

POWER SOLUTIONS

PROTECT A

User Manual

Protect A 500 LCD Protect A 700 LCD Protect A 1200 LCD Protect A 1600 LCD





REVISION

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Thank you for purchasing the AEG PS UPS Protect A LCD 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.

Warranty & Service Information:

Thanks for buying this UPS product. Please follow the instructions in the product manual and if applicable the software installation manual, to have the maximum use of your product.

Installing the software:

If your products comes with software you will find a CD Rom in the box containing the software.

Please follow the instructions when installing the software. You can download the software, manual and short reference manual at the following site: www.ups-software-download.com.

Problem solving:

Please check the chapter in your manual (hardware and software) on problem solving.

If this not solve your problem please contact your reseller for advice.

Service and Maintenance:

If the product requires service or maintenance, no matter it is under or out of warranty period always contact your reseller for the procedures. In any case always make sure that service or maintenance on the product are performed by a qualified technician.

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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 A 500 LCD, Protect A 700 LCD, Protect A 1200 LCD and Protect A 1600 LCD - referred to as Protect A in this document - safely and properly, and for its intended purpose. These operating instructions contain important information for avoiding dangers.

1.2 Please Read These Instructions Carefully Prior to Commissioning!

These operating instructions are a composite part of Protect A. The owner of this unit is obliged to communicate the full content of these operating instructions to all personnel transporting or starting the Protect A or performing maintenance or any other work on the unit, without the information having to be requested.

1.3 Validity

These operating instructions comply with the current technical specifications of Protect A at the time of publication. The contents do not constitute 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 for damage caused by noncompliance with these instructions (such damage also includes damage to the warranty seal). AEG will accept no liability for consequential damage. AEG will rescind all obligations such as warranty agreements, service contracts, etc. entered into by AEG or its representatives without prior notice in the event of maintenance and repair work being carried out with anything other than original AEG parts or spare parts purchased from AEG.

1.5 Handling

Protect A 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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This document must not be reproduced, either in whole or in part, without the express permission of AEG Power Solutions GmBH.

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. SYSTEM OVERVIEW



Protect A is an **u**ninterruptible **p**ower **s**upply (UPS) for essential loads such as PCs, workstations, relatively small-scale telecommunication equipment and similar devices.

The Protect A series is a compact, interactively operating step wave UPS available with nominal power output ratings 500, 700, 1200 and 1600 VA.

This document describes all types.

2.1 Brief Overview

LCD display, a pushbutton switch and fast charging USB port are located on the front of the UPS for straightforward monitoring and operation. The display unit with recognisable icon functions clearly signals the particular operating condition: normal operation, battery discharge, battery status, fault.

The connections for the mains and the loads are located on the rear of the Protect A, as are the communication interfaces and connections for telephone lines. Important UPS data is monitored permanently and transferred to the computer via USB or the RS232 interface and using the CompuWatch or WinPower software.

Features of Protect A:

- VI (line interactive) protection technology
- Automatic voltage regulation against mains voltage deviations (AVR)
- Microprocessor control for high reliability and efficiency
- DC cold start function as well as auto restart while AC is in recovery
- Modern battery management with integrated protection against exhaust. discharge and overloading
- User-friendly graphic LCD display with optimum legibility
- Intelligent monitoring system with USB and RS232 interfaces for fax, modem and phone
- RJ45 (in/out) 1000Mb Ethernet surge protection
- Provides DC 5.1V 2.0Amp USB charger on front panel
- CompuWatch and WinPower software for shutdown, status messages and measurement values for all major operating systems (incl. Windows, Mac, Linux)

- Compact design / without fan on all units except Protect A 1600 LCD which has a fan on the back of the unit
- Fully compliant with generator input

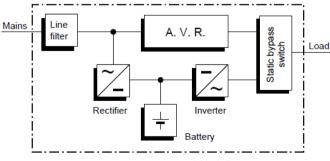
2.2 Principle of Operation

The UPS is connected to a shockproof socket between the public utility's mains and the loads to be protected.

