

# 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	UA18ESD08AGM1TI
Housing style	UA18ESD08AGM1TI
Housing size	UA18ESD08AGM1TI
Housing material	UA18ESD08AGM1TI
Housing length	UA18ESD08AGM1TI
Detection principle	UA18ESD08AGM1TI
Sensing distance	UA18ESD08AGM1TI
Output type	UA18ESD08AGM1TI
Output configuration	UA18ESD08AGM1TI
Connection	UA18ESD08AGM1TI
Teach-in	UA18ESD08AGM1TI

## Type Selection

Housing diameter	Connection	Rated operating dist. (S <sub>n</sub> )	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

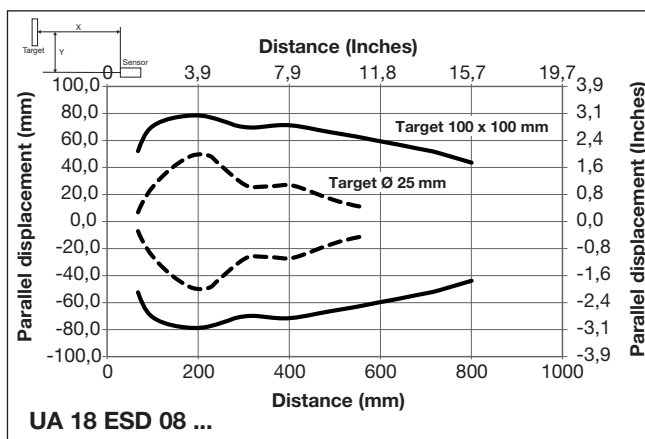
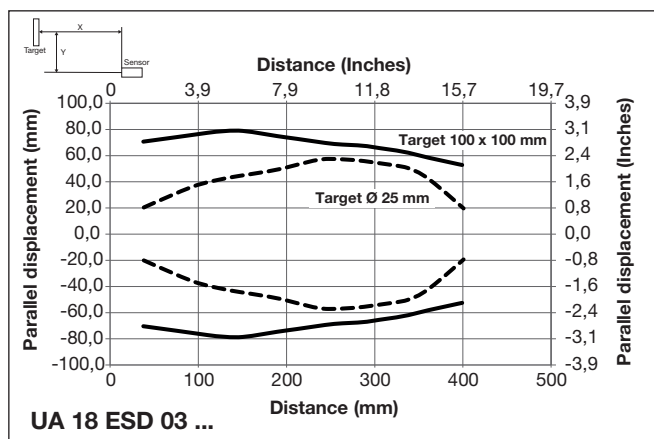
<b>Rated operating distance (S<sub>n</sub>)</b>	Reference target: 1 mm metal rolled finish 100 x 100 mm 40 - 300 mm 80 - 800 mm	<b>Temperature drift</b>	0.1%/°C @ -20° to +60° C
UA18ESD03 UA18ESD08		<b>Temperature compensation</b>	Yes
<b>Blind zone</b>	≤ 40 mm ≤ 80 mm	<b>Hysteresis (H)</b>	Min. 1%
UA18ESD03...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



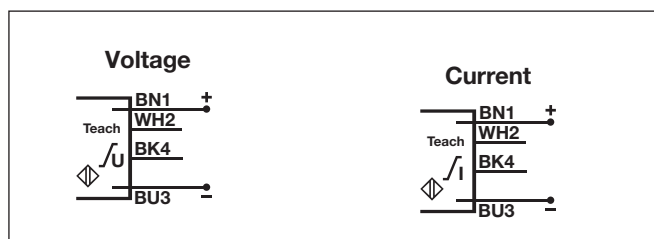
## Specifications (cont.)

