LANBAO

Photoelectric distance sensor PDT series

Operation manual

www.lanbaosensor.com

Precautions

- Before power on, ensure that the power supply voltage is within the rated range
- The sensor can detect normally after being powered on for 100ms
- If the sensor and the load use different power supplies, ensure that the sensor is powered on first
- When the sensor is not in use, you are advised to cut off the power supply to the load first and then to the sensor
- Do not subject the sensor to severe external forces (such as hammer, tapping, etc.) during installation, so as not to damage the sensor performance
- Avoid using diluents, alcohol or other organic solvents when cleaning

Safety Warning

- Do not use in the presence of oil or chemicals
- Do not use in the presence of flammable, explosive or corrosive gases with
- Do not use in an environment with high humidity
- Do not use in direct sunlight
- Do not use in any other environment exceeding the rated value
- Do not disassemble, repair or transform this product without authorizationg

Scrap Treatment

- When the product is scrapped, please dispose of it as industrial waste

PTL-Ver. 1.0 Z0311

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■ Technical specifications

Model	Controller	PDT-CT01
	Detection head	PDT-010M8
	Connection cable	CB-M2.6-YM8
Detection range		10mm
Installation spacing		0...300mm
Linearity		±0.4%F.S. (±40μm)At a distance of 100mm
Repeatability		±10μm (setting distance: 100mm)
Minimum detector		Φ1mm (setting distance: 300 mm)
Light source		Red semiconductor laser Class 1
Sampling period		500μs
Optical axis calibration indicator		Green LED (including one transmitter and one receiver)
Alarm indicator		Red LED (receiver)
Power consumption		≤720mW @24VDC (including transmitter and receiver)
External input		CH1
Switching output		CH1 output, PNP/NPN optional
Analog output		CH1/CH2 output, analog voltage (0-10V output resistance 100Ω)
Display resolution		1μm
Communication function		Controller and sensor head: RS485 bus
Number of connected units		1/2 Pairs
Quiescent current		<120mA (under rated voltage)
Dynamic current		<150mA (under rated voltage)
Minimum (load) operating current		<0.5mA
Voltage drop		<2.5V@Ie=200mA
Operating temperature		-10 ... +45°C (non-freezing)
Ambient humidity		35 ...85% RH (non-condensing)
Ambient light resistance		Incandescent lamp: < 3000lux
Protection circuit		Overload protection, short circuit protection, Zener protection
Optical axis alignment indicator		YES
Installation method		DIN rail mounting setup
Protection degree		IP50
Material		Sensing head: metal; Controller: Plastic
Cables		PVC

■ Wiring diagram

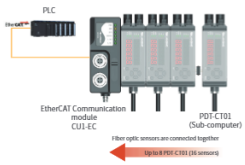
Emitter Receiver

Pins	Emitter	Receiver
1	DC5V±5%	DC5V±5%
3	GND	GND
2	RS-485A	RS-485A
4	RS-485B	RS-485B

Controller

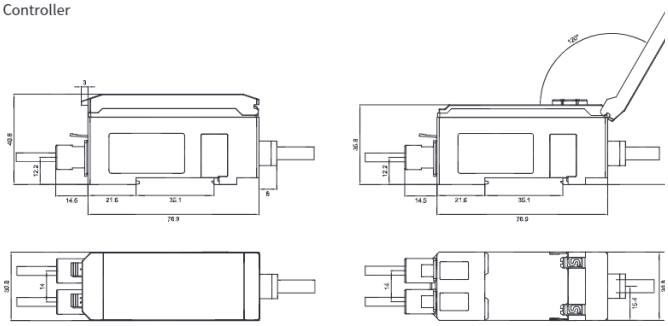
BN:12-24V
BU:GND
OG:Input
WH:Analog 1+
shied:Analog 1-
RD:HI output
PL:GO output
YL:LO output
PK:Analog 2+
shied:Analog 2-

EtherCAT Network diagram

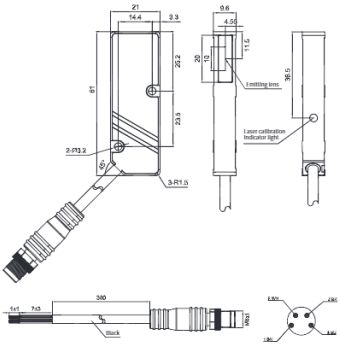


■ Dimensions (unit: mm)

