



USER MANUAL

RCB10+

REAC CONTROL BOX





About REAC

REAC is passionate about helping people in their daily lives, and by providing a wide range of advanced power solutions suitable for many different applications, we hope to make people's lives a little bit easier. Our aim is to offer our clients an excellent service, backed up by experience and know-how in the application of advanced motion systems.

REAC's power solutions contain compact and strong electrical actuators, lift and tilt systems, control units and hand controls. We know that our customers have different needs and therefore our products are designed to be customized according to their application's specific requirements.

We are confident to say that we can solve a wide range of motion problems, so please challenge us!

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1 Introduction

1.1 Documentation

This manual describes the RCB10+ control box.

The following related documentation is also available:

- RCB10+ Datasheet
- RHC10 Datasheet
- RST10 Datasheet
- General Features in RST10

1.2 Symbols

The following symbols are used in the manual:



Injury to persons can occur if these instructions are not followed.



Damage to the product can occur if these instructions are not followed.



Useful tips, recommendations, and information for efficient and trouble-free use.

1.3 Abbreviations

RCB	REAC Control Box
RHC	REAC Hand Control
RST	REAC Service Toolbox

2 Product description

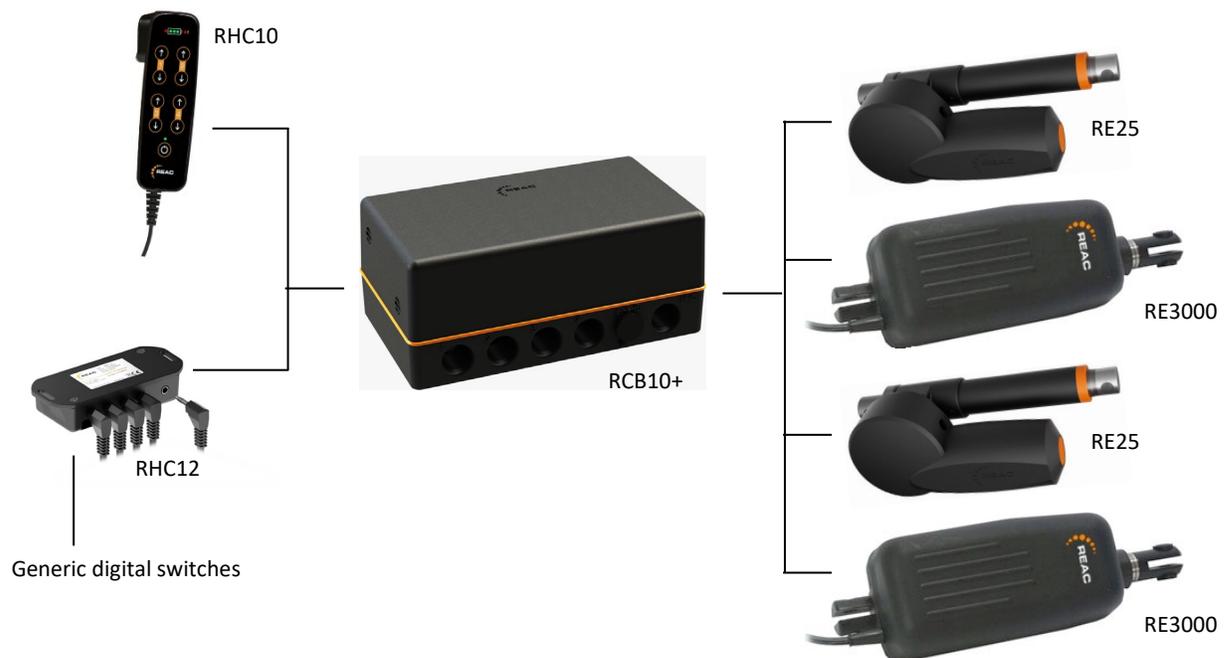
2.1 Overview

The RCB10+ is a 4-channel control box with a 2 Ah battery pack.

2.2 System and compatibility

A REAC control system consists of a control box, a power source, a hand control, and one or several actuators.

- The RCB10+ has a built-in battery and needs no additional power source.
- The RCB10+ can be combined with the RHC10 hand control and almost any REAC actuator¹.
- The RCB10+ can also be connected to generic digital switches, via the RHC12 adapter. In this case, the hand control cannot be connected.

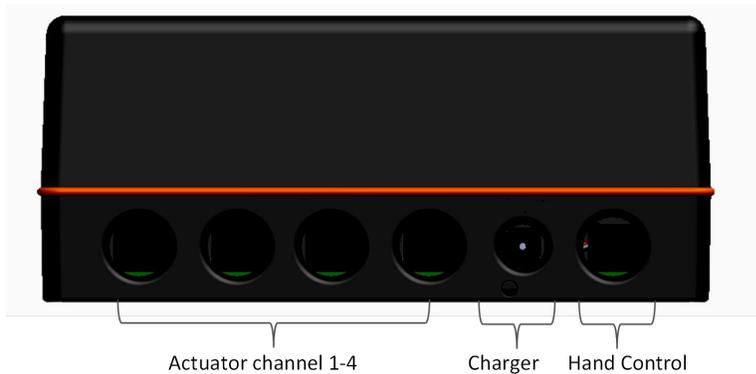


2.3 Configuration

The RCB10+ is easily configured using the RST10 Windows software. It is possible to set parameters for each actuator channel, in both directions. You can, for example, set the start/stop ramps, speed factors, and overcurrent limits.

¹ Except RE7000 which has a special interface.

2.4 Connectors



Actuator connectors

A REAC actuator² equipped with a 6.5 mm phono connector can be connected.

