

# BODAS-design

**RE 95112/10.10** 1/8  
Replaces: 07.09

## Data sheet

Version 3.0



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### Features

The PC software BODAS-design is used for programming and for software development for BODAS controllers RC from the Rexroth product range. All graphic and text-based languages specified in the IEC 61131-3 standard are available for programming.

In addition, BODAS-design also offers convenient additional functions for software development:

- An integrated simulation environment allows software to be tested without hardware.
- Internal parameters can be displayed over time for monitoring the program, and the program run can be interrupted, e.g. for troubleshooting.
- The application program is loaded into the controller via CAN or RS232 (depending on the RC series).
- A diagnosis configuration for the specific project is drawn up using a convenient editor in BODAS-service and is linked to the BODAS-design project by a standardized interface.
- Parameter setting, the output of process variables and the display of diagnostic information are possible either by individual visualization or by using BODAS-service.
- BODAS-design contains BODAS-service Full Version (for details see RE 95086 also).

BODAS-design and BODAS-service Full Version are enabled by the BODAS-design USB hardlock.

## Ordering code

BODAS-design 3.0 is available from Rexroth as follows:

License version \_\_\_\_\_ Material numbers

Design \_\_\_\_\_ R902109425

### Note

Version administration of BODAS-design:

The Index X defines the Version of BODAS-design (e.g. status 06/2010 = 3..0.12).

The Version with the higher Index defines always the latest Version and is always backwardscompatible to the former Versions.

Maximum two Updates of BODAS-design are scheduled per year!

Updates may be downloaded from [www.boschrexroth.de/mobile-electronics](http://www.boschrexroth.de/mobile-electronics) under the heading BODAS Tools.

## Main components

- CD-ROM
- License (USB dongle)

## Required components

- **Appropriate RS232 or CAN connection cable**  
from a serial port of the PC/Laptop (available COM port) or a connection from the interface of a CAN adapter to the CAN interface in the wiring to the controller
- **CAN-USB interface**  
from Vector (CANcardX, CANcardXL, CANcaseXL) or Peak (PCAN-USB) to the CAN interface of the controller

This connection cable and the CAN-USB interface are not included in supply of the PC tool.

The connection cable (one cable for CAN and RS232) and a CAN-USB interface may be ordered from Rexroth under the following material numbers.

- Connection cable \_\_\_\_\_ R902109422
- Interface CAN-USB \_\_\_\_\_ R902602780

### Additional recommended

- Software Library BODAS-design Library  
for extension of the functionality of the BODAS Runtime System with ramps, curves, ..., trigonometric functions.
- Software Library BODAS-design Template  
for extension of the functionality of the BODAS Runtime System with ramps, curves, ..., trigonometric functions (= BODAS-design Library) and extension with various BODAS-design Templates (Software Source Codes) for use with BODAS controller RC (AFC-fan controll, SPC-speed control, DRC-pump control / drive control (DRCA), VAC-valve control (VACB))
- BODAS test box TB3  
for simulating input signals, generating frequency signals (DSM, HDD simulation), displaying outputs, ... for series 20, 21, 22 and 30 BODAS controllers (for the RC36-20/30 two TB3 are necessary)
- Adapter cable TAK1  
for connection series 20 and 21 BODAS controllers to the TB2 or TB3
- Adapter cable TAK2  
for connection series 22 BODAS controllers to the TB3
- Adapter Kit RC36-20/30 (contains TAK4 and stencil) for connection of BODAS controller RC36-20 series 30 with two TB3

The test box, adapter kit and adapter cable are not included in the supply of the PC development environment.

The test box and adapter cable may be obtained from Rexroth under the following material numbers:

- BODAS TB3 test box \_\_\_\_\_ R902109066
- TAK1 adapter cable \_\_\_\_\_ R902076455
- TAK2 adapter cable \_\_\_\_\_ R902109508
- Adapter Kit RC36-20/30 \_\_\_\_\_ R902109578
- BODAS-design Template \_\_\_\_\_ R902109423
- BODAS-design Library \_\_\_\_\_ R902109424

## System requirements

- Personal computer with 500 MHz Pentium II microprocessor (minimum)
- VGA video adapter or video adapter with a resolution of at least 1024x768 and at least 16 bit colour quality
- Minimum 512 MB main memory (RAM)
- One free serial or CAN interface (depending on selected communication interface)
- One free USB interface (for license key - USB dongle)
- Available hard disk capacity > 500 MB

### Operating system

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7 (release on request)

## Program installation

Using the [Run] function in the [Start] menu, start „Setup\_BODAS-design\_3.xxx.exe" from the CD-ROM.

