

Instruction manual
Ultrasonic Sensors with two
switched outputs

UMT 30-350-2PSD-L5
UMT 30-1300-2PSD-L5
UMT 30-3400-2PSD-L5
UMT 30-6000-2PSD-L5

Product description

- The UMT-sensor with two switched outputs measures the distance to an object within the detection zone contactless. Depending on the adjusted detect distance the switched outputs are set.
- All settings are done with two push-buttons and a three-digit 7 segment display.
- Light emitting diodes (three-colour LEDs) indicate the switching status.
- The output functions are changeable from NOC to NCC.

- The sensors are adjustable manually using the numerical 7 segment display or may be trained using Teach-in processes.
- Useful additional functions are set in the Add-on-menu.

Important instructions for assembly and application

All employee and plant safety-relevant measures must be taken prior to assembly, start-up, or maintenance work (see operation manual for the entire plant and the operator instruction of the plant).

The sensors are not considered as safety equipment and may not be used to ensure human or machine safety!

The UMT- sensors indicate a **blind zone**, in which the distance cannot be measured. The **operating range** indicates the distance of the sensor that can be applied with normal reflectors with sufficient function reserve. When using good reflectors, such as a calm water surface, the sensor can also be used up to its **maximum range**. Objects that strongly absorb (e.g. plastic foam) or diffusely reflect

sound (e.g. pebble stones) can also reduce the defined operating range.

Synchronisation

If the assembly distances shown in Fig.1 for two or more sensors are exceeded the integrated synchronisation should be used. Connect Sync/Com-channels (pin 5 at the units receptable) of all sensors (10 maximum).

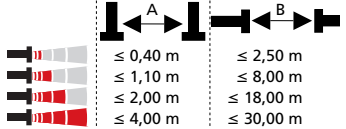


Fig. 1: Assembly distances, indicating synchronisation/multiplex

Multiplex mode

The Add-on-menu allows to assign an individual address »01« to »10« to each sensor connected via the Sync/Com-channel (Pin5). The sensors perform the ultrasonic measurement sequentially from low to high address. Therefore any influence between the sensors is rejected.

The address »00« is reserved for synchronisation mode and deactivates the multiplex mode. (To use synchronised mode all sensors must be set to address »00«.)

Assembly instructions

- Assemble the sensor at the installation location.
- Plug in the connector cable to the M 12 connector.

		colour
1	+U _B	brown
3	-U _B	blue
4	Q2	black
2	Q1	white
5	Sync/Com.	grey

Fig. 2: Pin assignment with view onto sensor plug and colour coding of the SensoPart connection cable

Start-up

UMT-sensors are delivered factory made with the following settings:

- Switched outputs on NOC
- Detecting distances at operating range and half operating range
- Measurement range set to maximum range

Set the parameters of the sensor manually or use the Teach-in procedure to adjust the detect points.

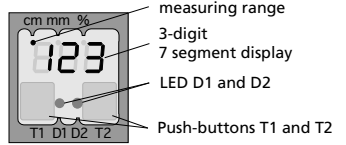


Fig. 3: Control panel

Operation

UMT-sensors work maintenance free. Small amounts of dirt on the surface do not influence function. Thick layers of dirt and caked-on dirt affect sensor function and therefore must be removed.

Note

- UMT-sensors have internal temperature compensation. Because the sensors heat up on their own, the temperature compensation reaches its optimum working point after approx. 30 minutes of operation.
- During normal mode operation, a yellow LED signals that the corresponding switched output has connected.
- During normal mode operation, the measured distance value is indicated on the 7 segment display in mm (up to 999 mm) or cm (from 100 cm). Scale switches automatically and is indicated by a point on top of the digits.

- During Teach-in mode, the hysteresis loops are set back to factory settings.

- If no objects are placed within the detection zone the 7 segment display shows »- - -«.

- If no push-buttons are pressed for 20 seconds during parameter setting mode the made changes are stored and the sensor returns to normal mode operation.