Under normal operating conditions, i.e. if Protect A is supplied with mains voltage, the battery charger will ensure that the battery is always completely charged.

During this operating status, the loads connected to Protect A are supplied with voltage via mains filters which provide effective protection against mains voltage peaks and high-frequency faults.

In case of sustained mains under voltage or overvoltage within defined ranges, the automatic voltage regulator (AVR) further stabilises the load voltage. As a result, voltage fluctuations in the public utility's mains are reduced to a level which is acceptable for the loads. This is performed without recourse to the internal energy storage, something which in turn has a positive effect on battery availability.



Protect A UPS block diagram

The static bypass switch is activated in the event of a mains failure. The inverter then takes over the voltage supply of the connected loads, in order to prevent the risk of data loss or damage to the loads. Protect A supplies voltage until the battery is discharged or your IT system has been shut down and switched off properly.

The standby time mainly depends on the connected loads. If the mains power supply is back to normal values, the UPS will automatically switch back the loads to mains supply. The battery charger will then recharge the battery.

For safety reasons (as required by German standards, VDE), the mains input in the unit will be disconnected by a two-pole switch in the event of a mains failure. Energy backfeed to the mains and voltage supply to the pins of the mains connector are thus reliably avoided.

Furthermore, additional measures ensure effective protection for the data/network interface.

3. SAFETY

3.1 General Safety Instructions

Read these operating instructions carefully prior to commissioning of Protect A UPS and observe the safety instructions!

Only use the unit if it is in a technically perfect condition and always in accordance with its intended purpose, while being aware of safety and danger aspects, and in accordance with the operating instructions! Immediately eliminate any faults that could be detrimental to safety.

The following pictograms are used in these operating instructions to identify dangers and important information:



Danger!

Identifies risk of fatal injury to the operator.



Attention!

Identifies risk of injury and risk of damage to the device and parts of the device.



Information!

Useful and important information for operating the UPS.

3.2 Safety Instructions for Protect A

This chapter contains important instructions for Protect A. These must be followed during assembly, operation and maintenance of the uninterruptible power supply and the batteries.



The UPS is live, and the voltage can be dangerous. The unit may only be opened by trained and qualified personnel. Repairs may only be carried out by qualified customer service staff!



The output may be live, even if the UPS is not connected to the mains supply, as the UPS has its own internal power supply (battery)!



For health and safety reasons, the unit must be earthed correctly!

Protect A may only be operated with or connected to a 220 / 230 / 240 VAC mains with protective grounding using a mains connection cable with PE conductor (included in the delivery) that has been tested in accordance with German standards (VDE).

Risk of burning!



The battery has powerful short-circuit currents. Incorrect connection or isolation faults can lead to melting of the plug connections, sparking potential and severe burns!



The unit has a warning signal that sounds when the battery voltage of Protect A is exhausted or when the UPS is not working in its normal mode.



Observe the following safety instructions to ensure permanent operational safety of and safe work with the UPS:

- Do not dismantle the UPS! (The UPS does not contain any parts that require regular maintenance. Bear in mind that the warranty will be invalidated if the unit is opened!)
- Do not install the unit in direct sunshine or in close proximity of heaters!
- The unit is designed to be installed inside in heated rooms. Never install the UPS in the vicinity of water or in an excessively damp environment!
- Condensation may occur if the UPS is brought from a cold environment into the room where it is to be installed. The UPS must be absolutely dry prior to startup. As a result, leave it to acclimatise for at least two hours.
- Never connect the mains input and the UPS output!
- Ensure that no fluids or foreign bodies can penetrate the UPS!

- Do not block the air vents of the unit! Make sure, for example, that children do not insert any objects in the ventilation openings!
- Do not connect household appliances such as hairdryers to the UPS!
- The mains connection should be near the unit and easily accessible to facilitate disconnecting the AC input or pulling out the plug!
- During operation, do not disconnect the mains connection cable from the UPS or from the socket outlet in the building (shockproof socket), otherwise the protective grounding of the UPS and all the loads connected to it will be cancelled.

\wedge

Danger! Electric shocks!

