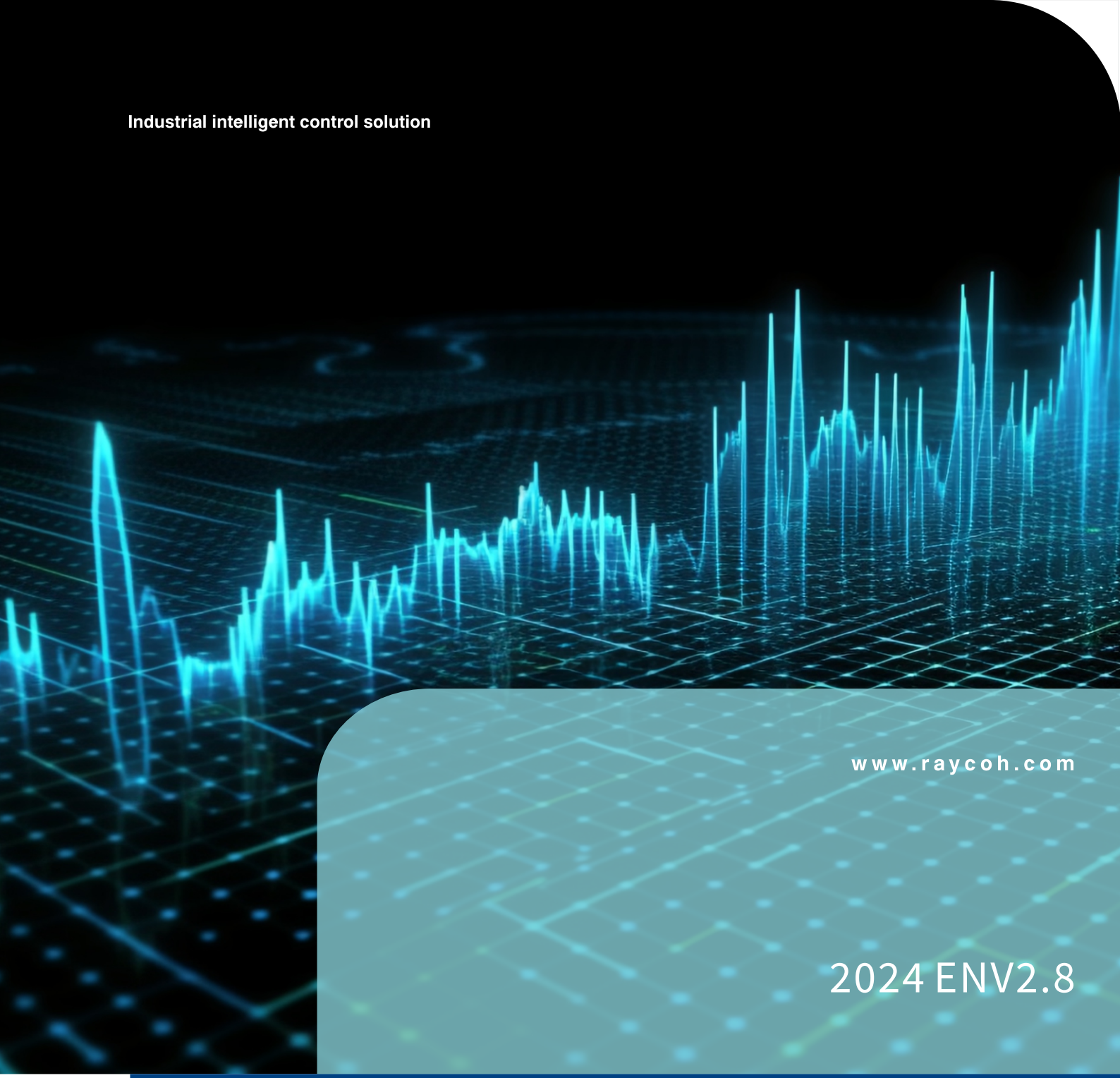
Industrial intelligent control solution



www.raycoh.com

2024 ENV2.8

Ultrasonic Sensors Brochure

锐科智能
RAYCOH®

Due to technical improvements in product development, displays may vary and products are subject to change without notice

Contents

ABOUT US

Company Profile

RAYCOH Ruike Intelligent is located in Qingshui River, University of Electronic Science and Technology of China.The company is supported by experts and professors engaged in electronic research for many years.

RAYCOH Intelligent provides ultrasonic sensors-ranging sensors, liquid level sensors, material level sensors, distance sensors, displacement sensors, anti-collision and control systems for mobile devices and other products. The company has a complete and scientific quality management system.

RAYCOH intelligent integrity, strength and high-quality products have been recognized and praised by the industry.

Welcome friends from all walks of life to visit, guide and negotiate business.

R&D, testing, manufacturing and sales all concerned

Careful craftsmanship is our commitment to the quality of our products. At the same time, it is a sign of respect for our customers. We always pursue excellence and pay attention to every detail. Let every product reflect our ultimate pursuit of quality. We listen to our customers with all our heart, understand their needs, and win their trust and loyalty with quality products and services.

Insist On Independent Innovation

We will continue to enhance our R&D strength and innovation awareness to provide better products and services to our global customers with leading technology and excellent quality.

TECHNOLOGY

Technology is our priority ,for smart industrial

copyright registration certificate

Data-processing capacity

Multiple technical certificates

Patents for technical inventions

Enterprise honours

EU certificate

Enterprise Culture

Mutually beneficial and win-win

Helping made in china building the intelligent age

Customer foremost

Enterprise Value

Credibility

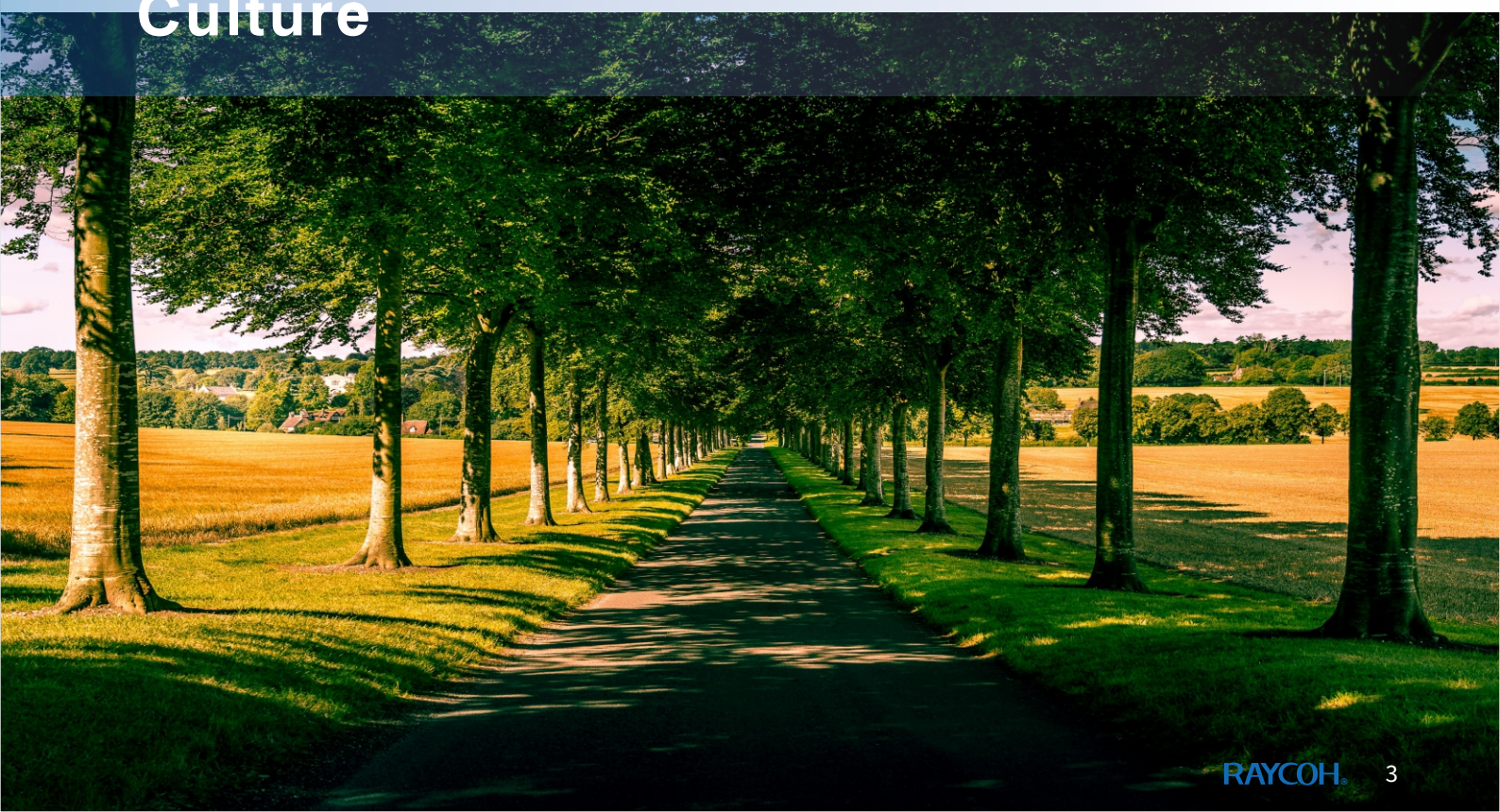
Efficiently

Core Values

Passion

Innovations

Culture



M12 cylindrical

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UB120	20-120mm	20mm	0.1mm	±0.15%	Straight
UB200	20-200mm				

M18 cylindrical

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UB300	30 - 300mm	30mm	0.1mm	±0.15%	Straight/ Curved
UB500	50 - 500mm	50mm	0.15mm	±0.15%	Straight/ Curved
UB1000	60 - 1000mm	60mm	0.17mm	±0.15%	Straight/ Curved

M30 cylindrical

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UB2000	100 - 2000mm	100mm	0.17 - 0.5mm	±0.15%	Straight
UB4000	200 - 4000mm	200mm	0.17 - 1.5mm	±0.15%	Straight
UB6000	35 0 - 6000mm	350mm	0.17 - 2.5mm	±0.15%	Straight

UCC corrosion resistant

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UCC2500	150 - 2500mm	150 mm	0.2-0.5 mm	±0.15%	Straight flange

UR Testing Series

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UR2000	100 - 2000mm	100mm	0.17mm	±0.15%	Plastics
UR3000	150 - 3000mm	150mm	0.17mm		

UDA double sheet

Tybe	Detection range	Blind	Resolution	Repeatability	shape
M12	20 - 40mm	5 mm	-	-	Straight
M18	20 - 60mm	7 mm	-	-	Straight
M30	20 - 100mm	7 mm	-	-	Straight

UDB slot label

Tybe	Detection range	Blind	Resolution	Repeatability	shape
UDB	5mm	-	-	-	Slot

M12 Cylindrical

M12 external thread, simple and compact ultrasonic sensor design, especially suitable for short-distance high-precision and narrow sound cone detection.

- The shortest external dimension is only 50mm, which is a compact form factor for easy installation.
- Switch output/analog output /RS485 output /IO-link output
- Detection distance: 120/200mm
- Temperature compensation function

M18 Cylindrical

M18 external thread installation, the longest shell length is 55mm. Ultrasonic sensor with small appearance and cost performance in 1m measuring range.

- The shell is 45/55mm series
- Switch output/analog output /RS485 output /IO-link output
- Temperature compensation function
- External synchronization function

M18 Elbow cylindrical

M18 external thread installation, Model with 90 degree elbow at the top. Ultrasonic sensor with small appearance and cost performance in 1m measuring range.

- The shell for 45/55mm two series, corresponding to the provision of elbow models
- Switching output/analogue output/RS485 output/IO-link output
- Temperature compensation function
- External synchronisation function

UCC Corrosion Resistance Cylindrical

PTFE and stainless steel design. suitable for all kinds of corrosive environments such as strong acid and alkali.

- Analog output /RS485 output /IO-link output
- Provides a 2.5 metre detection range
- Temperature compensation function
- Narrow cone design

M30 Cylindrical

M30 external thread installation, short design.

- Measuring distance of 2000/4000/6000mm
- Switch output/analog output /RS485 output /IO-link output
- External synchronization function
- Temperature compensation function

UR Series

The housing is compact, easy to install and waterproof.

- npn or pnp switching outputs
- Switch output/analog output /RS485 output /IO-link output/Modbus-rtu standard protocol communication
- Temperature compensation function
- External synchronization function

UDA Double Sheet

M12/M18/M30 external thread opposite installation design is compatible with the thinnest and thickest material detection to the greatest extent.

- Materials with different thicknesses ranging from 0.01mm to 3mm can be detected.
- Compatible with paper, plastic film, silicon wafer and metal sheet, etc.
- Can be use for detecting transparent material.
- 3 switch outputs

UDB Slot Label

Groove detection mode can accurately locate the position of high-speed moving labels, and is widely used in various label equipment.

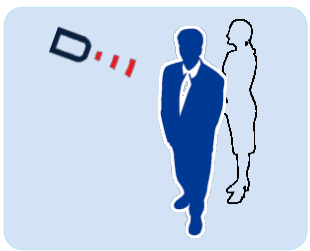
- Used for label/joint detection and material fracture monitoring.
- You can teach and mediate different label materials automatically or by pressing keys.
- Two on-off outputs
- Output speed is less than 1ms

Ultrasonic sensors show excellent performance in the application of non-contact positioning and distance measurement. It is not affected by color and shape, and is not limited by the material of the measured object, so it is widely used in industrial automation scenes.

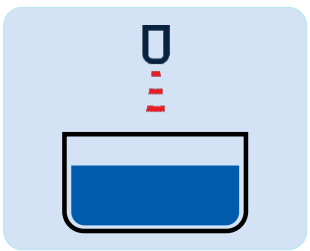
Target market of ultrasonic sensors:

- Industry
- Packaging Machinery
- Mobile Equipment
- Manufacturing and equipment engineering
- Process equipment
- New energy manufacturing equipment
- Material handling
- Gate control
- Monitoring and control of water level and material level
- Printing, paper and post-press processing
- Textile machinery
- Intelligent city environment detection and control

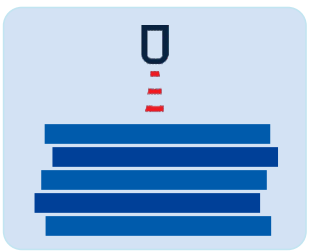
安全防护控制
Anti-collision control



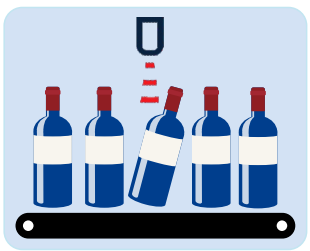
液位料位检测
Level Control



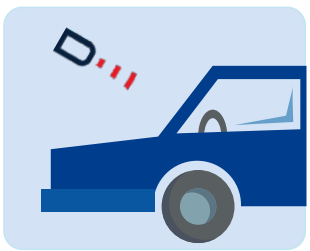
堆垛高度控制
Stacking Height Control



质量控制
Quality Control

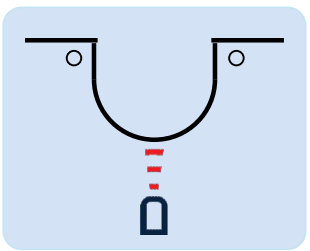


定 位
Positioning

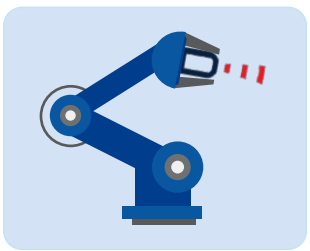


透明物体检测
Transparency Count

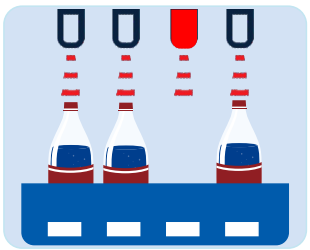
张力控制
Loop Control



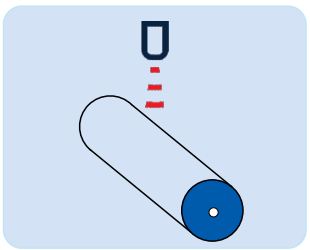
机械臂定位
Robotic Sensing



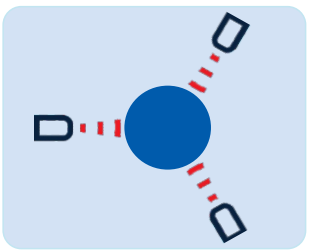
装箱填料控制
Crate Inspection



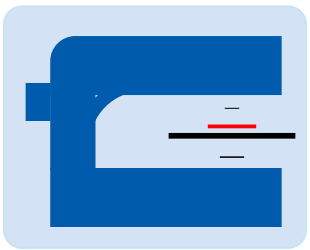
卷径检测
Diameter Checking



吹膜机控制
Control for Foil Extruder



双张检测
Double Detection



Quick Selection
Main Products
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Unstable description
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M18
M30
UDA
UCC
UDB
UR

U(1) B(2) 1000(3) - 18(4) GM(5) 55A(6) - E2(7) SH101(8) - V15(9)

Number	Name	Code And Meaning
1	U	Ultrasonic Sensor
2	Type	B Cylindrical Basic C Custom Made CC Chemical Resistance D B(A/C) Double Sheet Detection
3	Detection Range	120 120 mm 300 300 mm 6000 6000 mm
4	Shell	12 Cylinder, M12mm 18 Cylinder, M18mm 30 Cylinder, M30mm U Square Varikont (U1, U9) FK Slot FK(FK1....) F42 Square F42
5	Housing Material (Only for Cylinder)	G M Meteal G K Plastic
6	Length And Shape Of Shell	45, 50, 55 ,60 Represents The Length Of Different Shells A 90-degree elbow series
7	Electrical Output	E npn + pnp Double switch output E2/E3 / E4/E5 Single npn or single pnp switch output E6/E7 Dual pnp or dual npn switching output U Single analog voltage 0-10v output I Single analog current 4-20mA output IU Analog voltage 0-10V+ analog current 4-20mA dual output IE4 Analog current 4-20mA+npn dual output UE4 Analog voltage 0-10V+npn dual output IE5 Analog current 4-20mA+pnp dual output UE5 Analog voltage 0-10V+pnp dual output R4 Rs485 output IO IO-LINK output
8	Custom Made Code	SH101 XA101 .....
9	Connection	V Cable V1 4pin, m12x1 V3 3pin, m8x1 V4 4pin, m8x1 V15 5pin, m12x1

Rationale

Ultrasonic sensor makes use of the characteristics of sound waves to provide a non-contact and accurate detection scheme for the state and distance of objects.

The sensor transmits mechanical sound waves with high frequency, and receives the sound waves reflected by the object. By calculating the time or energy between transmitting and receiving sound waves, the accurate distance or state of the target object can be obtained. Ultrasonic sensors are different from ordinary proximity switches and photoelectric sensors. Compared with inductive or capacitive proximity switch, its detection distance is longer. Compared with photoelectric sensor, it can be used in worse environment, and is not affected by the color of the target, dust and water mist in the air.

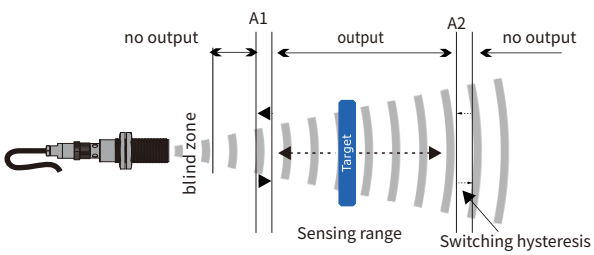
Ultrasonic sensors are suitable for detecting objects in different states, such as liquid, transparent materials, reflective materials and particles.

- Accurate
- Acoustic Properties
- Unaffected By Particles
- Not Affected By Water Mist

Switch output,no/nc set

The factory default setting of the sensor is normally open NO.

You can switch to normally closed NC by setting A2 point to the near side and A1 point to the far side.

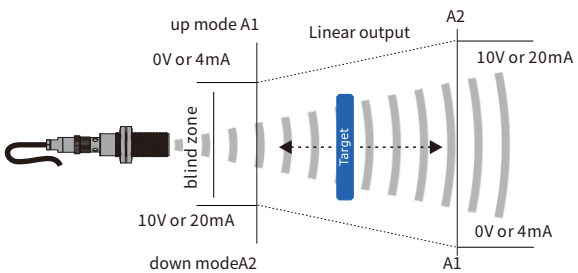


Analog output, up/down mode set

Analog voltage output type of sensor, the factory default setting is that the minimum detection distance value and the maximum detection distance value respectively correspond to 0V and 10V of analog output, which is the rising mode.

Analog current output type of sensor, factory default setting is that the minimum detection distance value and the maximum detection distance value respectively correspond to 4mA and 20mA of analog output, which is the rising mode.

The analog voltage output type and the analog current output type can be switched to the down mode by setting the A2 point near and the A1 point far side.



