⟪LANBAO

Ultrasonic sensor UR30-CM6 series

operation manual


CE

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Precautions

- Please do not supply voltages other than the normal operating voltage to avoid burnout of the sensor.
- Please avoid pulling on the lead wires to prevent damage to the electrical connections of the sensor.
- Do not cover the surface of the sensor probe to avoid affecting the detection range of the sensor.
- Please use the supplied mounting nut to secure the sensor in place and avoid using other non-standard clamping devices to ensure good sensitivity.
- Strong mechanical vibration should be avoided when the sensor is used, and the working environment should not have strong electromagnetic interference and rapid air circulation.
- Please do not disassemble the sensor without permission. If the sensor does not work properly, please contact the after-sales service in time to solve. The company will not bear all the consequences caused by the disassembly without permission.

■ Mounting

Since ultrasonic sensors are directional, the mounting position needs to be taken care of. It is recommended that the mounting position be perpendicular to the measured object to obtain better relative accuracy.

■ Response characteristic curve
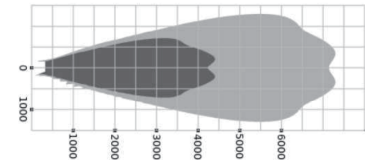
Dark color: 75mm diameter PVC pipe **Unit:** mm
Conditions: 24V power supply, room temperature
Light color: 300mm×300mm flat plate
Note: There may be deviations, for reference only

Ver.0.1 Y521 A2849.C3430

■ Technical specifications

Model	NPN+RS485	UR30-CM6DNR4B-E5
	PNP+RS485	UR30-CM6DPR4B-E5
Sensing range		350-6000mm
Blind area		0-350mm
Resolution ratio		4mm
Repeat accuracy		±0.15% full scale
Temperature drift		≤2% full scale (Built-in temperature drift compensation)
Linearity		<1%
Response time		300ms
Standard target		300×300mm
Oscillator frequency		About 65KHz
Rated operational current		≤200mA
Supply voltage		10…30VDC
No-load current		≤25mA
Angle		±10°
Circuit protection		Reverse protection, instantaneous over voltage protection, short circuit protection, overload protection
Output indication		Green LED always on: power on; Yellow LED always on: target detected; Red LED: Error; Blue LED: RS485 command received
Ambient temperature		-25℃…70℃ (253-343K)
Storage temperature		-40℃…85℃ (233-358K)
Material		Nickel plated copper, glass beads mixed with epoxy resin
Protection degree		IP67
Connection		M12 5-pin connection

■ Dimensions

Connector

■ Wiring diagram

NPN+RS485

1	BN	+ U_B
2	WH	B
4	BK	A
3	BU	- U_B
5	GY	NPN Output

PNP+RS485

1	BN	+ U_B
2	WH	B
4	BK	A
3	BU	- U_B
5	GY	PNP Output
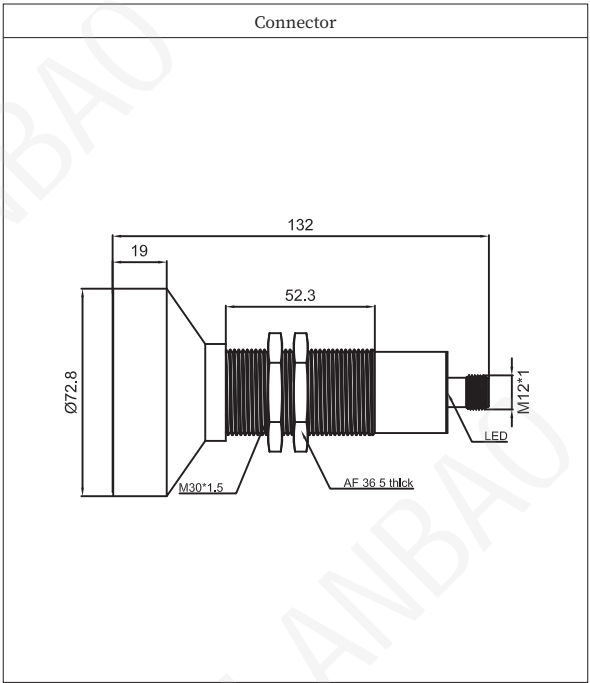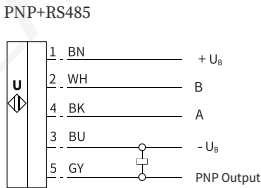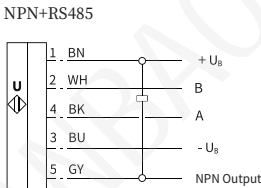
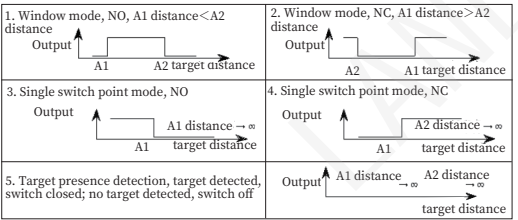## ■ Set the detection range

