ETU-LINK®

Optical Communication System

PON Series

GPON

EGP52X-3SCDN20

XGS-PON&XGPON OLT N1/N2/E1 SFP+

Optical Transceiver

- Single fiber bi-directional data links TX 9.95Gbps, Burst Mode RX 9.95G/2.488Gbps application
- Compliant with ITU-T XGS-PON G.9807.1
- Support ITU-T G.987.2 XGSPON OLT N1/N2/E1 application
- 0 to 70°C operating case temperature
- 3.3V power supply
- SFP+ package with SC Receptacle connector
- Hot-pluggable capability
- High power 1577nm EML LD
- High sensitivity 1270nm APD
- Support XGS-PON or XG-PON 20km application with SMF
- RX_SD indication
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- RoHS6 compliance

Applications

- XGS -PON OLT N1/N2/E1

Standard

- Complies with SFF-8472
- Complies with ITU G.987.2
- Complies with ITU G.9807.1
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11

Performance Specifications

Absolute Maximum Ratings					
Parameter	**Symbol**	**Min.**	**Max.**	**Unit**	**Note**
Storage Ambient Temperature	T_{STG}	-40	85	°C	
Operating Case Temperature	Tc	0	70	°C	
Operating Humidity	OH	5	85	%	
VCC3 Power Supply Voltage	V_{CC}	3.135	3.465	V	

Recommended Operating Conditions						
Parameter	**Symbol**	**Min.**	**Typical**	**Max.**	**Unit**	**Note**
Operating Case Temperature	Tc	0		70	°C	
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Consumption	P			2.4	W	
TX Date Rate			9.95		Gbps	
RX Date Rate			9.95 2.488		Gbps Gbps	

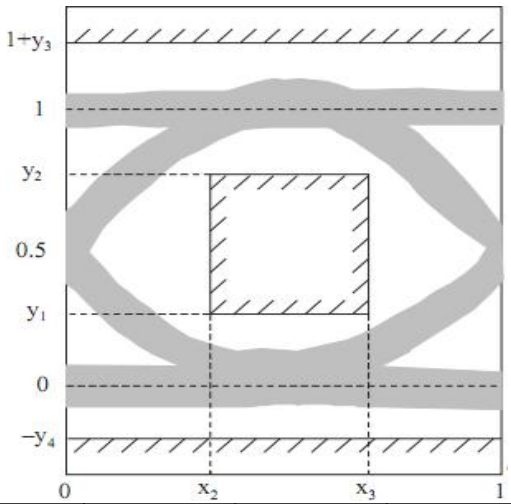
XGS-PON Transmitter Optical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Optical Center Wavelength	λC	1575		1580	nm	
Optical Spectrum Width (-20dB)	Δλ	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Transmitter and Dispersion Penalty	TDP			1	dB	Transmit on 20km SMF
Average Launch Optical Power （N1）	AOP	+2		+5	dBm	Launched into SMF

Average Launch Optical Power（N2）	AOP	+4		+7	dBm	Launched into SMF
Average Launch Optical Power（E1）	AOP	+6		+9	dBm	Launched into SMF
Power-OFF Transmitter Optical Power				-39	dBm	Launched into SMF
Extinction Ratio	ER	8.2			dB	PRBS2^{31}-1 @9.95Gbps
Optical Waveform Diagram	Compliant with ITU G.9807.1					Figure 1, Mask Margin>5%

XGS-PON Transmitter Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
Data Input Differential Swing			120		820	mV	CML input, DC coupled
Input Differential Impedance			90	100	110	Ω	
TX Disable	Disable		2		VCC +0.3	V	
	Enable		-0.3		0.8	V	
Transmitter Disable Time		Toff			100	uS	
Transmitter Enable Time		Ton			2	mS	

