

EFFEKTA

V1.2

MANUAL FOR EMERGENCY POWER SUPPLY EPS-D V2



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1. Safety

- Only authorized and experienced personnel in AC/DC are allowed to use, work, service/maintain, and install this device.
- Only insulated tools are permitted to be used within the device.
- Please note that dangerous voltages and currents exist within the device, both when the internal fuses are on or off.
- This manual should be thoroughly read and understood by all personnel who handle the device. If there is any doubt about the system's structure, function, components, or safety, the supplier should be contacted.

2. Presentation

EPS-D is an emergency power supply unit for operating emergency lighting fixtures, providing 100% voltage during emergencies, for at least 60 minutes. Fixtures with incandescent bulbs, LEDs, fluorescent tubes, or compact fluorescent tubes can be freely mixed in the same installation. Fixtures with conventional drivers, known as magnetic drivers, can be combined with fixtures that have HF drivers (Note: connected drivers should have $\text{Cos } \phi / \text{Power factor} > 0.8$).

The unit consists of a primary switched charging rectifier at 24V DC, an inverter, and built-in batteries. The batteries used are maintenance-free lead batteries with an estimated lifespan of 10-12 years. EPS works as an off-line UPS, so during normal power supply, the inverter is unloaded and only the batteries are maintained. This is very energy-efficient and provides an efficiency of approximately 98%.

SAFETY: The unit is protected against overload and short circuit. The mains, load, and battery are protected by fuses

EPS-D automatically performs a battery test and inverter test once a day at the preset time on the timer.

INDICATIONS AND ALARMS: Mains voltage is indicated on the display front. Alarm relay A is for mains voltage failure, and alarm relay B is for inverter failure. Alarm1 is for insulation failure, and Alarm 2 monitors the output loops. The alarm relays have potential-free switching contacts.

APPROVAL: Meets the requirements of EN-50 171 and is CE approved.



If you change the power at any output, a system test must be carried out!



ON/OFF
This is only for restarting the device, a complete test is not performed.

3. Functional description

The incoming single-phase 230V AC is converted through the primary switched power module inside the EPS-D unit into a DC charging voltage of 27.4V, 2-10A depending on the model (see table, page 10). The DC voltage then feeds the battery with a DC voltage level that is factory adjusted to the correct level, via 2-pole MCB for battery connection.

The inverter is driven by 24V and is secured with a fuse. It also has a built-in fan. The deep discharge relay breaks the voltage at about 21.5V during battery operation. The alarm relay monitors the output voltage of the inverter and provides a potential-free relay output in case of a fault.

The incoming AC voltage is fused with glass tube fuses and then feeds the power module and a UPS relay that switches between mains voltage and the inverter. This voltage is then forwarded to a distribution board with 4 or 8 outputs where you can choose different functions.

During normal power supply, the mains voltage is directly connected to the distribution board via the UPS relay. At the same time, the batteries are charged, and the inverter is in idle mode.

When the mains voltage disappears, the UPS relay switches to the inverter, which now supplies the outputs with clean sine-wave voltage. The switchover time is about 15ms.

Every day, a shorter self-test is performed when the pre-programmed timer breaks the input voltage and starts the inverter. This is done at 6:00 a.m. and lasts for five minutes. If you want to change the factory settings, contact Effekta service and support department.

Once a year, a full test is performed when the inverter performs a self-test that lasts for 60 minutes. If it fails to last for 60 minutes of battery operation, the battery fault indicator will flash and the alarm relay will switch. If everything is in order, the inverter will return to normal operation.

The outputs should be programmed for either safety luminaries, exit luminaries, lighting luminaries, or always off, or only during normal power supply

Alarm outputs

- **EPS-D** - Has multiple alarm functions and alarm outputs.
- Alarm output type A - Mains failure alarm
- Alarm output type B - Inverter failure alarm
- Alarm output Alarm-1* - Output relay that alarms for an insulation fault
- Alarm output Alarm-2* - Fault or interruption in the lighting loop
- IN1 - Turns on everything (Normally Open)
- IN2 - Turns on OUT1 (Normally Open)

→ **EPS-D** - has the following protections:

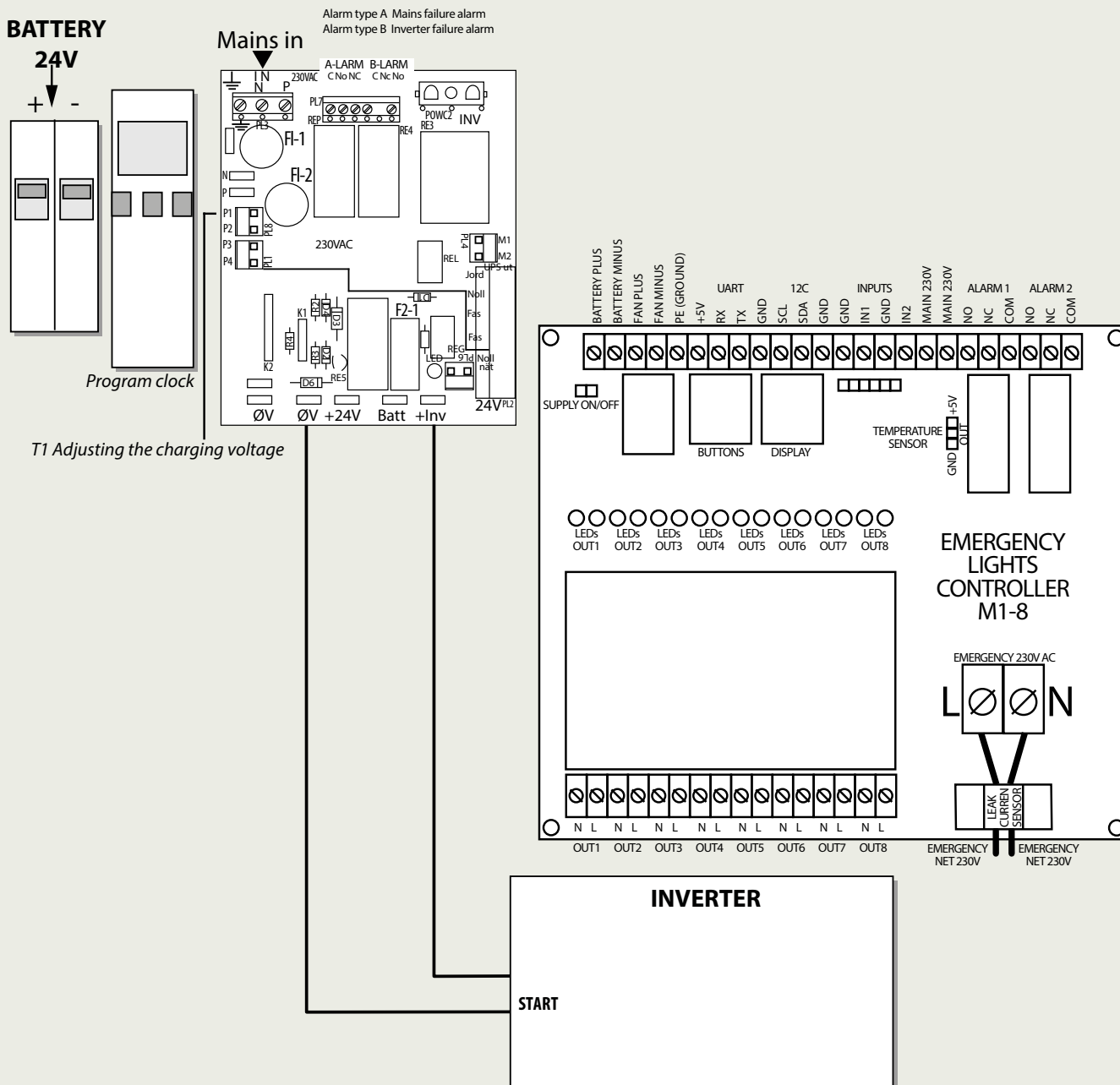
- Short-circuit protection
- Overload protection
- Deep discharge protection
- Fuses for incoming mains
- Fuses for each output
- Automatic fuse for inverter and batteries
- Maximum cable distance: 400 m / 2.5 mm²

**There needs to exist a connection between AL1 com-AL2 NC in order to obtain a summary alarm from Com AL2 and NC AL1. This summary alarm indicates mains failure and changes in the load*

