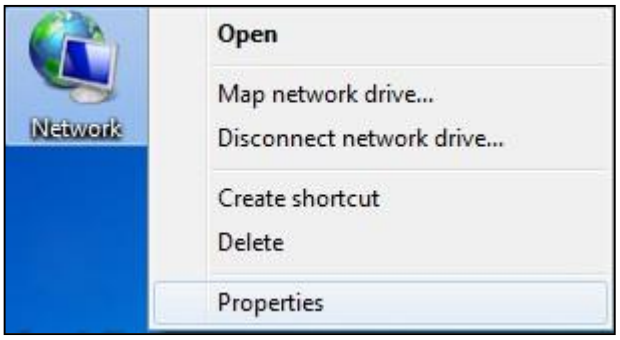
4 Technical Specifications

Item Name	TOFA-822W				
Art. Number	308551				
EAN	5061038085341				
Items	Unit	Min.	Typ.	Max.	Remarks
Optical					
CATV Operating Wavelength	nm	1545	1550	1565	
OLT PON Pass Wavelength	nm	XPON：1310/1490 10G PON：1270/1577			
Optical Input Range	dBm	-8		+10	
Output Power	dBm			22	1dBm interval
No. of OLT PON Ports	No.			8	SC/UPC
No. of COM Ports	No.			8	
CATV Pass Loss	dB			0.8	SC/APC
OLT Pass Loss	dB			0.8	
Output Adjustment Range	dB	-4		0	0.1dB each step
Output Ports Uniformity	dB			0.7	
Output Power Stability	dB			0.3	
Isolation between CATV and OLT	dB	40			
Switching Time of Optical Switch	ms			8	Optional
Insertion Loss of Optical Switch	dB			0.8	Optional
Noise Figure	dB			6	Pin：0dBm
PDL	dB			0.3	
PDG	dB			0.4	
PMD	ps			0.3	
Remnant Pump Power	dBm			-30	
Optical Return Loss	dB	45			
Fibre Connector		SC/APC			
Network Management Interface		SNMP, WEB supported			
Power Supply	V	90		265	AC
Power Consumption	W			70	Dual power supply
General					
Operating Temperature	℃	-5		65	
Storage Temperature	℃	-40		85	
Operating Relative Humidity	%	5		95	
Dimension W x L x H	mm	370×483×44			
Weight	Kg	5.5			

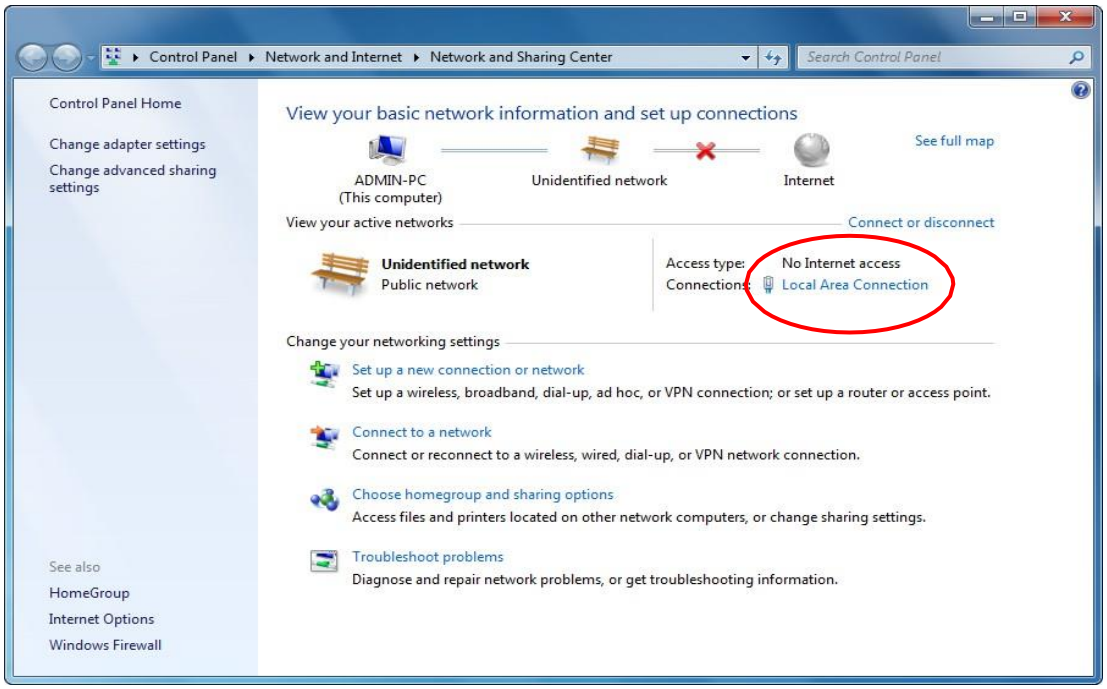
5 Web server

An SNMP Web server is built in. Users can directly view the basic operating parameters and network parameters of the EYDFA through web browsers like 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.