Charger jack

The charger jack is used for connection of the battery charger.

Hand control (HC) connector

The RHC10 hand control can be used together with the RCB10+. It is as standard equipped with a 6.5 mm phono connector.



To achieve full IP protection, all cable connectors must be equipped with O-rings.



The actuator and hand control connectors are of the same type. To facilitate identification, color coding of cables and connectors is available as an option.

2.5 Battery

RCB10+ has a built-in battery, with a capacity of 2.0 Ah.

The duration of a fully charged battery depends on the current consumption in each application and the usage pattern.



RCB10+ can handle energy from regenerating actuators. This makes it possible to use the actuators with very good efficiency, which in turn gives an improved time between charging.

2.5.1 Battery level information

The following battery level information is available:

- The RCH10 hand control has a low battery LED, which starts flashing when the RCB10+ battery has reached a low level.
- The RCB10+ Premium has a low battery sound alarm, which gives a sound when the battery has reached a low level.
- The estimated charge level can be read using the RST10, see section 5.3.2.

When the low battery warning is activated, a few strokes remains. The number of strokes depends on the application and the configuration in RST10, see section 5.2.7.

² Except RE7000 which has a special interface.



2.5.2 Battery disconnection function

To protect the battery from deep discharge and damaged battery cells, the RCB10+ has a function that can disconnect the battery completely internally.

The battery is automatically disconnected when the battery level is critically low or after 18 days of standby.

You can also disconnect the battery manually. The battery should typically be disconnected during shipping, storage, or when not in use for a long time. For more information, see section 4.2.

2.6 Safety functions

2.6.1 Duty cycle

To prevent the actuator motors from overheating, the REAC control systems have a built-in supervision and protection feature. There are three limits used to determine if the user shall be warned or if the operation should stop.

The following limits can be configured per actuator channel:

- Warning limit.
- No acceleration allowed limit (ongoing movement continues at current or lower speed, no new movement can start).
- No movement allowed limit.

The duty cycle limits can be configured using the RST10, see section 5.2.5.

2.6.2 Disabled motor activation while charging

If the battery charger is connected, the RCB10+ prevents any motor activation. The reason is that the charger is not intended to run a motor and doing so might cause EMC disturbance from the charger.

2.6.3 Overcurrent

Overcurrent is a limit that is used to detect if the actuator is overloaded, runs into any obstacle, or reaches an end limit (if limit switches are not used). The movement will be stopped if the motor current is above the set limit for 250 ms. If the motor current is 2 A above the set limit, the movement will stop immediately.

It is possible to configure individual current limits for all channels via the RST10, see section 5.2.4.

2.6.4 Internal errors

If an internal error is detected, the operation turns off for one channel only or for all channels, depending on the type of error. The alert indicator LED on the hand control lights up.

Errors are automatically cleared after 10 seconds and the operation turns on again. If the error still remains, the channel/channels will be turned off again and no operation will be possible.

3 Getting started

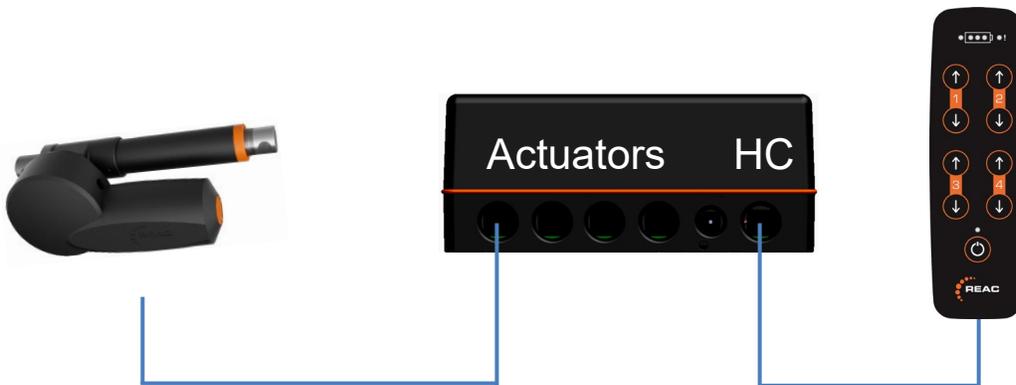
3.1 Before first use

Before using the RCB10+ for the first time, you should charge the battery for 24 hours. This to ensure full charge and to prolong the lifetime of the battery.

To charge the battery the first time, do the following:

1. Connect the battery charger to the RCB10+ charger jack and to a wall socket.
2. Check that the LED on the charger is red, indicating charging.
3. Keep the charger connected for 24 hours.

3.2 Connecting hand control and actuators



To connect the hand control and actuators, do the following:

1. Connect the hand control to the HC connector on the RCB10+.
2. Check that the LEDs on the hand control light up. If not, the battery needs to be activated. Do the following:
 - a. Connect the battery charger to the RCB10+ and to a wall socket.
 - b. Wait 5 seconds and then disconnect the charger.
3. Connect each actuator to an actuator connector on the RCB10+.



Make sure all cables are equipped with O-rings. Without the O-rings, the IP protection will be lost.



The actuator and hand control connectors are of the same type. Make sure you connect the cables to the correct connector.



To simplify assembly of the O-rings, put some grease on them. Standard Vaseline can be used.

