



# BT-5 Medium

en

Battery backup



350-132

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## About

The ECO series are reliable and small battery backups for use with access systems, locking systems and other loads. The battery backups have controlled charging\* which prevents batteries from overcharging, which significantly prolongs its

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### NOTICE

This unit should be installed on a wall or in a 19" rack, indoors.

The temperature must be 15 - 30 ° C.

Mains voltage must be disconnected during installation.

Only authorized persons should install and maintain the unit.

## Name, article number and e-number

Table 1. Name, article number and email number.

Name	Article number	E-number (SV)
BT-5 Medium	28160113	52 574 60

## Revisions and the edition of this document

The current and most recently published edition of this document is available at [www.rco.se](http://www.rco.se).

The validity of this document can not be guaranteed, as new editions are published without prior notice.









Instructions for use in Swedish in original.<sup>1</sup>

Instructions for use, technical data and translations thereof may contain errors. It is always the responsibility of the installer to install the product in a safe manner.

<sup>1</sup>Translations in languages other than Swedish are indicative only and not safely reviewed. Translation should always be checked against the Swedish original to ensure accurate information

## Symbols

Table 2. Symbol Explanation

Symbols	Denomination	Explanation
	Warning	Risk of electric shock, improper installation or hot surfaces. Appears in some manuals
	Note	Used for supplementary information that clarifies the text.
	Caution/Important	Indicates the risk of equipment damage or malfunction. Also used for information that is important but not security-related
	Tips	Displays practical advice or shortcuts for installation, operation, or service.
	CE marking	The product complies with applicable EU directives and harmonised standards.
	Read the manual	Please read manual before installation and service.
	Do not dispose of in household waste	The product is covered by the WEEE Directive and must not be disposed of with household waste, it must be recycled and delivered to a recycling centre.
	Recycling	Packaging, products and other materials that do not contain electronics must be recycled in accordance with local environmental regulations.

## Component overviews

### Component overview

Table 3. Component overview

Number	Explanation
A	Cabinet in powder-coated sheet metal.
B	The power supply, location and type vary with configuration.
C	Motherboard.
D	Cable entries.
E	Space for batteries.

# Enclosures

## Mounting - wall mounting

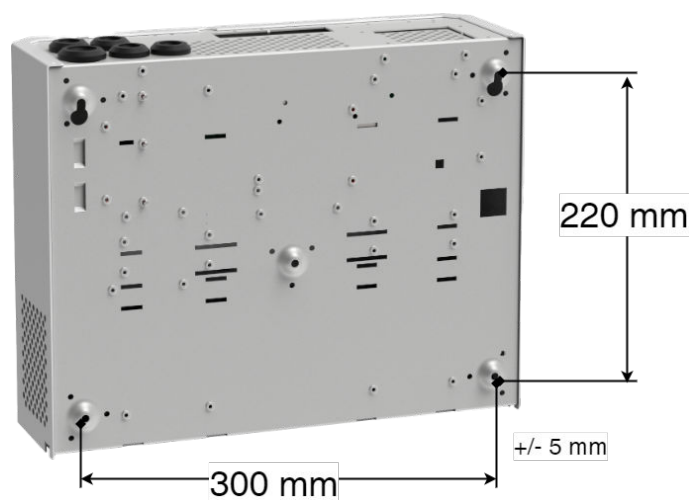
- The products shall be mounted on a stable wall or mounting plate with sufficient bearing capacity for the weight of the enclosure, including batteries.
- The enclosure is mounted vertically.
- Use four screws with a diameter of 4—5 mm, depending on the substrate.
- Recommended distance between screw head and wall should be 1.5-2 mm.
- For mounting on drywall, wall anchors or expanders should be used.
- When mounting on concrete or brick, dowels or equivalent fastening are used.
- For good ventilation, at least 100 mm of free space should be provided above and on the sides of the enclosure.
- The unit should be mounted at a comfortable working height, normally between 1.4 and 1.8 m above the floor.
- Avoid placement in direct sunlight, near heat sources, or in environments with high humidity or dust.
- For outdoor use, only enclosures with the specified IP class for outdoor use shall be used.
- Installation shall be carried out in accordance with the applicable installation rules and by a competent installer.