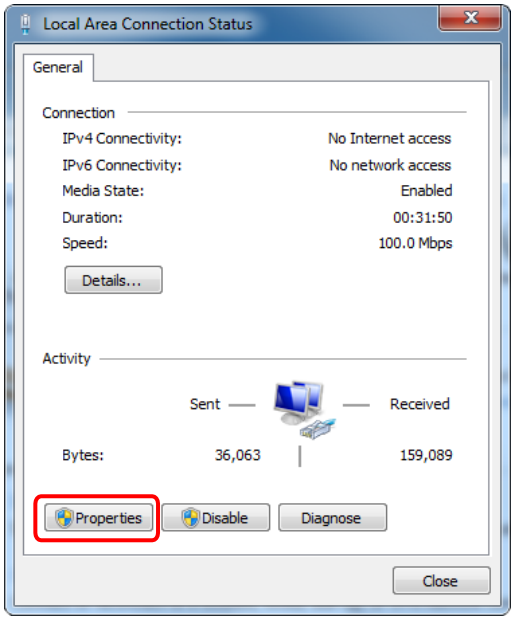
First, find the IP address of the transmitter in the LCD panel menu. The default IP address is 192.168.0.22. Set the IP address of the computer to the same network segment as the device, find the "network" icon on the desktop of windows system, select the icon, right-click the mouse, and select "properties"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

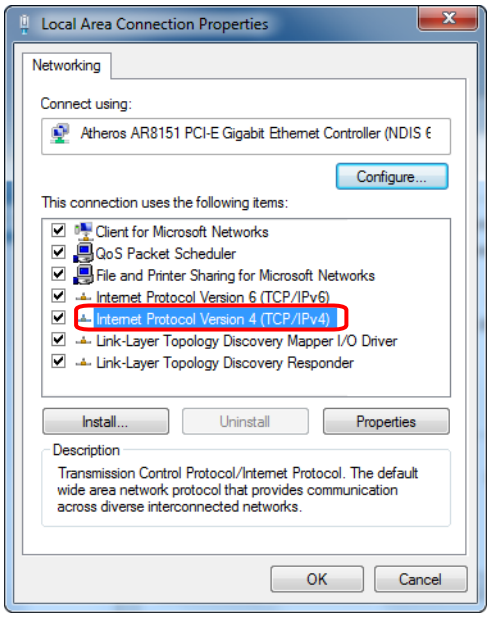


Click "Local Area Connection" in the pop-up version

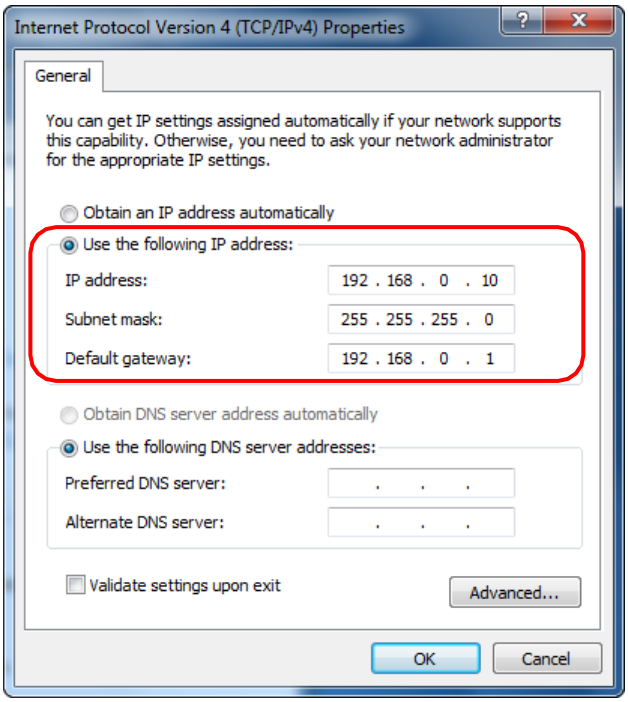


In the “Local Area Connection Status” menu, select “Properties”, and then double-click “Internet Protocol Version 4 (TCP / IPv4)”.

