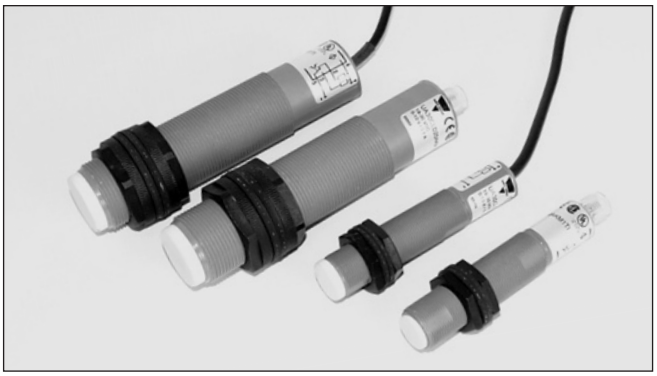
Ultrasonic
Diffuse, Analogue Output
Type M18 and M30

CARLO GAVAZZI



- **M18 and M30 PBT housing**
- **Sensing distance: 60 - 3500 mm**
- **Remote Teach by wire**
- **Outputs: Analog 0-10 V or 4-20 mA**
- **Setup of positive or negative slope**
- **Power supply: 15 to 30 VDC**
- **8° beam angle**
- **Protection: Short-circuit, reverse polarity, transients**
- **Protection degree IP 67**
- **M12 plug, 5 pin**

Product Description

A family of multi function diffuse ultrasonic sensors with a sensing range of 60 to 3500 mm. The analog output is easily set up in 2 setpoints (pos./neg. slope) and adjusted by teach-in - makes it ideal for level control tasks in a wide variety of vessels. A sturdy one-piece PBT 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

UA18CLD20AKM1TR

- **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.
M18 x 93 mm	Plug M12, 5 pin	60-500 mm	0-10 V	**UA18CLD05AKM1TR**
M18 x 93 mm	Cable	60-500 mm	0-10 V	**UA18CLD05AKTR**
M18 x 93 mm	Plug M12, 5 pin	60-500 mm	4-20 mA	**UA18CLD05AGM1TR**
M18 x 93 mm	Cable	60-500 mm	4-20 mA	**UA18CLD05AGTR**
M18 x 93 mm	Plug M12, 5 pin	100-800 mm	0-10 V	**UA18CLD08AKM1TR**
M18 x 93 mm	Cable	100-800 mm	0-10 V	**UA18CLD08AKTR**
M18 x 93 mm	Plug M12, 5 pin	100-800 mm	4-20 mA	**UA18CLD08AGM1TR**
M18 x 93 mm	Cable	100-800 mm	4-20 mA	**UA18CLD08AGTR**
M18 x 93 mm	Plug M12, 5 pin	200-2000 mm	0-10 V	**UA18CLD20AKM1TR**
M18 x 93 mm	Cable	200-2000 mm	0-10 V	**UA18CLD20AKTR**
M18 x 93 mm	Plug M12, 5 pin	200-2000 mm	4-20 mA	**UA18CLD20AGM1TR**
M18 x 93 mm	Cable	200-2000 mm	4-20 mA	**UA18CLD20AGTR**
M30 x 125 mm	Plug M12, 5 pin	300-3500 mm	0-10 V	**UA30CLD35AKM1TR**
M30 x 123.5 mm	Cable	300-3500 mm	0-10 V	**UA30CLD35AKTR**
M30 x 125 mm	Plug M12, 5 pin	300-3500 mm	4-20 mA	**UA30CLD35AGM1TR**
M30 x 123.5 mm	Cable	300-3500 mm	4-20 mA	**UA30CLD35AGTR**

Technical Data

Rated operational volt. (Ue)	15 to 30 VDC (ripple included)
Ripple	≤ 10%
No-load supply current (Io)	≤ 40 mA
Protection	Short-circuit, transients and reverse polarity
Rated insulation voltage	> 1 kV
Power-on delay	
UA18..D05/D08	60 ms
UA18..D20	90 ms
UA18..D35	220 ms

Output	
UA..CLD..AK..	0-10 VDC
UA..CLD..AG..	4-20 mA
Output slope	Positive or negative Setup via teach-in

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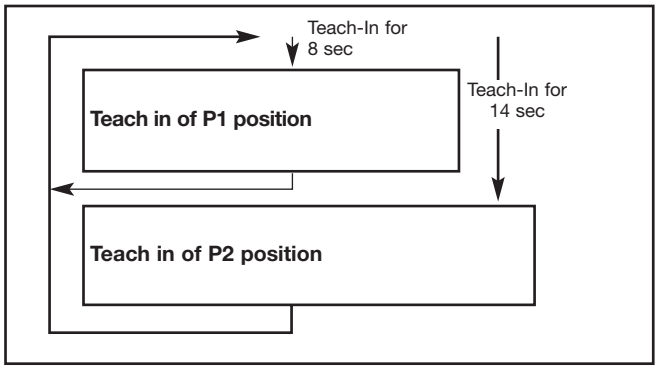
Technical Data (cont.)

