/ Perfect Welding / Solar Energy / Perfect Charging

ENERGY MANAGEMENT WITH THE FRONIUS WATTPILOT

APPLICATION GUIDE

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Solar Energy / Partner Programs and Trainings

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1 INTRODUCTION

This document provides an overview of the possible uses of the Fronius Wattpilot in conjunction with Fronius inverters. On the one hand, an overview of the possibilities of energy management in connection with the photovoltaic system is given, and on the other hand, the advantages of sector coupling with a focus on the mobility sector are shown.

In the following, Fronius presents the possibilities of integrating the Fronius Wattpilot into the overall solar system and shows the possibilities of holistic energy management on the way to 24 hours of sun.

1.1 Validity

This white paper covers the following inverter types:

- Fronius GEN24 Plus
- Fronius Tauro
- SnapINverter generation (web server)
- Fronius Symo Hybrid
- and the Datamanager Box

2 Sector coupling

Electromobility is a central point of the energy transition, with the help of which current climate protection goals can be achieved. By integrating electrically powered vehicles, it is also possible to store the uneven generation from renewable energies, thereby enabling a constant power draw from the photovoltaic system. This can increase self-consumption and minimize feed-in to the public grid. The proliferation of electrically powered vehicles, in addition to the obvious benefits such as better air quality in cities, lower noise pollution or lower energy consumption, also results in other advantages related to the electromobility system. One of these additional benefits is the fact that any vehicle on the road can also be used as a mobile electricity storage unit for renewable energy generation. In order to make the best possible use of this generation and relieve the strain on public grids, sector coupling is a key element. As a solution provider, Fronius offers the possibility of implementing sector coupling in one's own household. All 3 sectors are included for this purpose:

- Electricity (Fronius hybrid inverter and stationary battery storage)
- Heat (Fronius Ohmpilot for hot water generation or heating)
- Mobility (Fronius Wattpilot for charging the electric vehicle).

3 Prioritization of the components

To give the customer the greatest possible individualization, Fronius energy management offers the option of prioritizing the individual system components among themselves. This allows the customer to decide for himself what the available energy from the PV system should be used for. This chapter deals with the following 3 components that can be prioritized in energy management:

- Stationary battery storage
- Fronius Ohmpilot
- Fronius Wattpilot

For the configuration of the prioritization, two threshold values are available in the Solar.wattpilot app, which can be set as desired. This defines the behavior of the overall system.

PV battery threshold

If a battery is installed in the PV system, a threshold value (in % of SOC) can be set here. During operation, the SOC (State of charge) of the battery is constantly checked. If the current SOC is below the set value, the battery is preferably charged. As soon as the current SOC of the battery rises above the set threshold, from then on the energy is used to charge the car. The SOC of the stationary battery can nevertheless continue to rise slowly, since the car is regulated in whole ampere steps and any excess energy is stored in the stationary battery.

Ohmpilot threshold

If a Fronius Ohmpilot is installed in the PV system, a threshold value for the desired setpoint temperature (in °C) can be set here. During operation, the current temperature is constantly measured. If the current temperature is below the set threshold value, preference is given to using the temperature set for the available energy is heated. If the temperature exceeds the set value, the available energy is used to charge the car. The temperature can still continue to rise slowly as the car is charged in whole ampere steps and any excess energy is used for the Ohmpilot. **To use the function with an available Fronius Ohmpilot, a temperature sensor must be connected to the Ohmpilot.**

In the following, the possible settings will be described on the basis of use cases.
For more detailed information on how to access the web interface of the inverter, please read the chapter *Access to the web interface.*

IMPORTANT: For correct prioritization, the settings must be made in the Solar.wattpilot app under "Settings→""Cost optimization" and additionally in the web interface of the Fronius inverter.

