MYPV

AC ELWA®-E
Electrical Photovoltaic-Excess Hot-Water-Device

Operation Manual

Content

1.   Assembly

Before placing into operation it is essential to read the assembly instructions provided with the device.

2.   Controls and displays
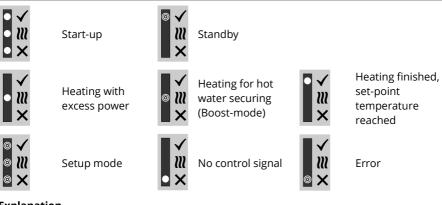

Temperature-adjusting knob

1-6 … Number of device

13A / 16A …fuse protection

LED operating mode displays

green

yellow

red

3.   Operation displays

 Start-up

 Standby

 Heating with excess power

 Heating for hot water securing (Boost-mode)

 Heating finished, set-point temperature reached

 Setup mode

 No control signal

 Error

Explanation

 LED on

 LED blinking

 LED off

⚠️ The display can change between „No control signal" and „Standby", if the device is triggered via Web-Interface or in cycles of one minute when data of temperature and power are recorded.

4. Putting into operation

During the first commissioning the AC ELWA-E is in the so-called "Auto Detect" mode. The device automatically searches for a signal source and adjusts itself accordingly. If the search is successful, <u>NO</u> further configuration via the Web-Interface of the AC ELWA-E is required for the use of excess power!

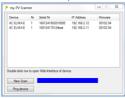### Configuration with router (recommended)

⚠️ The start-up with router only works, if it is configured to DHCP.

⚠️ The device must <u>not</u> be in Setup-Mode (Ⓣ symbol on adjusting knob)

1. Connect laptop with router (LAN or WLAN)
2. Connect AC ELWA-E and router via standard Rj45-cable („patch-cable")
3. Plug in AC ELWA-E power plug
4. AC ELWA-E gets a dynamic IP-address from router.
   Using the program „ my-PV Scanner 1.XX.exe"
   (contained in „Software Package AC ELWA-E.zip" at www.my-pv.com)
   the AC ELWA-E can be found.
   To do this, unpack the scanner program into a local directory.

5. Are there more AC ELWA-Es in the network, the desired device can be determined by the serial number (lateral on the case)!
6. A double click on the particular device opens the Web-Interface of the AC ELWA-E.
   From firmware version 00200.00 onwards, the required HTML file is downloaded from the Internet and stored in the same directory as the scanner program.

⚠️ Scanning is performed via UDP port 16124. Firewalls (or specific router settings) may prevent the AC ELWA-E from being found.
In this case, it is advisable to look for the IP address of the AC ELWA-E in the DHCP list of the router and enter it manually into the address line of the web browser.

Alternatively, the second scan program "Scan AC ELWA-E ARP.exe" can be used, which sends an ARP query to the router and displays the connected my-PV devices. Since the router takes some time to update the ARP table it may be that the ARP scan takes some time to show AC ELWA-E results.

TIP: Alternatively, the IP address of the device can also be determined via the DHCP client list of the router or via various IP scan programs!

From firmware version 00200.00 onwards, the Web-Interface of AC ELWA-E is outsourced to an external HTML file. If the device is accessed directly via the IP address in the web browser, this view appears.

> Ab Version 00200.00 erfolgt der Aufruf des AC ELWA-E Webinterface durch eigene HTML Datei, die einmalig lokal gespeichert werden muss.
> From Version 00200.00 the AC ELWA-E webinterface is accessed from a separate HTML file that needs to be stored locally once.
>
> ## Download Webinterface

Follow the download link and save the file locally, then open the file to access the Web-Interface.

⚠ my-PV does not recommend to connect the AC ELWA-E to the Internet via port forwarding access!

Configuration without router

⚠ From Ethernet firmware version 00200.00 this applies:

To be able to access the Web-Interface of AC ELWA-E in systems without internet access, please download the required HTML file in advance.

