



Operating manual wms ultrasonic sensor

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

wms-340/RT
wms-600/RT

Product description

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

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 opera-

tion 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 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.

Assembly instructions

- Assemble the sensor at the installation location.
- Plug in the connector cable to the M12 connector.
- Connect the sensor to your own control and signal evaluation equipment according to figure 1.

1	3	4	2	colour
				+U _B brown
				-U _B blue
				Echo black
				Transmitter white

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

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«

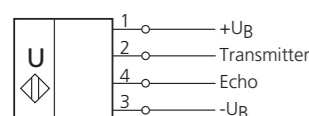
The signal output »Echo« subsequently transmits all echo signals received depending on the duration as 1-bit values (echo yes/no).



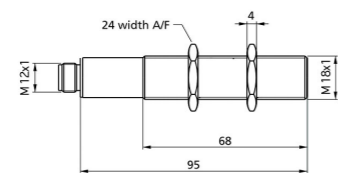
2014/30/EU



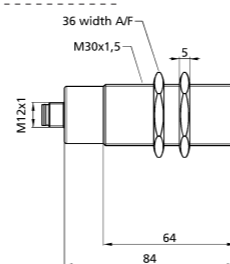
Technical data



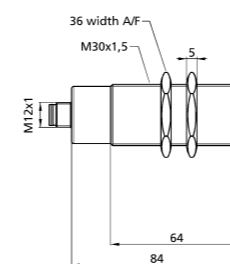
wms-25...



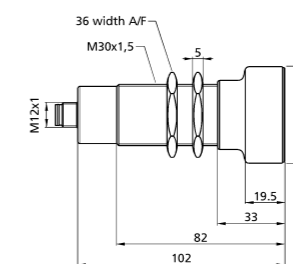
wms-35...



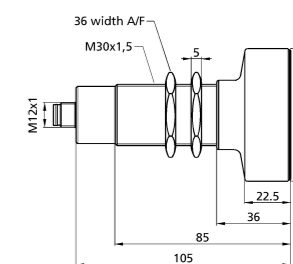
wms-130...



wms-340...



wms-600...

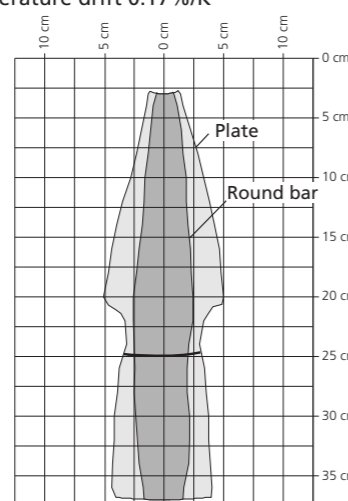


Blind zone 30 mm
Operating range 250 mm
Maximum range 350 mm
Transducer frequency 320 kHz
Resolution, sampling range 0.35 mm
Angle of beam spread Please see detection zones
Reproducibility ± 0.15 %

Accuracy Temperature drift 0.17%/K

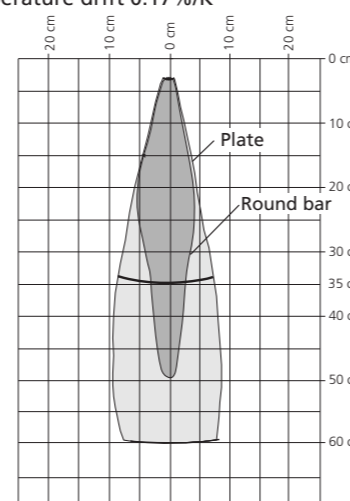
Detection zones for different objects:

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.