Digital RS485

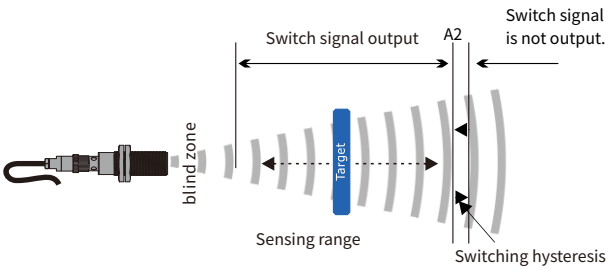
The factory default setting of sensor is Modbus protocol.

The agreement can be customized according to customer requirements.

Proximity Switch Mode

The sensor is provided with an A2 independent switching point, Different outputs are activated within the distance of the target passing through the corresponding switching point A2. The switch can be arbitrarily set in the detection range.

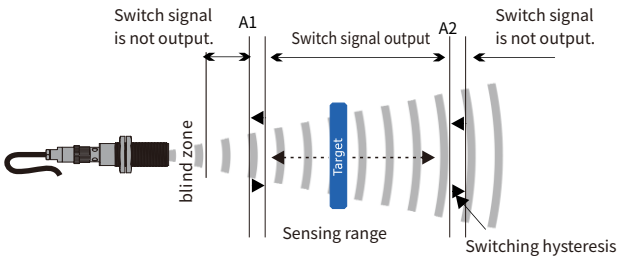
This working mode is suitable for counting or presence or absence detection on the conveyor belt.



Window Mode (interval Mode)

In window mode, the sensor can set two switching points A1 and A2.Each output will only be activated in A1 and A2 intervals. The two switching points can be arbitrarily set in the detection range. This working mode is suitable for detecting the defective rate of products.

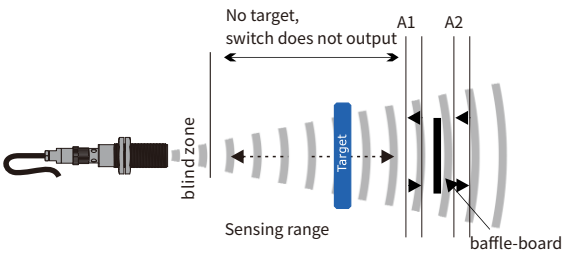
For example, check whether the bottle in the wooden box meets the height standard, Detect products that are too high or too short.



Reflex arc mode

The reflection mode is actually a special window mode, Place the fixed reflector in the set window. As long as the target object completely blocks the reflector, the sensor will send out a signal. The working mode is similar to that of photoelectric reflector, Ultrasonic sensors don't need a special reflector, any reflector can be used.

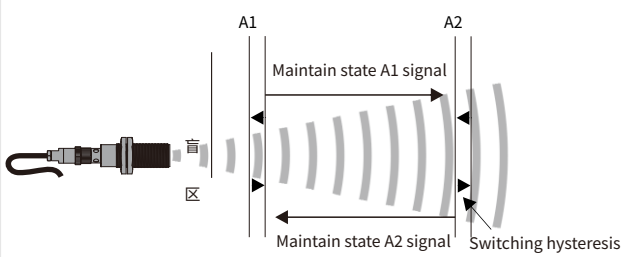
Whether the target absorbs or transfers sound waves. This working mode can be used to detect foam or other sound-absorbing materials.



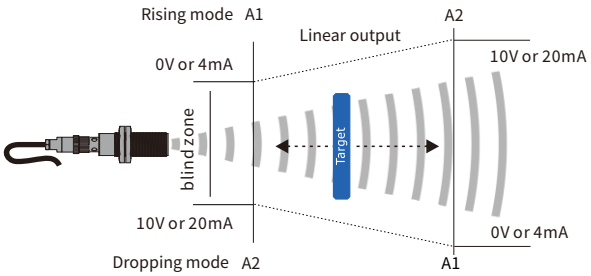
Double switch mode (hysteres is mode)

Set A1 and A2 points in the detection range of the sensor. When the target reaches point A1 or A2, the output is switched. When moving from point A1(A2) to point A2(A1), the sensor keeps the current ON. Off state. Until the point A2(A1) passes, the output switches to the original state.

This working mode is used to automatically control liquid level and material level.



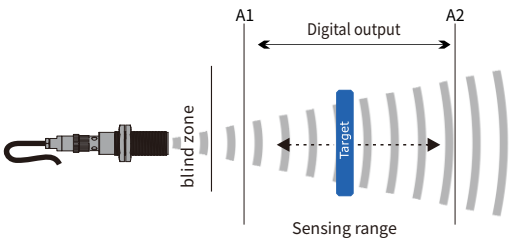
Analog Output Mode



Within the effective detection range of the sensor, A1 and A2 points can be arbitrarily set. The distance between points A1 and A2 will be proportional to the voltage (0-10V) Or current (4-20mA) signals are uniformly distributed and output. The distance information of the object is output linearly and in real time with analog signals. According to the position of points A1 and A2, switch the ascending mode and descending mode.

This working mode is suitable for all kinds of PLC, inverter and other real-time control.

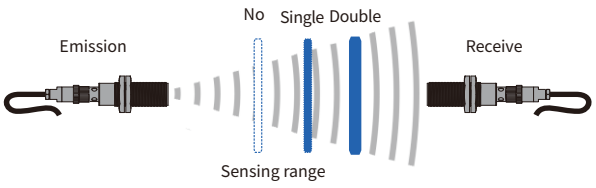
Digital Output Mode(IO-LINK, RS232,RS485,TTL,CAN...)



Sensors can communicate in real time at the level of system architecture. The measured distance value is transmitted to the controller in real time in the form of serial data bits.

This working mode is suitable for all kinds of developed systems.

Double Sheet Detection



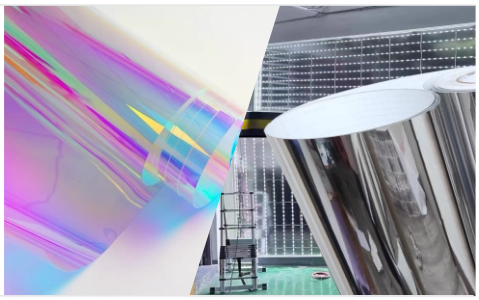
Ultrasonic single-sheet and double-sheet detection is the working mode of correlation, The number of sheets of material can be judged by detecting the sound wave energy transmitted through different sheets.

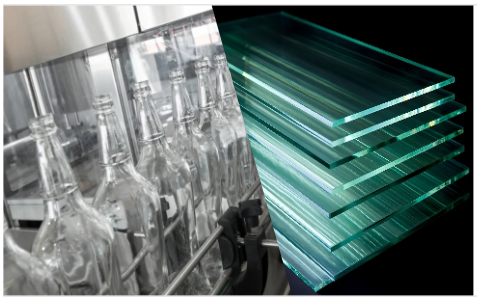
Used to detect single and double sheets of paper, film, plastic sheet and metal sheet.

Ultrasonic sensors can detect almost all liquids,
Such as purified water, oil and various solvents.

Ultrasonic sensors can detect different colours of ink, ink, etc.

Detection of reflective materials such as gold and silver foil.
The ultrasonic sensors all perform well.





Detect various transparent materials and reflective materials,
Such as glass bottles, glass plates, transparent PP/PE/PET films, etc.

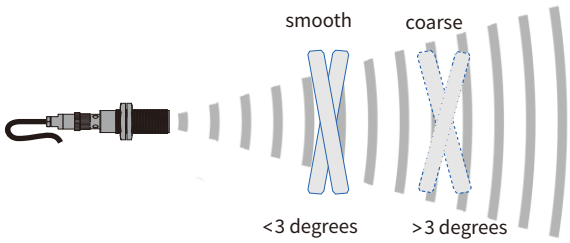
Almost all fiber fabrics of different colors can be
ultrasonic sensors can easily detect it.

Ultrasonic sensors are used to detect grain, etc. and automatically control the material level Automatic control of coal, sawdust, cement and other powder levels is also very suitable.

Installation and operation instructions

Ultrasonic sensors can be used in harsh environments, but water droplets and excessive dust accumulation will affect the normal output of ultrasonic waves. Fine dust and non-accumulated stains will not affect the normal work output.

To detect the object with smooth surface and high flatness, the sensor should be installed at an angle of 90 3 with the front of the object to be detected. Prevent the installation angle from being too large, and the sensor will not receive reflected sound waves.



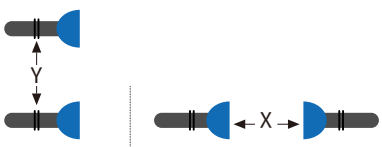
The surface of the object is rough, and the installation angle of the sensor can be greater than 3. Due to the inherent characteristics of sound waves, when detecting some materials with strong sound absorption, such as cotton, sponge and special cloth, the effective detection distance of the sensor will be shortened. The specific installation conditions shall be subject to on-site debugging.

When selecting the type, it needs to be tested according to different materials.

Installation spacing

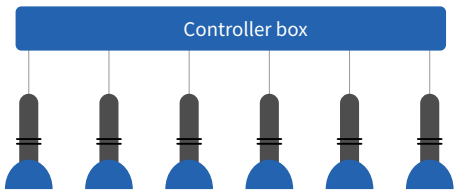
When two or more sensors of the same model are used respectively, the same frequency interference of the sensors will occur when they are installed too close, resulting in abnormal output of different sensors.In order to avoid this, enough distance should be kept between multiple sensors of the same model during installation.

The recommended installation distance is as follows:



Operating range		
150 mm	≥ 300 mm	≥ 1.5 m
300 mm	≥ 400 mm	≥ 1.8 m
500 mm	≥ 500 mm	≥ 2.5 m
1000 mm	≥ 700 mm	≥ 4.0 m
2000 mm	≥ 1500 mm	≥ 10.0 m
4000 mm	≥ 3000 mm	≥ 20.0 m
6000 mm	≥ 4000 mm	≥ 30.0 m

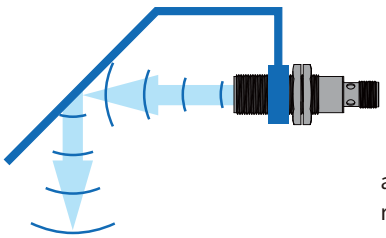
Synchronizing function



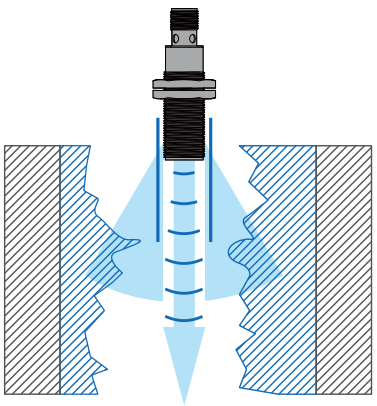
If multiple sensors are installed, when the installation distance is smaller than the distance that will cause mutual interference, it is necessary to use synchronous or asynchronous function. synchronous or asynchronous function controls multiple sensors to measure at the same time.

RAYCOH ultrasonic sensor with synchronous function. When sensors of the same model or different models are installed, the synchronous function or asynchronous function is realized by the synchronous controller.

Redirecting the sound



The sound wave beam attenuates very little after being reflected and redirected by a smooth reflecting surface.



he propagation direction of sound waves can be deflected by using suitable fittings or adjusting the installation angle. This can be installed and used in some narrow environments.

Effect of air pressure, air flow and humidity

Air temperature is the most influential factor on the accuracy of ultrasonic sensor. Ultrasonic waves travel at different speeds in the air at different temperatures. Generally speaking, every 1°C change in air temperature will affect the measurement accuracy by 0.17%.

All ultrasonic sensors of RAYCOH are equipped with temperature compensation circuits. The repetition accuracy error is controlled at about 0.15%.

Effect of air pressure, air flow and humidity

The air pressure below 3 kilometers above sea level has little influence on the ultrasonic sensor. If the test distance exceeds 3 kilometers, the test distance will be shortened. Please test and use it. Wind speed below 60km/h has little effect on ultrasonic sensor. It is recommended to use it at wind speed below 60 km/h. The influence of air humidity on ultrasonic sensor can be neglected.

Use IO-Link
Universal · Smart · Easy

CE

M12 cylindrical

Features

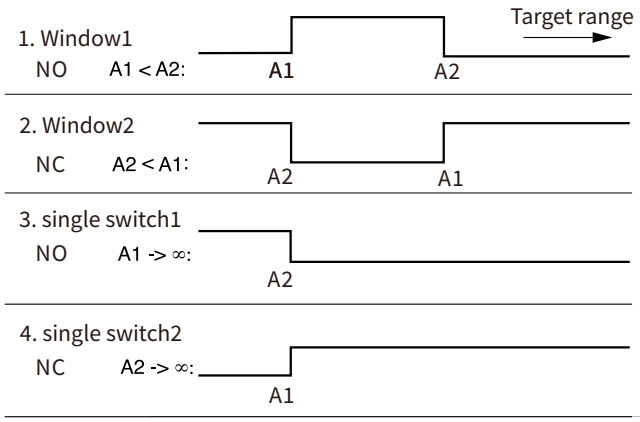
- M12cylindrical, only 25mm in length
- Small blind area, suitable for close-range find detection

Details

- 1 npn or pnp switch output
- Support the latest IO-Link outputs, RS485 modus-rtu outputs
- Analogue voltage output 0-10V or analogue current output 4-20mA
- Detection distance learning function via white line
- temperature compensation
- Standard working voltage DC 10-30V

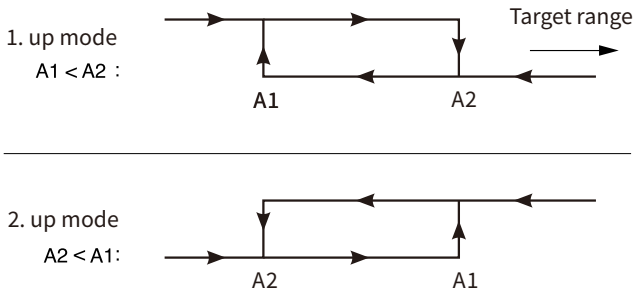
Output Methods and Reference Curves

Five output modes of E4/E5 switching value

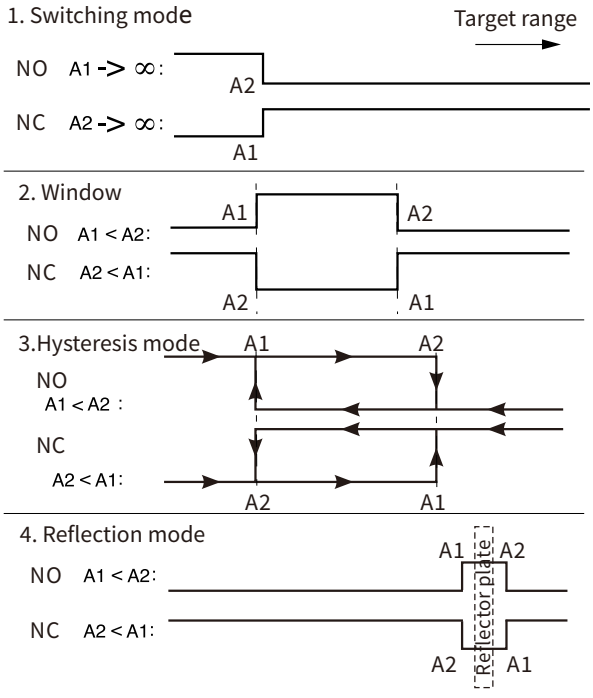


5. A1 -> ∞, A2 -> ∞: target presence detection;
Target detected: switch closed; Target not detected: switch open

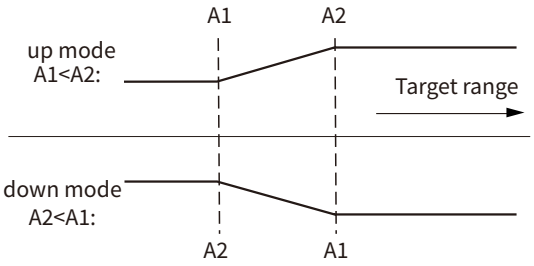
Two output modes of E2/E3 switching value



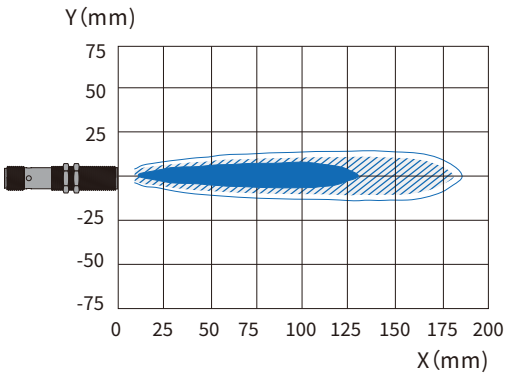
Support IO-Link switching output mole



Analog output mode

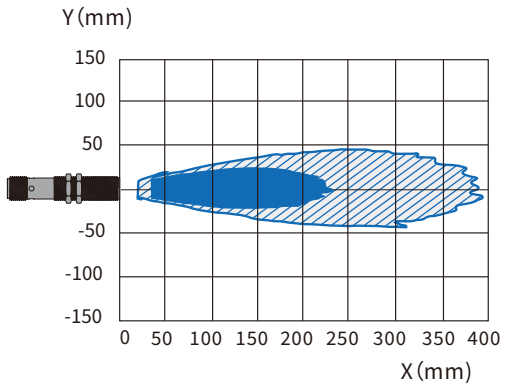


UB120



– flat 10×10mm – round rod Ø 8mm

UB200



– flat 10×10mm – round rod Ø 8mm

Teach-in function

Sensors of different models or the same model can realize asynchronous function or synchronous function, which needs to be realized by synchronous controller.

Teach-in function

Sett switch point

Ultrasonic sensor with switch output, the corresponding two switch points can be set. The setting method is to connect the TEACH-IN learning line to the power supply -UB or +UB respectively, and the connection time is at least three times when the indicator light flashes.

During the setting process, the LED light indicates whether the sensor detects the target. Set A1 point when the TEACH-IN learning line is connected to -UB, and set A2 point when it is connected to +UB.

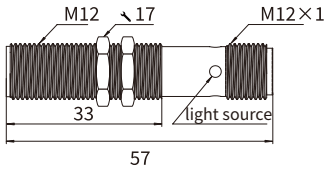
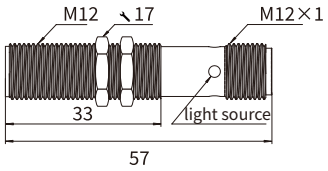
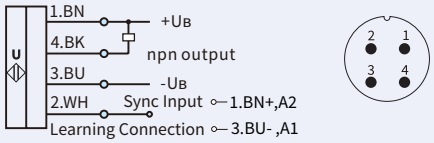
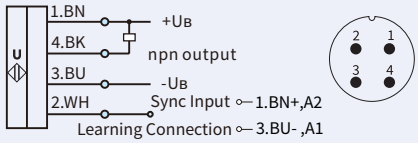
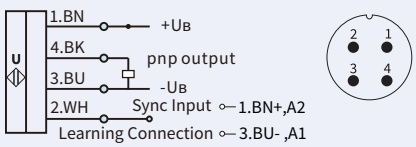
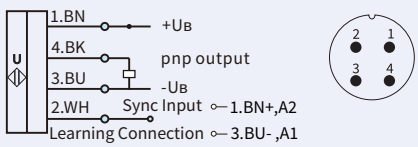
The following five different output functions can be selected:

mode	condition	requirement
Window Mode	NO	Place the target near the switch point. Set the TEACH-IN learning line connection -UB to A1 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
		Place the target at the far switch point. Set the TEACH-IN learning line connection +UB to A2 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
	NC	Place the target at the near switch point, connect the TEACH-IN learning cable to the +UB setting A2 point until it is green and the indicator light blinks more than 3 times, disconnect.
		Place the target at the far switch point, connect the TEACH-IN learning cable to the -UB setting A1 point until it is green and the indicator light blinks more than 3 times, disconnect.
Switch mode	NO	With the target at the near switch point, connect the TEACH-IN learning cable to the +UB set point A2 until the green indicator blinks more than 3 times to disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect. Set the TEACH-IN learning line to -UB at point A1.
	NC	Place the target near the switch point. Set TEACH-IN LEARNING LINE CONNECTION -UB to point A1 until the green indicator blinks more than 3 times, then disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect.Set the TEACH-IN learning line connection +UB to A2 point.
Object presence detection mode	/	Cover the sensor with your hand or remove all objects within the sensor's detection range. Set TEACH-IN LEARNING CABLE CONNECTION -UB to point A1 until the red indicator blinks more than 3 times, then disconnect. Then disconnect. Connect the TEACH-IN Learning Cable +UB to point A2 until the red light blinks more than 3 times, then disconnect.