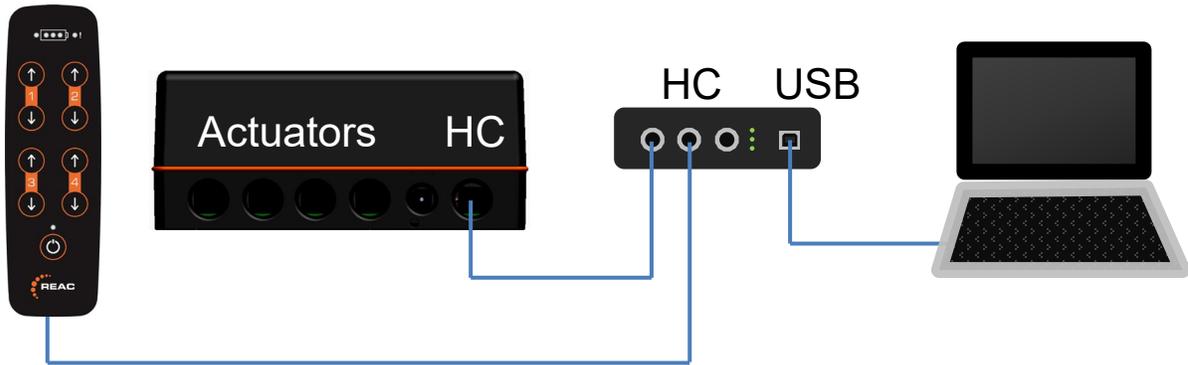
3.3 Configuring RCB10+

The configuration of RCB10+ is done using the RST10 Windows software, which you can download from REAC's web page and install on your computer.

To connect the RCB10+ to the computer, the RHC12 adapter with a USB cable (Type A-B) and 6.35 mm phono cable are needed.

To be able to test the effect of the parameter settings, the actuators and the hand control can optionally be connected.

3.3.1 Connecting RCB10+ to computer



To connect the RCB10+ to the computer, do the following:

1. Connect the USB cable to the USB connector on the RHC12 adapter and to the computer.
2. Connect the phono cable to the HC connector on the RCB10+ and to any of the HC connectors on the RHC12 adapter.
3. Connect the hand control to any of the HC connectors on the RHC12 adapter.
4. Connect the actuators to the actuator connectors on the RCB10+.



The first time the RHC12 adapter is connected to the computer, installation of drivers is required. This is done automatically if the computer is connected to the internet.



RHC12 adapter LEDs:

1. USB Power
2. PC tool
3. HC bus

3.3.2 Installing RST10

To install the RST10 software on your Windows computer, do the following:

1. Go to <https://www.reac.se/products/control-systems/rst10/> and download the RST10 Software zip file.
2. Extract the zip file.
3. Double-click the file named “setup”.

	RST10-1.0.0.0-win32-x86-portable.exe	2017-03-09 12:37	Program
	RST10-1.0.0.0-win32-x86-setup.msi	2017-03-09 12:48	Windows Installer...

4. A guide takes you through the installation. Normally, there is no need to change the suggested settings.

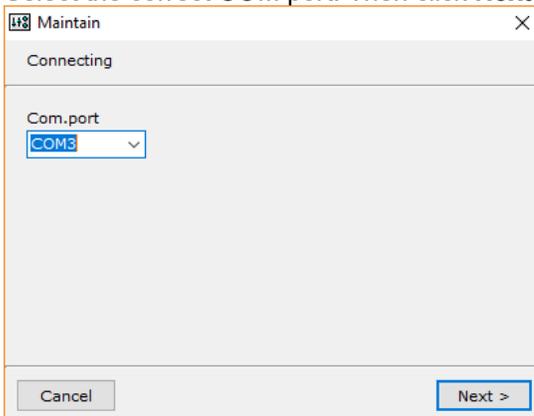


If there are limitations in installation rights on the computer, you can run the portable RST10 version instead. Double-click the file named “portable”.

3.3.3 Setting parameters

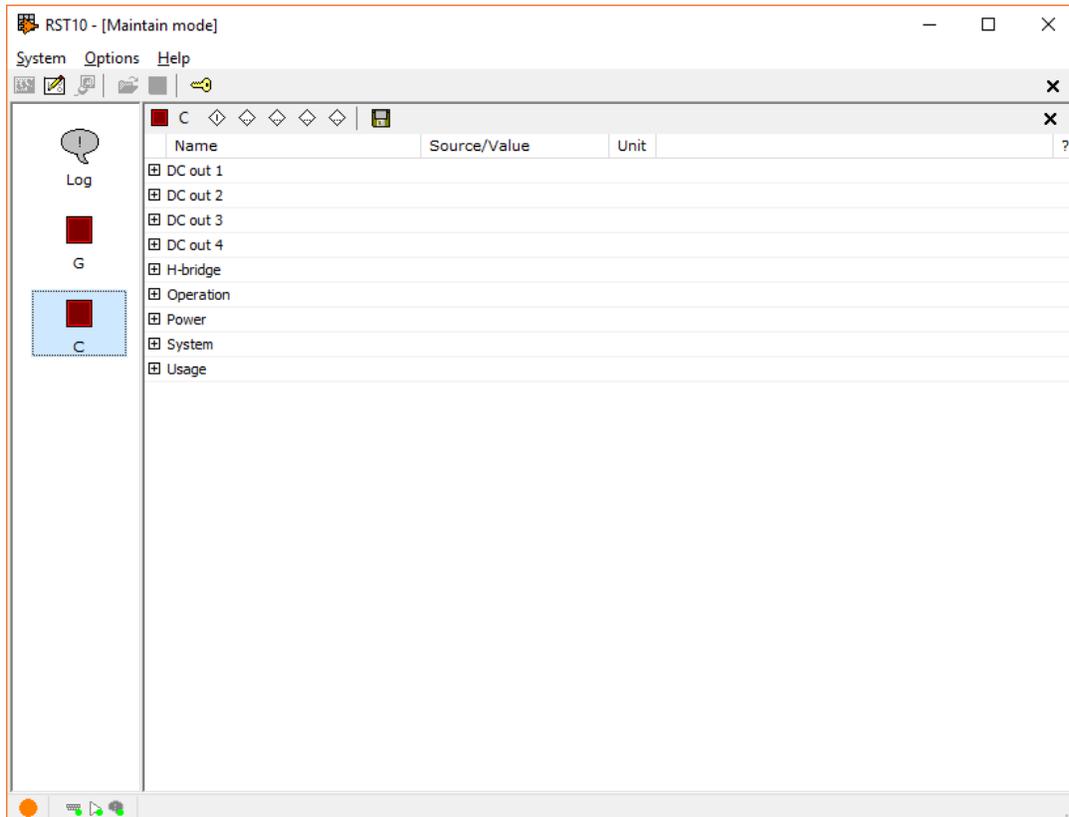
To change and set the parameters, do the following:

1. Run the RST10 from the program start menu or by double-clicking the desktop icon.
2. On the top menu, select **System > Maintain**.
3. Select the correct COM port. Then click **Next**.



Remove the USB cable from the computer. One of the COM ports will disappear. This is the one you should select when you have connected the USB cable again.

4. The software now collects information from all connected units. This takes some time. Wait until the *Receiving application* window disappears.
5. Icons for the detected units appears to the left. Double-click the **C** icon (control box). This displays parameter groups for the RCB10+.



The configurable parameters are available in the following groups:

- DC out 1-4, one group per actuator channel
- Operation
- Usage

To change a parameter, do the following:

1. Click the plus sign in front of the group. This displays all parameters in the group.
2. Click the parameter value.
3. Enter a new value.
4. Press Enter. The new parameter value becomes effective immediately.



Parameters related to a channel will become effective after the next movement on that channel.

For detailed information about all parameters, see section 5.2.

4 Operation

4.1 Charging the battery

For an optimum lifetime, you should charge the battery as often as possible. If the battery is not charged regularly, it will be damaged due to self-discharge. Frequent deep discharge reduces the battery life.

To charge the battery, do the following:

1. Connect the battery charger to the RCB10+ charger jack and to a wall socket.
2. Check that the LED on the charger is red, indicating charging.
3. The charging time is approximately 6 hours.
When the charging is completed, the LED on the charger is green and all the battery level LEDs on the hand control flash at the same time.



Only use the battery charger delivered together with the RCB10+.



If the RCB10+ has not been used for a long time, it is recommended to charge the battery for 24 hours.

4.2 Disconnecting and activating the battery

To protect the battery from deep discharge, the battery can be disconnected automatically or manually. For more information, see section 2.5.2.

You should manually disconnect the battery before shipping, storage, and when the RCB10+ will not be used for a long time.

Before use, you must activate the battery again.

4.2.1 Disconnecting using the RST10

You can disconnect the battery by using the RST10 software, see section 5.3.3.

4.2.2 Disconnecting using a 9 V power source

You can disconnect the battery by connecting a 9 V power source, for example a 9 V battery.

9 V power source requirements:

- Output connector: 5.5 mm x 2.1 mm barrel jack with positive center
- Output voltage: 6-10 V DC
- Output current: minimum 50 mA, maximum 800 mA (fused or current limited)

To disconnect the battery, do the following:

1. Connect the 9 V power source to the RCB10+ charger jack.
2. Do one of the following:
 - a. Wait minimum 5 seconds and maximum 10 seconds.
 - b. Wait until all LEDs on the hand control start flashing.
3. Disconnect the power source.
4. The battery is now internally disconnected and no operation is possible.



4.2.3 Activating the battery

To activate the battery, do the following:

1. Connect the battery charger to the RCB10+ charger jack and to a wall socket.
2. Wait 5 seconds.
3. The battery is now internally connected and the system is ready for use.



It is recommended to keep the charger connected until the battery is fully charged.

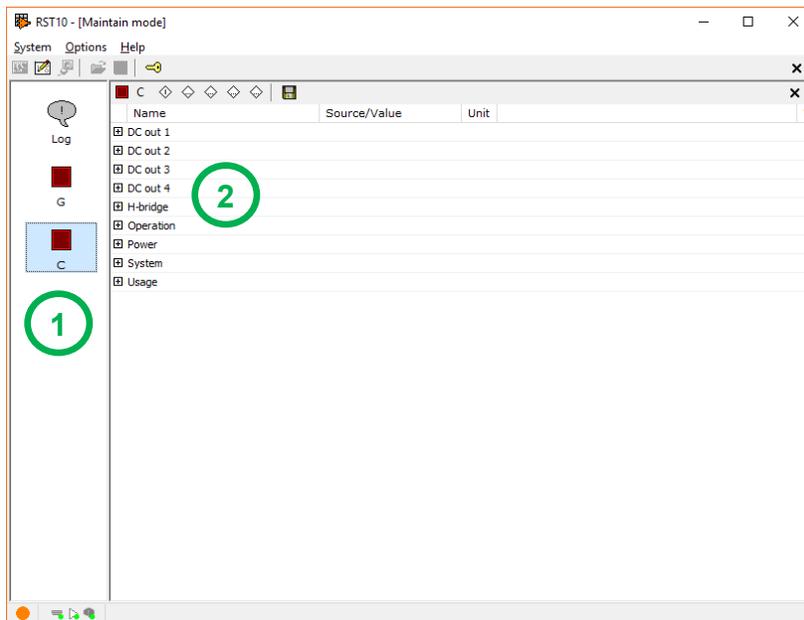
5 RST10 toolbox

The REAC Service Toolbox RST10 is a Windows software consisting of several maintenance and service tools. The RST10 can be used to configure settings, evaluate application solutions, perform service tasks, and monitor system behavior.