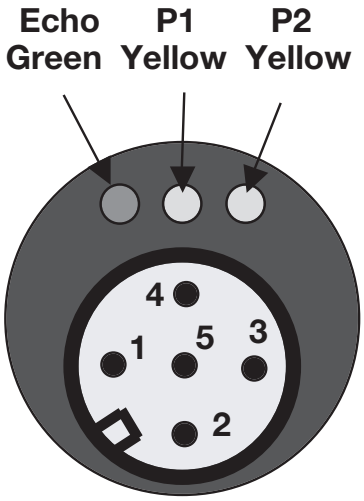
Linearity error	< 0.5%	
Repeat accuracy (R)		
UA....D05/08	0.2%; 1 mm	
UA....D20/35	0.2%: 2 mm	
Rated operating distance/ Resolution*		
UA18CLD05	60-500 mm:	0.25 mm
UA18CLD08	100-800 mm:	0.25 mm
UA18CLD20	200-2000 mm:	1.0 mm
UA30CLD35	300-3500 mm:	1.0 mm
Load		
4-20 mA	max. 500 Ω	
0-10 V	min. 1 kΩ	
Carrier frequency		
UA....D05	330 KHz	
UA....D08	300 KHz	
UA....D20	180 KHz	
UA....D35	130 KHz	
Response time		
UA18CLD05/08	100 ms	
UA18CLD20	200 ms	
UA30CLD35	400 ms	

Indication		Set points, 2 LEDs yellow Echo, 1 LED green
Rated operating distance		60 - 3500 mm
Temperature compensation		Yes
Beam angle		8°
Ambient temperature		
Operating and Storage		-15° to +70°C (5° to +158°F)
Degree of protection		IP 67 (Nema 1, 3, 4, 6, 13)
Housing material		Polyester, PBTP
Connection		
Cable		2 m, 5 x 0.25 mm²
Plug		M12, 5-pin
Cables for plug (M1)		CONM15 series
WeightWeight	UA 18 ...A.	96 g
	UA 18 ...A.M1	57 g
	UA 30 ...A.	199 g
	UA 30 ...A.M1	140 g
Tightening torque	M18	2.6 Nm
	M30	7.5 Nm
CE-marking		Yes

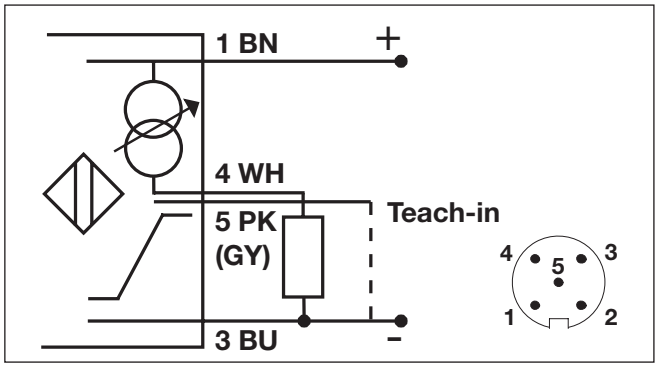
Analogue Output Adjustment



Normal function:
The Echo LED is ON when the echo is received (this is the alignment LED confirming that the target is properly aligned). The LED P1 is ON, when the target is between the sensor face and P1. The LED P2 is ON when Target is farther than P2.

