

Operating manual

UPS - System

POWERMASTER *M* MIL

1000VA – 7Min.

BAX 3330 E

UPS-Division

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communications

JOVYATLAS

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Relevant information!

Please read this manual thoroughly before installation.

Pay attention to each relevant information especially the specific comments on the separate chapters. Careful reading will avoid malfunctions of the device later on.

If there is any problem please contact our service - division.

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1. General information

Relevant information!

To prevent self discharging of the batteries you have to connect the UPS to mains and put it into operation within four weeks after receipt!

Attention!

The batteries built-in in this system are designed for the necessary bridging time at nominal load of the UPS. A no-load running operation of the UPS with a long time in battery operation could led to battery damages. This effect is determined by the technique of the battery, as the cut-off voltage will not be reached at a long discharging time.

Only qualified personal is allowed to open the UPS.

The connection of the UPS has to be done according to VDE considering the local rules.

Don't cover the ventilation slots at backside of the UPS. Keep a distance to the surrounding walls of at least 100 mm.

The UPS is built up according to protection class **IP21** and has to be installed in dry and clean rooms with a surrounding temperature of 20 °C. A lower operation temperature would decrease the autonomy time.

Don't connect devices with connection-cables exceeding the length of **10 meters**. This measure serves for the observance of the EMV-norm.

It's not allowed to carry out structural changes on the UPS. Improper operation causes the extinction of warranty.

Attention:

To prevent overload or a frequent switch-over to bypass mains caused by non-sinusoidal current peaks of the connected loads you shouldn't connect laser printer, faxes or similar devices to the UPS.

If it's necessary to connect such devices to the UPS, you have to choose an UPS with a higher nominal power than the maximum of the current spikes.

The power semiconductors of the UPS could be immediately destroyed by the connection of loads with a half-sinusoidal rectifier.

The battery isn't galvanic isolated from the mains, so it's possible that there is mains-potential at the battery-terminals!

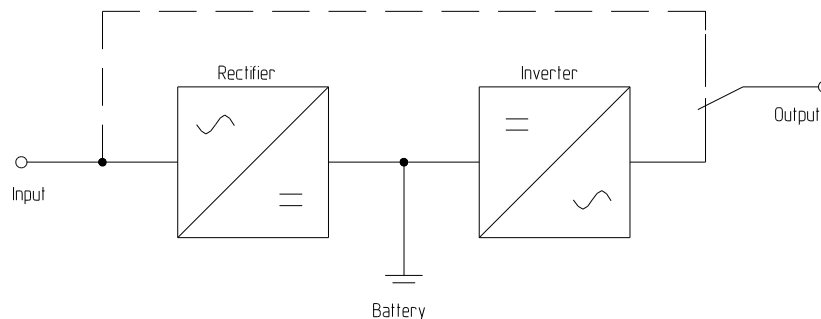
2. Description of the system

This power supply system out of the **POWERMASTER M** series is an especially build ups for ship use. The ups is qualified for power supply of important consumers in ship use, such as personal computer, computer-controlled devices and similar units. The output voltage is sinusoidal. In normal operation the connected load is fed in online operation by the mains through the internal rectifier and inverter. Mains disturbances such as voltage-variations, distortions, noise etc. are filtered. The internal battery is permanently charged in a careful way by the charging rectifier in trickle charge mode

3. Description of the functions

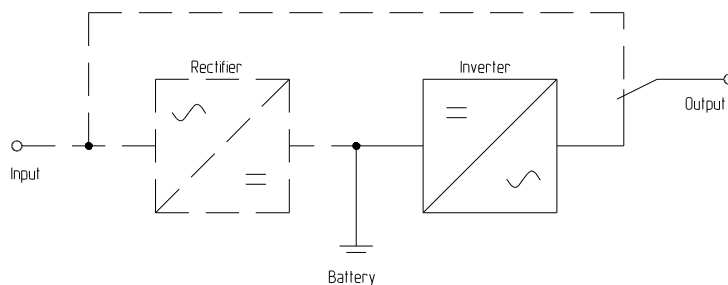
Normal operation

In normal operation the battery and the inverter are fed by the rectifier (online-operation). The conversion of the AC-voltage into DC-voltage and back into AC-voltage ensures a sinusoidal output voltage with a low distortion. The DC-voltage is also necessary for the battery-charging. The inverter feeds the connected loads.