Even after the mains voltage has been disconnected, the components within the UPS remain connected to the battery and can thus cause electric shocks. It is therefore imperative to disconnect the battery circuit before carrying out any maintenance or repair work! If it is necessary to replace the battery or carry out maintenance work.



this must be done by or under the supervision of a specialist familiar with batteries and the necessary safety precautions! **Only authorized persons are allowed in the vicinity of the batteries!**

When replacing the battery, the following must be observed: Only ever use an identical, maintenance-free sealed lead battery with the same data as the original battery.



Danger! Explosive!

Never throw batteries into open fire. Never open or damage batteries. (Electrolyte may leak out and damage skin and eyes. It may be toxic!)

Batteries can cause electric shocks and high short-circuit currents. Therefore, take the following safety precautions when working with batteries:

• Take off watches, rings and other metallic objects!



Only use tools with insulated handles!

For personal safety reasons, never switch on the main switch when the mains connector of Protect A is disconnected!

3.3 Technical Data

Type rating

Protect A 500 LCD Protect A 700 LCD Protect A 1200 LCD Protect A 1600 LCD 500 VA / 300 W 700 VA / 420 W 1200 VA / 720 W 1600 VA / 960 W

UPS input

Nominal connection voltage Voltage range without battery	230 Vac 170 Vac to 280 Vac
Frequency (automatic detection)	50 / 60 Hz
Connection	Non-heating appliance
	connector IEC 320 C 14
UPS output	
Rated output voltage	230 Vac
Rated output voltage in	±10 %
battery operation	
Frequency in battery operation	50 Hz / 60 Hz ± 1 Hz
Nominal output current	2.2 A (Protect A 500 LCD)
	3.0 A (Protect A 700 LCD)
	5.2 A (Protect A 1200 LCD)
	7.0 A (Protect A 1600 LCD)
Changeover time in the event	2-6 ms (Protect A 500
	of mains failure (typical)
	LCD and Protect A 700
	LCD) 4-8 ms (Protect A
	1200 LCD and Protect A
	1600 LCD)
Type of voltage wave	Modified sine wave
Connection	4* IEC outlet (Protect A
	500 LCD/700 LCD)6* IEC
	outlet (Protect A 1200
	LCD/1600 LCD)
Protection against over-	Yes
temperature and short circuit	

Battery	
Autonomy time at nominal load Exhaustive discharge protection/ protection against excess load	1 min Yes
Charging time (to 90% of rated capacity)	4h
Type Battery size and quantity	Sealed,maintenance-free 12V / 7Ah x 1 (Protect A 500 LCD) 12V / 9Ah x 1 (Protect A 700 LCD) 12V / 7Ah x 2 (Protect A 1200 LCD) 12V / 9Ah x 2 (Protect A 1600 LCD)
Communication	
Interfaces Shutdown software General data	USB and RS232 For all common operating systems, e.g. Windows, Linux, Mac, Unix, FreeBSD, Novell, Sun
Inherent noise (1m distance)	< 40 dB(A) (Protect A 500/700/1200 LCD) < 45 dB(A) (Protect A 1600 LCD)
Operating temperature range Humidity	0 °C to 40 °C 0 to 90 % (without condensation)
Installation height	Up to 1000m at nominal output
Housing colour Dimensions (DxWxH) and weight	Silver/black 290 x 100 x 143 mm / 4.4 kg (Protect A 500 LCD) 290 x 100 x 143 mm / 5.2 kg (Protect A 700 LCD) 360 x 139 x 195 mm / 9.7 kg (Protect A 1200 LCD) 360 x 139 x 195 mm / 10.7 kg (Protect A 1600 LCD)

Cooling type

Storage temperature range

UPS with integrated battery Conformity Increase natural cooling with additional fan for Protect A 1600 LCD -15 °C to +50 °C (UPS electronics) 0 °C to +40 °C CE

Directives

Protect A product line meets the product standard EN 62040-3: 2011. The CE mark on the unit confirms compliance with the EC outline directives for 2014 / 30 / EU EMC guideline and 2014 / 35 / EU Low voltage guideline and in conformity with related standards EN 62040-2:2006 and EN 62040-1:2008+A1:2013.

