

Ultrasonic Diffuse, 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: Two multi function switching outputs. PNP or NPN, NO or NC
- Setup: Normal switching or adjustable hysteresis
- 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 self-contained multi function diffuse ultrasonic sensor with a sensing range of 50 to 2200 mm in three ranges. 2 switching outputs - easily set up for two different output modes and adjusted by teach-in - makes it ideal for level control tasks in a wide variety of vessels. 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

UA18CAD04NPM1TI

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

Type Selection

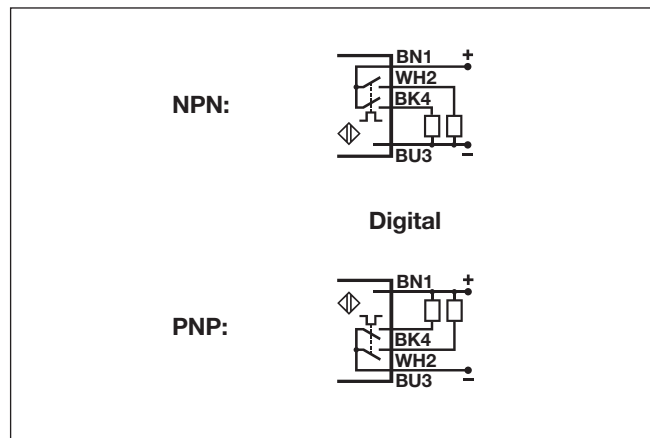
Housing diameter	Connection	Rated operating dist. (S_n)	Digital output NPN/PNP	Ordering no.
M18	Plug M12	50-400 mm	2 x NPN	UA 18 CAD 04 NP M1 TI
M18	Cable	50-400 mm	2 x NPN	UA 18 CAD 04 NP TI
M18	Plug M12	50-400 mm	2 x PNP	UA 18 CAD 04 PP M1 TI
M18	Cable	50-400 mm	2 x PNP	UA 18 CAD 04 PP TI
M18	Plug M12	100-900 mm	2 x NPN	UA 18 CAD 09 NP M1 TI
M18	Cable	100-900 mm	2 x NPN	UA 18 CAD 09 NP TI
M18	Plug M12	100-900 mm	2 x PNP	UA 18 CAD 09 PP M1 TI
M18	Cable	100-900 mm	2 x PNP	UA 18 CAD 09 PP TI
M18	Plug M12	200-2200 mm	2 x NPN	UA 18 CAD 22 NP M1 TI
M18	Cable	200-2200 mm	2 x NPN	UA 18 CAD 22 NP TI
M18	Plug M12	200-2200 mm	2 x PNP	UA 18 CAD 22 PP M1 TI
M18	Cable	200-2200 mm	2 x PNP	UA 18 CAD 22 PP TI

Specifications

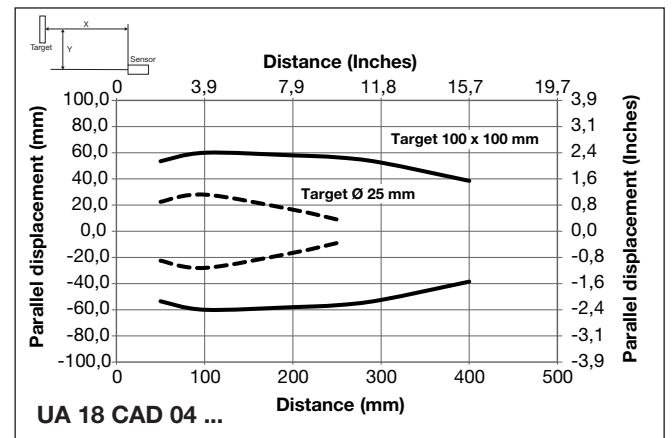
Rated operating distance (S_n)	Reference target: 1 mm metal rolled finish. CAD04: 100 x 100 mm CAD09 and CAD22: 200 x 200 mm 50 - 400 mm 100 - 900 mm 200 - 2200 mm	Repeatability	0.5%
UA18CAD04 UA18CAD09 UA18CAD22		Beam angle UA18CAD04... UA18CAD09... UA18CAD22...	$\pm 8^\circ$ $\pm 7^\circ$ $\pm 7^\circ$
Blind zone UA18CAD04... UA18CAD09... UA18CAD22...	≤ 50 mm ≤ 100 mm ≤ 200 mm	Sensitivity Push-button	P1 (farthest setpoint) P2 (nearest setpoint)
		Temperature drift	$\leq 0.1\%/^\circ\text{C}$ @ -20° to $+60^\circ\text{C}$
		Temperature compensation	Yes