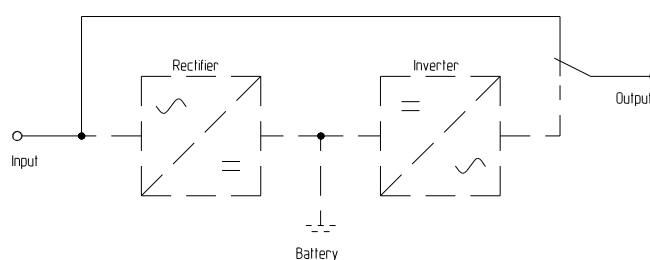
Mains failure

In case of mains failure the inverter is fed by the battery. At the output the output voltage of the inverter is still available.



Inverter failure or overload

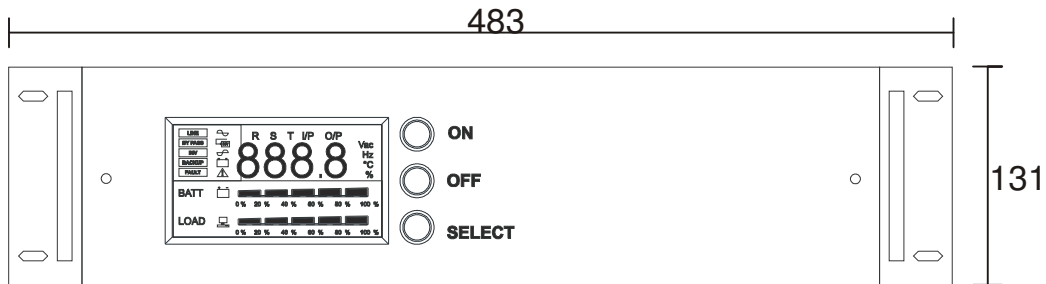
In case of inverter failure or overload the load is switched back to the mains. In case of mains failure the consumers are not supplied in that case any longer.



4. Technical data

POWERMASTER	S 1000-7-115
Input Voltage	115V (80V ... 138V)
Input power factor	cos ϕ : 0,98
Frequency	50Hz / 60Hz \pm 5%
Current at 115V	12,4A
Required fuse	C20A C-Automatic
Battery voltage	36V
Output power	1000VA
Affective power	700W
Efficency INV	85%
Output voltage	115V (sinuswave)
Output power factor	cos ϕ : 0,7
Frequency	50Hz / 60Hz \pm 0.5%
Distorsion	< 3% (at linear Load)
Overload capability	>105% for 10s /> 130% for 300ms
Crest Factor	3 : 1
Operation mode	Online
Signalisation	Data processing interface
Radio interference degree	Acc. EN 50091-2 : 1994 Klasse B
According to the rules of	CE, EN, IEC, VDE
Loudness	< 45 dBA
Temperature	0°C ... 55°C If temperature is exceeding 55°C the ups will switch to bypass, the load is now not buffered by battery
Humidity	Max. 95% non condensing
Dimension (mm)	
Width	483 (19-Inch)
Height	131
Depth	404
Weight (kg) (incl. Battery)	22

5.1 Front view POWERMASTER M – series 115V



technical modifications are possible

5.2 Back view POWERMASTER M – series 115V

Attention in this case the main input plug and the load output plug are modified in that way that there are special input socket and output socket are used on the rear side of the ups.

6. Electrical connection

Attention!

Only qualified personnel is allowed to work on the UPS-system.