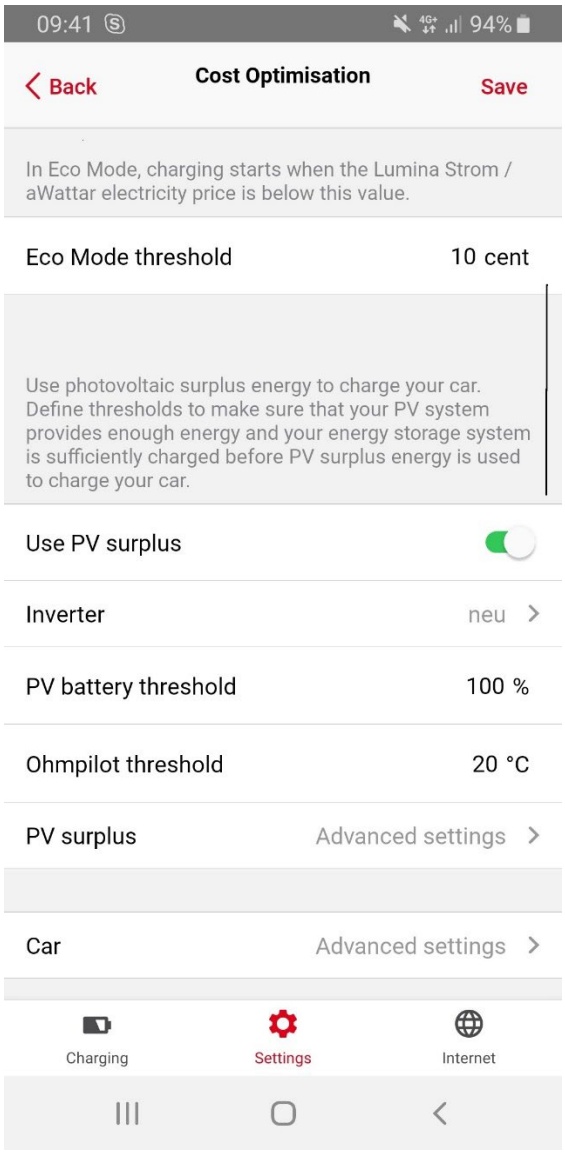
3.1 The customer has a stationary battery and a Wattpilot

3.1.1. Use case 1: The battery has highest priority

In the first use case, the stationary battery is preferred and should be given priority over the e-car charging. The following settings are made for this:

Settings in the Fronius inverter web interface: Battery storage to highest priority.

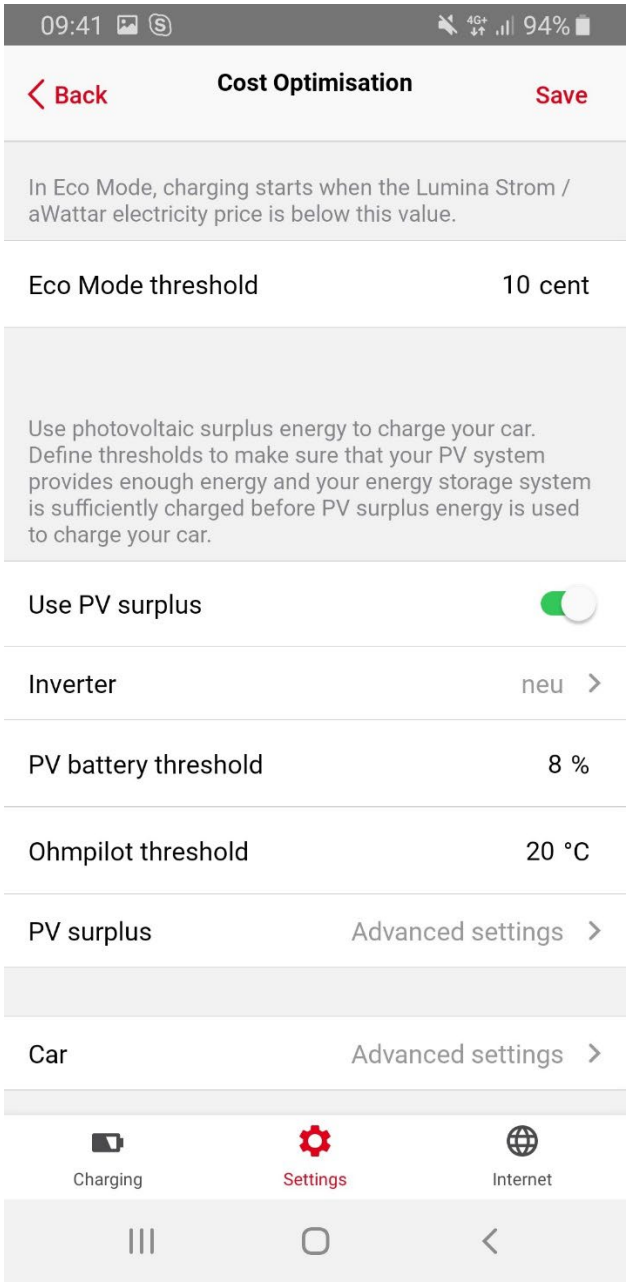
Note: Since in this case there is only a battery and no other components in the system, the ranking is invalid.



