


ETU-LINK

Optical Communication System

PON Series

GPON

EGPS3412-3SCDBM2

GPON Stick SFP ONU Transceiver

- Simplex SC/UPC or SC/APC Connector, Integrated Diplexer Transceiver
- SFP MSA, digital diagnostics SFF-8472 Compliant
- Compliant to FSAN G.984.5 Specifications
- 1244 Mbps Tx, 2488 Mbps Rx Asymmetric Data Rate
- Operating case temperature: 0~70°C or -40~85C
- Subscriber location identifier (SLID)
- PON Link Status notification
- Dying Gasp notification
- Supports Time of Day and 1PPS interface
- Response the TX power shut-down command from OLT when OLT detect anomaly
- C Layer GEM encapsulation mode
- OMCI support per ITU-T G.988
- 28 dB link budget; Class B+, 20 km reach
- Compliant to IEC-60825 Class 1 laser diode
- RoHS compliant
- Internal Calibration



Product Applications

- Providing pluggable GPON ONU function for Ethernet Switch, Router, Home gateway & other customer premises equipment

Standards

- Compliant with ITU-T G.984.x (G.984.5 support)
- Compliant with SFP MSA, INF-8074i
- Compliant with SFF-8472
- Compliant with FDA 21 CFR 1040.10 & 1040.11, Class I
- Compliant with IEEE 802.3
- Compliant with ITU-T G.984.2 Amd1, Class B+

General description

ETU is a G.984.5 (GPON) Optical Network Terminal (ONT) with Small Form-factor Pluggable (SFP) packaging. The ETU integrates a bi-directional optical transceiver function and GPON MAC function. By being plugged into the customer premise equipment (CPE) with standard SFP port directly, the ETU provides an asymmetric 1.244Gbps upstream 2.488 Gbps downstream GPON uplink to the CPE without requiring separate power supply.

The ETU supports a sophisticated ONT management system, including alarms, provisioning, DHCP and IGMP functions for a stand-alone IPTV solution at the ONT.

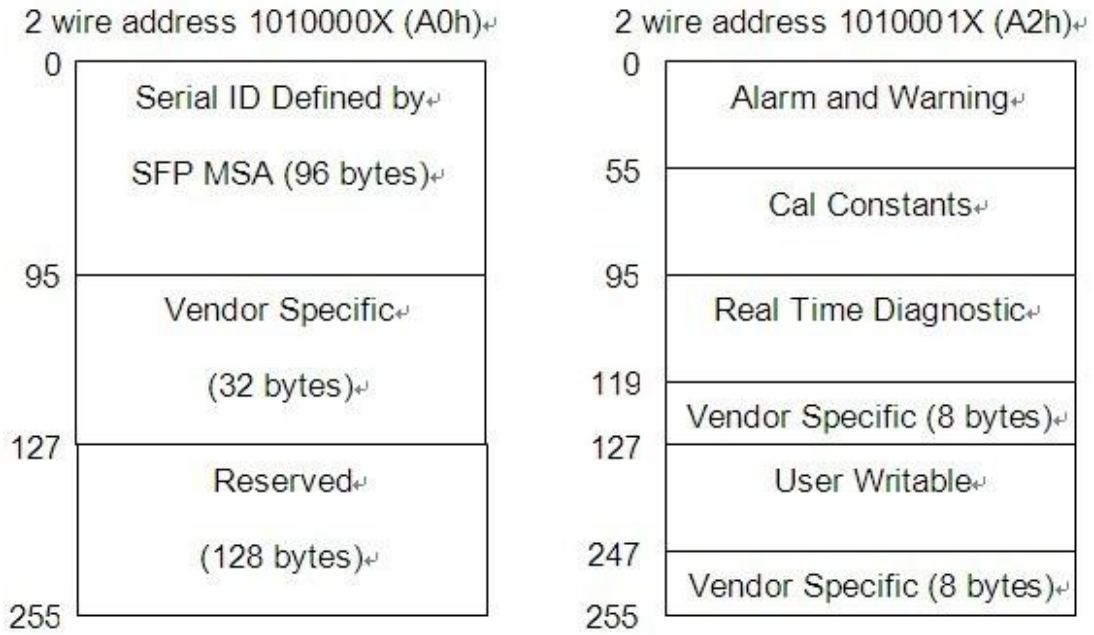
The ETU supports Time of Day and 1PPS interface.

