# Ultrasonic
# Diffuse, Analogue Output
# Types UA18CSD.....TI

CARLO GAVAZZI



- Cylindrical M18 PBT housing
- 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. ±7° or ±8°
- Protection: short-circuit and overvoltage
- Protection degree IP 67
- 2 m cable or M12 plug

## Product Description

A family of diffuse ultrasonic sensors with a sensing range from 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 microprocessor control the digital filtering makes the sensor immune to most electromagnetic interferences.

## Ordering Key

**UA18CSD08AGM1TI**

- **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 CSD 03 AG M1 TI** |
| M18 | Cable | 40-300 mm | 4-20 mA | **UA 18 CSD 03 AG TI** |
| M18 | Plug M12 | 40-300 mm | 0-10 V | **UA 18 CSD 03 AK M1 TI** |
| M18 | Cable | 40-300 mm | 0-10 V | **UA 18 CSD 03 AK TI** |
| M18 | Plug M12 | 80-800 mm | 4-20 mA | **UA 18 CSD 08 AG M1 TI** |
| M18 | Cable | 80-800 mm | 4-20 mA | **UA 18 CSD 08 AG TI** |
| M18 | Plug M12 | 80-800 mm | 0-10 V | **UA 18 CSD 08 AK M1 TI** |
| M18 | Cable | 80-800 mm | 0-10 V | **UA 18 CSD 08 AK TI** |

## Specifications

| | |
|---|---|
| **Rated operating distance** ($S_n$) | Reference target: 1 mm metal rolled finish 100 x 100 mm |
| UA18CSD03 | 40 - 300 mm |
| UA18CSD08 | 80 - 800 mm |
| **Blind zone** | |
| UA18CSD03... | ≤ 40 mm |
| UA18CSD08... | ≤ 80 mm |
| **Repeatability** | 1% |
| **Linear Accuracy** | 1% |
| **Beam angle** | |
| UA18CSD03... | 7° ± 2° |
| UA18CSD08... | 8° ± 2° |
| **Adjustment** | |
| Teach by wire | P1 (farthest setpoint)<br>P2 (nearest setpoint) |
| **Resolution** | 3 mm |
| **Temperature drift** | 0.1%/˚C @ -20˚ to +60˚ C |

| | |
|---|---|
| **Temperature compensation** | Yes |
| **Hysteresis** (H) | Min. 1% |
| **Rated operational voltage** ($U_B$) | 10 to 30 VDC (ripple included) |
| **Ripple** ($U_{rpp}$) | ≤ 5% |
| **No-load supply current** ($I_o$) | 35 mA @ $U_B$ max |
| **Protection analogue output** | Short-circuit and overvoltage |
| **Output analogue output** | |
| AG.. types | 4 to 20 mA |
| AK.. types | 0 to 10 VDC |
| **Load** | |
| 4 to 20 mA | max. 500 Ω |
| 0 to 10 VDC | min. 3 kΩ |
| **Carrier frequency** | 300 kHz |
| **Response time analogue output** | ≤ 400 mS |



ООО «Сенсорен Электро» +7(495)150-48-00 info@sensoren.ru

Sensoren

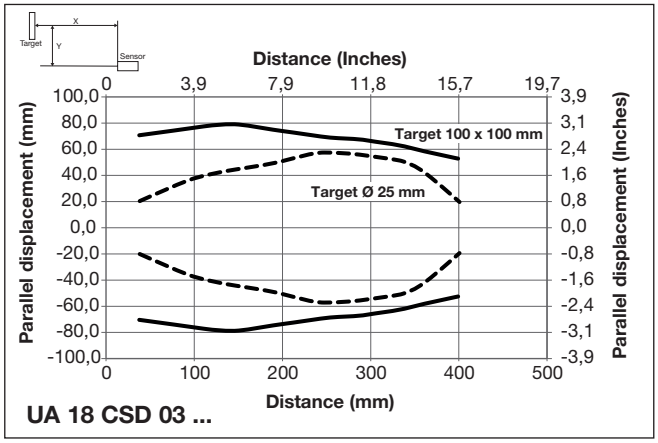
CARLO GAVAZZI

## Specifications (cont.)

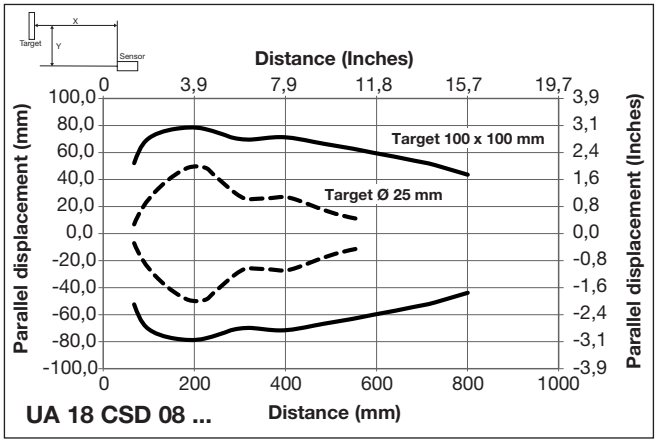
| | |
|---|---|
| **Power ON delay** | ≤ 900 mS |
| **Output switching function** | Analogue output with positive or negative slope. |
| **Indication** | |
| Output ON | Yellow LED |
| Echo ON | Green LED |
| **Environment** | |
| Installation category | III (IEC 60664/60664A; 60947-1) |
| Pollution 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 | 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$^2$, Ø = 4.7 mm |
| Plug | M12, 4-pin (CON. 14-series) |
| **Tightening torque** | ≤ 1 Nm |
| **Weight** | |
| Cable version | 135 g |
| Plug version | 65 g |
| **CE-marking** | Yes |
| **Approvals** | cULus (UL508) |

