



NOVA FLX L

NOVA 24V 15A FLX L

Publication date 2026-07-08



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1. REVISIONS AND THE EDITION OF THIS DOCUMENT

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

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



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



READ THIS FIRST!

Electronics, regardless of enclosure, are intended for use in a controlled indoor environment. Mains voltage should be disconnected during installation.

It is the installer's responsibility that the system is suitable for its intended use. Only authorized persons should install and maintain the system.

All information subject to change.



ABOUT GLASS TUBE FUSES ON CERTIFIED DEVICES

There are glass tube fuses on the circuit board's load outputs, these have a tripping time of approx. 150 ms. In the event that a glass tube fuse trips on ONE load output, the voltage on ALL load outputs drops to 0 V for 150 ms.

The installer is responsible for ensuring that there is an energy buffer of at least 150 ms in systems that the battery backup supplies power to or accepts a power failure of 150 ms.

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.

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 $\pm$ 10% at the unit.
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}					

3. VARIANT OVERVIEW NOVA

Table 4. Variant overview

Product name	Certified name	Mother-board: PRO1	Mother-board: PRO2:	Mother-board: PRO2 v3	Mother-board: PRO3
NOVA 12V 10A FLX S	12 V meets the requirements but is not certified.	-	X	-	X
NOVA 12V 10A FLX M	NOVA 13100-FLX	-	X	-	X
NOVA 12V 10A FLX L	It meets the requirements but is not certified.	-	-	-	X
NOVA 24V 5A FLX S	NOVA 25 50-FLX-S	X	X	-	X
NOVA 24V 10A FLX S	NOVA 25 100-FLX-S	X	X	-	X
NOVA 24V 5A FLX M	NOVA 25 50-FLX-M	X	X	-	X
NOVA 24V 10A FLX M	NOVA 25 100-FLX-M	X	X	-	X
NOVA 24V 15A FLX M	NOVA 25 150-FLX-M	X	X	X	-
NOVA 24V 25A FLX M	NOVA 25 250-FLX-M	X	X	X	-
NOVA 24V 5A FLX L	NOVA 25 50-FLX-L	X	X	-	X
NOVA 24V 10A FLX L	NOVA 25 100-FLX-L	X	X	-	X
NOVA 24V 15A FLX L	NOVA 25 150-FLX-L	X	X	X	-
NOVA 24V 25A FLX L	NOVA 27 250-FLX-L	X	X	X	-



4. ENCLOSURES

4.1. General assembly instructions

4.1.1. Mounting - wall mounting

- Enclosure must be mounted vertically.
- For good ventilation, at least 100 mm of free space should be provided above and on the sides of the enclosure. Do not block the flow of air on the sides
- The device should be mounted at a comfortable working height, normally between 1.4 and 1.8 m.
- Recommended distance between screw head and wall should be 1.5-2 mm.
- Avoid placement in direct sunlight, near heat sources, or in environments with high humidity or dust.
- Installation shall be carried out in accordance with the applicable installation rules and by a competent installer.

4.1.2. Indoor mounting in 19" rack

- The product should be mounted in a standardized 19" rack or cabinet with sufficient carrying capacity for the weight of the enclosure including batteries.
- The device should be mounted at a comfortable working height, normally between 1.4 and 1.8 m.
- The device is mounted horizontally in the rack with the included rack ears or corresponding brackets.
- Check that the rack posts are properly aligned and that the spacing corresponds to the 19" standard (465—470 mm between the inner edge of the posts).
- Use at least four mounting points (on each side) on the rack ears for stable attachment. Recommended screw size is M5 or M6
- When assembling, cage nuts or locking washers should be used to ensure that the screws fit securely.
- For good ventilation, at least 100 mm of free space should be provided above and below the unit. Do not block the air flow on the front or back.
- Batteries should always be placed as directed and must not block ventilation openings or wiring.
- Installation shall be carried out in accordance with the applicable installation rules and by a competent installer.

4.2. Mounting

Use the appropriate screw for mounting on a wall or in a 19" rack. Screws for mounting on a wall or in a rack are not included.

For wall mounting in concrete, concrete screws must be used. For rack mounting, M6 with basket nut is used

Screw length should be adjusted according to wall material and load. The specified screw length is the minimum allowable length

Table 5. Screw when mounting

Kaspling	Number	Screw ^a .
FLX L	4	Concrete screw 5,0×40 mm

^aScrew for mounting is not included.



4.3. Bracket

The supplied brackets can be attached in two ways: When mounting on a wall, the brackets must sit backwards, against the wall. When mounting in a 19" rack, the bracket must sit at the front of the unit.

Table 6. Bracket

Letter	Explanation
A	Bracket is pushed in from the bottom up. Slide the top bracket in first.
B	Clip clicks in when bracket is pushed in correctly.

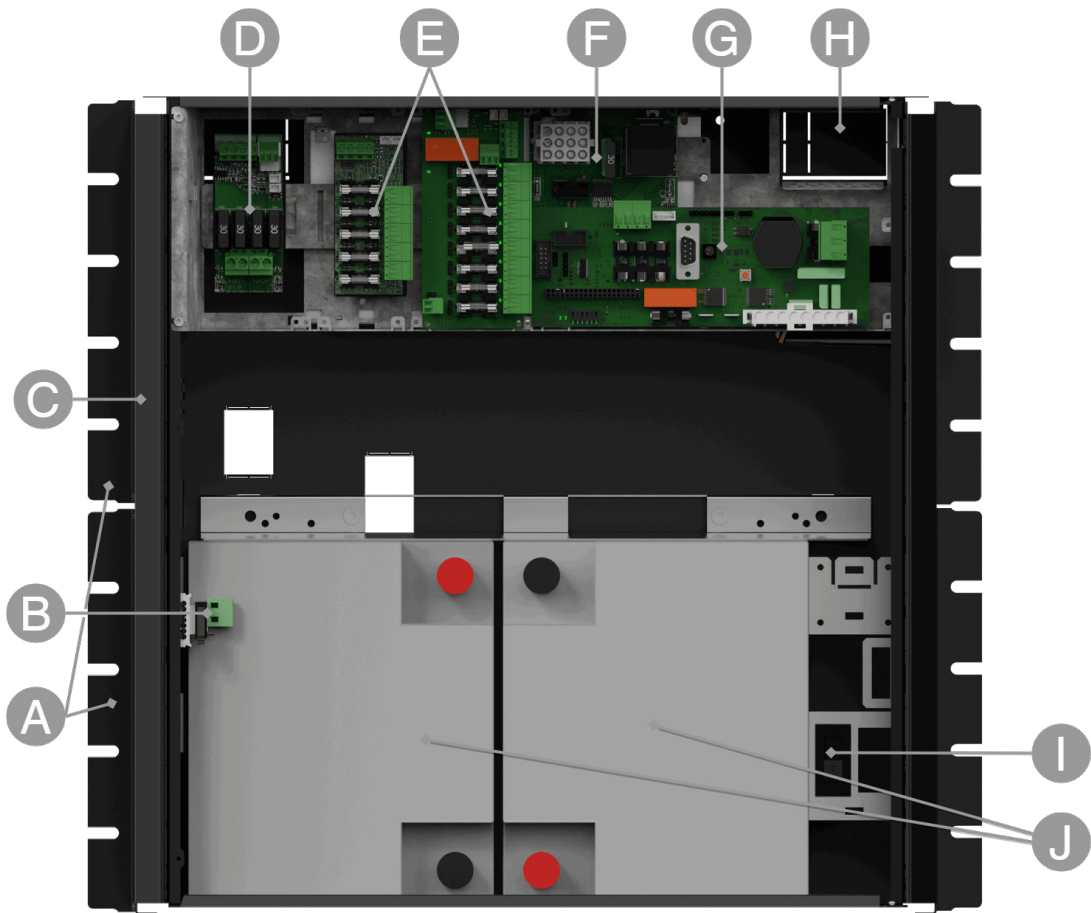


IMPORTANT

If alarm class 3 (SSF) is to be met, the cabinet and tamper switch must be mounted on the wall. Optional, Cabinet tamper M/L to put a tamper switch on the wall is available.

5. COMPONENT OVERVIEWS

5.1. Component overviewNOVA FLX L





Batteries should be placed as in the picture.

