

ECO

ECO 12V 5A S, ECO 24V 3A S, ECO 12V 10A M, ECO 24V 5A M, ECO 24V 10A M

351-xxx - Bruksanvisning i original, Operating instructions, Bruksanvisning, Käyttöohjeet
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1. 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 over-charging, which significantly prolongs their service life.

1.1. Revisions and the edition of this document

The current and most recently published edition of this document is available at www.milleteknik.com.

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

Original instructions for use: Swedish.¹

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.

1.1.1. Symbols

Table 1. Symbol Explanation

Symbols	Name	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.

¹Translations in languages other than Swedish are indicative only and not verified. Translation should always be checked against the Swedish original to ensure accurate information





Symbols	Name	Explanation
	Recycling	Packaging, products and other materials that do not contain electronics must be recycled in accordance with local environmental regulations.



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.

1.2. Installation — general information

Installation shall be carried out by a competent electrician in accordance with the applicable national electrical installation rules.

The product is of protection class I and must be connected to a grounded 230 V AC circuit.

- A main switch according to IEC 60947-1 shall be provided in the fixed installation. The switch should be easily accessible and clearly marked with its function.
- The area of the supply cable shall be at least 1,0 mm² and fitted with a fuse T 2,5 A (slow-blown) or equivalent.
- AC and low voltage cables must not be pulled together. Keep separate cable chutes or bundles
- Check that protective earth (PE) is properly connected before turning on voltage.
- Ensure free air circulation around the enclosure at least 100 mm, unless otherwise specified. Ventilation openings must not be covered.
- The product is intended for indoor installation in normal environment (pollution number 2 and indoor class 1).

These general requirements apply to all Milletechnik products with 230 V mains connection.

1.2.1. Requirements for main switch, fuse and cable area

In order to comply with applicable electrical safety requirements, the installation shall be equipped with a main switch according to IEC 60947-1.

Table 2. Main switch and fuse

Component	Requirements
Main switch	A main switch according to IEC 60947-1 shall be included in the installation and be easily accessible. Separated phase (L) and neutral (N)
Fuse	The supply circuit shall be protected by a fuse or automatic fuse with rated current according to the product specification (normally T 2,5 A slow-blow or equivalent). Refer to the device's nameplate.
Fuses	Approved type according to IEC 60127.
Cross-sectional area (230 V)	At least 1,0 mm ²
Cable length	In the case of longer wiring, voltage drops should be taken into account so that the operating voltage does not fall below 230 V ± 10% at the unit.



Component	Requirements
Strain relief	All cables must be properly secured and strain relief checked before energizing the unit.

These requirements apply to all Milletechnik products with 230 V mains connection.

The table below shows recommended cable area for low current installations at different voltages, current strengths and cable lengths. Values are based on copper cable and a maximum voltage drop of approximately 3% to ensure operational reliability.

Table 3. Cable area weak current

V	Current strength (A)	Cable length 10 meters	Cable length 30 meters	Cable length 60 meters	Cable length 100 meters
24V	1 A	0,75 mm ²	0,75 mm ²	1,5 mm ²	1,5 mm ²
24V	3A	0,75 mm ²	0,75 mm ²	1,5 mm ²	2,5 mm ²
24V	5A	0,75 mm ²	1,5 mm ²	2,5 mm ²	4 mm ²
24V	10A	1,5 mm ²	2,5 mm ²	6 mm ²	-*
24V	15A	1,5 mm ²	4 mm ²	-*	-*
24V	25A	2,5 mm ²	6 mm ²	-*	-*
24V	40A	4,0 mm ²	-*	-*	-*

* Cable area would exceed connector terminal dimensions therefore it is not possible to use cable larger than 6 mm^{1 2}

1.3. Name, article number and e-number

Table 4. Name, article number and e-number.

Name	Article number	E-number (SE)
ECO 24V 10A L	LA01C10424P100	52 137 82
ECO 24V 5A L	LA01C10424P050	52 137 81

2. COMPONENT OVERVIEWS

2.1. Component Overview ECO L

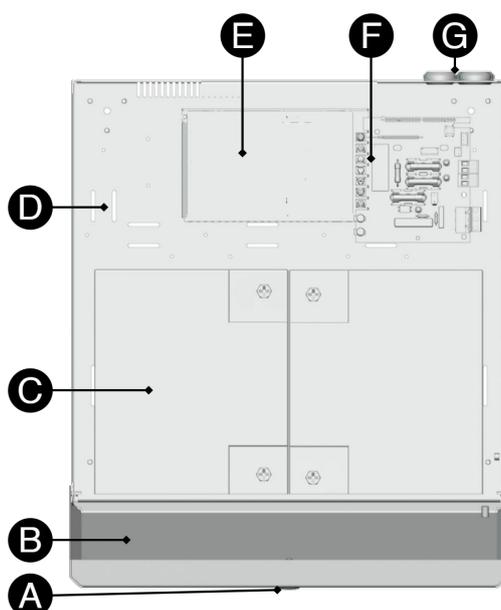




Table 5. Component Overview ECO L

Letter	Explanation
A	Lock.
B	Lid.
C	Batteries.
D	Space for optional cards (3 pcs).
E	Power supply, varies with configuration.
F	Motherboard.
G	Cable grommets.