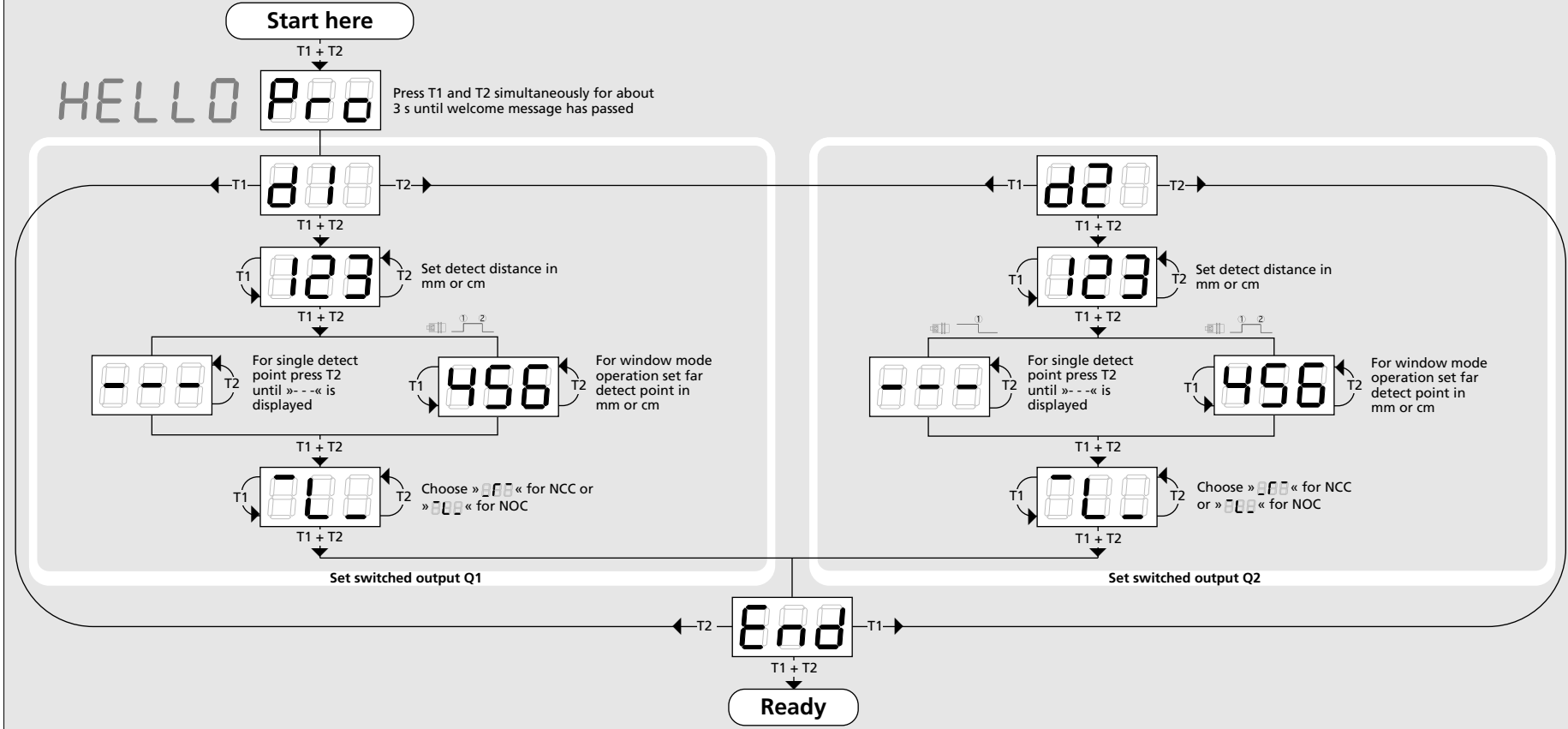
- You can lock the key pad to provide inputs, see »Key lock and factory settings«.

- You can reset the factory settings at any time, see »Key lock and factory setting«.

