

AC ELWA®-E

Electrical Photovoltaic-Excess Hot-Water-Device



Operation Manual

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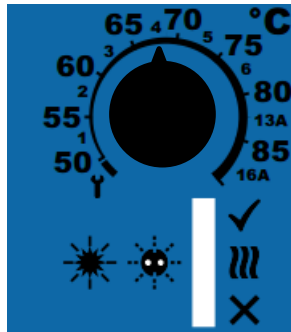
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1. Assembly

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

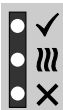
green

yellow

red

The possible adjustments are described in the chapter „knob adjustments“.

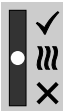
3. Operation displays



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. Factory presets


- Automatic hot water securing (Boost-mode) off (Winter setting)
- Set-point temperature for Boost-mode 35°C
- Time window for Boost-mode 5 - 11 pm and 5 - 7 am
- Auto-Detect function active (searches for control devices automatically)
- Timeout for http and Modbus TCP control 10 seconds
- Time window for blocking time 0-0 (no blocking)
- Device number 1 (Note: is shown in the Scan Tool and on the router in the DHCP list)
- 16A fuse protection of the plug socket

5. Placing into operation with router (recommended)

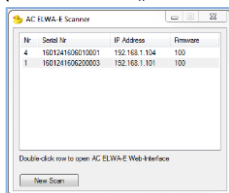


The start-up with router only works, if it is configured to DHCP.



The device must not 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
Searching for AC ELWA-E by using the software „Scan AC ELWA-E.exe“
(contained in „Software Package AC ELWA-E.zip“ at www.my-pv.com)



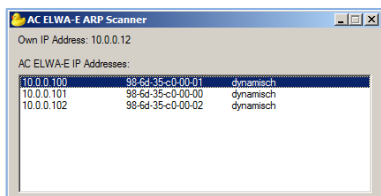
5. Are there more AC ELWA-Es in the network, the desired device can be determined by the serial number (lateral on the case)!
6. A double click on the particular device opens the website of the AC ELWA-E.



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.





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

6. Placing into operation without router

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“)
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
9. Select Button „Setup“ and configure as described in chapter „Setup“
10. After all the settings have been made, disconnect the AC ELWA-E power plug and turn the knob to the desired temperature
11. Disconnect the data connection between AC ELWA-E and Laptop/PC
12. Connect AC ELWA-E via standard Rj45-cable („patch-cable“) with router



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

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



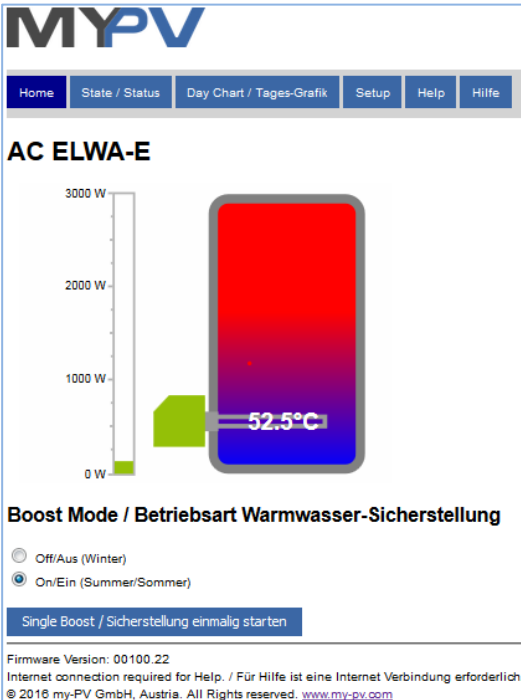
If the signal source for the AC ELWA-E is searched with the „Auto Detect“ – function, the process can take a few minutes!

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!

7. Web-Interface

Via web browser different data of the AC ELWA-E can be retrieved and adjustments can be made. From the homepage further pages can be selected via the menu buttons. 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.

In the section „**Boost Mode**“ hot water securing can be activated.

