

INSTRUCTION MANUAL



INSTRUCTION MANUAL POWERLINE 31



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INTRODUCTION

Thank you for purchasing the EVER POWERLINE power supply unit. It is the latest series of a state-of-the-art power supply units that are dedicated to servers, computer networks and data processing systems.

UPS EVER POWERLINE has been designed to meet all of your expectations related to protection against power outages in the best way.

This manual contains information on how to operate and maintain the unit safely. Thoroughly familiarise yourself with the EVER POWERLINE manual before first use to ensure that it is operated properly.

GENERAL INFORMATION

INTENDED APPLICATION OF THE POWER SUPPLY UNIT

POWERLINE units are on-line (VFI) devices that are intended to work with equipment powered from a ~230V single-phase grid.



NOTE! POWERLINE power supply units are not intended for use with medical equipment to support life and/or health.

GENERAL DESCRIPTION OF THE POWER SUPPLY UNIT

POWERLINE power supply units have the following components:

- rectifiers with PFC (power factor correction),
- battery charger,
- battery set,
- inverter manufactured with high-frequency IGBT technology,
- automatic bypass,
- manual (service mode) bypass,
- microprocessor control system with measurement circuits.

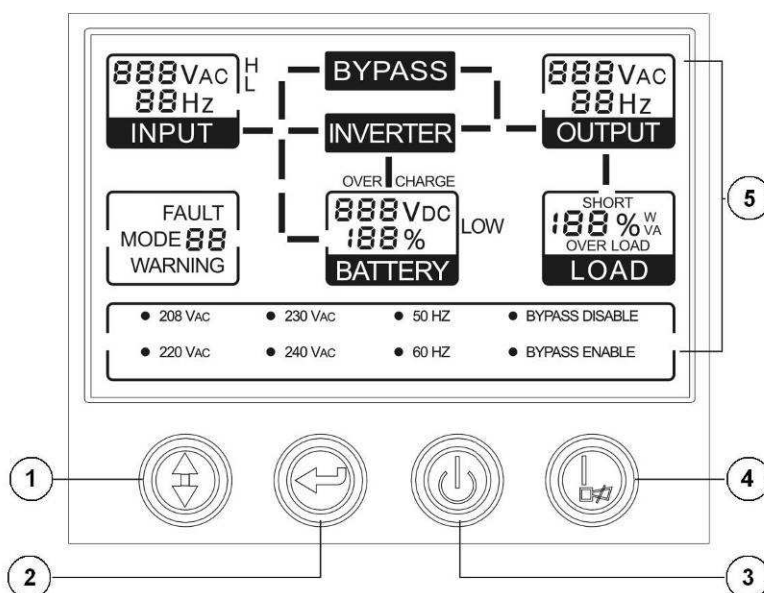
The input rectifies transforms the alternating voltage energy and supplies energy to the internal DC bus. The power factor correction (PFC) system used in the unit enables radical reduction in interference introduced to the power network. The DC bus is the basic power source for the inverter that generates alternating sine wave current that is used to feed the receivers. An independent charger is responsible for battery charging. It is characterised by very low alternating charging current component

which significantly extends battery life. A microprocessor control system (DSP) ensures precision and reliability of the entire power supply system.

An automated bypass system increases the overall system security. In the event of inverter failure, the current from the mains is provided directly to the load. The automated bypass system thus becomes an additional passive safeguard of the load. An additional manual bypass connection enables the complete switch of the load to the mains and in consequence service and maintenance works. Internal power circuits (except for the protected manual system) may be activated via an input fuse.

