

Operating manual ultrasonic sensors

UR18***090S/ UR18***220S
Retroreflektiv

Delivery

- 1x ultrasonic sensor
- Operation manual
- 2 metallic nuts SW24 (metallic version)
- 2 plastic nuts SW22 + 2 washer SW22 (plastic version)

Intended use

elobau ultrasonic sensors are used for non-contact detection of liquid media and objects.

Safety instructions

- Read the instructions before use
- Connection, installation and adjustment by qualified personnel only
- Protect the device against humidity and contamination during commissioning
- Not a safety component according to EU Machinery Directive

Notes for effective use* Remove the black protective cap before use.

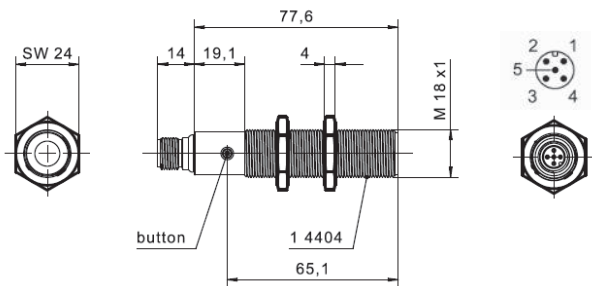
- Reliable measurement is not guaranteed within the blind zone. The ultrasonic sensors have internal temperature compensation. The optimum operating point is reached after approx. 20 minutes of operation. Rapid temperature changes require renewed internal temperature compensation.
- Ensure that the specified electrical data is complied with and not exceeded.
- Ensure that the sensor surface is not exposed to hot water (> 50 ° C), water vapour, acids or solvents.
- Sound-absorbing or diffusely reflecting materials can also reduce the specified measuring ranges.
- No flush mounting of sensor surface with object surface.
- The sensor retains the last set parameters after the operating voltage has been removed.

Operation / Maintenance:

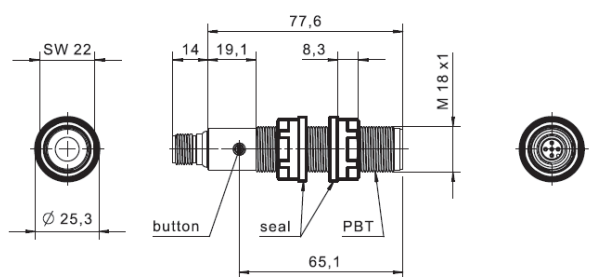
elobau ultrasonic sensors are maintenance-free. Nevertheless, it is advisable to clean the sensor surface with a damp cloth at regular intervals and to check the screw connections. Slight contamination of the sensor surface has no effect on the function. Heavy contamination or sticking of product may affect the function and must be removed.

Dimensions

UR18M* - Stainless steel version



UR18P* - Plastic version



Technical data

| | UR18***090S | UR18***220S |
|---|---|-------------------------|
| Technology | Ultrasonic | |
| Operating mode | Retroreflective | |
| Sensing range | 0...900mm ¹ | 0...2200mm ² |
| Minimum distance sensor/reflector (Retroreflective mode sensor) | 150mm | 300mm |
| Minimum distance object/reflector (Retroreflective mode sensor) | 10% ⁴ | |
| Blind zone | - | |
| Opening angle of sound cone | 7°±2° | 8°±2° |
| Operating voltage | 10...30V | |
| Ripple | 5% | |
| Current consumption | <50mA | |
| Operating frequency | 300KHZ | 200KHZ |
| Polarity reversal protection | yes | |
| Outputs | PNP / NPN | |
| Switching output | PNP/NPN NO/NC selectable | |
| Continuous current | 100mA | |
| Switching frequency | 3Hz | 2Hz |
| Linearity error | 1% | |
| Repeating accuracy | 0,5% | |
| Resolution | ≤3mm | |
| Temperature compensation | yes | |
| Thermal drift | ±2% | |
| Overload protection | yes | |
| Short-circuit protection | yes | |
| Start-up time digital output | 400ms | |
| Synchronization | yes | |
| Multiplexing | yes | |
| Controls | Teach-in button | |
| Indicators | Switching status: 2 LEDs orange, Echo: 1 LED green | |
| Application specific | - | |
| Operating temperature | -20°C...+70°C | |
| Storage temperature | -30°C...+80°C | |
| EMC | EN 60947-5-2 | |
| CE label | yes | |
| UL approval | cULus listed | |
| CCC approval | <36V yes | |
| MTTF | 126 | |
| Housing design | cylindrical | |
| Thread | M18 | |
| Housing material | DIN 1.4404 / PBT | |
| Dimensions | M18x1; L=91,6mm | |
| Material sound transducer | Epoxy resin with glass balls | |
| Connector type | M12 5-pol. | |
| Protection class | IP 67* (EN60529) | |
| Torque | 50Nm (metallic version)/1Nm (plastic version) | |
| Weight | 100g (metallic version)/70g (plastic version) | |
| Accessories supplied | 2 metallic nuts SW24 (metallic version) / 2 plastic nuts SW22 + 2 washer SW22 (plastic version) | |

