ETU-LINK®

Optical Communication System

1X9 Series

1X9

E185(31)005-3(5)SC(I)xx

500kbps Low Speed 1x9 Transceiver Multimode 850nm or 1310nm Single mode 1310nm

- 1x9 footprint package
- 0~500kbps data rate
- SC, FC, ST connector available
- TTL /LVTTL signal input and output
- Multimode, single mode available
- Max. 2km via multimode 1310nm
- Max. 20km via single mode
- 3.3V, 5V available
- 0~ 70°C, -40°C to 85°C available
- ROHS Compliant

Applications

- RS232/422/485 serial communication

Description

ETU-Link's 1x9 optical transceivers is design for RS232/422/485 serial communication. It adopts TTL data interface that supporting data-rate of 0~500kbps, supports max. 2km via multimode fiber, or 20km via single mode fiber.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_S	-40		+85	℃
Supply Voltage	V_{CC}T, R	-0.5		6	V
Relative Humidity	RH	0		95	%
Soldering Conditions Temp/Time				260/10	ºC/s

Recommended Operating Environment

Parameter		Symbol	Min.	Typical	Max.	Unit
Case operating Temperature	Industrial	T_C	-40		85	℃
	Commercial		0		+70	℃
Supply Voltage	3.3V	V_{CC}	3.135	3.5	3.465	V
	5V		4.75	5	5.25	
Supply Current		Icc			300	mA
Data rate			0		500	kbps

Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_C	840	850	860	nm
Spectral Width(RMS)	$\Delta\lambda$			1	nm
Average Output Power	Pout	-15		-8	dBm
Extinction Ratio	ER	9			dB
Relative Intensity Noise	RIN			-117	dB/Hz
Input High Voltage	VH	2		VCC	V
Input Low Voltage	VL	0		0.8	V
Eye Diagram	ITU-T G.957 Compliant				
Data Input	TTL				
Receiver					
Input center wavelength	C	770		870	nm
Receiver Sensitivity	Pmin			-16	dBm
Receiver Overload	Pmax	-7			dBm
SD Assert	SD_A			-18	dBm
SD De-Assert	SD_D	-30			dBm
Output High Voltage	VH	2.4		Vcc	V
Output Low Voltage	VL	0		0.4	V
Data Output	TTL				

ETU-Link's 1310nm 2km multmode

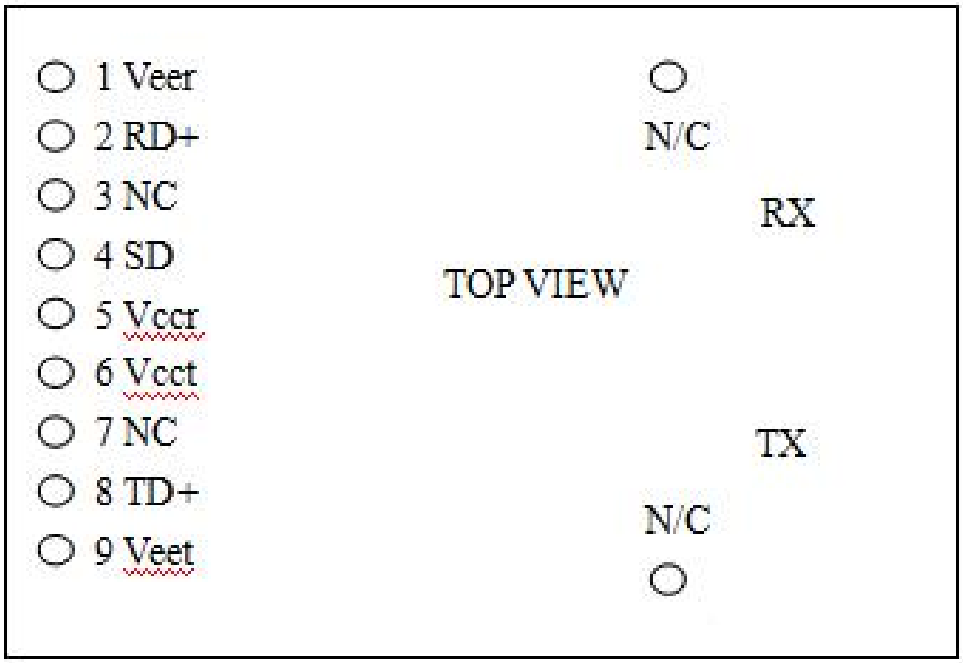
Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_C	1260	1310	1360	nm
Spectral Width(RMS)	Δλ			4	nm
Average Output Power	Pout	-15		-8	dBm
Extinction Ratio	ER	9			dB
Relative Intensity Noise	RIN			-117	dB/Hz
Input High Voltage	VH	2		VCC	V
Input Low Voltage	VL	0		0.8	V
Eye Diagram	ITU-T G.957 Compliant				
Data Input	TTL				
Receiver					
Input center wavelength	C	1260		1620	nm
Receiver Sensitivity	Pmin			-20	dBm
Receiver Overload	Pmax	-10			dBm
SD Assert	SD_A			-22	dBm
SD De-Assert	SD_D	-30			dBm
Output High Voltage	VH	2.4		Vcc	V
Output Low Voltage	VL	0		0.4	V
Data Output	TTL				