You will also find a corresponding note on the carton box:

Der Zugriff auf das Web-Interface dieses Gerätes ist nur durch eine HTML Datei möglich.
Nähere Infos:
www.my-pv.com/de/produkte/ac-elwa-e/webinterface

Access to the web interface of this device is only possible through an HTML file. More info:
www.my-pv.com/de/produkte/ac-elwa-e/webinterface

Procedure

1. Set adjusting knob to the symbol ⌁ (all three LEDs blinking)
2. Plug in AC ELWA-E power plug

3. All 3 LEDs of the AC ELWA-E are on for approx. 10 seconds (device boots), afterwards all 3 LEDs are blinking. The device is now in Setup-Mode
4. Disconnect existing Wi-Fi connections on the laptop to avoid possible network-conflicts
5. Connect Laptop to AC ELWA-E via standard Rj45-cable („patch-cable").
   Depending on the laptop, a cross-over network cable may be required!
6. The Laptop gets a dynamic IP address
7. The system software, e.g. MS Windows 7, might request you to choose a place of the network. At this step it is not necessary to do so. You can close the window.
8. Insert address 192.168.0.1 in the web browser to select homepage of the AC-ELWA-E

> Ab Version 00200.00 erfolgt der Aufruf des AC ELWA-E Webinterface durch eigene HTML Datei, die einmalig lokal gespeichert werden muss.
> From Version 00200.00 the AC ELWA-E webinterface is accessed from a separate HTML file that needs to be stored locally once.
>
> ## **Download Webinterface**

9. Start the <u>previously</u> downloaded HTML file to get to the Web-Interface
10. Select Button „Settings" and configure as described in chapter „Setup"
11. After all the settings have been made, disconnect the AC ELWA-E power plug
12. Turn the knob to the desired temperature
13. Disconnect the data connection between AC ELWA-E and Laptop/PC
14. Connect AC ELWA-E via standard Rj45-cable („patch-cable") with router or via cross-over network cable directly with the my-PV Power Meter!

⚠ Do not connect the device directly to the inverter or the battery system!

15. Plug in the AC ELWA-E power plug again

⚠ If the signal source for the AC ELWA-E is searched with the „Auto Detect" – function, the process can take a few minutes!

If the set-up is done without a router, a connection between PC/Laptop – Router – AC ELWA-E can though be implemented afterwards. See next chapter!
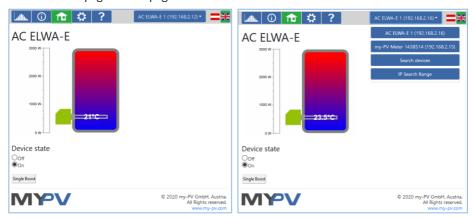
5. Web-Interface

By means of the HTML file (required for Ethernet firmware version 00200.00 or higher) data of the AC ELWA-E can be retrieved and adjustments can be made.

If the Web-Interface is started via the scanner program, the connection to the device is established automatically.

If the Web-Interface is started by calling the HTML file, the IP address range of the network in which the device is located must be set once. The entry is saved by the web browser, but the address range can be redefined at any time using the "IP Search Range" button.

From the homepage further pages can be selected via the menu buttons.

A quick selection in the upper right corner allows direct access to the Web-Interface from other my-PV devices in the network. The button "Search Devices" scans the network for my-PV devices.
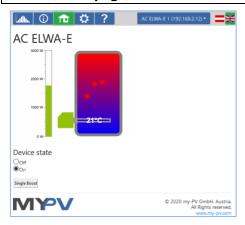
TIP: If the device search does not produce a result, the IP address can also be entered manually in the address line of the web browser.

URL: … /AC ELWA-E 00*XXX.XX.XX*.html**?ip=*XXX. XXX. XXX. XXX***

Consider that the appearance and the scope of options can change with updated software versions.

