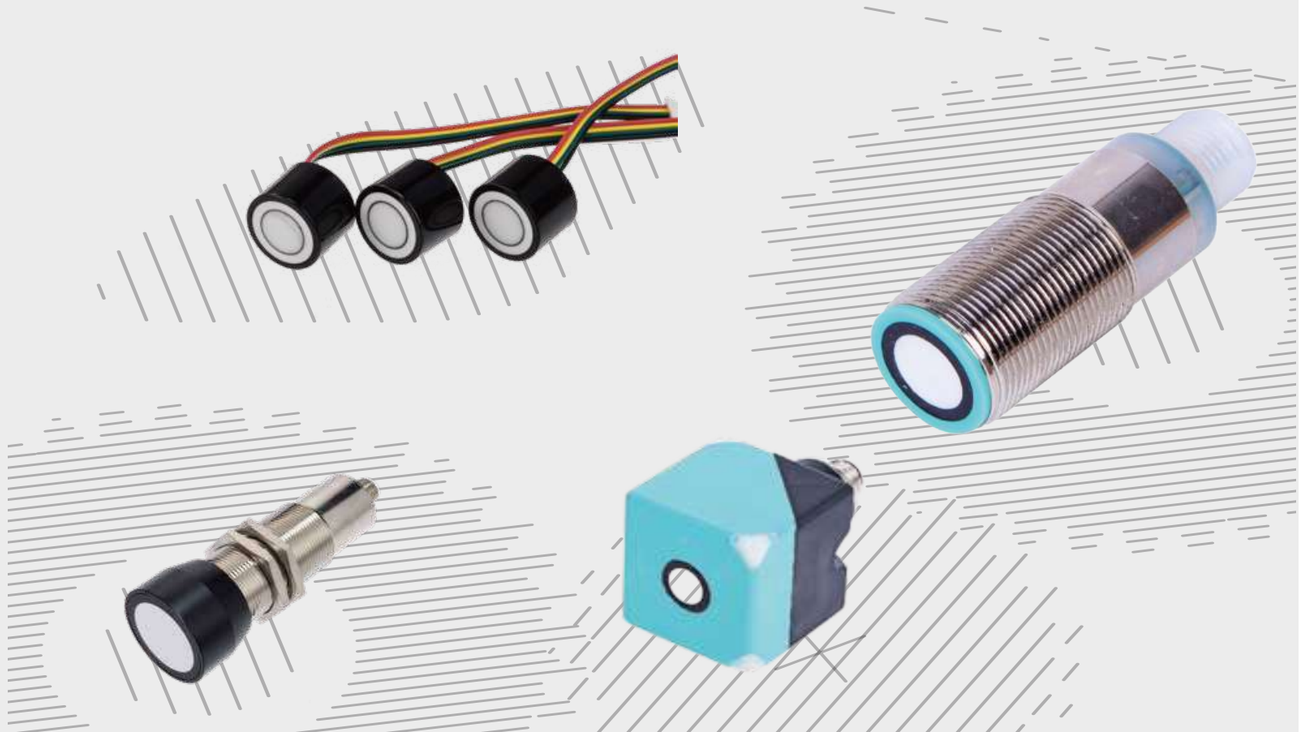
NIETZ

Ultrasonic Sensors

Catalogue



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DISTRIBUTORS

Ultrasonic sensor application

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闲置，在工控自动化场景中得到广泛的应用。

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

超声波传感器的目标市场

- Automobile industry
- Packaging Mechinery
- Mobile equipment
- Process equipment
- New energy manufacturing equipment
- Material handling
- Textile machinery
- Printing, paper and post-press processing
- Gate control

安全防护控制
Anti-collision control

液位料位检测
Level control for liquid

堆垛高度控制
Stacking height control

质量控制
Quality control

定位
Position control

透明物体检测
Transparencny detect

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

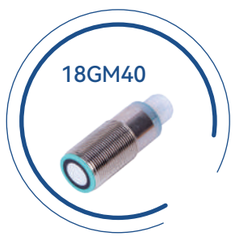
Product Naming Rules

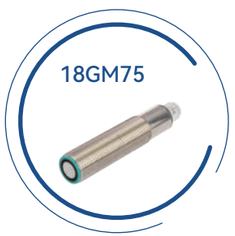
Code	U	B	1000	-	18	GM	75	-	U10	-	V1	-	A	200A/B
Number	1	2	3		4	5	6		7		8		9	10

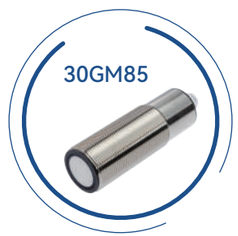
1	U	Ultrasonic sensor	
2	type	B Cylindrical basic C Standard CC Chemical resistance DB(A/C) double sheet detection	BE Thru-Beam A Intelligent T Custom made L Low power consumption
3	Detection range	120 120mm	300 300mm
4	Shell	12 Cylinder，M12mm 30 Cylinder，M30mm	F Squre case W 90° Elbow
5	Housing Material (Only for Cylinder)	GM Metal	GK plastic
6	Length and shape of shell	45,50,55,60 Represents the length of different shells	
7	Electrical output	E0 1x3 wire, NPN Switching, NO E1 1x3 wire, NPN Switching, NC E2 1x3 wire, PNP Switching, NO E3 1x3 wire, PNP Switching, NC E4 1x3 wire, NPN Switching, NO / NC E5 1x3 wire, PNP Switching, NO / NC E6 2x3 wire, PNP Switching, NO / NC E7 2x3 wire, NPN Switching, NO / NC E8 1x3 wire, NPN Switching, Delay mode E9 1x3 wire, PNP Switching, Delay mode A2 2x3 wire, PNP Switching, on NO + one NC I Analog current, 4-20mA U5 / U10 Analog current, 0-5V / 0-10V R2 / R4 Interface RS232 / RS485 8B 8 Digits output H3 External processing unit TTL / TTL1 Interface TTL232, command response / keep firing 3E0 3 chanel's NPN switching IU Analog I and two output U IE0 Analog current + NPN switching, 2 channels IE2 Analog current + PNP switching, 2 channels	
8	Connecting	VC cable VC5 5-core cable V31 4-pin M8 tail plug LXX Custom cables	V1 M12*1 four-pin tail plug V3 M12*1 four-pin tail plug, custom pin mould V15 M12*1 five-pin tail plug V16 plug with cord
9	Complete series of category codes	T: Synchronisation S: dual output DM: Short-term analogue	
10	Cable color	200: Transducer frequency A: Elbow type B: black	

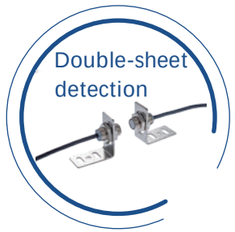
PRODUCT CATALOG

产品目录









18GM40

主要特征

>M18安装螺纹套管,全长最短仅40mm

>盲区小,声锥小,适合近距离精细检测

Advanced Features

> M18 Cylindrical; Shortest length is 40mm

> Short blind area; Small sound cone; Suitable for close-range fine detection.

基本特征

>1个npn或者pnp开关量输出

>模拟电压输出0-5/10V或者模拟电流输出4-20mA

>可通过串口升级更改输出

>通过学习线实现检测距离设置

>温度补偿

Basic Features

> One switching output NPN or PNP

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

> The teach-in function is realized by the gray line

> Temperature compensation

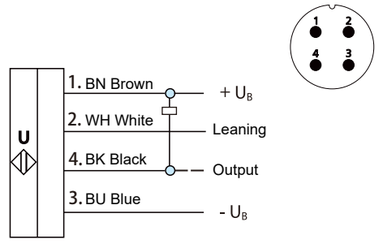
18GM40

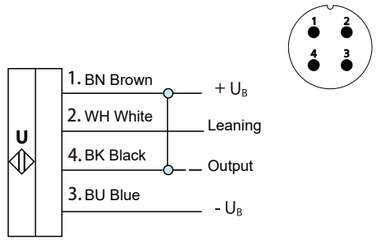
Technical DataSheet

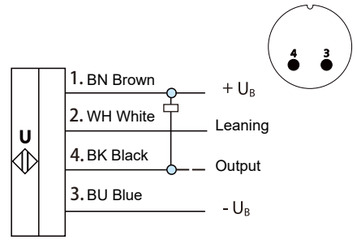
Model	UB150-18GM40-E4-V3	UB350-18GM40-E4-V3	UB500-18GM40-E4-V3
	UB150-18GM40-E5-V3	UB350-18GM40-E5-V3	UB500-18GM40-E5-V3
	UB150-18GM40-E8-V3	UB350-18GM40-E8V3	UB500-18GM40-E8-V3
	UB150-18GM40-E9-V3	UB350-18GM40-E9-V3	UB500-18GM40-E9-V3
	UB150-18GM40-I-V3	UB350-18GM40-I-V3	UB500-18GM40-I-V3
	UB150-18GM40-U5-V3	UB350-18GM40-U5-V3	UB500-18GM40-U5-V3
	UB150-18GM40-U10-V3	UB350-18GM40-U10-V3	UB500-18GM40-U10-V3
Adjustment range	25-150mm	35-350mm	45-500mm
Measure range	20-150mm	30-350mm	40-500mm
Angle	±6°	±7°	±7°
Repeatablity	±1% of full-scale value	±1%of full-scale value	±1%of full-scale value
Converter frequency	Approximately 400 kHz	Approximately 200 kHz	Approximately 200 kHz
Response delay	⩽50ms	⩽50ms	⩽50ms
Operating voltage	20-30VDC	20-30VDC	20-30VDC
Power-Up Timer	＜500ms		
Operating voltage	15-30VDC		
LED red light	no - No object detected flashes - No object detected at teaching status		
LED yellow light	no - Object detected en A1-A2 area flashes - Object detected at teaching status		
Input format	A1, learning line connected to UBBA2, learning line connected to UB		
Lag range	1% of the set switch distance		
No-load current	⩽30mA		
Repeatablity	±1% of full-scale value		
Material	Copper nickel plating, plastic fittings, glass filled epoxy resin		
Protective class	IP67		
Connection	4 pins M12 connector		
Ambient temperature	-25℃~+70℃(248~343K)		
Storage temperature	-40℃~+85℃(233~358K)		
Temperature drift	±2% of full-scale value		

Output	E4/E8	one switching output NPN, NO/NC/ Delay mode	TTL/TTL1	TTL232interface
	E5/E9	one switching output NPN, NO/NC/ Delay mode		
	I	one analog current output, 4-20mA		
	U5/U10	one analog voltage output, 0-5V/0-10V		

Electric wiring

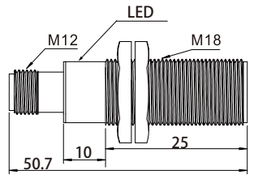




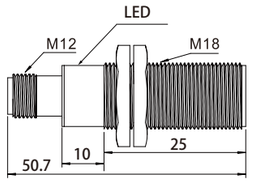


Core colors in accordance with EN 60947-5-2.

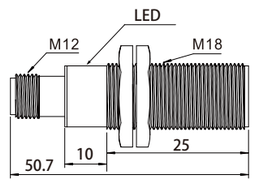
Dimension



UB150 series

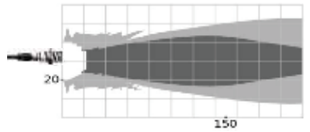


UB350 series



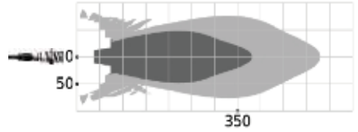
UB500 series

Reference curve



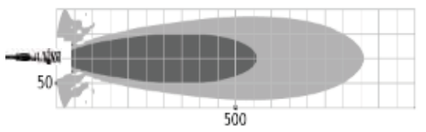
Curve 1: Flat 100x100mm
Curve 2: Round bar Ø25mm

UB150 series



Curve 1: Flat 100x100mm
Curve 2: Round bar Ø25mm

UB350 series

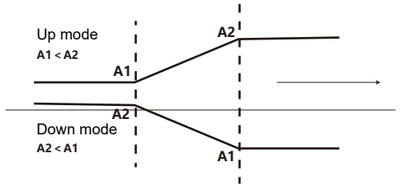


Curve 1: Flat 100x100mm
Curve 2: Round bar Ø25mm

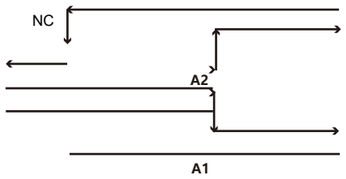
UB500 series

Output mode

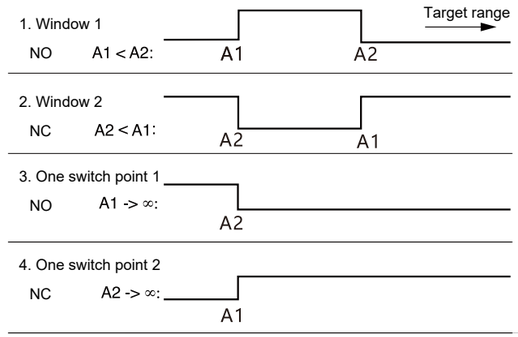
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9

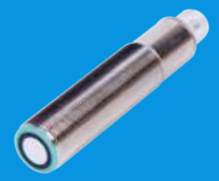


Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode
Object detected: Switch output closed
No object detected: Switch output open

18GM75
Single Output



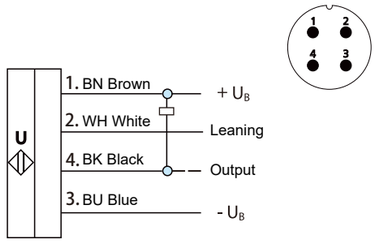
Advanced Features
> M18 Cylindrical
> Easilly installation

Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

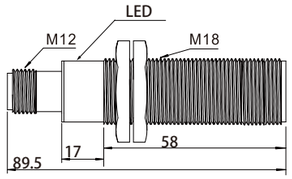
Model		UB1000-18GM75-E4-V1		
		UB1000-18GM75-E5-V1		
		UB1000-18GM75-E8-V1		
		UB1000-18GM75-E9-V1		
		UB1000-18GM75-I-V1		
		UB1000-18GM75-U5-V1		
		UB1000-18GM75-U10-V1		
		UB1000-18GM75-TTL-V1,UB1000-18GM75-TTL1-V1		
Measure range		60-1000mm		
Adjustment range		70-1000mm		
Angle		±7°		
Repeatablity		±1% of full-scale value		
Lag range		1% of the set switch distance		
Transducer frequency		200KHz		
Response time		100ms		
Operating voltage		9-30VDC		
LED red light		Constant light: Learning status No target detected Flashing: Error		
LED yellow light		Constant on: Switch status indicator Flashing: Learning status Target detected		
LED blue light		Constant on: Learning mode (5 minutes before power-on) Flashing: Entering learning mode		
LED green light		Constant light: Power connected		
No-load current		≤35mA		
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB		
Material		Copper nickel plating, plastic fittings, glass filled epoxy resin		
Protective class		IP67		
Connection		4 pins M12 connector		
Ambient temperature		-25℃~+70℃(248~343K)		
Storage temperature		-40℃~+85℃(233~358K)		
Temperature drift		±2% of full scale value (with built-in temperature compensation).		
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode	TTL/TTL1	TTL232 interface
	E5/E9	one switching output NPN, NO/NC/ Delay mode		
	I	one analog current output, 4-20mA		
	U5/U10	one analog voltage output, 0-5V/0-10V		

Electric wiring



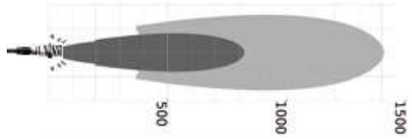
Core colors in accordance with EN 60947-5-2.

