AC ELWA 2: Operation Manual

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1. Assembly

Before placing into operation it is essential to read the assembly instructions provided with the device.
You can also find this manual here

2. Controls and displays

2.1. Homescreen

The content of the home screen varies depending on the operating mode and the settings.

1) Status symbols

	Lights up = set temperature reached		Lights up = physical connection to the RJ45 network connection is intact
	Flashes = stand-by, waits for excess		Lights up = no intact physical connection to the RJ45 network connection
	Lights up = heats with PV excess. Flashes = boost backup mode		Lights up = WiFi connected (incl. display of signal strength)
	Lights up = no control signal		Lights up = WiFi not connected
	Block active		Lights up = WiFi-Accesspoint active

2) The top bar shows the current date, time, unit number and operating mode.

3) Temperature reading(s) and sensor number. If the external temperature sensor T2 is connected, two temperature values are displayed.

To set the target temperature for heating with PV surplus, tap the lower temperature display Tmax (solar) and use the up and down arrow buttons on the right edge of the screen. Then save the settings with the button below.

To set the target temperature for the optional temperature safety setting, tap the upper temperature display Tmin (Boost) and proceed in the same way.

4) Current power output.

In operating mode M3, the power bar is automatically extended by the additional power at the AUX relay.

5) The button "Single-Boost" appears when a backup mode is activated. Pressing the button starts a single backup operation. This can also be deactivated again while the operation is running.

If the backup takes place automatically due to the day of the week, time and temperature, it cannot be deactivated via the button.

6) In operating mode M1, the status of the AUX relay is displayed if the "Activate AUX relay for heat output" setting is enabled. See the chapter "Special Configuration Options in the Web Interface."

In operating mode M3, the status of the AUX relay is displayed.

7) See chapter "Data logger" (internal on device). This is to be distinguished from data recording in the cloud live.my-pv.com. See chapter "Cloud mode".

8) See chapter „Status information on the display"

9) The "Home" button always returns you to the home screen.

10) Settings
See chapter "General settings" for general unit settings, also chapter "Operating modes" for settings specific to the respective operating mode.
In addition, there are unit settings that can only be made in the web interface, but not on the display. See chapter "Special settings on the web interface"

11) Help
When pressed, the display shows brief information about the current view. In the web interface, the button leads to the documents on the AC ELWA 2 on the my-PV homepage.

2.2. Data logger – internal on device

The internal data logger is to be distinguished from the online data recording in the cloud live.my-pv.com. See chapter Cloud Mode.

Recorded performance data, meter values and temperatures can be viewed at any time. The respective values can be selected via the "Open" button. Using the "Calendar" button, these can be displayed in the three views of the current year, month or day.
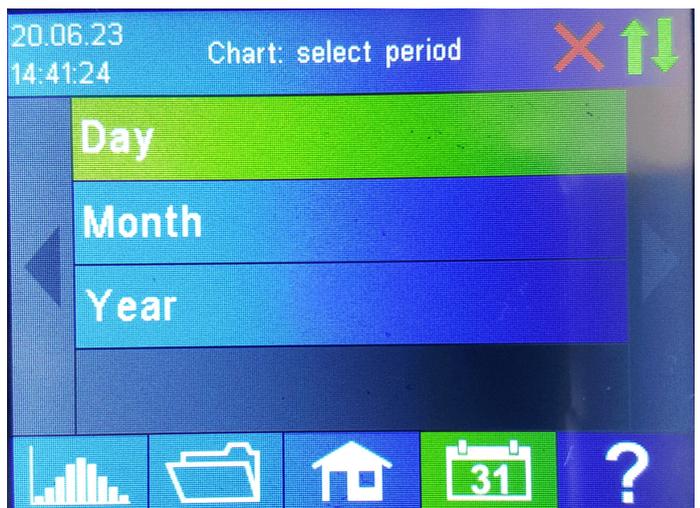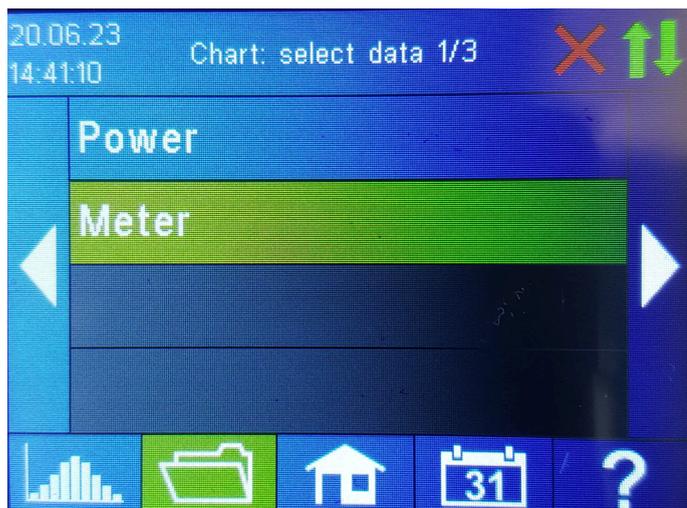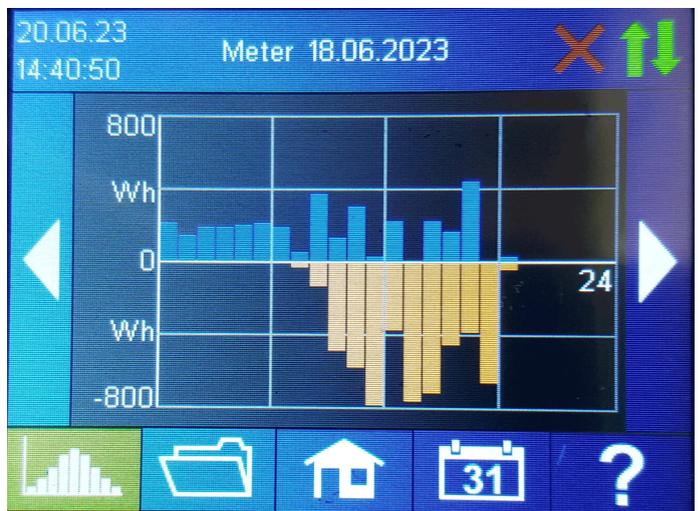
The following data can be displayed:

Total power: Shows the sum of the power values of AC ELWA 2 and heating rod at the AUX relay. The orange bars show the PV excess power used, the pink bars show the share of grid energy when using the optional temperature boost backup or the legionella mode.

Meter: indicates the value of the total power drawn from the grid (blue) including household loads and grid feed-in (orange) at the feed-in point.

Power 1: shows the power data for AC ELWA 2.

Power 2: shows the power data for the heating rod at the AUX relay.

Temperature 1 and 2: shows the data of the temperature probes.

2.3. Status information on the display

The data of all variables relevant to the operation are shown in a list.

Power: shows the total power output of AC ELWA 2.

Meter: shows the current data for the meter at the measuring point. A positive value shows drawing from the grid, a negative value, feeding into the grid.

PV: If a corresponding measuring point has been set in the Web-Interface under Setup, the value of the PV power is available here. See Measurement Settings.

Temperature 1: Current measured value of internal temperature sensor T1

Temperature 2: Current measured value external temperature sensor T2

Power 1: Current power at the heating element of the AC ELWA 2

Power 2: Current power at the external heating rod at the AUX relay

IP: shows the current IP address of AC ELWA 2.

Ctrl IP: shows the current IP address of the signal source. Shown in addition in the line below is the designation of the signal source and the current measured value. A positive value shows drawing from the grid, a negative value, feeding into the grid.

Status: Shows the unit's current status.

Mains voltage: shows the current input voltage.

Frequency: shows the current grid frequency.

Temperature power stage: shows the current temperature of the power electronics.

Fanspeed: shows the current speed setting of the internal fan.

Serial: shows the unit serial number.

MAC: shows the MAC address of the unit.

Hardware version: Shows the status of the installed hardware.