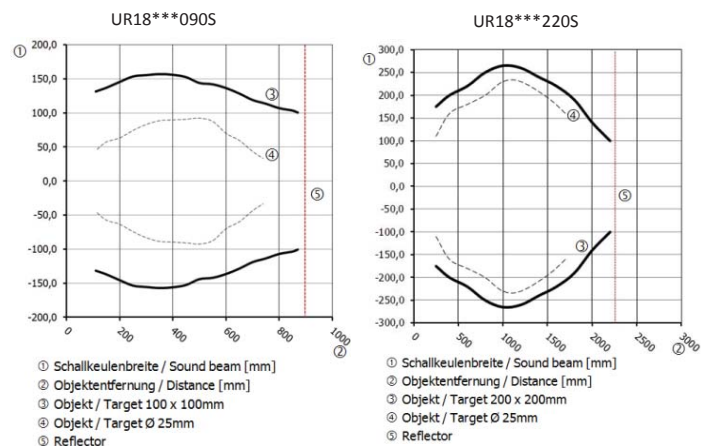
¹Objekt / Target 100 x 100mm

²Objekt / Target 200 x 200mm

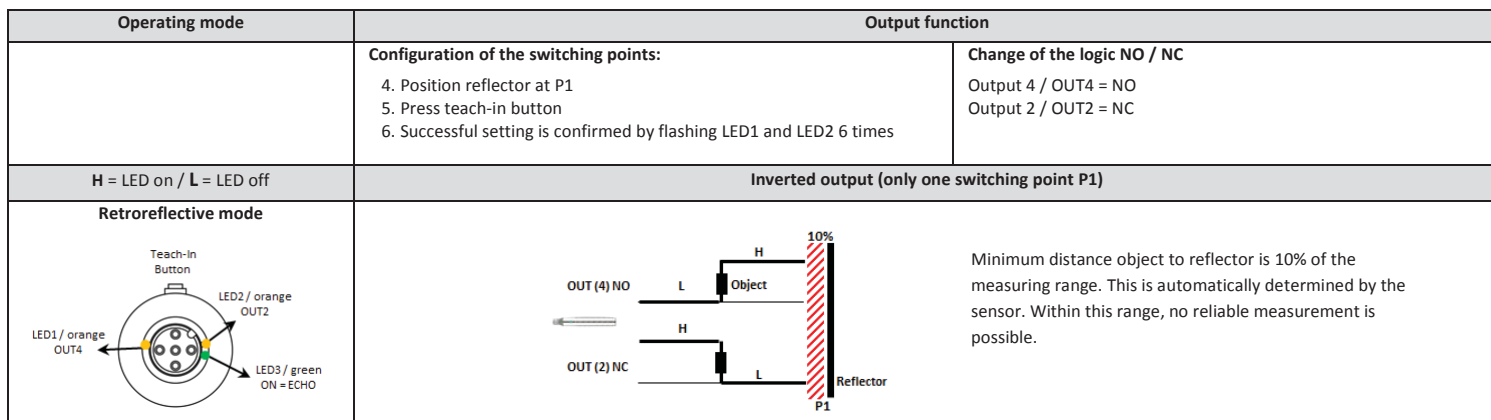
³IP67 only with well mounted cable connection

⁴Automatic calculation depending on the measuring length

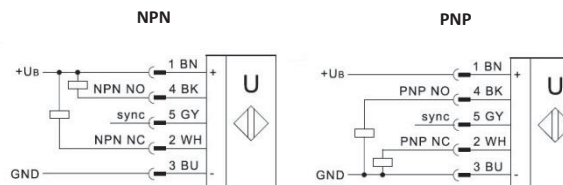
Sound cone



Adjustment of the ultrasonic sensors with the teach-in button



Electrical connection



Synchronisation

The sensors connected to a network detect and transmit the signals in parallel and prevent mutual interference in confined spaces. In this mode, up to 10 sensors of the same type can be interconnected. Connect the SYNC / MUX contact (PIN 5 / grey) of each sensor with each other. After applying the operating voltage, this operating mode is automatically available. The synchronisation signal is generated automatically. All sensors must detect an identical (flat surface, otherwise this may result in incorrect measurements).

Multiplexing

In multiplex mode, up to 4 sensors of the same type can be interconnected. The sensors work successively with a time-delayed transmitted pulse. While the first sensor is measuring, the other sensors are locked. After completion of the first measurement, the second sensor becomes active. This procedure is repeated up until the last sensor. In this mode, the response time of the sensor in the network is increased as follows: Response time in the network = (response time sensor * n) + 25ms (n = number of sensors in the network).

Connect the SYNC / MUX contact (PIN 5 / grey) of each sensor with each other. To activate the multiplex mode, the SYNC / MUX line must be connected to ground / GND for at least 5s when the operating voltage is applied. The multiplex signal is generated automatically.

Factory settings

Resetting the switching points P1 / P2
Press the Teach-In button for > 12s. All LEDs will flash 5 times to confirm the successful reset. After the reset, the maximum and minimum values of the measuring range are set. Logic (NO / NC) does not change.
Note: To ensure optimum SYNC / MUX operation, after resetting to factory settings, it is recommended to de-energize the sensor for a short time.

Blocking Teach-in button

Press the Teach-In button for > 8s. The successful blocking is confirmed by fast (approx. 10Hz) alternating flashing of LED1 and LED2. To cancel, repeat the steps.
Note: Do not confuse with flashing to select the operating mode!