Ultrasonic
Diffuse, Digital Output
Types UA30CAD.....TI



- **Cylindrical M30 PBT housing**
- **Sensing distance: 250-3500 mm**
- **Power supply: 12 to 30 VDC**
- **Outputs: Two multi function switching outputs. PNP or NPN**
- **Setup: Normal switching or adjustable hysteresis**
- **Repeatability 0.2%**
- **Beam angle. ±6°**
- **Protection: Short-circuit, reverse polarity and overvoltage**
- **Protection degree IP 67, Nema 4X**
- **2 m cable or M12 plug**

Product Description

A self-contained multi function diffuse ultrasonic sensor with a sensing range of 250 to 3500 mm. 2 switching outputs - easely 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

UA30CAD35NPM1TI

- **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.
M30	Plug M12	250-3500 mm	2 x NPN	**UA 30 CAD 35 NP M1 TI**
M30	Cable	250-3500 mm	2 x NPN	**UA 30 CAD 35 NP TI**
M30	Plug M12	250-3500 mm	2 x PNP	**UA 30 CAD 35 PP M1 TI**
M30	Cable	250-3500 mm	2 x PNP	**UA 30 CAD 35 PP TI**

Specifications

Rated operating distance (S_n)	Reference target: 1 mm metal rolled finish, size 200 x 200 mm. 250 - 3500 mm
Blind zone	≤ 250 mm
Repeatability	0.2%
Beam angle	±6°
Adjustment	
Push-button	P1 (farthest setpoint) P2 (nearest setpoint)
Temperature drift	≤ 0.1%/°C @ -20° to +70° C
Temperature compensation	Yes
Hysteresis (H)	Min. 0.5%
Rated operational voltage (U_B)	12 to 30 VDC (ripple included)
Ripple (U_{rpp})	≤ 5%
No-load supply current (I_o)	≤ 50 mA @ U_B max
Output current continuous (I_e)	
Max. load capacity 100 nF	≤ 300 mA
UL508 specification	≤ 100 mA
Output current short-time (I)	
Max. load capacity 100 nF	≤ 300 mA
UL508 specification	≤ 100 mA
Minimum operational current (I_m)	≤ 0.5 mA
OFF-state current (I_r)	≤ 10 µA
Voltage drop (U_d)	≤ 2.2 VDC @ 100 mA
Protection	Short-circuit, overvoltage and reverse polarity
Carrier frequency	112 kHz
Operating frequency (f)	≤ 2 Hz
Response time OFF-ON (t_{ON})	≤ 250 mS
Response time ON-OFF (t_{OFF})	≤ 250 mS
Power ON delay	≤ 500 mS
Output function, open collector	

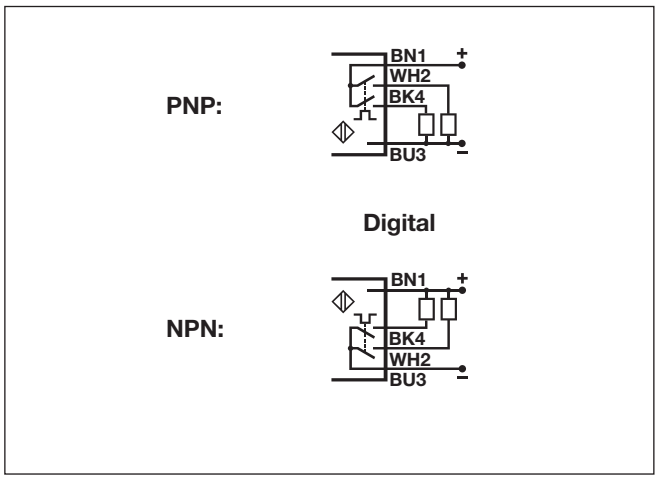
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Specifications (cont.)

