

BODAS Connectivity Unit RCU

Connectivity device for connecting vehicles to the cloud



No connectivity – no IoT services for off-highway vehicles. This is why connectivity devices are a crucial element in any strategy to tap into the potential of the internet of things for improvements in performance, availability and efficiency of mobile machines. The BODAS Connectivity Unit (RCU) provides wireless connectivity in an off-highway vehicle and enables the development, remote deployment and operations of end-to-end IoT use cases and digital services.

CUSTOMER BENEFITS

- State of the art connectivity performance:
4G, IP67, LinuxOS, CAN, RS232
- User friendly and seamless device management
- Diagnostic, service and certificate management
- Freely programmable in various high-level languages
- Software portability
- Range of standard application software available
- High quality standards of Bosch

FUNCTION AND BENEFITS

State of the art connectivity performance

The RCU collects vehicle data from up to 3 CAN busses and 3 RS232 interfaces and connects to state-of-the-art 4G mobile radio communication. Since it complies with IP67, it can be used in the entire range of rugged applications and harsh environments off-highway vehicles usually operate in.

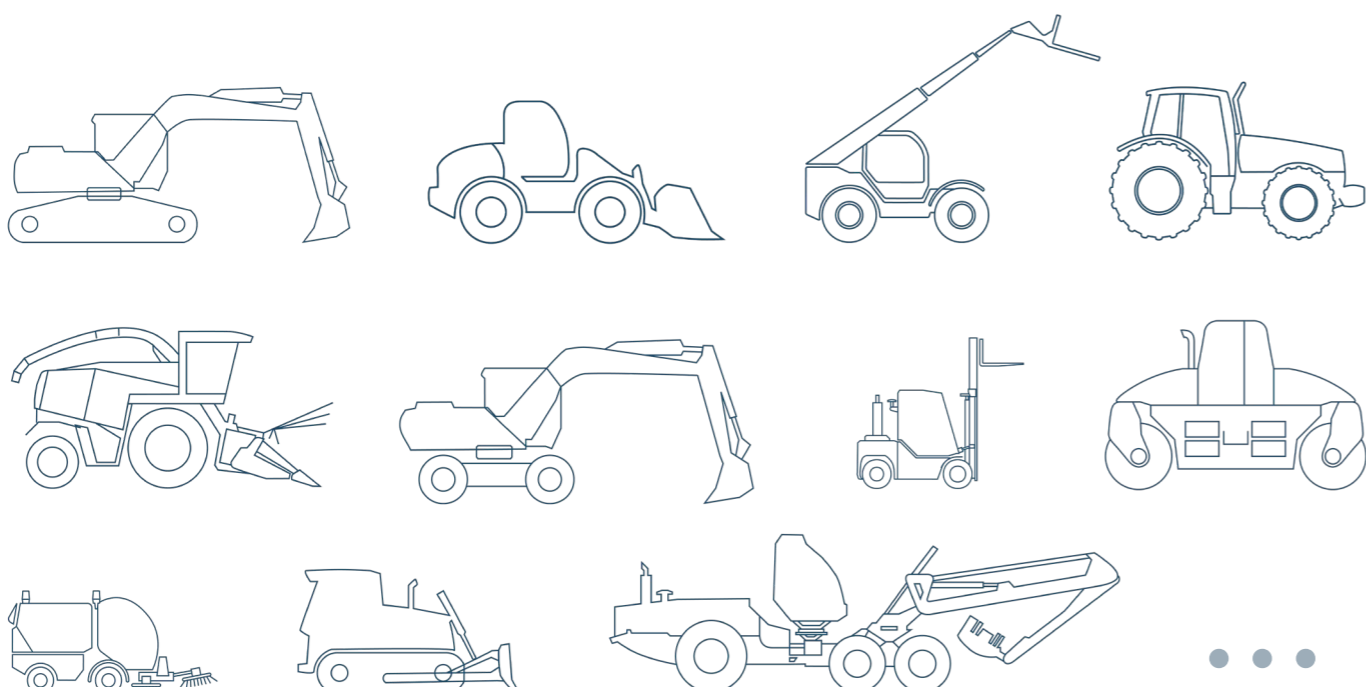
User friendly and seamless device management with BOSCH technology

BODAS Connectivity Units come with a base software and are securely managed by the device management solution from Bosch Connected Industries. The base software contains a Linux operating system and a Rexroth specific container based device management engine. This supports an easy, secure and transactional deployment or update of Bosch, Bosch Rexroth or customer specific application software. A software development kit enables customers to develop specific software features on the connectivity unit.