This chapter describes the RST10 user interface and the configurable RCB10+ parameters.

For installation and connection instructions, see section 3.3.

5.1.1 User interface





1. This area displays icons for each detected unit and a log:
 - a. **Log** aggregated log for all units
 - b. **G** USB adapter (gateway)
 - c. **C** control box
 - d. **H** hand control

To select a unit, double-click the icon.

2. This area displays groups of status registers and parameters for the selected unit.
 - a. To expand a group, click the plus sign.
 - b. To collapse a group, click the minus sign.

Name	Source/Value	Unit
<input type="checkbox"/> DC out 1		
<input type="checkbox"/> DC out 2		
<input type="checkbox"/> DC out 3		
<input type="checkbox"/> DC out 4		
<input type="checkbox"/> H-bridge		
<input type="checkbox"/> Operation		
<input checked="" type="checkbox"/> Power		
Estimated charge level	1715	mAh
Presumed capacity	2000	mAh
Charger connected	1	
<input type="checkbox"/> System		
<input type="checkbox"/> Usage		

This image shows status registers and parameters in an expanded group.

ED level 1		0 %	1
Connected 1		0	
Directional restriction 1		0	
Max current forward 1	:	8000 mA	2
Max current backward 1	:	8000 mA	
Soft start 1	:	1000 ms	
Soft stop 1	:	1000 ms	

1. Status registers are values that only can be read/viewed.
2. Parameters are values that can be changed. Parameters have a colon sign in front of the value.

To change a parameter, do the following:

1. Click the parameter value.
2. Enter a new value.
3. Press Enter. The new parameter value becomes effective immediately.



Parameters related to a channel will become effective after the next movement on that channel.

5.2 RCB10+ parameters

To view and change the RCB10+ parameters, select the **C** icon and expand the groups.

The configurable parameters are available in the following groups:

- DC out 1-4, one group per actuator channel
- Operation
- Usage

5.2.1 Soft start and soft stop

The soft start and soft stop parameters are used to adjust the start and stop ramps of the motor.

The parameters are set in time (ms). The time is between 0 to 100% PWM. Simply explained it works more like a ramp speed setting, rather than an actual time setting. If a movement at 50% PWM is demanded, that PWM level will be reached in half the time.

The *Soft start* and *Soft stop* parameters are available in the **DC out** groups.

5.2.2 Gain

If an actuator is considered to run too fast, either because it is built that way or as a result of the mechanics around it, the speed can be limited by using the gain parameter. This can be needed, for example, if the load is “helping” the actuator in one direction.

There is one parameter in each direction: *Gain forward* and *Gain backward*. The gain parameters are set in % of the full pass-through of the signal.

The *Gain forward* and *Gain backward* parameters are available in the **DC out** groups.



Even if the parameter is called “gain”, this is not about amplification of the signal. The maximum gain is the neutral 100%, meaning that it is only possible to reduce the signal.

5.2.3 Reverse orientation

The reverse orientation parameter is used to compensate for crossed motor cables, a gearbox that alters the direction, or similar.

0 means regular orientation. 1 means reversed orientation.

The *Reverse orientation* parameter is available in the **DC out** groups.

5.2.4 Current limits

Overcurrent is a limit that is used to detect if the actuator is overloaded, runs into any obstacle, or reaches an end limit (if limit switches are not used). The movement will be stopped if the motor current is above the set limit for 250 ms. If the motor current is 2 A above the set limit, the movement will stop immediately.

There is one current limit parameter in each direction: *Max current forward* and *Max current backward*. The parameters are set in mA.

The *Max current forward* and *Max current backward* parameters are available in the **DC out** groups.

5.2.5 Duty cycle

To prevent the actuator motors from overheating, the REAC control systems have a built-in supervision and protection feature. There are three levels used to determine if the user shall be warned or if the operation should stop. In the control box, this is realized as a percentage out of a total time.

The following levels can be configured per actuator channel:

- *ED warning level*: At this level, the alert LED on the hand control will light up when the motor is running.
- *ED no start level*: At this level, the motor will not start anymore, until after “cool down”. An already started movement will continue at current or lower speed.
- *ED stop level*: At this level, the motor will stop immediately. The motor will stop even in the middle of a movement.

The parameters are set in percentage of time using a motor, within a certain period (duty cycle). Most REAC actuators have a specified duty cycle of 2 minutes run, followed by 18 minutes of rest; in total 20 minutes.

The duty cycle parameters are available in the **DC out** groups.

5.2.6 Regular input throttle

It is possible to control the reaction speed for the regular buttons on the hand control.

Using a button on the hand control will result in a request to start a movement at a certain throttle level. This level, one for each channel, is set by the regular input throttle parameters.

The parameters are set in percentage of full throttle input signal.

The regular input throttle parameters are available in the **Operation** group.



The regular input throttle parameter is only intended for control of the button speed. To adjust for different actuators and mechanical factors, the gain parameters should be used, see section 5.2.2.

5.2.7 Low battery warning

The hand control has a low battery LED and the RCB10+ Premium has a low battery sound alarm. The LED starts flashing and the alarm gives a sound when the RCB10+ has reached a low level.

It is possible to adjust the level for when the low battery warnings will be activated.

The level is set as an absolute value in mAh. This makes it possible to set a level where there are a certain number of strokes left for a typical application, regardless of power source.