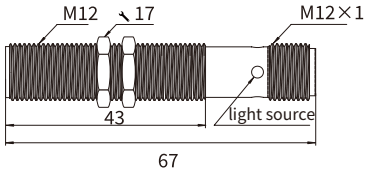
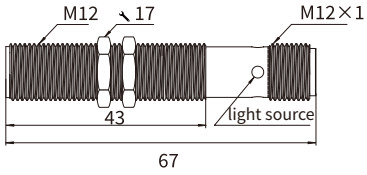
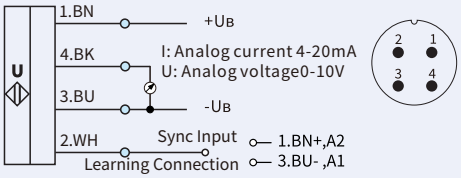
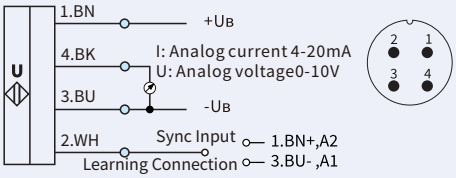
Factory settings

A1: Blind zone (minimum working range)
A2: Maximum range

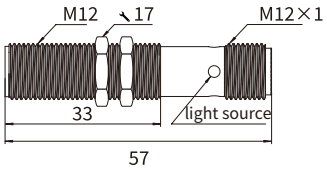
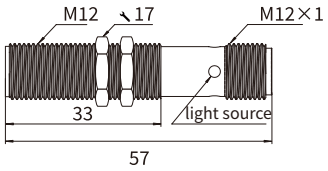
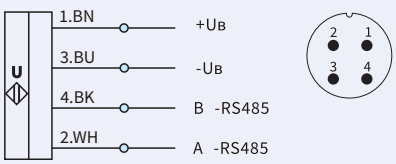
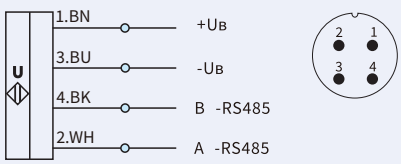
12GM12 cylindrical, switch output: E2/E3/E4/E5

Detection range	20-120mm	20-200mm
		
Blind zone	0-20mm	0-20mm
Resolution	0.1mm	0.1mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1%(Built-in temperature drift compensation)	±1%(Built-in temperature drift compensation)
Switching hysteresis	1mm	1mm
Switching frequency	55Hz	45Hz
Response time	18ms	22ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm，U/＞1k Ohm	I/<300 Ohm，U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	4pin M12 connector	4pin M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C（248~343K）	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C（233~358K）	-40°C~+85°C (233~358K)
Weight	16g	16g
Model	UB120-12GM55-E2-V1 UB120-12GM55-E4-V1	UB200-12GM55-E2-V1 UB200-12GM55-E4-V1
	1 npn switch output NO/NC Adjustable, Short Circuit Protection	1 npn switch output NO/NC Adjustable, Short Circuit Protection
		
Model	UB120-12GM55-E3-V1 UB120-12GM55-E5-V1	UB200-12GM55-E3-V1 UB200-12GM55-E5-V1
	1pnp switch output NO/NC adjustable, short circuit protection	1pnp switch output NO/NC adjustable, short circuit protection
		

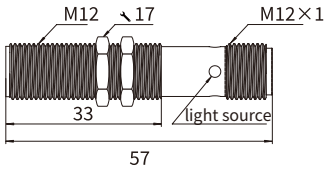
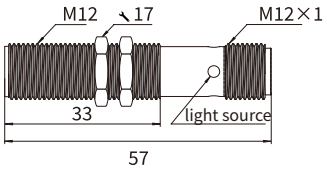
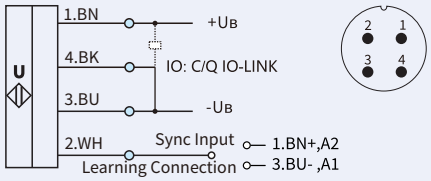
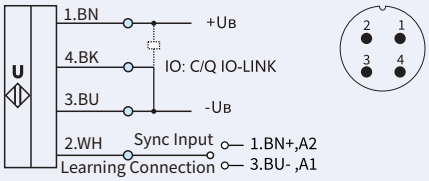
M12 cylindrical, RS485/IO-LINK analoy output: I/U

Detection range	20-120mm	20-200mm
		
Blind zone	0-20mm	0-20mm
Resolution	0.1mm	0.1mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1%(Built-in temperature drift compensation)	±1%(Built-in temperature drift compensation)
Switching hysteresis	1mm	1mm
Switching frequency	55Hz	45Hz
Response time	18ms	22ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	4pin M12 connector	4pin M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	20g	20g
Model	UB120-12GM65-I-V1	UB200-12GM65-I-V1
	UB120-12GM65-U-V1	UB200-12GM65-U-V1
	U: Voltage output 0-10V I: Current output 4-20mA	U: Voltage output 0-10V I: Current output 4-20mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up
		

M12 Cylindrical, Analogue Output RS485

Detection range	20-120mm	20-200mm
		
Blind zone	0-20mm	0-20mm
Resolution	0.1mm	0.1mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1%(Built-in temperature drift compensation)	±1%(Built-in temperature drift compensation)
Switching hysteresis	1mm	1mm
Switching frequency	55Hz	45Hz
Response time	18ms	22ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	4pin M12 connector	4pin M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	16g	16g
Model	UB120-12GM55-R4-V1	UB200-12GM55-R4-V1
	RS485 Modbus standard protocol	RS485 Modbus standard protocol
		

M12 Cylinderical, Analogue IO-Link Outputs IO

Detection range	20-120mm	20-200mm
		
Blind zone	0-20mm	0-20mm
Resolution	0.1mm	0.1mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1%(Built-in temperature drift compensation)	±1%(Built-in temperature drift compensation)
Switching hysteresis	1mm	1mm
Switching frequency	55Hz	45Hz
Response time	18ms	22ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	4pin M12 connector	4pin M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	16g	16g
Model	UB120-12GM55-IO-V1	UB200-12GM55-IO-V1
	Support IO-LINK output	Support IO-LINK output
		

Use IO-Link
Universal · Smart · Easy

CE

M18 cylindrical

Feature

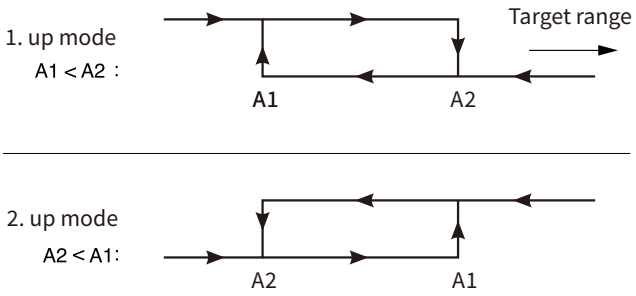
- M18 Mounting Thread Sleeve
- Easy to install

Details

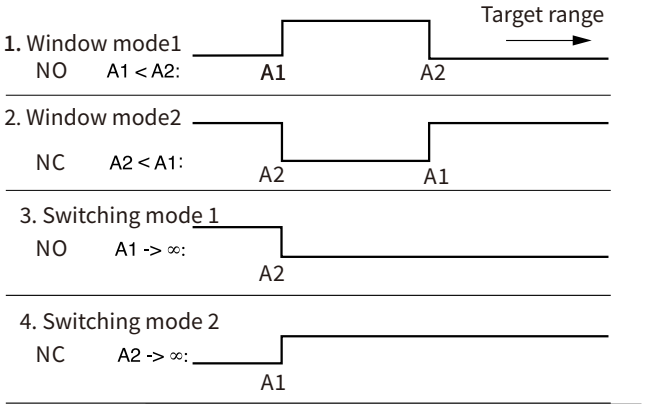
- 1 npn or pnp switch output
- 2 npn or pnp switching outputs
- Analogue voltage output 0-10V or analogue current output 4-20mA
- Latest IO-Link outputs, RS485 modbus-rtu outputs
- Detection distance learning function via grey line
- Standard working voltage DC 10-30V
- temperature compensation

Output Methods and Reference Curves

Two output modes of E2/E3 switching value

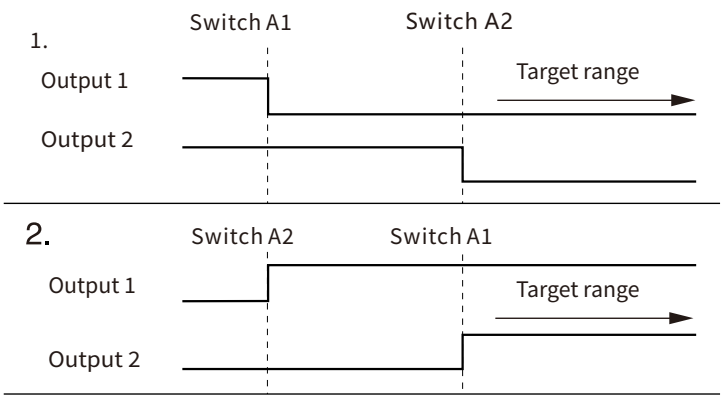


Five output modes of E4/E5 switching value



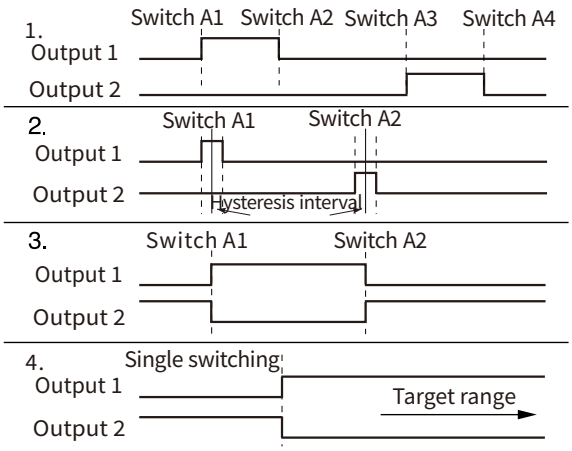
5. A1 -> ∞, A2 -> ∞: Object presence detection;
Target detected: the switch is closed; Target not detected: switch open

E6/E7 dual switch three output modes

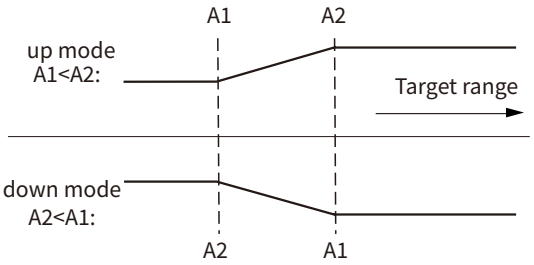


3. Switch A1->∞: Output 1; Detect that existence of an object
Switch A2->∞: Output 2; Detect that existence of an object
Switch A1&A2->∞: Double output; Detect that existence of an object

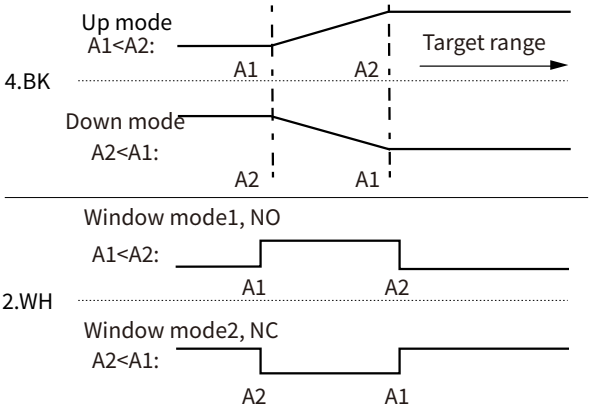
E8/E9 dual switch four output modes



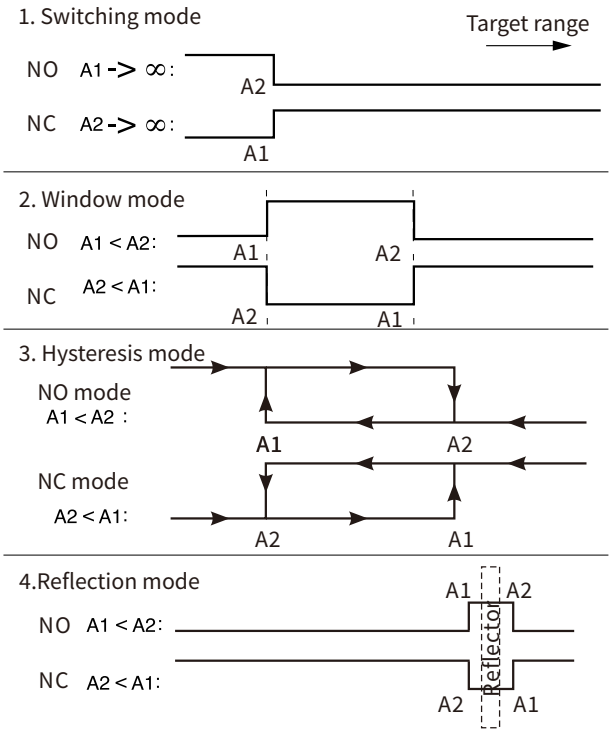
Analog output mode



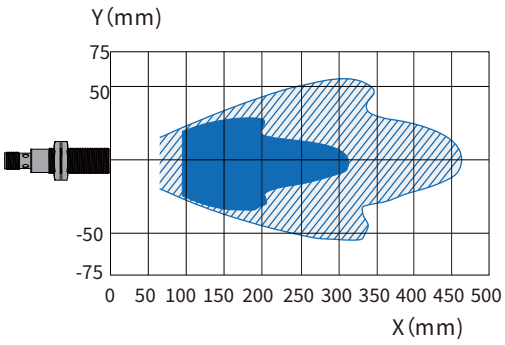
Output mode of analog+switch



2EP-IO switching Output mode

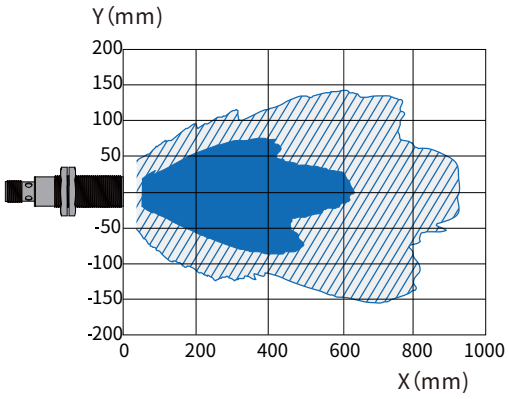


UB300



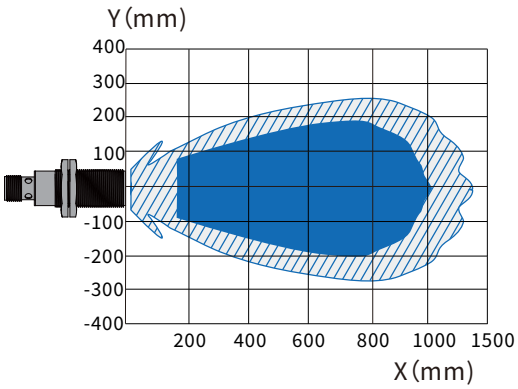
– flat 100×100mm – round rod Ø 25mm

UB500



– flat 100×100mm – round rod Ø 25mm

UB1000



– flat 100×100mm – round rod Ø 25mm

Teach-in function

mode	condition	requirement
Window Mode	NO	Place the target near the switch point. Set the TEACH-IN learning line connection -UB to A1 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
		Place the target at the far switch point. Set the TEACH-IN learning line connection +UB to A2 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
	NC	Place the target at the near switch point, connect the TEACH-IN learning cable to the +UB setting A2 point until it is green and the indicator light blinks more than 3 times, disconnect.
		Place the target at the far switch point, connect the TEACH-IN learning cable to the -UB setting A1 point until it is green and the indicator light blinks more than 3 times, disconnect.
Switch mode	NO	With the target at the near switch point, connect the TEACH-IN learning cable to the +UB set point A2 until the green indicator blinks more than 3 times to disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect. Set the TEACH-IN learning line to -UB at point A1.
	NC	Place the target near the switch point. Set TEACH-IN LEARNING LINE CONNECTION -UB to point A1 until the green indicator blinks more than 3 times, then disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect.Set the TEACH-IN learning line connection +UB to A2 point.
Object presence detection mode	/	Cover the sensor with your hand or remove all objects within the sensor's detection range. Set TEACH-IN LEARNING CABLE CONNECTION -UB to point A1 until the red indicator blinks more than 3 times, then disconnect. Then disconnect. Connect the TEACH-IN Learning Cable +UB to point A2 until the red light blinks more than 3 times, then disconnect.

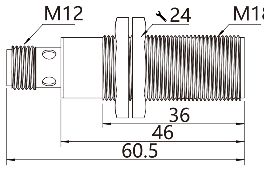
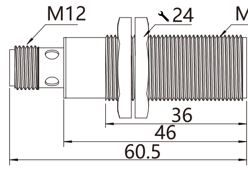
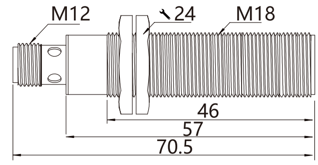
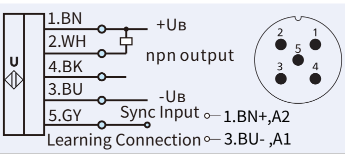
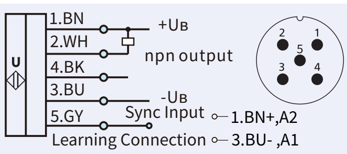
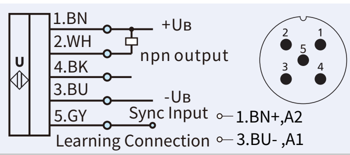
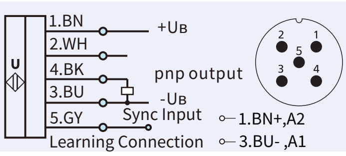
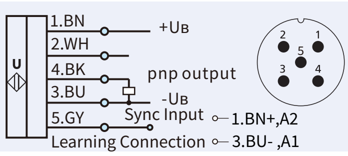
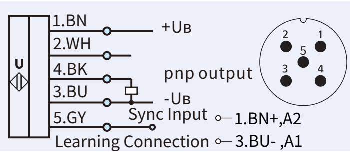
Factory settings

A1: Blind zone (minimum working range)
A2: Maximum range

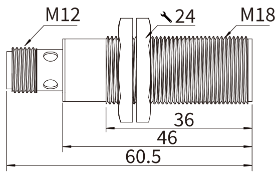
Teach-in function

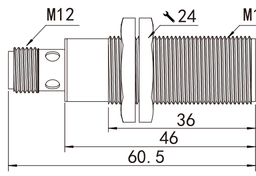
Sensors of different models or the same model can realize asynchronous function or synchronous function, which needs to be realized by synchronous controller.

