ISSR®
英萨智研®

Ultrasonic sensor

Selection Manual

Convey virtue to the world Sense shape with you and me

ISSR
英萨智研

Chengdu Intelligent Sensor and System Technology Research Co., Ltd, referred to as ISSR, was established in 2017, focusing on the research and development of intelligent sensors and their applications. In 2020, it was certified as a high-tech enterprise, and has obtained more than 20 products patent certificates. Our core business is ultrasonic transducer and ultrasonic sensor research and development, as well as to provide customers with ultrasonic sensor solutions.

The existing team members of our company cover experts in piezoelectric ceramic research, transducer design, sensor hardware and software design, process design and intelligent management. Our market personnel also have excellent technical background, which ensures us providing services to customers quickly and reliably from the basic principles of products, product design process to the whole chain of products from pre-sales to after-sales;

Our products are widely used and well received in liquid and material level measurement, anti-collision, printing industry, intelligent feeding, lithium battery production, photovoltaic production and other industries. Our product list covers the range of 4cm to 4m distance detecting products and the single and double sheet testing products; At the same time, we can provide customized ultrasonic solutions for the digital transformation of each enterprise. We have won unanimous praise form our customers in terms of standard product provision, product customization and optimization, and project design.

We are committed to providing customers with professional and concise services in the intelligent and digital era, and strive to reach the world's leading level in the field of ultrasonic sensor.

Catalogue

Ultrasonic Sensor Application

Ultrasonic sensors show excellent performance in non-contact positioning and distance measurement applications.
It is not affected by color and shape, and is not limited by the material of the target, and can be widely used in industrial control automation fields.

Target Market for Ultrasonic Sensor

Automobile industry	Packaging machinery	Mobile device
Mechanical manufacturing	Process equipment	New energy manufacturing equipment
Material transfer	Gate controller	Water & material level monitoring and control
Printing industry	Textile machinery	Smart city environment detection and control

Safety protection control	Liquid & material level detection	Stacking height control
Quality control	Positioning	Transparent object detection
Tension control	Manipulator positioning	Packing control
Roll diameter detection	Film blowing machine control	Double sheet detection

ISSR Product Naming Rules

Example	IS	U	B	1000	-	18	GM	75	-	U10	-	VC	C	G
Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Position Description:

1. [IS]: Manufacturer ISSR
2. [U]: Ultrasonic series
3. [B]: Basic series

Other Types:
[BE] Bijection
[A]: Automation (fully integrated)
[C]: Criterion series
[T]: Tailored product

[J]:Junior series
[DB]:Double sheet detection
[CC]: Criterion series, Chemical resistance
[L]:Low consumption series

4. [1000]: Upper detection range, unit [mm]
5. [-]: Space mark
6. [18]: Tube diameter 18mm

Other Types:
[12]: Tube diameter 12mm
[30]: Tube diameter 30mm
[F]: Square shell
[W]: 90 degree elbow

7. [GM]:Ground Metal

Other Types: [GK]:Plastic shell

8. [75]: Shell length 75mm
9. [-]: Space mark
10. [U10]:Analog voltage 0-10V output

[E0]:1*3 line, PNP switch output, always On	[E1]:1*3 line, NPN switch output, always Off
[E2]:1*3 line, PNN switch output, always On	[E3]:1*3 line, PNP switch output, always Off
[E4]:1*3 line, NPN switch output, always On/always Off	[E5]:1*3 line, PNP switch output, always On/always Off
[E6]:2*3 line, PNP switch output, always On/always Off	[E7]:2*3 line, PNP switch output, always On/always Off
[E8]:1*3 line, NPN switch output, Hysteresis mode	[E9]:1*3 line, PNP switch output, Hysteresis mode
[A2]:2*3 line, PNP switch output,1 always On+1 always Off	[I]: Analog current 4-20mA output
[U5]:Analog voltage 0-5V output	[U10]:Analog voltage 0-10V output
[R2]:RS232 interface	[8B]:8-bit data output,parallel-direction
[R4]:RS485 interface	[H3]: External processing unit
[TTL]:TTL232 interface, Command response	[TTL1]:TTL232 interface, Keep firing
[3E0]:3 route NPN switch output	[IU]:Analog output I and U
[IE0]:Analog current I plus NPN switch output, two route output	
[IE2]:Analog current I plus PNP switch output, two route output	

12. [-]: Space mark

11. [VC]:Connection Type: 2 meter ordinary four-core cable

Other Types:
[V1]:M12*1 four pin tail insert
[V2]:M12*1 four pin tail insert, metal shell
[V15]:M12*1 five pin tail insert
[V3]:M12*1 four pin tail insert, Custom needle

13. [C]: Connect line 0.5m
Tail insert is not applicable, omitted; Default length is 2m, omitted

Other Types:
[D]: 1m
[E]: 3m [F]: 4m

14. [G]:Color of line: Gray
Tail insert is not applicable, omitted; Default black cable, omitted

Other Types:
[B]:Blue [R]:Red
[Y]Yellow [W]White [N]:Brown

02 PRODUCT CATALOG

We can also accept the OEM special customization

18GM40

18GM75

30GM85

30GM85 Synchronization

F40

M18 Double Sheet Detection

M12 Double Sheet Detection

AGV Obstacle Avoiding

Material Inspection

Main features:

> M18 mounting threaded bushing. The overall length is only 40mm;

> Small blind zone and small sound cone. It's suitable for fine detection at close distance;

Basic features:

> 1 x npn or pnp switching output;

> Analog voltage output 0-5/10V or analog current output 4 - 20mA;

> It can change the output by serial port upgrade;

> It can set the detection distance by learning line;

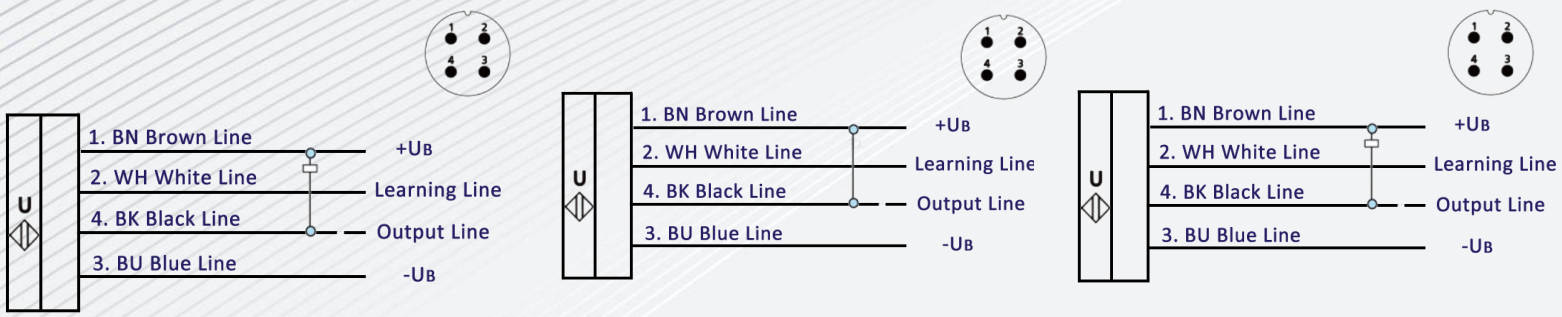
> Temperature compensation;

18GM40

Electrical Parameters

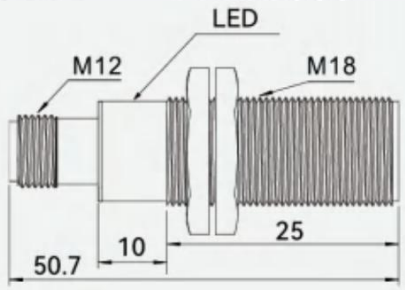
Model		ISUB150-18GM40-E4-V3	ISUB350-18GM40-E4-V3	ISUB500-18GM40-E4-V3
		ISUB150-18GM40-E5-V3	ISUB350-18GM40-E5-V3	ISUB500-18GM40-E5-V3
		ISUB150-18GM40-E8-V3	ISUB350-18GM40-E8-V3	ISUB500-18GM40-E8-V3
		ISUB150-18GM40-E9-V3	ISUB350-18GM40-E9-V3	ISUB500-18GM40-E9-V3
		ISUB150-18GM40-I-V3	ISUB350-18GM40-I-V3	ISUB500-18GM40-I-V3
		ISUB150-18GM40-U5-V3	ISUB350-18GM40-U5-V3	ISUB500-18GM40-U5-V3
		ISUB150-18GM40-U10-V3	ISUB350-18GM40-U10-V3	ISUB500-18GM40-U10-V3
Measurement Range		20-150mm	30-350mm	40-500mm
Blind Zone		0-20mm	0-30mm	0-40mm
Resolution Ratio		0.17mm	0.17mm	0.17mm
Repeatability		±0.15% of full range value	±0.15% of full range value	±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)
Response Time		50ms	50ms	50ms
Switching Hysteresis		2mm	2mm	2mm
Switching Frequency		20Hz	20Hz	20Hz
Power-on Delay		<500ms		
Working Pressure		15-30VDC		
LED Red Light		Normally lighting on, no target detected; flashing, no target detected in learning state		
LED Yellow Light		Normally lighting on, targets detected in the A1-A2 range; flashing, targets detected in learning state		
Protection Circuit		Anti-reverse connection protection, instant over-voltage protection		
Load Impedance		U/>1k Ohm		
No-load Current		⩽25mA		
Input Type		With learning function		
Material		Copper bushing nickel plating, plastic parts, glass filled epoxy resin		
Protection Class		IP67		
Connection Type		4-pole M12 connector		
Ambient Temperature		-25~+70 ℃ (248~343K)		
Storage Temperature		-40~+85 ℃ (233~358K)		
Output Feature		Serial port upgrade available to change output type		
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode		
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode		
	I	1 analog current output, 4-20mA		
	U5/U10	1 analog voltage output, 0-5V/0-10V		
Certification		CE ROHS	CE ROHS	CE ROHS

