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超声波传感器

Ultrasonic Sensor

温度补偿 High accuracy of detecting temperature compensation

不受颜色形状和材质影响 Digital display with direct measured value output

稳定性好，抗干扰能力强 Stable Performanle strong anti-interference ability

洞察未来的深度，
取决于站在怎样的高度。

The depth of insight into the
future depends on the height where you stand.

我们一直在路上 ……
We've been on the way……

Brief Introduction

企业简介

上海本烜电气科技有限公司其前身是一家集设计开发、生产、销售于一体的专业的传感器的制造商。我公司拥有独立的研发部门，专业的生产团队，并吸取众家之长，所设计的产品在品质、外观均可与任何厂家媲美。

我们产品涵盖电感接近传感器、电容式接近传感器、霍尔传感器、光电传感器、超声波传感器、固态继电器、固态调压器及开关电源。我们一直致力于通过不断研发和质量管理，以高品质和多种类的产品及优质的服务来满足用户的需要。

公司以完善的组织架构和技术实力，保证了生产效率，以高度的灵活性为客户提供优质的服务，大部分产品通过欧共体 CE 认证，并始终贯彻执行“今天的质量，明天的市场”的质量方针，使企业得到了飞速的发展。

qwifm 在中国已被业界公认为传感器行业的领导品牌，并日益成为全球工控领域的知名品牌。

Shanghai Nature Beyond Electric Technology Co.,LTD is a sensor manufacturer, specialized in research and development, production and marketing. We have independent department and technical office for research and development. We also manage to accumulate other companies' advantages so that the products are comparable to any manufactory in quality and appearance.

Our products include inductive proximity sensors, capacitive proximity sensors, Hall sensors, photoelectric sensors, solid state relays, solid state voltage regulators and switching power supplies. We are committed to meeting the needs of our customers with high quality and diverse products and quality services through continuous research and development and quality management.

With perfect organizational structure and technical strength, the company guarantees production efficiency and provides customers with high-quality service with high flexibility. Most of the products have passed the CE certification of the European Community and have always implemented the “Today's Quality, Tomorrow's Market”. The quality policy has enabled the company to develop rapidly.

QWIFM, has been the leading brand in sersor market and gained its global reputation among industrial areas.

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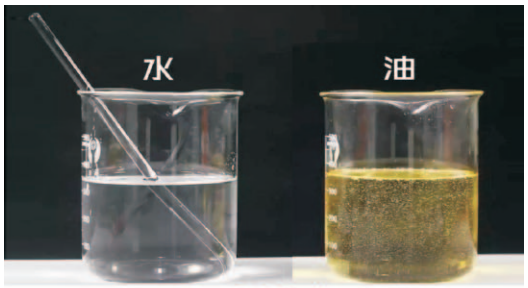
超声波传感器
Ultrasonic Sensor



超声波传感器几乎能检则所有的液体，如纯净水、油等。
Ultrasonic sensor can detect almost all the liquid, such as pure water, oil etc...

超声波传感器检测不同颜色的油墨、墨水等。
Ultrasonic sensor can detect different Colors of printing ink, ink etc...

无论是透明材质，
如玻璃瓶、玻璃板、透明 PP/PE/PET 膜等的检测；
还是反光材料，如金箔、银箔等检测。
超声波传感器均能表现出色。
Whether it’s transparent material,
such as glass bottle, glass board, transparent PP/PE/PET film etc...
or reflective materials, such as golden foil, silver foil etc...
ultrasonic sensor can perform well.

几乎所有不同颜色的纤维面料，都可以被超声波传感器轻松探测到。
Almost all different colors fabrics can be easily detected by
ultrasonic sensor.

超声波传感器用来探测粮食等，自动控制料位；
煤炭、木屑、水泥等粉末料位的自动控制也是非常适合的。
Ultrasonic sensor used to detect grain, automatic control of material level;
Automatic level control of coal, sawdust, cement and other powder is also very suitable.

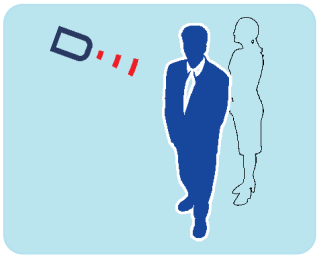
超声波传感器应用

超声波传感器在非接触定位和距离测量的应用中表现出优异的性能。
不受颜色和形状的影响，不受被测目标材质的限制，在工控自动化场景中得到广泛的应用。
下面列举了一些行业中的典型应用。

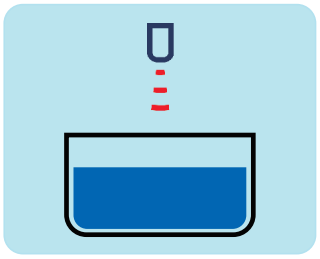
ULTRASONIC SENSOR APPLICATION

Ultrasonic sensor has excellent performance in non-contact positioning and distance measurement.
Not affected by color and shape, not limited by the material of the detected target, it is widely used in industrial automation scenes.
Some typical applications:

人体探测
People Detection

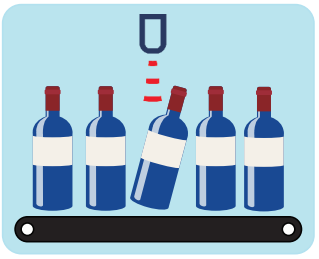


液位检测
Level Control

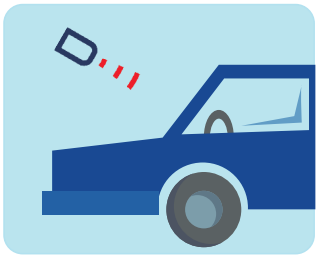


堆垛高度控制
Stacking Height Control

质量控制
Quality Control

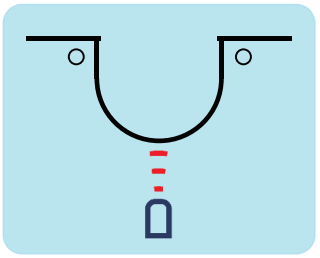


定位
Positioning

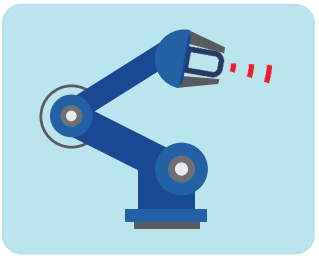


透明物体检测
Transparency Count

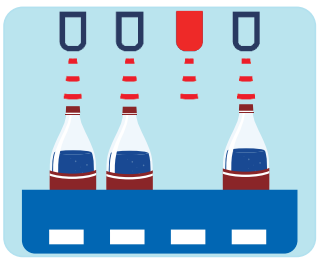
张力控制
Loop Control



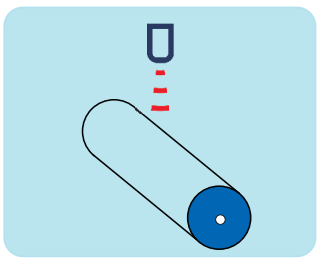
机械臂定位
Robotic Sensing



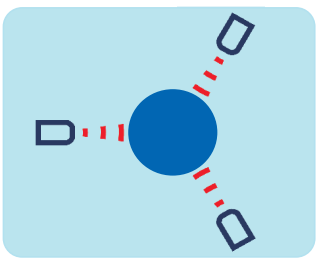
装箱填料控制
Crate Inspection



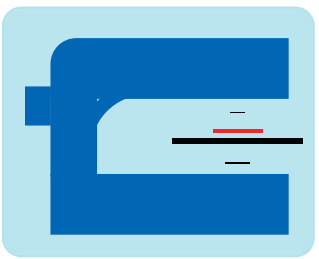
卷径检测
Diameter Checking



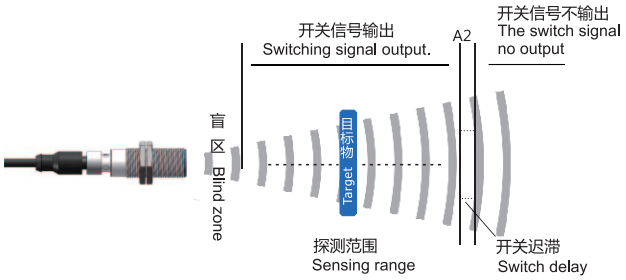
吹膜机控制
Control for Foil Extruder



双张检测
Double Detection



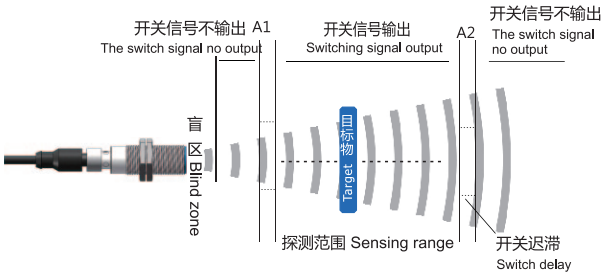
接近开关模式 Proximity sensor mode



传感器设置一个 A2 独立开关点，不同的输出在目标经过相应的开关点 A2 距离内被激活。
开关点可以在检测范围内任意设定。
这种工作模式适用于传送带上的计数或有无检测等。

The sensor sets an A2 independent switching point.Different outputs are activated within the distance of the target passing the corresponding switching point A2.The switching point can be set arbitrarily within the detection range .This operation mode is suitable for counting on the conveyor belt or detection whether there is, etc

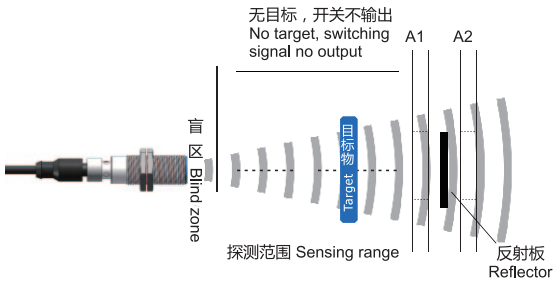
窗口模式 (区间模式) Window mode(interval mode)



窗口模式下，传感器可以设 A1.A2 两个开关点。
每个输出只有在 A1,A2 区间内才会被激活。 两个开关点可以在检测范围内任意设定。
这种工作模式适用于检测产品的不良率。 例如，检测木箱内瓶子是否符合高度标准， 检测出太高或者太矮的产品。

In window mode, the sensor can set two switching points A1.A2.
Each output is activated only within A1,A2. The two switching points can be set arbitrarily within the detection range.
This operation mode is suitable for testing the defective rate of products. For example, detecting if the bottles in the wooden box meet the height standard, too high or too short.

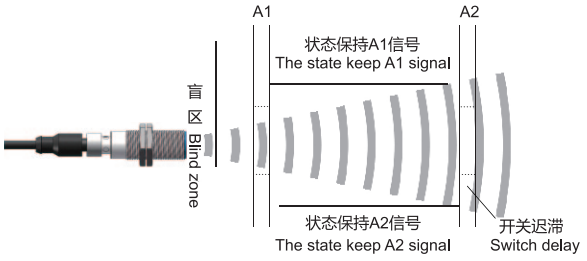
反射板模式 Reflector mode



反射板模式实际上是一种特殊窗口模式，将固定的反射板放在设定的窗口中。只要目标检测物完全遮挡反射板，传感器就会发出信号。
工作方式和光电反射板类似，
这种工作模式可以用来检测泡沫或其他吸音材质。

The reflector mode is actually a special window mode，Place the fixed reflector in the set window.The sensor gives a signal as long as the target detector completely blocks the reflector.It works like photoelectric reflector,This operation made can be used to detect foam or other sound–absorbing materials.

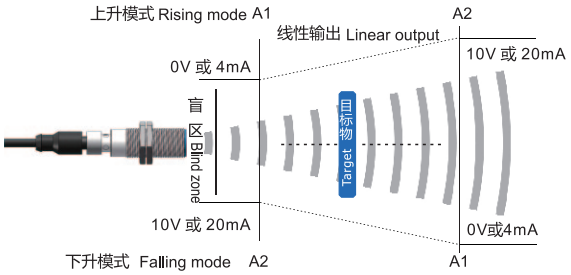
双开关模式 (迟滞模式)Dual switch mode (hysteresis mode)



传感器在检测范围内设 A1.A2 点。
当目标物到达 A1 或 A2 点时，输出切换。从 A1(A2) 点运动到 A2(A1) 点时，传感器一直保持当前的开 关状态。直到经过 A2(A1) 点时，输出切换到原来的状态。
这种工作模式用于自动控制液位和料位。

The sensor sets A1, A2 point within the detecting range.
When target object reach to A1 or A2 point, the output switching.When moving from Point A1(A2) to point A2(A1), the sensor keeps its current on/off state. Until it passes A2(A1), the output switches to its original state.
This working mode is used for automatic control of liquid level and material level.

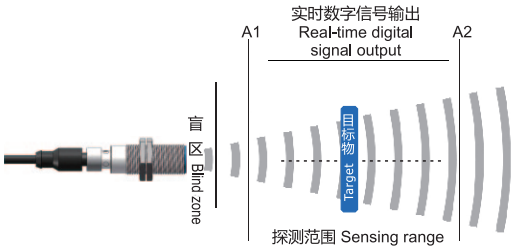
模拟量输出模式 Analog output mode



传感器在有效检测范围内，可以任意设置 A1 和 A2 点。A1 ,A2 点之间的距离值会按比例以电压 (0–10V) 或电流 (4–20mA) 信号均匀分布输出。目标物体距离信息以模拟量信号线性的、实时的输出。 根据设置 A1,A2 点的位置，切换上升模式和下降模式。
这种工作模式适用于各种 PLC , 变频器等实时控制。

A1 and A2 points can be set arbitrarily within the effective detection range of the sensor.The distance value between A1 and A2 points will be proportionally distributed to the output in terms of voltage (0–10V) or current (4–20mA) signals.The target object distance information to the analog signal in linear, real–time output. According to the position of A1 and A2, switch the rising mode and falling mode.
This working mode is suitable for all kinds of PLC, inverter and other real – time control.

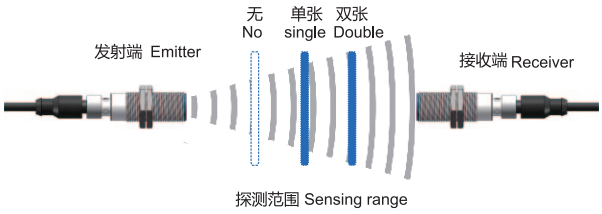
数字量输出模式 (IO–LINK, RS232.RS485)
Digital data output mode



传感器信号可以在系统架构的层级进行实时通讯。
测量的距离值以串行数据位的形式 , 实时传输给控制器。
这种工作模式适用于各种开发的系统。

Sensor signals can communicate in real time at the system architecture level.
The measured distance value is transmitted to the controller in real time in the form of serial data bits.
This operation mode is suitable for various developed systems.

超声波单双张检测传感器
Ultrasonic single and double detection sensor



超声波单双张检测是对射的工作方式，通过检测透过不同张数的声波能量 , 来判断材料的张数。
用于检测纸张、胶片、塑料片和金属薄片等的单双张。

Ultrasonic single and double sheet detection is the through–beam working mode.By detecting the acoustic energy of different sheets, to determine the number of materials
Using for detecting single or double sheets of paper, film, plastic sheet, metal sheet, etc

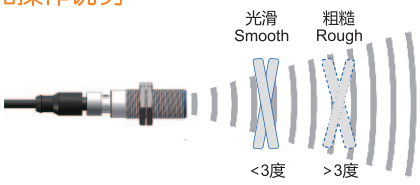
超声波边缘检测传感器 Ultrasonic edge detection sensor

为边缘检测特别设计的传感器，应用对射的工作原理。
材料边缘放入对射槽内 , 置于发生器和接收器的中心位置。
传感器判断边缘的偏移距离，对应接收到的能量来输出模拟信号 0–10V 或 4–20mA, 模拟信号的大小与材料边缘的运动轨迹偏离成正比。
这种传感器广泛用于各种包装印刷纸张运动纠偏。

Specially designed sensor for edge detection, using the through beam working principle.
The edge of the material place in the counter slot, in the center of the transmitter and receiver.
The sensor is working for judging the offset distance of the edge, and outputs the analog signal 0–10V or 4–20mA corresponding to the received energy.
The size of the analog signal is proportional to the deviation of the motion track of the edge of the material.
This sensor is widely used in movement correction of various packaging printing paper.

声波传感器的使用及安装说明

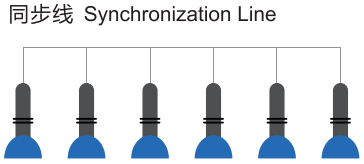
安装和操作说明



超声波传感器可以在恶劣的环境中使用，但是水滴和过量的灰尘堆积会影响超声波的正常输出。细小的灰尘和非堆积性的污渍不会影响正常的工作输出。
检测表面光滑和平整度很高的目标物，传感器需要与被检测物正面以 90° ±3。的角度安装。防止安装角度过大，传感器接收不到反射的声波。
目标物表面比较粗糙，传感器的安装角度可以大于 3。由于声波固有特性，在检测一些吸音很强的材料时，如：棉花、海绵和特殊布料时，传感器的检测有效距离会有所缩短。具体安装情况需要根据现场调试为准。在选型时，需要根据不同材料测试为准。

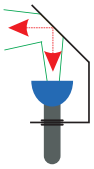
同步功能

如果安装多个传感器，安装间距小于会产生相互干扰的距离时，需要使用同步功能。
同步功能控制多个传感器一直同时进行测量。



同型号的传感器安装时，只需要将传感器的同步线相互连接，就可以激活同步功能。

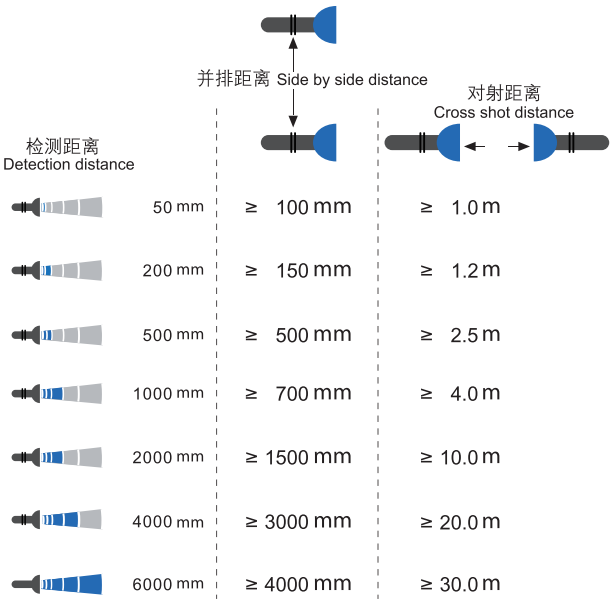
声波反射特性的应用



声波的波束在经过光滑反射面的反射、变向之后，衰减很小。
利用合适的配件或安装角度的调整，可以使声波的传播方向偏转。这样可以在一些狭小的环境中安装使用。

安装间距

在分别使用同型号的两个或者多个传感器时，安装时距离太近会发生传感器的同频干扰，造成不同传感器的输出异常。



气温对超声波传感器的影响

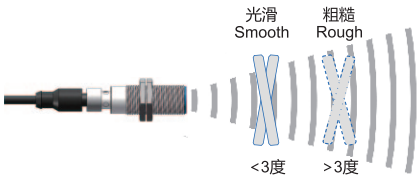
气温是对超声波传感器精度影响最大的因素。超声波在不同气温的空气中传播速度不一样。一般来说气温每变化 1℃，会对测量精度产生 0.17% 的影响。
所有的超声波传感器都带有温度补偿电路。重复精度误差控制在 0.15% 左右。

气压，气流，湿度对超声波传感器的影响

3 千米海拔以下气压对超声波传感器影响很小。
超过 3 千米测试距离会缩短，请测试使用。
60km/h 以下风速对超声波传感器几乎没有影响。
建议在 60km/h 以下风速使用。
空气湿度对超声波传感器的影响可以忽略。

Ultrasonic sensor`s instructions and installation

Installation and instructions

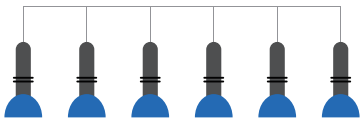


Ultrasonic sensors can be used in harsh environments, but water droplets and excessive dust accumulation can affect the normal ultrasonic output. Tiny dust and non–piling stains will not affect the normal working output.
To detect objects with smooth surface and high flatness, the sensor needs to install to the detected object with 90° ± 3. To avoiding the install angle is too large, the sensor cannot receive reflected sound waves.
If the object`s surface is relatively rough, the sensor`s installation Angle can be more than 3. Due to the inherent characteristics of sound waves, the effective range of sensors can be reduced when detecting some sound absorbing materials, such as cotton, sponges and special fabrics. Specific installation conditions shall be subject to on–site debugging.
When selecting the model, need to test different materials.