Version: shows the current firmware version of the controller.

Version Co: shows the current firmware version of the co-controller.

Version PS: shows the current firmware version of the power stage.

Device number: shows the unit number set. This is also visible on the home screen.

Mode: shows the operating mode set. This is also visible on the home screen.

SEV relay state: shows the current status of the switch output (0 or 1).

AUX relay state: shows the current status of the switch output (0 or 1).

Cloud Status: Regardless of whether the cloud mode is active or not, it is displayed whether the cloud server is reachable. If the info "99, Timeout" is displayed at this point, please send the 16-digit serial number to support@my-pv.com.

3. Commissioning

A quick-start guide is enclosed with the unit, in which each step of the initial commissioning is explained in detail. These instructions can also be found here

3.1. Possible Controls

3.1.1. my-PV WiFi Meter:

Instructions can be found here

3.1.2. Compatible manufacturers:

Instructions can be found here

Further preset controls (without separate instructions) are listed here:

Signalsource	my-PV Power Meter Direct
Hardware Interface	Direct connection (RJ45, Ethernet)
Comments	Connection to the my-PV Power Meter is established directly without a network. In the case of AC ELWA 2, a standard Ethernet cable can be used for this type of connection. A crossover network cable (as necessary for AC•THOR or AC ELWA-E) is not required. **The my-PV Power Meter was replaced by the my-PV WiFi Meter in 2022. No direct connection is possible with the my-PV WiFi Meter!**
Signalsource	my-PV API
Hardware Interface	LAN (RJ45, Ethernet)
Comments	For control via the internet, see the chapter 'Special configuration options in the web interface'.
Signalsource	my-PV WiFi Meter (Modbus RTU)
Hardware Interface	Modbus RTU (RS485, A B GND)

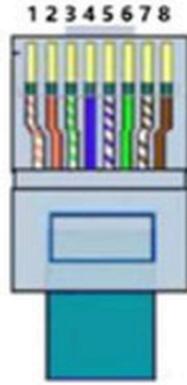|	
Comments	**Connection possible from WiFi meter serial number: 230505XXXX!**
	Firmwareversion e0001301 required!
	To use the my-PV Cloud, it is recommended to also integrate the AC-THOR into the network!
Signalsource	Adjustable Modbus RTU
Hardware Interface	Modbus RTU (RS485, A B GND)
Comments	Cannot be selected on the display, configuration is done in the web interface. Temporary network access (RJ45, Ethernet) is therefore required at least for commissioning. The AC ELWA 2 can only function as a Modbus RTU master via RS485. Freely programmable control is therefore not possible. See chapter "Special setting possibilities in the Web-Interface".
Signalsource	Adjustable Modbus TCP (Sunspec etc)
Hardware Interface	LAN (RJ45, Ethernet)
Comments	Cannot be selected on the display, configuration is done in the web interface. See chapter "Special setting possibilities in the Web-Interface".
Signalsource	Carlo Gavazzi EM24 Manual
Hardware Interface	LAN (RJ45, Ethernet)
Comments	Approved for meter type EM24 with Modbus TCP.
Signalsource	Frequency
Hardware Interface	Mains connection
Comments	Can only be set if the system requirements are met. See chapter Frequency control.
Signalsource	Growatt (Modbus RTU)

Hardware Interface	Modbus RTU (RS485, A B GND)

Comments	The control signal is received via Modbus RTU (RS485, A B GND)! Growatt connection assignment for RS485:

Signalsource	http
Hardware Interface	Note: Inverters that are not SPH-UP may need to be updated to the latest LAN (RJ45, Ethernet) firmware version to communicate via RS485, according to Growatt. To do this, send the Growatt serial number and a short explanation to service.de@growatt.com.
Comments	For control by freely programmable energy management or smart home systems, a description of the open protocols Modbus TCP and http is available in a separate document. The connection to the signal source is made via LAN. The description can be found here or at www.my-pv.com/en/info/downloads/ with the search term "Controls"

Signalsource	IME Conto D4 Modbus MID (Modbus RTU)
Hardware Interface	Modbus RTU (RS485, A B GND)
Comments	The control signal is received via Modbus RTU (RS485, A B GND)! Tested by my-PV with IME Conto D4 Modbus MID.

Signalsource	MEC electronics Manual
Hardware Interface	LAN (RJ45, Ethernet)
Comments	Approved for meter type MECmeter.
Signalsource	Modbus TCP
Hardware Interface	LAN (RJ45, Ethernet
Comments	For control by freely programmable energy management or smart home systems, a description of the open protocols Modbus TCP and http is available in a separate document. The connection to the signal source is made via LAN. The description can be found here or at www.my-pv.com/en/info/downloads/ with the search term "Controls"
Signalsource	QCELLS (Modbus RTU)
Hardware Interface	Modbus RTU (RS485, A B GND)
Comments	The control signal is received via Modbus RTU (RS485, A B GND)!
	Tested by my-PV with Q.VOLT HYB-G3 5.0 kW 1P, baud rate 115200. According to information from Q CELLS, the devices in the Q.VOLT HYB-G3 series support RTU communication. The correct communication connection to the Q.VOLT HYB-G3 inverter can be found in the Q CELLS manual.
Signalsource	RCT Power Manual
Hardware Interface	LAN (RJ45, Ethernet)
Comments	-
Signalsource	Slave
Hardware Interface	LAN (RJ45, Ethernet)

Comments	Cannot be selected manually. See chapter " Multi units"
Signalsource	Steca Auto
Hardware Interface	Modbus RTU (RS485, A B GND), LAN (RJ45, Ethernet)
Comments	-

> ## ⚠ Attention
>
> - 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.
>
> - Not every signal source is approved for hybrid systems with battery storage. If necessary, please contact the technical support of my-PV.
>
> - Operation with battery may require additional control parameters. In this case, please contact the technical support of my-PV.

3.2. Frequency control

Can only be set if the system requirements are met.

3.2.1. Explanation

In AC offgrid systems, battery inverters can change the grid frequency depending on the battery's state of charge. With frequency control, the AC ELWA 2 is thus given the power via the power grid connection. Wiring for communication is not required!

> ## ⚠ Attention
>
> In boost backup mode, the battery must be expected to discharge!

As soon as frequency control is selected as
the signal source, the measured value is

shown on the display at the bottom right above the help button.
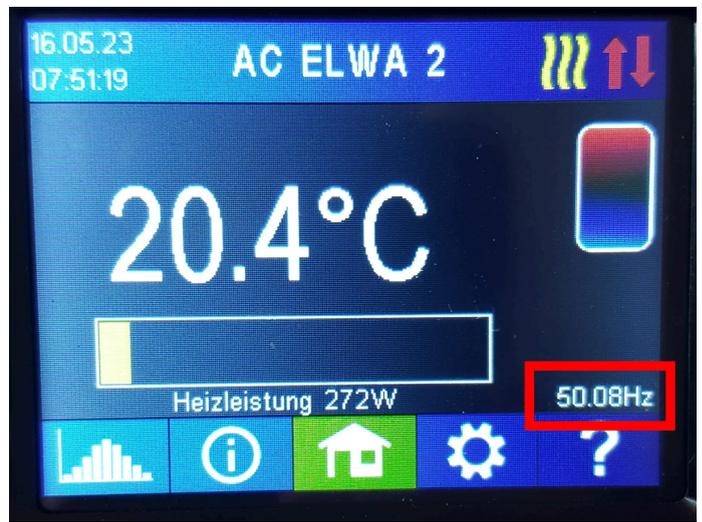
> ### ♡ Tip
>
> With several units, different frequency ranges can be specified in each case. Thus, prioritisation of several devices is possible even without setting the multi-mode!

3.2.2. System requirements

Hardware version: 1.5A or higher
Firmware version: e0000600 or higher
Power stage firmware version ep102 or higher

> ### ⚠ Attention
>
> This control mode only works in compatibility mode AC ELWA 2 (standard)!