Diagnostic, service and certificate management

The device management solution from Bosch Connected Industries features flashing and parameterizing as well as reading out process values and error messages of BODAS Connectivity Units. The integrated certificate management serves as the foundation for secure communication.

APPLICATIONS



Rexroth Connectivity Unit

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TECHNICAL DATA

BODAS Connectivity Units are available in 3 variants:

- RCU3-1A: 3G mobile network and 1 CAN interface
- RCU4-3A: 4G mobile network and 3 CAN interfaces
- RCU4-3W: 4G mobile network, 3 CAN interfaces, WiFi and Bluetooth connectivity.

Common features	
Application Processor	ARM Cortex A8, 800MHz; 512MB DDR3, 1GB NAND Flash
Operating System	Linux Kernel and File system
Device Management	Container based device management engine
Accelerometer	Configurable 3 axis accelerometer
Programming language	C, C++, Java, Python, NodeJS, Golang
MicroSD card slot	Available for extending the NAND Flash for more permanent memory
Power Supply	9V – 48V
Protection	IP67
SIM Types	eSIM (additional plug in SIM possible)
Housing	150 x 135 x 58mm; 400g; Glass reinforced plastic
Connector	35 pin TE automotive connector; Antenna: FAKRA
Temperature	-40°C to +85°C ambient

Variable features	RCU3-1A	RCU4-3A	RCU4-3W
2G/3G Mobile Network GSM/GPRS + 3G HSPA	●	●	●
4G LTE Mobile Network LTE FDD/TDD Cat1		●	●
GNSS GPS, Glonass, Galileo, Beidou, QZSS, SBAS	●	●	●
WIFI IEEE802.11 a/b/g/n/ac			●
Bluetooth Version 4.2			●
CAN Interface	1	2	2
CAN-FD Interface		1	1
RS232	3	3	3
RS485		1	1
External Antenna	●	●	●
Ignition Input ¹	1	1	1
ON/OFF Input		1	1
Digital I / O		8	8
Analog Inputs ²		4	4
K-Line (1 can be used as LIN) ³		2	2
USB (for development) ⁴		1	1
Certification EU28, CH, NO; NAM (others on request)	●	●	●

Freely programmable in various high-level languages

BODAS Connectivity Units are based on a software deployment technology that allows the deployment and execution of software applications in protected sandboxes. This means applications are deployed with all necessary libraries. This enables developers to use various programming languages. Access rights to device management interfaces such as drivers or APIs are securely granted.

Software Portability

Due to the rapidly evolving technology in the IoT and connectivity business (e.g. mobile communication technology: stop of 2G, introduction of 5G), application software portability is one of the key requirements for future-proof connectivity devices. This means the ability to change / upgrade the hardware with minimum effort on the operating system and especially application software. To ensure this portability, the Rexroth BODAS Connectivity Units are provided with a software stack implementing an open and clear software structure with low coupling between operating system (incl. hardware drivers) and developed software applications.

Range of standard application software available

Off-the shelf standard software applications by Bosch Rexroth are optionally available and can be deployed over the air.

High quality standards of Bosch

Like all Bosch Rexroth solutions, BODAS RCUs and the embedded software are developed in accordance with the high Bosch quality standards.

1. Ignition Input is multiplexed with a Digital I / O
2. Analog input 1 is multiplexed with a Digital I / O
3. Kline and RS485 cannot work at the same time (SW selected). Kline 2 is incompatible with RS232(1) and is multiplexed with a Digital I / O
4. USB connector no external access

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