Electric Wiring

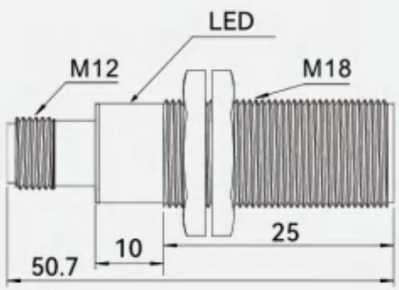


Core color in accordance with EN 60947-5-2

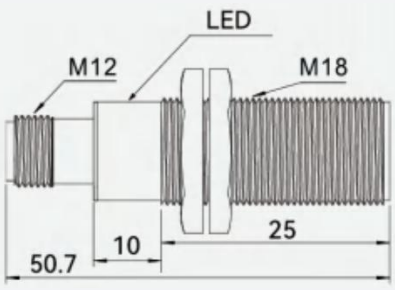
Appearance Dimension



ISUB150 Series

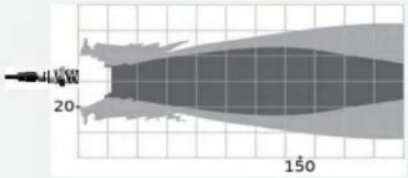


ISUB350 Series



ISUB500 Series

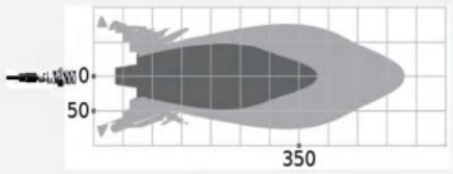
Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

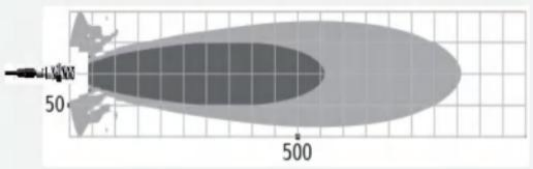
ISUB150 Series



Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

ISUB350 Series



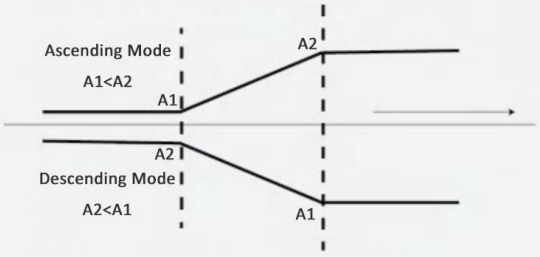
Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

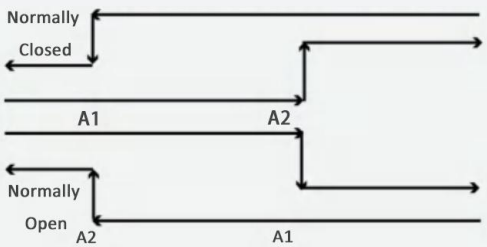
ISUB500 Series

Output Mode

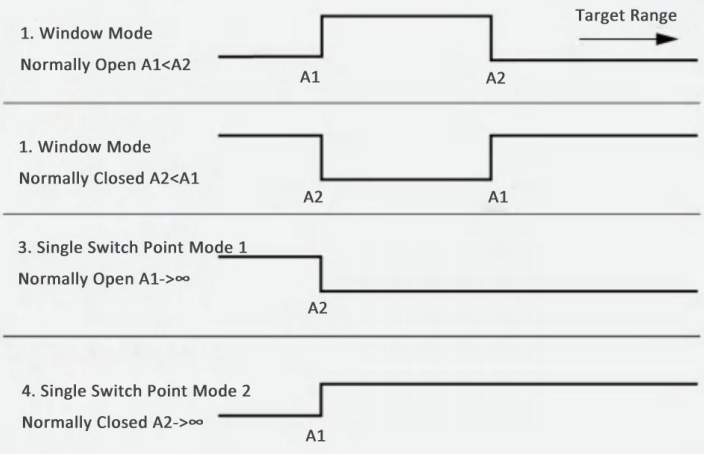
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis



5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

Target detected: switch closed; no target detected: switch open

Main features:

>M18 mounting threaded bushing;
>Easy to install;

Basic features:

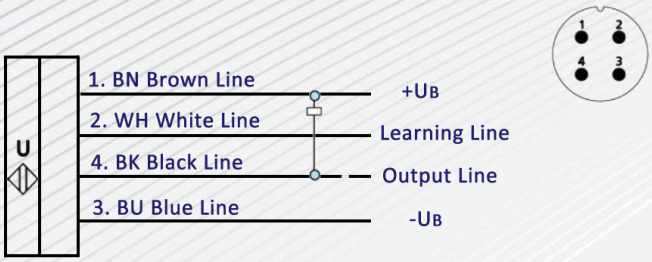
>1 x npn or pnp switching output;
>Analog voltage output 0-5/10V or analog current output 4 - 20mA;
>Digital TTL output;
> It can change the output by serial port upgrade;
> It can set the detection distance by learning line;
>Temperature compensation;

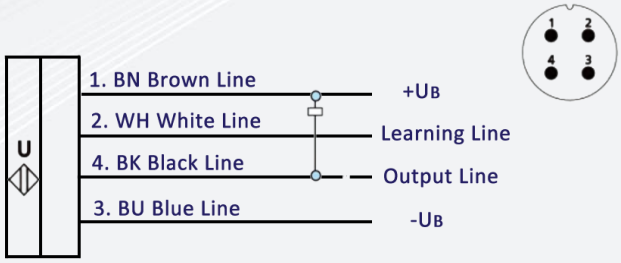
18GM75

Electrical Parameters

Model		ISUB1000-18GM75-E4-V1	ISUB1000-18GM75-E4-VC
		ISUB1000-18GM75-E5-V1	ISUB1000-18GM75-E5-VC
		ISUB1000-18GM75-E8-V1	ISUB1000-18GM75-E8-VC
		ISUB1000-18GM75-E9-V1	ISUB1000-18GM75-E9-VC
		ISUB1000-18GM75-I-V1	ISUB1000-18GM75-I-VC
		ISUB1000-18GM75-U5-V1	ISUB1000-18GM75-U5-VC
		ISUB1000-18GM75-U10-V1	ISUB1000-18GM75-U10-VC
		ISUB1000-18GM75-TTL-V1	ISUB1000-18GM75-TTL-VC
Measurement Range		60-1000mm	60-1000mm
Blind Zone		0-60mm	0-60mm
Resolution Ratio		0.5mm	0.5mm
Repeatability		±0.15% of full range value	±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)
Response Time		100ms	100ms
Switching Hysteresis		2mm	2mm
Switching Frequency		10Hz	10Hz
Power-on Delay		<500ms	
Working Pressure		15-30VDC	
LED Red Light		No targets detected in learning state, normally lighting on	
LED Yellow Light		Normal operation mode, switching state	
LED Blue Light		Targets detected in learning state, flashing	
LED Green Light		Power indicator light, normally lighting on	
No-load Current		≤25mA	
Input Type		With learning function	
Material		Copper bushing nickel plating, plastic parts, glass filled epoxy resin	
Protection Class		IP67	
Connection Type		4-pole M12 connector	
Ambient Temperature		-25~+70 ℃ (248~343K)	
Storage Temperature		-40~+85 ℃ (233~358K)	
Output Feature		Serial port upgrade available to change output type	
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode	
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode	
	I	1 analog current output, 4-20mA	
	U5/U10	1 analog voltage output, 0-5V/0-10V	
Certification		CE ROHS	CE ROHS CE ROHS