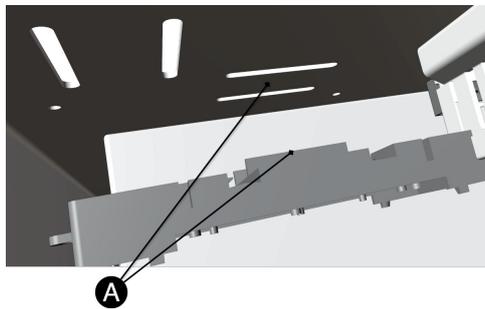
3. OPTIONAL CARD POSITIONS

There is room for optional cards in the smaller form factor (85 x 37 mm).



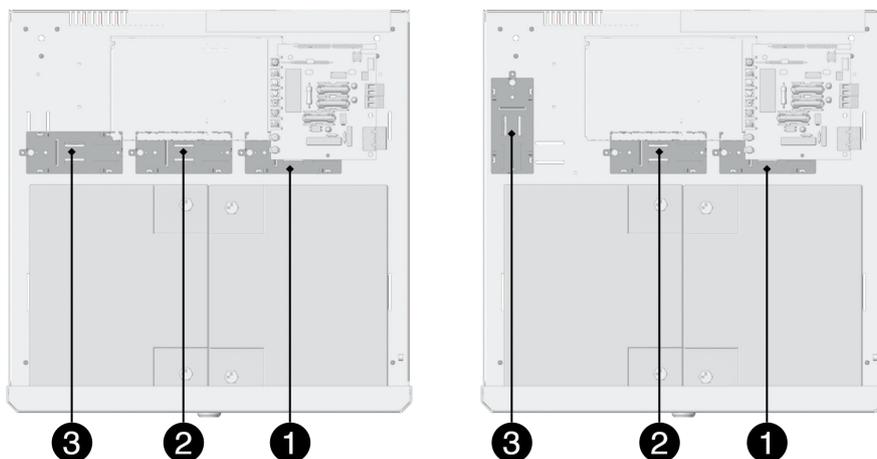
NOTICE

Even if it can fit three optional boards, it is not safe to work electrically - always check that the board is powered by a power supply before installation.



Optional cards are pushed into the slots on the housing.

Figure 1. Positions on optional boards in ECO 24V 5A L



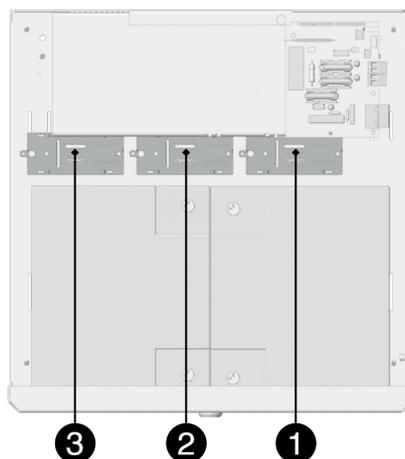


Table 6. Positioner optional card

Designation	Explanation
A	Slots and corresponding holes in the housing where the optional card is pressed.
1	Placement for optional cards.
2	Placement for optional cards.
3	Placement for optional cards. This is recommended when wiring requires extra space



IMPORTANT

ECO 24V 5A L: In position 3, the optional card can be mounted in two ways — vertically or horizontally — depending on the wiring that provides the best access.

4. ENCLOSURES

4.1. 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. The supplied spacers provide an additional distance of + 20 mm.
- For mounting on drywall, wall anchors or expanders should be used.
- When mounting on concrete or brick, wall plugs 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.





4.2. Dimensions for mounting

The device is mounted on the wall.