3.2.3. Specific settings for Frequency control

Frequency

The frequency range in which the adjustable power can be linearly fed can be altered. As lower limit (no power) and upper limit (maximum power) a range between 45 and 65 Hz is available. The factory settings are 50 Hz and 51 Hz. The frequency range must be at least 0.5 Hz!

Maximum power

Entering the maximum power is very important in offgrid systems. If the available power of the photovoltaic system is less than the power of the AC ELWA 2, then a limitation is

necessary.

3.3. PWM control with 3 - 24 V DC voltage from external source

The AC ELWA 2 can also be operated via an external PWM signal with variable power. The corresponding signal input is located at the 8-pin connector to which the external temperature sensor T2 is also connected.

This control is independent of the selected operating mode. If a PWM signal is present, all other control signals that might be available are also overridden.

If the boost backup mode is set, it remains valid.

> ⚠ **Attention**
>
> When using several devices, a separate PWM signal is required for each one. Multimode is not possible with this control mode!

As soon as a PWM signal is present, it is displayed in percent on the bottom right of the display above the help button.
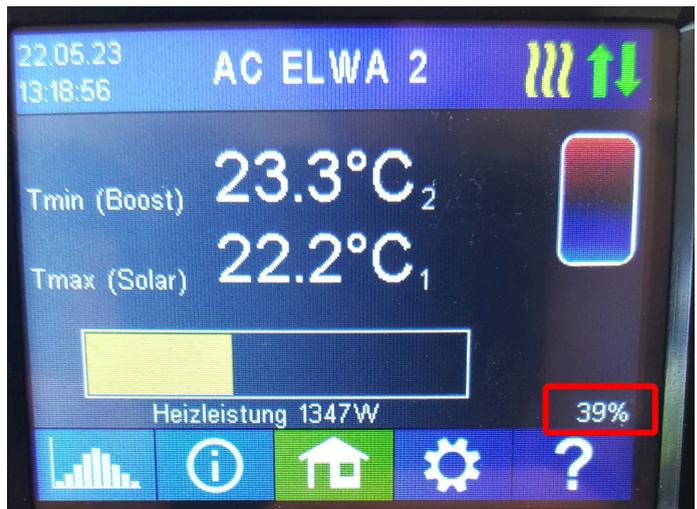
4. Operating modes

> ⚠ **Attention**
>
> The wiring diagrams for the respective operating mode can be found in the enclosed assembly instructions and in the current version at any time at https://my-pv.com/en/info/downloads/?docart=Technische+Dokumentation&product=AC+ELWA+2

4.1. M1: Hot water 3,5 kW

4.1.1. Explanation

In this operating mode, the heating rod at the electronics until is linearly powered with PV surplus until the target temperature is reached at the internal sensor T1.

4.1.2. Optional boost backup

Optionally, the AC ELWA 2 can also maintain a minimum temperature. Two boost modes are available in operating mode M1. See "Specific settings for operating mode M1".

💡 Tip

Use the external temperature sensor T2 for this. In this way, in boost backup mode only the volume above the sensor will be heated to the minimum temperature, while when there is excess PV, the entire contents above the immersion heating element will be heated.

⚠ Attention

The external temperature sensor T2 must always be installed on the storage tank above the AC ELWA 2 to provide a usable measurement result!

4.1.3. Specific settings for operating mode M1

Hot water 1 temperatures

The maximum temperature that may be reached at the internal temperature sensor T1 due to PV excess can be set (factory setting 60°C).

If the optional automatic temperature boost backup is shown "On" in the window on the right (factory setting "Off") or the "SELV relay" output has been selected, a minimum temperature can then be set (factory setting 50 °C).

Automatic temperature boost backup "On":
When active, the heating rod at the electronics is supplied with maximum power. This can lead to current being drawn from the mains or to a battery discharging!

Automatic temperature boost backup "SELV relay":
Alternatively, the minimum temperature can be maintained by enabling an external heat source. Enablement is by means of a potential-free contact. For details of wiring the potential-free contacts, please refer to the assembly instructions in the chapter "Wiring diagram Mode M1".

The external temperature sensor T2 is always required for the "SELV relay" backup mode and it must always be installed on the storage tank above the AC ELWA 2 to provide a usable measurement result!

Operating mode	M1 Without external Sensor T2
Boost options	Off
	On Boost by AC ELWA 2
	-
	-
Operating mode	M1 With external Sensor T2
Boost options	Off

On Boost by AC ELWA 2

SELV relay

-

Hot water 1 min switching times

This setting can be selected when the boost backup is not "Off" under "Hot water 1 temperatures".

There are two time windows available to maintain the minimum temperature. Start and finish can each be defined at full hours. Factory settings suggest switching times of 5 to 11 pm and 5 to 7 am.

💡 **Tip**

Restrict the times when the minimum temperature has to be maintained to mornings and evenings, to increase your PV self-consumption through the day!

⚠ **Attention**

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

Hot water 1 min weekdays

This setting can be selected when the boost backup is not "Off" under "Hot water 1 temperatures".

You can select the weekdays on which the minimum temperature has to be maintained. In the factory settings, all weekdays are activated.

Legionella program

For ensuring drinking water hygiene, a period can be specified by the end of which a set minimum temperature must again be reached at the internal sensor T1 after the last time it was reached. The number of days in this period can be set between 1 and 14. A time at which the legionella program is to start can also be specified. Factory settings are number of days 7, starting time 8 pm, temperature is 60 °C, the legionella program is "Off".
The AC ELWA 2 is supplied with maximum power until the legionella temperature at the internal sensor T1 is reached. This may result in current being drawn from the mains or a battery discharging!

4.2. M3: Hot water 3,5 + 3 kW

4.2.1. Explanation

In this operating mode, another heating element is supplied with PV surplus in addition to the AC ELWA 2 until the target temperature is reached at the internal sensor T1. Only the AC ELWA 2 can adjust the power output linearly, the other heating element is switched on as soon as sufficient surplus is available. If this is the case, the AC ELWA 2 starts power control again from 0. The total control range is thus extended.

The heating element is switched on for the first time when a surplus level of 3 kW is exceeded. As soon as a measured value of the load is available, this is taken into account as the switching threshold in further operation!

> ## Tip
>
> In this operating mode, it is strongly recommended that the AC ELWA 2 control is carried out with a my-PV Meter!

> ### ⚠ Attention
>
> - Third party control types may not be able to command the power up to 6,5 kW!
>
> - The external temperature sensor T2 must in any event be installed in the hot water tank above the external (upper) heater to provide a reliable reading!
>
> - The power of the external heater must not exceed 3 kW. It must be fused separately!
>
> - The external heater must be equipped with a bimetal thermostat.
>
> - The following applies to external control via "Modbus TCP", "http" or "SMA Home Manager" (not "SMA Direct Meter Communication"): An AC ELWA 2 in which the Tmax has been reached at the internal sensor T1 cannot be controlled in operating mode M3. Since the load at the AUX relay cannot be powered linearly, unstable control behavior would be expected!
>
> - Multiple units (multi-mode): An AC ELWA 2 as slave on which the Tmax has been reached at the internal sensor T1 cannot be controlled in multi-mode in operating mode M3. Since the load at the AUX relay cannot be powered linearly, unstable control behavior would be expected!
>
> - The following applies to frequency control: This operating mode is not suitable for off-grid systems. my-PV recommends using several AC ELWA 2 instead to increase the control range!

If the nominal power at the switched load is reduced at a later time (e.g. due to a modification of the system), it is necessary to reset to factory settings.

4.2.2. Optional boost backup

Optionally, the AC ELWA 2 can also maintain a minimum temperature on the external sensor T2. Three boost modes are available in operating mode M3. See "Specific settings for operating mode M3".

4.2.3. Specific settings for operating mode M3

Hot water 1 temperatures

Adjustable is the maximum permitted temperature to be reached at the internal temperature sensor T1 (factory setting = 60 °C).