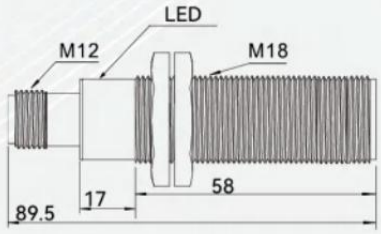
Electric Wiring



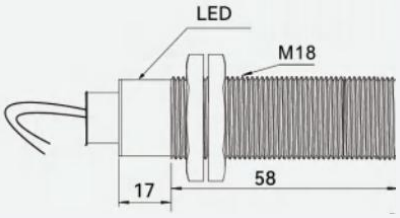


Core color in accordance with EN 60947-5-2

Electric Wiring

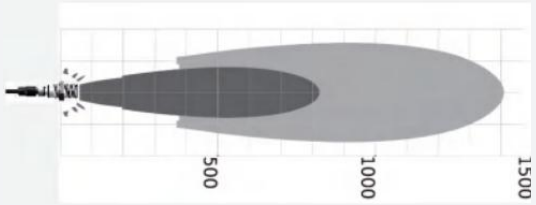


ISUB1000 Series



ISUB1000 Series

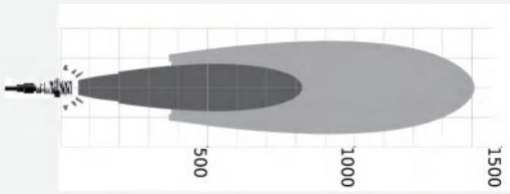
Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

ISUB1000 Series



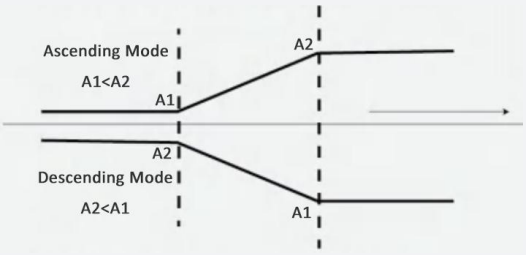
Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

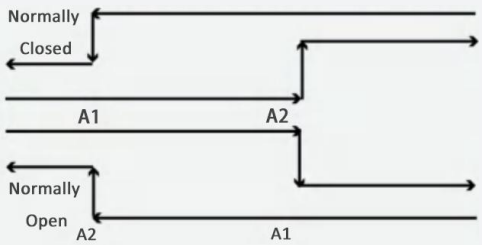
ISUB1000 Series

Output Mode

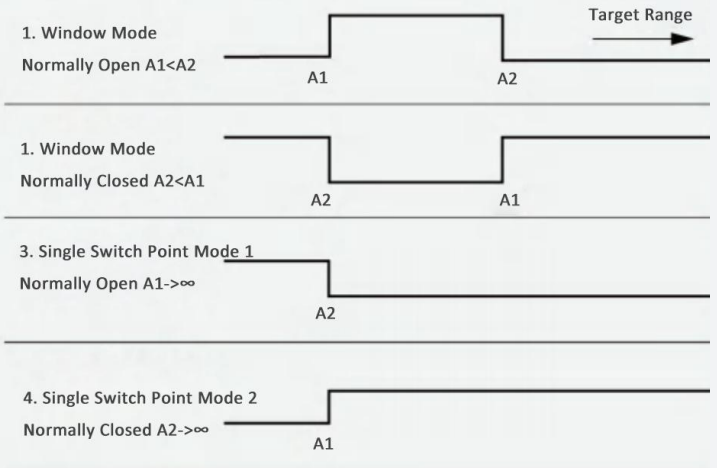
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis



5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

Target detected: switch closed; no target detected: switch open

Main features:

>M30 mounting threaded bushing;
>Detecting more distant locations;

Basic features:

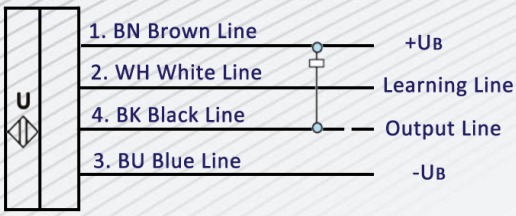
>1 x npn or pnp switching output;
>Analog voltage output 0-5/10V or analog current output 4 - 20mA;
>Digital TTL output;
> It can change the output by serial port upgrade;
> It can set the detection distance by learning line;
>Temperature compensation;

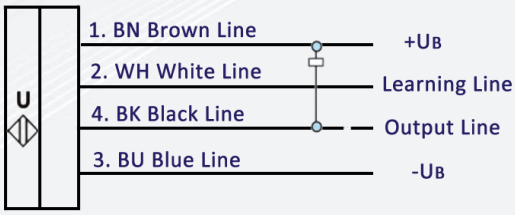
30GM85

Electrical Parameters

Model		ISUB2000-30GM85-E4-V1	ISUB3000-30GM85-E4-VC
		ISUB2000-30GM85-E5-V1	ISUB3000-30GM85-E5-VC
		ISUB2000-30GM85-E8-V1	ISUB3000-30GM85-E8-VC
		ISUB2000-30GM85-E9-V1	ISUB3000-30GM85-E9-VC
		ISUB2000-30GM85-I-V1	ISUB3000-30GM85-I-VC
		ISUB2000-30GM85-U5-V1	ISUB3000-30GM85-U5-VC
		ISUB2000-30GM85-U10-V1	ISUB3000-30GM85-U10-VC
		ISUB2000-30GM85-TTL-V1	ISUB3000-30GM85-TTL-VC
Measurement Range		180-2000mm	180-3000mm
Blind Zone		0-180mm	0-180mm
Resolution Ratio		1mm	1mm
Repeatability		±0.15% of full range value	±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)
Response Time		100ms	110ms
Switching Hysteresis		2mm	2mm
Switching Frequency		10Hz	9Hz
Power-on Delay		<500ms	
Working Pressure		15-30VDC	
LED Red Light		No targets detected in learning state, normally lighting on	
LED Yellow Light		Normal operation mode, switching state	
LED Blue Light		Targets detected in learning state, flashing	
LED Green Light		Power indicator light, normally lighting on	
No-load Current		≤25mA	
Input Type		With learning function	
Material		Copper bushing nickel plating, plastic parts, glass filled epoxy resin	
Protection Class		IP67	
Connection Type		4-pole M12 connector	
Ambient Temperature		-25~+70 ℃ (248~343K)	
Storage Temperature		-40~+85 ℃ (233~358K)	
Output Feature		Serial port upgrade available to change output type	
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode	
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode	
	I	1 analog current output, 4-20mA	
	U5/U10	1 analog voltage output, 0-5V/0-10V	
Certification		CE ROHS	CE ROHS

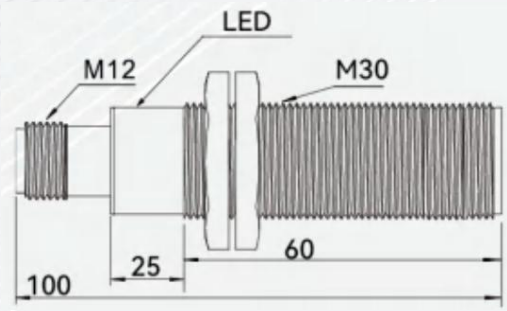
Electric Wiring



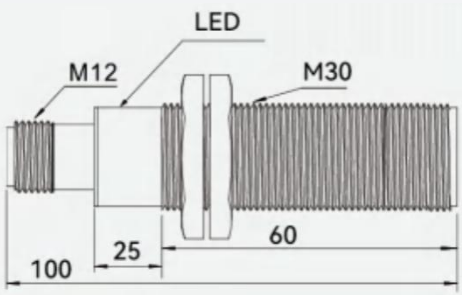


Core color in accordance with EN 60947-5-2

Appearance Dimensions

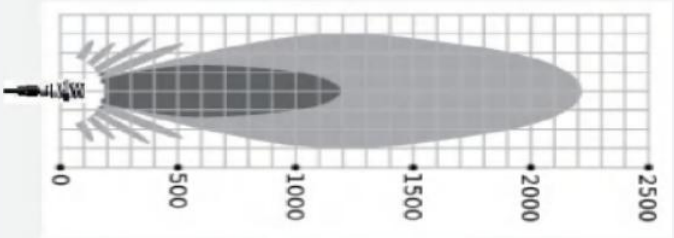


ISUB2000 Series



ISUB3000 Series

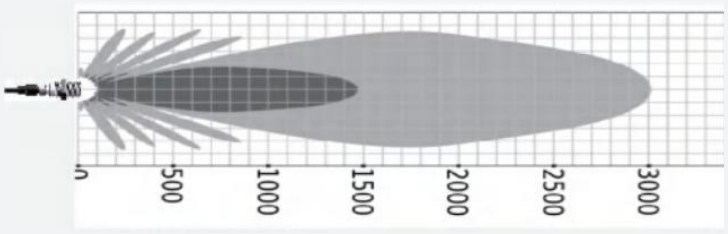
Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

ISUB2000 Series



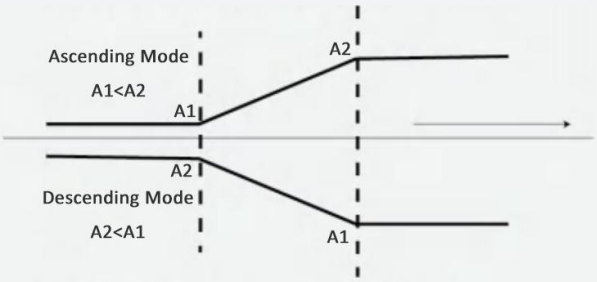
Curve 1: Flat plate 100mm x 100mm, Distance x [mm]