UPS STRUCTURE

FRONT PANEL

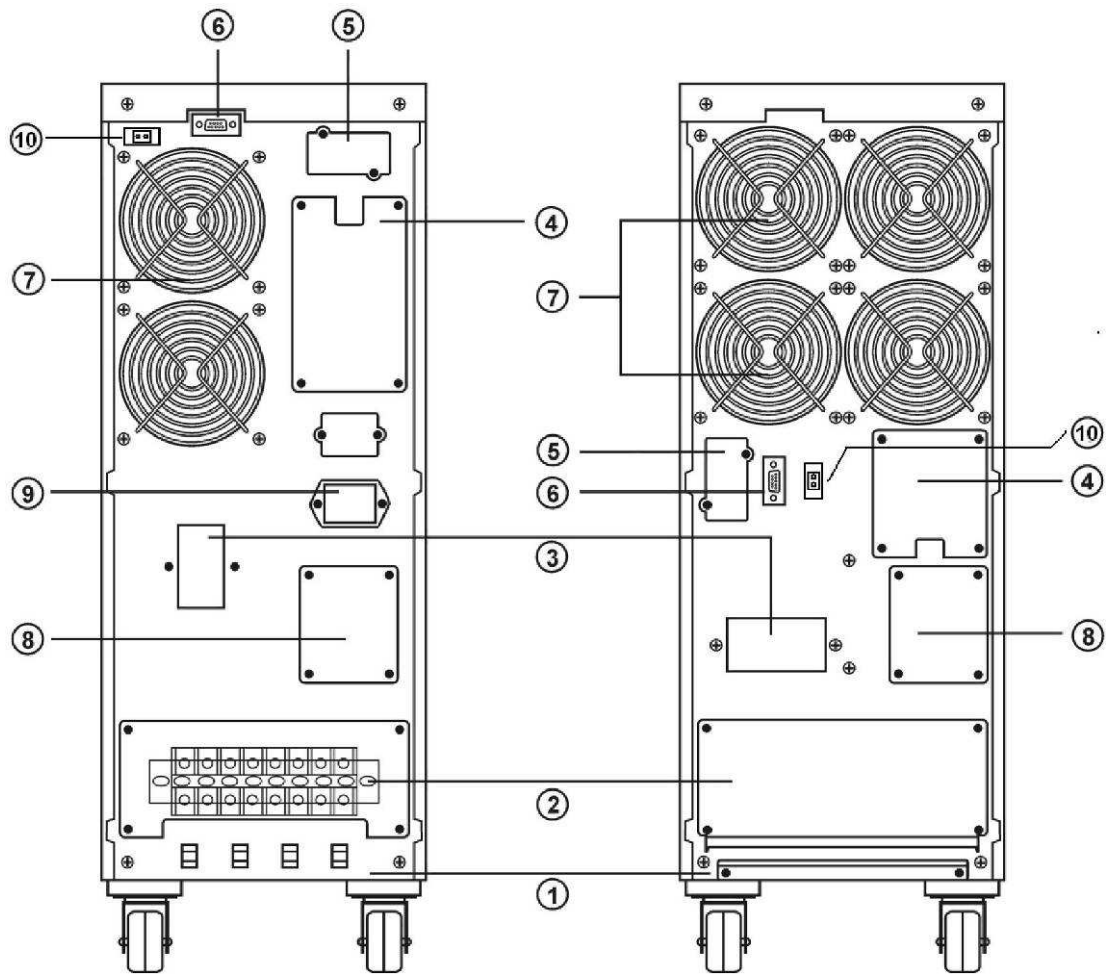


No.	Symbol	Name	Description
1		SELECT	If the unit is in BYPASS mode or zero mode (STANDBY), pressing this button allows you to configure the unit's parameters: output voltage, frequency, BYPASS mode options. To approve the selection, press ENTER (2)
2		ENTER	If the unit is in BYPASS mode, parameters set by means of the SELECT key may be approved by pressing ENTER.
3		OFF	When the power supply is regular, pressing the OFF button causes the unit to switch to BYPASS mode and turns off the inverter. If the BYPASS mode option is available, the outlet is powered from the BYPASS line
4		ON	Turns the unit on Deactivates sound alarms.
5	-	LCD	LCD

Display	Description
Input*	
888 VAC	Input voltage value
88 Hz	Input voltage frequency
H	Indicates excessively high input voltage; not displayed if the voltage is regular
L	Indicates excessively low input voltage; not displayed if the voltage is regular
Output	
888 VAC	Output voltage value
88 Hz	Output voltage frequency
Load	
188 % ^W / _{VA}	Unit load in W or VA
SHORT	Indicates short-circuit of the unit's output
OVER LOAD	Indicates unit overload
Storage cells	
888 V _{DC}	Storage cells voltage value
188 %	Charge level of storage cells
OVER CHARGE	Indicates overload of the storage cells; the unit will switch to battery mode
LOW	Indicates that the storage cells are discharged; the unit will soon switch off
Mode/Error/Warning	
FAULT MODE 88 WARNING	Displays the unit's mode, error codes and warnings
Inverter	
INVERTER	Indicates the operational status of the inverter
Bypass	
BYPASS	Indicates the operational status of the BYPASS circuits
Output voltage, frequency, BYPASS mode option	
208 VAC 230 VAC	If the unit is in STANDBY or BYPASS mode, one of the four output voltage values may be selected
220 VAC 240 VAC	
50 HZ	If the unit is in STANDBY or BYPASS mode, one of the two input voltage frequency values may be selected
60 HZ	
BYPASS DISABLE	If the unit is in STANDBY or BYPASS mode, one of the two BYPASS mode options may be selected
BYPASS ENABLE	

*For POWERLINE 10-31 power supply units, the information applies to phase C and for POWERLINE 15-31 power supply units the information applies to phase A.

BACK PANEL



Back panel view for POWERLINE 10-31 and POWERLINE 15-31/20-31 power supply units

- 1 - Wire holders
- 2 - Power network and receiving terminal panel shield
- 3 - Input protection
- 4 - Parallel port (option)
- 5 - Adapter card (option)
- 6 - RS 232 communication port
- 7 - Fans
- 8 - Service BYPASS switch shield
- 9 - Battery pack socket
- 10 - EPO connector

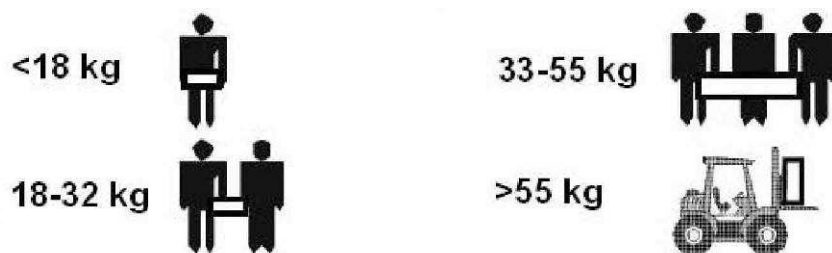
INDUSTRIAL WORK SAFETY INSTRUCTIONS

TRANSPORT

- Due to the considerable weight of the device, it is necessary to exercise particular care when transporting it;
- The UPS units must be transported in a vertical position;
- The equipment must be protected against atmospheric conditions (shielded against rain);
- Transport or storage in temperatures lower than 0°C and higher than 25°C for extended periods is inadvisable, as it may impair the life of the batteries and facilitate the condensation of water vapour;
- The considerable weight and overall dimensions of the equipment make it necessary to ensure the appropriate transport conditions (the requisite number of people, a forklift truck, and transport corridor);

	NOTE! Should you observe any damage that may impact the correct functioning of the equipment, please contact the Service Centre.
---	---

- Heavy appliances must be moved by at least two or more persons;



- The device should be operated and stored in conditions concordant with those set in the device specification;

	NOTE! POWERLINE UPS units may be transported, installed, and maintained only by qualified personnel.
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	NOTE! Exercise particular care during the transport, unloading and installation of the equipment
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ELECTRICAL SAFETY

- it is forbidden to work on your own under conditions constituting a threat to life and/or health;
- in the event of a brief short-circuit, the high current may cause serious burns;
- before connecting the device, it is necessary to check the technical condition of the cables, plugs and sockets, as well as that of the device itself;
- to reduce the risk of electric shock, when it is impossible to check the earthing, the device should be disconnected from the mains before installation or connection to other equipment and then the power supply cord should be connected again after all the connections are made;
- if possible, only use one hand when connecting and disconnecting the signal transmitting cables in order to avoid potential electric shock when two surfaces of the opposite charge touch;
- the device must be plugged with the system containing a protective line. Failure to comply with this requirement can lead to electric shock;
- the installation must enable the total disconnection of the power source from the UPS unit, for example by switching the fuse type "S";
- a current receiver must be connected with the appropriate circuit protection (manual or automatic fuse);
- the device is fitted with the earth conductor that channels leak current from receivers (e.g. computer hardware); Differential protection should take this aspect into account;

	NOTE! The receiving line of the emergency supply system should be equipped with a (remotely) controlled safety cut-out (EPO - Emergency Power Off) located near the main power switch and marked properly.
	NOTE! It is strictly forbidden for the user to perform any repair work, as this would constitute a threat to health and/or life. All repairs and battery replacements must be carried out exclusively by qualified service personnel.