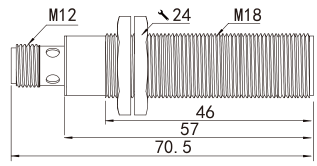
M18 Cylinderical, Switching output E2/E4/E3/E5

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g
Model	UB300-18GM45-E2-V15	UB500-18GM45-E2-V15	UB1000-18GM55-E2-V15
	UB300-18GM45-E4-V15	UB500-18GM45-E4-V15	UB1000-18GM55-E4-V15
	1npn switch output	1npn switch output	1npn switch output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection
			
Model	UB300-18GM45-E3-V15	UB500-18GM45-E3-V15	UB1000-18GM55-E3-V15
	UB300-18GM45-E5-V15	UB500-18GM45-E5-V15	UB1000-18GM55-E5-V15
	1 PNP switching output	1 PNP switching output	1 PNP switching output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection
			

M18 Cylinderical, Single switch output E6/E7/E8/E9

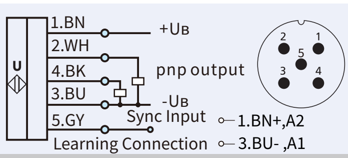


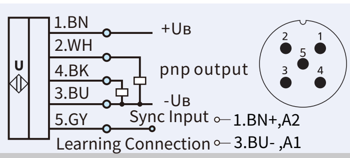


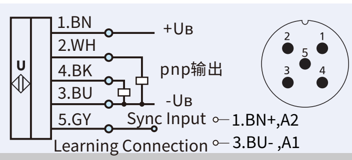


Detection range	30-300mm	50-500mm	60-1000mm
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g

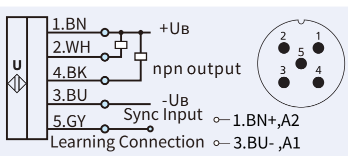
Model	UB300-18GM45-E6-V15	UB500-18GM45-E6-V15	UB1000-18GM55-E6-V15
	UB300-18GM45-E8-V15	UB500-18GM45-E8-V15	UB1000-18GM55-E8-V15
	2pnp switching output	2pnp switching output	2pnp switching output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection

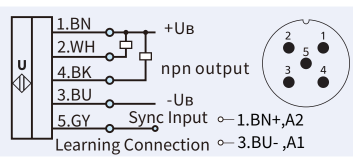


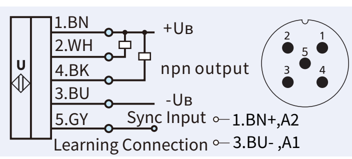




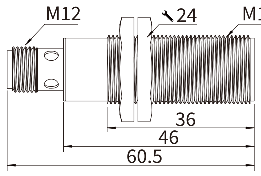
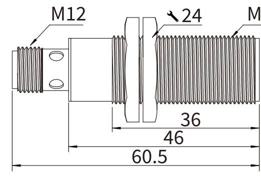
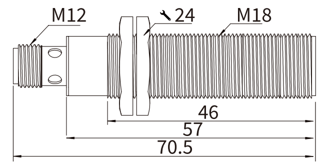
Model	UB300-18GM45-E7-V15	UB500-18GM45-E7-V15	UB1000-18GM45-E7-V15
	UB300-18GM45-E9-V15	UB500-18GM45-E9-V15	UB1000-18GM45-E9-V15
	2npn switching output	2npn switching output	2npn switching output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection



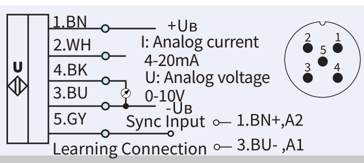


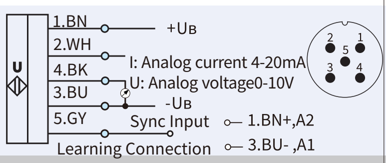


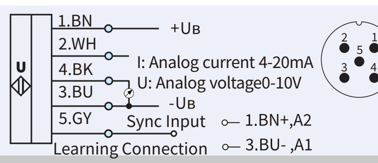
M18 Cylinderical, Analogue output/digital output I/U/IU

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	＜500ms	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g

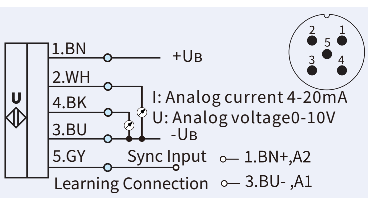
Model	UB300-18GM45-I-V15	UB500-18GM45-I-V15	UB1000-18GM55-I-V15
	UB300-18GM45-U-V15	UB500-18GM45-U-V15	UB1000-18GM55-U-V15
	U: Voltage output 0-10V I: Current output 4-20mA	U: Voltage output 0-10V I: Current output 4-20mA	U: Voltage output 0-10V I: Current output 4-20mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up

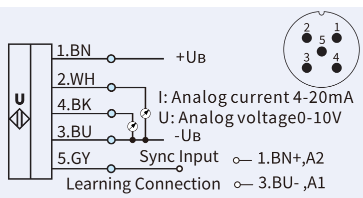


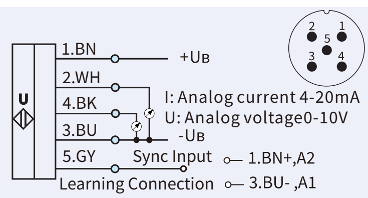




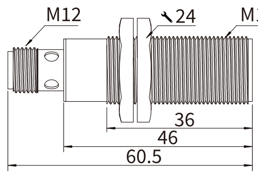
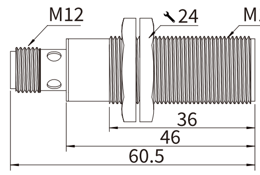
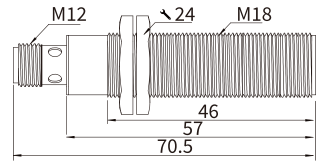
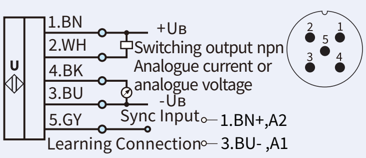
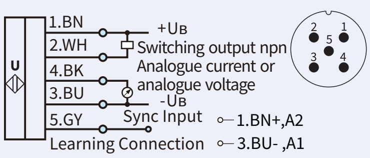
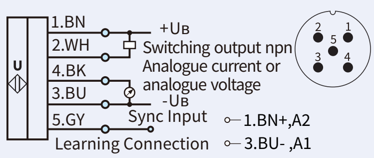
Model	UB300-18GM45-IU-V15	UB500-18GM45-IU-V15	UB1000-18GM55-IU-V15
	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up



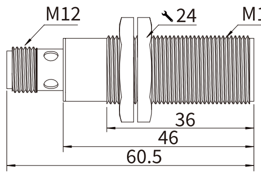
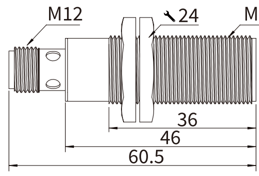
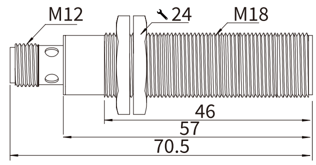
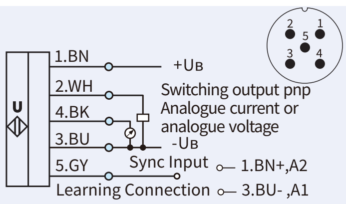
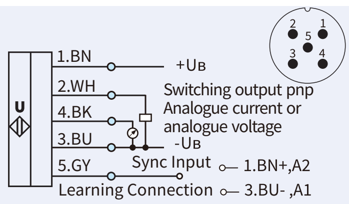
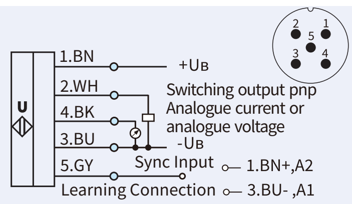




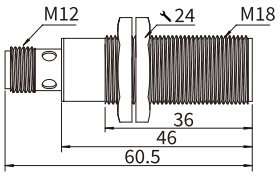
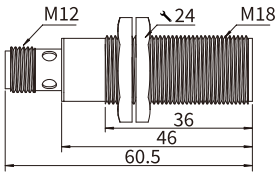
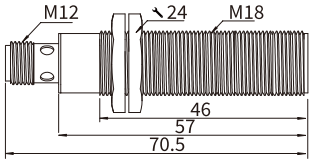
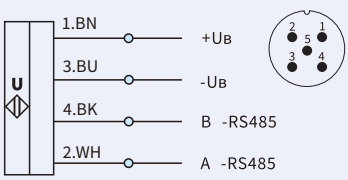
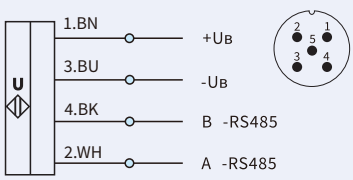
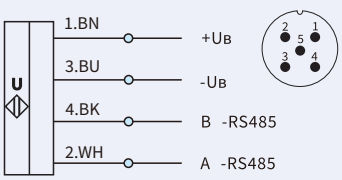
M18 Cylinderical, Analogue output/digital output UE4/IU4

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g
Model	UB300-18GM45-IU4-V15	UB500-18GM45-IU4-V15	UB1000-18GM55-IU4-V15
	UB300-18GM45-UE4-V15	UB500-18GM45-UE4-V15	UB1000-18GM55-UE4-V15
	UE4:Voltage output 0-10V+1NPN	UE4:Voltage output 0-10V+1NPN	UE4:Voltage output 0-10V+1NPN
	IE4:Current output4--20mA+1NPN	IE4:Current output4--20mA+1NPN	IE4:Current output4--20mA+1NPN
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up
			

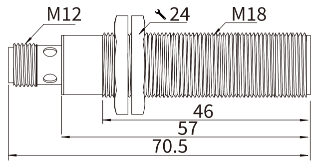
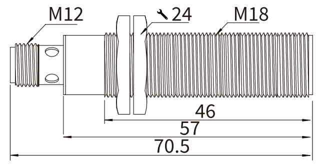
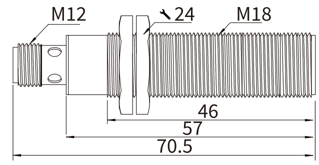
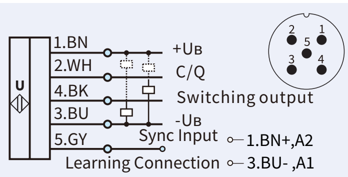
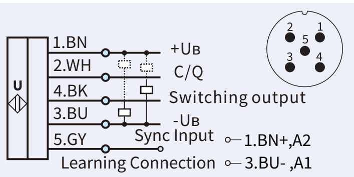
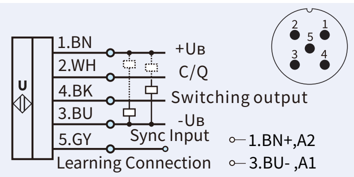
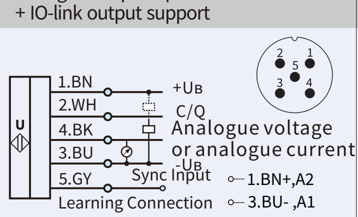
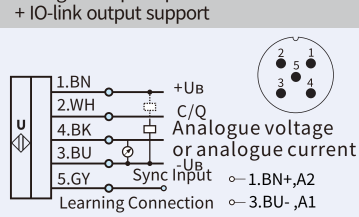
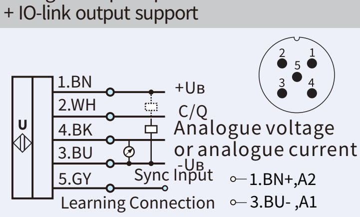
M18 Cylinderical, Analogue output/digital output UE5/IE5

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g
Model	UB300-18GM45-IU5-V15	UB500-18GM45-IU5-V15	UB1000-18GM55-IE5-V15
	UB300-18GM45-UE5-V15	UB500-18GM45-UE5-V15	UB1000-18GM55-UE5-V15
	UE5:Voltage output 0-10V+1pnp	UE5:Voltage output 0-10V+1pnp	UE5:Voltage output 0-10V+1pnp
	IE5:Current output4--20mA+1pnp	IE5:Current output4--20mA+1pnp	IE5:Current output4--20mA+1pnp
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up
			

M18 Cylinderical, Analogue output/digital output RS485

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	＜500ms	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	32g	32g	38g
Model	UB300-18GM45-R4-V15	UB500-18GM45-R4-V15	UB1000-18GM55-R4-V15
	RS485 Modbus standard protocol	RS485 Modbus standard protocol	RS485 Modbus standard protocol
			

M18 Cylinderical, IO-LINK output 2EP-IO/IUEP-IO

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	38g	38g	38g
Model	UB300-18GM55-2EP-IO-V15	UB500-18GM55-2EP-IO-V15	UB1000-18GM55-2EP-IO-V15
	2push pull	2push pull	2push pull
	Support IO-Link output	Support IO-Link output	Support IO-Link output
			
Model	UB300-18GM55-IUEP-IO-V15	UB500-18GM55-IUEP-IO-V15	UB1000-18GM55-IUEP-IO-V15
	Analogue + 1 push pul + IO-link output support	Analogue + 1 push pul + IO-link output support	Analogue + 1 push pul + IO-link output support
			

Use IO-Link
Universal · Smart · Easy

CE

M18 cylindrical-Bends

features

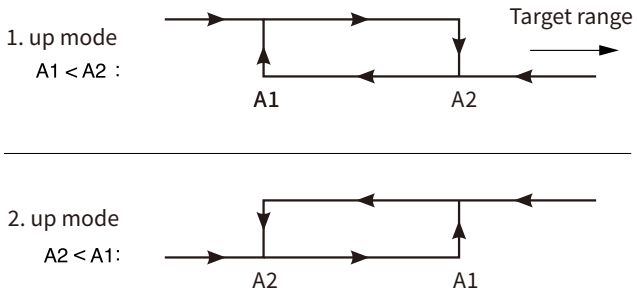
- M18 Mounting Thread Sleeve
- Models with 90 degree elbow at top

Details

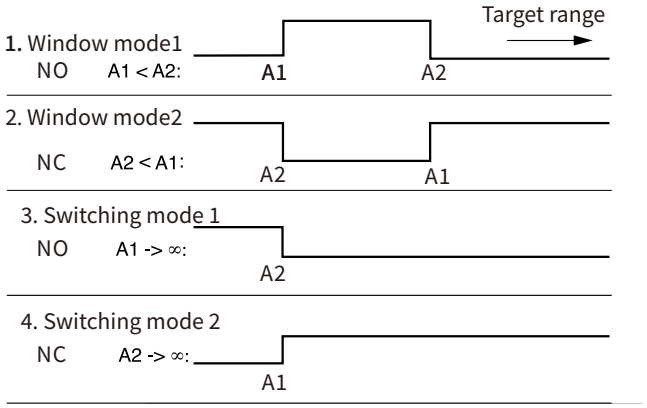
- 1 npn or pnp switch output
- 2 npn or pnp switch outputs
- Analogue voltage output 0-10V or analogue current output 4-20mA
- Latest IO-Link outputs, RS485 modbus-rtu outputs
- Detection distance learning function via grey line
- Standard working voltage DC 10-30V
- Temperature compensation

Output Methods and Reference Curves

Two output modes of E2/E3 switching value

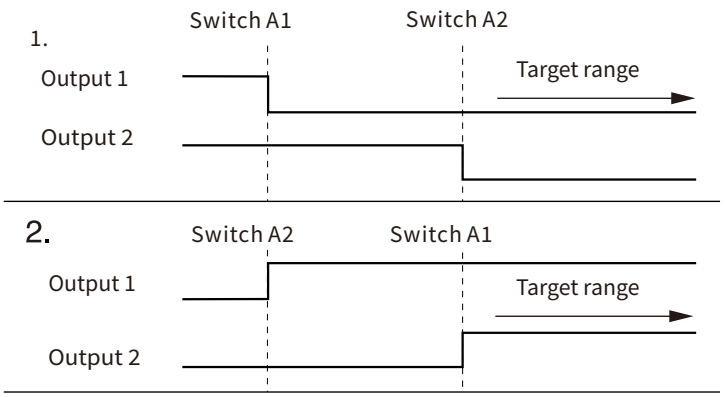


Five output modes of E4/E5 switching value



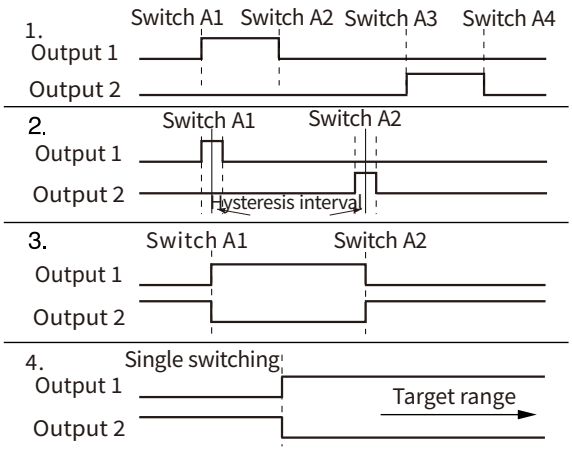
5. A1 -> ∞, A2 -> ∞: Object presence detection;
Target detected: the switch is closed; Target not detected: switch open

E6/E7 dual switch three output modes

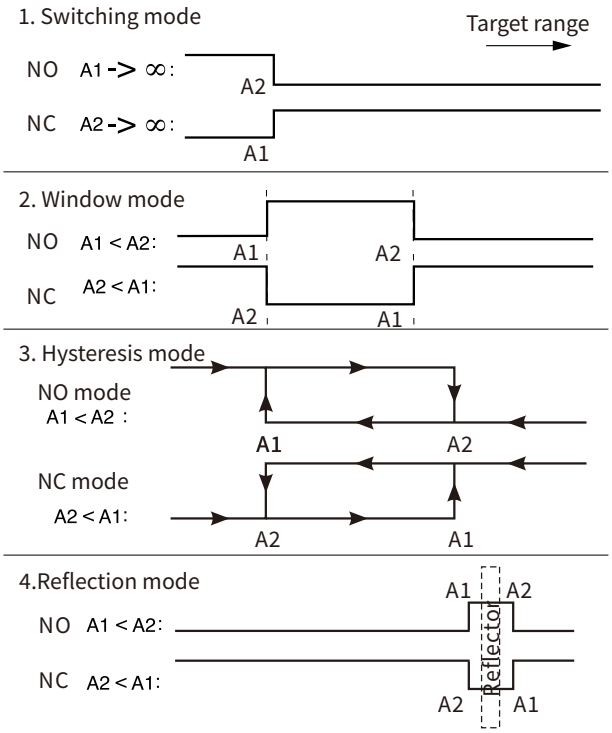


3. Switch A1->∞: Output 1; Detect that existence of an object
Switch A2->∞: Output 2; Detect that existence of an object
Switch A1&A2->∞: Double output; Detect that existence of an object

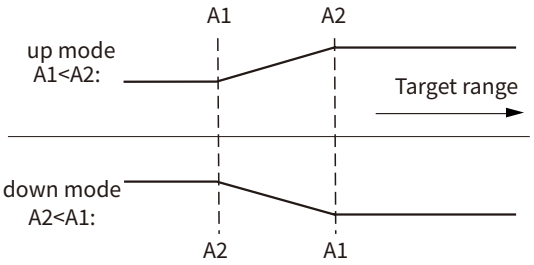
E8/E9 dual switch four output modes



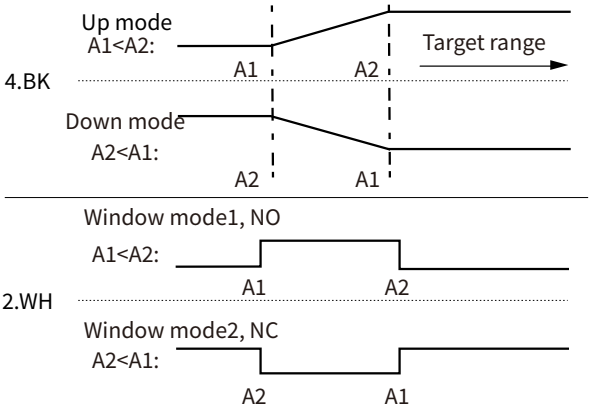
2EP-IO switching Output mode



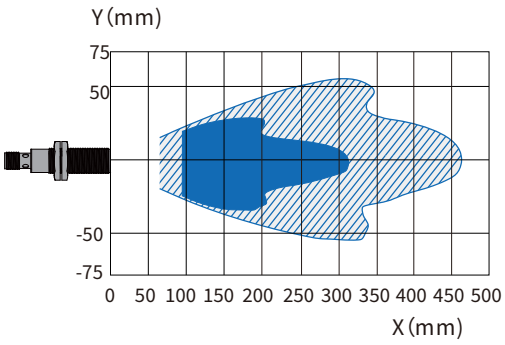
Analog output mode



Output mode of analog+switch

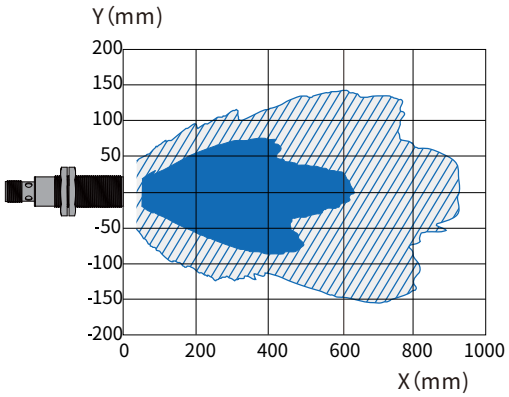


UB300



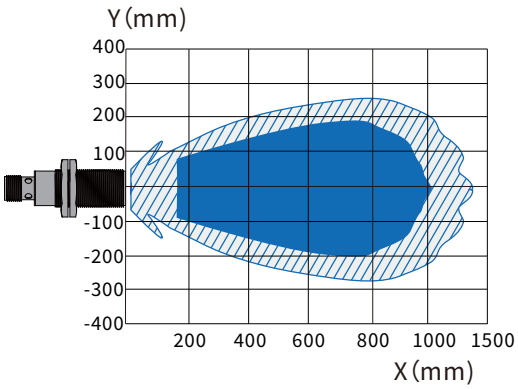
▨ – flat 100×100mm ■ – round rod Ø 25mm

UB500



▨ – flat 100×100mm ■ – round rod Ø 25mm

UB1000



▨ – flat 100×100mm ■ – round rod Ø 25mm

Teach-in function

mode	condition	requirement
Window Mode	NO	Place the target near the switch point. Set the TEACH-IN learning line connection -UB to A1 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
		Place the target at the far switch point. Set the TEACH-IN learning line connection +UB to A2 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
	NC	Place the target at the near switch point, connect the TEACH-IN learning cable to the +UB setting A2 point until it is green and the indicator light blinks more than 3 times, disconnect.
		Place the target at the far switch point, connect the TEACH-IN learning cable to the -UB setting A1 point until it is green and the indicator light blinks more than 3 times, disconnect.
Switch mode	NO	With the target at the near switch point, connect the TEACH-IN learning cable to the +UB set point A2 until the green indicator blinks more than 3 times to disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect. Set the TEACH-IN learning line to -UB at point A1.
	NC	Place the target near the switch point. Set TEACH-IN LEARNING LINE CONNECTION -UB to point A1 until the green indicator blinks more than 3 times, then disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect.Set the TEACH-IN learning line connection +UB to A2 point.
Object presence detection mode	/	Cover the sensor with your hand or remove all objects within the sensor's detection range. Set TEACH-IN LEARNING CABLE CONNECTION -UB to point A1 until the red indicator blinks more than 3 times, then disconnect. Then disconnect. Connect the TEACH-IN Learning Cable +UB to point A2 until the red light blinks more than 3 times, then disconnect.

