

# 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
- 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 <sub>n</sub> )	Digital output NPN/PNP	Ordering no.
M18	Plug M12	50-400 mm	2 x NPN	<b>UA 18 CAD 04 NP M1 TI</b>
M18	Cable	50-400 mm	2 x NPN	<b>UA 18 CAD 04 NP TI</b>
M18	Plug M12	50-400 mm	2 x PNP	<b>UA 18 CAD 04 PP M1 TI</b>
M18	Cable	50-400 mm	2 x PNP	<b>UA 18 CAD 04 PP TI</b>
M18	Plug M12	100-900 mm	2 x NPN	<b>UA 18 CAD 09 NP M1 TI</b>
M18	Cable	100-900 mm	2 x NPN	<b>UA 18 CAD 09 NP TI</b>
M18	Plug M12	100-900 mm	2 x PNP	<b>UA 18 CAD 09 PP M1 TI</b>
M18	Cable	100-900 mm	2 x PNP	<b>UA 18 CAD 09 PP TI</b>
M18	Plug M12	200-2200 mm	2 x NPN	<b>UA 18 CAD 22 NP M1 TI</b>
M18	Cable	200-2200 mm	2 x NPN	<b>UA 18 CAD 22 NP TI</b>
M18	Plug M12	200-2200 mm	2 x PNP	<b>UA 18 CAD 22 PP M1 TI</b>
M18	Cable	200-2200 mm	2 x PNP	<b>UA 18 CAD 22 PP TI</b>

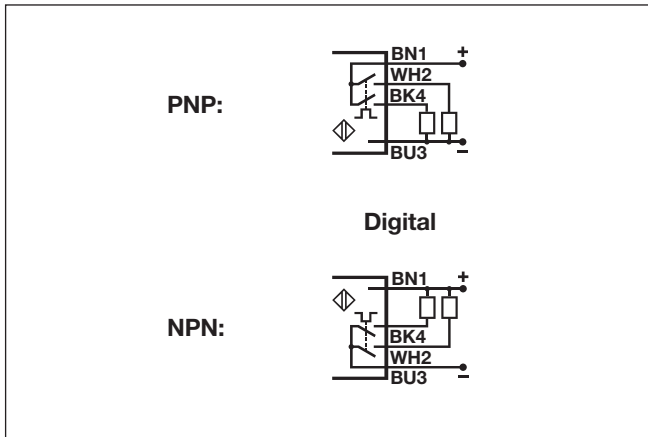
## Specifications

<b>Rated operating distance (S<sub>n</sub>)</b>	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	<b>Repeatability</b>	0.5%
UA18CAD04 UA18CAD09 UA18CAD22		<b>Beam angle</b> UA18CAD04... UA18CAD09... UA18CAD22...	$\pm 8^\circ$ $\pm 7^\circ$ $\pm 7^\circ$
<b>Blind zone</b> UA18CAD04... UA18CAD09... UA18CAD22...	$\leq 50$ mm $\leq 100$ mm $\leq 200$ mm	<b>Adjustment</b> Push-button	P1 (farthest setpoint) P2 (nearest setpoint)
		<b>Temperature drift</b>	$\leq 0.1\%/^\circ\text{C}$ @ $-20^\circ$ to $+60^\circ\text{C}$
		<b>Temperature compensation</b>	Yes

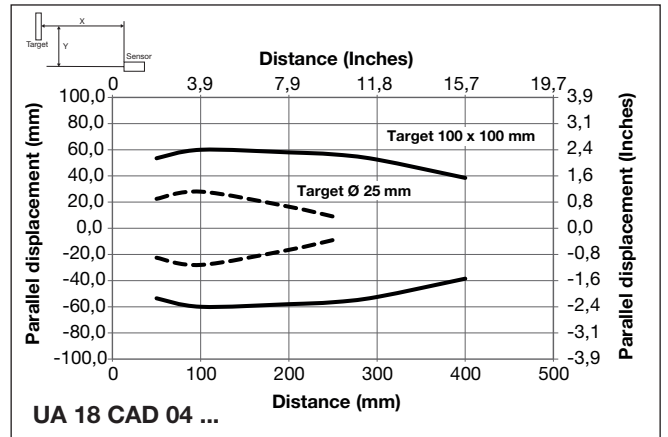
## Specifications (cont.)

<b>Hysteresis (H)</b>	Min. 1%	Normal Switching function with N.O. output. Adjustable hysteresis Filling or emptying control
<b>Rated operational voltage (<math>U_B</math>)</b>	15 to 30 VDC (ripple included)	
<b>Ripple (<math>U_{rip}</math>)</b>	≤ 5%	
<b>No-load supply current (<math>I_o</math>)</b>		<b>Indication Output ON</b>
UA18CAD04...	≤ 45 mA @ $U_B$ max	Yellow LED
UA18CAD09...	≤ 45 mA @ $U_B$ max	<b>Environment</b>
UA18CAD22...	≤ 50 mA @ $U_B$ max	Installation category
<b>Output current continuous (<math>I_o</math>)</b>		Pollution degree
Max. load capacity 100 nF	≤ 500 mA	Degree of protection
UL508 specification	≤ 100 mA	<b>Ambient temperature</b>
<b>Output current short-time (I)</b>		Operating
Max. load capacity 100 nF	≤ 500 mA	Storage
UL508 specification	≤ 100 mA	<b>Vibration</b>
<b>Minimum operational current (<math>I_m</math>)</b>	≤ 0.5 mA	10 to 55 Hz, 1.0 mm/6g (IEC/EN 60068-2-6)
<b>OFF-state current (<math>I_r</math>)</b>	≤ 10 $\mu$ A	<b>Shock</b>
<b>Voltage drop (<math>U_d</math>)</b>	≤ 2.2 VDC @ $I_o$ max.	30 g / 11 mS, 3 directions (IEC/EN 60068-2-27)
<b>Protection</b>	Short-circuit, overvoltage and reverse polarity	<b>Rated insulation voltage</b>
<b>Carrier frequency</b>		< 500 VAC (rms)
UA18CAD04...	400 kHz	<b>Housing</b>
UA18CAD09...	300 kHz	Material body
UA18CAD22...	200 kHz	Material front
<b>Operating frequency (f)</b>		Material back, plug
UA18CAD04...	≤ 10 Hz	Material back, cable
UA18CAD09...	≤ 4 Hz	Material push-button
UA18CAD22...	≤ 1 Hz	Sealing around push-button
<b>Response time OFF-ON (<math>t_{ON}</math>)</b>		Material sealing front
UA18CAD04...	≤ 50 mS	UA18CAD04...
UA18CAD09...	≤ 125 mS	UA18CAD09...
UA18CAD22...	≤ 500 mS	UA18CAD22...
<b>Response time ON-OFF (<math>t_{OFF}</math>)</b>		<b>Connection</b>
UA18CAD04...	≤ 50 mS	Cable
UA18CAD09...	≤ 125 mS	PVC, grey, 2 m, 4 x 0.32 mm <sup>2</sup> , $\varnothing = 4.7$
UA18CAD22...	≤ 500 mS	mm
<b>Power ON delay</b>	≤ 900 mS	Plug
<b>Output function, open collector</b>		M12, 4-pin (CON. 14-series)
By sensor type	NPN or PNP	<b>Tightening torque</b>
<b>Output switching function</b>	Two open collector transistor outputs to be configured as:	≤ 1 Nm
		<b>Weight</b>
		Cable version
		Plug version
		<b>CE-marking</b>
		Yes
		<b>Approvals</b>
		cULus (UL508)

## Wiring Diagram



## Detection Range



## Dimensions

