

Operating manual

wms ultrasonic sensor

wms-25/RT/HV/M18 wms-340/RT
 wms-35/RT wms-600/RT
 wms-130/RT

Product Description

The wms sensors require a connection to the customer's own control and signal evaluation equipment.

Safety Notes

- Read the operating manual prior to start-up.
- Connection, installation and adjustments may only be carried out by qualified staff.

- No safety component in accordance with the EU Machine Directive, use in the area of personal and machine protection not permitted.

The wms 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.

Proper Use

wms ultrasonic sensors are used for non-contact detection of objects.

Installation

- Mount the sensor at the place of fitting.
- Connect a connection cable to the M12 device plug.
- Connect the sensor to your own control and signal evaluation equipment according to Fig. 1.

Signal input »Transmitter«

A signal on the input makes the wms sensor emitting a sound pulse. For this a open collector output has to earth the »transmitter« signal input for the time given in the technical data table below.

Signal output »Echo«

The signal output »Echo« subsequently transmits all echo signals received depending on the duration as 1-bit values (echo yes/no).

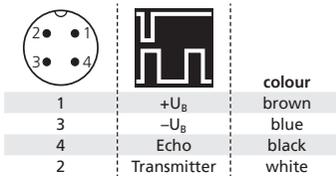
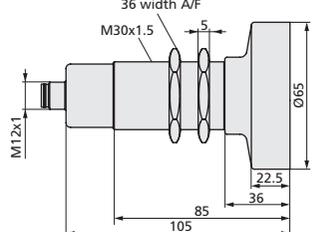
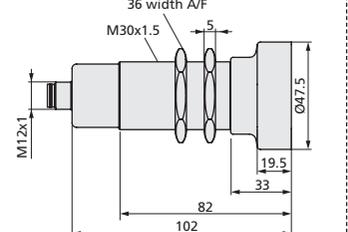
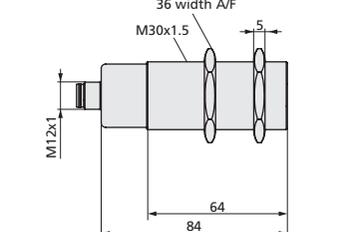
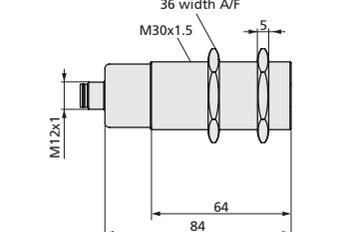
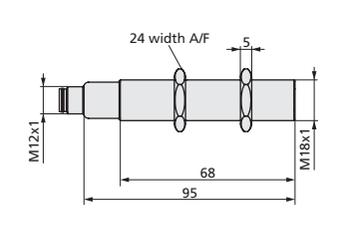
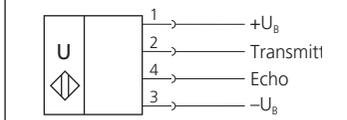


Fig. 1: Pin assignment with view onto the sensor plug and colour code of the connection cable

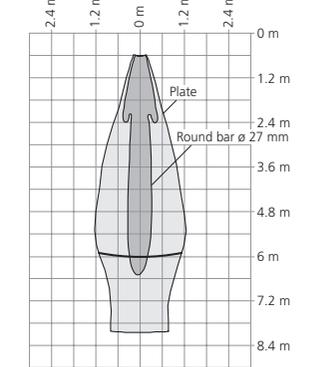
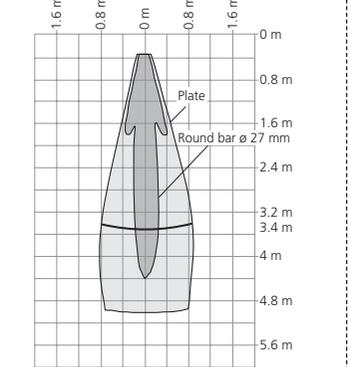
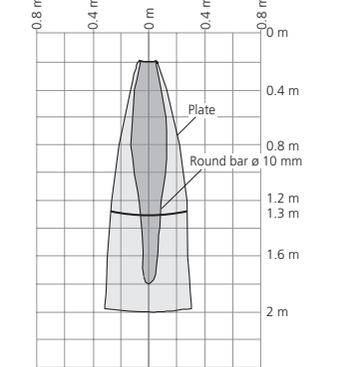
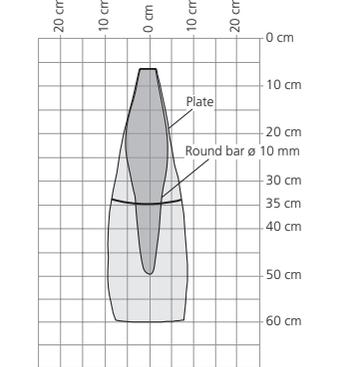
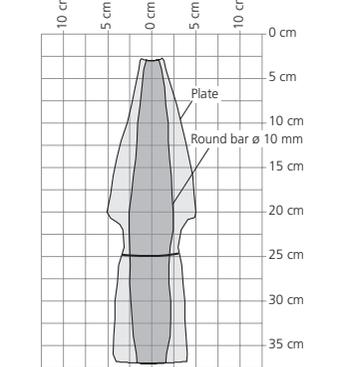


Technical Data



Blind zone	30 mm	65 mm	200 mm	350 mm	800 mm
Operating range	250 mm	350 mm	1,300 mm	3,400 mm	6,000 mm
Maximum range	350 mm	600 mm	2,000 mm	5,000 mm	8,000 mm
Transducer frequency	320 kHz	400 kHz	200 kHz	120 kHz	80 kHz
Resolution, sampling range	0.35 mm	0.18 mm	0.18 mm	0.18 mm	0.18 mm
Angle of beam spread	see detection zone				
Reproducibility	±0.15 %	±0.15 %	±0.15 %	±0.15 %	±0.15 %

detection zones
 for different objects:
 The dark grey areas represent the zone where it is easy to recognise the normal reflector (round bar). This indicates the typical operating range of the sensors. The light grey areas represent the zone where a very large reflector – for instance a plate – can still be recognised. The requirement is an optimal alignment of the sensor and reflector.
 It is not possible to evaluate ultrasonic reflections outside this area.



Accuracy	Temperature drift 0.17%/K	Temperature drift 0.17%/K	Temperature drift 0.17%/K	Temperature drift 0.17%/K	Temperature drift 0.17%/K
Operating voltage U_B/Voltage ripple	10 to 30 V DC, reverse polarity protection/±10 %				
No-load current	30 mA	30 mA	30 mA	30 mA	30 mA
Housing	Brass sleeve, nickel-plated, plastic parts: PBT; Ultrasonic transducer: polyurethane foam, epoxy resin with glass content				
Class of protection to EN 6052	IP67	IP67	IP67	IP67	IP67
Type of connection	4-pin initiator plug, brass, nickel-plated				
Operating temperature	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
Storage temperature	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C
Weight	80 g	200 g	200 g	260 g	320 g
Signal input (Transmitter)	Controlled by open collector (npn); I _C ≥ 3 mA, U _{CE} ≥ 30 V				
Recommended transmitted pulse length	25 µs	80 µs	150 µs	300 µs	350 µs
Recommended measuring cycle time	8 ms	12 ms	20 ms	40 ms	65 ms
Signal output (Echo)	Positive-switched (pnp), I _{max} = 10 mA, short-circuit-proof and reverse polarity protection				
Order No.	wms-25/RT/HV/M18	wms-35/RT	wms-130/RT	wms-340/RT	wms-600/RT