

Configurable Control Zones Software for the RC12-10 Controller

Version 10

USH00075

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Features

The changing needs of today's machinery requires software that can change along with it. From simple machines requiring unidirectional control, to complex machines with bidirectional control and/or fan-drive functionality. The Configurable Control Zones software is a single software with many different configurations. These configurations are recognized using the BODAS-service Tool.

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Ordering information

The CCZ application software is used with the RC12-10/30 control unit. When ordering, link the hardware and software type codes with a "+", for example:

RC12-10/30 + CCZ1210 (R978730855)

Functional Description

The general function of this software is to make an RC12-10/30 controller flexible and easy to configure for typical proportional control of functions needed on a machine.

The software divides the RC12-10/30 controller into six (6) separate zones, each of which can be independently configured as a dual solenoid driver (DSD) or a single solenoid driver (SSD). In addition one of the zones can be configured for a fan drive with reversing functionality using up to 6 temperature inputs.

Each zone contains a switched output that can be either turned on or flash with output A, output B, and/or when in

neutral with a separate on and off time delay. This switched output can also be used to power the proportional outputs.

Some of the configurations also have a fine control mode where the input range does not change but the current to the output can be adjusted to be lower than the maximum current.

For fast response times without overshoot on the outputs, each output can be configured using a soft start function.

For setup information, see **USH00075-B**.

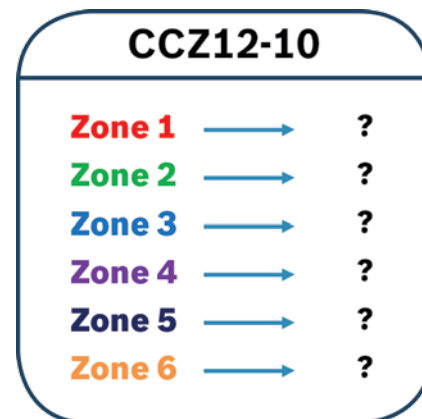
Internal Variants

The configurable control zones CCZ is an easily configurable software program for controlling various types of outputs. These outputs usually control a hydraulic pump, motor or valve. There are three different configurations variants used in each zone, the DSD, SSD, and AFC.

The **DSD** (dual solenoid driver) is an amplifier that takes input from a joystick, pedal, or potentiometer and then drives 2 separate solenoids. Typically, the solenoids are attached to a pump, motor, or valve. The first solenoid drives the output in one direction, and the second solenoid drives the output in the opposite direction. The bidirectional input is typically scaled from (+/-100%) from a center position.

The **SSD** (single solenoid driver) is an amplifier that takes input from a joystick, pedal, or potentiometer and then drives a single solenoid. Typically, the solenoid is attached to a pump, motor, or valve. The solenoid drives the output in one direction. The unidirectional input is typically scaled from (0 → 100%).

The **AFC** (automatic fan control) monitors temperature inputs (either analog or J1939-CAN messages) to proportionally control the speed of the cooling fan circuit. Using time ramps, you can configure how quickly the fan responds to a change in the requested fan speed.



One program, many uses.

The versatility of the Control Zones software means that it can be configured for many different machines, from single function, to multi-function or fan control.

Control Zones Software makes new machine development easy. For example, a new machine might be developed with up/dn, and lf/rt functionality. Then the machine might need in/out functionality added. Not a problem. With the same controller and the same software loaded, simply log in to the controller, enable and configure the new functions, and your new machine function is now ready to use.

Compatibility, built-in.

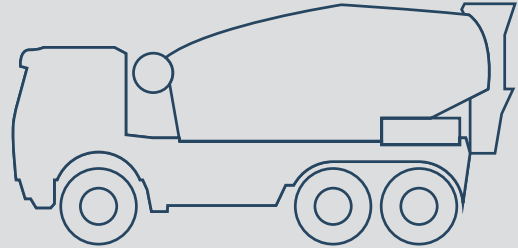
The Control Zones software was developed to be used on both 12V and 24V systems. In addition to the predefined coils, there are 'manual' settings that can be selected to allow for maximum compatibility with all types of components.

Fault detection, included.

The Control Zones software has several different fault detections built in, to monitor the inputs and outputs for wire breaks, as well as electrical 'shorts' to power or ground. The Control Zones software is programmed with Start-Latch functionality, to make sure certain conditions are met before the outputs can be activated. The RC12-10 controller provides for E-stop functionality that can be wired in and then activated with the Control Zones software.

Example 1 – Single function machines.

