

# AEG

POWER  
SOLUTIONS

## PROTECT D

### User Manual

Protect D 1000(S) LCD  
Protect D 1500(S) LCD  
Protect D 2000(S) LCD  
Protect D 3000(S) LCD  
Protect D 1000BP LCD  
Protect D 1520BP LCD  
Protect D 3000BP LCD



# REVISION

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Thank you for purchasing the AEG PS UPS Protect D from AEG Power Solutions.

Safety information and operating instructions are included in this manual. To ensure correct use of the UPS, please read this manual thoroughly before operating it. Use this manual properly.

# CONTENTS

<b>1.</b>	<b>NOTES ON THESE OPERATING INSTRUCTIONS.....</b>	<b>6</b>
1.1	Duty to provide information .....	6
1.2	Operating instructions .....	6
1.3	Validity .....	6
1.4	Warranty and liability .....	6
1.5	Handling.....	7
1.6	Copyright .....	7
<b>2.</b>	<b>GENERAL INFORMATION .....</b>	<b>8</b>
2.1	Description of commonly used symbols .....	8
2.2	Technology.....	9
2.3	Technical data .....	9
<b>3.</b>	<b>INSTALLATION .....</b>	<b>12</b>
3.1	Inspection of Unit .....	13
3.2	Unpacking the Cabinet.....	13
3.3	UPS Setup .....	13
3.3.1	External battery pack installation .....	14
3.3.2	Connecting the multiple external battery packs.....	15
3.4	Operation.....	17
3.4.1	Prerequisites.....	17
<b>4.</b>	<b>CONNECTION S, OPERATING / DISPLAY ELEMENTS .....</b>	<b>19</b>
4.1	Front display panel.....	19
4.2	Operating keys (Navigation).....	19
4.3	Display (Main Menu).....	20
4.4	UPS status - display .....	20
4.5	Rear panel.....	21
<b>5.</b>	<b>ELECTRICAL CONNECTION.....</b>	<b>24</b>
5.1	UPS input connection.....	24
5.2	UPS Output Connection .....	25
5.3	EPO Connection: .....	25
5.4	Battery charge.....	26
5.5	UPS turn ON.....	27
5.6	UPS Turn off .....	27
<b>6.</b>	<b>OPERATING MODES.....</b>	<b>28</b>

6.1	Messages and alarms.....	29
6.2	Event log .....	30
6.2.1	Accessing the event log .....	30
6.2.2	Measurements.....	31
6.2.3	Control .....	31
6.2.4	Configuring Load Segments .....	32
6.2.5	Identification.....	33
6.2.6	Settings .....	33
<b>7.</b>	<b>INTERFACES AND COMMUNICATIONS .....</b>	<b>40</b>
7.1	RS-232 and USB communication ports .....	40
7.2	USB port.....	40
7.3	Installing a Serial Network Management Card (optional).....	40
7.4	Dry Contact port .....	41
7.5	UPS management software .....	44
<b>8.</b>	<b>TROUBLESHOOTING .....</b>	<b>45</b>
<b>9.</b>	<b>MAINTENANCE.....</b>	<b>48</b>
9.1	Operation.....	48
9.2	Storage .....	48
9.3	Battery Replace.....	48
9.4	Testing New Batteries.....	50
9.5	Recycling the used equipment.....	51
9.6	Disposal.....	52

# 1. NOTES ON THESE OPERATING INSTRUCTIONS

## 1.1 Duty to provide information

These operating instructions will help you to install and operate the Uninterruptible Power Supply (UPS) Protect D – safely and properly, and for its intended purpose. These operating instructions contain important information necessary to avoid dangers during operation. Please read these instructions carefully prior to commissioning!

## 1.2 Operating instructions

The owner of this unit is obliged to communicate the full content of these operating instructions to all personnel transporting or starting the Protect D or performing maintenance or any other work on the unit.

## 1.3 Validity

These operating instructions comply with the current technical specifications of the Protect D at the time of delivery. The contents do not constitute a subject matter of the contract, but serve for information purposes only.

## 1.4 Warranty and liability

We reserve the right to alter any specifications given in these operating instructions, especially with regard to technical data and operation, prior to start-up or as a result of service work. Claims in connection with supplied goods must be submitted within one week of receipt, along with the packing slip. Subsequent claims cannot be considered.

The warranty does not apply to damage caused by non-compliance with these instructions (such damage also includes damaging the warranty seal). AEG will accept no liability for consequential damage. AEG reserves the right to rescind all obligations such as warranty agreements, service contracts, etc. entered into by AEG and its representatives without prior notification in the event of maintenance and repair work being carried out with anything other than original AEG spare parts or spare parts purchased by AEG.

## 1.5 Handling

Protect D is designed and constructed so that all necessary steps for start-up and operation can be performed without any internal manipulation of the unit. Maintenance and repair work may only be performed by trained and qualified personnel.

Illustrations are provided to clarify and facilitate certain steps. If danger to personnel and the unit cannot be ruled out in the case of certain work, it is highlighted accordingly by pictographs explained in the safety regulations of chapter 3.

## 1.6 Copyright

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AEG is a registered trademark used under license from AB Electrolux.

This product complies with the safety and environmental regulations in EU.

If the time arises to throw away your product, please recycle all the components possible.














Batteries and rechargeable batteries are not to be disposed in your domestic waste! Please recycle them at your local recycling point.

Together we can help to protect the environment.

## 2. GENERAL INFORMATION

### 2.1 Description of commonly used symbols

Some or all of the following symbols may be used in this manual. It is advisable to familiarize yourself with them and understand their meaning.

Symbol and Explanation			
Symbol	Explanation	Symbol	Explanation
	Alert you to pay special attention		Protective ground
	Caution of high voltage		Alarm silence
	Turn on the UPS		Overload indication
	Turn off the UPS		Battery
	Idle or shut down the UPS		Recycle
	Alternating current source (AC)		Do not dispose with ordinary trash
	Direct current source (DC)		



The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste but must be collected separately. The product should be handed in for recycling in accordance with the local environmental regulations for waste disposal.

By separating waste electrical and electronic equipment, you will help reduce the volume of waste sent for incineration or land-fills and minimize any potential negative impact on human health and environment.



## 2.2 Technology

This On-Line-Series is an uninterruptible power supply incorporating double-converter technology. It provides perfect protection specifically for Novell, Windows NT and UNIX servers.

The double-converter principle eliminates all mains power disturbances. A rectifier converts the alternating current from the socket outlet to direct current. This direct current charges the batteries and powers the inverter. Based on this DC voltage, the inverter generates a sinusoidal AC voltage, which permanently supplies the loads.

Computers and periphery are thus powered entirely by the mains voltage. In the event of power failure, the maintenance-free batteries power the inverter.

This manual covers the UPS listed as follows. Please confirm whether it is the model you intend to purchase by performing a visual inspection of the Model No. on the rear panel of the UPS.