Home (homepage)

The graphic shows the current temperature in the boiler, the bar on the left visualises the power output of the device.

With device state "Off" the control of the AC ELWA-E can be switched off. The status page displays "Status 21, Device disabled".

With the button „Single Boost" the hot water backup can be started immediately once.

⚠ The dynamic web pages „Home" and „Status" are displayed without animation by Microsoft Internet Explorer. Recommended browsers are Google Chrome or Mozilla Firefox in the latest versions!

Status

State	Number, operating condition
AC ELWA-E	power output / W
Boost	current power for hot water boost / W
Watertemperature	current water temperature / °C
Targettemperature	adjusted set-point temperature on the knob / °C

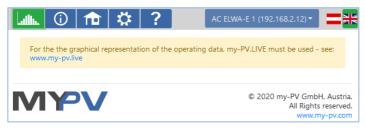|	
Boost active	0: Boost inactive
	1: boosting via time control
	2: manual boost
Next legionella boost	on/off, days
Time	system time of the device / hh:mm:ss
Control Status	describes the current control mode
Block active	Shows whether the device is blocked

Depending on which other measurements are queried in the system (see "Measurement Settings"), the status overview also provides information on these variables.

Data logger

A graphical information of the operating data is provided in the data platform my-PV.LIVE (see "Cloud Mode").

Setup
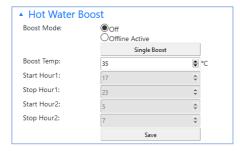
On this page all adjustments of the device can be made.

Boost Settings

As an option, the AC ELWA-E can also ensure a minimum temperature in addition to the normal excess power operation. During backup operation the device is supplied with a power of 3kW.

Boost Mode	Off
	This is the factory preset. Hot water securing is deactivated. Only PV-excess is used.

Offline Active
Hot water securing works independent from the status of the network-connection (even at network-incidents).

With the button „Single Boost" the hot water backup can be started immediately once

Boost Temp   Set-point temperature for hot water backup

Start Hour1:   Start of boost time window 1

Stop Hour1:   End of boost time window 1

Start Hour2:   Start of boost time window 2

Stop Hour2:   End of boost time window 2

Two boost timeframes can be defined per day. These frames may overlap.

⚠ Start hour and stop hour refer to the same calendar day. If a time window is defined over midnight, hot water backup will not start!

⚠ If start-hour and stop-hour are identical, boost-backup starts one-time until the set-point temperature is reached.

⚠ If the adjusted start-hour is after the stop-hour, hot water backup will not start!
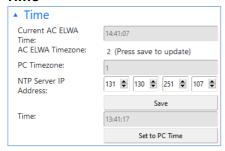
Legionella Protection

To ensure drinking water hygiene, a period of time can be specified up to which an adjustable minimum temperature must be reached again after the last time this value has been reached. The number of days of this period is adjustable between 1 and 14. A time at which the legionella program is to be started can be specified. The factory preset values of the days is 7, the start time is 8 pm, the temperature is 60 °C, the legionella program is "Off".

The AC ELWA-E is then supplied with a power of 3kW.

Time

In case of an available internet connection via a router, AC ELWA-E gets its time setting automatically from the web but it doesn't determine the particular time zone. That information can be transferred from the Laptop/PC by pressing the „**Save/Speichern**" Button. The re-setting of the ELWA-time to the new time zone can last a few minutes.
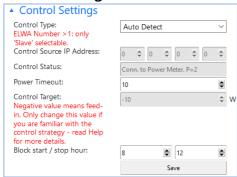
⚠ Usually the time zone on the Laptop/PC shifts with the change from summer to wintertime. This shift can also be adopted with the „**Save/Speichern**" Button. An automatic time shift from summer to winter is not scheduled.

NTP-Timeserver-address: can be changed if necessary. (NTP = Network Time Protocol).