Dimension



UB1000 series

Reference curve

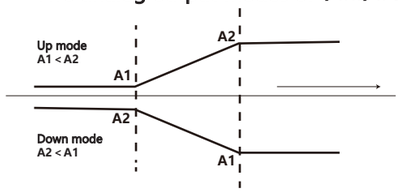


Curve 1: Flat 100x100mm
Curve 2: Round bar 25mm
X [mm]

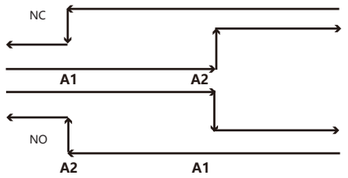
UB1000 series

Output mode

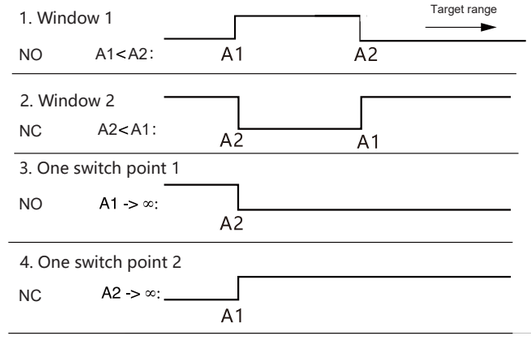
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5

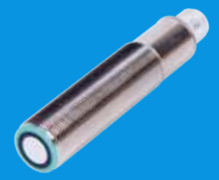


5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

18GM75

Dual Output



Advanced Features

> M18 Cylindrical
> Easilly installation

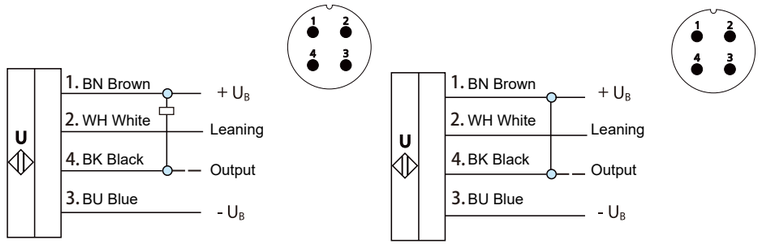
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

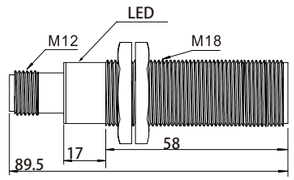
Model		UB1000-18GM75-E6-V15
		UB1000-18GM75-E7-V15
		UB1000-18GM75-IE4-V15
		UB1000-18GM75-IE5-V15
		UB1000-18GM75-U5E4-V15
		UB1000-18GM75-U5E5-V15
		UB1000-18GM75-U10E4-V15
		UB1000-18GM75-U10E5-V15
Measure range		60-1000mm
Adjustment range		70-1000mm
Angle		±7°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Transducer frequency		200KHz
Response time		100ms
Operating voltage		9-30VDC
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch 1 status indicator Flashing: Target detected during A1 learning
LED blue light		Constant on: Switch 2 status indicator Flashing: Target detected during A2 learning
LED green light		Constant light: Power connected
No-load current		⩽35mA
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
Material		Copper nickel plating, plastic fittings, glass filled epoxy resin
Protective class		IP67
Connection		4 pins M12 connector
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E6/E7	Two PNP channels/two NPN channels
	IE4/IE5	4-20mA，NPN / 4-20mA，PNP
	U5E4/U5E5	0-5V，NPN / 0-5V，PNP
	U10E4/U10E5	0-10V，NPN / 0-10V，PNP

Electric wiring



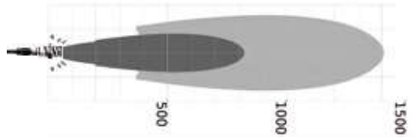
Core colors in accordance with EN 60947-5-2.

Dimension



UB1000 series

Reference curve

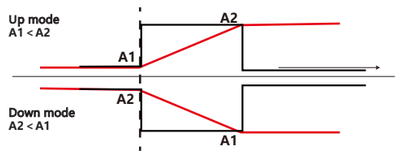


Curve 1: Flat 100x100mm
Curve 2: Round bar 25mm
X [mm]

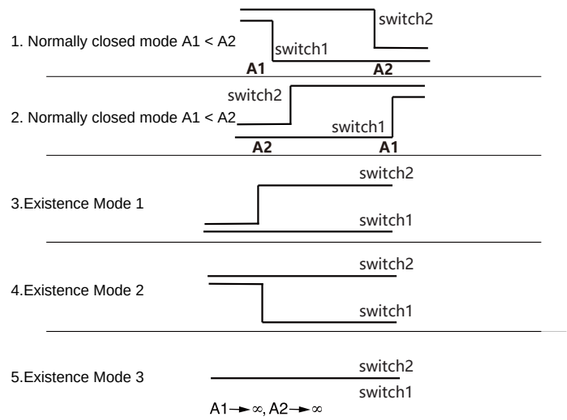
UB1000 series

Output mode

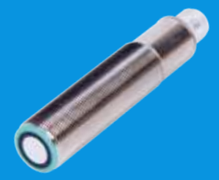
Two output modes for IE4/IE5/U5E4/U5E5/U10E4/U10E5



Five output modes for E6/E7 dual switch quantities



18GM75
Synchronisation



Advanced Features

> M18 Cylindrical
> Easilly installation

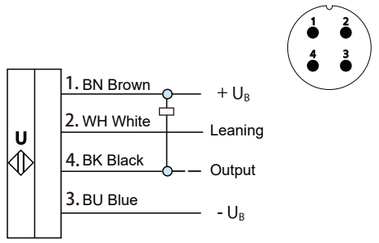
Basic Features

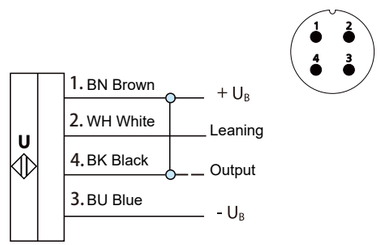
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

Model		UB1000-18GM75-E4-V15
		UB1000-18GM75-E5-V15
		UB1000-18GM75-E8-V15
		UB1000-18GM75-E9-V15
		UB1000-18GM75-I-V15
		UB1000-18GM75-U5-V15
		UB1000-18GM75-U10-V15
		UB1000-18GM75-TTL-V15,UB1000-18GM75-TTL1-V15
Measure range		60-1000mm
Adjustment range		70-1000mm
Angle		±7°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Transducer frequency		200KHz
Response time		100ms×N
Operating voltage		9-30VDC
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch status indicator Flashing: Entering learning mode
LED green light		Constant light: Power connected Flashing: Target detected in learning mode
No-load current		⩽35mA
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
Input/Output		A synchronous input/output
Material		Copper nickel plating, plastic fittings, glass filled epoxy resin
Protective class		IP67
Connection		5 pins M12 connector
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	1 switch output NPN, NO/NC/hysteresis mode
	E5/E9	1 switch output PNP, NO/NC/hysteresis mode
	I	1 analogue current output, 4-20 mA
	U5/U10	1 analogue voltage output, 0-5V/0-10V

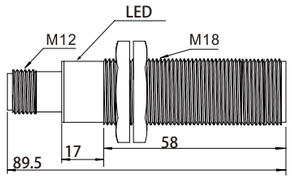
Electric wiring





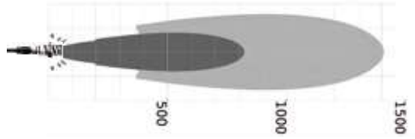
Core colors in accordance with EN 60947-5-2.

Dimension



UB1000 series

Reference curve



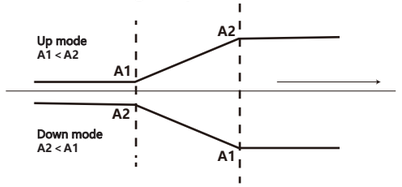
Curve 1: Flat 100x100mm
Curve 2: Round bar 25mm

X [mm]

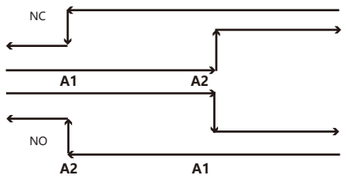
UB1000 series

Output mode

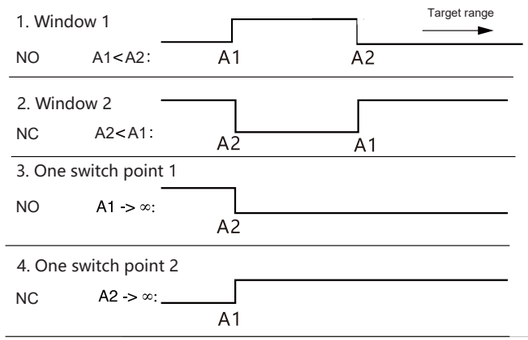
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5

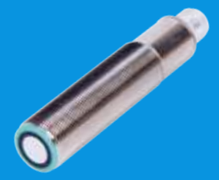


5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

18GM75

RS485



Advanced Features

> M18 Cylindrical
> Easilly installation

Basic Features

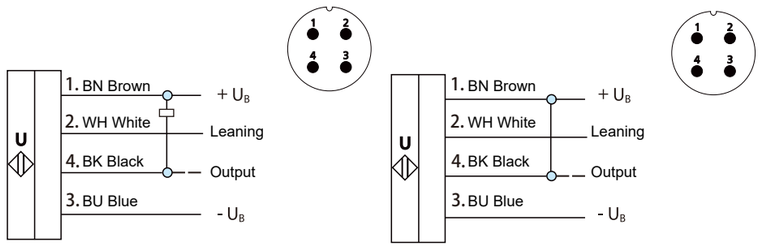
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

Model	UB1000-18GM75-R4E4-V15 UB1000-18GM75-R4E5-V15 UB1000-18GM75-R4-V15
Measure range	60-1000mm
Adjustment range	70-1000mm
Angle	±7°
Repeatablity	±0.3% of full-scale value
Lag range	1% of the set switch distance
Transducer frequency	200KHz
Response time	100ms
Operating voltage	9-30VDC
LED red light	Working status: Error
LED yellow light	Chang Liang: Target detected
LED blue light	Received command 485
LED green light	Constant light: Power connected
No-load current	⩽35mA
Output method	RS485 interface, NPN/PNP; MODBUS485
Material	Copper nickel plating, plastic fittings, glass filled epoxy resin
Protective class	IP67
Connection	4 pins M12 connector
Ambient temperature	-25℃~+70℃(248~343K)
Storage temperature	-40℃~+85℃(233~358K)
Temperature drift	±2% of full scale value (with built-in temperature compensation).
Output R4E4 R4E5	RS485 interface + NPN
Output R4	RS485 interface (Modbus protocol)

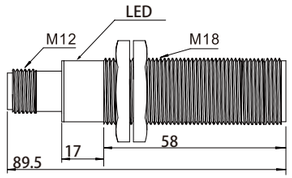
NIETZ

Electric wiring



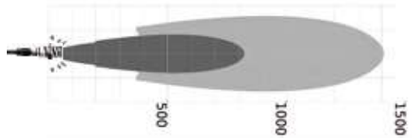
Core colors in accordance with EN 60947-5-2.

Dimension



UB1000 series

Reference curve



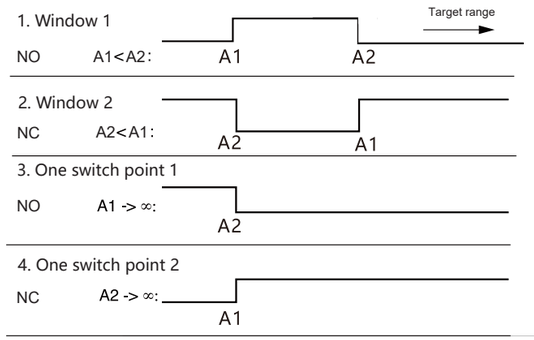
Curve 1: Flat 100x100mm
Curve 2: Round bar 25mm

UB1000 series

Output mode

E Switch Mode

By writing the values of points A1 and A2 through the RS485 interface, the following five switch modes can be set:

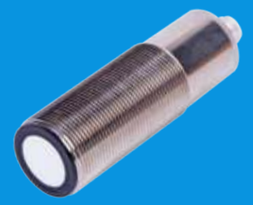


5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85

Single Output



Advanced Features

> M30 Cylindrical
> Synronous function

Basic Features

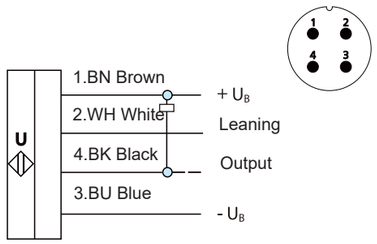
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

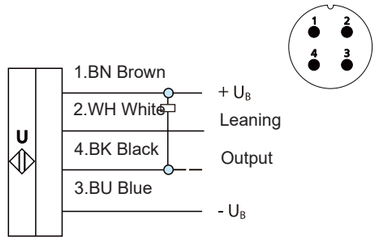
Model		UB2000-30GM85-E4-V1	UB3000-30GM85-E4-V1
		UB2000-30GM85-E5-V1	UB3000-30GM85-E5-V1
		UB2000-30GM85-E8-V1	UB3000-30GM85-E8-V1
		UB2000-30GM85-E9-V1	UB3000-30GM85-E9-V1
		UB2000-30GM85-I-V1	UB3000-30GM85-I-V1
		UB2000-30GM85-U5-V1	UB3000-30GM85-U5-V1
		UB2000-30GM85-U10-V1	UB3000-30GM85-U10-V1
		UB2000-30GM85-TTL-V1,UB2000-30GM85-TTL1-V1	UB3000-30GM85-TTL-V1,UB3000-30GM85-TTL1-V1
Transducer frequency		200KHz	200KHz
Measure range		120-2000mm	180-3000mm
Adjustment range		130-2000mm	190-3000mm
Angle		±5°	±8°
Repeatablity		±1% of full-scale value	
Lag range		1% of the set switch distance	
Response time		⩽110ms	
Operating voltage		9-30VDC 10%Vpp	
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB	
LED red light		Constant light: Learning status No target detected Flashing: Error	
LED yellow light		Constant on: Switch status indicator Flashing: Learning status Target detected	
LED blue light		Constant on: Learning mode (5 minutes before power-up) Flashing: Entering learning mode	
LED green light		Constant light: Power connected	
No-load current		⩽35mA	
Material		Nickel-plated brass	
Protective class		IP67	
Connection		V1 connector (M121), 4 pins	
Ambient temperature		-25℃~+70℃(248~343K)	
Storage temperature		-40℃~+85℃(233~358K)	
Temperature drift		±2% of full scale value (with built-in temperature compensation).	
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode	
	E5/E9	one switching output NPN, NO/NC/ Delay mode	
	I	one analog current output, 4-20mA	
	U5/U10	one analog voltage output, 0-5V/0-10V	