If the optional automatic temperature boost backup is shown "On" in the window on the right (factory setting: Off), or the setting "SELV relay" or "AUX relay" has been selected, then a

minimum temperature can also be set (factory setting: 50°C).

> ## 💡 Tip
>
> Both temperatures can also be set on the Home screen. Tap on the temperature displays and use the arrow keys up and down on the right edge of the screen. Then save the settings with the button below.

Automatic temperature boost backup "On":
When active, the heating rod at the electronics <u>and</u> the heating element on the AUX relay are supplied with maximum power. This can lead to current being drawn from the mains or to a battery discharging!

Automatic temperature boost backup "SELV relay":
Alternatively, the minimum temperature can be maintained by enabling an external heat source. Enablement is by means of a potential-free contact. For details of wiring the potential-free contacts, please refer to the assembly instructions in the chapter "Wiring diagram Mode M1".

Automatic temperature boost backup "AUX relay":
As a third possibility, the minimum temperature can also be maintained only by the switched heating element on the AUX relay. This can lead to current being drawn from the mains or to a battery discharging!

> ## 💡 Tip
>
> Automatic temperature boost backup AUX relay has the advantage that the lower storage area remains "free" for PV surplus and tends to require less energy for boost backup.

Operating mode	M3 Externals sensor T2 required
Boost options	Off

On Boost by AC ELWA 2 + Heater at AUX relay

SELV relay

AUX relay

Hot water 1 min switching times

This setting can be selected when the boost backup is not "Off" under "Hot water 1 temperatures".

There are two time windows available to maintain the minimum temperature. Start and finish can each be defined at full hours. Factory settings suggest switching times of 5 to 11 pm and 5 to 7 am.

> ### 🔆 Tip
>
> Restrict the times when the minimum temperature has to be maintained to mornings and evenings, to increase your PV self-consumption through the day!

> ### ⚠ Attention
>
> - 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 the adjusted start-hour is after the stop-hour, hot water backup will not start!

Hot water 1 min weekdays

This setting can be selected when the boost backup is not "Off" under "Hot water 1 temperatures".

You can select the weekdays on which the minimum temperature has to be maintained. In the factory settings, all weekdays are activated.

Legionella program

For ensuring drinking water hygiene, a period can be specified by the end of which a set minimum temperature must again be reached at the internal sensor T1 after the last time it was reached. The number of days in this period can be set between 1 and 14. A time at which the legionella program is to start can also be specified. Factory settings are number of days 7, starting time 8 pm, temperature is 60 °C, the legionella program is "Off".
The AC ELWA 2 <u>and</u> the heating element on the AUX relay are supplied with maximum power until the legionella temperature at the internal sensor T1 is reached. This may result in current being drawn from the mains or a battery discharging!

5. General settings

For settings specific to the different operating modes, please see the chapter "Operating modes". In addition, there are unit settings that can only be made in the web interface, but not on the display. See chapter "Special settings on the web interface".

<u>Time zone:</u> From the English-language list, first select the continent, then the country and, if necessary, the city (required for countries with several time zones).

<u>Date:</u> The date can be entered in the format dd.mm.yy.

<u>Time:</u> The time can be entered in the format hh:mm:ss.

<u>IP DHCP/static:</u> As standard, DHCP is activated, i.e., the unit will get an IP address from the router to which it is connected. This only works when the router is configured as a DHCP server. If no DHCP server is active in the network or if a static assignment is required, a fixed IP address is needed.

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

<u>IP address:</u> can only be set when "Static IP" has been selected and there is no direct connection to the my-PV Power Meter (meanwhile replaced by my-PV WiFi Meter).

Subnet mask: can only be set when "Static IP" has been selected and there is no direct connection to the my-PV Power Meter (meanwhile replaced by my-PV WiFi Meter)..

Gateway address: can only be set when "Static IP" has been selected and there is no direct connection to the my-PV Power Meter (meanwhile replaced by my-PV WiFi Meter).

DNS server: can only be set when "Static IP" has been selected and there is no direct connection to the my-PV Power Meter (meanwhile replaced by my-PV WiFi Meter).

Display timeout: the number of seconds elapsing until the display is turned off can be set. A value between "10" and "250" seconds can be entered.

Display brightness: brightness of the display can be adjusted in ten steps.

Logo brightness: brightness of the illuminated my-PV logo on the unit can be adjusted in ten steps. "0" indicates that the logo will not be turned off.

Control source: In this section, the selection of the control is made. See the enclosed Quick Start Guide or the chapter "Commissioning".

Ctrl IP: The IP address of the signal source can be selected manually. For example, this is necessary when there are several compatible sources in the network and a special one of them should be chosen as the control system.

Control target power: The setpoint value of the power at the measuring point is specified here. A negative value means grid feed-in. A target value of -50 W is preset at the factory. This parameter can be freely selected in the range between -9999 and +9999 W.

Mode: Detailed description will be found in the chapter "Operating modes".

Language: In addition to German and English, other languages will be available in the future.

Device number: Each AC ELWA 2 has the number 1 ex works. Higher unit numbers only have to be assigned in multi-mode (see Special setting options in the web interface).

Max. power: This setting can be used to limit the power at the heating element. The value can be set on the display between 17 - 100 percent.

This is necessary, for example, if other loads are connected to the same circuit as the AC ELWA 2. In this way, you can prevent the fuse from blowing.

Power timeout: With this setting, the timeout of the AC ELWA 2 (power timeout) can be set for several control types.

Hysteresis: Switching hysteresis for hot water can be set. These do not cause an increase at the target temperature! After reaching the target temperature, however, the value may drop by the set amount before the heating process is restarted.

Hot water maximum temperature (factory setting 3.0 °C)
Hot water minimum temperature (factory setting 3.0 °C)

Check for new firmware: This option is not yet available in this firmware version.

When a new version is available, the following buttons are displayed.

eXXXXXXX Download
The download may take several minutes. Do not interrupt the process!

eXXXXXXX Installation
After the installation, the unit will automatically restart.

ecYYY Download and installation
After installation, the machine will automatically restart.

epZZZ Download and installation
After installation, the machine will automatically restart.

Factory reset:

Factory reset: tapping on the menu point resets the AC ELWA 2 to its factory settings. This will cause all altered settings in the unit to be deleted!
CAUTION! No security confirmation is requested!

Debug mode: To analyse control problems, the debug mode can be activated in coordination with support@my-pv.com.

WiFi password: This option can be selected if "WiFi" is already selected in "Ethernet mode" (next menu item).
An automatic search for available networks is carried out. After the selection, you will be asked to enter the WiFi password. Press the shift key and the "123?" key to use additional special characters.

Ethernet mode: There are three options to choose from:

Ethernet

The AC ELWA 2 is connected to the router via a network cable. Two green arrows appear at the top right of the home screen as soon as the connection is established.

WiFi

The AC ELWA 2 is connected to the router via WiFi.
An automatic search for available networks is carried out. After the selection, the WiFi password is entered. Press the shift key and the "123?" key to use additional special characters.
As soon as the connection is established, a WiFi symbol appears in the top right-hand corner of the home screen (including a display of the signal strength).

