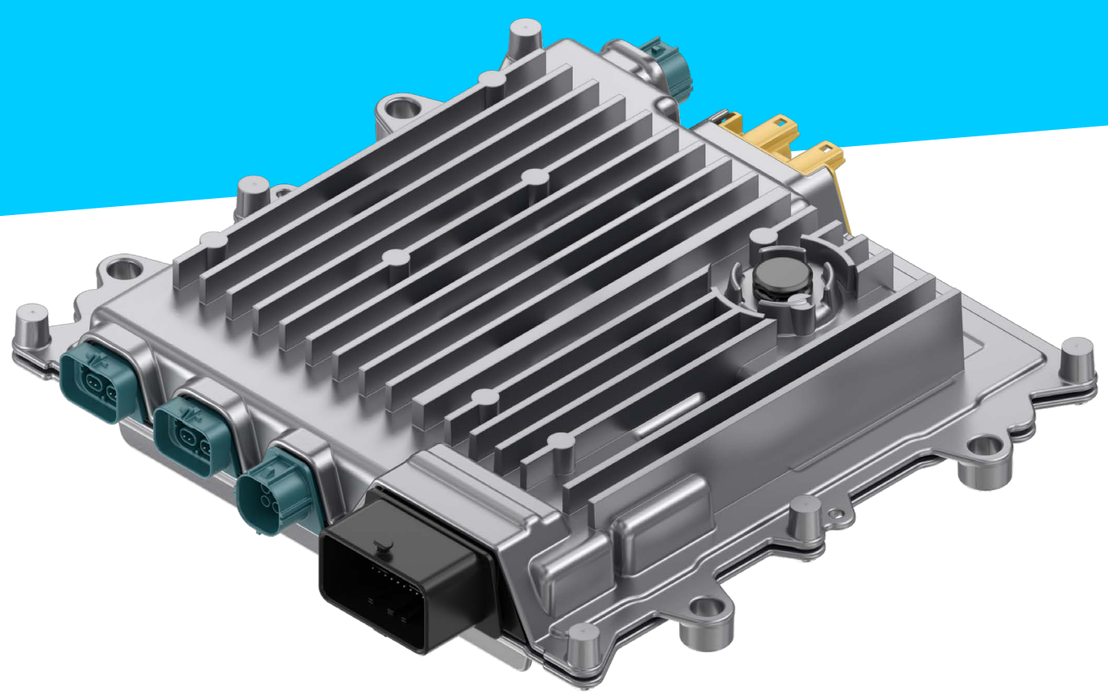
BODAS Off-highway robotics controller ORC2

