

Translation of Original Installation Guide ESS 3.0 / ESS 7.0 Firmware

Adresses, Identification and Notes

Impressum

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Product Identification

Firmware: 31502A_V2.03 or higher
Battery: BMZ Art. Nr. 24930-01
Software: ESS 3.0 Service Tool (Rev. 0.0.23.27079)
Country of origin: Germany

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Document Identifikation

Translation of Original Installation Guide ESS 3.0/7.0 Firmware
Index: 0.03
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1 Safety Notes

**Purpose,
Target Group**

1.1 Important information on this guide

This guide contains information for a firmware update of the ESS 3.0/7.0 energy storage system with the ESS 3.0 Service Tool. It is directed to service staff trained for the ESS 3.0/7.0.

Structure



This guide is based on the ESS 3.0/7.0 operating instruction. Before you use the ESS 3.0 Service Tool with the energy storage system make sure to understand the contents of the ESS 3.0/7.0 operating instruction.

Safety notes

1.2 Explanation of illustration




Safety notes apply at all times. They are placed in the Safety Notes chapter or at the beginning of other chapters.

**Warning
messages**

Warning messages are placed directly before the instruction in question. They help you to avoid potential risks during the operation.

Warning messages consist of the following elements:


Table 1
Structure of warning
messages

Safety alert symbol	is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
Signal word	<div> DANGER</div> <div>indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</div> <div> WARNING</div> <div>indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.</div> <div> CAUTION</div> <div>indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.</div> <div>NOTICE</div> <div>indicates situations with potential damage to property only</div>
Hazard identification	describes the kind and the source of the hazard.
consequences	describes what may happen if the hazardous situation is not avoided.
means	► tells you what to do to avoid the hazard.

**Pictograms and
Symbols**

Symbols and pictograms may be used in addition to the safety alert symbol. Hazard alert symbols (yellow) show the hazard. Prohibition symbols (red) and mandatory symbols (blue) show how to avoid the hazard.

Table 2
Safety Symbols

Symbol	Explanation
	General Hazard alert symbol. Observe additional information.



Beware of electrical volage!



Read the instructions before use.

1.3 Intended use

The software is only intended for firmware updates of ESS 3.0 and ESS 7.0 batteries. Other use than described in this document is not intended.

Explicitly not intended are:

- Use of damaged batteries or cables
- Use of unapproved software and firmware
- Installation by non-trained personnel
- Connecting more than one battery to the PC simultaneously

Dangerous misuse

Before using the Service Tool with the ESS 3.0 or ESS 7.0 the battery must be disconnected from the inverter and the battery's main fuse must be removed.

2 Software Description

2.1 User interface

Fig. 1
User Interface

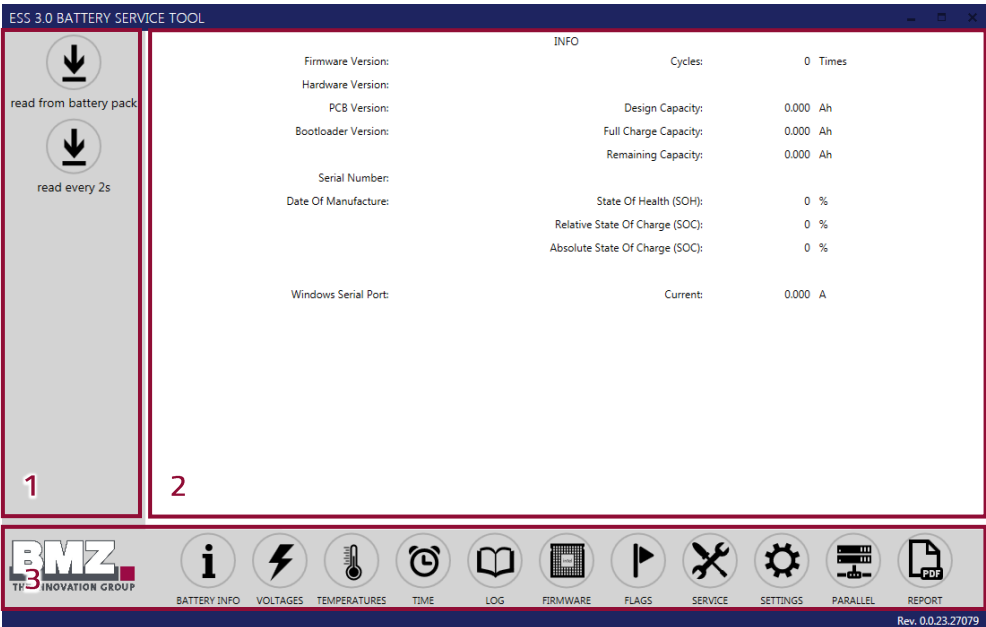













Table 3
User interface areas

Position	Description	Function
1	Task bar	Allows actions for each menu.
2	Panel	Displays information from the respective menu.
3	Menu	Allows you to switch between the various menus.