Factory setting:default window mode,NO,A1=350mm;A2=6000mm
A1:Target distance from near to far,through the A1 point,the switch from open to closed
A2:Target distance from near to far,through the A2 point,the switch from closed to open
Working Mode:A1 and A2 can be learned individually,and the working mode can be selected by setting the position of A1 point and A2 point.There are 5 kinds of working modes as below:

1. Window mode, NO, A1 distance<A2 distance
2. Window mode, NC, A1 distance>A2 distance
3. Single switch point mode, NO
4. Single switch point mode, NC
5. Target presence detection, target detected, switch closed; no target detected, switch off

■ RS 485 protocol

Product working baud rate:115200   Stop bit:1
Data bits:8   Parity check:none

1.Command format

Frame header	ID	Command	Data bit low	Data bit high	Summation check First five bytes summing to take the low byte
0xA5	0x** (01~32)	0x** (01~06)	0x**	0x**	0x**

2.Specific command indication

1)Write sensor ID number
Example:Write A5 01 01 02 00 A9,
        the sensor returns data:A5 02 01 00 00 A8

2)Write A1 point value(If the value of A1 is less than 3500 or greater than 65000,A1 will not work and the switching quantity will enter a single point normally open mode)
Example:Write A1 value 800(8cm):A5 01 02 20 03 CB,
        the sensor returns data:A5 01 02 20 03 CB

3)Write A2 point value(If the A2 value is less than 3500 or greater than 65000,A2 will not work and the switching quantity enters a single point normally closed mode)
Example:Write A2 value 10000(100cm):A5 01 03 10 27 E0,
        the sensor returns data:A5 01 03 10 27 E0

4)Write external temperature value and use external temperature compensation
Example:Write the temperature 18℃,18*100=1800,and convert it to a hexadecimal number:A5 01 04 08 07 B9,
        the sensor sends back data:A5 01 04 08 07 B9

5)Use internal temperature compensation
Example:Write the internal temperature value 0℃:A5 01 05 00 00 AB,
        the sensor sends back data:A5 01 05 00 00 AB

6)Read the sensor's current measurement data
Example:Write A5 01 06 00 00 AC,the sensor sends back data in the following table:

Frame header	ID	Distance	Fight time (us)	Temperature value (0.1℃)	A1 value	A2 value	Signal strength value	Sum check (first 14 bytes and lower byte)	End
FF	01	XX XX	XX XX	XX XX	XX XX	XX XX	XX XX	XX	FE

7) Read the ID of the current sensor
Example:Write A5 01 F0 00 00 96,the sensor sends back data:
        A5 01 F0 00 00 96(Write ID,the ID ranges from 0 to 32.The ID in the returned data is the ID of the current sensor.When the ID is read,only one sensor can exist on the 485 network.)