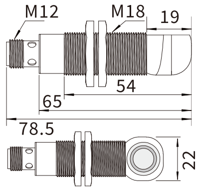
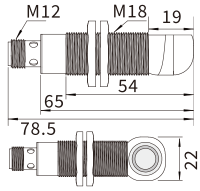
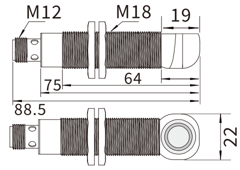
Factory settings

A1: Blind zone (minimum working range)
A2: Maximum range

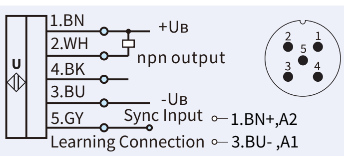
Teach-in function

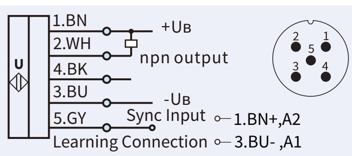
Sensors of different models or the same model can realize asynchronous function or synchronous function, which needs to be realized by synchronous controller.

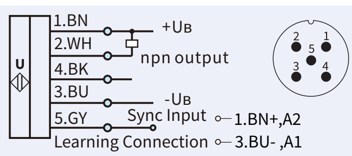
M18 Cylinderical-bends, Switching outputs E2/E4/E3/E5

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g

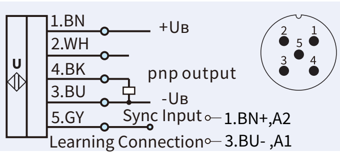
Model	UB300-18GM45A-E2-V15	UB500-18GM45A-E2-V15	UB1000-18GM55A-E2-V15
	UB300-18GM45A-E4-V15	UB500-18GM45A-E4-V15	UB1000-18GM55A-E4-V15
	1npn switch output	1npn switch output	1npn switch output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection

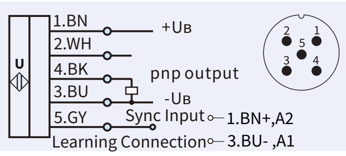


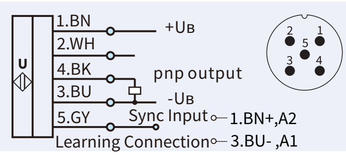




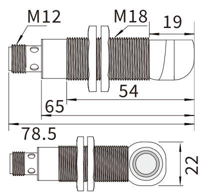
Model	UB300-18GM45A-E3-V15	UB500-18GM45A-E3-V15	UB1000-18GM55A-E3-V15
	UB300-18GM45A-E5-V15	UB500-18GM45A-E5-V15	UB1000-18GM55A-E5-V15
	1pnp switch output	1pnp switch output	1pnp switch output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection

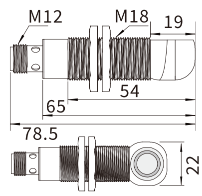


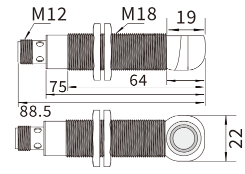




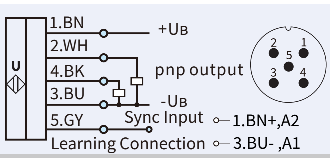
M18 Cylinderical-bends, Switching outputs E6/E7/E8/E9

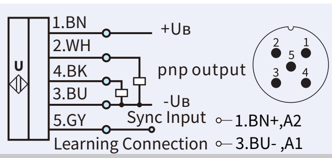


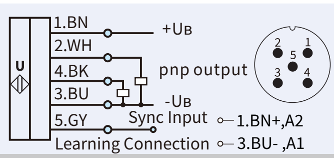




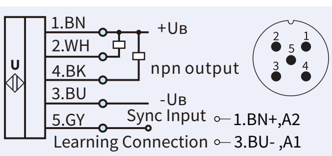
Detection range	30-300mm	50-500mm	60-1000mm
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	＜500ms	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM45A-E6-V15 UB300-18GM45A-E8-V15	UB500-18GM45A-E6-V15 UB500-18GM45A-E8-V15	UB1000-18GM55A-E6-V15 UB1000-18GM55A-E8-V15
	2pnp switching output Short-circuit protection, switchable down/up	2pnp switching output Short-circuit protection, switchable down/up	2pnp switching output Short-circuit protection, switchable down/up

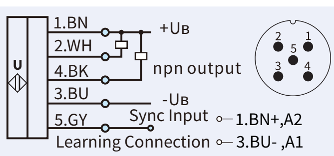


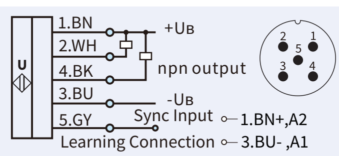




Model	UB300-18GM45A-E7-V15 UB300-18GM45A-E9-V15	UB500-18GM45A-E7-V15 UB500-18GM45A-E9-V15	UB1000-18GM55A-E7-V15 UB1000-18GM55A-E9-V15
	2npn switching output Switchable down/up, short-circuit proof	2npn switching output Switchable down/up, short-circuit proof	2npn switching output Switchable down/up, short-circuit proof

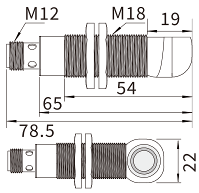


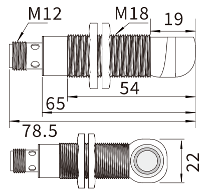


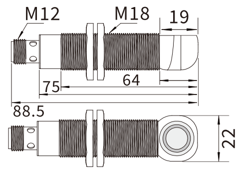


M18 Cylinderical-bends, Analogue output/digital output I/U/IU

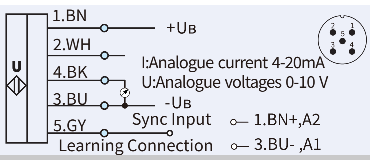
Detection range	30-300mm	50-500mm	60-1000mm

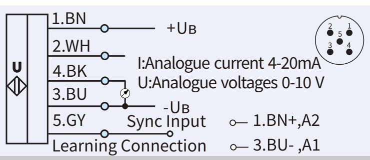


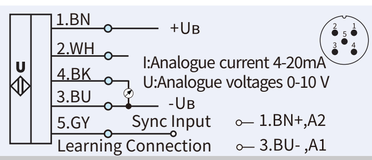




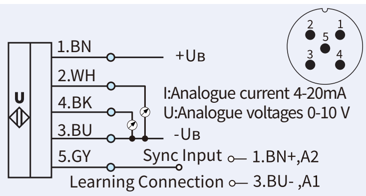
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM45A-I-V15	UB500-18GM45A-I-V15	UB1000-18GM55A-I-V15
	UB300-18GM45A-U-V15	UB500-18GM45A-U-V15	UB1000-18GM55A-U-V15
	U: Voltage output 0-10 V I: Current output 4-20 mA	U: Voltage output 0-10 V I: Current output 4-20 mA	U: Voltage output 0-10 V I: Current output 4-20 mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up

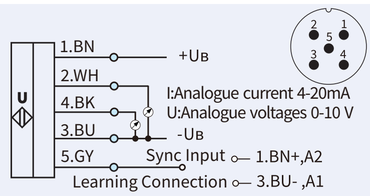


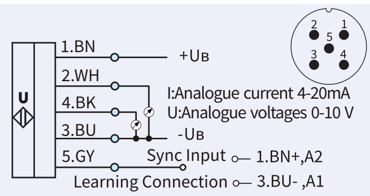




Model	UB300-18GM45A-IU-V15	UB500-18GM45A-IU-V15	UB1000-18GM55A-IU-V15
	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up

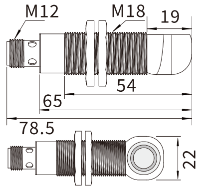
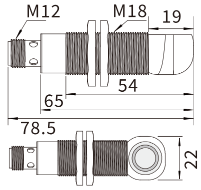
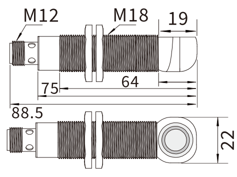
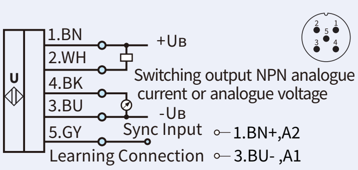
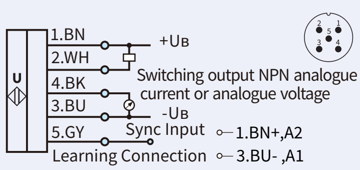
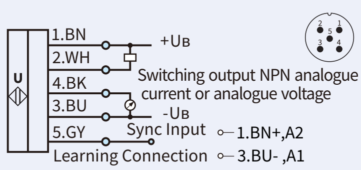




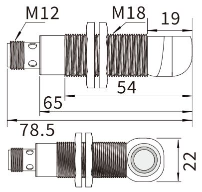
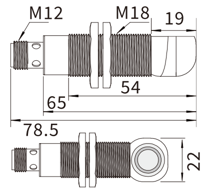
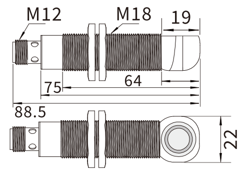


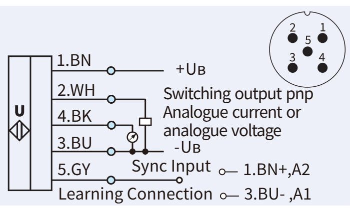
Quick Selection
Main Products
Application
Connotation
Usage pattern
Features
Installation Notes
Accessores
Unstable description
M12
M18
M30
UDA
UCC
UDB
UR

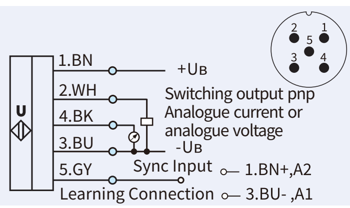
M18 Cylinderical-bends, Analogue output/digital output UE4/IE4

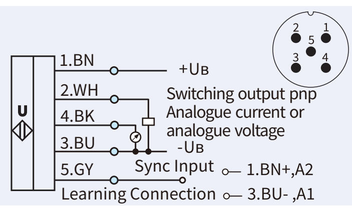
Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM45A-IU4-V15	UB500-18GM45A-IU4-V15	UB1000-18GM55A-IU4-V15
	UB300-18GM45A-UE4-V15	UB500-18GM45A-UE4-V15	UB1000-18GM55A-UE4-V15
	UE4: Voltage output 0-10 V+10npn	UE4: Voltage output 0-10 V+10npn	UE4: Voltage output 0-10 V+10npn
	IE4:Current output 4-20mA+1npn	IE4:Current output 4-20mA+1npn	IE4:Current output 4-20mA+1npn
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up
			

M18 Cylinderical-bends, Analogue output/digital output IE5/UE5

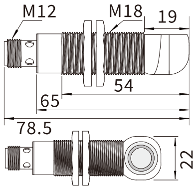
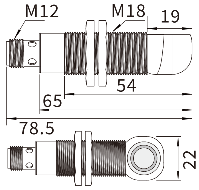
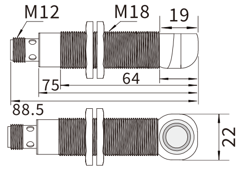
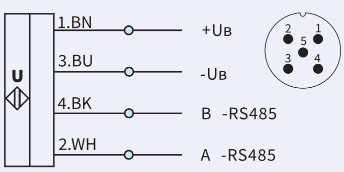
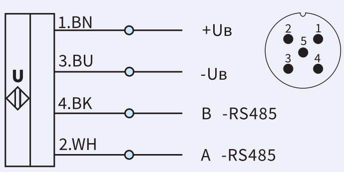
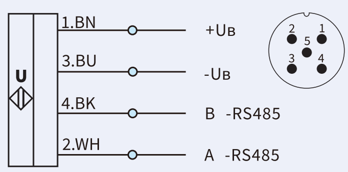
Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM45A-IU5-V15 UB300-18GM45A-UE5-V15	UB500-18GM45A-IU5-V15 UB500-18GM45A-UE5-V15	UB1000-18GM55A-IE5-V15 UB1000-18GM55A-UE5-V15
	UE5:Voltage output 0-10V+1pnp	UE5:Voltage output 0-10V+1pnp	UE5:Voltage output 0-10V+1pnp
	IE5:Current output4--20mA+1pnp	IE5:Current output4--20mA+1pnp	IE5:Current output4--20mA+1pnp
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up



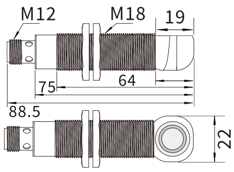
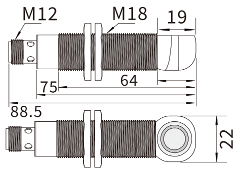
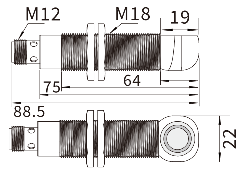
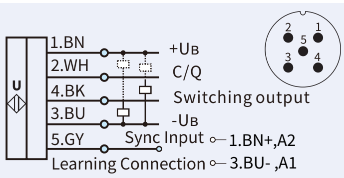
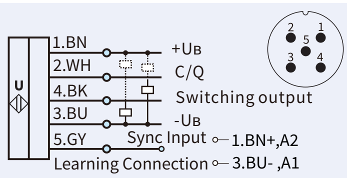
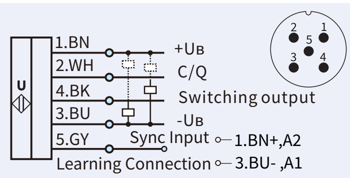
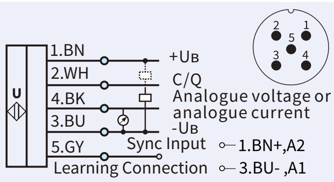
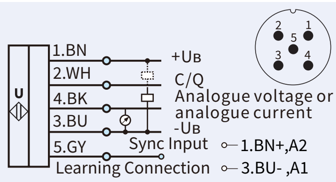
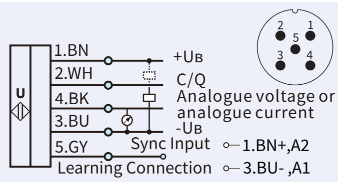




M18 Cylinderical-bends, Analogue output/digital output RS485

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM45A-R4-V15	UB500-18GM45A-R4-V15	UB1000-18GM55A-R4-V15
	RS485	RS485	RS485
	Modbus standard protocol	Modbus standard protocol	Modbus standard protocol
			

M18 Cylinderical-bends, IO-LINK outputs 2EP-IO/IUEP-IO

Detection range	30-300mm	50-500mm	60-1000mm
			
Blind zone	0-30mm	0-50mm	0-60mm
Resolution	0.1mm	0.15mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	2mm	2mm
Switching frequency	45Hz	31Hz	19Hz
Response time	22ms	32ms	52ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	37g	38g	43g
Model	UB300-18GM55A-2EP-IO-V15	UB500-18GM55A-2EP-IO-V15	UB1000-18GM55A-2EP-IO-V15
	2push pull	2push pull	2push pull
	Supports IO-LINK output	Supports IO-LINK output	Supports IO-LINK output
			
Model	UB300-18GM55A-IUEP-IO-V15	UB500-18GM55A-IUEP-IO-V15	UB1000-18GM55A-IUEP-IO-V15
	Analogue + 1push pull + IO-Link output	Analogue + 1push pull + IO-Link output	Analogue + 1push pull + IO-Link output
			

Use IO-Link
Universal · Smart · Easy

CE

M30 cylindrical

features

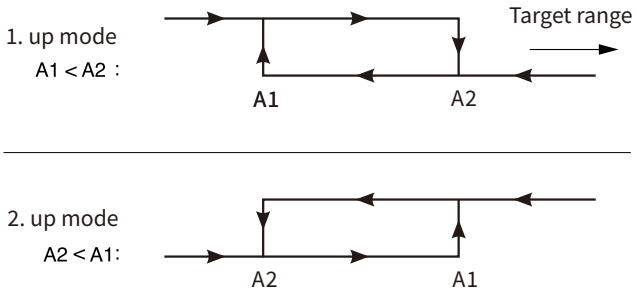
- M30 cylindrical
- Small blind spot, use in harsh environments

Details

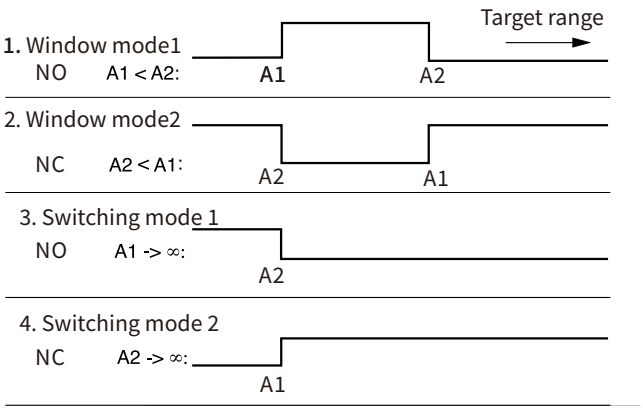
- 1 npn or pnp switch output
- 2 npn or pnp switch output
- Analog voltage output 0-10V or analog current output 4-20mA
- Supports the latest IO-Link output, digital RS485, modbus-rut standard.
- The teach-in function is realized by the gray line
- Standard working voltage 10-30V
- Emperature Compensation

Output Methods and Reference Curves

Two output modes of E2/E3 switching value

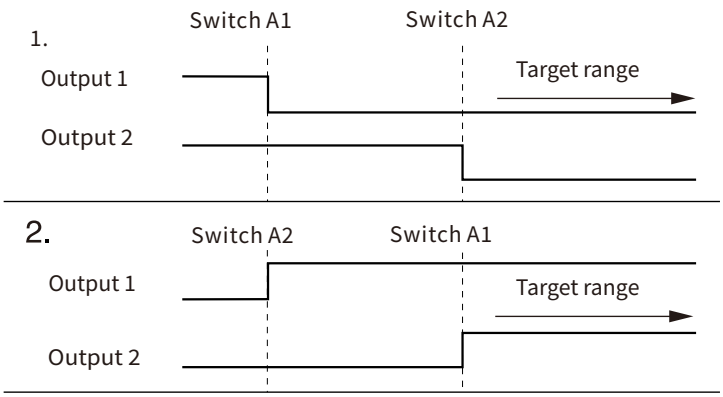


Five output modes of E4/E5 switching value



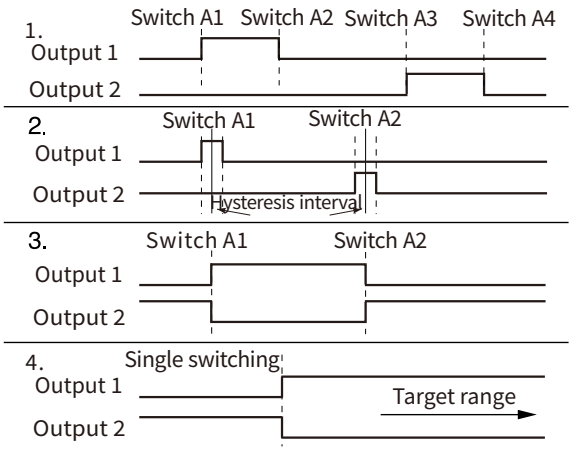
5. A1 -> ∞, A2 -> ∞: Object presence detection;
Target detected: the switch is closed; Target not detected: switch open

E6/E7 dual switch three output modes

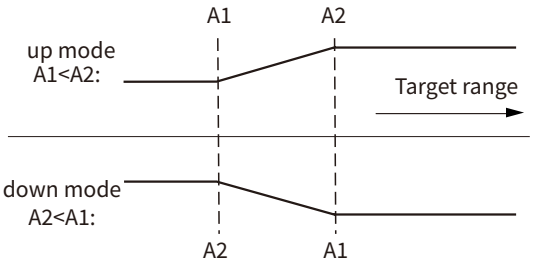


3. Switch A1->∞: Output 1; Detect that existence of an object
Switch A2->∞: Output 2; Detect that existence of an object
Switch A1&A2->∞: Double output; Detect that existence of an object