Synchronizing function

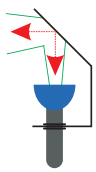
If install multiple sensors, and the installation spacing is less than the distance that would interfere with each other, synchronization function is required.
The synchronization function controls the simultaneous measurement of multiple sensors.

同步线 Synchronization Line



When install the same model sensors, the synchronization function can be activated by connecting the synchronization lines of the sensor to each other.

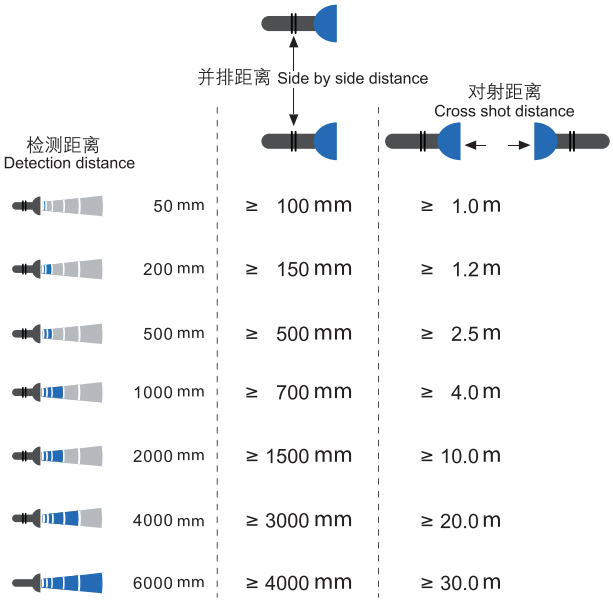
Acoustic reflection properties application



The sound wave becomes very small after it passes through the smooth reflecting surface and changes direction.
Using proper fitting or angle adjustment,can deflect the direction of sound wave. Then sensor can be installed in some tiny space.

Installation distamce

When two or more sensors of the same type are used separately, when the distance is too close during installation will occur same frequency interference, caused abnormal output of different sensors.



Ambient temperature effects on the ultrasonic sensor

Air temperature is the most important factor affecting the accuracy of ultrasonic sensors. Ultrasonic waves spread at different speeds in air at different temperatures. Generally speaking, every 1℃ change in temperature has a 0.17% influence on the measurement accuracy. ultrasonic sensors come with temperature compensation circuits. The repetition precision error is controlled at 0.15%.

The influence of air pressure, air flow and humidity on ultrasonic sensors

Pressure at altitudes below 3km has little effect on ultrasonic sensors. More than 3km altitudes will short the test distance, please test that before use.
The wind speed below 60km/h has little effect on the ultrasonic sensor. It is recommended to use below 60km/h wind speed.
The influence of air humidity on ultrasonic sensor can be ignored

超声波传感器命名及含义 CODE DESCRIPTION

U	B	300	–	30	GM	□	–	E6	SH101	–	V15
1	2	3		4	5	6		7	8		9

编号 N.o	构成 Composition	代码及含义 Code and definition
1	U	超声波传感器 Ultrasonic sensor
2	系列 Series	B 圆柱基本型系列 Cylindrical basic series R 紧凑型系列 Compact series CC 标准系列，抗化学腐蚀 Standard series, chemical resistance C 定制系列 Customized series DB(A/C) 双张检测 (根据材料厚度)Double sheet test (according to material thickness)
3	上限检测范围 Upper limit detection range	300 300mm 6000 6000mm
4	外壳及安装尺寸 Housing and install dimension	12 圆柱形外壳，直径 12mm Cylindrical housing, diameter 12mm 18 圆柱形外壳，直径 18mm Cylindrical housing, diameter 18mm 30 圆柱形外壳 , 直径 30mm Cylindrical housing, diameter 30mm U 方形外壳 VariKont(U1,u9) Square housing VariKont(U1,u9) FP 方形外壳 FP(FP1,FP,.) Square housing FP(FP1,FP,.) F42 方形外壳 F42 Square housing F42
5	外壳材质，螺纹 (仅圆柱形) 带数字表示长度，单位 mm Housing material, thread(only cylindrical type), the number means length, unit: mm	GM 金属 Metal GK 塑料 Plastic
6	表示外壳长度序列号 Represent length of the shell serial number	45，50，55，60 仪表不同的长度以外形尺寸为准 45, 50, 55, 60 Different lengths are subject to external dimensions
7	电气输出 Electrical output	E4 1 × 4 线制，单开关量 npn 输出 1*4 wire, single digital NPN output E 1 × 4 线制 , 单开关量推挽输出 1*4 wire, single digital Push–pull output E4E5 2 × 5 线制 , 开关量输出 ,npn/pnp 2*5 wire, digital NPN/PNP output E6E7 2 × 5 线制，双开关量推挽输出 2*5 wire, double digital Push–pull output U 2 × 5 线制，1 模拟量 0–10V 输出 2*5 wire, single analogue 0–10V output I 2 × 5 线制，1 模拟量 4–20mA 输出 2*5 wire, single analogue 4–20mA output IU 2 × 5 线制，1 模拟量电流 4–20mA + 1 模拟量电压 0–10V 2*5 wire, single current analogue 4–20mA + single voltage analogue 0–10V AE 2 × 5 线制 ,1 模拟量电流 4–20mA 或 0–10V 自动识别 +1 开关量推挽 AE 2*5 wire, 4–20mA Analog current or 0–10V automatic identification + single switch push–pull AE 2 × 5 线制 ,1 模拟量电流 4–20mA 或 0–10V 自动识别 +1 开关量推挽 AE 2*5 wire, 4–20mA Analog current or 0–10V automatic identification + single switch push–pull R2 RS232 接口输出 Connector output R4 RS485 接口输出 Connector output IO IO–link
8	客户特殊要求定制代码 Special customized code	SH101 … CD101
9	连接方式 Connection Type	V 电缆 Cable VI 插头 ,4 针 m12 × 1 Plug, 4 pin M12 × 1 V3 插头 ,3 针 m8 × 1 Plug, 3 pin M8 × 1 V4 插头 ,4 针 m8 × 1 Plug, 4 pin M8 × 1 V15 插头 ,5 针 m12 × 1 Plug, 5 pin M12 × 1

超声波传感器
Ultrasonic Sensor

超声波传感器快速选型 ULTRASONIC SENSOR QUICK SELECTION

型 号 Model	UB50 系列 Series	UB150 系列 Series	UB300 系列 Series	UB500 系列 Series	UB1000 系列 Series
页数 Page	10–11	12–15	16–19	20–23	24–27
工作距离 Sensing distance	3–50mm	20–150mm	30–300mm	50–500mm	60–1000mm
盲区 Blind zone	0–3mm	0–20mm	0–30mm	0–50mm	0–60mm
精度 Accuracy	0.1mm	0.1mm	0.1mm	0.17mm	0.17mm
响应时间 Response time	2–10ms	20ms	20ms	30ms	50ms
开关量输出 Digital output	●	●	●	●	●
双开关量推挽输出 Double digital push–pull output		●	●	●	●
1 模拟量电流电压自动识别输出 Analog current and voltage Automatic identification output					
1 模拟电流电压自动识别输出 +1 开关推挽输出 Analog current and voltage Automatic identification output + push–pull output					
模拟电流电压自动识别输出 + 1 × npn 开关输出 Analog current and voltage Automatic identification output + NPN output		●	●	●	●
1 模拟电压 0–10V 输出 + 1× 模拟电流 4–20mA 输出 Analog voltage 0–10V + Analog current 4–20mA output		●	●	●	●
RS232		●	●	●	●
RS485		●	●	●	●
IO–LINK		●	●	●	●
3 × npn; 3 × pnp: 无，单张，双张 None，Single, Double					
安装孔尺寸 Mounting hole dimensions	M18 铜管镀镍 M18 Brass nickel plated	M18 铜管镀镍 M18 Brass nickel plated	M18 铜管镀镍 M18 Brass nickel plated	M18 铜管镀镍 M18 Brass nickel plated	M18 铜管镀镍 M18 Brass nickel plated
电气连接 Electric connector	V15 连接器 (M12 × 1), 5 针 connecto(M12 × 1), 5 pin	V15 连接器 (M12 × 1), 5 针 connecto(M12 × 1), 5 pin	V15 连接器 (M12 × 1), 5 针 connecto(M12 × 1), 5 pin	V15 连接器 (M12 × 1), 5 针 connecto(M12 × 1), 5 pin	V15 连接器 (M12 × 1), 5 针 connecto(M12 × 1), 5 pin

超声波传感器
Ultrasonic Sensor

超声波传感器快速选型 ULTRASONIC SENSOR QUICK SELECTION

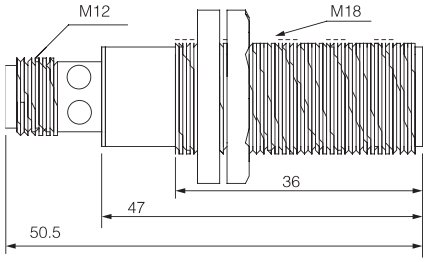
型 号 Model	UB1500 系列 Series	UB2000 系列 Series	UB4000 系列 Series	UB6000 系列 Series	双张检测 UDB(A/C) Double detection
页数 Page	28–31	32–35	36–39	40–43	44–45
工作距离 Sensing distance	80–1500mm	120–2000mm	200–4000mm	300–6000mm	29
盲区 Blind zone	0–80mm	0–120mm	0–200mm	0–300mm	–
精度 Accuracy	0.17mm	0.17–0.5mm	0.17–1.5mm	0.17–2.5mm	
响应时间 Response time	60ms	100ms	200ms	300ms	300ps–15ms
开关量输出 Digital output	●	●	●	●	
双开关量推挽输出 Double digital push–pull output	●	●	●	●	
1 模拟量电流电压自动识别输出 Analog current and voltage Automatic identification output					
1 模拟电流电压自动识别输出 +1 开关推挽输出 Analog current and voltage Automatic identification output + push–pull output	●	●	●	●	
模拟电流电压自动识别输出 + 1 × npn 开关输出 Analog current and voltage Automatic identification output + NPN output					
1 模拟电压 0–10V 输出 + 1 × 模拟电流 4–20mA 输出 Analog voltage 0–10V + Analog current 4–20mA output	●	●	●	●	
RS232	●	●	●	●	
RS485	●	●	●	●	
IO–LINK	●	●	●	●	
3 × npn; 3 × pnp: 无，单张，双张 None，Single, Double					●
安装孔尺寸 Mounting hole dimensions	M30 铜管镀镍 M18 Brass nickel plated	M30 铜管镀镍 M30 Brass nickel plated	M30 铜管镀镍 M30 Brass nickel plated	M30 铜管镀镖 M30 Brass nickel plated	M18 铜管镀镍 M18 Brass nickel plated
电气连接 Electric connector	V15 连接器 (M12 × 1), 5 针 connector(M12 × 1), 5 pin	V15 连接器 (M12 × 1), 5 针 Connector(M12 × 1) 5 Pin	V15 连接器 (M12 × 1), 5 针 Connector(M12 × 1) 5 Pin	V15 连接器 (M12 × 1), 5 针 Connector(M12 × 1) 5 Pin	V 连接线 6 芯 V connection cable 6

UB50 系列
超声波传感器
Ultrasonic Sensor

电气参数 ELECTRIC PARAMETER

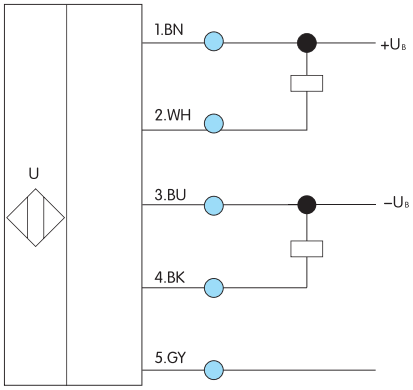
型 号 Model	UB50–18GM45–E4E5–V15	UB30–18GM45–E4E5–V15
测范围 Detecting Distance	3–50mm	25–30
盲 区 Blind Zone	–	–
分辨率 Resolution ratio	0.1mm	0.1mm
重复精度 Repeated accuracy	满量程值的 ±0.15% Full range value ±0.15%	
精 度 Accuracy	±1%（内置温度漂移补偿）(Built–in temperature drift compensation)	
响应时间 Response time	10ms	10ms
开关频率 Switching frequency	100Hz	100Hz
开关迟滞 Switching delay	2mm	2mm
上电延时 Power On Delay	<500ms	
工作电压 Working voltage	10–30V DC	
LED 红灯 Red light	无目标物常亮 Normal open when no object	
LED 绿灯 Green Light	检测到目标物常亮 Normal open when detecting object	
过载保护 Over load protection	200mA, 红灯绿灯同时闪烁 Red and green lights flash at the same time	
空载电流 No–load current	≤ 30mA	
电压降 Voltage drop	≤ 2V	
输入类型 Input type	无学习功能，No learn function	
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin	
防护等级 Insulation	IP67	
连接类型 Connect type	5 芯 M12 连接件 M12 Connector, 5 pin	
环境温度 Ambient temperature	–20℃ ~+70℃	
储存温度 Storage temperature	–40℃ ~+85℃	
重量 weight	32g	

外形尺寸图 Outline dimension drawing

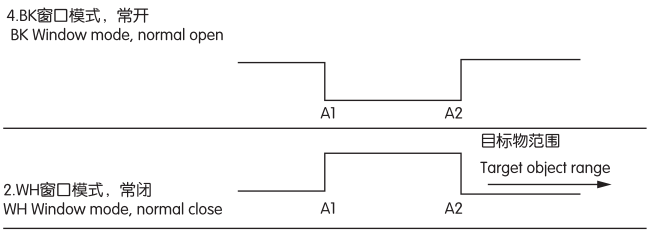


电气连接 / 输出方式 Electric connection/ Output type

电气链接 Electric connection

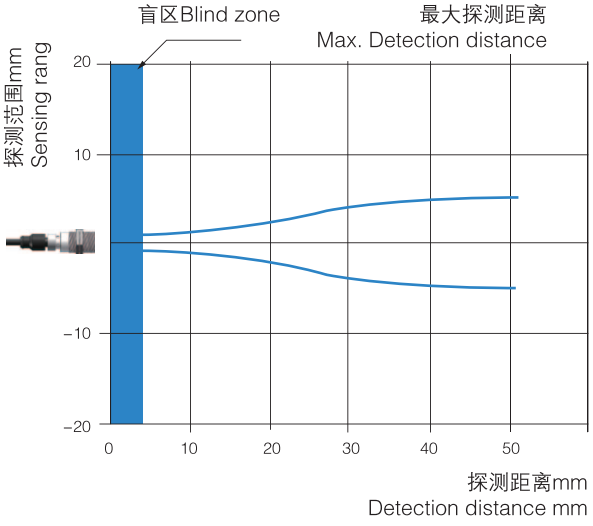


输出方式 Output type

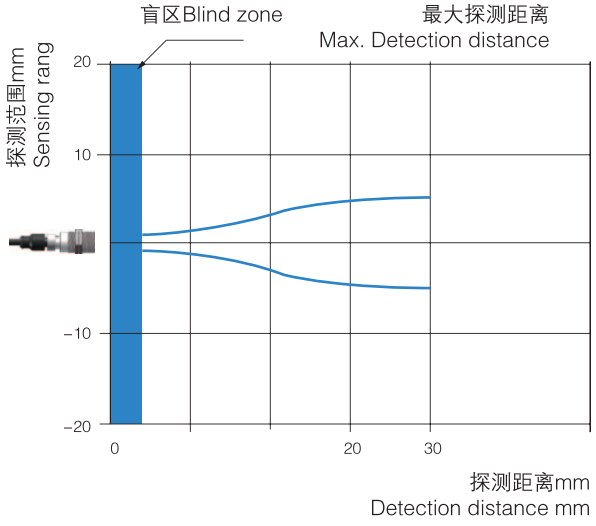


声波曲线图 Sound wave curve

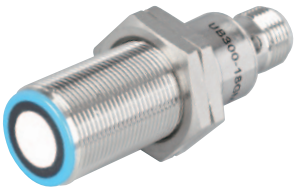
声波曲线图 UB50... Sound wave curve UB50



声波曲线图 UB30... Sound wave curve UB30



超声波传感器
Ultrasonic Sensor



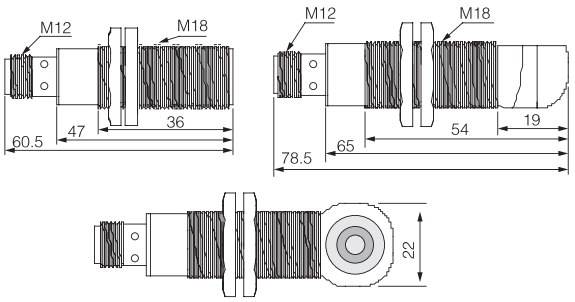
UB150–18GM45...

UB150–18GM45A...