## Wall mounting

Use four screws suitable for the wall to set up the cabinet.

The distance between the screw head and the wall should be 1.5–2 mm.

Preferably leave a 100 mm air gap around the unit.



# Batteries - placement and connection

## Connection of batteries, 24V

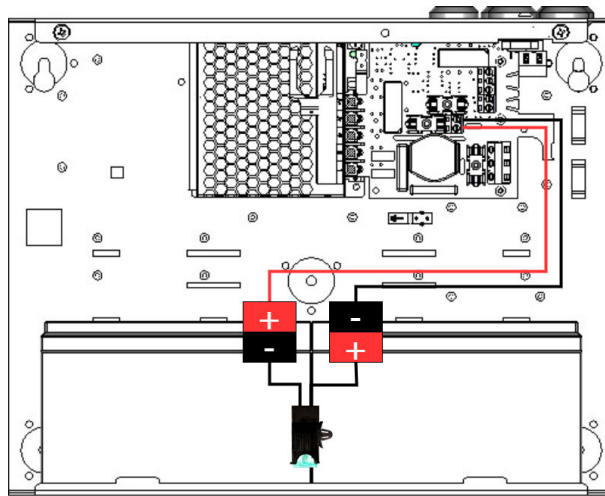


### CAUTION

Check battery voltage when switching on. Before installation, the voltage of each individual battery must be measured. Never connect two batteries whose terminal voltage differs by more than 0.3 V (max 0.4 V). Too large a voltage difference may indicate a damaged battery and lead to performance degradation, battery damage or overheating with the risk of fire.

Mains voltage should be disconnected when connecting batteries

1. Slide batteries from the side with the battery terminals toward the center. Only use new batteries during installation and battery replacement.
2. Connect fuses on batteries. Connect red cable to + (plus) and black cable to - (minus)
3. Connect cables from battery backup to batteries. Connect red cable to + (plus) and black cable to - (minus)



The picture shows how cables should be connected.

**Figure 1. Slide the battery from the side with the battery terminals toward the center.**

# CEO3 v5 Up

## Motherboard description

The card has several connections, below they are described those that are needed to connect the device.

### Connect in this order

To minimize the risk of errors that may occur in connection with a short circuit, connections to the motherboard must be made in this order.

