
Optical Data Transmission

OPT Series

Manual

Version: V1.0

The user manual must be properly placed in the packaging box to ensure that the manual can be easily accessed and referenced.

User manuals must always be placed with the product, even for secondary sales.

* Thank you wholeheartedly for using our products

* This manual explains how to use the product and safety matters

* Read this manual carefully and pay attention to safety during use

* Keep this manual in a suitable place for easy reference

Guangdong Hinson Technology Co., Ltd.

1. Applicable objects

This manual is written for the following users

- Installation
- operation
- Maintenance
- Maintenance

1.1. Requirements

All users must read and fully understand the contents of this manual.

contents

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2. Overview

2.1. Features

Using infrared laser communication, it meets the full-duplex 100M bandwidth and the longest communication distance is 130 meters, which is used for customer mobile process network communication needs.

2.2. Use

Used for stacker cranes and rail car communications;

2.3. Specifications

OPT 1 150 78 0 0 0 0

Product series	OPT	
Hardware version	1	1:Version 1
Maximum transmission distance	150	080=80m 150=150m 300=300m
Send light frequency	78	65=650nm:F1 78=780nm:F2 82=820nm:F3 85=850nm:F4 94=940nm:F5
Communication support	0	0:TCP/IP
Does it contain a heater?	0	0. Not included
Customer customization needs	00	00: Standard version

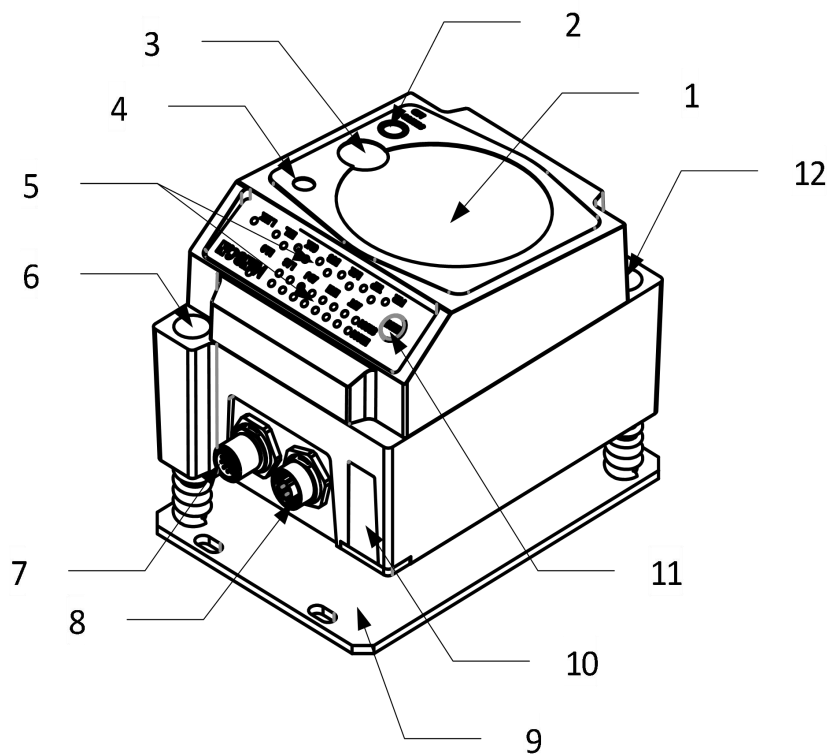
3. Technical characteristics

3.1. Main performance

Series	OPT
Transmission distance	80M
	150M
Luminous frequency	F1=650nm
	F2=780nm
	F3=820nm
	F4=850nm
	F5=940nm
Communication Interface:	100M Ethernet
Laser parameters	
light source	laser
The scope of work	0.1m~300m
Emitter divergence angle	($\pm 0.7^{\circ}$ @80m) ($\pm 0.5^{\circ}$ @150m/300m)
Acceptance angle	$\pm 1.5^{\circ}$
Optical communication establishment time	The initial establishment time is less than 2.5s, and the re-establishment time is less than 50ms.
Docking light source	650nm
Communication rate	100Mbps
Electrical Specifications	
Operating Voltage	DC 10V~30V
Environmental conditions	
Use ambient temperature	- 10℃-55℃, indoor use
Use ambient humidity	Below 80% RH
Storage environment humidity	Storage temperature (-20℃-70℃)
Ambient light	<80000lux