Hysteresis (H)	Min. 1%	Normal Switching function with N.O and N.C. output. Adjustable hysteresis Filling or emptying control
Rated operational voltage (U_B)	15 to 30 VDC (ripple included)	
Ripple (U_{rip})	≤ 5%	
No-load supply current (I_o) UA18CAD04... UA18CAD09... UA18CAD22...	≤ 45 mA @ U _B max ≤ 45 mA @ U _B max ≤ 50 mA @ U _B max	Indication Output ON Yellow LED
Output current continuous (I_a) Max. load capacity 100 nF UL508 specification	≤ 500 mA ≤ 100 mA	Environment Installation category Pollution degree Degree of protection
Output current short-time (I) Max. load capacity 100 nF UL508 specification	≤ 500 mA ≤ 100 mA	Ambient temperature Operating Storage
Minimum operational current (I_m)	≤ 0.5 mA	Vibration
OFF-state current (I_p)	≤ 10 µA	Shock
Voltage drop (U_d)	≤ 2.2 VDC @ I _e max.	Rated insulation voltage
Protection	Short-circuit, overvoltage and reverse polarity	Housing
Carrier frequency UA18CAD04... UA18CAD09... UA18CAD22...	400 kHz 300 kHz 200 kHz	Material body Material front Material back, plug Material back, cable Material trimmer Sealing around trimmer Material sealing front UA18CAD04... UA18CAD09... UA18CAD22...
Operating frequency (f) UA18CAD04... UA18CAD09... UA18CAD22...	≤ 10 Hz ≤ 4 Hz ≤ 1 Hz	PBT Epoxy-glass resin Grilamid Grilamid POM TPE TPE TPE PBT
Response time OFF-ON (t_{ON}) UA18CAD04... UA18CAD09... UA18CAD22...	≤ 50 mS ≤ 125 mS ≤ 500 mS	Connection Cable Plug
Response time ON-OFF (t_{OFF}) UA18CAD04... UA18CAD09... UA18CAD22...	≤ 50 mS ≤ 125 mS ≤ 500 mS	Tightening torque
Power ON delay	≤ 900 mS	Weight Cable version Plug version
Output function, open collector By sensor type	NPN or PNP	CE-marking
Output switching function	Two open collector transis- tor outputs to be config- ured as:.	Approvals

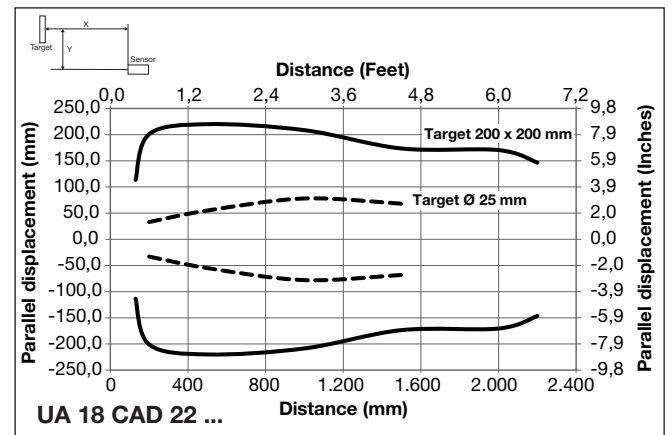
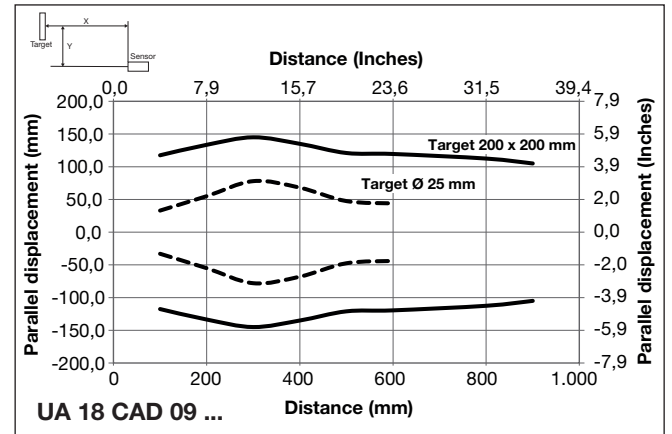
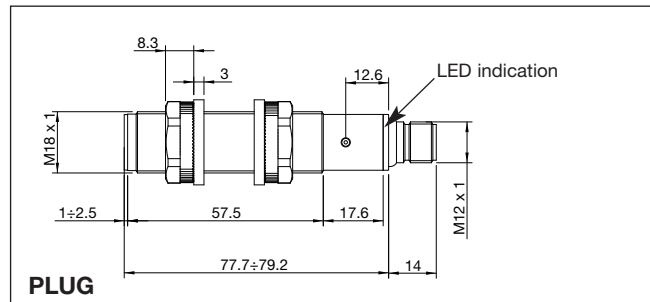
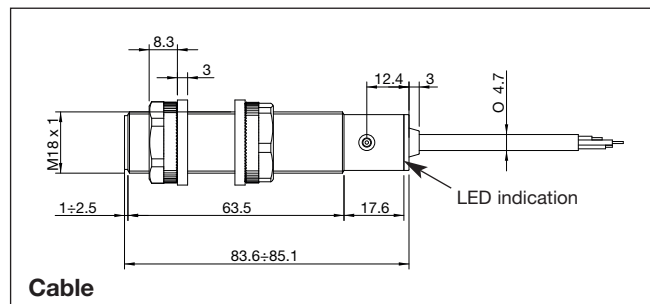
Wiring Diagram