The low battery warning parameter is available in the **Operation** group.

5.2.8 Service intervals

RCB10+ can optionally be used with other hand controls than RHC10. Some hand controls have a service interval indication LED. It is possible to adjust the limits for the service indication and to reset the interval counters.



Only authorized personnel is allowed to change the service limits and reset the counters. If necessary service is not performed, damage to the system and personal injury can occur.

The service interval limit defines the number of strokes before the service indication LED on the hand control will light up.

The limit is set per channel using the parameter *Strokes service interval X*, where X is the channel number.

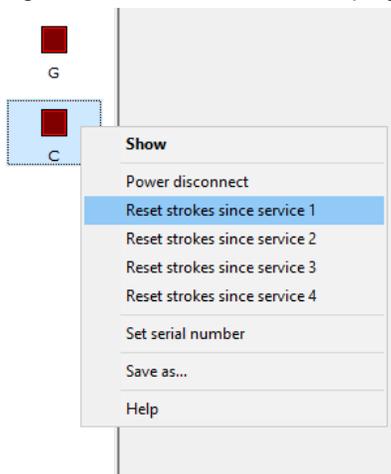
To disable the service interval limit, select the value, press Delete, and then press Enter. The text “Not set” is shown instead of a value. If the limit is disabled, the service indication LED will never light up.

The service interval parameters are available in the **Usage** group.

5.2.8.1 Reset counter

To reset the service interval counter to 0, do the following:

1. Right-click the **C** icon. This displays a menu.



2. To reset the counter for channel X, select **Reset strokes since service X**.
3. In the Confirmation dialog, select **Yes**.

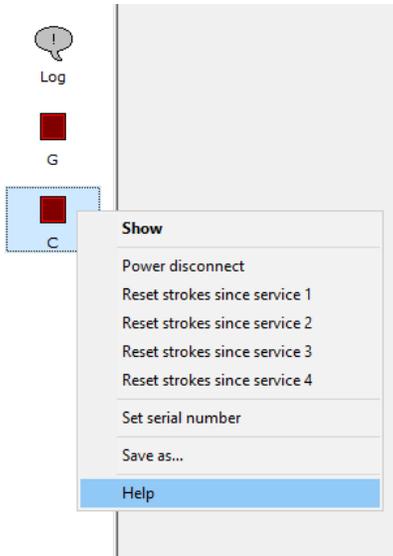
5.3 Additional functions

5.3.1 Checking system information

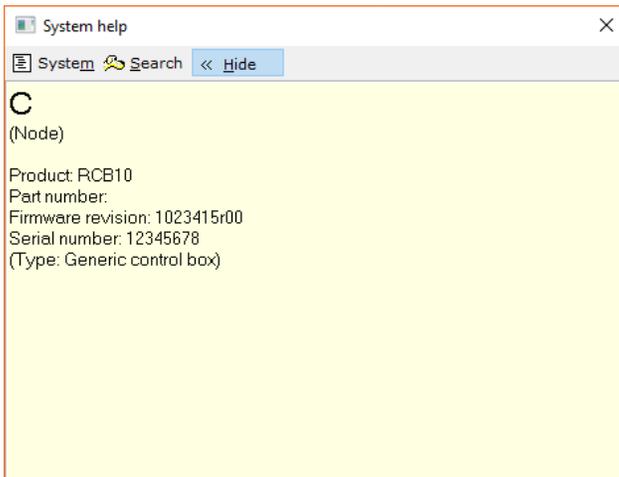
It is possible to display information about all units in the system, for example firmware revision and serial number.

To check the system information for a unit, do the following:

1. Right-click the icon for the unit. This displays a menu.



2. Select **Help** from the menu.
3. The *System help* window displays information for the unit.



5.3.2 Checking the charge level

To check the battery charge level, do the following:

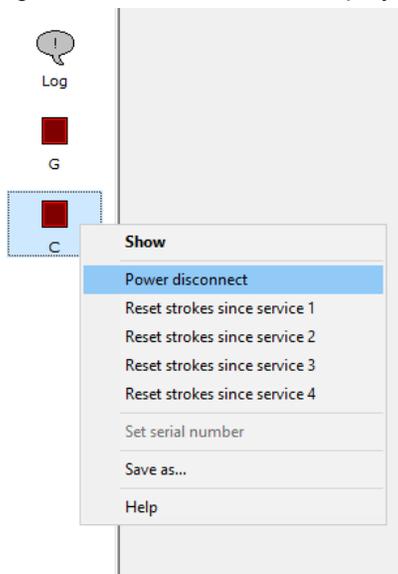
1. Double-click the **C** icon.
2. Expand the group **Power**.
3. The status register *Estimated charge level* displays the estimated battery charge level.

5.3.3 Disconnecting the battery

To protect the battery from deep discharge, it is possible to disconnect the battery. For more information, see sections 2.5.2 and 4.2.

To disconnect the battery using RST10, do the following:

1. Right-click the **C** icon. This displays a menu.



2. Select **Power disconnect** from the menu.
3. In the Confirmation dialog, select **Yes**.

5.3.4 Checking flags

If a motor channel is not working, the RST10 can be a helpful tool in combination with the trouble shooting guide in chapter 7.