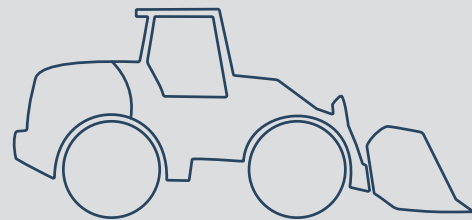
Zone1 → Configure drum rotation as DSD



Example 2 – Multiple function machines.

Zone1 → Fwd/Rev functions

Zone2 → Steering functions



Example 3 – Single or multi function machines, with fan control

Zone1 → Up/Down functions

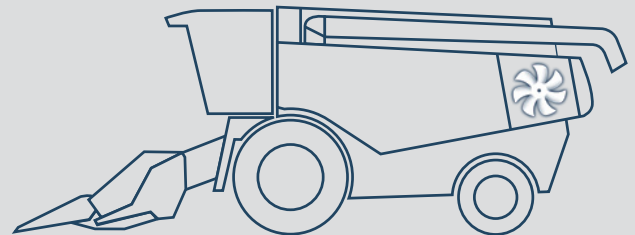
Zone2 → Auger rotation

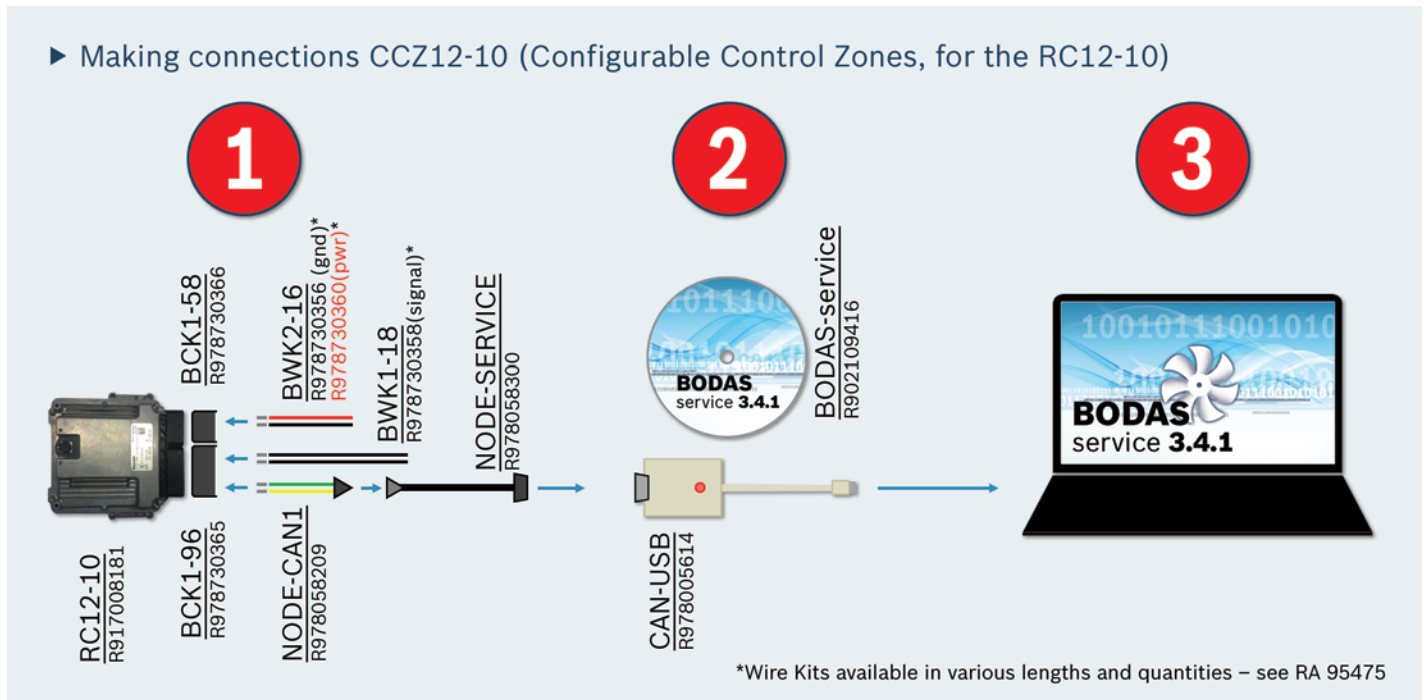
Zone3 → Conveyor in/out

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Zone6 → Fan drive (w/rev)





Making Connections

Pre-packaged connector kits, and pre-crimped wire kits, make wiring up the controller quick and easy. Wire kits come in several different quantities and lengths, to fit your specific application.