	NOTE! The UPS is completely disconnected from the power network only when the power supply cord is disconnected.
	NOTE! The device is equipped with a power source (external batteries). The device's output may be live, even if the mains is disconnected from the network.
	NOTE! POWERLINE power supply units are not intended for use with medical equipment to support life and/or health.

INSTALLATION

	NOTE! Before installing the UPS, you must acquaint yourself with the principles of industrial work safety as set forward in the previous chapter.
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UNPACKING

Inspect the power supply unit visually immediately upon its delivery. Although the product is solidly packaged, the appliance could have been damaged due to shocks experienced during transport. If any damage is discovered, inform the carrier or seller.

The power supply unit is packed in a way that ensures safe transport (including transport by a forklift). To unpack the device, it is necessary to:

- carefully cut the affixing bands;
- lift the released cardboard shield;
- remove the foam transport protection;
- the power supply unit should be removed from a wooden transport pallet and placed on the floor following Health and Safety instructions (assistance of several people might be necessary);
- the power supply unit should be placed at the point of installation using transport wheels;
- the transport wheels should be blocked.

Save the packaging for future transport.

Check the contents of the packaging. The packaging should contain the following:

- power supply unit,
- 1 RS 232 communication cable,
- user manual,
- warranty card.

ASSEMBLY

- When selecting the place of installation, consider the weight of the device:



NOTE! The user is responsible for selecting the place of installation and ensuring the appropriate operating conditions for the equipment.

- It is recommended to install the UPS unit in a separate room (due to the fact that the unit emits a uniform sound during operation, and also because such a location provides protection against access by unauthorised persons);
- The equipment should not be exposed to extremes of temperature (the optimal temperature is $18 \div 25^{\circ}\text{C}$) due to the fact that this may shorten the life of batteries;
- The equipment should not be installed in rooms that are: dusty, have a caustic or explosive atmosphere, or are very humid (under 90% without condensation);
- If the equipment is to be installed on a roof, the load bearing capacity of the roof should be taken into consideration;
- The surface on which the equipment is placed cannot give in under its weight;
- Appropriate cooling conditions must be ensured for the UPS to work properly. For this reason, the ventilation openings of the UPS must be uncovered at all times;
- It is recommended to leave service access to the equipment (1 m).

For the necessary data, see the table of technical parameters.



NOTE! It is forbidden to install the device near flammable materials!

CONNECTING THE UPS

The connected load must meet the requirements on the wire sizes and the protection systems installed (the table of technical parameters).

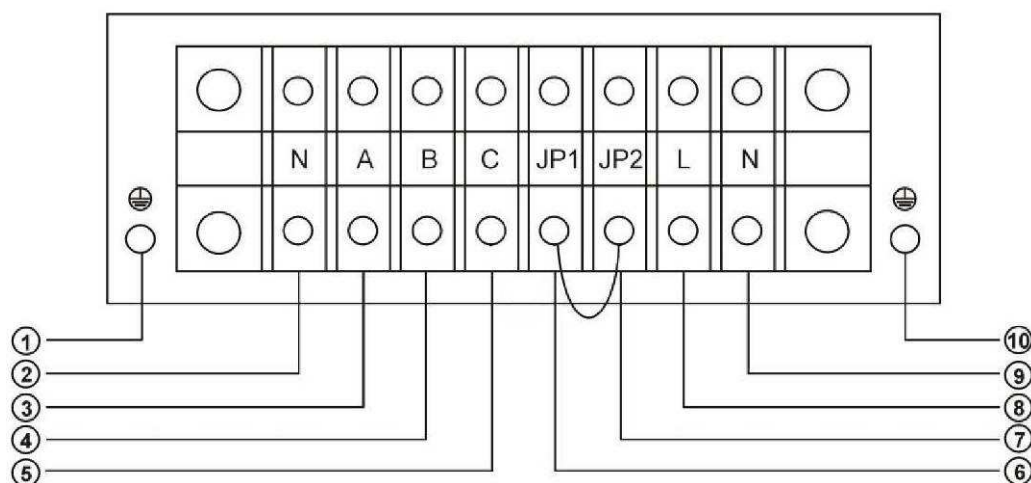
	NOTE! The UPS should be connected by qualified and authorised personnel only.
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	NOTE! The UPS is completely disconnected from the mains only when the power supply cord is disconnected.
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It is recommended for the protection systems in the building's electric system to be used as one of the measures of protection. The parameters of the building's electric wiring system protection should be selected in accordance with the type and value of the load connected to the wiring system (the table of technical parameters).

Input system / output system

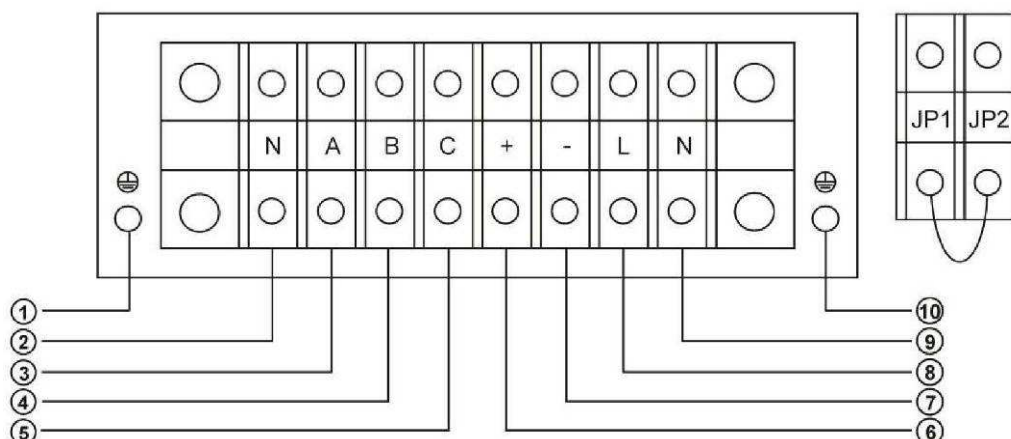
Input system/output system – POWERLINE 1-31 power supply units



- 1 - Power supply line PE protection wire
- 2 - Power supply line neutral N wire
- 3 - Power supply line phase A wire
- 4 - Power supply line phase B wire
- 5 - Power supply line phase C wire

- 6 - Jumper (parallel work option)
- 7 - Jumper (parallel work option)
- 8 - Output line phase L wire
- 9 - Output line neutral N wire
- 10 - Output line protection PE wire

POWERLINE 15-31 and POWERLINE 20-31 power supply units



1 - Power supply line PE protection wire

2 - Power supply line neutral N wire

3 - Power supply line phase A wire

4 - Power supply line phase B wire

5 - Power supply line phase C wire

6 - Battery positive terminal

7 - Battery negative terminal

8 - Output line phase L wire

9 - Output line neutral N wire

10 - Output line protection PE wire

JP1 - Jumper (parallel work option)

JP2 - Jumper (parallel work option)

FIRST START-UP

During the first start-up, it might be necessary to leave the UPS connected to the mains to charge the batteries. To do that, just connect the input power supply lines. UPS will charge the batteries regardless of the operating mode (ONLINE - UPS is activated, the inverter is working or OFFLINE – UPS is switched off, the inverter is not working, the output is powered by a bypass).



