Ultrasonic Sensor

Diffuse reflective, digital output

UA30ASDxBPM1IO

- Ultrasonic sensor configurable as a sensor or barrier with IO-Link
- M30 Nickel plated brass housing
- Sensing range: 300 … 6000 mm
- 3 different teach modes
- Supply voltage: 18 to 30 VDC
- Linear accuracy <0.2% or <0.5%
- Small blindzone
- Resistant to dirt
- Switching hysteresis by IO-Link
- Protection degree IP67
- M12 connector

Product description

A family of diffuse ultrasonic sensors with IO-Link in nickel-plated brass housing and with sensing ranges from 300-3000 mm or from 600-6000 mm and a resolution as low as 1.0 mm. The sensor contains only a digital output. The output is NPN or PNP, NO or NC which forms a window detection.

The sensor is the ideal choice for distance measurement, level measurement, diameter measurement or loop control. Microprocessor controlled digital filtering makes the sensor immune to most electromagnetic interferences.

Part selection key

U	-	Ultrasonic sensor
A	-	Cylindric housing
30	-	M30 housing
A	-	Nickel plated brass housing
S	-	Short housing
D	-	Diffuse reflective
X	30	Rated operating distance: 3000 mm
	60	Rated operating distance: 6000 mm
B	-	Digital output
P	-	Switching output: Push-pull, NPN, PNP, 150 mA, NO/NC, switchable
M1	-	Connector, M12
IO	-	IO-Link version

Part selection

Rated operating distance	Output	Code
3000 mm	Digital output	**UA30ASD30BPM1IO**
6000 mm	Digital output	**UA30ASD60MPM1IO**

Features

Main operation data

Functional principle	Ultrasonic sensor, Ultrasonic barrier
Functional principle details	• Teach • Out 1 • IO-Link
Switching modes	• Push-pull • 150 mA • NO/NC
Sensing	
Sensing distance	300 - 3000 mm (UA30ASD30) 600 - 6000 mm (UA30ASD60)
Rated operating distance (S_n)	3000 mm, standard plate 200 x 200 mm (UA30ASD30) 6000 mm, standard plate 200 x 200 mm (UA30ASD60)
Adjustment range (Teach-in)	300 - 3000 mm (UA30ASD30) 600 - 6000 mm (UA30ASD60)
Blind zone	300 mm (UA30ASD30) 600 mm (UA30ASD60)
Resolution	1.0 mm
Sensitivity adjustment	Remote teach
Reference object	200 x 200 mm or Ø20 mm
Hysteresis	Adjustable via IO link: **5 ***…50 mm
Frequency of operating cycles (f)	< 3 Hz (UA30ASD30) < 2 Hz (UA30ASD60)
Response times	≤ 300 ms
Temperature drift	≤ 0.2%/S_n (uncompensated) ≤ 1.5%/S_n (compensated)
Ultrasonic information	
Osciliation frequency	125 kHz (UA30ASD30) 80 kHz (UA30ASD60)
Modulation frequency	100 Hz
Linear accuracy	< 0.2 % (UA30ASD30) < 0.5 % (UA30ASD60)
Reproducibility	< 2 mm (UA30ASD30) < 4 mm (UA30ASD60)
Beam angle	± 5° at 300 mm and ± 2° at 3000 mm (UA30ASD30) ± 5° at 600 mm and ± 2° at 6000 mm (UA30ASD60)

*** Factory settings** - see options in “Smart functions - IO-Link selectable”

Electrical data

Power supply	
Rated operational voltage (U_B)	18 - 30 VDC
Ripple (U_{rpp})	≤ 10%
No load supply current (I_o)	≤ 40 mA (24 VDC)
Power-ON delay	≤ 300 ms
Outputs	
Switching output	• **Push-pull ***, NPN, PNP • 150 mA • N.O. / N.C.
Rated operational current (I_e)	≤100 mA
Voltage drop (U_d)	≤ 2 VDC