NIETZ

Electric wiring

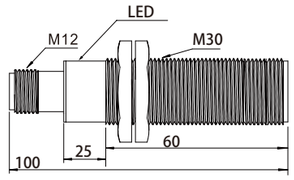


Core colors in accordance with EN 60947-5-2

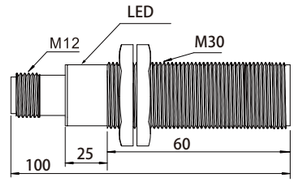


Core colors in accordance with EN 60947-5-2

Dimension

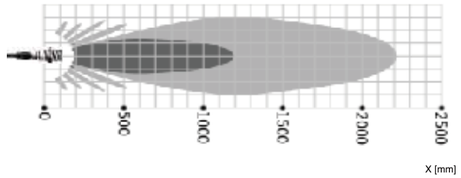


UB2000 series

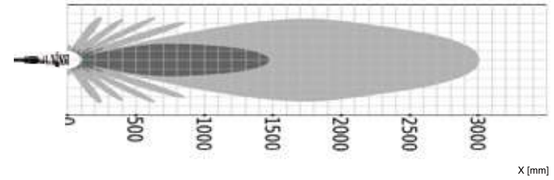


UB3000 series

Reference curve



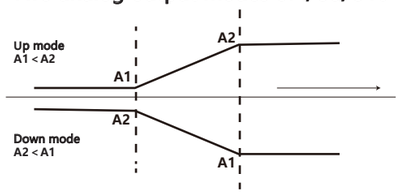
UB2000 series



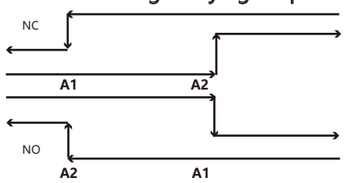
UB3000 series

Output mode

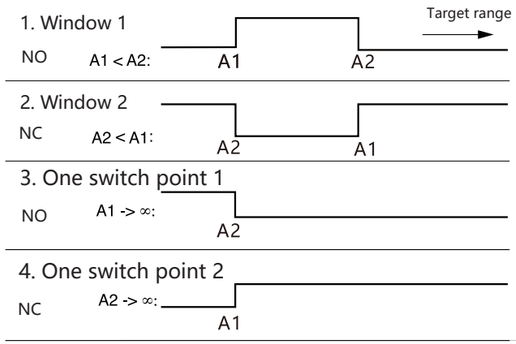
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

NIETZ

30GM85
Single Output

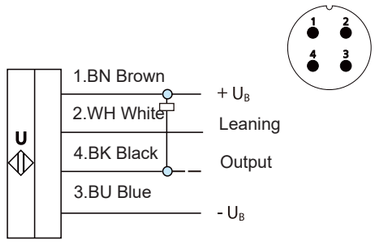
Advanced Features
> M30 Cylindrical
> Synronous function

Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

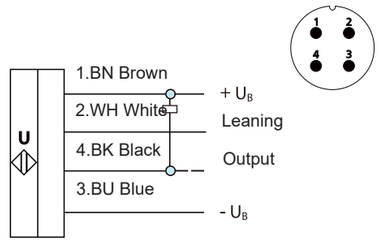
Technical Data Sheet

Model		UB4000-30GM85-E4-V1
		UB4000-30GM85-E5-V1
		UB4000-30GM85-E8-V1
		UB4000-30GM85-E9-V1
		UB4000-30GM85-I-V1
		UB4000-30GM85-U5-V1
		UB4000-30GM85-U10-V1
		UB4000-30GM85-TTL-V1,UB4000-30GM85-TTL1-V1
Transducer frequency		75KHz
Measure range		200-4000mm
Adjustment range		130-2000mm
Angle		±8°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽150ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Constant light: Learning status No target detected Flashing: Error
LED yellow light		Constant on: Switch status indicator Flashing: Learning status Target detected
LED blue light		Constant on: Learning mode (5 minutes before power-up) Flashing: Entering learning mode
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V1 connector (M121), 4 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode
	E5/E9	one switching output NPN, NO/NC/ Delay mode
	I	one analog current output, 4-20mA
	U5/U10	one analog voltage output, 0-5V/0-10V

Electric wiring

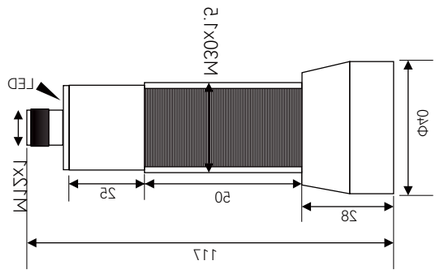


Core colors in accordance with EN 60947-5-2



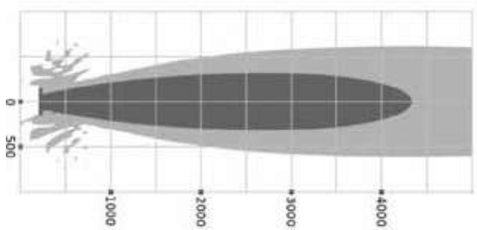
Core colors in accordance with EN 60947-5-2

Dimension



UB4000 series

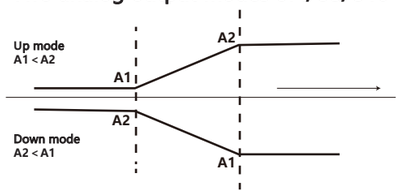
Reference curve



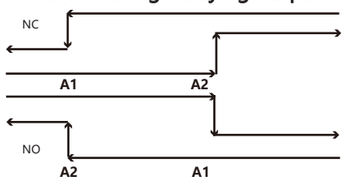
UB4000 series

Output mode

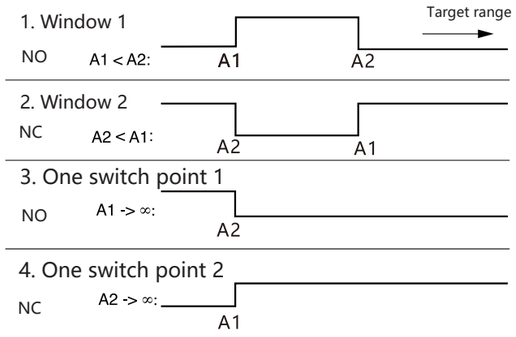
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85
Single Output

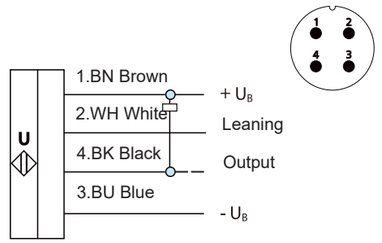
Advanced Features
> M30 Cylindrical
> Synronous function

Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

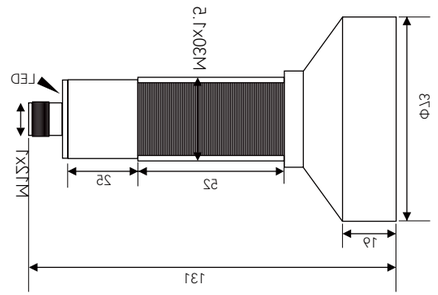
Model		UB6000-30GM85-E4-V1
		UB6000-30GM85-E5-V1
		UB6000-30GM85-E8-V1
		UB6000-30GM85-E9-V1
		UB6000-30GM85-I-V1
		UB6000-30GM85-U5-V1
		UB6000-30GM85-U10-V1
		UB6000-30GM85-TTL-V1,UB6000-30GM85-TTL1-V1
Transducer frequency		65KHz
Measure range		350-6000mm
Adjustment range		370-6000mm
Angle		±10°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽300ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Constant light: Learning status No target detected Flashing: Error
LED yellow light		Constant on: Switch status indicator Flashing: Learning status Target detected
LED blue light		Constant on: Learning mode (5 minutes before power-up) Flashing: Entering learning mode
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V1 connector (M121), 4 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode
	E5/E9	one switching output NPN, NO/NC/ Delay mode
	I	one analog current output, 4-20mA
	U5/U10	one analog voltage output, 0-5V/0-10V

Electric wiring



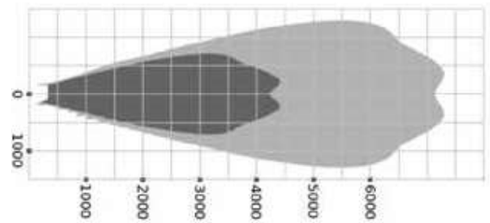
Core colors in accordance with EN 60947-5-2

Dimension



UB6000series

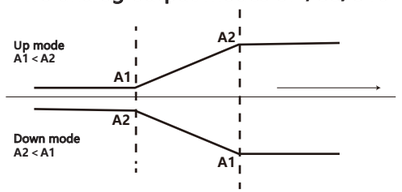
Reference curve



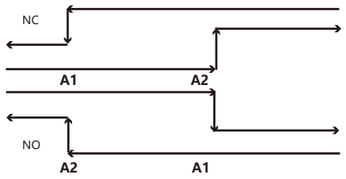
UB6000series

Output mode

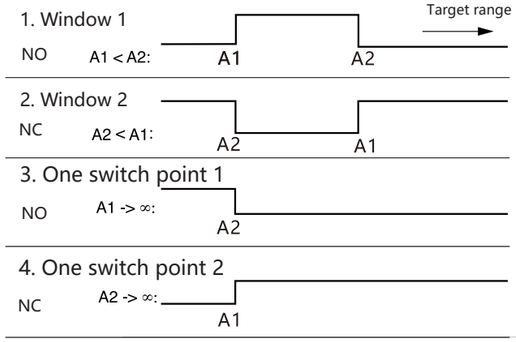
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85
Synchronisation

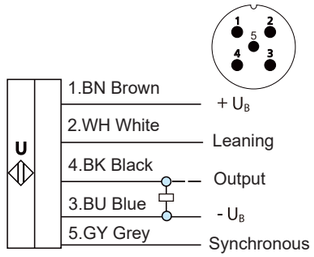
Advanced Features
> M30 Cylindrical
> Synronous function

Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

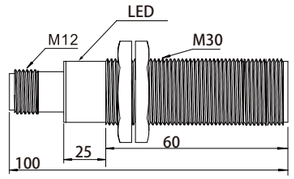
Model		UB2000-30GM85-E4-V15
		UB2000-30GM85-E5-V15
		UB2000-30GM85-E8-V15
		UB2000-30GM85-E9-V15
		UB2000-30GM85-I-V15
		UB2000-30GM85-U5-V15
		UB2000-30GM85-U10-V15
		UB2000-30GM85-TTL-V15,UB2000-30GM85-TTL1-V15
Transducer frequency		180KHz
Measure range		120-2000mm
Adjustment range		130-2000mm
Angle		±5°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		110 ms×N
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch status indicator Flashing: Entering learning mode
LED green light		Constant light: Power connected Flashing: Target detected in learning mode
No-load current		⩽35mA
Input/Output		A synchronous input/output
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 4 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode
	E5/E9	one switching output NPN, NO/NC/ Delay mode
	I	one analog current output, 4-20mA
	U5/U10	one analog voltage output, 0-5V/0-10V

Electric wiring



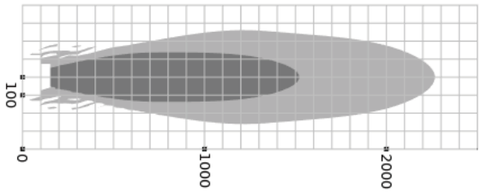
Core colors in accordance with EN 60947-5-2

Dimension



UB2000 series

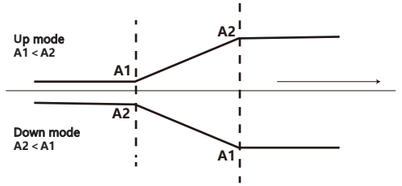
Reference curve



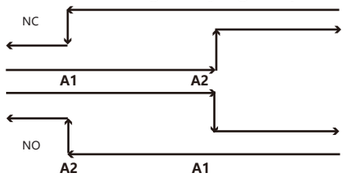
UB2000 series

Output mode

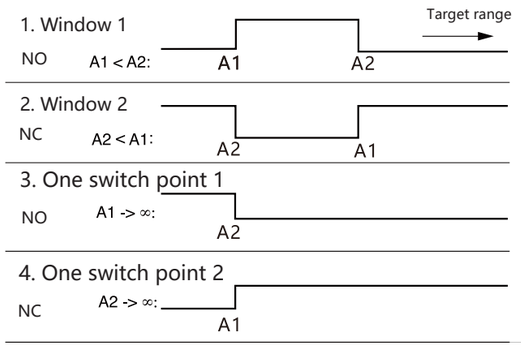
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



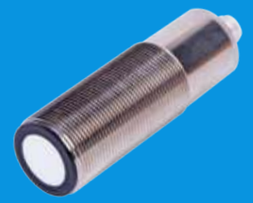
Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85
Synchronisation



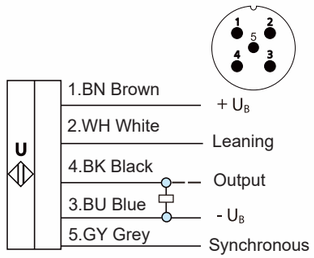
Advanced Features
> M30 Cylindrical
> Synronous function

Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

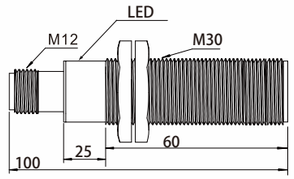
Model		UB3000-30GM85-E4-V15
		UB3000-30GM85-E5-V15
		UB3000-30GM85-E8-V15
		UB3000-30GM85-E9-V15
		UB3000-30GM85-I-V15
		UB3000-30GM85-U5-V15
		UB3000-30GM85-U10-V15
		UB3000-30GM85-TTL-V15,UB3000-30GM85-TTL1-V15
Transducer frequency		112KHz
Measure range		180-3000mm
Adjustment range		190-3000mm
Angle		±8°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		110 ms×N
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch status indicator Flashing: Entering learning mode
LED green light		Constant light: Power connected Flashing: Target detected in learning mode
No-load current		⩽35mA
Input/Output		A synchronous input/output
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 4 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode
	E5/E9	one switching output NPN, NO/NC/ Delay mode
	I	one analog current output, 4-20mA
	U5/U10	one analog voltage output, 0-5V/0-10V

Electric wiring



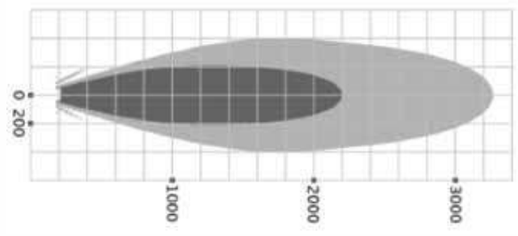
Core colors in accordance with EN 60947-5-2