Table 7. Component overview

Letter	Explanation
A	Bracket, reversible for wall mounting or 19 "rack.
B	Tamper switch. If alarm class 3 (SSF) is to be met, the tamper contact must be on the wall.
C	Cabinet in powder-coated sheet metal.
D	Load card - load is connected here.
E	Space for mounting optional cards (not included).
F	Power card - in units 15 A and 25 A.
G	Motherboard, (varies with configuration).
H	Cable entries.
I	Battery fuse.
J	Space for batteries.



CAUTION

For 15 A and 25 A units, loads may not be connected to the motherboard but must be connected to the power board or to the option board.

6. BATTERIES - PLACEMENT AND CONNECTION

6.1. Connection of batteries in FLX S, FLX M and FLX L

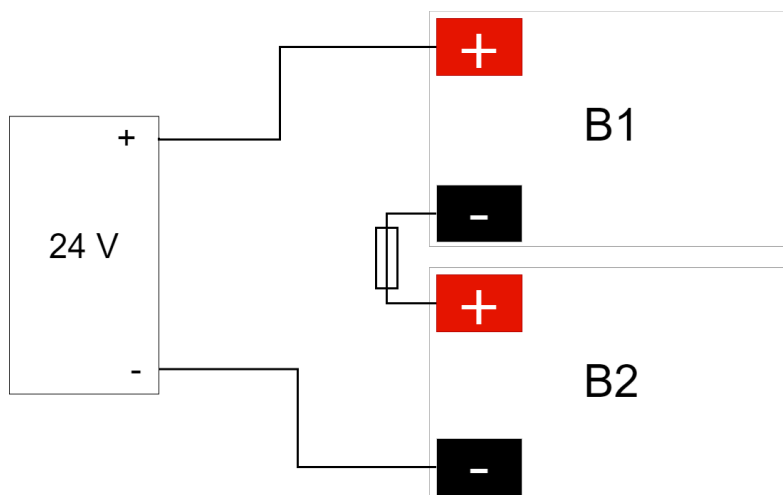
Battery wiring is mounted on the circuit board upon delivery. Pictures below only show how to connect wiring.

1. Place the batteries in the cabinet with the battery terminals facing outwards.
 2. Connect the battery cable. Red cable on + and black cable on -.
 3. Plug in battery fuse.
- If possible, disconnect mains voltage when replacing the battery.





Figure 1. Wiring diagram for batteries in battery backup



Connect the terminals correctly so that you do not damage the equipment.

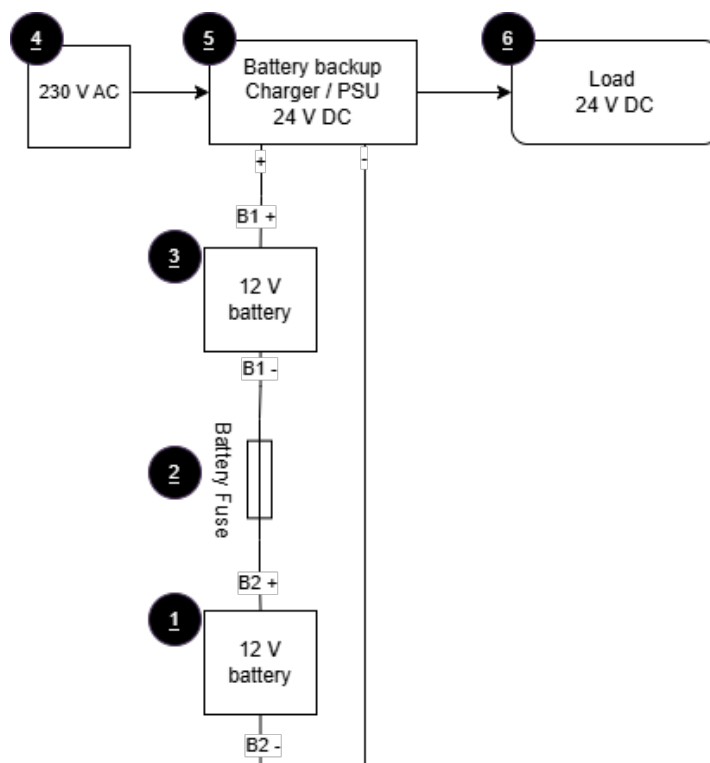


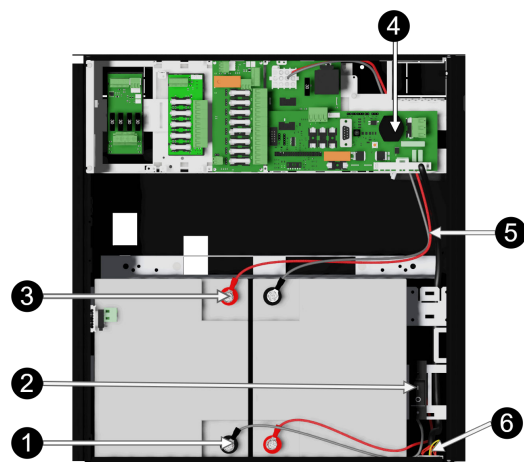
Table 8. Electrical scheme

No.	Explanation
1	Battery 2.
2	Battery fuse.
3	Battery 1.
4	Incoming mains voltage, 230 V AC.
5	Rectifier 24 V DC.
6	Load, 24 V DC.



6.2. Connecting batteries in FLX M

Figure 2. Connection of batteries in FLX M. Motherboards may differ depending on the configuration, but connection of batteries takes place in the same way.



Note that cards (4) differ from different configurations.

Table 9. Connecting batteries.

No	Explanation
1	Minus coil for battery cable from 4.
2	Fuse.
3	Plus terminal for battery cable from 4.
4	Motherboard, varies with configuration.
5	Battery cables are located on the system board.
6	Connection for connection of battery box.

7. PCB DESCRIPTION OF PRO2V3

The motherboard controls the device, distributes power and communicates with other systems. See technical data for more information.

Figure 3. PRO2 v3

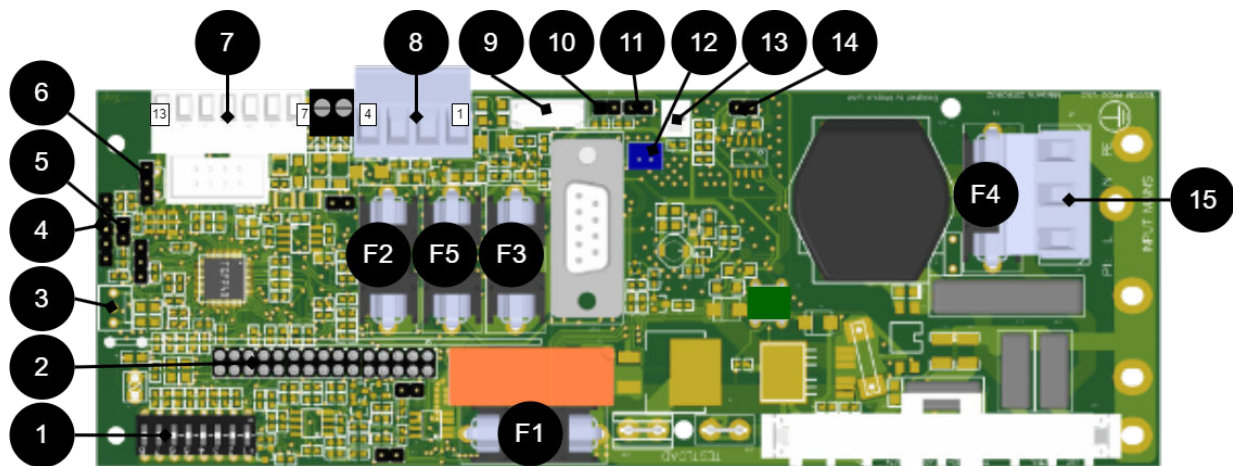




Table 10. Circuit board overview, explanation

No .	On circuit board	Explanation
1	Dip SW	Dip switch 1-8
2	J20	Connection relay board.
3	JU17	Connection external indicator diode.
4	-	Programming contact.
5	J13	Reset of data after battery replacement.
6	J6	Temperature sensor.
7	P2:7-13 7-8 9-10 11 12 13	Connection communication. RS-485 GND, Protective earth RX TX +5V
8	P2:1-4 1 2 3 4	Load outputs. + - + -
9	J29	Connection to fan.
10	J14	Tamper switch connection.
11	J3	Connection tamper switch from battery box.
12	J1	Connection option card.
13	J4	Connection external fuse (NO).
14	J7/21	Connection to external fuse (NC).
15	P1:1-3	Incoming mains, (230 V). L, N, PE.

