



Battery Box 24 V FLX S & Battery Box 24 V FLX M

For battery backup

350-136

Publication date 2023-11-02

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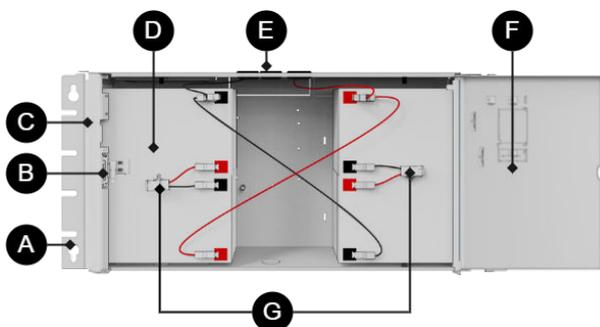
1. ABOUT TRANSLATION OF THIS DOCUMENT

User manual in original language in Swedish. Other languages are machine translated and not reviewed, errors may occur.

2. BATTERY BOX 24V FLX S

Battery box 24V FLX S has room for four batteries and is mounted under the battery backup on the wall or in a 19" rack.

2.1. Component overview



Batteries should be placed as in the picture. The picture also gives an overview of connection points for battery cables and battery fuse.

Table 1. Component overview

Number	Explanation
A	Battery cabling for connection to battery backup.
B	Batteries
C	Battery fuse
D	Cabinet in powder-coated sheet metal. Lockable door.
E	Reversible brackets (4 pcs) for mounting the unit on a wall or in a 19" rack.
F	Lockable door.
G	Battery fuses.

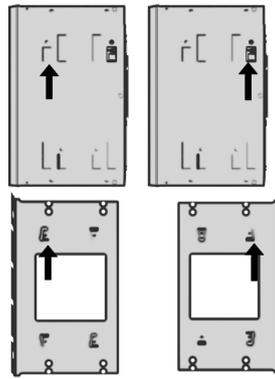
2.2. Mounting on a wall or in a 19" rack

The unit can be mounted in a 19" rack or on a wall. 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 console must be attached at the front of the unit.





Figure 1. FLX S - mount brackets



Left bracket facing the front for mounting in a 19" rack.

Right bracket facing the back for wall mounting.



IMPORTANT

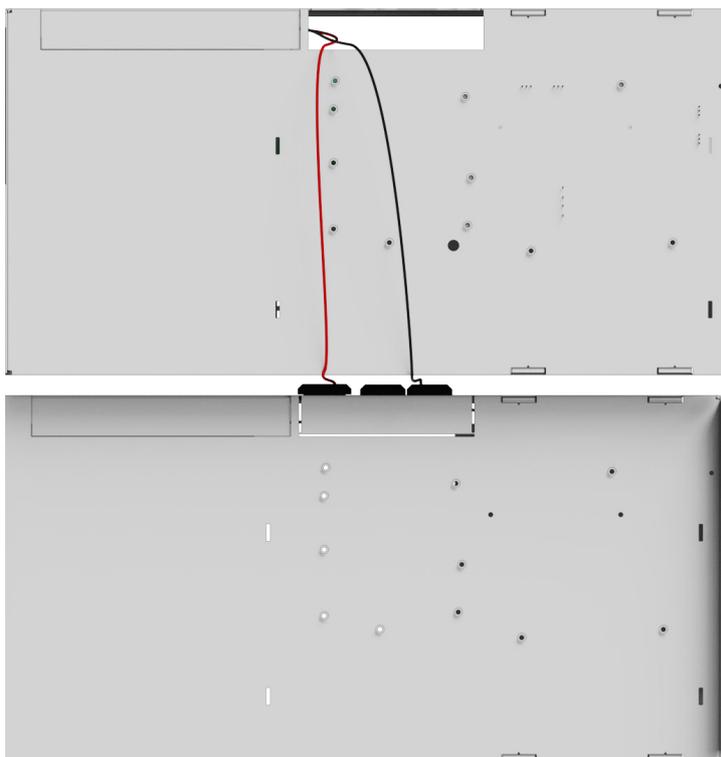
Leave 100 mm free around the air vents.