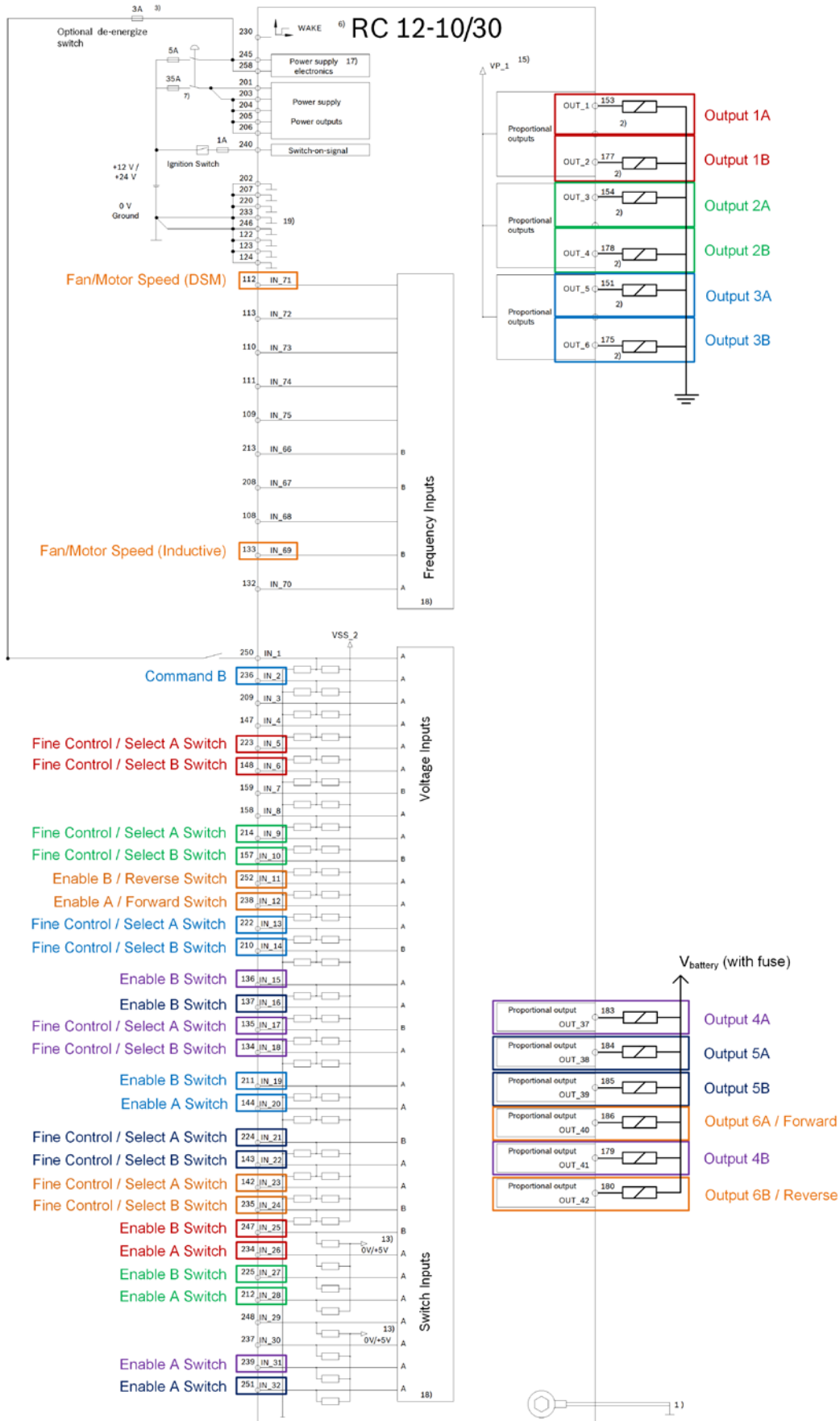
Once the controller is connected, and wired into your system, simply connect to the communication node with a CAN-USB adapter, and configure the software with the BODAS-service Tool.