4. SET-UP

4.1 Unpacking and Inspection

The unit has been completely checked and inspected. Although the device has been packed and shipped with the usual degree of care, damage during transport cannot be ruled out completely.



Claims for damage during transport must always be made with the transport company!

Check the shipping container for damage on arrival. If necessary, ask the transport company to check the goods and make a record of the damage in the presence of the transport company employee and report the damage to the AEG representative or dealer within eight days of delivery.

Check the content is complete:

- package: UPS Unit x 1
- Start-up manual x 1
- Warranty card x 1
- USB cable x 1
- RJ45 cable x 1
- Input power cord x 1
- Output power cord x 1

Please contact your distributor in case of any discrepancy.

The original packaging provides effective protection against mechanical shocks and should be retained so the unit can be transported safely later on.



Please keep the plastic packaging bags away from babies and children in order to safeguard against suffocation accidents.

4.2 Installation Site

Protect A is designed to be installed in a protected environment. When installing the unit, pay attention to such factors as sufficient ventilation and suitable ambient conditions.

Protect A is air/fan-cooled. Do not obstruct the air vents!

The UPS should preferably be operated at room temperature (between 15 °C and 25 °C).

Install the UPS in a room that is dry, relatively dust-free and free of chemical vapours.

Make sure that no magnetic storage media are stored and/or operated close to Protect A.

Check the nameplate to make sure the voltage and frequency data correspond to the values applicable to your loads.

4.3 Front Panel



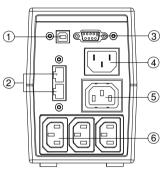
3 ഹ (2) AEG

1) Power ON/OFF

(2) LCD Indications

③ USB charger 5V 2A max

4.4 Back Panel



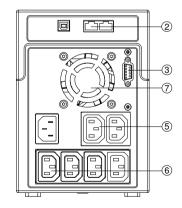
2. RJ45 LAN/modem/ phone line

1.

USB Port

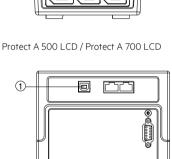
- protection 3. RS232
- 4. AC Input
- Bypass & Surge(Protect A 5. 500/700)
 - 2* Bypass & Surge(Protect A 1200/1600)
- 3* IEC outlet (Protect A 6. 500/700) 4* IEC outlet (Protect A 1200/1600)
- 7. Fan

4



Protect A 1600 LCD





Protect A 1200 LCD

4.5 Display

When LCD starts to work, it will display all information for 3 seconds.

IN BATTERY Hz Vdc Vac

When in AVR mode, it will display as below. And the mark will flicker every 1 second.



When in normal mode, it will display as below.



When in battery mode, it will display as below.

And the mark will flicker every 1 second.



Note: If I/P-V<40V, input voltage will display "000"

When in off charging mode, it will display as:



When in off charging mode, it will display as:



Note: the output voltage always is displayed

4.5.1 Load capacity level display



Indicate the percentage of UPS load capacity which is being used by the protected equipment. Each LCD level bar indicates a 25 % of the total UPS output capacity.

4.5.2 Battery capacity definition



Indicate the amount of battery volume remaining. Each battery volume level bar indicates a 20 % of total battery volume.

4.5.3 Overload indication



Indicate overload. When there is overload on the UPS, mark flickers every 1 second.

4.5.4 Battery low indication



Indicate low battery. When battery low on the UPS, mark flickers every 1 second.

4.5.5 Audio indication

Audible Alarm	Situation
Sounding every 10 seconds	Battery Mode
Sounding every 1 second	Battery Low
Sounding every 0.5 seconds	Overload
Continuous sounding	Faulty

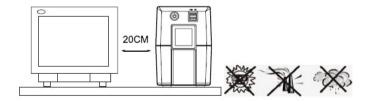
5. INSTALLATION AND INITIAL SETUP

5.1 Check

Remove the UPS from its transport packaging and check that it has not been damaged in transit. If you find any damage, pack the unit up again and send it back to where you purchased it.