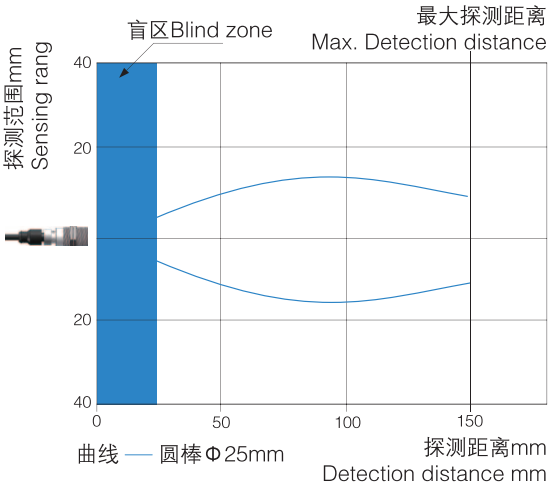
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB150–18GM45–E4E5–V15 UB150–18GM45A–E4E5–V15	开关量输出 npn+pnp Digital output NPN+PNP
UB150–18GM45–E6E7–V15 UB150–18GM45A–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB150–18GM45–AE4–V15 UB150–18GM45A–AE4–V15	1 × 模拟电压电流自动识别输出 +1 × npn 开关量输出 1 × Analog voltage and current automatic identification output+1 × npn switch output
UB150–18GM45–IU–V15 UB150–18GM45A–IU–V15	模拟电压 0–10V 输出 +1 模拟电流 4–20mA 输出 0–10V Analog voltage output + Single 4–20mA Analog current output
UB150–18GM45–R2–V15 UB150–18GM45A–R2–V15	RS232
UB150–18GM45–R4–V15 UB150–18GM45A–R4–V15	RS485
UB150–18GM45–IO–V15 UB150–18GM45–IO–V15	IO–LINK
检测范围 Detection distance	20–150mm
盲 区 Blind zone	0–20mm
分辨率 Resolution ratio	0.1mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	20ms
开关迟滞 Switching delay	2mm
开关频率 Switching frequency	50Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃（248–343K）
储存温度 Storage temperature	–40℃ ~+85℃（233–358K）
重 量 weight	32g/A35g

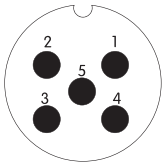
外形尺寸图 Outline dimension drawing



声波曲线图 Acoustic curve



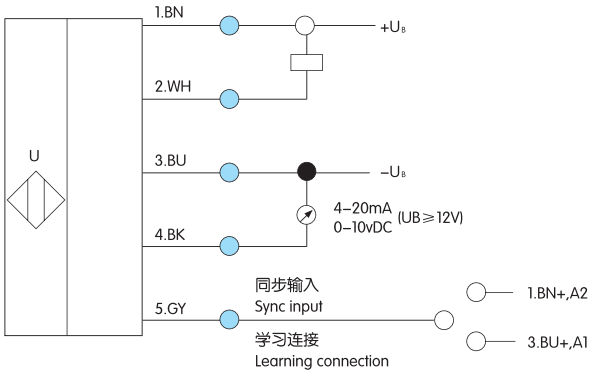
电气连接 / 输出方式 Electrical connection/ Output type



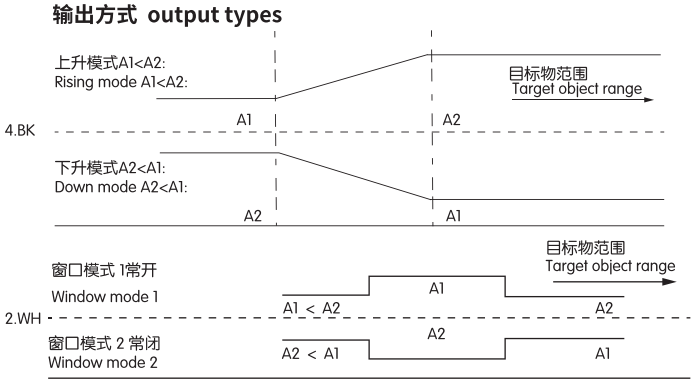
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE4,1 × 模拟电流电压自动识别 输出 +1 × npn 开关量输出 AE4, 1 × analog current and voltage automatic identification output+1 × npn switch output

电气连接 Electrical connection

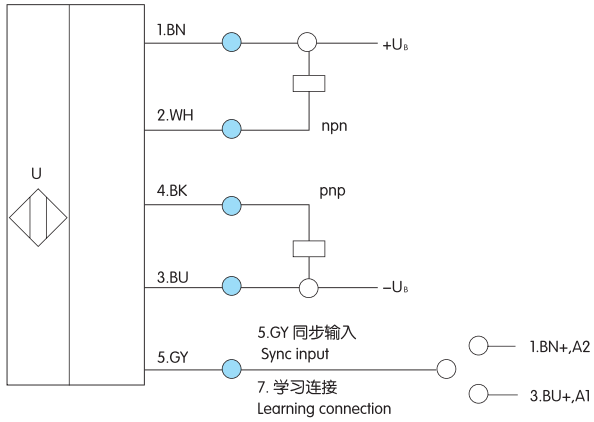


输出方式 output types

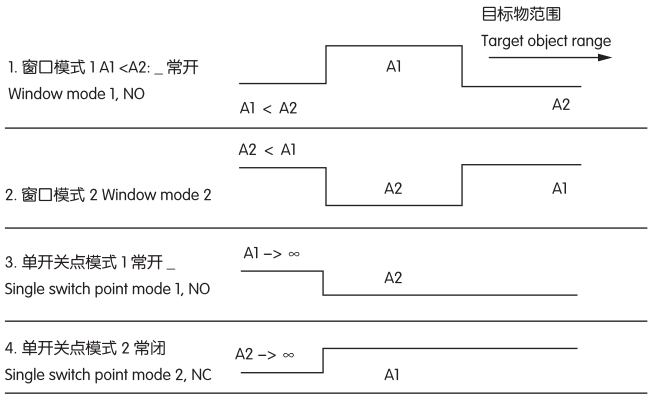


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



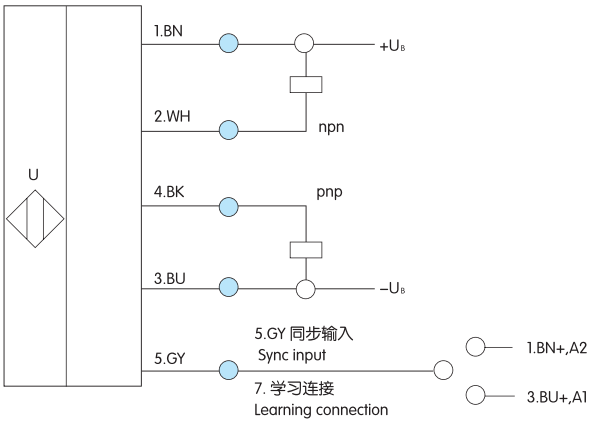
5 种输出方式 5 output types



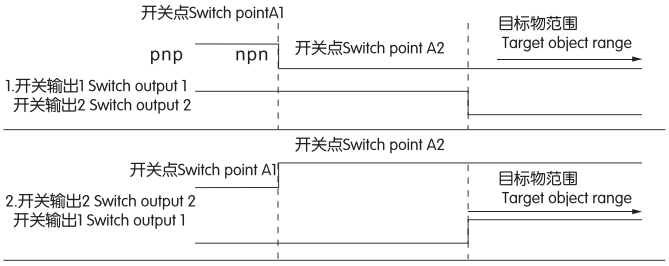
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



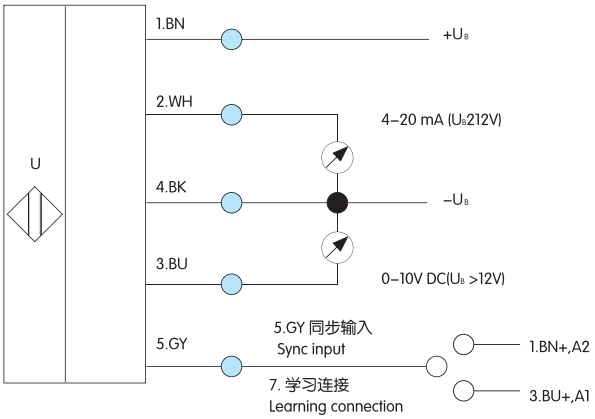
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

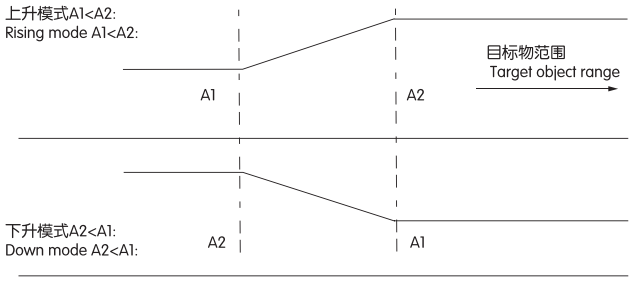
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

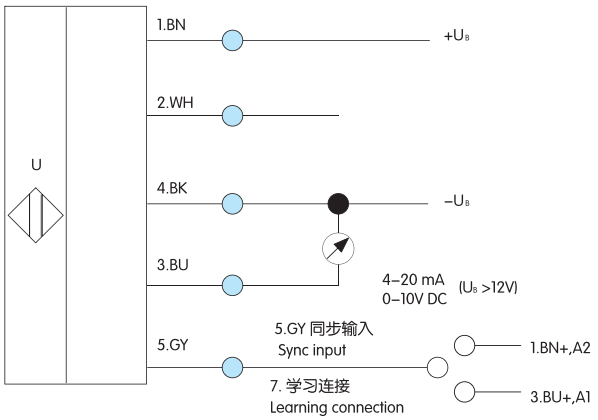


输出方式 output types

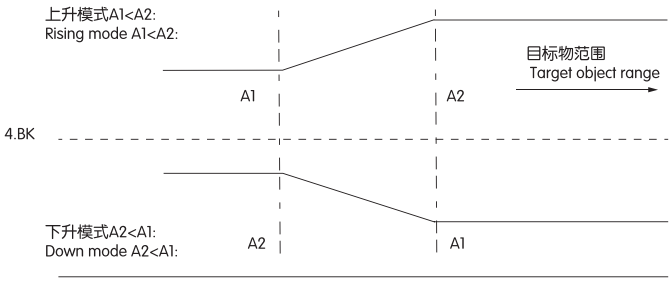


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

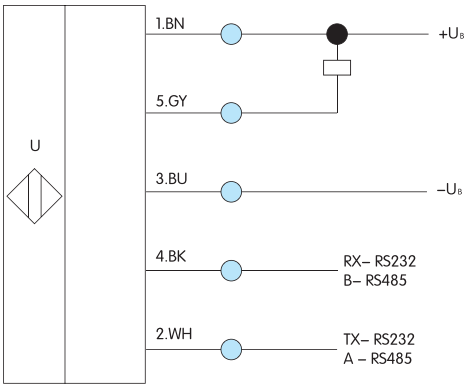


输出方式 output types

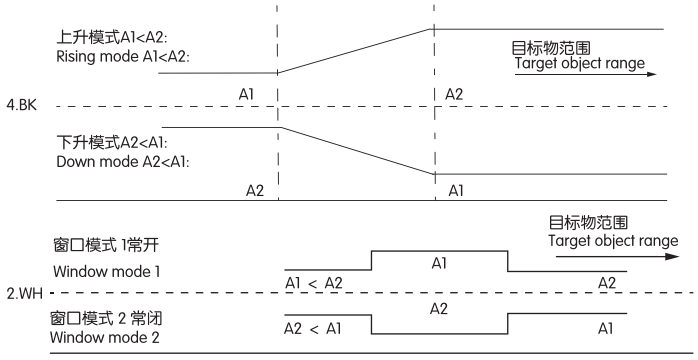


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

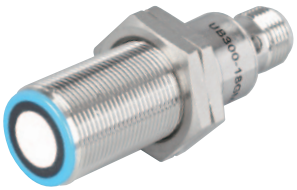
After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

超声波传感器
Ultrasonic Sensor



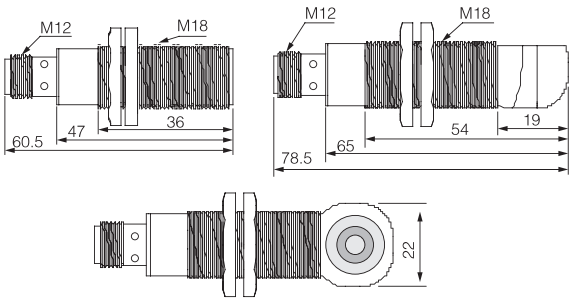
UB300–18GM45...

UB300–18GM45A...

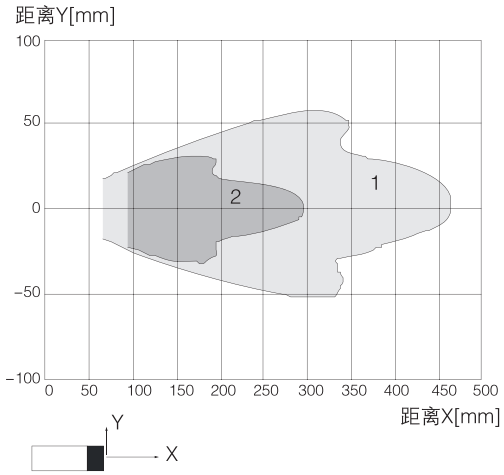
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB300–18GM45–E4E5–V15 UB300–18GM45A–E4E5–V15	开关量输出 npn+pnp Digital output NPN+PNP
UB300–18GM45–E6E7–V15 UB300–18GM45A–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB300–18GM45–AE4–V15 UB300–18GM45A–AE4–V15	1× 模拟电压电流自动识别输出 +1 × npn 开关量输出 1 × Analog voltage and current automatic identification output+1 × npn switch output
UB300–18GM45–IU–V15 UB300–18GM45A–IU–V15	模拟电压 0–10V 输出 +1 模拟电流 4–20mA 输出 0–10V Analog voltage output + Single 4–20mA Analog current output
UB300–18GM45–R2–V15 UB300–18GM45A–R2–V15	RS232
UB300–18GM45–R4–V15 UB300–18GM45A–R4–V15	RS485
UB300–18GM45–IO–V15 UB300–18GM45–IO–V15	IO–LINK
检测范围 Detection distance	30–300mm
盲 区 Blind zone	0–30mm
分辨率 Resolution ratio	0.1mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	20ms
开关迟滞 Switching delay	2mm
开关频率 Switching frequency	50Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	⩽ 30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	32g/A35g

外形尺寸图 Outline dimension drawing

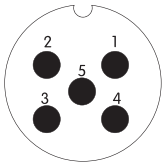


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

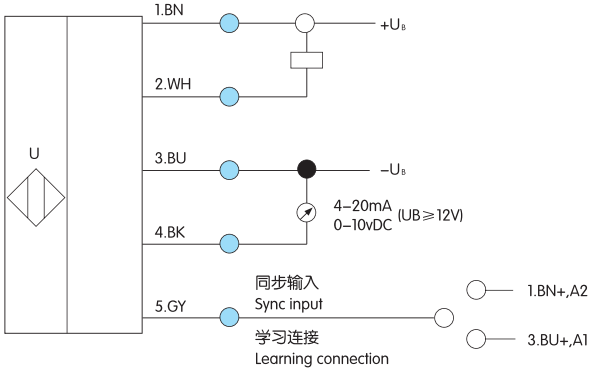
电气连接 / 输出方式 Electrical connection/ Output type



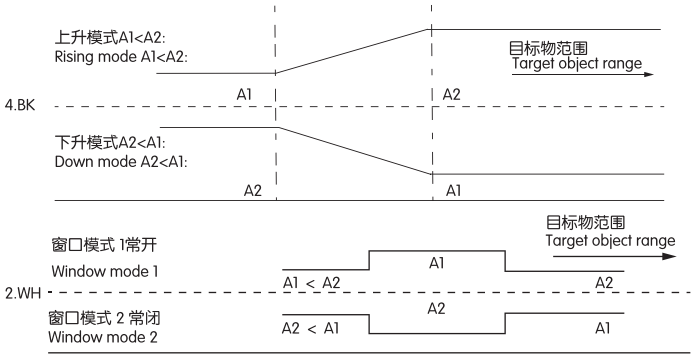
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE4,1 × 模拟电流电压自动识别 输出 +1 × npn 开关量输出 AE4, 1 × analog current and voltage automatic identification output+1 × npn switch output

电气连接 Electrical connection

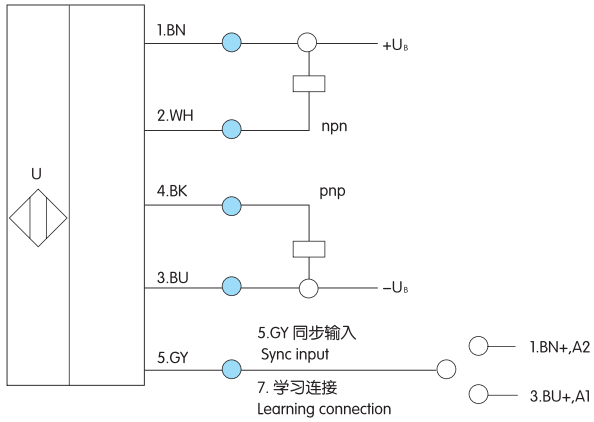


输出方式 output types

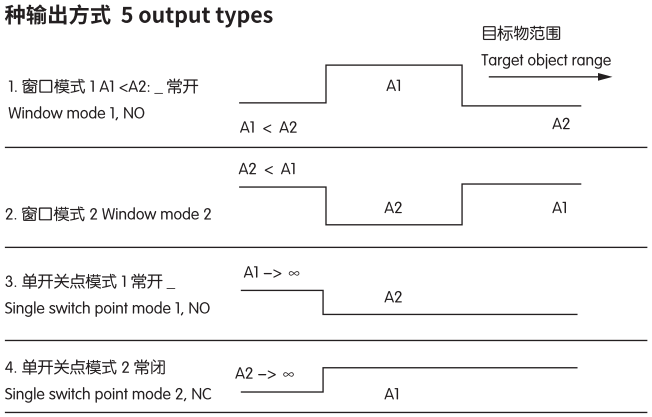


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



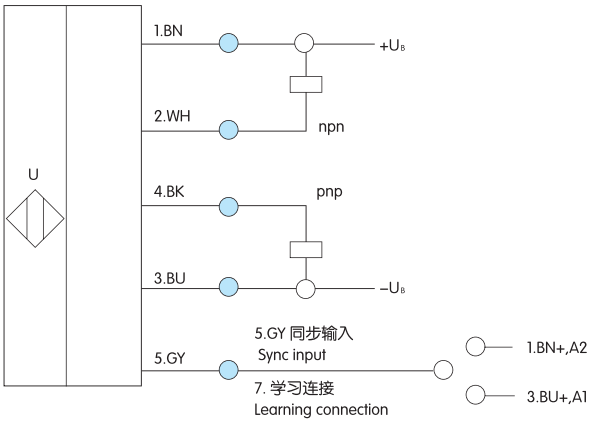
5 种输出方式 5 output types



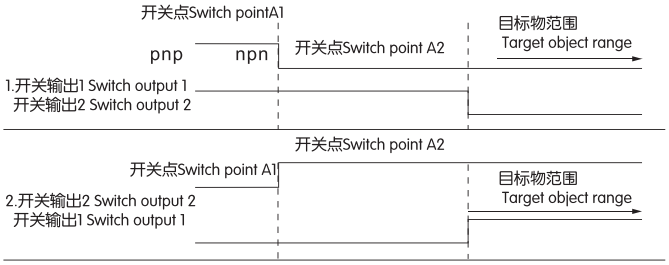
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