The ETU can be managed from the OLT over the GPON using G.988 OMCI.

The ETU fits seamlessly into existing communications equipment, providing service providers with a smooth upgrade to GPON. The ETU solution vastly decreases the installation costs of deploying fiber access in MDUs and enables service providers to improve their revenue streams while decreasing OPEX.

The module provides digital diagnostic information of its operating conditions and status, including transmitting power, laser bias, receiver input optical power, module temperature, and supply voltage. Calibration and alarm / warning threshold data are written and stored in internal memory (EEPROM). The memory map is compatible with SFF-8472, as shown in Fig.

The diagnostic data are raw A/D values and must be converted to real world units using calibration constants stored in EEPROM locations 56 – 95 in A2h.



Block Diagram

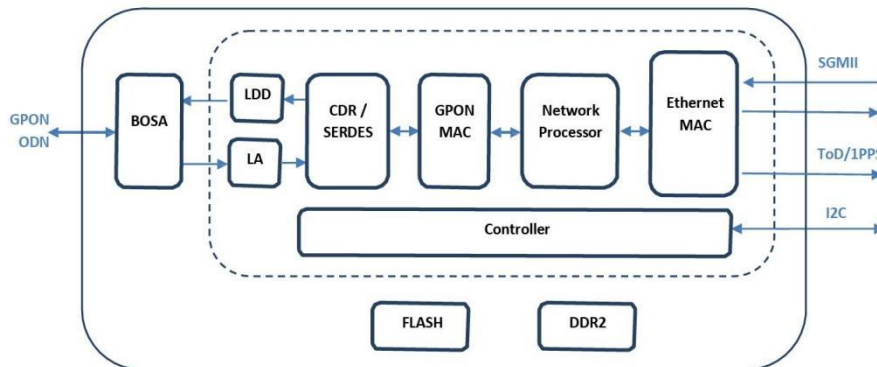


Figure 1, Block Diagram

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Tst	-40	+85	°C	
Operating Case Temperature	Tc	0	70	°C	
		-40	85		
Input Voltage	-	GND	Vcc	V	
Power Supply Voltage	Vcc-Vee	-0.5	+3.6	V	
Damage Threshold For Receiver	-	-	4	dBm	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	-
Operating Case Temperature	Tc	0	-	70	°C	
		-40	-	85		
Total Supply Current	-	-	-	600	mA	-
Bit Rate Tx	BR(Tx)		1244.16		Mbps	
Bit Rate Rx	BR(Rx)		2488.32		Mbps	
Transmitting Distance	TD			20	km	

Optical Specification

Transmitter						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate	DR	-	1.244	-	Gbps	-
Optical Central Wavelength	λ	1290	1310	1330	nm	
Spectral Width (-20dB)	$\Delta\lambda$	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Optical Output Power	Po	0.5	-	5	dBm	
Extinction Ratio	Er	10	-	-	dB	-
Transmitter Reflectance	-	-	-	-12	dB	
Tx Burst ON Time	Ton	-	-	12.8	ns	-
Tx Burst OFF Time	Toff	-	-	12.8	ns	-
Rise/Fall Time	Tr/Tf	-	-	250	ps	-
Average Launched Power of Off	Poff	-	-	-45	dBm	-
Transmitter						
Output Eye	Compliant with ITU-T G.984.2					
Receiver						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate	DR	-	2.488	-	Gbps	-
Operate Wavelength	-	1480	-	1500	nm	-
Sensitivity	Pr	-	-	-28	dBm	1

Saturation	Ps	-8	-	-	dBm	1
SD De-assert Level	-	-45	-	-	dBm	-
SD Assert Level	-	-	-	-28	dBm	-
SD Hysteresis	-	0.5	-	6	dB	-
Receiver Reflectance	-	-	-	-12	dB	-
RSSI Range	-	-28	-	-8	dBm	
RSSI Accuracy	-	-3	-	+3	dB	
1310nm Tx to 1490nm Rx Crosstalk	-	-	-	-47	dB	
1550nm Rx to 1490nm Isolation	-	30	-	-	dB	
(1550~1560nm) Ext to 1490nm Rx Isolation	-	34	-	-	dB	
Back Reflection@1310nm				-12	dB	
Back Reflection@1490nm				-27	dB	
Rx Relectance				-20	dB	
1530nm to 1490nm Rx Isolation		7			dB	
1539nm to 1490nm Rx Isolation		22			dB	
1625nm to 1490nm Rx Isolation		22			dB	