This option is disabled as a factory preset („**Off/Aus**“). It is intended as “winter-mode” when the normal heating system does the space heating and additionally ensures the hot water. In this operating mode AC ELWA-E exclusively uses excess energy.

In „**On/Ein (Summer/Sommer)**“ mode, hot water securing is made regularly up to the desired temperature at the time windows defined in the setup. This setting is recommended for summer because usually the high solar coverage ratios at this time mean just a little demand for backup from the grid. A potentially non-economical and un-ecological start of the heating system is not required.

Regardless of that, the hot water securing can be started one single time with the button „**Single Boost / Sicherstellung einmalig starten**“.

 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!

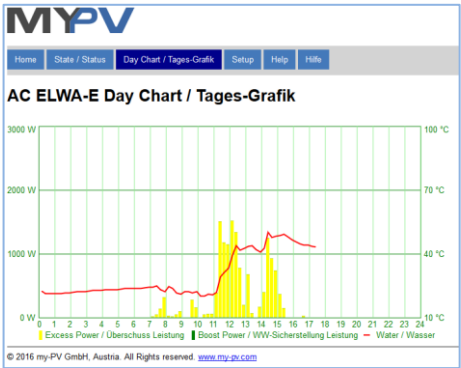
Status

AC ELWA-E Status	
Status	3
Power	0 W
Boostpower	0 W
Watertemp	47°C
Targettemp	49.5°C
Boosttemp	0°C
Boostactive	0
Time	11:59:07
Control Status	Search devices...

- Status / Nr operating condition
- Power / W current power
- Boostpower / W current power for hot water securing
- Watertemp / °C current water temperature
- Targettemp / °C adjusted set-point temperature on the knob
- Boosttemp / °C adjusted set-point temperature for hot water securing
- Boostactive 0: Boost inactive
 1: securing via time control
 2: manual securing
- Time / hh:mm:ss system time of the device
- Control Status describes the current control mode

Day Chart

Visualisation of the data of the current day:



Setup

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

Boost Settings

Boost Settings / Einstellung Warmwasser-Sicherstellung			
Boost Mode / Sicherstellungs-Modus:	<input checked="" type="radio"/> Off / aus	<input type="radio"/> Online Active / Mit Netzwerk aktiv	<input type="radio"/> Offline Active / Ohne Netzwerk aktiv
Boost Temp. / Sicherstellungs-Temperatur:	50	°C	
Start Hour1 / Start-Stunde1:	17	Stop Hour1 / Stop-Stunde1:	23
Start Hour2 / Start-Stunde2:	5	Stop Hour2 / Stop-Stunde2:	7
Save / Speichern		Single Boost / Sicherstellung einmalig starten	

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

Online Active / Mit Netzwerk aktiv: Hot water securing works, but only when the network-connection is active.

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

Boost Temp. / Sicherstellungs-Temperatur: set-point temperature for hot water securing


Start Hour1 / Start-Stunde1: Start of boost time window 1


Stop Hour1 / Stop-Stunde1: End of boost time window 1

Start Hour2 / Start-Stunde2: Start of boost time window 2

Stop Hour2 / Stop-Stunde2: End of boost time window 2

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

 If start-hour and stop-hour are identical, hot water securing starts one-time until the set-point temperature is reached.

 If the adjusted start-hour is after the stop-hour, hot water securing will not start!

Single Boost / Sicherstellung einmalig starten: Hot water securing can be started one single time, even if "Off/aus" is selected or the boost mode is deactivated by the time control.

