TRIAX

connecting the future

TRIAX GPON

A Complete Range of GPON Solutions

For Hospitality, Commercial and MDU settings

triax.com

TRIAX

Introduction to
TRIAX GPON

In today's fast-paced digital world, high-speed and reliable connectivity is essential for businesses, communities and service providers alike.

TRIAX Gigabit Passive Optical Network (GPON) Solutions offer a cutting-edge, fibreoptic-based network infrastructure that delivers ultra-fast, scalable and cost-effective broadband connectivity.

Designed to meet the growing demands of smart cities, enterprises, telecom operators and residential developments, the TRIAX GPON Solution ensures seamless voice, video and data transmission with minimal latency and maximum efficiency.

By leveraging passive optical technology, TRIAX GPON reduces operational costs, improves energy efficiency and provides a future-proof network for next-generation applications. With high bandwidth, centralised management and robust security, TRIAX GPON is the ideal choice for organisations looking to modernise their networks and enhance the user experience.

Discover how our innovative GPON technology can transform your customers' network infrastructure needs and drive their digital transformation.

TRIAX
Your GPON Solution Partner.

What is GPON

Gigabit Passive Optical Network (GPON) is a high-speed, fibre-optic broadband technology that delivers data, voice and video services to end-users over a single fibre infrastructure. It is widely used by Internet Service Providers (ISPs) and telecom operators to offer scalable and cost-effective broadband solutions.

GPON is part of the Passive Optical Network (PON) family and is defined by ITU-T recommendations G.984.x.

How GPON Works

GPON operates on a point-to-multipoint (P2MP) architecture, where a single optical fibre from the central office (CO) is split among multiple users utilising passive optical splitters. This eliminates the need for active components in the distribution network, reducing maintenance costs and power consumption.

Key Components of GPON

1. Optical Line Terminal (OLT) – Located at the CO, the OLT manages data transmission, allocates bandwidth and ensures smooth communication with end-user devices.

2. Optical Network Unit (ONU)/Optical Network Terminal (ONT) – Installed at customer premises, ONUs/ONTs receive optical signals from the OLT and convert them into electrical signals for local network use.

3. Optical Splitter – A passive device that divides the optical signal from the OLT into multiple paths for distribution to multiple ONUs. Split ratios typically range from 1:8 to 1:128.

4. Fibre Infrastructure (PON) – The physical optical fibres (Passive Optical Network) that connect the OLT, splitters and ONUs.

Technical Specifications of GPON

GPON utilises Asynchronous Transfer Mode (ATM) and Gigabit Ethernet (GE) for data transmission. It Supports downstream speeds of up to 2.5 Gbps and upstream speeds of 1.25 Gbps, making it suitable for high-bandwidth applications such as 4K video streaming, cloud computing and VoIP.

Key Technologies in GPON

- Wavelength Division Multiplexing (WDM): GPON uses WDM to separate upstream and downstream traffic, with downstream operating at 1490 nm and upstream at 1310 nm (data transmission), while a third wavelength at 1550 nm can be used for RF video signals.
- Time Division Multiplexing (TDM) & Time Division Multiple Access (TDMA): GPON shares bandwidth efficiently among multiple users by assigning time slots for data transmission.
- Forward Error Correction (FEC): Ensures data integrity by correcting transmission errors, improving network reliability.

Advantages of GPON

- High Bandwidth Efficiency: Supports multiple services (data, voice and video) on the same infrastructure.
- Cost-Effective: Uses passive splitters, reducing maintenance and energy costs.
- Long Reach: Supports fibre lengths of up to 20 km, covering a wide area without signal degradation.
- Scalability: A single OLT can serve multiple users, making GPON ideal for urban and rural deployments.
- Security & Reliability: Encrypted data transmission and low latency ensures secure and stable connections.

Free TRIAX GPON Project Design

Collaborate with TRIAX to ensure your next GPON project meets your required specifications. We can accommodate project specific requirements not covered in this brochure.

TOLT-4422 - Layer 3 GPON OLT - 4 GPON ports

The TOLT-4422 is a 19" rack mount GPON OLT with 4 PON ports that provides flexible and fast FTTx access, suiting scenarios such as sparsely populated or remote areas, industrial parks, commercial buildings and other MDU settings including hospitality.
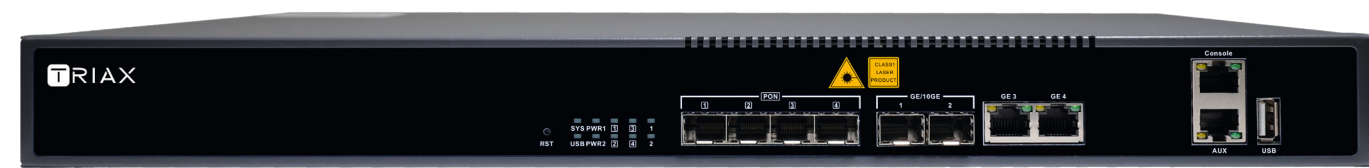
FEATURES

- Compact design, meets various application scenarios:
  – Supports deployment in diverse scenarios including low density areas, remote/sparsely populated areas and industrial parks
  – Supports FTTM and sharing site/rack with wireless base stations

- Small size and lightweight, easier to transport and install:
  – Supports multiple installation modes, e.g, limited room space, basement and small rack or cabinet

- Carrier-class security protection, supports dynamic routing protocol RIP&OSPF, ensures the safe operation of the network:
  – Supports uplink redundancy protection including LACP STP, RSTP and MSTP
  – Supports RIP & OSPF protocol
  – Supports link protection

- Lower TCO:
  – Dramatically saves on investment fees in trunk fibres, pipe engineering and facilities. Effectively reduce CapEx and OpEx

MANAGEMENT FUNCTION

- SNMP, Telnet, CLI, WEB, SSH v2
- Fan Group Control
- Port status monitoring and configuration management
- Online ONT configuration and management
- User management
- Alarm management

LAYER 2 SWITCH

- 32K Mac address
- Supports 4096 VLANs
- Supports port VLAN
- Supports VLAN tag/Un-tag, VLAN transparent transmission
- Supports VLAN translation and QinQ
- Supports storm control based on port
- Supports port isolation
- Supports port rate limitation
- Supports 802.1D and 802.1W
- Supports static LACP, Dynamic LACP
- QoS based on port, VID, TOS and MAC address
- Access control list
- IEEE802.x flow control
- Port stability statistic and monitoring

MULTICAST

- IGMP snooping
- 2048 IP Multicast Groups

DHCP

- DHCP server, DHCP relay, DHCP snooping
- DHCP option82

POWER CONSUMPTION

- 35W

WORKING TEMPERATURE

- -20°C ~+60°C

STORAGE TEMPERATURE

- -40~+70°C

RELATIVE HUMIDITY

- 5~95% (non-condensing)

LAYER 3 ROUTE

- ARP proxy
- 4096 hardware Host Routes, 512 hardware Subnet Routes
- Supports Radius, TACACS+
- Supports IP source guard
- Supports static route, dynamic route RIP v1/v2,RIPng and OSPF v2/v3;

IPV6

- Supports NDP;
- Supports IPv6 Ping, IPv6 Telnet, IPv6 routing
- Supports ACL based on source IPv6 address, destination IPv6 address, L4 port, protocol type, etc;
- Supports MLD v1/v2 snooping (Multicast Listener Discovery snooping)