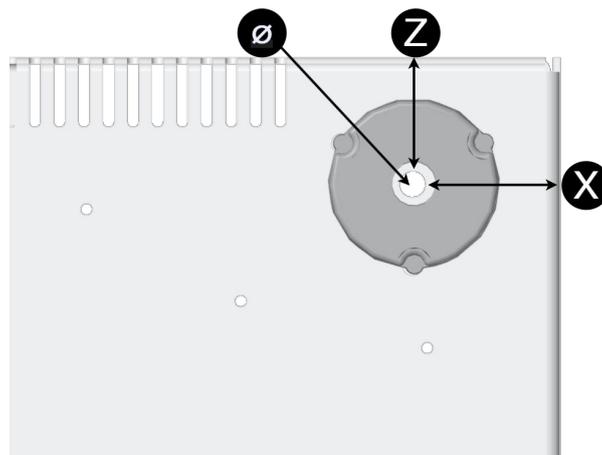
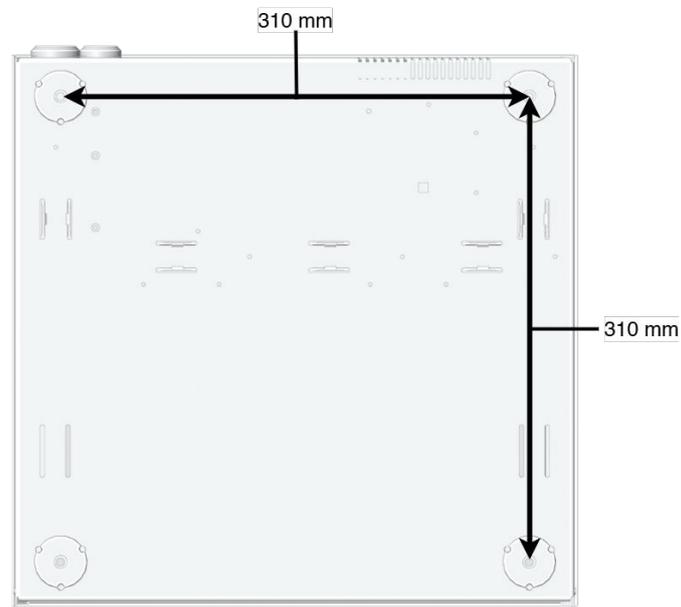


Table 7. Dimension hole image

Designation	Dimensions
Ø	5 mm
Z	24mm
X	27mm



5. BATTERIES - PLACEMENT AND CONNECTION

5.1. Connection of batteries, 24V



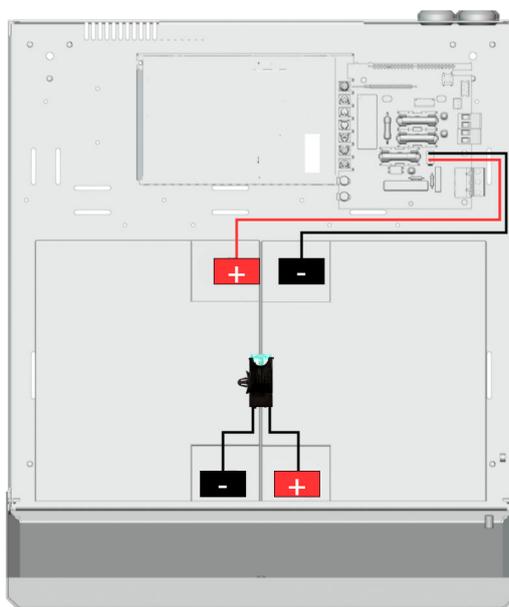
CAUTION

Check battery voltage before switching on. Before installation, the voltage of each individual battery must be measured. Never connect two batteries if their 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)

Figure 2. Slide the battery from the side with the battery terminals toward the center.



The picture shows how cables should be connected.





6. CEO-FLX

6.1. Motherboard - description

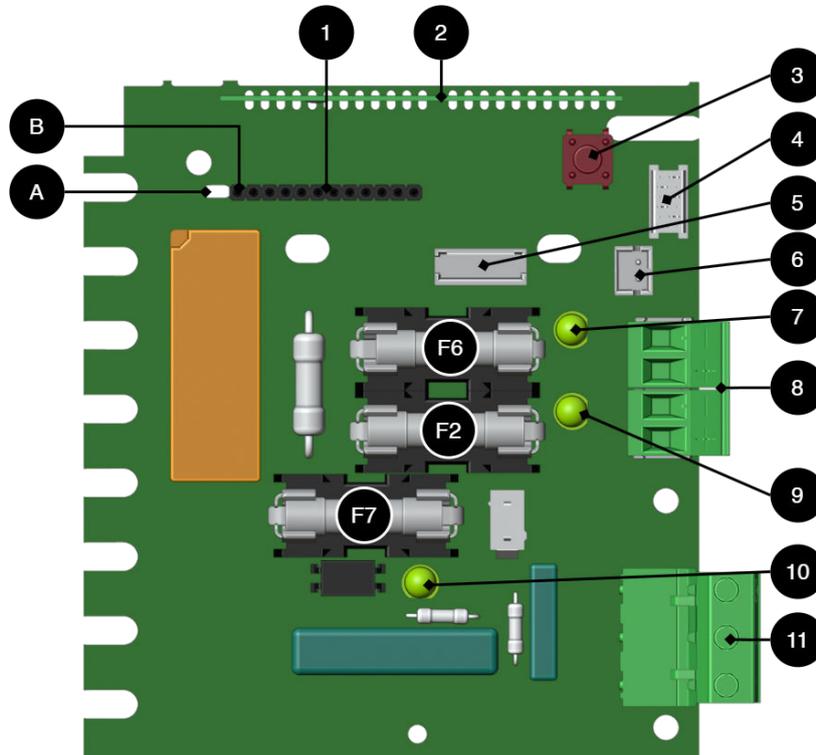


Table 8. Circuit Board Overview, Explanation

No.	On PCB	Explanation
A	-	Holes for struts on communication boards.
B	-	Sleeve strip for connecting communication cards.
1	-	Optional cards for communication.
2	-	CPU card.
3	S1	Push button for starting with batteries only.
4	J39	Connection to power stages.
5	J31	Fan connection.
6	J24	To fuse, EXT load card.
7	D1	LED, lights green at full fuse, F6, on output 1
8	J33 and J14	Load outputs +/-.
9	D16	LED, green on fuse, F2, on output 1
10	D10	LED, lights green when mains voltage is applied.
11	J23	Connection mains, 230 V AC in.