4. Commissioning

- Connect the outgoing cables to terminals 1 to 8. The terminals for the outputs can accommodate up to 2.5mm² cable area. Tighten the screws properly! And check all internal cables/wires!
- Connect 230V AC to the "MAIN IN" terminal
- **NOTE!** There is no ON/OFF button on the device which means that the device starts when the battery fuse is switched on.
- Check that the charging voltage is correct. Adjust if necessary.
- Check the output voltage and current to your luminaries.
- Check that the display on the front is lit and that no alarms are active before programming the outputs

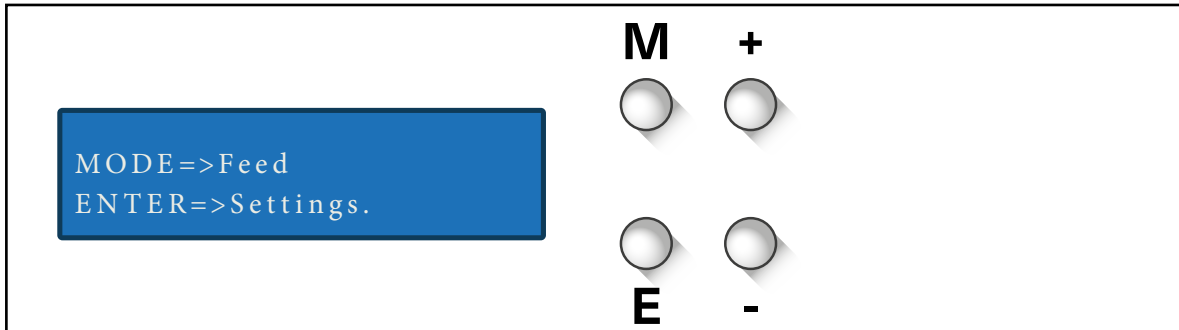
Connecting an EPS-D V2



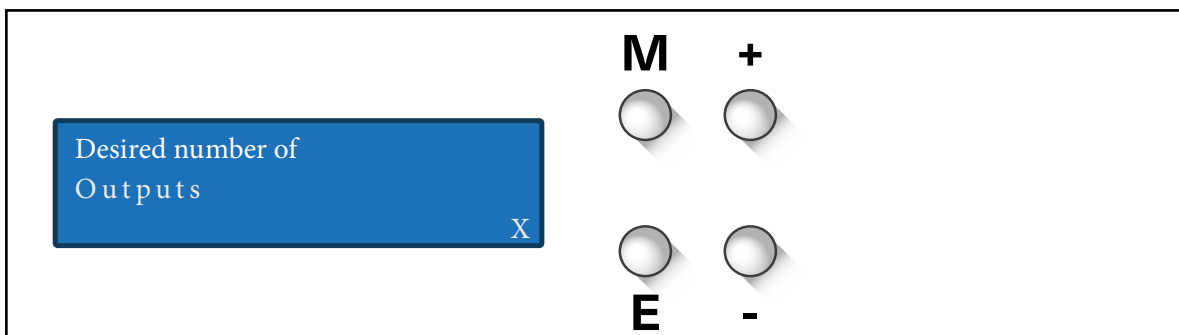
5. Programming

Setting the number of outputs

→ Press the "Menu" button until the screen displays:"



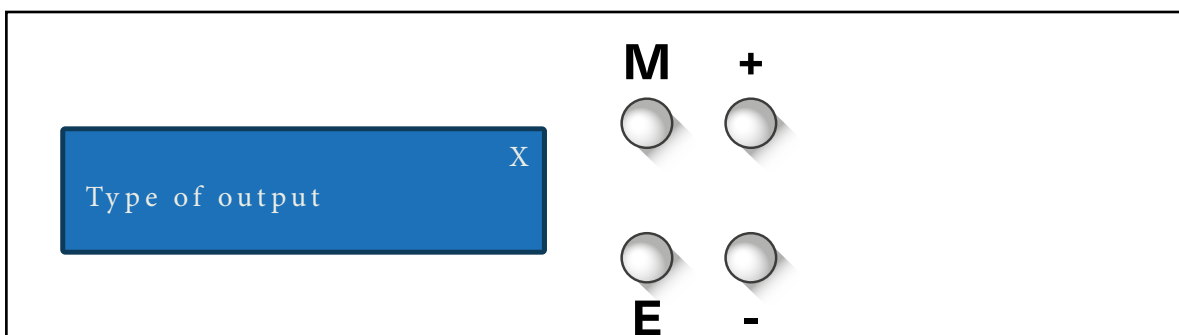
→ Then press the "E" button. Next, a prompt will appear asking for the password. The default password is 0000, then press the "E" button to confirm. Press the "M" button again until you reach the following screen



→ Here, you can use the "+" and "-" buttons to select the desired number of outputs. Once you have selected the correct number, press the "Enter" button to confirm.