7.1. Fuses

Table 11. Fuses on PRO2 / PRO2 V3

Fuse	Type	Explanation
F1	T16A	Mains fuse
F2	T250m	Load fuse 2 + (for P2: 4)
F3	T250mA	Reading protection 1 + (for P2: 1)
F4	T4A	Mains fuse.
F5	T16A	Load fuse 1+ (for P2: 2)



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.



7.2. Connect the mains to the motherboard (PCB)

7.2.1. Connect mains

Pull wiring through the cable entry on the cabinet.

Before connecting, the supply circuit should be disconnected and voltage-free. Verify that the conductor area and cable type meet the applicable installation rules and that the strain relief and insulation levels comply with the requirements for 230 V AC

After connection, all screw connections should be checked and tightened. Tensioning shall only take place after mechanical protection, caps and housing have been reassembled and comply with the contact protection according to EN 62368-1

Secure F and N with cable ties.



IMPORTANT

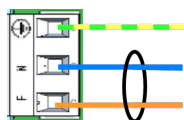
Protective earth (PE) must be connected to the PE terminal on the motherboard. The motherboard is grounded via its mounting points in the enclosure, ensuring proper potential equalization between PCB and enclosure. Also the cover is grounded through ground cable/earth braid between cover and enclosure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

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

The 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 correct equipotential bonding between the circuit board and the enclosure. The cover is also grounded via a grounding cable / grounding braid between the cover and the enclosure to maintain continuity and EMC function.

Check that the marking on the circuit board matches the wiring order on the terminal block.

Figure 4. 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 12. Electrical network connections

Letter	Explanation
L	Fas
N	Neutral
PE	





7.2.2. Filter Capacitors

The products are supplied with the following filter capacitors for standard networks (TN/TT):

Table 13. TN/TT standard network

Type	Location
X2	Phase — Zero (L—N)
Y2	Phase/Zero — Protective ground (one per conductor)

IT Networking

IT networks generate higher transients as the system works phase to phase. Therefore, according to the current standard, capacitors of a higher class are required

Departure from X1/Y1 capacitors can be done but then external transient protection must be installed. For devices to be installed in IT networks, Milletechnik's lightning protection must be fitted to maintain standards.

7.3. Connect load



MAX CURRENT

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



LOAD OUTPUTS WHEN SSF CERTIFIED

In order for certificates to be maintained, only one load output must be used.

If there are one or more connection cards (to increase the number of load outputs), load must be connected there and not on the main board.

Table 14. Load connections

On circuit boards	Explanation
P2: 1	Connection for load 1 +.
P2: 2	Hookup for load 1 -.
P2: 3	Connection for load 2 +
P2: 4	Connection for load 2 -



CAUTION

Load may only be connected to the motherboard in 5 A and 10 A units. For other units, load must be connected via power board or option board.



7.4. Connection of load 15 A - 25 A units

For units with a effect card, which is available to handle the higher currents (15 ampere and above), the load must be connected on an optional board.

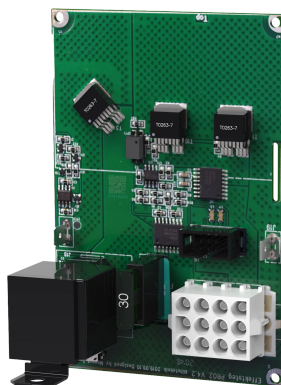
See documentation for option board for how to connect load.



WARNING

Load must not be connected to the motherboard if the device is a 15 A or 25 A, as it will be destroyed during commissioning. Motherboards that are faulty due to incorrect connections are not covered by warranty.

Figure 5. Effect card



The effect card increases the current for 15 A and 25 A units.

7.5. Alarm via communication

Connection of communication to the parent system takes place via JU6. See the parent system documentation for more information.

7.6. Communication to a parent system

It is possible to connect communication to a superior system via connections on P2. See also the parent system's documentation for compatible protocol. See technical data for more information on alarms.

Table 15. Connections over communication

Terminal block	Explanation
P2: 7	RS-485 -
P2: 8	RS-485 +
P2: 9	System minus -
P2: 10	System-minus -
P2: 11	RXD
P2: 12	TXD
P2: 13	+5 V





7.7. Dip switch 1-8

Dip-Switch has several different modes:

Table 16. Dip switch 1-8

Dip switch	In mains operation or in battery operation
1	Address for external communication.
2	Address for external communication
3	Address for external communication
4	Address for external communication
5	Sets alarm for mains failure delay
6	Sets alarm for mains failure delay
7	Sets alarm limit for low battery voltage in battery operation.
8	Turns off or turns on LED indication, for everything except alarm in case of triggered tamper contact which is always indicated regardless of dip-switch position.
8 in sequence	Perform battery tests.

7.7.1. Address setting for external communication (Dip switch 1-4)

Dip-Switch S1: 1-4 sets addressing.

Table 17. Addressing Dip-Switch 1-4

	Dip: 1	Dip: 2	Dip: 3	Dip:4
Adress 1	ON	OFF	OFF	OFF
Adress 2	OFF	ON	OFF	OFF
Adress 3	ON	ON	OFF	OFF
Adress 4	OFF	OFF	ON	OFF
Adress 5	ON	OFF	ON	OFF
Adress 6	OFF	ON	ON	OFF
Adress 7	ON	ON	ON	OFF
Adress 8	OFF	OFF	OFF	ON
Adress 9	ON	OFF	OFF	ON
Adress 10	OFF	ON	OFF	ON
Adress 11	ON	ON	OFF	ON
Adress 12	OFF	OFF	ON	ON
Adress 13	ON	OFF	ON	ON
Adress 14	OFF	ON	ON	ON
Adress 15	ON	ON	ON	ON

7.7.2. Mains failure delay (dip 5-6)

It is possible to change the time for when the alarm for a power outage should be given. Use the matrix to set the alarm.

Table 18. Mains failure delay

Alarms for mains failure are given after:	Dip 5	Dip 6
3 seconds	OFF	OFF
30 minutes	ON	OFF
60 minutes	OFF	ON
240 minutes (4 hours)	ON	ON



7.7.3. Low battery voltage (dip 7)

Dip: 7 has the same function regardless of whether the unit is in mains or battery operation or whether the tamper switch is held down.

Table 19. Low battery voltage

Alarm for low battery voltage is given when	Dip 7
22,8 V*	ON
24 V	OFF
*25% of battery capacity remains.	

7.7.4. LED (dip 8)

LED/battery-test always lights up when the door is open.

Dip-switch 8=ON turns off the LED.

Dip-switch 8=OFF turns on the LED.

7.7.5. Battery test (dip 8)

To do a battery test, dip 8 needs to change position and five seconds need to pass before the test is initiated.

- If dip 8 in original position is on OFF then switch dip 8 to: ON (wait 5 seconds) and then switch back to OFF.
- If dip 8 in original position is on ON then switch dip 8 to: OFF (wait 5 seconds) and then switch back to ON.

This activates the battery test after 3-8 seconds. The battery test lasts for about 6 seconds and then the LED flashes yellow quickly. Aged battery alarms may be indicated while the battery test is being performed.

Only reset dip 8 when the test is complete.

7.8. Reboot to confirm changes in address, battery and alarm settings to parent system

After the dip-switch has been set for various parameters, the device's software needs to be restarted. This is for the new settings to be stored and take effect.



IMPORTANT

Rebooting according to this procedure does not interrupt the output voltage.

Restarting the device software is done by jumpering J13 (PRO2)



IMPORTANT

Reboot must be done every time a change is made to the device.

NEO cannot be connected to communication/UC.

7.9. Alarm card for PRO2

Relay card - description, connections and alarm outputs.

- All fault arm relays must be in the drawn state. Check that there is a gap between CO and NC. Put the measuring instrument on continuity measurement and test closure. This should then indicate a short circuit.
- All relay outputs are normally live and give an alarm in the event of no voltage.



IMPORTANT

There is normally a 10 second delay in alarm reset. The software on the main board must be configured for a different time period.

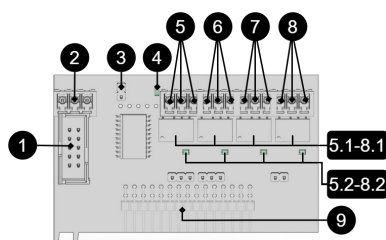


Table 20. Alarm board for motherboard: PRO2.