The respective safety regulations have to be considered.

The labeling of the conductors has to be made according DIN40705,2.80 and DIN-EN60445,09.91!

Ensure a sufficient dimensioning of the protective conductor connection!

Attention!

During works on the battery dangerous situations may arise caused by the high dc-voltage and the high short circuit currents. Therefore works on the system may be carried out only by using suited protective measures, such as insulated tools, face- and hands protection and so on.

6.1 Electrical Connection of the UPS-system

At the UPS-system **POWERMASTER m 1000** all connections are located on the rear side of the ups and are fixed.

6.2 Commissioning of the UPS-system

The mains input has to be connected to plug U9:B1 at the rear of the UPS and the load has to be connected to plug U9:B3. The communication cable has to be connected to plug U9:B2. The ups starts only by connecting the ups to the mains and switching on the **ON** button at the front of the ups, for 2 seconds continuously.

In case of a lightening bar graph at the battery display you have to press down the mains switch **ON** for 2 seconds.

ONLY FOR 115V – SERIES:

After a short initialization of approx. 5 sec. the following LED's are lightening:

- **LINE** (input mains)
- **BYPASS** (direct bypass onto the input mains)
- **LOAD** (load of the UPS in %)
- **BATTERY** (battery state in %)

After approx. 5 seconds further on the announcement

- **INV (inverter)** appears.

The signal **BYPASS** goes out. The consumer plug backsides the UPS is fed by the inverter now.

For controlling its correct functioning, disconnect the UPS from the mains, **but don't switch it off**. Now the message **LINE** extinguishes and the messages **INV** and **BACKUP** are lightening.

The consumer plug is fed by the inverter which is supplied by the battery. As soon as you'll connect the UPS to the mains again, the messages **LINE** and **INV** will lighten up again and the **BACKUP**-announcement goes out.

Attention!

After controlling the correct operation of all functions the UPS is ready for servicing the connected consumers!

Now you can connect the consumers which have to be powered onto the consumer plug at the rear of the UPS. After that switch-on the UPS and wait until the inverter (INV) has switched-on again. After that you have to switch-on the consumers.

During the connection of devices with fans or transformers, it is possible that the UPS switches over onto bypass-operation **BYPASS** because of the high initial currents of the connected loads. That's a normal occurring, the UPS gets back to inverter operation **INV** after a few seconds.

If you recognize deviations please contact us (see also page 2).