2.3. Mounting Battery box 24V FLX S for battery backup in FLX S housing

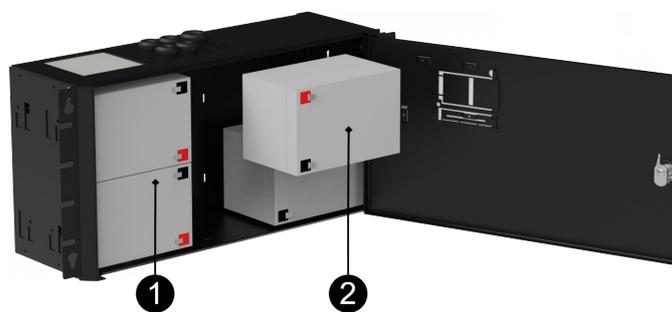
The battery box is mounted on a wall or in a 19" rack, below the battery backup.

Cable entries are located at the top of the housing and in the middle on its back.





2.4. Placement of batteries in Battery box 24V FLX S

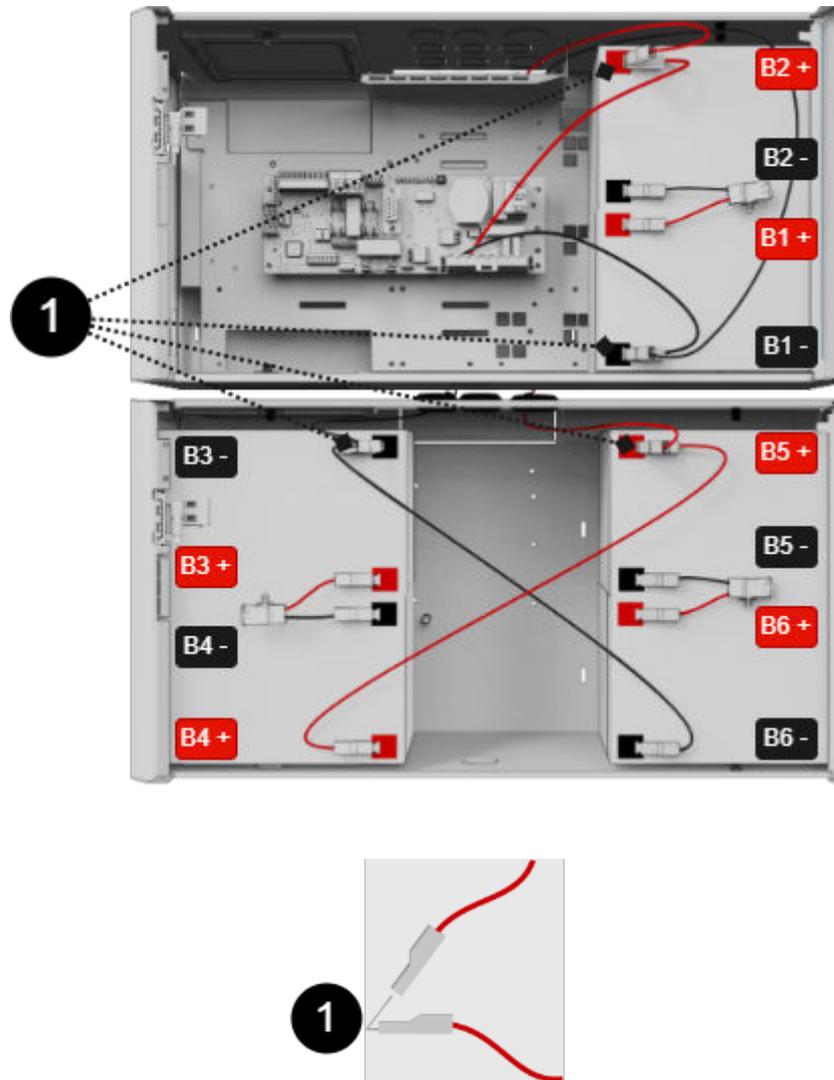


No .	Explanation
1	Insert in the the first batteries. If there is a tamper contact here, the battery must be pushed in behind the tamper contact.
2	Insert the other two batteries.