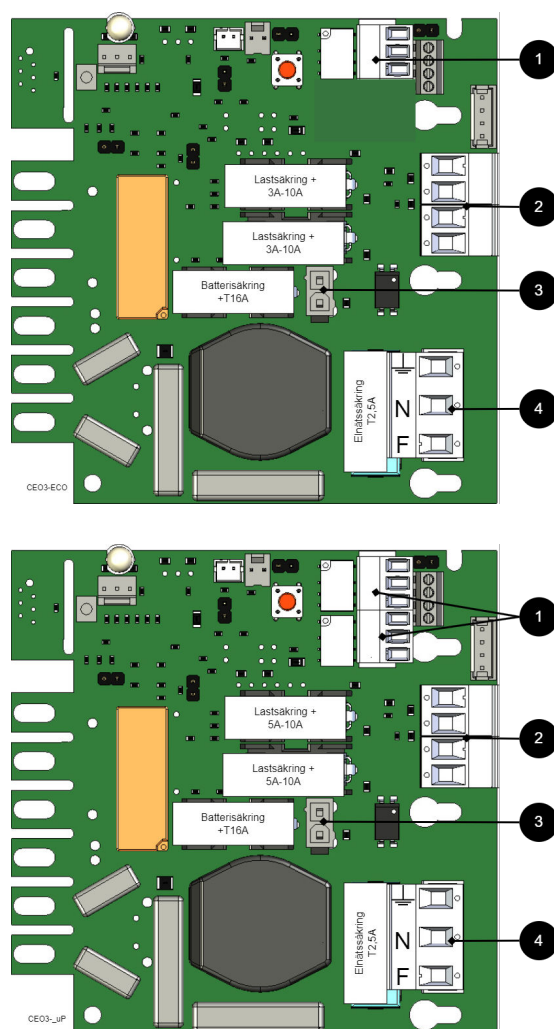


Table 4. Connect in this order

Nr	Explanation
1	Connect alarm.
2	Connect load.
3	Connect batteries
4	Connect mains.

### Connect alarm

Connect alarm on terminal P3.



Table 5. Connect alarm P3

P3: 4-6	Explanation
Sum-alarm	
P3: 4	NC
P3: 5	Com
P3: 6	NO

## Connect load

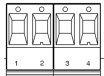


Table 6. Load connections

Circuit board number	Explanation
P2: 1	Connection for load 1 +
P2: 2	Connection for load 1 -
P2: 3	Connection for load 2 +.
P2: 4	Connection for load 2 -.



### MAX CURRENT

The maximum current must not be exceeded. Max current is indicated on [nameplate](#) on the device.



### DANGER

Mains voltage must be disconnected when working with stripped cables. It is the installer's responsibility to ensure that the correct skills are available for connecting 230 V to the unit. Maximum cable area is 4 mm<sup>2</sup>

## Connect mains

Secure F and N with cable ties.



### IMPORTANT

Mains wiring must be kept separate from other wiring to avoid EMC interference.

**IMPORTANT**

protective earth (PE) should be connected to the PE terminal on the motherboard. The motherboard is grounded via its mounting points in the enclosure, ensuring proper potential equalization between PCB and enclosure. Also the cover is grounded through ground cable/earth braid between cover and enclosure to maintain continuity and EMC



Connect the mains cable to the terminal before it is put back on the motherboard. Secure F and N with cable ties for electrical safety.

**Figure 2. Connect the mains to the motherboard**

**Table 7. Electrical network connections**

Letter	Explanation
F	Fas
N	Neutral
PE	

**ELECTRICAL MAINS CONNECTION 230 V AC ON CIRCUIT BOARD**

Check that the marking on the circuit board matches the cable arrangement on the terminal block.

**Control alarm limit**

Alarm for low battery voltage in battery operation can be controlled.

**Table 8. Low battery voltage alarm limit**

Low battery voltage alarm limit	JU2 with jumper <sup>a</sup>	JU2 without jumper
24 V	24.0V	26.5V

<sup>a</sup>The unit is delivered with jumper on JU2

**Fuses**

**Table 9. Fuses.**

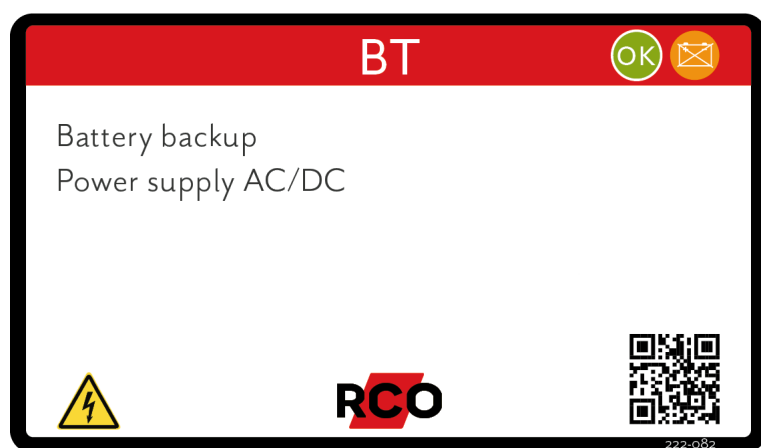
Unit	Fuse	Type	Explanation
All units	F1	T2,5A	Mains fuse
BT-5 Medium.	F2, F6	T5A	Load fuse +
All units	F7	T16A	Battery fuse

**WARNING FOR REPLACING FUSES (CURRENT STRENGTH, A)**

There is a risk of damage if the fuse is changed to a larger one than what the unit is delivered with. The function of the fuse is to protect the connected load and cables against damage and fire. It is not possible to change the fuse to a larger one to increase the power output.