ETU-Link's 1310nm 20km single mode

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_C	1260	1310	1360	nm
Spectral Width(RMS)	Δλ			4	nm
Average Output Power	Pout	-12		-6	dBm
Extinction Ratio	ER	9			dB
Relative Intensity Noise	RIN			-117	dB/Hz
Input High Voltage	VH	2		VCC	V
Input Low Voltage	VL	0		0.8	V
Eye Diagram	ITU-T G.957 Compliant				

Data Input	TTL				
Receiver					
Input center wavelength	C	1260		1620	nm
Receiver Sensitivity	Pmin			-23	dBm
Receiver Overload	Pmax	-13			dBm
SD Assert	SD_A			-25	dBm
SD De-Assert	SD_D	-36			dBm
Output High Voltage	VH	2.4		Vcc	V
Output Low Voltage	VL	0		0.4	V
Data Output	TTL				

Pin Assignment



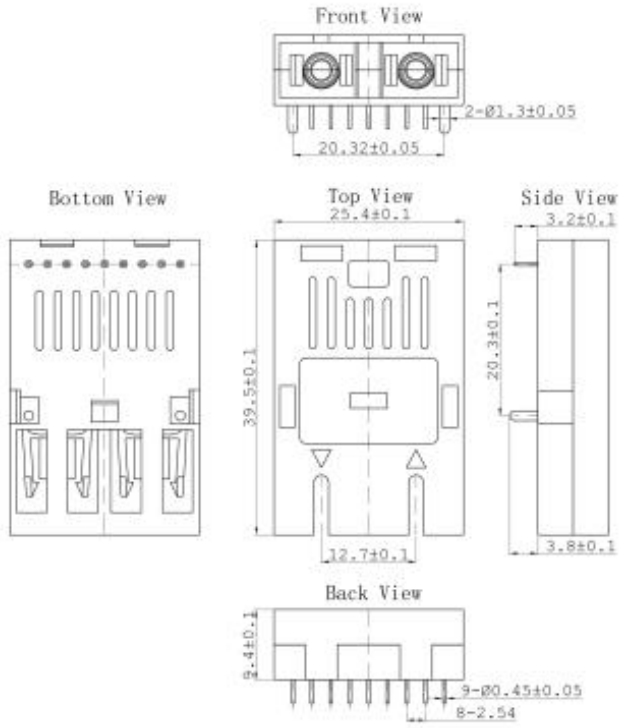
Pin Function Definitions

No.	Name	SD Level	Description
1	GNDR		RX ground
2	RD	TTL/LVTTL	RX data output
3	NC		No connect
4	SD	TTL/LVTTL	RX no light alarm
5	VccR		RX power positive
6	VccT		TX power positive
7	NC		No connect
8	TD	TTL/LVTTL	TX data input
9	GNDT		TX ground