## 2.3 Technical data

### INPUT

Model	Protect D 1000(S) LCD	Protect D 1500(S) LCD	Protect D 2000(S) LCD	Protect D 3000(S) LCD
Phase	1 phase			
Frequency	(45~55) / (54~66) Hz			
Max Current (A)	7.5	10.5	13.5	20

### OUTPUT

Model	Protect D 1000(S) LCD	Protect D 1500(S) LCD	Protect D 2000(S) LCD	Protect D 3000(S) LCD
Power rating	1kVA / 0.9kW	1.5kVA / 1.35kW	2kVA / 1.8kW	3kVA / 2.7kW
Voltage	208/220/230/240× (1 ± 1%) VAC			
Frequency	50/60 (±0.2) Hz (Battery mode)			
Wave form	sinusoidal			

**BATTERIES**

Model	Protect D 1000 LCD	Protect D 1500 LCD	Protect D 2000 LCD	Protect D 3000 LCD
Qty and type	3 × 12V 9Ah	4 × 12V 9Ah	4 × 12V 9Ah	6 × 12V 9Ah

**TYPICAL BACKUP TIME (TYPICAL VALUES AT 25°C IN MINUTES)**

Model	Protect D 1000 LCD	Protect D 1500 LCD	Protect D 2000 LCD	Protect D 3000 LCD
100% load	6.5	5.5	3	3
50% load	16.5	14.5	10	10

**DIMENSIONS AND WEIGHT, UPS**

Model	Protect D 1000 LCD	Protect D 1500 LCD	Protect D 2000 LCD	Protect D 3000 LCD
Net weight (kg)	17.7	21.7	21.7	28.6
Dimensions (mm) (W x H x D)	438 x 86.5 x 436	438 x 86.5 x 436	438 x 86.5 x 436	438 x 86.5 x 608

**DIMENSIONS AND WEIGHT, UPS**

Model	Protect D 1000S LCD	Protect D 1500S LCD	Protect D 2000S LCD	Protect D 3000S LCD
Net weight (kg)	8.4	9.3	9.3	13.2
Dimensions (mm) (W x H x D)	438 x 86.5 x 436	438 x 86.5 x 436	438 x 86.5 x 436	438 x 86.5 x 608

Model	Protect D 1000BP LCD	Protect D 1520BP LCD	Protect D 3000BP LCD
Net weight (kg)	25.2	31.5	46.5
Dimensions (mm) (W x H x D)	438 x 86.5 x 436	438 x 86.5 x 436	438 x 86.5 x 608
Type	36V	48V	72V

**OPERATING ENVIRONMENT**

Ambient Temperature	0°C to 40°C
Operating humidity	< 95%
Altitude	< 1000m
Storage temperature	0°C to 45°C

**ENVIRONMENTAL / SAFETY**

Safety	IEC/EN 62040-1
<b>EMI</b>	
Conducted emission	IEC/EN 62040-2, Category C1
Radiated emission	IEC/EN 62040-2, Category C1
Harmonic current	IEC/EN 61000-3-2
Voltage fluctuations and flicker	IEC/EN 61000-3-3
<b>EMS</b>	
ESD	IEC/EN 61000-4-2, Level 3
RS	IEC/EN 61000-4-3, Level 3
EFT	IEC/EN 61000-4-4, Level 4
SURGE	IEC/EN 61000-4-5, Level 4
CS	IEC/EN 61000-4-6, Level 3
MS	IEC/EN 61000-4-8, Level 3
Voltage dips	IEC/EN 61000-4-11
Low frequency signals	IEC/EN 61000-2-2

### 3. INSTALLATION

Please read carefully the following user manual and the safety instructions before installing the unit or using the unit!

- See installation instructions before connecting to the supply.
- Condensation may occur if the UPS is moved directly from a cold to a warm environment. The UPS must be dry before being installed. Please allow an acclimatization time of at least two hours.
- Do not install the UPS near water or in damp environment.
- Do not install the UPS where it would be exposed to direct sunlight or near heat.
- Do not connect appliances or items of equipment which would overload the UPS (e.g. laser printers, etc.) to the UPS output.
- Place cables in such a way that no one can step on or trip over them.
- Assure to connect with the earth reliably.
- Assure external battery source must be earthed.
- Connect the UPS only to an earthed shockproof socket outlet.
- The building wiring socket outlet (shockproof socket outlet) must be easily accessible to close to the UPS.
- With the installation of the equipment, the sum of the leakage current of the UPS and the connected load does not exceed 3.5mA.
- Do not block ventilation openings in the UPS's housing. Ensure the air vents on the front and rear of the UPS are not blocked. Allow at least 25cm of space on each side.
- UPS has provided earthed terminal, in the final installed system configuration, equipotential earth bonding to the external UPS battery cabinets.
- An appropriate disconnect device as short-circuit backup protection should be provided in the building wiring installation.
- The equipment is powered by more than one source.
- Please transport the UPS only in the original packaging (to protect against shock and impact).
- The UPS must be stockpiled in the room where it is ventilated and dry.

## 3.1 Inspection of Unit

Inspect the UPS upon receiving. If the UPS is apparently damaged during the shipment, please keep the box and packing material in original form for the carrier and notify the carrier and dealer immediately.

## 3.2 Unpacking the Cabinet

To unpack the system:

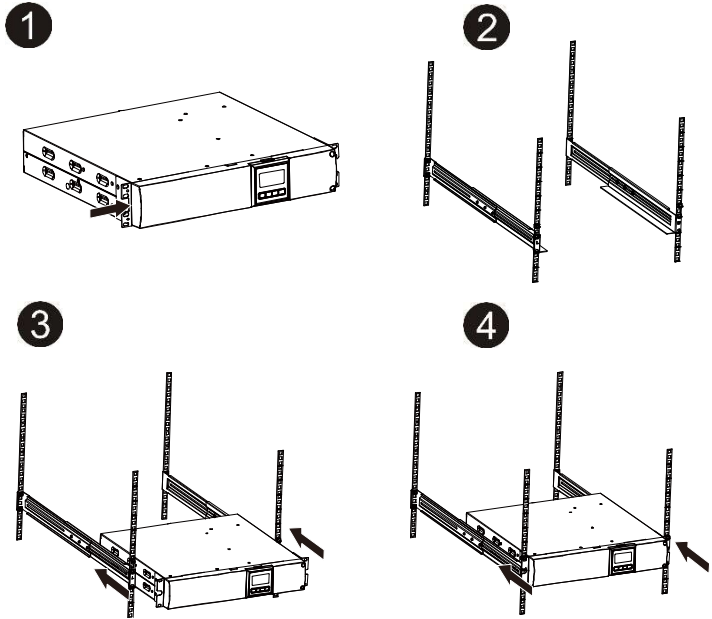
- Open the outer carton and remove the accessories packaged with the cabinet.
- Carefully lift the cabinet out of the outer carton and set it on a flat, stable surface.
- Discard or recycle the packaging in a responsible manner or store it for future use.

## 3.3 UPS Setup

Protect D LCD model series are designed for rack purpose. They can be installed into a 19 inches equipment rack.

Both the UPS and external battery enclosure need 2U of rack space. Use the following procedure to install UPS in a rack.

