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

CARLO GAVAZZI

- Cylindrical M18 stainless steel housing INOX AISI316L
- Sensing distance: 40-800 mm
- Power supply: 10-30 VDC
- Outputs: PNP or NPN, NO or NC
- Repeatability 0.5%
- Beam angle. ±7° or ±8°
- Protection: Short-circuit, reverse polarity and overvoltage
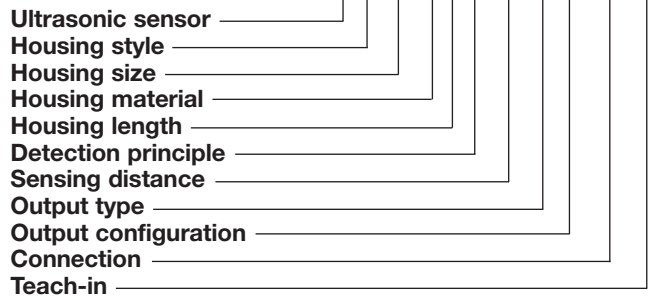- Protection degree IP 67
- 2 m cable or M12 plug

Product Description

A self-contained multifunctional diffuse ultrasonic sensor with a sensing range of 40 to 300 mm and 80-800 mm. One switching output - easily set up for "windows" detection with two setpoints. NO or NC output is selectable. A sturdy 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 on true distance measurement.

Ordering Key

UA18ESD08NPM1TI

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

Type Selection

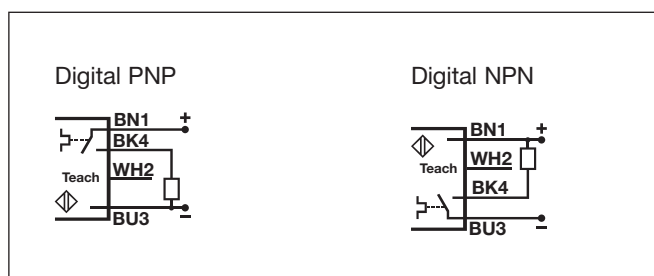| Housing diameter	Connection	Rated operating dist. (S_n)	Digital output NPN/PNP	Ordering no.
M18	Plug M12	40-300 mm	NPN	UA 18 ESD 03 NP M1 TI
M18	Cable	40-300 mm	NPN	UA 18 ESD 03 NP TI
M18	Plug M12	40-300 mm	PNP	UA 18 ESD 03 PP M1 TI
M18	Cable	40-300 mm	PNP	UA 18 ESD 03 PP TI
M18	Plug M12	80-800 mm	NPN	UA 18 ESD 08 NP M1 TI
M18	Cable	80-800 mm	NPN	UA 18 ESD 08 NP TI
M18	Plug M12	80-800 mm	PNP	UA 18 ESD 08 PP M1 TI
M18	Cable	80-800 mm	PNP	UA 18 ESD 08 PP TI

Specifications

Rated operating distance (S_n)	Reference target: 1 mm metal rolled finish. 100 x 100 mm	**Adjustment** Teach by wire	P1 (farthest setpoint) P2 (nearest setpoint)
UA18ESD03	40 - 300 mm	**Temperature drift**	≤ 0.1%/°C @ -20° to +60° C
UA18ESD08	80 - 800 mm	**Temperature compensation**	Yes
Blind zone		**Hysteresis** (H)	Min. 1%
UA18ESD03...	≤ 40 mm	**Rated operational voltage** (U_B)	10-30 VDC (ripple included)
UA18ESD08...	≤ 80 mm		
Repeatability	0.5%	**Ripple** (U_{rpp})	≤ 5%
Beam angle		**No-load supply current** (I_o)	≤ 35 mA @ U_B max
UA18ESD03...	7 ± 2°		
UA18ESD08...	8 ± 2°		