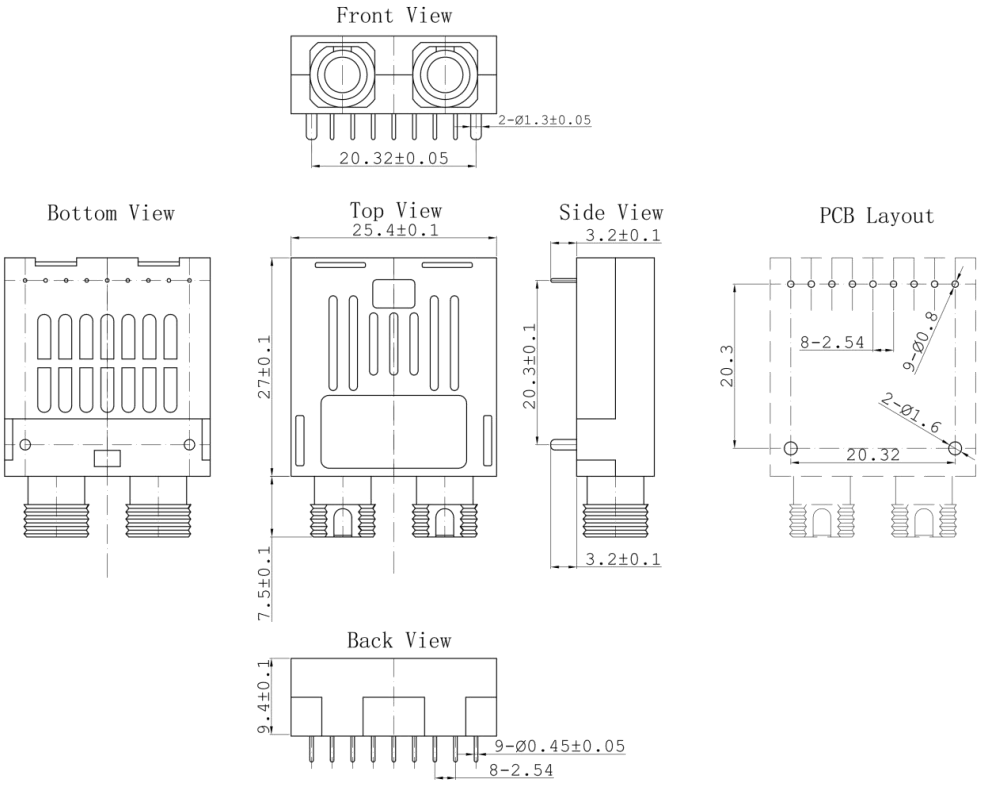
Regulatory Compliance

Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>1000 V)
Electrostatic Discharge (ESD) to the Single LC Receptacle	IEC 61000-4-2 GR-1089-CORE	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class 1 laser product.

