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Ultrasonic Diffuse, Analogue Output Types UA18ESD.....TI

CARLO GAVAZZI



- Cylindrical M18 Stainless Steel housing INOX AISI 316L
- Sensing distance: 40-800 mm
- Power supply: 10-30 VDC
- Outputs: 0-10 VDC or 4-20 mA
- Linearity error 1%
- Repeatability 1%
- Beam angle, $\pm 7^\circ$ or $\pm 8^\circ$
- Protection: Short-circuit and overvoltage
- Protection degree IP 67
- 2 m cable or M12 plug



Product Description

A family of diffuse ultrasonic sensors in stainless steel housing and with a sensing range of 40-300 mm and 80-800 mm with a resolution as low as 3.0 mm. The sensor contains an analogue output that is either 0-10 V or 4-20 mA.

This sensor is the ideal choice for distance measurement, level measurement, diameter measurement or loop control. Due to the use of micro-processor control the digital filtering makes the sensor immune to most electromagnetic interferences.

Ordering Key

UA18ESD08AGM1TI

Ultrasonic sensor	_____
Housing style	_____
Housing size	_____
Housing material	_____
Housing length	_____
Detection principle	_____
Sensing distance	_____
Output type	_____
Output configuration	_____
Connection	_____
Teach-in	_____

Type Selection

Housing diameter	Connection	Rated operating dist. (S _n)	Analogue Output	Ordering no.
M18	Plug M12	40-300 mm	4-20 mA	UA 18 ESD 03 AG M1 TI
M18	Cable	40-300 mm	4-20 mA	UA 18 ESD 03 AG TI
M18	Plug M12	40-300 mm	0-10 V	UA 18 ESD 03 AK M1 TI
M18	Cable	40-300 mm	0-10 V	UA 18 ESD 03 AK TI
M18	Plug M12	80-800 mm	4-20 mA	UA 18 ESD 08 AG M1 TI
M18	Cable	80-800 mm	4-20 mA	UA 18 ESD 08 AG TI
M18	Plug M12	80-800 mm	0-10 V	UA 18 ESD 08 AK M1 TI
M18	Cable	80-800 mm	0-10 V	UA 18 ESD 08 AK TI

Specifications

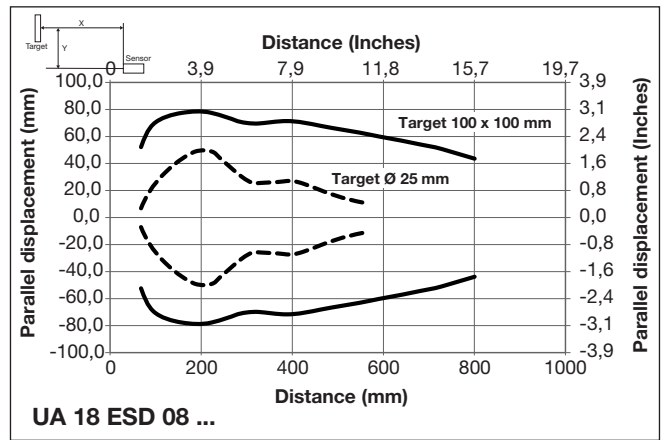
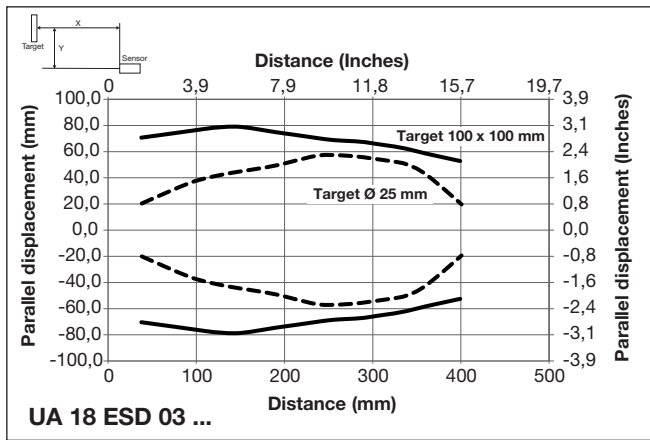
Rated operating distance (S_n)	Reference target: 1 mm metal rolled finish 100 x 100 mm 40 - 300 mm 80 - 800 mm	Temperature drift	0.1%/°C @ -20° to +60° C
UA18ESD03 UA18ESD08		Temperature compensation	Yes
Blind zone	≤ 40 mm ≤ 80 mm	Hysteresis (H)	Min. 1%
UA18ESD03... UA18ESD08...		Rated operational voltage (U_B)	10-30 VDC (ripple included)
Repeatability	1%	Ripple (U_{ripple})	≤ 5%
Linear Accuracy	1%	No-load supply current (I₀)	35 mA @ U _B max
Beam angle	7 ± 2° 8 ± 2°	Protection analogue output	Short-circuit and overvoltage
UA18ESD03... UA18ESD08...		Output analogue output	AG.. types AK.. types
Adjustment	P1 (farthest setpoint) P2 (nearest setpoint)	Load	4 to 20 mA 0 to 10 VDC
Teach by wire			max. 500 Ω min. 3 kΩ
Resolution	3 mm		