All further instructions are provided on the screen.

### Note

System administrator rights are required in order to install the BODAS-design software under Windows.

Current drivers for the dongle, runtime system updates and program updates can be found on the Internet under [www.boschrexroth.com/mobile-electronics](http://www.boschrexroth.com/mobile-electronics) under the BODAS Tools heading or within the Bosch Rexroth media directory under the search criteria "development suite BODAS-design"

It is recommended to update BODAS-design resp. the BODAS controller runtime systems at least every 6 months, if such an update is present!

A change history of BODAS-design and the contained BODAS runtime systems is available within the installation directory of BODAS-design under "Version Information".

Attention: After an Update of BODAS-design or of the BODAS runtime systems the corresponding used/changed Software project has to be completely retested!

With the BODAS-design product CD you will receive also BODAS-service Full Version. This version can be used to do diagnosis, flash software and create your diagnostic configuration (details see RE 95086).

For installation of BODAS-service please select the SETUP file out of the BODAS-service folder of the BODAS-design product CD and follow the instructions of the Installation assistant.

Current BODAS-service program updates may be found on the Internet at [www.boschrexroth.com/mobile-electronics](http://www.boschrexroth.com/mobile-electronics) under the BODAS-Tools heading or within the Bosch Rexroth media directory under the search criteria "Diagnosis Tool BODAS-service". It is recommended to update BODAS-service at least every 6 months, if such an update is present!

Further information about BODAS-service and the Diagnosis-configurator may be found in the BODAS-service data sheet RE 95086 or in the help menu of BODAS-service.

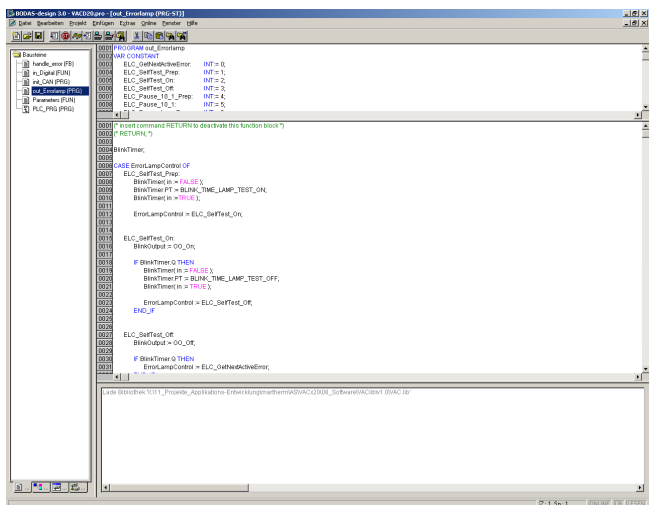
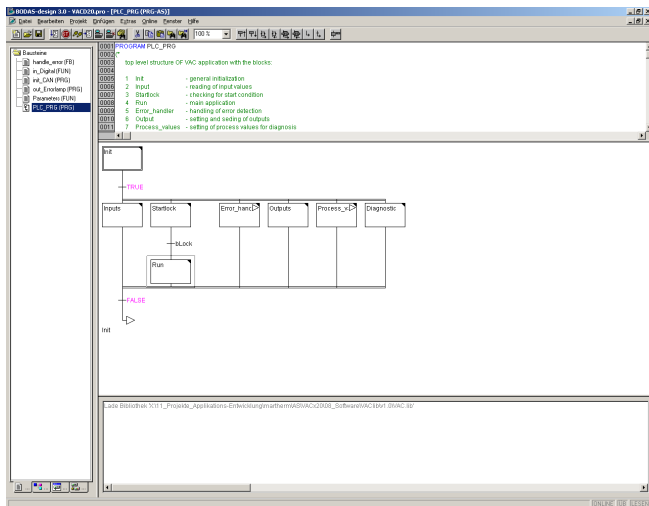
# Start-up and operation

## BODAS-design

After the program has been started, either an existing BODAS project can be loaded or a new one can be created. Here, the target platform (specification for BODAS controller used) must be selected.

A detailed functional description of the development environment may be found in the online help. This can be accessed after starting the program by pressing the F1 key.