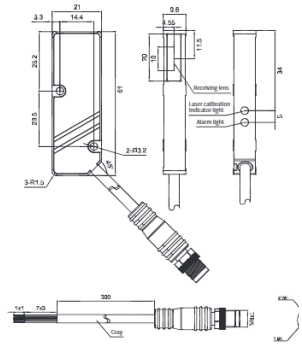
Controller



Emitter

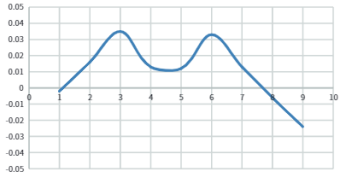


Receiver

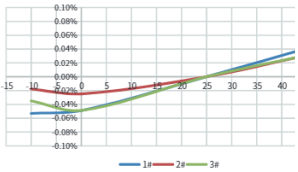


■ Basic feature diagram

Typical curve of linearity (mm)

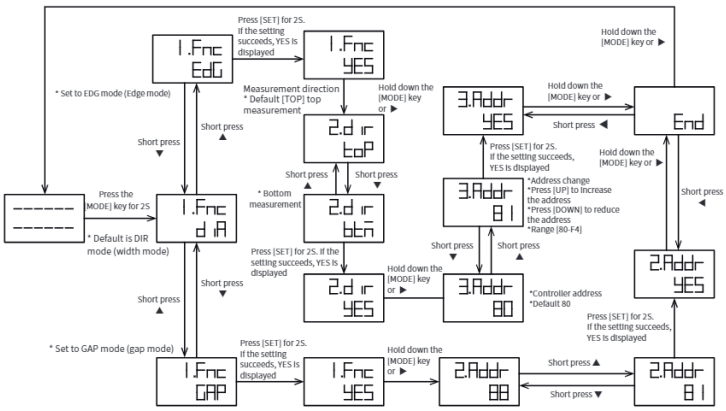


Typical curves of temperature characteristics



■ Operation instruction

1.Key setting function



Key function	
Implementation Method	Instructions
Switching the width measurement MODE: When the product is powered on, hold down the mode key to display 1.FNC on the home screen. When DIR is displayed on the secondary screen, hold down the SET key until the SET key is released when YES is displayed on the secondary screen.	FNC stands for measurement mode and DIR stands for width measurement.
Switching of edge measurement MODE: When the product is powered on, hold down the mode key to display 1 and FNC on the main screen, and DIR on the secondary screen, hold down the UP key to display EDG on the secondary screen, and hold down the SET key until the SET key is released when the secondary screen displays YES, indicating that the edge measurement mode is successfully switched.	FNC stands for measurement mode and EDG stands for edge measurement.
Top measurement MODE switch: Power on the product, hold down the mode key to SET the measurement mode to EDG mode, hold down the RIGHT key to display 2.dir on the main screen and top on the secondary screen, hold down the SET key until release the Set key when the secondary screen displays YES, Indicating that the top measurement mode switch is successful.	dIr Indicates the measurement direction and top indicates the measurement at the top. The top measurement mode can only be set in EDG mode.
Switch the measurement MODE at the bottom: Power on the product, hold down the mode key to SET the measurement mode to EDG mode, hold down the RIGHT key to display 2.dir on the main screen and btm on the secondary screen, and hold down the SET key until the Set key is released when the secondary screen displays YES, indicating that the measurement mode at the bottom is successfully switched.	dIr Indicates the measurement direction, btm Indicates the bottom measurement; The bottom measurement mode can only be set in EDG mode.
Switch GAP measurement MODE: When the product is powered on, hold DOWN the mode key to display 1.FNC on the main screen, and DIR on the secondary screen. Hold down the Down key to display Gap on the secondary screen.	FNC stands for measurement mode and GAP stands for gap measurement.
Check and modify the address: When the product is powered on, hold DOWN the MODE key to display 1.FNC on the main screen, DIR on the secondary screen, press the RIGHT key to display 2, Addr on the main screen, and 80 on the secondary screen. You can press UP or Down to change the address, and hold down the SET key until YES is displayed on the secondary screen, indicating that the address has been changed successfully. Press the RIGHT key The End exit button is displayed.	The default address is 80
Waveform login: When the product is powered on and there is no target and the transmitter and receiver are aligned, hold down MODE+SET. ALIGn on the main screen Align if YES is displayed on the secondary screen, the waveform login is successful.	After successful login, the system automatically returns to the main screen.
Action point setting: Power on the product. 1. Move the plug gauge to the measurement area. 2. Press the LEFT key on the home screen of the controller. The secondary screen blinks and starts to measure the current pin gauge. 3. Press the SET key. SET is displayed on the home screen.	Automatically return to the main interface after setting.
Restore RS485 communication Settings: Power on the product, use the serial port assistant to SET the address to not 0X80, baud rate to not 2000000, and then press the RIGHT key on the controller home screen: rSt is displayed on the home screen --> Hold down the Set key --> The setting is successful.	he address is restored to 0x80. Baud rate restored to 2 million.