Dimension



UB3000 series

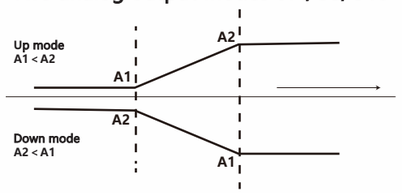
Reference curve



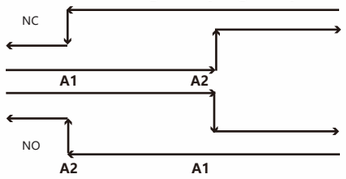
UB3000 series

Output mode

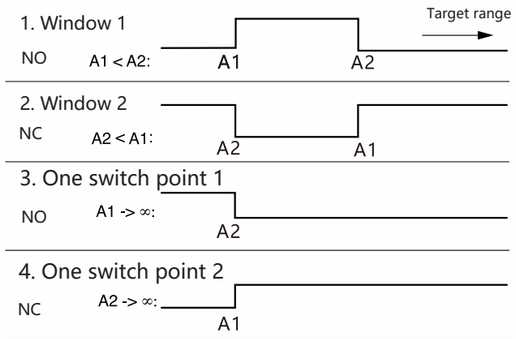
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



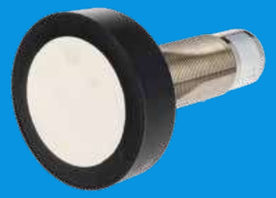
Five switching output modes of E4/E5



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85
Synchronisation



Advanced Features
> M30 Cylindrical
> Synronous function

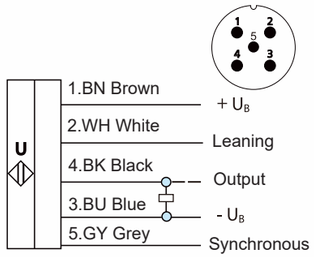
Basic Features
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

Model		UB6000-30GM85-E4-V15
		UB6000-30GM85-E5-V15
		UB6000-30GM85-E8-V15
		UB6000-30GM85-E9-V15
		UB6000-30GM85-I-V15
		UB6000-30GM85-U5-V15
		UB6000-30GM85-U10-V15
		UB6000-30GM85-TTL-V15,UB6000-30GM85-TTL1-V15
Transducer frequency		65KHz
Measure range		350-6000mm
Adjustment range		370-6000mm
Angle		±10°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽300ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch status indicator Flashing: Entering learning mode
LED green light		Constant light: Power connected Flashing: Target detected in learning mode
No-load current		⩽35mA
Input/Output		A synchronous input/output
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 4 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode
	E5/E9	one switching output NPN, NO/NC/ Delay mode
	I	one analog current output, 4-20mA
	U5/U10	one analog voltage output, 0-5V/0-10V

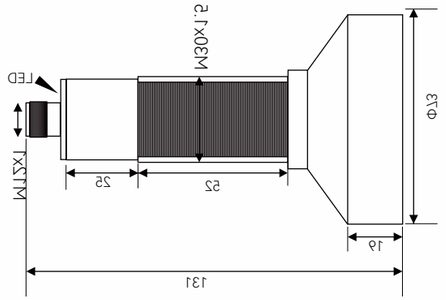
NIETZ

Electric wiring



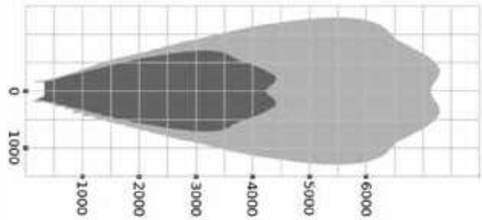
Core colors in accordance with EN 60947-5-2

Dimension



UB6000series

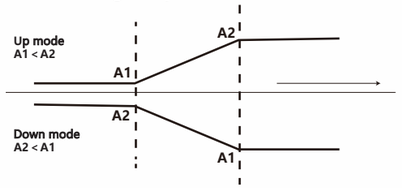
Reference curve



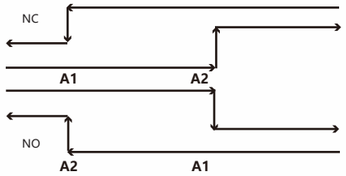
UB6000series

Output mode

Two analog output modes of I/U5/U10

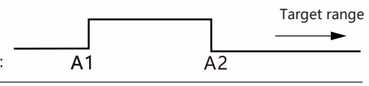


Two Switching delaying output modes of E8/E9



Five switching output modes of E4/E5

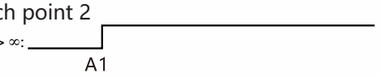
1. Window 1
NO A1 < A2:



2. Window 2
NC A2 < A1:

3. One switch point 1
NO A1 -> ∞:

4. One switch point 2
NC A2 -> ∞:



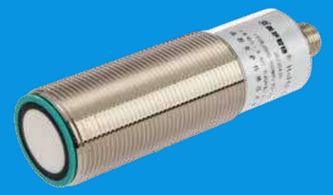
5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

NIETZ

30GM85

Dual Output



Advanced Features

> M30 Cylindrical
> Synronous function

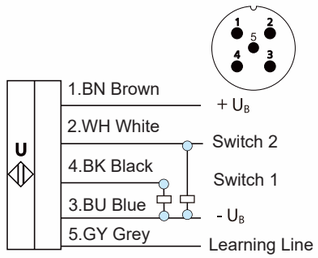
Basic Features

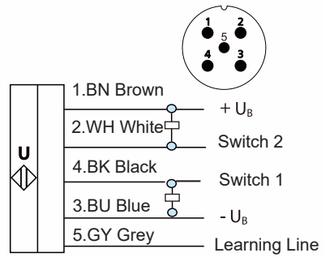
> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

Model		UB2000-30GM85-E6-V15
		UB2000-30GM85-E7-V15
		UB2000-30GM85-IE4-V15
		UB2000-30GM85-IE5-V15
		UB2000-30GM85-U5E4-V15
		UB2000-30GM85-U5E5-V15
		UB2000-30GM85-U10E4-V15
		UB2000-30GM85-U10E5-V15
Transducer frequency		120-2000mm
Measure range		120-2000mm
Adjustment range		130-2000mm
Angle		±5°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽110ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Working status: Error Learning status, flashing: Target not detected
LED blue light		Constant on: Switch 2 status indicator Flashing: Target detected during learning of A2
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E6/E7	Two PNP channels/two NPN channels
	IE4/IE5	4-20mA，NPN / 4-20mA，PNP
	U5E4/U5E5	0-5V，NPN / 0-5V，PNP
	U10E4/U10E5	0-10V，NPN / 0-10V，PNP

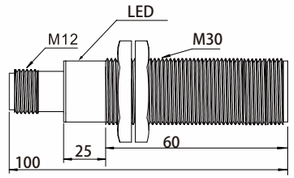
Electric wiring





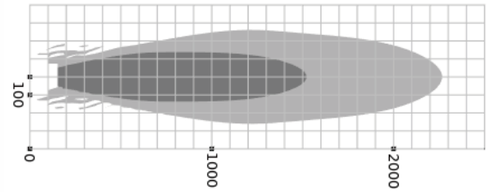
Core colors in accordance with EN 60947-5-2

Dimension



UB2000 series

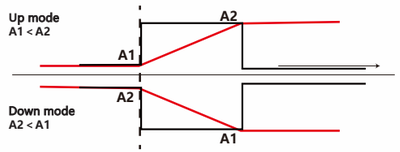
Reference curve



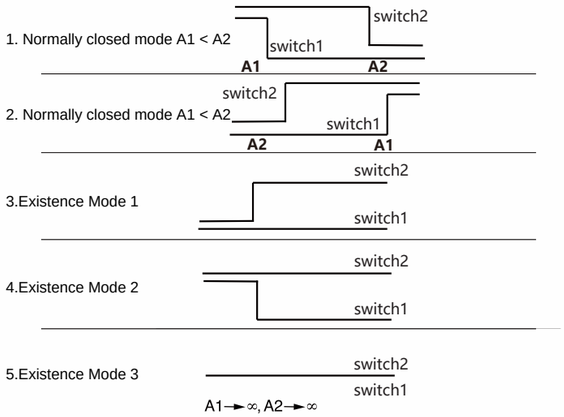
UB2000 series

Output mode

Two output modes for IE4/IE5/U5E4/U5E5/U10E4/U10E5



Five output modes for E6/E7 dual switch quantities



30GM85

Dual Output

Advanced Features

> M30 Cylindrical
> Synronous function

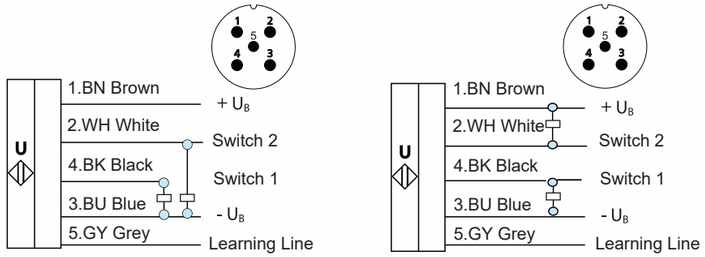
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

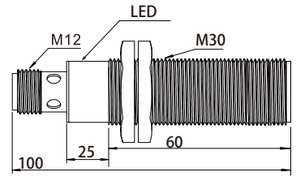
Model		UB3000-30GM85-E6-V15 UB3000-30GM85-E7-V15 UB3000-30GM85-IE4-V15 UB3000-30GM85-IE5-V15 UB3000-30GM85-U5E4-V15 UB3000-30GM85-U5E5-V15 UB3000-30GM85-U10E4-V15 UB3000-30GM85-U10E5-V15
Transducer frequency		112kHz
Measure range		180-3000mm
Adjustment range		190-3000mm
Angle		±8°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽110ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch 1 status indicator Flashing: Target detected during learning of A1
LED blue light		Constant on: Switch 2 status indicator Flashing: Target detected during learning of A2
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E6/E7	Two PNP channels/two NPN channels
	IE4/IE5	4-20mA，NPN / 4-20mA，PNP
	U5E4/U5E5	0-5V，NPN / 0-5V，PNP
	U10E4/U10E5	0-10V，NPN / 0-10V，PNP

Electric wiring



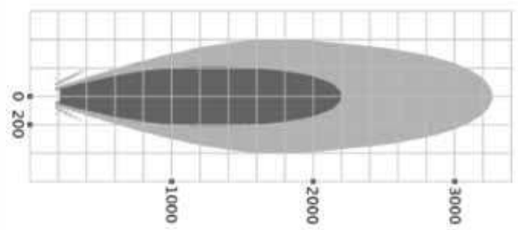
Core colors in accordance with EN 60947-5-2

Dimension



UB3000 series

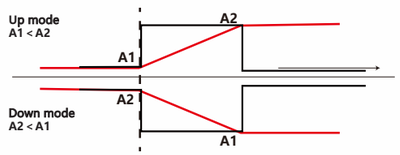
Reference curve



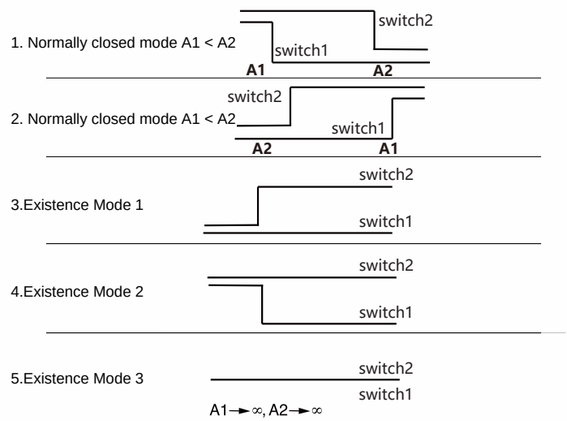
UB3000 series

Output mode

Two output modes for IE4/IE5/U5E4/U5E5/U10E4/U10E5



Five output modes for E6/E7 dual switch quantities



30GM85

Dual Output

Advanced Features

> M30 Cylindrical
> Synronous function

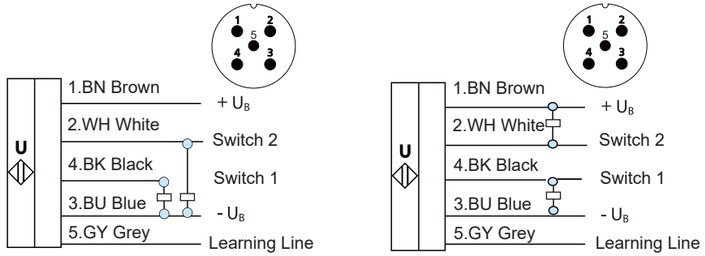
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

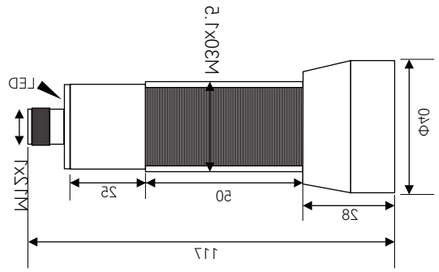
Model		UB4000-30GM85-E6-V15
		UB4000-30GM85-E7-V15
		UB4000-30GM85-IE4-V15
		UB4000-30GM85-IE5-V15
		UB4000-30GM85-U5E4-V15
		UB4000-30GM85-U5E5-V15
		UB4000-30GM85-U10E4-V15
		UB4000-30GM85-U10E5-V15
Transducer frequency		75kHz
Measure range		200-3000mm
Adjustment range		220-3000mm
Angle		±8°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽150ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch 1 status indicator Flashing: Target detected during learning of A1
LED blue light		Constant on: Switch 2 status indicator Flashing: Target detected during learning of A2
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E6/E7	Two PNP channels/two NPN channels
	IE4/IE5	4-20mA，NPN / 4-20mA，PNP
	U5E4/U5E5	0-5V，NPN / 0-5V，PNP
	U10E4/U10E5	0-10V，NPN / 0-10V，PNP

Electric wiring



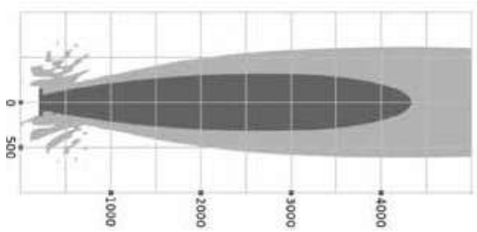
Core colors in accordance with EN 60947-5-2