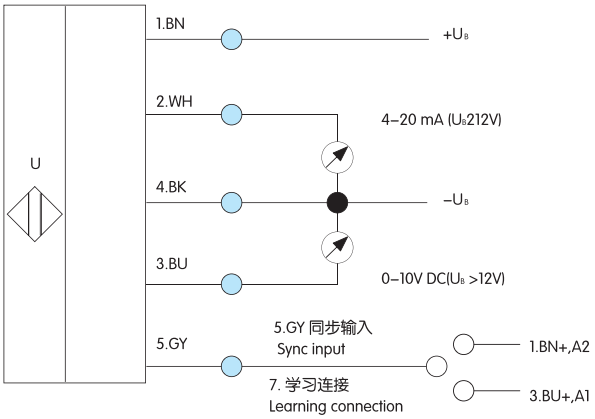
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

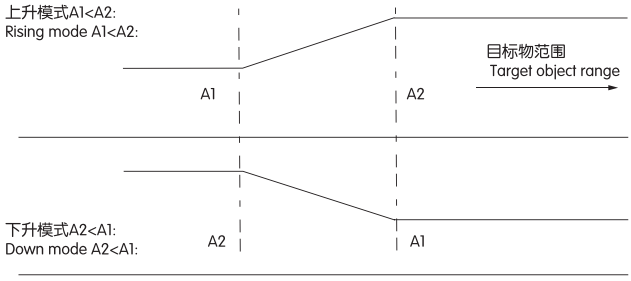
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

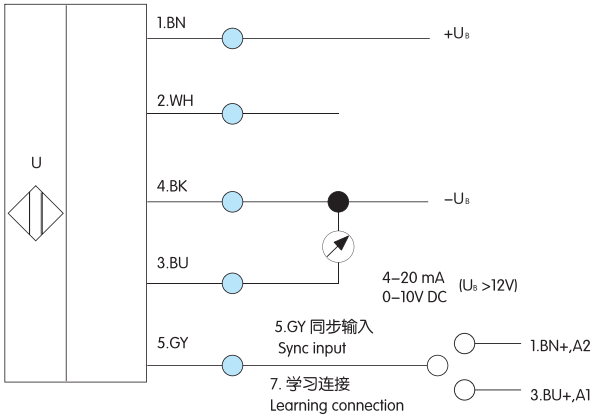


输出方式 output types

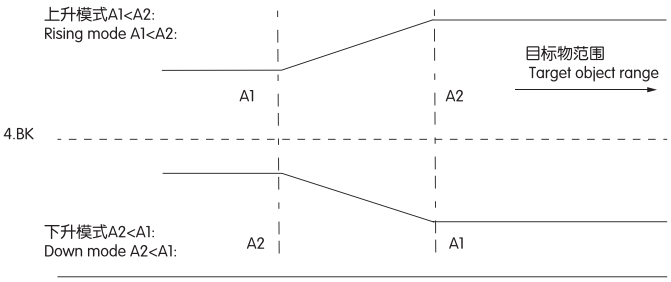


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

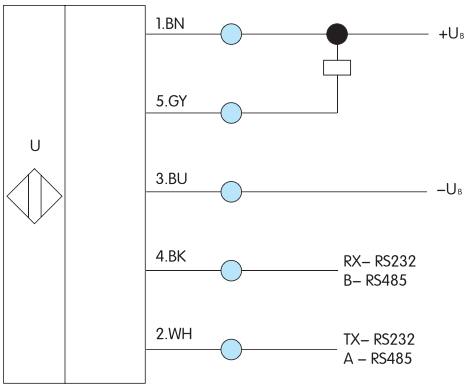


输出方式 output types

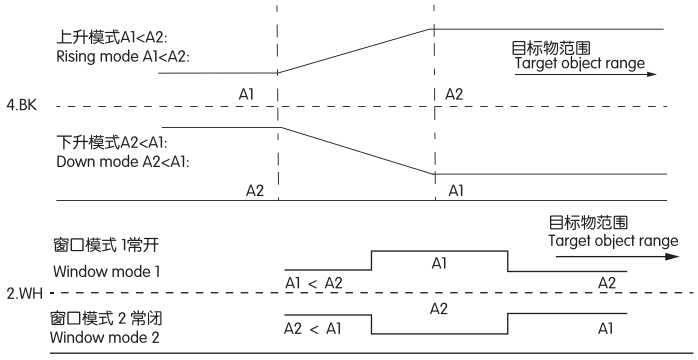


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

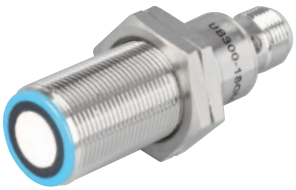
After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

超声波传感器
Ultrasonic Sensor



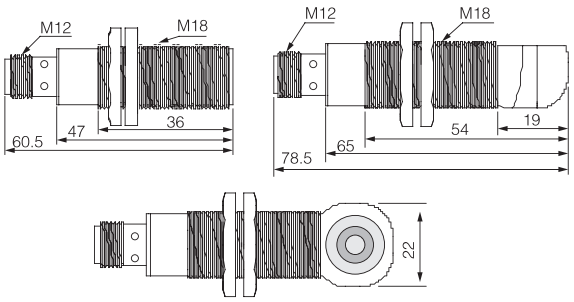
UB500–18GM45...

UB500–18GM45A...

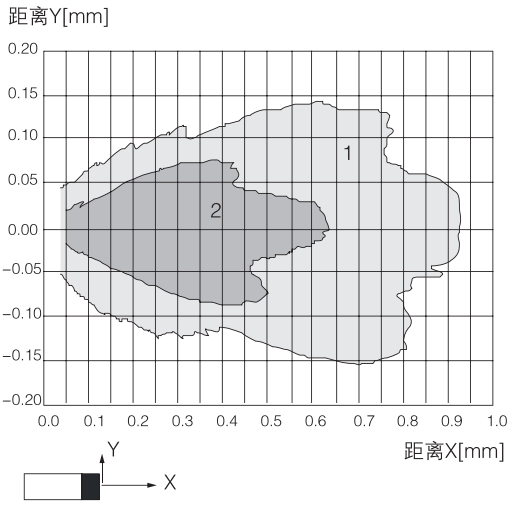
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB500–18GM45–E4E5–V15 UB500–18GM45A–E4E5–V15	开关量输出 npn+pnp Digital output NPN+PNP
UB500–18GM45–E6E7–V15 UB500–18GM45A–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB500–18GM45–IU–V15 UB500–18GM45A–IU–V15	1 × 模拟电压 0–10V 输出 +1 × 模拟电流 4–20mA 输出 1 × Analog Voltage 0–10V Output+1 × Analog Current 4–20mA Output
UB500–18GM45–R2–V15 UB500–18GM45A–R2–V15	RS232
UB500–18GM45–R4–V15 UB500–18GM45A–R4–V15	RS485
UB500–18GM45–IO–V15 UB500–18GM45–IO–V15	IO–LINK
UB500–18GM45–AE4–V15	1 × 模拟电流电压自动识别输出 +1 × npn 开关量输出
UB500–18GM45A–AE4–V15	1 × Analog current and voltage automatic identification output+1 × npn switch output
检测范围 Detection distance	50–500mm
盲 区 Blind zone	0–50mm
分辨率 Resolution ratio	0.1mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	30ms
开关迟滞 Switching delay	2mm
开关频率 Switching frequency	33Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	⩽ 30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	32g/A35g

外形尺寸图 Outline dimension drawing

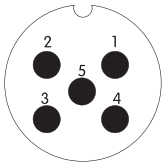


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

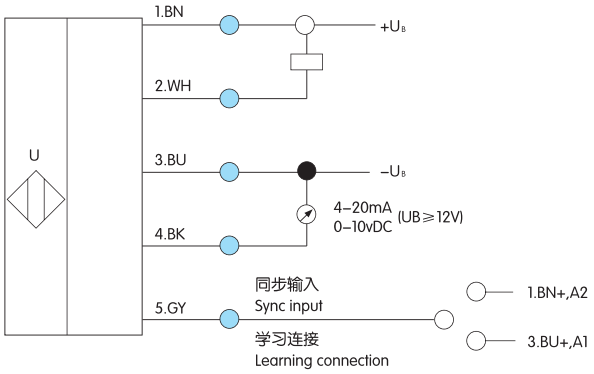
电气连接 / 输出方式 Electrical connection/ Output type



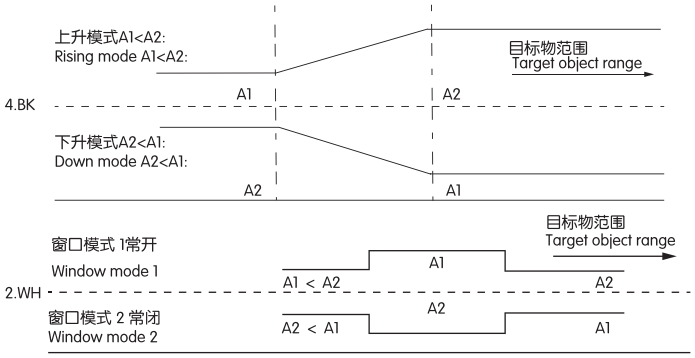
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE4,1 × 模拟电流电压自动识别 输出 +1 × npn 开关量输出 AE4, 1 × analog current and voltage automatic identification output+1 × npn switch output

电气连接 Electrical connection

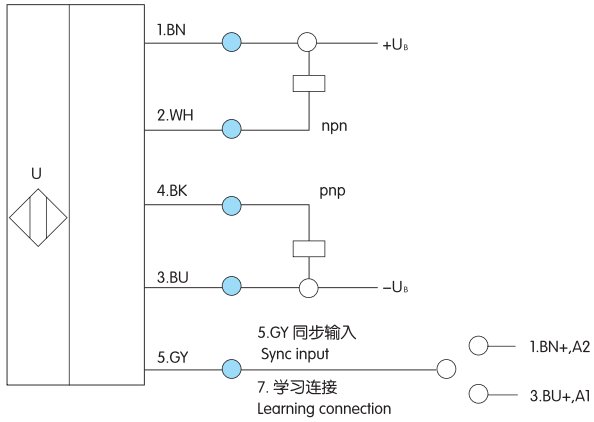


输出方式 output types

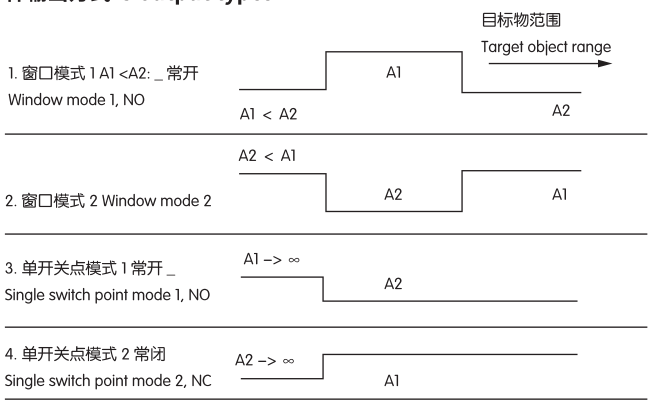


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



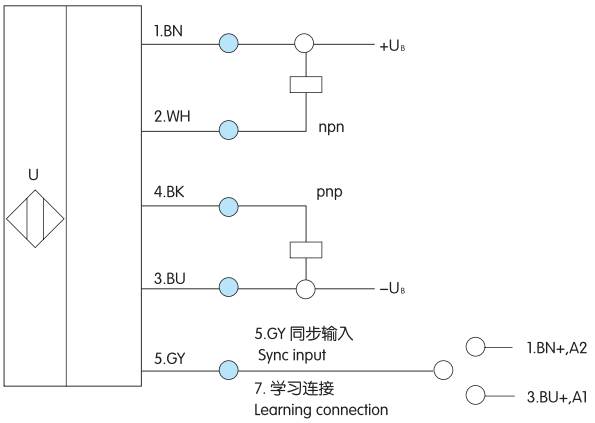
5 种输出方式 5 output types



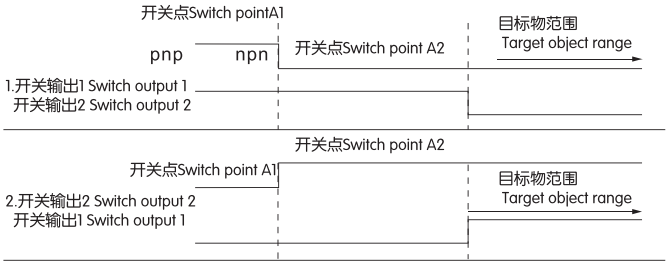
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push–pull output

电气连接 Electrical connection



3 种输出方式 3 output types



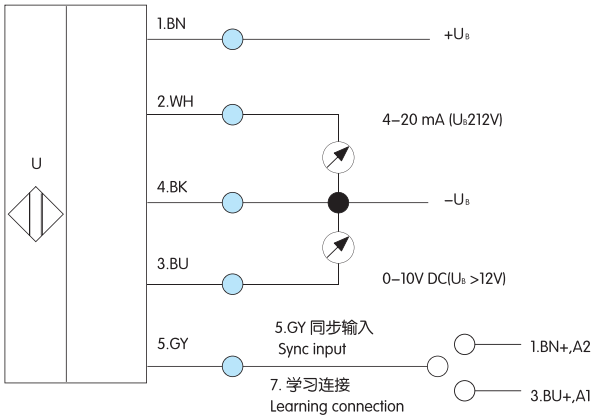
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

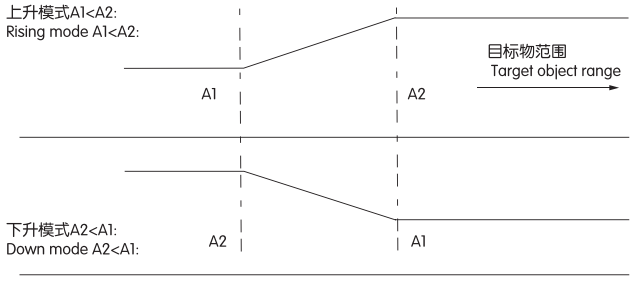
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

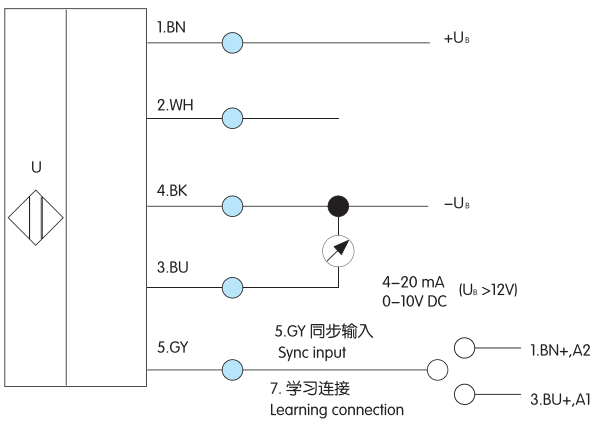


输出方式 output types

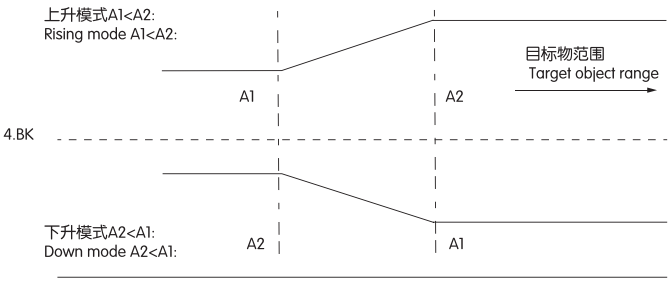


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

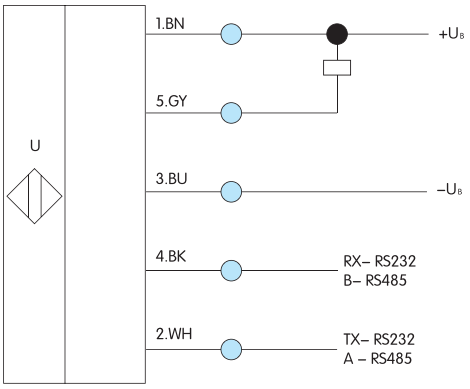


输出方式 output types

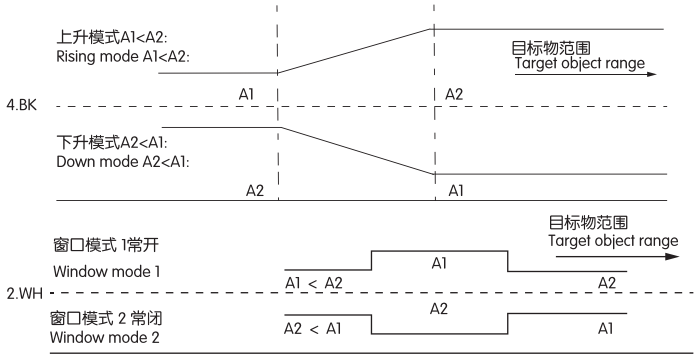


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

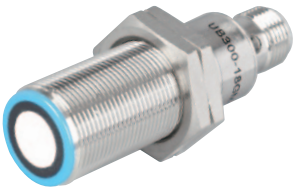
After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

超声波传感器
Ultrasonic Sensor



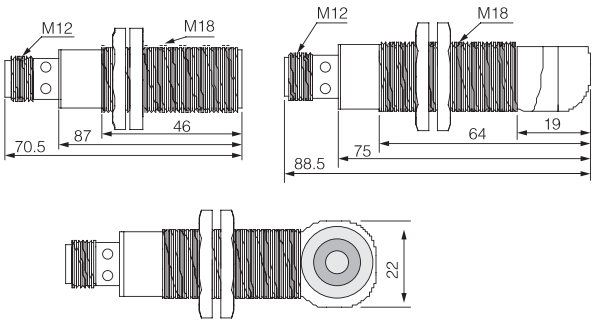
UB1000–18GM55...

UB1000–18GM55A...

