

BODAS Ultra Sonic System USS

Compact sensor system for object detection, collision warning, and distance determination



The number of standards for the functionality of mobile machines are increasing. Therefore, surround sensing systems for mobile machines are becoming more and more popular. They provide operators with information on the distance of objects close-by while they're maneuvering their machine, enhancing both comfort and functionality and reducing the risk of damage and injury. The BODAS Ultra Sonic System USS from Bosch Rexroth provides a compact and high-quality solution for collision warning and object detection and for supporting object distance measurement. Rexroth BODAS USS is suitable for a wide range of construction machinery, tractors, and material-handling equipment as well as other equipment like aerial working platforms and scissor lifts.

CUSTOMER BENEFITS

- High flexibility for a number of use cases and requirements
- Space-saving thanks to compact modular design
- Functional freedom of choice with two different ECU versions
- Fast and easy commissioning and configuration
- Extraordinary system reliability in all scenarios
- Bosch Automotive Electronics' high quality standards

FUNCTION AND BENEFITS

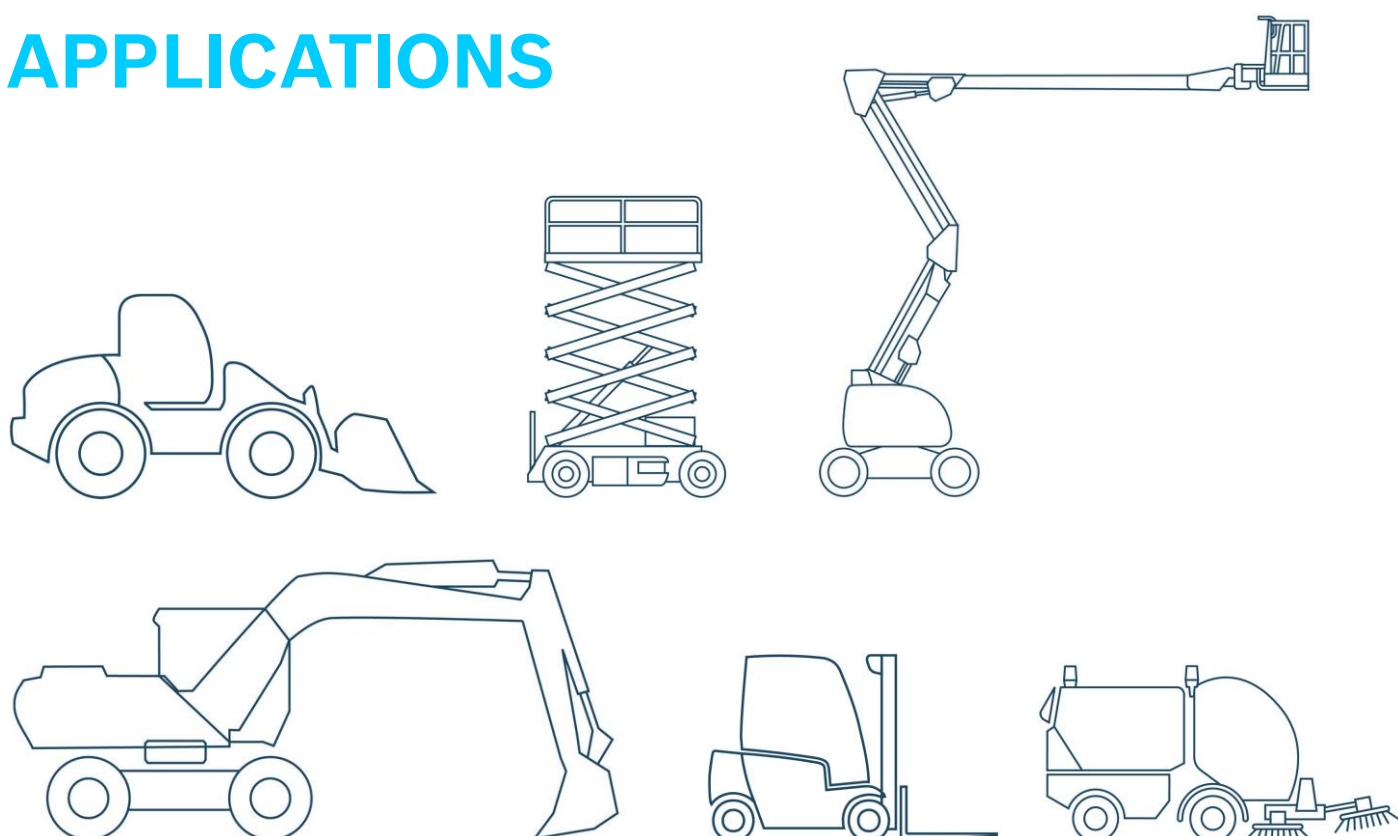
High flexibility for a wide range of use cases and requirements