NOTE! The batteries of the power supply unit gain full efficiency after, more or less, one month of operation in a mains mode.

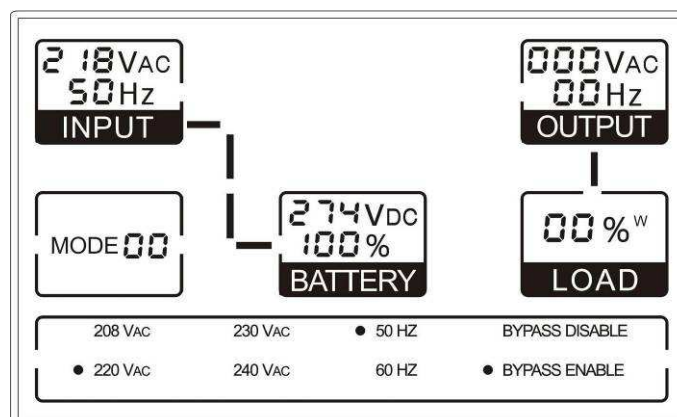
DESCRIPTION OF THE OPERATION OF THE POWER SUPPLY UNIT

GENERAL INFORMATION

POWERLINE UPS is a state-of-the-art electronic device forming an autonomous sinusoidal voltage source of 230 V. This device is from the group of uninterrupted power supply units of ONLINE class characterised by continuous processing. Due to continuous power processing in the POWERLINE unit, the UPS may be used to condition the power from the power supply line. Regardless of the voltage fluctuations or distortion of the input flow, the POWERLINE UPS maintains a sinusoidal waveform at output at a fixed value of ~230 V at all times. The power supply unit operates in the mains operation mode (it does not use the energy from the batter) in the wide range of input voltage $\sim 304 \div 478$ V (phase-to-phase voltage) and it supplies voltage of ~230 V to receivers. The next advantage of the continuous processing in the ONLINE power supply units is the fact that there are no outages required to switch the load into another supply source (mains - battery). The switching between the mains operation and battery mode is not noticeable for receivers connected to the UPS output.

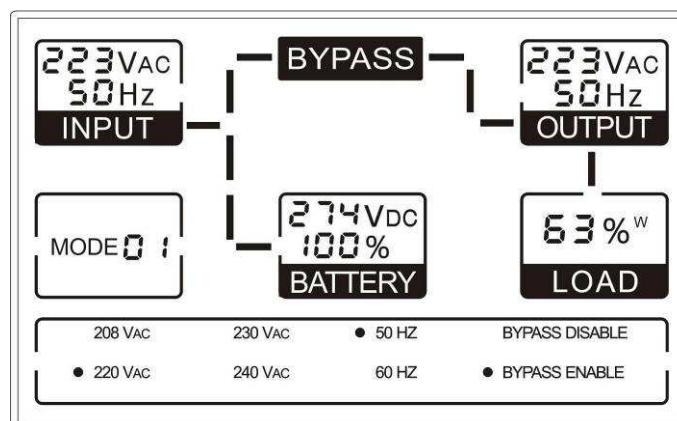
Code	Operational status		Signals
00	Zero mode (STANDBY)		None
01	BYPASS mode		A single sound signal every 2 minutes.
02	Mains operation mode		None
03	Battery operation mode	Charge level of storage cells at 0~20%	A single sound signal every 1 second.
		Charge level of storage cells at 21~100%	A single sound signal every 4 seconds.
04	Storage cells test mode		None

ZERO MODE ("00" MODE)



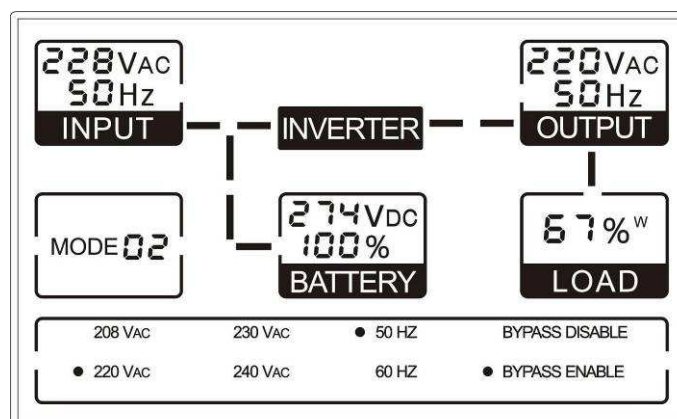
The display presents information on the battery charge status and input parameters (the value and frequency of input voltage). The UPS does not supply voltage to the output.

BYPASS MODE (“01” MODE)



The power supply unit switches to the BYPASS mode when the inverter is overloaded, maximum permitted temperature is exceeded, inverter damage is detected and when the device is switched off using the “OFF” button on the device panel. Voltage is supplied to the output in the BYPASS mode directly from the input line by a mechanical switch (converter). If the UPS switches to the BYPASS mode due to an overloaded inverter or exceeding the maximum permitted temperature, then the device itself checks the load level and the temperature of the inverter. When these values return to the standard, the inverter reactivates. In BYPASS mode, the unit does not provide any protection against voltage decay. Voltage from the input line is switched to the unit's output through an internal filter.

