Base Load Power Hub (BLPH)

PACKING, PREPARATION FOR SHIPPING AND HANDLING AND STORAGE PROCEDURES

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Revision / Change Log

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PACKING PROCEDURE

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Packaging specifications and procedures for shipping goods

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Name	PL / D. Frei		P / M. Hitzegrad
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1. Purpose

These work instructions regulate the type of packaging for the corresponding ways of transportation.

2. Scope

These work instructions apply to the PL WHS area of AEG Power Solutions.

3. Terms, abbreviations and definitions

See IMS manual terms, abbreviations and definitions.

4. Responsibility and procedures

4.1. General informations

Depending on the nature of the goods to be shipped, different types of packaging must be chosen depending on the way of transportation chosen.

Implementation:

Depending on the type, the packaging of the respective goods is carried out by the shipping staff or by a service provider commissioned by the shipping department (special wooden packaging). The packaging chosen depends, on the one hand, on the properties of the goods and, on the other hand, on the way of transportation chosen. The employees are informed of the selected route via the picking list, so that the correct allocation of the packaging can be made using the following matrix.

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Verpackungsvorgabe anhand der Routen auf den Kommissionierlisten

Route		IPS - PV - POC - Grid & Storage Systems - P10/Blue	SNT
AB	Abholbereit	Palette / Ecken / Folie	Karton / Palette m. Folie
ABHOL	Selbstabholung	Palette / Ecken / Folie	Karton / Palette m. Folie
VB	Versandbereit melden	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 000	TNT - 1 Tag	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 001	DHL EG	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 002	DHL EWR	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 003	TNT - 2/3 Tag	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 004	TNT - 4 Tag	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 005	Luftfracht	Kiste	Karton / Palette m. Folie
EX 006	Seemäßig Verpackt	Kiste	Kiste
EX 010	Standard Export	Palette / Ecken / Folie	Karton / Palette m. Folie
EX 025	Seefracht	Kiste	Kiste
Ex 035	Seefracht Asien/Fernost	Kiste	Kiste
IN 000	Spedition Sonderfahrt	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 001	1 Tag, über Nacht Zustellung	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 0012	1 Tag, 9 Uhr Zustellung	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 0013	1 Tag, 10 Uhr Zustellung	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 0014	1 Tag, 12 Uhr Zustellung	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 002	2 Tage Zustellung	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 004	Standard Inland	Palette / Ecken / Folie	Karton / Palette m. Folie
IN 005	Mididata	Palette / Ecken / Folie	-
IN 006	Seemäßig Verpackt	Kiste	Kiste
IN 008	Bahnaufträge	-	Karton / Palette m. Folie
MITNAH	Mitnahme	Nach bedarf	Nach Bedarf
Kurier	Zustellung per Kurier	Palette / Ecken / Folie	Karton / Palette m. Folie

31.10.2018

D. Frei

S. Wille

K.-H- Luig

4.2. Types of packaging

When it comes to cabinets, a distinction is made between two standard types of packaging.

For domestic packaging, the cabinet on the pallet is provided with 4 corner protectors (blue colour) and wrapped in stretch film and provided with tipping indicators (red arrow).



For sea or air freight packaging, the cabinets are welded into an aluminum composite film using desiccants and a wooden box is built around the cabinet and provided with tipping indicators. (The HPE packaging guidelines must be observed).



5. Other applicable documents

See IMS manual applicable documents.

Co-applicable documents: See IMS manual applicable documents.

List of attachments: --

Revision history

ED 0.0: First edition
ED 0.1: New format, document in the appendix updated to October 26, 2016
ED 1.1: Content 4.2 added and adapted to new template.

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STORAGE PROCEDURE

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PROCEDURES

Storage and preservation procedures

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1. Document purpose

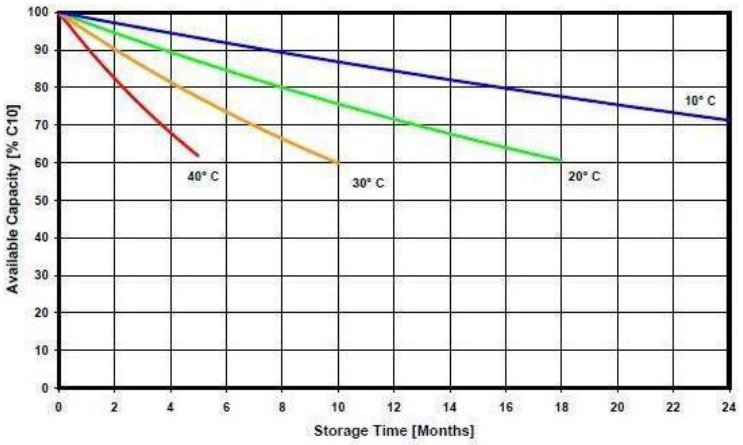
This document is intended to provide the correct procedure to storage and preserve the UPS system that is inside the AEG scope of supply. This procedure has to be applied to all items included in the scope of supply.