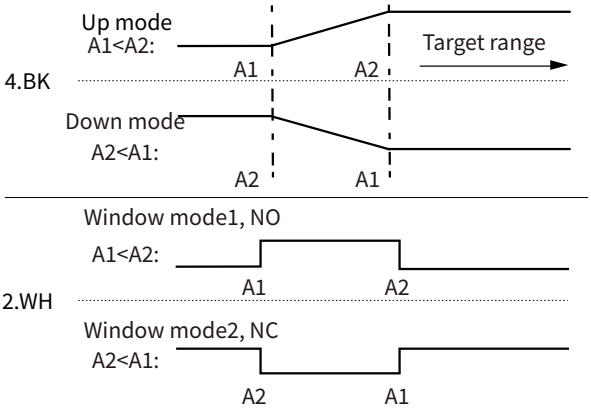
E8/E9 dual switch four output modes



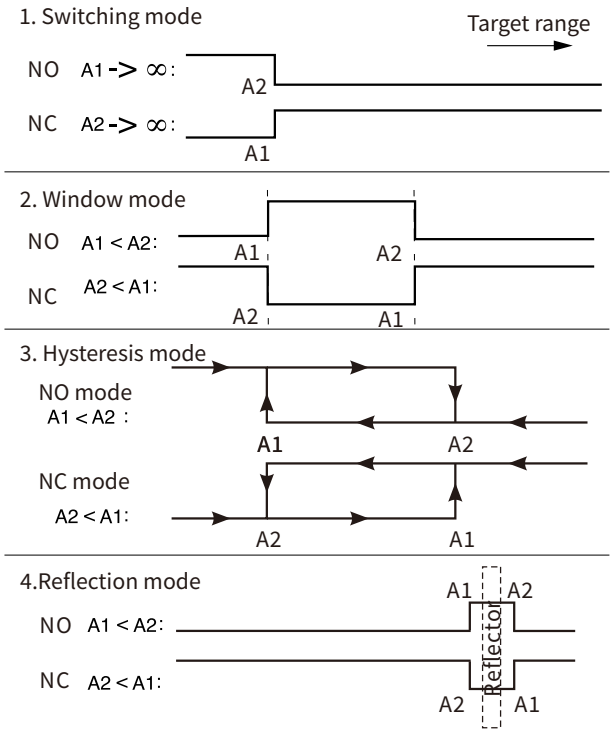
Analog output mode



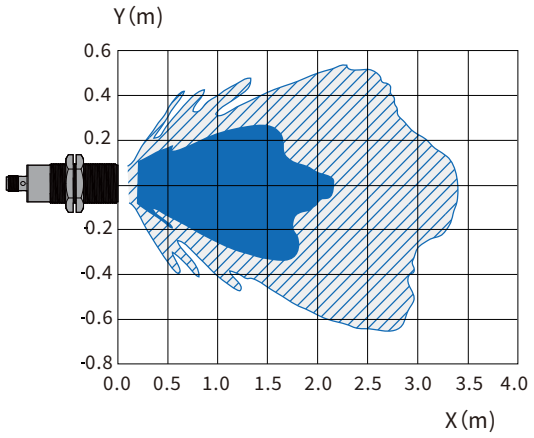
Output mode of analog+switch



2EP-IO switching Output mode

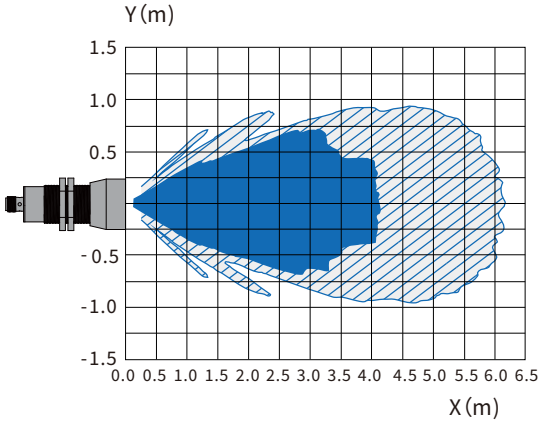


UB2000



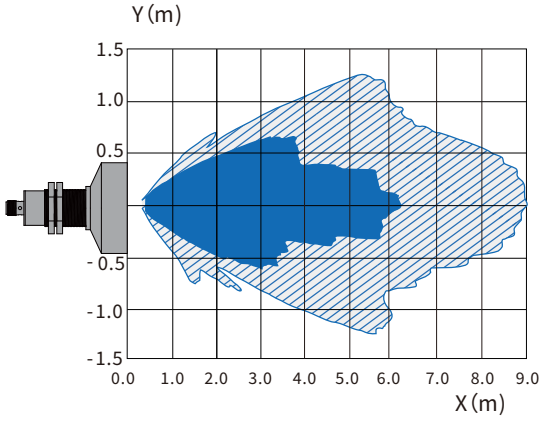
– flat 100×100mm – round rod Ø 25mm

UB4000



– flat 100×100mm – round rod Ø 25mm

UB6000



– flat 100×100mm – round rod Ø 25mm

Teach-in function

mode	condition	requirement
Window Mode	NO	Place the target near the switch point. Set the TEACH-IN learning line connection -UB to A1 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
		Place the target at the far switch point. Set the TEACH-IN learning line connection +UB to A2 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
	NC	Place the target at the near switch point, connect the TEACH-IN learning cable to the +UB setting A2 point until it is green and the indicator light blinks more than 3 times, disconnect.
		Place the target at the far switch point, connect the TEACH-IN learning cable to the -UB setting A1 point until it is green and the indicator light blinks more than 3 times, disconnect.
Switch mode	NO	With the target at the near switch point, connect the TEACH-IN learning cable to the +UB set point A2 until the green indicator blinks more than 3 times to disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect. Set the TEACH-IN learning line to -UB at point A1.
	NC	Place the target near the switch point. Set TEACH-IN LEARNING LINE CONNECTION -UB to point A1 until the green indicator blinks more than 3 times, then disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect.Set the TEACH-IN learning line connection +UB to A2 point.
Object presence detection mode	/	Cover the sensor with your hand or remove all objects within the sensor's detection range. Set TEACH-IN LEARNING CABLE CONNECTION -UB to point A1 until the red indicator blinks more than 3 times, then disconnect. Then disconnect. Connect the TEACH-IN Learning Cable +UB to point A2 until the red light blinks more than 3 times, then disconnect.

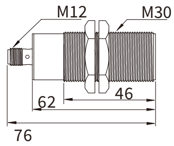
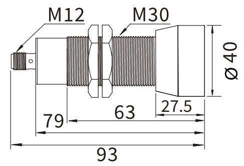
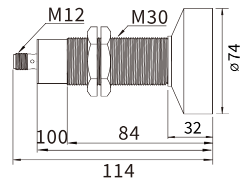
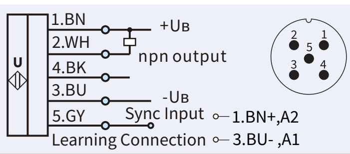
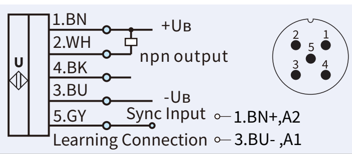
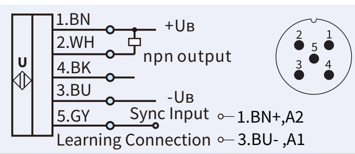
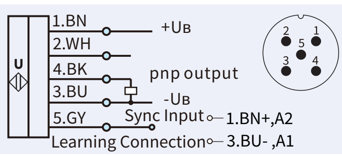
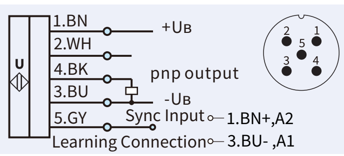
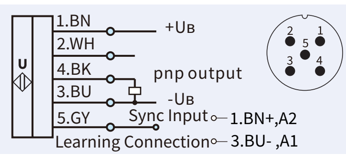
Factory settings

A1: Blind zone (minimum working range)
A2: Maximum range

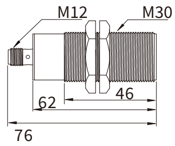
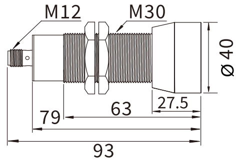
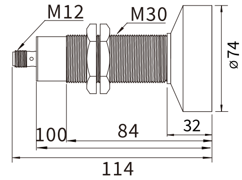
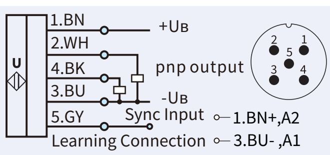
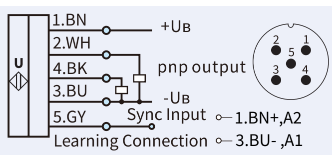
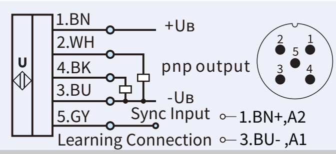
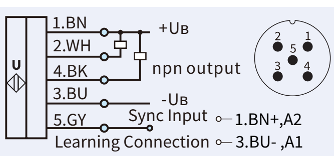
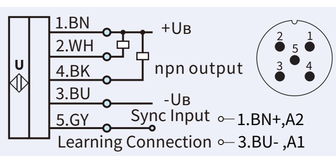
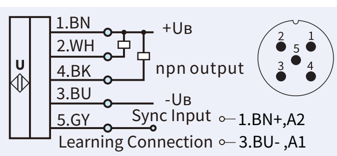
Teach-in function

Sensors of different models or the same model can realize asynchronous function or synchronous function, which needs to be realized by synchronous controller.

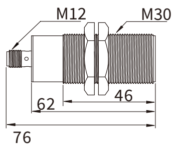
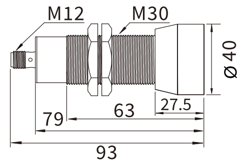
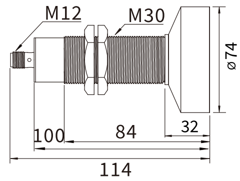
M30 Cylinderical, Switching output E2/E4/E3/E5

Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	＜500ms	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g
Model	UB2000-30GM60-E2-V15	UB4000-30GM60-E2-V15	UB6000-30GM70-E2-V15
	UB2000-30GM60-E4-V15	UB4000-30GM60-E4-V15	UB6000-30GM70-E4-V15
	1npn switch output	1npn switch output	1npn switch output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection
			
Model	UB2000-30GM60-E3-V15	UB4000-30GM60-E3-V15	UB6000-30GM70-E3-V15
	UB2000-30GM60-E5-V15	UB4000-30GM60-E5-V15	UB6000-30GM70-E5-V15
	1pnp switch output	1pnp switch output	1pnp switch output
	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection	NO/NC Adjustable, Short Circuit Protection
			

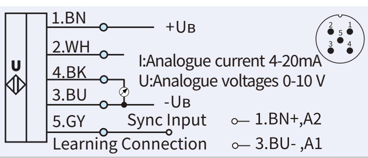
M30 Cylinderical, Switching outputs E6/E7/E8/E9

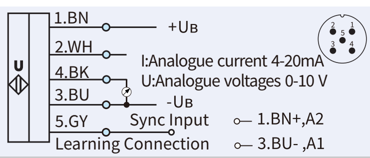
Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g
Model	UB2000-30GM60-E6-V15 UB2000-30GM60-E8-V15	UB4000-30GM60-E6-V15 UB4000-30GM60-E8-V15	UB6000-30GM70-E6-V15 UB6000-30GM70-E8-V15
	2pnp switching output Short-circuit protection, switchable down/up	2pnp switching output Short-circuit protection, switchable down/up	2pnp switching output Short-circuit protection, switchable down/up
			
Model	UB2000-30GM60-E7-V15 UB2000-30GM60-E9-V15	UB4000-30GM60-E7-V15 UB4000-30GM60-E9-V15	UB6000-30GM70-E7-V15 UB6000-30GM70-E9-V15
	2npn switching output Switchable down/up, short-circuit proof	2npn switching output Switchable down/up, short-circuit proof	2npn switching output Switchable down/up, short-circuit proof
			

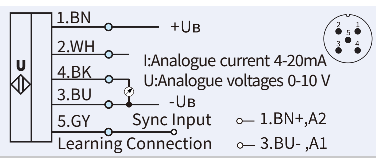
M30 Cylinderical, Analogue output/digital output I/U/IU

Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g

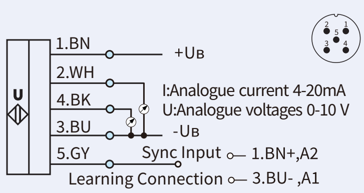
Model	UB2000-30GM60-I-V15	UB4000-30GM60-I-V15	UB6000-30GM70-I-V15
	UB2000-30GM60-U-V15	UB4000-30GM60-U-V15	UB6000-30GM70-U-V15
	U: Voltage output 0-10 V I: Current output 4-20 mA	U: Voltage output 0-10 V I: Current output 4-20 mA	U: Voltage output 0-10 V I: Current output 4-20 mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up

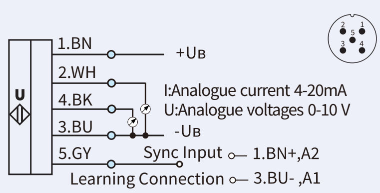


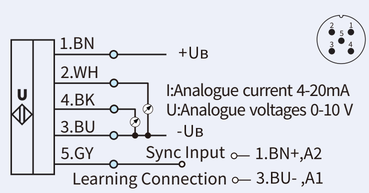




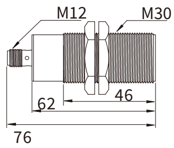
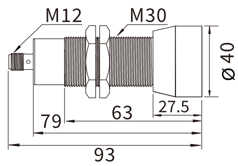
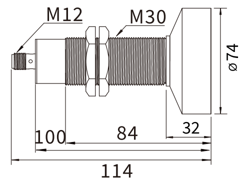
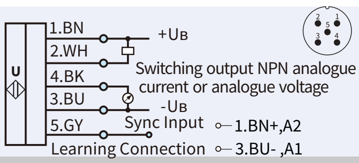
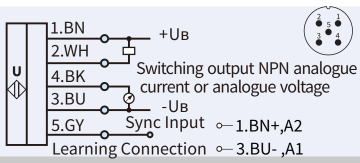
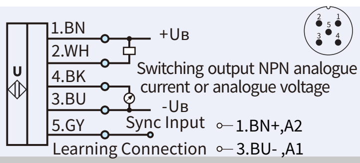
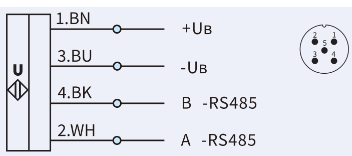
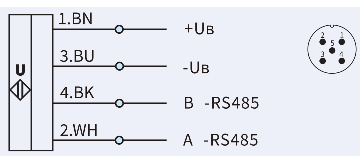
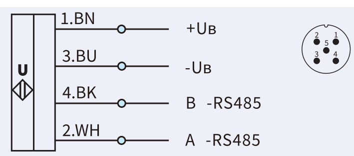
Model	UB2000-30GM60-IU-V15	UB4000-30GM60-IU-V15	UB6000-30GM70-IU-V15
	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA	Analogue voltage 0-10V and analogue current 4-20mA
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up



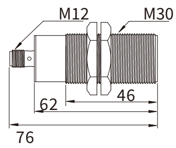
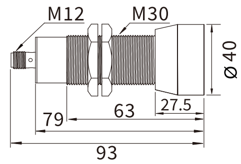
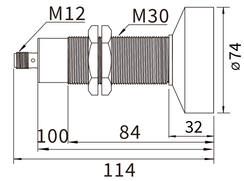
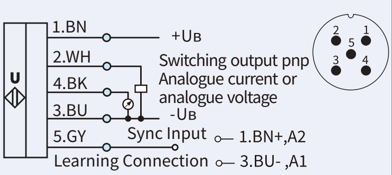
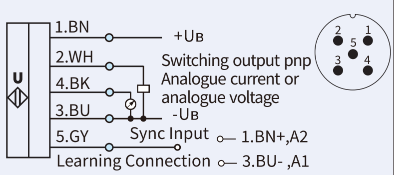
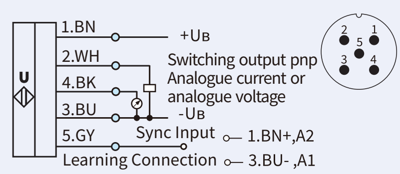




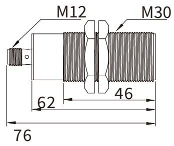
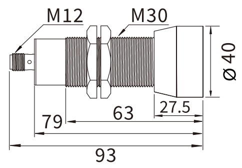
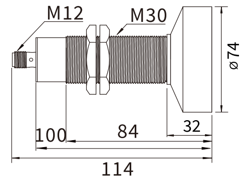
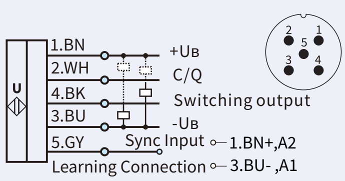
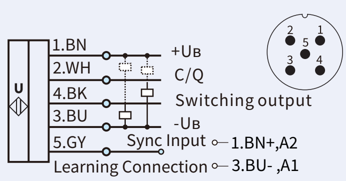
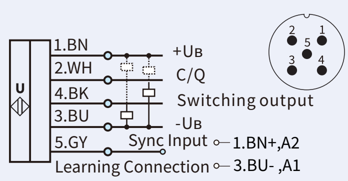
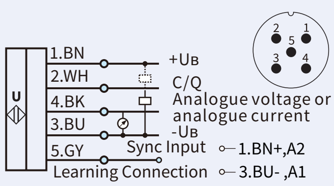
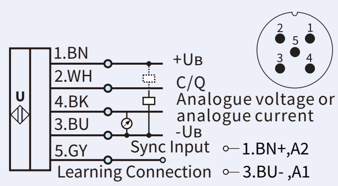
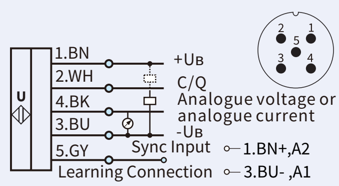
M30 Cylinderical, Analogue output/digital output IE4/UE4,RS458

Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g
Model	UB2000-30GM60-IE4-V15 UB2000-30GM60-UE4-V15	UB4000-30GM60-IE4-V15 UB4000-30GM60-UE4-V15	UB6000-30GM70-IE4-V15 UB6000-30GM70-UE4-V15
	UE4: Voltage output 0-10 V+10npn IE4:Current output 4-20mA+1npn Short-circuit protection, switchable down/up	UE4: Voltage output 0-10 V+10npn IE4:Current output 4-20mA+1npn Short-circuit protection, switchable down/up	UE4: Voltage output 0-10 V+10npn IE4:Current output 4-20mA+1npn Short-circuit protection, switchable down/up
			
Model	UB2000-30GM60-R4-V15	UB4000-30GM60-R4-V15	UB6000-30GM70-R4-V15
	RS485 Modbus standard protocol	RS485 Modbus standard protocol	RS485 Modbus standard protocol
			

M30 Cylinderical, Analogue output/digital output IE5/UE5

Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	＜500ms	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	⩽30mA	⩽30mA	⩽30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g
Model	UB2000-30GM60-IE5-V15	UB4000-30GM60-IE5-V15	UB6000-30GM70-IE5-V15
	UB2000-30GM60-UE5-V15	UB4000-30GM60-UE5-V15	UB6000-30GM70-UE5-V15
	UE5: Voltage output 0-10 V+10pnp IE5:Current output 4-20mA+1pnp Short-circuit protection, switchable down/up	UE5: Voltage output 0-10 V+10pnp IE5:Current output 4-20mA+1pnp Short-circuit protection, switchable down/up	UE5: Voltage output 0-10 V+10pnp IE5:Current output 4-20mA+1pnp Short-circuit protection, switchable down/up
			

M30 Cylinderical, IO-LINK output 2EP-IO/IUEP-IO

Detection range	100-2000mm	200-4000mm	350-6000mm
			
Blind zone	0-100mm	0-200mm	0-350mm
Resolution	0.17mm	0.17-1.5mm	0.17-2.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	4mm	5mm
Switching frequency	10Hz	5Hz	4Hz
Response time	82ms	162ms	232ms
Power-Up Timer	<500ms	<500ms	<500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm	I/<300 Ohm, U/>1k Ohm
No-load current	≤30mA	≤30mA	≤30mA
Material	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam	Plastic, Nickel Plated, Brass, Urethane Foam
Protection Class	IP67	IP67	IP67
Connection type	5 pole M12 connector	5 pole M12 connector	5 pole M12 connector
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	99g	138g	210g
Model	UB2000-30GM60-2EP-IO-V15	UB4000-30GM60-2EP-IO-V15	UB6000-30GM70-2EP-IO-V15
	2push pull Supports IO-LINK output	2push pull Supports IO-LINK output	2push pull Supports IO-LINK output
			
Model	UB2000-30GM60-IUEP-IO-V15	UB4000-30GM60-IUEP-IO-V15	UB6000-30GM70-IUEP-IO-V15
	Analogue + 1push pull + IO-Link output	Analogue + 1push pull + IO-Link output	Analogue + 1push pull + IO-Link output
			

Use IO-Link
Universal · Smart · Easy

CE

UDA double sheet contro

features

- 3 output control
- easy to teach-in according to any material

Details

- suitable for various materials
- 3 npn or pnp output
- Standard working voltage 10-30V
- The teach-in function is realized by the pink line

Function Description

Single and double ultrasonic sensors are used to automatically distinguish between single and double application scenes, so as to protect equipment and avoid waste.

Combined with ultrasonic point sensor, it is mainly used for packaging or label positioning, and can realize automatic control automatically and accurately.

Different Learning Methods Of Materials

Learning mode: pink line learning line, pink line hanging in the air during learning mode.

1. After power-on, the yellow light and the green light flash.

Place a piece of material in the middle of two sensors, and the green light flashes. Short-circuit the pink line to the blue line (GND), and then let it go, so that the green becomes always bright. At this point, the single study is completed.