GPON FUNCTION

- T-CONT DBA
- Gemport traffic
- Is compliant with ITU-T984.x standard
- Up to 20KM transmission distance
- Supports data encryption, multi-cast, port VLAN separation, RSTP, etc
- Supports ONT auto-discovery/link detection/remote upgrade of software
- Supports VLAN division and user separation to avoid broadcast storm
- Supports power-off alarm function, for easy link problem detection
- Supports broadcasting storm resistance function
- Supports port isolation between different ports
- Supports ACL and SNMP to configure data packet filter
- Specialised design for system breakdown prevention to maintain a stable system
- Supports RSTP

DIMENSION (L*W*H)

- 442mm * 229mm * 43.6mm

WEIGHT

- Net weight of single power: 2.95kg
- Gross weight of single power: 4.15kg

TOLT - 4422			
ART. Number	308500		
	Product Description	Accessories	Power Configuration
	4*GPON 2*RJ45 2*SFP/SFP+	GPON SFP C+++ MODULE	2*AC
Chassis	Rack	1U 19Inch Standard Box	
Uplink Port	QTY	4	
	RJ45(GE)	2	
	SFP(GE)/SFP+(10GE)	2	
GPON Port	QTY	4	
	Physical Interface	SFP Slots	
	Max splitting ratio	1:128	
Management Ports		1*10/100/1000BASE-T out-band port, 1*CONSOLE port	
		1*USB2.0	
Backplane Bandwidth (Gbps)		104	
Port Forwarding Rate (Mpps)		47.616	
PON Port Specification	Transmission Distance	20KM	
	GPON port speed	Upstream 1.244Gbps, Downstream 2.488Gbps	
	Wavelength	TX 1490nm, RX 1310nm	
	Connector	SC/UPC	
	Fibre Type	9/125μm SMF	
	Supported PON module level	Class B+, C, C+, C++, C+++	
Power Supply	AC	Working Voltage Range: 100~240V, Rated Voltage: 110V/220V	
Management Mode		EMS, WEB, SNMP, Telnet, CLI	

TOLT-8422 - Layer 3 GPON OLT - 8 GPON ports

The TOLT-8422 is a 19" rack mount GPON OLT with 8 PON ports that provides flexible and fast FTTx access, suiting scenarios such as sparsely populated or remote areas, industrial parks, commercial buildings and other MDU settings including hospitality.

FEATURES

- Compact design, meets various application scenarios:
  - Supports the deployment in diverse scenarios including low density areas, remote/sparsely populated areas and industrial parks
  - Supports FTTM and sharing site/rack with wireless base stations

- Small size and lightweight, easier to transport and install:
  - Supports multiple installation modes, e.g, limited room space, basement and small rack or cabinet

- Carrier-class security protection, supports dynamic routing protocol RIP & OSPF, ensures the safe operation of the network:
  - Supports uplink redundancy protection including LACP, STP, RSTP and MSTP
  - Supports RIP & OSPF protocol
  - Supports link protection

- Lower TCO:
  - Dramatically saves on investment fees in trunk fibres, pipe engineering, and facilities. Effectively reduce CapEx and OpEx

MANAGEMENT FUNCTION

- SNMP, Telnet, CLI, WEB, SSH v2
- Fan Group Control
- Port status monitoring and configuration management
- Online ONT configuration and management
- User management
- Alarm management

LAYER 2 SWITCH

- 32K Mac address
- Supports 4096 VLANs
- Supports port VLAN
- Supports VLAN tag/Un-tag, VLAN transparent transmission
- Supports VLAN translation and QinQ
- Supports storm control based on port
- Supports port isolation
- Supports port rate limitation
- Supports 802.1D and 802.1W
- Supports static LACP, Dynamic LACP
- QoS based on port, VID, TOS and MAC address
- Access control list
- IEEE802.x flow control
- Port stability statistic and monitoring

MULTICAST

- IGMP snooping
- 2048 IP Multicast Groups

DHCP

- DHCP server, DHCP relay, DHCP snooping
- DHCP option82

POWER CONSUMPTION

- 45W

WORKING TEMPERATURE

- -20°C ~+60°C

STORAGE TEMPERATURE

- -40~+70°C

RELATIVE HUMIDITY

- 5~95% (non-condensing)

LAYER 3 ROUTE

- ARP proxy
- 4096 hardware Host Routes, 512 hardware Subnet Routes
- Supports Radius, TACACS+
- Supports IP source guard
- Supports static route, dynamic route RIP v1/v2,RIPng and OSPF v2/v3

IPV6

- Supports NDP;
- Supports IPv6 Ping, IPv6 Telnet, IPv6 routing
- Supports ACL based on source IPv6 address, destination IPv6 address, L4 port, protocol type, etc
- Supports MLD v1/v2 snooping (Multicast Listener Discovery snooping)

GPON FUNCTION

- T-CONT DBA
- Gemport traffic
- Is compliant with ITU-T984.x standard
- Up to 20KM transmission distance
- Supports data encryption, multi-cast, port VLAN separation, RSTP, etc
- Supports ONT auto-discovery/link detection/remote upgrade of software
- Supports VLAN division and user separation to avoid broadcast storm
- Supports power-off alarm function, for easy link problem detection
- Supports broadcasting storm resistance function
- Supports port isolation between different ports
- Supports ACL and SNMP to configure data packet filter
- Specialised design for system breakdown prevention to maintain a stable system
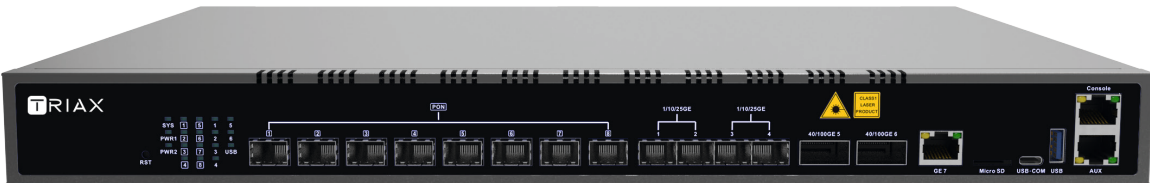- Supports RSTP

DIMENSION (L*W*H)

- 442mm * 319mm * 43.6mm

WEIGHT

- Net weight of single power: 4.05kg
- Gross weight of single power: 5.65kg

TOLT - 8422			
ART. Number	308501		
	Product Description	Accessories	Power Configuration
	8*GPON 4*RJ45 2*SF 2*SFP+	GPON SFP C+++ MODULE	2*AC
Chassis	Rack	1U 19Inch Standard Box	
Uplink Port	QTY	8	
	RJ45(GE)	4	
	SFP(GE)/SFP+(10GE)	2	
GPON Port	QTY	8	
	Physical Interface	SFP Slots	
	Max splitting ratio	1:128	
Management Ports		1*10/100/1000BASE-T out-band port, 1*CONSOLE port, 1*USB2.0	
Backplane Bandwidth (Gbps)		104	
Port Forwarding Rate (Mpps)		68.448	
PON Port Specification	Transmission Distance	20KM	
	GPON port speed	Upstream 1.244Gbps, Downstream 2.488Gbps	
	Wavelength	TX 1490nm, RX 1310nm	
	Connector	SC/UPC	
	Fibre Type	9/125µm SMF	
	Supported PON module level	Class B+, C, C+, C++, C+++	
Power Supply	AC	Working Voltage Range: 100~240V, Rated Voltage: 110V/220V	
Management Mode		EMS, WEB, SNMP, Telnet, CLI	

TOLT-842X 8-Port 10G Combo PON/GPON OLT

The TOLT-842X is an innovative 10G GPON OLT product with 8 PON ports with XG (S) - PON & GPON Combo compatibility and supports single GPON mode, giving customers more networking possibilities and the flexibility to choose the appropriate bandwidth access mode according to current applications and future business needs. In the early stage of construction, customers can choose to consider reducing investment costs and switch any of the 8 PON to single GPON mode and then switch to XG(S)-PON&GPON Combo mode according to future requirements. They can also choose the smooth upgrade from GPON to XG(S)-PON, and switch to XG(S)-PON & GPON Combo mode in the early stage, ensuring the stability of the original functionality during any upgrades. TOLT-842X provides 1*GE (RJ45) + 4*25GE (SFP28) + 2*100GE (QSFP28) uplink ports to achieve full-speed data forwarding and meet the needs of high-bandwidth, high-speed data transmission and large-scale deployment.