Type of output

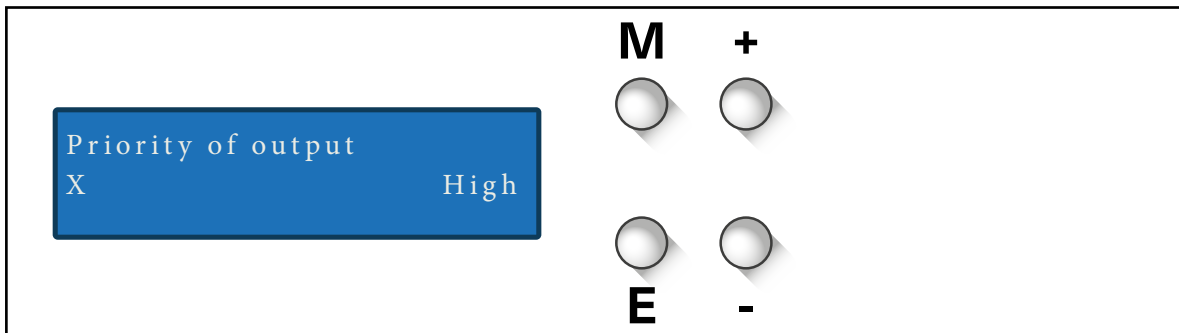
→ Here, you can select whether the output should be reference, emergency, constantly off, or only during mains operation. Complete the previous steps first. Then, press the "M" button until you reach the following screen:



Select which output you want to change by pressing the "+" or "-" buttons, and then press the "E" button to select that output. Once you have selected the output, use the "+" and "-" buttons again to change the type of output. When you have made your selection, press the "E" button to confirm it

Setting priority levels

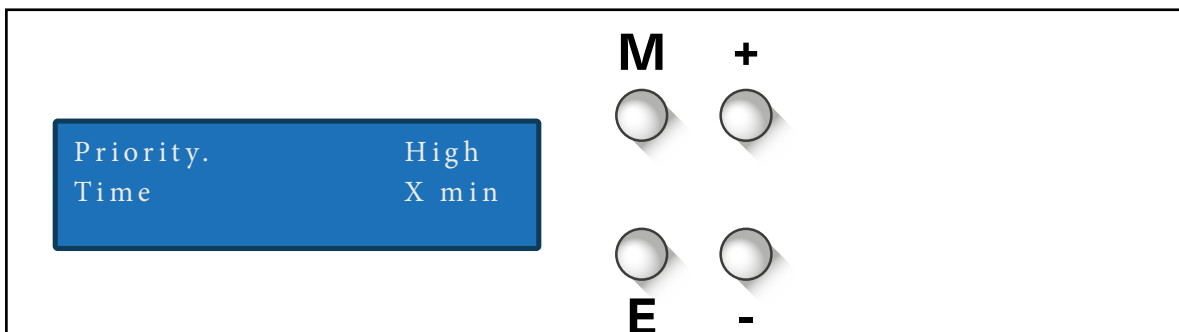
→ Press the "M" button until you reach the following screen:



→ Here, you can select the output you want to change the priority for by using the "+" and "-" buttons and then pressing "E". Once you have selected an output, you can choose the priority level for it using the "+" and "-" buttons and then pressing "E".

Setting the time for the priority levels

→ This is the time that the outputs should have emergency power in case of power failure.
NOTE: Default is 60 minutes! Click on M until you reach the following screen:

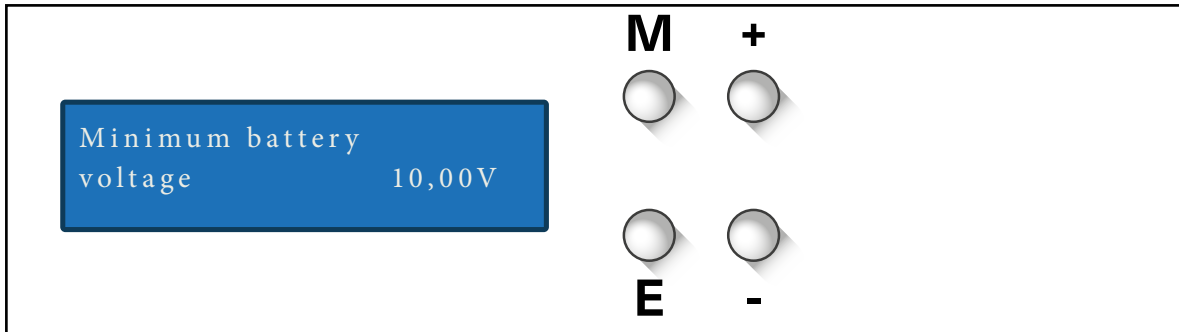


→ Select the output you want to set the time for by using the "+" and "-" buttons and then press "Enter". Use the "+" and "-" buttons to set the time you want for the priority level and then press "Enter" to confirm.

Repeat this process for any other outputs you want to set the time for.

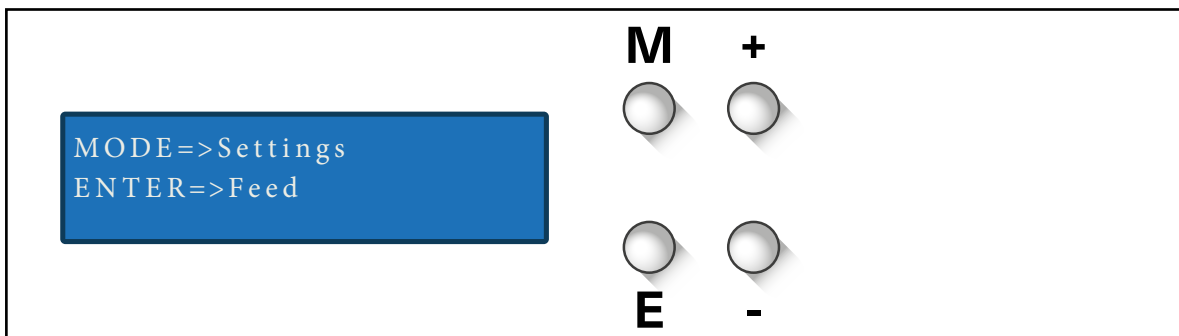
Setting the warning level for low battery voltage

→ The minimum battery voltage is set to warn the system when the battery capacity has dropped.

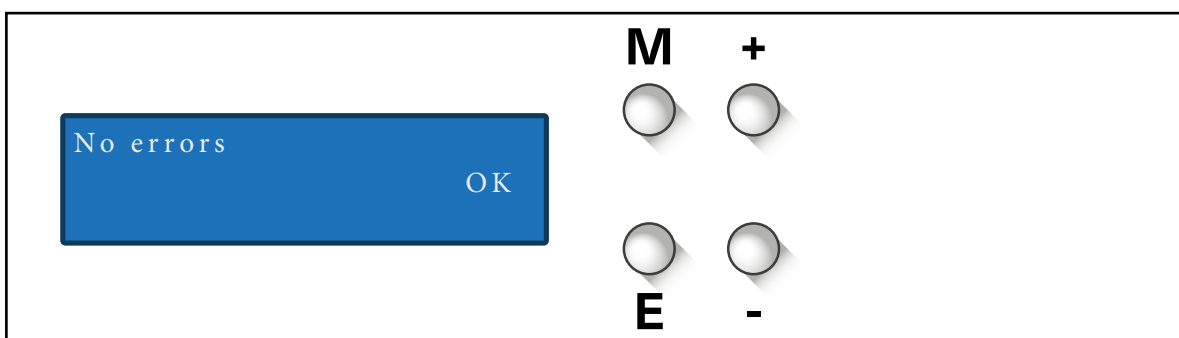


→ Use the + and - buttons to adjust to a suitable level, preferably 22.5V for a 24V battery system. Then confirm the choice by pressing the "E" button

→ Once the settings are completed, exit the menu by clicking on the "M" button until you return to the main view.