Detection Range



Dimensions



Programming setup

General set up of sensing point P1 (longest distance) and P2 (shortest distance) independently of the sensor type or function.

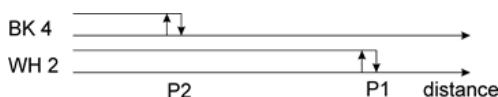
- 1) Mount the sensor in the selected application.
- 2) Place a target in front of the sensor at the maximum required distance (P1), then press shortly on the teach-button. The yellow LED switches Off and then On again after a maximum of 2 seconds. Now, the distance (P1) is saved in the sensor, and the target can be moved. I)
- 3) Place the target at the minimum distance requested (P2), then press shortly on the teach-button. The yellow LED turns Off and then flashes 5 times. Now, the distance (P2) is saved in the sensor and the target can be moved. II)

I) P1 can be set to maximum exceeding the family specification for the sensor by removing the target in front of the sensor. Push and hold the teach-button for more than one second and the sensing distance is set at a unique distance for this sensor only.

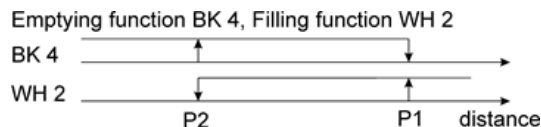
II) The second switch point can be set to minimum by setting the target within the blind zone close to the sensor head or by covering the sensor head with your hand while teaching P2.

Sensors with 2 digital outputs: UA..CAD..PP/NP types, Normal sensing function or Adjustable Hysteresis

- 1) The factory settings are normal sensing function.

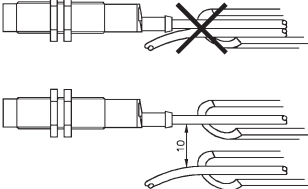
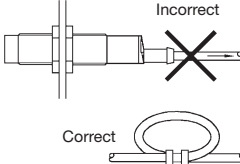
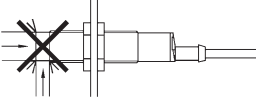
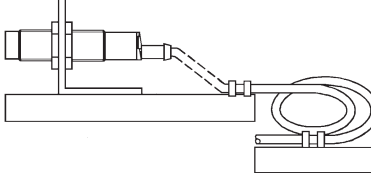


- 2) Push and hold the teach-button for 8 seconds (12 for UC18CAD22..) until the yellow LED flashes fast, then release the teach-button and the LED will flash 5 times to acknowledge the change in function. Now, the sensor is in adjustable hysteresis mode.



- 3) To switch back to normal function, repeat step 2.

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  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
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Delivery Contents

- Ultrasonic sensor: UA18CAD....
- Installation instruction
- Mounting:
 - 2 x M18 Nuts
 - 2 x rubber washers
- **Packaging:** Carton box 35 x 107 x 173 mm