Dimension



UB4000 series

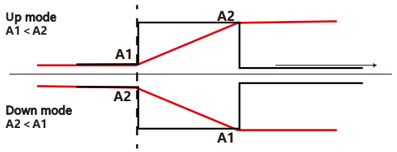
Reference curve



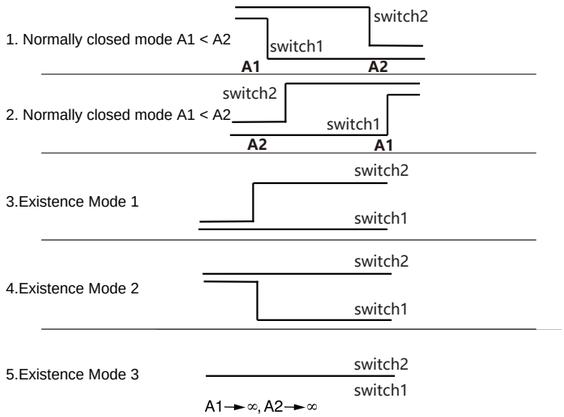
UB4000 series

Output mode

Two output modes for IE4/IE5/U5E4/U5E5/U10E4/U10E5



Five output modes for E6/E7 dual switch quantities



30GM85

Dual Output

Advanced Features

> M30 Cylindrical
> Synronous function

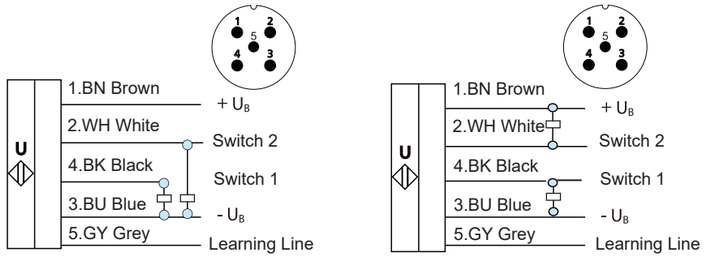
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

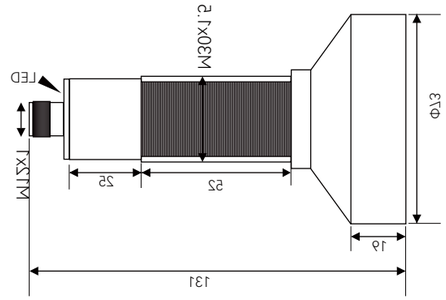
Model		UB6000-30GM85-E6-V15
		UB6000-30GM85-E7-V15
		UB6000-30GM85-IE4-V15
		UB6000-30GM85-IE5-V15
		UB6000-30GM85-U5E4-V15
		UB6000-30GM85-U5E5-V15
		UB6000-30GM85-U10E4-V15
		UB6000-30GM85-U10E5-V15
Transducer frequency		65kHz
Measure range		350-6000mm
Adjustment range		370-6000mm
Angle		±10°
Repeatablity		±1% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽300ms
Operating voltage		9-30VDC 10%Vpp
Input format		A1, learning line connected to -UB; A2, learning line connected to +UB
LED red light		Working status: Error Learning status, flashing: Target not detected
LED yellow light		Constant on: Switch 1 status indicator Flashing: Target detected during learning of A1
LED blue light		Constant on: Switch 2 status indicator Flashing: Target detected during learning of A2
LED green light		Constant light: Power connected
No-load current		⩽35mA
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	E6/E7	Two PNP channels/two NPN channels
	IE4/IE5	4-20mA，NPN / 4-20mA，PNP
	U5E4/U5E5	0-5V，NPN / 0-5V，PNP
	U10E4/U10E5	0-10V，NPN / 0-10V，PNP

Electric wiring



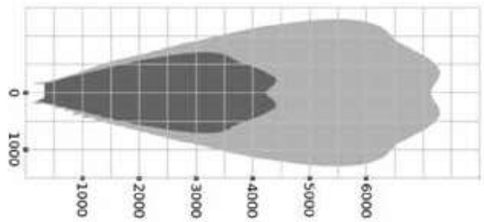
Core colors in accordance with EN 60947-5-2

Dimension



UB6000series

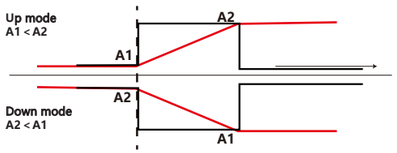
Reference curve



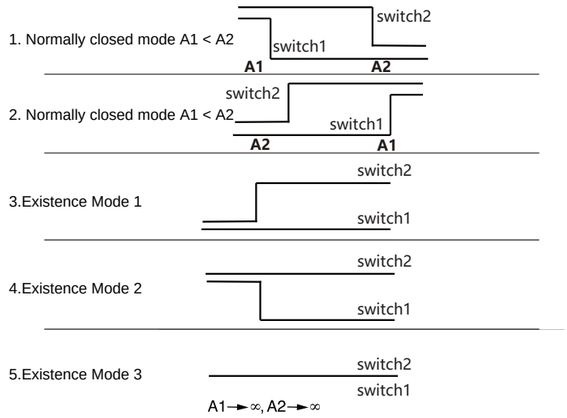
UB6000series

Output mode

Two output modes for IE4/IE5/U5E4/U5E5/U10E4/U10E5



Five output modes for E6/E7 dual switch quantities



30GM85

RS485

Advanced Features

> M30 Cylindrical
> Synronous function

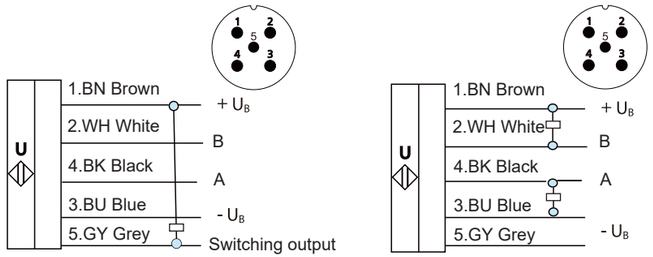
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

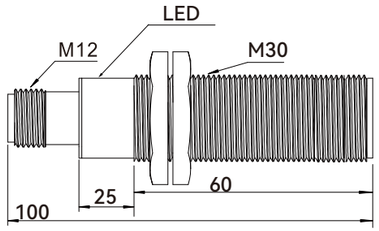
Model		UB2000-30GM85-R4E4-V15 UB2000-30GM85-R4E5-V15 UB2000-30GM85-R4-V15
Transducer frequency		180kHz
Measure range		120-2000mm
Adjustment range		130-2000mm
Angle		±5°
Repeatablity		±0.3% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽110ms
Operating voltage		9-30VDC 10%Vpp
LED red light		Working status: Error
LED yellow light		Chang Liang: Target detected
LED blue light		Received command 485
LED green light		Constant light: Power connected
No-load current		⩽35mA
Output method		RS485 interface, NPN
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	R4E4 R4E5	RS485 interface + NPN RS485 interface + PNP
	R4	RS485 interface (Modbus protocol)

Electric wiring



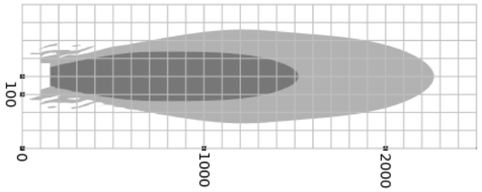
Core colors in accordance with EN 60947-5-2

Dimension



UB2000series

Reference curve

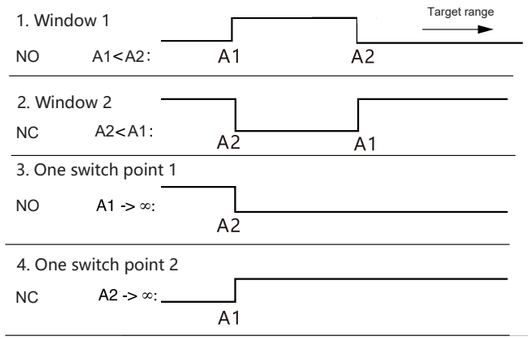


UB2000series

Output mode

E Switch Mode

By writing the values of points A1 and A2 through the RS485 interface, the following five switch modes can be set:



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85

RS485

Advanced Features

> M30 Cylindrical
> Synronous function

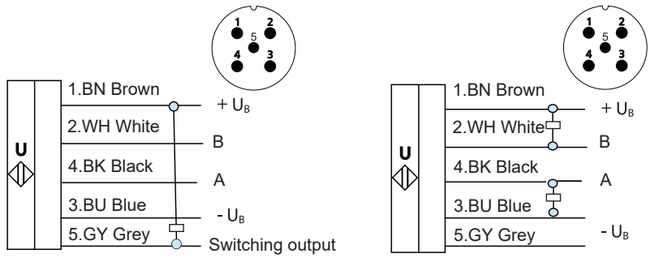
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

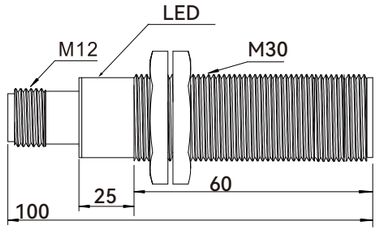
Model		UB3000-30GM85-R4E4-V15 UB3000-30GM85-R4E5-V15 UB3000-30GM85-R4-V15
Transducer frequency		112kHz
Measure range		180-3000mm
Adjustment range		190-3000mm
Angle		±8°
Repeatablity		±0.3% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽110ms
Operating voltage		9-30VDC 10%Vpp
LED red light		Working status: Error
LED yellow light		Chang Liang: Target detected
LED blue light		Received command 485
LED green light		Constant light: Power connected
No-load current		⩽35mA
Output method		RS485 interface, NPN
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	R4E4 R4E5	RS485 interface + NPN RS485 interface + PNP
	R4	RS485 interface (Modbus protocol)

Electric wiring



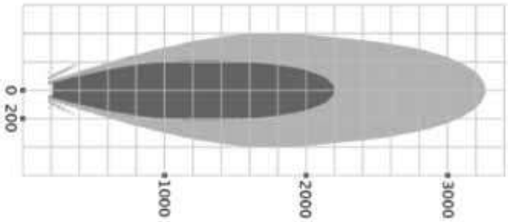
Core colors in accordance with EN 60947-5-2

Dimension



UB3000series

Reference curve

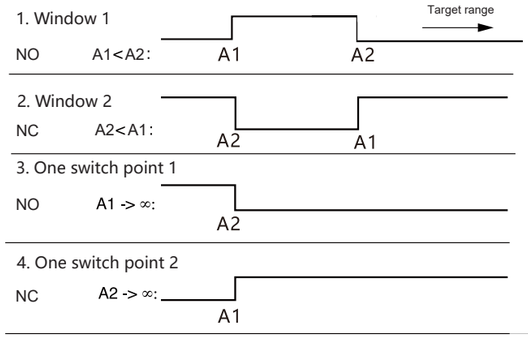


UB3000series

Output mode

E Switch Mode

By writing the values of points A1 and A2 through the RS485 interface, the following five switch modes can be set:



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85

RS485

Advanced Features

> M30 Cylindrical
> Synronous function

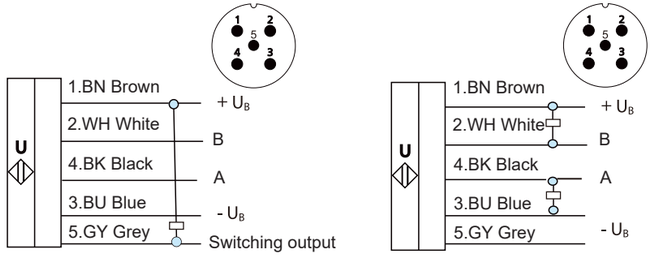
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

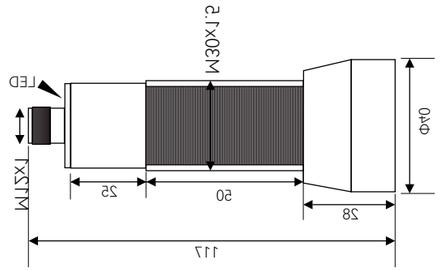
Model		UB4000-30GM85-R4E4-V15 UB4000-30GM85-R4E5-V15 UB4000-30GM85-R4-V15
Transducer frequency		75kHz
Measure range		200-3000mm
Adjustment range		220-3000mm
Angle		±8°
Repeatablity		±0.3% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽150ms
Operating voltage		9-30VDC 10%Vpp
LED red light		Working status: Error
LED yellow light		Chang Liang: Target detected
LED blue light		Received command 485
LED green light		Constant light: Power connected
No-load current		⩽35mA
Output method		RS485 interface, NPN
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	R4E4 R4E5	RS485 interface + NPN RS485 interface + PNP
	R4	RS485 interface (Modbus protocol)

Electric wiring



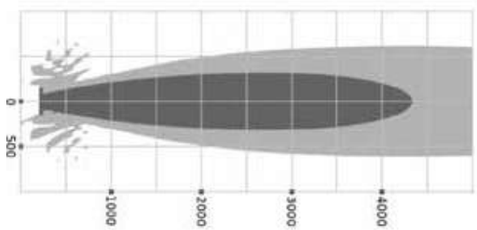
Core colors in accordance with EN 60947-5-2

Dimension



UB4000series

Reference curve

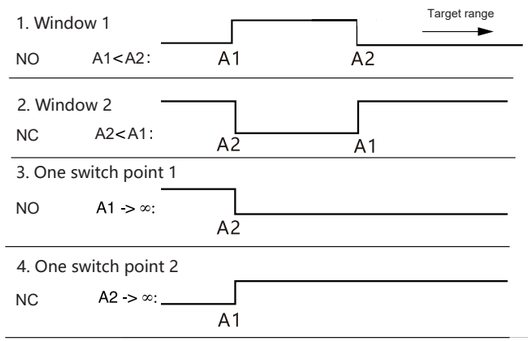


UB4000series

Output mode

E Switch Mode

By writing the values of points A1 and A2 through the RS485 interface, the following five switch modes can be set:



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

30GM85

RS485

Advanced Features

> M30 Cylindrical
> Synronous function

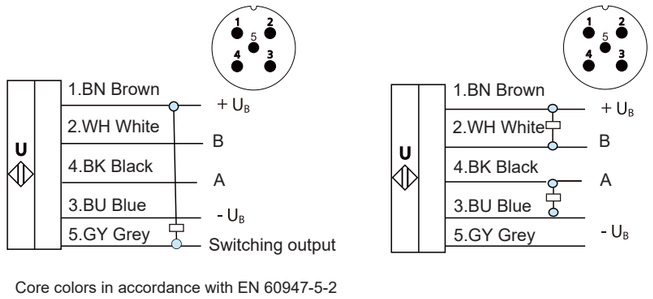
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or
  Analog current output 4-20mA
> Two digital outputs or one digital output + one analogue output
> Modbus 485 output
> Serial port upgradeable
> Temperature compensation

Technical Data Sheet

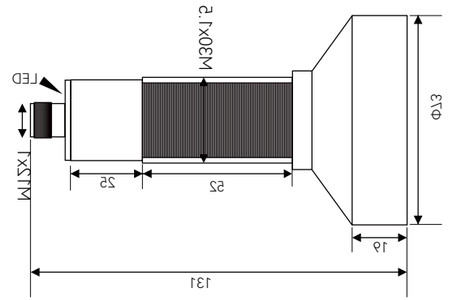
Model		UB6000-30GM85-R4E4-V15
Transducer frequency		65kHz
Measure range		350-6000mm
Adjustment range		370-6000mm
Angle		±10°
Repeatablity		±0.3% of full-scale value
Lag range		1% of the set switch distance
Response time		⩽300ms
Operating voltage		9-30VDC 10%Vpp
LED red light		Working status: Error
LED yellow light		Chang Liang: Target detected
LED blue light		Received command 485
LED green light		Constant light: Power connected
No-load current		⩽35mA
Output method		RS485 interface, NPN
Material		Nickel-plated brass
Protective class		IP67
Connection		V15 connector (M121), 5 pins
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		±2% of full scale value (with built-in temperature compensation).
Output	R4E4 R4E5	RS485 interface + NPN RS485 interface + PNP
	R4	RS485 interface (Modbus protocol)