2.5. Connection battery box with battery backup



The picture shows a battery backup with extra battery box with 2 batteries.

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

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
B5+	See B4+
B5-	Connects to fuse
B6+	Connects to fuse
B6-	See B3-



Table 2. Connection

Number	Explanation
1	Dual cabling, one for motherboard and one for connection connector.

3. BATTERY BOX 24V FLX M

Battery box 24V FLX M has room for two 45 Ah batteries and is mounted below the battery backup on a wall or in a 19" rack.

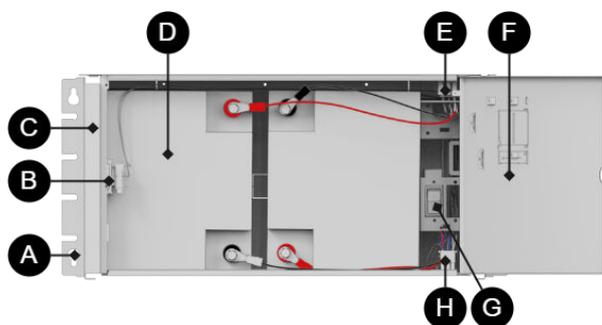


BATTERIES AND CERTIFICATES

Batteries must be new during installation and battery replacement in order to maintain warranty and certified standards.

Always use the same (type and manufacturer) batteries with which the device is certified.

3.1. Component overview



Batteries should be placed as in the picture. The picture also gives an overview of connection points for battery cables and battery fuse.

Table 3. Component overview

Number	Explanation
A	Bracket, reversible for wall mounting or 19" rack.
B	Sabotage contact, If alarm class 3 (SSF) is to be met, the sabotage contact must be on the wall.
C	Cabinet in powder-coated sheet metal. Lockable door
D	Batteries.
E	Connection to battery backup.
F	Lockable door.
G	Battery fuse.
H	Connection to the next battery box

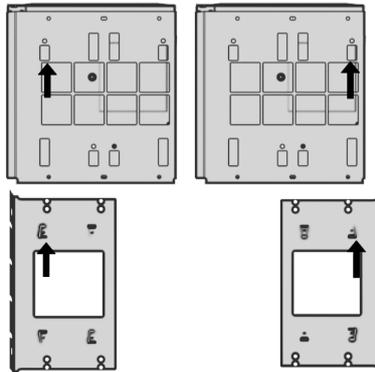




3.2. Mounting on a wall or in a 19 "rack

The unit can be mounted in a 19 "rack or on a wall. The included 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 console must be at the front edge of the unit.

Figure 2. FLX M - mount brackets



Left bracket facing the front for mounting in a 19 "rack.

Right bracket facing the back for wall mounting.

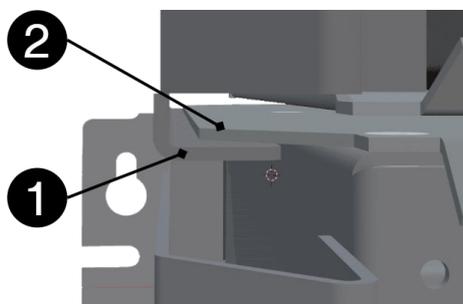


IMPORTANT

Leave 100 mm free around the air vents.