WiFi Access Point

The AC ELWA 2 can set up an access point to which WiFi-capable devices can connect.
The WLAN password is: administrator
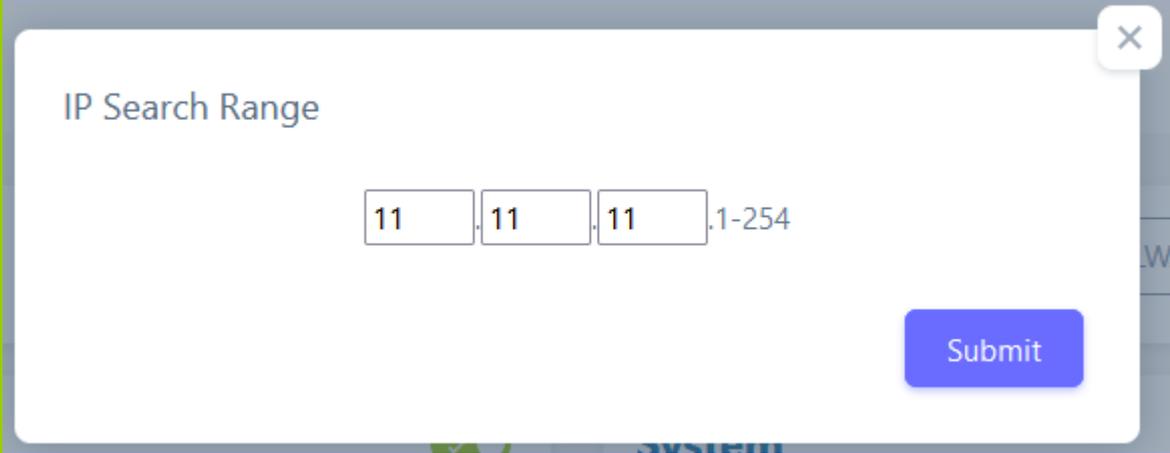The IP address of the AC ELWA 2 is 11.11.11.2.
A WiFi symbol with the letters "AP" appears at the top right of the home screen.

Cloud mode / Cloud connection:

If desired, the settings of the AC ELWA 2 can also be accessed from outside the local network. For this purpose, it is necessary to register the device with serial number and device key in the my-PV data cloud: https://live.my-pv.com/

Open the website and log in or register as a new user. When you register for the first time, you will receive an email with a confirmation link. If the email does not appear in your inbox, it may be in the spam folder.

The serial number and the device key can be found under Cloud connection.

If the cloud mode is also activated, an overview of the recorded operating data is also available after connecting the device to the my-PV data cloud.

Activate the data transfer under Cloud mode.

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

Compatibility mode: There are three options to choose from:

AC ELWA 2 (default)

Imitation AC ELWA-E

In the event that the signal source cannot yet control the AC ELWA 2, an AC ELWA-E is now imitated. The maximum power output is therefore only 3kW.
This may apply to signal sources that specify the power to my-PV via Modbus TCP!

Heating element AC ELWA-E

You use the electronic unit of the AC ELWA 2 on the heating rod of the older AC ELWA-E. The maximum power output is therefore only 3kW. Other immersion heaters are not permitted!

6. Local Web-Interface

The local web interface is a single HTML file, which is saved locally after downloading. After that, Internet access is is no longer necessary.

It only connects to the unit within the local network, while remote access is only possible via the data cloud is possible.

> ⚠ **Attention**
>
> The local web interface must be distinguished from the data cloud https://live.my-pv.com/

6.1. Download local Web-Interface

Check which IP address the AC ELWA 2 has in the local network. This can be read directly on the display. From the home screen, you can access the status information via the info button (second from the left). Scroll with the arrow to the right to the line "IP". Next to it are four numerical blocks, each separated by a dot. This is the IP address you will need next.

Enter the IP address of the AC ELWA 2 in the address line of the web browser.

DE: Der Aufruf des AC ELWA 2 Webinterfaces erfolgt durch eigene HTML Datei, die einmalig lokal gespeichert werden muss.

EN: The AC ELWA 2 web interface is called via a separate HTML file, which must be saved locally once.

FR: L'interface web de l'AC ELWA 2 est appelée via un fichier HTML séparé, qui doit être sauvegardé localement une fois.

ES: Se accede a la interfaz web AC ELWA 2 a través de un archivo HTML independiente, que debe guardarse localmente una vez.

NL: De webinterface van AC ELWA 2 wordt opgeroepen via een afzonderlijk HTML-bestand, dat eenmalig lokaal moet worden opgeslagen.

Download Webinterface

DE: Alternativ kann das AC ELWA 2 Webinterface auch direkt im Browser geöffnet werden.

EN: Alternatively, the AC ELWA 2 webinterface can also be opened directly in the browser.

FR: L'interface web de la AC ELWA 2 peut également être ouverte directement dans le navigateur.

ES: Alternativamente, la interfaz web de AC ELWA 2 también puede abrirse directamente en el navegador.

NL: Als alternatief kan de AC ELWA 2 webinterface ook rechtstreeks in de browser worden geopend.

Open Webinterface in Browser

Follow the download link (above) and save the file locally, then open the file to access the Web-Interface. Alternatively, you can open the Web-Interface directly in your web browser (link below).

> ### ⚠ Attention
>
> my-PV does not recommend to connect the AC ELWA 2 to the Internet via port forwarding access!

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

6.2. Connect the local Web-Interface with AC ELWA 2

When opening for the first time, the IP address range of the network in which the unit is located must be set. The entry is saved by the web browser, but the address range can be redefined at any time via settings and the button "IP search range".

If the IP address of the device is known, it can be directly entered by selecting "IP Address Known." The address can be read from the status information on the display.
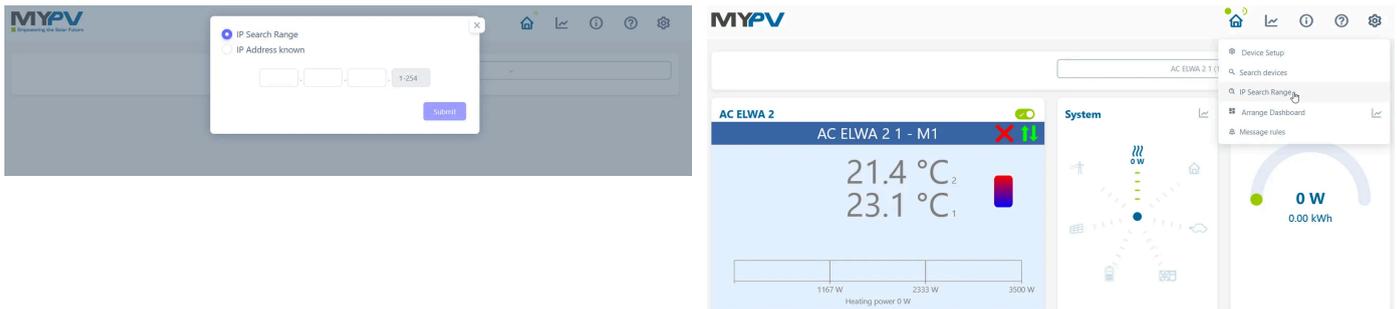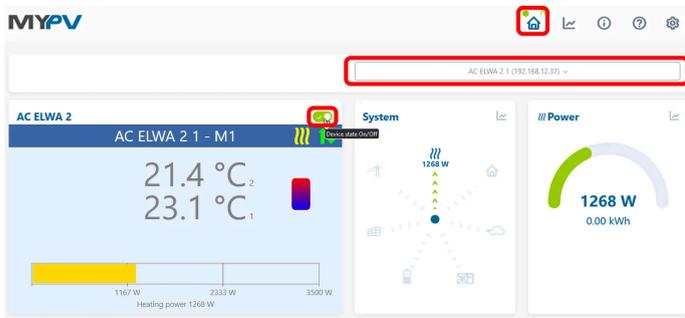

6.3. Home – homepage

The home page in the web browser gives the same information as the home screen on the display.

The countdown (10 seconds) next to the home button shows the remaining time until the next data update.

The AC ELWA 2 can be switched off with "Unit status On/Off".