Electric wiring



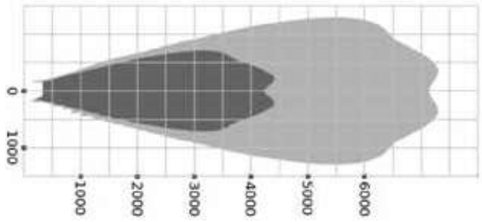
Core colors in accordance with EN 60947-5-2

Dimension



UB6000series

Reference curve

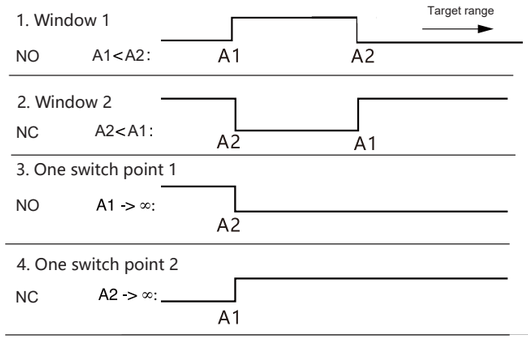


UB6000series

Output mode

E Switch Mode

By writing the values of points A1 and A2 through the RS485 interface, the following five switch modes can be set:



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

F77

Advanced Features

> Compact size, easy to install
> Short-range detection

Basic Features

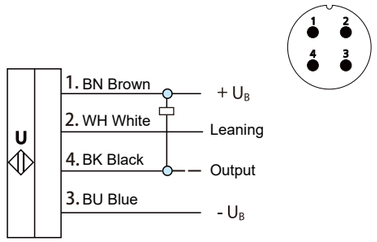
> 1 NPN or PNP switch output
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> Output can be changed via serial port upgrade
> Detection distance setting via learning line
> Temperature compensation

Technical Data Sheet

Model		UB250-F77K12-E0-V31 UB250-F77K12-E1-V31 UB250-F77K12-E2-V31 UB250-F77K12-E3-V31
Scope of testing		20-250mm
Blind spot		0-20mm
Resolution		0.17mm
Repeatablity		±0.15% of full-scale value
Absolute accuracy		±1% (built-in temperature drift compensation)
Response time		50ms
Switch hysteresis		2mm
Transducer frequency		300kHz
Power-on delay		≤250ms
Operating voltage		20...30V DC，10%Vpp
LED red light		Constant on: Switch status (open circuit) Flashing: Learning status, no target detected
LED yellow light		Constant on: Switch status (closed) Flashing: Learning status Target detected
No-load current		⩽30mA
Input type		With learning function
Material		Plastic, glass-filled epoxy resin
Protective class		IP67
Connection		4-core M12 connector
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		Serial port upgrade to change output type
Output	E0	NPN normally open
	E1	NPN normally closed
	E2	PNP normally open
	E3	PNP normally closed

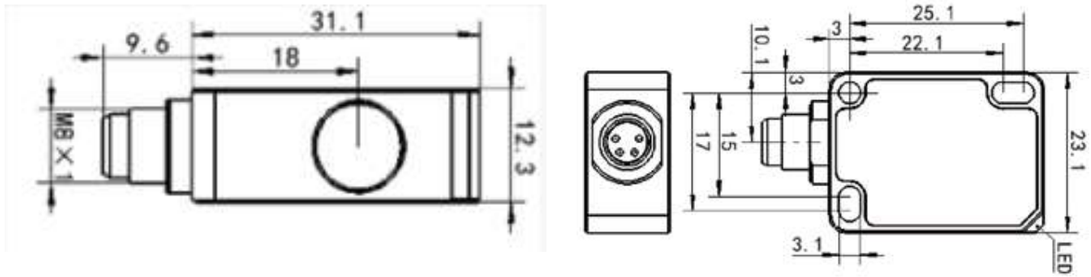
NIETZ

Electric wiring

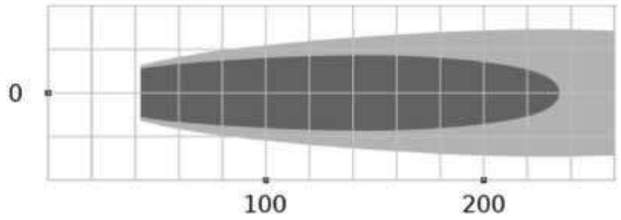


Core colors in accordance with EN 60947-5-2.

Dimension



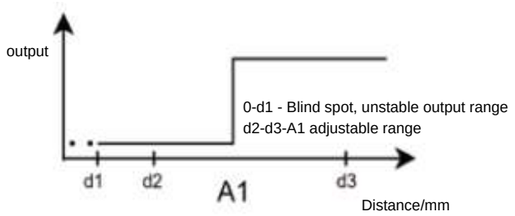
Reference curve

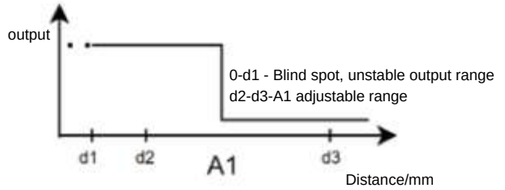


F77series

Output mode

Working mode: By setting the position of point A1, the working mode is as follows:





NIETZ

F40

Advanced Features

> Rotatable for detecting different directions
> Compact size, easy to install

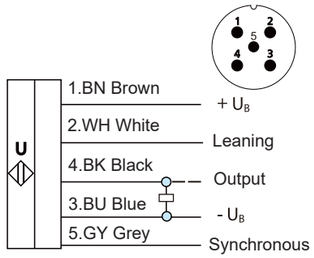
Basic Features

> One switching output NPN or PNP
> Analog voltage output 0-5/10V or Analog current output 4-20mA
> With synchronisation function
> Sound cone optional
> Output can be changed via serial port upgrade
> Detection distance setting via learning line
> Temperature compensation

Technical Data Sheet

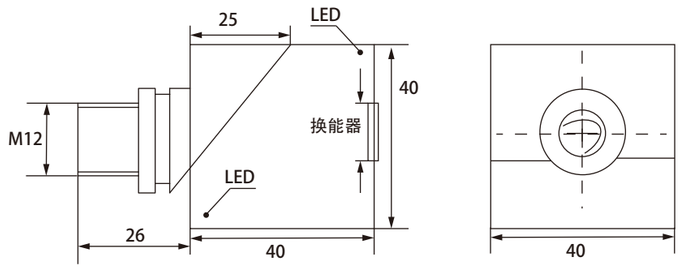
Model	UB500-F40-E4-V15	UB1000-F40-E4-V15	UB4000-F40-E4-V15
	UB500-F40-E5-V15	UB1000-F40-E5-V15	UB4000-F40-E5-V15
	UB500-F40-U5-V15	UB1000-F40-U5-V15	UB4000-F40-U5-V15
	UB500-F40-U10-V15	UB1000-F40-U10-V15	UB4000-F40-U10-V15
	UB500-F40-I-V15	UB1000-F40-I-V15	UB4000-F40-I-V15
	UB500-F40-TTL-V15	UB1000-F40-TTL-V15	UB4000-F40-TTL-V15
	UB500-F40-TTL1-V15	UB1000-F40-TTL1-V15	UB4000-F40-TTL1-V15
Measure range	40-500mm	60-1000mm	200-4000mm
Blind area	0-40mm	0-70mm	0-220mm
Angle	±7°	±7°	±8°
Response time	50ms	50ms	50ms
Transducer frequency	200kHz	200kHz	1120kHz
Response delay	50ms× N	100ms× N	110ms× N
Operating voltage	20-30VDC	9-30VDC	15-30VDC
Repeatablity	±0.15% of full-scale value		
Absolute accuracy	1% of the set switch distance		
LED red light	Working status: Error In learning mode, flashing: Target not detected		
LED yellow light	Constant on: Target detected within A1-A2 range Flashing: Target detected in learning mode		
LED green light	Constant light: Power connected		
No-load current	⩽35mA		
Input format	A1, learning line connected to -UB; A2, learning line connected to +UB One button function input		
Input/Output	A synchronous input/output		
Material	Nickel-plated copper sleeve, plastic fittings, glass-filled epoxy resin		
Protective class	IP67		
Connection	5 pins M12 connector		
Ambient temperature	-25℃~+70℃(248~343K)		
Storage temperature	-40℃~+85℃(233~358K)		
Temperature drift	±2% of full scale value (with built-in temperature compensation)		
Output	E4/E8	one switching output NPN, NO/NC/ Delay mode	
	E5/E9	one switching output NPN, NO/NC/ Delay mode	
	I	one analog current output, 4-20mA	
	U5/U10	one analog voltage output, 0-5V/0-10V	

Electric wiring

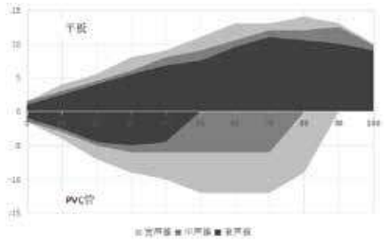


Core colors in accordance with EN 60947-5-2

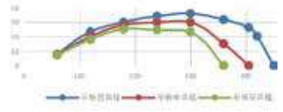
Dimension

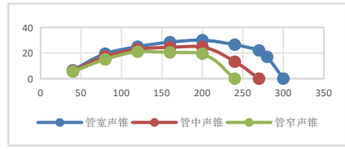


Reference curve



PVC pipe: diameter 25 mm
Flat plate: 100 mm × 100 mm
Unit: mm
Test conditions:
Power supply: 24V, 25° C,
Humidity 50%

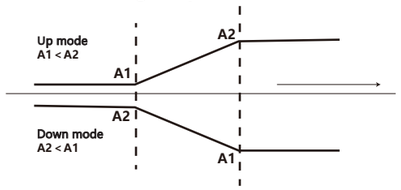




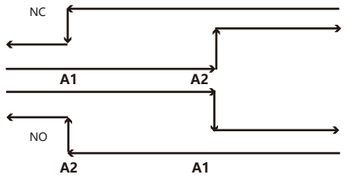
PVC pipe: diameter 75 mm
Flat plate: 300 mm × 300 mm
Unit: mm
Test conditions: 24V power supply, 25° C, 50% humidity

Output mode

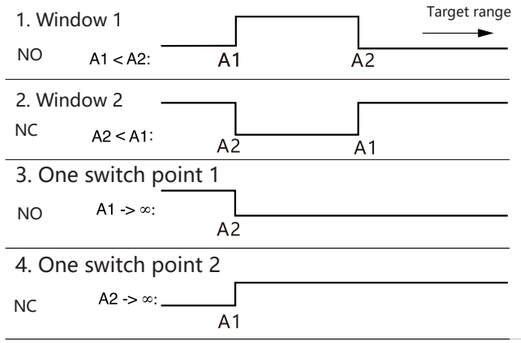
Two analog output modes of I/U5/U10



Two Switching delaying output modes of E8/E9



Five switching output modes of



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed
No object detected: Switch output open

Double-sheet detection

Advanced Features

> 3-channel control output
> Can be learned based on any material

Basic Features

> 3-channel NPN/PNP output
> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

Model	UDB60-18GM46-3E0-V16 UDB60-18GM46-3E1-V16 UDB60-18GM46-3E2-V16 UDB60-18GM46-3E3-V16
Scope of testing	20-60mm
No-load current	＜50mA
Transducer frequency	200kHz
Response delay	Single sheet approx. 17 ms, air approx. 17 ms, double sheet approx. 52 ms
Operating voltage	18-30VDC,10%Vpp

LED indicator light

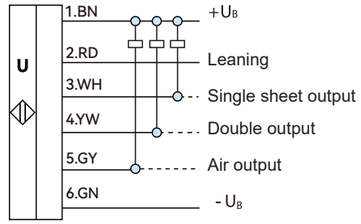
Mode	Status	Indicator light
Working mode	Single sheet	Green light
Working mode	Double sheet	Red light
Working mode	Air	Yellow light
Learning mode	Learning	Green light flashing
Learning mode	Successful learning	Alternating red and yellow lights (thin material), simultaneous red and yellow lights, flashing red light, flashing yellow light, simultaneous red and green lights (thick material)
Learning mode	Failure to learn	Red light on (approx. 2 seconds)

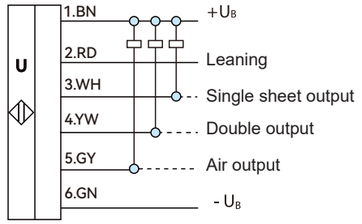
Input format	Learning line connection - UB, perform calibration of the object under test
Output format	3 NPNs or 3 PNPs
Material	Nickel-plated brass
Protective class	IP67
Connection	V16 connector (M121), 6-pin
Ambient temperature	-25℃~+70℃(248~343K)
Storage temperature	-40℃~+85℃(233~358K)
Temperature drift	Serial port upgrade to change output type

Output		
	3E0	3 NPNs, normally open load impedance must be ≤150kΩ
	3E1	3 NPNs, normally closed load impedance must be ≤150kΩ
	3E2	3 PNP, normally open
	3E3	3 PNP, normally closed

NIETZ

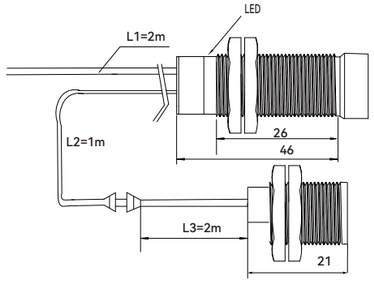
Electric wiring





Core colors in accordance with EN 60947-5-2.

Dimension



UDB60-18GM46 series

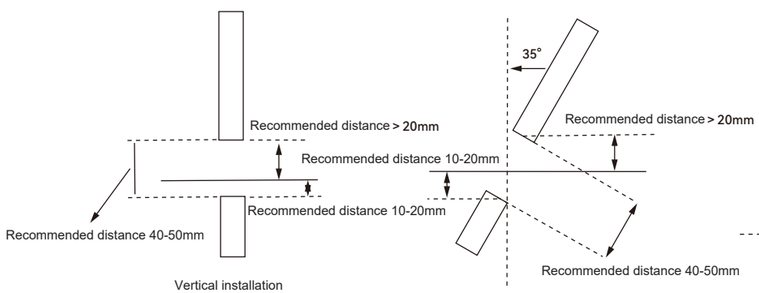
Study methods

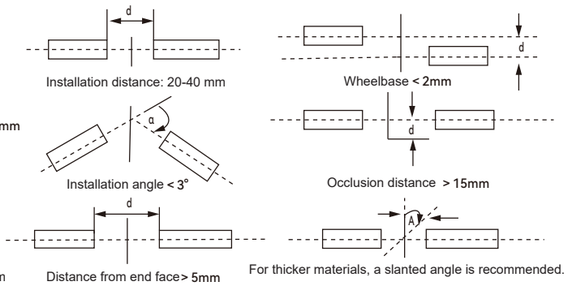
UDB60-18GM46 Series

1. Place the test object individually within the detection range and power on.
2. Short-circuit the learning line (red line) to the negative terminal (green line).
3. The green light flashes continuously for>3 seconds, indicating successful learning.
   (After successful learning, the product will no longer learn.)Learning failure scenarios:
   A flashing red light indicates the test object is too thick or the transmitter is not connected;
   A flashing yellow light indicates no test object is placed or the test object is too thin.
   After learning failure, the indicator light will briefly turn off and automatically re-learn.
4. Leave the learning line disconnected, then power on again for normal operation.