## Alarm displayed on cabinet door

In normal mode, the indicator LED shows a solid green light.



**Table 10. Alarm displayed on cabinet door / indicator diode.**

The display LED shows	Explanation
Solid green light	Normal operation.
Solid red light	Undervoltage, LED is green in the event of a power failure until the battery voltage drops below the alarm limit.

When operating system: If the indicator LED is off, deep discharge protection has come into force.

# ECO product sheet

## Product sheet / technical data



BT-5 MEDIUM The unit must be wall-mounted.

Figure 3. BT-5 MEDIUM

## Technical specifications

These technical specifications are subject to change without notice.

## Name, article number and e-number

Table 11. Name, article number and email number.

Name	Article number	E-number (SV)
BT-5 Medium	28160113	52 574 60

## About

The ECO series are reliable and small battery backups for use with access systems, locking systems and other loads. The battery backups have controlled charging\* which prevents batteries from overcharging, which significantly prolongs its

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- For AGM batteries.
- Can be tested with only batteries connected.
- Has controlled charging for better operating economy.

## Areas of use

Most used in:

## Alarm

The device alarms for:

Undervoltage/low battery voltage.

## Fixed installation

The product is intended for fixed installation. The battery backup must be installed by a qualified installer.

## Test before installation of 230 V

"Cold start" means that the battery backup can be commissioned with only the batteries connected without the battery backup being connected to 230 V. This is practical if the installer is not a qualified electrician but still wants to be able to test the system.

## Regulations and certifications

### Requirements that the product meets

Table 12. The product meets the following requirements.

EMC:	EMC Directive 2014 / 30EU
Electricity:	Low voltage directive: 2014/35 / EU
CE:	EC Directive in force: 765/2008
Machinery Directive	The product is part of electrical systems, is subject to the relevant electrical and safety directives and is not a machine according to the Machinery Directive (2006/42/EC).
Ecodesign	Milleteknik's products are intended for professional use and are therefore not directly covered by the Ecodesign Regulation (EU 2019/1782). As some components may be covered, we nevertheless disclose relevant information to give our customers confidence in their choice

Efficiency (%)<sup>a</sup>

Standby consumption, typical (W):

<sup>a</sup>.At rated load.



## Expected operating time in the event of a power failure ( with new batteries)

System voltage	Number of batteries	Battery type	Load: 0.5 A	Load: 1 A	Load: 2 A	Load: 4 A	Load: 6 A	Load: 8 A
24 V	2 pcs	7.2 Ah	12 h	5 h	2 h	1 h	30 min.	15 min.

System voltage	Number of batteries	Battery type	Load: 0.5 A	Load: 1 A	Load: 2 A	Load: 4 A	Load: 6 A	Load: 8 A
24 V	2 pcs	14 Ah	24 h	12 h	5 h	2 h	1 h	45 min.

System voltage	Number of batteries	Battery type	Unit + battery box *	Load: 2 A	Load: 4 A	Load: 8 A	Load: 10 A	Load: 14 A	Load: 18 A

\* Example: 1 + 2 means that there is 1 battery backup with 2 battery boxes connected. 1 + 0 means that it is a battery backup without a battery box.