*** Factory settings** - see options in “Smart functions - IO-Link selectable”

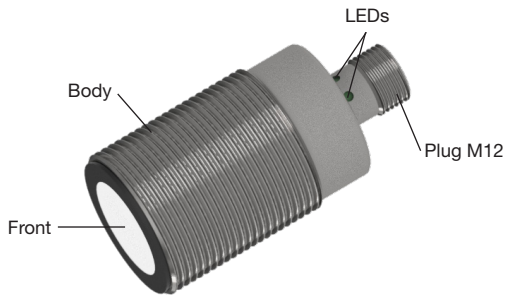
Environmental data

Ambient temperatures	
Operating	-25°C…+70°C (-13°F…+158°F)*
Storage	-25°C…+70°C (-13°F…+158°F)*
Mechanical influences	
Vibration	10…55 Hz,1.0 mm/15 g (EN IEC 60068-2-6)
Shock	30 gn / 11 ms, 3 pos, 3 neg pr axis (EN IEC 60068-2-27)
Categorization	
Overvoltage category	III (EN IEC 60664; EN IEC 60947-1)
Degree of protection	IP67(EN IEC 60529; EN IEC 60947-1)
Safety (electrical)	
Protections	Short circuits and reverse polarity (except for the analog output PIN2)
Rated insulation voltage (U_i)	500 VDC
Dielectric insulation voltage	≥ 500 VAC rms, 50/60 Hz for 1 min
EMC immunity standard	EN IEC 60947-5-2 / EN IEC 61000-6-2
EMC immunity test	
Electrostatic discharge	± 8 kV @ air discharge ± 4 kV @ contact discharge (IEC 61000-4-2)
Electromagnetic field	10 V/m (IEC 61000-4-3)
Fast transient	± 2 kV / 5 kHz (IEC 61000-4-4)
Wire conducted noise	3 Vrms (IEC 61000-4-6)

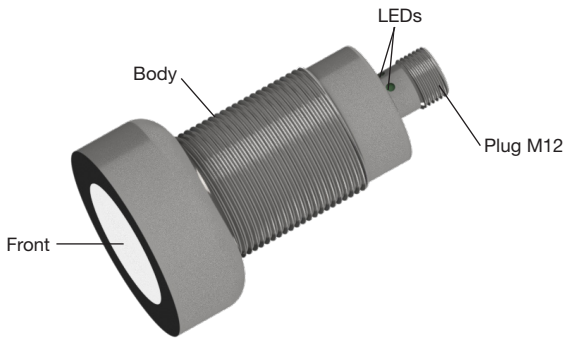
* Do not bend the cable in temperatures below -10°C