2. Then place two pieces of materials in the middle of the sensor, then short the brown line (+) with a pink line, and switch to the two-piece learning mode. At this time, the indicator light turns red and flashes. Then short the pink line to the blue line (GND), and then let it go. The test red light turns on normally. At this time, the double-sheet study is completed.

3. After the study is finished, turn off the electricity.

Connect the pink line and the blue line (GND) together. Power on again, and it can be used normally.

4. In the learning mode, enter the single learning step. If the thickness of the placed material is too thick, it will exceed the detection range of the sensor. Before shorting the blue line (GND), after placing a single piece of material, the indicator light will turn red and blink.

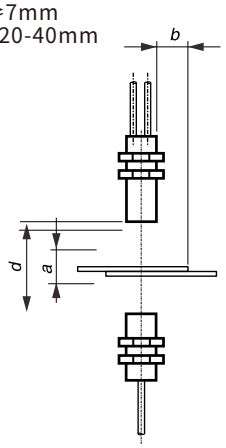
5. In the learning mode, enter the single learning step. If the thickness of the placed material is too thin, the sensor cannot detect the material. Before shorting the blue line (GND), after placing a single piece of material, the indicator light will turn yellow and blink.

Mounting Adjustment

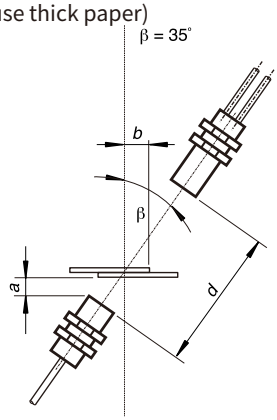
M12 installation/adjustment

Recommended distance

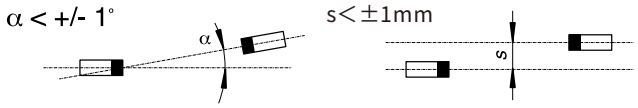
a=5-15mm
b⩾7mm
d=20-40mm



(use thick paper)

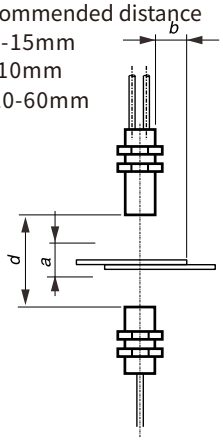


Detecting metal sheet



M18 installation/adjustment

Recommended distance
a=5-15mm
b⩾10mm
d=20-60mm



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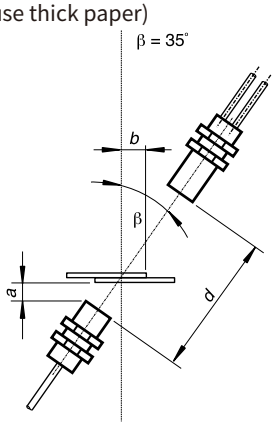
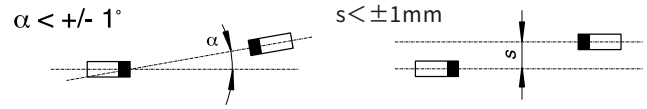
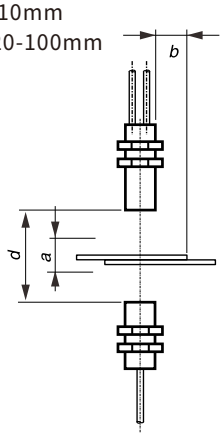


Detecting metal sheet

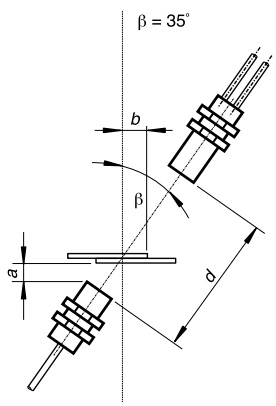


M30安装/调节

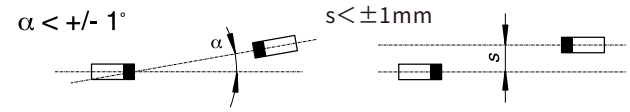
Recommended distance
a=5-15mm
b⩾10mm
d=20-100mm



(use thick paper)



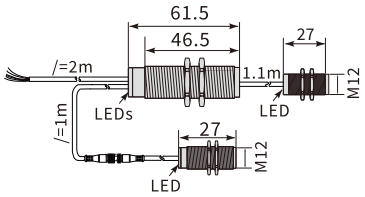
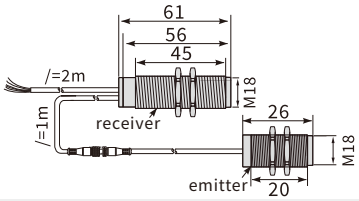
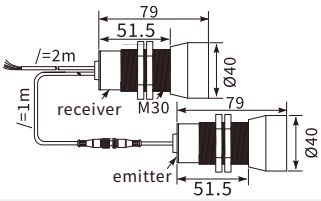
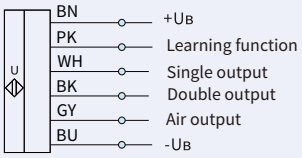
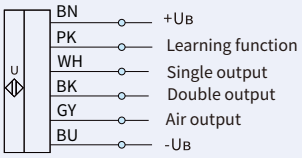
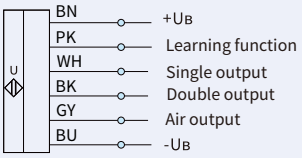
Detecting metal sheet



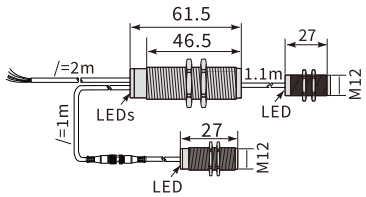
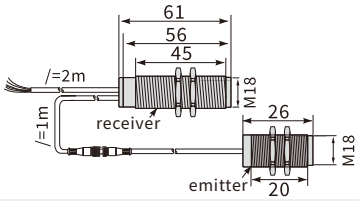
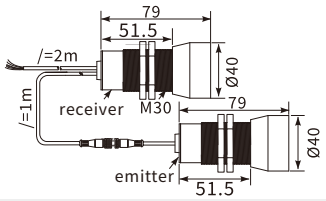
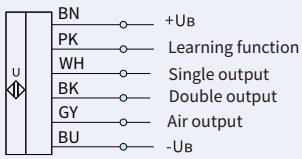
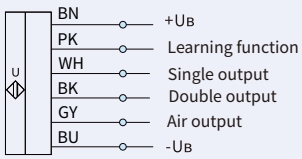
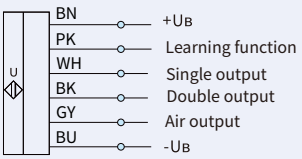
Single-sheet sensor learning box

A special learning box for single and double ultrasonic transducers is used for learning problems of frequent switching of multiple materials.

UDA double sheet contro 3E1/3E2

Detection range	20-40mm	20-60mm	20-100mm
			
Blind zone	7mm in front of transmitter and receiver	7mm in front of transmitter and receiver	7mm in front of transmitter and receiver
Maximum angle deviation of operation	45 to the vertical plane	45 to the vertical plane	45 to the vertical plane
Working range	Paper with a weight per unit area of 20-60 g/m², alloy laminates and films with a thickness of 0.2 mm, self-adhesive films	＜1mm thick metal composite plate and film, self-adhesive sheet, Label on the substrate, paper ＞0.01mm,PCB, silicon chip	＜3mm thick metal plate
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
Response delay	4ms	10ms	10ms
LED Green	Single sheet detected	Single sheet detected	Single sheet detected
LED Red	Double sheet detected	Double sheet detected	Double sheet detected
LED Red	No target (air)	No target (air)	No target (air)
LED Yellow	200mA, red light and green light flashing at the same time	200mA, red light and green light flashing at the same time	200mA, red light and green light flashing at the same time
No-load current	⩽30mA	⩽30mA	⩽30mA
Overpower protection	2m, PVP cable 0.14mm²	2m, PVP cable 0.14mm²	2m, PVP cable 0.14mm²
Operational current	3x200mA short circuit protection/overload protection	3x200mA short circuit protection/overload protection	3x200mA short circuit protection/overload protection
Material	Copper nickel plating, plastic fittings, glass filled epoxy resin	Copper nickel plating, plastic fittings, glass filled epoxy resin	Copper nickel plating, plastic fittings, glass filled epoxy resin
Voltage drop	⩽2V	⩽2V	⩽2V
Connection type	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	200g	220g	480g
Model	UDA-12GM25-400-3E1	UDA-18GM55-200-3E1	UDA-30GM60-100-3E1
	UDA-12GM25-400-3E2	UDA-18GM55-200-3E2	UDA-30GM60-100-3E2
	3 switch outputs npn	3 switch outputs npn	3 switch outputs npn
	3E1(NO)/3E2(NC)	3E1(NO)/3E2(NC)	3E1(NO)/3E2(NC)
			

UDA double sheet contro 3E3/3E4

Detection range	20-40mm	20-60mm	20-100mm
			
Blind zone	7mm in front of transmitter and receiver	7mm in front of transmitter and receiver	7mm in front of transmitter and receiver
Maximum angle deviation of operation	45 to the vertical plane	45 to the vertical plane	45 to the vertical plane
Working range	Paper with a weight per unit area of 20-60 g/m², alloy laminates and films with a thickness of 0.2 mm, self-adhesive films	＜1mm thick metal composite plate and film, self-adhesive sheet, Label on the substrate, paper ＞0.01mm,PCB, silicon chip	＜3mm thick metal plate
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
Response delay	4ms	10ms	10ms
LED Green	Single sheet detected	Single sheet detected	Single sheet detected
LED Red	Double sheet detected	Double sheet detected	Double sheet detected
LED Red	No target (air)	No target (air)	No target (air)
LED Yellow	200mA, red light and green light flashing at the same time	200mA, red light and green light flashing at the same time	200mA, red light and green light flashing at the same time
No-load current	⩽30mA	⩽30mA	⩽30mA
Overpower protection	2m, PVP cable 0.14mm²	2m, PVP cable 0.14mm²	2m, PVP cable 0.14mm²
Operational current	3x200mA short circuit protection/overload protection	3x200mA short circuit protection/overload protection	3x200mA short circuit protection/overload protection
Material	Copper nickel plating, plastic fittings, glass filled epoxy resin	Copper nickel plating, plastic fittings, glass filled epoxy resin	Copper nickel plating, plastic fittings, glass filled epoxy resin
Voltage drop	⩽2V	⩽2V	⩽2V
Connection type	IP67	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	200g	220g	480g
Model	UDA-12GM25-400-3E3	UDA-18GM55-200-3E3	UDA-30GM60-100-3E3
	UDA-12GM25-400-3E4	UDA-18GM55-200-3E4	UDA-30GM60-100-3E4
	3 switch outputs pnp	3 switch outputs pnp	3 switch outputs pnp
	3E3(NO)/3E4(NC)	3E3(NO)/3E4(NC)	3E3(NO)/3E4(NC)
			

Use IO-Link
Universal · Smart · Easy

CE

UR Waterproof Series

features

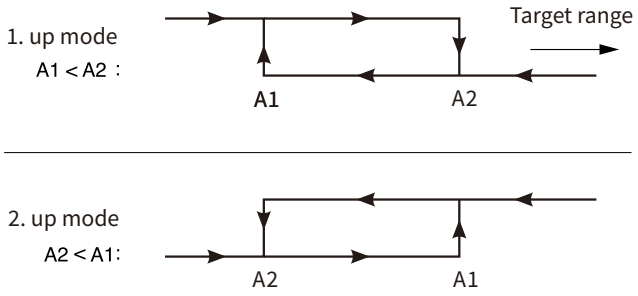
- Compact case size for easy installation
- Waterproof performance

Details

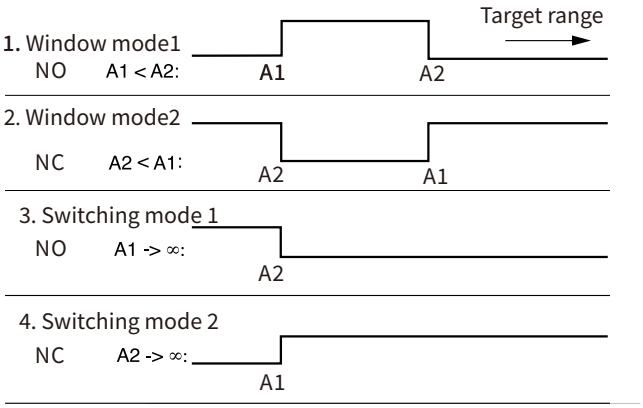
- 1 npn or pnp switch output
- 2 npn or pnp switch outputs
- Analogue voltage output 0-10V or analogue current output 4-20mA
- Support digital RS485, Modbus-rtu standard protocol communication
- Simple debugging through learning functions
- Standard operating voltage DC 10-30 V
- temperature compensation

Output Methods and Reference Curves

Two output modes of E2/E3 switching value

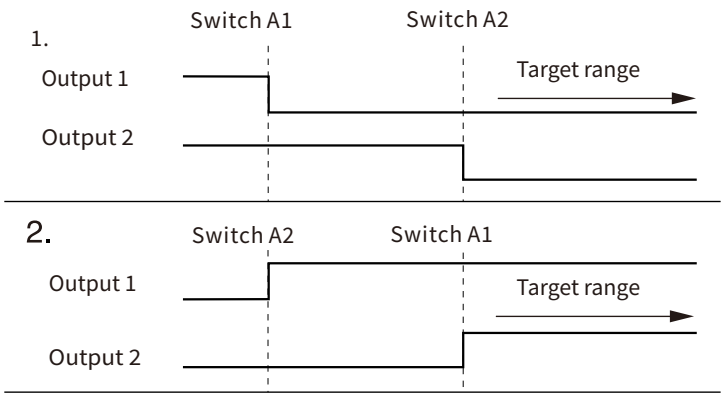


Five output modes of E4/E5 switching value



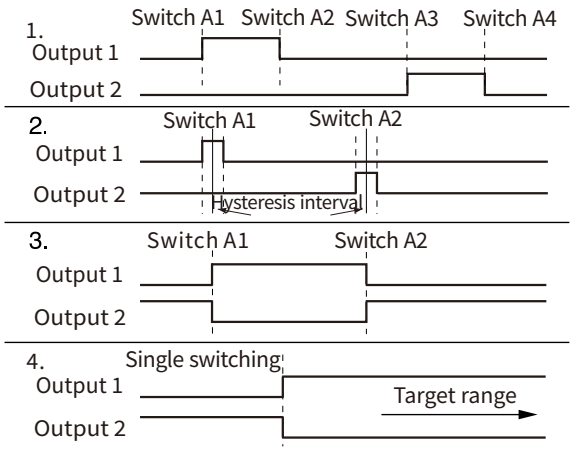
5. A1 -> ∞, A2 -> ∞: Object presence detection;
Target detected: the switch is closed; Target not detected: switch open

E6/E7 dual switch three output modes

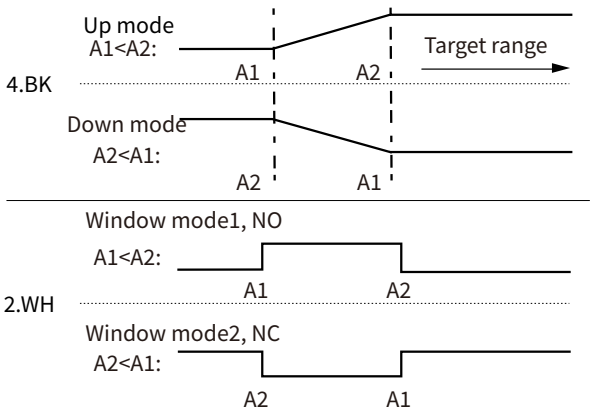


3. Switch A1->∞: Output 1; Detect that existence of an object
Switch A2->∞: Output 2; Detect that existence of an object
Switch A1&A2->∞: Double output; Detect that existence of an object

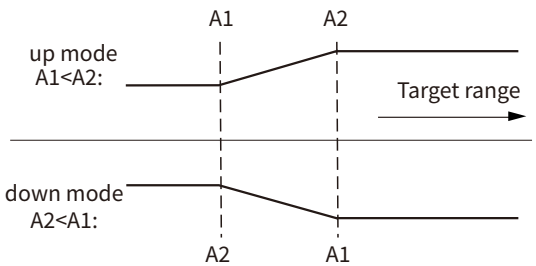
E8/E9 dual switch four output modes



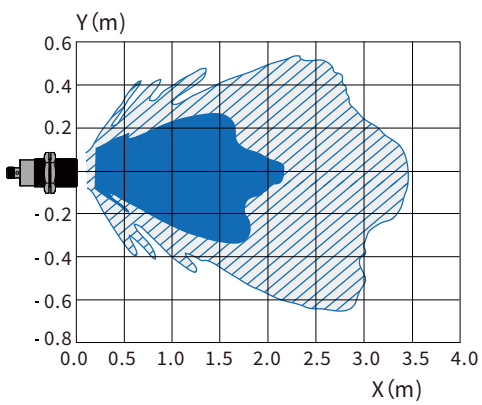
Output mode of analog+switch



Analog output mode

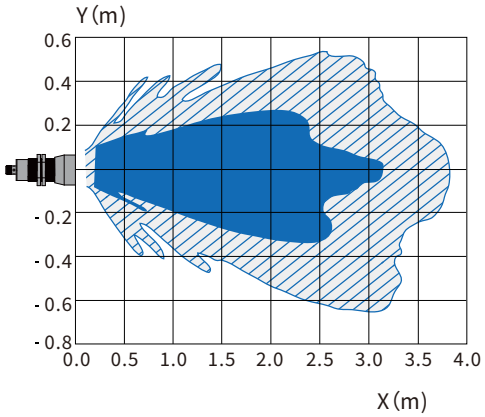


UR2000



– flat 100×100mm – round rod Ø 25mm

UR3000



– flat 100×100mm – round rod Ø 25mm

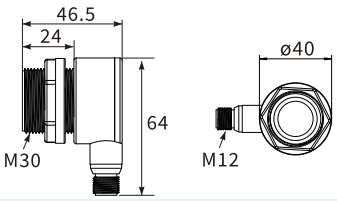
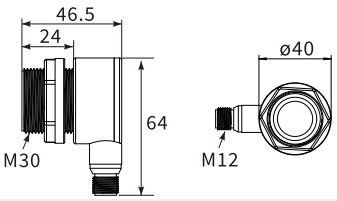
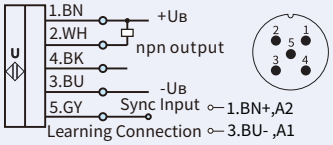
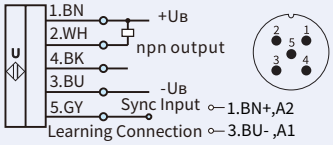
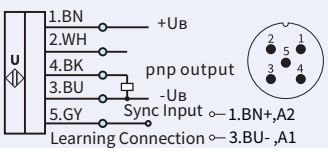
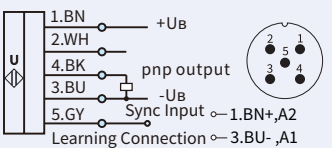
Teach-in function

mode	condition	requirement
Window Mode	NO	Place the target near the switch point. Set the TEACH-IN learning line connection -UB to A1 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
		Place the target at the far switch point. Set the TEACH-IN learning line connection +UB to A2 point until it is green, and the indicator light flashes for more than 3 times, and disconnect it.
	NC	Place the target at the near switch point, connect the TEACH-IN learning cable to the +UB setting A2 point until it is green and the indicator light blinks more than 3 times, disconnect.
		Place the target at the far switch point, connect the TEACH-IN learning cable to the -UB setting A1 point until it is green and the indicator light blinks more than 3 times, disconnect.
Switch mode	NO	With the target at the near switch point, connect the TEACH-IN learning cable to the +UB set point A2 until the green indicator blinks more than 3 times to disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect. Set the TEACH-IN learning line to -UB at point A1.
	NC	Place the target near the switch point. Set TEACH-IN LEARNING LINE CONNECTION -UB to point A1 until the green indicator blinks more than 3 times, then disconnect.
		Cover the sensor with your hand or remove all objects within the detection range of the sensor until the red indicator flashes more than 3 times, and disconnect.Set the TEACH-IN learning line connection +UB to A2 point.
Object presence detection mode	/	Cover the sensor with your hand or remove all objects within the sensor's detection range. Set TEACH-IN LEARNING CABLE CONNECTION -UB to point A1 until the red indicator blinks more than 3 times, then disconnect. Then disconnect. Connect the TEACH-IN Learning Cable +UB to point A2 until the red light blinks more than 3 times, then disconnect.