Legionella Settings

Legionella Settings / Einstellungen Legionellenvermeidung	
Avoidance of Legionella / Vermeidung von Legionellen:	<input checked="" type="radio"/> Off / aus <input type="radio"/> On / ein
Activation Intvall: / Aktivierungs-Intervall:	7 days / Tage
Start Hour: / Start-Stunde:	20
Target Temp: / Ziel-Temperatur:	60 °C
Save / Speichern	


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 Settings


Time Settings / Uhrzeit Einstellungen	
Current AC ELWA Time: / Aktuelle Uhrzeit AC ELWA:	13:40:55
AC ELWA Timezone: / AC ELWA Zeitzone:	1 (Press save to update)
PC Timezone: / PC Zeitzone:	1
NTP Server IP Address: / Zeitserver IP Adresse:	131 . 130 . 251 . 107
	<input type="button" value="Save / Speichern"/>
Time: / Zeit:	13:40:54
	<input type="button" value="Set to PC Time / Auf PC Zeit stellen"/>

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

Control Settings / Steuerungs-Einstellungen	
Control Type: / Ansteuerungs-Typ:	Auto Detect
Control Source IP Address: / IP Adresse der Ansteuerung:	0 . 0 . 0 . 0
Control Status: / Status Ansteuerung:	Search devices...
Power Timeout: / Zeitablauf Ansteuerung:	150
Control Target: / Zielwert der Regelung: <small>Negative value means feed-in. Only change this value if you are familiar with the control strategy - read Help for more details. Negativer Wert bedeutet Einspeisung. Verändern Sie diesen Wert nur, wenn Sie mit der Regelungsstrategie vertraut sind - siehe Hilfe für weitere Details.</small>	-50 W
Block Start Hour: / Sperre Start-Stunde:	0
Block Stop Hour: / Sperre Stop-Stunde:	0
	<input type="button" value="Save / Speichern"/>

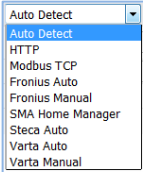
In this section the choice of the signal source for the AC ELWA-E is made.

As a factory preset the control mode „**Auto Detect**“ is present. The device automatically searches for compatible sources and adjusts itself to them.

 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.



Option „**Power Timeout**“ of AC ELWA-E can be changed for the modes „http“ and „modbus TCP“. Please consult the specific manual for further information.

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 / Sperre**“ 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 the „**Block**“ 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.

Several devices

Initiating from firmware version 00101.01, several AC ELWA-E can be used in a network. Operation is based on the master / slave principle. To display all devices, the displays of **Home** and **Status** are expanded in the master's web-interface. Each AC ELWA-E is additionally identified by a number.

The screenshot shows the MYPV web interface. On the left, three units are listed: AC ELWA-E 1, AC ELWA-E 2, and AC ELWA-E 3. Each unit has a small status card showing a battery level bar and a temperature gauge. The right side shows the detailed status page for each unit.

Unit	Status	Power	Boosterpower	Watertemp	Targettemp	Boosttemp	Boostactive	Time	Control Status
AC ELWA-E 1	2. Heating	632 W	0 W	43°C	63.2°C	43°C	0	10.38.16	Connected
AC ELWA-E 2	2. Heating	632 W	0 W	22.5°C	55.9°C	38°C	0	10.38.03	Controlled by Master (10.0.0.100)
AC ELWA-E 3	2. Heating	632 W	0 W	18.5°C	58.4°C	40°C	0	10.38.28	Controlled by Master (10.0.0.100)

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



When using several AC ELWA-E the following things have to be considered:

- Only one master can be assigned to a signal source and vice versa.
- Up to 10 slaves can be controlled in one network.
- A maximum of 5 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:
 - In the web interface of the respective device (see IP Settings)
 - By the router (recommended)

Settings on Slaves

If an AC ELWA-E has a higher device number than 1 (see Basic settings) and if it has not yet been assigned to a master, a corresponding indication appears above the menu bar.

If an AC ELWA-E has a higher device number than 1 (see Basic settings) and if it is already assigned to a master, a corresponding indication appears above the menu bar. The master can be attained via the link in the indication.

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.

Settings on Master

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

Multi Units / Mehrere Geräte

Mode / Modus Off / Aus Synchron Stratify / Schicht

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 the selection, please click **Save** (left) to display the button **Scan for Slaves** (right).