2.key

It is used to set the sensor mode switching, address setting, action point setting, waveform login and other functions.

SET	Mode setting button
MODE	Mode selection, interface switch button
UP	Move up
DOWN	Move down
RIGHT	Move right
LEFT	Move left

3.The indicator light

Used for status indication.

Controller		
Name	Color	Normally on/off
HI	Red	The current status is HI
GO	Red	The current status is GO
LO	Red	The current status is LO
LASER	Red	Laser indicator light
ARANG	Red	Laser calibration indicator
R.V.	Red	Action point instruction light

Transmitter		
Name	Color	Normally on/off
ARANG	Green	Laser calibration indicator

Receiver		
Name	Color	Normally on/off
ARANG	Green	Laser calibration indicator
WARNNING	Red	Alarm indicator light

4.Display Screen

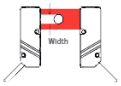
Used to display the current measurement mode, measurement direction, address, measurement value, and setting menu

Measured value	Display the width value and displacement value measured by the current sensor in real time
Measured method	Display the current measurement modes EDG, DIR, GAP
Measured direction	Display the current measurement direction TOP and BTM
Address	Display controller address
YES	Setup successful
Err	Setup failure
NOVAL	There is no valid value when the action point is set

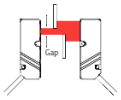
5.Mode description

1.Edge mode: Locate the edge position of the measured object. According to the measurement object and measurement direction, it is divided into top measurement and bottom measurement

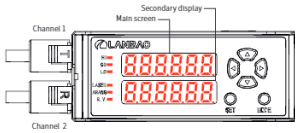
2.Width mode: Measure the width and outside diameter of the object in the target area.



3.Gap mode: Measure the gap distance of objects in the target area.



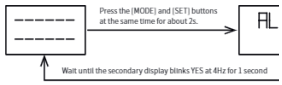
6.Product operation chart (controller)



7.Waveform login

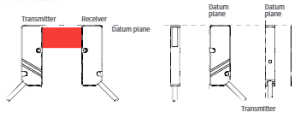
If the installation is the first time or the installation position has
the "waveform login" operation must be performed before meas

The transmitter and receiver are perfectly aligned, and there is n
object between them. When the laser calibration indicator is on,
hold down "SET" and "MODE" for about 2S at the same time, wh
display appears YES and blinks. Waveform automatically returns
main interface after successful login. As shown in the picture bel

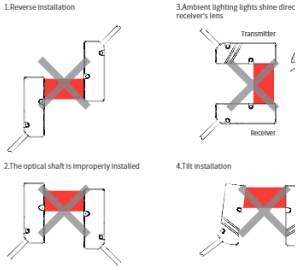


8.Installation

When installing, use the head of the sensor as the reference plan
whether the optical axis between the transmitted light and the r
is in focus.
You can check whether the optical axis is in focus according to th
on the back.



Please note the following incorrect installation methods:



DIN rail mounting

1.Align the card slot at the bottom of the controller with the DIN
shown in the figure. While pushing the controller forward in the
arrow 1, press down in the direction of arrow 2.
2.To remove the controller, push the controller back in the oppos
of arrow 1 and raise it in the direction of arrow 4.
3.The controller cascade installation and EtherCAT networking ir
must be stuck on the DIN rail and aligned before inserting the co