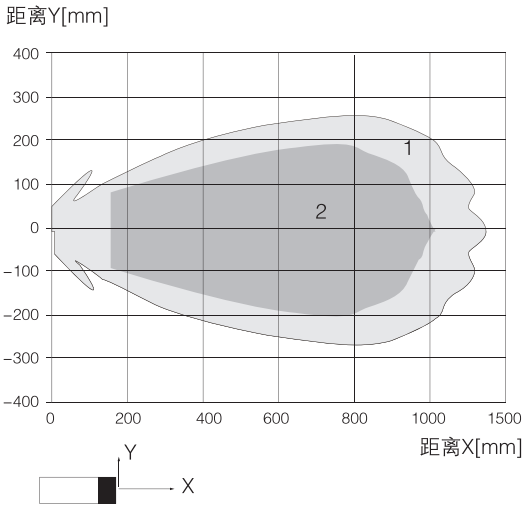
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB1000–18GM45–E4E5–V15 UB1000–18GM45A–E4E5–V15	开关量输出 npn+pnp Digital output NPN+PNP
UB1000–18GM45–E6E7–V15 UB1000–18GM45A–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB1000–18GM45–AE4–V15 UB1000–18GM45A–AE4–V15	1 × 模拟电压电流自动识别输出 +1 × npn 开关量输出 1 × Analog voltage and current automatic identification output+1 × npn switch output
UB1000–18GM45–IU–V15 UB1000–18GM45A–IU–V15	1 × 模拟电压 0–10V 输出 +1 × 模拟电流 4–20mA 输出 1 × Analog Voltage 0–10V Output+1 × Analog Current 4–20mA Output
UB1000–18GM45–R2–V15 UB1000–18GM45A–R2–V15	RS232
UB1000–18GM45–R4–V15 UB1000–18GM45A–R4–V15	RS485
UB1000–18GM45–IO–V15 UB1000–18GM45–IO–V15	IO–LINK
检测范围 Detection distance	60–1000mm
盲 区 Blind zone	0–60mm
分辨率 Resolution ratio	0.17mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	50ms
开关迟滞 Switching delay	± 2mm
开关频率 Switching frequency	20Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	⩽ 30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	38g/A41g

外形尺寸图 Outline dimension drawing

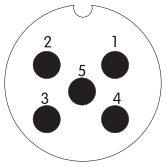


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

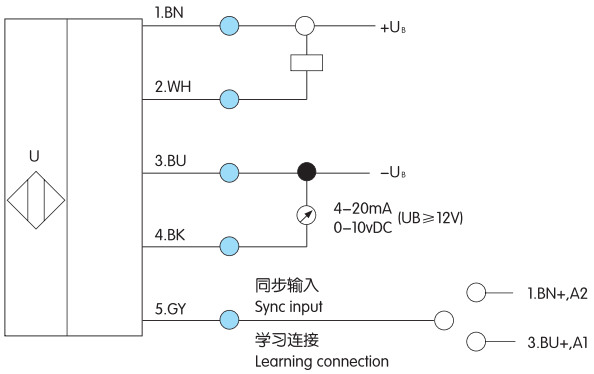
电气连接 / 输出方式 Electrical connection/ Output type



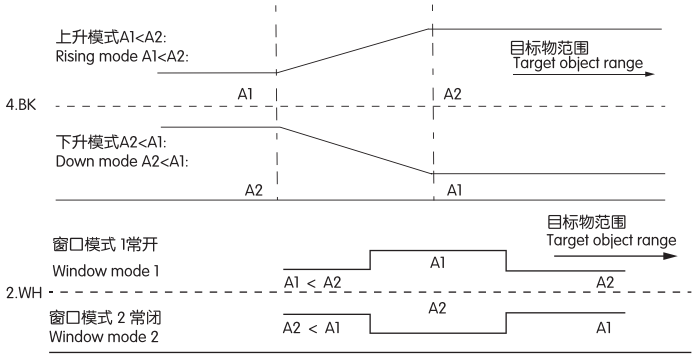
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE4,1 × 模拟电流电压自动识别 输出 +1 × npn 开关量输出 AE4, 1 × analog current and voltage automatic identification output+1 × npn switch output

电气连接 Electrical connection

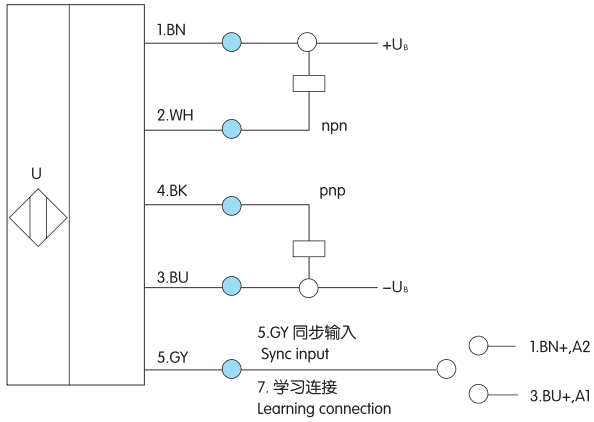


输出方式 output types

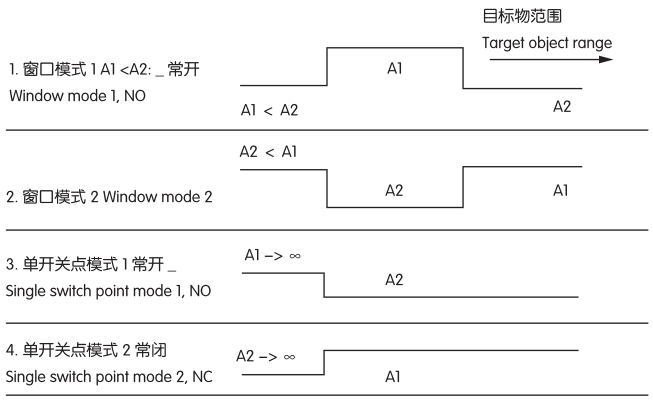


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



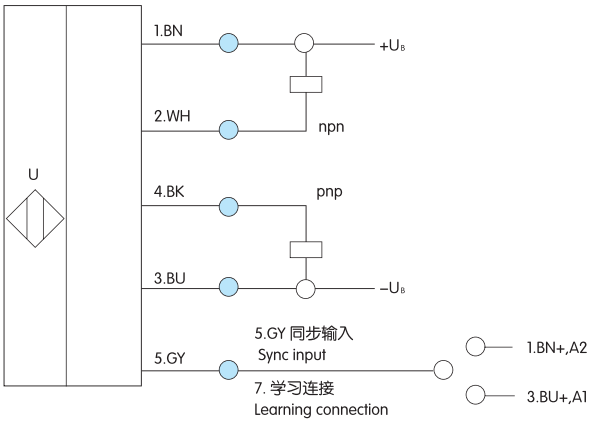
5 种输出方式 5 output types



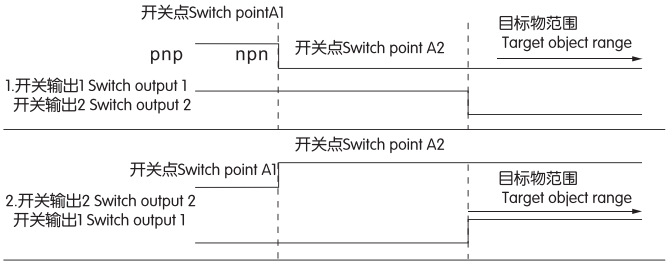
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



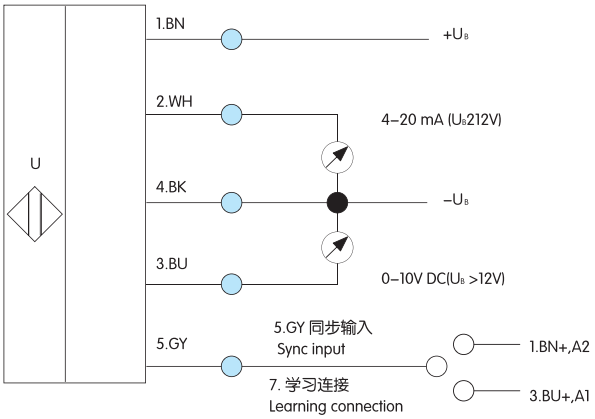
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

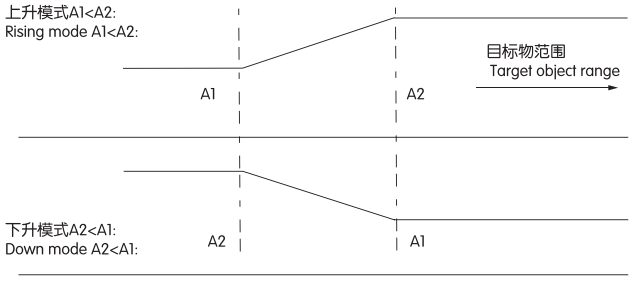
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

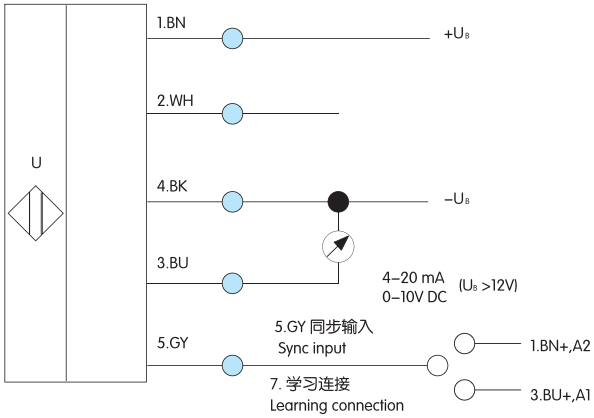


输出方式 output types

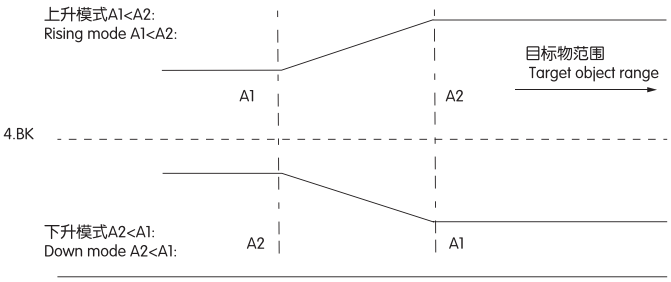


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

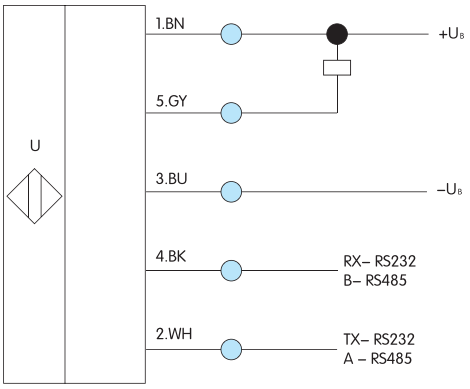


输出方式 output types

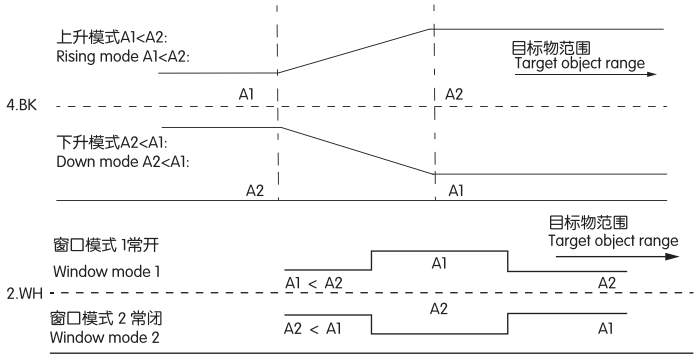


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

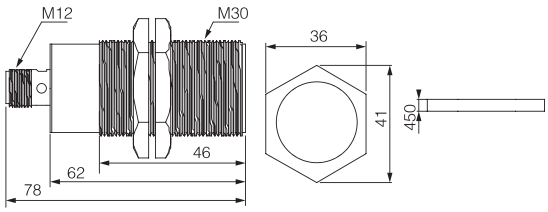
Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

UB1500 系列
超声波传感器
Ultrasonic Sensor

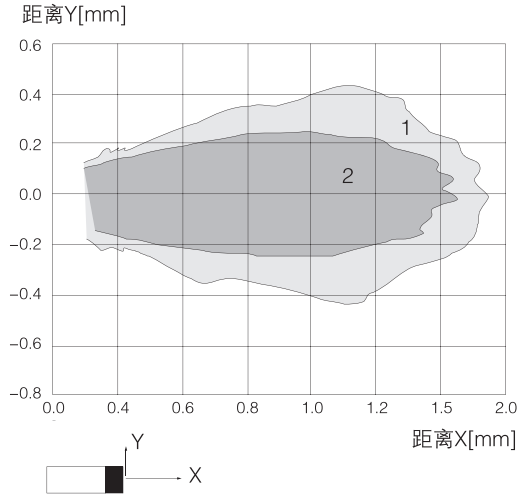
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB1500–30GM60–E4E5–V15	开关量输出 npn+pnpDigital output NPN+PNP
UB1500–30GM60–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB1500–30GM60–AE–V15	1× 模拟电流电压自动识别输出 +1× 开关量推挽输出 1× analog current and voltage automatic identification output + 1× switch value push–pull output
UB1500–30GM60–R2–V15	RS232
UB1500–30GM60–IU–V15	1× 模拟电压 0–10V 输出 + 1× 模拟电流 4–20mA 输出 1× analog voltage 0–10V output + 1× analog current 4–20mA output
UB1500–30GM60–R4–V15	RS485
UB1500–30GM60–IO–V15	IO–LINK
检测范围 Detection distance	80–1500mm
盲 区 Blind zone	0–80mm
分辨率 Resolution ratio	0.17mm
重复精度 Repeated accuracy	满量程值的 ±0.15% Full range value ±0.15%
精 度 Accuracy	±1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	80ms
开关迟滞 Switching delay	±2mm
开关频率 Switching frequency	12.5Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	⩽ 30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	100g

外形尺寸图 Outline dimension drawing

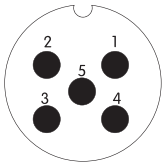


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

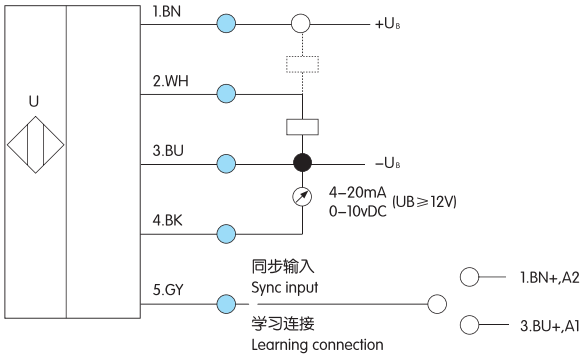
电气连接 / 输出方式 Electrical connection/ Output type



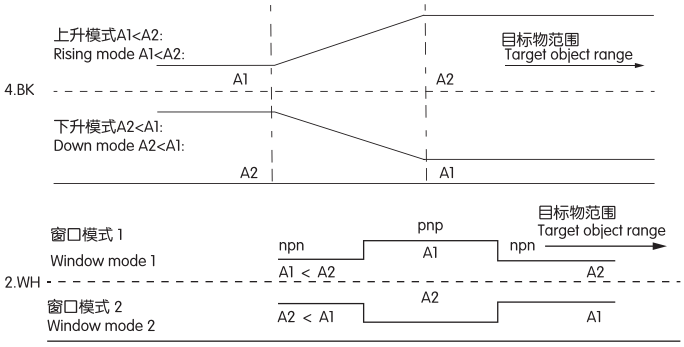
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE,1 × 模拟电流电压自动识别 输出 + 开关量推挽输出 AE, 1 × analog current and voltage automatic identification output+switch push–pull output

电气连接 Electrical connection

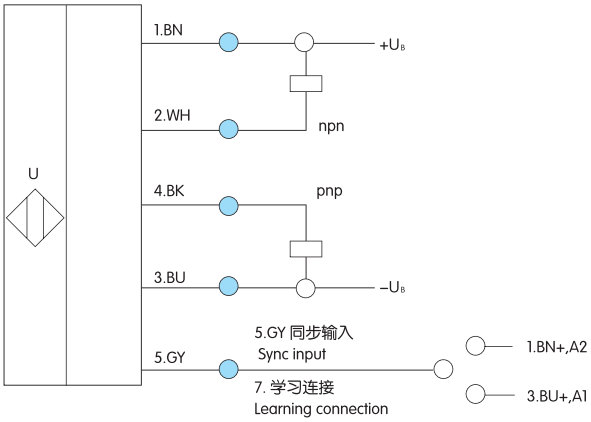


输出方式 output types

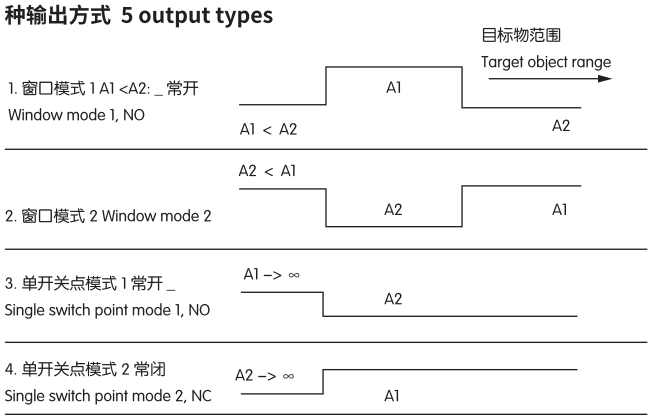


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



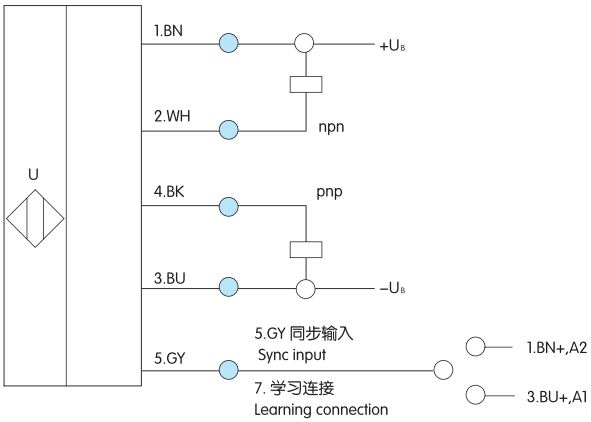
5 种输出方式 5 output types



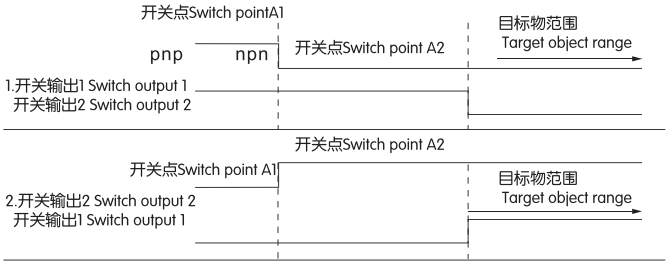
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



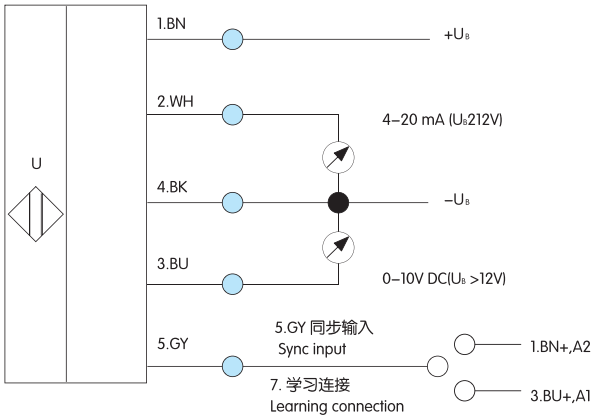
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

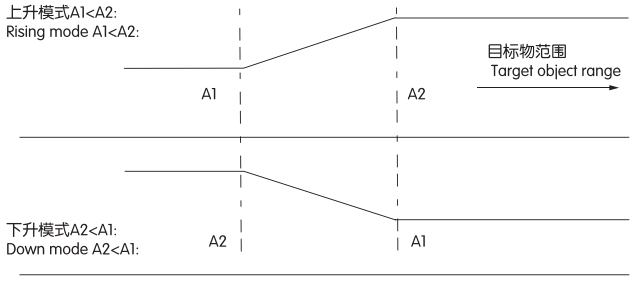
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