2.2 Area overview

Table 4
Area overview

Area	Contents
 BATTERY INFO	<ul style="list-style-type: none">■ Display batty data (serial numbers, versions, capacities, currents)■ Set battery address
 VOLTAGES	<ul style="list-style-type: none">■ Display battery voltages■ Display cell voltages
 TEMPERATURES	<ul style="list-style-type: none">■ Read current temperatures■ Display the recorded minimum and maximum temperatures■ Reset minimum and maximum temperatures
 TIME	<ul style="list-style-type: none">■ Display system time.■ Set system time.
	<ul style="list-style-type: none">■ Display batteriy log■ Export log as Excel file

LOG	
	■ Update firmware
FIRMWARE	
	■ Display status flags (operating and error status)
FLAGS	
	■ Display error log ■ Display counter log
SERVICE	
	■ Settings
SETTINGS	
	■ Settings for battery operation ■ Device mode (single, master, slave) ■ Device address (1-12)
PARALLEL	
	■ Print PDF report
REPORT	

3 Software Installation

BMZ GmbH recommends using a Windows 7 laptop.

3.1 System requirements

- ✓ Operating system: Windows 7 (recommended)
- ✓ RAM: min. 4 GB
- ✓ CPU: min. 1,5 GHz

3.2 Install Microsoft .NET Framework

Microsoft .NET Framework 4.5 is required for the Service Tool to run properly.

Instruction

1. Open the website: `www.microsoft.com/en-us/download/details.aspx?id=42643`
2. Select language and click **Download**.
3. Save file and run as administrator:
`NDP452-KB2901954-Web.exe` (File names may vary.)
4. Follow the instructions on screen.

3.3 Install the FTDI driver

3.3.1 With internet connection

Overview

If you have internet access near the ESS, Windows installs the driver automatically.

*In order to connect the laptop with the ESS, see section **Fehler!**
Verweisquelle konnte nicht gefunden werden..*

3.3.2 Without internet connection

Overview

If you have no internet access near the ESS, please copy the driver to a USB stick from another PC with internet access.

Auxiliaries

- ✓ USB stick

Instruction

1. Open the website
`www.ftdichip.com/Drivers/VCP.htm`
2. Download the following file to the USB stick:
`CDM v2.12.06 WHQL Certified.exe`
3. Connect the USB stick to the service laptop and open the file.
4. Follow the instructions on screen.

3.4 Install the ESS 3.0 Service Tool

Auxiliaries

- ✓ File `ESS30ServiceTool_0_0_23.zip` (Either on the provided USB stick or sent by e-mail from the ESS manufacturer)

Instruction

1. Create an appropriate folder
(e.g. `C:\Program Files\ESS_3.0`)
2. Open the zip-File.
3. Unpack the following files to the new folder:
 - `ESS30ServiceTool.exe`
 - `System.Windows.Interactivity.dll`

Note

Both files must be in the same folder!

It is not recommended to open the Service Tool from the USB stick.


4 Firmware-Update

NOTICE

After a successful firmware update the ESS must be switched off.

Bootling the system must be done in accordance to the respective operating instruction.

4.1 Connect the battery to a laptop

	⚠ WARNING
	<p>Electric shock can kill</p> <p>Touching live parts can cause electrical shocks, which may have thermal or muscle paralyzing effects. The latter can lead to ventricular fibrillation, cardiac arrest or respiratory paralysis resulting in death.</p> <ul style="list-style-type: none"> ▶ Disconnect the ESS from the inverter. ▶ Do not touch contacts.

NOTICE

Damage to your laptop by ground loops.

If the laptop is connected to the ESS when the laptop is plugged in, ground loops may damage the laptop.

- ▶ Run laptop in battery mode only.

OR

- ▶ Use active USB amplifier or HUB.