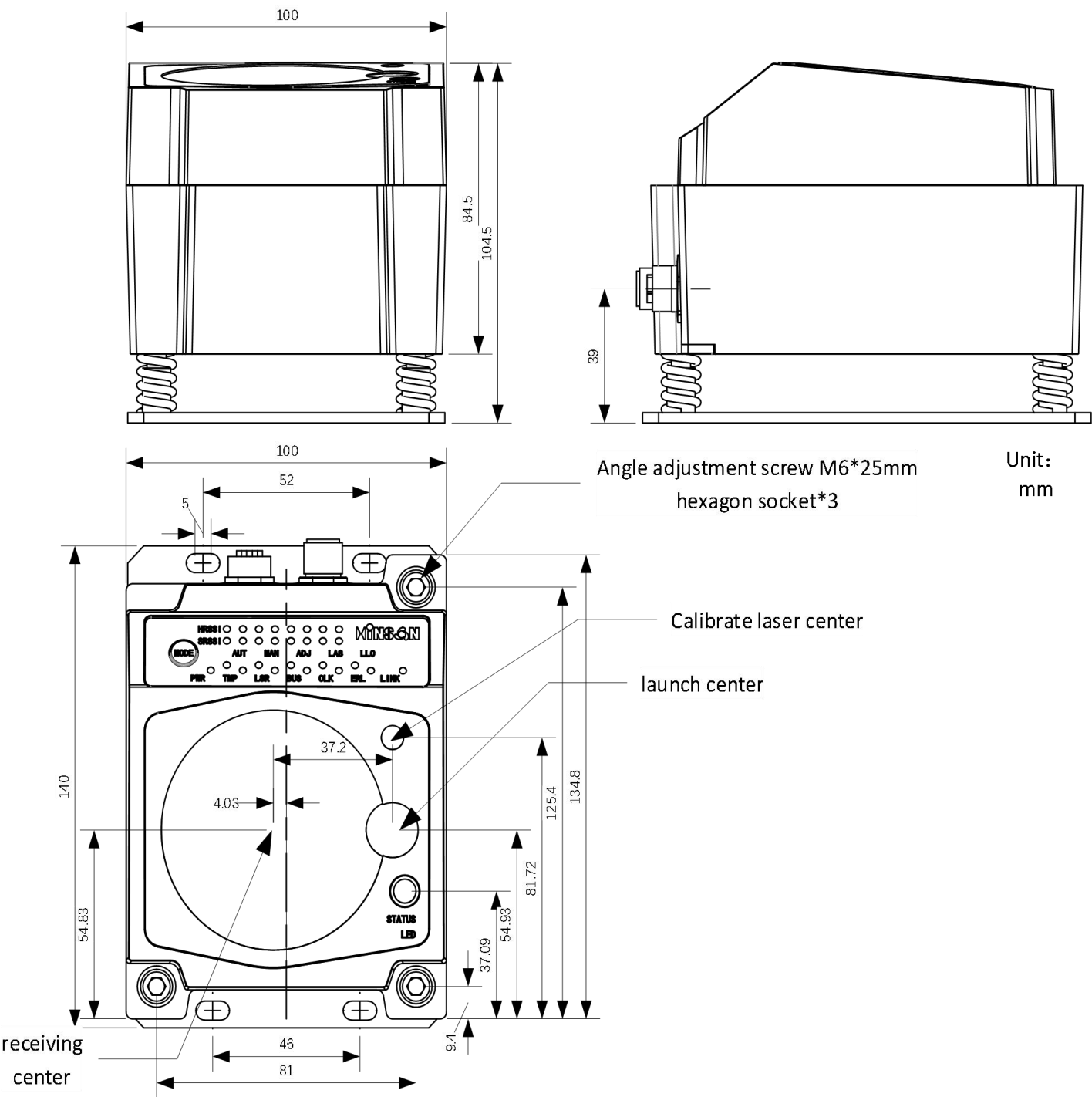
4. Dimensions and installation

4.1. functional area

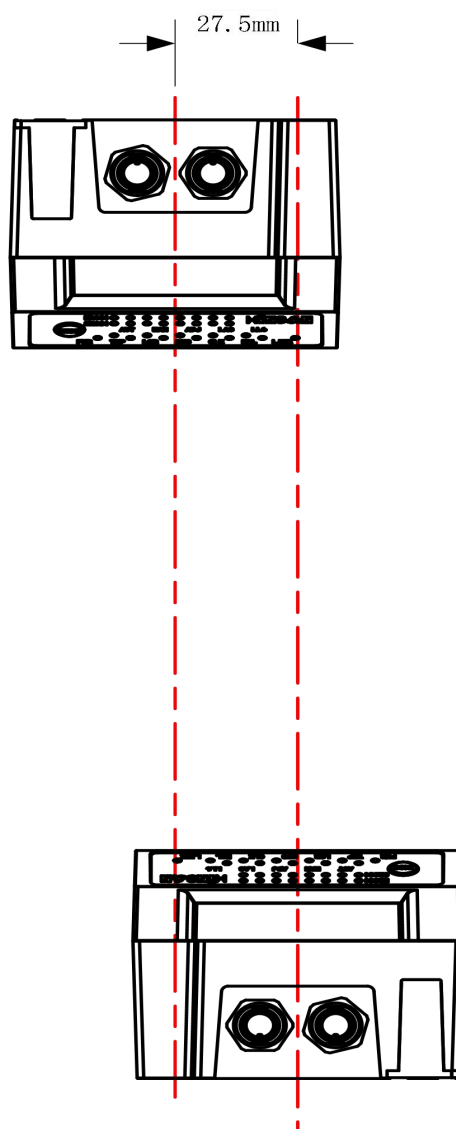


1	Receive window
2	Sensor docking status light
3	Send window
4	Calibrate light source port
5	LED status display area
6	Adjust fixing holes
7	Ethernet port
8	Power and IO signal ports
9	Fixed mounting plate
10	horizontal indicator tube