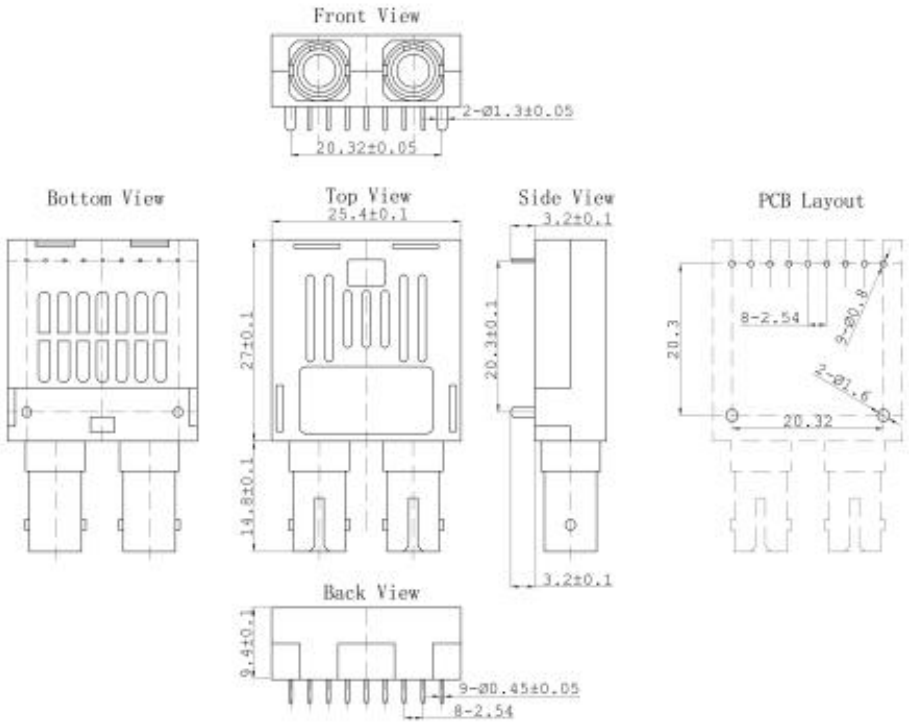
Mechanical Dimensions



Duplex SC



Duplex FC



Duplex ST

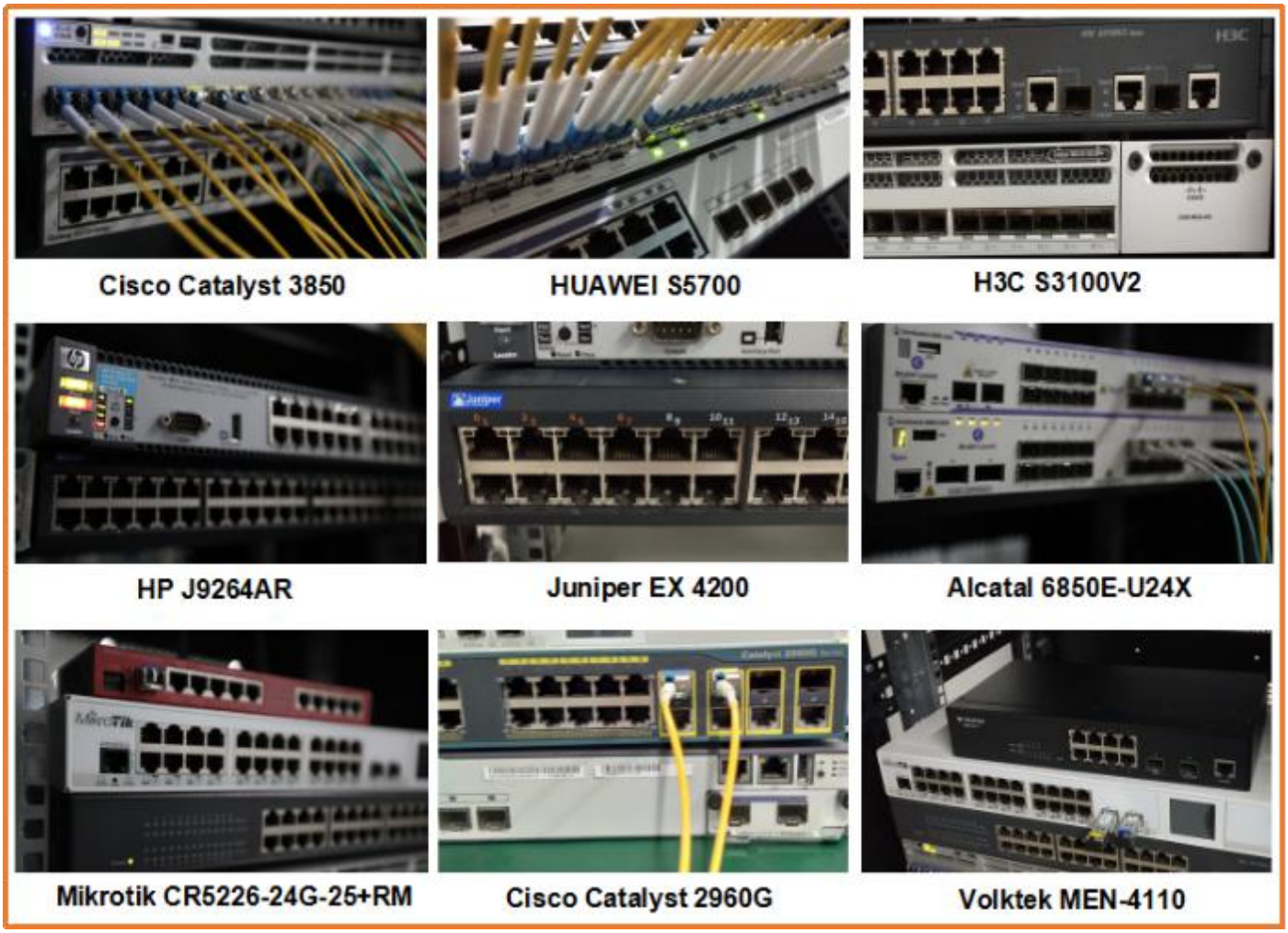
Ordering Information

Part Number	Data Rate	Signal input/output	SD	Wavelength	Distance	Voltage	Connector	Temperature
E185005-5SC1	0~500kbps	DC/DC	TTL	850nm VCSEL	1km@MMF	5V	SC*	0~70℃
E185005-5SI1	0~500kbps	DC/DC	TTL	850nm VCSEL	1km@MMF	5V	SC*	-40~85℃
E185005-3SC1	0~500kbps	DC/DC	LVTTL	850nm VCSEL	1km@MMF	3.3V	SC*	0~70℃
E185005-3SI1	0~500kbps	DC/DC	LVTTL	850nm VCSEL	1km@MMF	3.3V	SC*	-40~85℃
E131005-5SC2	0~500kbps	DC/DC	TTL	1310nm FP	2km@MMF	5V	SC*	0~70℃
E131005-5SI2	0~500kbps	DC/DC	TTL	1310nm FP	2km@MMF	5V	SC*	-40~85℃
E131005-3SC2	0~500kbps	DC/DC	LVTTL	1310nm FP	2km@MMF	3.3V	SC*	0~70℃
E131005-3SI2	0~500kbps	DC/DC	LVTTL	1310nm FP	2km@MMF	3.3V	SC*	-40~85℃
E131005-5SC20	0~500kbps	DC/DC	TTL	1310nm FP	20km@SMF	5V	SC*	0~70℃
E131005-5SI20	0~500kbps	DC/DC	TTL	1310nm FP	20km@SMF	5V	SC*	-40~85℃
E131005-3SC20	0~500kbps	DC/DC	LVTTL	1310nm FP	20km@SMF	3.3V	SC*	0~70℃
E131005-3SI20	0~500kbps	DC/DC	LVTTL	1310nm FP	20km@SMF	3.3V	SC*	-40~85℃

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

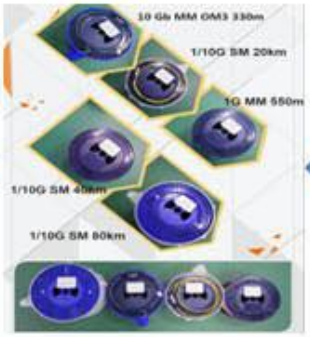
Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.

Standardized Production Line

Professional Welding

Assembling

Cleaning end face



Distance Testing

Aging Testing

Product Initial Test

Switch Testing

Product Final Test

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