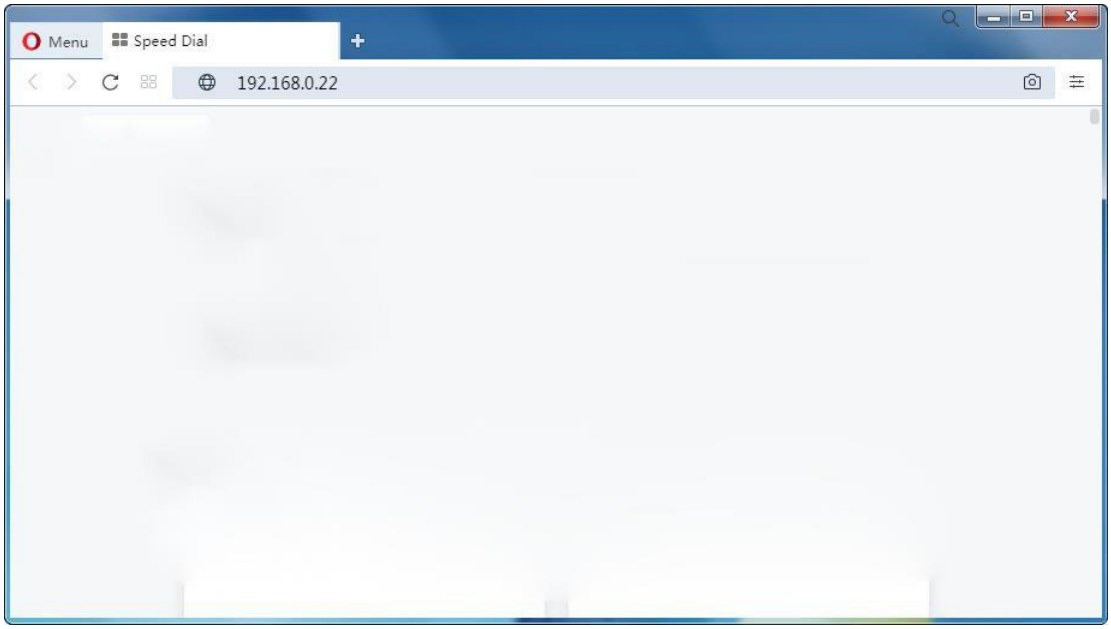




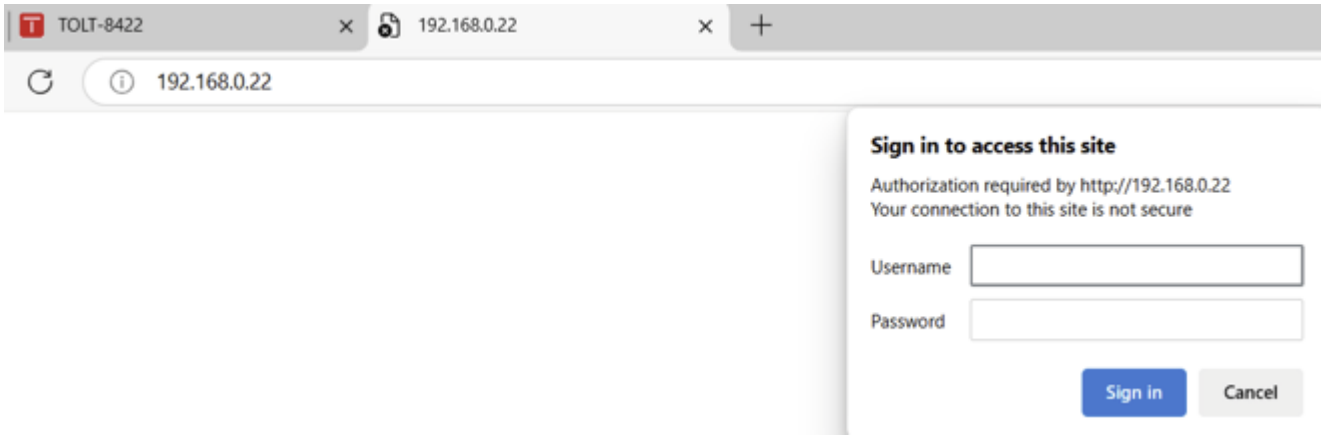
Set the IP address of your PC to be in the same network segment as the device, so that the computer can access the GUI.



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

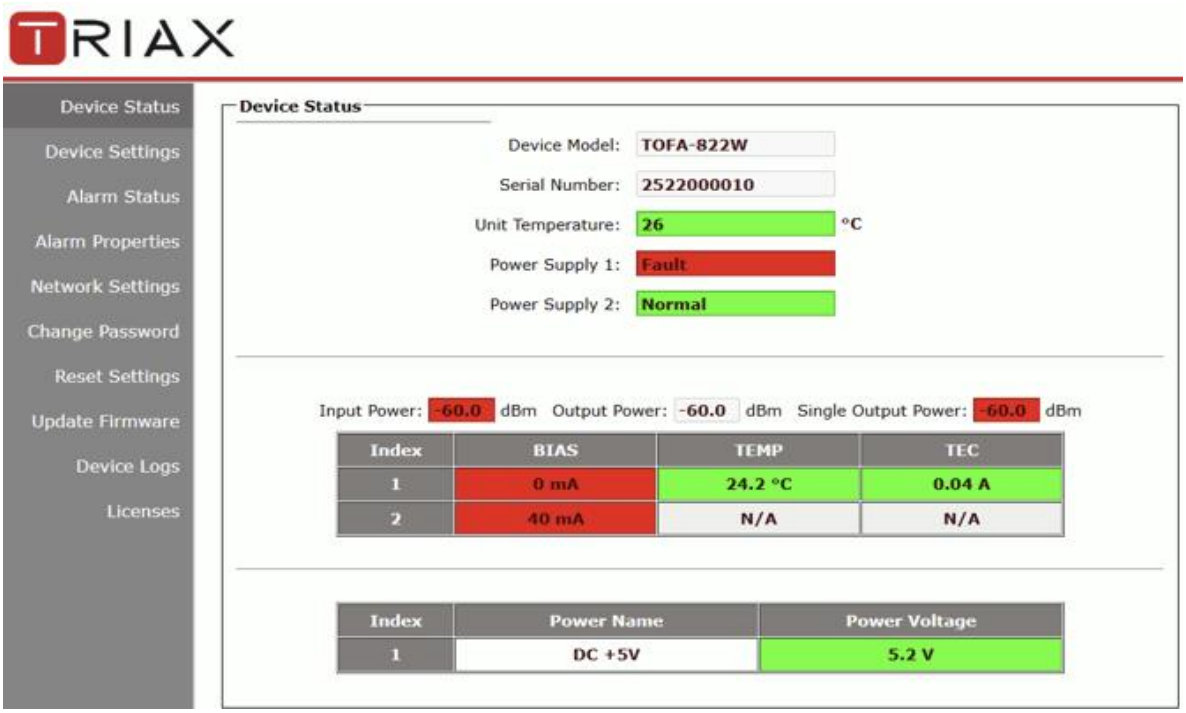


The browser will pop up a login box



In the pop-up login box, enter the Username and Password as shown on the product label (Note: both are in lowercase letters).