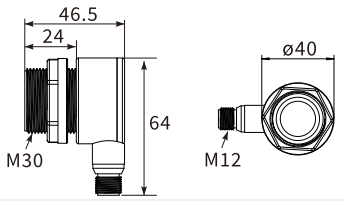
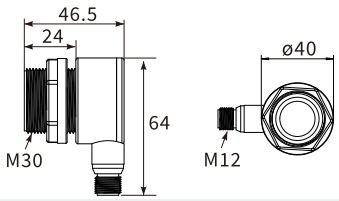
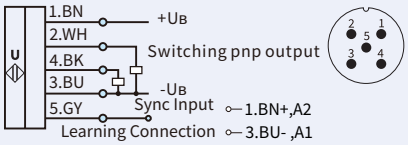
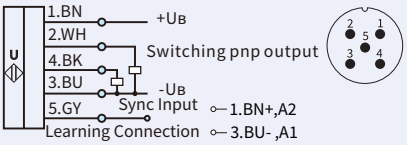
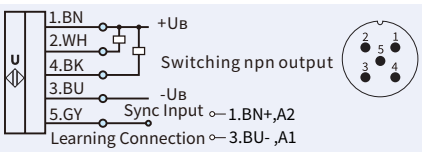
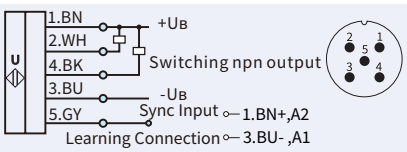
Factory settings

A1: Blind zone (minimum working range)
A2: Maximum range

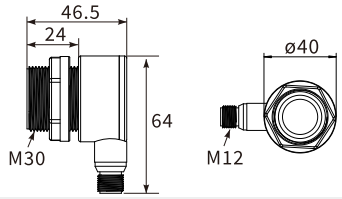
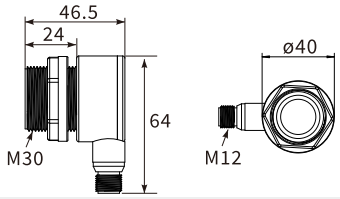
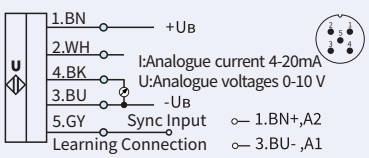
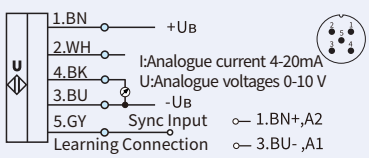
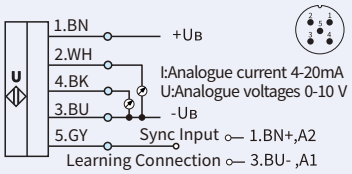
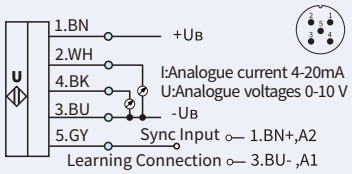
UR Series Switching outputs E2/E4/E3/E5

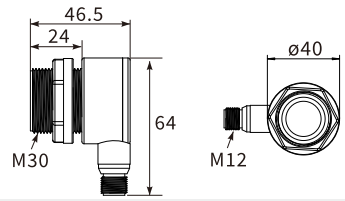
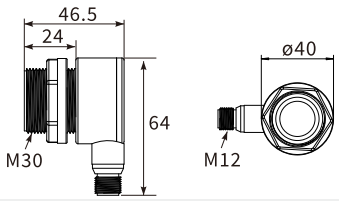
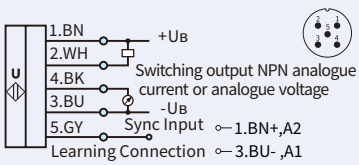
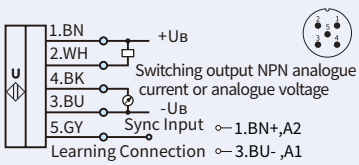
Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-E2-V15 UR2000-30GK-E4-V15	UR3000-30GK-E2-V15 UR3000-30GK-E4-V15
	1npn switch output NO/NC Adjustable, Short Circuit Protection	1npn switch output NO/NC Adjustable, Short Circuit Protection
		
Model	UR2000-30GK-E3-V15 UR2000-30GK-E5-V15	UR3000-30GK-E3-V15 UR3000-30GK-E5-V15
	1pnp switch output NO/NC Adjustable, Short Circuit Protection	1pnp switch output NO/NC Adjustable, Short Circuit Protection
		

UR Series Switching outputs E6/E7/E8/E9

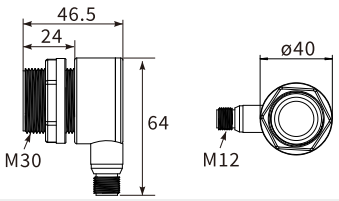
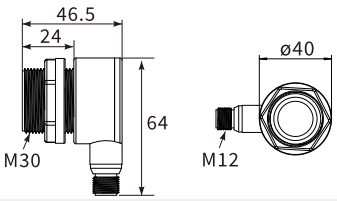
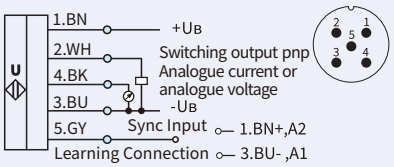
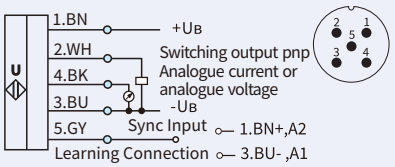
Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-E6-V15 UR2000-30GK-E8-V15	UR3000-30GK-E6-V15 UR3000-30GK-E8-V15
	2pnp switch output NO/NC Adjustable, Short Circuit Protection	2pnp switch output NO/NC Adjustable, Short Circuit Protection
		
Model	UR2000-30GK-E7-V15 UR2000-30GK-E9-V15	UR3000-30GK-E7-V15 UR3000-30GK-E9-V15
	2npn switch output NO/NC Adjustable, Short Circuit Protection	2npn switch output NO/NC Adjustable, Short Circuit Protection
		

UR Series Analogue/digital outputs I/U/IU

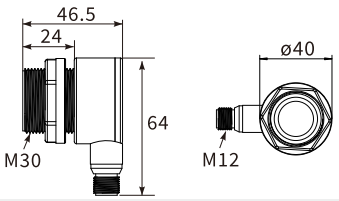
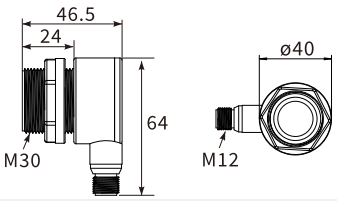
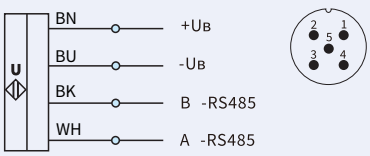
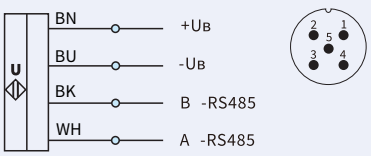
Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-U-V15	UR3000-30GK-U-V15
	U: Voltage output 0-10 V I: Current output 4-20 mA Short-circuit protection, switchable down/up	U: Voltage output 0-10 V I: Current output 4-20 mA Short-circuit protection, switchable down/up
		
Model	UR2000-30GK-IU-V15	UR3000-30GK-IU-V15
	Analogue voltage 0-10V and analogue current 4-20mA Short-circuit protection, switchable down/up	Analogue voltage 0-10V and analogue current 4-20mA Short-circuit protection, switchable down/up
		

Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-IE4-V15 UR2000-30GK-UE4-V15	UR3000-30GK-IE4-V15 UR3000-30GK-UE4-V15
	UE4: Voltage output 0-10 V+10npn IE4:Current output 4-20mA+1npn Short-circuit protection, switchable down/up	UE4: Voltage output 0-10 V+10npn IE4:Current output 4-20mA+1npn Short-circuit protection, switchable down/up
Model		

UR Series Analogue/digital outputs IE5/UE5

Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-IE5-V15 UR2000-30GK-UE5-V15	UR3000-30GK-IE5-V15 UR3000-30GK-UE5-V15
	UE5: Voltage output 0-10 V+10pnp	UE5: Voltage output 0-10 V+10pnp
	IE5:Current output 4-20mA+1pnp	IE5:Current output 4-20mA+1pnp
	Short-circuit protection, switchable down/up	Short-circuit protection, switchable down/up
		

UR Series Analogue/digital outputs RS485

Detection range	100-2000mm	150-3000mm
		
Blind zone	0-100mm	0-150mm
Resolution	0.17mm	0.17mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Switching hysteresis	2mm	3mm
Switching frequency	10Hz	9Hz
Response time	82ms	102ms
Power-Up Timer	＜500ms	＜500ms
Operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	⩽30mA	⩽30mA
Material	Plastic, Polyurethane Foam	Plastic, Polyurethane Foam
Connection type	5 pole M12 connector	5 pole M12 connector
Protection Class	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	62g	62g
Model	UR2000-30GK-R4-V15	UR3000-30GK-R4-V15
	RS485 Modbus standard protocol	RS485 Modbus standard protocol
		

Use IO-Link
Universal · Smart · Easy

CE

UCC Series

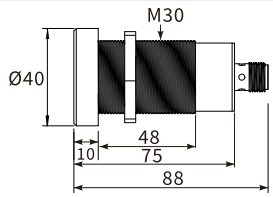
features

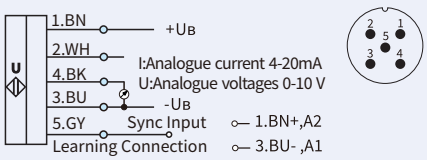
- Stainless steel and PTFE corrosion-resistant flange probe design for a variety of corrosive environments
- Small blind spot, small sound cone, suitable for close range fine detection

Details

- Support RS485 modbus-rtu output
- Analog voltage output 0-10V or analog current output 4-20mA
- through the gray line detection distance learning function
- Standard operating voltage DC 10-30 V
- Temperature compensation

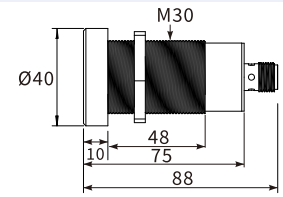
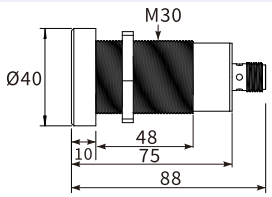
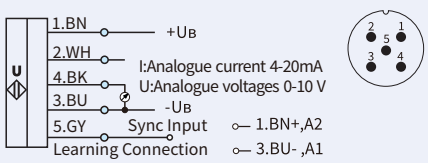
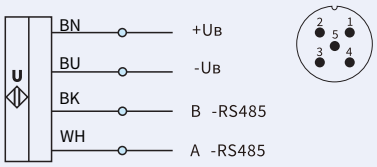
UCC Corrosion Resistant Series Analogue/Digital I

Detection range	150-2500mm
	
Blind zone	0-150mm
Resolution	0.2-0.5mm
Repeatability	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)
Response time	160ms
Power-Up Timer	＜500ms
operating voltage	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm
No-load current	⩽30mA
Material	PTFE & Stainless Steel
Protection Class	5 pole M12 connector
Connection type	IP67
Ambient temperature	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)
Weight	180g
Model	UCC2500-30PT70-I-V15 ① UCC2500-30ST70-I-V15 ②
	U: Voltage output 0-10 V I: Current output 4-20 mA Short-circuit protection, switchable down/up



注:
①:PTFE
②:Stainless

UCC Corrosion Resistant Series Analogue/Digital U/RS485

Detection range	150-2500mm	150-2500mm
		
Blind zone	0-150mm	0-150mm
Resolution	0.2-0.5mm	0.2-0.5mm
Repeatability	0.15% of full-scale value	0.15% of full-scale value
Absolute accuracy	±1% (Built-in temperature drift compensation)	±1% (Built-in temperature drift compensation)
Response time	160ms	160ms
Power-Up Timer	＜500ms	＜500ms
operating voltage	10-30V DC, reverse polarity protection	10-30V DC, reverse polarity protection
LED red light	No target is always bright, and no target flashes when studying.	No target is always bright, and no target flashes when studying.
LED green light	Detected that the target is always bright, and the target flashes when studying.	Detected that the target is always bright, and the target flashes when studying.
Overpower protection	200mA, red light and green light flashing at the same time.	200mA, red light and green light flashing at the same time.
Load impedance	I/<300 Ohm, U/＞1k Ohm	I/<300 Ohm, U/＞1k Ohm
No-load current	≤30mA	≤30mA
Material	PTFE & Stainless Steel	PTFE & Stainless Steel
Protection Class	5 pole M12 connector	5 pole M12 connector
Connection type	IP67	IP67
Ambient temperature	-25°C~+70°C (248~343K)	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)	-40°C~+85°C (233~358K)
Weight	180g	180g
Model	UCC2500-30PT70-U-V15 ① UCC2500-30ST70-U-V15 ②	UCC2500-30PT70-R4-V15 ① UCC2500-30ST70-R4-V15 ②
	U: Voltage output 0-10 V I: Current output 4-20 mA Short-circuit protection, switchable down/up	RS485 Modbus standard protocol
		
	注: ①:PTFE ②:Stainless	注: ①:PTFE ②:Stainless

Use IO-Link
Universal · Smart · Easy

CE

UDB groove label detection

features

- UDB recessed design, compact size, space-saving identification of transparent, opaque and printed labels
- Response time: 250μs

Details

- pnp+npn switching output
- at a very fast transmission speed, it can be monitored accurately with a short response time
- the top of the sensor housing is provided with an LED indicator and a switch button
- by learning the teaching function, debugging is simple and fast
- Standard working voltage DC 10-30V
- temperature compensation

Functional description

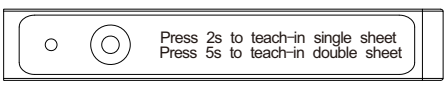
UD ultrasonic groove sensor is used to identify the printing mode of labels and carrier materials, and the materials with transparency and surface roughness, and can identify whether the materials are one layer or two layers. Such as transparent labels on transparent carrier materials and different printed patterns on the labels.

UD ultrasonic groove sensor can identify the labels with the minimum spacing of 2mm, and it has high positioning accuracy, short response time and small size, which makes the groove sensor widely used.

Teach-in function

- Power-on state: Yellow light, single green light, double red light; Learning status:
- ① When pressing the key for a long time > 2s, the green light will start flashing, and then the automatic learning leaflet will be released (if successful, the green light will continue flashing for 3 times; If it fails, the red light flashes 3 times);
- ② When pressing the key for longer than 5s, switch from flashing green light to flashing yellow light. At this time, release the automatic learning double sheets (if the green light flashes three times successfully; If it fails, the red light flashes 3 times);
- ③ Double thresholds will be automatically completed when learning a single sheet, and work will start automatically after learning. The learning function is not limited to time.

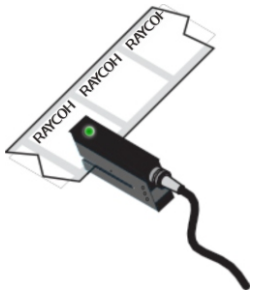
- Functional signals



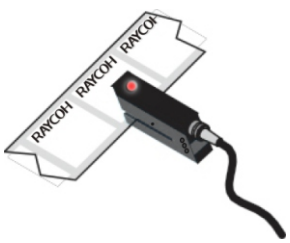
Air yellow One-sheet green light double red light

- RAYCOH Tip: Pressing the button before powering on can set normally open and normally closed.

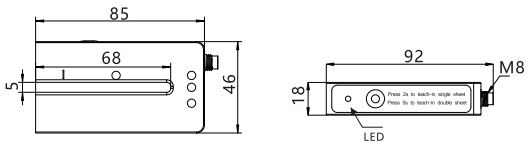
- Placement of the label or substrate within the effective area of the slotted sensor



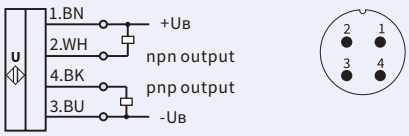
- Multiple labels via slot sensors



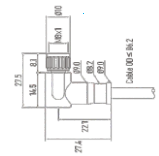
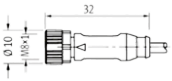
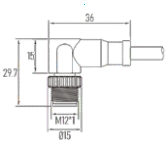
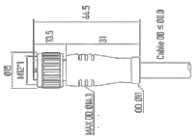
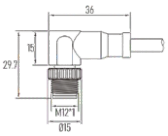
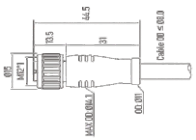
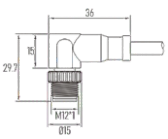
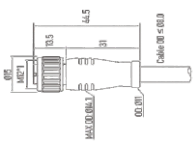
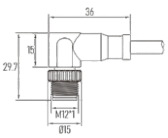
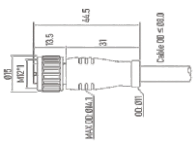
Detection range	150-2500mm



trough depth	68mm
trough width	5mm
Smallest detectable object	Label spacing to date/label size: 2 mm
Switching frequency	1.2kHZ
Response time	250μs
Working voltage	10-30V DC, reverse polarity protected
LED red	Double Sheets Detected
LED green	Double Sheets Detected
LED yellow	No targets (air)
Switching output	pnp+npn
Input Type	Synchronisation and learning functions
Output Current	100mA
Material	Metal, aluminium
Material	4 pole M8 connectors
Connection type	IP67
Ambient temperature	-25°C~+70°C (248~343K)
Storage temperature	-40°C~+85°C (233~358K)
Weights	105g
Model	UDB-5FK-E-V4
	npn+pnp



Accessory Connections & Accessories

		V4-W-2M-PVC 4pin-M12 initiator plug, bends 2m PVC cable,4x0.25mm²	V4-W-10M-PVC 4pin-M8 initiator plug, bends 10m PVC cable,4x0.25mm²
		V4-G-2M-PVC 4pin-M8 initiator plug, straight 2m PVC cable,4x0.25mm²	V4-G-10M-PVC 4pin-M8 initiator plug, straight 10m PVC cable,4x0.25mm²
		V15-W-2M-PVC 5pin-M12 initiator plug, bends 2m PVC cable,5x0.25mm²	V15-W-10M-PVC 5pin-M12 initiator plug, bends 10m PVC cable,5x0.25mm²
		V15-G-2M-PVC 5pin-M12 initiator plug,bends 2m PVC cable,5x0.25mm²	V15-G-10M-PVC 5pin-M12 initiator plug, bends 10m PVC cable,5x0.25mm²
		V1-W-2M-SW 4pin-M12 initiator plug, bends 2m 485 SW cable,4x0.2mm²	V1-W-10M-SW 4pin-M12 initiator plug, bends 10m 485 SW cable,4x0.2mm²
		V1-G-2M-SW 4pin-M12 initiator plug, straight 2m 485 SW cable,4x0.2mm²	V1-G-10M-SW 4pin-M12 initiator plug,straight 10m 485 SW cable,4x0.2mm²
		V15-W-2M-PUR 5pin-M12 initiator plug, bends 2m PUR cable,4x0.25mm²	V15-W-10M-PUR 5pin-M12 initiator plug, bends 10m PUR cable,4x0.25mm²
		V15-G-2M-PUR 5pin-M12 initiator plug, vertical 2m PUR cable,4x0.25mm²	V15-G-10M-PUR 5pin-M12 initiator plug,vertical 10m PUR cable,4x0.25mm²
		V15-W-2M-PUR 5pin hpvc initiator plug, bends 2m HPVC cable,4x0.25mm²	V15-W-10M-PUR 5pin HPVC initiator plug,bends 10m HPVC cable,4x0.25mm²
		V15-G-2M-PUR 5pin HPVC initiator plug, vertical 2m HPVC cable,4x0.25mm²	V15-W-10M-PUR 5pin HPVC initiator plug,vertical 10m HPVC cable,4x0.25mm²

Ultrasonic sensor synchronous asynchronous controller

General model: ZCPJ-COM-SY01

supply electricity: 10-30V

5-way interface

Note: WIFI versions available

Setting controller for single and double ultrasonic sensors

model: ZCPJ-CONT-UDA

supply electricity: 10-30V

UNSTABLE DESCRIPTION

The principle of ultrasonic sensor is to judge the state or distance of the target by detecting and processing sound waves. Therefore, the transmission rate of sound waves will be affected by the state of air, thus affecting the output state of ultrasonic sensors.

RAYCOH's ultrasonic sensor has made as much compensation as possible on the circuit for various influencing factors, such as a full range of temperature drift compensation circuits.

In order to ensure the stable and effective operation of the ultrasonic sensor. The following situations are recommended to be considered before testing.

- ▶ The target surface temperature is higher than 100°C.
- ▶ Detect the scene where the ambient wind speed is greater than 60 km/h.
- ▶ The environment is used in areas with an altitude of more than 3 kilometers.
- ▶ In a sealed environment, the air pressure exceeds 1.2 standard atmospheric pressure.
- ▶ The working environment is below minus 20°C and above 70°C.
- ▶ Non-reflective plate mode, which detects materials with strong sound absorption, such as felt, wool, cotton or sponge foam.
- ▶ Sound waves cannot propagate in a vacuum. When used in vacuum environment, the ultrasonic sensor fails.
- ▶ Detect other unknown substances and uncertain usage scenarios.

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