SOLAR ELECTRIC

KOSTAL

Smart
connections.

Installation guide

PIKO MP plus with
KOSTAL Smart Energy Meter and
BYD Battery-Box Premium HVS/HVM

Legal notice

Exclusion of liability

All names, trademarks, product names or other designations used in this manual may be legally protected even if not indicated as such (e.g. as a trademark). KOSTAL Solar Electric GmbH assumes no liability or warranty for their free usage. The illustrations and texts have been compiled with great care. However, the possibility of errors cannot be ruled out. The compilation is made without any guarantee.

General note on gender equality

KOSTAL Solar Electric GmbH is aware of the importance of language with regard to the equality of women and men and always makes an effort to reflect this in the documentation. Nevertheless, for the sake of readability we are unable to use non-gender-specific terms throughout and use the masculine form instead.

© 2020 KOSTAL Solar Electric GmbH

Valid from:
PIKO MP plus: HMI 3.13.2
KOSTAL Smart Energy: SW 1.2.0

Installation guide

You can find this installation guide in our **download area** for the PIKO MP plus under Operating manual.

> ⚠️ **The installation guide does not replace the operating instructions or manuals for the inverter, battery and KOSTAL Smart Energy Meter required for correct assembly and installation.**

! **IMPORTANT INFORMATION**

Installation may only be carried out by a trained and qualified electrician!

Follow the safety instructions in the operating instructions for the inverter, battery and KOSTAL Smart Energy Meter.

A battery activation code for the KOSTAL Smart Energy Meter and a computer / tablet are required to put the storage system into full operation and to make all the necessary settings.

For all work on the devices or on the supply lines, the power supply in the house, the inverter and the battery must be completely de-energized. Take a look at the corresponding operating instructions for the respective devices (inverter / battery / KOSTAL Smart Energy Meter).

PIKO MP plus applications

The PIKO MP plus can be used as a PV inverter, battery inverter or as a hybrid inverter with and without a battery.

PIKO MP plus 1.5 to 3.6 with 1 MPP tracker		PIKO MP plus 3.0 to 5.0 with 2 MPP trackers		
PV inverter	Battery inverter	PV inverter	Hybrid inverter	Battery inverter
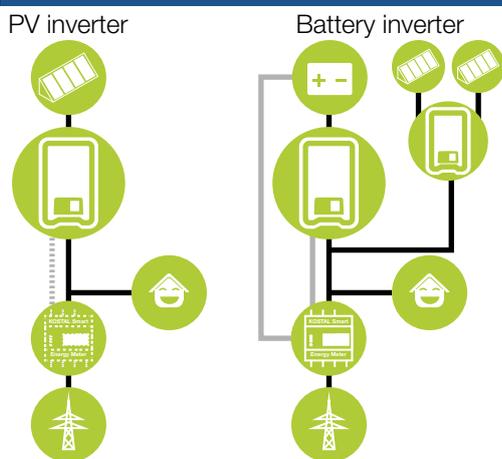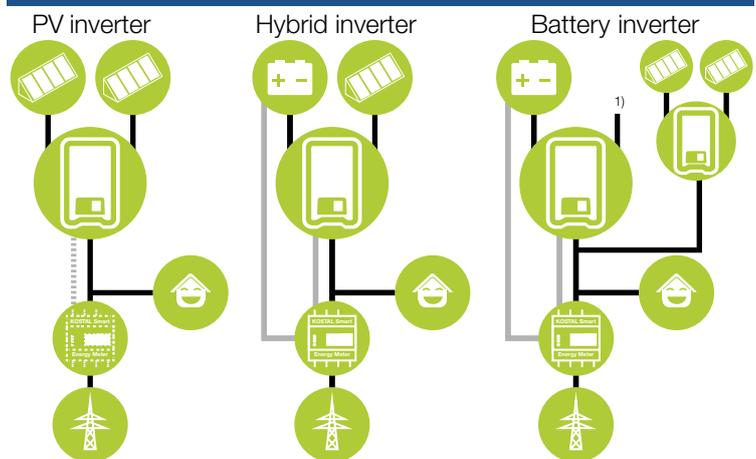
1) Second DC input not connected.

Sequence of installation and commissioning

The following software is required for the PIKO MP plus function with battery. You can find these in the download area for the PIKO MP plus.

- PIKO MP plus: HMI 3.13.2 / PU-APP 3.7.0 / ENS1 1.31.0 / PAR 23.0.2

- KOSTAL Smart Energy: 1.2.0

The following sequence must be observed when installing and commissioning the entire system to avoid errors.

1. Install the KOSTAL Smart Energy Meters (KSEM) energy meter according to the operating instructions.

2. Install the PIKO MP plus inverter according to the installation instructions and switch on the the AC side.

3. Install the BYD Battery-Box Premium HVS / HVM battery according to the operating instructions and preconfigure it with the BYD-APP.

4. Set the inverters DC switch to OFF (0).

5. Switch off the battery by pressing the power button (min. 6 sec.) on the front.

6. Switch on the battery using the main switch on the side of the BCU.

7. Set up the inverter and battery in the KOSTAL Smart Energy Meter (KSEM).

8. Set the inverters DC switch to ON (|).

Switch-on sequence after error

The following sequence must be followed if an error has occurred or the battery was switched off manually during operation using the circuit breaker on the battery.