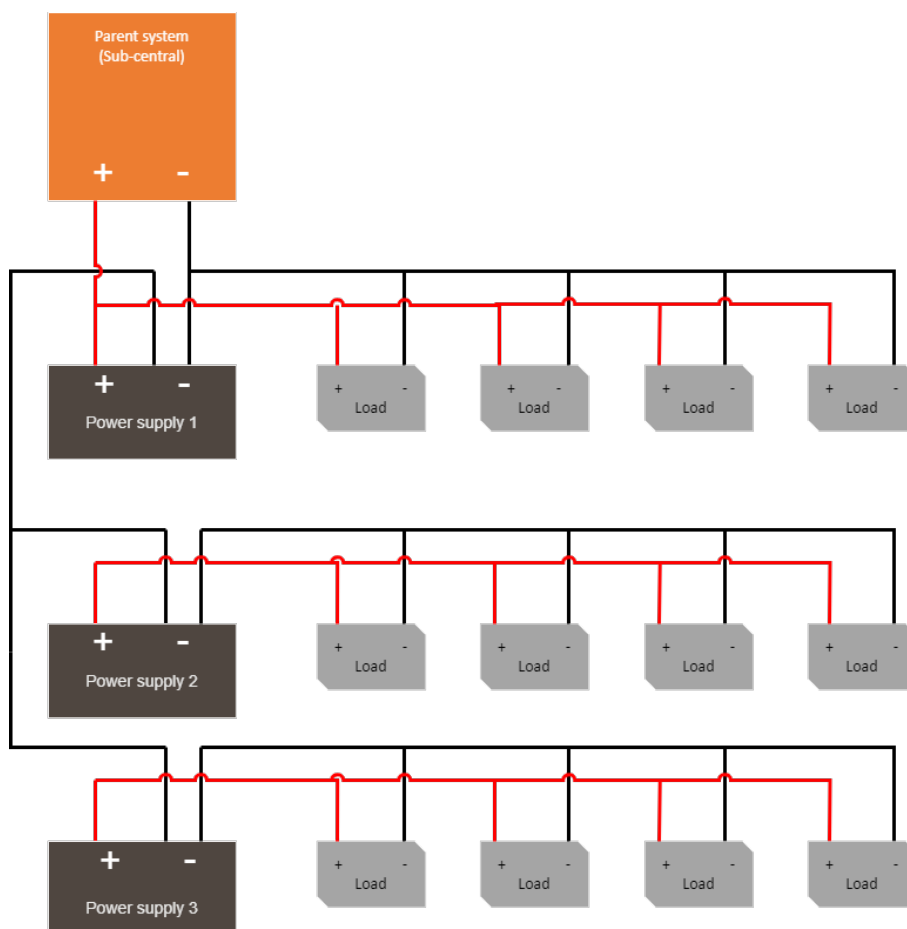
No .	Relay (Terminal no.)	The relay is normally energized.	Alarm type / explanation
1	J7	-	Connection for RS-232 cable.
2	P4:1	-	RS-232: TxD, data OUT from motherboard.
	P4:2	-	RS-232: RxD, data IN to motherboard.
	P4:3	-	RS-232: Ground, do not connect ground to another terminal.
3	J6	-	Reset jumper.
4	D7	-	Indicator diode, flashes green during normal operation.
5,5.1, 5.2	P5:1-3	NO, COM, NC	Tamper alarm, (optional for EN54). 5.1 Relay. 5.2 LED, lights up green when relay is energized.
6, 6.1, 6.2	P5:4-6	NO, COM, NC	Alarm for: Low system voltage. 6.1 Relay. 6.2 LED, lights up green when relay is energized.
7, 7.1, 7.2	P5:7-9	NO, COM, NC	Alarm for: Fuse failure, charger failure overvoltage, charger failure undervoltage, cell failure/not connected battery, low battery voltage in case of mains failure and aged battery. 7.1 Relay. 7.2 LED, lights up green when relay is energized.



No .	Relay (Terminal no.)	The relay is normally energized.	Alarm type / explanation
8, 8.1, 8.2	P5:10-12	NO, COM, NC	Power failure alarm. 8.1 Relay. 8.2 LED, lights up green when relay is energized.
9	J11	-	Connection to motherboard.
Via communication on PRO1 card: All alarms and alarms for: Fan fault, overtemperature, subtemperature, short battery life left, overcurrent 100% of minute average, overcurrent 80% daily average and overcurrent 175% second average.			

8. MULTIPLE UNITS INTO ONE PARENT SYSTEM

To connect several units to a higher system, the load-minus between several battery backups must be connected together.



9. COMMISSIONING - HOW TO START THE UNIT

9.1. Connect in this order

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





IMPORTANT

For setting dip switches and addressing — see online manual via QR code.

1. connect load, alarm and possibly. other connections.
2. Connect batteries
 - Connect / switch on fuses
3. Screw the mains cable into the terminal block and attach the terminal block to the motherboard.
 - Switch on mains voltage.

The unit works normally when the indicator LED on the outside of the cabinet door lights up with a solid green light. See front panel for other status indications.

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



IMPORTANT

Important information - Disclaimer for test scenarios outside normal operation

Please note: The product is designed for normal operation according to the specified application area and is equipped with protective components such as PTC (e.g. PTC2 on RS-485 port, 0.2A/30V) to protect against overload. PTC protection is self-restoring and limits current in the event of failure, meaning that attempts to draw power from ground connections outside intended limits may result

During deployment, there have been test scenarios where minus wires on load boards are deliberately broken to check alarm function, while communication interfaces (RS232/RS485) are connected. Such actions may lead to the negative supply of the load inadvertently passing through the ground of the communication cable (e.g. via RS232), which is not an intended mode of use

We disclaim liability for damage or failure arising from use or testing outside specified operating conditions, including manipulation of load supply or communication interfaces in ways not described in this manual.

To avoid this, the following is recommended:

- Do not conduct tests in which minus supply on cargo boards is broken while communications are connected.
- In case of intentional test: Break the 24V voltage on the plus side, not on the minus side.
- For future installations, extra protective measures, such as PTC or fuses on communications ground (e.g. Millekontakters soil)
- Always follow the installation and commissioning instructions according to the manual.

9.2. 72 hours after commissioning / battery change

For the first 72 hours after commissioning, the device does not perform a battery capacity test. The test is postponed so that the device does not falsely alarm before the batteries are charged. The unit must always be started with new batteries when commissioning or changing batteries and it is unlikely that new batteries are faulty.



9.3. System test

Test the connected device by performing a system test afterwards [commissioning \[20\]](#).



IMPORTANT

Let the batteries charge for a couple of hours, use a multimeter to measure the voltage on each battery. The voltage must be at least 12.7 V per battery.

- Switch on incoming mains voltage.
- Indicator LED on the outside of the cabinet door lights up with a solid green light. Disconnect the mains voltage to check that the unit is operating in battery mode and alarms.
- LED on the cabinet door indicates, see panel for alarm type.
- Switch on incoming mains voltage. Indicator LED, on the outside of the cabinet door, lights up with a solid green light. Normal operation.

9.4. Recovery

Reset the unit by completely de-energizing the unit.

Disconnect battery wiring and mains voltage and reconnect after 5 seconds.

10. ALARM DISPLAYED ON CABINET DOOR

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

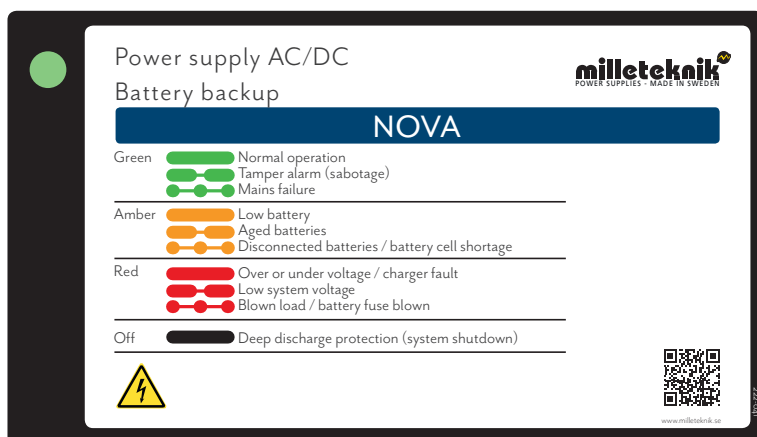


Table 21. The indicator diode shows.