2. Storage modality

2.1. Warehouse

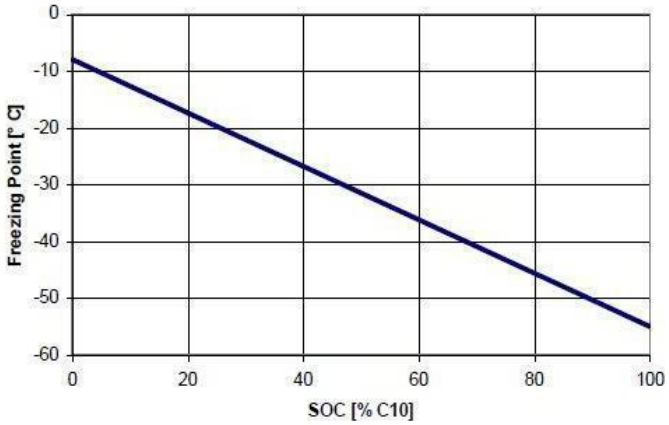
The warehouse must be a closed and covered place, with floor isolated from natural, covered with a roof to protect and attenuate the solar radiation. It is recommended an ambient ventilation to keep the room dry. Only for UPS and related auxiliary panels, the room's temperature should be between -25°C and +70°C. The relative air humidity should be between 15% and 85% not condensing.

2.2. Environmental conditions of battery



To store battery blocks for a long period of time, they should be fully charged and stored in a dry frost-free room. Don't store the battery under direct sunlight and don't expose to excessive heat. Storage of filled battery at temperatures above +30°C (+86°F) for long time can result in a permanent change and loss of product performances, depending on the duration of the storage above the maximum recommended temperature. The effect of the battery auto-discharge process will be as per table above.

Do not expose the battery to low temperature in order to avoid freezing of the electrolyte. Below the table of the freezing point of the electrolyte compared with the charging status of the battery:



2.3. Refreshing charge of battery

The maximum storage period before energization, without any refreshing charge, is 6 (six) months at 20°C. The maximum recommended storage period before energization, with periodic refreshing charge, is 18 (eighteeen) months at 20°C. Every 3 months it will be necessary to check the open circuit voltage of each battery block. If the voltage of the block is less than 12,60 Vpc a refreshing charge is needed, according to the battery manufacturer recommendations.

For the battery in our scope of supply the refreshing charge can be carried out with a voltage of 2,40 Vpc for up to 24 hours and with limited current. During the charging process the cells/blocks temperature must never exceed 40°C. If it happens, please stop charging or change to float charge to allow the temperature to drop down.

2.4. Environmental conditions of UPS

For a safe storage in case of seaworthy packing:

- select a dry and ventilated room with a stable protective roof for the storage of equipments. The temperature of the room should be between -25°C and +70°C. The relative air humidity should be between 15% and 85%
- the equipments may only be stored for a maximum period of 12 months in the original packaging.

2.5. Environmental conditions monitoring

Monitoring procedure:

- temperature and humidity recorded periodically inside the storage place. This measurement has to be done each month
- packing integrity to be checked every 3 (three) month

CHECK LIST		
Description	**Result: OK / not OK**	**Date**
Visual check of integrity case		
Visual check of eventual presence of molds and cracks		
Check of integrity of all external labels		

PROCEDURES

3. Packaging removal

The packing protects the equipment during transportation. A pallet is screwed to the underside of the equipment. It makes the transportation easier and protects the equipment whilst on the move. The housing is protected by corner and edge mouldings. It is wrapped in stretch plastic film. The film provides protection against damage caused by leaks, dust and rain.

AEG Power Solutions recommendations:

- do not remove the packing until immediately before start-up. (This to avoid unnecessary damages to the equipment)
- remove carefully any condensation that may have occurred inside and outside the equipment. The condensation is caused by variations in pressure and in temperature between where the equipment was manufactured, stored and where it is finally installed. Condensation can be volatilised by storing the equipment at the installation site for 48 hours. Remove seaworthy packaging after that period.

4. Preservation activities after the installation

4.1 Battery

Keep the battery clean and dry to avoid creeping currents. Plastic parts of the battery, especially containers, must be cleaned with pure water without additives.

At least every 6 (six) months please measure and record:
- Battery voltage
- Float voltage of some cells/blocks (as sample)
- Surface temperature of some cells/blocks (as sample)
- Battery room temperature

At least every 12 (twelve) months please measure and record:
- Battery voltage
- Float voltage of all cells / blocks
- Surface temperature of all cells/blocks
- Battery room temperature
- Insulation resistance acc. to DIN 43539 part1

At least every 12 (twelve) months please check:
- Screw connections
- Screw connections without locking devices have to be checked for tightness
- Battery installation and arrangement
- Ventilation

4.2 UPS and auxiliary cabinets

Many maintenance tasks must be carried out at periodic intervals. The following table shows the maintenance tasks to be carried out and the corresponding maintenance intervals:

Maintenance interval	Maintenance Task
3 months	Check block battery voltage
3 months	Check battery voltage
6 months	Carry out functional test
12 months	Check battery screw connections
40.000 hours	Replace fan (*)
10 years	Replace electrolytic capacitors for AC UPS
7 years	Replace electrolytic capacitors for DC UPS
5 years	Replace input filter

(*) The maintenance interval for "Replace fan" depends upon the ambient conditions. If large quantities of dust have accumulated, clean the equipment at regular intervals using dry compressed air.

5. Responsability

The customer is responsible of the storage and preservation of the items according to the conditions mentioned above. Periodically a report shall be issued in order to record the storage and the environmental conditions.

6. Treacebility

Marking-Cases: the items will be packed according to project specification and identified in the related packing list. Each case will be identified by a tag-mark.

Final Storage Documentation: after the storage period (before the installation) all the cases will be photographed highlighting the related mark of the case. This document will be shared between the customer and AEG PS.

Communications: the customer will guarantee that will communicate to AEG PS if any event compromising the integrity of the equipment will happen. AEG PS will reserve the right to organize and expediting to check the packing status of the items held in storage.

Storage Limits: the equipment must be stored with original whole packing.
If for any reason the cases and the barrier-bag will be open before the installation a short period.
In case of prolonged period before installation the packaging must be restored to ensure the conservation of storage till the installation