FEATURES

- High Performance Chipset
- 100Gbps QSFP28 High-Speed Uplink
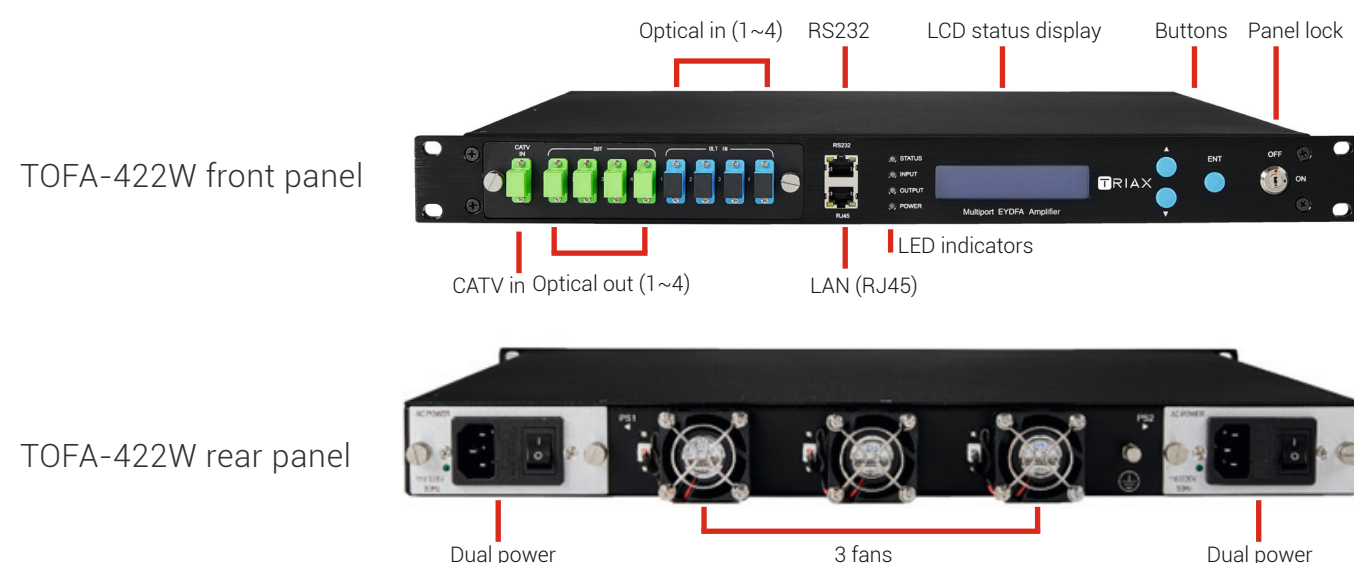- Supports XGS-PON/XG-PON/GPON triple mode for Flexible Networking

TOLT - 842X			
ART. Number	308502		
	Product Description	Accessories	Power Configuration
	8*XG(S)-PON/GPON 1*GE(RJ45) 4*25GE(SFP28) 2*100GE(QSFP28)	Class C++++ module (Single GPON mode)	2*AC POWER
Chassis	Rack	1U 19Inch Standard Box	
Uplink Port	QTY	8	
	RJ45(GE)	1	
	SFP28(25GE)	4	
	QSFP28(25GE/50GE/100GE)	2	
	QTY	8	
	Physical Interface	SFP+ Slots	
XG(S)-PON/GPON port	Connector Type	XG(S)-PON&GPON Combo mode: N2_C+	
		Single GPON mode: Class B+/C/C+/C++/C+++/C++++	
	Optical Splitting Ratio	1:256(Maximum), 1:128(Recommended)	
Management Ports		1*10/100/1000BASE-T out-band port, 1*CONSOLE port, 1*USB3.0,	
		1*Type-C USB console, 1*Micro SD port	
Backplane Bandwidth (Gbps)		1960	
Port Forwarding Rate (Mpps)		566.928	
XG(S)-PON&GPON Combo Port Specification	Transmission Distance	20KM	
	XG(S)-PON Port Speed	GPON: Upstream1.244Gbps, Downstream 2.488Gbps	
		XG-PON: Upstream 2.488Gbps, Downstream 9.953Gbps	
		XGS-PON: Upstream 9.953Gbps, Downstream 9.953Gbps	
	Wavelength	GPON: Upstream 1310nm, Downstream 1490nm	
		XG(S)-PON: Upstream: 1270nm Downstream: 1577nm	
	Supported PON ports	PON 1~8 (8 PON ports are in XG(S)-PON&GPON Combo mode by default)	
GPON Port specification	Transmission Distance	20KM	
	GPON Port Speed	Upstream: 1.244Gbps, Downstream: 2.488Gbps	
	Wavelength	Upstream: 1310nm, Downstream: 1490nm	
	Supported PON ports	PON 1~8 (Each PON port can be manually hot switched to GPON mode)	
Lightning Protection	Power Lightning Protection	6KV	
	Interface Lightning Protection	4KV	
Power Supply	AC	Working Voltage Range: 100~240V, Rated Voltage: 110V/220V	
Number of Fans		4	
Management Mode		CLI (Console/Telnet/SSH) / WEB	

MANAGEMENT FUNCTION
- SNMP, Telnet, CLI, WEB, SSH v2
- Fan Group Control
- Port Status monitoring and configuration management
- Online ONT configuration and management
- User management
- Alarm management

LAYER 2 SWITCH
- 32K Mac address
- Supports 4096 VLANs
- Supports port VLAN
- Supports VLAN tag/Un-tag, VLAN transparent transmission
- Supports VLAN translation and QinQ
- Supports storm control based on port
- Supports port isolation
- Supports port rate limitation
- Supports 802.1D and 802.1W
- Supports static LACP, Dynamic LACP
- QoS based on port, VID, TOS and MAC address
- Access control list
- IEEE802.x flow control
- Port stability statistic and monitoring

MULTICAST
- IGMP snooping
- 2048 IP Multicast Groups

DHCP
- DHCP server, DHCP relay, DHCP snooping
- DHCP option82

LAYER 3 ROUTE
- ARP proxy
- 4096 hardware Host Routes, 512 hardware Subnet Routes
- Supports Radius, TACACS+
- Supports IP source guard
- Supports static route, dynamic route RIP v1/v2,RIPng and OSPF v2/v3

IPV6
- Supports NDP
- Supports IPv6 Ping, IPv6 Telnet, IPv6 routing
- Supports ACL based on source IPv6 address, destination IPv6 address, L4 port, protocol type, etc
- Supports MLD v1/v2 snooping

PON FUNCTION
- T-CONT DBA
- X-Gem traffic
- Is compliant with ITU-T G.9807 (XGS- PON) ,ITU-T G.987(XG-PON) and ITU-T 984.x
- Up to 20KM transmission Distance
- Supports data encryption, multi-cast, port VLAN, separation, RSTP, etc
- Supports ONT auto-discovery/link detection/remote upgrade of software
- Supports VLAN division and user separation to avoid broadcast storm

- Supports power-off alarm function, for easy link problem detection
- Supports broadcasting storm resistance function
- Supports port isolation between different ports
- Supports ACL and SNMP to configure data packet filter
- Specialised design for system breakdown prevention to maintain a stable system
- Supports RSTP, IGMP Proxy