The indicator diode (LED) shows	Explanation
Solid green light	Normal operation.
Slow green flashes	Sabotage alarm.
Fast green flashes	Mains failure.
Solid amber light	Low battery voltage.
Slow amber flashes	Aged batteries.



The indicator diode (LED) shows	Explanation
Rapid amber flashes	Disconnected batteries or battery cell shortage.
Solid red light	Overvoltage or undervoltage or charger fault.
Slow red flashes	Low system voltage.
Rapid red flashes	Blown load or battery fuse has blown.
No light / off	Deep discharge protection is activated. (System shutdown).

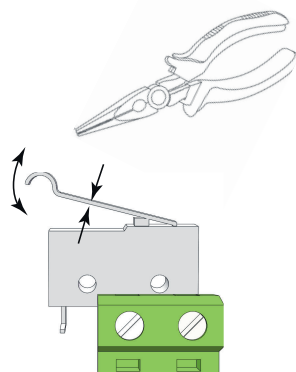
When operating system: If the indicator LED is off, deep discharge protection has been activated.



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

11. ADJUSTMENT OF TAMPER SWITCH



The tamper switch lever must be in the closed position when the cabinet door is closed. If the alarm goes off ("tamper alarm"), the lever may need to be adjusted.

The lever is adjusted by the following steps:

1. Pinch with pliers in the middle of the lever.
2. Carefully adjust the lever in the desired direction (up / down).
3. Check by closing the door. A click is heard when the contact is closed.



NOTICE

Tamper switch will not give an alarm when closed and locked the door.



12. MAINTENANCE

The system with the exception of batteries is maintenance-free when installed in an indoor environment.

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.

12.1. About batteries

Batteries generate electricity through a chemical process and there is thus a natural degradation of capacity. The biggest factor in battery life is temperature. The higher the temperature, the shorter the battery life. The date of manufacture stamped on the battery and the service life (as stated by the battery manufacturer). An ideal temperature is 20 °C both in operation and in storage. Higher ambient temperature greatly reduces the service life. Thus, actual lifespan varies when used. Batteries should be replaced after half specified (from the battery manufacturer) lifetime for safe operation. Batteries purchased through the manufacturer of the battery backup have a lifespan (from the battery manufacturer) of between 10-12 years with recommended replacement after 5-6 years.

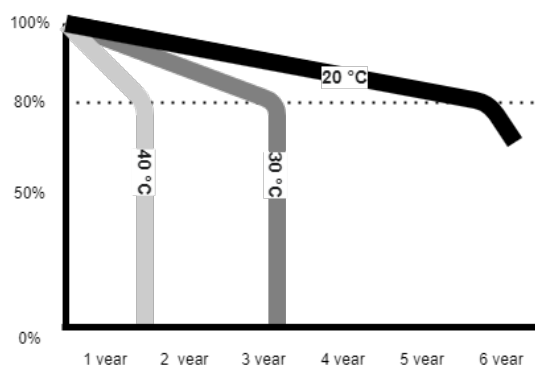


Table 22. Manufacturer's stated lifespan and recommended battery replacement

Manufacturer's stated service life ^a .	Battery in operation should be replaced after ^b .
3-5 years	2-3 years
6-9 years	3-5 years
10-12 years	5-7 years
15+ years	8-10 years

^a-Valid in case of completely unused battery stored under optimal conditions.

^b-When operating at ideal ambient temperature, 20 °C.

12.2. battery change

- If possible, disconnect mains (voltage) when replacing the battery.
- Disconnect battery cables. Note how battery cables are mounted before removing them.
- Remove battery fuse between batteries.
- Insert and fasten the new batteries.
- Connect the battery cables in the same way as before.
- Connect battery fuse between batteries.





- Switch on mains voltage. The indicator LED may not be green (up to 72 hours), until the batteries are charged.
- Test the system by briefly disconnecting the mains voltage, (= the load is driven by the batteries), and then switch on the mains voltage again.

12.3. Battery recycling

All batteries must be recycled. Return to manufacturer or return to recycling station.



13. 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 \[25\]](#) 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.

13.1. Troubleshooting

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

Table 23. 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.



Control measurement of batteries

In case of troubleshooting, the voltage of the batteries can be checked using a multimeter. Measure each 12V battery separately over the plus and minus pole. Next, measure the entire battery group connected in series. Two 12 V batteries connected in series should provide approximately 24-27 V DC depending on the degree of charge and whether charging is in progress. If measured voltage is significantly lower than expected, check polarity, battery fuse and wiring between battery box and battery backup.

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

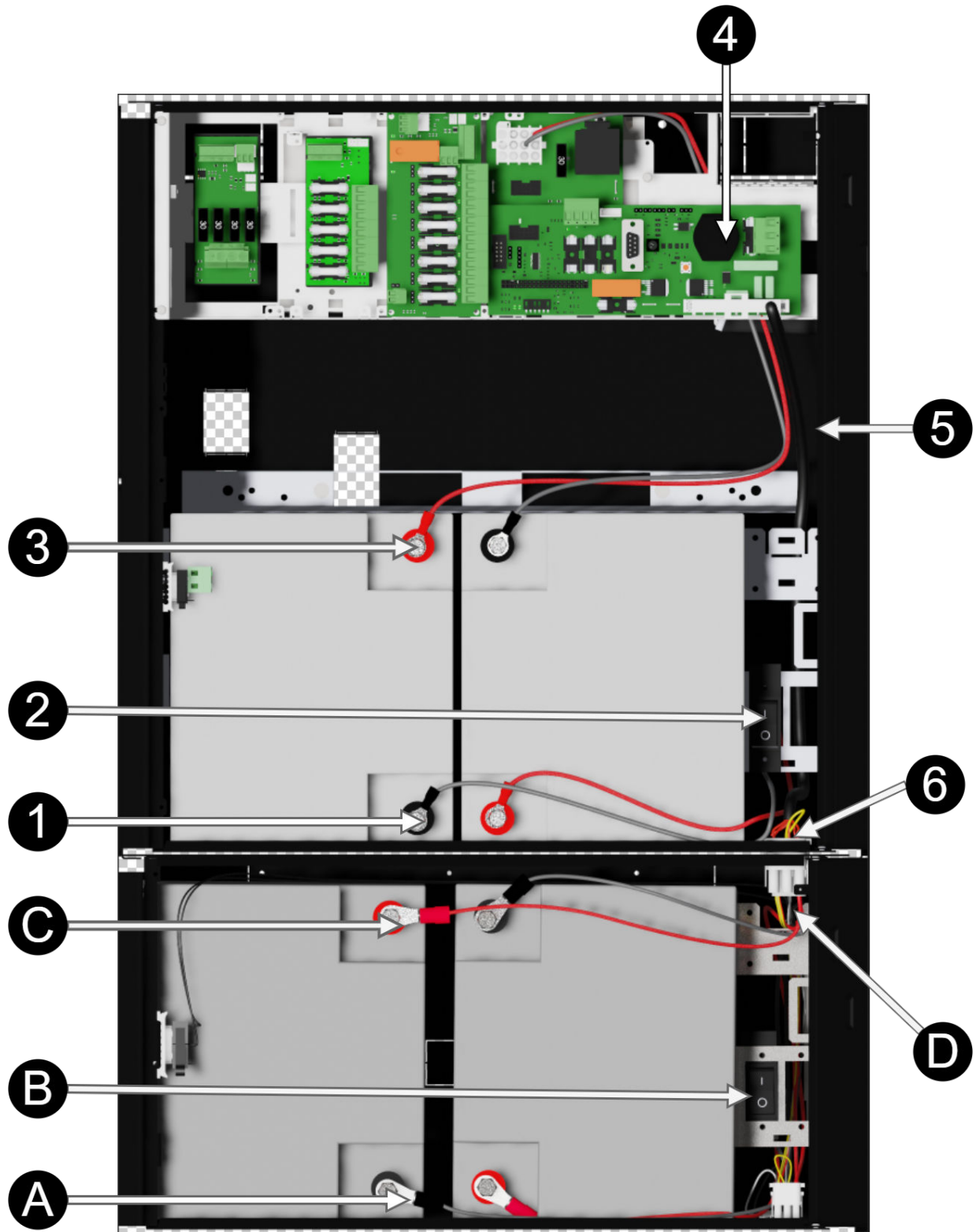




14. CONNECTION OF BATTERY BOX

14.1. Connecting batteries in FLX M

Figure 6. Connection of batteries in FLX M. Motherboards may differ depending on the configuration, but connection of batteries takes place in the same way.