3.3. Mounting battery box with battery backup

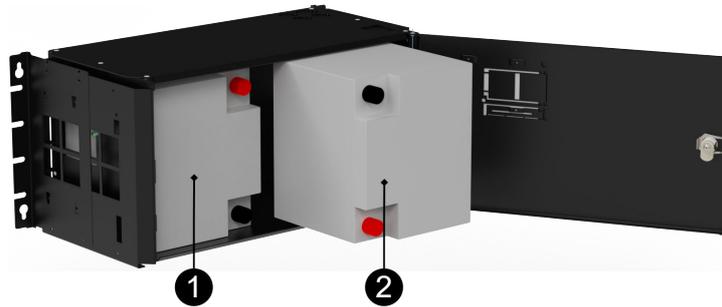
The battery box is pushed in during the battery backup, (or previous battery box). The battery box is then screwed to a rack or wall. The two enclosures must meet each other without gap.



Nr	Explanation
1	Track in battery backup.
2	Protruding part on the roof of the battery box.

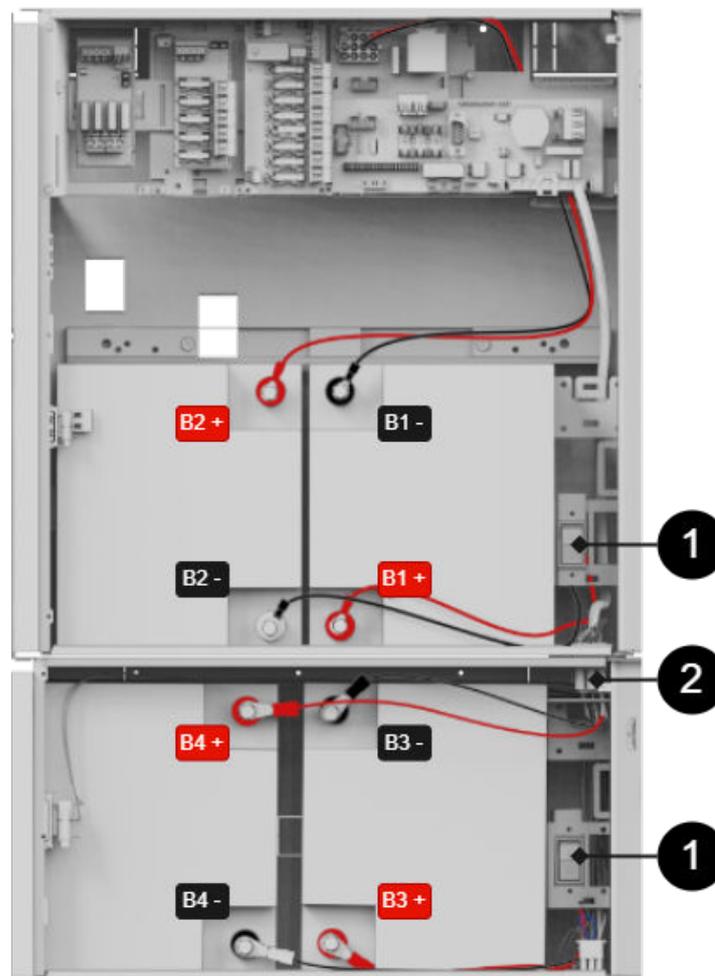


3.4. Placement of batteries



No	Explanation
1	Slide the first battery. If there is a tamper connector here, the battery must be pushed in behind the tamper connector.
2	Slide in the second battery.

3.5. Connection to batterybox



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

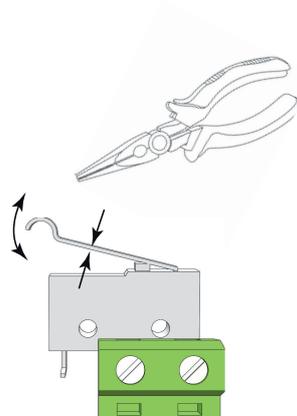




Number	Explanation
1	IN - incoming connection
2	OUT - outgoing connection
3	Jumper on base on outgoing connection

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

4.1. 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.