## Typical applications



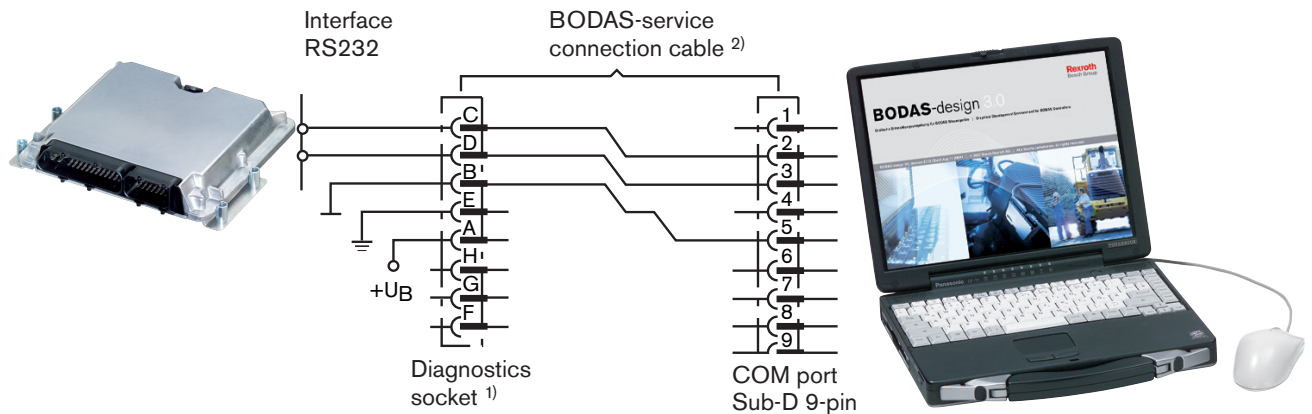
# Function/operating notes

The BODAS-design PC development environment is used to create application programs for BODAS controllers RC. This is characterized by the following functions:

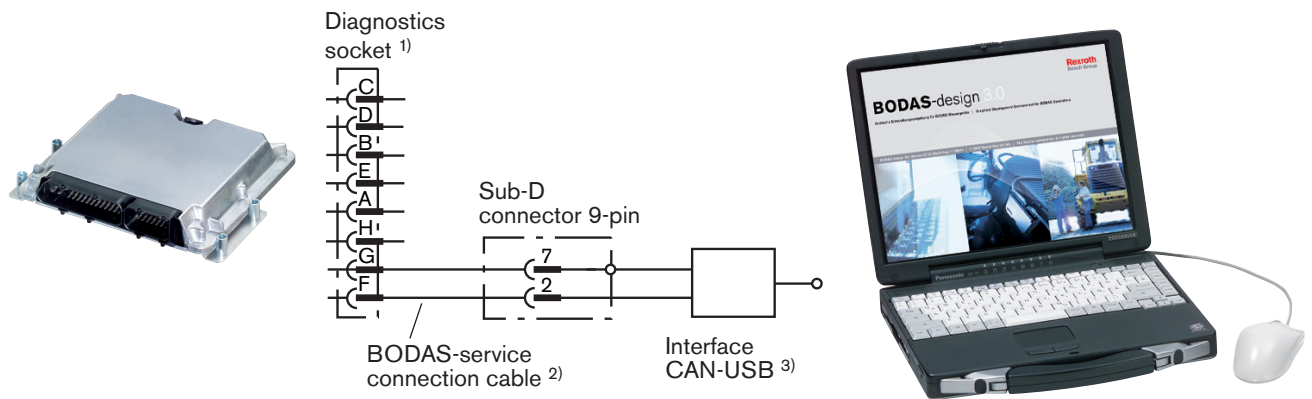
- Software development as per IEC 61131-3, i.e. based on graphic and text-based languages: CFC, SFC, ST, FUP, ...
- Convenient functions for reading-in signals and for actuating outputs based on the BODAS runtime system.
- The diagnostic configuration for BODAS-design projects is drawn up in the convenient BODAS-service diagnostic configurator.
- The diagnostic configuration from BODAS-service is incorporated via a standardized BODAS-design interface. (The diagnosis configuration must be stored in the same folder as the corresponding BODAS-design Application (.pro file). Details about the configurator you will find in the BODAS-service help.)
- Simulation mode for testing BODAS applications without hardware.
- Internal parameters can be displayed over time for monitoring the program, and the program run may be interrupted, e.g. for troubleshooting.
- Program download via CAN or RS232 (depending on RC series) onto BODAS controllers with BODAS runtime system.
- If the BODAS-design library or BODAS-design template are used (for details, please refer to RE 95113), an individual application software can be programmed in a very short time.