Transmitter Eye Mask Definitions and Test Procedure



X3-X2	Y1	Y2	Y3	Y4	Unit
0.2	0.25	0.75	0.25	0.25	UI

Fig.1 XGPON Transmitter Eye Mask Definition

XGS-PON Receiver Optical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Operating Wavelength		1260		1280	nm	
Sensitivity（N1）	SEN			-26	dBm	PRBS2^{31}-1@9.95Gbps BER ≤1×10^{-3}
Sensitivity（N2）	SEN			-28	dBm	
Sensitivity（E1）	SEN			-30	dBm	
Saturation Optical Power（N1）	SAT	-5			dBm	
Saturation Optical Power（N2）	SAT	-7			dBm	
Saturation Optical Power（E1）	SAT	-9			dBm	
Max Input power		-3			dBm	
SD Assert Level				-27	dBm	
SD De-Assert Level		-45			dBm	
Hysteresis		0.5		6	dB	

XGPON Receiver Optical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Operating Wavelength		1260		1280	nm	
Sensitivity（N1）	SEN			-27.5	dBm	PRBS 2^{23}-1@2.488Gbps BER ≤1×10^{-4}
Sensitivity（N2）	SEN			-29.5	dBm	
Sensitivity（E1）	SEN			-31.5	dBm	
Saturation Optical Power（N1）	SAT	-7			dBm	
Saturation Optical Power（N2）	SAT	-9			dBm	
Saturation Optical Power（E1）	SAT	-12			dBm	
Max Input power		-3			dBm	
SD Assert Level				-29	dBm	
SD De-Assert Level		-45			dBm	
Hysteresis		0.5		6	dB	

XGS/XGPON Receiver Electrical Characteristics						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Receiver Threshold Settling Time	TSETTLING			400	ns	Figure 3
Data Output Differential Swing		400		1000	mV	CML output, AC coupled
Input Differential Impedance	Zin	90	100	110	Ω	
SD Assert Level Time				512	ns	
SD De-Assert Level Time				2048	ns	
SD Voltage - Low		-0.3		0.4	V	
SD Voltage - High		2.4		VCC+ 0.3	V	
RSSI Trigger-Low		-0.3		0.8	V	
RSSI Trigger-High		2.0		VCC+ 0.3	V	
CID		72			Bit	

Timing Parameter Definitions in Burst Mode Sequence

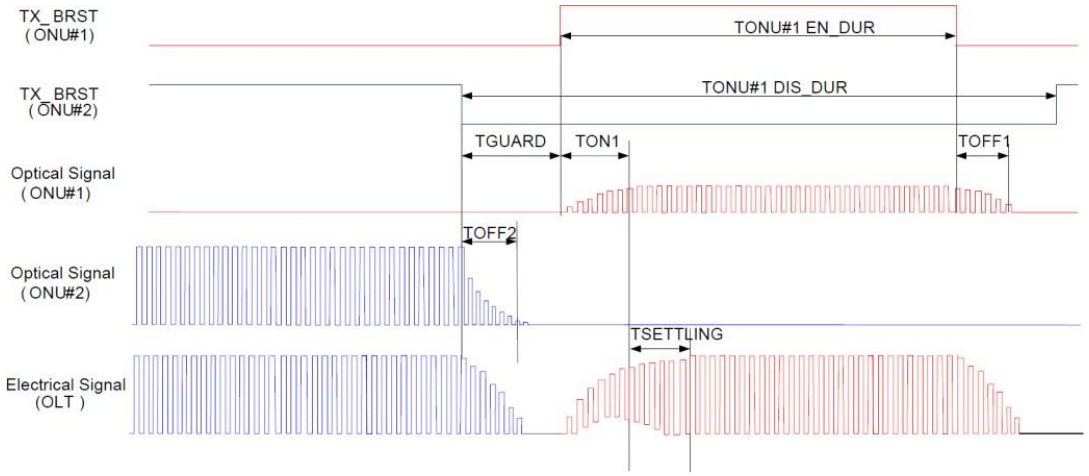


Fig. 2 Timing Parameter Definitions in Burst Mode Sequence

RSSI Timing Sequence						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
Optical Signal During Time	Topt	1500			ns	
RSSI Trigger width	TW	450	500	550	ns	
RSSI Trigger Delay	TD	250	300	350	ns	
I²C Access Prohibited Time	TS			500	μs	
I²C Bus Frequency			100		KHz	