## Circuit boards - Technical data

### Technical data: CEO 3

Table 13. CEO3-ECO

Info	Explanation
Article name	CEO3-ECO
Product description	CEO 3 is the next generation circuit board for simpler battery backups. Advanced functions that were not previously possible in simpler battery backups are now available as standard. CEO 3 is manufactured with fewer components than before, which reduces the environmental impact.
Measure	120 x 55 mm x 52 mm
Own consumption	50 mA
Fuses	See table: Fuses.
Outputs	Output: two load outputs.
Insurance	Load output: + secured.
Max load	Maximum load is 10 A per load output (T2A is mounted from the factory) and the card's total load must not exceed 16 A.
Alarm outputs	Alarm outputs: Sum alarm in case of fuse fault, see indication below. Alarm on potential-free relay contact.
Alarm	Undervoltage, lights up red in the event of a power failure until the battery voltage drops below the alarm limit.
Alarm via	Triggered load securing, potential-free shifting, CO / NO.
Indication	Display showing operating status, alarms and faults. Operating indication: one indication diode per load output +/- . Solid green light = normal operation.

## Control alarm limit with JU2

### Control alarm limit

Alarm for low battery voltage in battery operation can be controlled.

Table 14. Low battery voltage alarm limit

Low battery voltage alarm limit	JU2 with jumper <sup>a</sup>	JU2 without jumper
24 V	24.0V	26.5V

<sup>a</sup>The unit is delivered with jumper on JU2

## Fuses

Table 15. Fuses.

Unit	Fuse	Type	Explanation
All units	F1	T2,5A	Mains fuse
BT-5 Medium.	F2, F6	T5A	Load fuse +

Unit	Fuse	Type	Explanation
All units	F7	T16A	Battery fuse



### WARNING FOR REPLACING FUSES (CURRENT STRENGTH, A)

There is a risk of damage if the fuse is changed to a larger one than what the unit is delivered with. The function of the fuse is to protect the connected load and cables against damage and fire. It is not possible to change the fuse to a larger one to increase the power output.

## Power supply

### Power supply - Technical Data LRS-150-24

In:
BT-5 Medium

Info	Explanation
Output voltage	27.3 V
Output current:	0 A - 6.5 A
Output voltage, ripple	200 mVp-p
Overvoltage	28.8 V - 33.6 V
Voltage recharge, ripple / current limitation	Less than 0.6 Vp-p
Efficiency	89%
Current limitation	110% - 140%
Constant voltage	+/- 0.5%
Regulatory accuracy	+ / - 1.0%
Input current (230 V)	1,7 A
Mains voltage frequency	47 Hz- 63 Hz
Mains voltage	230 V AC - 240 V AC
Brand effect	156 W
Temperature range	-30°C - +70°C
Humidity range	20% - 90% RH non-condensed

The power supply is adapted and calibrated with the battery / hardware of the battery backup. Only power and calibrated power supplies may be used. Contact support when changing power supplies. Use of power supplies coming from another source may cause damage not covered by the warranty. Warranty is canceled if power supplies (from a source other than support / designated by support) that are not correctly calibrated are used.

## Technical data enclosures

### Enclosures - Technical Data M

Info	Explanation
Name	M
Enclosure class	IP 20
Measure	Height: 242 mm, width: 350 mm, depth: 150 mm.
Height units	-
Mounting	Wall

Info	Explanation
Ambient temperature	+ 5 ° C - + 40 ° C. For best battery life: + 15 ° C to + 25 ° C.
Environment	Environmental class 1, indoors. 20% ~ 90% relative humidity
Material	Powder coated sheet
Color	White
Cable entries, number	5
Batteries that fit	2 pcs 12 V 7.2 Ah or 2 pcs 12 V 14 Ah.
Place for fan	No Yes: 10 A, 24 V units.

## Link to the latest information

Products and software are subject to updates, you will always find the latest information on our website.

### ECO

## Warranty, support, country of manufacture and country of origin

### Warranty

The product has a two-year warranty, from the date of purchase (unless otherwise agreed). Support during the warranty period can be reached at [support@milleteknik.se](mailto:support@milleteknik.se) or telephone, +46 31-34 00 230. Compensation for travel and / or working hours in connection with locating faults, installing repaired or replaced goods is not included in the warranty. Contact Milleteknik for more information. Milleteknik provides support during the product's lifetime, however, no later than 10 years after the date of purchase. Switching to an equivalent product may occur if Milleteknik deems that repair is not possible. Support costs may (at Milleteknik's discretion) occur after the warranty period has expired.