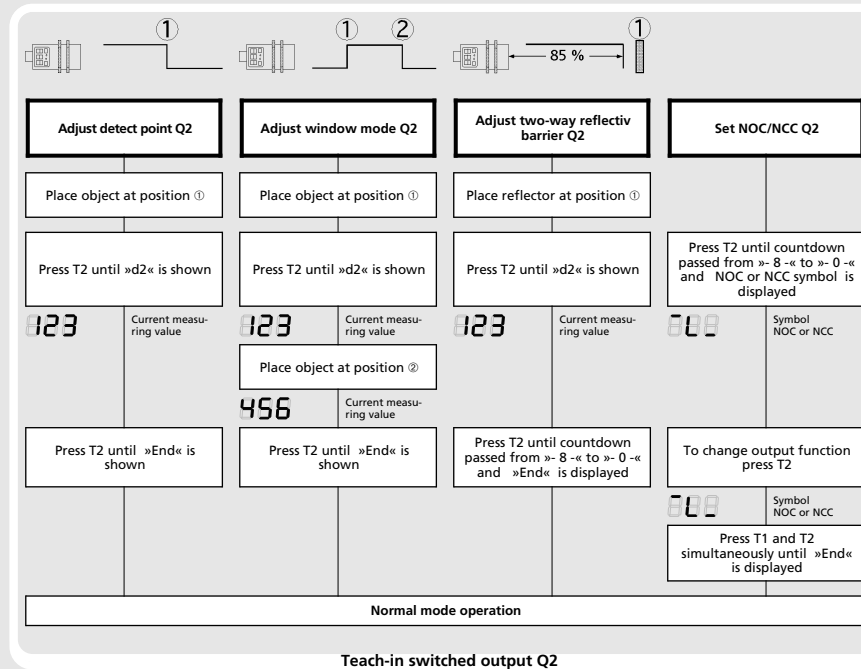
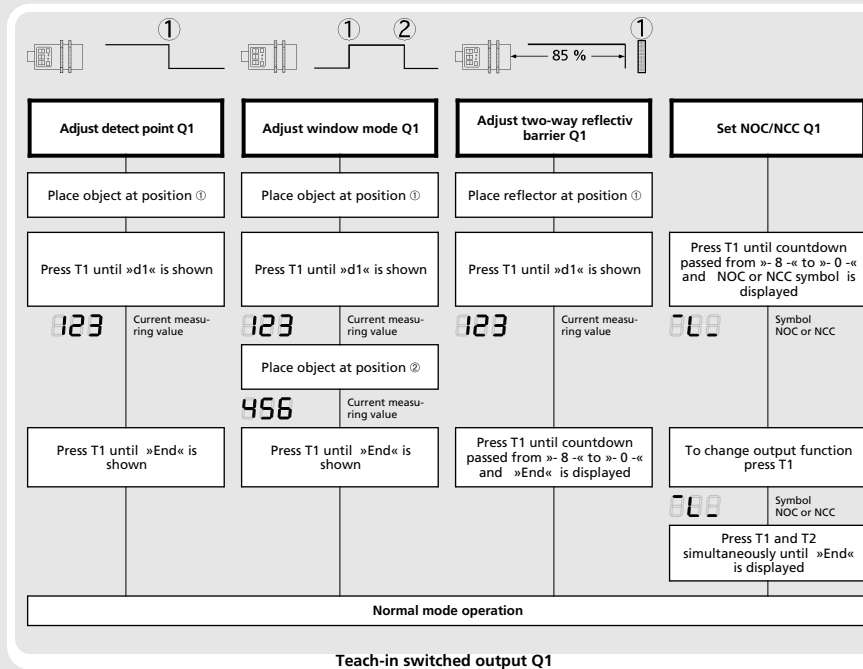
Show parameters

Tapping push-button T1 shortly during normal mode operation shows »PAR« on the 7 segment display. Each time you tap push-button T1 the actual settings of the switched outputs are shown.

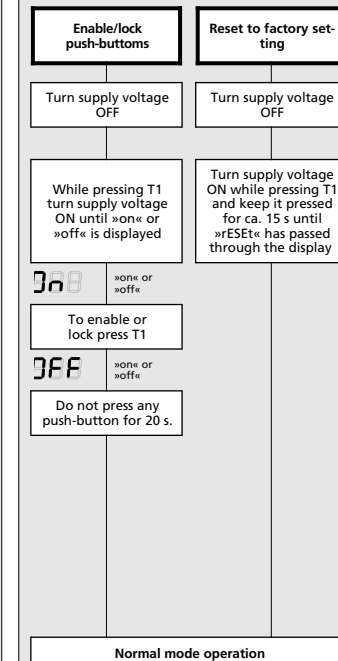
Set sensor parameters alternatively numerically using 7 segment display...



