Rexroth
Bosch Group

Application Software
CAN Expansion Module CEMA

RE 95 340/11.04   1/6

Technical Data Sheet

Expansion for use of an additional
control unit, Version 10

Contents

Features

– A control unit can be used to electronically actuate a hydraulic drive. The CEMA CAN expansion module allows an additional RC2-2 control unit to be used, which provides a master control unit with supplementary inputs and outputs.

– The inputs and outputs are designed for use with Rexroth hydraulic pumps and motors.

– Diagnostics and configuration are carried out using the BODEM PC software or the BB-3 control panel.

– Monitoring for wire breaks and short circuits

Ordering Code

	AS/	CEMA	10

Type

Application Software	AS/		

Software

CAN Expansion Module		CEMA	

Version

			10

Order Information

The AS/CEMA10 application software must only be used with the RC2-2/20 control unit and other accessories (see page 5). When placing an order, the hardware and software type codes should be linked by a "+".

Example: RC2-2/20+AS/CEMA10

How it Works

The CAN expansion module is designed to actuate a variable displacement pump in an open or closed circuit and one or two valve disks.

The following is an example of the hydraulic configuration used:

• An A4VG or A10VG variable displacement pump with electro-proportional (EP) control combined with one or more A2FM, A2FE, A4FM or A10FM fixed displacement motors
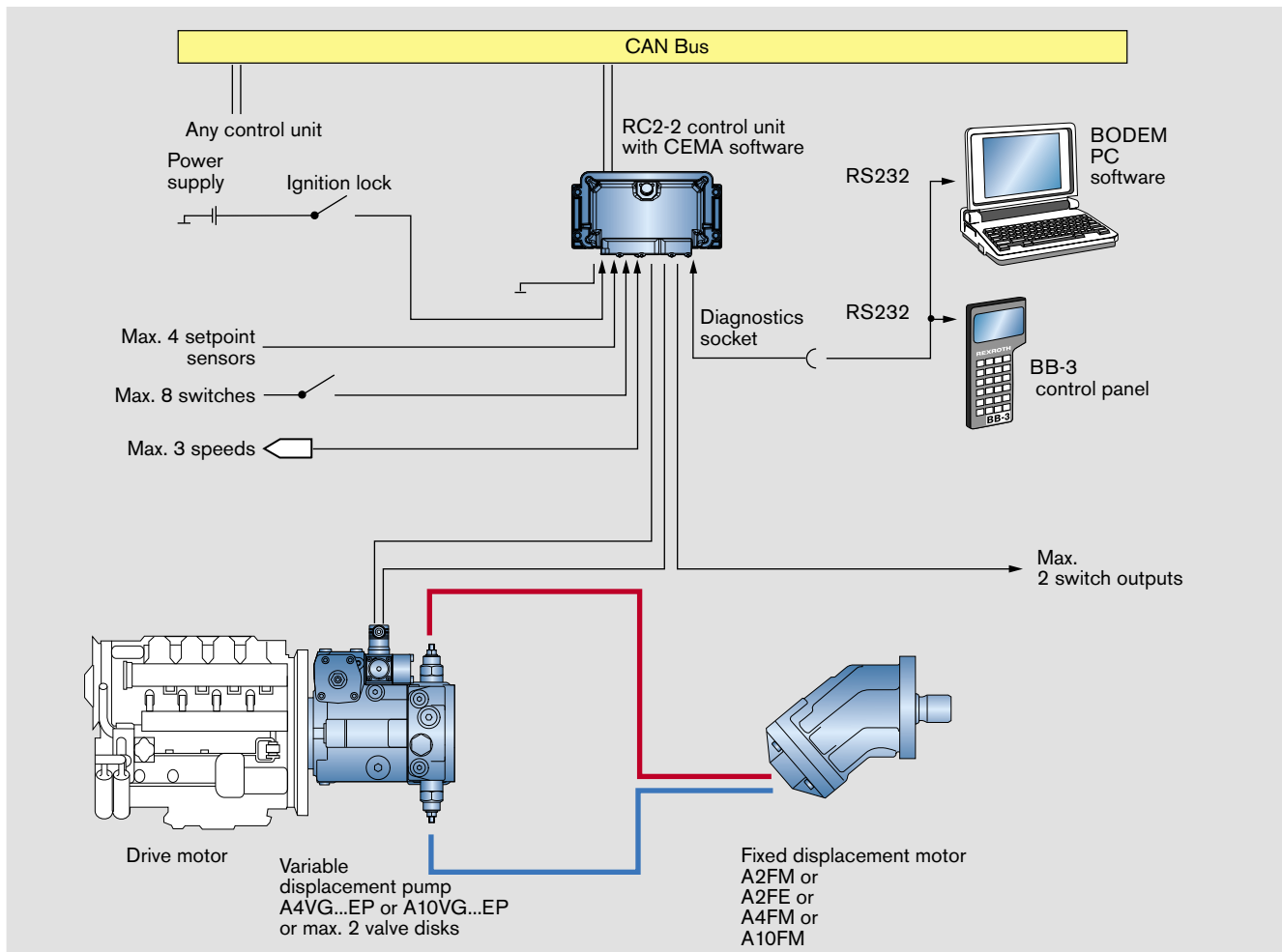
Function

CAN Communication

The CAN expansion module provides the control unit that is controlling the hydraulic drive with additional inputs and outputs. The first control unit works as the master and the CAN expansion module as the slave.

