

# Ultrasonic Diffuse, PNP or NPN Outputs Type M12

CARLO GAVAZZI



- 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

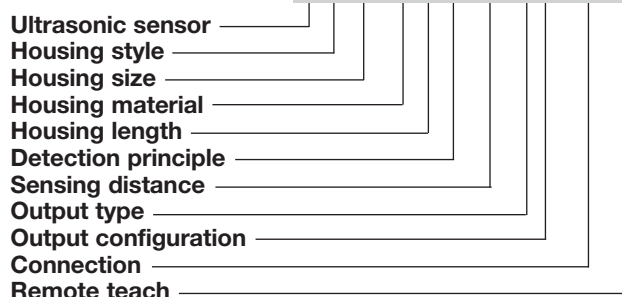
## Product Description

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 sophisticated 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**



## Type Selection

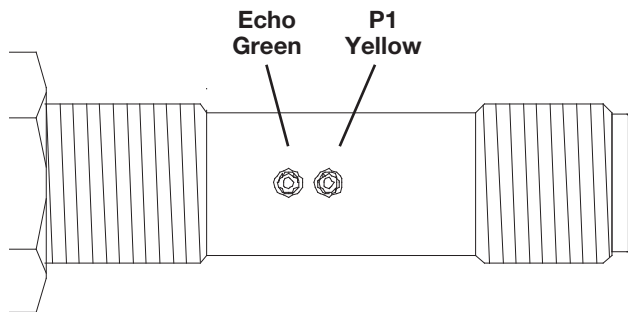
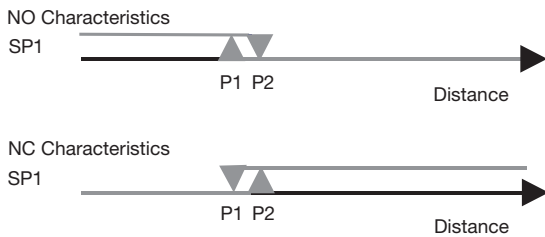
Housing dimensions	Connection	Rated operating dist. (S <sub>n</sub> )	Outputs	Ordering no.
M12 x 79 mm	Plug M12, 4 pin	25-200 mm	1 x PNP, NO/NC	<b>UA12BLD02PPM1TR</b>
M12 x 79 mm	Plug M12, 4 pin	25-200 mm	1 x NPN, NO/NC	<b>UA12BLD02NPM1TR</b>

## Technical Data

<b>Rated operational volt. (U<sub>e</sub>)</b>	10 to 30 VDC (ripple included)	<b>Operating frequency</b>	20 Hz
<b>Ripple</b>	10%	<b>Carrier Frequency</b>	400 kHz
<b>Output current (I<sub>o</sub>)</b>	max. 100 mA (continuous)	<b>Response time</b>	10 ms (target speed 1 m/s) 25 ms (step response)
<b>No-load supply current (I<sub>o</sub>)</b>	≤ 35 mA	<b>Hysteresis (H) (differential travel)</b>	2%
<b>Protection</b>	Short-circuit, transients and reverse polarity	<b>Repeatability</b>	0.3 mm
<b>Rated insulation voltage</b>	> 1 kV	<b>Temperature compensation</b>	Yes
<b>Output</b>	1 PNP or NPN open coll. NO or NC via Teach	<b>Beam angle</b>	12°
<b>Power-on delay</b>	< 400 ms	<b>Ambient temperature</b>	Operating and Storage -20° to +70°C (-4° to +158°F)
<b>Voltage drop (U<sub>d</sub>)</b>	< 1.4 V	<b>Degree of protection</b>	IP 65
<b>Off-state current (I<sub>o</sub>)</b>	< 100 µA	<b>Housing material</b>	Stainless steel
<b>Indication</b>	Set points, 1 LED, yellow Echo, 1 LED, green	<b>Connection</b>	Plug M12, 4-pin CONB14 series
<b>Rated operating distance</b>	25-200 mm	<b>Cables for plug (M1)</b>	
		<b>Weight</b>	22 g
		<b>Tightening torque</b>	15 Nm
		<b>CE-marking</b>	Yes