3.1.2. Use case 2: The Wattpilot has highest priority

In the second use case, e-car charging is preferred and should be given priority over stationary battery storage. The following settings are made for this:

Settings in the Fronius inverter web interface: Battery storage to highest priority. Note: Since in this case there is only one battery and no other components in the system, the ranking is invalid.

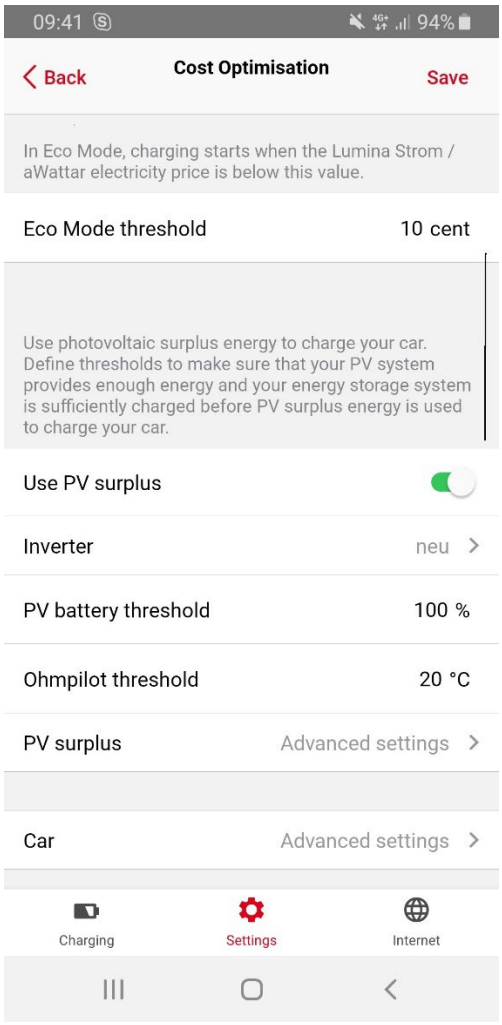


3.2 The customer has a stationary battery, a Wattpilot and an Ohmpilot

3.2.1. Use case 1: The battery has highest priority

In the first use case, the stationary battery is preferred and should be given priority over the e-car charging and the Ohmpilot. The following settings are made for this:

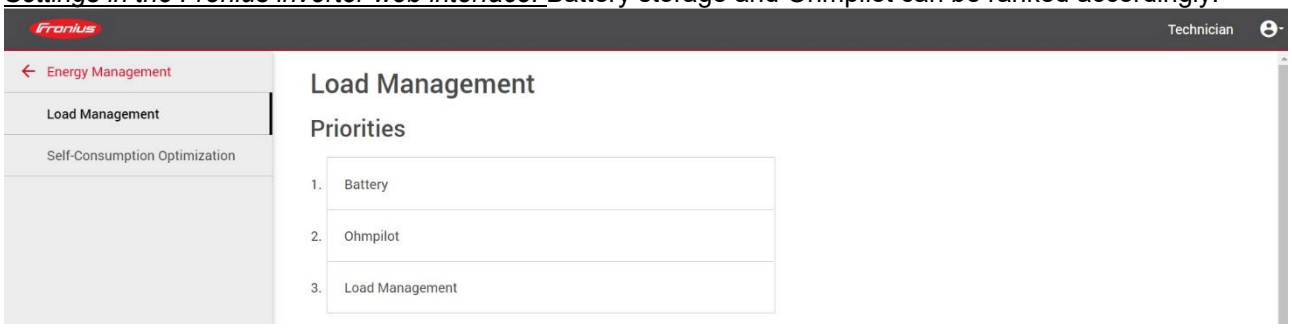
Settings in the Fronius inverter web interface: Battery storage on highest priority, Ohmpilot behind it.