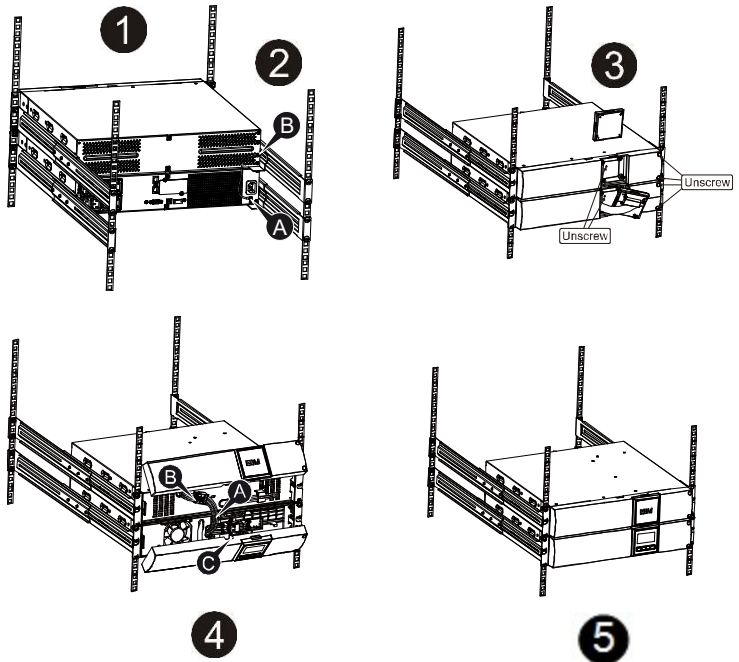
1. Align the mounting ears with screw holes on the side of the UPS and tighten the screw.
2. Assemble the rack rails with the rack-mounting.
3. Slide in the UPS into the rack rail and lock it in the Rack-mounting.
4. Tighten the screw, and then the load can be connected.



### 3.3.1 External battery pack installation

1. Using the same method as assembling UPS in a rack form, assemble external battery pack into the rack-mounting on the top or bottom of the UPS.
2. Connect the earth line from UPS (port A) to external battery pack (port B)
3. Take off the LCD box and unscrew the internal screws.
4. Take off the front panel and connect the battery terminal (A) from UPS to external battery pack terminal (B) shown as below. Users need to remove the small gate(C) on side of the front panel to allow the outlet wire of the external battery pack to pass through the gate and then reassemble front panel.

- After installing the UPS into rack, the load can then be connected to UPS. Please make sure the load equipment is turned off before plugging all loads into the output receptacle

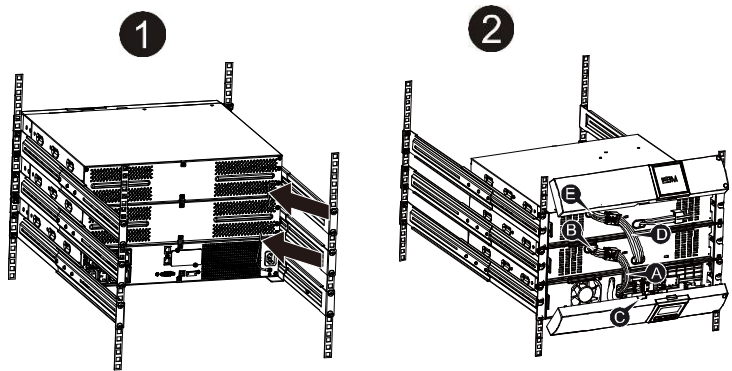


### 3.3.2 Connecting the multiple external battery packs

Protect D UPS include external battery port that allows users to connect multiple external battery packs in order to provide additional backup time. Follow the procedure to install multiple external battery pack as below.

- Connect Earth line between UPS and the first external battery pack, and then connect Earth Line between the first external battery pack and the second external battery pack.
- Take off the front panel and connect the battery terminal (A) from UPS to external battery pack terminal (B) shown as below.

And then connect the battery terminal (D) from the first external battery pack to the battery terminal (E) from the second external battery pack. Users need to remove the small gate(C) on side of the front panel to allow the outlet wire of the external battery pack to pass through the gate and then reassemble front panel.



**Note:** Three or more external battery packs can be connected to the UPS in the same way as shown above.

**Note:** After connecting the external battery packs, please do not forget to set the number of packs on UPS settings via LCD, please refer to chapter **Error! Reference source not found. Error! Reference source not found.** for setting method.

### 3.3.3 Connecting the external battery packs for long backup models (“S” models)

Use the battery pack with voltage: 36VDC for 1KS (12V×3 batteries), 48VDC for 1.5KS/ 2KS (12V×4 batteries), 72VDC for 3KS (12V×6 batteries). Connection of batteries more than or less than required will cause abnormality or permanent damage.

One hard wiring type battery terminal on the rear panel is used for connecting the battery pack.



The battery connection procedure is very important. Any in compliance may result in the risk of electric shock. Therefore, the following steps must be strictly complied with.

Make sure the mains input is cut off, if there is a battery breaker then turn it off first.

Remove front panel, connect the battery via Anderson PP45 connectors. Prepare the battery cable which should be able to carry the current of >50A for all models, the cross-section area should be great than 4 mm<sup>2</sup> for all model. And battery wire color is recommended as following:

+	GND	-
Red wire	Green/Yellow wire	Black wire

The red wire is connected to the "+" terminal of the battery. The black wire is connected to the "-" terminal of the battery. (Note: the green/yellow wire is grounded for protection purpose.)

Make sure the wires are fastened, install the terminal block cover on the rear panel of the UPS.

Connect the UPS to the load. Then, turn on the mains switch or connect the power cord of the UPS to utility power supply, the battery would start to be charged.



**Caution:**

A DC breaker must be connected between the UPS and external battery. The output sockets of the UPS system may still be electrically live even if the power supply system has been disconnected or the Bypass switch is on "OFF" position.

## 3.4 Operation

### 3.4.1 Prerequisites

Do not disconnect the mains cable on the UPS or the building wiring socket (grounded shockproof socket) during operation as this would remove the ground to the UPS and of all connected loads.

The UPS features its own, internal current source (batteries). You may receive an electric shock when you touch the UPS output sockets or output terminal block even if the UPS is not connected to the building wiring socket. In order to fully disconnect the UPS, first press the OFF button to turn off the UPS, then disconnect the mains lead.

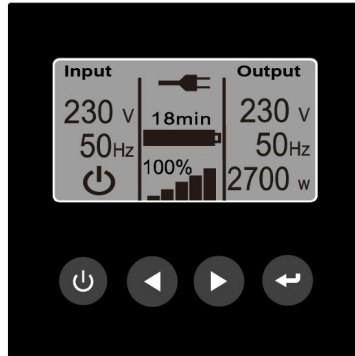
Ensure that no liquid or other foreign objects can enter the UPS. Do not remove the enclosure. This system is to be serviced by qualified service personnel only.

Remove the protective panel only after disconnecting the terminal connections. Use No. 4 mm<sup>2</sup> (12 AWG), 90°C copper wire and 0.5 Nm (4.4 lb-in) Torque force when connecting to terminal block.

## 4. CONNECTION S, OPERATING / DISPLAY ELEMENTS

### 4.1 Front display panel

The main feature of the operating panel is its graphical, two-color LCD display. The standard setting is white lettering on a black background; for alarm messages, the background changes to amber. There are 4 keys at the bottom for menu navigation and another 3 different-colored LEDs at the top.




Standard "UPS status" display

### 4.2 Operating keys (Navigation)

The 4 keys for navigation control the following functions:

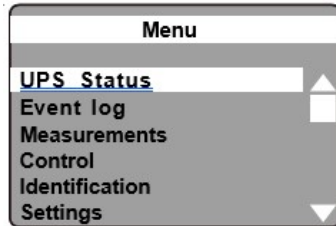
- "◀" key: Press this key to scroll upwards in the menu levels or to alter a value you want to set. If you press this key in the status display, you will access the main menu.
- "▶" key: Press this key to scroll downwards in the menu levels or to alter a value you want to set.
- "↩" key: Press this key briefly to select the corresponding menu item. To confirm and store a menu item in the "Settings" menu, press this key and hold it down for at least 1 second.