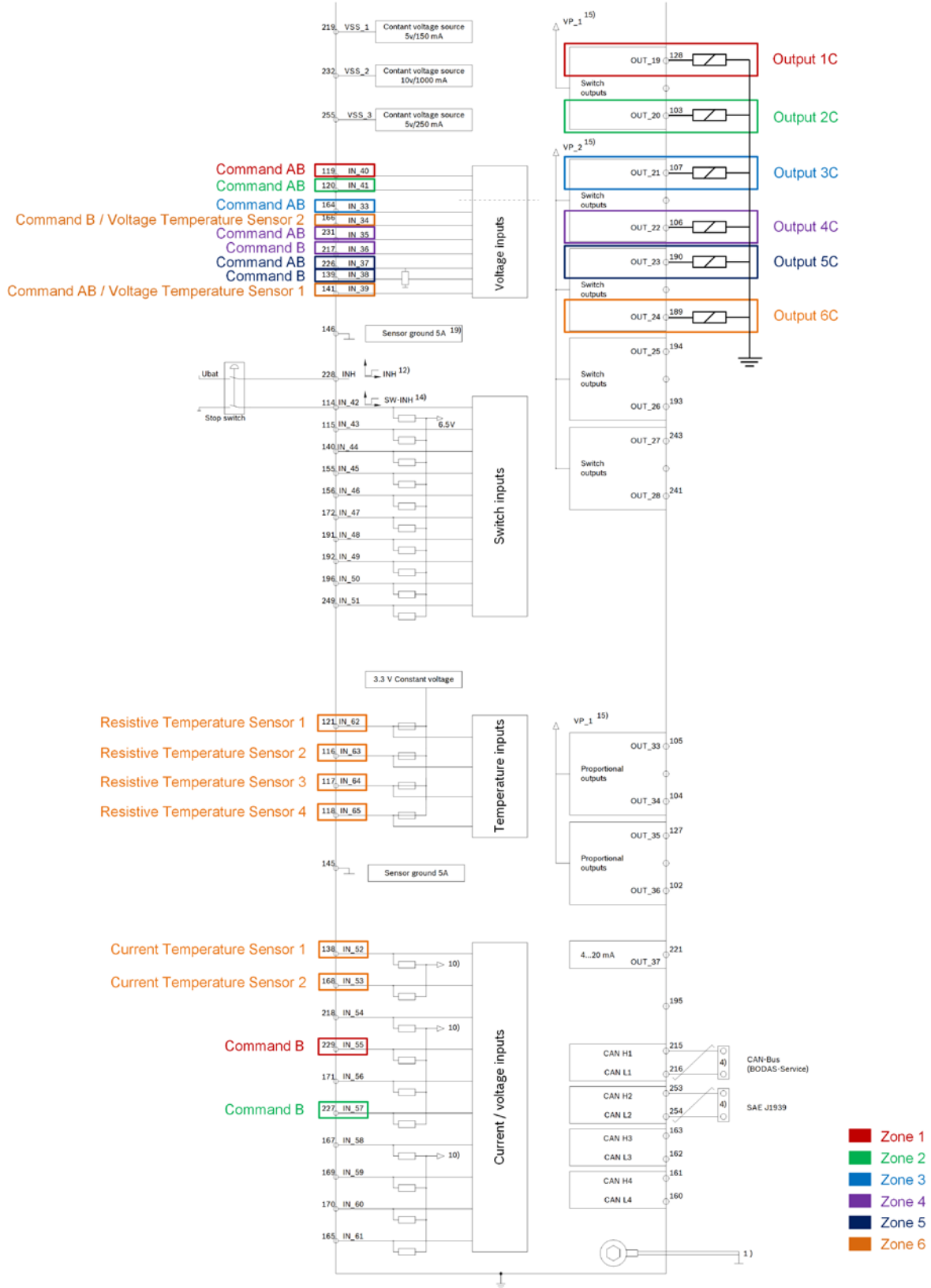
The BODAS-service Tool can also be used for things like ‘data-logging’ which will allow you to save performance data, as well as other parameters, to your computer.

Components shown

The following electronic components are illustrated above:

- (R917008181) **RC12-10** Controller
- (R978730365) **BCK1-96** Connector Kit
- (R978730366) **BCK1-58** Connector Kit
- (R978730358) **BWK1-18** Signal Wire Kit
- (R978730356) **BWK2-16** Ground Wire Kit
- (R978730360) **BWK2-16** Power Wire Kit
- (R978058209) **NODE-CAN1** Wire Assembly
- (R978058300) **NODE-SERVICE** Cable Assembly
- (R978005614) **CAN-USB** Can Adapter
- (R902109416) **BODAS-service** Full Edition





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-B 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 solenoids connected. The proportional solenoids must not be connected to spark suppression diodes.
- ▶ Switching solenoids at the outputs of the RC control unit 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 personnel from Rexroth.

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Subject to change