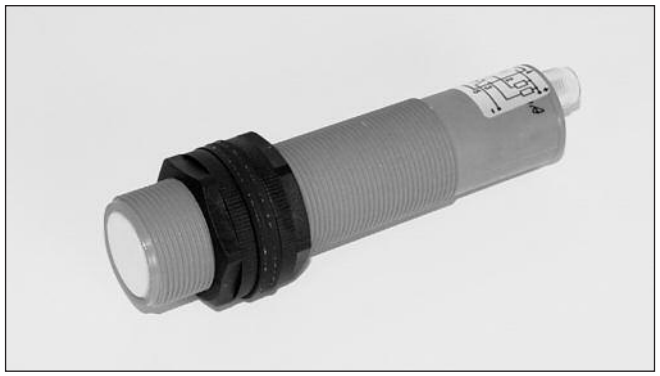
Ultrasonic
Diffuse, Analogue Output with Teach-in
Types UA 30 CLD .. .. M1 TI



- **Cylindrical M30 polyester housing**
- **Sensing distance: 150-1500 mm, 250-2000 mm or 350-3500 mm**
- **Outputs: Analogue 0-10 V or 4-20 mA and 2 switching outputs PNP, NO or NC**
- **Teach-in functionality**
- **Power supply: 19 to 30 VDC**
- **8° beam angle**
- **Protection: Short-circuit, reverse polarity, transients**
- **Protection degree IP 67**
- **M12 plug, 5 pin**
- **Repeatability ± 2 mm ± 0.4%**
- **Linearity error ± 0.5% / 3 mm**
- **Hysteresis 1% / 2 mm**

Product Description

A family of diffuse ultrasonic sensors with sensing range from 100-1500 mm, 200-2000 mm and 300-3500 mm with teach-in adjustment. Adjustments by teach-in makes it possible to set the analog angle according to the requests and program the output to NO or NC switching as well. The outputs are either 0-10 V or 4-20 mA which make it an ideal choice for distance measurement, level measurement, diameter measurement or loop control with customised settings. Due to use of microprocessor control the digital filtering makes the sensor immune to most electromagnetic interferences.

Ordering Key

UA 30 CLD 35 AK M1 TI

- **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 and 2 PNP outputs NO/NC	Ordering no. Teach-in
M30	Plug M12	150-1500 mm	0-10 VDC and 2 x PNP	**UA 30 CLD 15 AK M1 TI**
M30	Plug M12	250-2000 mm	0-10 VDC and 2 x PNP	**UA 30 CLD 20 AK M1 TI**
M30	Plug M12	250-2000 mm	4-20 mA and 2 x PNP	**UA 30 CLD 20 AG M1 TI**
M30	Plug M12	250-2000 mm	2 x PNP	**UA 30 CLD 20 PO M1 TI**
M30	Plug M12	350-3500 mm	0-10 VDC and 2 x PNP	**UA 30 CLD 35 AK M1 TI**

Specifications

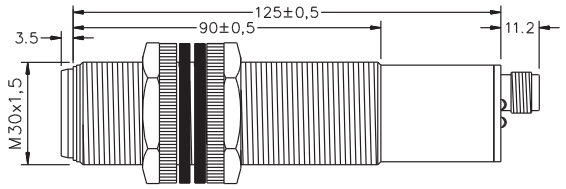
Rated operational volt. (U_e)	19 to 30 VDC (ripple included)
Ripple	≤ 10%
Output current (I_e)	max. 100 mA (continuous) for switching outputs
No-load supply current (I_o)	≤ 45 mA
Protection	Short-circuit, transients and reverse polarity
Rated insulation voltage	> 1 kV
Output	
UA30CLD..AKM1TI	Analogue 0-10 VDC, 2 PNP open collector outputs, NO or NC
UA30CLD20AGM1TI	Analogue 4-20 mA, 2 PNP open collector outputs, NO or NC
UA30CLD20POM1TI	2 PNP open collector outputs, NO or NC
Power-on delay	< 10 ms
Carrier frequency	130 KHz
Voltage drop (U_d)	4.5 V
Load	
4 - 20 mA	max. 500 Ω
0 - 10 V	min. 1 kΩ
Off-state current (I_r)	200 μA
Teach-in	Set point adjustment NO/NC selection
Indication	Set points, 2 LED's
Rated operating distance / resolution	
UA30CLD15 .. M1 TI	150-1500 mm / < 1 mm
UA30CLD20 .. M1 TI	250-2000 mm / < 1 mm
UA30CLD35 .. M1 TI	350-3500 mm / < 1 mm
Operating frequency	1 Hz
Response times	
UA30CLD15/20 .. M1 TI	60 ms (target speed 1 m/s) 300 ms (step response)
UA30CLD35 AG M1 TI	120 ms (target speed 1 m/s) 500 ms (step response)

Specifications (cont.)