Robust high-performance computing platform

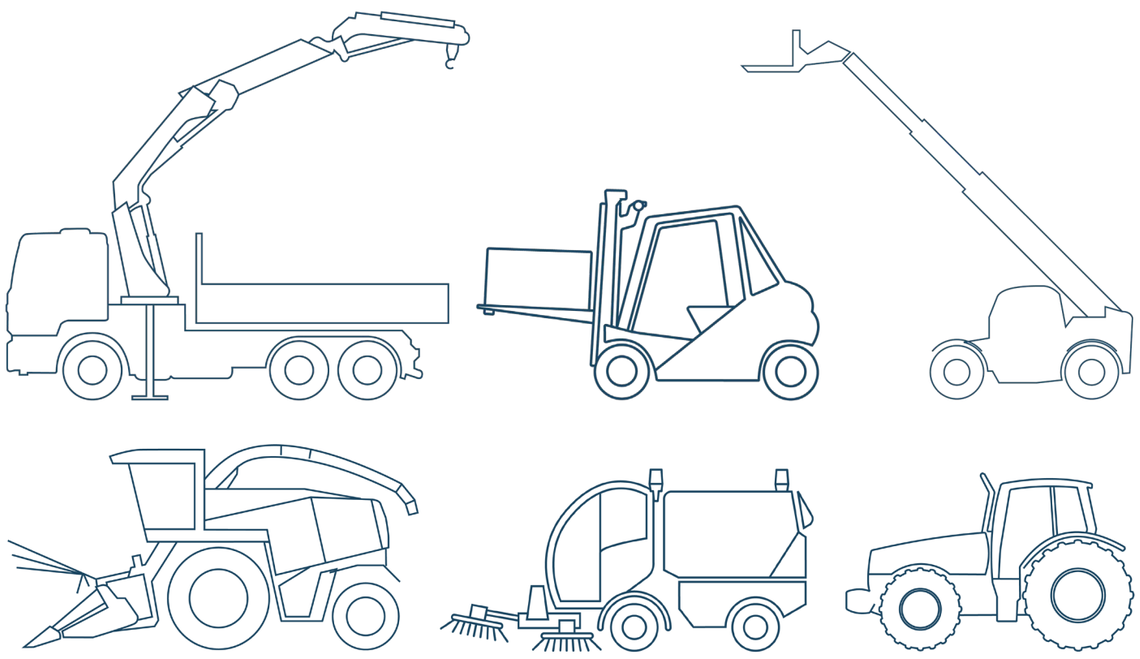


With the ORC2, Bosch Rexroth is expanding its portfolio with a new type of controller. This high-performance computing platform was developed specifically for mobile machines and sets new standards in the processing of complex data. Thanks to its exceptional computing power, the ORC2 processes point clouds, video data, AI algorithms, and other complex data streams directly on the machine. This enables advanced functions such as precise environment perception, intelligent object recognition, and autonomous operations – reliably and in real time.
With its computing power, the robust ORC2 off-highway robotics controller takes the digitalization and automation of your machines to the next level.

CUSTOMER BENEFITS

- Customizable and highly flexible
- Safety functions at the highest level
- High-performance system-on-a-chip (SoC) for environment detection and intensive computing operations
- Connected and powerful communication: Ethernet & CAN
- Video in/out – optimized camera and display connection
- Extensive range of connection options

APPLICATIONS



FUNCTION AND BENEFITS

Customizable and highly flexible
The powerful base software of the control unit is based on a QNX operating system and offers a comprehensive range of functions for development and programming. The programming interface (API) enables direct and easy access to all hardware resources – from inputs and outputs to a wide range of communication interfaces and system resources. The proven QNX system is optimally designed for real-time and safety-critical applications. Thanks to the flexibly configurable base software, the ORC2 can be adapted to individual applications – for maximum design freedom in machine development.

Safety functions at the highest level
The ORC2 meets all strict requirements for functional safety: In accordance with the harmonized standard EN ISO 13849, safety functions up to Performance Level PL d can be implemented. In addition, the standards ISO 25119 and ISO 19014 up to AgPL d and MPL d are also taken into account. This means that the ORC2 is optimally prepared for safety-related applications in demanding machine environments.

TECHNICAL DATA

BODAS Off-highway robotics controller ORC2	
Supply voltage:	12 V or 24 V nominal
Processor:	TDA4VP-Q1
Storage:	128 GB ROM, 8 GB RAM
Communication:	1 x 2.5 GBASE-T1 or 100 BASE-T1 4 x 100/1000 BASE-T1 3 x 100 BASE-T1 1 x 100 BASE-TX 8 x CAN(-FD)
Video:	6 x GMSL2 with PoC 2x FPDIII link
Inputs / Outputs:	2x HS 3A CS – digital 2x LS 3A 6x 5 V (0,5 - 4,5 V) 4x digital in (Battery)
Other	Sensor supply: 5 V @ 200 mA USB 2.0 RS232
Functional safety	▪ EN ISO 13849 up to PL d ▪ ISO 25119 up to AgPL d ▪ ISO 19014 up to MPL d
Temperature range:	-40 °C to +85 °C depending on the profile
Dimensions LxWxH:	~ 250 x 250 x 70 mm
Datenblatt:	In preparation

High-performance system-on-a-chip (SoC) for environment detection and intensive computing operations
At the core of the ORC2 is a system-on-a-chip (SoC) developed specifically for ADAS and autonomous driving functions. It integrates a variety of computing cores, including 8x ARM Cortex-A72 CPUs, multiple C7x DSPs, and deep learning accelerators. This architecture enables the simultaneous processing of complex algorithms in the fields of sensor fusion, computer vision, and artificial intelligence. Thanks to its high energy efficiency and enormous computing power, the ORC2 can handle huge amounts of data from cameras, radars, and lidars – ideal for the most demanding applications in the field of mobile machinery and automation.

Connected and powerful communication: Ethernet & CAN
The ORC2 off-highway robotics controller offers versatile communication interfaces for maximum connectivity: Multiple Ethernet interfaces (2.5GBASE-T1, 100/1000BASE-T1, 100BASE-T1, 100BASE-TX) ensure fast data transfer and seamless connectivity between controllers. In addition, eight CAN interfaces are available for robust, proven communication within the machine. This combination enables flexible integration and supports both modern and established architectures.

Video in/out – optimized camera and display connection
The controller offers six GMSL2 interfaces including Power over Coax (PoC), allowing a large number of cameras to be easily and efficiently connected. Two FPD-Link III interfaces also simplify connection to displays – for high-resolution image processing and intuitive feedback directly on the device.

Extensive range of connection options
In addition to the powerful main interfaces, the ORC2 offers further inputs and outputs for direct connection of analog sensors or for signal transmission to other control units. An integrated sensor supply, RS232 and USB2.0 interfaces complete the package. This allows the ORC2 to be optimally integrated into a wide range of machine concepts.

Bosch Rexroth AG
Lise-Meitner-Straße 4
89081 Ulm, Germany
Tel. +49 9352 40 50 60
info.bodas@boschrexroth.de
www.boschrexroth.com