Specifications (cont.)

Carrier frequency	300 kHz
Response time analogue output	≤ 400 mS
Power ON delay	≤ 900 mS
Output switching function	Analogue output with positive or negative slope
Indication	
Output ON	Yellow LED
Echo ON	Green LED
Environment	
Installation category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP67 (IEC 60529; 60947-1)
Ambient temperature	
Operating	-20° to +60°C (-4° to +140°F)
Storage	-35° to +70°C (-31° to +158°F)
Vibration	10 to 55 Hz, 1.0 mm/6g (IEC/EN 60068-2-6)

Shock	30 g / 11 mS, 3 directions (IEC/EN 60068-2-27)
Rated insulation voltage	< 500 VAC (rms)
Housing	
Material body	AISI 316L stainless steel
Material front	Epoxy-glass resin
Material back, plug	Grilamid
Material back, cable	Grilamid
Material sealing front	TPE
Connection	
Cable	PVC, grey, 2 m, 4 x 0.32 mm ² , Ø = 4.7 mm
Plug	M12, 4-pin (CON. 14-series)
Tightening torque	≤ 50 Nm
Weight	
Cable version	160 g
Plug version	85 g
CE-marking	Yes
Approvals	cULus (UL508)

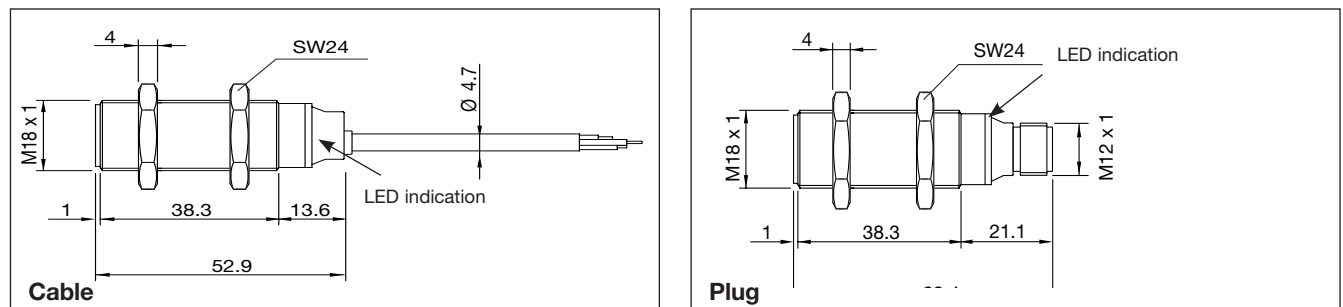
Detection Range



Wiring Diagram



Dimensions



Programming set-up

Teach-in by wire adjustment options

In the following, “**Activate Teach**” means:
Connect the white wire to GND (Blue wire)