Table 9. Fuses

Designation	Fuse	Explanation
F7	T16A	Battery fuse.
F2, F6	5 A unit: T5A 10A unit: T10A	Load 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.

6.1.1. Connect the mains to the motherboard (PCB)

CONNECT MAINS

Pull wiring through the cable entry on the cabinet.

Secure L and N with cable ties.



IMPORTANT

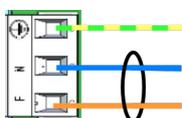
Mains wiring must be kept separate from other wiring to avoid EMC interference.



IMPORTANT

Protective earth (PE) must 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

Figure 3. Mains connection is made to the terminal block on the motherboard.



Connect the mains cable to the terminal block before it is re-inserted into the motherboard. Secure L (F in picture) and N with cable ties for electrical safety.

Table 10. Electrical network connections

Letter	Explanation
L	Fas
N	Neutral
PE	





MAINS CONNECTION 230 V AC ON PCB

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

Table 11. Connect load

On circuit boards	Terminal No.	Explanation
+ LOAD -	J33	Connection for load +/-.
+ LOAD -	J14	Connection for load +/-.



MAX CURRENT

The maximum current must not be exceeded. Max current is indicated on the rating plate on the device.

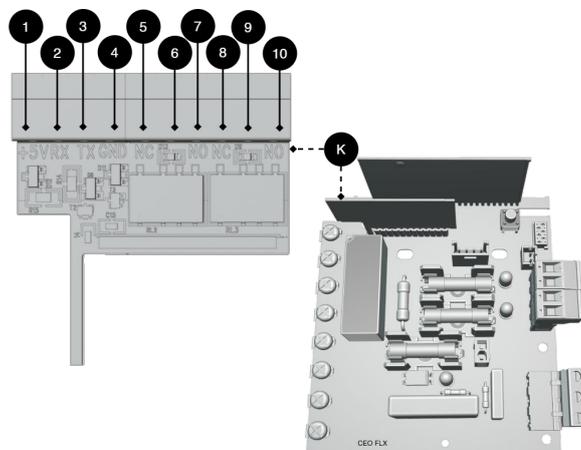
7. ALARM AND COMMUNICATION BOARD INSTALLATION AND CARD DESCRIPTION



IMPORTANT

The card is an option for products that have CEO-FLX motherboards.

The alarm card is used to transmit alarm and status information between the CEO-FLX card and external systems. It provides the ability to send alarms via relay outputs as well as



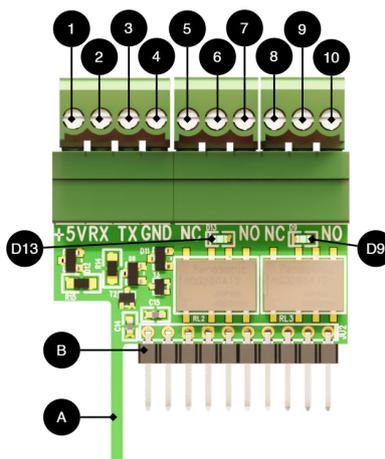


Table 12. Alarms and communication cards

No.	On the PCB	Explanation
K	-	Alarm board that mounts to the CEO-FLX board, as the picture shows.
A	-	Support pillar for stability and to prevent incorrect connection.
B	-	Pin strip.
D13	D13	LED indicates relay idle state (green lit).
D9	D9	LED indicates relay idle state (green lit).
1	+5V	Connection to PowerWatch.
2	RX	
3	TX	
4	GND	
5	NC	Relay output 1 — normally closed (breaking contact).
6	COM	Relay output 1 — common contact.
7	NO	Relay output 1 — Normally Open (closing contact).
8	NC	Relay output 2 — normally closed (breaking contact).
9	COM	Relay output 2 — common contact.
10	NO	Relay output 2 — normally open (closed contact).

7.1. PowerWatch compatible



The product is compatible with PowerWatch.



TIP

ECO products with CEO-FLX motherboards require a separate communication card (optional) for PowerWatch functionality.



8. COMMISSIONING - HOW TO START THE UNIT

8.1. Connect in this order

To minimize the risk of short-circuit errors, connect the components to the motherboard in the following order.