When there is no connection to the internet, the current time zone setting can be transferred from the Laptop/PC by pressing „**Set to PC Time / Auf PC Zeit stellen**".

⚠ If the device has no internet connection via router, the time setting is lost after a power outage.

Control Settings

In this section the choice of the signal source for the AC ELWA-E is made.

⚠ A control type can only be selected if the AC ELWA-E has the factory preset device number 1. See "Basic settings".

Besides the my-PV Power Meter and open communication protocols such as http, Modbus TCP and Adjustable Modbus TCP, pre-set signal sources are available for these manufacturers:

Signalsource	Comments
Carlo Gavazzi	Approved for meter type EM24 with Modbus TCP .
Fronius	Smart Meter required. For Modbus control Sunspec must be activated.
Huawei	Sunspec must be enabled on inverter.
KACO TL1 + TL3	Sunspec must be enabled on inverter.
Kostal PIKO IQ Plenticore plus	Suitable electricity meters please refer to the Kostal descriptions.
Kostal Smart Energy Meter	Device ID as set on the device. Modbus Settings – Modbus TCP – set "Enable TCP Slave" active
MEC electronics	Approved for meter type MECmeter.
RCT Power	-
SMA Sunny Home Manager	-
SolarEdge	Sunspec must be enabled on SolarEdge. The communication works either via port 502 or 1502.
Steca	-
Varta	-
Victron	With Modbus control, the excess power control can be selected according to one or three phases.

TIP: For many of these **and other manufacturers** there are separate instructions for the required settings. More information about compatible manufacturers can be found **here**.

Not every control type is approved for hybrid systems with battery storage. If required, please contact the technical support of my-PV.

For some control types the IP address must be set manually. This must not change during operation (e.g. by a DHCP router), otherwise the AC ELWA-E loses the control signal.

When controlled by an inverter, a feed-in meter is required in the system. The query of the inverter otherwise provides no data.

We ask for your understanding that we cannot do any binding support for third-party products. For questions about third-party products, please contact the technical support of the respective company.

Operation with battery may require additional control parameters. In this case, please contact the technical support of my-PV.

As a factory pre-set the control mode „**Auto Detect**" is present. The device automatically searches for compatible sources. Some compatible manufacturers are not recognizable by the "**Auto Detect**" function!
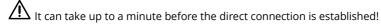
The "**Auto Detect"** function can only be effective when just one signal source is present in the network. If there are more different sources (e.g. several inverters), a manual setting is essential for a correct functionality!

For certain compatible sources the choice between „**Auto**" (automatic IP-search of the device) or „**Manual**" (manual entry of the IP address of the source) is possible. „**Manual**" is necessary when there are several compatible sources in the network and a special one of them should be chosen as the control system.

The control mode **"my-PV Power Meter direct"** has to be selected when a direct data connection between the Power Meter and the AC ELWA-E is made (without network).

⚠ For this type of connection a crossover patch cable has to be used!

⚠ If the AC ELWA-E is also used for the optional hot water boost-backup, then the direct connection is not recommended since time and boost-backup settings are much easier to set via the network!

⚠ It can take up to a minute before the direct connection is established!

With the setting „**Power Timeout**" the timeout of AC ELWA-E can be changed for the modes „http", „Modbus TCP" and „Adjustable Modbus TCP".

The parameter "**Control Target**" specifies the set point of the power at the metering point. A negative value means feed-in. The factory pre-set of the set-point is -50 W. This parameter can be freely chosen in a range between -500 and +500 W.
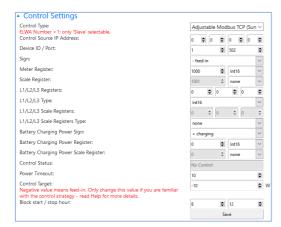
The function „**Block**" allows to define a time window within AC ELWA-E must not run. Unlike the two time frames for hot water securing the transition to the following day is possible (Start Hour is higher than Stop Hour). For example, this function can be used to give an existing battery time for charging and to do the water heating subordinate.