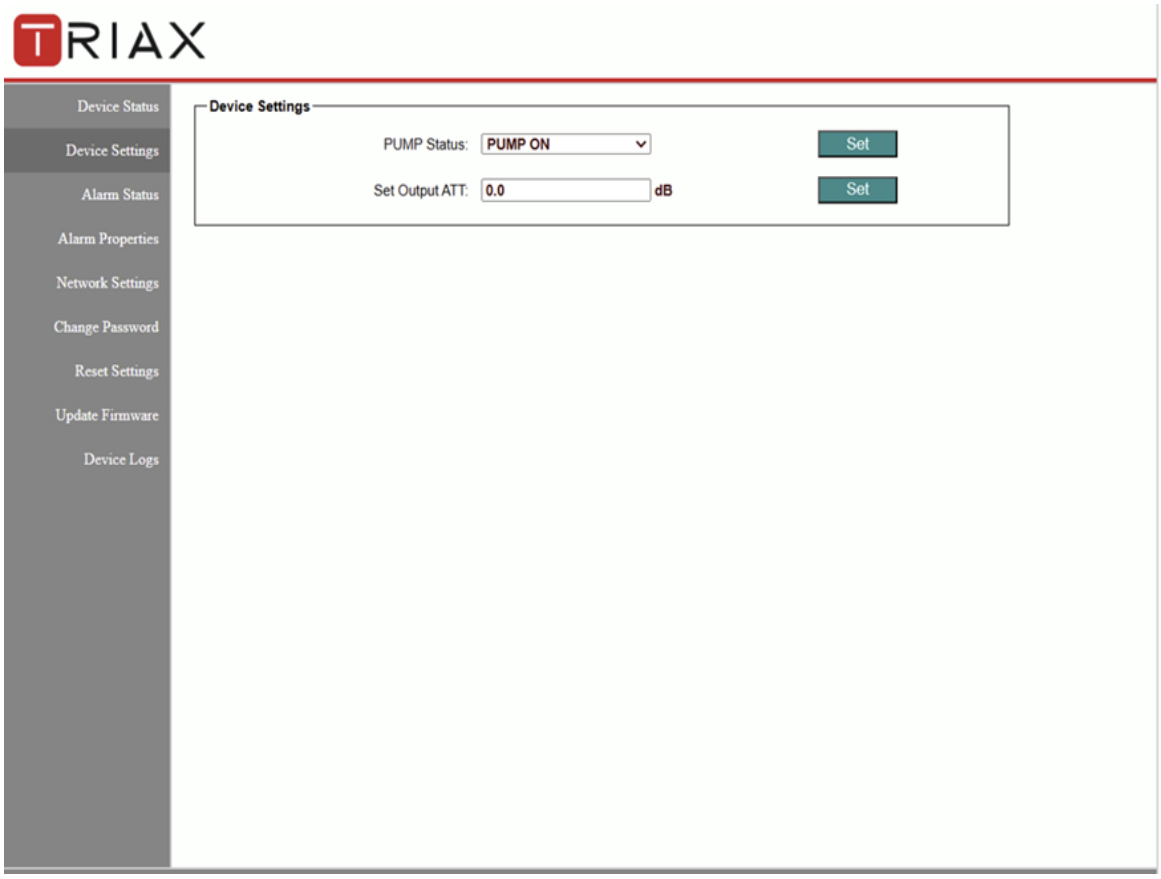
The browser displays the device status page by default



