Ultrasonic Diffuse, Digital Output
Types UA18CSD......TI

Product Description
A self-contained multifunctional diffuse ultrasonic sensor with a sensing range from 40-300 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 one-piece polyester 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
UA18CSD08NPM1TI

Ordering no.
UA 18 CSD 03 NP M1 TI
UA 18 CSD 03 NP TI
UA 18 CSD 03 PP M1 TI
UA 18 CSD 03 PP TI
UA 18 CSD 08 NP M1 TI
UA 18 CSD 08 NP TI
UA 18 CSD 08 PP M1 TI
UA 18 CSD 08 PP TI

Type Selection

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<tr>
<th>Housing diameter</th>
<th>Connection</th>
<th>Rated operating distance (S_n)</th>
<th>Digital output NPN/PNP</th>
<th>Ordering no.</th>
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Specifications

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<th>Rated operating distance (S_n)</th>
<th>Reference target: 1 mm metal rolled finish</th>
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<tr>
<td>UA18CSD03</td>
<td>100 x 100 mm</td>
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<tr>
<td>UA18CSD08</td>
<td>40 - 300 mm</td>
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<td></td>
<td>80 - 800 mm</td>
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| Blind zone UA18CSD03...        | ≤ 40 mm                                     |
| Blind zone UA18CSD08...        | ≤ 80 mm                                     |

| Repeatability                 | 0,5%                                        |
| Beam angle                    | 7° ± 2°                                     |
|                                | 8° ± 2°                                     |

| Adjustment                     | Teach by wire                              | P1 (farthest setpoint) P2 (farthest setpoint) |
| Temperature drift              | ≤ 0,1%/°C @ -20° to +60° C                  |
| Temperature compensation       | Yes                                         |
| Hysteresis(ΔH)                 | Min. 1%                                     |
| Rated operational voltage(U_R) | 10-30 VDC (incl. ripple)                    |
| Ripple (U_Ripple)              | ≤ 5%                                        |
| No-load supply current (I_o)   | ≤ 35 mA @ U_R maks.                        |
Specifications (cont.)

Output current continuous \( (I_{\text{e}}) \)
Max. load capacity 100 nF ≤ 100 mA

Output current short-time \( (I) \)
Max. load capacity 100 nF ≤ 0.5 mA

Minimum operational current \( (I_{\text{m}}) \)
≤ 10 μA @ \( U_{\text{e}} \) max.

Voltage drop \( (U) \)
≤ 2.2 VDC @ \( I_{\text{e}} \) 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 \( (t_{\text{on}}) \)
UA18ESD03...
UA18ESD08...
≤ 60 mS
≤ 100 mS

Response time ON-OFF \( (t_{\text{off}}) \)
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 transistor output to be configured as NO or NC

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 m/s, 3 directions (IEC/EN 60068-2-27)

Rated insulation voltage
< 500 VAC (rms)

Housing
Material body PBT
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, Ø = 4.7 mm
Plug M12, 4-pin (CON. 14-series)

Tightening torque
≤ 1 Nm

Weight incl. packaging
Cable version 135 g
Plug version 65 g

CE-marking
Yes

Approvals
cULus (UL508)

Digital PNP

Digital NPN

Wiring Diagram

Dimensions

Specifications are subject to change without notice (21.09.2015)
Detection Range

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
Incorrect
Correct
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

Delivery Contents

• Ultrasonic sensor: UA18CSD....
• Installation instruction
• Mounting:
  M18 Nuts
  rubber washers
• Packaging: Carton box 35 x 107 x 173 mm