MAINS OPERATION MODE (MODE “02”)

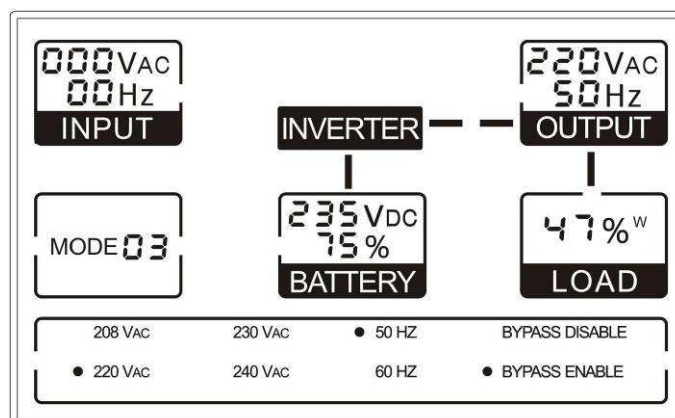


After connecting the UPS to the mains, the output voltage is generated. Power is supplied to the output by an internal BYPASS system. When the device is connected to the mains, the UPS batteries are also charged. The UPS is activated only after the “ON” button on the front panel is pressed for approx. 1 second. After the completion of a self test, the UPS is ready to work. If the mains voltage is irregular (excessively low or high voltage, frequency outside the operating range), the unit will switch to battery mode. If the voltage is regular, the UPS activates the inverter and it is then ready to work.

In the mains operation mode there is voltage at the UPS output.

	NOTE! When the UPS is switched off by pressing the “OFF” button on the panel, voltage is not disconnected from the UPS output. Voltage at output disappears only after the disconnection of the input power supply line.
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BACKUP (BATTERY) MODE (MODE “03”)



In the backup mode, the sinusoidal output voltage is generated from the battery until the mains voltage returns, the battery is discharged, or an emergency.

In the event of no mains voltage, the unit is activated in the same way as in mains operation mode; however, the difference is that following the completion of self test the panel displays the battery mode screen.

STORAGE CELLS TEST MODE (“04” MODE)

When in the storage cells test mode, the LCD panel displays the same information as in the battery operating mode. This mode has the “04” code. In this mode, the excessively low or excessively high input voltage indicators are not available.

The storage cells test mode is activate for approx. 10 seconds by pressing the “ON” button when the UPS is in mains operation mode (“02” MODE).

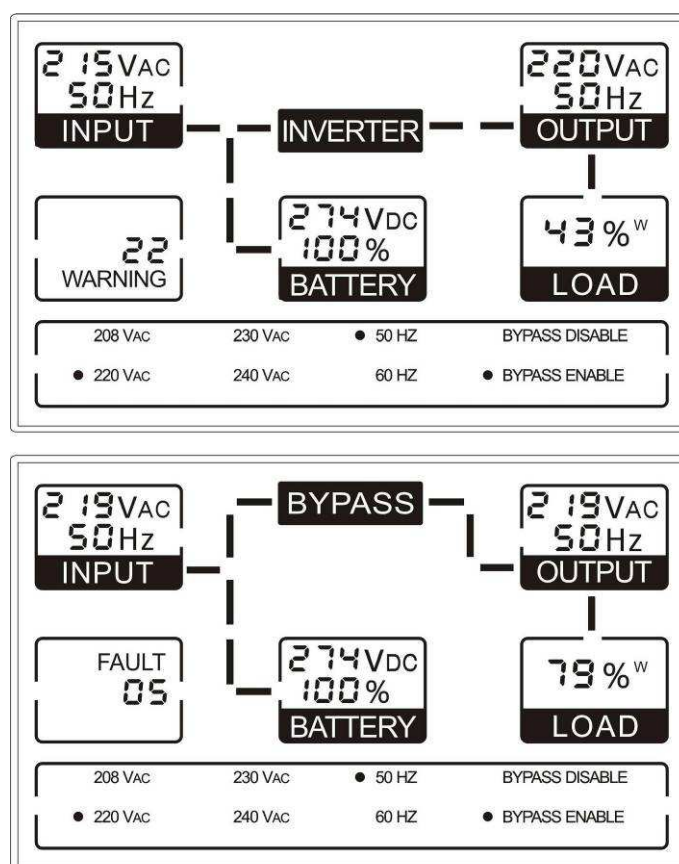
SERVICE BYPASS MODE

This mode enables UPS service without the necessity to disconnect the power supply from the receivers connected to the UPS output.



NOTE! In the service BYPASS mode, receivers powered from the UPS output are not protected against voltage decays in the power supply line. In this mode, the UPS is completely shut off from the output.

EMERGENCY MODE



In this mode, the unit sends the appropriate error codes to the LCD panel and emits sound signals as per the following table.

Table 1

Code	Unit operational status	Signals
01	Overload in mains mode; the UPS is in BYPASS mode	A double sound signal every 1 second.
02	Overload in mains mode; the inverter continues to operate	A double sound signal every 1 second.
03	Overload in battery mode; early warning	A double sound signal every 1 second.
05	Incorrect DC bus voltage	Continuous sound signal
06	Incorrect inverter operation	Continuous sound signal
07	Overload in battery mode; output cut-off	Continuous sound signal
08	Maximum temperature exceeded	Continuous sound signal
09	Output short circuit	Continuous sound signal
10	Incorrect communication*	Continuous sound signal
11	Disconnected battery circuit	Continuous sound signal
12	Damaged inverter relay	Continuous sound signal
14	Damaged battery thyristor	Continuous sound signal
15	Parallel operation errors	Continuous sound signal
22	Incorrect fan operation	A single sound signal every 1 second.
23	Damaged batteries and loader	A single sound signal every 1 second.

*For code 10 only a frame with error code is displayed. Other parameters are not visible.

PROTECTION

OVERLOAD PROTECTION

An overload condition is signalled by the relevant code on the LCD panel and a sound signal (cf. Table 1).

If the load is 105-130% of the maximum load, the UPS switches to the BYPASS mode after 10 minutes. If the load is greater than 130%, the UPS switches to BYPASS mode after one second and cuts the power supply to the output off after 1 minute.

SHORT CIRCUIT PROTECTION

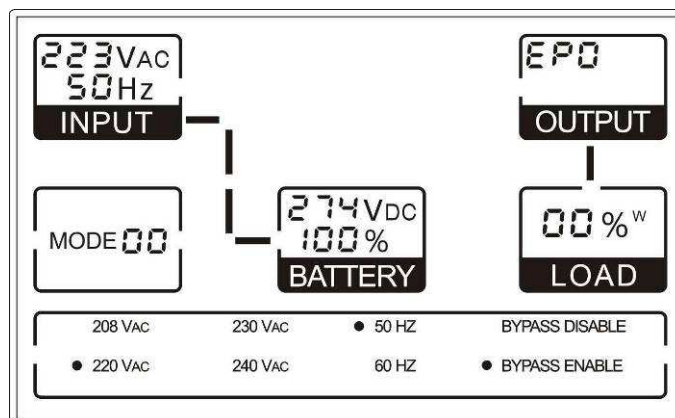
The unit signals a short circuit by means of the relevant code on the LCD panel and a sound signal. If there is a short circuit, the power supply to the output is cut off. If the UPS is switched off during a short circuit indication, and the short circuit is not removed, the UPS switches to BYPASS mode, which activates the input automatic fuses.