Curve 2: Round bar Φ25mm

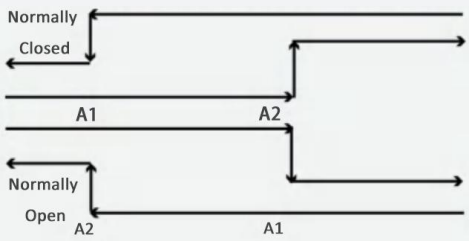
ISUB2000 Series

Output Mode

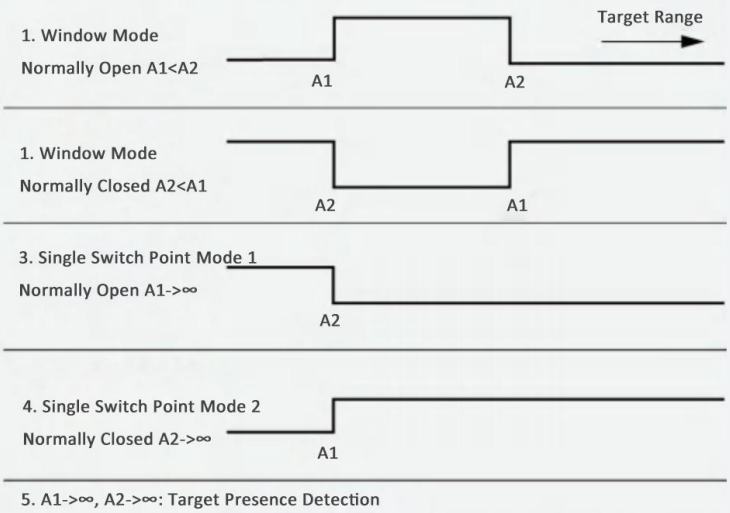
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis



5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

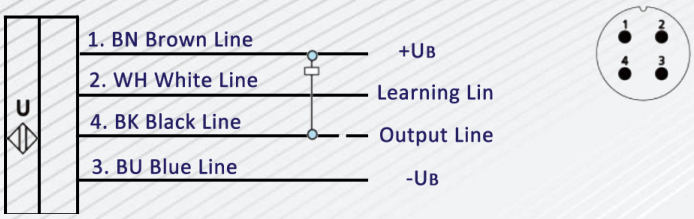
Target detected: switch closed; no target detected: switch open

30GM85

Electrical Parameters

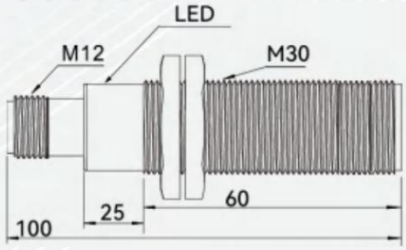
Model		ISUB4000-30GM85-E4-V1	ISUB4000-30GM85-E4-VC
		ISUB4000-30GM85-E5-V1	ISUB4000-30GM85-E5-VC
		ISUB4000-30GM85-E8-V1	ISUB4000-30GM85-E8-VC
		ISUB4000-30GM85-E9-V1	ISUB4000-30GM85-E9-VC
		ISUB4000-30GM85-I-V1	ISUB4000-30GM85-I-VC
		ISUB4000-30GM85-U5-V1	ISUB4000-30GM85-U5-VC
		ISUB4000-30GM85-U10-V1	ISUB4000-30GM85-U10-VC
		ISUB4000-30GM85-TTL-V1	ISUB4000-30GM85-TTL-VC
Measurement Range		200-4000mm	200-4000mm
Blind Zone		0-200mm	0-200mm
Resolution Ratio		1mm	1mm
Repeatability		±0.15% of full range value	±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)
Response Time		300ms	300ms
Switching Hysteresis		2mm	2mm
Switching Frequency		3Hz	3Hz
Power-on Delay		<500ms	
Working Pressure		9-30VDC	
LED Red Light		No targets detected in learning state, normally lighting on	
LED Yellow Light		Normal operation mode, switching state	
LED Blue Light		Targets detected in learning state, flashing	
LED Green Light		Power indicator light, normally lighting on	
No-load Current		≤25mA	
Input Type		With learning function	
Material		Copper bushing nickel plating, plastic parts, glass filled epoxy resin	
Protection Class		IP67	
Connection Type		4-pole M12 connector	
Ambient Temperature		-25~+70 ℃ (248~343K)	
Storage Temperature		-40~+85 ℃ (233~358K)	
Output Feature		Serial port upgrade available to change output type	
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode	
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode	
	I	1 analog current output, 4-20mA	
	U5/U10	1 analog voltage output, 0-5V/0-10V	
Certification		CE ROHS	CE ROHS CE ROHS

Electric Wiring



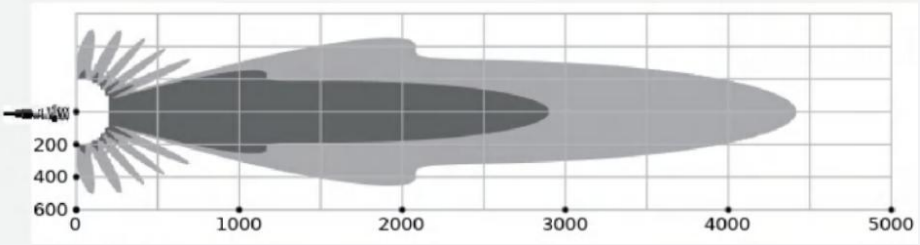
Core color in accordance with EN 60947-5-2

Appearance Dimensions



ISUB4000 Series

Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm

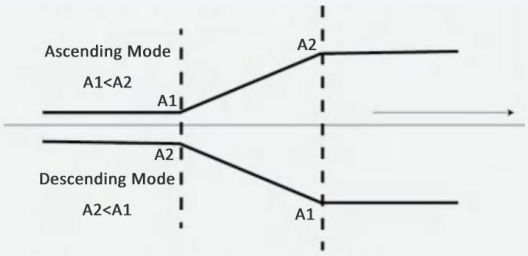
Curve 2: Round bar Φ25mm

Distance x [mm]

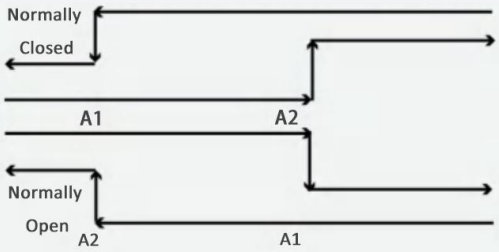
ISUB4000 Series

Output Mode

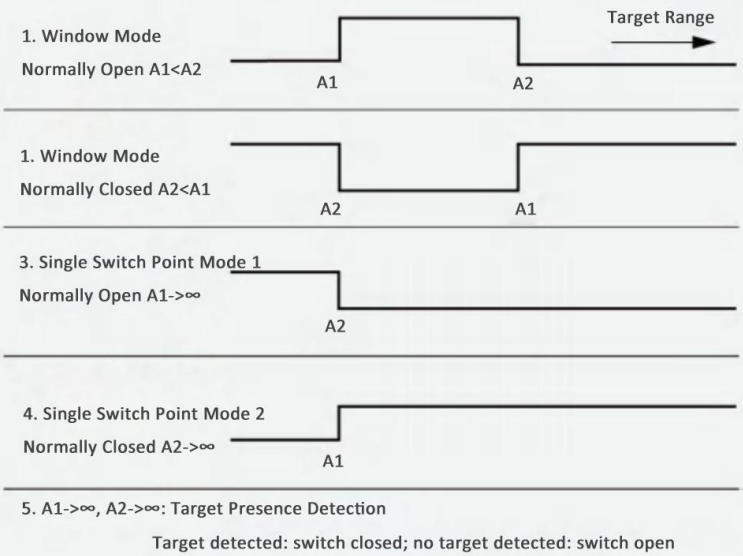
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis



5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

Target detected: switch closed; no target detected: switch open

Main features:

>M30 mounting threaded bushing;
>Synchronization function;

Basic features:

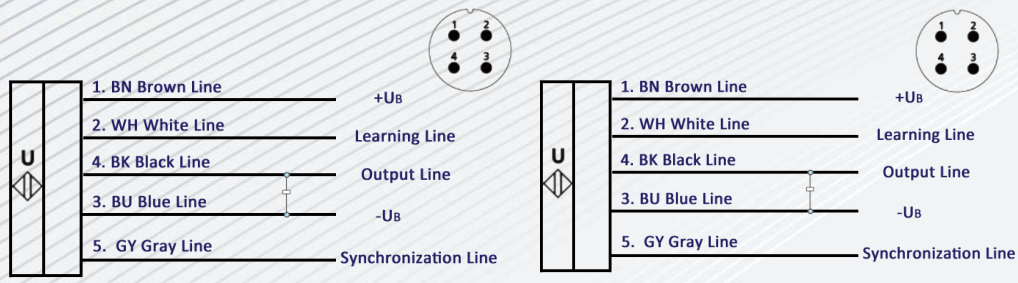
>1 x npn or pnp switching output;
>Analog voltage output 0-5/10V or analog current output 4 - 20mA;
> It can change the output by serial port upgrade;
> It can set the detection distance by learning line;
>Temperature compensation;