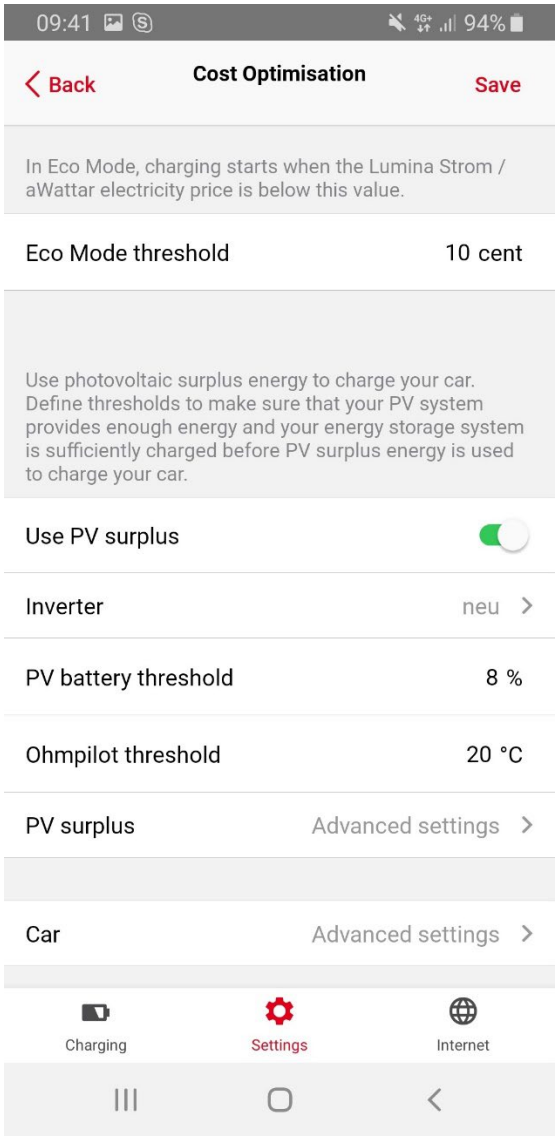


3.2.2. Use case 2: The Wattpilot has highest priority

In the second use case, the e-car charging is preferred and should be given priority over the stationary battery storage and the Ohmpilot. The following settings are made for this:

Settings in the Fronius inverter web interface: Battery storage and Ohmpilot can be ranked accordingly.