The RST10 can provide additional information via error and diagnostic flags:

- **Flags in the *H bridge* group:** All status registers starting with “Error” should be 0. If not, something is probably broken. To make sure it is a consistent error, wait 10 seconds and then try again. Wait another 10 seconds and try another channel. If the error is consistent, the flag will be set again and again.
- **Flags in the *Battery* group:** The status register *Charger connected* should be 0. If not, a charger is connected and the control box is preventing any movement. To clear this flag, disconnect the charger from the RCB10+.
- **Flags in the *DC out* groups:** There is one DC out group per channel, each with a set of flags.
 - The *Error jack ID*, *Error chain link*, and *Incompatible device detected* flags should be 0. If not, the system parts are probably not connected correctly. Check that the actuators and the hand control are connected to the correct connectors on the RCB10+.
 - The *Connected* flag should be 1. If not, the system has not detected any actuator on that channel. Check that the actuator is properly connected to the motor output.
 - The *Directional restriction* flag should be 0, when no restrictions apply. If not, try to run in the other direction (an obstacle or end limit may have restricted the movement in one direction).
 - The *ED no start* and *ED stop* flags should be 0. If not, the channel is used too much. Wait 20 minutes and then try again.

6 Maintenance

6.1 Service intervals

To ensure safe and proper operation, regular service is required. The service interval depends on the final application and the number of actuator cycles.

Between the planned service points, regular inspection and maintenance should also be performed.

The following maintenance schedule is suggested:

	Initially	Regularly	At planned service
Control box Make sure the control box is firmly fixed.	✓		✓
Cover Check the plastic housing for mechanical damage (cracks).	✓	✓	✓
Cables Make sure the cable that connects the actuator to the control box is firmly affixed.	✓	✓	✓
Sealings Check all O-rings for damage. Replace if necessary.	✓	✓	✓
Battery Before use, make sure at least 1 green battery indicator LED is lit on the hand control.	✓	✓	✓

6.2 Cleaning and disinfection

Cleaning instructions

Clean with a damp cloth or with a brush and water (water must not be under pressure)



Make sure all connectors are plugged during cleaning. This to prevent ingress of water.
Do not wash directly with a high-pressure cleaner.
Do not use a steam cleaner.



For disinfection, it is recommended to use soap or equal and clean with a damp cloth.
Cleaners and disinfectants must not:

- be highly alkaline or acidic,
- contain caustic agents,
- change the structure of the surface of the plastic or the adhesives.

7 Trouble shooting

In addition to this trouble shooting guide, it can be useful to check error and diagnostic flags in the RST10 software, see section 5.3.4.

Problem	Probable cause	Description	Solution
No actuator movement	Overcurrent	Current peaks above the current limit are allowed for 250 ms. When this is exceeded, the actuator will be turned off. Overcurrent can be caused by overload or by running into an obstacle or a mechanical end stop.	Overload – reduce load. Obstacle – remove obstacle. End stop – run in opposite direction.
	Short circuit	The alert indication LED on the hand control is lit.	Service is needed.
	Duty cycle protection	Duty cycle protection is a function that protects the actuator motor from overheating. The alert indication LED on the hand control is lit during attempt to run the actuator.	Wait until the actuator “rest time” has elapsed.
	Actuator not correctly connected to control box	No actuator movement.	Make sure the actuator is properly connected to an actuator connector.
	Actuator mix up	Wrong actuator will move.	Make sure the actuator/actuators are properly connected. Color coding is possible on both actuator and control box.
	Internal error	The alert indication LED on the hand control is lit.	Wait 10 s. If the error remains, service is needed.
	Actuator cable faulty	No actuator movement.	Check the cable and replace the actuator if necessary.
	Charger is connected	No actuator movement. The alert indication LED on the hand control is lit during attempt to run the actuator.	Disconnect the charger.

System appears “dead”	Low battery level.	When the level is critically low, the battery is automatically disconnected to protect the battery ³ .	Charge the battery.
	Battery disconnect functionality activated.	Nothing happens.	Activate the battery, see section 4.2.3.
	Battery is worn out.	The battery level indicators on the hand control drop quickly after full charge.	Service is needed.
Hand control appears “dead”	Poor contact with control box.	Nothing happens when pressing a button, no LEDs are lit.	Make sure the hand control is properly connected to the HC connector.
	Low battery level.	Nothing happens when pressing a button, no LEDs are lit.	Charge the battery.
	Hand control out of order.	Nothing happens.	Service is needed.

³ Before this happens, the RCB10+ Premium will give a warning sound and the low battery LED on the hand control will flash.

Alert indication LED is lit	Short circuit.	The alert indication LED on the hand control is lit.	Service is needed.
	Duty cycle protection	Duty cycle protection is a function to protect the actuator motor from overheating. The alert indication LED on the hand control is lit during attempt to run the actuator.	Wait until the actuator “rest time” has elapsed.
	Internal error.	The alert indication LED on the hand control is lit.	Wait 10 s. If the error remains, service is needed.
	Charger connected while trying to run actuator.	The alert indication LED on the hand control is lit.	Disconnect the charger.
No Charging	Charger cable not connected to control box or wall socket.	The LED on the charger and the LEDs on the hand control are not indicating charging.	Make sure the cable is properly connected to the control box and wall socket.
	Damaged battery	Charger connected for several hours, but no charging indication.	Service is needed.

7.1 Repairs

To avoid risk of malfunction, all repairs must be carried out by authorized REAC workshops or by a REAC appointed representative. Products under warranty must also be returned to an authorized REAC workshop.



Do not open the product. Damage to the product can occur.