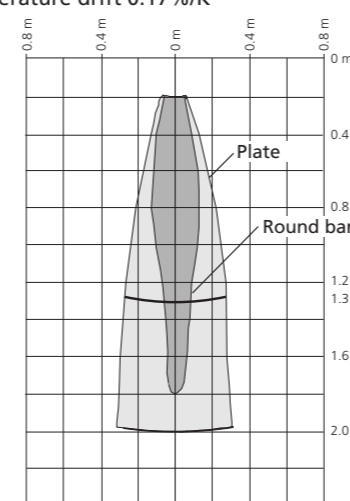
Blind zone 65 mm
Operating range 350 mm
Maximum range 600 mm
Transducer frequency 400 kHz
Resolution, sampling range 0.18 mm
Angle of beam spread Please see detection zones
Reproducibility ± 0.15 %

Accuracy Temperature drift 0.17%/K



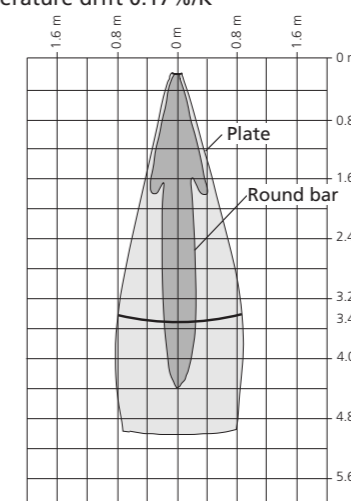
Blind zone 200 mm
Operating range 1,300 mm
Maximum range 2,000 mm
Transducer frequency 200 kHz
Resolution, sampling range 0.18 mm
Angle of beam spread Please see detection zones
Reproducibility ± 0.15 %

Accuracy Temperature drift 0.17%/K



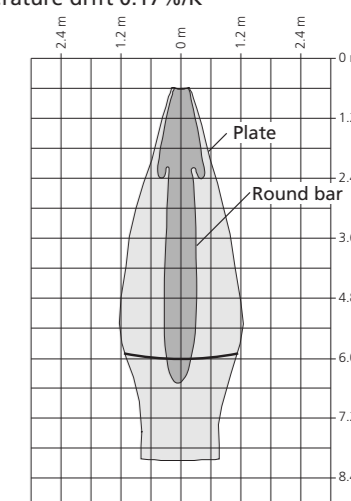
Blind zone 350 mm
Operating range 3,400 mm
Maximum range 5,000 mm
Transducer frequency 120 kHz
Resolution, sampling range 0.18 mm
Angle of beam spread Please see detection zones
Reproducibility ± 0.15 %

Accuracy Temperature drift 0.17%/K



Blind zone 800 mm
Operating range 6,000 mm
Maximum range 8,000 mm
Transducer frequency 80 kHz
Resolution, sampling range 0.18 mm
Angle of beam spread Please see detection zones
Reproducibility ± 0.15 %

Accuracy Temperature drift 0.17%/K



Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 80 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 25 μs
Recommended measuring cycle time 8 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

Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 200 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 80 μs
Recommended measuring cycle time 12 ms
Signal output (Echo) Positive-switched (pnp), I_{max} = 10 mA, short-circuit-proof and reverse polarity protection
Order No. wms-35/RT

Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 200 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 150 μs
Recommended measuring cycle time 20 ms
Signal output (Echo) Positive-switched (pnp), I_{max} = 10 mA, short-circuit-proof and reverse polarity protection
Order No. wms-130/RT

Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 260 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 300 μs
Recommended measuring cycle time 40 ms
Signal output (Echo) Positive-switched (pnp), I_{max} = 10 mA, short-circuit-proof and reverse polarity protection
Order No. wms-340/RT

Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 320 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 350 μs
Recommended measuring cycle time 65 ms
Signal output (Echo) Positive-switched (pnp), I_{max} = 10 mA, short-circuit-proof and reverse polarity protection
Order No. wms-600/RT

Operating voltage U_B / Voltage ripple 10 V bis 30 V DC, reverse polarity protection / ± 10 %
No-load current 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
Type of connection 4-pin initiator plug, brass, nickel-plated
Operating temperature -20°C to +70°C
Storage temperature -40°C to +85°C
Weight 320 g
Signal input (Transmitter) Controlled by open collector (npn); I_C ≥ 3 mA, U_{CE} ≥ 30 V
Recommended transmitted pulse length 350 μs
Recommended measuring cycle time 65 ms
Signal output (Echo) Positive-switched (pnp), I_{max} = 10 mA, short-circuit-proof and reverse polarity protection
Order No. wms-600/RT