The CAN expansion module can send and receive messages:

- Send messages: The CAN expansion module reads the values that are present at its inputs and sends this scaled raw data to the master.
- Receive message: The CAN expansion module receives the setpoints for its outputs sent by the master and actuates the outputs accordingly.
- In addition to the input values, status information for the outputs is also reported to the master.

Inputs/Outputs

Various inputs can be used twice. This usage is specified by the master in the first receive message after a reset.

The following inputs and outputs are available:

Inputs/Outputs	Value range	Maximum number
Analog voltage inputs	0 to 5 V	4
Analog current inputs	0 … 20 mA	2
Switch inputs	low < 1.5 V high > 4.5 V	8
Frequency inputs	0 … 10 kHz > 1 V_{rms}	3
PWM outputs	0 … 2.3 A 100 Hz, 200 Hz	2
Switch outputs	Max. 2 A	2

Safety Functions

The CAN expansion module expects a CAN telegram from the master at least once every 200 ms. If this telegram is not received, the CAN expansion module shuts down all its outputs and attempts to re-establish communication with the master via the CAN bus.

The outputs are monitored for wire breaks and short circuits. Their status is reported to the master.

Important Features

- The inputs and outputs of the control unit are monitored (wire breaks, short circuit). Any faults are signaled to the master.
- If CAN communication fails, the outputs are shut down.
- Any faults that occur are logged in the control unit and can be read later on using BODEM or BB-3 in plain text.

Main Setting Variables

- CAN baud rate and format
- CAN IDs used
- Repeat rate for sent CAN telegrams
- Frequency of proportional outputs

Connection Diagram
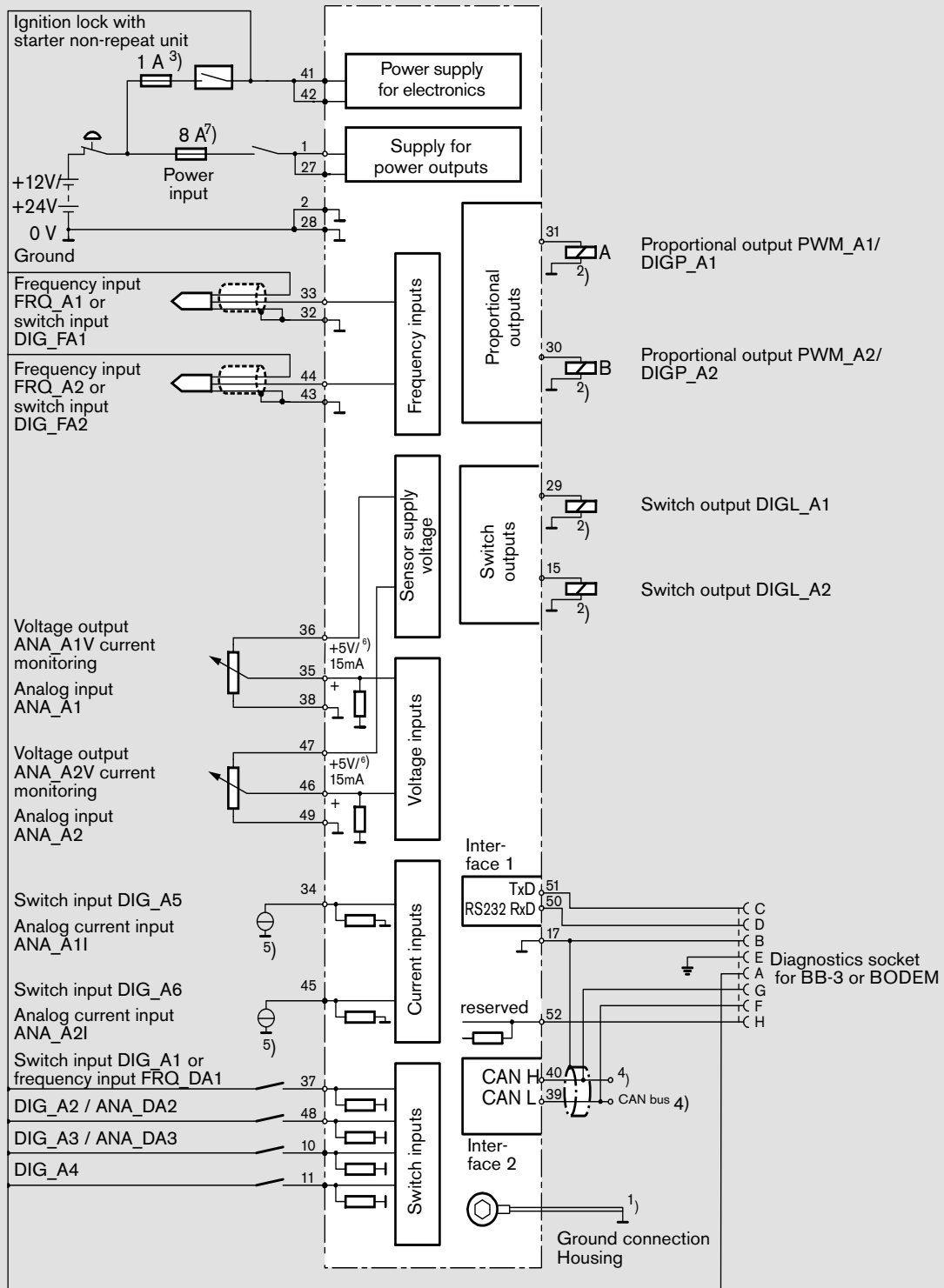
[1] Short, low-resistance connection from a housing screw to the unit or vehicle ground
[2] Separate ground connection from solenoid return lead to battery (chassis also possible)
[3] Separate fuses recommended for switches, sensors and electronics
[4] CAN bus: Terminating resistor 120 Ω recommended (see RDE 90 300-01 installation instructions)
[5] Separate ground connection from current source to battery, control unit GND (pin 38/49) possible
[6] Constant voltage source
[7] Observe max. current consumption where proportional solenoids and switch outputs are controlled simultaneously