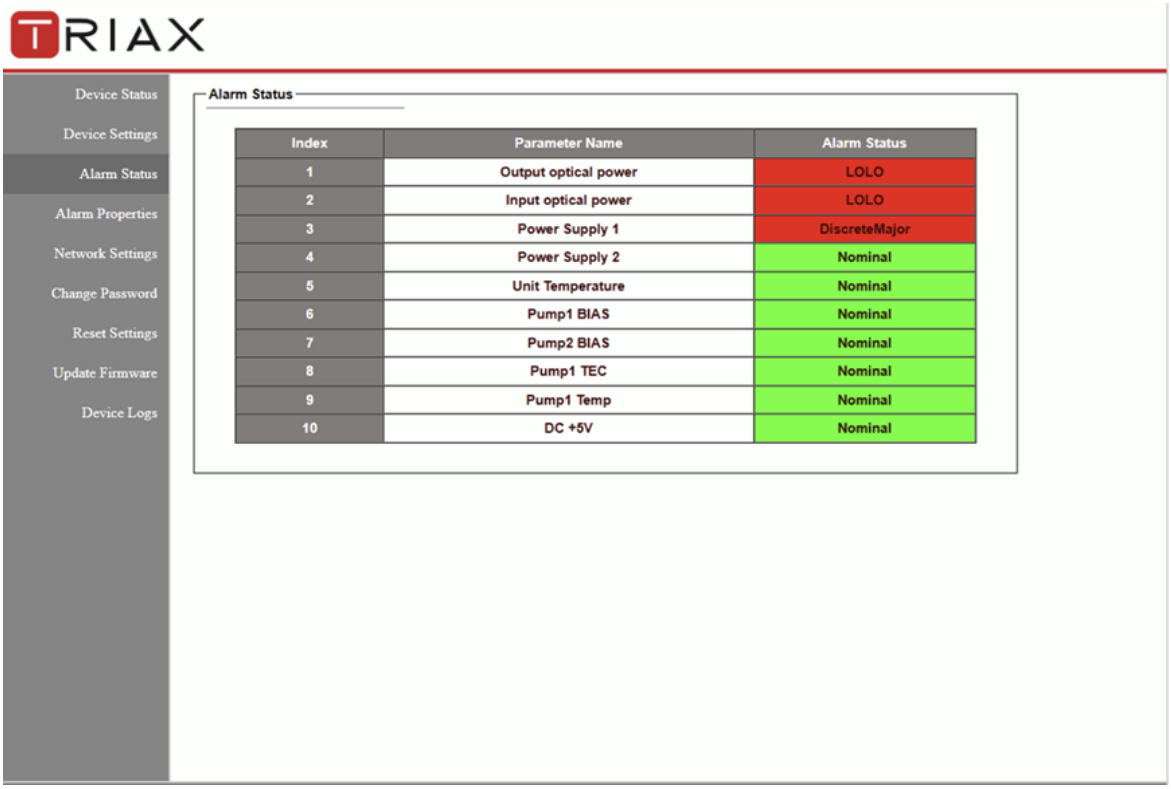
Real Time Device Status Page

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

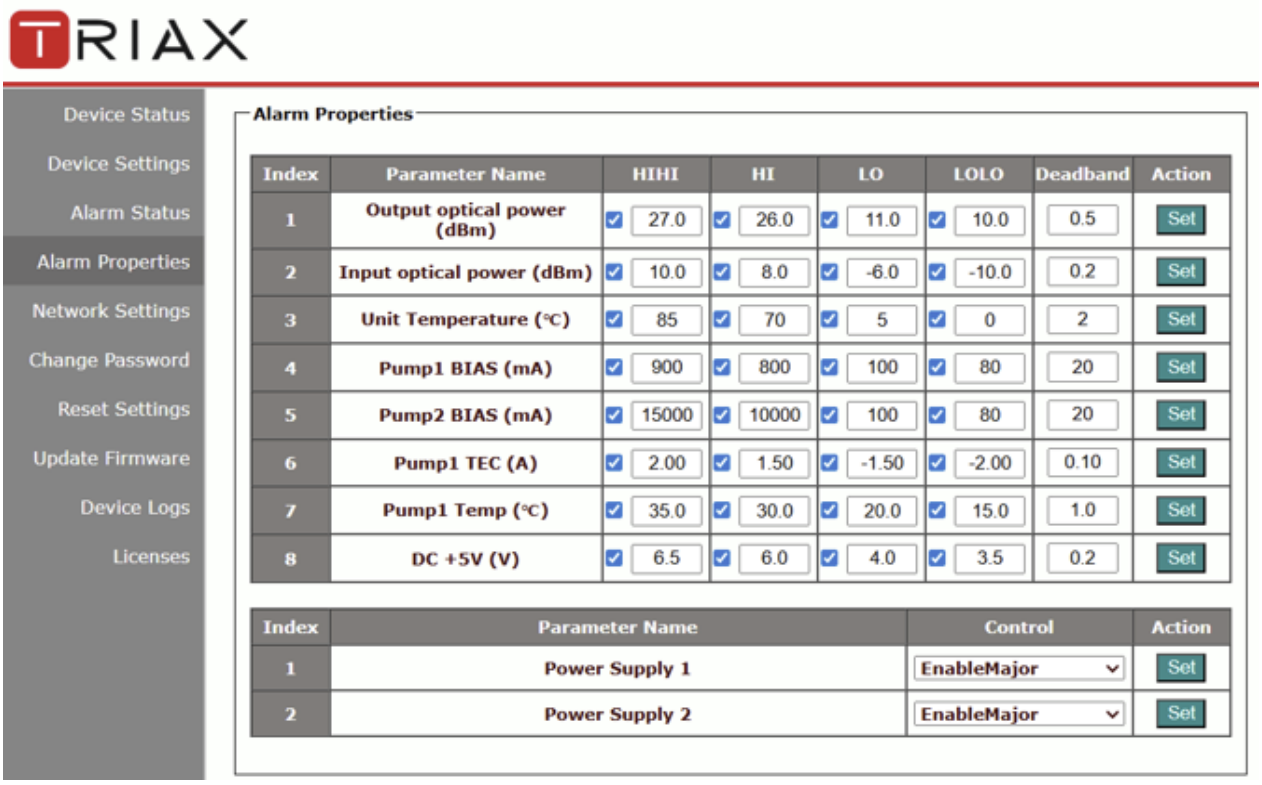
Page Navigation Bar



Device Setting Page



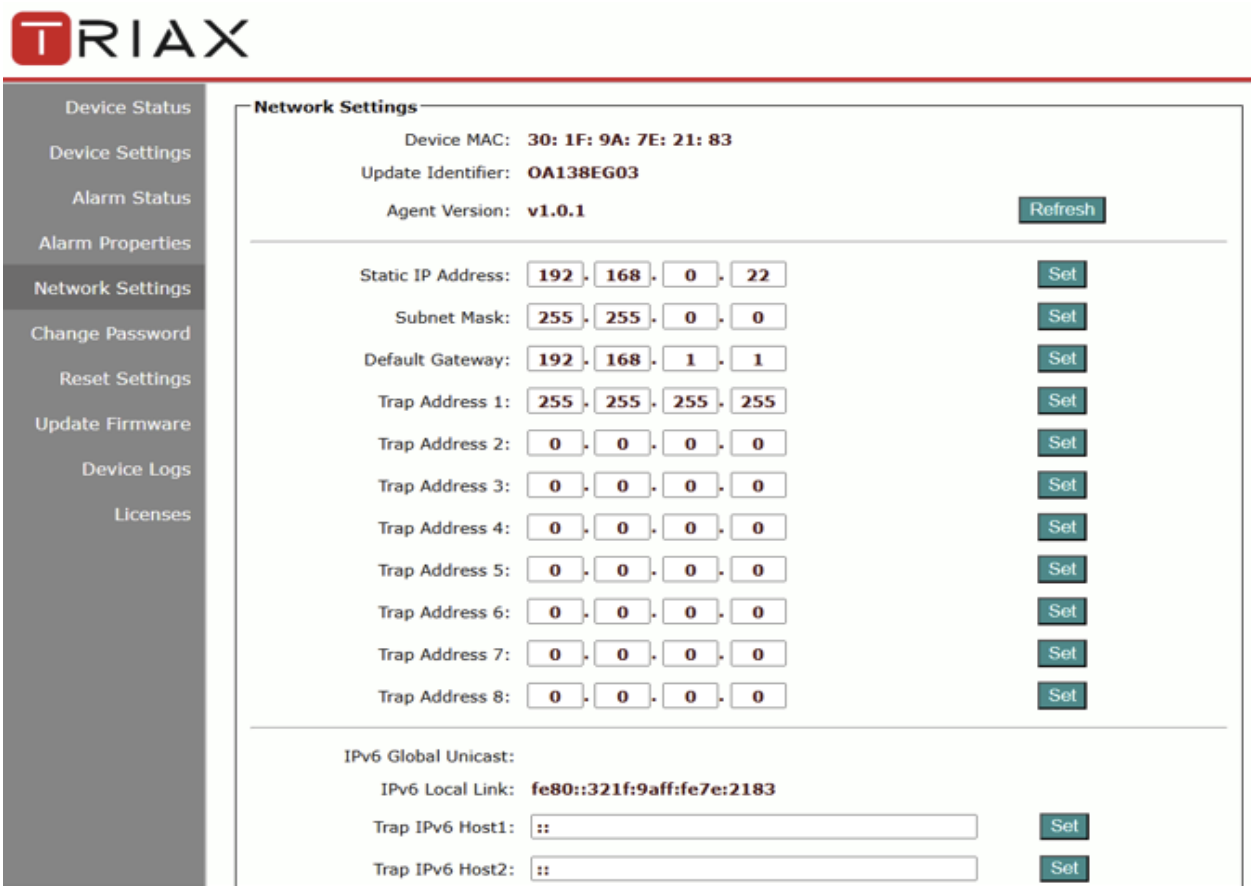
Alarm Status Page



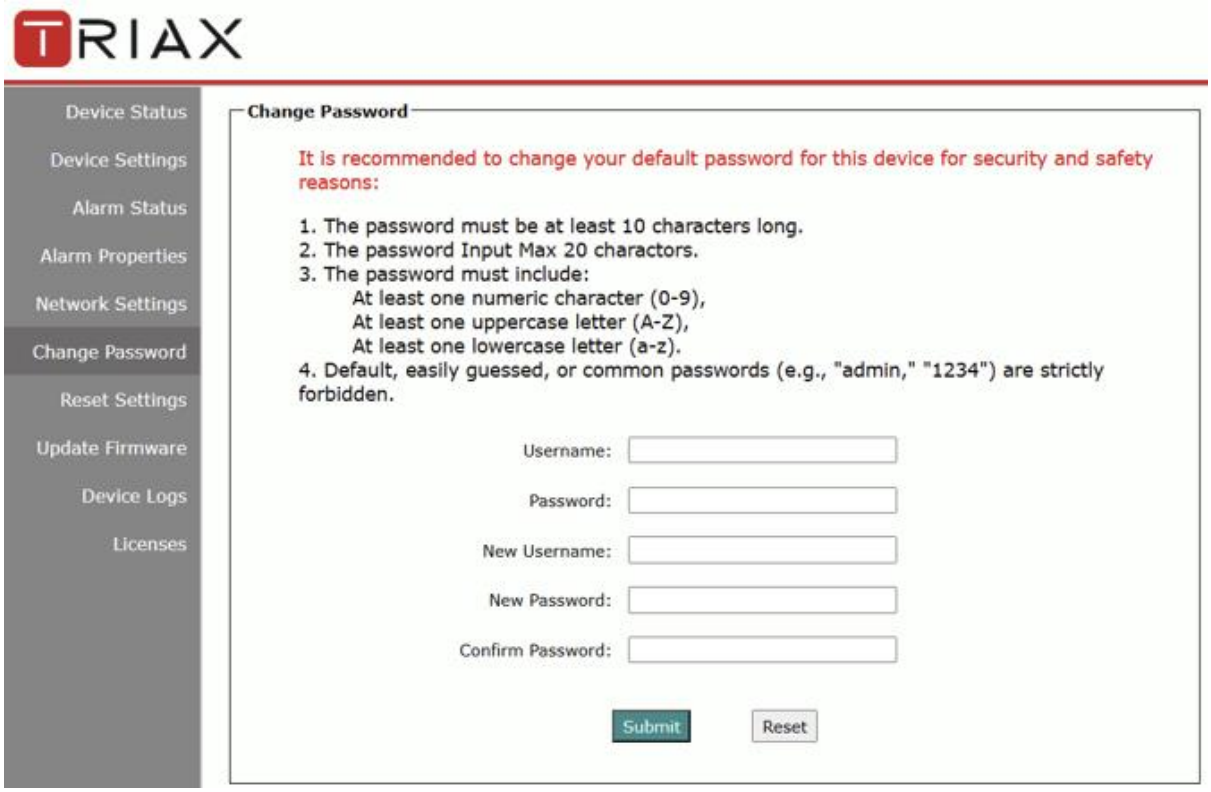
Index	Parameter Name	HIHI	HI	LO	LOLO	Deadband	Action
1	Output optical power (dBm)	27.0	26.0	11.0	10.0	0.5	Set
2	Input optical power (dBm)	10.0	8.0	-6.0	-10.0	0.2	Set
3	Unit Temperature (℃)	85	70	5	0	2	Set
4	Pump1 BIAS (mA)	900	800	100	80	20	Set
5	Pump2 BIAS (mA)	15000	10000	100	80	20	Set
6	Pump1 TEC (A)	2.00	1.50	-1.50	-2.00	0.10	Set
7	Pump1 Temp (℃)	35.0	30.0	20.0	15.0	1.0	Set
8	DC +5V (V)	6.5	6.0	4.0	3.5	0.2	Set