Installation method

Since ultrasonic sensors are directional, care must be taken when selecting the installation location.
It is recommended that the centre lines of the two transducers be aligned to achieve higher sensitivity.
When installing vertically, it is recommended that the transmitter face upwards.





Double-sheet detection

Advanced Features

> 3-channel control output
> Can be learned based on any material

Basic Features

> 3-channel NPN/PNP output
> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

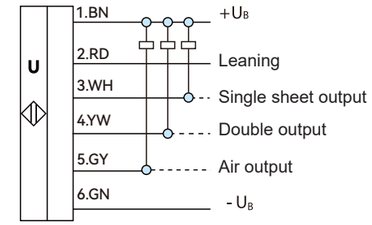
Model		UDB60-18GM75-3E0-VC UDB60-18GM75-3E1-VC UDB60-18GM75-3E2-VC UDB60-18GM75-3E3-VC
Scope of testing		20-60mm
No-load current		<50mA
Transducer frequency		200kHz
Response delay		Single sheet approx. 17 ms, air approx. 17 ms, double sheet approx. 52 ms
Operating voltage		18-30VDC,10%Vpp

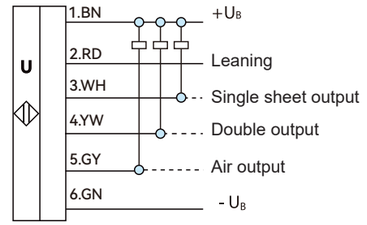
LED indicator light

Mode	Status	Indicator light
Working mode	Single sheet	Green light
Working mode	Double sheet	Red light
Working mode	Air	Yellow light
Learning mode	Learning	Green light flashing
Learning mode	Successful learning	Alternating red and yellow lights (thin material), simultaneous red and yellow lights, flashing red light, flashing yellow light, simultaneous red and green lights (thick material)
Learning mode	Failure to learn	Red light on (approx. 2 seconds)

Input format		Learning line connection - UB, perform calibration of the object under test
Output format		3 NPNs or 3 PNPs
Material		Nickel-plated brass
Protective class		IP67
Connection		VC, six-core cable, 2 metres
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		Serial port upgrade to change output type
Output	3E0	3 NPNs, normally open load impedance must be ≤150kΩ
	3E1	3 NPNs, normally closed load impedance must be ≤150kΩ
	3E2	3 PNP, normally open
	3E3	3 PNP, normally closed

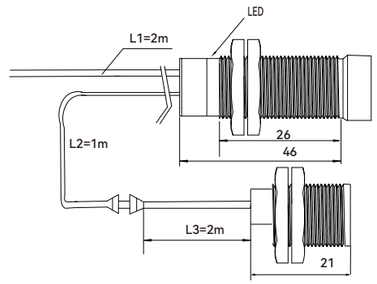
Electric wiring





Core colors in accordance with EN 60947-5-2.

Dimension



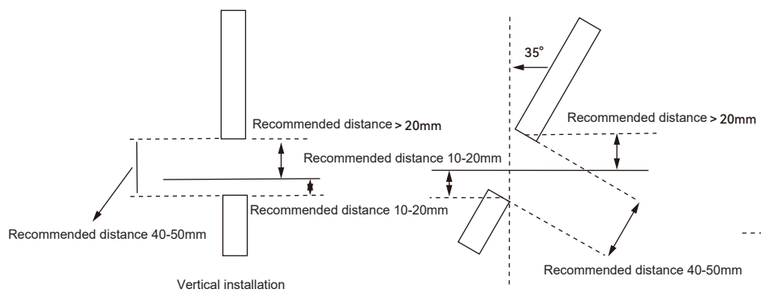
UDB60-18GM75 series

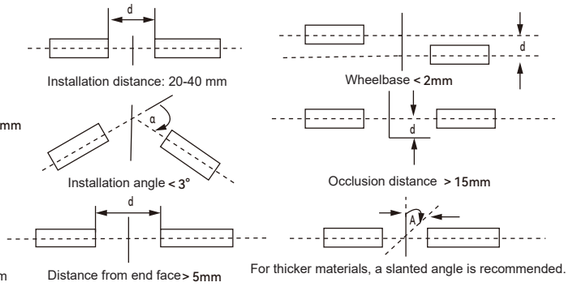
Study methods

UDB60-18GM75 Series
1. Place the test object individually within the detection range and power on.
2. Short-circuit the learning line (red line) to the negative terminal (green line).
3. The green light flashes continuously for>3 seconds, indicating successful learning.
(After successful learning, the product will no longer learn.)Learning failure scenarios:
A flashing red light indicates the test object is too thick or the transmitter is not connected;
A flashing yellow light indicates no test object is placed or the test object is too thin.
After learning failure, the indicator light will briefly turn off and automatically re-learn.
4. Leave the learning line disconnected, then power on again for normal operation.

Installation method

Since ultrasonic sensors are directional, care must be taken when selecting the installation location.
It is recommended that the centre lines of the two transducers be aligned to achieve higher sensitivity.
When installing vertically, it is recommended that the transmitter face upwards.





Double-sheet detection

Advanced Features

> 3-channel control output
> Can be learned based on any material

Basic Features

> 3-channel NPN/PNP output
> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

Model	UDB40-12GM75-3E0-VC UDB40-12GM75-3E1-VC UDB40-12GM75-3E2-VC UDB40-12GM75-3E3-VC
Scope of testing	20-40mm
No-load current	＜50mA
Transducer frequency	300kHz
Response delay	≤10ms
Operating voltage	18-30VDC,10%Vpp

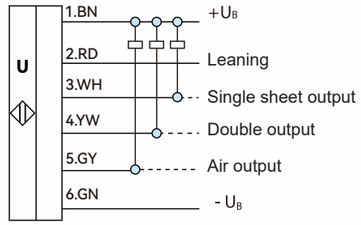
LED indicator light

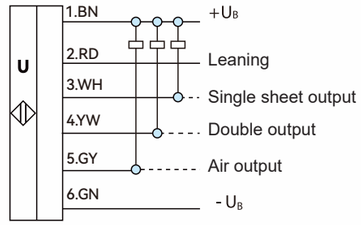
Mode	Status	Indicator light
Working mode	Single sheet	Green light
Working mode	Double sheet	Red light
Working mode	Air	Yellow light on (+ red light on: not aligned)
Learning mode	Successful learning	Red light flashing (material too thick) Yellow light flashing (material too thin)
Learning mode	Failure to learn	Green light flashing

Input format	Learning line connection - UB, perform calibration of the object under test
Output format	3 NPNs or 3 PNPs
Material	Nickel-plated brass
Protective class	IP67
Connection	VC, six-core cable, 2 metres
Ambient temperature	-25℃~+70℃(248~343K)
Storage temperature	-40℃~+85℃(233~358K)
Temperature drift	Serial port upgrade to change output type

Output		
	3E0	3 NPNs, normally open load impedance must be ≤150kΩ
	3E1	3 NPNs, normally closed load impedance must be ≤150kΩ
	3E2	3 PNP, normally open
	3E3	3 PNP, normally closed

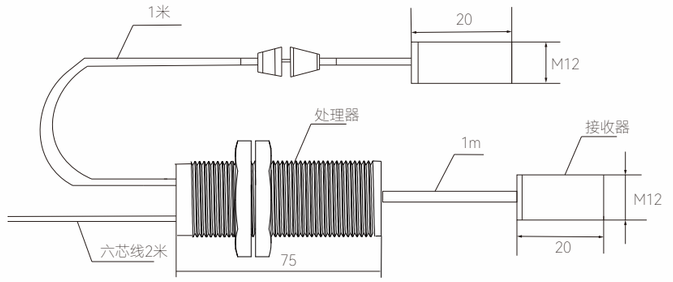
Electric wiring





Core colors in accordance with EN 60947-5-2.

Dimension



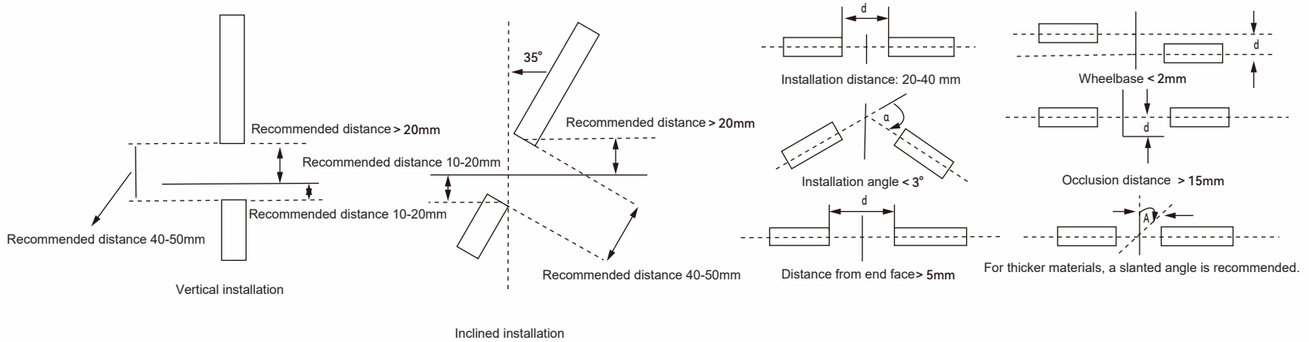
UDB40-12GM75 series

Study methods

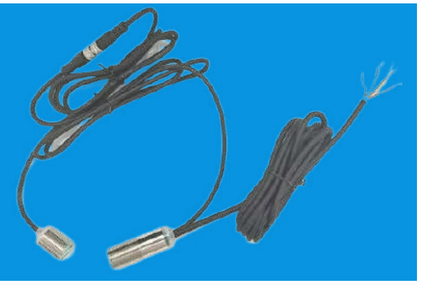
UDB60-18GM46 Series
1. Place the test object individually within the detection range and power on.
2. Short-circuit the learning line (red line) to the negative terminal (green line).
3. The green light flashes continuously for>3 seconds, indicating successful learning.
(After successful learning, the product will no longer learn.)Learning failure scenarios:
A flashing red light indicates the test object is too thick or the transmitter is not connected;
A flashing yellow light indicates no test object is placed or the test object is too thin.
After learning failure, the indicator light will briefly turn off and automatically re-learn.
4. Leave the learning line disconnected, then power on again for normal operation.

Installation method

Since ultrasonic sensors are directional, care must be taken when selecting the installation location.
It is recommended that the centre lines of the two transducers be aligned to achieve higher sensitivity.
When installing vertically, it is recommended that the transmitter face upwards.



Double-sheet detection



Advanced Features

> 3-channel control output
> Can be learned based on any material

Basic Features

> 3-channel NPN/PNP output
> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

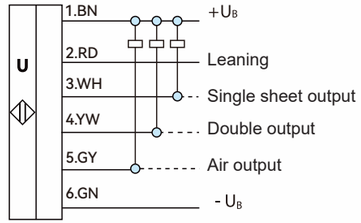
Model		UDB60-18GM46-3E0-V16 UDB60-18GM46-3E1-V16 UDB60-18GM46-3E2-V16 UDB60-18GM46-3E3-V16
Scope of testing		20-60mm
No-load current		＜50mA
Transducer frequency		200kHz
Response delay		Single sheet approx. 17 ms, air approx. 17 ms, double sheet approx. 52 ms
Operating voltage		18-30VDC,10%Vpp

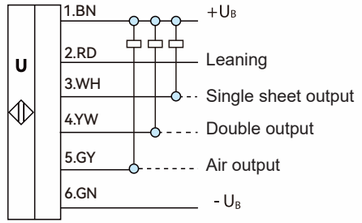
LED indicator light

Mode	Status	Indicator light
Working mode	Single sheet	Green light
Working mode	Double sheet	Red light
Working mode	Air	Yellow light
Learning mode	Learning	Green light flashing
Learning mode	Successful learning	Alternating red and yellow lights (thin material), simultaneous red and yellow lights, flashing red light, flashing yellow light, simultaneous red and green lights (thick material)
Learning mode	Failure to learn	Red light on (approx. 2 seconds)

Input format		Learning line connection - UB, perform calibration of the object under test
Output format		3 NPNs or 3 PNPs
Material		Nickel-plated brass
Protective class		IP67
Connection		VC, six-core cable, 2 metres
Ambient temperature		-25℃~+70℃(248~343K)
Storage temperature		-40℃~+85℃(233~358K)
Temperature drift		Serial port upgrade to change output type
Output	3E0	3 NPNs, normally open load impedance must be ≤150kΩ
	3E1	3 NPNs, normally closed load impedance must be ≤150kΩ
	3E2	3 PNP, normally open
	3E3	3 PNP, normally closed

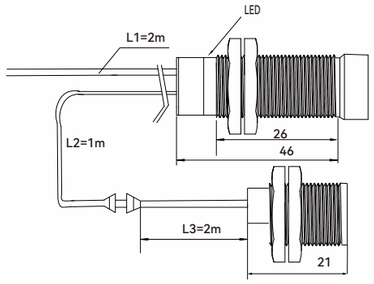
Electric wiring





Core colors in accordance with EN 60947-5-2.

Dimension



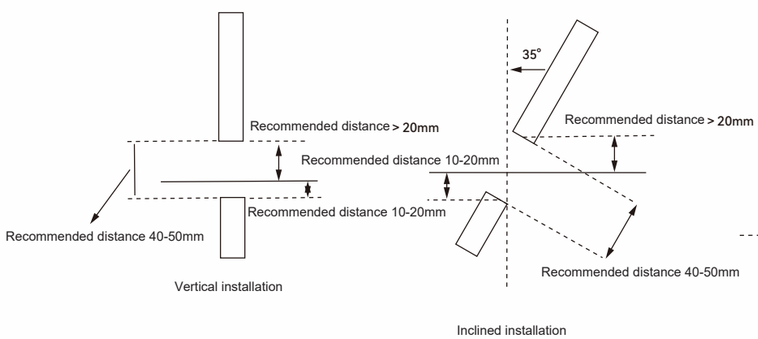
UDB60-18GM46 series

Study methods

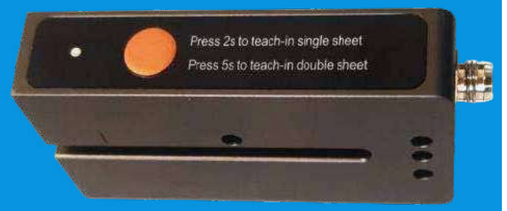
UDB60-18GM46 Series
1. Place the test object individually within the detection range and power on.
2. Short-circuit the learning line (red line) to the negative terminal (green line).
3. The green light flashes continuously for>3 seconds, indicating successful learning.
(After successful learning, the product will no longer learn.)Learning failure scenarios:
A flashing red light indicates the test object is too thick or the transmitter is not connected;
A flashing yellow light indicates no test object is placed or the test object is too thin.
After learning failure, the indicator light will briefly turn off and automatically re-learn.
4. Leave the learning line disconnected, then power on again for normal operation.