Prerequisites

Auxiliaries

Instruction

- ✓ Der energy storage system is disconnected from the inverter.
- ✓ Screwdriver (PH2)
- ✓ optional: USB 2.0 cable (A-A)
- ✓ optional: active USB amplifier or HUB
- ✓ optional: small side cutter

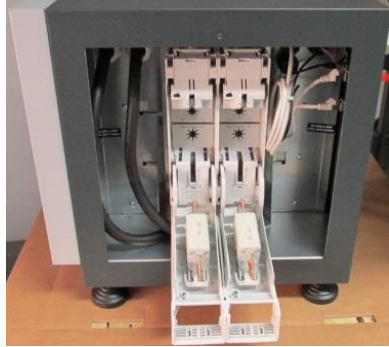
1. Open service lid with screwdriver.



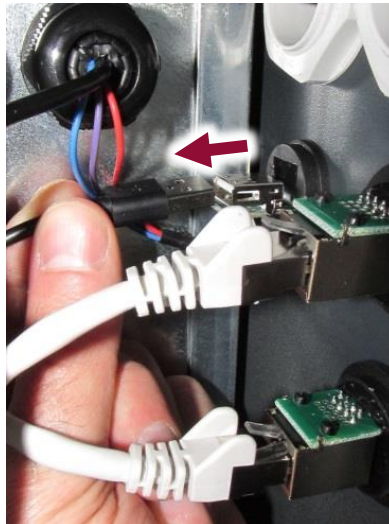
2. To switch off the ESS, hold button for about 10 seconds.



3. Pull fuse holder and remove from NH isolator.



4. Remove cable tie from the USB cable. Remove the USB plug from the rear wall.



5. Connect laptop and ESS with USB cable.



6. Push the button to switch on the ESS.



In order to disconnect the laptop from the ESS after a successful software update, see section 4.7.

4.2 Start the ESS 3.0 Service Tool

Prerequisites

- ✓ The battery is connected with the laptop via USB cable

Instruction

- ▶ Open file `ESS30ServiceTool.exe`.

⇒ The start screen opens and shows the **INFO** area.

Note

If the software does not communicate with the battery, please contact the customer service. The battery must be replaced.



4.3 Check the cell voltages

The cell voltages can be read with the button **read from battery pack** in the **VOLTAGES** area (see Table 4). Clicking the button **read every 2s** updates the panel every two seconds.

Prerequisites

- ✓ The battery and the laptop are connected with a USB cable.

Instruction

1. Click **VOLTAGES** in the menu.
2. Click **read from battery pack** in the task bar.
3. Compare cell voltage 1 to 15: The difference between the highest and the lowest voltage must not exceed 200 mV. If the difference is higher, please contact the customer service. The battery must be checked in more detail and, if necessary, replaced.

Note

If one of the cell voltages is below 2,5 V the cell is deeply discharged. Please contact the customer service. The battery must be replaced.

4.4 Update the firmware

NOTICE

Non-authorized firmware may damage the ESS.

The manufacturer will not assume any liability for malfunction or damage caused by non-authorized firmware.

- ▶ Only authorized service personnel may install firmware.
- ▶ Only install firmware which is authorized by BMZ GmbH.



For a proper operation, the ESS must run with the latest firmware recommended by the manufacturer. The area **BATTERY INFO** provides information about the firmware version.

Prerequisites

- ✓ The required driver and software are installed.
- ✓ The battery and the laptop are connected by a USB cable.

Auxiliaries

- ✓ Firmware V2.03 or higher

Instruction

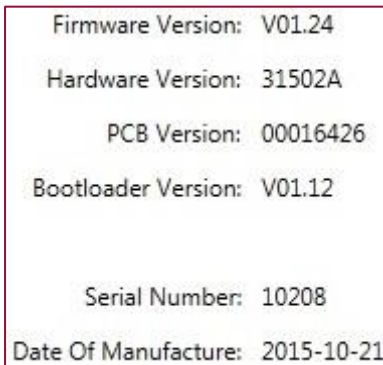
1. Klick the **FIRMWARE** button in the menu and the **open firmware** button in the task bar.
2. Select the firmware file (*.flash) and klick **open**.
3. Klick the **write to battery pack** button in the task bar.
4. Confirm the information with **ok**.

⇒ After the update the battery is switched off.