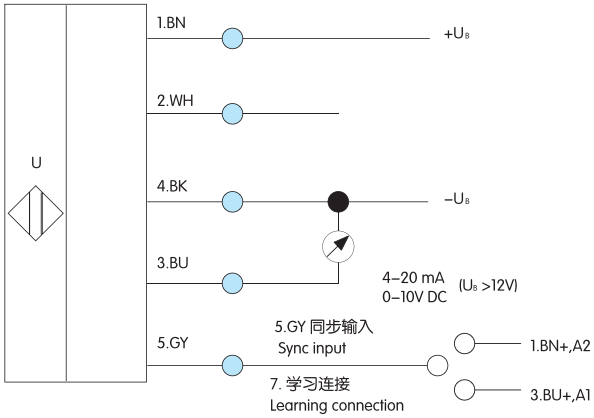


输出方式 output types

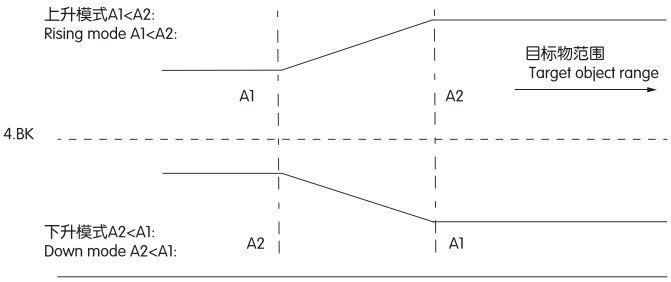


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

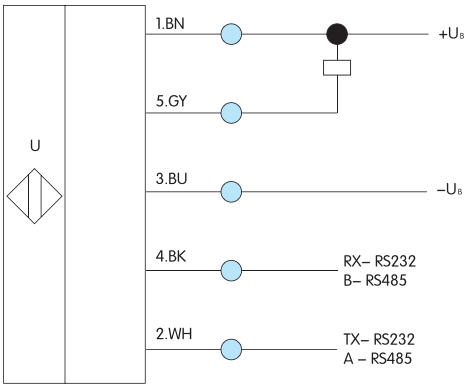


输出方式 output types

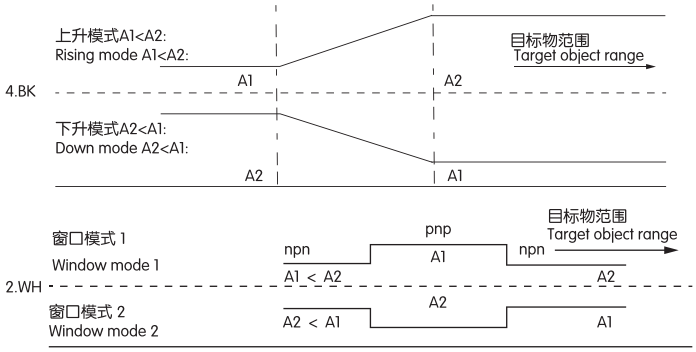


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

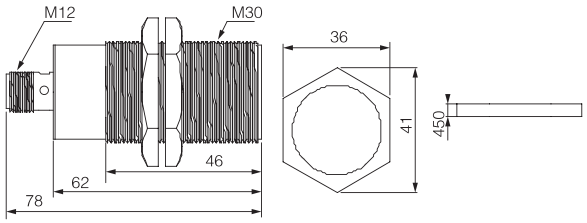
Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

UB2000 系列
超声波传感器
Ultrasonic Sensor

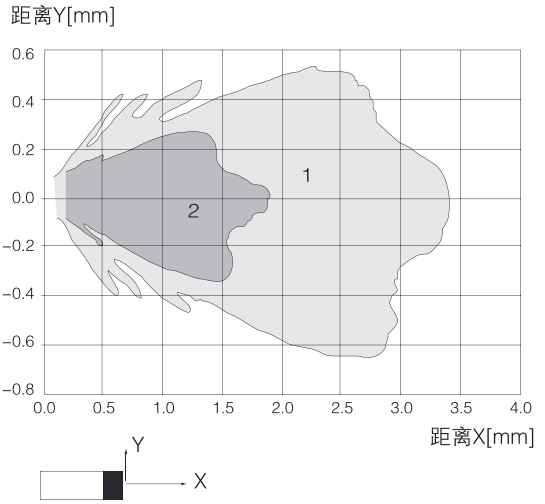
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB2000–30GM60–E4E5–V15	开关量输出 npn+pnpDigital output NPN+PNP
UB2000–30GM60–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB2000–30GM60–AE–V15	1× 模拟电流电压自动识别输出 +1× 开关量推挽输出 1×Analog current and voltage automatic identification output+1×Switch push–pull output
UB2000–30GM60–R2–V15	RS232
UB2000–30GM60–IU–V15	1× 模拟电压 0–10V 输出 + 1× 模拟电流 4–20mA 输出 1× analog voltage 0–10V output + 1× analog current 4–20mA output
UB2000–30GM60–R4–V15	RS485
UB2000–30GM60–IO–V15	IO–LINK
检测范围 Detection distance	100–2000mm
盲 区 Blind zone	0–100mm
分辨率 Resolution ratio	0.17–0.5mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	100ms
开关迟滞 Switching delay	± 2mm
开关频率 Switching frequency	10Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ≥ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	≤ 30mA
电压降 Voltage drop	≤ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	100g

外形尺寸图 Outline dimension drawing

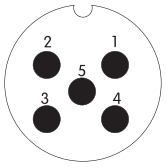


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

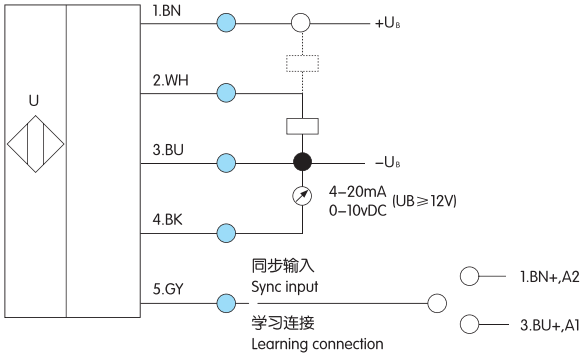
电气连接 / 输出方式 Electrical connection/ Output type



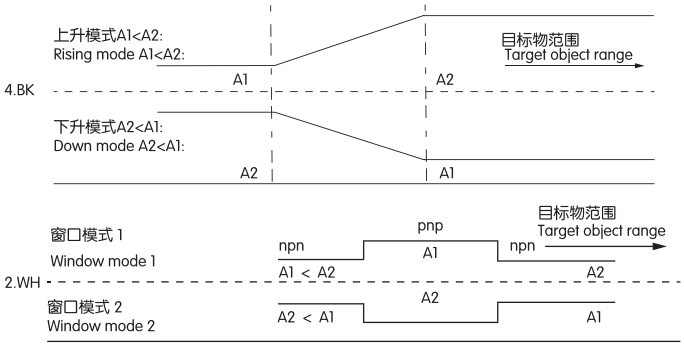
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE,1 × 模拟电流电压自动识别 输出 + 开关量推挽输出 AE, 1 × analog current and voltage automatic identification output+switch push–pull output

电气连接 Electrical connection

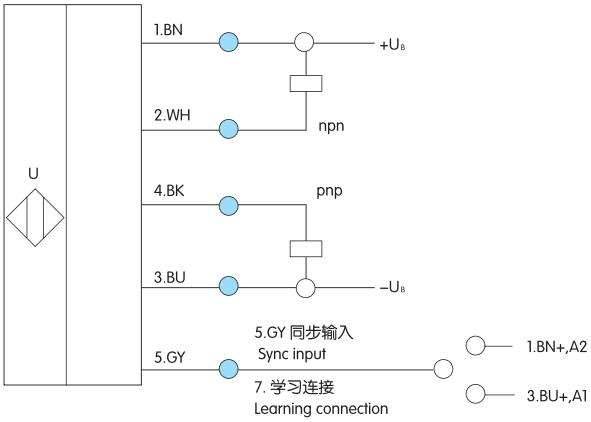


输出方式 output types

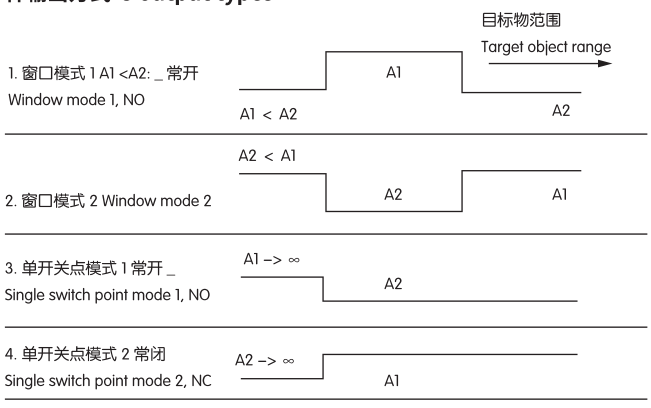


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



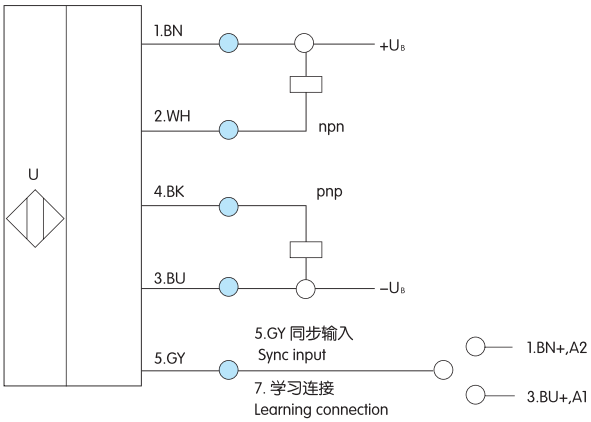
5 种输出方式 5 output types



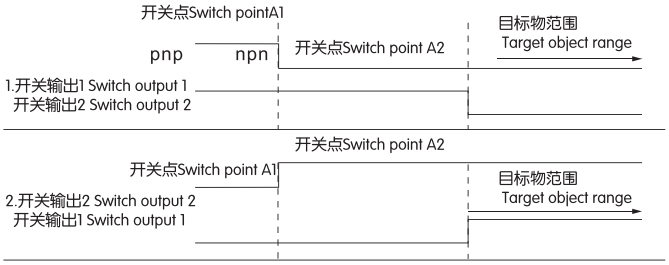
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



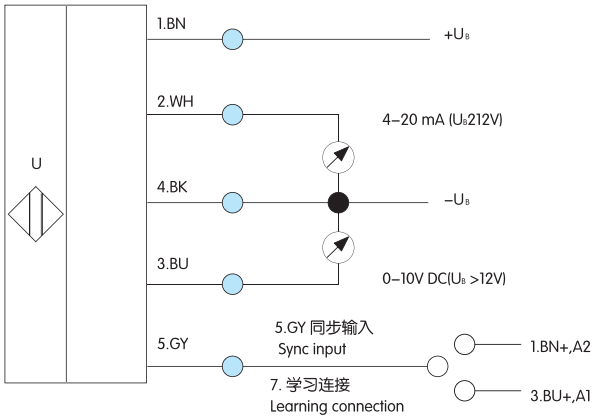
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

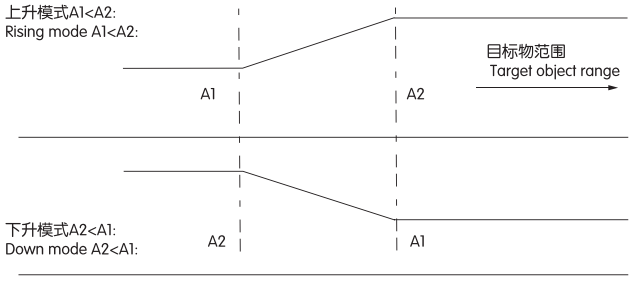
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

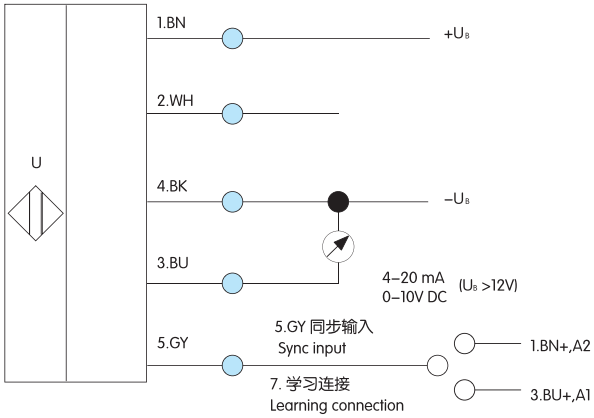


输出方式 output types

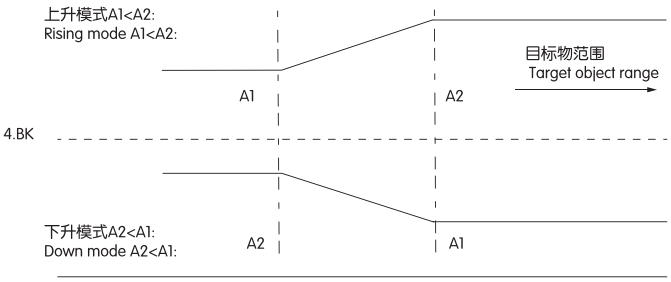


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

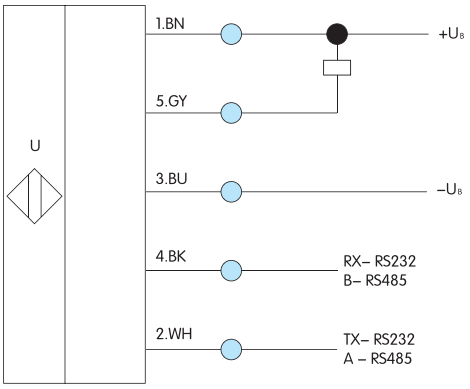


输出方式 output types

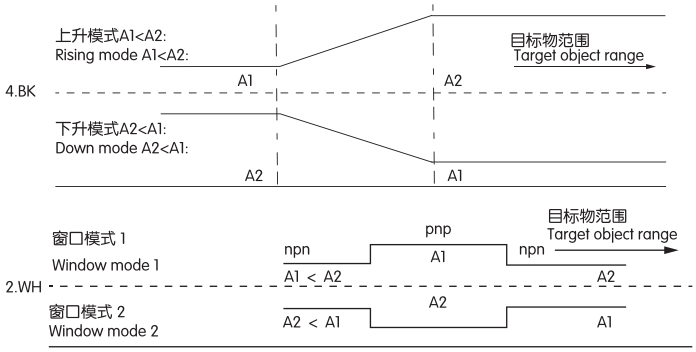


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

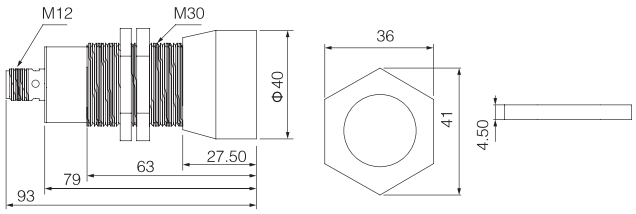
Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

UB4000 系列
超声波传感器
Ultrasonic Sensor

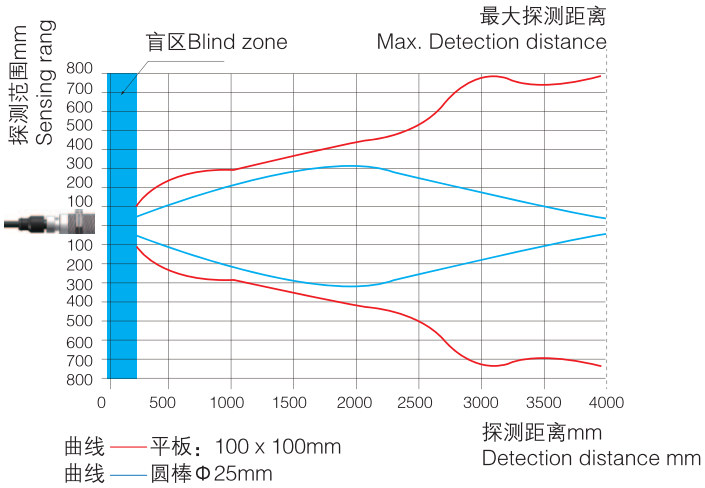
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB4000–30GM60–E4E5–V15	开关量输出 npn+pnpDigital output NPN+PNP
UB4000–30GM60–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB4000–30GM60–AE–V15	1× 模拟电流电压自动识别输出 +1× 开关量推挽输出 1× Analog current and voltage automatic identification output+1× Switch push–pull output
UB4000–30GM60–R2–V15	RS232
UB4000–30GM60–IU–V15	1× 模拟电压 0–10V 输出 + 1× 模拟电流 4–20mA 输出 1× analog voltage 0–10V output + 1× analog current 4–20mA output
UB4000–30GM60–R4–V15	RS485
UB4000–30GM60–EO–V15	单开关推挽输出 + 使能 Single switch push–pull output+Enable
UB4000–30GM60–IO–V15	IO–LINK
检测范围 Detection distance	200–4000mm
盲 区 Blind zone	0–200mm
分辨率 Resolution ratio	0.17–1.5mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	200ms
开关迟滞 Switching delay	± 4mm
开关频率 Switching frequency	5Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ≥ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	≤ 30mA
电压降 Voltage drop	≤ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	130g

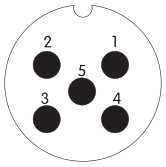
外形尺寸图 Outline dimension drawing



声波曲线图 Acoustic curve



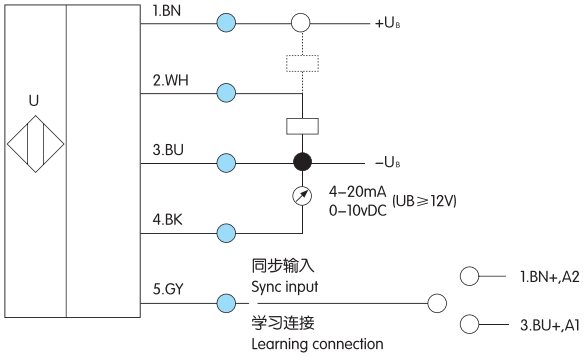
电气连接 / 输出方式 Electrical connection/ Output type



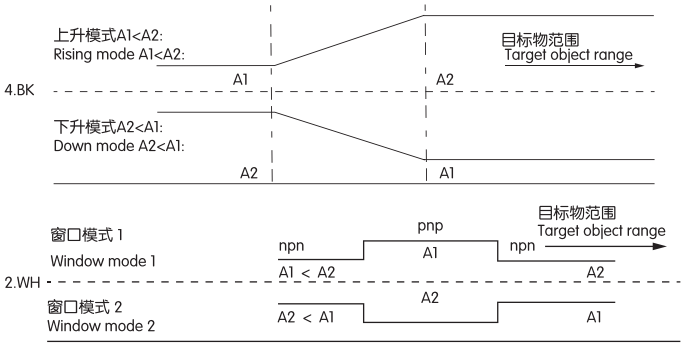
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE,1 × 模拟电流电压自动识别 输出 + 开关量推挽输出 AE, 1 × analog current and voltage automatic identification output+switch push–pull output