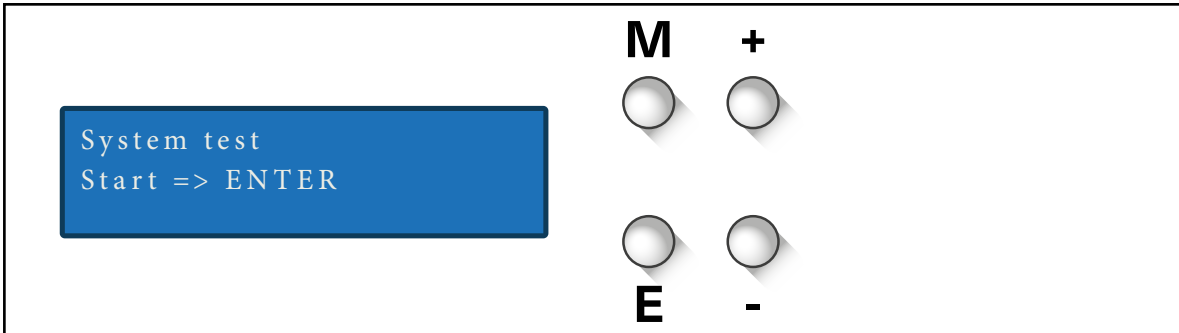


→ Click on "E" to go to the next view. In the next view, click on "M" until you come to a menu that in a faultless system looks like this:



Conduct a full system test

→ This test checks all outputs and their power, to detect if any fixtures are malfunctioning. Click on “M” until you reach the following screen:



→ Click on “E” to start the test.

NOTE: The test must always be performed as soon as the load on any of the outputs has changed!

After following the steps above, the setup is complete, and the product is ready to be used.

6. Schematics

<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			
<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			
<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			
<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			
<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			
<input type="checkbox"/> Exit			
<input type="checkbox"/> Safety			

7. Technical data

Art. nr	Product	In/Out	Battery		Mass	Dimensions
302040	EPS-D V2	150W	230VAC	12Ah	24 kg	400 x 600 x 250 mm
302041	EPS-D V2	400W	230VAC	24Ah	38 kg	400 x 600 x 250 mm
302042	EPS-D V2	600W	230VAC	45Ah	55 kg	400 x 600 x 250 mm
302043	EPS-D V2	1000W	230VAC	65Ah	82 kg	600 x 800 x 300 mm
302044	EPS-D V2	1500W	230VAC	100Ah	100 kg	600 x 800 x 300 mm
302045	EPS-D V2	2000W	230VAC	120Ah	120 kg	600 x 800 x 300 mm

TECHNICAL DATA

	302040	302041	302042	302043	302044	302045
Rated voltage normal operation	230 VAC	230 VAC	230 VAC	230 VAC	230 VAC	230 VAC
Rated frequency normal operation	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Charging time	<15h	<15h	<15h	<15h	<15h	<15h
Lead batteries 10-12 years	2 x12V 12Ah	2 x12V 24Ah	2 x12V 45Ah	2 x12V 65Ah	2 x12V 100Ah	2 x12V 120Ah
Rated operating power emergency operation	150W	400W	600W	1000W	1 500W	2 000W
Operating temperature	-10° - +25° C	-10° - +25° C	-10° - +25° C	-10° - +25° C	-10° - +25° C	-10° - +25° C
Operating time in emergency operation	>1h	>1h	>1h	>1h	>1h	>1h
Protection class	IP 21	IP 21	IP 21	IP 21	IP 21	IP 21
Number of outputs	4	4	4	8	8	8