4.2. Tamper switch and alarm class 3/4 according to SSF1014

- Tamper switch must be attached to the wall to comply with alarm class 3/4 according to SSF1014.
- The tamper switch must be connected to the system board.

If the distance is long from the wall when mounting in a rack, for example, a spacer is needed. It is the installer's responsibility to install the appropriate spacer. The tamper switch in the cabinet must end

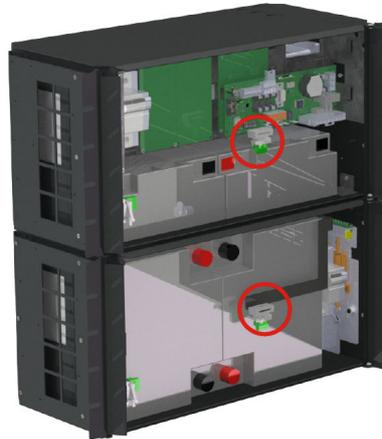




when the cabinet door is closed. If the alarm goes off ("tamper alarm" / alarm to the control panel), the lever may need to be adjusted.

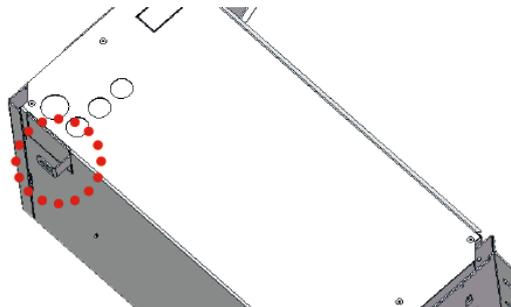
Tolerance levels for tamper contact: Alarm must be triggered when: Opening the cabinet door; > 1 mm.
Breaking unit from wall:> 2.5 mm.

Figure 3. Placement of tamper switch when wall mounted.



The picture shows location in battery backup and battery box.

Figure 4. The angle of the tamper switch must be fixed to the wall.



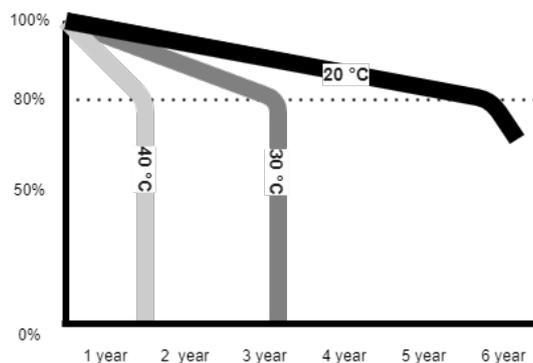
5. MAINTENANCE

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

5.1. 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.





5.2. 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.
- In order for the system to measure the capacity of new batteries, the device needs to clear previous battery capacity. Dip-switch 8 performs a software reset which, among other things, resets alarms. See [Resetting data after battery change \(Dip-switch 8\)](#)
- Test the system by briefly disconnecting the mains voltage, (= the load is driven by the batteries), and then switch on the mains voltage again.

5.3. Battery recycling

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



5.4. Maintenance schedule batteries

The maintenance schedule applies to batteries made by UPLUS and with the following serial names: US, USL, USF, and for batteries made by XLENT POWER with serial names XLT and XLL. For maintenance instructions see separate document "[care instructions valve-regulated lead-acid battery](#)".

Table 5. Battery replacement

Series designation	Battery type	Replace battery after
XLT	3-5 years	2-3 years
US	6-9 years	3-5 years
USL	10-12 years	5-7 years





Series designation	Battery type	Replace battery after
USF	12 years	8-10 years
* battery life depends mainly on ambient temperature and charging current. An AGM battery should never be charged with more than 30% of its rated capacity. The battery will be fully charges, but the charning current must not excced 30% of its rated capacity.		