11	Function mode button
12	Adjust fixing holes

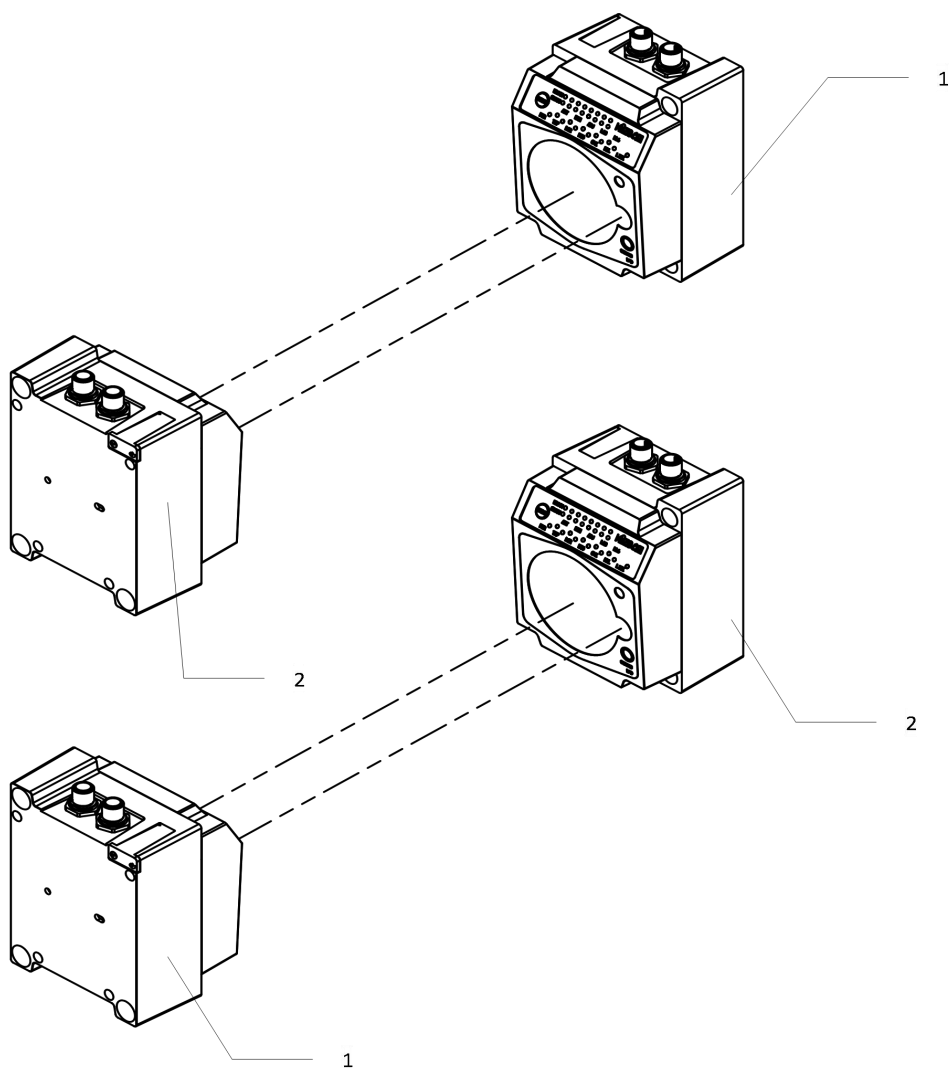
4.2. Appearance and installation dimensions



4.3. Installation requirements



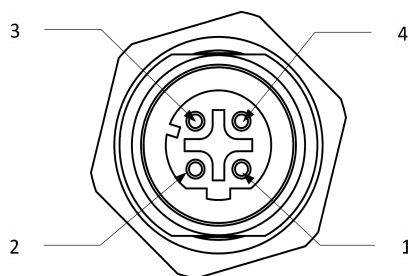
During installation, a lateral offset of 27.5mm is required to ensure that the sending center of the sending transmitter is aligned with the receiving center;