Firmware Version: V1.24
Allowed Hardware Versions: 31502A
Firmware Update Succeeded: ✓

5. Hold battery button for ca. 3 s, to restart the battery.
⇒ After a short self-test, the battery indicates the operating mode: the red and the green LED flash simultaneously.
6. Klick **BATTERY INFO** in the menu.
Klick **read from battery pack** in the task bar.
Check, whether the installed firmware is displayed.



Firmware Version: V01.24
Hardware Version: 31502A
PCB Version: 00016426
Bootloader Version: V01.12

Serial Number: 10208
Date Of Manufacture: 2015-10-21

4.5 Adjust settings in Device Mode

NOTICE

For a flawless operation of the ESS, the settings in Device Mode must be adjusted.

If the parameters are not set correctly, the ESS may not operate correctly. The manufacturer will not assume any liability for malfunction caused wrong parameters.

- ▶ Only authorized service personnel may set the parameters.
- ▶ Only set parameters which are authorized by BMZ GmbH.



After the firmware update, the following values must be adjusted in the area **PARALLEL**:

- Device Mode
 - Single Mode
 - Master Mode
 - Slave Mode

Prerequisites

■ Device Address

- ✓ The required drivers and software are installed.
- ✓ The battery and the laptop are connected by a USB cable.

Instruction

1. Klick the **PARALLEL** button in the menu.
2. In **Device Mode**, select and klick the appropriate mode.
3. Klick **set mode** in the task bar.
4. In **Device Address**, assign the ESS an address between 1 and 12.

NOTICE: Even if the required number is already shown in the **Device Address** field, the number must be typed again. If no new entry is made, the system will not recognize the address.

5. Klick **set address** in the task bar.
6. In order to check the new settings klick **read from battery pack**.
7. Create PDF report (see 4.6).
8. Disconnect battery from laptop and switch it off (see 4.7).

NOTICE**Recommended settings for a stand-alone system:**

- Device Mode: Single Mode
- Device Address: 1

Recommended settings for a cluster system:

Master settings:

- Device Mode: Master Mode
- Device Address: 1

Slave settings:

- Device Mode: Slave Mode
- Device Address: 2 ... 12

The device addresses between 1 and 12 may be assigned freely, but every number may be assigned only once!

Cluster systems may have only one master. The master must be connected directly to the inverter via CAN interface.

4.6 Create PDF report

The PDF-Report must contain the following:

- Customer name
- Customer address
- The battery's serial number
- Name of installer, service person or executing company

Prerequisites

- ✓ The battery and the laptop are connected by a USB cable.


Instruction

1. In the menu, klick **REPORT** button.
2. Fill out the **REMARK** field with the data provided above.



3. In the task bar, klick **create pdf report**.
4. Define a folder and a filename and klick **save**. The filename is always `ESS_SNxxxxx` (e. g. `ESS_SN10208`)
5. Send the PDF file to ess.service@bmz-gmbh.de.

4.7 Disconnect battery from laptop and switch it off

	⚠ WARNING
	<p>Electric shock can kill</p> <p>Touching live parts can cause electrical shocks, which may have thermal or muscle paralyzing effects. The latter can lead to ventricular fibrillation, cardiac arrest or respiratory paralysis resulting in death.</p> <p>► Do not touch contacts.</p>

Auxiliaries

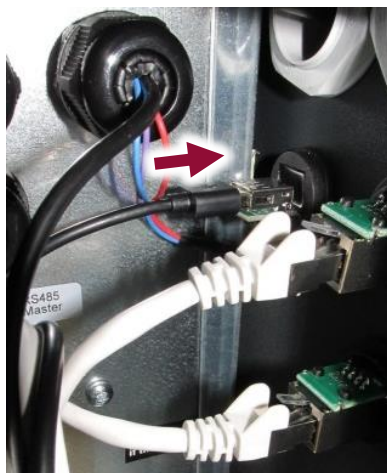
- ✓ Screwdriver (PH2)
- ✓ Cable tie (290 x 3,6 mm)

Instruction

1. Hold battery button for ca. 10 seconds, to switch off the battery. Wait until the LEDs turn off.
2. Remove USB cable from laptop.



3. Reconnect internal USB cable to socket in back wall.



4. Stow cables securely. If required, fasten with cable tie. Insert main fuse in NH isolator.
5. Start the battery according to the operating manual.
6. Screw service lid to housing (#902512).
Torque: max. 2 N m

4.8 Spare parts

BMZ Art. No.	Description	Measures (mm)
902512	Oval head screw	M4 x 6 (PH2)
2580	cable tie	290 x 3,6



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