Table 6. Charging voltages

Charging voltage from power supply	12 V units	24 V units	48 V units
Minimum charging voltage	13.6 V	27.2 V	54.4 V
Maximum charging voltage	13.7 V	27.4 V	54.8 V
Tolerance	+/- 0.5%	+/- 0.5%	+/- 0.5%

Table 7. terminal voltage

terminal voltage	After 15 minutes of rest / charging.
Minimum terminal voltage	12.9 V
Maximum allowable difference between battery pairs	0.5 V
New battery with terminal voltage below 12.0 V is defective and should be reported to the supplier.	

Table 8. Ambient temperature for batteries

Temperature in battery backup	Temperature
Lowest	15 ° C
Recommended	20 ° C - 25 ° C
Highest	32 ° C
Warranty is valid only if the temperature is within these levels.	

Installation control batteries

1. Check that the battery is completely clean and that the terminals are free from corrosion.
2. Check and note the temperature in the battery compartment.
3. Check the terminal voltage of each battery before installation. If the difference between the batteries exceeds 0.5 V, the battery loop should be equalized in connection with installation. If any battery has a terminal voltage of less than 12V, this battery must be replaced with a new battery and reported to the supplier.
4. Connect the battery and check the charging voltage. The charging voltage should be between 2.25 V - 2.27 V per cell = between 13.5 V - 13.62 V for a 12 V system and between 27.0 V - 27.24 V for a 24 V system.

Year-round inspection

1. Check that the battery is completely clean and that the terminals are free from corrosion. If there is corrosion on the terminals: Check that the battery does not leak acid. Then clean the terminals and reconnect the battery. Then lubricate with battery terminal grease over the connected terminal.
2. Check and note the temperature in the battery compartment.
3. Check and note the average current.
4. Check that all connections are securely fastened and that there is no gap in the connection.
5. Check that the fan (if units have a fan) is working properly. Clean the fan if necessary.
6. Check the charging voltage by measuring with a multimeter between the connection points + & amp; -. The charging voltage should be between 2.25-2.27 volts per cell = between 13.5-13.62V for a 12V system and between 27-27.24V for a 24V system.
7. Turn off the rectifier and let the batteries rest for 10 - 15 minutes. Then measure the terminal voltage of each battery. After resting, the terminal voltage must be between 12.9 V - 13.5 V.



6. PRODUCT SHEET / TECHNICAL DATA: BATTERY BOX 24 V FLX S, BATTERY BOX 24 V FLX M

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6.1. Technical specifications: Battery box 24V FLX S and Battery box 24V FLX M - area of use

Figure 5. Battery box 24V FLS S and Battery box 24V FLX M



The battery box can be mounted in a 19" rack or on a wall. The enclosure is lockable and two pairs of keys are included.

A battery box is used to extend the reserve operating time of a battery backup or to allow for higher currents in a rated system. You can find more about possible average currents in the battery backup's manual.



BATTERIES AND CERTIFICATES

Batteries must be new during installation and battery replacement in order to maintain warranty and certified standards.

Always use the same (type and manufacturer) batteries with which the device is certified.

6.1.1. Manufacturer support

Manufacturers provide support for the life of the product, however, for a maximum of 10 years after the date of purchase. Switching to an equivalent product may occur if the manufacturer deems that repair is not possible. Support costs will be added after the warranty period has expired.





6.1.2. Product life cycle, environmental impact and recycling

The product is designed and constructed for a long service life, which reduces the environmental impact. The product's service life depends on, among other things, environmental factors, mainly ambient temperature, unforeseen load on components such as lightning strikes, external damage, handling errors, and more. Products are recycled by being handed over to the nearest recycling station or sent back to the manufacturer. Contact your distributor for more information. Costs that arise in connection with recycling are not reimbursed.