Note:

Minimum Sensitivity and saturation levels for a $2^{23}-1$ PRBS. $BER \leq 10^{-12}$, 2.488Gpbs, ER=8.2dB

Electrical Specification

Transmitter						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Differential Input Voltage	V_{IN-DIF}	200	-	1600	mV	-
Tx Burst Input Voltage-Low	V_{IL}	0	-	0.8	V	-
Tx Burst Input Voltage-High	V_{IH}	2.0	-	Vcc	V	-
Receiver						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Output Voltage Differential	$V_{OUT-DIF}$	400	-	1000	V	-
Signal Detect Output Voltage-Low	V_{SD-L}	0	-	0.8	V	-
Signal Detect Output Voltage-High	V_{SD-H}	2.0	-	Vcc	V	

PIN Definition

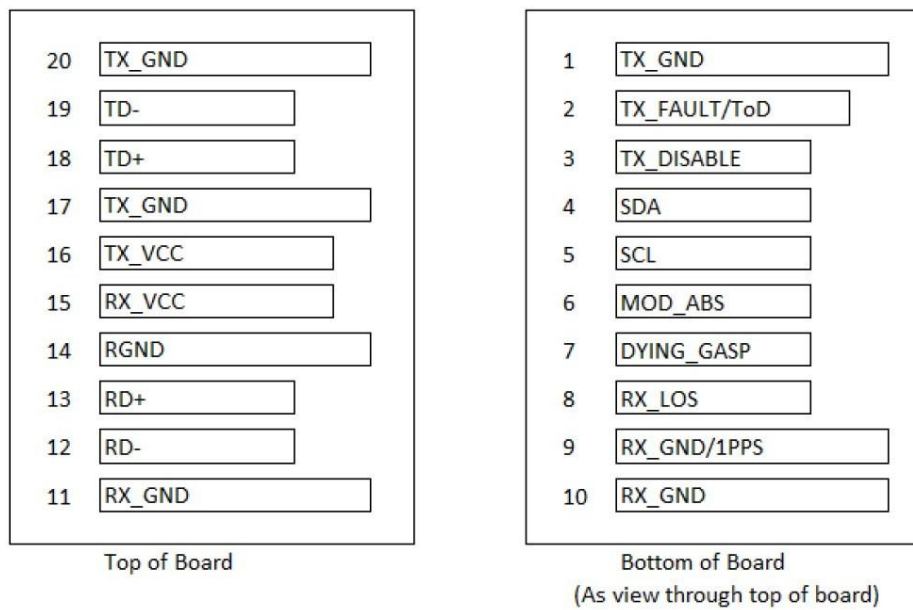


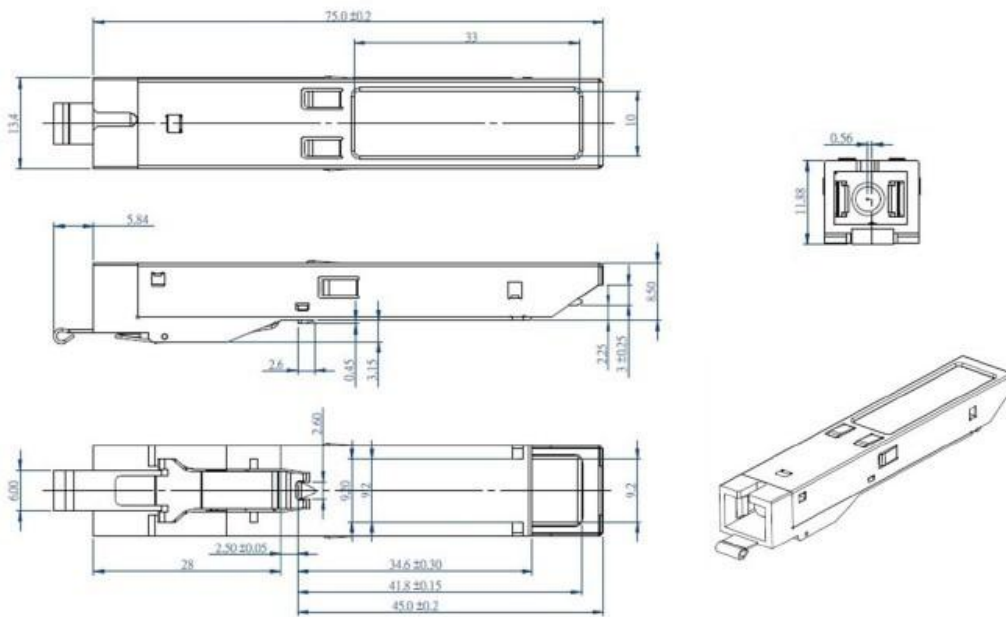
Figure 2 PIN Assignment

PIN Description

Pin#	Name	In/Out	Function	Note
1	Tx_GND	Power	Transmitter Ground	
2	TX_FAULT/ToD	Output	Transmitter Fault interrupt High: TX fault / Low: Normal	Open collector output.
3	TX_DISABLE	Input	Disable transmitter High: Disable / Low: Enable	Pulled up internally.
4	SDA	Bi-	I2C SDA	Pulled up internally.
5	SCL	Input	I2C SCL	Pulled up internally.
6	MOD_ABS	Output	Low active. High: Absent / Low: Present	Pulled up Internally.
7	Dying-Gasp	Input	Dying-Gasp input. High: Normal / Low: Dying	Pulled up with 10Kohm internally.
8	LOS	Output	LOS of RX Signal High: loss of RX signal Low: Normal	Pulled up int, max 8mA driver
9	VEER/1PPS	Power	Receiver Ground	*This pin can be 1pps with a different mounting option.

10	RX_GND	Power	Receiver Ground	
11	RX_GND	Power	Receiver Ground	
12	RD-	Out	Receiver Inverted DATA out.	AC coupled internally.
13	RD+	Out	Receiver Non-inverted DATA out.	AC coupled internally.
14	RGND	Power	Receiver Ground	
15	RX_Vcc	Power	Receiver Power Supply	3.3V±5%, connected with VCCT int
16	TX_Vcc	Power	Transmitter Power Supply	3.3V±5%, connected with VCCR int