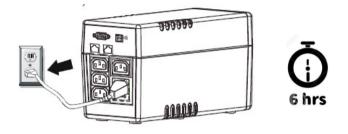
5.2 Placement and Storage Conditions

Install the UPS in a protected area that is free of excessive dust and has adequate air flow around the unit, and is free from excessive dust, corrosive fumes and conductive contaminants. Please place the UPS away from other units at least 20 cm to avoid interference. Do NOT operate the UPS where the temperature exceeds 0-40 °C and the humidity is over 0-90 % RH.



5.3 Connect to Utility and Charge

Plug in the AC input cord to the 2-pole, 3-wire grounded wall outlet. For the best results, we suggest charging the battery at least 6 hours with no load (no electrical devices such as computers, monitors, etc.) connected before initial use. The unitcharges its battery while connecting to the utility.





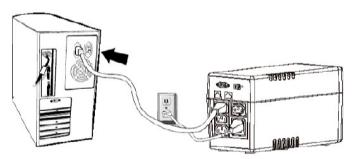
The battery is charged irrespectable of the settings on the UPS

5.4 Connect the Loads

Plug in the loads to output receptacles on the rear panel of the UPS. Simply turn on the power switch of UPS unit, and devices connected to the UPS will be protected by UPS unit.



Do not attach a power strip or surge suppressor to the UPS.



5.5 Connect 1000Mb Ethernet for Surge Protection

Connect for example a single modem line into surge-protected outlet on the back panel of the UPS unit. Connect from another outlet to the computer with another line cable.

5.6 Connect USB Cable

To monitor the UPS status, such as unattended UPS shutdown and start-up, by using bundled software, please connect the UPS and PC with USB cable included.



NEVER connect a laser printer or scanner to the UPS unit, because in-rush current generated by motor's devices may cause the damage of the unit.

5.7 Turn On/Off the Unit

Turn on the UPS unit by pressing the power switch. Turn off the UPS unit by pressing again the power switch.

Normally, the UPS operates continuously. The UPS now supplies the output with voltage, this being signalled by the LCD display.

6. SOFTWARE INSTALLATION ON YOUR PC

Connected by USB to a PC or notebook, the Software enables communication between the UPS and the computer. The UPS software monitors the status of the UPS, shuts down the system before the UPS is exhausted and can remotely observe the UPS via the Network (enabling users to manage their system more effectively). Upon AC failure or UPS battery low, UPS takes all necessary actions without intervention from the system administrator. In addition to automatic file saving and system shut-down functions, it can also send warning messages via

pager, e-mail etc.

- Use the bundled CD and follow the on-screen instructions to install the software.
- Enter the following serial No. to install software: 511C1-01220-0100-478DF2A
- After the software is successfully installed, the communication with UPS has been established and a green icon will appear in the system tray.



- Double-click the icon to use the monitor software (as above).
- You can schedule UPS shutdown/start-up and monitor UPS status through PC.
- Detail instructions please refer to the e-manual in the software.



Check <u>www.aegps.com</u>, than go to Products / Monitoring solutions from time to time to get the latest version of monitoring software.

7. SMART BATTERY FUNCTION

When UPS connects to Windows PC with USB cable, it will show a battery icon located in the system tray, near the clock. You can get some basic information (e.g. Charging/Discharging, battery remaining capacity) by clicking the battery icon.



You can set PC's Operating System (OS) to Sleep/Hibernate/ Shutdown OS or do nothing when it reached Battery Low Level or Battery Critical Level (even without any additional software installation).