- “” key: Press this key to return to the previous menu level without altering any settings. If you press this key in the status display, you will access the “UPS On or Off” menu item

If no keys are pressed, the display will automatically return to the standard display after 5 minutes. If you want to “freeze” a screen in the “Measurements” menu, press “◀” and “▶” at the same time for about 3 seconds. A small key appears on the upper right-hand side of the display to indicate this setting. Press both these keys again for approx. 3 seconds to cancel this setting.

## 4.3 Display (Main Menu)


Press “ESC” to access the main menu.



Main menu for the LCD display

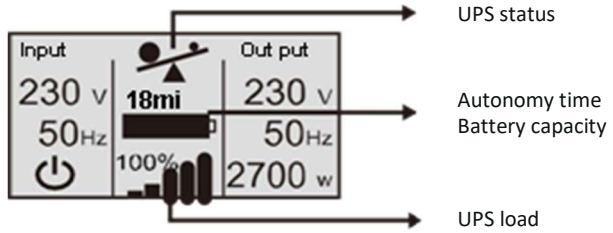
The following figures show the display in English.

## 4.4 UPS status - display

You can access the status screen by pressing “◀” in the main menu to go to “UPS Status” (the line is then highlighted) and then press “” (automatic display after 5 min.).

The UPS status display is divided into several different sections to retrieve the following information:

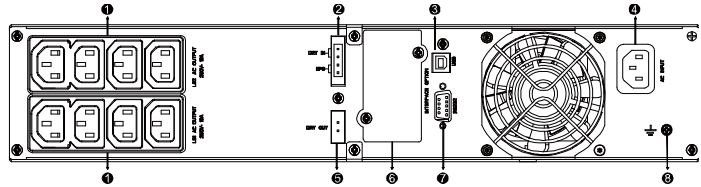
- Display that summarizes all load segment-relevant input and output parameters, including the information on operation status, the current load and the currently available battery capacity
- Messages and alarms.
- Battery display with status window and state of charge



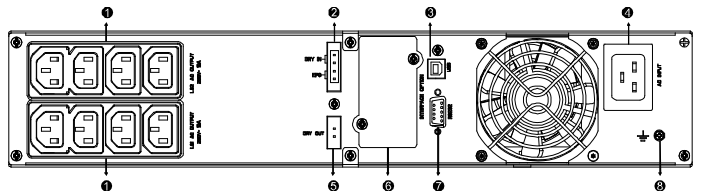
Part 1 of the UPS status display

## 4.5 Rear panel

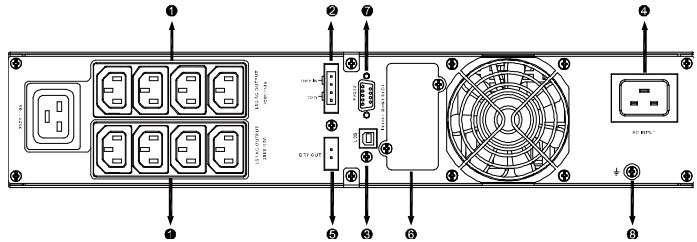
The UPS rear panel description table and pictures are shown as below.



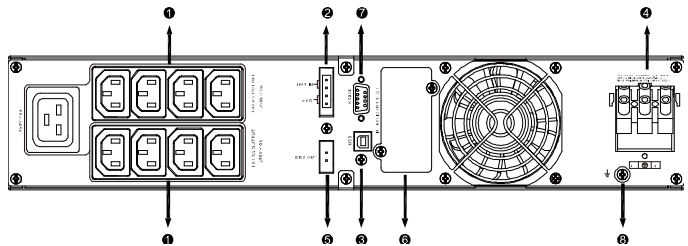
Protect D 1000(S) / 1500(S) / 2000 LCD model rear panel



Protect D 2000S LCD model rear panel



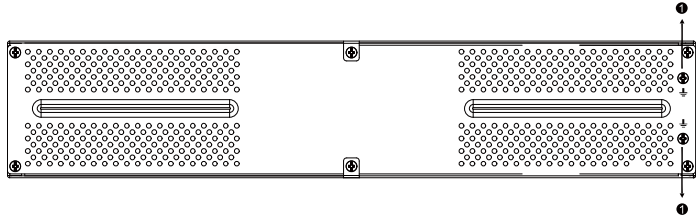
Protect D 3000 LCD model rear panel



Protect D 3000S LCD model rear panel

1. AC Output
2. EPO / Dry in Communication Port
3. USB Port
4. AC Input
5. Dry out
6. SNMP slot
7. RS232
8. Earth Line Port

The external battery pack rear panel description table and picture is shown as below.



Protect D BP LCD models' rear panel

1. Earth Line Port

## 5. ELECTRICAL CONNECTION

### 5.1 UPS input connection

The system may be installed and wired only by qualified electricians in accordance with applicable safety regulations! When installing the electrical wiring, please note the nominal amperage of your incoming feeder. Inspect the packaging carton and its contents for damage. Please inform the transport agency immediately should you find signs of damage. Please keep the packaging in a safe place for future use.

**Note:** Please ensure that the incoming feeder is isolated and secured to prevent it from being switched back on again.

If the UPS is connected via the power cord, please use a proper socket with protection against electric current, the user can refer to below table. If the UPS is connected via wires, it is recommended to select the 2.5mm<sup>2</sup> wire, and the “GND” terminal should be grounded first.

The UPS System has no input breaker on the standard cabinet. When installing the UPS, the user needs to connect the external breakers and protective components in the input terminals. It is recommended to select the NFB (Non-Fuse Breaker) instead of the traditional combination kit including breaker and fuse.

When selecting the NFB, the user can refer to below table.

Model	INPUT NFB & Power Cord & Socket	
	VOLTAGE	CURRENT
Protect D 1000(S) LCD	300 VAC	10 A
Protect D 1500(S) LCD	300 VAC	12 A
Protect D 2000(S) LCD	300 VAC	16 A
Protect D 3000(S) LCD	300 VAC	20 A



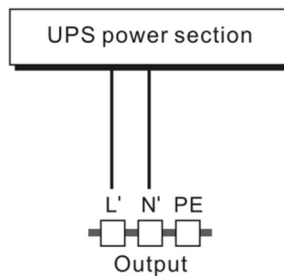
## 5.2 UPS Output Connection

The output of the UPS is made up of IEC socket-types. Simply plug the load power cord to the output sockets to complete connection. Use one cord for every 5A load.

Model	Output Socket (pcs)
Protect D 1000(S) LCD	8 x IEC320 C13
Protect D 1500(S) LCD	
Protect D 2000(S) LCD	
Protect D 3000(S) LCD	8 x IEC320 C13 + 1 x C19

The wiring configuration is shown as the following procedure:

- Remove the small cover of the terminal block
- Use 2.5mm<sup>2</sup> wires for wiring configuration
- Upon completion of the wiring configuration, please check whether the wires are securely affixed
- Put the small cover back to the rear panel



Do not connect equipment which would overload the UPS system (e.g. laser printers).

## 5.3 EPO Connection:

EPO stands for Emergency Power Off.

User can select the polarity of EPO, EPO is NC (Normally Close) as default setting.

- NO (Normally Open)

Normally the EPO connector is open on the rear panel. Once the connector is closed with a wire, the UPS would stop the output until the EPO status is disabled.