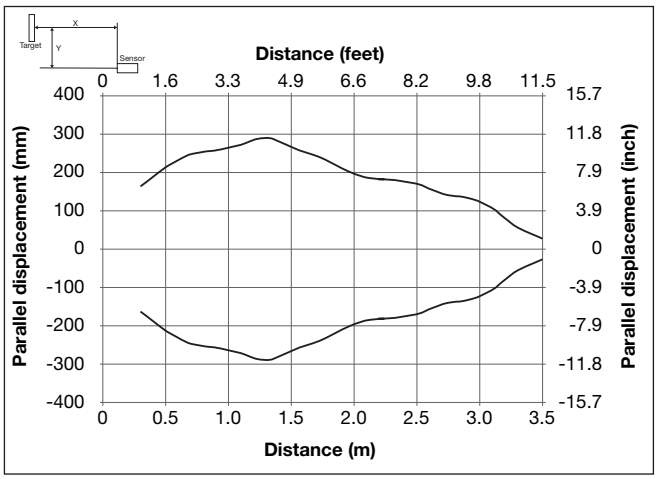
By sensor type	NPN or PNP
Output switching function	Two open collector transistor outputs to be configured as:. - Normal Switching function with N.O output. - Adjustable hysteresis Filling or emptying control
Indication	
Output ON	Yellow LED
Echo received	Green LED
Environment	
Installation category	III (IEC 60664/60664A; 60947-1)
Pollution degree	3 (IEC 60664/60664A; 60947-1)
Degree of protection	IP67 (IEC 60529; 60947-1) Nema 4X
Ambient temperature	
Operating	-20° to +70°C (-4° to +158°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 push-button	TPE
Sealing around push-button	TPE
Material sealing front	TPE
Connection	
Cable	PVC, grey, 2 m, 4 x 0.34 mm², Ø = 4.7 mm
Plug	M12, 4-pin (CON. 14-series)
Tightening torque	≤ 1.5 Nm
Weight	
Cable version	160 g
Plug version	90 g
CE-marking	Yes
Approvals	cULus (UL508)

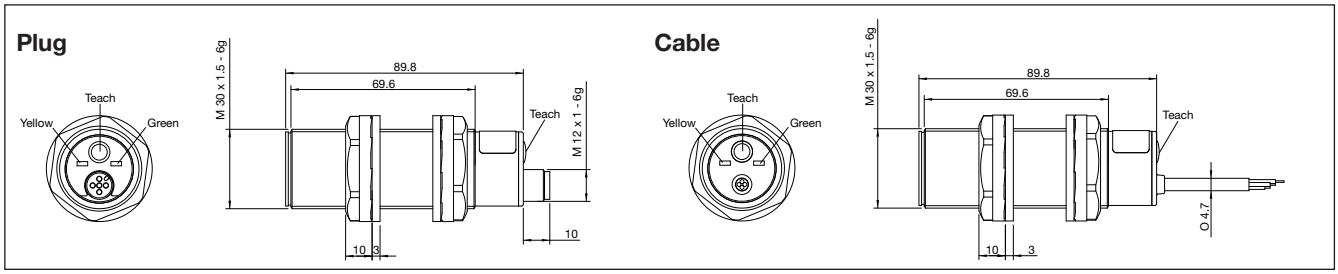
Wiring Diagram



Detection Range



Dimensions



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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 switch Off and then On and start flashing. The distance (P1) is now 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.

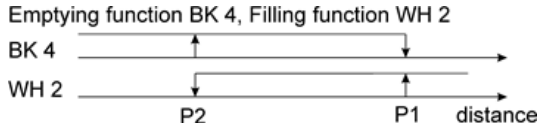
   II) The second switch point can be set to minimum by setting the target within the blind zone close to the sensor head or by covering the sensor head with your hand while teaching P2.

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

1) The factory settings are normal sensing function.



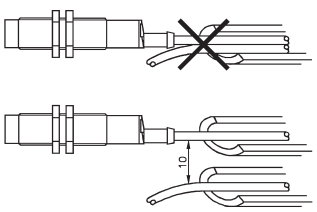
2) Push and hold the teach-button for 8 seconds (12 for UC18CAD22..) until the yellow LED flashes fast, then release the teach-button and the LED will flash 5 times to acknowledge the change in function.
   Now, the sensor is in adjustable hysteresis mode.



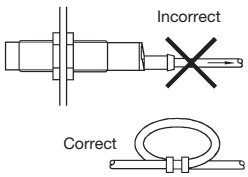
3) To switch back to normal function, repeat step 2.

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

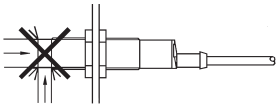


Relief of cable strain



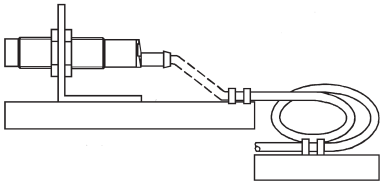
The cable should not be pulled

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

Delivery Contents

- Ultrasonic sensor: UA30CAD....
- Installation instruction
- Mounting:
  2 x M30 Nuts
  2 x rubber washers
- Packaging: Carton box 35 x 107 x 173 mm

Accessories

- Connector type COBM14NF.. series

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