

Ultrasonic Diffuse, Analogue and Digital Output Types UA18CAD.....TI

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- Cylindrical M18 PBT housing
- Sensing distance: 50-2200 mm
- Power supply: 15 to 30 VDC
- Outputs: 0-10 VDC or 4-20 mA and one switching output NPN or PNP, NO or NC.
- Linearity error 1%
- Repeatability 0.5%
- Beam angle. $\pm 7^\circ$ or $\pm 8^\circ$
- Protection: Short-circuit, reverse polarity and overvoltage
- Protection degree IP 67
- 2 m cable or M12 plug

Product Description

A family of diffuse ultrasonic sensors with sensing range from 50-400 mm, 100-900 mm and 200-2200 with a resolution as low as 1.0 mm. The sensor contains both an analogue and a digital output. The output is either 0-10V or 4-20 mA and the digital output NPN or PNP, NO or NC which forms a win-

dow detection. The sensor is the ideal choice for distance measurement, level measurement, diameter measurement or loop control. Due to use of microprocessor control the digital filtering makes the sensor immune to most electromagnetic interferences.

Ordering Key

UA18CAD04NGM1TI

| | |
|----------------------|-------|
| 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) | Analog Output | Digital output NPN/PNP | Ordering no. |
|------------------|------------|---|---------------|------------------------|-----------------------|
| M18 | Plug M12 | 50-400 mm | 4-20 mA | NPN | UA 18 CAD 04 NG M1 TI |
| M18 | Cable | 50-400 mm | 4-20 mA | NPN | UA 18 CAD 04 NG TI |
| M18 | Plug M12 | 50-400 mm | 0-10 V | NPN | UA 18 CAD 04 NK M1 TI |
| M18 | Cable | 50-400 mm | 0-10 V | NPN | UA 18 CAD 04 NK TI |
| M18 | Plug M12 | 50-400 mm | 4-20 mA | PNP | UA 18 CAD 04 PG M1 TI |
| M18 | Cable | 50-400 mm | 4-20 mA | PNP | UA 18 CAD 04 PG TI |
| M18 | Plug M12 | 50-400 mm | 0-10 V | PNP | UA 18 CAD 04 PK M1 TI |
| M18 | Cable | 50-400 mm | 0-10 V | PNP | UA 18 CAD 04 PK TI |
| M18 | Plug M12 | 100-900 mm | 4-20 mA | NPN | UA 18 CAD 09 NG M1 TI |
| M18 | Cable | 100-900 mm | 4-20 mA | NPN | UA 18 CAD 09 NG TI |
| M18 | Plug M12 | 100-900 mm | 0-10 V | NPN | UA 18 CAD 09 NK M1 TI |
| M18 | Cable | 100-900 mm | 0-10 V | NPN | UA 18 CAD 09 NK TI |
| M18 | Plug M12 | 100-900 mm | 4-20 mA | PNP | UA 18 CAD 09 PG M1 TI |
| M18 | Cable | 100-900 mm | 4-20 mA | PNP | UA 18 CAD 09 PG TI |
| M18 | Plug M12 | 100-900 mm | 0-10 V | PNP | UA 18 CAD 09 PK M1 TI |
| M18 | Cable | 100-900 mm | 0-10 V | PNP | UA 18 CAD 09 PK TI |
| M18 | Plug M12 | 200-2200 mm | 4-20 mA | NPN | UA 18 CAD 22 NG M1 TI |
| M18 | Cable | 200-2200 mm | 4-20 mA | NPN | UA 18 CAD 22 NG TI |
| M18 | Plug M12 | 200-2200 mm | 0-10 V | NPN | UA 18 CAD 22 NK M1 TI |
| M18 | Cable | 200-2200 mm | 0-10 V | NPN | UA 18 CAD 22 NK TI |
| M18 | Plug M12 | 200-2200 mm | 4-20 mA | PNP | UA 18 CAD 22 PG M1 TI |
| M18 | Cable | 200-2200 mm | 4-20 mA | PNP | UA 18 CAD 22 PG TI |
| M18 | Plug M12 | 200-2200 mm | 0-10 V | PNP | UA 18 CAD 22 PK M1 TI |
| M18 | Cable | 200-2200 mm | 0-10 V | PNP | UA 18 CAD 22 PK TI |