30GM85 Synchronization

Electrical Parameters

Model		ISUB500-30GM85-E4-V15	ISUB2000-30GM85-E4-V15
		ISUB500-30GM85-E5-V15	ISUB2000-30GM85-E5-V15
		ISUB500-30GM85-E8-V15	ISUB2000-30GM85-E8-V15
		ISUB500-30GM85-E9-V15	ISUB2000-30GM85-E9-V15
		ISUB500-30GM85-I-V15	ISUB2000-30GM85-I-V15
		ISUB500-30GM85-U5-V15	ISUB2000-30GM85-U5-V15
		ISUB500-30GM85-U10-V15	ISUB2000-30GM85-U10-V15
		ISUB500-30GM85-TTL-V15	ISUB2000-30GM85-TTL-V15
Measurement Range		50-500mm	120-2000mm
Blind Zone		0-50mm	0-120mm
Resolution Ratio		0.5mm	0.5mm
Repeatability		±0.15% of full range value	±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)	±1% (built-in temperature drift compensation)
Response Time		50ms*N (Number of synchronization N≤5)	50ms*N (Number of synchronization N≤5)
Switching Hysteresis		2mm	2mm
Switching Frequency		20/N Hz(Number of synchronization N≤5)	20/N Hz(Number of synchronization N≤5)
Power-on Delay		<500ms	
Working Pressure		9-30VDC	
LED Red Light		Working status: Error; Learning state: no targets detected	
LED Yellow Light		Normally lighting on: switching output in the on/off state; Flashing: getting into the learning groove	
LED Green Light		Normally lighting on: power-on; Flashing: targets detected in learning state	
Angle		±4°	
No-load Current		≤25mA	
Input Type		With learning function/synchronization function	
Material		Copper bushing nickel plating, plastic parts, glass filled epoxy resin	
Protection Class		IP67	
Connection Type		5-pole M12 connector	
Ambient Temperature		-25~+70 ℃ (248~343K)	
Storage Temperature		-40~+85 ℃ (233~358K)	
Output Feature		Serial port upgrade available to change output type	
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode	
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode	
	I	1 analog current output, 4-20mA	
	U5/U10	1 analog voltage output, 0-5V/0-10V	
Certification		CE ROHS	CE ROHS CE ROHS

Electric Wiring



Core color in accordance with EN 60947-5-2

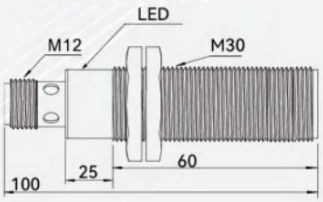
Synchronization Setting:

Internal synchronization: synchronization lines are connected together, N products are synchronized (N≤5), sequential measurement, measurement period=50ms*N

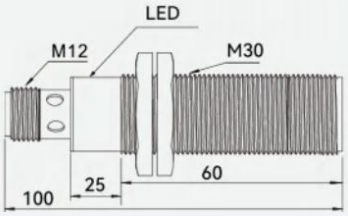
External synchronization: synchronization line and external signal line are connected together, external pull-down pulse width is 50-500us, trigger external synchronization, measurement at the same time, measurement period depends on external trigger signal.

No synchronization: Synchronization line remains suspended, or use four-pin plug-in.

Appearance Dimensions

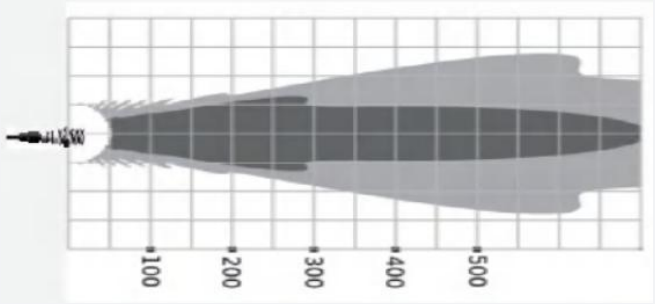


ISUB500 Synchronization Series



ISUB2000 Synchronization Series

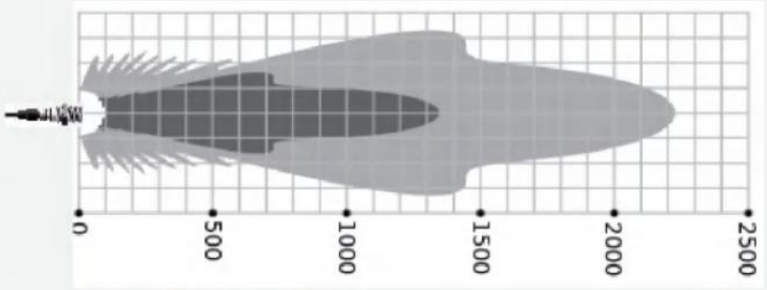
Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm Distance x [mm]

Curve 2: Round bar Φ25mm

ISUB500 Synchronization Series



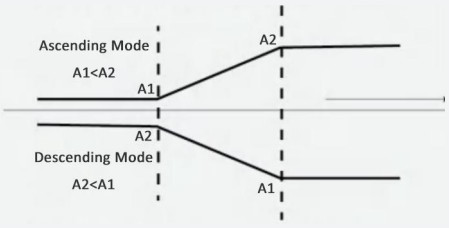
Curve 1: Flat plate 100mm x 100mm Distance x [mm]

Curve 2: Round bar Φ25mm

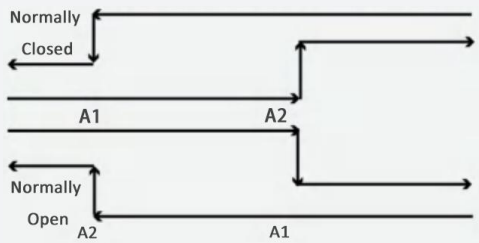
ISUB2000 Synchronization Series

Output Mode

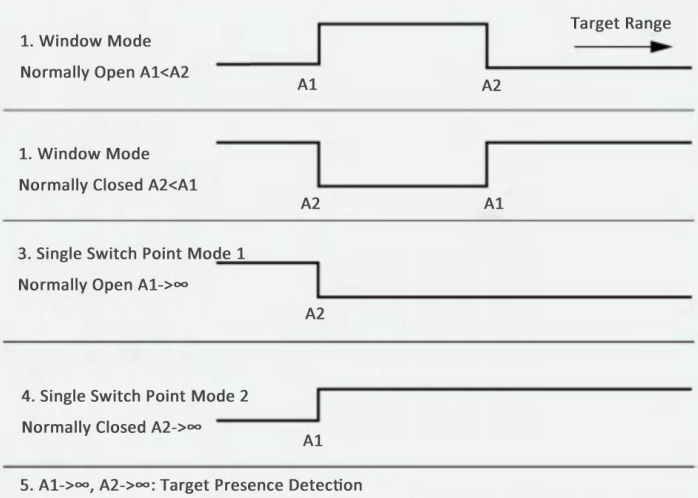
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis

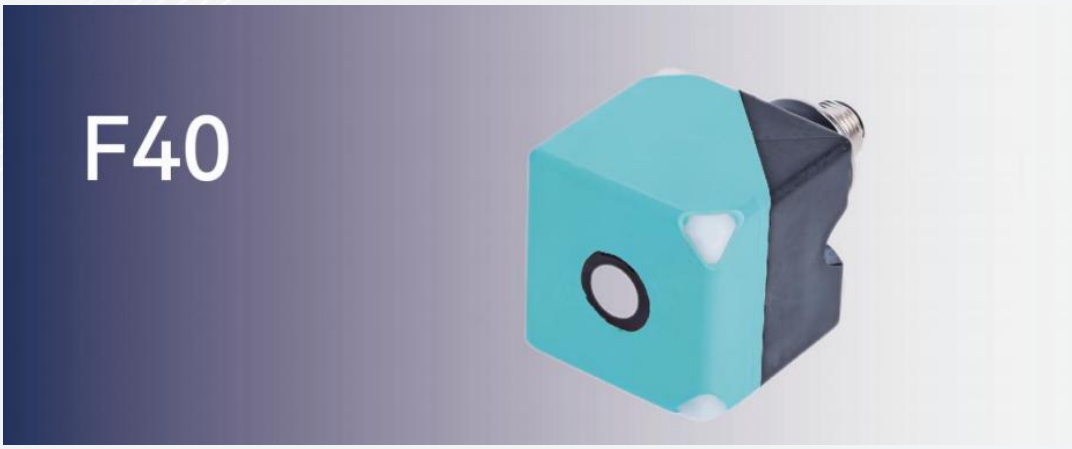


5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

Target detected: switch closed; no target detected: switch open



Main features:

>Can detect different directions rotatably;
>Compact size and easy to install;

Basic features:

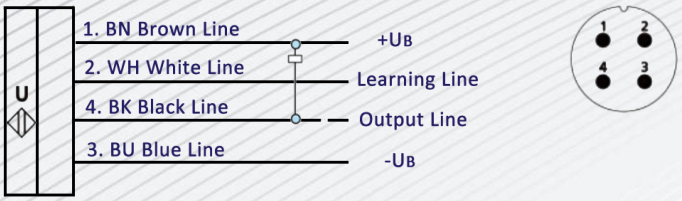
>1 x npn or pnp switching output;
>Analog voltage output 0-5/10V or analog current output 4 - 20mA;
>Digital TTL output;
> It can change the output by serial port upgrade;
> It can set the detection distance by learning line;
>Temperature compensation;

F40

Electrical Parameters

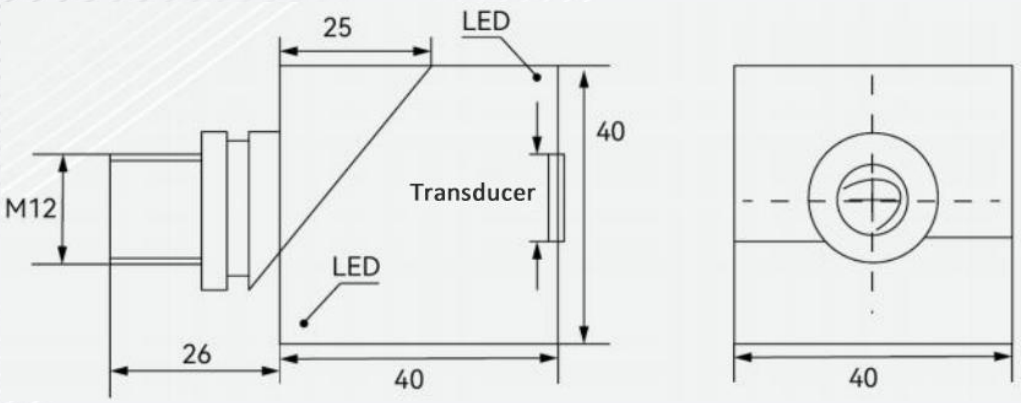
Model		ISUB500-F40-E4-V1
		ISUB500-F40-E5-V1
		ISUB500-F40-E8-V1
		ISUB500-F40-E9-V1
		ISUB500-F40-I-V1
		ISUB500-F40-U5-V1
		ISUB500-F40-U10-V1
		ISUB500-F40-TTL-V1
Measurement Range		40-500mm
Blind Zone		0-40mm
Resolution Ratio		0.17mm
Repeatability		±0.15% of full range value
Absolute Accuracy		±1% (built-in temperature drift compensation)
Response Time		50ms
Switching Hysteresis		2mm
Switching Frequency		20 Hz
Power-on Delay		<500ms
Working Pressure		20-30VDC
LED Light		Working status: target in the range of A1-A2, yellow light on Green light is always on Learning status: learning success: yellow light flashing Learning failure: green light flashing + yellow light flashing
No-load Current		≤25mA
Input Type		With learning function
Material		Plastic, glass filled epoxy resin
Protection Class		IP67
Connection Type		4-pole M12 connector
Ambient Temperature		-25~+70 ℃ (248~343K)
Storage Temperature		-40~+85 ℃ (233~358K)
Output Feature		Serial port upgrade available to change output type
Output Type	E4/E8	1 x switching output npn, NO/NC/hysteresis mode
	E5/E9	1 x switching output npn, NO/NC/hysteresis mode
	I	1 analog current output, 4-20mA
	U5/U10	1 analog voltage output, 0-5V/0-10V
Certification		CE ROHS
		CE ROHS
		CE ROHS

Electric Wiring

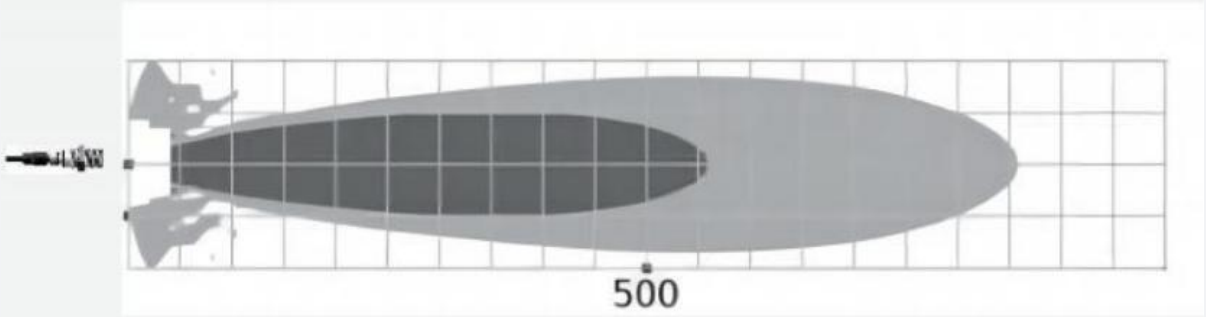


Core color in accordance with EN 60947-5-2

Appearance Dimensions



Performance Reference Curve



Curve 1: Flat plate 100mm x 100mm

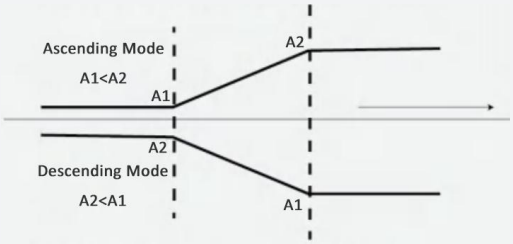
Curve 2: Round bar Φ25mm

F40 Series

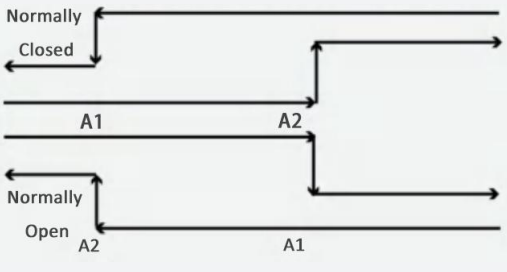
Distance x [mm]

Output Mode

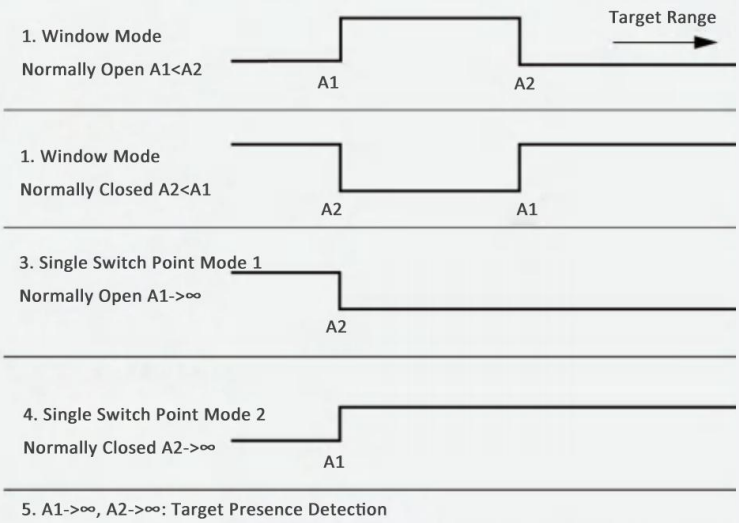
2 Output Types of I/U5/U10 Analog



2 Output Types for E8/E9 Switching Hysteresis



5 Output Types for E4/E5 Switching



5. A1->∞, A2->∞: Target Presence Detection

Target detected: switch closed; no target detected: switch open

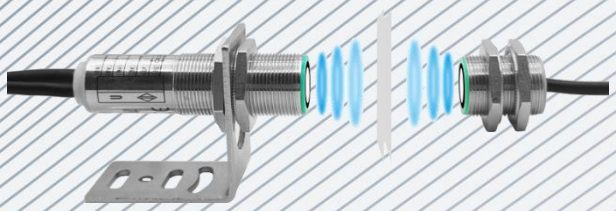
Main Features

>Control output from 3 ports
>Learn single sheets based on any material

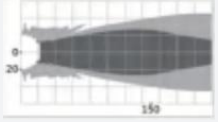
Basic Features

>NPN/PNP output from 3 ports
>Detect single and double sheets of various materials
>Output mode can be changed through serial port upgrade
>Implement learning functions for different materials through learning wires
>Temperature compensation

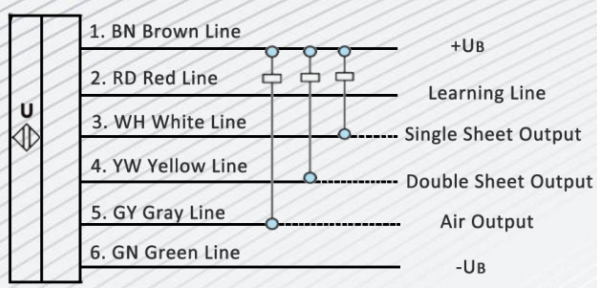
Ultrasonic Single & Double Sheet Detection