EPO

EPO (Emergency Power Off) is a mechanism that cuts off the energy supply to the receivers at the UPS output in extreme situations (e.g. a fire).

The mechanism may be activated by short-circuiting the pins of the external EPO connector (trip).

If the unit was in mains operation mode, it switches to zero mode (STANDBY).



If, in turn, the unit was in battery operation mode, it is switched off. Input voltage is reinstated only after the user manually removes the EPO short circuit. If the unit is in zero mode (STANDBY), signalling can be turned off by pressing the “OFF” button; the unit then switches to BYPASS mode. Only then is it possible to power on the unit. When the unit is switched off and the short circuit in the EPO circuit has been rectified, the unit may be powered on using the standard procedure.

The EPO connector pins have a safe voltage that is separate from the remaining systems of the device.



NOTE! The EPO circuit must be a separate circuit, and it is forbidden to connect it to other systems.

WORK WITH COMPUTERS

RS 232 COMMUNICATION

POWERLINE series units are equipped with extended management functions. There is an RS 232 communication port or an optional Ethernet port (for UPS units with the SNMP card). To ensure correct communication, it is necessary to connect the unit to a free computer port by using a provided communication cable. Once connected, the UPS and computer should be switched on and the software should be installed as per the enclosed manual and following the installation application's instructions (applies to Microsoft Windows).

POWERLINE unit, which may be managed and monitored in Windows via WinPower software.

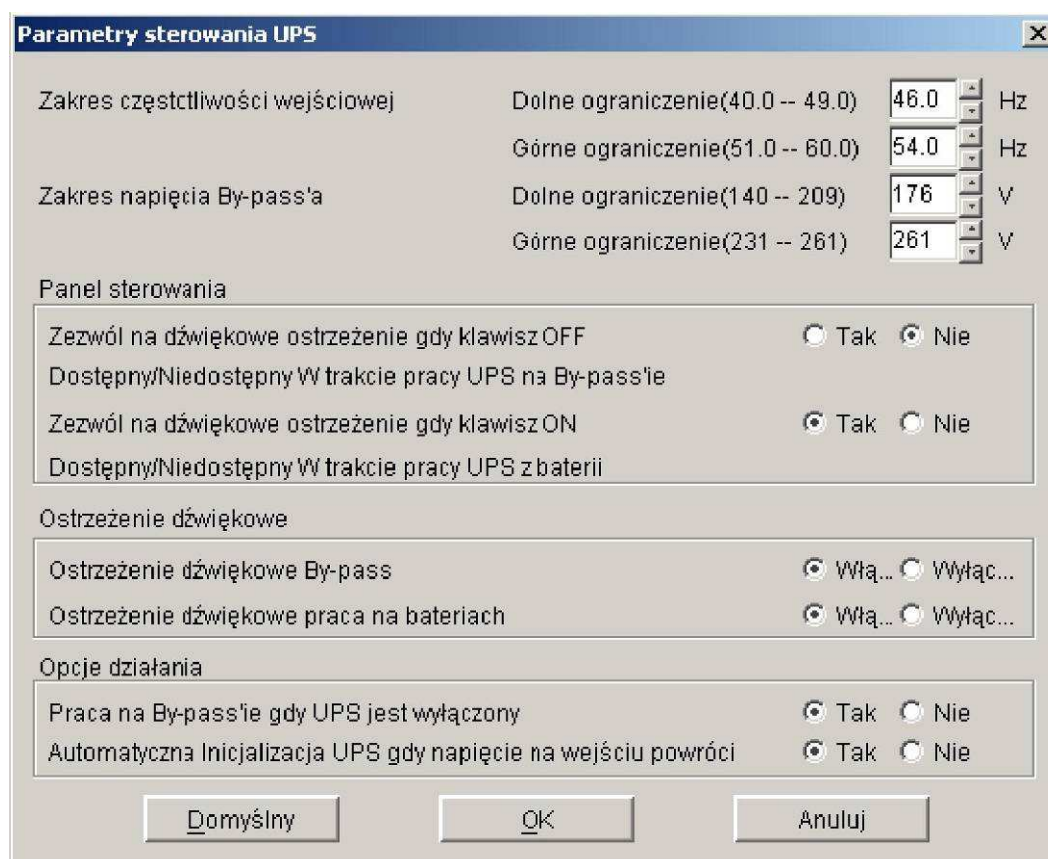
WINPOWER SOFTWARE INSTALLATION

During installation, please follow the application installer instructions (version for MS Windows), when the programme asks for a series number, please enter: 511C1 -01220-0100-478DF2A

CONFIGURATION OF THE UPS PARAMETERS

The user can change certain parameters of the UPS unit by using WinPower software. To make this possible, the UPS must be connected to a computer by the cable provided by the manufacturer and the user must be logged in as the administrator. By default, the administrator's password is set to "Administrator". After logging in, the user may change the password.

The parameters that can be modified by the user by the software are shown in the screenshot below. The range of the input frequency for BYPASS, the range of voltage for BYPASS, settings of the function of the panel buttons, and sound alarms and device response when it is switched off.



POWERSOFT PERSONAL SOFTWARE INSTALLATION AND CONFIGURATION

WINDOWS

Before installing PowerSoft:

- uninstall any previous version of PowerSoft and other monitoring software (if the user is exchanging a UPS for the same computer);

To install PowerSoft with Windows (a list of operating systems verified for compatibility with the software is available at www.ever.eu), simply launch the software installer and then follow the instructions. When installing, choose the UPS model that is connected to the computer running the software. That setting can also be changed later when the software is installed.

To uninstall PowerSoft, select the PowerSoft uninstall icon in the start menu. The software can also be uninstalled from "Add/remove programmes", in the control panel.