6.2. Tekniska data Battery box 24V FLX S Battery box 24V FLX M

System voltage:	24 V.
Battery capacity, Battery box 24V FLX S	Two 7.2 Ah or two 14 Ah.
Battery capacity, Battery box 24V FLX M	Two 45 Ah.
Battery type:	AGM lead acid.
Enclosure:	Powder coated sheet.
Mounting:	Wall or 19 "rack.
Country of manufacture	Sweden

6.3. Battery box warranty

The product has a five-year warranty, from the date of purchase. Support during the warranty period is reached via the contact information on the CE label. Compensation for travel and / or working hours in connection with locating faults, installing repaired or replaced goods is not included in the guarantee. Batteries are not covered by the warranty.

6.4. CE marking

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





6.5. Technical data enclosures

6.5.1. Enclosures - Technical Data FLX S

Info	Explanation
Name	FLX S
Enclosure class	IP 32
Measure	Height: 222 mm, width 437 mm, depth 145 mm
Height units	5 HE
Mounting	Wall or 19 "rack
Ambient temperature	+ 5 ° C - + 40 ° C. For best battery life: + 15 ° C to + 25 ° C.
Environment	Environmental class 1, indoors. 20% ~ 90% relative humidity
Material	Powder coated sheet
Color	Black
Cable entries, number	4
Batteries that fit	2 pcs 7.2 Ah or 4 pcs 14 Ah.
Place for fan	Yes

6.5.2. Enclosures - Technical Data FLX M

Info	Explanation
Name	FLX M
Enclosure class	IP 32
Measure	Height: 224 mm, width 438 mm, depth 212 mm
Height units	5 HE
Mounting	Wall or 19 "rack
Ambient temperature	+ 5 ° C - + 40 ° C. For best battery life: + 15 ° C to + 25 ° C.
Environment	Environmental class 1, indoors. 20% ~ 90% relative humidity
Material	Powder coated sheet
Color	Black
Cable entries, number	4 Knockout for Battery connector
Batteries that fit	2 pcs 12 V, 45 Ah.

6.6. Technical data: Tamper switch

Name	T-Tamperswitch
Type	Microswitch
Voltage	12 V / 24 V

Manufactured in Milleteknik's factory in Partille, Sweden.

This translation is not verified and should be cross referenced with the swedish original before use.





6.7. Battery recycling

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



6.8. Batteries - recommended, not included

6.8.1. Batteries are not included they are sold separately

Batteries are sold separately.

6.8.2. Battery combinations with Battery box 24V FLX S, (14 Ah batteries)

Battery capacity (Ah)	Battery type	Number of batteries	Batteries in unit
14 Ah	14 Ah	2 pcs.	2 in Battery Backup
42 Ah	14 Ah	6 pcs	2 in Battery Backup 4 in Battery Box
70 Ah	14 Ah	10 pieces.	2 in Battery Backup 4 in Battery Box 4 in battery box 2

6.8.3. Battery combinations Battery box 24V FLX M and battery backup (20 Ah batteries)

Battery capacity (Ah)	Battery type	Number of batteries	Batteries in unit
20 Ah	20 Ah	2 pcs	2 in Battery Backup
45 Ah	45 Ah	2 pcs	0 in Battery Backup 2 in Battery Box 1
65 Ah	20 Ah + 45 Ah	4 st	2 in Battery Backup 2 in Battery Box 1
90 Ah	45 Ah	4 st	0 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2
110 Ah	20 Ah + 45 Ah	6 st	2 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2
135 Ah	45 Ah	6 st	0 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3



Battery capacity (Ah)	Battery type	Number of batteries	Batteries in unit
155 Ah	20 Ah + 45 Ah	8 st	2 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3
180 Ah	45 Ah	8 st	0 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3 2 and Batteribox 4
200 Ah	20 Ah + 45 Ah	10 pieces	2 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3 2 and Batteribox 4

6.8.4. Battery combinations Battery box 24V FLX M and battery backup (45 Ah batteries)

Battery capacity (Ah)	Battery type	Number of batteries	Batteries in unit
45 Ah	45 Ah	2 pcs.	2 in Battery Backup
90 Ah	45 Ah	4 pcs	2 in Battery Backup 2 in Battery Box 1
155 Ah	45 Ah	6 pcs	2 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2
180 Ah	45 Ah	8 pcs	0 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3
225 Ah	45 Ah	10 pieces.	2 in Battery Backup 2 in Battery Box 1 2 and Batteribox 2 2 and Batteribox 3 2 and Batteribox 4

6.8.5. Certified with battery type

The device is certified with a UPLUS battery that must be used to maintain the certificate.