Installation method

Since ultrasonic sensors are directional, care must be taken when selecting the installation location.
It is recommended that the centre lines of the two transducers be aligned to achieve higher sensitivity.
When installing vertically, it is recommended that the transmitter face upwards.



Tag sensor



Advanced Features

> NPN switch output
> Label and carrier material identification
> Single/double sheet detection

Basic Features

> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

Model	UDB5-F85-E4-V31
Scope of testing	150-2500mm
Smallest detectable object	Spacing between labels/label size- 2 mm
Switching frequency	1.2kHz
Output current	100mA
Operating voltage	10-30 VDC, reverse polarity protection

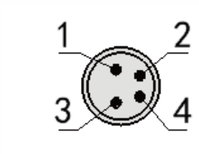
LED indicator light

Mode	Status	Indicator light
Working mode	Single sheet	Green light
Working mode	Double sheet	Red light
Working mode	Air	Yellow light
Learning mode	Single-sheet learning	Press and hold the button for more than 2 seconds. The green light will flash. Release the button to enter learning mode (if successful, the green light will flash 3 times; if unsuccessful, the red light will flash 3 times).
Learning mode	Double-sided learning	Press and hold the button for more than 5 seconds to switch from a flashing green light to a flashing yellow light. Release the button to enter learning mode (successful: 3 flashes of green light; unsuccessful: 3 flashes of red light).

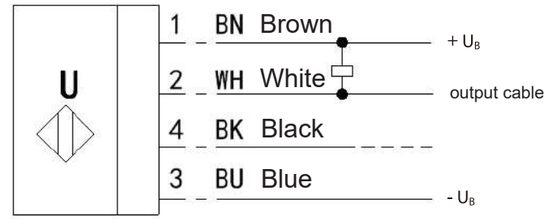
Response delay		250μs
Output format		NPN
Material		Metal, aluminium
Protective class		IP67
Connection		V31 connector (M81), 4 pins
Ambient temperature		-25℃~+70℃
Storage temperature		-40℃~+85℃
Temperature drift		Serial port upgrade to change output type
Output	E4	NPN

NIETZ

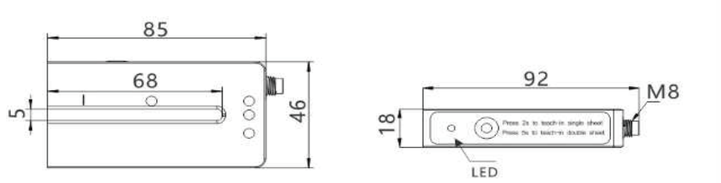
Electric wiring



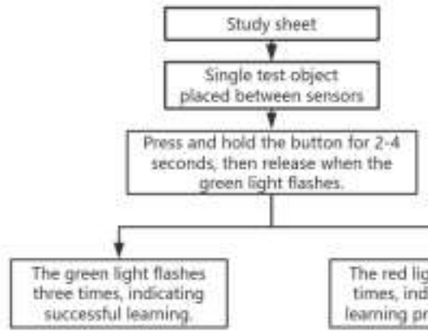
V31 connector

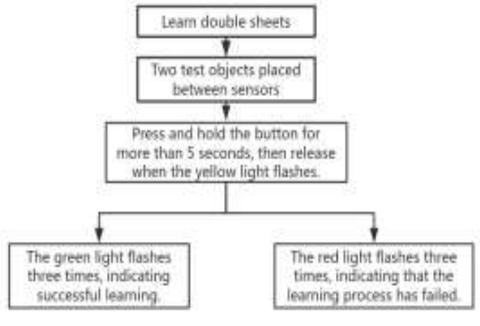


Dimension



Study methods





Installation method

- Place the label or substrate within the effective area of the slot sensor.
- Through multiple tags via a slot-shaped sensor

NIETZ

Material testing

Advanced Features

> Rotatable for detecting different directions
> Compact size, easy to install

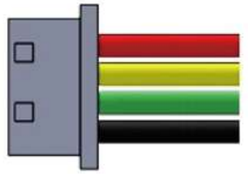
Basic Features

> 3-channel NPN/PNP output
> Detection of single and double sheets of various materials
> The output mode can be changed via serial port upgrade
> Achieve learning functions for different materials through Learning lines
> Temperature compensation

Technical Data Sheet

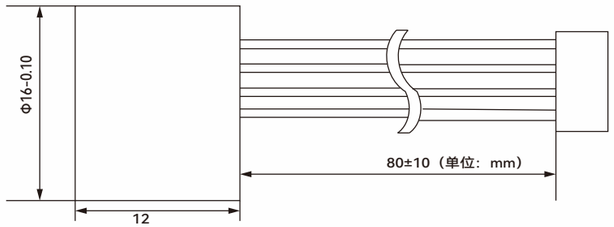
Model		UB30-16GK12-TTLE5-VC UB300-16GK12-TTL-VC UB45-16GK12-IIC-VC UB100-16GK12-TTL-VC UB200-16GK12-E2-VC UB300-16GK12-TTL-VC UB300-16GK12-TTL8-VC
Scope of testing		50-100mm
Material testing		Wooden flooring or tiles, carpets
Transducer frequency		300kHz
Response delay		≤20ms
Operating voltage		5VDC,10%Vpp
Detection principle		Different materials have different ultrasonic reflection intensities and echo heights. For example, flat and smooth materials such as wooden floors and tiles reflect sound waves more strongly. The echo height is relatively high however, materials such as carpets have weak sound wave reflection and a relatively low echo height. By utilising the difference in echo height, different materials can be identified.
No-load current		≤11mA
Operating temperature		0℃-40℃
Storage temperature		0℃-80℃
Protective class		IP67
Connection type		VC, 1.25 mm terminal, A1251H-4P/CT
Shell material		Plastic, epoxy resin + glass beads
Weight		4g
Output	TTL/TTLE5/TTL8	TTL232 interface
	IIC	IIC communication protocol
	E2	PNP normally open* (*output high or low level) No target detected: low level 0-0.5V; Target detected: high level 2.8-3.8V

Electric wiring

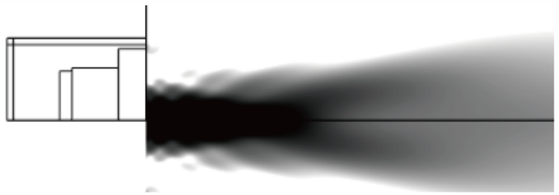


Red wire: Power positive
Yellow line: R (sensor input)
Green line: T (sensor output)
Black wire: Power negative

Dimension



Response characteristic curve



NIETZ

Material testing

Advanced Features

> Rotatable for detecting different directions
> Compact size, easy to install

Basic Features

> 3-channel NPN/PNP output
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> Achieve learning functions for different materials through Learning lines
> Temperature compensation

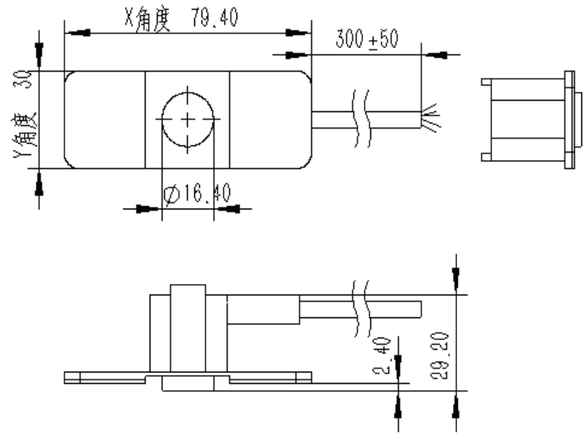
Technical Data Sheet

Model	UB1000-17GKW29-TTL3-VC-58 UB1000-17GKW29-TTL-VC-58 UB1000-17GKW29-TTL-VC-58 UB2000-17GKW29-TTL-VC-58 UB2000-17GKW29-TTL-VC-58-T12 UB1000-17GKW29-TTL1-VC-58 UB1000-17GKW29-TTL2-VC-58
Scope of testing	150-1000mm
Blind spot	0-150mm
Transducer frequency	58kHz
Response delay	100ms
Operating voltage	5-12VDC,10%Vpp
Protective circuit	reverse polarity protection, transient overvoltage protection
No-load current	≤25mA
Ambient temperature	-20℃~+70℃(253~343K)
Storage temperature	-40℃~+85℃(233~358K)
Protective class	IP65
Connection	VC, 1.25 mm terminal, 5-pin, M 51146
Material	Plastic, transducer aluminium
Weight/Line Length	28g/0.3m
Output	Digital TTL232 interface

Electric wiring

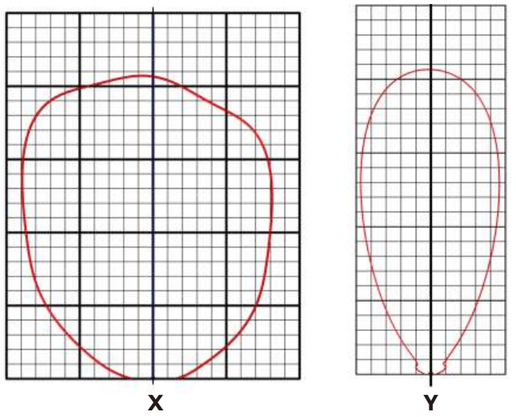
Blue line: TX
Green line: RX
Yellow line: synchronisation line
Black line: Power negative
Brown wire: Power positive

Dimension



Recommended hole size:
Hole diameter 16.4 mm
Shell thickness: 2.4 mm
Unit: mm

Response characteristic curve



Dark colour: 25 mm diameter PVC pipe
Unit: mm
Light colour: 100 mm × 100 mm flat plate
Note: There may be discrepancies. For reference only.

Note: The detection area of this proximity switch is not rotationally symmetrical. Please pay attention to the angle when installing.

APPLICATION CASE
应用案例

ultrasonic sensor

超声波传感器是一种很有影响力的传感器。它们功能强大,适用于各种应用,并开辟了广泛的应用范围,从工厂自动化到工程机械,以及市场上一些最困难和最极端的应用。

Ultrasonic sensor is a very influential sensor. We have powerful functions and are suitable for various applications, and have opened up a wide range of applications, from factory automation to engineering machinery, as well as some of the most difficult and extreme applications in the market.

料位检测

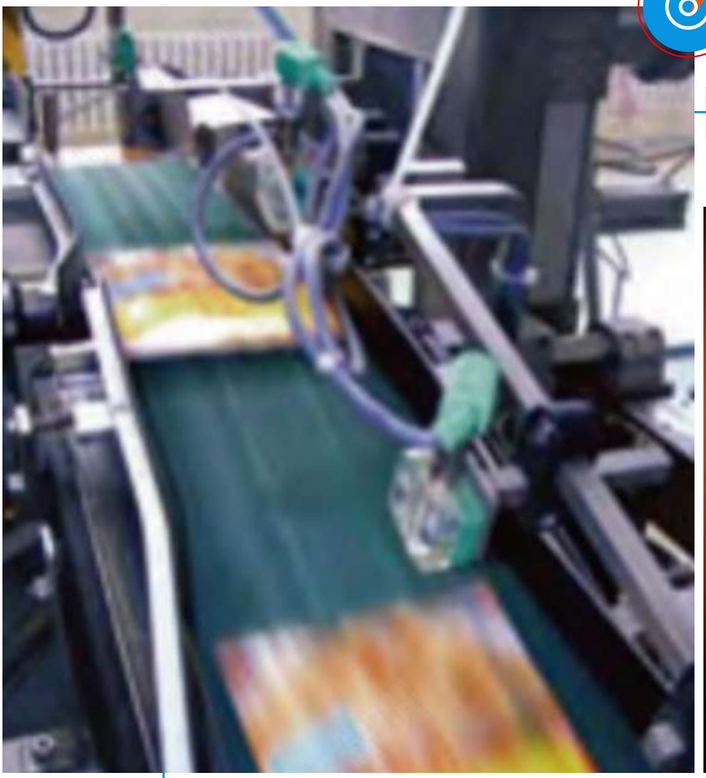
Material level detection

由于超声波是用超声波脉冲从传感器传到介质表面。计算能级高度所需的时间，目标的化学性质和物理性质不会影响探测。牛奶，油漆，化学材料和，以及泥浆或颗粒物质也可以准确地检测测量。

For material level detection, ultrasonic wave is transmitted from sensor to medium surface by ultrasonic pulse.

The time required to calculate the energy level height, and the chemical and physical properties of the target will not affect the detection.

Milk, paint, chemicals and, as well as mud or particulate matter can also be accurately measured.



工业机械手

Industrial manipulator

超声波传感器检测或用于做安全警示检测(人靠近机器)，电路板制造过程中，机械手抓取电路板前超声波传感器检测电路板是否到位。由于电路板颜色不同，会出现光吸收或反射现象，所以用光电接近开关会出现假阳性的情况。拆叠时，用传感器检测手与物体之间的距离，避免距离过近对物体造成损伤，距离过远对物体不稳定。

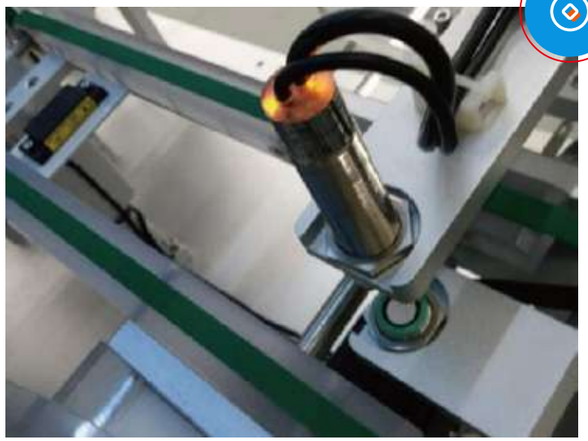
Ultrasonic sensor detection or used to do safety warning detection (people close to the machine), circuit boardmanufacturing process, manipulator grab circuit board before the ultrasonic sensor detection circuit board is in place. Because the circuit board has different colors,there will be light absorption or reflection phenomenon, so there is a false positive situation with photoelectricproximity switch.When stacking and disstacking,use sensors to detect the distance between the hand and the object to avoid damage to the object if the distance is too close and the object is unstable if the distance is too far.

工程机械

Construction machinery

为工程机械设计的传感器也可以用于恶劣的户外环境。由于灰尘、污垢和化学物质在现代农业中受影响较小，在工业机械中，超声波传感器也可以稳定工作。超声波能有效检测作物高度、种子与地面的距离，或者是谷堆的高度。

Sensors specially designed for construction machinery can also be used in harsh outdoor environments. Because dust, dirt and chemicals are less affected in modern agriculture, ultrasonic sensors can also work stably in industrial machinery. Ultrasound can effectively detect the height of crops, the distance between seeds and the ground, or the height of grain piles.



超声波双片检测

Ultrasonic double piece inspection

利用超声波的传输特性来检测能量通过介质的强度，判断被检测对象是一个或多个。

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