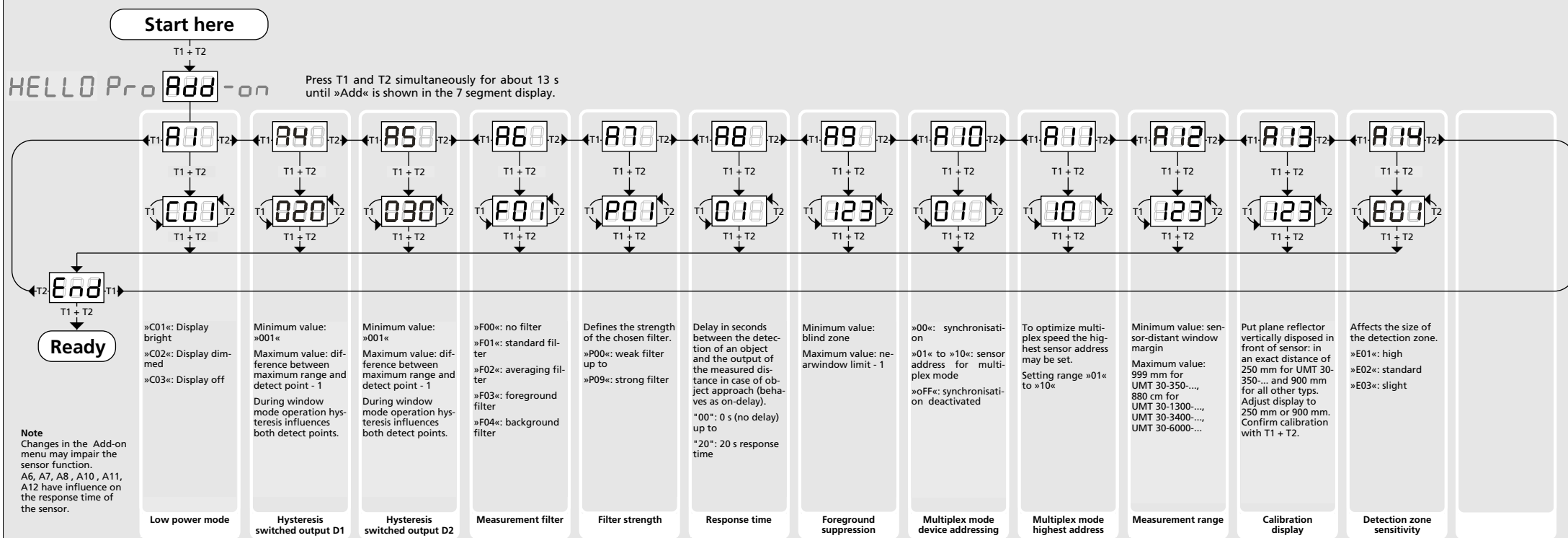
...or with the Teach-in procedure



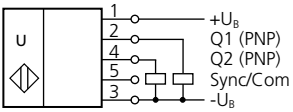
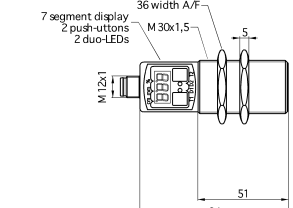
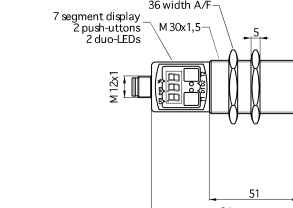
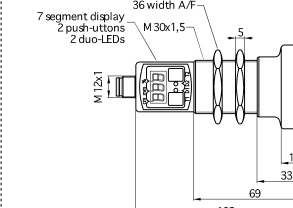
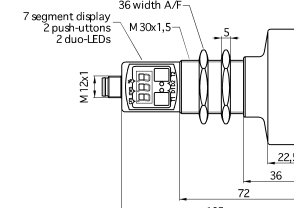
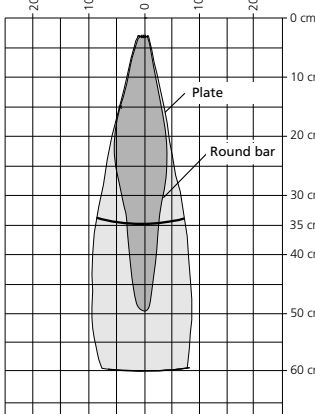
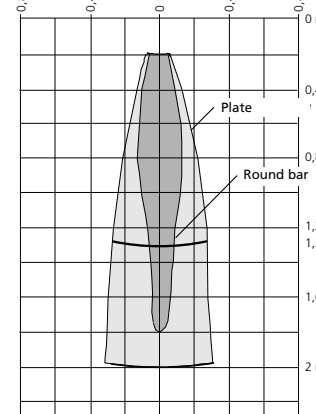
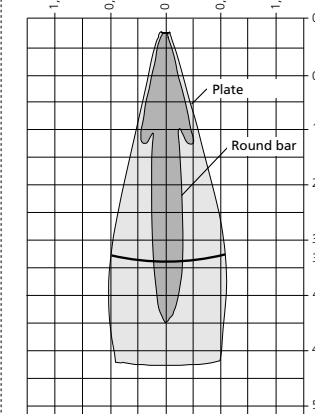
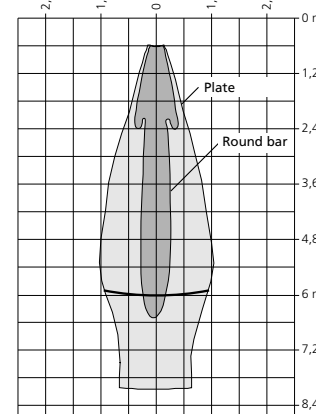
Key lock and factory setting