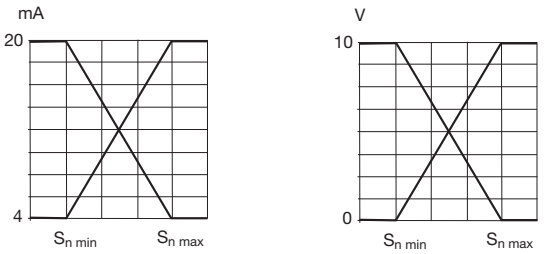
Hysteresis (H) (differential travel)	1% / 2 mm
Temperature compensation	Yes
Beam angle	8°
Ambient temperature	
Operating	-15° to +70°C (5° to +158°F)
Storage	-25° to +85°C (-13° to +185°F)
Degree of protection	IP 67 (Nema 1, 3, 4, 6, 13)

Housing material	Polyester PBTP
Connection	Plug M12, 5-pin Cable CONM15 series
Weight	148 g
Tightening torque	7.5 Nm
CE-marking	Yes

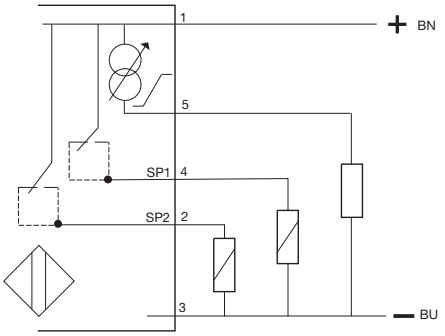
Dimensions

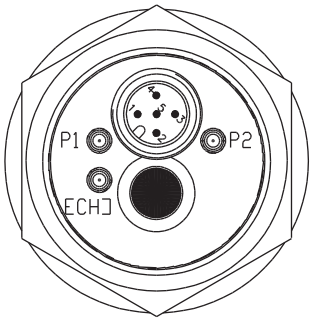


Analogue Output Curves

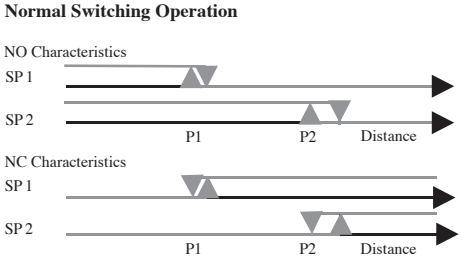


Cable Wiring

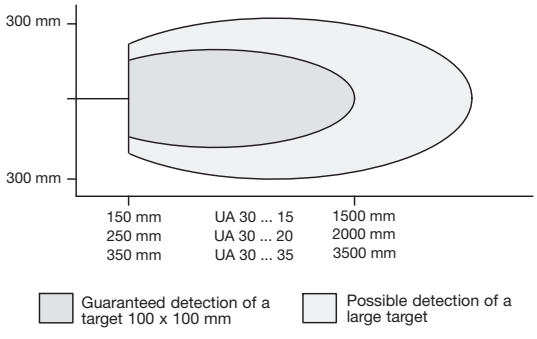




Switching Operation



Detection Range



Teach-in procedure

Analogue output adjustment

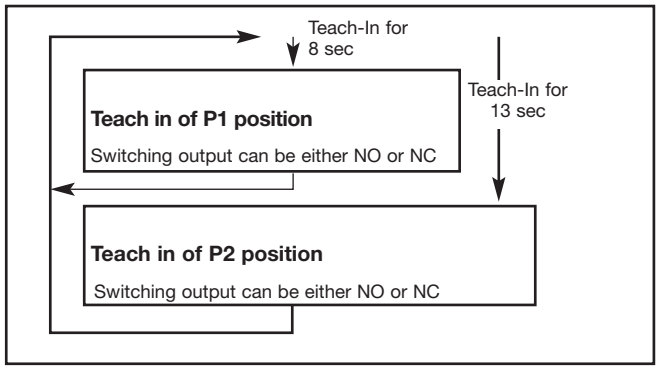
P1 and P2 define the analogue output slope.
P1 determines the 4 mA/0V position and P2 the 20 mA/10V position.
Positive slope: P1 < P2
Negative slope: P2 < P1

Teach-In of P1 position (4 mA/0V and SP1 output)
Hold Teach-In for 8 seconds until P1 and Echo LED's start flashing 2 times per second.
The sensor is now in teach mode for P1:
P1 LED will now flash once per second and the Echo LED returns to normal function (alignment LED).
The Teach-In function is now open for 1 minute to do the programming of P1.
Place the target at the new position P1.
Activate Teach-in: P1 is now programmed.
Sensor returns to normal function with new value for P1.

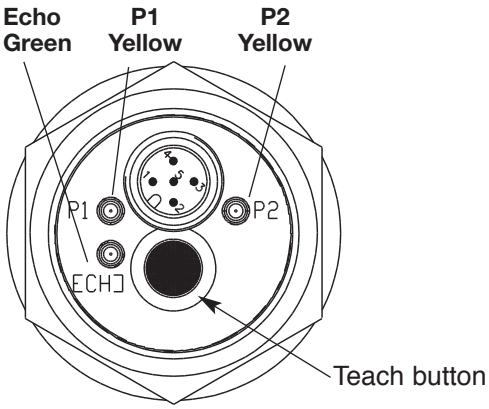
Teach-In of P2 position (20 mA/10V and SP2 output)
Hold Teach-In for 13 seconds until the P2 and Echo LEDs start flashing 2 times per second. After 8 seconds, the P1 and Echo LEDs will start flashing, but this must be ignored and after an additional 5 seconds the P2 is reached.
The sensor is now in teach mode for P2:
P1 LED is flashing once per second. The Echo LED returns to normal function (alignment LED).
Teach-mode is now open for 1 minute to do the programming of P1.
Move the target to the new position P2.
Activate Teach-in: P2 is now programmed.
Sensor returns to normal function with new value for P2.

Switching output characteristics can be selected during teaching of the set point P1 or P2. If activating the Teach-In as the LED is ON – the switching output will have NO characteristics, if doing this as the LED is OFF, the switching output will have NC characteristics.

Output Adjustment



Normal function:
The Echo LED is ON when the echo is received (this is the alignment LED confirming that the target is properly aligned). The LED P1 is ON, when the target is between the sensor face and P1. The LED P2 is ON when Target is farther than P2.



Installation Hints