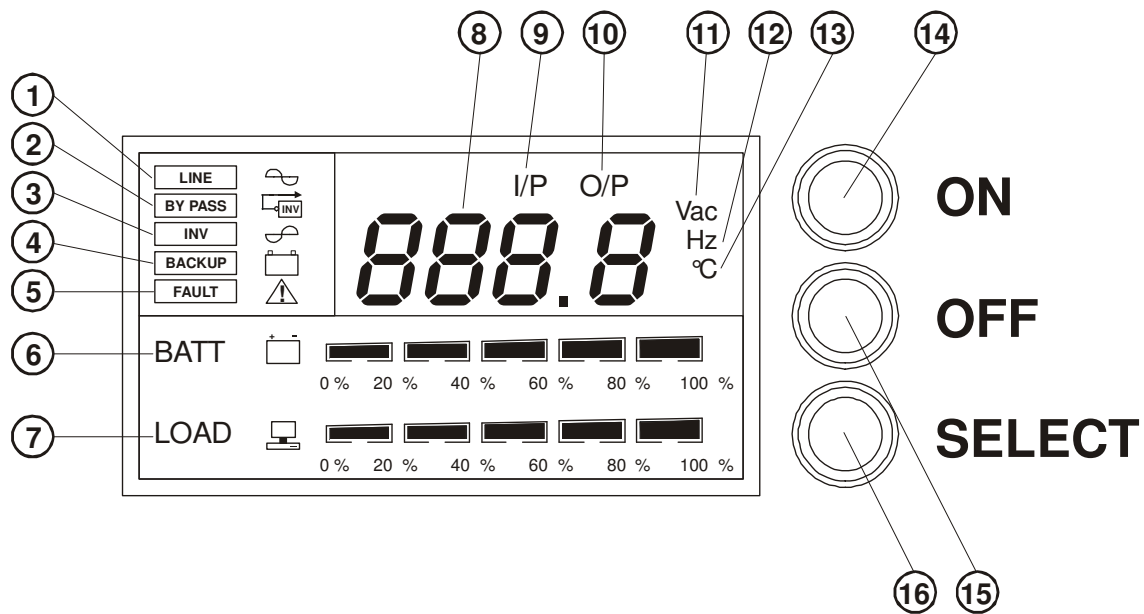
6.3 Shut-down of the UPS-system

To switch – off the UPS, please press the off – button in front of the ups, the ups will be initialized again and the message 8888 is shown in the display, the load is still supplied by the ups.

To switch-off the complete UPS, please switch off the mains.

For the system **POWERMASTER m 1000** you have to switch-off the mains voltage. After that you have to press down the mains switch of the UPS OFF.

7. Operating and display elements for 115V - Series

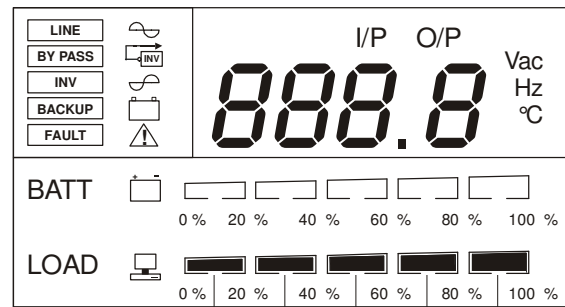


position	display	Function of the display
1	LINE	Input mains is connected
2	BYPASS	Overloaded UPS
3	INV	Inverter operation (normal operation)
4	BACKUP	Autonomy operation
5	FAULT	UPS failure + fault signal shown at the display
6	BATT	state of battery charge
7	LOAD	Loading of the UPS-system
8	<i>888.8</i>	Digital display of the data
9	I/P	Display in connection with the input data
10	O/P	Display in connection with the output data
11	Vac	Display in connection with the input/ output voltage
12	Hz	Display in connection with the input/ output frequency
13	°C	Temperature of the UPS – system
14	ON	Switch-on of the UPS-system
15	OFF	Switch-off the UPS-system
16	SELECT	Selector switch of the functions

Technical deviations may occur

7.1 Display of the loading of the UPS-system for 115V - Series

The display of the UPS shows the actual state of the loading. The loading is shown through five segments.



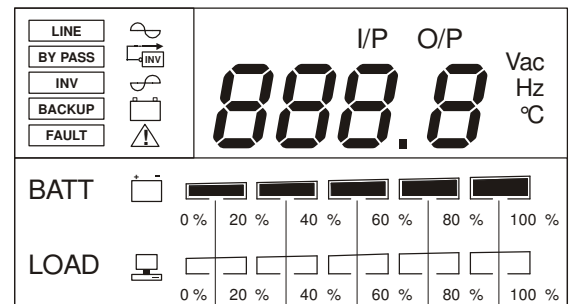
1. loading of the UPS amounts to 0% - 20%
2. loading of the UPS amounts to 21% - 40%
3. loading of the UPS amounts to 41% - 60%
4. loading of the UPS amounts to 61% - 80%
5. loading of the UPS amounts to 81% - 100%

Relevant information!

The interval cheeping sound and blinking of the loading display are the indication for overloading of the UPS. The UPS switches – off automatically onto bypass operation!