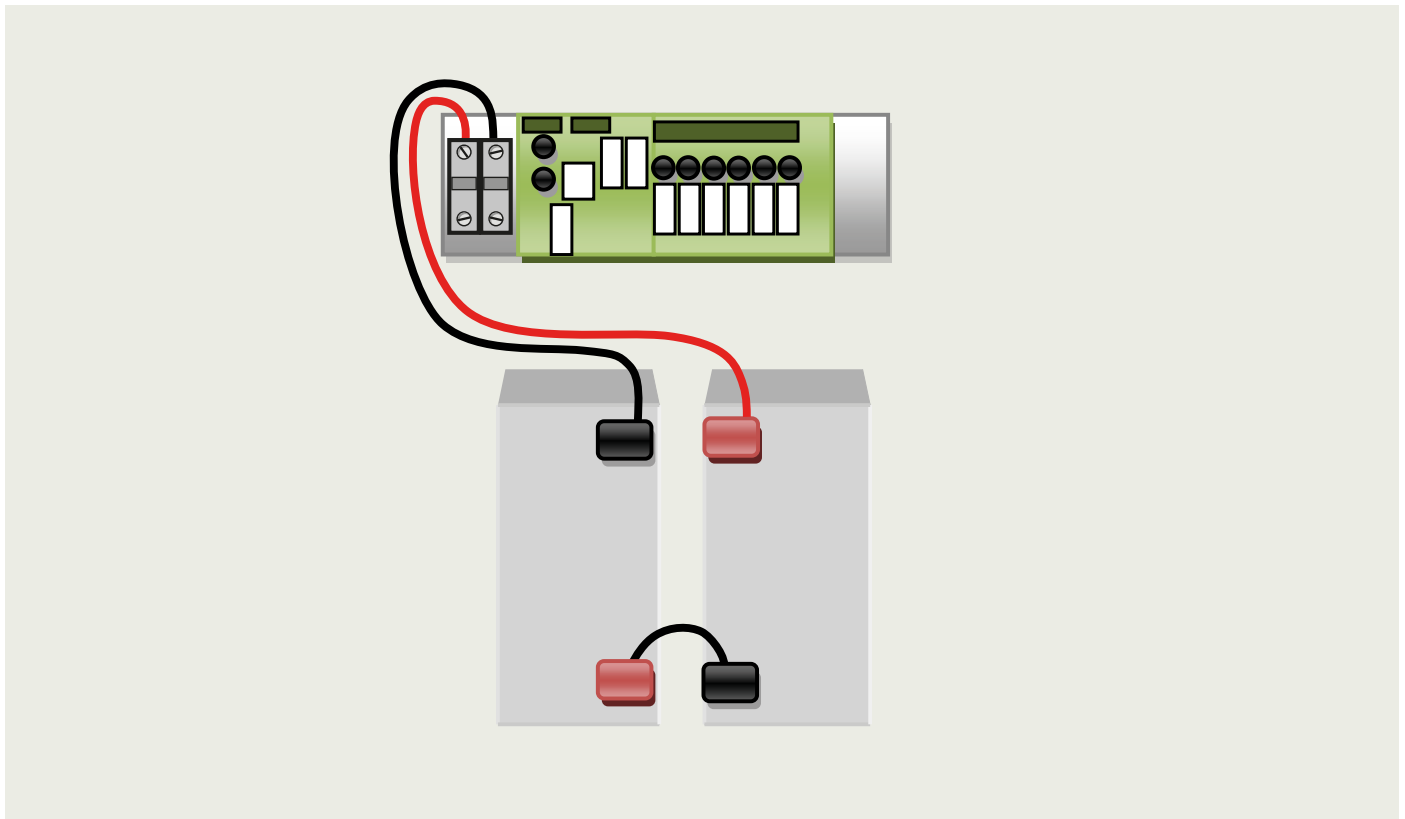
INTERNAL FUSES

Type	F1-1,F1-2 Mains fuse	F2-1 (BLADSÄKRING) Inverter fuse	F1-4 (F1-8) Load fuse	S5,S6 Battery fuse
302040 150W	2 AT	15A	6,3As	10 AT
302041 400W	4 AT	20A	6,3As	16 AT
302042 600W	5AT	30A	6,3As	25 AT
302043 1000W	6AT	5A	6,3As	40AT
302044 1500W	10AT	5A	6,3As	63 AT
302045 2000W	10AT	5A	6,3As	2x40 AT (Bridged)

8. Battery mounting

For service, we recommend batteries as below.

				Battery options	
EPS-D V2	600W	230VAC	45Ah	UPLUS US12-45	Leoch LPC12-45
EPS-D V2	1000W	230VAC	65Ah	UPLUS US12-65	Leoch LPL12-65
EPS-D V2	1500W	230VAC	100Ah	UPLUS USC12-100	Leoch LPL12-100
EPS-D V2	2000W	230VAC	120Ah	UPLUS USC12-120	Leoch LPL12-120