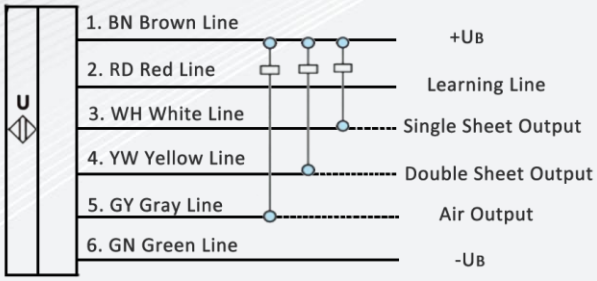


Electrical Parameters

Model	ISUDB60-18GM75-3E0-VC	ISUDB40- 12GM75-3E0-VC			
	SUDB60-18GM75-3E1-VC	ISUDB40-12GM75-3E1-VC			
	ISUDB60-18GM75-3E2-VC	ISUDB40- 12GM75-3E2-VC			
	ISUDB60-18GM75-3E3-VC	ISUDB40-12GM75-3E3-VC			
Detection Range	30~60mm	20-40mm			
Detection Method	Non-contact type	Non-contact type			
Resolution Ratio	1mm	1mm			
No-load Current	<50mA	<50mA			
Impedance	>4mA	>4mA			
Voltage Drop	<2V	2V			
Judgment Delay	about15ms	About4ms			
Response Delay	about15ms	About4ms			
Power On Delay	<300ms				
Working Voltage	18-30VDC				
Indication	LED green light，Single sheet detected				
	LED yellow light, no target (air)				
	LED red light, double detected				
		status	Green light	Yellow light	Red light
	Learning mode	Learning success	flashing		
		Learning failure/ high sensitiveness		flashing	
		Learning failure/ low sensitiveness			flashing
	Working mode	Single sheet detected	lighting		
		Air detected		lighting	Lighting unaligned
		Double sheet detected			lighting
Output type	PNP/NPN output from 3 ports				
Input type	With learning function				
Material	Copper sleeve nickel plating				
Protection Grade	IP67				
Connection type	VC, Six core cable, 2 meters				
Ambient Temp.	-25℃~+70℃(248~343K)				
Storage Temp.	-40℃~+85℃(233~358K)				
Output Feature	upgrade the serial port to change the output type				
Output Type E4/E8	1 switch output npn,NO/NC/Hysteretic mode				
Output Type E5/E9	1 switch output npn,NO/NC/Hysteretic mode				
Output Type I	1 analog output current，4-20mA				
Output Type U5/10	1 analog output current，0-5V/0-10V				
Certificate	CE ROHS	CE ROHS			

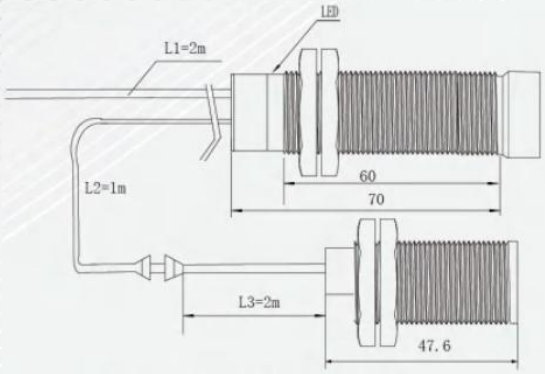
Electric Wiring



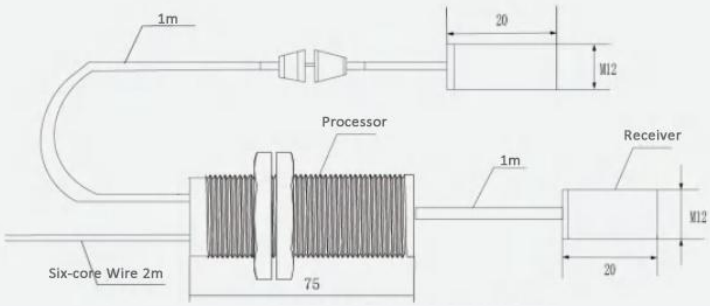


Core color in accordance with EN 60947-5-2

Appearance Dimensions



ISUDB60-18GM75 Series



ISUDB40-12GM75 Series

Learning Method

ISUDB60-18GM75 Series

1. Place a single sheet of tested material between two sensors;

2. Connect the learning line to - UB.

3. Power on and green light will be flashing. When the red and yellow lights flash alternately or simultaneously and when the red light or the yellow light flashes or they flash simultaneously, the learning is completed.

If the learning is not successful, the red light will always light up once,

Then the green light flashes and enters the learning state again.

4. Power off and float the learning line into the air.

5.Normal use.

ISUDB40-12GM75 Series

1. Place a single sheet of the tested object within the detection range and power it on.

2. Short circuit the learning wire (red wire) to the negative electrode (green wire).

3. The green light continues to flash for more than 3 seconds, indicating successful learning (after successful learning, the product will no longer learn.

Learning failure situation: A red light flashing indicates that the measured object is too thick or not connected for emission, while a yellow light flashing indicates that the measured object is not placed or too thin.

When learning fails, the indicator light goes out briefly. Automatic re-learning.)

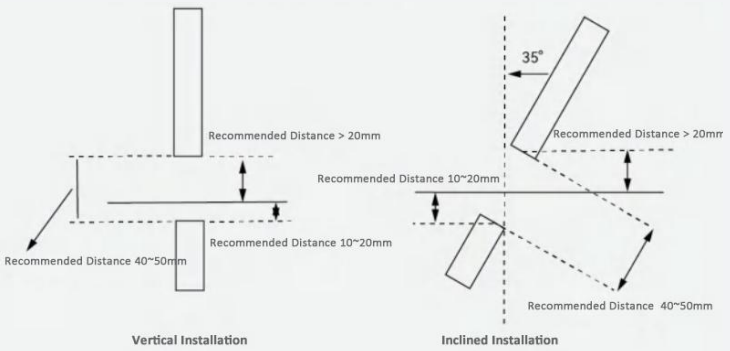
4. Learning wire overhangs and reapply power. The product works normally.

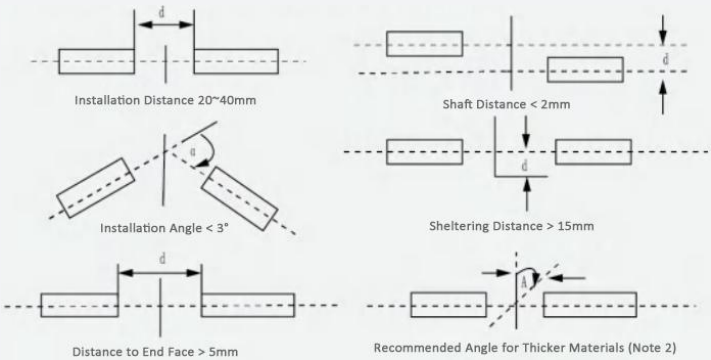
Installation Method

Due to the directional nature of ultrasonic sensors, it is necessary to pay attention to the installation position.

It is recommended that the two probes be installed in a position where their center axes coincide for high sensitivity;

when installed vertically, it is recommended that the emitter end face up.





[Note 1] Alignment indication: If the wheelbase deviation of the product is greater than 2-4mm, or the installation angle deviation is greater than 3-6 ° , and the red and yellow lights are on simultaneously under air output, it indicates that the product is not aligned.

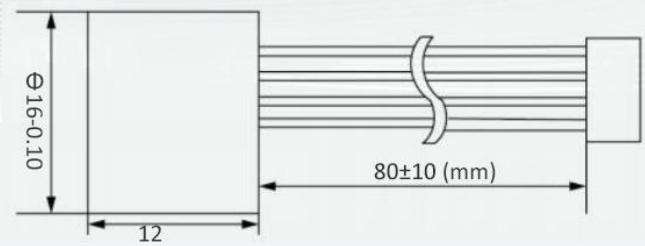
[Note 2] Corrugated paper <35 ° ,solar cell pole pieces about 30 ° , thin metal sheets about 27 ° , wafers about 11 ° . The actual optimal installation angle needs to be confirmed repeatedly by learning.