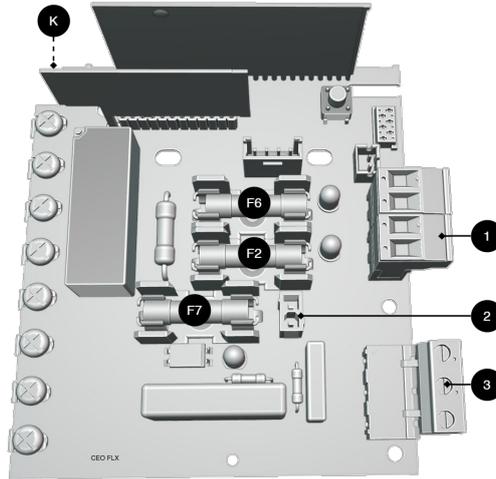


Table 13. Connect in this order

Designation	
K	Optional communication card for communication and relay alarms.
1	Connect the load.
2	Connect the batteries.
3	Connect the mains supply.

It may take up to 72 hours for the batteries to be fully charged.

9. ALARM DISPLAYED ON CABINET DOOR

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

ECO										
Power supply AC/DC Battery backup	<table border="0"> <tr> <td>Green</td> <td>●</td> <td>Normal operation</td> </tr> <tr> <td></td> <td>●</td> <td>N/A</td> </tr> <tr> <td></td> <td>●</td> <td>Mains failure</td> </tr> </table>	Green	●	Normal operation		●	N/A		●	Mains failure
Green	●	Normal operation								
	●	N/A								
	●	Mains failure								
	<table border="0"> <tr> <td>Amber</td> <td>●</td> <td>Low battery voltage during battery operation</td> </tr> <tr> <td></td> <td>●</td> <td>N/A</td> </tr> <tr> <td></td> <td>●</td> <td>Batteries disconnected</td> </tr> </table>	Amber	●	Low battery voltage during battery operation		●	N/A		●	Batteries disconnected
Amber	●	Low battery voltage during battery operation								
	●	N/A								
	●	Batteries disconnected								
	<table border="0"> <tr> <td>Red</td> <td>●</td> <td>Power supply over-voltage, failed under-voltage test</td> </tr> <tr> <td></td> <td>●</td> <td>Low system voltage</td> </tr> <tr> <td></td> <td>●</td> <td>Blown load fuse</td> </tr> </table>	Red	●	Power supply over-voltage, failed under-voltage test		●	Low system voltage		●	Blown load fuse
Red	●	Power supply over-voltage, failed under-voltage test								
	●	Low system voltage								
	●	Blown load fuse								
	<table border="0"> <tr> <td>Off</td> <td>●</td> <td>Deep discharge protection</td> </tr> </table>	Off	●	Deep discharge protection						
Off	●	Deep discharge protection								

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Table 14. The indicator diode shows.

Indicator diode shows	Text on the panel	Explanation
Solid green light	Normal operation	The system is in normal operation. Mains voltage is available and the battery is fully charged.
Slow green flashes	N/A	Not present in this model.
Quick green flashes	Mains failure	.Mains power is lost. The unit is running on battery. Check the mains supply.
Solid amber light	Low battery voltage during battery operation	The battery voltage is low during battery operation. The system will soon shut down when batteries are discharged.
Slow amber flashes	N/A	Not present in this model.
Quick amber flashes	Batteries disconnected	The battery is not connected or has a bad contact. Check battery cables and fuses
Solid red light	Power supply over-voltage, failed under-voltage test	The power supply has an incorrect input voltage or is out of tolerance. Check the voltage of the power supply.
Slow red flashes	Low system voltage	The system voltage is low. This may be due to high load, a discharged battery, or other system issues.
Quick red flashes	Blown load fuse	A load fuse has loosened. Check the load and replace the fuse if necessary
Black/Off	Deep discharge protection	In the event of a deep discharge, the unit shuts down and the LED goes out. This is normal and protects the batteries. Mains power must be restored to restart.

When operating system: If the indicator LED is off, deep discharge protection has been activated.



NOTICE

If the indicator light flashes every 15 seconds, the battery is fully charged and the charge is in rest phase to extend battery life. In the event of a power failure during the rest phase, the battery backup switches to battery operation as usual

10. MAINTENANCE

Inspect the fan annually. The fan should rotate smoothly without any noise. Clean the fan from dust and dirt. The fan must be replaced if it does not rotate smoothly or is so dirty that it cannot be completely cleaned. If the fan does not work well, the air flow in the unit will be obstructed, which causes heat to build up inside the enclosure, which can lead to reduced battery capacity and to a significantly shorter battery replacement interval.

11. SAFETY INFORMATION - SERVICE AND TROUBLESHOOTING

- If possible, disconnect the mains supply before starting any work, such as servicing, battery replacement, metering or troubleshooting.
- Remove the battery fuse/plug before working on the DC side.
- Check that all cables are properly connected and grounded before re-energizing the unit.
- The product may contain components that become hot during operation. Avoid touching internal parts immediately after the power has been switched off.
- If fuses blow repeatedly see [Troubleshooting \[17\]](#) or disconnect the unit and contact Milletechnik technical support.





- In case of suspicion of damage, liquid ingress or burnt odour, the product must not be used until it has been inspected by qualified personnel.
- During operation, the housing should be closed and locked (if the device has a lock).
- Only authorized service personnel may perform repairs on the device.
- Use only original fuses and batteries of the same type and value as specified in the manual/product sheet.