DIMENSION (L*W*H)
- 442mm*330mm*43.6mm

WEIGHT
- Net weight: 4.8 KG

POWER CONSUMPTION
- 150W

WORKING ENVIRONMENT
- Working Temperature: -20°C ~+60°C
- Working Humidity: 5%~95% (non- condensing)

STORAGE ENVIRONMENT
- Storage Temperature: -40 ~ +70°C
- Storage Humidity: 5%~95% (non- condensing)

TOFA-422W - 4 Port 1550nm High Power PON EYDFA

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 is not less than 19dBm/22dBm (optical power level selectable), replacing multip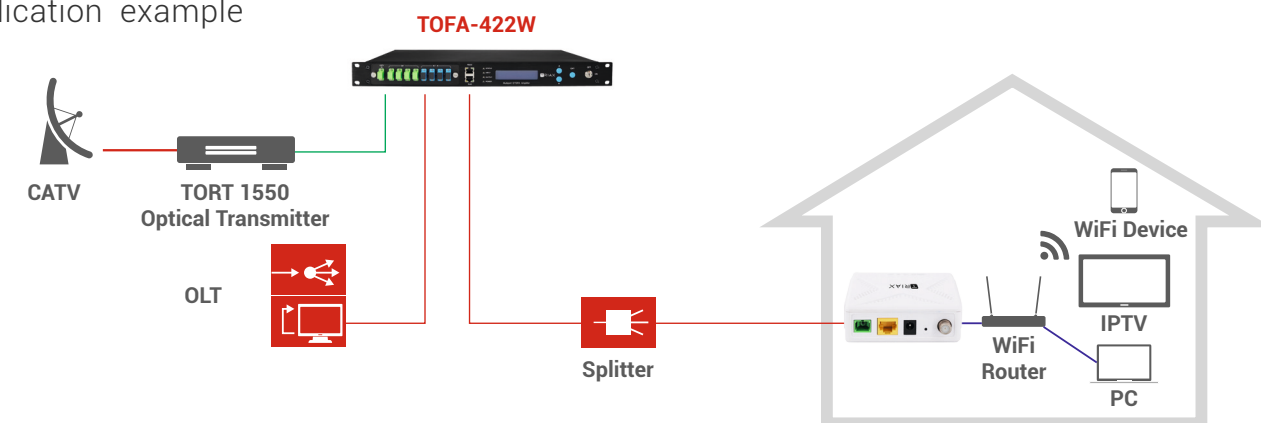le EDFA units. Each output port has built in CWDM to multiplex CATV signal and OLT PON Data flow, ideal for FTTH applications. The TOFA-422W offers excellent performance and reliability and supports network management and power redundancy.

Application example

TOFA-422W

CATV   TORT 1550 Optical Transmitter

OLT

Splitter

WiFi Device

IPTV

WiFi Router

PC

Optical in (1~4)   RS232   LCD status display   Buttons   Panel lock

TOFA-422W front panel

LED indicators

CATV in   Optical out (1~4)   LAN (RJ45)

TOFA-422W rear panel

Dual power   3 fans   Dual power

FEATURES

▪ TOFA-422W adopts a high-quality pump laser and double cladding active fibre

▪ Each output port has built in CWDM

▪ Compatible with any FTTx PON: EPON, GPON, 10GPON

▪ Perfect 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 protection of low input or no input. When the optical power at input is lower than the set value, the laser will automatically shut down to protect the operating safety of the device

▪ Output adjustable, adjustment range from 0~-4dBm

▪ 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-422W 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

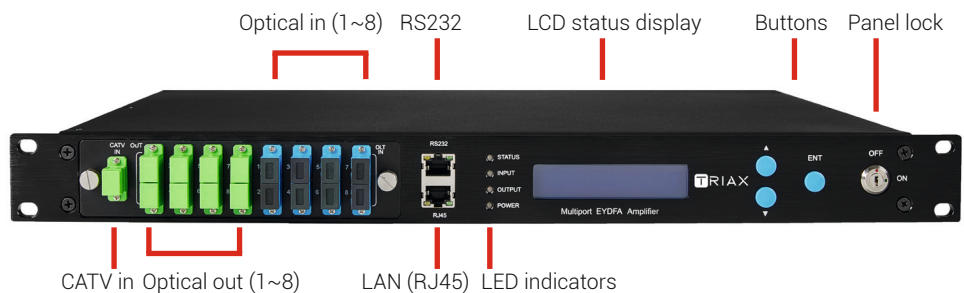| TOFA - 422W					
ART. Number	308550				
EAN Number	5061038085334				
		Product Description		Output Power	Power Configuration
Ordering Information		4*SC/APC (Output) 4*SC/UPC(PON Input) 1*SC/APC (CATV Input)		4*22dBm	2*AC
Items	Unit	Min.	Typ.	Max.	Remarks
Optical					
CATV Operating Wavelength	nm	1545		1565	
OLT PON Pass Wavelength	nm		XPON:1310/1490 10G PON:1270/1577		
Optical Input Range	dBm	-3		10	1dBm interval
Output Power	dBm			37	
No. of OLT PON Ports	No.			4	SC/UPC
No. of COM Ports	No.			4	SC/APC
CATV Pass Loss	dB			0.8	
OLT Pass Loss	dB			0.8	0.1dB each step
Output Adjustment Range	dB	-4		0	
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	
Insertion Loss of Optical Switch	dB			0.8	
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 SUPPORT			
Power Supply	V	90		265	AC
Power Consumption	W			70	Dual power supply
General					
Operating Temp	°C	-5		65	
Storage Temp	°C	-40		85	
Operating Relative Humidity	%	5		95	
Dimension W x L x H	mm	370×483×44			
Weight	Kg	5.5			

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

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 19dBm/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.

Application chart

TOFA-822W front panel

Optical in (1~8)　RS232　LCD status display　Buttons　Panel lock

CATV in　Optical out (1~8)　LAN (RJ45)　LED indicators

TOFA-822W rear panel

Dual power　3 fans　Dual power
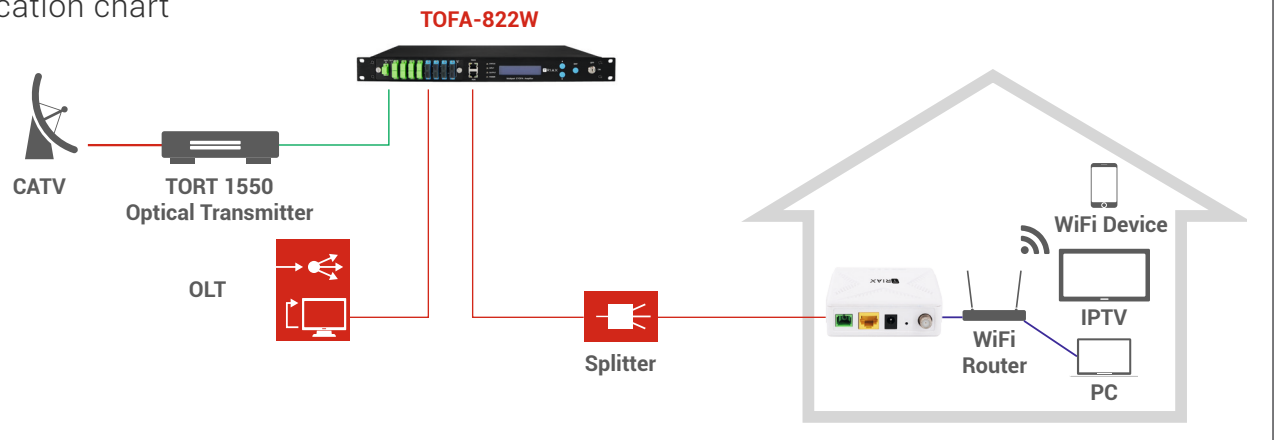
FEATURES

- TOFA-822W adopts a high-quality pump laser and double cladding active fibre

- Each output port has built in CWDM

- Compatible with any FTTx PON: EPON, GPON, 10GPON

- Perfect 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 protection of low input or no input. When the optical power at input is lower than the set value, the laser will automatically shut down to protect the operating safety of the device