The web interface of other my-PV units in the same network can be accessed directly via a quick selection at the top right.
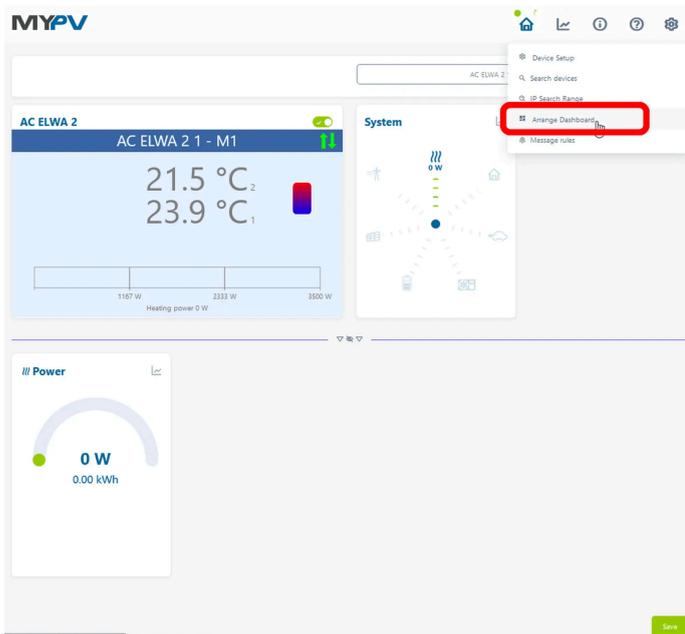
6.3.1. Widgets

If you are on the home page, the button "Arrange dashboard" is available under settings. This allows the windows on the home page ("Widgets") to be arranged differently. To hide them, drag a widget below the horizontal line and press the "Save" button to save the new arrangement.

> ⚠ **Attention**
>
> The choice of widgets depends on the available data!

6.4. Data logger

The data logger In the web browser gives the same information as the data logger on the display. The selection of values and time period is possible using the menu bar above the diagram.

6.5. Status information

The status information in the web browser contains more details than that on the display.

Explanations can be found in the chapter "Status information on the display".

Depending on the operating mode and application, this representation varies.

6.6. Device Setup

The setting options in the web browser are more extensive than those on the display. See next section " Special setting possibilities in the Web-Interface".

An explanation of the other general unit settings is included in the chapter "General settings".

An explanation of the other specific unit settings for the different operating modes is included in the chapter "Operating modes".
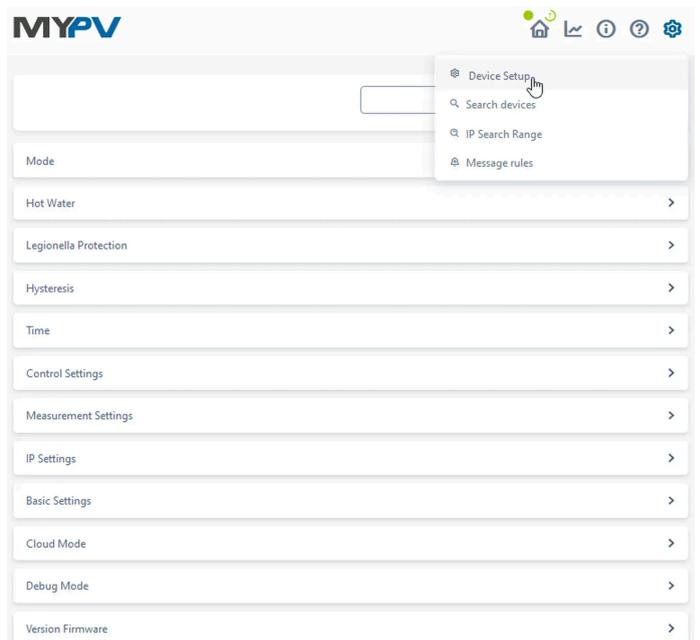
6.7. Special setting one the Web-Interface

The following unit settings are only possible in the web interface and <u>cannot</u> be carried out on the display.

6.7.1. Special settings for operating mode M1 – 3.5 kW

Special Settings for Operating Mode M1 (3.5 kW) The following parameters can be set in operating mode M1 (3.5 kW) via the web interface.

Activate AUX relay during heat output: If this option is "On," the AUX relay will be activated for at least 120 seconds during heat output. The relay can thus be used as a potential-free signal transmitter. It can also be used to switch smaller circulation pumps with power up to approximately 50 watts.

Mode

Activate AUX relay when heating

1: Hot water 3.5 kW

● Off
○ On

Save

⚠ Attention

When switching larger loads or when controlled externally via "Modbus TCP," "http," or "SMA Home Manager," unstable control behavior may occur!

> **Tip**
>
> If the heating rod is not installed directly in the heat storage tank but in a hydraulic bypass, and the heat input is to be achieved by the circulation pump, any potential mixing of the thermal layers in the storage tank could be prevented by an intermediate mixing valve.
>
>
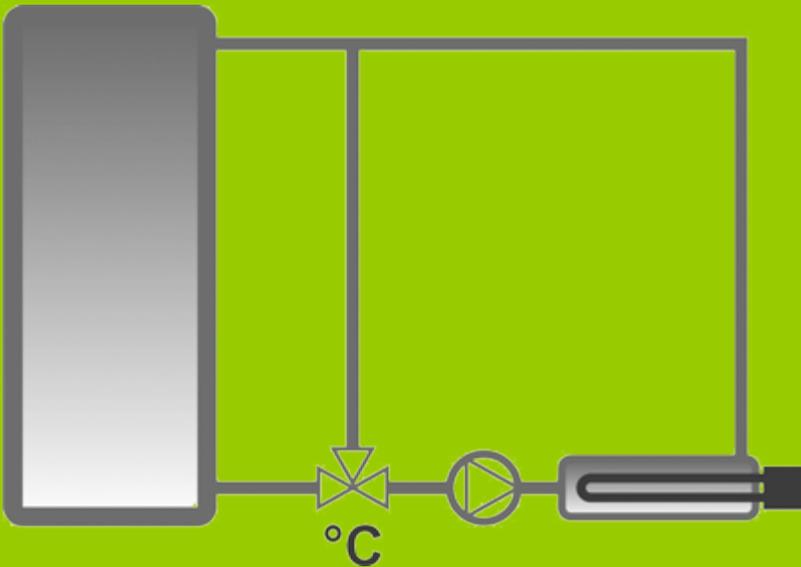
6.7.2. Special settings for operating mode M3 – 3,5 + 3 kW

The following parameters can be set on the web interface in operating mode M3 (3,5 + 3 kW).

Control tolerance: This value defines the reaction sensitivity of the AUX relay to changes in the power input. The second heating rod is switched by the relay.

Mode

> 3: Hot water 3.5 + 3 k\ ∨

Control tolerance   50   ◇   W

Save

6.7.3. Time

In the web setup, a time server or NTP server (NTP = Network Time Protocol) can be defined by means of a domain name. Region and location can also be set on the display under "Time zone".

Time

Current AC ELWA 2 time   15:20:32

Region   Europe   ∨

Location   Austria/Vienna   ∨

NTP server   pool.ntp.org

Save

6.7.4. Control Settings

In this section the choice of the signal source for the AC ELWA 2 is made.

Control Settings

Control type   my-PV Meter Auto

ELWA Number >1: only 'Slave' selectable.

TIP: For many control types there are separate instructions for the required settings. More information can be found here.

Control source IP address   0   0   0   0

Control state   No Control

Power timeout   10   s

Control target   -50   W

Negative value means feed-in. Only change this value if you are familiar with the control strategy - read Help for more details.

Interval target value:

Interval target value: If active, a different target value of the control is used in the set time window.

◉Off
◯On

Block start / stop hour   0   0

Save

⚠ **Attention**

A control type can only be selected if the AC ELWA 2 has the factory preset device number 1. See "Basic settings".

The **"Interval target value"** function causes the AC ELWA 2 to automatically change the target value of the control to another adjustable target value for a certain duration in an adjustable time interval. This can ensure that other applications with regulated surplus control are not deprived of surplus energy by the my-PV application.

Interval target value:

Interval target value: If active, a different target value of the control is used in the set time window.

◯Off
◉On

Interval target value of the control: -1500   W

Interval   15   min

Duration of the interval target value: 60   s

Block start / stop hour   0   0

Save

This includes, for example, charging stations for electric cars that are neither directly nor indirectly connected to my-PV. Therefore, my-PV sets -1500W as the default for the interval target value. This corresponds to the minimum charging power of many electric cars.