Milletechnik is not responsible for damage caused by improper handling, modification or unapproved components.

11.1. Troubleshooting

If the device does not work as expected, go through the following checks:

Table 15. Troubleshooting

Problem	Possible cause	Action
No output voltage.	No mains voltage, fuse triggered or battery failure.	Check the supply, fuses and battery connections.
Battery does not charge.	Faulty battery connection or battery fuse has blown.	Check battery cables and replace battery fuse if necessary.
The device starts but alarms.	Batteries not sufficiently charged or faulty load or battery.	Wait 72 hours until the batteries are fully charged. Ensure that the connected load does not exceed the rated current.
LED flashes.	Information, warning or error.	See panel or manual for explanation.
Fuses blow frequently.	Short circuit or overload.	Check connected devices, change the fuse only after the cause has been resolved.
Unit overheating	High load or insufficient ventilation	Check that the rated current is not exceeded and ensure adequate ventilation around the enclosure.

If the problem persists after these checks, contact Milletechnik support and provide the product name, serial number, and a brief description of the fault.

12. PRODUCT SHEET - POWER SUPPLY / BATTERY BACKUP

12.1. Product sheet - power supply from Milletechnik

12.1.1. ECO power supply with battery backup

Figure 4.





12.1.2. Name, article number and e-number

Table 16. Name, article number and e-number.

Name	Article number	E-number (SE)
ECO 24V 10A L	LA01C10424P100	52 137 82
ECO 24V 5A L	LA01C10424P050	52 137 81

12.1.3. Technical description

ECO supplies access control systems, locking systems and other security products in a property powered by 24 V DC. The rectifier in the power supply converts 230 V AC down to 24 V DC

ECO in L-enclosure is a compact and robust power supply with a charger and space for up to 2 x 45 Ah batteries. Three VMC slots provide flexibility for different security installations. The housing is white lacquered with key lock and LED indication. The device has built-in protection against overload, over voltage, over temperature, short circuit and deep discharge. Alarm output for, among other things, power failure, fuse failure and low battery voltage. Controlled Charging protects the batteries and Cold Start enables operation without mains voltage

Table 17. Quick Facts

Quick Facts	Data
Supply voltage (V)	230 V AC - 240 V AC, 47 Hz- 63 Hz.
Voltage out (V)	27.3 V DC, (24 V).
Current output (A), max load current output.	5A. 10 A.
Batteries ^a .	2 x 45 Ah

^aRecommended. If batteries are included, it is indicated, otherwise batteries are ordered separately

12.1.4. Areas of application

Areas of application	Yes	No
Access system (door reader, magnetic lock, electric terminal plate, etc)	✓	

12.1.5. Electronics

Table 18. Printed circuit boards and Internal power consumption

Circuit Boards	Internal power consumption (during battery operation)	Other. info
CEO-FLX	50 mA	-

Table 19. Electrical data

Electrical data	Data
Supply voltage (V)	230 V AC - 240 V AC, 47 Hz- 63 Hz.
Charge current	Depending on the power outlet. Max 5 A.Max 10A
Efficiency ^a .	86% (5A)87% (10A)
Standby consumption	Data is missing.
Voltage out	27.3 V DC, (24 V).
Voltage out in battery operation	24 in DC.
Fuses	
Mains fuse	2.5 A.
Load fuses	5A. 10 A.
Battery fuse	16 A.





Electrical data	Data
Current (A) ^b .	5A, 10 A.

^aAt rated load.

^bPower outlet/load is specified as max, normal current output should be 80% of max.

12.1.6. Load outputs

Table 20. Load outputs

Load outputs	Data
Number of load outputs	2



IMPORTANT

Note that the outputs divide by the total maximum load. The value does not apply per output.

Table 21. Total maximum load and recommended load.

Model	Total Max Load	Recommended total load (80%) ^a .
5A	5A	4 A
10A	10A	8A

^aTypically, 70-80% of the maximum load is recommended in continuous operation, depending on the thermal margins of the product.

12.1.7. Alarm and protection

Table 22. Number of relay on which alarm can be given

Number of Relays	Alarm on switching relay? ^a .
------------------	--

^aRelay, alternating potential-free contacts.

Table 23. Alarm and protection

Alarm and protection	Yes	No
Disconnected batteries, cell failure	✓	
Power outage alarm, 10 sec delay	✓	
Buzzer alarm, Power failure, fuse failure, charger failure, batteries not connected	✓	
Protection		
Short circuit protection	✓	
Deep discharge protection, see Battery [20] ^a .	✓	
Overload Protection/Surge Protection	✓	
Over-temperature protection	✓	
Battery charge protection/controlled charging ^b	✓	
Cold Start	✓	Starts directly from battery operation without mains voltage.

^aWhen the deep discharge protection is activated, the device turns off and the LED goes out.

^bControlled charging protects and extends battery life.