1: Model: OPT15078XX

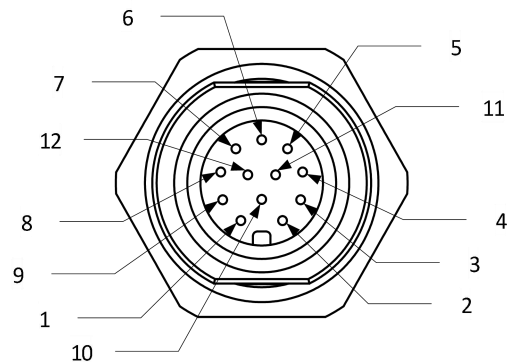
2: Model: OPT15082XX

4.4. Port



M12, 4Pin, D-type port, female port (Enthernet connection)

Pin1	Tx+
Pin2	Rx+
Pin3	Tx-
Pin4	Rx-

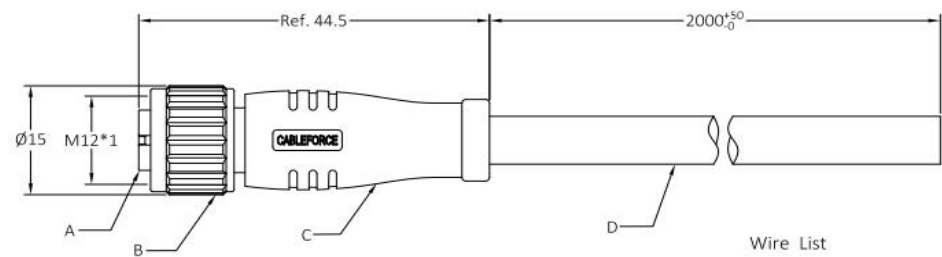


NO	Symbol	Attributes	Color	Function
Pin1	X00+	enter	White	Control communication: OFF: Allow communication ON: communication disconnected
Pin2	+VIN	enter	Brown	Power supply V+ Positive power supply, 10-30V DC input;
Pin3	X00-	enter	Green	IO input common terminal
Pin4	Y00+	output	Yellow	Received signal quality is low
Pin5	Y00-	output	Grey	IO output common terminal 1
Pin6	Y01+	output	Pink	Two-way connection successful
Pin7	-VIN	enter	Blue	Negative input of power supply
Pin8	Y01-	enter	Red	IO output common terminal 2
Pin9	reserved	invalid	Orange	reserved
Pin10	RX	communication	Deep purple	RS232-RX
Pin11	TX		Black	RS232-TX
Pin12	GND		Light purple	RS232-GND

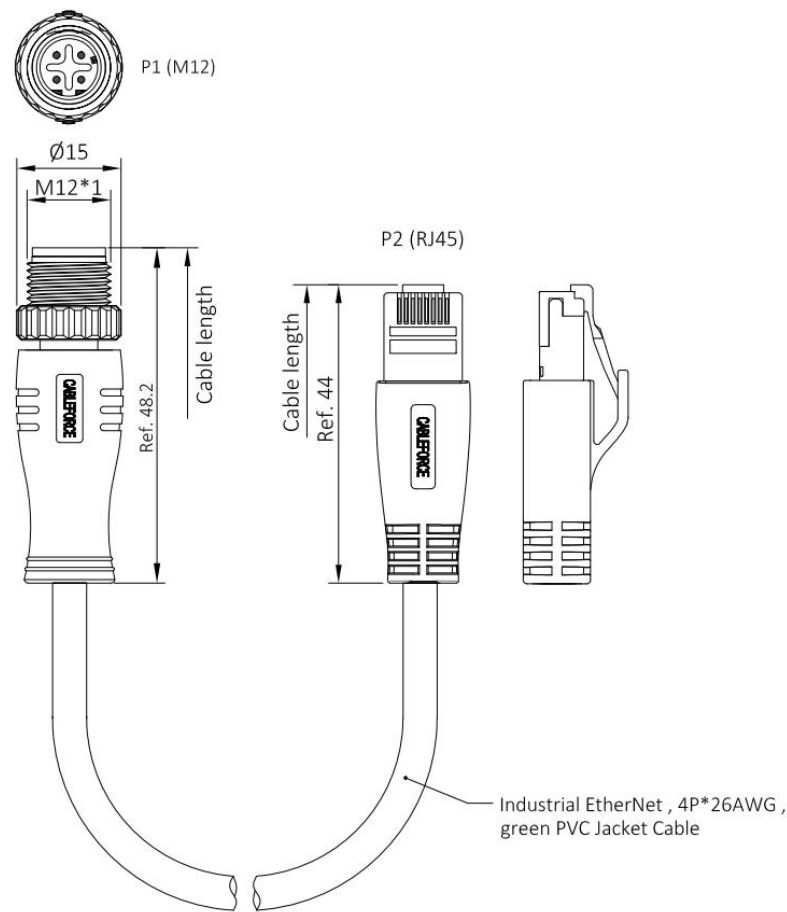
4.5. Cable

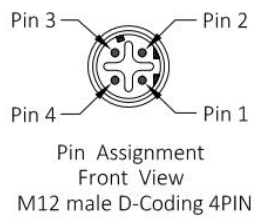
accessories

IO and power
connector:

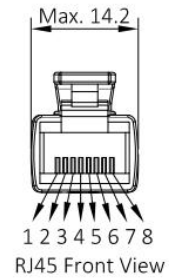


Name	Model	Specification
Cable	HCX12L60BX	M12 12-core female connector straight pre-cast 6 meters 26AWG 12C PVC cable;
Cable	HCX12L20BX	M12 12-core female connector straight precast 2 meters 26AWG 12C PVC cable;
Cable	HCX12L100BX	M12 12-core female connector straight pre-cast 10 meters 26AWG 12C PVC cable;





Wire List			
P1 (M12)			P2 (RJ45)
PIN 1	White /Orange 白/橙 (AWG 26)		PIN 1
PIN 2	Orange 橙 (AWG 26)		PIN 2
PIN 3	White/Green 白/绿 (AWG 26)		PIN 3
PIN 4	Green 绿 (AWG 26)		PIN 6
Shell	Braid 编织		Shell



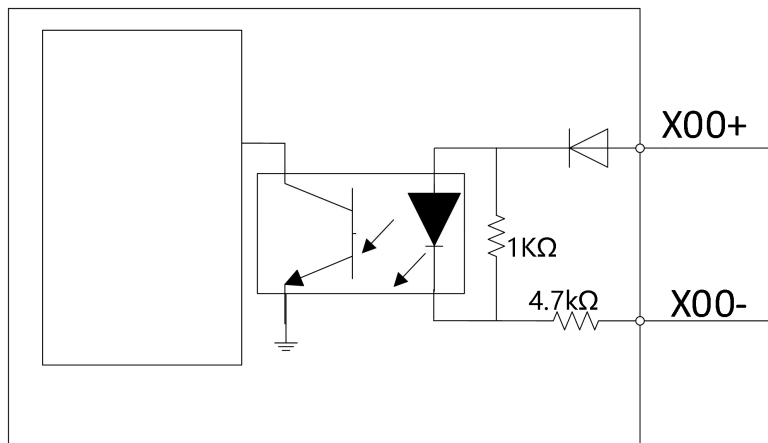
Cable	HCX4L20EE;	M12 D-Code 4PIN molded male straight connector 2.0M cable, dark green PUR cable, molded RJ45 crystal head at the end;
Cable	HCX4L60EE;	M12 D-Code 4PIN molded male straight connector 6.0M cable, dark green PUR cable, molded RJ45 crystal head at the end;
Cable	HCX4L100EE;	M12 D-Code 4PIN molded male straight connector 10.0M cable, dark green PUR cable, molded RJ45 crystal head at the end;

4.6. Input and output signal connection

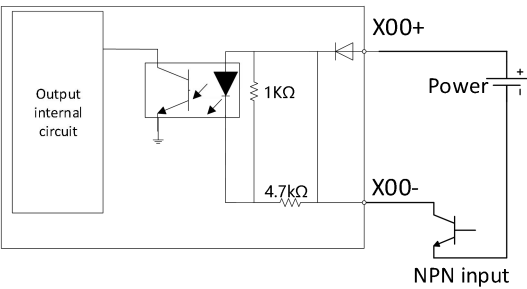
4.6.1. Input signal connection

Port	Function	Output logic
X00	Control optical module status	ON: The device is in silent mode and does not send data. OFF: The device is in normal mode and sends and receives data normally;

Use external power supply: COM+ input DC24V±20%, 100mA or more;

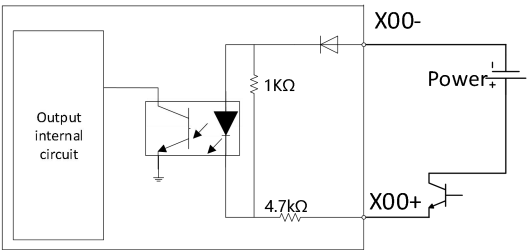


NPN signal wiring diagram

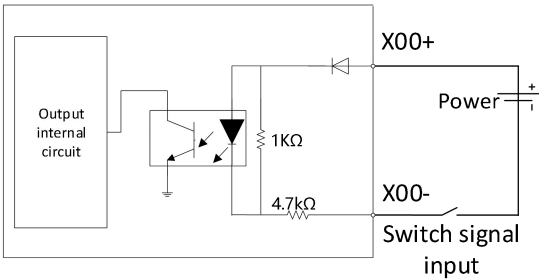


PNP signal wiring diagram

Use external power supply: COM- input DC24V±20%, 100mA or more;