Specifications

| | | | |
|---|---|--|--|
| Rated operating distance (S_n) | Reference target: 1 mm metal rolled finish. CAD04: 100 x 100 mm CAD09 and CAD22: 200 x 200 mm | Operating frequency digital output (f) | |
| UA18CAD04 | 50 - 400 mm | UA18CAD04... | ≤ 10 Hz |
| UA18CAD09 | 100 - 900 mm | UA18CAD09... | ≤ 4 Hz |
| UA18CAD22 | 200 - 2200 mm | UA18CAD22... | ≤ 1 Hz |
| Blind zone | | Response time OFF-ON digital output (t_{ON}) | |
| UA18CAD04... | ≤ 50 mm | UA18CAD04... | ≤ 50 mS |
| UA18CAD09... | ≤ 100 mm | UA18CAD09... | ≤ 125 mS |
| UA18CAD22... | ≤ 200 mm | UA18CAD22... | ≤ 500 mS |
| Repeatability | 0.5% | Response time ON-OFF digital output (t_{OFF}) | |
| Linear Accuracy | 1% | UA18CAD04... | ≤ 50 mS |
| Beam angle | | UA18CAD09... | ≤ 125 mS |
| UA18CAD04... | ±8° | UA18CAD22... | ≤ 500 mS |
| UA18CAD09... | ±7° | Response time analog output | ≤ 500 mS |
| UA18CAD22... | ±7° | Power ON delay | ≤ 500 mS |
| Sensitivity | | Output function, open collector | |
| Push-button | P1 (farthest setpoint) P2 (nearest setpoint) | By sensor type | NPN or PNP |
| Resolution | 1 mm | Output switching function | One open collector transistor and one analogue output to be configured as: Window function with N.O or N.C. output. Analogue output with positive or negative slope. |
| Temperature drift | 0.1%/°C @ -20° to +60° C | Indication Output ON | Yellow LED |
| Temperature compensation | Yes | Environment | |
| Hysteresis (H) | Min. 1% | Installation category | III (IEC 60664/60664A; 60947-1) |
| Rated operational voltage (U_B) | 15 to 30 VDC (ripple included) | Pollution degree | 3 (IEC 60664/60664A; 60947-1) |
| Ripple (U_{pp}) | ≤ 5% | Degree of protection | IP67 (IEC 60529; 60947-1) |
| No-load supply current (I_o) | | Ambient temperature | |
| UA18CAD04... | 45 mA @ U _B max | Operating | -20° to +60°C (-4° to +140°F) |
| UA18CAD09... | 45 mA @ U _B max | Storage | -35° to +70°C (-31° to +158°F) |
| UA18CAD22... | 50 mA @ U _B max | Vibration | 10 to 55 Hz, 1.0 mm/6g (IEC/EN 60068-2-6) |
| Output current continuous digital output (I_o) | | Shock | 30 g / 11 ms, 3 directions (IEC/EN 60068-2-27) |
| Max. load capacity 100 nF UL508 specification | 500 mA 100 mA | Rated insulation voltage | < 500 VAC (rms) |
| Output current short-time digital output (I) | | Housing | |
| Max. load capacity 100 nF UL508 specification | 500 mA 100 mA | Material body | PBT |
| Minimum operational current digital output (I_m) | 0.5 mA | Material front | Epoxy-glass resin |
| OFF-state current digital output (I_o) | 10 μA | Material back, plug | Grilamid |
| Voltage drop digital output (U_d) | ≤ 2.2 VDC @ I _g max. | Material back, cable | Grilamid |
| Protection digital output | Short-circuit, overvoltage and reverse polarity | Material trimmer | POM |
| Output analog output | | Sealing around trimmer | TPE |
| NG.. or PG.. types | 4 to 20 mA | Material sealing front | |
| NK.. or PK.. types | 0 to 10 VDC | UA18CAD04... | TPE |
| Load | | UA18CAD09... | TPE |
| 4 to 20 mA | max. 500 Ω | UA18CAD22... | PBT |
| 0 to 10 VDC | min. 3 kΩ | Connection | |
| Carrier frequency | | Cable | PVC, grey, 2 m, 4 x 0.32 mm ² , Ø = 4.7 mm M12, 4-pin (CON. 14-series) |
| UA18CAD04... | 400 kHz | Plug | |
| UA18CAD09... | 300 kHz | Tightening torque | ≤ 1 Nm |
| UA18CAD22... | 200 kHz | | |

Specifications (cont.)

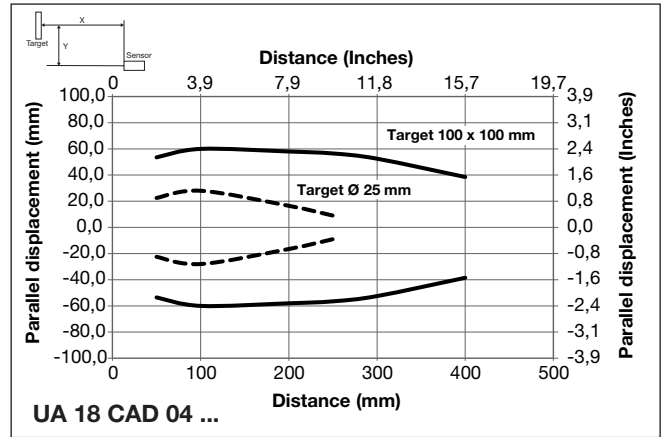
| | |
|---------------|------|
| Weight | |
| Cable version | 98 g |
| Plug version | 35 g |

| | |
|-------------------|---------------|
| CE-marking | Yes |
| Approvals | cULus (UL508) |

Wiring Diagram



Detection Range



Dimensions