Structure

Housing



UA30ASD30

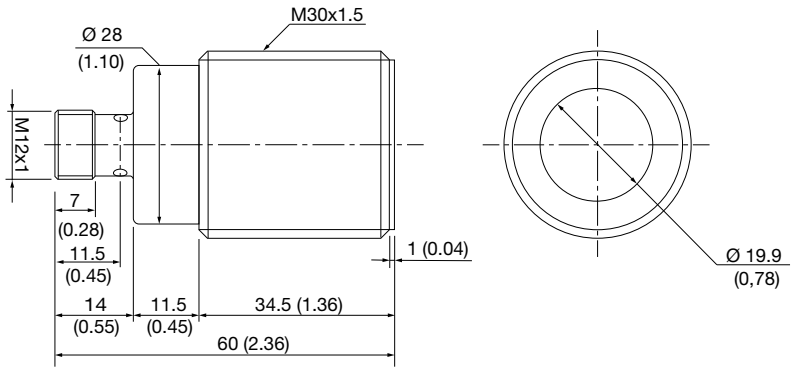


UA30ASD60

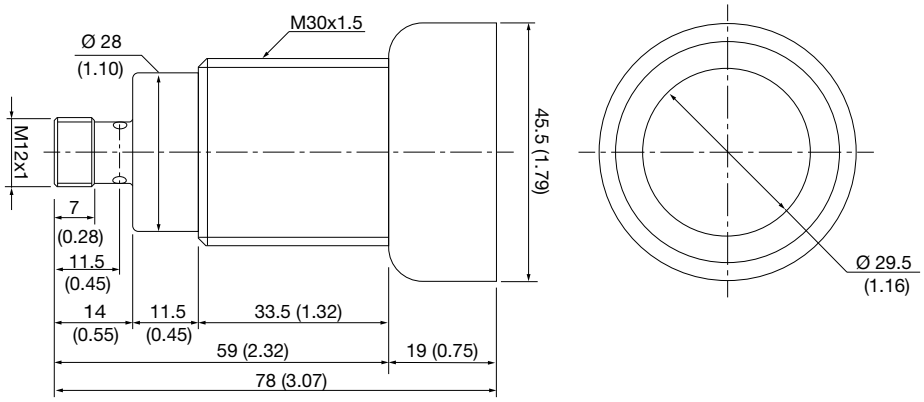
Body	Nickel plated brass
Front	Epoxy resin
Sealing front	PUR
Thread	M30 x 1.5
Dimensions	M30 x 60 mm (UA30ASD30) M30 x 78 mm (UA30ASD60)
Weight	70 g (UA30ASD30) 140 g (UA30ASD60)
Plug	M12, 4 pin male connector

Dimensions in mm (inch)

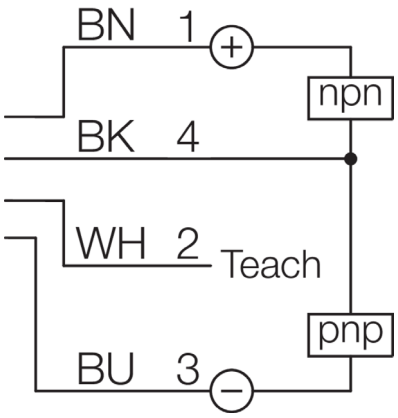
UA30ASD30

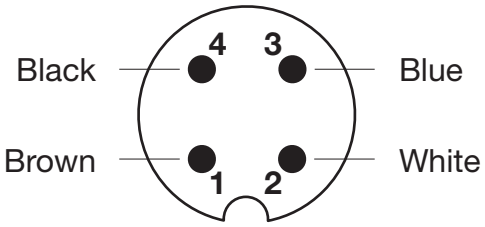


UA30ASD60



Connection and wiring





LED indication

Green LED	Status
Yellow LED	Switching output

Detection diagram

UA30ASD30

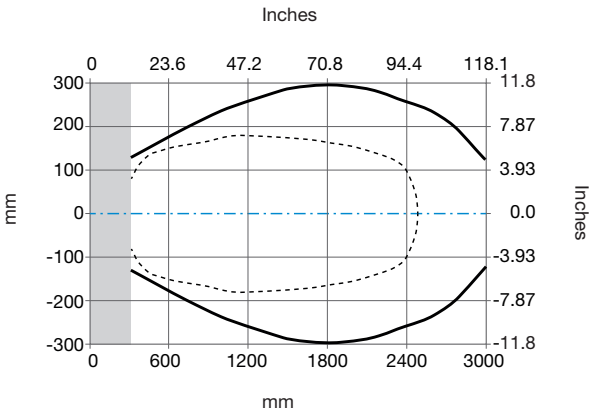


Plate 200 x 200 mm
Round bar Ø 20 mm

UA30ASD60

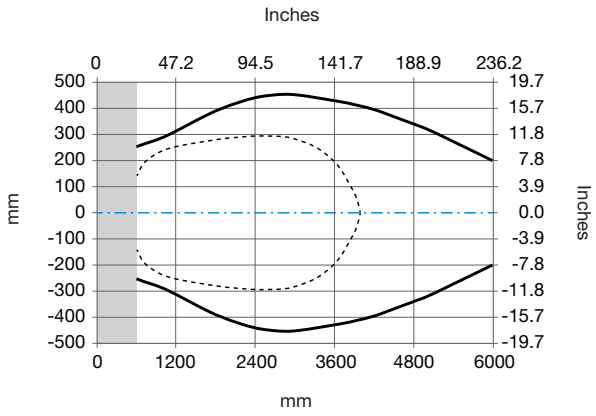
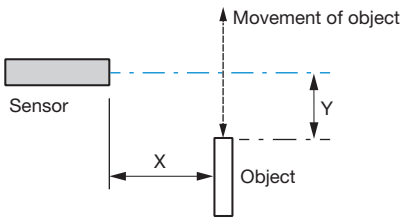