Switch wiring diagram

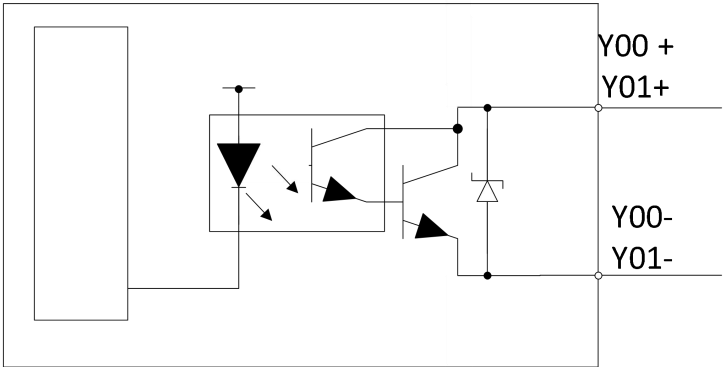


4.6.2. Output signal connection

Output signal usage function

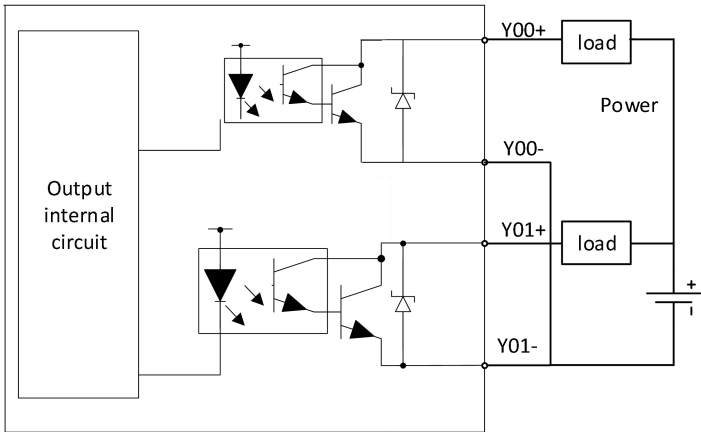
Port	Function	Output logic
Y00	Received signal quality status	Output logic ON: The signal quality is poor, which will affect communication. OFF: signal quality is normal;
Y01	Connection Status	ON: Optical communication bidirectional connection is successful. OFF: Optical communication is not established;

The maximum load capacity of the output port is 100mA.



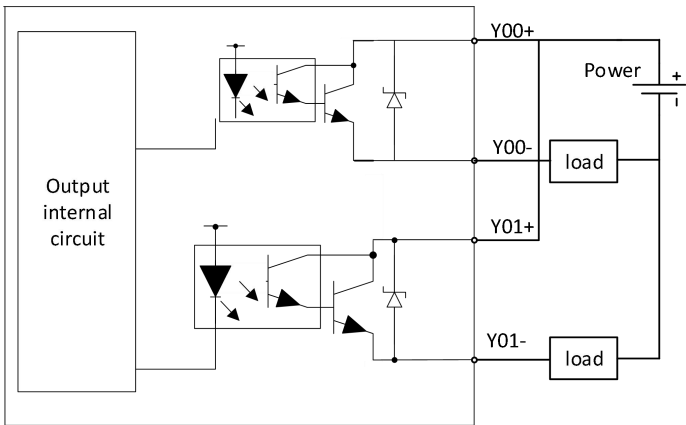
NPN signal output wiring diagram

Please refer to the figure below for the output schematic diagram:



PNP signal output wiring diagram

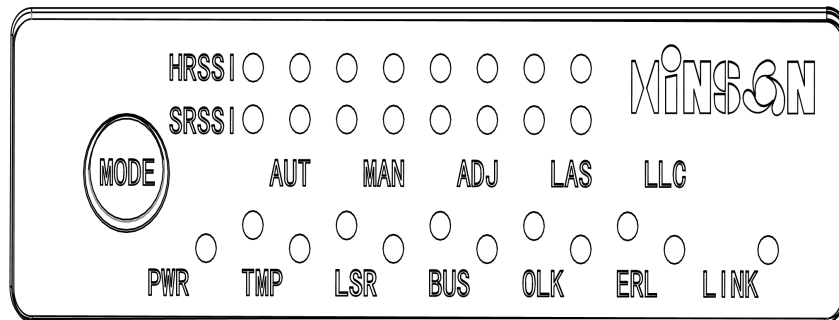
Please refer to the figure below for the output schematic diagram:



Notice

The input and output ports cannot be short-circuited or connected to a load exceeding the specified current, otherwise the port will be damaged.