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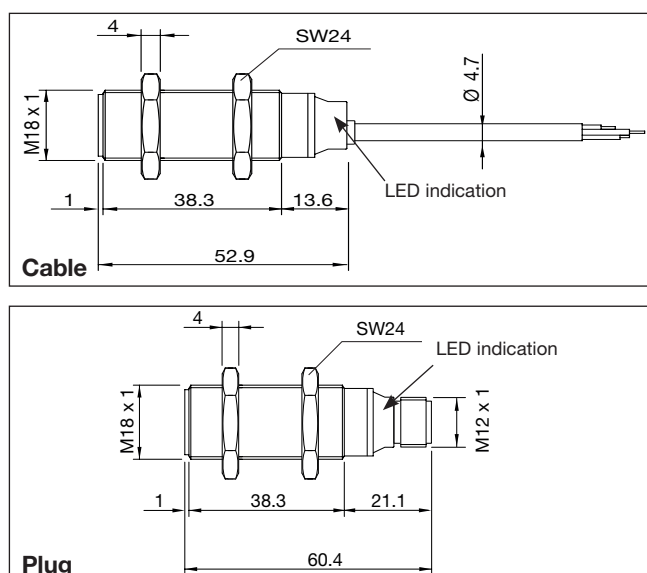# Specifications (cont.)

Output current continuous (I_e) Max. load capacity 100 nF	≤ 100mA
Output current short-time (I) Max. load capacity 100 nF	≤ 100 mA
Minimum operational current (I_m)	≤ 0.5 mA
OFF-state current (I_r)	≤ 10 µA @ U_B max.
Voltage drop (U_d)	≤ 2.2 VDC @ I_e max.
Protection	Short-circuit, overvoltage and reverse polarity
Carrier frequency	300 kHz
Operating frequency (f) UA18ESD03... UA18ESD08...	≤ 8 Hz ≤ 5 Hz
Response time OFF-ON (t_{ON}) UA18ESD03... UA18ESD08...	≤ 60 mS ≤ 100 mS
Response time ON-OFF (t_{OFF}) UA18ESD03... UA18ESD08...	≤ 60 mS ≤ 100 mS
Power ON delay	≤ 100 mS
Output function, open collector By sensor type	NPN or PNP
Output switching function	One open collector transis- tor output to be config- ured as NO or NC
Indication Output ON Echo ON	Yellow LED 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 Storage	-20° to +60°C (-4° to +140°F) -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 Material front Material back, plug Material back, cable Material sealing front	AISI 316L stainless steel Epoxy-glass resin Grilamid Grilamid TPE
Connection Cable Plug	PVC, grey, 2 m, 4 x 0.32 mm², Ø = 4.7 mm M12, 4-pin (CON. 14-series)
Tightening torque	≤ 1 Nm
Weight incl. packaging Cable version Plug version	160 g 85 g
CE-marking	Yes
Approvals	cULus (UL508)

Wiring Diagram

Digital PNP

BN1
BK4
Teach
WH2
BU3

Digital NPN

BN1
WH2
Teach
BK4
BU3

Dimensions

4
SW24
M18 x 1
Ø 4.7
1
38.3
13.6
LED indication
52.9
Cable

4
SW24
LED indication
M18 x 1
M12 x 1
1
38.3
21.1
60.4
Plug

Detection Range

UA 18 ESD 03 ...