Note that cards (4) differ from different configurations.

Table 24. Connecting batteries in FLX L.

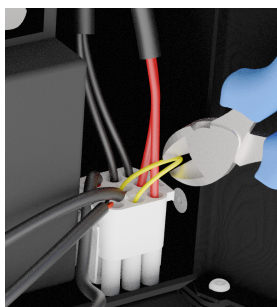
Nr	Explanation
1	+ and - battery cable from battery fuse.
2	Battery fuse.
3	+ and - battery cable from motherboard.
4	Motherboard, varies with configuration.
5	Battery cables from the motherboard.
6	Connection for connecting the battery box.
A	- terminal for battery cable from battery fuse.
B	Battery fuse.
C	- terminal for battery cable for connection to battery backup.
D	Connection for connection to battery backup.

14.2. Installation of battery box, what to do in battery backup

Cable gland / knock-out is located on the underside of the battery backup and must be disconnected before mounting.

The unit must be de-energized during installation and connection.

- Use the wiring that comes with the battery box to meet the wiring from the battery backup. See picture.



The picture shows cable wiring from the battery backup that meets cables from the battery box

14.3. Connection of batteries battery box

Battery wiring is mounted on the circuit board upon delivery. Pictures below only show how to connect wiring.



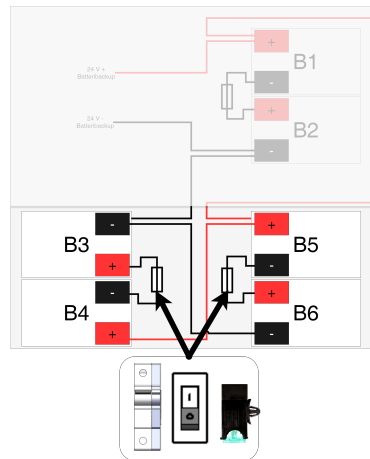
WARNING

Damage to equipment can occur due to incorrect connection.





Figure 7. Wiring diagram for batteries in battery backup

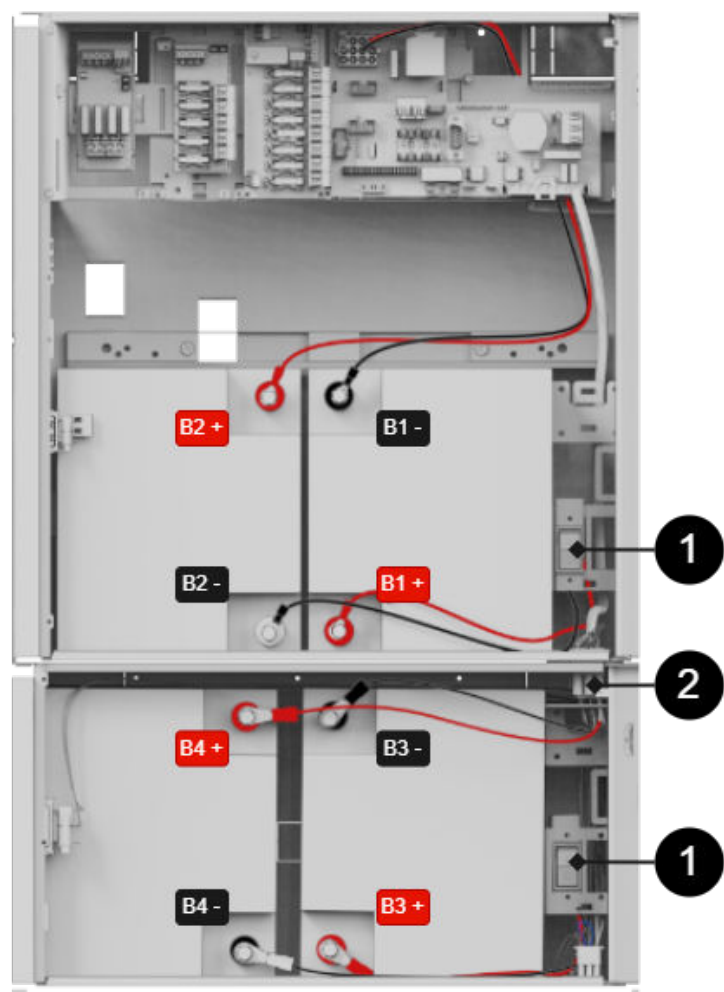


NOTE

The type of fuse between batteries varies with configuration.



14.4. Connection to batterybox



The picture also gives an overview of connection points for battery cables and battery fuses.

Table 25. Connecting battery box with battery backup.

Battery cables	Explanation
B1+	Connects to fuse .
B1-	Cable from motherboard is connected to battery .
B2+	Cable from motherboard is connected to battery .
B2-	Connects to fuse .
B3+	Connects to fuse .
B3-	Connected via connector to battery in battery backup .
B4+	Connected via connector to battery in battery backup .
B4-	Connects to fuse .

Table 26. Connection

Number	Explanation
1	Battery fuse.
2	Connect battery backup and battery box with white square connector.





14.5. Wiring diagram and jumper

Alarms for tamper contact are connected in series and therefore the loop must be unbroken to the last battery box wiring. Jumper closes the loop on each wiring that goes from battery backup to battery box and in order for an alarm to be given on the tamper connector in the battery box, a yellow jumper on wiring must be cut. Do not cut the jumper on the last wiring in the battery box, as sabotage alarms will not be given in any connected battery backup or battery box.

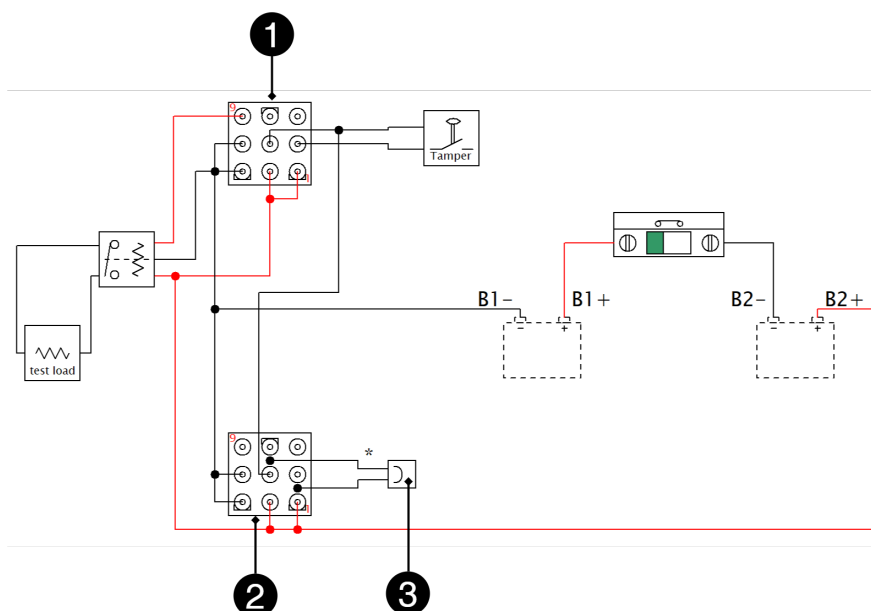
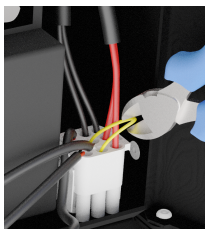


Table 27. Wiring diagram and jumper

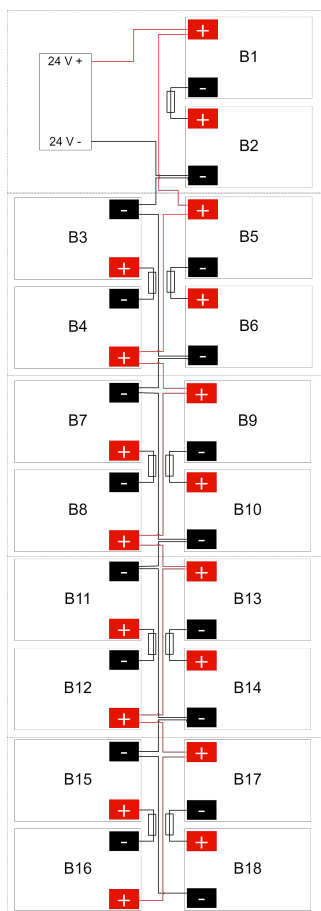
Number	Explanation
1	IN - incoming connection
2	OUT - outgoing connection
3	Jumper on base on outgoing connection

Table 28. Wiring diagram and jumper

Devices	Yellow jumper - where to cut / not cut	Where the end of the loop should be
Battery backup without battery box	Do not cut the jumper	Jumper should remain in battery backup
Battery backup + 1 battery box	Cut jumper from battery backup	Jumper must remain in battery box 1
Battery backup + 2 battery boxes	Cut jumper in battery backup and from battery box 1	Jumper must remain in battery box 2



14.6. Battery backup (NOVA FLX) with 4 battery boxes (NOVA FLX)



14.7. Tamper switch when using battery box(-es)

If one or more battery boxes have been connected to the unit, the tamper switch must be connected in series in order for alarms from all units to be given. It is important that the series connection ends at the last tamper contact. The series connection must start in the battery backup unit and return to the last battery box.