- Output adjustable, adjustment range from 0~-4dBm

- 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

TOFA - 822W					
ART. Number		308551			
EAN Number		5061038085341			
		Product Description		Output Power	Power Configuration
		8*SC/APC (Output) 8*SC/UPC(PON Input) 1*SC/APC (CATV Input)		8*22dBm	2*AC
Items	Unit	Min.	Typ.	Max.	Remarks
Optical					
CATV Operating Wavelength	nm	1545		1565	
OLT PON Pass Wavelength	nm	XPON:1310/1490 10G PON:1270/1577			
Optical Input Range	dBm	-8		+10	1dBm interval
Output Power	dBm			37	
No. of OLT PON Ports	No.			8	SC/UPC
No. of COM Ports	No.			8	SC/APC
CATV Pass Loss	dB			0.8	
OLT Pass Loss	dB	-4		0.8	0.1dB each step
Output Adjustment Range	dB			0	
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	
Insertion Loss of Optical Switch	dB			0.8	
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 SUPPORT			
Power Supply	V	90		265	AC
Power Consumption	W			70	Dual power supply
General					
Operating Temp	°C	-5		65	
Storage Temp	°C	-40		85	
Operating Relative Humidity	%	5		95	
Dimension W x L x H	mm	370×483×44			
Weight	Kg	5.5			

TOLT-SFP GPON Class C+++ SFP OLT Transceiver

FEATURES

- SFP with SC/PC Connector Transceiver
- 1490 nm DFB Tx with isolator
- 1310 nm APD Rx
- Digital diagnostics SFF-8472 Compliant
- 2488 Mbps continuous mode Transmission
- 1244 Mbps Burst mode receiver Data Rate
- RX Fast Burst Mode Detection
- Provide fast RSSI function
- Operation case temperature: 0~70°C
- Class D+ link budget
- Complies with ITU-T G984.2 Amendment 1
- Complies with RoHS directive (2002/95/EC)

TOLT - SFP	
ART. Number	308600
Product Description	SFP GPON OLT / Tx1490 / Rx1310 / 20km / Tx2.5G / Rx1.25G / G984.2 Class D+ / 0~70°C / SC receptacle / Po>8dBm

# TOLT-SFP+ XGS-PON/GPON Combo OLT Optical Transceiver

FEATURES

- Compliant with ITU-T G.9807.1, ITU-T G.987.2 and G.984.2 application
- XGS-PON 1577nm 9.953G continuous-mode transmitter with EML laser, 1270nm 9.953G&2.488G burst-mode receiver with APD-TIA (with RESET), with GPON 1490nm 2.488G continuous-mode transmitter with DFB laser, 1310nm 1.244G burst-mode receiver with APD-TIA (with RESET)
- 2-wire interface for integrated digital diagnostic monitoring
- Digital receiving signal strength indication (RSSI)
- SFP+ MSA package with SC/UPC receptacle optical interface
- +3.3V power supply
- Operating case temperature 0~70°C
- RoHS compliance

TOLT - SFP+			
ART. Number	308601		
Product Description	GPON-XGSPON Combo OLT, compatible with GPON OLT C+ and XGS-PON OLT N2, TX 1490nm 2.488Gbps, Burst RX 1310nm 1.244Gbps, TX 1577nm 9.95Gbps, Burst RX 1270nm 9.95Gbps, SFP+ form-factor, BIDI SC/UPC Receptacle, 0~70°C		

Parameter	Unit	Min.	Typical	Max.
Storage Temperature	°C	-40		85
Operating Case Temperature	°C	0		70
Storage Humidity	%	5		90
Operating Relative Humidity	%	5		85
Power Supply Voltage	V	3.135	3.3	3.465
Power Supply Consumption	W			3
Bit Rate for Tx 1577nm	Gbps	9.953		
Bit Rate for Rx 1270nm	Gbps	2.488	9.953	
Bit Rate for Tx 1490nm	Gbps	2.488		
Bit Rate for Rx 1310nm	Gbps	1.244		

TONU-1000 GE ONU

TONU-1000 (XPON 1GE ONU) is specially designed to meet the needs of telecom operators for FTTO (office), FTTD (desktop), FTTH (home), SOHO broadband access, video surveillance, etc. The ONU is based on high-performance chip technology solutions and supports Layer 2 / Layer 3 functions, providing data services for carrier-grade FTTH applications.

The ONU has high reliability and can be applied to a wide temperature environment; and has a powerful firewall function, which is easy to manage and maintain. It provides a QoS guarantee for different services. The ONU complies with international technical standards such as IEEE802.3ah and ITU-T G.984.

### Application example
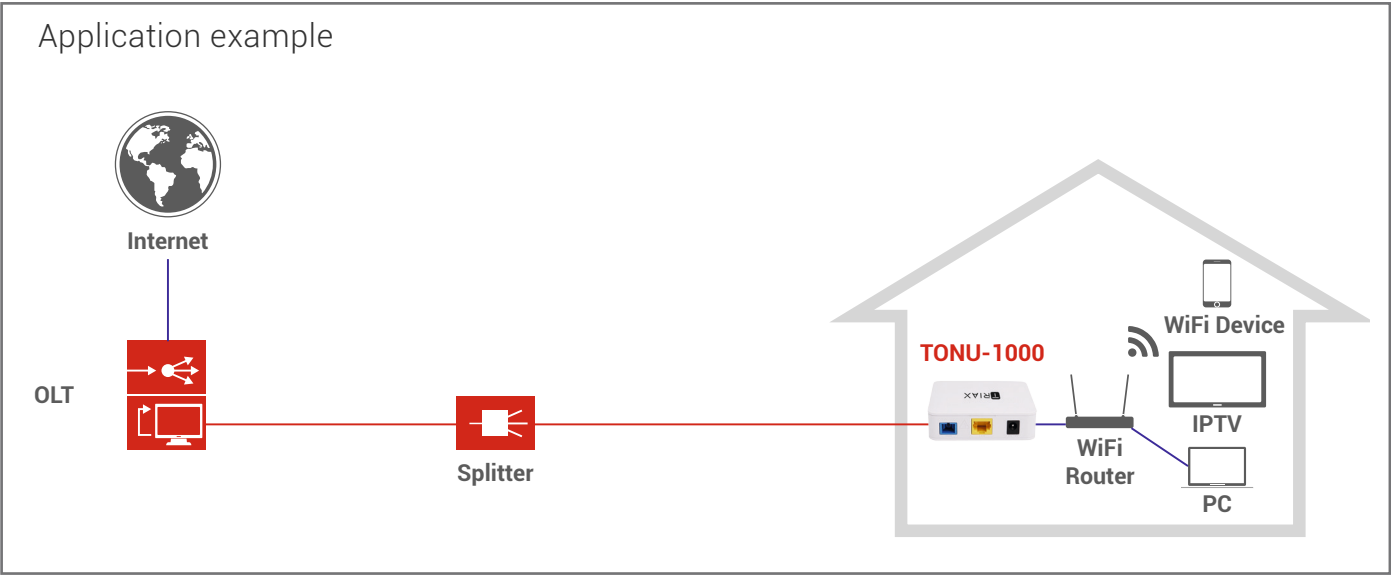
FEATURES

- XPON Dual Mode can automatically access EPON/GPON
- Rogue ONU detection compliant
- Powerful Firewall
- Wide Working Temperature: -25℃~+55℃