The function „**Block**" allows to define a time window within AC ELWA 2 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.

The function blocks the surplus control, as well as the optional boost backup. It also applies to the AUX relay in operating mode M3.

The blocking time does not apply to the optional boost backup setting via SELV relay.

Attention

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

- With **"Adjustable Modbus TCP"** the control signal is received via network (RJ45, Ethernet or WiFi)!

- With **"Adjustable Modbus RTU"** the control signal is received via Modbus RTU (RS485, A B GND)! This control system is also configured via the Web-Interface. At least for commissioning, a network access is therefore temporarily necessary, but this can be removed after configuration!

💡 Tip

If you set up the AC ELWA 2 as a WiFi access point (see chapter "General settings"), then the settings for "Adjustable Modbus RTU" can also be made without network access.

To be able to access the local web interface (HTML file) in systems without Internet access, download it to your end user device beforehand: https://download.my-pv.com/currentversionget.php

The IP search range in the web interface must be set for the access point of the AC ELWA 2.
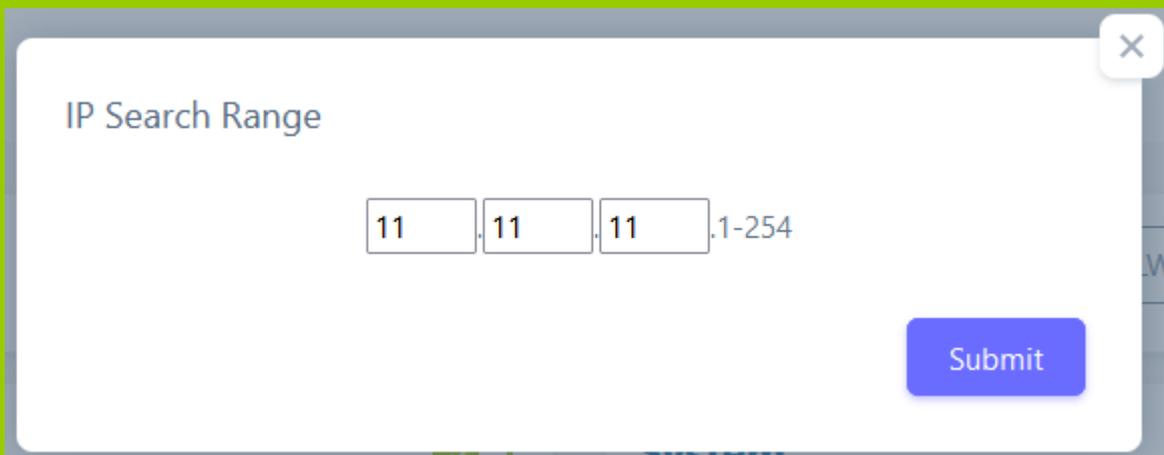
Control Settings

Control type: Adjustable Modbus TCP (Sunspe ▾)

ELWA Number >1: only 'Slave' selectable.

TIP: For many control types there are separate instructions for the required settings.
More information can be found here.

Control source IP address	0 0 0 0
Device ID	1
Device port	502
Register range	Holding registers ▾
Sign	- feed in ▾
Meter register	1000 Int16 ▾
Separate meter register for feed-in (0 if not present)	0
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 Settings

Control type: Adjustable Modbus RTU ▾

ELWA Number >1: only 'Slave' selectable.

TIP: For many control types there are separate instructions for the required settings.
More information can be found here.

Device ID	1
Baud rate	9600 ▾
Parity	none ▾
Stop bits	1 ▾
Register range	Holding registers ▾
Sign	- feed in ▾
Meter register	1000 Int16 ▾
Separate meter register for feed-in (0 if not present)	0
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 ▾

Description of the data types:	Int16
	16-bit integer value, two's complement representation
Description of the data types:	Int16-nc
	16-bit integer value, magnitude sign representation (1st bit = sign)
Description of the data types:	Int32
	32-bit integer value, two's complement representation
Description of the data types:	Int32-sw
	32-bit integer value, two's complement representation, swapped words

Description of the data types:	Int32-nc
	32-bit integer value, magnitude sign representation (1st bit = sign)

Description of the data types:	Int32-sw-nc
	32-bit integer value, magnitude sign representation (1st bit = sign), swapped words

Description of the data types:	Float
	32-bit float value

Description of the data types:	Float-sw
	32-bit float value

> ⚠ **Attention**
>
> - This control types are 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 2 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.

6.7.5. Measurement Settings

As an option, other measurements can be queried in the system in addition to PV excess measurement (see Control Settings) and visualise them on the my-PV cloud. Available variables are Photovoltaic power, Battery power, EV Charging station power and Heat pump power.

> ⚠ **Attention**
>
> These measured values have no relevance for the regular operation of the my-PV device!

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

Detect measuring point by requesting data from external device ("Adjustable Modbus TCP")

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

> ⚠ **Attention**
>
> Measured value acquisition only works via network, not via Modbus RTU!

> ⚠ **Attention**
>
> 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.

| **Setting** | Measure source |

Description	With "Adjustable Modbus TCP", the control signal is received via the network (RJ45, Ethernet)!
Setting	Modbus IP address
Description	Enter the IP address of the device from which you want to retrieve data.
Setting	Device ID / Port
Description	Device ID and port must be set according to the external device. This is like a specific apartment in a large building. You tell the system which "door" it should knock on. Example: Device ID 1 and port 502.
Setting	Register range
Description	**Holding Registers:** Are intended for storing information that can be changed by a user, such as settings, configurations or process parameters (R/W Read and Write).
	Input Registers: Contain data that cannot normally be changed by the user (R/O Read Only). These registers often contain information about the status of a device or process, such as sensor data or status information.
Setting	Meter register
Description	The sum register (sum of the power at all three current phases) of the external device is set here. ⚠️ If relevant for the type of metering point, e.g. for battery storage or bi-directional wallbox, the register must include both directions of energy flow! Data type: Specify the format in which the totals register provides data. Description of the data types:
	Int16: 16-bit integer value, two's complement representation
	Int16-nc: 16-bit integer value, magnitude sign representation (1st bit = sign)
	Int32: 32-bit integer value, two's complement representation
	Int32-sw: 32-bit integer value, two's complement representation, swapped words
	Int32-nc: 32-bit integer value, magnitude sign representation (1st bit = sign)
	Int32-sw-nc: 32-bit integer value, magnitude sign representation (1st bit = sign), swapped words
	Float: 32-bit float value
	Float-sw: 32-bit float value, swapped words

Setting	Scale register
	Scale register type
Description	If scaling of the data from the register is required, you can set this here. You can choose between scaling according to Sunspec, dividing "DIV" or multiplying "MUL".

Setting	L1/L2/L3 registers
	L1/L2/L3 type
	Scale registers
	Scale register type
Description	If the manufacturer does not have a total register (sum of the power of all three current phases), the three registers for the individual phases can usually be queried.
	Data type: Specify the format in which the phase registers provide data. Description of the data types above. If scaling of the data from the registers is required, you can set this here. You can choose between scaling according to Sunspec, dividing "DIV" or multiplying "MUL".

Photovoltaic power

At the measuring point "Photovoltaic power" it is possible to block the my-PV device if the inverter does not produce any power. The operation for optional boost-backup is not affected by this.

Battery power

With the "Battery power" measuring point, it is also possible to query the SOC (State of Charge) of the battery and the battery status, if this information is provided by the battery.

EV Charging station power

At the "EV Charging station power" measuring point, it is also possible to query the SOC (State of Charge) of the vehicle, if this information is provided by the charging station.

If the "Interval target value" control function is used (see chapter "Control settings") <u>and</u> the "EV Charging station power" measuring point is also queried, it is possible to define an additional duration of the interval target value here. The interval target value is thus extended by this additional duration, provided the power at the charging station is at least above 500W at the end of the first interval.