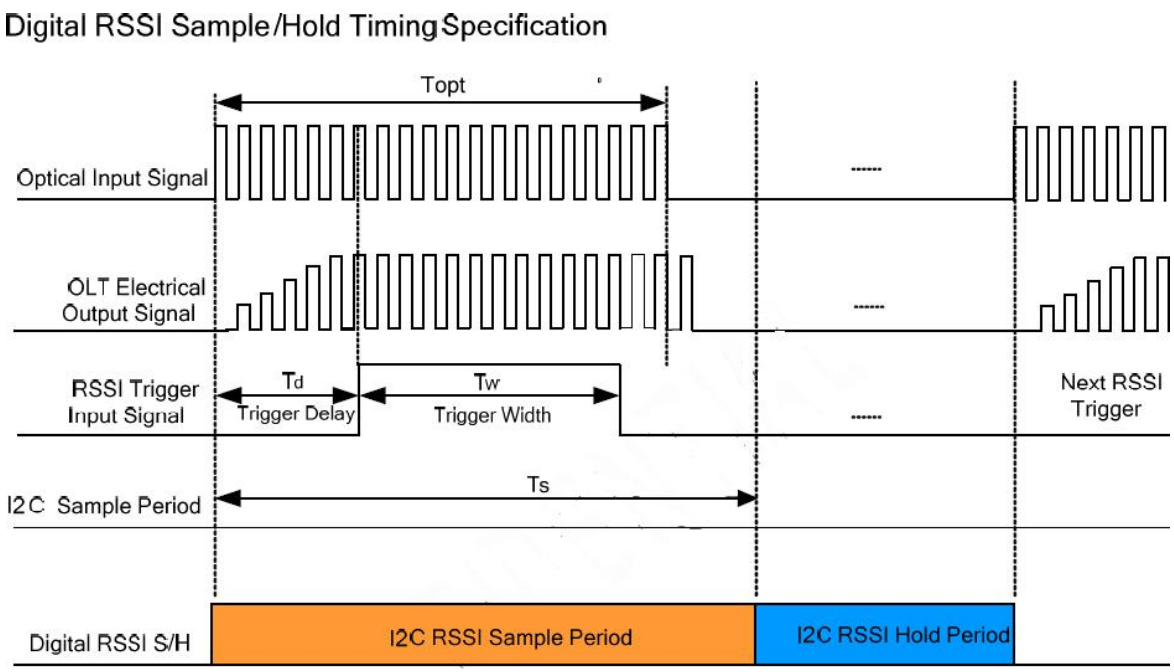


Fig. 3 Timing Parameter Definitions in RSSI Trigger

Pin Out Drawing

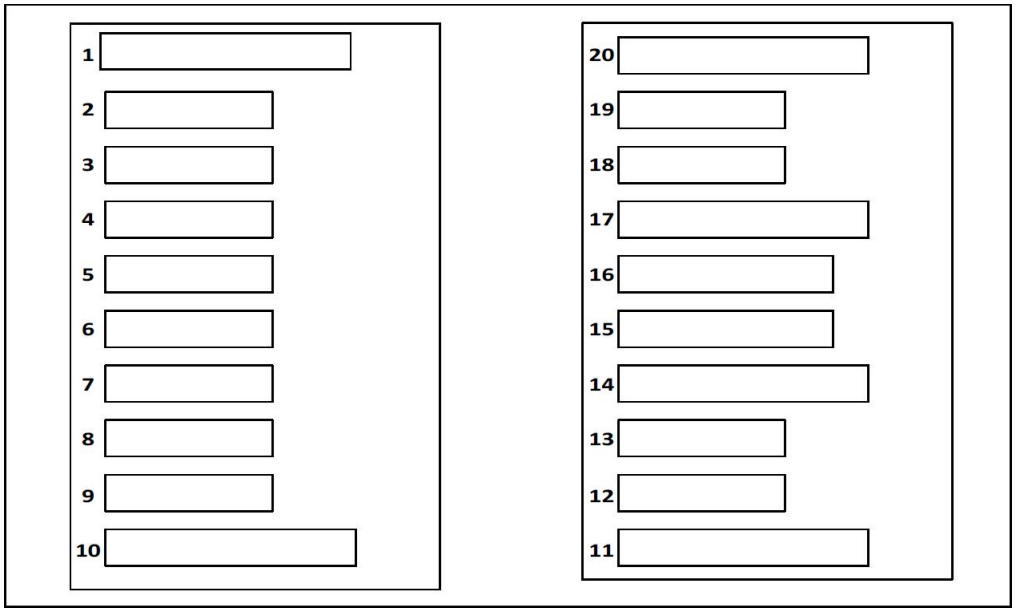


Fig.4 Pin Out Drawing

Pin	Name	Description	Notes
1	GND	GND.	
2	TX_Fault	TX fault out	
3	TX_Disable	TX disable in	
4	SDA	I2C Data in/out	
5	SCL	I2C Clock in	
6	MOD_ABS	Module absent	
7	RX_Reset	No connect	
8	RX_SD	Signal detect out	
9	RSSI_Trigger	RSSI trigger in	
10	GND	GND.	