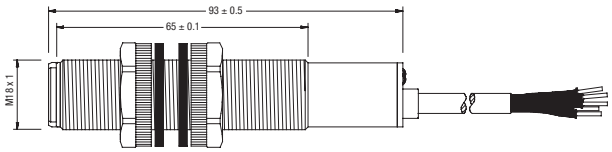


Wiring Diagram

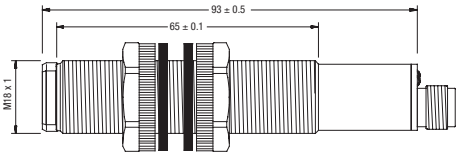


Dimensions

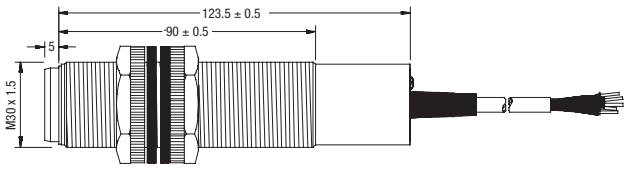
M18 cable



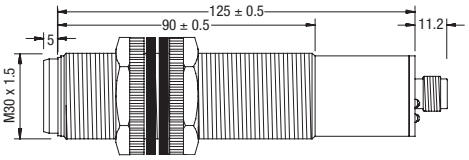
M18 plug



M30 cable

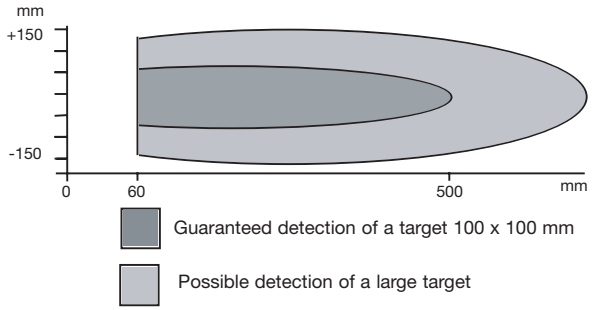


M30 plug

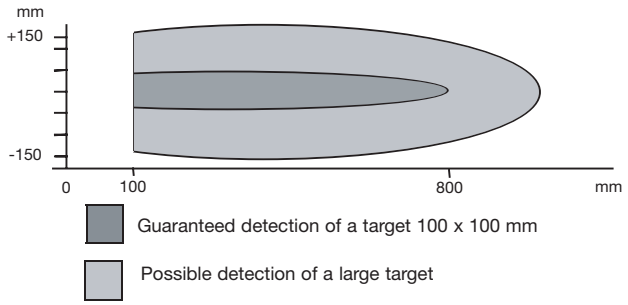


Detection Range

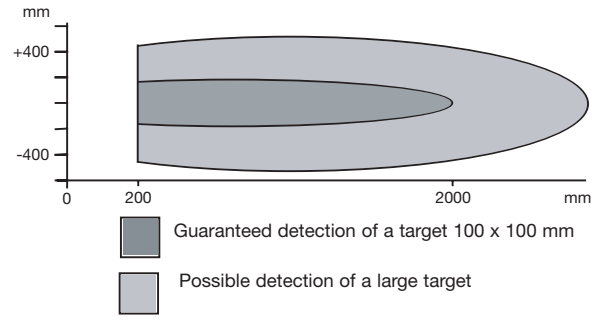
UA18CLD05



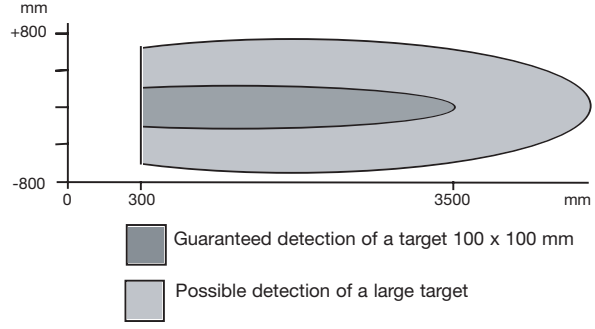
UA18CLD08



UA18CLD20



UA30CLD35



Teach-in procedure

Analogue output adjustment

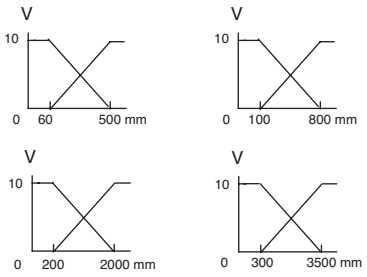
P1 and P2 define the analogue output slope.
P1 determines the 4 mA position and P2 the 20 mA position.
Positive slope: P1 < P2
Negative slope: P2 < P1

Teach-In of P1 position (4 mA output)
Hold Teach-In for 8 seconds until P1 and Echo LED's start flashing 2 times per second.
The sensor is now in teach mode for P1:
P1 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 P1.
Place the target at the new position P1.
Activate Teach-in: P1 is now programmed.
Sensor returns to normal function with new value for P1.

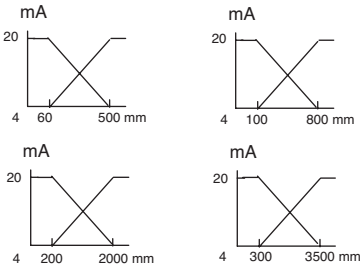
Teach-In of P2 position (20 mA output)
Hold Teach-In for 14 seconds until the P2 and Echo LEDs start flashing 2 times per second. After 8 seconds, the P1 and Echo LEDs will start flashing, but this must be ignored and after an additional 5 seconds the P2 is reached.
The sensor is now in teach mode for P2:
P2 LED is flashing once per second. The Echo LED returns to normal function (alignment LED).
Teach-mode is now open for 1 minute to do the programming of P2.
Move the target to the new position P2.
Activate Teach-in: P2 is now programmed.
Sensor returns to normal function with new value for P2.

Output Functions

Voltage Output

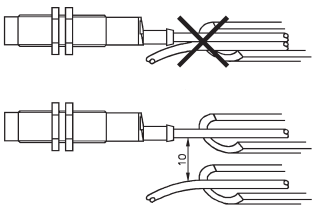


Current Output

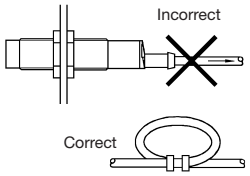


Installation Hints

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

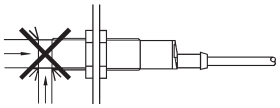


Relief of cable strain



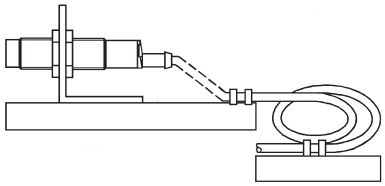
The cable should not be pulled

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