Plate 200 x 200 mm
Round bar Ø 20 mm



Compatibility and conformity

Approvals and markings

General reference	Sensor designed according to EN IEC 60947-5-2
MTTFd	UA30ASD30: 128.2 years (EN ISO 13849-1, SN 29500) UA30ASD60: 126.8 years (EN ISO 13849-1, SN 29500)
CE-marking	CE
Approvals	c UL us LISTED (IND. CONT. EQ. 29W7) UKCA

IO-Link

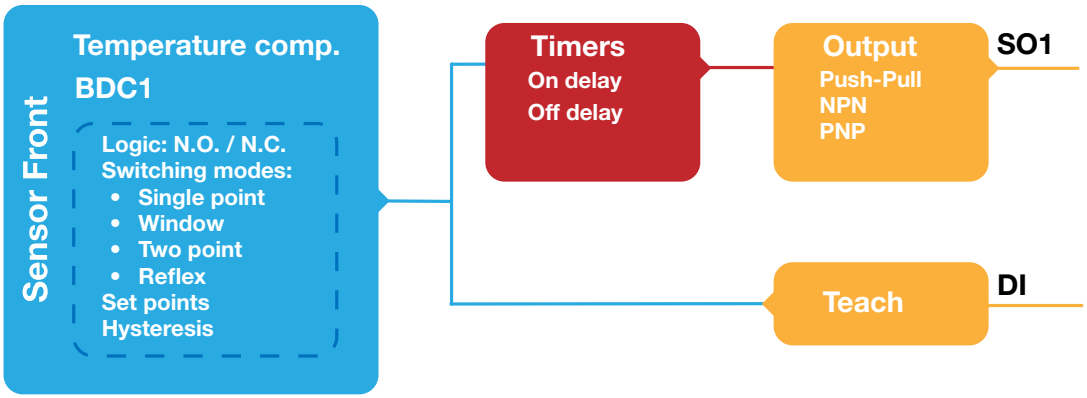
IO-Link information	
Revision	1.1
Transmission rate	COM2 (38.4 kbaud)
SDCI-Norm	EN IEC 61131-9
Profile	Smart sensor profile, common profile
Min. cycle time	8 ms
SIO mode	Yes
Min. master port class	A (4-pin)
Process data lenght	16 bit

IO-Link Functions

Smart functions - IO-Link selectable

Input selector (BDC1)	• Deactivated • Single point • Window • Two point • Reflex • Set points • Hysteresis
Timer mode (SO1)	• **Disabled *** • ON delay • OFF delay
Output Inverter	• N.O. • N.C.
Sensor output SO1	• PNP • NPN • Push-pull
Sensor input DI	• Teach
Diagnostic parameters	• Sensor diagnostics • Temperature diagnostics • Operating diagnostics: Operating hours, Number of power cycles • Error count • Device status
Events	Maintenance, temperature and short circuit events
Observations	Readable via IO-link: Analog values, Switching outputs, Switching channels

*** Factory settings**



Delivery contents and accessories

Delivery contents

- Ultrasonic sensor: UA30ASDxBPM1IO
- 2 x M30 nuts
- Packaging: Carton box

Accessories

- Mounting bracket: AMB30-A or AMB30-S to be purchased separately
- Connector type: CON.14NF... series to be purchased separately

Further information

User manual	http://cga.pub/?c22c29	
Mounting brackets	http://cga.pub/?68adbc	
Connectors	http://cga.pub/?d91364	
Carlo Gavazzi website	www.gavazziautomation.com	

Please refer to the manual for in-depth explanations.