Configuration and Diagnostics

The parameters to be set when commissioning the CEMA CAN expansion module can easily be adjusted using the BODEM PC software.
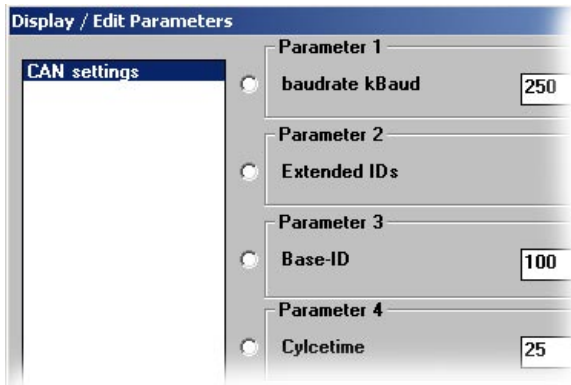
You can use BODEM to display the most important process data and the error messages for fault diagnosis and troubleshooting purposes.

Instead of BODEM, you can also use the BB-3 control panel for configuration and diagnostics.

Components Required

The following electronic components are needed:

- RC2-2/20 control unit with 52-pin mating connector (RE 95200)

- AS/CEMA software, version 10

The following hydraulic components can be used:

- Variable displacement pump with electro-proportional control A4VG…EP (RE 92003) or A10VG…EP (RE 92750)

- Fixed displacement motor A2FM (RE 91001) or A2FE (RE 91008) or A4FM (RE 91120) or A10FM (RE 91172)

The following electronic components can be used:

- HG104 lever (RE 95041)

- WS1 angle sensor (RE 95140) with mating connector

- IDR speed sensor (RE 95130) with mating connector

- HDD speed sensor (RE 95135) with mating connector

For commissioning and servicing, the following are needed:

- Diagnostics socket (RE 95085)

- BODEM PC software with BODEM connecting cable (RE 95085), or

- BB-3 control panel with BB-3 connecting cable (RE 29798 and RE 95080)

Safety Instructions

- The suggested circuits do not imply any technical liability for the system on the part of Rexroth.

- The safety instructions contained in RE 90301-01 must be observed.

- Leads for speed sensors must be shielded. The shield must be connected to the electronics on one side or to the machine or vehicle ground via a low-resistance connection.

- Cables to the electronics must not be routed close to other power-conducting cables in the machine or vehicle.

- Sufficient distance from radio systems must be maintained.

- All connectors must be unplugged from the electronics during electrical welding operations.

- The electronics may only be tested with the proportional solenoids connected.

- The proportional solenoids may not be connected to spark suppression diodes.
  Switching solenoids at the outputs of the RC electronics need not be connected to spark suppression diodes. Other inductive loads that are in the system but not connected to the RC must be connected to spark suppression diodes.

- In order to preserve the warranty, any installation or replacement of the RC software (Flash EPROM) must be performed by Rexroth personnel.

- Follow the RE 95 340-B operating instructions.