9. Troubleshooting

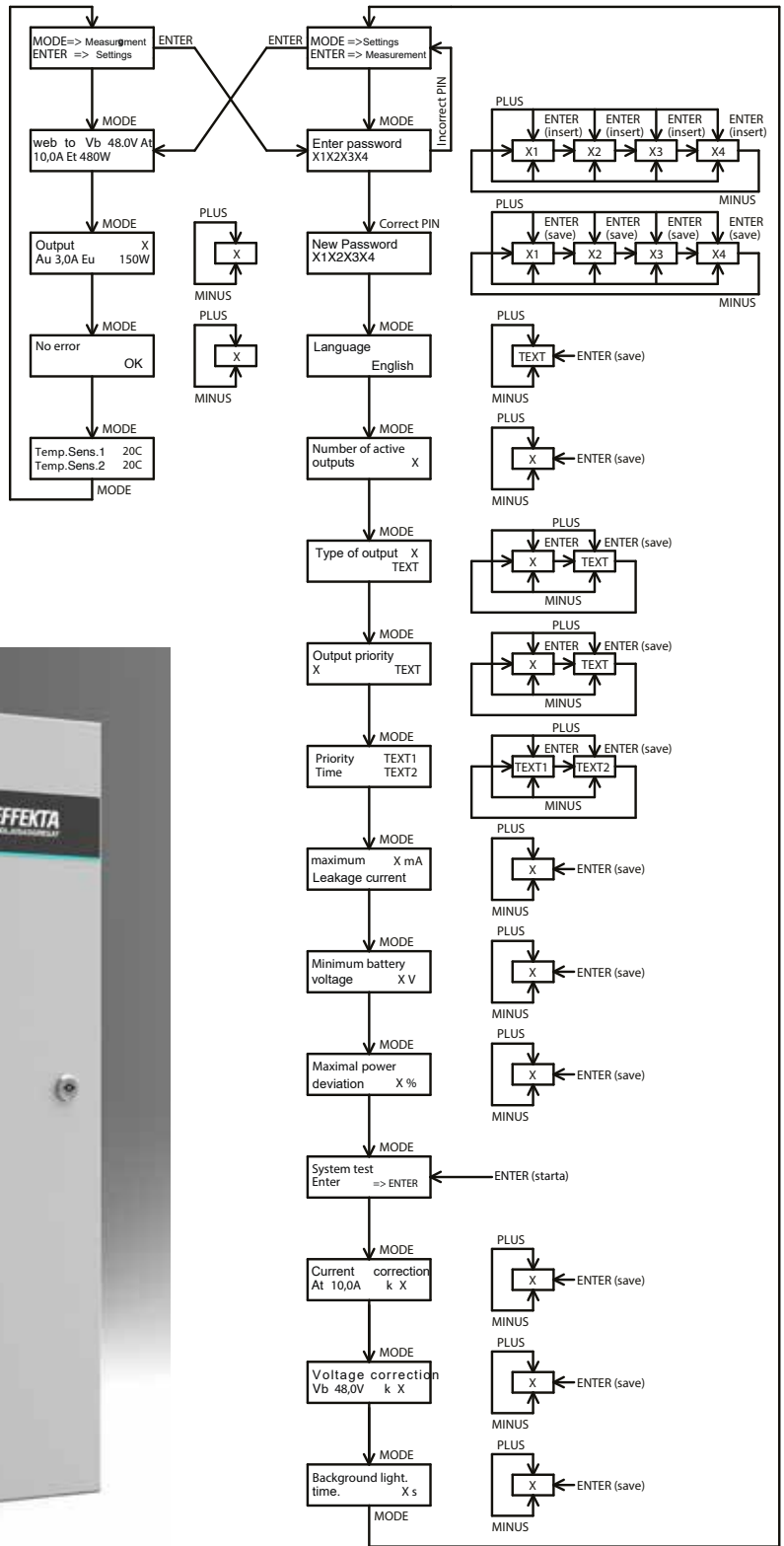
- ➔ **Mains power failure indicated** – check input voltage and primary fuse F1-1, F1-2. Replace fuse if necessary. If the fuse blows again, check the connected equipment.
- ➔ **Low battery voltage alarm** - Check the batteries.
- ➔ **Inverter alarm** – check the input voltage to the inverter module. If there is 24VDC input voltage to the inverter, check the output voltage which should be 230VAC. If input voltage is present and output voltage is missing – turn off the switch on the right side of the inverter, wait 20 seconds and turn it on again. If the problem persists, replace the inverter module
- ➔ **Inverter alarm and the unit is beeping** – conduct troubleshooting according to text above

10. Menu tree

➔ Menu tree as shown in figure.

! If you change the power at any output, a system test must be carried out!

i ON/OFF This is only for restarting the device, a complete test is not performed.



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