Usefull additional functions in Add-on menu (for experienced users only, settings not required for standard applications)



Technical data

 <p>2 PNP switched outputs</p>	<p>UMT 30-350-...</p> 	<p>UMT 30-1300-...</p> 	<p>UMT 30-3400-...</p> 	<p>UMT 30-6000-...</p> 	
<p>Blind zone Operating range Maximum range Angle of beam spread Transducer frequency Resolution, sampling rate Reproducibility Accuracy</p>	<p>0 to 65 mm 350 mm 600 mm Please see detection zone ca. 400 kHz 0,18 mm ± 0,15 % Temperature drift internal compensated, ≤ 2 % may be deactivated¹⁾ (0,17%/K without compensation)</p>	<p>0 to 200 mm 1.300 mm 2.000 mm Please see detection zone ca. 200 kHz 0,18 mm ± 0,15 % Temperature drift internal compensated, ≤ 2 % may be deactivated¹⁾ (0,17%/K without compensation)</p>	<p>0 to 350 mm 3.400 mm 5.000 mm Please see detection zone ca. 120 kHz 0,18 mm ± 0,15 % Temperature drift internal compensated, ≤ 2 % may be deactivated¹⁾ (0,17%/K without compensation)</p>	<p>0 to 600 mm 6.000 mm 8.000 mm Please see detection zone ca. 80 kHz 0,18 mm ± 0,15 % Temperature drift internal compensated, ≤ 2 % may be deactivated¹⁾ (0,17%/K without compensation)</p>	
<p>Detection zones for different objects: The dark grey areas are determined with a thin round bar (10 or 27 mm dia.) and indicate the typical operating range of a sensor. In order to obtain the light grey areas, a plate (500 x 500 mm) is introduced into the beam spread from the side. In doing so, the optimum angle between plate and sensor is always employed. This therefore indicates the maximum detection zone of the sensor. It is not possible to evaluate ultrasonic reflections outside this area.</p>					
<p>Operating voltage U_B Voltage ripple No-load supply current Housing Class of protection to EN 60529 Norm conformity Type of connection Controls Indicators Programmable Operating temperature Storage temperature Weight Switching hysteresis¹⁾ switching frequency¹⁾ Response time¹⁾ Time delay before availability Order No. Switched output</p>	<p>9 V to 30 V DC, reverse polarity protection ±10 % ≤ 80 mA Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67 EN 60947-5-2 5-pin initiator plug, PBT 2 push-buttons 3-digit 7 segment display, 2 three-colour LEDs Yes, via control panel -25°C bis +70°C -40°C bis +85°C 150 g 5 mm 12 Hz 64 ms < 300 ms UMT 30-350-2PSD-L5 2 x PNP, U_B - 2 V, I_{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof</p>	<p>9 V to 30 V DC, reverse polarity protection ±10 % ≤ 80 mA Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67 EN 60947-5-2 5-pin initiator plug, PBT 2 push-buttons 3-digit 7 segment display, 2 three-colour LEDs Yes, via control panel -25°C bis +70°C -40°C bis +85°C 150 g 20 mm 8 Hz 92 ms < 300 ms UMT 30-1300-2PSD-L5 2 x PNP, U_B - 2 V, I_{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof</p>	<p>9 V to 30 V DC, reverse polarity protection ±10 % ≤ 80 mA Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67 EN 60947-5-2 5-pin initiator plug, PBT 2 push-buttons 3-digit 7 segment display, 2 three-colour LEDs Yes, via control panel -25°C bis +70°C -40°C bis +85°C 210 g 50 mm 4 Hz 172 ms < 300 ms UMT 30-3400-2PSD-L5 2 x PNP, U_B - 2 V, I_{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof</p>	<p>9 V to 30 V DC, reverse polarity protection ±10 % ≤ 80 mA Brass sleeve, nickel-plated, plastic parts: PBT, TPU; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67 EN 60947-5-2 5-pin initiator plug, PBT 2 push-buttons 3-digit 7 segment display, 2 three-colour LEDs Yes, via control panel -25°C bis +70°C -40°C bis +85°C 270 g 100 mm 3 Hz 240 ms < 300 ms UMT 30-6000-2PSD-L5 2 x PNP, U_B - 2 V, I_{max} = 2 x 200 mA switchable NOC/NCC, short-circuit-proof</p>	

1) Can be programmed via control panel