Disable the EPO status    Enable the EPO status

- NC (Normally Close)

Normally the EPO connector is closed with a wire on the rear panel. Once the connector is open, the UPS would stop the output until the EPO status is disabled.



Enable the EPO status    Disable the EPO status


## 5.4 Battery charge

Fully charge the batteries of the UPS system by leaving the UPS system connected to the mains for 1-2 hours. You may use the UPS system directly without charging it but the stored energy time may be shorter than the nominal value specified.

## 5.5 UPS turn ON


Insert the plug of the power cord into the correctly fused power outlet of your sub-distribution system. The UPS will be immediately supplied with power from the public power network. It will start up with an initialization phase, indicated by the AEG logo, which appears on the screen for 5 seconds. After that, you will see the following message:

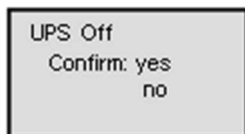


Now confirm the highlighted “UPS On” command by pressing “”. Hold the key pressed for approx. 1 second. The UPS will synchronize and switch into normal operating mode after just a few seconds. The display will switch to the UPS status display.

If there are no keys pressed for 5 minutes, the display will automatically switch back to the UPS status display.

## 5.6 UPS Turn off

If the UPS is in operation, it is possible to access the command above by pressing “” when in the basic UPS status screen.



Once you have confirmed the command again, the UPS will switch off or switch to bypass (depending on the setting selected).

# 6. OPERATING MODES

The LCD display indicates the current UPS status in the top middle section. Here is a list of the symbols used and what they mean:

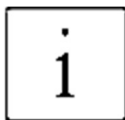
Display	Status
	<p>UPS is in normal / continuous double- conversion mode. Power supply is available and within the acceptable tolerance range (Mode: "High performance").</p>
	<p>UPS is in battery mode.</p>
	<p>UPS supplies the load via the integrated bypass.</p>
	<p>UPS is operating in frequency converter mode.</p>
	<p>UPS is in standby mode.</p>
	<p>UPS is operating in economical mode (ECO mode).</p>
	<p>UPS is operating in high efficiency mode (ECO+ mode).</p>
	<p>UPS is testing the battery.</p>

	<p>Display for 10 seconds after a successful battery test.</p>
	<p>UPS reports a defective or disconnected battery system.</p>
	<p>UPS is overloaded.</p>
	<p>UPS indicates a critical error and has switched off the UPS output.</p>
	<p>General UPS alarm. Details can be found in the Alarm messages and entries in the event log.</p>

## 6.1 Messages and alarms

Press “▶” to access part 2 of the UPS status display. It contains current messages and alarms, if any. Each message or each alarm is displayed in its own window and you can press “▶” to scroll through them.

If there is no information available, the following message will appear: “No alarms”.



Events are listed and stored in the “Event log” only (a separate menu item) with the corresponding date and time.

Part 3 of the UPS display contains information on the battery status; it can also be accessed by pressing “▶”.

<b>Battery status display</b>	<b>Description</b>
Battery charge	Batteries are currently charging with constant current.
Battery float charge	Batteries are currently being supplied with constant voltage.
Battery resting	Batteries on standby, but in “sleep” mode (part of the battery standby cycle mode).
Battery discharge	Batteries are currently discharging, e.g. due to a power outage.
Battery disconnected	Battery system not available because currently not connected.

## 6.2 Event log


Up to 127 events are stored in the internal non-volatile event memory in the UPS. The last event that occurred is the first on the list, followed by other previous events. Similar to the messages and alarms, each event is shown in its own window.

An event is indicated along with the date and time, followed by a description in plain text. The numerical code facilitates error analysis and other procedures in dealing with the event that has occurred. In the lower right- hand corner of the display, you will find the total number of events already stored as well as your position when scrolling through the window. “1/...” indicates the most recent, last stored event (= starting position when accessed).

If there are no events stored or if the event memory has been deleted, the following message will appear: “No events in the event log”.

### 6.2.1 Accessing the event log

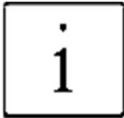
Access the event log by pressing “ESC” to go to the main menu and then pressing “◀” or “▶” to go to the “Event log” menu item (line appears highlighted) and then press “←” (basis / starting point is the UPS status display).

Return to the UPS status display by pressing “” again (or automatically after 5 minutes if no other keys are pressed).

## 6.2.2 Measurements

Select this menu item to find the following measurements in this order:

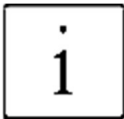
Power Usage Efficiency	[%]
Output power (active and apparent power)	[W] & [VA]
Output power (current and power factor)	[A]
Output (voltage and frequency)	[V] & [Hz]
Input (voltage and frequency)	[V] & [Hz]
Battery (voltage and charge state)	[V] & [%]
DC bus (intermediate circuit voltage)	[V]
External battery modules	
Total kWh consumption	[kWh]



If you want to see any particular measurement on the screen permanently, you can “freeze” the screen in the Measurements menu. To do so, press “◀” and “▶” for approx. 3 seconds at the same time until a small key appears in the upper right-hand corner of the display. Press the two buttons again at the same time for approx. 3 seconds to cancel this setting.

## 6.2.3 Control

During normal mode, you can active this menu item to access the following sub-menu items: “Go to bypass mode”, “Battery test”, “Reset error state” and “Load segments”.



Depending on the operating mode, only those sub- menu items that are available will appear.

“Control” / Command	Description
Go to Bypass / Normal	Possibility to change operation mode. If the UPS is not in Normal Mode or Bypass Mode this option is not

	used and should not be displayed as a control option.
Battery Test	Schedule Battery Test: yes Cancel Battery test: no
Reset Error State	Starts a manual battery test. Reset Alarms: yes   no Manually clears any latched alarms, such as bad battery detected or DC Bus over voltage/ under voltage. If a bad battery alarm was also active, reset the battery test status to "Not Tested".
Load Segments	Load segment 1: on   off Load segment 2: on   off These on/off commands override automatic load segment on/off controls made by the Automatic Start Delay and Automatic On Battery Shutdown settings.

#### 6.2.4 Configuring Load Segments



Load segments are sets of receptacles that can be controlled by power management software or through the display, providing an orderly shutdown and startup of your equipment. For example, during a power outage, you can keep key pieces of equipment running while you turn off other equipment. This feature allows you to save battery power and to get a controlled shutdown and later by using the time-delayed switching-on a controllable reboot of the network devices.

- Load segment 0: The highest-level outlets (directly fed by UPS output – not manageable)
- Load Segment 1 and 2: Outlets for loads, which should be controlled during operation, that means which should be manageable.



### 6.2.5 Identification

Activate this menu item to view the following sub-menu items: “Type / Model”, “Part number”, “Serial number” and finally the current “UPS firmware” version one after the other.