EV Charging station power
Measure source   my-PV Meter
my-PV Meter ID   0
For the my-PV Power Meter, the ID (serial number) has 7 digits. For the my-PV WiFi Meter, the ID (serial number) has 10 digits.
Additional duration of the interval target value when power is drawn (> 500W) from the charging station.   120   s
Only relevant in connection with the interval target value under "Control Settings".

The positive effect of this is that the time of the higher target value of the control can be significantly shortened. It is regulated back to the original target value more quickly, which in turn ensures higher self-consumption.

6.7.6. EV Function

This option is not yet available in this firmware version.

6.7.7. Multi units

Multiple AC ELWA-E, AC•THOR or AC•THOR 9s can be used in a network. Operation is based on the master / slave principle.
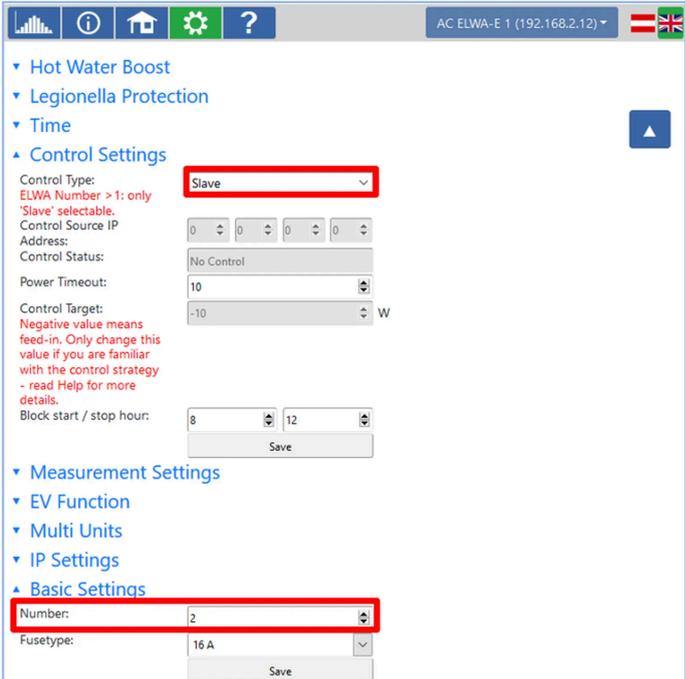
⚠ Attention

When using several units, the following things have to be considered:

- ■ All devices must be connected to the router

- ■ 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 three ways:

  - ■ In the web interface of the respective device (see IP Settings)

  - ■ On the display

  - ■ By the router (recommended)

Settings on Slaves

For the slaves only the device numbers has 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 Signal source field.
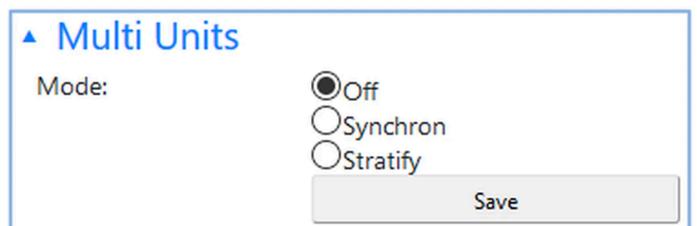
After a device search in the quick selection at the top right, the slave with the set number

appears. Switching between the devices is possible here.
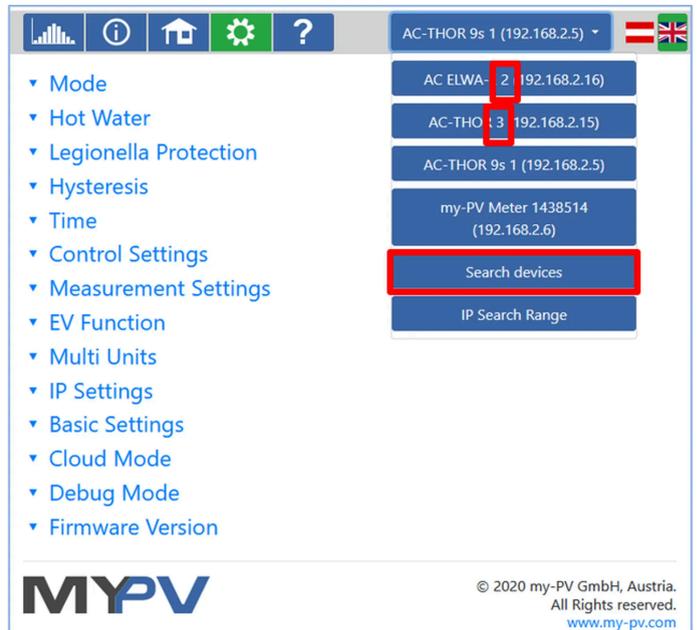
Settings on Master

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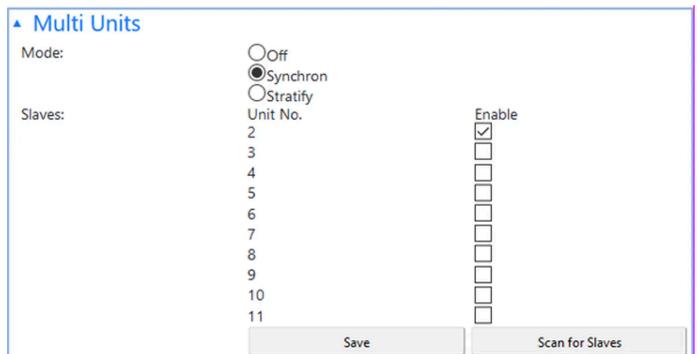
After selection, please start the "Search for slaves" and activate the desired devices. Then save the setting.

⚠ **Attention**

Scanning is performed via UDP port 16124. Firewalls (or specific router settings) may prevent that other units can be found.

6.7.8. API

This menu item only appears in the device settings in the my-PV Cloud, not in the local Web-Interface! For this, it is essential that the device has an active internet connection and "Cloud mode" is activated.

The my-PV API allows current operating data to be queried and setup changes to be made via an internet-based interface (https). Power can be specified for the duration specified in the request.

An access token can be generated in the 'API' menu item. In conjunction with the 16-digit serial number of the device, the endpoints of the API can be used with the token. This token is only displayed once in the my-PV Cloud, so please make a note of it. However, you can generate a new token at any time if necessary.

The detailed documentation of the API (Swagger documentation) is available at: api.my-pv.com

> ⚠ **Attention**
>
> Local signal sources are overridden with this control. The API control always has priority!

6.7.9. Version Software

> ⚠ **Attention**
>
> Internet access is required!

With the button "Check for updates", the unit checks whether a newer firmware version is available. If this is the case, the latest version number appears next to the currently installed version number.

The button "Download update" starts the download of the latest firmware (State: Downloading).

Version Firmware

Version Controller   e0000025, Latest e0000026
       [Download update]

Version Co-Controller: ec012
Version Power stage: ep009
       [Check for updates]

Serial No   1601502302010000
       [Reboot Device]
       [Factory Reset]

Version Firmware

Version Controller   e0000025, Latest e0000026
       State: Downloading

Version Co-Controller: ec012
Version Power stage: ep009
       [Check for updates]

Serial No   1601502302010000
       [Reboot Device]
       [Factory Reset]

The button "Update Firmware" starts the installation.

The my-PV logo on the unit flashes at short intervals during the installation of eXXXXXXX.

During the installation of ecYYY and epZZZ, the installation progress is displayed.

Version Firmware

Version Controller   e0000025, Latest e0000026
       State: Wait
       [Update Firmware]

Version Co-Controller: ec012
Version Power stage: ep009
       [Check for updates]

Serial No   1601502302010000
       [Reboot Device]
       [Factory Reset]

7. Signal of the my-PV logo

1x blinking: If the my-PV logo flashes constantly, the unit is ready for a firmware update via WLAN access point.