Change settings for th Choose the sleep and display	e plan: Balanced settings that you want your comp	uter to use.	wanced settings Select the power plan that you want to o then choose settings that reflect how yo computer to manage power.	ustomize, and ou want your
	Cn battery	🝠 Plugged in	Computer to manage power. Change settings that are currently unavailable	ale
O Dim the display:	5 minutes •	30 minutes	Balanced [Active]	
Turn off the display. Pit the computer to rise # Adjust plan highlyness Oursys sharead poses sati	• 0 *	1 hour Never	Multimedia settings Battery Critical battery action On battery: Hibernate Phaged in: Do nothing Low battery: 10% Phaged in: 10% Phaged in: 10% On battery: 10% On battery: 10% On battery: 10%	
Restore default settings for th	s plan		<u>Restore</u>	plan defaults

8. TROUBLESHOOTING

Symptom	Pos	sible Cause		Remedy
_	1.	Battery weak	1.	Charge battery up to 8 hours
No LED display on the front panel	2.	Battery defect	2.	Replace with same type of battery
	3.	Power switch is not pressed	3.	Press the power switch again
Alarm buzzer beeps continuously when AC supply is normal.		Overload of the UPS		Verify that the load matches the UPS capability specified in the specification.
	1.	Overload of the UPS	1.	Remove some non-critical load
When power	2.	Battery voltage is too low	2.	Charge battery for 8 hours or more
failure, back-up time is shorten.	3.	Battery defect due to high temperature operation environment, or improper operation of battery	3.	Replace with the same type of battery
Mains normal but LED is flashing		Power cord is loose.		Reconnect the power cord.

If any abnormal situations occur that are not listed above, please stop using the unit and contact your reseller for advice.

When replacing the batteries, use batteries with exactly same specifications.

The battery must be replaced exclusively by qualified personnel (risk of shock).



Do NOT replace battery by oneself. Please contact your reseller if need.

9. MAINTENANCE

Protect A consists of state-of-the-art, non-wearing components. We do, however, recommend regular visual checks of the unit to maintain its continuous availability and operational reliability. Check whether:

- there is any mechanical damage or foreign bodies can be found in the system,
- any conductive dirt or dust has accumulated in the unit,
- accumulation of dust affects heat supply and dissipation.



CAUTION:

UPS must be disconnected from the power supply prior to carrying out the following work.

If large quantities of dust have accumulated, the unit should, as a precaution, be cleaned with dry compressed air, in order to ensure adequate heat dissipation.

The intervals at which visual checks should be performed are primarily determined by the site conditions.

Checking the battery

Progressive ageing of the battery system can be detected by regular capacity checks. Every 12 months, perform measurements to compare the achievable standby times, e.g. by simulating a mains failure. In this case, the load should always have approximately the same capacity demand. Have the battery system renewed if the time drops drastically compared to the previous measurement.

9.1 Battery Replacement



ATTENTION:

A battery can cause an electric shock, and represents a considerable hazard if handled incorrectly.

The following precautions should be taken before the battery is renewed.

- Switch off the UPS and disconnect the mains cable from the socket.
- Remove any rings, wristwatch and other metallic objects you may be wearing.

- If the replacement battery kit is damaged in any way or shows any signs of leaking, please contact your dealer immediately.
- Recycle or dispose of the used battery appropriately.
- Never dispose of batteries by burning. The batteries might explode.



If you are not qualified to renew the battery, do not try to open the battery cover. Leave this work to qualified personnel.

10. STORAGE AND DISPOSAL



Long storage times without charging or discharging the battery at regular intervals may lead to permanent damage of the battery.

If the battery is stored at room temperature (20 °C to 30 °C) it will automatically discharge at a rate of 3-6% per month due to internal reactions. Storing the battery at temperatures above room temperature should be avoided. A high storage temperature also means a higher rate of battery degradation.



Batteries that are stored at room temperature should be recharged every six months to maintain their full capacity and service life.

Connect Protect A to the mains before putting it into storage, in order to make sure that the battery is fully charged.

The charging time should be at least 8 hours.

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.



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



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.

In the interest of environmental protection and recycling, please dispose of the individual system components in accordance with the regulations and legal guidelines when permanently taking the system out of operation.

Certificate of guarantee

Model: Serial number: Date of purchase:

Trading stamp / Signature

Specifications are subject to change without notice

Operating instructions 8000067924_00_BAL_EN

AEG Power Solutions

Emil-Siepmann-Str. 32 | 59581 Warstein-Belecke | Germany | Tel. +49 180 523 4787 | Fax +49 180 523 4789 | www.aegps.com

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