电气连接 Electrical connection

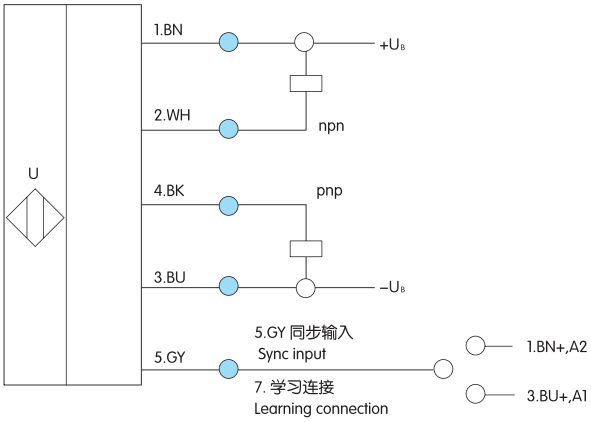


输出方式 output types

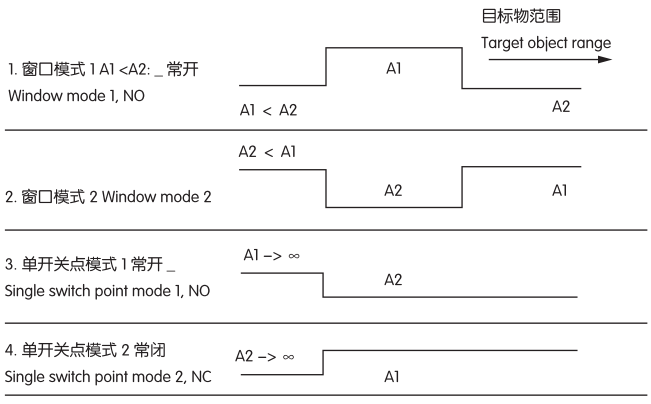


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



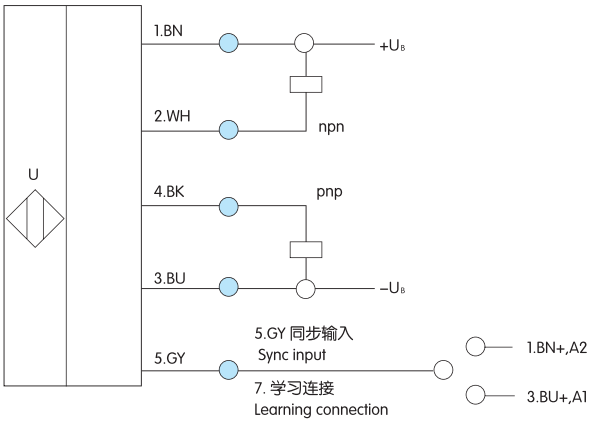
5 种输出方式 5 output types



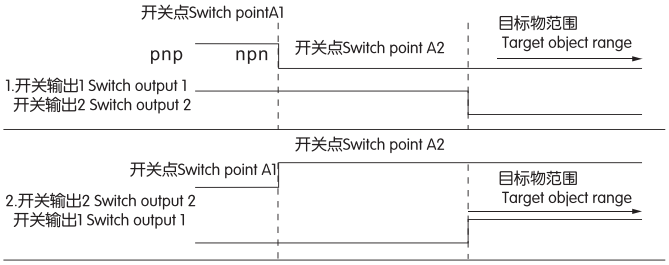
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物：开关闭合；未检测到目标：开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



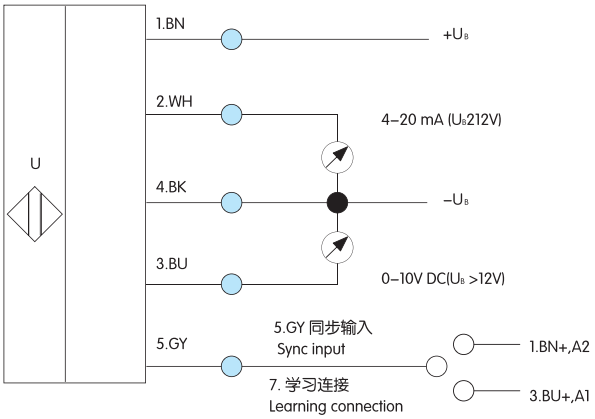
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

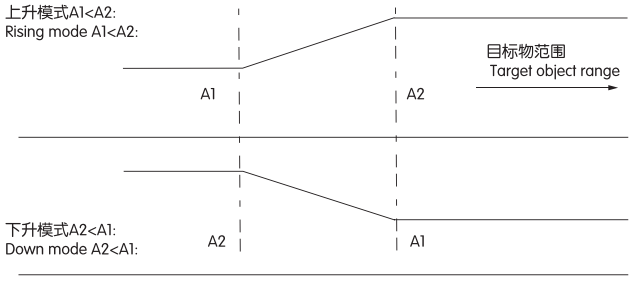
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

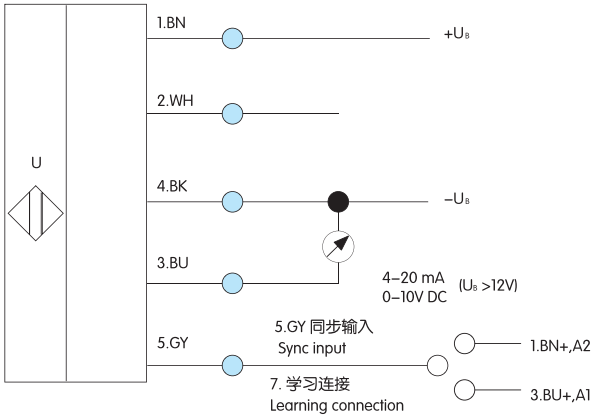


输出方式 output types

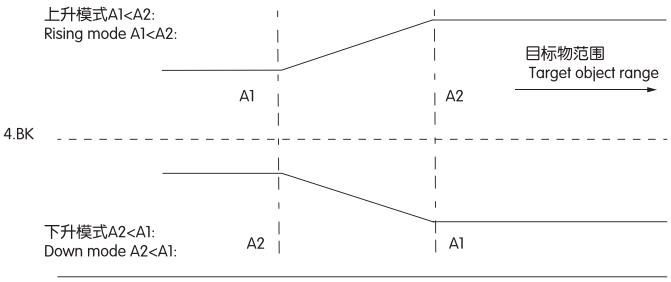


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

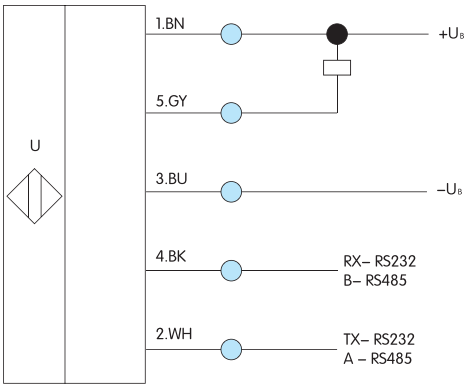


输出方式 output types

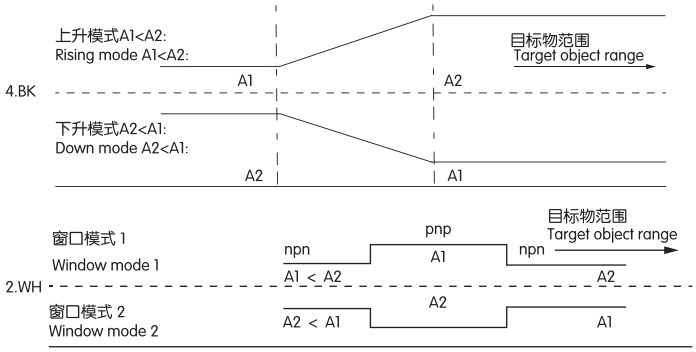


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

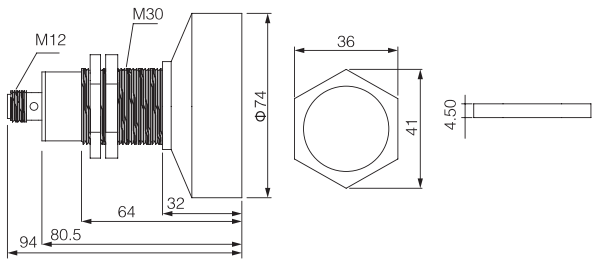
Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

超声波传感器
Ultrasonic Sensor

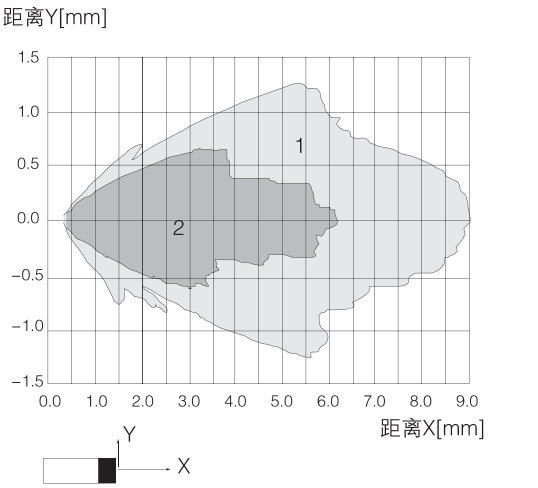
电气参数 Electrical parameter

型号 Model	输出类型 Output type
UB6000–30GM60–E4E5–V15	开关量输出 npn+pnpDigital output NPN+PNP
UB6000–30GM60–E6E7–V15	双开关量推挽输出 Double digital push–pull output
UB6000–30GM60–AE–V15	1× 模拟电流电压自动识别输出 +1× 开关量推挽输出 1× Analog current and voltage automatic identification output+1× Switch push–pull output
UB6000–30GM60–R2–V15	RS232
UB6000–30GM60–IU–V15	1× 模拟电压 0–10V 输出 + 1× 模拟电流 4–20mA 输出 1× analog voltage 0–10V output + 1× analog current 4–20mA output
UB6000–30GM60–R4–V15	RS485
UB6000–30GM60–IO–V15	IO–LINK
检测范围 Detection distance	500–6000mm
盲 区 Blind zone	0–500mm
分辨率 Resolution ratio	0.17–2.5mm
重复精度 Repeated accuracy	满量程值的 ± 0.15% Full range value ± 0.15%
精 度 Accuracy	± 1 %（内置温度漂移补偿）(Built–in temperature drift compensation)
响应时间 Response time	300ms
开关迟滞 Switching delay	± 5mm
开关频率 Switching frequency	3.3Hz
上电延时 Power On Delay	<500ms
工作电压 Working voltage	10–30V DC, UB ⩾ 12V
LED 红灯 Red light	无目标物常亮，学习时无目标闪烁 Normal open when on object, learning mode flashing when no object
LED 绿灯 Green light	检测到目标物常亮，学习时有目标闪烁 Normal open when detecting object, learning model flashing when there is object.
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red and green lights both flashing
负载阻抗 Load impedance	1/ 0 ~ 300 Ohm, U/>1k Ohm
空载电流 No–load current	⩽ 30mA
电压降 Voltage drop	⩽ 2V
输入类型 Input type	带同步功能和学习功能 With synchronization function and learning function
材 质 Material	铜套镀镍，塑料配件，玻璃填充环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	5 芯 M12 连接件 M12 connector 5 pin
环境温度 Ambient temperature	–20℃ ~+70℃
储存温度 Storage temperature	–40℃ ~+85℃
重 量 weight	215g

外形尺寸图 Outline dimension drawing

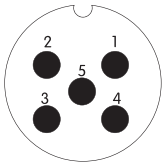


声波曲线图 Acoustic curve



曲线1: 平板100mm x 100mm Curve 1:Flat plate100mm X 100mm
曲线2: 圆棒Φ25mm Curve 2: round bar Φ25mm

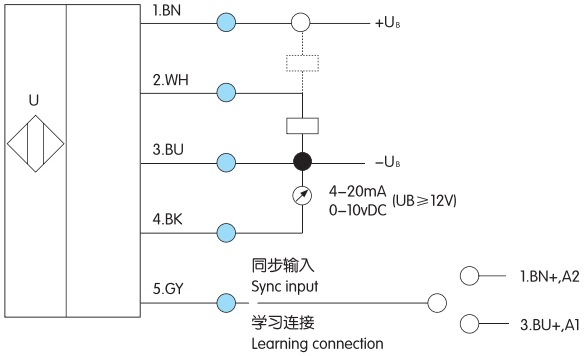
电气连接 / 输出方式 Electrical connection/ Output type



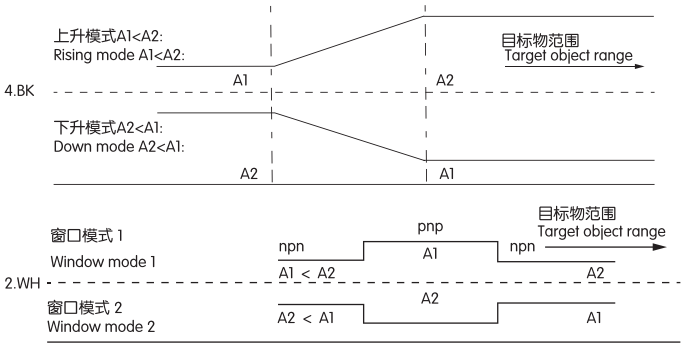
1= Brown. 棕色 BN
2= White. 白色 WH
3= Blue. 蓝色 BU
4= Black. 黑色 BK
5= Gray. 灰色 GY

AE,1 × 模拟电流电压自动识别 输出 + 开关量推挽输出 AE, 1 × analog current and voltage automatic identification output+switch push–pull output

电气连接 Electrical connection

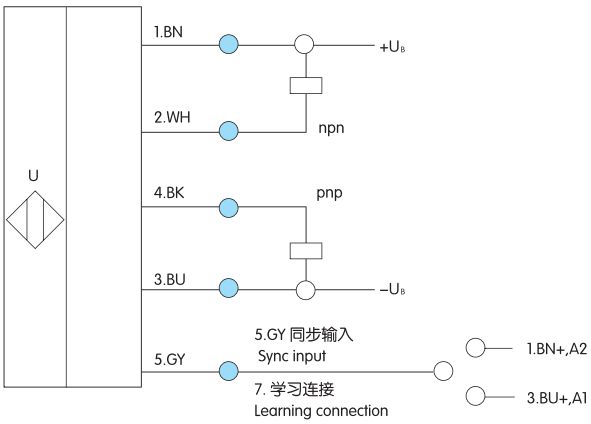


输出方式 output types

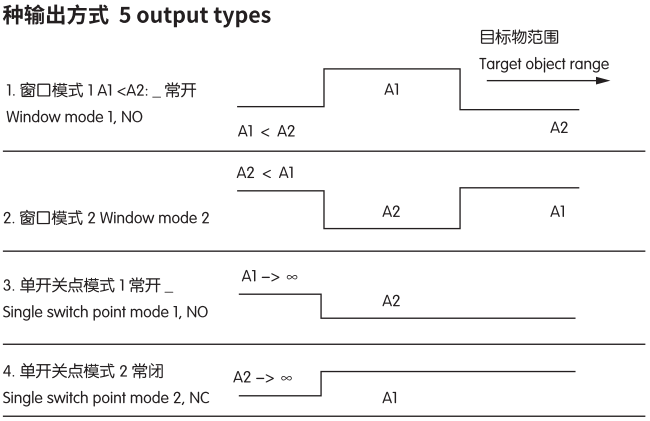


E4E5, 开关量输出 Digital output

电气连接 Electrical connection



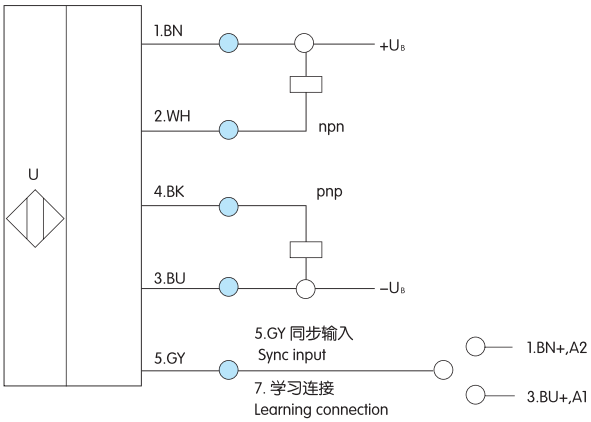
5 种输出方式 5 output types



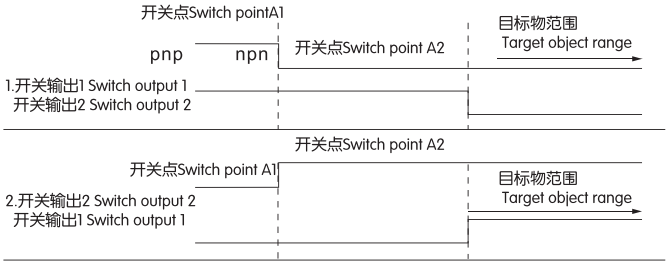
5.A1–>8,A2 –>8：目标物存在检测；Detection of object presence
检测到目标物 : 开关闭合 ; 未检测到目标 : 开关打开
Detected object: switch closed; No target detected: switch on

E6E7, 双开关量推挽输出 Double digital push-pull output

电气连接 Electrical connection



3 种输出方式 3 output types



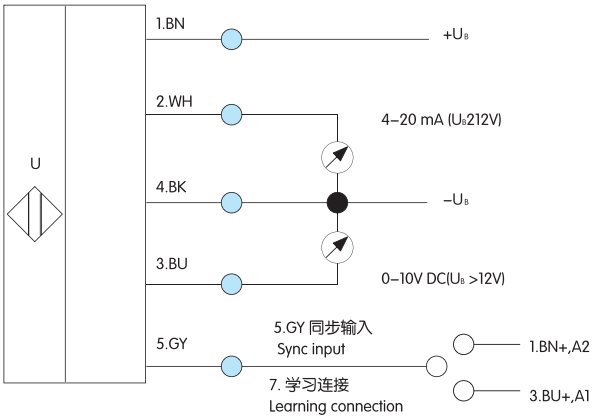
3.开关点A1–>∞：开关输出1,npn;检测物体存在
Switch point A1–>∞： Switch output 1,npn; Detect there is object

开关点A2–>∞：开关输出1,npn;检测物体存在
Switch point A2–>∞： Switch output 1,npn; Detect there is object

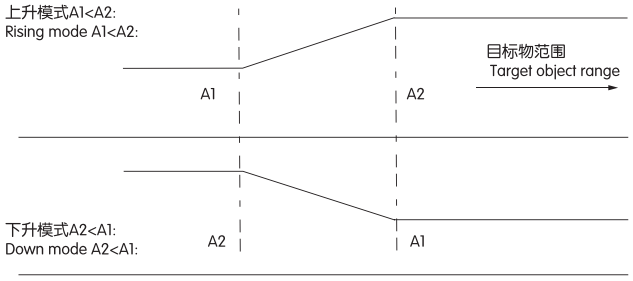
开关点A1&A2–A∞：双输出,pnp; 检测物体存在
Switch point A1&A2–A 00： Double output ,pnp; Detect there is object