⚠ Changes of the time settings are effective within one minute.

With the **"Adjustable Modbus TCP"** control mode, the AC ELWA-E receives the power-value in the feed-in point from an inverter or Modbus counter. The required communication registers shall be set according to the manufacturer's description.

Device ID must be set to the Modbus ID of the external device.

Control Settings

Control Type: ELWA Number >1: only 'Slave' selectable.	Adjustable Modbus TCP (Sun ∨)
Control Source IP Address:	0 / 0 / 0 / 0
Device ID / Port:	1 / 502
Sign:	- feed in ∨
Meter Register:	1000 / Int16 ∨
Scale Register:	1001 / none ∨
L1/L2/L3 Registers:	0 / 0 / 0
L1/L2/L3 Type:	Int16 ∨
L1/L2/L3 Scale Registers:	0 / 0 / 0
L1/L2/L3 Scale Registers Type:	none ∨
Battery Charging Power Sign:	+ charging ∨
Battery Charging Power Register:	0 / Int16 ∨
Battery Charging Power Scale Register:	0 / none ∨
Control Status:	No Control
Power Timeout:	10
Control Target: Negative value means feed-in. Only change this value if you are familiar with the control strategy - read Help for more details.	-10 W
Block start / stop hour:	8 / 12
	Save

⚠ This type of control is currently not approved for hybrid systems with battery storage.

⚠ With the settings "Adjustable Modbus TCP (Sunspec etc)", the IP address of the signal source must not change during operation (eg by a DHCP router), otherwise the AC ELWA-E loses the control signal.

⚠ When controlled by an inverter, a feed-in meter is required in the system. The query of the inverter otherwise provides no data.

⚠ We ask for your understanding that we cannot do any binding support for third-party products. For questions about third-party products, please contact the technical support of the respective company.

⚠ Operation with battery may require additional control parameters. In this case, please contact the technical support of my-PV.
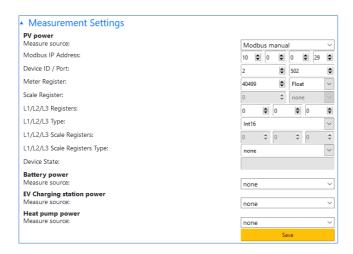
Measurement Settings

As an option, other measurements can be queried in the system in addition to PV excess measurement and visualise them on the my-PV.LIVE data platform. Available variables are PV power, Battery power, EV Charging station power and Heat pump power.

If you are using the my-PV Power Meter to detect these values, you must enter the ID (serial number) of the device. You will find this number on the device.

If the measured values come from an inverter or Modbus meter, the required communication registers shall be set according to the manufacturer's description.

⚠ We ask for your understanding that we cannot do any binding support for third-party products. For questions about third-party products, please contact the technical support of the respective company.

EV Function
More information on compatible charging stations can be found **here**.

Multi Units
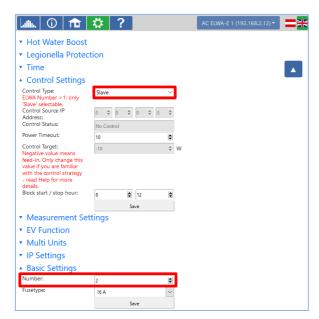Several AC ELWA-E, AC•THOR or AC•THOR 9s can also be used in a network. Operation is based on the master/slave principle.

⚠ When using several devices the following things have to be considered:

- All devices must be connected to the router via a network cable.
- Only one master can be assigned to a signal source and vice versa.
- A maximum of 10 slaves are possible per master.
- All slaves in the network must have different device numbers, even if these are assigned to different masters.
- **All devices must be assigned by permanent IP addresses**. This can be done in two ways:
    o In the Web-Interface of the respective device (see IP Settings) or via Cloud
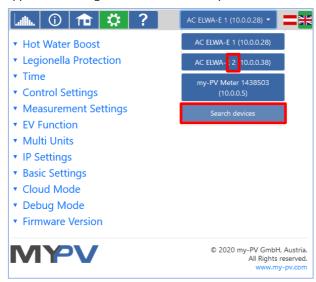   o By the router (recommended)

Settings on Slaves

For the slaves only the device numbers have to be specified (see Basic Settings). All other settings are only required on the master.