Index	Parameter Name	Control	Action
1	Power Supply 1	EnableMajor	Set
2	Power Supply 2	EnableMajor	Set

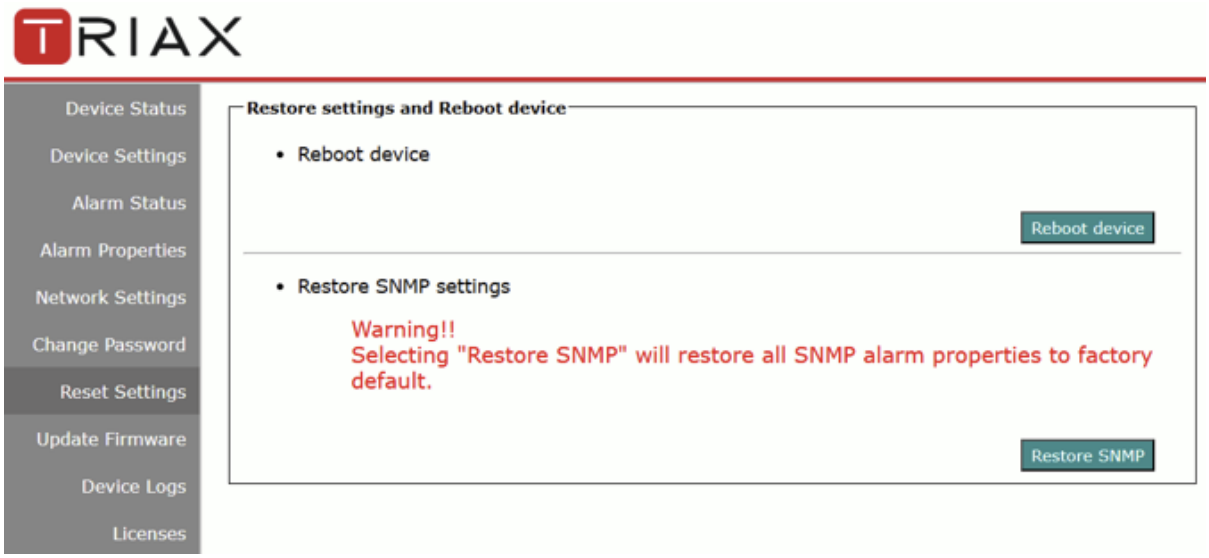
Alarm Properties Setting Page



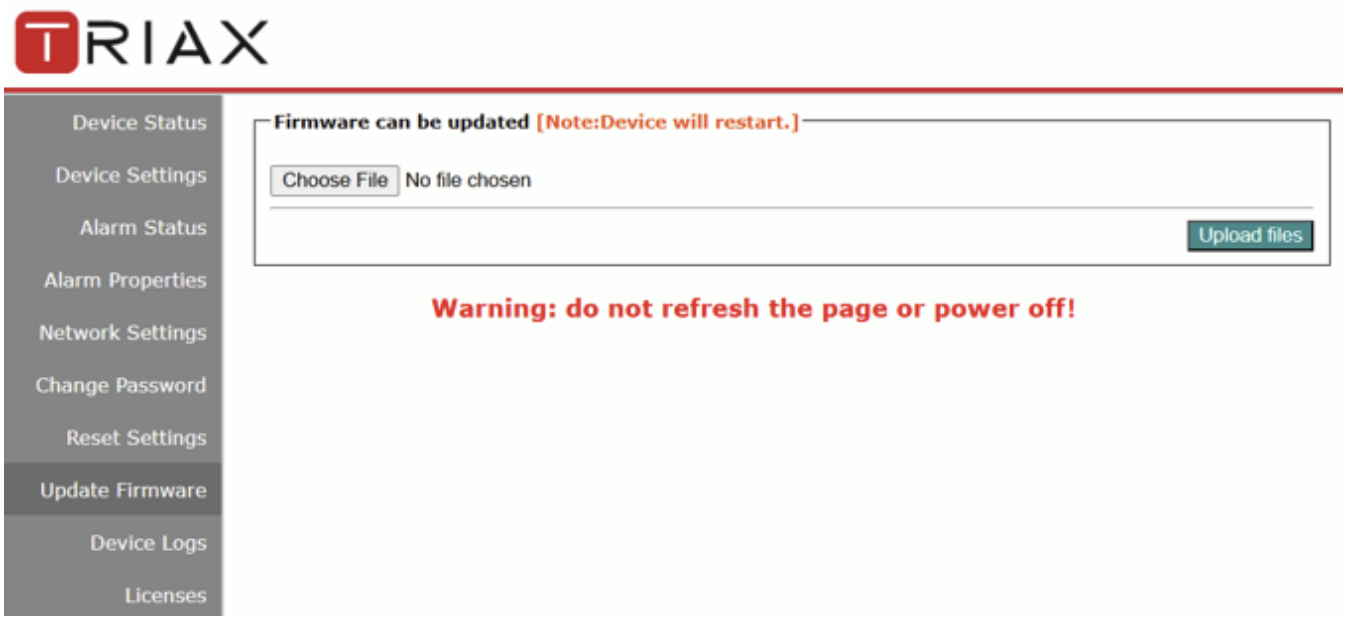
Network Setting Page



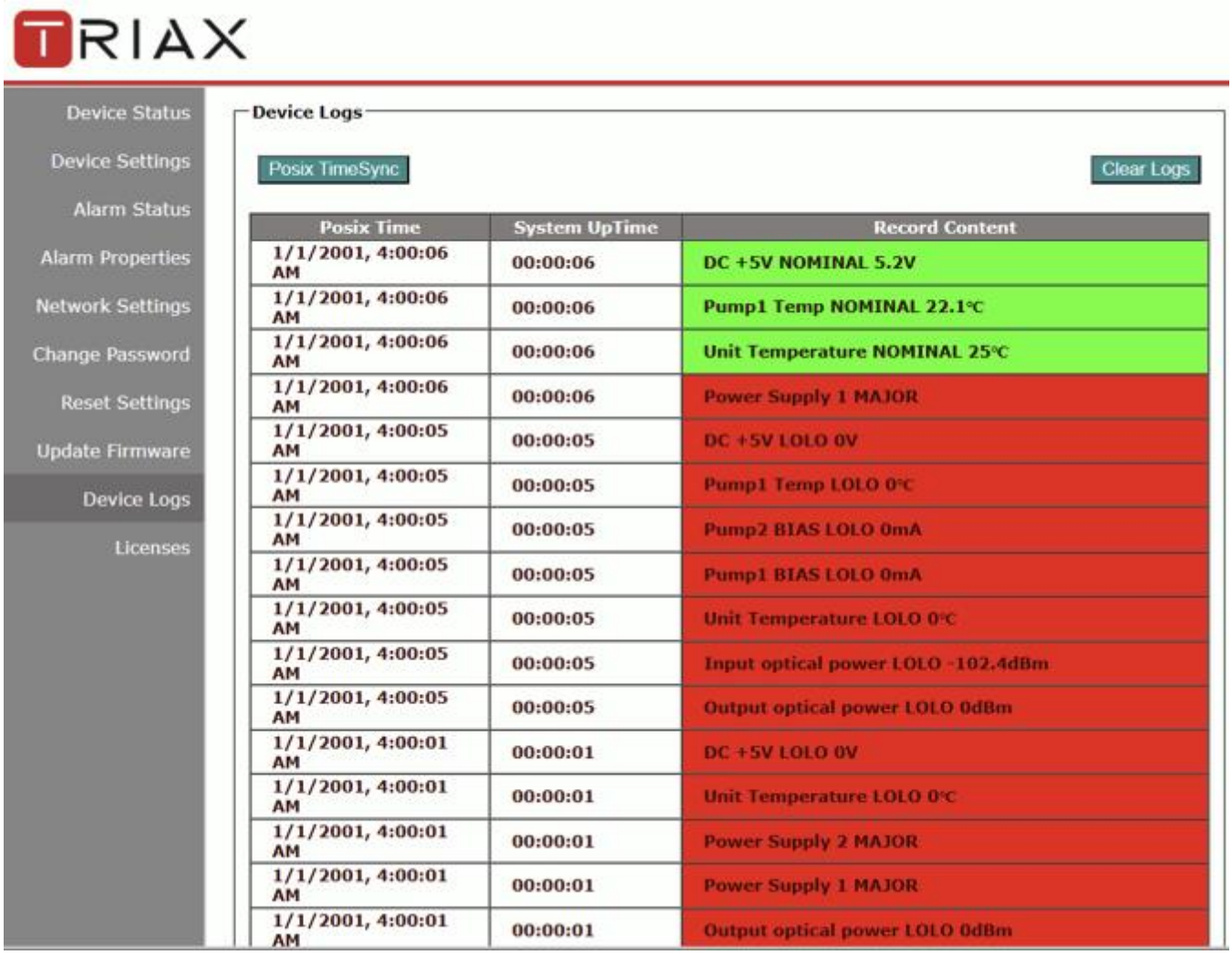
Page to Change Username and Password



Restore Page



Firmware update page



Device log 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 RED INPUT LED YELLOW OUTPUT LED RED	No Input or Input level too low	Adjust the input power value
3	Status LED RED INPUT LED GREEN OUTPUT 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 low value measured with power meter	Fibre interface damage caused by incorrect operation such as plugging in/out the patch cord when the power supply is ON, this will cause the output power to be lower than shown on the LCD display	Replace the fibre connector
		Output interface of EYDFA or patch cord is dirty	Clean the output interface
		Power meter error	Change power meter
		The wavelength deviation of input optical signal is too far from 1550nm	Adjust the wavelength of optical transmitter
5	LCD display shows output is about 0 ~ 4dB lower than specified value	Check if the ATT (attenuation) in "Setting info" is ON	Turn OFF the attenuation
6	LCD display shows output is about 6dB	Check if the “Maintain -6dB” function in “Setting Info” is activated	Turn OFF the “-6dB” function
7	The output power of the optical amplifier is normal, but the index at the user end is reduced	Optical power to fibre is high	Reduce the power to the fibre below 19 dBm

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.

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