UA 18 ESD 08 ...
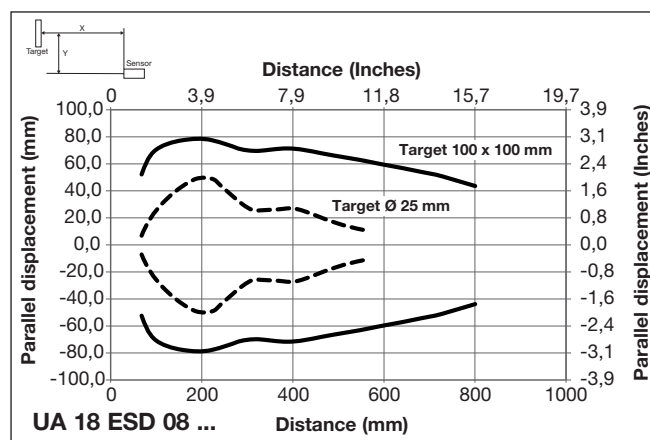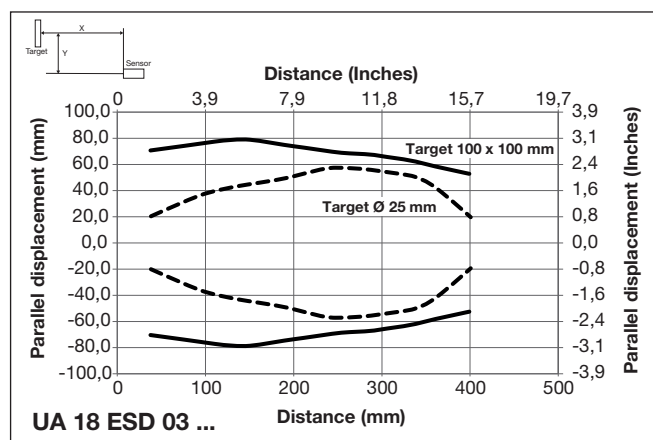
Programming set-up

Teach-in by wire adjustment options

In the following, **"Activate Teach"** means:
PNP – Connect the white wire to V+ (Brown wire)
NPN – Connect the white wire to GND (Blue wire)

Three 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

3) Full range teach (NPN and PNP versions only)
- Remove the target in front of the sensor -the green Echo LED switches OFF
- *"Activate Teach"* shortly
- The orange LED will flash 5 times with a frequency of 2,5 Hz
- Setpoint P1 has been stored at the maximum distance and P2 at the minimum distance
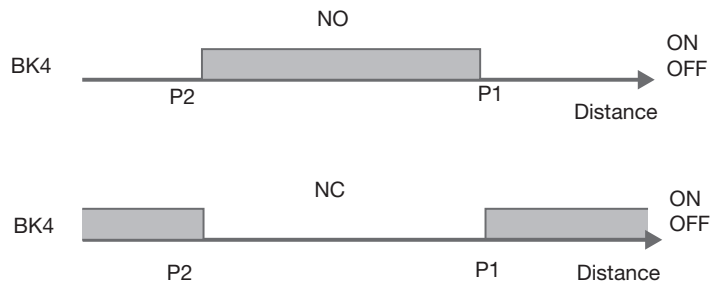(this distance is not uniquely definite and repeatable throughout the different sensor types)

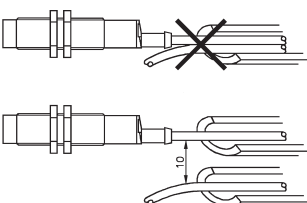# Programming set-up (cont.)

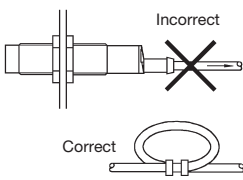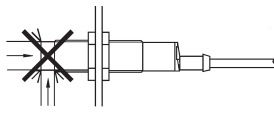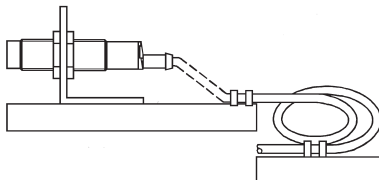**Configuration of the NO/NC states**
Default setting is NO (normally open)

Change configuration from NO to NC:
- *"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.

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	Protection of the sensing face	Switch mounted on mobile carrier
	Incorrect / Correct — The cable should not be pulled	A proximity switch should not serve as mechanical stop	Any repetitive flexing of the cable should be avoided

Delivery Contents

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

Specifications are subject to change without notice (14.09.2015)