Two Teach-in adjustment options are available:

1) Window Teach-in Option (adjustment of two points: P1 and P2)

Teach-in of set point P1:

- Place the target at the selected far distance P1 - the green Echo LED is ON
- “Activate Teach” shortly
- Setpoint P1 has been stored and the sensor is still in teach mode
- The orange LED will continue flashing rapidly with a frequency of 2 Hz until the setpoint P2 has been learned

Teach-in of set point P2:

- Place the target at the selected close distance P2 - the green Echo LED is still ON
- “Activate Teach” shortly
- The green LED switch OFF and the orange LED will flash 5 times with a frequency of 2,5 Hz
- Setpoint P2 has been stored.
- The sensor is in normal mode and the green and yellow LEDs are steady.

2) Target adjustment on P1 only (Minimum P2 distance)

Teach-in of set point P1:

- Place the target at the selected far distance P1 - the green Echo LED is ON
- “Activate Teach” shortly
- Setpoint P1 has been stored and the sensor is still in teach mode
- The orange LED will continue flashing rapidly with a frequency of 2 Hz until setpoint P2 has been learned
- Without moving the target
- “Activate Teach” shortly
- The green LED switches OFF and the orange LED will flash 5 times with a frequency of 2,5 Hz
- Setpoint P2 has been stored at the minimum distance
- The sensor is in normal mode and the green and yellow LEDs are steady

Programming set-up (cont.)

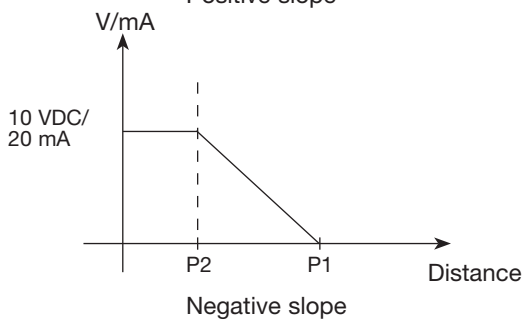
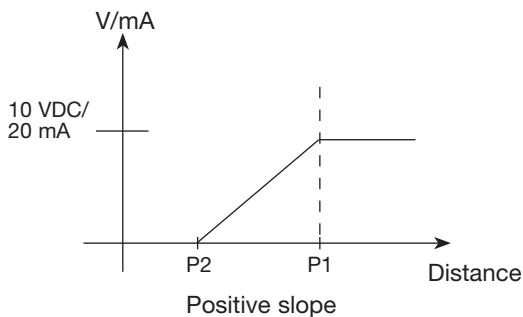
Configuration of the slope of the analogue output

The analogue version's default setting is positive slope.

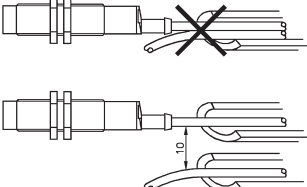
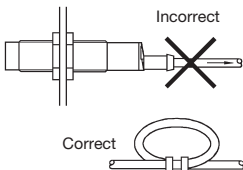
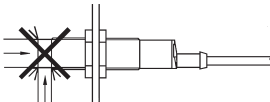
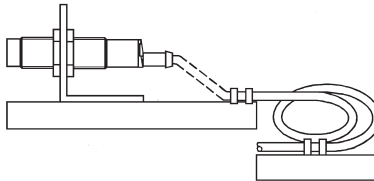
Change configuration from positive to negative slope:

- "Activate Teach" for more than 6 seconds until the orange LED flashes at a high rate/10 times per second.
- Deactivate Teach: The orange LED flashes 5 times, and the output stage is changed.

Analogue



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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Delivery Contents

- Ultrasonic sensor: UA18ESD....
- Installation instruction
- Mounting: 2 x M18 Nuts
- **Packaging:** Carton box 35 x 107 x 173 mm