### 6.2.6 Settings

The following table provides you with a detailed description of the possible user settings using the UPS operating panel:

Description	Adjustable parameters	Presetting
Change Language	[English], [German], [French], [Spanish], [Russian] If user select German for display language, option item display as below: [English], [Deutsch], [Französisch], [Spanisch], [Russisch]	English
User Password	[enabled<AAAA>] [disabled] If Enabled, the select character between A~z and digital between 0~9. NOTE: If you enter an incorrect password, the message “Incorrect Password” appears. Press any button to return to the password screen and retry the password.	disabled
Audible Alarms	[enabled] [disabled] NOTE: If you disable audible alarms, it takes effect instantly and remains disabled, even after a power cycle. This differs from the mute feature where the horn is temporarily silenced on any button press, but turns on again if a new alarm is triggered.	enabled

Set Date and Time	Set Month,Day,Year, Hours and Minutes; Date layout: mm/dd/yyyy Time layout: hh:mm NOTE: The date format depends on the language selection. NOTE: Time is a 24-hour clock.	03/15/2019
Relay configuration	[UPS ok], [on bypass], [on Economical mode (ECO)], [on High efficiency mode (ECO+)], [on battery], [battery low], [battery fault], [battery missing], [Fan fault], [Summary Alarm]	UPS ok
Control Commands from Serial Port	[enabled] [disabled] If Enabled, control commands are accepted through Serial & USB port and cards in the communication slot. If Disabled, configuration and load control commands are restricted to LCD panel only.	enabled
Output Voltage	[220V], [230V], [240V], [auto-sensing] Setting only available in UPS stand-by mode.	auto-sensing
Output Frequency	[50Hz], [60Hz], [auto-sensing] Setting only available in UPS stand-by mode.	auto-sensing
Load Alarm Level (Overload)	[10%], [20%], [30%], ...[100%] If 100%, the UPS issues an Output Overload alarm at load > 100%. NOTE: Output Overload Level 1 by default is set to 100% and is configurable from 10% to 100% in 10% increments through the LCD setting menu. This allows customers to be alerted before the UPS has reached its rated capacity limits.	100%
Power strategy	[High performance mode (normal)], [Economical mode (ECO)],	normal

	[High efficiency mode (ECO+)], [converter] Setting only available in UPS stand-by mode.	
Automatic Start Delay	[Off], [On] = <hh>H <mm>M <ss>S Adjustment: Hours, Minutes, Seconds <00>H <00>M <00>S to <12>H <59>M <59>S If Off, automatic restart is disabled on the selected load segment and turns on only when commanded manually by on/off select button or via the display (Control => Load Segments)	Load Segment <1> 1s, Load Segment <2> 2s
Automatic on Battery Shutdown	[Off], [On] = <hh>H <mm>M <ss>S Adjustment: Hours, Minutes, Seconds <00>H <00>M <00>S to <12>H <59>M	Load Segment <1> Off, Load Segment <2> Off

To control the load segments with power management software, see your power management software manual for details. Refer to the software “CompuWatch” on [www.aegps.com](http://www.aegps.com), under Products / Monitoring solutions for latest information.

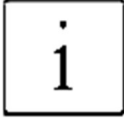
To control the load segments through the display:

1. Press “ESC” button to activate the menu options, and then select CONTROL and LOAD SEGMENTS.
2. Set the desired load segment ON or OFF, and ENTER to confirm.
3. Set the other load segment if applicable.

To set the restart and shutdown delay times for each load segment:

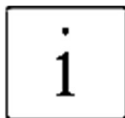
1. Press “ESC” button to activate the menu options and then select SETTINGS, and AUTOMATIC START DELAY.
2. Set the restart delay for one load segment, and ENTER to confirm.
3. Set the other load segment if applicable.
4. Select AUTOMATIC ON BATTERY SHUTDOWN.
5. Set the shutdown delay for one load segment, and ENTER to confirm.

6. Set the other load segment if applicable.



Load segment On/Off commands issued through the Control menu overrules the settings for load segments.

Description	Adjustable parameters	Presetting
Start w/o mains	[enabled], [disabled] cold Start	enabled
Battery Saving Mode	[disabled], [10%], [20%], ...[100%] On battery operation the UPS output is turned off as soon as the battery capacity is below the selected level.	disabled
Site Wiring Fault Alarm	[enabled], [disabled]	disabled
External battery modules	[0], [1], ..., [9]	0
Charger output voltage / cell	Float charging voltage per battery cell 2.21V, 2.22V, 2.23V, 2.24V, 2.25V, 2.26V, 2.27V, 2.28V, 2.29V, 2.30V, 2.31V	2.28V
Battery Charge capability % to Restart	[0%], [10%], [20%], ...[100%] When enabled, automatic restart is made when the battery charge state reaches the selected level. If set 0, the feature is disabled.	0
Automatic battery support tests	[enabled], [disabled]	enabled
Periodic Battery Tests	[daily], [weekly], [monthly]	weekly



Automatic battery tests run according to “periodic battery test”, unless disabled. During the test, the UPS transfers to Battery mode and discharges the batteries for 10 seconds under the existing load.

The “UPS on Battery” notice and the “Battery Low” alarm do not activate during a battery test.

**NOTE:** For automatic battery tests to run:

- The “Automatic Battery Support Tests” setting must be enabled.
- The UPS must be in Normal mode, with no active alarms.
- The batteries must be fully charged.
- The bypass voltage must be acceptable.

To pass the battery test, the battery voltage must remain above the threshold value during discharge.

Description	Adjustable parameters	Presetting
Ambient temperature high alarm	[enabled], [disabled] If enabled, UPS alarm when ambient temperature >40°C	enabled
EPO operation	[normally open], [normally closed] Normally open means UPS makes a shutdown by a closing input state. Normally closed means UPS makes a shutdown by an opening input state. Setting only available in UPS stand-by mode.	normally closed
Reset Cumulative Consumption kWh	[no], [yes] If “no”, no action. If “yes”, the Cumulative Consumption kWh value is cleared and the date and time stamp for this statistic is set to the current date and time.	no
Battery limit time	5h,6h,...14h,15h,16h,...999h, disabled Default “14h” means when work on battery mode for more than 14	14h


hours, UPS will make bat low alarm and then shutdown itself 30 minutes later even battery voltage still above the shutdown value.

Disabled means “No time limitation” for battery mode

Auto reboot	[enabled], [disabled] Enabled means UPS will auto restart to normal mode while utility recover after the UPS has been shut down for battery low.	enabled
-------------	---	---------

The UPS automatically restarts if utility returns after the output was shut off due to exhausted batteries, a shutdown input signal, or automatic shutdown command.

You can set the load segment for the amount of time to delay the restart once utility returns, using the “Automatic Start Delay” setting. You can also configure UPS restart to depend on the battery charge level, using the “Battery Charge Capability % to Restart” setting.

Description	Adjustable parameters	Presetting
Auto bypass	[enabled], [disabled] “enabled” means UPS will have bypass output when utility power on. “disabled” means UPS will not have bypass output when power on but could get bypass output when UPS is fault or overload.	enabled
Clear Event Log	The number after “Total events” shows how many events are currently stored in the log. Press the “  ” button for one second to reset the event count to zero and clear the log.	—
LCD Contrast	[-5], [-4], ...[-1], [0], [+1], ...[+4], [+5] The LCD Contrast is adjustable and the valid range is from -5 to +5.	0

Restore Factory Settings	[no], [yes] Setting only available in UPS stand-by mode. Restoring the factory settings: - Returns all user-configurable EEPROM settings to default factory settings - Resets all pending on/off commands - Clears the Event Log and resets all time stamps - Resets the battery test status - Initiates the Self Diagnostics test	No
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The “Restore Factory Settings“ process is completed after the UPS was switched off completely. Wait until the fans stopped to allow the UPS internal EEPROM overwriting.