12.1.8. Communication and Indications

Table 24. Communication and Indications

Communication and Indications	Yes	No	Other. info.
Communication	✓		Communication with the parent system is not supported.
PowerWatch ^a .	✓		Works with PowerWatch provided the optional communication card is installed.
Indicators/LEDs	✓		LED displays information and alarms on circuit boards and on the outside of the housing.

^aPowerWatch consists of a cable and software, it is ordered separately.



Table 25. PowerWatch Ordering Information

Name	Item No.	E-number
PowerWatch	A-OT0000UPG02P2V3P3	52 137 06

Table 26. Alarms that can be set in PowerWatch

Alarms that can be set in PowerWatch
Charger failure, overvoltage
Charger failure, undervoltage
Fan failure, (in case of externally connected fan)
Fuse failure on load
Low battery voltage, in battery operation
Power outage, delay 10 seconds
Unconnected battery
Unit not calibrated

12.1.9. Battery

Table 27. Technical data - Batteries

Battery	Data
Battery type	Maintenance-free AGM (lead-acid) batteries.
Deep discharge protection	Activates when the system voltage drops below about 20 V DC.
Recommended Batteries ^a .	2 x 45 Ah

^aIf batteries are included, it is indicated, otherwise batteries are ordered separately.

12.1.10. Enclosure and Mechanics

Table 28. Enclosure and Mechanics

Enclosure and Mechanics	Data
Enclosure	
IP class	IP20
Material	Powder coated sheet metal.
Colour	White



Enclosure and Mechanics	Data
Height units	10
Cable grommets	5 pcs.
Lock	✓, 2 pcs. keys included.
Fan in enclosure	✓ Fan sits in power supply.

12.1.11. Dimensions, weight and packaging information

Table 29. Dimensions

Dimensions, (WxHxD).	Dimensions with packaging ^a .
370 x 370 x 195 mm	380 x 380 x 200 mm

^aDimensions (WxHxD) of product and packaging may differ, this is because the product may be oriented differently in the package.

Table 30. Weight

Net weight	Weight with packaging
6.1 kg	6.3 kg

Table 31. Packaging

Packaging	Info
Packaging	Cardboard and impact protection in cardboard.
Quantity in pack	1 pc.
Packaging Type (GS1 T0137)	BX box.

12.1.12. Assembly, installation and eligibility requirements

Table 32. Fitting

Fitting
Wall.

Table 33. Installation

Installation	Yes	No	Other. info
Fixed installation.	✓		-

Qualification requirements vary between countries. The table summarizes national requirements for fixed installation and connection of equipment with a plug socket, respectively.

Table 34. Eligibility requirements by country. Applies only to the installation of this product in a fixed network connection

Permission Requirements for Installation	Fixed installation (230 V)	Plug	Other. info
Sweden	✓	x	Fixed installation may be performed by technicians but shall be under the responsibility of a qualified installer. (Electrical Safety Act, SS 436 40 00) Plug may be connected without authorization.
Norway	✓	✓	Requirements for qualified electricians also for equipment with a plug socket in fixed installations. (NEK 400, DSB)
Finland	✓	x	Plug may be connected without authorization. (Tukes, SFS 6000)
Denmark	✓	x	Plug may be connected without authorization. (Safety Board)
Germany	✓	x	All fixed installations require a qualified electrician according to VDE 0100. Plug sockets may be connected without authorization, but only by person with basic electrical knowledge ("Elektrotechnisch unterwiesene Person")



12.1.13. Recommended options

Recommended options for specific installation, safety and functional needs.

Table 35. Name, Part Number and E-Number

Name	Item No.	E-number
Relay/Communication Cards ECO Series (CEO-FLX)	A-AL1224CEO01	52 137 85

12.1.14. Operation and maintenance

Table 36. Operation

Operation	Data	Other. info
Environment	Indoor environmental class 1.	-
Operating temperature (recommended)	+15°C to +25°C	For the best battery life. Higher temperatures significantly shorten the life of the batteries.
Operating temperature (permissible) ^a .	+5°C to +40°C	Class 1 according to EN 50131-6/ EN 60839-11
Load, power supply	80%	Average load shall not exceed 80% of the rated capacity of the power supply.
Ventilation, free distance around the enclosure.	100 mm	Ventilation openings must not be blocked or covered.

^aSpecifies the permissible ambient temperature range in which the product can operate without damage. See also table on battery life.

Table 37. Maintenance

Yes	No	Interval	Other. info
✓		Annually	Battery terminal voltage must be measured. Ensure that the average load does not exceed 80% of the rated capacity of the power supply.
	✓		Maintenance-free.