As soon as an assignment has been made, further control settings are no longer possible or required. The IP address field is disabled and "Slave" appears in the Control type field.

After a device search in the quick selection at the top right, the slave with the set number appears. Switching between the devices is possible here.
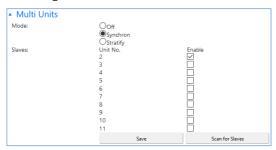

Settings on Master

Only for devices with number 1 (= master) the following display appears in the setup:

To make the settings for several devices on the master, first choose between **Synchron** and **Stratify**. In the case of synchronous charging, the power is evenly distributed to the master and its slaves. In the case of stratified charge, the devices are controlled one after the other according to their numbers, in each case until the set target temperature is reached.

After selection, please start the "Search for slaves" and activate the desired devices. Then save the setting.

⚠ Scanning is performed via UDP port 16124. Firewalls (or specific router settings) may prevent the AC ELWA-E from being found.
(see Placing into operation with router)

IP Settings

DHCP**:**   Selection of DHCP is standard, which means the device requests an IP address from the router to which it is connected.
          This only works when the router is configured as a DHCP server.

Static IP**:**   If there is no DHCP server active in the network or third-party control is desired, a static IP address is necessary.

⚠ The settings have to fit with the router, otherwise the device become invisible in the network!

Basic Settings

Number**:**	Ex-factory each AC ELWA-E is assigned the number 1. If several devices are used, this setting must be adjusted for the "Slaves" (see Multiple devices).
Fusetyp**:**	If the device is connected to a 13 A plug socket, the 13 A setting restricts the maximum power to 2,500 W.

Cloud Mode

TIP: Inform yourself in advance on the Cloud Mode simply by watching our video explanation (activate English subtitles): **https://youtu.be/tJtAvwM7-7Q**

If your device has a device key, a connection to the data platform **my-PV.LIVE** possible. You will find it glued on the enclosed assembly instructions.

Activate the cloud mode and save the settings.

Open the website **www.my-pv.live** and log in or register as a new user.

TIP: If you register for a new account you will receive an email with a confirmation link. If it does not appear in your inbox, it might be in your spam folder.

Edit device overview

Add Device

Choose a name that is as unique as possible and enter the serial number and the device key (without hyphens) of your device. Click on Save.

If the cloud mode has been activated, an overview of the operating data recorded from then on is available after connecting the device to the data platform.

Privacy

Information on the privacy regulations can be found at www.my-pv.com.

Debug-Mode

In order to simplify the analysis in the case of possible connection problems, a debug mode can be activated in coordination with our technical support.

Firmware Version

In this section the current firmware versions can be retrieved (for service and Update purpose).

Details about the button "Update Firmware" can be found in the chapter "Firmware Update Ethernet".

The button "Reboot Device" restarts the AC ELWA-E.

With the button „Factory Reset" all settings of the device are set back to factory pre-set. After pressing the button a confirm message appears.

Consider that depending on the router settings the AC ELWA-E eventually is no longer visible in the network. To find it again restart the AC ELWA-E program „ my-PV Scanner 1.XX.exe". For this reason, you cannot be automatically redirected to the AC ELWAE´s Web-Interface after reset.

6.   Knob adjustments

The following sections describe the possible settings with the knob.

⚠ **The device parameterization is much more comfortable via the Web-Interface!**

The target temperature for the regular operation mode has to be adjusted with the knob.

⚠ Target temperature cannot be set via the Web-Interface, only queried.