<b>Carrier frequency</b>	300 kHz	<b>Shock</b>	30 g / 11 mS, 3 directions (IEC/EN 60068-2-27)
<b>Response time analogue output</b>	≤ 400 mS	<b>Rated insulation voltage</b>	< 500 VAC (rms)
<b>Power ON delay</b>	≤ 900 mS	<b>Housing</b>	
<b>Output switching function</b>	Analogue output with positive or negative slope	Material body	AISI 316L stainless steel
<b>Indication</b>		Material front	Epoxy-glass resin
Output ON	Yellow LED	Material back, plug	Grilamid
Echo ON	Green LED	Material back, cable	Grilamid
<b>Environment</b>		Material sealing front	TPE
Installation category	III (IEC 60664/60664A; 60947-1)	<b>Connection</b>	
Pollution degree	3 (IEC 60664/60664A; 60947-1)	Cable	PVC, grey, 2 m, 4 x 0.32 mm <sup>2</sup> , Ø = 4.7 mm M12, 4-pin (CON. 14-series)
Degree of protection	IP67 (IEC 60529; 60947-1)	Plug	
<b>Ambient temperature</b>		<b>Tightening torque</b>	≤ 50 Nm
Operating	-20° to +60°C (-4° to +140°F)	<b>Weight</b>	
Storage	-35° to +70°C (-31° to +158°F)	Cable version	160 g
<b>Vibration</b>	10 to 55 Hz, 1.0 mm/6g (IEC/EN 60068-2-6)	Plug version	85 g
		<b>CE-marking</b>	Yes
		<b>Approvals</b>	cULus (UL508)

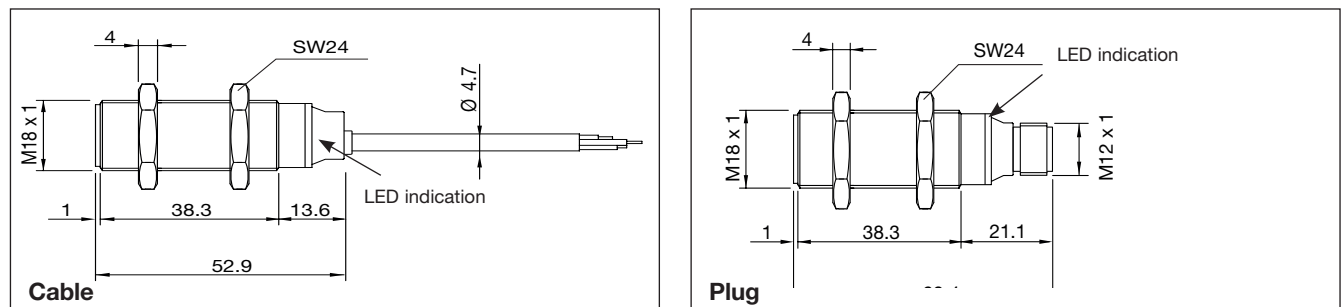
## Detection Range



## 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.)

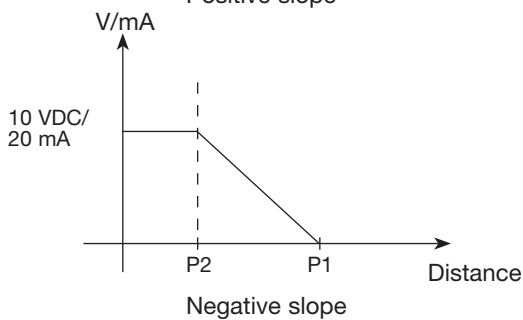
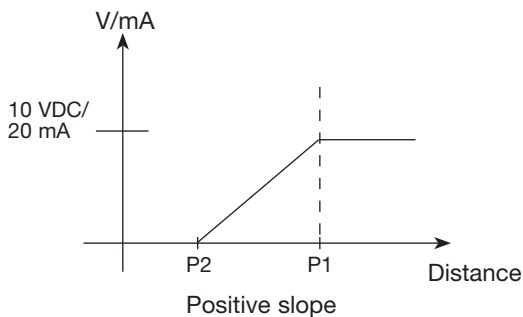
### Configuration of the slope of the analogue output

The analogue version's default setting is positive slope.

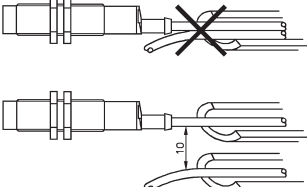
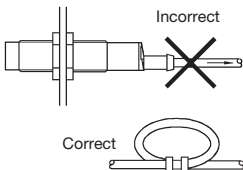
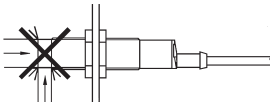
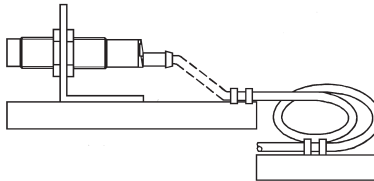
Change configuration from positive to negative slope:

- "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

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