IU, 模拟量双路输出 IU, analog dual output

电气连接 Electrical connection

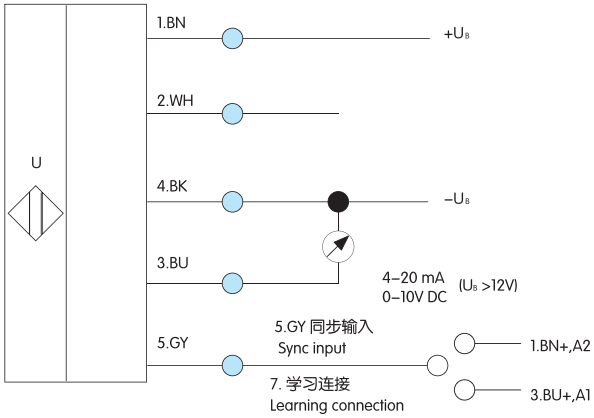


输出方式 output types

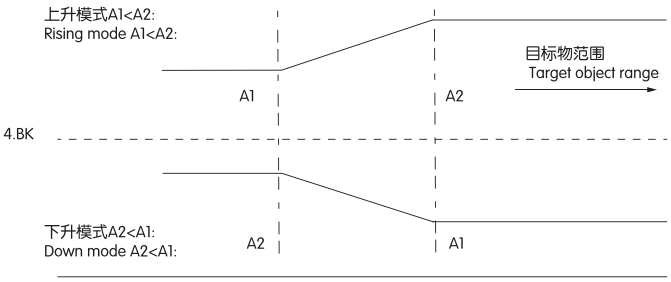


U/I, 模拟电流或电压输出 U/I Analog current or voltage output

电气连接 Electrical connection

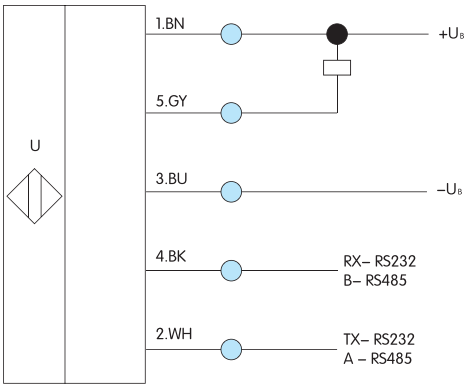


输出方式 output types

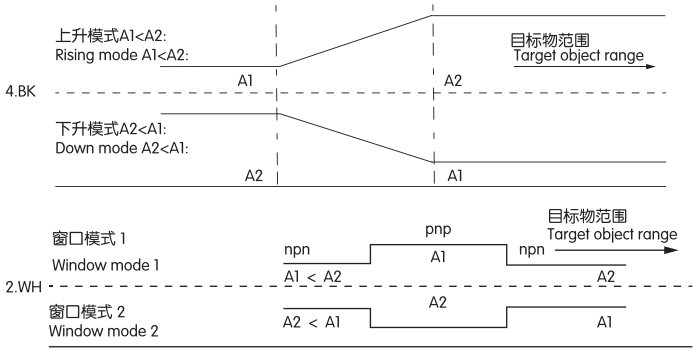


R2/R4, 数字量输出 R2/R4, digital output

电气连接 Electrical connection



输出方式 output types



学习功能 Learning function

传感器通电后，无目标时亮红灯。学习功能在通电 5 分 钟之内有效。可以在 5 分钟之内分别设置 A1,A2 点；也可以两次通电分别设置 A1,A2 点。

- 将 A1,A2 点设置在传感器有效检测范围内时，将目标物放在检测距离 A1 或 A2 点处，传感器检测到目标物时，LED 亮绿灯。
- 将学习线连接到 +UB , 此时绿灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时绿灯闪烁 ,3 秒后断开 连接，A1 点设置成功。
- 将 A1,A2 点设置为无穷远时，将传感器对置无目标 状态，传感器检测不到目标物，LED 亮红灯。
- 将学习线连接到 +UB , 此时红灯闪烁，3 秒后断开连接，A2 点设置成功。
- 将学习线连接到 –UB , 此时红灯闪烁，3 秒后断开连接，A1 点设置成功。

设置好 A1,A2 点之后，传感器有记忆功能，以后断电重启会保存最近一次设置。

When the sensor is powered on, it will turn on red light when there is no target. The learning function is effective within 5 minutes of power. A1 and A2 can be set in 5 minutes; Or you can switch on two times and set A1 and A2 respectively.

- When A1 and A2 are set within the effective detection range of the sensor, the target is placed at the detection distance of A1 or A2. When the sensor detects the target, the LED turns green.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.
- When A1 and A2 are set to infinity, the sensor is set to a target–free state. If the sensor cannot detect the target object, the LED will turn on the red light.
- Connect the Teach–in wire to +UB, then the green light flashes, disconnect after 3 seconds, and point A2 is set successfully.
- Connect the Teach–in wire to –UB, then the green light flashes, disconnect after 3 seconds, and point A1 is set successfully.

After setting points A1 and A2, the sensor has the memory function, and the last setting will be saved after power failure and restart.

同步功能 Synchronizing function

最多有 5 个混合配置不同检测距离的传感器，直接将同步线连接起来，即可激活同步功能。超过 5 个、不同型号的传感器或异步功能，需要使用同步盒实现。

Up to five sensors can be connected directly to activate the synchronization function with mixed configurations of different detection distances. More than five sensors of different sizes or asynchronous functions need to be implemented using a synchronization box.

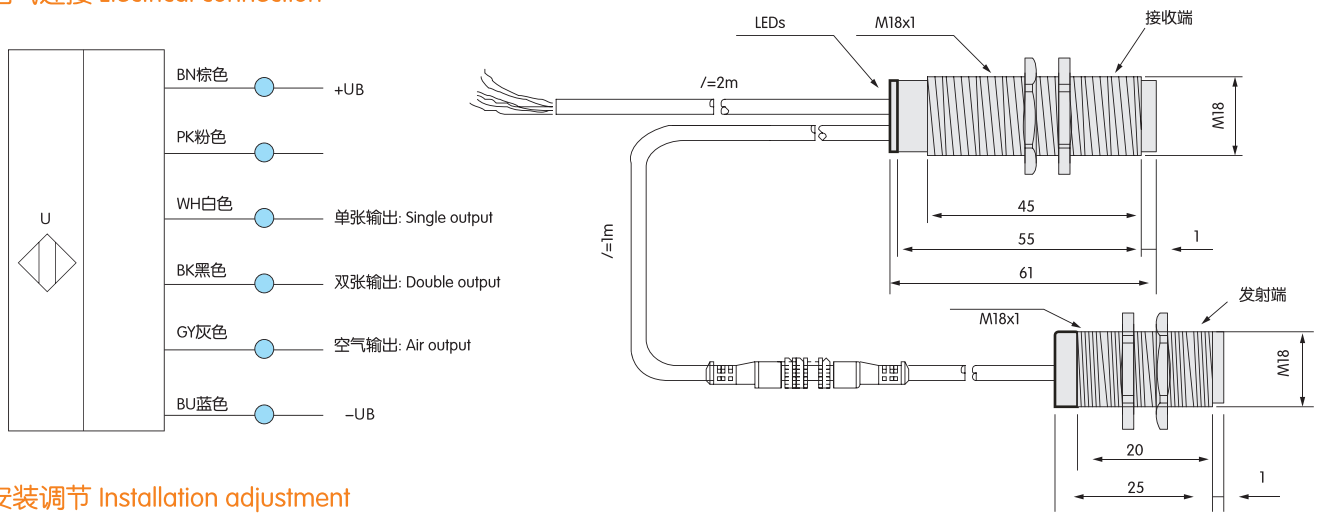
双张检测 UDA 系列
超声波传感器
Ultrasonic Sensor

电气参数 Electrical parameter

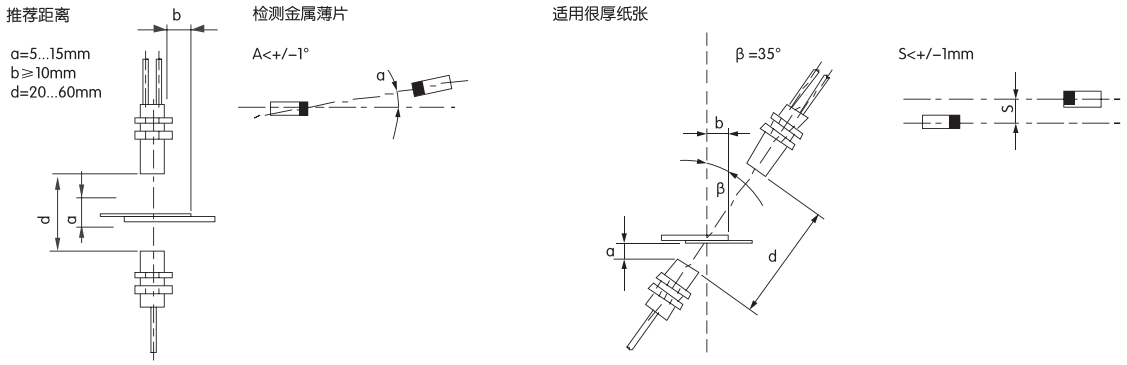
型号 Model	输出类型 Output type
UDA–18GM55–200–3E3	3 个开关量 PNP, 常开（3 switch value PNP NO)
UDA–18GM55–200–3E1	3 个开关量 NPN, 常开（3 switch value NPN NO)
检测范围 Detection distance	20–60mm, 最佳值：居中 10mm 范围 20–60mm, best value: in the range of 10mm
工作范围	小于 1mm 厚的金属及复合板，薄膜，不干胶片，衬底材料上的标签，大于 0.01mm 的纸张 ,PCB 板，硅片等 Less than 1mm thickness metal and composite board, film, adhesive sheet, label on substrate material, paper greater than 0.01mm,PCB board, silicon wafer, etc
LED 绿 Green light	指示：检测到单张 Indication: single sheet detected
LED 黄灯 Yellow light	指示：无目标（空气）Indication: No target (air)
LED 红灯 Red light	指示：检测到双张 Indication: double sheet detected
工作电压 Working voltage	12–30V DC
空载电流 No–load current	≤ 30mA
工作电流 Working current	3 × 200mA 短路保护 / 过载保护 Short circuit protection/overload protection
过载保护 Overload protection	200mA, 红灯绿灯同时闪烁 Red light and green light flash as the same time
电压降 Voltage drop	≤ 2V
响应延时 Response delay	300 μ s–20ms, 取决于材料 Depends on the materials
脉冲宽度 Pulse width	≥ 2100ms
阻 抗 Impedance	≥ 4KV
材 质 Material	铜套，镀镍，塑料零件，换能器：玻璃填充的环氧树脂 Copper sleeve nickel plated, plastic fittings, glass filled epoxy resin
防护等级 Insulation	IP67
连接类型 Connection type	2m, PVC 电缆 Cable
环境温度 Ambient temperature	+0℃ ~+60℃ (273–333K)
储存温度 Storage temperature	–40℃ ~+85℃ (233–358K)
重 量 Weight	120g

双张检测 UDA 系列
超声波传感器
Ultrasonic Sensor

电气连接 Electrical connection



安装调节 Installation adjustment



不同材料的单双张学习方法 Single and double sheet learning method for different materials

学习模式：粉色线学习线，学习模式时粉色线悬空。

1、上电之后，黄色灯和绿色灯闪烁。将一张材料放置在两只传感器中间的位置，绿色灯闪烁。将粉色线短接一下蓝色线(GND)，再放开，绿色变成常亮。此时单张学习完成。

2、然后将两张材料放置在传感器中间，然后用粉色线短接一下 棕色线（ + ），切换成双张学习模式，此时指示灯变成红色闪 烁。然后将粉色线短接一下蓝色线（GND），再放开，测试红色 灯变成常亮，此时双张学习完成。

3、学习完成之后，关电。将粉色线和蓝色线（GND）连接在一起。再次通电，就可以正常使用了。

4、在学习模式时，进入单张学习步骤，如果放置材料厚度过于厚，超出了传感器的检测范围。在短接蓝色线（GND）之前，放 入单张材料之后，指示灯会变成红色灯闪烁。

5、 在学习模式时，进入单张学习步骤，如果放置材料厚度过于薄，传感器检测不到材料。在短接蓝色线（GND）之前，放入单张材料之后，指示灯会变成黄色灯闪烁。

Learning mode: Pink line learning mode, when learning model pink line hanging in the air.

1.When power on, the yellow and green lights flashing.Place a piece of material in the middle of two sensors, green light flashes. Short connect the pink line to the blue line (GND), then let release, and the green becomes permanently bright. Then the single sheet learning is complete.

2.Then place the two pieces of material between the sensors, then short connect the pink line to the brown line (+) , switch to the double learning mode, and the indicator light will turn to red. Then short connect the pink line to the blue line (GND), then release, and test the red light to become normally open. At this time, double sheet learning is complete.

3.After done the learning, turn–off the electricity.Connect the pink line and the blue line (GND). Power on again, then can be used normally.

4.In learning mode, enter the single sheet learning steps. If the material is too thick, it is beyond the detection range of the sensor. Before the short connection of the blue line (GND), the indicator will turn to red when put the single material in.

5. In learning mode, enter the single sheet learning steps. If the material is too thin, the sensor cannot detect the material. Before the short connection of the blue line(GND), the indicator will turn to yellow when put the single material in.

适配连接件
超声波传感器
Ultrasonic Sensor

超声波传感器不稳定的场景

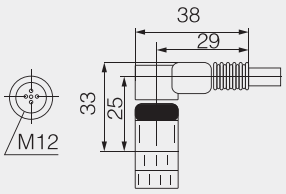
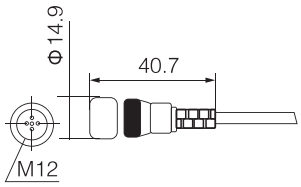
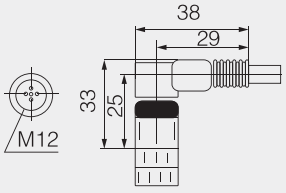
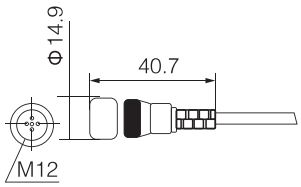
超声波传感器的原理是通过检测和处理声波，来判断目标物的状态或距离。所以，声波的传输速率会受空气的状态影响，从而对超声波传感器的输出状态产生影响。

本公司的超声波传感器对各种影响因素，在电路上做了尽可能多的补偿，例如全系列的温度漂移补偿电路等。

为了保证超声波传感器稳定的、有效的工作。如下情况，建议测试前务必考虑。

- 目标物表面温度高于 100℃。
- 检测环境风速大于 60km/h 的场景。
- 使用环境在海拔超过 3 千米的地区。
- 密封环境下，气压超过 1.2 个标准大气压的场景。
- 工作环境低于零下 20℃，高于 70℃的场景。
- 非反射板模式，检测吸音很强的材料，如毛毡、羊毛、棉花或者海绵泡沫等。
- 声波在真空中不能传播。真空环境中使用时，超声波传感器失效。
- 检测其他未知物质及不确定的使用场景。

适配连接件

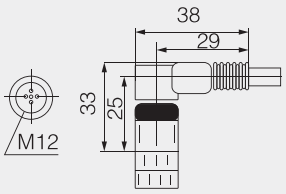
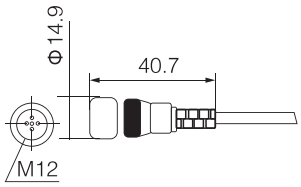
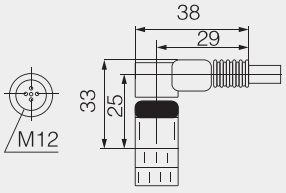
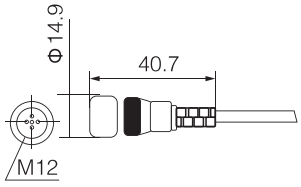
		V1–W–2M–PVC 4 芯 M12 电缆连接器，弯头 2m PVC 电缆 ,4 × 0.25mm²	V1–W– 10M–PVC 4 芯 M12 电缆连接器，弯头 10m PVC 电缆 ,4 × 0.25mm²
		V1–G– 2M–PVC 4 芯 M12 电缆连接器，直头 2m PVC 电缆 ,4 × 0.25mm²	V1–G– 10M–PVC 4 芯 M12 电缆连接器，直头 10m PVC 电缆 ,4 × 0.25mm²
		V1 5–W–2M–PVC 5 芯 M12 电缆连接器，弯头 2m PVC 电缆 ,5 × 0.25mm²	V15–W–10M–PVC 5 芯 M12 电缆连接器，弯头 10m PVC 电缆 ,5 × 0.25mm²
		V15–G–2M–PVC 5 芯 M12 电缆连接器，直头 2m PVC 电缆 ,5 × 0.25mm²	V15–G– 10M–PVC 5 芯 M12 电缆连接器，直头 10m PVC 电缆 ,5 × 0.25mm²

Unstable scene of ultrasonic sensor

The principle of the ultrasonic sensor is to judge the state or distance of the target object by detecting and processing sound waves. Therefore, the transmission rate of sound waves will be affected by the state of the air, thereby affecting the output state of the ultrasonic sensor.
The company’s ultrasonic sensors compensate as much 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 work of the ultrasonic sensor. It is recommended to consider the following situations before testing.

- The surface temperature of the target is higher than 100℃ .
- Detect scenarios where the ambient wind speed is greater than 60km/h.
- The operating environment is in an area with an altitude of more than 3 kilometers.
- In a sealed environment, the air pressure exceeds 1.2 standard atmospheres.
- The working environment is lower than minus 20℃ and higher than 70℃ .
- Non–reflective board mode, to detect materials with strong sound absorption, such as felt, wool, cotton or sponge foam.
- Sound waves cannot propagate in vacuum. When used in a vacuum environment, the ultrasonic sensor fails.
- Detect other unknown substances and uncertain usage scenarios.

Adapter connector

		V1–W–2M–PVC 4–core M12 cable connector, bent type 2m PVC cable, 4 × 0.25mm^2	V1–W– 10M–PVC 4–core M12 cable connector, bent type 10m PVC cable, 4 × 0.25mm^2
		V1–G– 2M–PVC 4–core M12 cable connector, straight type 2m PVC cable, 4 × 0.25mm^2	V1–G– 10M–PVC 4–core M12 cable connector, straight type 10m PVC cable, 4 × 0.25mm^2
		V1 5–W–2M–PVC 5–pin M12 cable connector, bent type 2m PVC cable, 5 × 0.25mm^2	V15–W–10M–PVC 5–pin M12 cable connector, bent type 10m PVC cable, 5 × 0.25mm^2
		V15–G–2M–PVC 5–pin M12 cable connector, straight type 2m PVC cable, 5 × 0.25mm^2	V15–G– 10M–PVC 5–pin M12 cable connector, straight type 10m PVC cable, 5 × 0.25mm^2