## 7. INTERFACES AND COMMUNICATIONS

### 7.1 RS-232 and USB communication ports

To establish communication between the UPS and a computer, connect a computer to one of the UPS communication ports by using an applicable communication cable.

**NOTE:** Only one of the communication ports can be active at one time. The USB port has priority over the RS-232 port. When a communication cable is installed, the power management software can exchange data with the UPS. The software polls the UPS for detailed information on the status of the power environment. If a power emergency occurs, the software initiates the saving of all data and an orderly shutdown of the equipment.

### 7.2 USB port

The UPS can communicate with a USB-compliant computer by using HID-compatible power management software.

To establish communication between the UPS and a computer, connect the USB cable that comes with the UPS to the USB port on the UPS. Connect the other end of the USB cable to the USB port on a computer.

### 7.3 Installing a Serial Network Management Card (optional)

Each UPS has one available communication bay, which supports the optional Serial Network Management Card. After you install a Serial Network Management Card, you can connect an environmental monitoring probe to the UPS.

**Note:** You do not have to shut down the UPS before you install a communication card.



To install the Network Management Card, complete the following steps:

1. Locate the UPS communication bay.
2. Remove the two screws that secure the communication bay cover to the UPS and save the screws.
3. Insert the Serial Network Management Card into the slot on the UPS.
4. Secure the Serial Network Management Card to the UPS with both screws.

For more information about the Serial Network Management Card, see the Serial Network Management Card User's Guide.

## 7.4 Dry Contact port

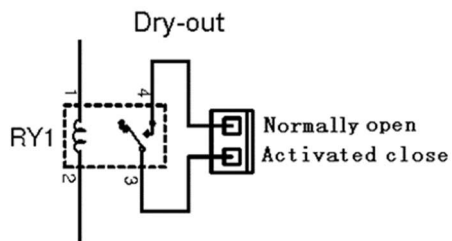
The UPS incorporates build-in single programmable relay output with potential free contact for remote alarm indication: Dry out port; And incorporates single signal input: Dry in port. See figure in the UPS rear panel for the locations of the ports.

The relay output can be configured by protocol command setting, the default output contact is "Summary Alarm"; The signal input to control UPS On/Off status does not need to be configured, its function is the same as one button to control UPS On/Off status.

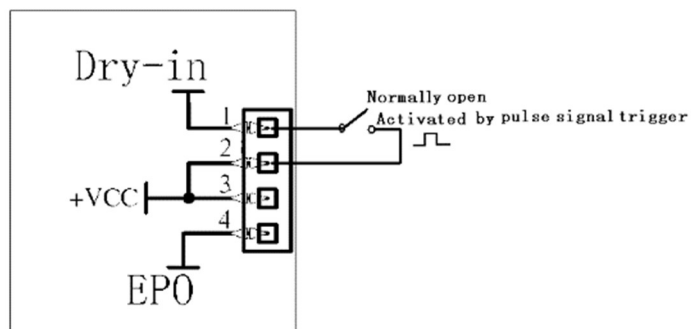
**Note:** The relay output contact must not be connected to any utility connected circuits. Reinforced insulation to the utility is required. The relay output contact has a maximum rating of 30Vac/1A and 60Vdc/2A normal values.

The following figures show schematic of the dry out/in contacts.

- Dry out contact schematic



- Dry in contact schematic



The following table shows the options for the dry out/in contacts.

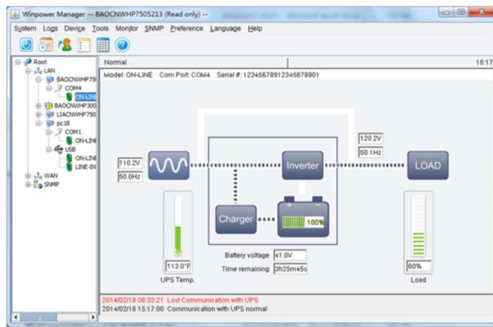
<b>Dry out signal</b>	<b>Description</b>
Summary Alarm	Activated when any warning happens
On Battery	Activated when the UPS operates on battery
Battery Low	Activated with the "bLOW" alarm
UPS ok	Activated when the UPS has no alarms and no fault.
On Bypass	Activated when the UPS has bypass output.
Dry in signal	Description
UPS On/Off	One second pulse activate, if active, the UPS turns off when UPS is on inverter; the UPS turns on when UPS is not on inverter. It is the same as a remote button to control UPS On/Off status.

# 7.5 UPS management software

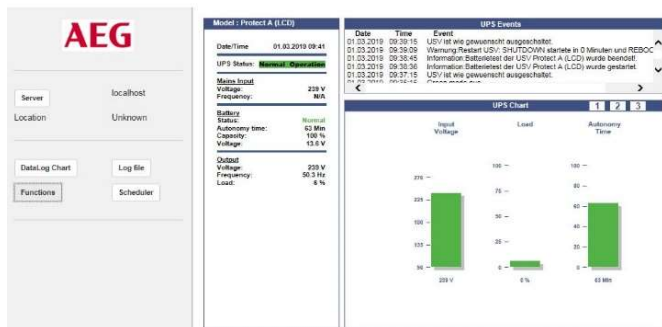
For the UPS settings, management and shutdown scheduling AEG can propose two different solutions:

- Advanced software package CompuWatch
- Lite software package WinPower

For more details, please visit [www.aegps.com](http://www.aegps.com) under Products / Monitoring Solutions. There you can download software package and documentation.



WinPower



CompuWatch

## 8. TROUBLESHOOTING

If the UPS system does not operate correctly, please attempt to solve the problem using the table below.

<b>Problem</b>	<b>Possible cause</b>	<b>Remedy</b>
No indication, no warning tone even though system is connected to mains power supply	No input voltage	Check building wiring socket outlet and input cable.
Display Mode string "STBY" in LCD, even though the power supply is available	Inverter not switched on	Press On-Switch "I".
Display Mode string "bATT" in LCD, and audible alarm sounding every 1 beep in every 4 seconds	Mains power supply has failed, or Input power and/or frequency are out of tolerance	Switching to battery mode automatically. Check input power source and inform dealer if necessary.
Emergency supply period shorter than nominal value	Batteries not fully charged / batteries defect	Charge the batteries for at least 5-8 hours and then check capacity. If the problem still persists, consult your dealer.
Fan fail	Fan abnormal	Check if the fan is running
Battery over voltage	Battery is over charged	Stop charging to battery automatically, and after the battery voltage is normal and the mains is normal, charge automatically again.
Battery low	Battery voltage is low	When audible alarm sounding every second, battery is almost empty.
Charge fail	The charge is broken	Notify dealer.