Adjust fuse type of the circuit (13A/ 16A)

With factory preset AC ELWA-E can perform up to 3.000 W (16 A). For circuits with 13 A fuses the power consumption can be limited to 2.500 W (setting on the AC ELWA-E or via Web-Interface possible).

Configure the device as follows:

1. Disconnect power plug
2. Set adjusting knob to the symbol ⊻
3. Plug in the power plug
4. ▶ All 3 LEDs blinking (Setup mode active)
5. Turn the knob to the 13A marking
6. ▶ LEDs blinking from top to the bottom: green, yellow, red, green, etc.
7. Value is automatically saved when the position of the knob is not changed for 5 seconds
8. ▶ All 3 LEDs blinking fast for 2 seconds, setting saved.
9. Set the knob to the desired temperature value

The setting can be reversed. For this purpose repeat procedure.

Adjust device number

1. Disconnect power plug
2. Set adjusting knob to the symbol ⊻
3. Plug in the power plug
4. ▶ All 3 LEDs blinking (Setup mode active)
5. Turn the knob to the desired device-number marking
    ▶ LEDs blinking to signal the number (see table)

AC ELWA-E number:	LED green	LED yellow	LED red
1	blinking	off	off
2	off	blinking	off
3	blinking	blinking	off
4	off	off	blinking
5	blinking	off	blinking
6	off	blinking	blinking

6. Value is automatically saved when the position of the knob is not changed for 5 seconds
7. ▶ All 3 LEDs blinking fast for 2 seconds, setting saved.
8. Set the knob to the desired temperature value

The setting can be reversed. For this purpose repeat procedure.

7.   Protocol description of http and Modbus TCP

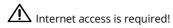These are described in a separate document which will be provided on request.

8.   Firmware Update Ethernet

⚠ Before updating, please consider whether you really need an update! After the update, the view of the "day-chart" from Ethernet versions before 200.00 is no longer available locally. For the graphic display of the operating data, my-PV.LIVE must then be used. A connection to my-PV.LIVE is only possible for devices from 160124171114XXXX!
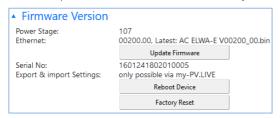
⚠ From serial number 160124180131XXXX the update is no longer carried out with USB cable. The firmware is downloaded via the Internet instead.

⚠ For serial number older than 160124180131XXXX a remote firmware-update via Internet is not possible. It is instead done with a USB cable.

Update from Server (from SNr 160124180131XXXX)

⚠ Internet access is required!

With the "Update Firmware" button, the AC ELWA-E loads the latest firmware from the Internet. After the update, the AC ELWA-E is automatically restarted.

Update with USB cable (for SNr below 160124180131XXXX)

The update of the firmware for the communication via Ethernet happens via the Micro USB interface and the provided USB cable at the bottom of the unit. A firmware update via the Ethernet interface is not possible because of security reasons.

Get the Firmware **here**.

9.   Fault indication

No display:	Check power supply. Check fuse of the circuit. Check if there are other loads on the circuit of the AC ELWA-E.
Red LED on:	No controlling. Can be interrupted by green blinking LED in one minute cycle. (search function)
1x blinking ▶	over-temperature safety protection activated. Device must be checked by customer service.

2x blinking ▶   Water temperature above 90°C. Device shuts down and turns on again when the temperature has decreased.

Annotation: In this case the temperature is near the over-temperature safety protection. If the water was heated so high by an external heat source, set the limit temperature of the heat source to 90 ° C

3x blinking ▶   Internal electronics over-temperature. Device shuts off and turns on again after cooling down.

4x blinking ▶   Electronic damage. Device must be checked by customer service.

6x blinking ▶   Temperature-sensor damage. Device must be checked by customer service.

my-PV GmbH   Subject to change.
Teichstrasse 43, 4523 Neuzeug
www.my-pv.com