TONU-1000		
ART. Number	308700	
	Product Description	Accessories
	1*GE	AC-DC power adapter, DC12V/0.5A
Interface		
PON	1 XPON port (EPON PX20+ & GPON Class B+) SC single mode, SC/UPC connector TX optical power: 0~+4dBm RX sensitivity: -27dBm Overload optical power: -3dBm (EPON) or - 8dBm (GPON) Transmission distance: 20KM, Wavelength: TX 1310nm, RX1490nm	
LAN	1*GE, Auto-negotiation, RJ45 connector	
Function data		
XPON mode	Dual mode, Auto-access to EPON/GPON OLT	
Uplink mode	Bridging and Routing Mode	
Abnormal protection	Detecting Rogue ONU, Hardware Dying Gasp	
Firewall	DDOS, Filtering Based on ACL/MAC/URL	
Product features		
Basic	Supports MPCP discover & register Supports authentication MAC/LOID/MAC + LOID Supports Triple Churning Supports DBA bandwidth Supports auto-detecting, auto-configuration, and auto firmware upgrade Supports SN/Psw/LOID/LOID+Psw authentication	
Alarm	Supports Dying Gasp, Port Loop Detect, Ethernet Port LOS	
LAN	Supports Port rate limiting Supports Loop detection Supports Flow control Supports Storm control	
WLAN	Supports VLAN tag mode Supports VLAN transparent mode Supports VLAN trunk mode (max 8 vlans) Supports VLAN 1:1 translation mode (≤8 vlans)	
Multicast	Supports IGMPv1/v2/Snooping Max Multicast vlan 8, Max Multicast Group 64	
QoS	Supports 4 queues, SP and WRR, 802.1P	
L3	Supports IPv4/IPv6 Supports DHCP/PPPOE/Static IP Supports Static route Supports NAT	
Management	Supports CTC OAM 2.0 and 2.1 Supports ITUT984.x OMCI Supports WEB Supports TELNET Supports CLI	
Electrical		
Power adapter	DC 12V, 0.5A, external AC-DC power adaptor, ≤4W	
Indicators	SYS, LINK/ACT, REG	
General		
Operating condition	Operating temperature: -10 ~ +55°C Operating humidity: 5 ~ 95% (non-condensing)	
Storage condition	Storage temperature: -40 ~ +70°C Storage humidity: 5~ 95% (non-condensing)	
Packaging size (L x W x H) / Net weight	82x82x25mm / 0.85Kg	

TONU-1010 GE ONU + CATV

With the added feature of a CTAV Output the TONU-1010 (XPON 1GE ONU) is specially designed to meet the needs of telecom operators for FTTO (office), FTTD (desktop), FTTH (home), SOHO broadband access, video surveillance, etc. The ONU is based on high-performance chip technology solutions and supports Layer 2/Layer 3 functions, providing data services for carrier-grade FTTH applications.

The ONU has high reliability and can be applied to a wide temperature environment and has a powerful firewall function, which is easy to manage and maintain. It can provide QoS guarantee for different services. The ONU complies with international technical standards such as IEEE802.3ah and ITU-T G.984.
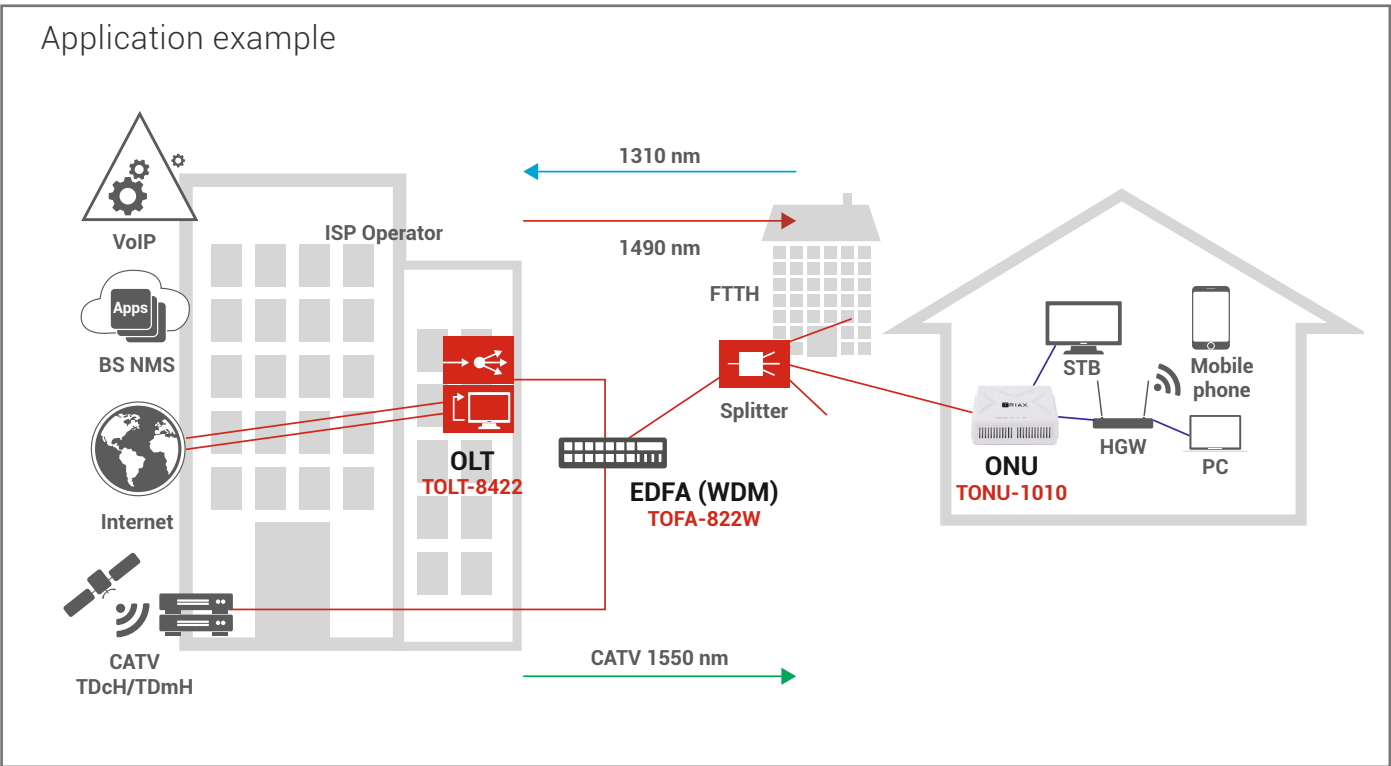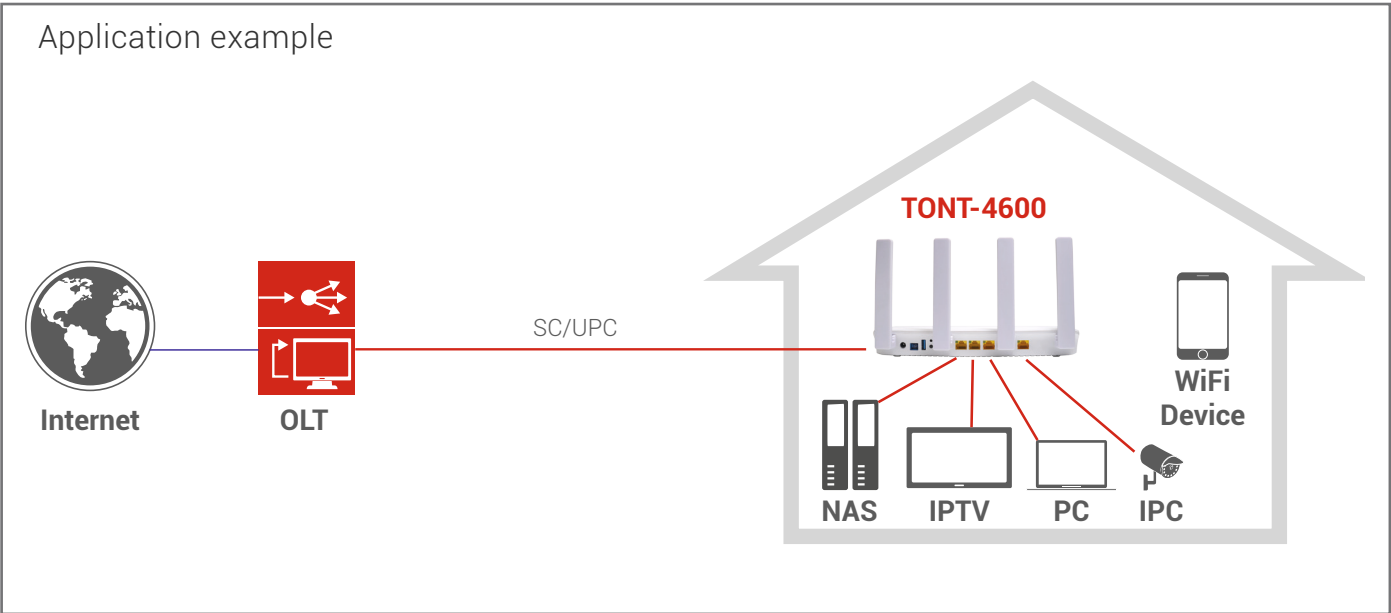
FEATURES