7.2 Display of the charge state of the batteries for 115V - Series

At the display of the UPS the actual charge state of the system is shown through a segment display



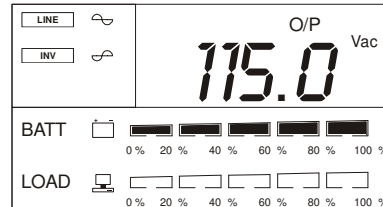
1. loading of the battery amounts to 0% - 20%
2. loading of the battery amounts to 21% - 40%
3. loading of the battery amounts to 41% - 60%
4. loading of the battery amounts to 61% - 80%
5. loading of the battery amounts to 81% - 100%

7.3 Handling of the panel for 115V - Series

By pressing the **SELECT** push button the actual Input and output parameters were displayed. For a display of the different parameters one after another you have to press down the push button **SELECT** durably. You've to release the push button **SELECT** when the display shows the parameter you've asked for. The following input and output parameters can be displayed.

1. Output voltage

115V

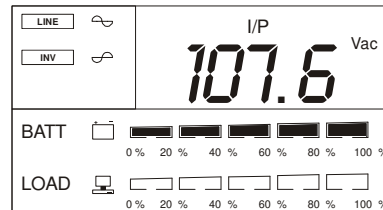


2. input voltage

normally: 1 x 115V

tolerance: 80V - 138V

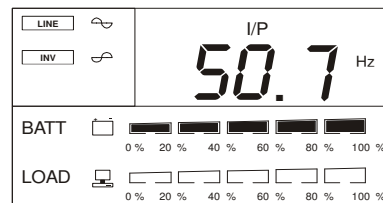
critical range: <138V



3. input frequency

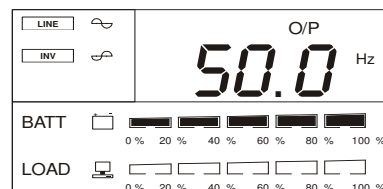
normally: 50Hz or 60Hz \pm 3Hz

critical range: <37,5Hz / >82,5Hz



4. output frequency

normal: 50Hz or 60Hz \pm 3Hz

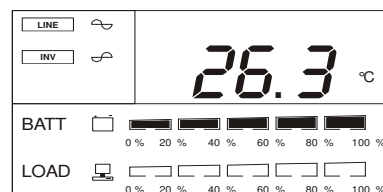


5. Temperature

The temperature is dependent on the loading and on the surrounding temperature of the UPS-system.

Critical range: > 55 °C

In this case the ups will switch to bypass the load isn't buffered by the ups until the temperatue will be less then 55 °C.



8. Alarm messages for 115V - Series

8.1 Displayed alarm messages for 115V - Series

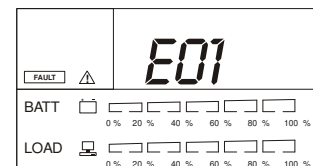
The display of the UPS is designed to send out 7 messages.

Attention!

These alarm messages can't be reset without a complete switch-off of the UPS-system. Please contact our service department in case of alarms like these.

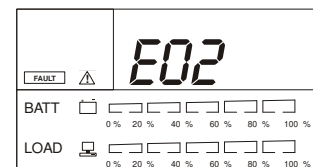
E01 : Inverter failure

The alarm Message E01 will be shown at the display and the connected load is supplied through the internal bypass further on.



E02 : Overtemperature

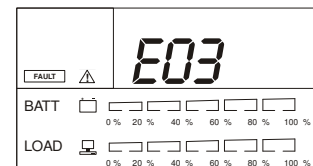
The alarm E02 will be shown at the display and the connected load is supplied through the internal bypass further on.



E03 : Short circuit on the part of the output

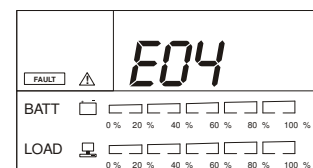
In case of this fault the UPS-system switches off immediately .
„The existing load won't be supplied any longer“.

