

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

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- 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 <sub>n</sub> )	Analogue Output	Ordering no.
M18	Plug M12	40-300 mm	4-20 mA	<b>UA 18 ESD 03 AG M1 TI</b>
M18	Cable	40-300 mm	4-20 mA	<b>UA 18 ESD 03 AG TI</b>
M18	Plug M12	40-300 mm	0-10 V	<b>UA 18 ESD 03 AK M1 TI</b>
M18	Cable	40-300 mm	0-10 V	<b>UA 18 ESD 03 AK TI</b>
M18	Plug M12	80-800 mm	4-20 mA	<b>UA 18 ESD 08 AG M1 TI</b>
M18	Cable	80-800 mm	4-20 mA	<b>UA 18 ESD 08 AG TI</b>
M18	Plug M12	80-800 mm	0-10 V	<b>UA 18 ESD 08 AK M1 TI</b>
M18	Cable	80-800 mm	0-10 V	<b>UA 18 ESD 08 AK TI</b>

## 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		

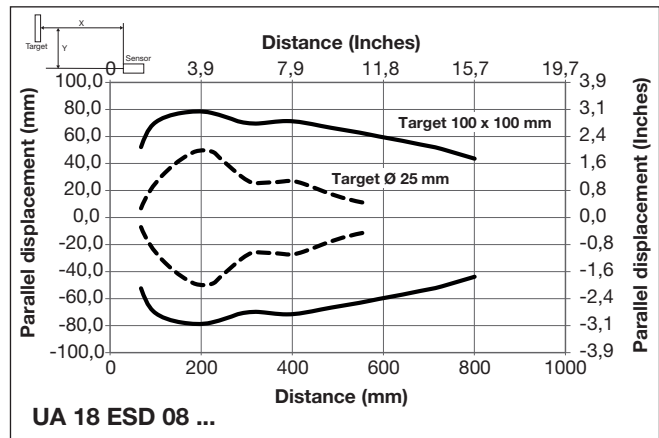
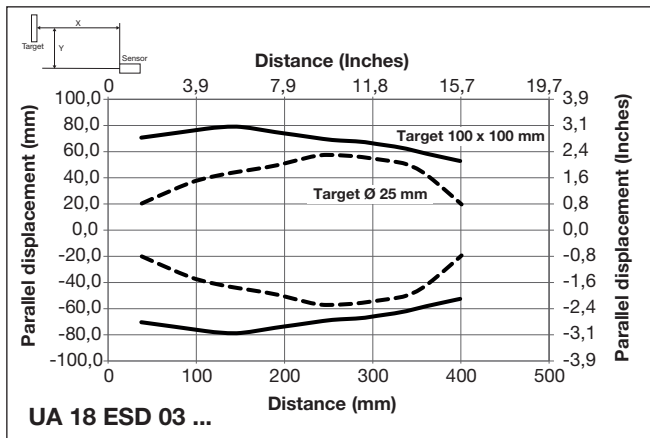


## Specifications (cont.)

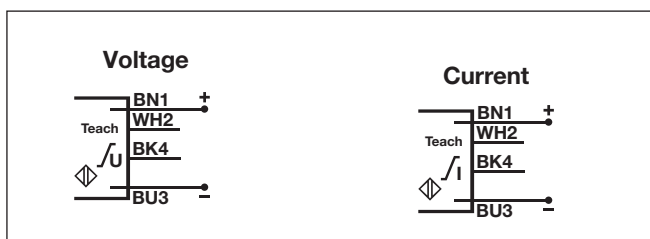
<b>Carrier frequency</b>	300 kHz
<b>Response time analogue output</b>	≤ 400 mS
<b>Power ON delay</b>	≤ 900 mS
<b>Output switching function</b>	Analogue output with positive or negative slope
<b>Indication</b>	
Output ON	Yellow LED
Echo ON	Green LED
<b>Environment</b>	
Installation category	III (IEC 60664/60664A;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

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

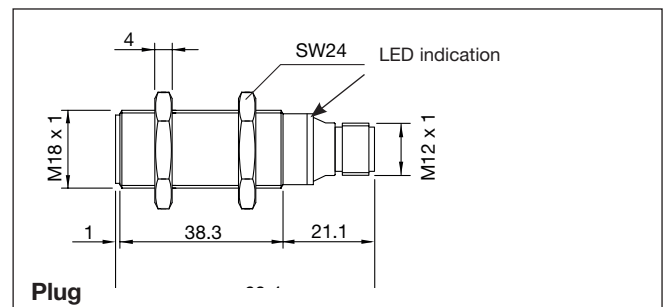
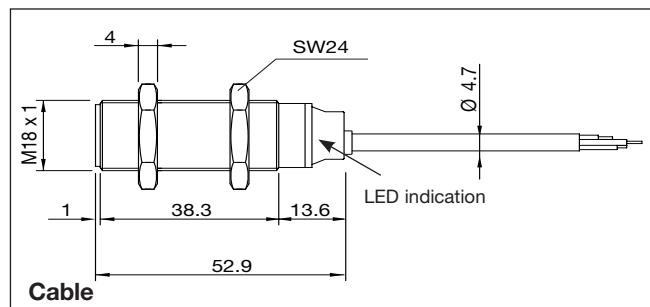
## Detection Range



## 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