17	TX_GND	Power	Transmitter Ground	
18	TD+	In	Transmitter Non-Inverted DATA in.	AC coupled int.
19	TD_	In	Transmitter Inverted DATA in.	AC coupled int.
20	TX_GND	Power	Transmitter Ground	

Package Diagram



Unit: mm

Order Information

ETU	PON	SFP	Tx1310nm	Rx1490nm	20km	1.244Gbps	2.488Gbps	-	GPON ONU STICK Class B+	C	0~70℃	S	SC-UPC Receptacle
										I	-40~85℃	N	SC-APC Receptacle

Compatibility Test

In order to ensure the product compatibility, our products will be tested on the switch before shipment. Our modules can compatible with many mainstream brand switches, such as Cisco, Juniper, Extreme, Brocade, IBM, H3C, HP, Huawei, D-Link, Mikrotik, ZTE, TP-Link...

Our test equipment: VOLKTEK MEN-4110, HP 2530-8G, CRS226-24G-25+RM, Catalyst 2960G Series, Catalyst 3850 XS 10G SFP+, Catalyst 3750-E Series, HUAWEI S5700Series, H3C S3100V2 Series, Juniper-EX4200, etc.



Cisco Catalyst 3850



HUAWEI S5700



H3C S3100V2



HP J9264AR



Juniper EX 4200



Alcatel 6850E-U24X



Mikrotik CR5226-24G-25+RM



Cisco Catalyst 2960G



Volktek MEN-4110

Quality Assurance

Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.



**Standardized
Production Line**



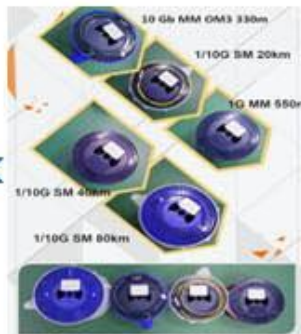
**Professional
Welding**



Assembling



Aging Testing



Distance Testing



Cleaning end face



Product Initial Test



Switch Testing



Product Final Test

Packaging

ETU-Link provides two kinds of packaging, 10pcs/Tray and individual package.



Company: ETU-Link Technology Co., LTD

Address: Right side of 3rd floor, No. 102 building, Longguan expressway, Dalang street,
Longhua District, Shenzhen city, Guangdong Province, China 518109

Tel: +86-755 2328 4603

Addresses and phone number also have been listed at www.etulinktechnology.com.

Please e-mail us at sales@etulinktechnology.com or call us for assistance.