The alarm message E03 will be shown at the display



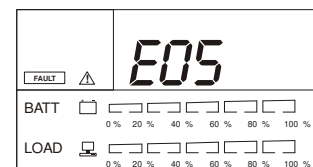
E04 : Overloading of the UPS-system

The alarm E04 will be shown at the display and the connected load is supplied through the internal bypass further on.



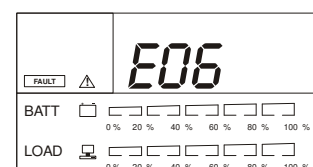
E05 : Misvoltage (>400VDC) on the part of the d.c.voltage

The alarm E05 will be shown at the display and the connected load is supplied through the internal bypass further on.



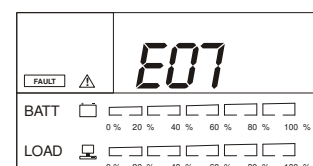
E06 : Misvoltage of the battery (voltage higher than 280V_{DC})

The alarm E06 will be shown at the display and the connected load is supplied through the internal bypass further on.



E07 : Battery voltage is too high or too low

The alarm E07 will be shown at the display and the connected load is supplied through the internal bypass further on



8.2 Reset of the alarm messages for 115V – Series

The alarm messages can't be reset without switching off the UPS-system completely.

- Switch off the complete load at the consumer distribution pole of the UPS.

Attention

High relevant devices and so on won't be supplied further on. If it's still necessary to supply them by the UPS, there has to be installed an external bypass to feed the loads during a failure or servicing of the UPS further on.

- Switch off the UPS-systems **POWERMASTER m 1000** through removing the input mains of the device. Than you have to press down the push button **OFF** in front of the display for 2 seconds. After a delay of 5 seconds the UPS-system will switch-off completely.
- In case of no success please contact our service-department.

8.3 Acoustical alarms (deactivated) and troubleshooting for 115V - Series

The symbol **LINE** at the display is out and the symbols **INV** and **BACKUP** are lightening.

- Failure of the mains (input mains of the UPS-system)

Measure: Check the line from the terminals to the UPS-system and control the mains fuses of the domestic installation

- The symbol **INV** is out, the symbol **BYPASS** is on and the load indication is flashing:
The UPS is overloaded.

Measure: Decrease the loading of the UPS-system by switching-off separate consumers.

Attention!

To protect the batteries the UPS-system switches-off at the moment the adjusted battery cut-off voltage is reached. Thereby the system is completely released. In case of mains returning the UPS-system returns automatically into the normal operation state.

9. Remote control for 115V - Series

The UPS possesses a signal output at the rear side of the ups.

The serial interface serves to the data transfer between a PC and the UPS.

Even the inspection of the UPS can be done by PC. In case of mains failure the switch-off of the UPS is possible.

Pin holding of the data transfer interface

PIN	Description of the function	input / output	Contact rating
A	Reference earth for PIN B + C	output	TTL – Logic
B	RS 232 data output TX	output	TTL – Logic
C	Remote shutdown RX	output	TTL – Logic
D	Battery low, Battery discharged	input	TTL – Logic
E	Mains failure	input	TTL – Logic
F	Reference earth for PIN D + E (RTN)	input	TTL - Logic

Technical deviations are possible

10. Maintenance

In case of longer standstill of the UPS (≥ 4 weeks) the battery has to be charged monthly. For this charging you only have to connect the UPS to the mains for a charging time of at least 8 hours.

However we recommend a charging time for about 24 hours.

The battery in its standard version is maintenance-free. Please note the hints of the battery-manufacturer in case of using a special battery.

The ventilation slot at the backside of the UPS has to be clean, without any dust or something soiling to prevent a reduced air-exchange. Please observe the necessary distance to surrounding walls of at least 100 mm.

Half a year you have to check up the perfect function of the UPS. Therefore you have to disconnect the UPS from the mains with connected load / consumers.

We recommend the use of a remote control system in case of UPS systems which can't be controlled directly.