LINUX/UNIX

The binary version for Linux/Unix is provided in the following forms:

CentOS, RedHat, Suse Linux, and Fedora Core

For systems: CentOS, RedHat, Suse Linux, and Fedora Core, the software is supplied as an RPM package. The software can be installed using any package manager in the operating system. If using the command line, the software is installed by typing:

```
rpm -ivh powersoftpersonal-x.x.x.i3 86.rpm
```

The user must have administrator privileges (root) to install and use the software. Once installed, the application is in

```
/usr/local/powersoft.
```

To uninstall, type in the command line:

```
rpm -ev powersoftpersonal-x.x.x
```

Debian

For Debian system, the software is provided as a DEB package. The software is installed by typing in the command line:

```
dpkg --install powersoftpersonal-x.x.x.deb
```

To uninstall, type in the command line:

```
dpkg --remove powersoft
```

FreeBSD

For FreeBSD systems, software is provided as the default package for FreeBSD systems. The software is installed by typing in the command line:

```
pkg_add powersoftpersonal-x.x.x.tbz
```

To uninstall, type in the command line:

```
pkg_delete powersoft
```

Initialisation

Once installed, the system service is initialised automatically, while the control panel application is at */usr/local/powersoft*. Make sure that the system localisation is Polish to enable Polish diacritical symbols.

SOFTWARE UPDATE

Windows

The installer application for Windows features an embedded automatic software updater. PowerSoft can check regularly for new versions and notify the user about their availability. By default, the available updates are verified after the user logs in. That setting can be changed in the “Update configuration”, in the programmes menu in the system.

Linux/Unix

PowerSoft for Linux/Unix can be updated using new versions available at www.ever.eu. In case of CentOS, RedHat, Suse Linux, and Fedora Core, the update can be executed by typing:

```
rpm -Uv powersoftlite-x.x.x
```

In Debian and FreeBSD, it is recommended to uninstall the older version and then install the new one. Instructions for the above operations are provided in the software manual available at www.ever.eu.

COMMENTS ON OPERATION



NOTE! This product is intended for commercial and industrial use in the second environment. To prevent interference emissions, it may be necessary to apply additional measures of prevention or the limitation of the system.



NOTE! The battery module contains no end-user serviceable elements.

- Damage to the guarantee seal in turn results in the automatic voidance of the device's guarantee.
- All repairs should be performed solely by qualified service personnel.
- The unit may operate below expectations, if the receiver device requires high impulse power. In practice, even if the average power of the receiver device is within the permitted level of the UPS, the device can turn the UPS off. This results from the high instantaneous power collected by the device, much above the power rating of the UPS and leading to an overload and UPS shut down. This may be true for:
 - television receivers and monitors (during activation there is a picture tube demagnetisation cycle that requires a temporary very high power demand),
 - laser printers (drum heating cycle),
 - other products with similar operation type.

Therefore, when the emergency UPS is used with a load other than a computer load, it is necessary to check the compatibility of the device and the UPS. To do that, it is necessary to connect the tested device to the UPS and check its response in all its statuses i.e. (start-up, switching-off, standby, etc.).

WORK WITH POWER GENERATORS

POWERLINE units are ONLINE devices. The unit has been designed to tolerate voltage fluctuations in the range of $\sim 304 \div 478$ V (phase-to-phase voltage) and changes in the frequency of ± 4 Hz in relation to the model frequency of 50 Hz. When working with a power generator, frequency changes are variable over time and directly depend on changes of the load. If the generator voltage frequency changes

were to exceed this tolerance, the power supply unit may consider such a frequency value as incorrect and switch to battery operation.

STORAGE, MAINTENANCE, AND TRANSPORT

The UPS should be stored in a cool and dry place, in its working position, with fully charged storage cells:

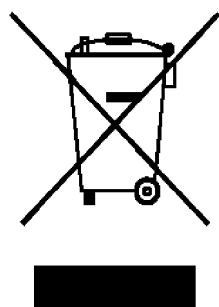
- at a temperature between $0^{\circ}\text{C} \div +30^{\circ}\text{C}$, the battery should be charged every 6 months;
- at a temperature between $+30^{\circ}\text{C} \div +45^{\circ}\text{C}$, the battery should be charged every 3 months.

The UPS should be transported in its original packaging, under conditions concordant with those set forward in the product specification (cf. the table with technical parameters). EVER Sp. z o.o. shall not be liable for mechanical damage arising during the transport of the appliance without its original or incomplete packaging.

UTILISATION

The appropriate utilisation of used electric and electronic equipment helps protect human health and the natural environment against the negative effects brought about by the presence of hazardous materials and components, and the improper storage and processing of such equipment.

Act of 29 July 2005, on Waste Electric and Electronic Equipment, Article 22.1, Point 1.2.



The crossed out waste container symbol means that, in the European Union, a used product should be handed over to a special waste handling outlet. This concerns both the device itself, and all the accessories marked with this symbol. Such products should not be disposed of together with unsorted municipal waste.

Method of safe removal of the battery from the appliance:

The battery should be removed from the appliance by an authorised service outlet or by a duly authorised electrician.

TECHNICAL PARAMETERS

INSTALLATION GUIDELINES

Parameter/UPS	POWERLINE 10-31	POWERLINE 15-31	POWERLINE 20-31
Apparent/active power	10 kVA/7 kW	15 kVA/10.5 kW	20 kVA/14 kW
Power supply parameters			
Supply system topology	3P5W	3P5W	3P5W
Rated input voltage	400 V	400 V	400 V
Rated input current	9 A	12 A	16 A
Maximum input current	47 A	69 A	90 A
Rated input frequency	50 Hz	50 Hz	50 Hz
Efficiency	>90%	>90%	>90%
Minimum wire section surface area	10 mm ²	16 mm ²	25 mm ²
Line protection	4x 50 A (chk C)	4x 80 A (chk C)	4x 100 A (chk C)
Output parameters			
Output system topology	1P3W	1 P3W	1 P3W
Nominal output voltage	230 V	230 V	230 V
Rated output current	31 A	46 A	61 A
Maximum output current	43 A	65 A	86 A
Minimum wire section surface area	10 mm ²	16 mm ²	25 mm ²
Line protection	2x 50 A (chk B)	2x 80 A (chk B)	2x 100 A (chk B)
Environmental parameters			
Quantity of heat released for nominal work conditions	2400 BTU	3600 BTU	3600 BTU
Working temperature	0 - 40 °C	0 - 40 °C	0 - 40 °C
Storage temperature	0 - 40 °C	0 - 40 °C	0 - 40 °C
Humidity	< 95%	< 95%	< 95%
Altitude (above sea level)	<1000 m	<1000 m	<1000 m
Mechanical parameters			
Dimensions (height x width x depth)	260 x 570 x 717 mm	260 x 570 x 717 mm	260 x 570 x 717 mm
Weight	39 kg	55 kg	55 kg
Operating distance	front: >200 mm sides: >100 mm rear: >300 mm	front: >200 mm sides: >100 mm rear: >300 mm	front: >200 mm sides: >100 mm rear: >300 mm