6.8.6. 7.2 Ah, 12 V AGM battery

Fits in	Number of batteries
Batterybox 24V FLX S	4





Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	7.2 Ah

Table 9. 10+ Design life * battery

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

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

6.8.7. 14 Ah, 12 V AGM battery

Fits in	Number of batteries
Batterybox 24V FLX S	4

Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	14 Ah

Table 10. 10+ Design life * battery

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

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

6.8.8. 45 Ah, 12 V AGM battery

Fits in	Number of batteries
Batterybox 24V FLX M	2

Battery type	V	Ah
Maintenance-free AGM, lead-acid battery.	12 V	45 Ah

Table 11. 10+ Design life * battery

Article number	E-number	Article name	Terminal	Measure. Height width depth	Weight per piece	Make
MT113-12V45-01	5230546	UPLUS 12V 45Ah 10+ Design Life battery	M5 Bolt	197x165x170 mm	14.5 kg	UPLUS

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



6.8.9. Reserve operating times for different alarm classes - overview

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



IMPORTANT

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

Applies to new batteries.

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

Table 12. Backup operating times 24 V units - with battery box, 28 Ah - 70 Ah

Medium current	28 Ah	42 Ah	65 Ah	70 Ah
-	4 batteries (14 Ah)	6 batteries (14 Ah)	4 batteries (20Ah + 45 Ah)	10 batteries (7 Ah)
Loading	Backup operating time (approx.), Minutes			
0.5 A	1650	2090	5574	3440
1 A	970	865	3252	2118
2 A	560	815	1770	1329
4 A	335	490	930	864
6 A	245	360	600	605
8 A	210	310	426	544
10 A	160	240	342	414
12 A	140	210	270	363
14 A	120	180	234	311
16 A	100	150	204	286
18 A	90	130	150	254
20 A	84	126	138	241

Table 13. Backup operating times 24 V units - with battery box, 90 Ah - 155 Ah

Medium current	90 Ah	110 Ah	135 Ah	155 Ah
-	4 batteries (45 Ah)	6 batteries (20 Ah + 45 Ah)	6 batteries (45 Ah)	8 batteries (20 Ah + 45 Ah)
Loading	Backup operating time (approx.), Minutes			
0.5 A	4705	5796	7056	8215
1 A	2928	3582	4392	5070
2 A	1836	2247	2754	3230
4 A	1183	1438	1762	2018
6 A	788	959	1175	1345
8 A	748	861	1048	1150
10 A	570	689	839	920
12 A	499	603	699	765





Medium current	90 Ah	110 Ah	135 Ah	155 Ah
14 A	427	516	629	655
16 A	404	499	592	590
18 A	359	444	526	520
20 A	340	420	498	495

Table 14. Backup operating times 24 V units - with battery box, 180 Ah - 225 Ah

Medium current	180 Ah	200 Ah	225 Ah
-	8 batteries (45 Ah)	10 batteries (20 Ah + 45 Ah)	10 batteries (45 Ah)
Loading	Backup operating time (approx.), Minutes		
0.5 A	9408	12972	11760
1 A	5856	7872	7320
2 A	3672	4548	4590
4 A	2365	2670	2945
6 A	1577	1780	1960
8 A	1500	1558	1800
10 A	1140	1246	1410
12 A	950	1038	1200
14 A	855	890	1055
16 A	810	902	995
18 A	715	802	885
20 A	680	722	840

Subject to typos.

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