11	GND	GND.	
12	XGS_RD-	XGSPON data out, CML	AC coupling
13	XGS_RD+	XGSPON data out, CML	AC coupling
14	GND	GND.	
15	VCCR	Module power	
16	VCCT	Module power	
17	GND	GND.	
18	XGS_TD+	XGSPON data in, CML	
19	XGS_TD-	XGSPON data in, CML	
20	GND	GND.	

Note: “1~20” PIN comply with SFF 8431.

EEPROM Information

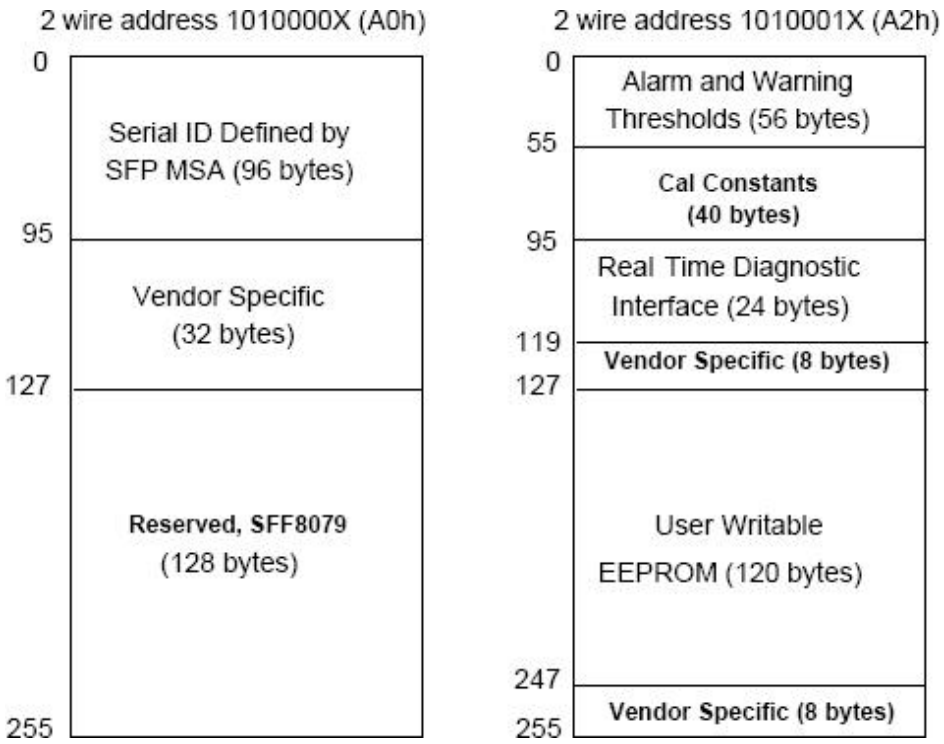
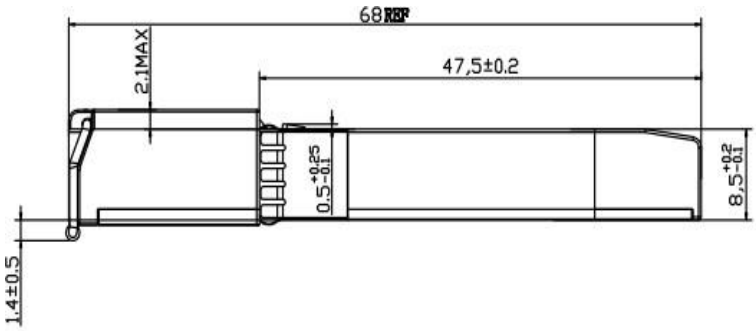
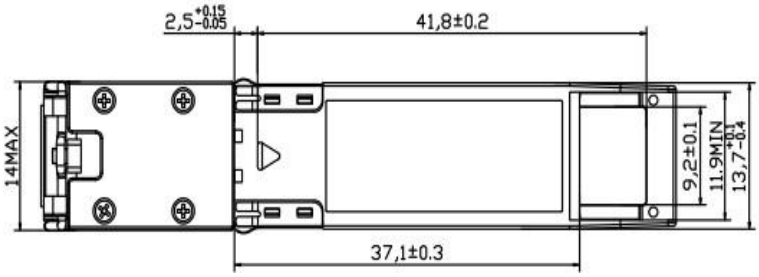