### CE marking

Each product has a CE label with information about the product and contact information for the manufacturer. If you are missing something or need more information, you should firstly turn to retailers who will also be able to answer questions about warranty and support. You can always contact the manufacturer if you have questions about the product's performance.



### Support

Do you need help with installation or connection?

You will find answers to many questions at: [www.milleteknik.se/support](http://www.milleteknik.se/support)

Phone: +46 31-340 02 30

Support is open: Monday-Thursday 08:00-16:00, Fridays 08:00-15:00. Closed 11:30-13:15.

## Spare parts

Contacted support for questions about spare parts.

## Support after the warranty period

Milleteknik provides support during the life of the product, but no longer than 10 years after the date of purchase. Replacement for an equivalent product may occur if the manufacturer deems that repair is not possible. Costs for support and replacement are added after the warranty period has expired.

## Contact us

Milleteknik AB

Ögärdesvägen 8 B

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Sweden

+46 31-34 00 230

[www.milleteknik.se](http://www.milleteknik.se)

## Country of manufacture

Country of manufacture / country of origin is Sweden. For more information, contact your seller.

## Designed and produced by: Milleteknik AB

Designed and produced by Milleteknik AB

## Batteries - recommended, not included

### Batteries are not included they are sold separately

Batteries are sold separately.

### 7.2 Ah, 12 V AGM battery

Fits in	Number of batteries	
Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	7.2 Ah

Table 16. 10+ Design life \* battery

Article number	E-number	Article name	Terminal	Measure. Height width depth	Weight per piece	Make
MT113-12V07-01	5230536	UPLUS 12V 7.2Ah 10+ Design Life battery	Flat pin 6.3 mm	151 x 65 x 100 mm.	2.4 kg	UPLUS

\*Design life is the shelf life in years for an unused battery. Environmental factors such as heat and load affect the service life. Batteries that have a durability (+10 Design Life) of 10+ years usually need to be replaced after 5-6 years.

## 14 Ah, 12 V AGM battery

Fits in	Number of batteries	
Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	14 Ah

Table 17. 10+ Design life \* battery

Article number	E-number	Article name	Terminal	Measure. Height width depth	Weight per piece	Make
MT113-12V14-01	5230537	UPLUS 12V 14Ah 10+ Design Life battery	Flat pin 6.3 mm	151x98x101 mm	4.2 kg	UPLUS

\*Design life is the shelf life in years for an unused battery. Environmental factors such as heat and load affect the service life. Batteries that have a durability (+10 Design Life) of 10+ years usually need to be replaced after 5-6 years.

## Reserve operating times for different alarm classes - overview

The table shows the requirements for backup operating time and recharging of batteries for different alarm classes.



### IMPORTANT

This is a guide and all times are approximate and may differ from actual times. Load, temperature and other factors come into play, which is why exact time can not be provided.

Applies to new batteries.

Amperage and batteries vary with configuration, check if the configuration can handle batteries and amperage.

Table 18. Backup operating times 24 V units - without battery box

Medium current	7.2 Ah	14 Ah	28 Ah	45 Ah
Loading	Backup operating time (approx.), Minutes			
0.5 A	450	820	1650	2350
1 A	260	485	970	1460
2 A	150	280	560	920
4 A	90	165	335	550
6 A	67	125	245	405
8 A	57	105	210	350
10 A	44	80	160	270
12 A	38	70	140	235
14 A	33	60	120	200
16 A	28	50	100	170

Medium current	7.2 Ah	14 Ah	28 Ah	45 Ah
18 A	25	45	89	150
20 A	23	42	84	142

Subject to typos.

## Address and contact details

RCO Security AB  
Box 3130  
S-169 03 Solna  
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