All tamper contacts must be in series for everyone to be part of the alarm chain. Therefore, the yellow cable that is in the jackable connector must be cut on all connecting cables, except the last one. The cable must not be cut on the last connection / battery box.

15. PRODUCT SHEET - POWER SUPPLY / BATTERY BACKUP

15.1. Product Sheet

15.1.1. SSF1014 certified battery backup with communication





Figure 8. NOVA FLX L



NOVA FLX L can be mounted on a wall or in a 19" rack.

15.1.2. Item Information

THE TABLE SHOWS THE NAME, PART NUMBER AND EMAIL NUMBER OF THE PRODUCT

PRODUCT IDENTIFICATION

Table 29. Product designation, part number and email number.

Product designation	Article number	E-number (SE)
NOVA 24V 15A FLX L	FL01P23024P150-SSF	52 136 41

15.1.3. Technical description

NOVA powers access control systems, alarm systems or other security products in a property powered by 12 V or 24 V DC. The rectifier in the power supply converts 230 V AC down to 12 V DC or 24 V DC. NOVA 24 V power supply is certified for use in security installations that must comply with SSF 1014, all the way from alarm class 1 up to alarm

Batteries, for example, drive the access system further when the power grid goes down.

Table 30. Quick Facts

Quick Facts	
Supply voltage (V)	230V AC, +/- 10%, 47Hz- 63Hz
Voltage out (V)	27.3 V DC, (24 V DC) Also applicable in battery operation.
Current output (A), max load current output.	15A
Batteries ^a .	2 x 45 Ah

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

15.1.4. Areas of application

Table 31. Areas of application

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



Areas of application	Yes	No
Burglar alarm	✓	
SSF certified access systems. Alarm class 1-4	✓	
Communication to subcentral.	✓	

15.1.5. Electrical data

Table 32. Electrical data

Electrical data	
Supply voltage	230V AC, +/- 10%, 47Hz- 63Hz
Charge current	Max 10A
Efficiency ^a .	89%
Standby consumption	5.54 W
Voltage out	27.3 V DC, (24 V DC) Also applicable in battery operation.
Current (A) ^b .	15A

^aAt rated load.

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

Table 33. Fuses

Fuses	
Mains fuse	2.5 A 4 A
Load fuses	15A
Battery fuse	(16 A) and 30 A automatic fuse

Table 34. Printed circuit boards and Internal power consumption

Circuit Boards	Internal power consumption (during battery operation)	Other. info
PRO2 and PRO2v3	< 210 mA	Less than 210 mA, 100 mA without power surge with all relays on external alarm board drawn in normal mode.

15.1.6. Load outputs

Table 35. Load outputs

Load outputs	
Number of load outputs	! 2 ^a .

^aLoad outputs share on the total maximum load. The value does not apply per output

Table 36. Total maximum load and recommended load.

Model	Recommended total load (80%) ^a .
15A	12A

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

15.1.7. Alarm and protection

Table 37. Number of relay on which alarm can be given

Number of Relays	Alarm on switching relay? ^a .
1	✓ ^b .
4	✓Can be given on four outputs, with alarm card, otherwise alarm appears in parent system.

^aRelay, alternating potential-free contacts.Ending CO/NO.



^bRelay, alternating potential-free contacts. Ending CO/NO.

Table 38. Alarm over communication and on LED on motherboard PRO2v3

Alarms	Alarm via communication	Indication ^a .
Network outage	✓	✓
Fuse failure	✓	✓
Sabotage Breakers	✓	✓
Fan failure	✓	
Charger failure, overvoltage	✓	✓
Charger failure, undervoltage	✓	✓
Cell failure or not connected battery	✓	✓
Low system voltage ^b .	✓	✓
Low battery voltage (<24.0 V DC) or network outage	✓	✓
Over-temperature	✓	
Sub-temperature	✓	
Short battery life remaining	✓	
Aged battery	✓	✓
Overcurrent 80%, daily average	✓	
Overcurrent 100%, minute average	✓	
Over current 175%, second average	✓	

^aIndication diode on main board and LED on door.

^bSystem voltage in mains operation is below 24.0 V

Table 39. Alarm overview, alarm card PRO2

Alarms ^a .	Relay 1 ^b .	Relay 2 ^c .	Relay 3 ^d .	Relay 4 ^e .
Network outage	✓	-	-	-
Fuse failure	-	✓	-	-
Sabotage Breakers	-	-	-	✓
Fan failure	-	-	-	-
Charger failure, overvoltage	-	✓	-	-
Charger failure, undervoltage	-	✓	-	-
Cell failure or not connected battery	-	✓	-	-
Low system voltage ^f .	-	-	✓	-
Low battery voltage (<24.0 V DC) or power failure	-	✓	-	-
Over-temperature	-	-	-	-
Sub-temperature	-	-	-	-
Sub-temperature	-	-	-	-
Short battery life remaining	-	-	-	-
Aged battery	-	✓	-	-
Overcurrent 80%, daily average	-	-	-	-
Overcurrent 100%, minute average	-	-	-	-
Over current 175%, second average	-	-	-	-

^aAlarm on potential-free relay contact.

^bAlarm Output 1

^cAlarm output 2

^dAlarm Output 3

^eAlarm output 4

^fSystem voltage in mains operation is below 24.0 V.



Table 40. Alarm and protection

Alarm and protection	Yes	No
Battery charge protection/controlled charging ^a	4.5A.	
Deep discharge protection, see Battery [36] ^b	✓	
Overload Protection/Surge Protection	✓	
Over-temperature protection	✓	
Short circuit protection	✓	

^aControlled charging protects and extends battery life.

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

15.1.8. Communication and Indications

Table 41. Communication and Indications

Communication and Indications	Yes	No	Other. info.
Communication	✓		
Alarm to subcentral	✓		
PowerWatch ^a	✓		
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.



The PowerWatch is available as an option for the product.

Table 42. Communication protocol

Interfaces	Included/optional	Signal Type/Communication Principle	Protocols
RS-485 ^a	Included	Differential signaling	OSDP
RS-232	Optional	Serial communication (TTL level)	Proprietary protocol
Ethernet	Optional	Packet-based (Ethernet)	TCP/IP
In ¹ 2C	Optional	Two-wire bus	In ¹ 2C

^aFor other brands, the communication interface of the respective manufacturer applies.

15.1.9. Battery

Table 43. Technical data - Batteries

Battery	
Ref. Batteries ^a	2 x 45 Ah
Battery type	Maintenance-free AGM (lead-acid) batteries
Deep discharge protection	Activates when the system voltage drops below about 20 V DC.
Other sizes of batteries that can be used	2 x 28 Ah Other batteries may not be used if certificates are to be maintained.

