Ultrasonic
Diffuse, PNP or NPN Outputs
Type M12



- **M12 stainless steel housing**
- **Sensing distance: 25 - 200 mm**
- **Remote Teach by wire**
- **Outputs: 1 switching outputs PNP or NPN**
- **Setup of NO or NC via Remote teach**
- **Power supply: 10 to 30 VDC**
- **8° beam angle**
- **Protection: Short-circuit, reverse polarity, transients**
- **Protection degree IP 65**
- **M12 plug, 4 pin**

Product Description

A self-contained multi function diffuse ultrasonic sensor with a sensing range of 25 to 200 mm. 1 switching output - easily set up for NO or NC switching modes and adjusted by teach-in - makes it ideal for level control tasks in a wide variety of applications. A Stainless steel housing provides the perfect packaging for the sofisticated microprocessor controlled and digitally filtered sensor electronics. Excellent EMC performance and precision are typical features of this sensor based on true distance measurement.

Ordering Key

UA12BLD02PPM1TR

- **Ultrasonic sensor**
- **Housing style**
- **Housing size**
- **Housing material**
- **Housing length**
- **Detection principle**
- **Sensing distance**
- **Output type**
- **Output configuration**
- **Connection**
- **Remote teach**

Type Selection

Housing dimensions	Connection	Rated operating dist. (S_n)	Outputs	Ordering no.
M12 x 79 mm	Plug M12, 4 pin	25-200 mm	1 x PNP, NO/NC	**UA12BLD02PPM1TR**
M12 x 79 mm	Plug M12, 4 pin	25-200 mm	1 x NPN, NO/NC	**UA12BLD02NPM1TR**

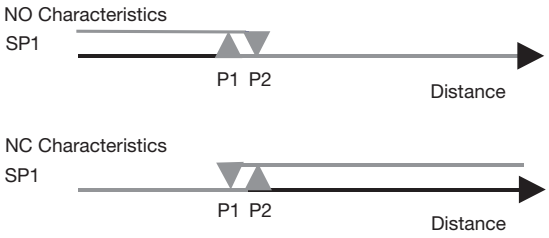
Technical Data

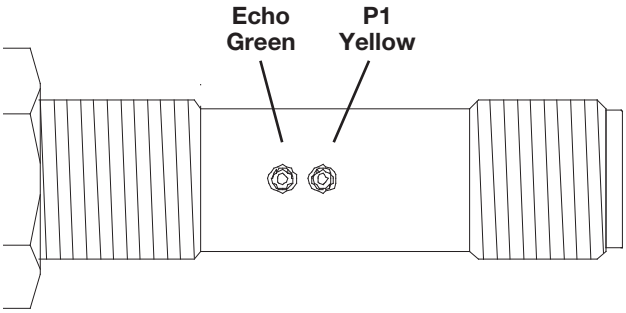
Rated operational volt. (U_e)	10 to 30 VDC (ripple included)
Ripple	10%
Output current (I_e)	max. 100 mA (continuous)
No-load supply current (I_o)	≤ 35 mA
Protection	Short-circuit, transients and reverse polarity
Rated insulation voltage	> 1 kV
Output	1 PNP or NPN open coll. NO or NC via Teach
Power-on delay	< 400 ms
Voltage drop (U_d)	< 1.4 V
Off-state current (I_r)	< 100 µA
Indication	Set points, 1 LED, yellow Echo, 1 LED, green
Rated operating distance	25-200 mm

Operating frequency	20 Hz
Carrier Frequency	400 kHz
Response time	10 ms (target speed 1 m/s) 25 ms (step response)
Hysteresis (H) (differential travel)	2%
Repetability	0.3 mm
Temperature compensation	Yes
Beam angle	12°
Ambient temperature Operating and Storage	-20° to +70°C (-4° to +158°F)
Degree of protection	IP 65
Housing material	Stainless steel
Connection Cables for plug (M1)	Plug M12, 4-pin CONB14 series
Weight	22 g
Tightening torgue	15 Nm
CE-marking	Yes

Switching Operation

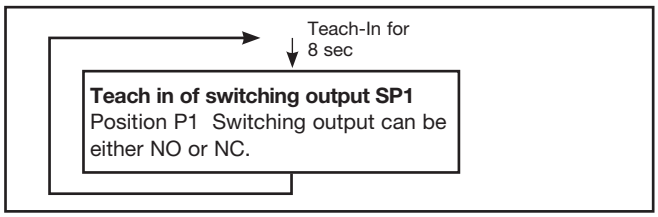
Normal Switching Operation





Teach in of output

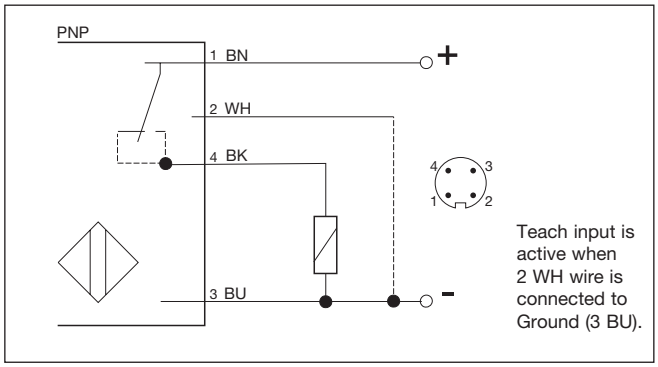
All these functions may be programmed/taught by means of the Teach-in input (pin 2) present in the connector. Each mode has a unique indication using the Echo, P1 and P2 LEDs. The programming/Teach-In procedure is shown in the following flow diagram:

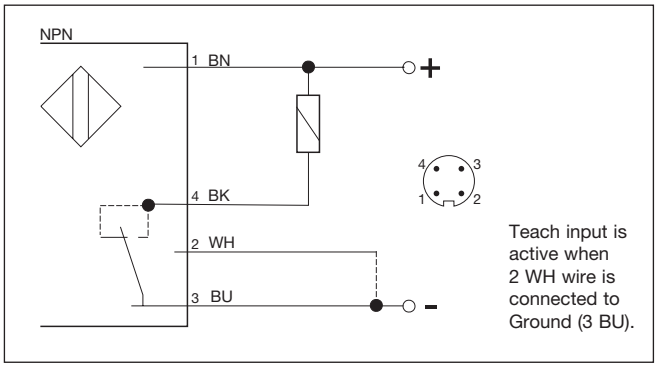


Normal function:

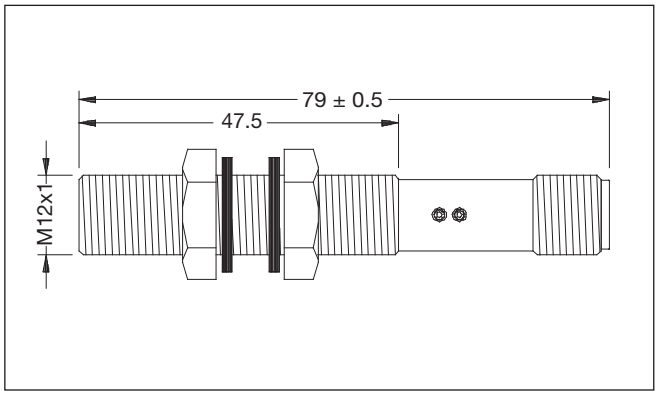
The Echo LED is ON when an echo is received (alignment LED). P1 LED is indicating status of the switching output.

Wiring Diagram

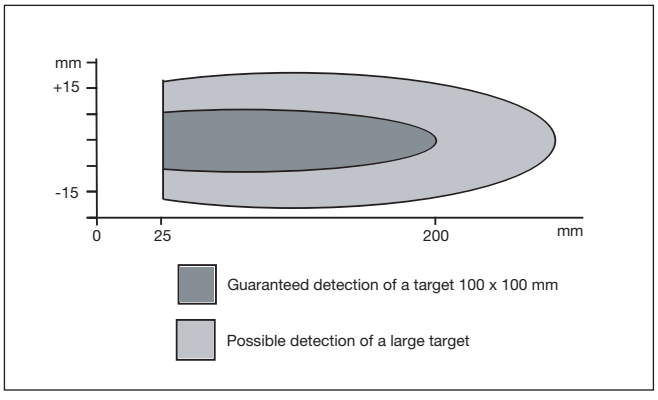




Dimensions



Detection Range



CARLO GAVAZZI

Teach-in procedure

Normal switching function

The Teach-In function
When - in the following paragraphs, the term “Activate Teach-In” is used, this means: make contact between the Teach-in wire and GND wire once (ON-OFF) - could be done with an externally mounted switch.
When - in the following paragraphs, the term “Hold Teach-In” is used, this means: make contact between the Teach-in wire and GND wire (ON) - could be done with an externally mounted switch.

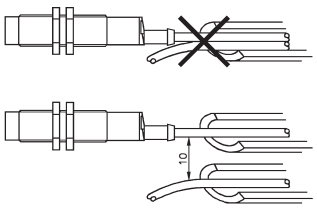
Teach-In of P1 (SP1 position)
Hold Teach-In for 8 seconds until SP and Echo LED’s start flashing 2 times per second.

The sensor is now in teach mode for SP:
SP LED will now flash once per second and the Echo LED returns to normal function (alignment LED).
The Teach-In function is now open for 1 minute to do the programming of SP.
Place the target at the desired position.
Activate Teach-in: SP is now programmed.
Sensor returns to normal function with new value for Switching output.

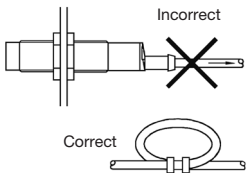
Switching output characteristics can be selected during teaching of the set point. If activating the Teach-In as the LED is ON – the switching output will have NO characteristics, if doing this as the LED is OFF, the switching output will have NC characteristics.

Installation Hints

To avoid interference from inductive voltage/ current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables

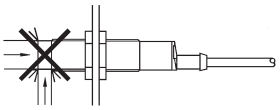


Relief of cable strain



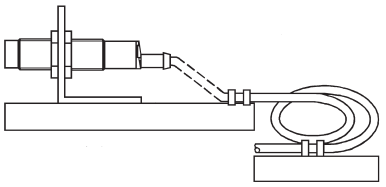
The cable should not be pulled

Protection of the sensing face



A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier



Any repetitive flexing of the cable should be avoided