Multi Units / Mehrere Geräte

Mode / Modus Off / Aus Synchron Stratify / Schicht

Slaves / Sekundärregler:

Unit No.: / Gerät Nr.:	IP Address: / IP Adresse:	Enable / Aktiv
2	not available / nicht verfügbar	<input type="checkbox"/>
3	not available / nicht verfügbar	<input type="checkbox"/>
4	not available / nicht verfügbar	<input type="checkbox"/>
5	not available / nicht verfügbar	<input type="checkbox"/>
6	not available / nicht verfügbar	<input type="checkbox"/>
7	not available / nicht verfügbar	<input type="checkbox"/>
8	not available / nicht verfügbar	<input type="checkbox"/>
9	not available / nicht verfügbar	<input type="checkbox"/>
10	not available / nicht verfügbar	<input type="checkbox"/>
11	not available / nicht verfügbar	<input type="checkbox"/>


With the search the slaves in the network are displayed. Assign the found slaves to the master by activating them. The IP address now leads directly to the Web interface of the respective slave as a hyperlink.

Multi Units / Mehrere Geräte

Mode / Modus Off / Aus Synchron Stratify / Schicht

Slaves / Sekundärregler:

Unit No.: / Gerät Nr.:	IP Address: / IP Adresse:	Enable / Aktiv
2	10.0.0.101	<input checked="" type="checkbox"/>
3	10.0.0.102	<input type="checkbox"/>
4	not available / nicht verfügbar	<input type="checkbox"/>
5	not available / nicht verfügbar	<input type="checkbox"/>
6	not available / nicht verfügbar	<input type="checkbox"/>
7	not available / nicht verfügbar	<input type="checkbox"/>
8	not available / nicht verfügbar	<input type="checkbox"/>
9	not available / nicht verfügbar	<input type="checkbox"/>
10	not available / nicht verfügbar	<input type="checkbox"/>
11	not available / nicht verfügbar	<input type="checkbox"/>

 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

IP Settings / IP Einstellungen	
MAC Address: / MAC Adresse:	98-6D-35-00-00-0B
Current IP Address: / aktuelle IP Adresse:	192.168.0.1
Current Subnet Mask: / aktuelle Subnetz Maske:	255.255.255.0
Current Gateway: / aktuelles Gateway:	192.168.0.1
Use static IP only if you are familiar with network administration. Statische IP Adressen nur verwenden, wenn Sie mit Netzwerk-Administration vertraut sind.	<input checked="" type="radio"/> DHCP <input type="radio"/> Static IP / statische IP
IP Address: / IP Adresse:	192 <input type="text"/> 168 <input type="text"/> 0 <input type="text"/> 1 <input type="text"/>
Subnet Mask: / Subnetz Maske:	255 <input type="text"/> 255 <input type="text"/> 255 <input type="text"/> 0 <input type="text"/>
Gateway:	192 <input type="text"/> 168 <input type="text"/> 0 <input type="text"/> 1 <input type="text"/>

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

Basic Settings / Grundeinstellungen	
Number: / Nummer:	1 <input type="text"/>
Fusetype: / Absicherung:	16 A <input type="text"/>

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).

Fusotyp: If the device is connected to a 13 A plug socket, the 13 A setting restricts the maximum power to 2,500 W.

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).

Firmware Version / Software Version	
Power Stage: / Leistungsteil:	105
Ethernet:	00102.01, Latest: / Neueste: 00102.02 Update Firmware / Software updaten
Serial No: / Seriennummer:	1601241706280001
Export & Import Settings: / Exportiere & Importiere Einstellungen:	Export / Exportieren Import / Importieren
	Reboot Device / Gerät neu starten
	Factory Reset / Auf Werkseinstellungen zurücksetzen

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

With the "**Export**" button the current settings of the device are saved in a text file. Via "**Import**", this text file (AC_Elwa Settings.txt) can then be used for faster setting of other devices.

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

With the button „**Factory Reset**“ all settings of the device are set back to factory preset. 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 „Scan AC ELWA-E.exe“. For this reason, you cannot be automatically redirected to the AC ELWAE’s web interface after reset.