- XPON Dual Mode, can automatically access EPON/GPON
- Routing & Bridging Mode
- High Performance Solution
- Remote Control CATV (with AGC) on/off

TONU-1010		
ART. Number	308701	
	Product Description	Accessories
	1*GE + CATV (AGC)	AC-DC power adapter, DC12V/0.5A
Interface		
PON	1 XPON port (EPON PX20+ & GPON Class B+) SC single mode, SC/UPC connector TX optical power: 0~+4dBm RX sensitivity: -27dBm Overload optical power: -3dBm (EPON) or - 8dBm (GPON) Transmission distance: 20KM, Wavelength: TX 1310nm, RX1490nm, CATV 1550nm	
LAN	1*GE, Auto-negotiation, RJ45 connector	
CATV	RF Optical power: +2~-18dBm Optical receiving wavelength: 1550±10nm RF frequency range: 47~1000MHz RF output impedance: 75Ω RF output level: ≥ 70dBuV(0~-15dBm) AGC range: 0~-15dBm MER: ≥32dB (-14dBm optical input)	
Function data		
PON mode	XPON Dual Mode	
Uplink mode	Bridging and Routing Mode Will connect with most mainstream OLTs	
CATV	Supports CATV Remote management	
Standard	Supports CTC OAM 2.1 and 3.0 Supports ITUT984.x OMCI	
Layer 2	802.1D&802.1ad bridging 802.1p CoS 802.1Q VLAN	
Layer 3	IPv4 DHCP Client/Server PPPoE, NAT, DMZ, DDNS	
Multicast	IGMP v2/v3, IGMP snooping	
Security and Firewall	Prevent Rogue ONU DDOS, Filtering Based on ACL/MAC/URL	
O&M	Supports EMS\WEB\Telnet\CLI and unified network management of TRIAX OLT	
Electrical		
Power adapter	DC 12V, 0.5A, external AC-DC power adaptor, ≤4W	
Indicators	SYS, LINK/ACT, REG	
Interfaces	1GE + CATV	
Operating condition	Operating temperature: -10 ~ +55°C Operating humidity: 5 ~ 95% (non-condensing)	
Storage condition	Storage temperature: -40 ~ +70°C Storage humidity: 5~ 95% (non-condensing)	
Packaging size (L x W x H) / Net weight	100 x 92 x 30mm / 0.140Kg	

Application example

TONT-4600 1XPON + 4LAN + 1USB3.0 + Wi-Fi6 ONT

TONT-4600 (1∗2.5GbE, 3∗GE, Wi-Fi6, XPON, HGU ONT) is a broadband access device specially designed to meet the needs of fixed network operators for FTTH. The ONT is based on high-performance chip solutions, supports XPON dual-mode technology (EPON and GPON), and supports IEEE802.11b/g/n/ac/ax Wi-Fi 6 technology and other Layer 2/Layer 3 functions, providing data service for carrier-grade FTTH applications.

In addition, the ONT also supports the OAM/OMCI protocol and various services of the ONT can be configured and managed on the TRIAX TOLT. The ONT has high reliability, is easy to manage and maintain and has QoS guarantees for various services. It conforms to a series of international technical standards such as IEEE802.3ah and ITU-T G.984

FEATURES

- XPON + Wi-Fi6 + Gig+ performance
- Next-Gen Gigabit Wi-Fi6 2.4GHz & 5GHz Dual Band
- IPv4/IPv6 Dual Stack
- USB3.0 Interface for Shared Storage/Printer