Material Inspection

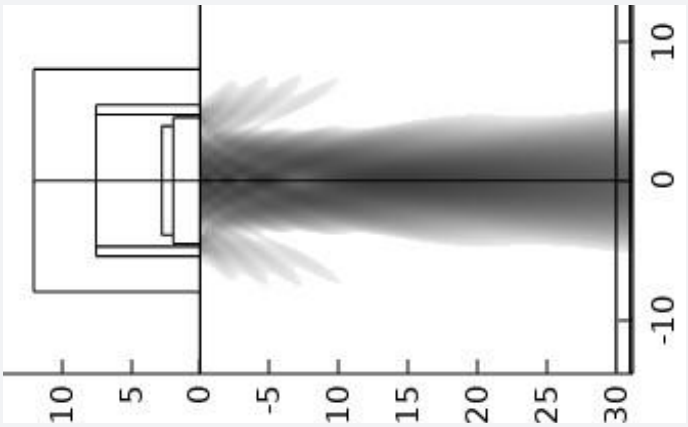
Electrical Parameters

	1SUB30- 16GK12-TTL2-VC
	ISUB30- 16GK12-TTL3-VC
	ISUB30- 16GK12-TTL4-VC
Detection Range	30±1mm
Detection Material	Wood flooring, tiles or carpets
Angle	±6°
Switching Frequency	34Hz
Response Delay	20ms
No-load Current	≤12mA
Working Voltage	5VDC,10%Vpp
Output	TTL232

Appearance Dimension



Performance Reference Curve

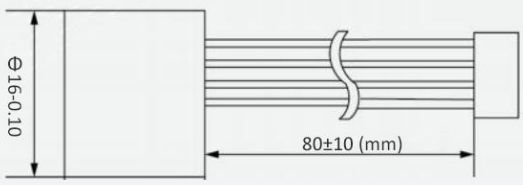


Certificate	CE ROHS	CE ROHS	CE ROHS

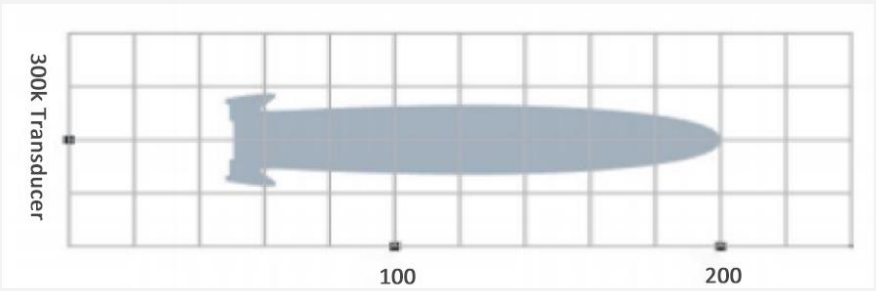
Electrical Parameters

Model	ISUB100-16GK12-TTL-VC	ISUB150-16GK12-TTL1-VC	ISUB300-16GK12-TTL-VC
Detection range	30-100mm	50-150mm	50-300mm
Blind spot	0-30mm	0-50mm	0-50mm
Repeatability	± 0.5% of full scale value	± 0.5% of full scale value	± 0.5% of full scale value
Switching frequency	34Hz	34Hz	34Hz
Response delay	20ms	20ms	35ms
No-load current	≤10mA	≤10mA	≤15mA
Working voltage	5VDC,10%Vpp	5VDC,10%Vpp	5VDC,10%Vpp
Output mode	TTL232	TTL232	TTL232

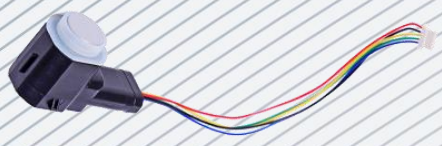
Appearance Dimension



Performance Reference Curve



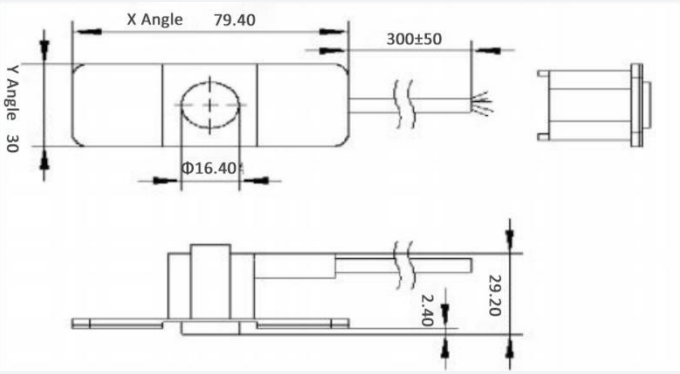
AGV Obstacle Avoidance



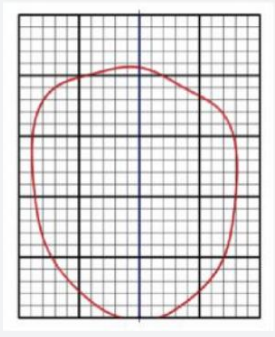
Electrical Parameter

Model	1SUB1000-17GKW29-TTL1-VC-58
Detection Range	150-1000mm
Blind Zone	0-150mm
Resolution Ratio	10mm
Repeatability	± 0.5% of full scale value
Absolute Accuracy	±1%(Built in temperature drift compensation)
Response Time	100ms
Working Voltage	5- 12V
Resolution Ratio	0. 17mm
Repeatability	± 0.5% of full scale value
Temperature Drift	0.17%/℃
No-load Current	≤25mA
Angle	X=75° Y=45°
Type of Output	TTL232
protection grade	IP65
Weight / Wire Length	28g/0.3m

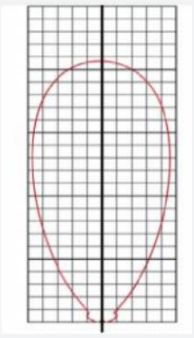
Appearance Dimension



Performance Reference Curve



x



Y

Deep colour: diameter 25mm PVC pipe
Light colour: 100mm*100mm flat board
Note: there maybe bias, for reference only

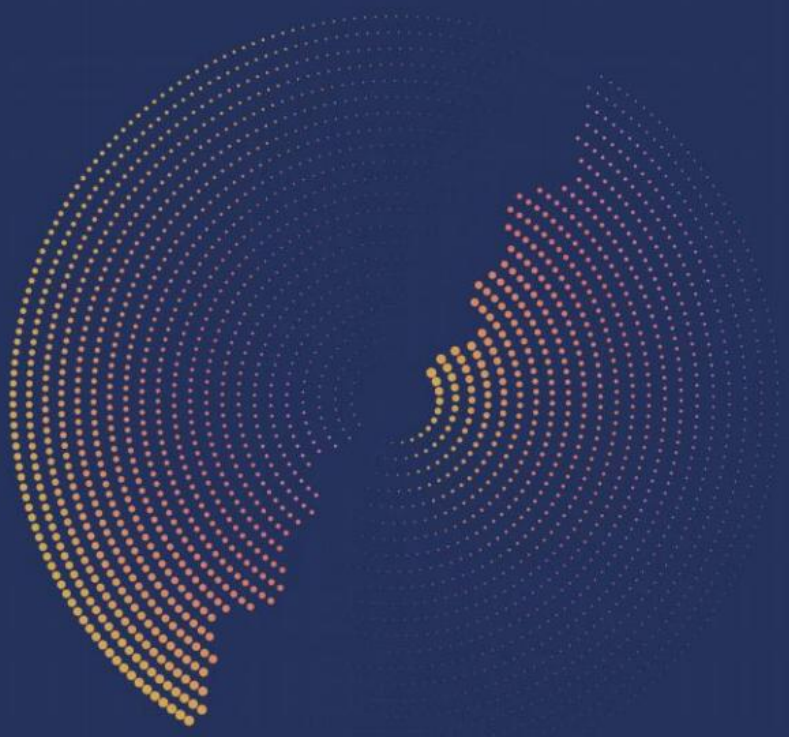
Certificate	CE ROHS	CE ROHS	CE ROHS

03

APPLICATION

Cases

ultrasonic sensor



Ultrasonic sensor is a very influential sensor. They have powerful functions and are suitable for various applications. At present, we have already developed sensors for a wide range of applications, which are from factory automation to engineering machinery as well as some of the most difficult and extreme applications in the market.

Material Level Detection

Ultrasonic waves are transmitted from the sensor to the surface of the medium using ultrasonic pulses. Therefore, the time required to calculate the energy level height, the chemical and physical properties of the target do not affect the detection. Milk, paint, chemical materials, as well as mud or granular substances can also be detected and measured accurately.

Construction Machinery

Sensors specially designed for construction machinery can be used in harsh outdoor environments. Because dust, dirt and chemicals are less affected in modern agriculture, ultrasonic sensors can work stably in industrial machinery as well.

Besides, ultrasonic can effectively detect the height of crops, the distance between seeds and the ground, or the height of grain piles.

Industrial Manipulator

Ultrasonic sensor detection can be used for safety warning detection (people close to the machine). In the circuit board manufacturing industry, ultrasonic sensors can be used to check whether a circuit board is in place before it is gripped by a robot. Due to the different colors of the circuit boards, light absorption or reflection can occur, so that false positives can occur with photoelectric proximity switches.

During unfolding, the sensor detects the distance between the hand and the object to avoid damage to the object if the distance is too close, or to avoid instability in gripping the object if the distance is too far.

Ultrasonic Double Sheet Inspection

Use the characteristics of ultrasonic transmission to detect the strength of the energy through the medium to judge the detected object is one or more.

ChengDu Intelligent Sensor and System Technology Research Limited Company

Address：OneSchoolandOnetrainingBase,No.13,TianxinRoad, GaoxinWestZone,Chengdu,China

Tellephone：028-61703200

Contact：15902813789(sales）

Mail: marketing@sensorsis.com

Official website: http://www.sensorsis.com/