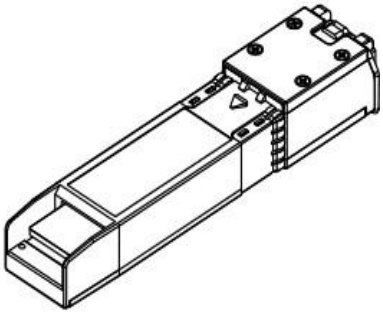
Fig. 5 EEPROM Memory Map Specific Data Field Descriptions

Digital Diagnostic Monitoring Interface				
Parameter	**Range**	**Accuracy**	**Calibration**	**Notes**
Temperature	0 to 70°C	±3°C	Internal	LSB: 1/256C
Voltage	2.97 to 3.63V	±5%	Internal	LSB: 0.1mV
Bias Current	0 to 262mA	±10%	Internal	LSB: 4uA
TX Power	1 to 6dBm	±3dB	Internal	LSB: 0.2uW
RX Power Monitor	-29 to -5dBm	±3dB	Internal	LSB: 0.1uW

Package Dimensions



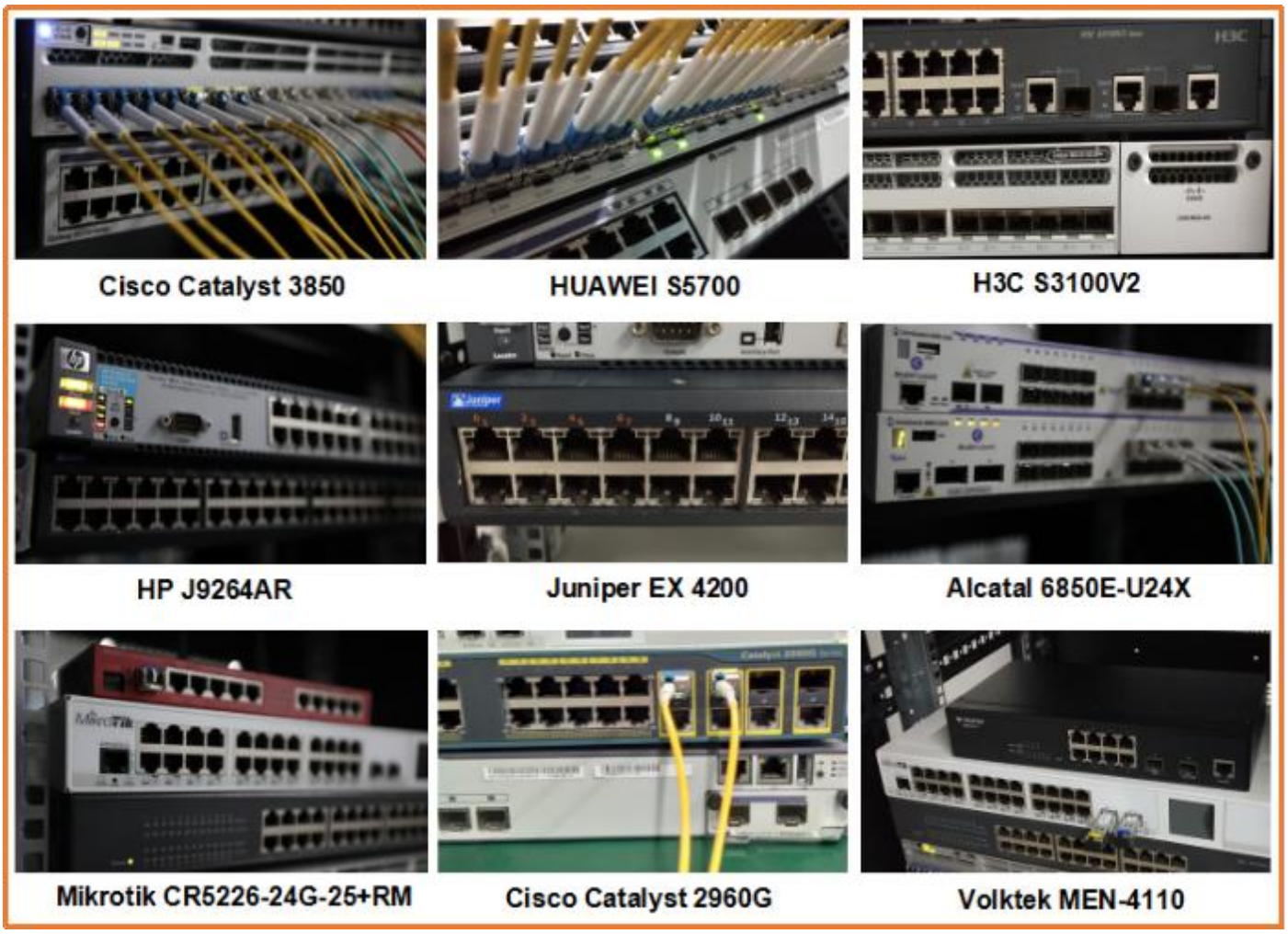




Compatibility Test

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 | Alcatal 6850E-U24X

Mikrotik CR5226-24G-25+RM | Cisco Catalyst 2960G | Volktek MEN-4110

Product Production Process

Quality Assurance

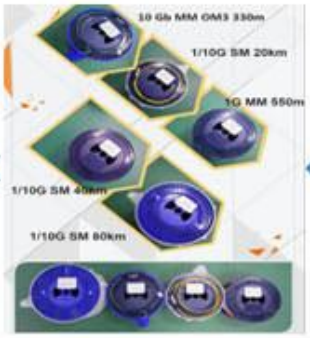
Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.

Standardized Production Line

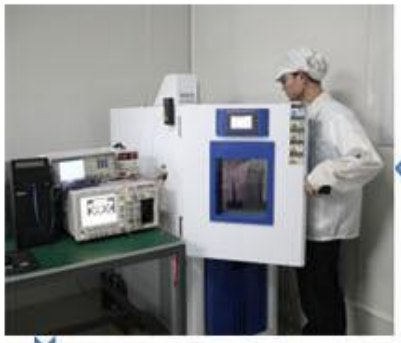
Professional Welding

Assembling

Cleaning end face



Distance Testing



Aging Testing

Product Initial Test

Switch Testing

Product Final Test

Packaging

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

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