# Connection variants

## Variant 1: RS232



## Variant 2: CAN



<sup>1)</sup> Ordering code for the Metalock-Bantam diagnostics socket, manufacturer: e.g. FCI

Consisting of	FCI order designation
Socket	UTG012-8S
8 connector contacts	RC16M23K
Cable clips	UTG12PG
Dust cap	UTP12DCG

The diagnostics socket is available from Rexroth under material number R909831291.

<sup>2)</sup> The BODAS-service connection cable is available from Rexroth under material number R902109422.

<sup>3)</sup> The CAN USB Interface is available from Rexroth under material number R902602780.

**Assembly of the BODAS-service connection cable: see RE 95086**

# Safety notes

## General instructions

- The proposed circuits do not imply any technical liability for the system on the part of Bosch Rexroth.
- The use of BODAS-design in the standard working mode of the machine is not permissible.
- Working on the PC with BODAS-design in combination with a control unit or display in a machine or vehicle is only permissible during commissioning of the machine or during service operations. Appropriate safety measures must be provided against hazards caused by unexpected operational states.
- Changing parameters or loading (flash-programming) software onto the BODAS controller RC or BODAS display may only be performed by trained and experienced specialists who are suitably familiarized with both the components used and the complete system.
- When performing flash-programming, the user is responsible for ensuring that the software to be flash-programmed is compatible with the BODAS RC hardware/vehicle in question.
- Incorrect parameter settings resp. incorrect programming by using BODAS-design may create potential hazards while the machine is in operation.  
It is the responsibility of the machine manufacturer to identify hazards of this type in a hazard analysis and to bring them to the attention of the end user. Rexroth assumes no liability for dangers of this type.
- System developments, installations and commissioning of electronic systems for controlling hydraulic drives must only be carried out by trained and experienced specialists who are sufficiently familiar with both the components used and the complete system.
- While commissioning and programming with BODAS-design the machine may pose unforeseen hazards. Before commissioning the system, you must therefore ensure that the vehicle and the hydraulic system are in a safe condition.
- Make sure that nobody is in the machine's danger zone.
- No defective or incorrectly functioning components may be used. If the components should fail or demonstrate faulty operation, repairs must be performed immediately.

## Notes on the installation point and position

- Connect the RC controller to a PC with the BODAS-service connection cable only. The BB-3 connection cable must not be used! Incorrect connection cables or wiring could cause the PC interface to be destroyed!
- The control unit and the PC must be switched off when the BODAS-service connection cable is connected or disconnected.
- When using the BODAS-service resp. BODAS-design flash function, the drive unit (e.g. diesel engine) must be switched off during data transmission to the BODAS controller!

## Intended use

- Operation of the BODAS-design must generally occur within the operating ranges specified and released in this data sheet, particularly with regard to voltage, temperature, vibration, shock and other described environmental influences.
- Use outside of the specified and released boundary conditions may result in danger to life and/or cause damage to components which could result in consequential damage to the complete system.

## Improper use

- Any use of the BODAS-design other than that described in chapter "Intended use" is considered to be improper.
- BODAS-design may be used on a restricted base only for development of safety relevant applications. Details for safety relevant programming can be provided on request by Bosch Rexroth Mobile Electronics.
- Use in explosive areas is not permissible.
- Damage resulting from improper use and/or from unauthorized interference in the component not described in this data sheet render all warranty and liability claims void with respect to the manufacturer.

# Safety notes

## More detailed information

- More detailed information on BODAS-design may be found at [www.boschrexroth.com/mobile](http://www.boschrexroth.com/mobile) electronics under the heading BODAS Tools.
- Pay regular visits to our home page for the latest product information and information about updates.
- Disposal of BODAS-design must be performed professionally by the customer.
- Copying, translation and distribution of Bosch Rexroth software is prohibited under copyright law.

Bosch Rexroth AG  
Hydraulics  
Mobile Electronics  
Glockeraustraße 4  
89275 Elchingen, Germany  
Telefon +49 (0) 73 08 82-0  
Telefax +49 (0) 73 08 72 74  
info.brm-me@boschrexroth.de  
[www.boschrexroth.com/mobile-electronics](http://www.boschrexroth.com/mobile-electronics)

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Subject to change.