8. Knob adjustments

The following sections describe the possible settings with the knob.

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.

Apart from this all settings can be made more comfortable using the Web-Interface.

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 temperature for automatic hot water securing (Boost)

The AC ELWA-E can ensure hot water in the absence of excess energy. This function is deactivated in the factory preset.



The automatic hot water securing only works when it is activated in the Web-Interface!

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 a °C marking. The setting value corresponds to the temperature of the table:
► LEDs red/green (simultaneously) and yellow alternating


Knob position:	Meets the following boost-temperature
----------------	---------------------------------------

55° C	35° C
60° C	40° C
65° C	45° C
70° C	50° C
75° C	55° C
80° C	60° C
85° C	65° C

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.

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.

9. Protocol description of http and Modbus TCP

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

10. Firmware Update Ethernet



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. The button only appears if a newer version than the one currently installed is available. After the update, the AC ELWA-E is automatically restarted.



Update with USB cable (for SNr below 160124180131XXXX)

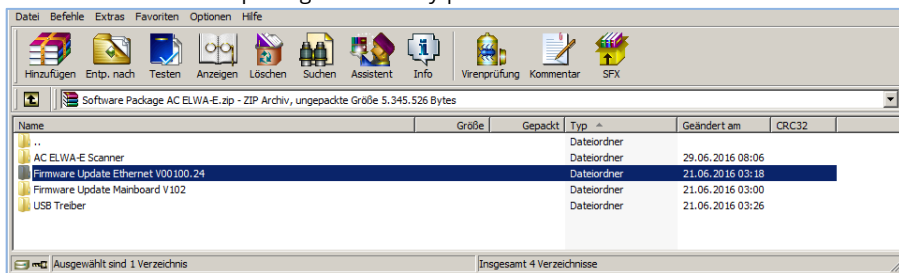
The update of the firmware for the communication via Ethernet happens via the Micro USB interface and the provided USB cable at the bottom of the unit. A firmware update via the Ethernet interface is not possible because of security reasons.



This firmware has to be clearly distinguished from the firmware of the mainboard, which is only uploaded in exceptional cases via a "my-PV USB-Interface" via the infrared interface at the upper side of the AC ELWA-E!

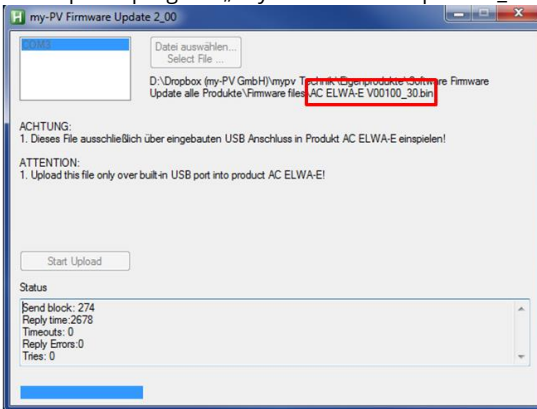
Procedure:

1. Download the software package at www.my-pv.com



2. Unzip the package to a directory of your choice
3. Connect Laptop/PC via Micro USB cable to the AC ELWA-E
4. A USB driver that sets up a COM port on your computer should automatically be installed. If there is no automatic driver installation, it can manually be installed with the software package.

5. Start update program „ my-PV Firmware Update 2_00.exe “



6. Select COM interface of the USB port

7. Select firmware file **for Ethernet**

8. Start upload. This can last a few minutes. The upload program automatically terminates after successful update

9. It is recommended to do a „Factory Reset“ after the firmware update.



After the update is finished it is recommended to disconnect the AC ELWA-E short-term from the power grid to restart the control!

11. Device Key

The device key is from 160124180131XXXX on a sticker on the enclosed assembly instructions. Keep it safe. It serves for access to the future online platform www.my-pv.live.

12. 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 (98°C) 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 (98°C). 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. |

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Subject to change.