TECHNICAL DATA

PARAMETERS/UPS TYPE	POWERLINE 10-31	POWERLINE 15-31	POWERLINE 20-31
Output power ¹⁾	10 kVA/7 kW	15 kVA/10.5 kW	20 kVA/14 kW
Work environment	office or industrial rooms with a low level of contamination		
Operating temperature ²⁾	0 ÷ +40 °C		
Storage temperature	0 ÷ +40 °C		
Relative humidity when working	<95% (non condensing)		
Relative humidity during storage	<95% (non condensing)		
Height above sea level ³⁾	up to 1000 m		
Maximum length of output cords	<10 m		
POWER NETWORK MODE			
Phase-to-phase input voltage	~304 ÷ 478 V ± 2%		
Input voltage frequency	46 ÷ 54 Hz ± 1 Hz		
Output voltage	~230 V ± 1%		
Switching thresholds: mains - UPS	~304 V / ~ 478V ± 2%		
Output voltage waveform	Sine		
Time to switch to UPS	0		
BACKUP (BATTERY) MODE			
Output voltage (RMS)	~230 V ± 1%		
Output voltage waveform	Sine		
Switching thresholds: UPS – mains	~311 V / ~ 450 V ± 2%		
Output voltage frequency	50 Hz ± 1 Hz		
Output voltage filtering	LC		
Short circuit protection	Electronic		
Overload protection	Electronic		
Time to switch to network mode	0 ms		
Backup time with 1 battery pack (100% / 80%/50% Pmax)	12/15/34 min*	25/32/65 min**	18/23/48 min***
Additional packs	7Ah	40 Ah	40 Ah
Maximum charging time for 1 pack (after recharging with the power of 80% Pmax)	<2 h	<8 h	<8 h
MECHANICAL PARAMETERS			
Dimensions (height x width x depth)	717 x 260 x 570 mm		
UPS weight	39 kg	55 kg	55 kg
Battery pack weight	133 kg	321 kg	321 kg
FITTINGS			
Output sockets	terminal strip - screw terminals		
Signals	sound and LED		
Fuse	3 x D50A automatic fuse - power supply end protection	3 x D100A automatic fuse - power supply end protection	3 x D100A automatic fuse - power supply end protection
Communication interface	RS 232, SNMP/HTTP network management card - option		

Note: The manufacturer reserves the right to modify the above parameters without prior notice.

Time for a model 1 pack 2x20x7 Ah. It is possible to connect other dedicated packs.

** Time for model 1 pack 1x20x40 Ah. It is possible to connect other dedicated packs.

*** Time for model 1 pack 1x20x40 Ah. It is possible to connect other dedicated packs.

Note

- 1) For standard operation, the load that is applied to the output must not exceed 80% of the value in the table. The power margin is necessary to ensure the continuous work of the connected devices in the case of instantaneous surges of the load.
- 2) Constant exposure of the battery module to temperatures of +25°C reduces the battery life.
- 3) The permitted maximum load of the power supply unit decreases with the height above the sea level above the limit specified above.

DIAGNOSTIC OPERATIONS FOR ERRORS REPORTED BY THE UPS

Problem	Possible cause	Solution
Error code "08", continuous sound signal	The unit switched to an error state due to exceeding maximum permitted temperature	Make sure that the unit is not overloaded, the fans are not blocked, and the surrounding temperature is not excessively high. Wait 10 minutes before powering on the unit in order for it to cool down. If the problem was not eliminated, contact technical support.
Error code "09", continuous sound signal	Short circuit on the unit's output	Disconnect all receivers. Turn off the unit. Make sure that the receivers are not damaged and check whether the UPS has no internal errors, and reconnect the receivers. In the event of a problem concerning the UPS, contact technical support.
Error code "05" or "06", continuous sound signal	The unit switched to an error state due to an internal error	Contact technical support
The UPS switches on in battery mode (MODE "03")	Input voltage or frequency exceeds permitted levels	Check the power source
Error code "07", continuous sound signal	Receiver overload or short circuit.	Check the receivers and disconnect non-critical receivers. Recalculate the power load and reduce the number of receivers connected to the unit. Check whether any of the receivers are damaged.
Warning - code "23", sound signal every 1 second	Damaged storage cells or loader	Contact technical support
Error code "11", continuous sound signal	Low charge level of storage cells or storage cells disconnected	Check the condition of storage cells
The UPS does not operate although the mains voltage is correct	service BYPASS switch damaged	Contact technical support
The battery support time has become shorter	The storage cells are not fully charged	Leave the unit connected to the mains for at minimum 10 hours in order to fully charge the storage cells.
	Unit overload	Check the receivers and disconnect non-critical receivers.
	Storage cell capacity decrease caused by aging	Replace the storage cells
The unit does not switch on after pressing the "ON" button	The "I" has been pressed for an insufficient period of time	Press the "ON" button for at least 1 second
	No storage cells are connected to the unit or the voltage of storage cells is too low	Check the connection of storage cells or charge the storage cells
	Unit error	Contact technical support

When contacting technical support, please prepare the basic information:

- UPS model and series number
- when the problem occurred
- complete description of the problem, including error codes, sound signals, supply and load status. If you have a UPS designed for long backup times, it is also required to prepare information about the batteries used.

LEGAL REGULATIONS AND THE GUARANTEE

DECLARATION OF CONFORMITY

The UPS structure complies with the provisions of the pertinent standards.

GUARANTEE

The guarantee for the device constitutes a separate document enclosed with the product. This document must meet all the formal requirements (e.g. the following field should be filled in: manufacturing number, model/type, date of sale, and stamp of the seller).

The manufacturer has made every effort to ensure that the offered products are free of defects in materials and workmanship. The liability of the company under the guarantee is limited to the repair or replacement of products containing such defects. The method for removal of defects shall be determined by the manufacturer. The guarantee shall not cover those appliances with mechanical damage that were improperly maintained or used, or that were modified in any way by the user. EVER Sp. z o.o. does not provide any guarantees or warranties, including the guarantees of fitness for sale or for any specific purpose, other than what is set out in the guarantee card.

EVER Sp. z o.o. shall not be liable for any direct, indirect, extraordinary, coincidental, or consequential losses resulting from the use of the power supply unit, even if the possible occurrence of such losses has been notified. The company shall not be held liable for any costs, such as the loss of profits or earnings, equipment, equipment usage, software, data, costs of replacement products, claims of third parties, or for any other costs whatsoever.