## Detection Range

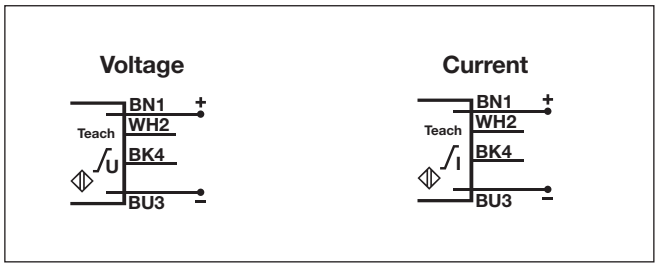



UA 18 CSD 03 ...




UA 18 CSD 08 ...

## Wiring Diagram

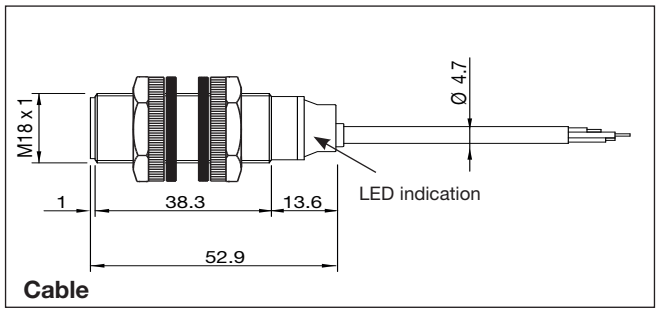




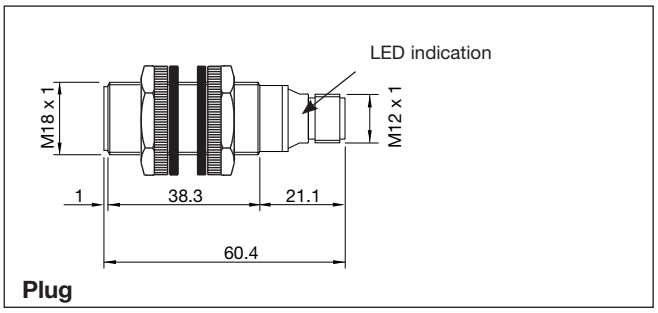

ООО «Сенсорен Электро» +7(495)150-48-00 info@sensoren.ru

Sensoren

## Dimensions



Cable



Plug

## Programming set-up

**Teach-in by wire adjustment options**

Two Teach-in adjustment options are available:

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

**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

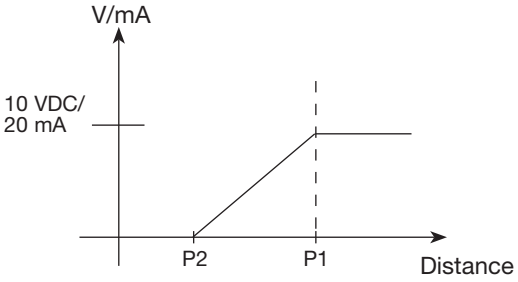

ООО «Сенсорен Электро» +7(495)150-48-00 info@sensoren.ru
Sensoren

## Programming set-up (cont.)

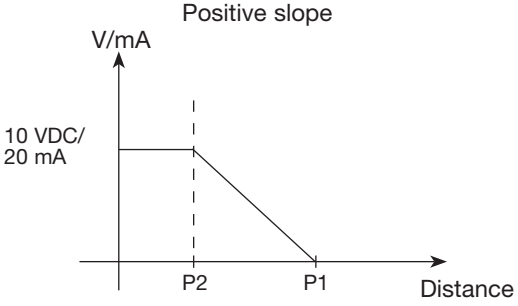
**Configuration of the slope of the analogue output**
The analogue version's default setting is positive slope.

*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**

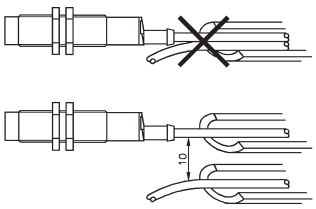
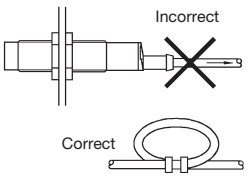
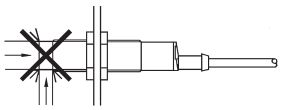
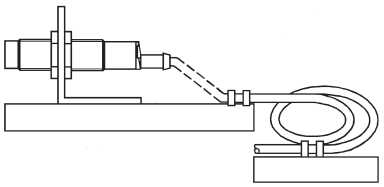


Positive slope



Negative slope

## 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* |
|---|---|---|---|
|  |  |  |  |
| | 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: UA18CSD....
- Installation instruction
- Mounting:
  2 x M18 nuts
  2 x rubber washers
- **Packaging:** Carton box 35 x 107 x 173 mm



ООО «Сенсорен Электро» +7(495)150-48-00 info@sensoren.ru
Sensoren