8 Technical data

8.1 Basic characteristics

	RCB10+
Output voltage	24 VDC
No of actuator channels	4
IP class	IPX4
Battery type	Lead
Capacity	2.0 Ah
Charge time	6 h
Weight	1.9 kg
Flammability rating	UL94 V-0
Color	Black (RAL9005) White (RAL9016)

8.2 Environmental conditions

	RCB10+
Operating	
Ambient temperature	-15 °C to +50 °C
Relative humidity	15% to 90%
Atmospheric pressure	700 to 1060 hPa
Storage	
Ambient temperature	-20 °C to +50 °C
Relative humidity	15% to 90%
Atmospheric pressure	700 to 1060 hPa
General	
Oxygen rich environment	No
Label reading environment	50 cm / 500 lx



Do not use the product outside the specified limits. Personal injury and damage to the product can occur.

8.3 Functional features

	RCB10+ premium	RCB10+ basic
Low battery sound alarm	✓	
Deep discharge protection	✓	✓
Battery disconnect function	✓	✓
Battery status indicator (available on RHC10)	✓	✓
External charger	✓	✓
HC-bus interface	✓	✓
Service reminder tracking	✓	✓
Service tool (RST10)	✓	✓
Duty cycle protection	✓	✓
Adjustable soft start- and stop ramps (via RST10)	✓	✓
Adjustable current limits (via RST10)	✓	✓

8.4 Control interface options

	RCB10+ premium	RCB10+ basic
Via REAC Hand Control (RHC10)	✓	✓
Via REAC Digital Input Adapter (RHC12)	✓	✓

8.5 Warranty

There is a warranty on REAC products against manufacturing faults. The warranty period begins on the purchasing date of the product and applies for 12 months. Warranty exclusions: REAC is entitled to deny any warranty if:

- The product has not been correctly used or the product usage specifications (load, environment, temperature, duty cycle, voltage, current, etc) have not been respected.
- The product has not been correctly maintained.
- The product has been tampered with.
- The product has been exposed to violent or abrasive treatment.

Nonconformities due to age of the product (for example, discolouring of painting) are excluded from warranty. In case of doubt regarding the existence of a defect or if an inspection is required, REAC reserves the right to request the return of the product.

Any additional warranty obligations for parts replaced free of charge or for any service provided without charge under this warranty shall be excluded.

Warranty of the replaced parts under warranty period will end on the date of expiry of the warranty period of the product concerned.

8.6 Waste disposal



All REAC products are marked with this symbol. According to *Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/CE*, the symbol indicates that the product must be taken to a proper disposal site and cannot be discarded in normal household waste.

RCB10+ consist of several parts with different material, which means it cannot be disposed as one single item. It is recommended (at disposal) to disassemble and divide the product as much as possible into feasible waste groups to be able to recycle the product in the most environmentally friendly way.

The following waste groups have been identified for the RCB10+:

	Cables	Electronics	Metal	Plastic	Bies
RCB10+	<ul style="list-style-type: none"> • Internal harness • Charger cable 	<ul style="list-style-type: none"> • Main circuit board • Charger circuit board 	<ul style="list-style-type: none"> • Screws 	<ul style="list-style-type: none"> • Cover 	<ul style="list-style-type: none"> • 2 × 12 V Pb

Some of these main groups can be divided into sub-groups. Metal can, for example, be divided into iron, stainless steel, and aluminum and alloy steel. Plastic can, for example, be divided into ABS, PA, PE, and PP. All REAC plastic units are provided with an interior code for plastic types and fiber contents.

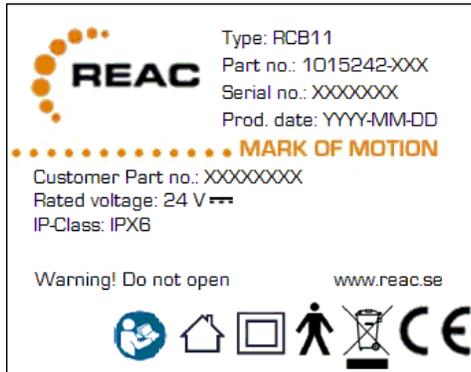
8.7 Labeling

The following symbols are used on the label of REAC control system products.

	Rated voltage (24 VDC)
IPXX	Ingress of particles (first character) and water (second character) as per EN60529.
	IEC 60417-5840: Patient part of type B
	IEC 60417-5957: For indoor use only
	WEEE compliant
	CE-label attached based on Low Voltage Directive and EMC Directive.
	ISO 7010-M002: Risk(s) mitigated in accompanying documents



Label example - product

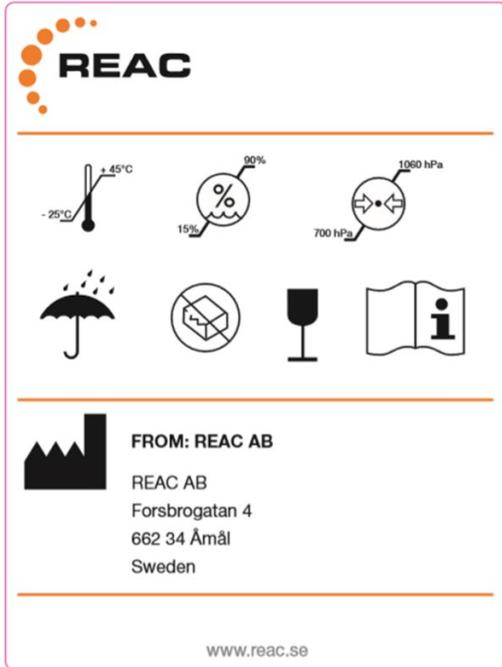


The following symbols are used on the packaging of REAC control system products.

	Manufacturer/manufacturing date.
	Do not use if package is damaged.
	Fragile, handle with care
	Keep dry
	Temperature limits
	Relative humidity limits
	Atmospheric pressure limits
	Consult instructions for use



Label example - packaging





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