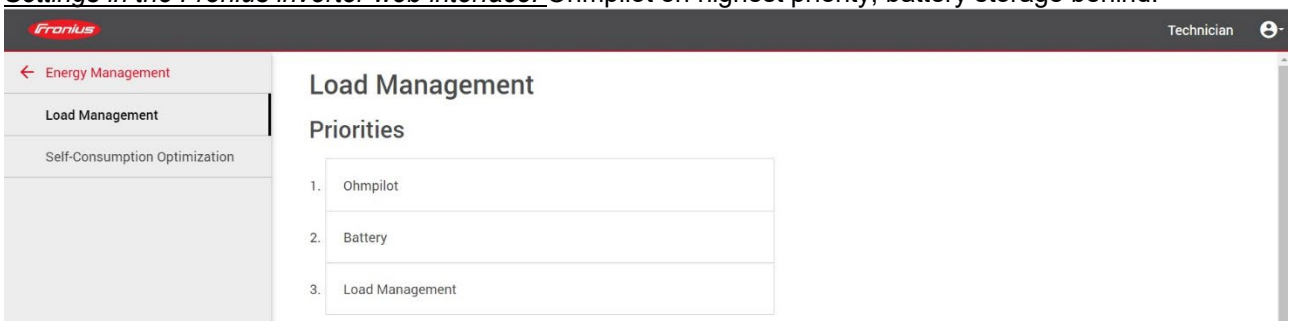


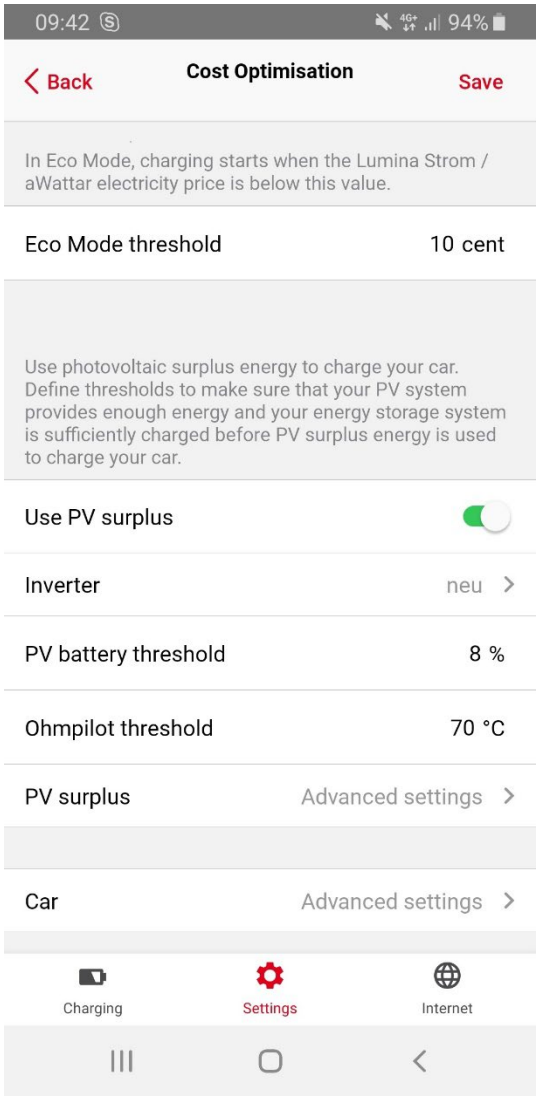


3.2.3. Use case 3: The Ohmpilot has highest priority

In the third use case, the Ohmpilot is preferred and should be given priority over stationary battery storage and e-car charging. The following settings are made for this:

Settings in the Fronius inverter web interface: Ohmpilot on highest priority, battery storage behind.





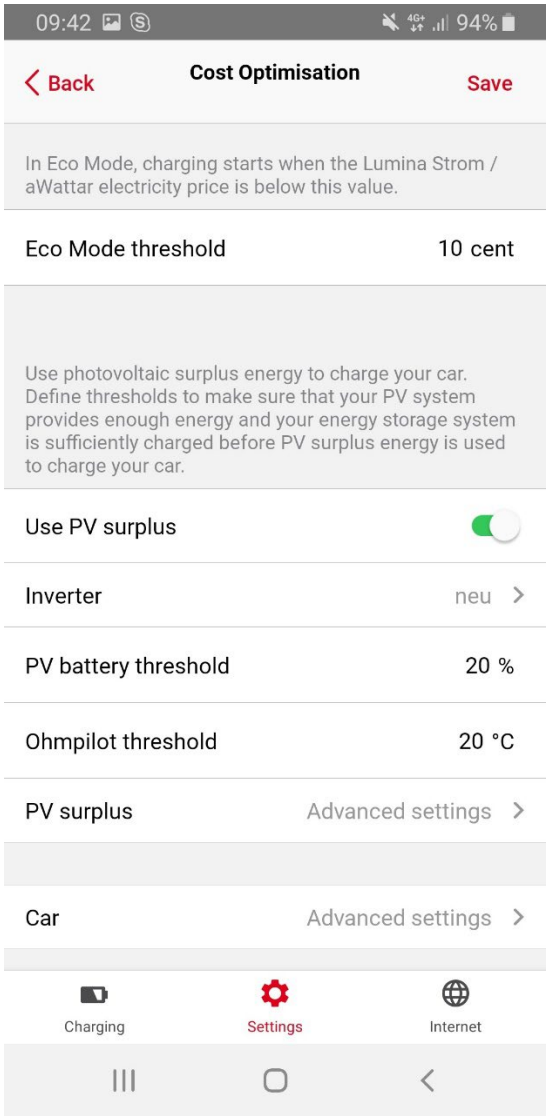
3.3 The customer has a Wattpilot and an Ohmpilot

3.3.1. Use case 1: The Wattpilot has highest priority

In the first use case, the e-car charging is preferred and should be given priority over the Ohmpilot. The following settings are made for this:

Settings in the Fronius inverter web interface: Ohmpilot to highest priority.

Note: Since in this case there is only an Ohmpilot and no other components in the system, the ranking is invalid.