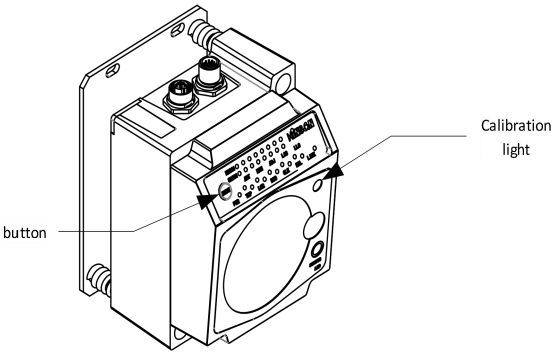
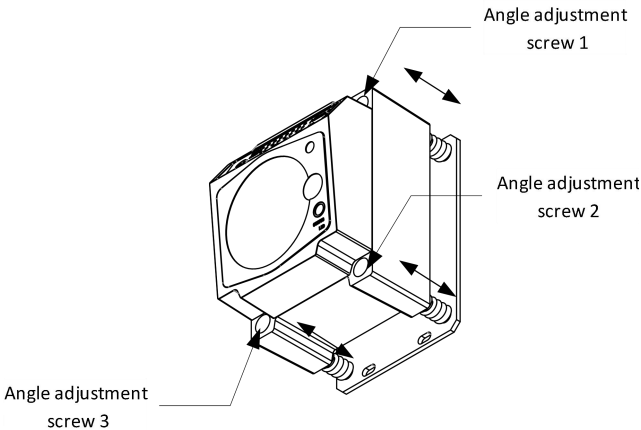
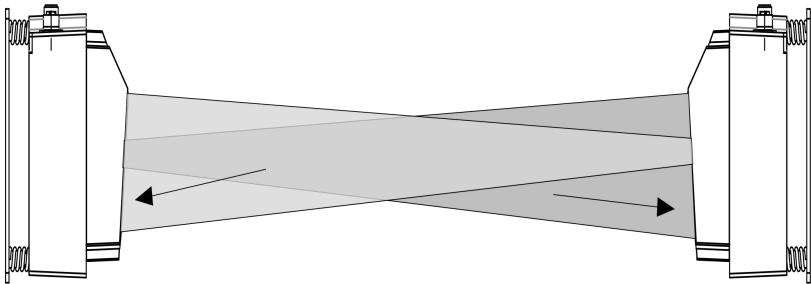
4.7. indicator light

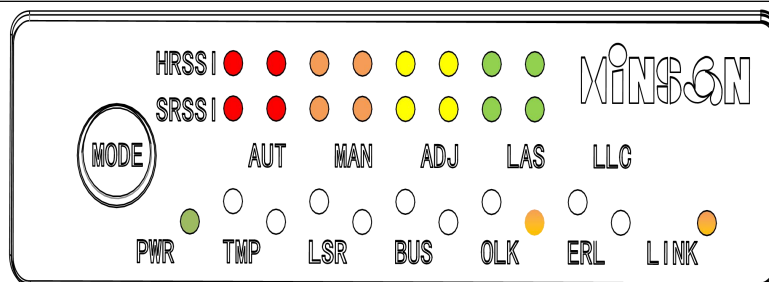


Mark	Show	Operating Instructions
AUT	green	Always on: Normal working mode Shiny: The calibration light is on; Off: Power off;
MAN	green	Always on Currently, alignment mode Off:
ADJ	green	Not open
LAS	green	Not open
LLC	green	Always on Not open
Power PWR	Green red	Off: No supply voltage Green-steady on: power supply is normal Red-steady on: device error
TMP	Red green	Off: Operating temperature is normal Orange yellow-always on: The operating temperature is at a high temperature of 70°C; Red-always on: Exceeding the operating temperature 80°C;
LSR	Unused	
BUS	Unused	

OLK	green, orange	Off: No light signal Green-always on: No data transfer Orange - always on: Activating data transfer
ERL	yellow light, red light	Off: the device is normal Yellow light - always on: The device is abnormal, but it does not affect data transmission. Red light - always on: The device is abnormal and data transmission is disconnected
LINK	green, orange	Off: The network cable is not connected successfully. Green-steady on: The network cable connection is normal Orange-steady on: Data transfer is being activated
HRSSI	S: 2 red lights 2 orange lights 4 green lights	HRSSI is the signal strength received by the other party; Only the red light is always on: it means the signal strength is weak; The red and orange lights are always on at the same time: it means the signal strength is medium; Red, orange, and green lights are all on: it means the signal strength is good; Off: means no signal is received
SRSSI	S: 2 red lights 2 orange lights 4 green lights	SRSSI is the signal strength received by the other party from the machine; Only red light indicates weak signal strength; Bright red and orange lights indicate medium signal strength; Red, orange, and green lights are all on, indicating that the signal strength is good; Off means no signal is received
MODE button		Switch mode: Turn on and off the calibration light source