Inverter temperature high	Inside temperature of the UPS is too high	Check the ventilation of the UPS, check the ambient temperature.
Ambient temperature high	The ambient temperature is too high	Check the environment ventilation.
Battery open	Battery pack is not connected correctly	Check the battery bank is connected to the UPS. Check the battery breaker is turn on.
Battery fault	Battery may need to be replaced	Notify dealer
Overload	Overload	Check the loads and remove some non-critical loads. Check whether some loads are failed.
Site fail	Phase and neutral conductor at input of UPS system are reversed	Rotate mains power socket by 180° or connect UPS system.
EPO active	EPO function is enabled	Turn off the EPO switch.
Bus fault (Low / High / Unbalance / Soft start)	UPS internal fault	Notify dealer
Inverter fault (Low/high/soft start)	UPS internal fault	Notify dealer
Over temperature fault	Over temperature	Check the ventilation of the UPS, check the ambient temperature and ventilation.
NTC open	UPS internal fault	Notify dealer

Inverter short	Output short circuit	Remove all the loads. Turn off the UPS. Check whether the output of UPS and loads is short circuit. Make sure the short circuit is removed, and the UPS has no internal faults before turning on again.
Bus short	UPS internal fault	Notify dealer

Please have the following information at hand before calling the After-Sales Service Department:

1. Model number, serial number
2. Date on which the problem occurred
3. LCD display status, Buzzer alarm status
4. Utility power condition, load type and capacity, environment temperature, ventilation condition
5. The information (battery capacity, quantity) of external battery pack if the UPS is "S" model
6. Other information for complete description of the problem

# 9. MAINTENANCE

## 9.1 Operation

The UPS system contains no user-serviceable parts. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case please contact your dealer.

For the best preventive maintenance, keep the area around the UPS clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner. For long battery life, keep the UPS at an ambient temperature of 25°C (77°F)

## 9.2 Storage

If the batteries are stored in temperate climatic zones, they should be charged every three months for 1~2 hours. You should shorten the charging intervals to two months at locations subject to high temperatures.

When the UPS is intended to store for a long period, recharge the battery every 6 months by connecting the UPS to utility power. The batteries charge to 90% capacity in approximately 4 hours. However, it is recommended that the batteries charge for 48 hours after long-term storage.

## 9.3 Battery Replace

If the battery service life has been exceeded, the batteries must be replaced. Battery replacement should be performed only by qualified personnel.

When the discharging time is less than 50% of specified after full charged, the battery may need to be replaced. Please check the battery connection or contact your local dealer to order new battery.

It recommends shutting off the UPS completely before the replacement. If there is a battery breaker then turn it off first. Disconnect the battery cable carefully and make sure no any exposed wires can be touched. Reconnect the new batteries to the UPS by following section 3.3.1 *External battery pack installation*. Then turn on the battery breaker and start the UPS.

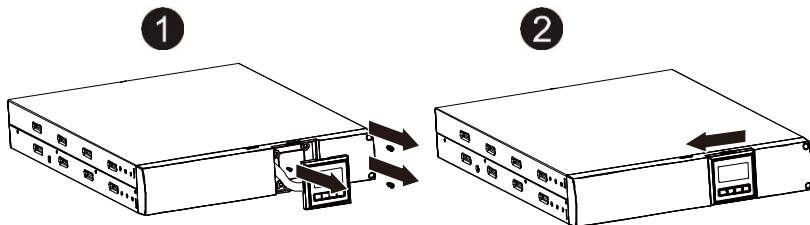


If it needs to replace the batteries while the UPS is running, make sure the UPS would not shut down during the replacement. If there is a battery breaker then turn it off first. Disconnect the battery cable carefully and make sure no any exposed wires can be touched.

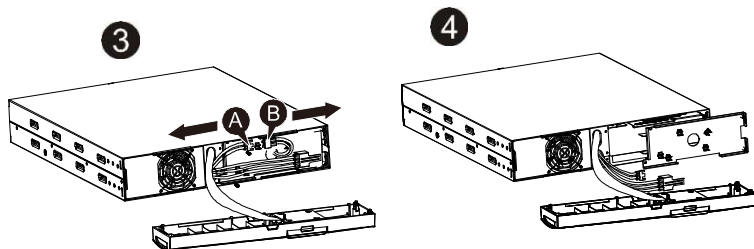
Reconnect the new batteries to the UPS by following section 3.3.1 *External battery pack installation* Then turn on the battery breaker and press the ON switch to make the UPS do the battery test, check whether the battery information is normal.

Follow the steps and Charts as below to replace batteries:

1. Take off the LCD box and remove the screws.
2. Slide and Pull the front panel leftward and then take it off.

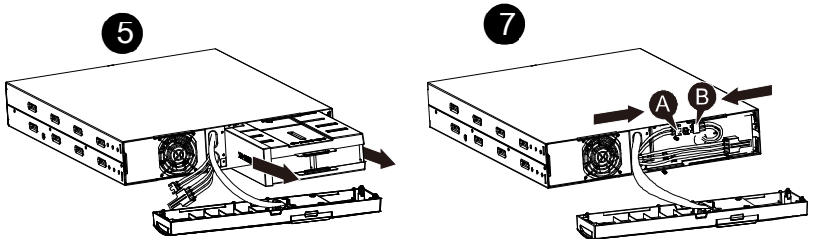


3. Disconnect the cable from the UPS and battery pack.
4. Remove the right inner battery bracket.



5. Pull the battery pack out onto flat area.
6. Install new battery pack into UPS.

7. Screw up the battery bracket and reconnect the battery cable A and B
8. Re-install the front panel back to UPS.



## 9.4 Testing New Batteries

For a battery test, please check:

- The batteries must be fully charged.
- The UPS must be in Normal mode with no active alarms.
- Don't take on/off the load.

To test batteries:

1. Connect the UPS to utility power for at least 48 hours to charge the batteries.
2. Press and hold the "I" button 1 second to start the battery test on line mode or HE mode. The status display string shows "TEST"

## 9.5 Recycling the used equipment

Contact your local recycling or hazardous waste center for information on proper disposal of the used equipment.

Do not dispose of the batteries in the fire. Which may cause battery explosion. The batteries must be rightly disposed according to local regulation.

Do not open or destroy the batteries. Escaping electrolyte can cause injury to the skin and eyes. It may be toxic.

Do not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead acid batteries and must be disposed of properly. For more information, contact your local recycling/ reuse or hazardous waste center.

Do not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

The UPS is designed for durable, automatic operation and also alert you whenever potential operating problems may occur. Usually the alarms shown by the control panel do not mean that the output power is affected. Instead, they are preventive alarms intended to alert the user.

- Events are silent status information that are recorded into the Event log. Example = "Battery charging".
- Alarms are recorded into the Event log and displayed on the LCD status screen with the logo blinking. Some alarms may be announced by a beep every 1 second. Example = "Battery low".
- Faults are announced by a continuous beep and red LED, recorded into the Event log. Example = Out. short circuit.

## 9.6 Disposal

This section tells you how to dispose of the individual components of the equipment.

- **Packaging:** Dispose of the stretch plastic film and the moulded parts made from polyethylene foam with normal industrial waste. They are chemically inactive and can be disposed of or recycled.
- **Metal parts:** Take metal parts to a scrap metal dealer. The equipment housing, the lines, the inverter, the rectifier and the transformers can be recycled via normal routes.
- **Electronics components:** Take the electronics components to a recycling company which specialises in disposing of electronics components.
- **Batteries:** Follow the specifications set out by the battery manufacturer for toxic and hazardous substances.

Batteries must be removed from all parts of the equipment and disposed of in accordance with the regulations for toxic and hazardous substances.

- **Other components:** Dispose of rubber seals and plastic parts with industrial waste. They can be disposed of or recycled.




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Electrical and electronics waste must only be disposed of in compliance with local legislation and regulations.

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Never dispose of used batteries or battery material with refuse. Ensure compliance with local legislation and regulations governing the storage, handling and disposal of batteries and battery material.

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Certificate of guarantee

Model:

Serial number:

Date of purchase:

Trading stamp / Signature

Specifications are subject to change without notice

Operating instructions  
8000068306 BAL, EN

**AEG Power Solutions**

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