A single solution for nearly every field of application for mobile machines – and a broad range of voltages and temperatures. The Rexroth BODAS Ultra Sonic System USS allows for near field monitoring from 15 cm up to 5.5 m. The entire system can be used flexibly in both 12 V and 24 V vehicle power-supply networks and operates in an extended temperature range from -40° Celsius up to +85° Celsius. BODAS USS also has all the necessary markings, including CE and E1.

Space-savings thanks to a compact modular design

Thanks to its compact design, BODAS USS takes up significantly less space than comparable conventional models and can be adjusted for individual needs. The sensor is available in two mechanical orientations of the connector outlet: radial and axial. A decoupling ring improves the measurement results by reducing vibration from the vehicles chassis. Depending on the requirements, the Electronic Control Unit (ECU) can be flexibly equipped with 4, 6, 8 , or 12 of these sensors.

APPLICATIONS



TECHNICAL DATA

BODAS Ultra Sonic System	
Supply:	12V or 24V nominal
Current consumption:	< 260mA [with 12 sensors]
Measurement distance:	15 - 550cm
Field of view:	vertical: ± 35° @3dB horizontal: ± 70° @3dB
Measurement rate/ cycle time:	<250ms/40ms
Frequency range:	43kHz - 60kHz
Protection class:	IP6k9k (sensor) IP69k (ECU)
Temperature range:	-40°C ... +85°C
CAN:	1x CAN ISO 11898, J1939
Dimensions ECU LxWxH:	190.7x118.3x40 mm
Dimension sensor Ø:	23 mm
Data sheet:	95245/95246



The BODAS Ultra Sonic System USS can be used in all types of vehicles for indoor and outdoor applications, including work platforms, sprayers, and wheeled loaders.

Functional freedom of choice with two different ECU versions

Whether a surround sensing system is needed for the usual standard applications or you need next-level functionality: Bosch Rexroth offers two different options for the Electronic Control Unit BODAS USS. The ECU version ENTRY provides direct echo functionality of every single sensor in order to measure and evaluate the distance of each sensor to the closest object. The version PREMIUM also uses cross-echo information from one sensor to another to compute a 2D mapping of the surrounding, identify the precise object locations, and even detect object movements. Both ECU versions offer several filters and compensation features to ensure signal quality and reliability.

Fast and easy commissioning and configuration

The carefully selected default settings simplify and speed up the commissioning and configuration of the BODAS Ultra Sonic System from Bosch Rexroth. The system can be conveniently configured and parameterized using the Rexroth service tool BODAS-service 4.x or any other tool that supports the UDS standard to select the number of used sensors, set distance filter and ambient temperature, read sensitivity, and more.

Outstanding system reliability in all scenarios

The high protection classes IP6K9k for the sensor and IP69K for the ECU ensure high system reliability in tough environments. Additional self-protection functions increase its reliability even more: for example, the sensor will automatically detect dirt blocking its membrane or when its view is blocked by objects. This information is transferred via CAN bus to ensure that the operator always knows the status of its system. To guarantee reliable distance information, the sensitivity filter settings provide robust distance data with low false-positive rates as well as insensitivity to external disturbances from other ultrasonic interference sources or sensors.