Application example

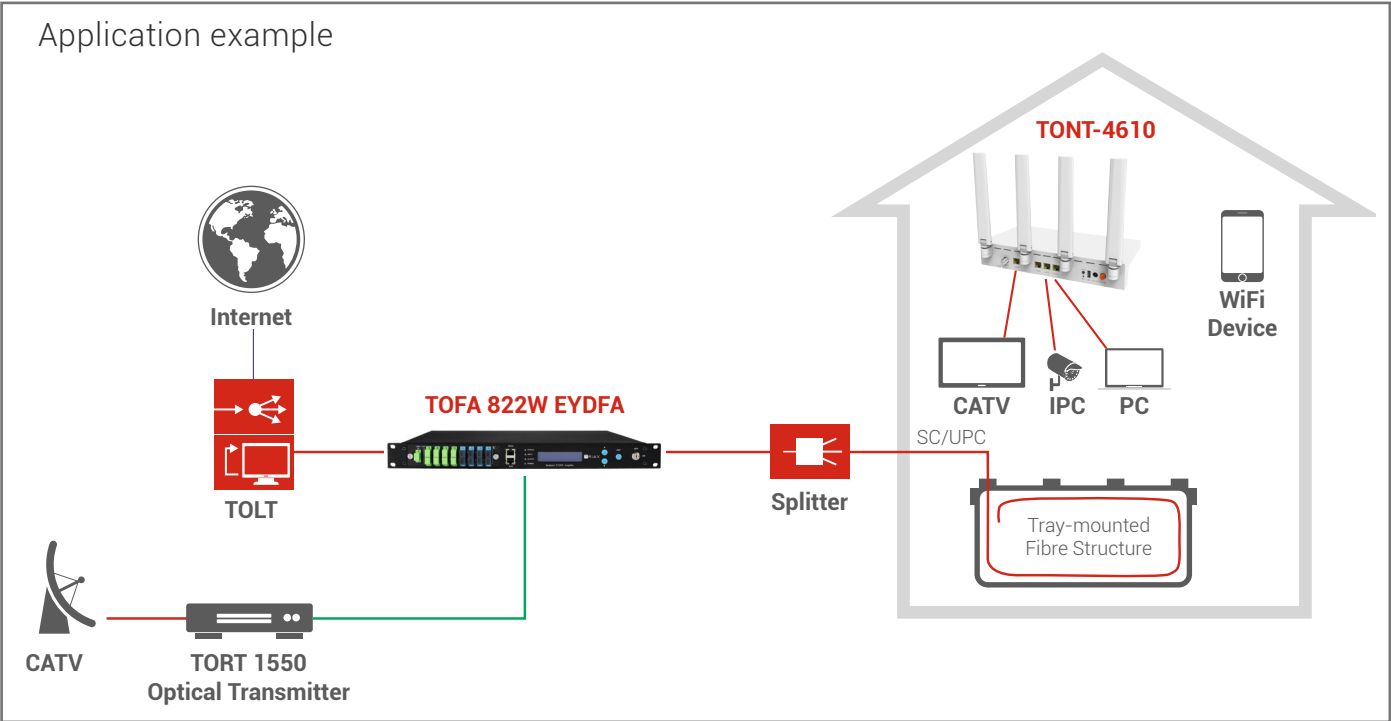|	TONT-4600	
ART. Number	308702	
	Product Description	Accessories
	1∗XPON + 1∗2.5GbE + 3∗GE + WiFi6	AC-DC power adapter, DC12V/0.5A
Interface		
PON	1XPON port (EPON PX20+ and GPON Class B+) SC single mode, SC/UPC connector TX optical power: 0~+4dBm RX sensitivity: -27dBm Overload optical power: -3dBm(EPON) or - 8dBm(GPON) Transmission distance: 20KM Wavelength: TX 1310nm, RX1490nm	
User interface	1 x 2.5GbE + 3 x GE Auto-negotiation RJ45 ports	
Antenna	4 ×5dBi external antennas	
USB	1× USB 3.0 for shared storage/printer	
Function data		
O&M	WEB/TELNET/OAM/OMCI/TR069 Supports private OAM/OMCI protocol and Unified network management of TRIAX OLT	
Internet connection	Supports Routing Mode	
Multicast	IGMP v1/v2/v3, IGMP snooping MLD v1/v2 snooping	
Wi-Fi	Wi-Fi 6: 802.11a/n/ac/ax 5GHz & 802.11g/b/n/ax 2.4GHz Wi-Fi Encryption: WEP-64/WEP-128/ WPA/WPA2/WPA3 Supports OFDMA, MU-MIMO, Dynamic QoS, 1024-QAM Smart Connect for one Wi-Fi name - One SSID for 2.4GHz and 5GHz dual band	
L2	802.1D&802.1ad bridge, 802.1p CoS, 802.1Q VLAN	
L3	IPv4/IPv6, DHCP Client/Server,PPPoE, NAT, DMZ, DDNS	
Firewall	Anti-DDOS, Filtering Based on ACL/MAC/URL	
Electrical		
Power adapter	DC 12V, 1.5A, external AC-DC power adaptor, ≤12W	
Indicators	PWR, PON, LOS, WAN, WiFi, ETH1~4, WPS, USB	
Interfaces	1∗XPON + 1∗2.5GbE + 3∗GE + WiFi6	
General		
Operating condition	Operating temperature: -10 ~ +55°C	
	Operating humidity: 5 ~ 95% (non-condensing)	
Storage condition	Storage temperature: -40 ~ +70°C	
	Storage humidity: 5~ 95% (non-condensing)	
Packaging size (L x W x H) / Net weight	250 x 145 x 36mm / 0.34Kg	

TONT-4610 1XPON + 4LAN + 1USB3.0 + CATV + Wi-Fi6 HGU ONT

TONT-4610 (4GE+CATV+WiFi6 XPON HGU ONT) is a broadband access device designed to meet the demands of fixed network operators for FTTH and triple-play services. This ONT is based on a high performance chip solution, supporting XPON dualmode technology (EPON and GPON). With Wi-Fi speeds of up to 3000Mbps, it also supports IEEE 802.11b/g/n/ac/ax Wi-Fi 6 technology and other Layer 2/Layer 3 features, providing data services for carrier-grade FTTH applications.

In addition, this ONT supports OAM/OMCI protocols, allowing configuration and management of various services on the TRIAX TOLT, making it easy to manage and maintain, and ensuring QoS for various services. It complies with international technical standards such as IEEE802.3ah and ITU-T G.984.
With a bottom disc fibre structure design to tidy fibre cable, it can be placed on a desktop or wall-mounted, adapting effortlessly to various locations.

FEATURES

- High Performance Solution
- Next-Gen Gigabit Wi-Fi6 2.4GHz & 5GHz Dual Band Speed up to 3Gbps
- Tray-mounted Fiber Structure

Application example

	TONT-4610	
ART. Number	308703	
	Product Description	Accessories
	1*XPON + 4*GE + 1USB3.0 + CATV + Wi-Fi6	AC-DC power adapter, DC12V/0.5A
Interface		
PON	1XPON port (EPON PX20+ and GPON Class B+) SC single mode, SC/UPC connector TX optical power: 0~+4dBm RX sensitivity: -27dBm Overload optical power: -3dBm(EPON) or - 8dBm(GPON) Transmission distance: 20KM Wavelength: TX 1310nm, RX1490nm	
User interface	4 x GE, Auto-negotiation, RJ45 ports	
Antenna	2.4GHz 2T2R, 5GHz 3T3R	
CATV	Optical receiving wavelength: 1550±10nm, optical input range: +2~-18dBm Optical reflection loss: ≥40dB RF frequency range: 47~1000MHz, RF output impedance: 75Ω RF output level and AGC range: ≥81±2dBuv@+1~-10dBm ≥79±2dBuv@ 0~-11dBm ≥77±2dBuv@-1~-12dBm ≥75±2dBuv@-2~-13dBm ≥73±2dBuv@-3~-14dBm ≥71±2dBuv@-4~-15dBm MER: ≥ 32dB (-14dBm optical input)	
Function data		
O&M	WEB/TELNET/OAM/OMCI/TR069 Supports private OAM/OMCI protocol and Unified network management	
Internet connection	Supports Routing Mode	
Multicast	IGMP v1/v2/v3, IGMP snooping, MLD v1/v2 snooping	
Wi-Fi	Wi-Fi 6: 802.11a/n/ac/ax 5GHz, 2.4GHz - 2.4GHz 2×2, 5GHz 3×3, 5 antenna 4*External antenna,1*Internal antenna, rate up to 3Gbps, Multiple SSID Wi-Fi Encryption: WPA/WPA2/WPA3 Supports OFDMA, MU-MIMO, Dynamic QoS, 1024-QAM Smart Connect for one Wi-Fi name - One SSID for 2.4GHz and 5GHz dual band	
L2	802.1 p CoS, 802.1Q VLAN	
L3	IPv4/IPv6, DHCP Client/Server, PPPoE, NAT, DMZ, DDNS	
Firewall	Anti-DDOS, Filtering Based on ACL/MAC/URL	
Electrical		
Power adapter	DC 12V, 1.5A, external AC-DC power adaptor, ≤18W	
Indicators	PWR, PON, LOS, WAN, LAN1~4, 2.4G, 5.0G, WPS, USB, CATV	
Interfaces	1*XPON + 4*GE + 1*USB3.0 + CATV + Wi-Fi6	
General		
Operating condition	Operating temperature: -10 ~ +55°C	
	Operating humidity: 5 ~ 95% (non-condensing)	
Storage condition	Storage temperature: -40 ~ +70°C	
	Storage humidity: 5~ 95% (non-condensing)	
Packaging size (L x W x H) / Net weight	260 x 157.4 x 45.8mm / 0.55Kg	

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TRIAX is a global supplier of reliable, innovative products and solutions for the reception and distribution of video, audio and data signals.

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