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

15.1.10. Enclosure and Mechanics

Table 44. Enclosure and Mechanics

Enclosure and Mechanics	
Type	Universal enclosure for wall and rack
IP class	IP32





Enclosure and Mechanics	
Material	Powder coated sheet metal.
Colour	Black
Height units	10
Cable grommets	4 pcs
Knockout hole	1 pc. on the back
Lock	✓ 2 keys included
Fan in enclosure	✓x

15.1.11. Assembly, installation and eligibility requirements

Table 45. Fitting

Fitting	Yes	No
19" rack.	✓	
Wall.	✓	

Table 46. Installation

Installation	Yes	No
Fixed installation.	✓	

15.1.12. Dimensions, weight and packaging information

Table 47. Dimensions

Dimensions, (WxHxD).	Dimensions with packaging ^a .
444 x 437 x 212 mm	550 x 500 x 300 mm

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

Table 48. Weight

Net weight	Weight with packaging
13.7 kg	14.8 kg

Table 49. Packaging

Packaging	
Packaging	Cardboard and plastic shock protection. Cardboard and impact protection in cardboard.
Quantity in pack	1 pc.
Packaging Type (GS1 T0137)	BX box.
Conditions EUR pallet	EUR pallets may not be stacked during transport or storage. Stacking may result in damage to product and packaging
Transport environment	The product must be protected from condensation and direct precipitation during transportation.
Transport temperature (without battery)	-30 °C to +70 °C
Storage environment	Dry indoor environment, protected from condensation. Relative humidity: max 95%, non-condensing
Storage temperature without batteries	-20 °C to +60 °C



15.1.13. Contact

Table 50. Contact

Department	
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

15.1.14. 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.

Publication date 2026-07-08

15.2. Compliance and regulatory compliance

15.2.1. Delivery time, warranty and terms

Table 51. Delivery time, warranty and terms

Delivery time, warranty and terms	
Warranty period ^a	The product has a two (2) year warranty against manufacturing defects. The product has a five (5) year warranty against manufacturing defects.
Special warranty conditions	The battery backup should be used in conjunction with UPLUS 10+ Design Life batteries. The fan shall be cleaned annually and replaced if necessary. The average load shall not exceed 80% of the rated capacity of the power supply. Ambient temperature shall not exceed 32°C. 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.

^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.

15.2.2. Operation and maintenance

Table 52. 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.



Operation	Data	Other. info
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 53. Maintenance

Yes	No	Interval	Other. info
✓		Annually	The fan should be cleaned annually. Battery terminal voltage must be measured. Ensure that the average load does not exceed 80% of the rated capacity of the power supply.

15.2.3. Certifications and approvals

Table 54. Approved according to

Complies with	Directives
Emissions	EN61000-6-2:2001 EN 55022:1998: -A 1:2000, A 2:2003 Class B, EN61000-3-2:2001, EN 55032 (replaces EN 55022)
C.E.	CE marking according to Regulation (EC) No 765/2008
RoHS	RoHS Directive 2011/65/EU, including amendment (EU) 2015/863
EMC	EMC Directive 2014/30/EU

Table 55. SBF

Complies with	Yes	No
SBF 110:8	✓	



The unit meets the requirements for installation in facilities that must be SSF 1014 approved. SSF 1014 certificate is only valid when certified together with the parent system.



IMPORTANT

For SSF 1014 certificates to be valid, only one (1) load exit may be used.

Table 56. Certificates and certificate numbers

Certificate number, report number	Designation in test report
Nos. 20-117	NOVA 27 50-FLX S • NOVA 27 100-FLX S • NOVA 27 50-FLX M • NOVA 27 100-FLX M • NOVA 27 150-FLX M • NOVA 27 250-FLX M • NOVA 27 50-FLX L • NOVA 27 50-FLX L • NOVA 27 100-FLX L • NOVA 27 150-FLX L • NOVA 27 250-FLX L • UNISON Facility Cabinet



HOW DO CERTIFICATES APPLY IF OPTIONAL IS INSTALLED IN THE DEVICE?

Table 57. Do certificates apply if optional is installed outside the device?

Product Series	Certification	Do certificates apply if optional is installed in the device?
NOVA ^a	SSF 1014 (Burglary)	Yes

^aThe product is certified together with the parent system. In order for certificates to be maintained, batteries of the same brand must be used as in certification, (

15.2.4. Environmental data

Table 58. Environmental data

Environmental data	J/N	Informație	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/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.		
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. ^b Contact your distributor for more information.			

^aStandby consumption and power.

^bCosts incurred in connection with recycling are not reimbursed.





15.2.5. Manufacturer and country of origin

Table 59. Manufacturer and country of origin

Manufacturer ^a	Milleteknik AB
Customs State. Nos.	85044095 ^b
Country of origin	Sweden

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

^bVerify with the Customs Ombud/Customs Service for export/import; alternative classification 85044055 may become applicable if the product is assessed as a battery charger.

15.3. Appendix

15.3.1. Power outlet NOVA FLX

NOVA 24V 15A FLX L	Unit without battery box	Unit with 1 battery box	Unit with 2 battery boxes	Unit with 3 battery boxes	Unit with 4 battery boxes
Battery	2 pcs. 45 Ah	4 st 45 Ah	6 st 45 Ah	8 st 45 Ah	10 st 45 Ah
Max battery capacity	45 Ah	90 Ah	135 Ah	180 Ah	225 Ah
According to. SSF1014, Alarm Class 1-2	3.6 A	7.3 A	11.1 A	14.8 A	18.6 A
According to. SSF1014, Alarm Class 3-4	1.4 A	2.9 A	4.4 A	5.9 A	7.4 A
I _{max} A (max discharge current)	13 A	13 A	13 A	13 A	13 A
I _{max} b (max charging current)	15 A	15 A	15 A	15 A	15 A
I _{min} is always 0 A.					

15.3.2. 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/

15.3.3. Permitted average load according to SSF1014 Alarm class 1-4:

Table 60. NOVA 24 V FLX L

Permitted average load according to SSF1014 Alarm class 1-4:	NOVA 24V 5A FLX L	NOVA 24V 10A FLX L	NOVA 24V 25A FLX L	NOVA 24V 25A FLX L
FLX M without battery box according to Alarm class 1-2 / 3-4	3.7 A / 1.5 A	3.7 A / 1.5 A	3.6 A / 1.4 A	3.6 A / 1.4 A
Including 1 pc. Battery box FLX M, according to Alarm class 1-2 / 3-4:	-	7.4 A / 3 A	7.3 A / 2.9 A	7.3A / 2.9A
Including 2 pcs. Battery box FLX M, according to Alarm class 1-2 / 3-4:	-	-	11.1 A / 4.4 A	11.1 A / 4.4 A
Including 3 pcs. Battery box FLX M, according to Alarm class 1-2 / 3-4:	-	-	-	14.8A / 5.9A
Including 4 pcs. Battery box FLX M, according to Alarm class 1-2 / 3-4:	-	-	-	18.7A / 7.5A



15.3.4. Charging current for batteries and battery capacity

The unit reads the connected system load and charges the batteries with available residual current from the power supply. The device performs qualified* battery tests and notifies when batteries need to be replaced. The batteries are charged gently to extend their life and protection is available against overcharging.

Table 61. Charge current

12 V / 24 V	Maximum charging current for batteries
NOVA FLX L	6 A

The battery backup has controlled charging ** (controlled charging) which prevents batteries from being overcharged and extends their service life significantly. The NOVA series must be used with AGM batteries.

Table 62. Battery capacity in 24 V units

24 V	Battery capacity	Maximum battery capacity with 1 battery box	Maximum battery capacity with 2 battery boxes	Maximum battery capacity with 3 battery boxes	Maximum battery capacity with 4 battery boxes
NOVA FLX L, 24 V	45 Ah (2 pcs 45 Ah)	90 Ah (4 x 45 Ah)	135 Ah (6 x 45 Ah)	180 Ah (8 x 45 Ah)	225 Ah (10 x 45 Ah)

15.3.5. PowerWatch



Table 63. PowerWatch Ordering Information

Product designation	Item No.	E-number (SE)
PowerWatch	A-OT0000UPG02P2V3P3	52 137 06

Table 64. 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

15.3.6. Eligibility requirements, installation

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



Options on the secondary side of the product, such as 12 V, 24 V or 48 V DC, are connected according to the respective instructions. Work on the network connection of the product shall be carried out in accordance with national eligibility requirements

Table 65. 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	✓	✗	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	✓	✗	Plug may be connected without authorization. (Tukes, SFS 6000)
Denmark	✓	✗	Plug may be connected without authorization. (Safety Board)
Germany	✓	✗	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")

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

Table 66. 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

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

Table 67. 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.

15.3.9. Reserve operating times for different alarm classes - overview

Alarm class	Spare operating time in the event of a power failure	Maximum number of hours of battery re-charging (80%)
EN54-4	-	24 h
SBF110: 8	30 h + 10 min	24 h
EN50131-6 grades 1-2	12 h	72 h
EN50131-6 grade 3	24 h	24 h
SSF1014 Alarm class 1/2	12 h	72 h
SSF1014 Alarm class 3/4	30 h	24 h

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



15.3.10. 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.

Publication date 2026-07-08