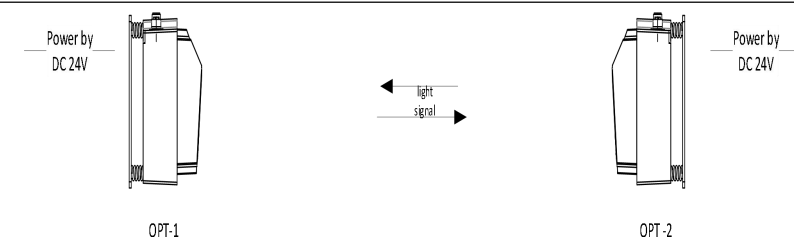
5. Installation and debugging

5.1. Installation confirmation	
initial position	
	 Turn on the calibration laser;
	 Use a hex wrench to adjust the module angle;
	 The calibrated light source can be aimed at the sending window of the opposite module; Confirm communication status at a distance of 0.5 meters;

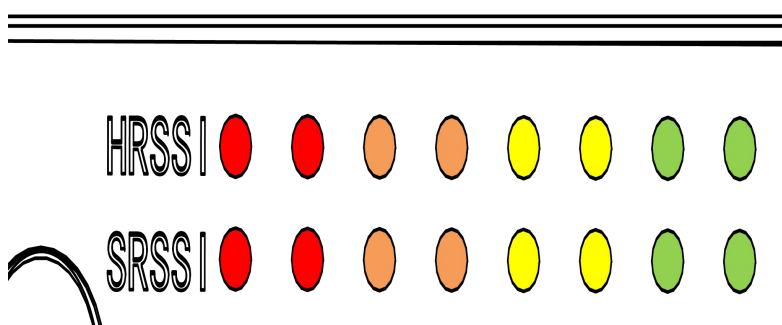


Confirm the above light status;

Ensure that the HRSSI and SRSSI signal lights are fully lit;



1) Gradually increase the spacing until the RSSI signal begins to weaken to the orange area, and adjust the installation angle;

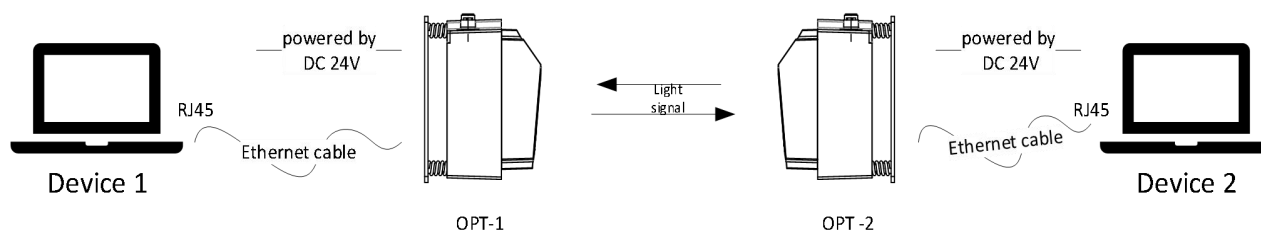


2) Adjust the angle target so that the HRSSI and SRSSI signals need to reach the maximum signal front angle at the current position at the current distance, which does not necessarily require full grid;

5.2. Debug confirmation

After completing the installation and docking, conduct a network test

Follow the link below to support Ethernet devices;



After the installation is completed, direct Ethernet communication can be achieved between device 1 and device 2;

6. After-sales information

6.1. Warranty period

OPT provides a limited warranty. If the sensor cannot be used normally due to quality problems or design defects during the warranty period, we will provide free after-sales maintenance.

- Warranty period: 1 year from the date of sale.

6.2. Warranty coverage

If the product is within the warranty period and falls within the warranty conditions, we will repair or replace it free of charge.

- The warranty and after-sales service of this product are limited to mainland China;
- The product cannot be used normally due to unpacking during transportation;
- The product cannot work normally due to damage to its own components;
- The product cannot be used normally due to design defects;

6.3. Disclaimer

Please pay attention to the following conditions during the use of the product. We will not provide free after-sales and warranty.

- Failure to install the product correctly according to the instructions, resulting in product damage;
- Use the product in an unsuitable environment and conditions, resulting in product damage;
- Product damage caused by failure to operate in accordance with the product manual;
- Dismantling or repairing the product without the company's permission;
- Product damage caused by irresistible external forces such as natural disasters and fires.

6.4. Technical Support

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