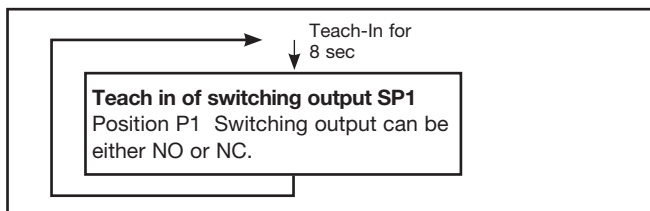
## Switching Operation

### Normal Switching Operation



### Teach in of output

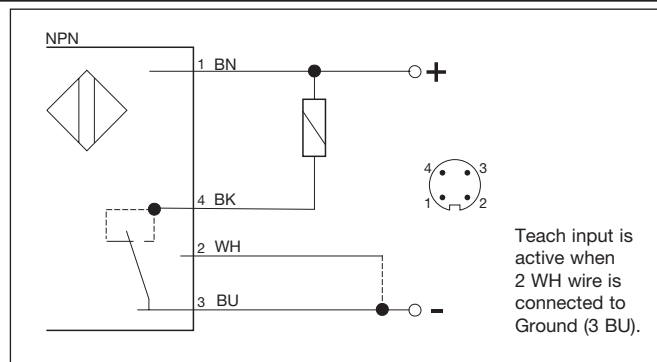
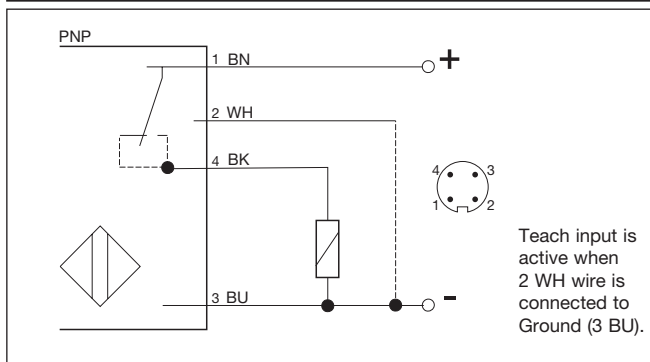
All these functions may be programmed/taught by means of the Teach-in input (pin 2) present in the connector. Each mode has a unique indication using the Echo, P1 and P2 LEDs. The programming/Teach-In procedure is shown in the following flow diagram:



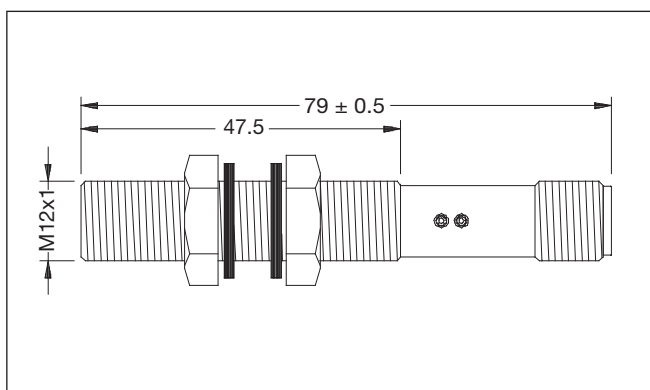
### Normal function:

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

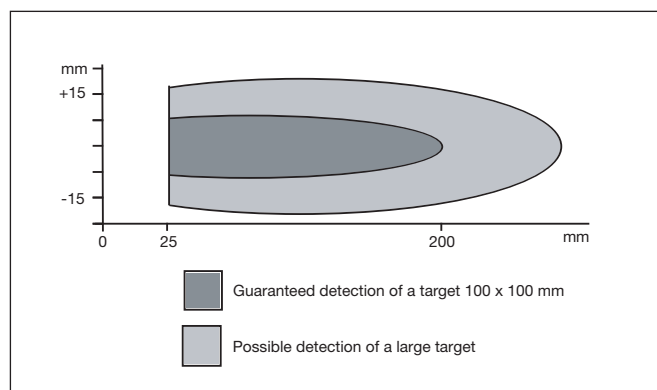
## Wiring Diagram



## Dimensions



## Detection Range



## 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.

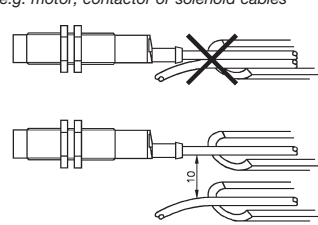
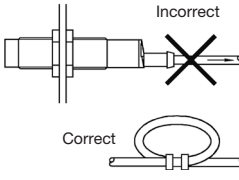
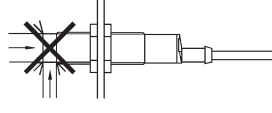
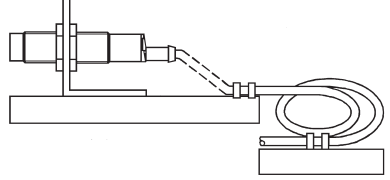
#### Teach-In of P1 (SP1 position)

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

<p>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</p> 	<p>Relief of cable strain</p>  <p>The cable should not be pulled</p>	<p>Protection of the sensing face</p>  <p>A proximity switch should not serve as mechanical stop</p>	<p>Switch mounted on mobile carrier</p>  <p>Any repetitive flexing of the cable should be avoided</p>
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