Table 38. Reference table: environmental classes according to EN 50130-5 (referred to in EN 50131-6)

Class	Type	Temperature range
Environmental Class 1	Heated indoors (type office/residence).	+5°C to +40°C
Environmental Class 2	Generally indoors (type warehouses/stairwells, not temperature controlled).	-10°C to +40°C
Environmental class 3	Protected outdoors.	-25°C to +50°C
Environmental class 4	Generally outdoors.	-25°C to +60°C

Table 39. Reference table: manufacturer's stated service life and recommended battery replacement

Battery Type (Design Life) ^a .	Battery replacement time in normal operation, +20°C.	Replacement during hot operation, +30°C	Replacement during hot operation, +40°C
3 - 5 years	2 - 3 years	1 - 1.5 years	0.5 - 0.75 years
6 - 9 years	5 - 6 years	2.5 - 3 years	1.2 - 1.5 years
10 - 12 years	6 - 7 years	3 - 3.5 years	1.5 - 1.75 years
15 + years	10 - 12 years	5 - 6 years	2.5 - 3 years

^aValid in case of completely unused battery stored under optimal conditions.

12.1.15. Backup operating time on batteries

The reserve operating time in battery operation depends on how large a load is connected to the power supply. If the load varies, as with frequent opening of door locks, the time that batteries can continue to power the security system decreases. To get an estimate of reserve operating times see: www.milleteknik.se/Manualer/FaQ/Reservdrifttider/



12.1.16. Certifications and approvals

Table 40. Approved according to

Complies with	Directives
C.E.	CE marking according to (EC) 765/2008
EMC	EMC Directive 2014/30EU
Electric (LVD)	Low Voltage Directive: 2014/35/EU

12.1.17. Environmental data

Table 41. Environmental data

Environmental data	J/N	Information	Other. info.
Building Product Declaration (BPD)	✓	Yes, see iBvd at www.milleteknik.se .	-
REACH Information Obligation (EC) No 1907/2006	✓	Yes, see the DoC at www.milleteknik.se . The product complies with REACH Regulation (EC) No 1907/2006.	If empty, the product is not covered.
SVHC substances, CAS/EC	✓	Yes, lead, 7439-92-1/231-100-4	For text, see iBvd at www.milleteknik.se . If blank, substance is missing.
Subject to the RoHS Directive, (EU) 2015/863	✓	Yes, see the DoC at www.milleteknik.se	
WEEE 2012/19/EU	✓	The product contains electrical components or wiring and is covered by the WEEE Directive (2012/19/EU).	If empty, the product is not covered. End-of-life products must be returned to a recycling centre
Battery Regulation (EU) 2023/1542	x		
SCIP No 2008/98/EC	✓	Yes, registered under the EU Waste Directive where applicable, (2008/98/EC).	If empty, no SCIP number is needed.
Conflict minerals (EU) 2017/821	x/x/x/✓	No=Gold, Tungsten, Tantalum, Cobalt. Yes=Tin	Tin in solders in printed circuit boards purchased through a Swedish supplier.
Contains nanomaterials: EC 1272/2008	x	The product does not contain nanomaterials.	-
Ecodesign 2009/125/EC		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 ^a , where applicable, to provide our customers with confidence in their choice.	
Machine Directive 2006/42/EC		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). Will be replaced by Machinery Regulation (EU) 2023/1230, which will apply in 2027.	

^aStandby consumption and power.





The product is designed and constructed for a long service life, which reduces the environmental impact. The life of the product (except wearing parts) depends on, among other things, environmental factors, mainly ambient temperature, unforeseen load on components such as lightning strikes, external impact, handling errors, etc. Products are recycled, simply because they are modular, by being left at the nearest recycling station or sent back to the manufacturer.²Contact your distributor for more information.

12.1.18. Delivery time, warranty and terms

Table 42. Delivery time, warranty and terms

Delivery time, warranty and terms	Info
Warranty period ^a	The product has a two (2) year warranty against manufacturing defects. In addition to the regular warranty period, an additional three (3) year warranty can be purchased.
Special warranty conditions	Batteries and wear parts are not covered by warranty. See also general terms and conditions.
General Terms and Conditions	ALEM09 with exceptions, see: www.milleteknik.se/conditions/
Support	Telephone support and email support during the warranty period are free of charge. For spare parts that are not covered by warranty, there is a charge
Delivery and stock	
Delivery time ^b	5 working days. Or as per agreement. Delivery from factory, transportation time is added.
Storage	Temperate environment/frost free.

^aIf the device is purchased through a wholesaler or other supplier, other warranty conditions may apply

^bIn the case of larger orders, delivery time increases, acc. to agreement.

12.1.19. Manufacturer and country of origin

Table 43. Manufacturer and country of origin

Manufacturer and origin	Info
Manufacturer ^a	Milleteknik AB
Country of origin	Sweden

^aManufacturer is the trademark indicated on the product, regardless of what is stated in this product sheet.

12.1.20. Contact

Table 44. Contact

Department	Contact
Switchboard	031-340 02 30
Support and technical issues	support@milleteknik.se
Sales	sales@milleteknik.se
WWW	www.milleteknik.se
Address	Ögärdesvägen 8B, 433 30 Partille

12.1.21. About this information

All information is published subject to possible errors. Information is updated without prior notice.

Milleteknik with the associated logo is a trademark of Milleteknik AB.

PowerWatch is a trademark of Milleteknik AB.

²Costs incurred in connection with recycling are not reimbursed.





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