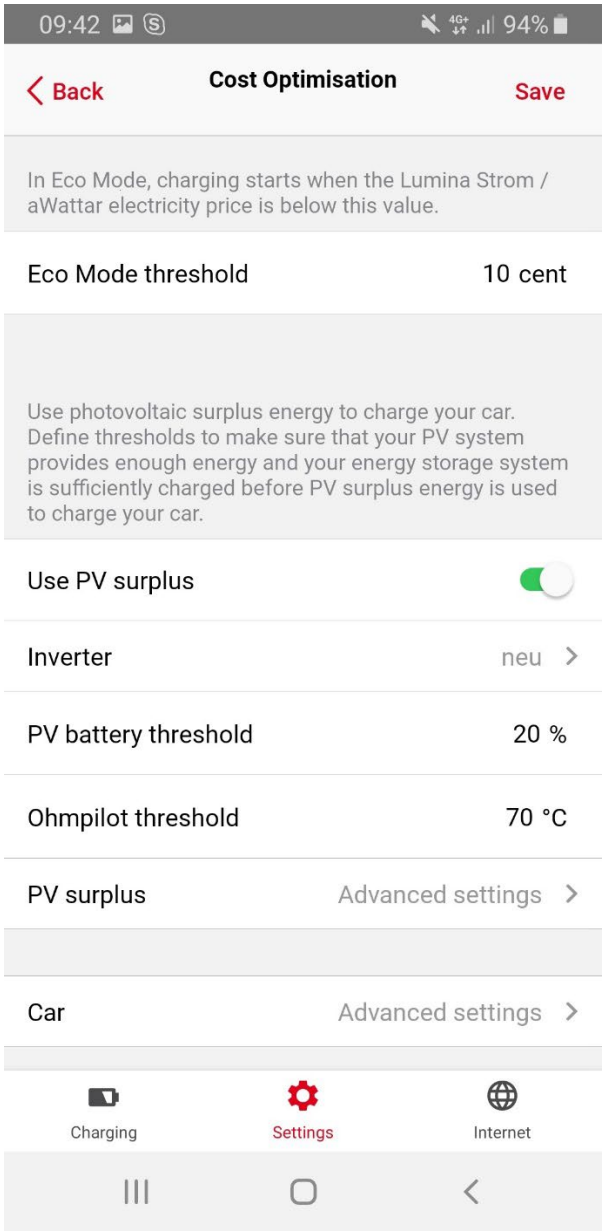


3.3.2. Use case 2: The Ohmpilot has highest priority

In the second use case, the Ohmpilot is preferred and should be given priority over the e-car charging. The following settings are made for this:

Settings in the Fronius inverter web interface: Ohmpilot to highest priority.

Note: Since in this case there is only an Ohmpilot and no other components in the system, the ranking is invalid.



3.4 Special case load management with the 4 digital I/Os

For the rudimentary load management with the 4 digital I/Os on the Fronius inverter, special behavior applies in combination with the Fronius Wattpilot. Fronius does not recommend operating the digital I/Os in parallel with the Fronius Wattpilot. The inverter - and thus the system's energy management - does not know the connected power that is to be controlled via the digital I/Os. Therefore, it can lead to undesired behavior, especially with higher loads such as heating rods, since no prioritization is possible between the load management (digital I/Os) and the Fronius Wattpilot. The switching operations can therefore not be controlled. When using the Fronius Wattpilot, the digital I/Os can at best be used for very small loads (e.g. pump with 500 W), where control is rather secondary and does not affect the charging behavior of the Wattpilot.

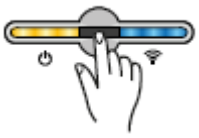
Fronius does not recommend using the digital I/Os and the Fronius Wattpilot at the same time, as the loads cannot be prioritized.

4 Settings on the Fronius inverter

4.1 Access to the web interface

Fronius GEN24 Plus

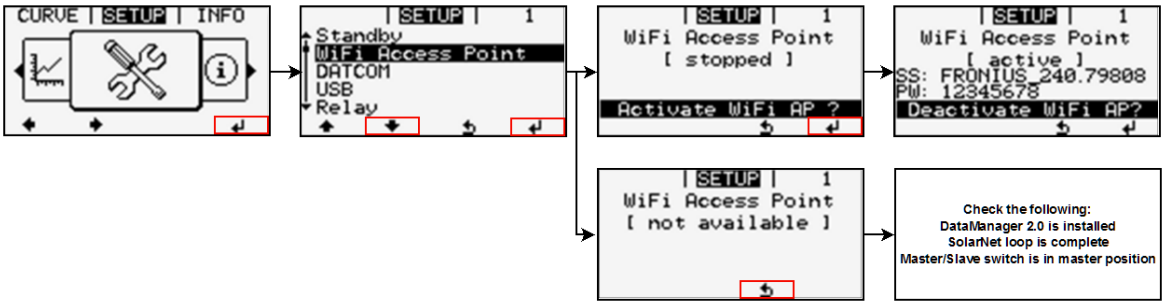
1. Open the access point of the inverter by actuating the sensor right ➔ LED flashes blue.



3. Open the browser and call the web interface with the IP 192.168.250.181.

Fronius SnapINverter, Symo Hybrid and Datamanager Box 2.0

1. Activate access point.



2. Connect to the Access Point.
3. Open the browser and call the Datamanager web interface in the address bar with the IP 192.168.250.181.