1. Set the inverters DC switch to OFF (0).

2. Switch off the battery by pressing the power button (min. 6 sec.) on the front (if it is still switched on).

3. Switch on the battery using the main switch on the side of the BCU.

4. Set the inverters DC switch to ON (|).

Installation of KOSTAL Smart Energy Meters for battery operation

INFO

Use the KOSTAL Smart Energy Meter instruction manual for the complete installation.

It is impotant that the KOSTAL Smart Energy Meter is installed at the grid connection point.

When the battery input in the PIKO MP plus is activated, the installation position of the KOSTAL Smart Energy Meter is fixed to the grid connection point and cannot be changed.
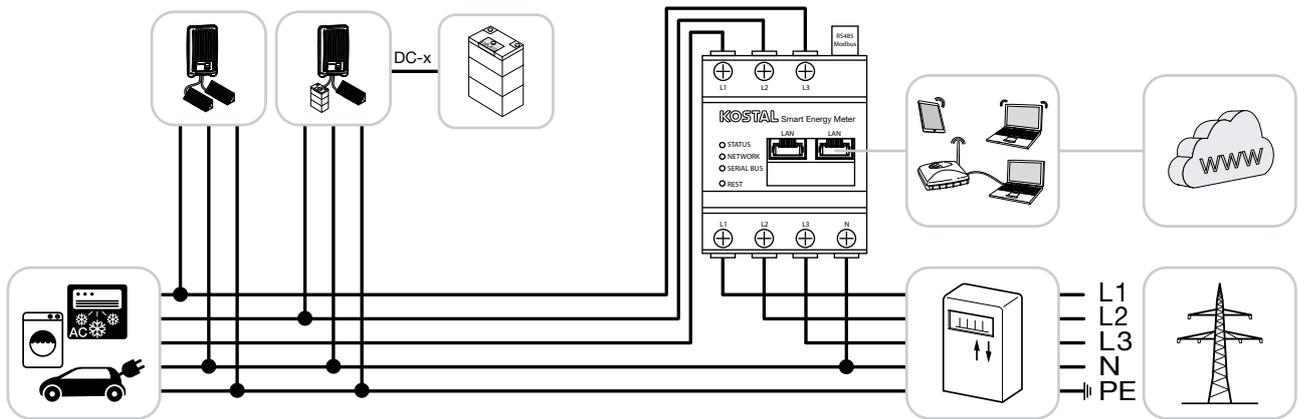

1. Install KOSTAL Smart Energy Meter as shown at the grid connection point.

2. Establish a LAN connection from the KOSTAL Smart Energy Meter, battery and inverter to the Internet.

3. In this variant, the KOSTAL Smart Energy Meter runs as a master and sends data to the inverter and battery.

Installation of PIKO MP plus for battery operation

INFO

Use the PIKO MP plus instruction manual for the complete installation.

PIKO MP plus xx-1: DC1 - PV / Bat
PIKO MP plus xx-2: DC1 - PV

PIKO MP plus xx-2: DC2 - PV / Bat
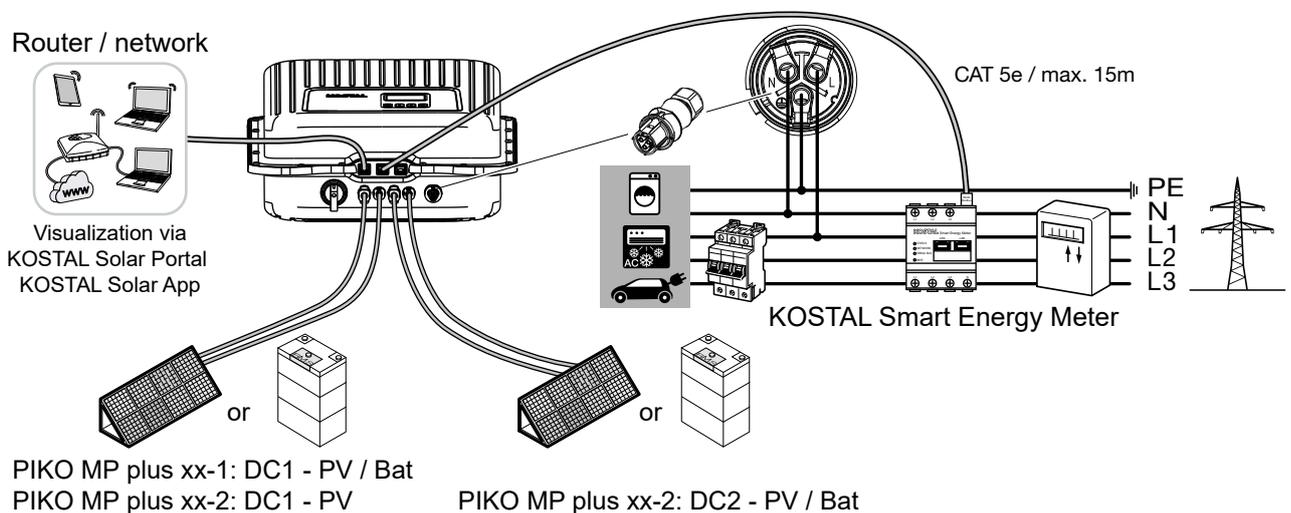
Connection of PIKO MP plus PIKO MP plus / Batterie BYD Battery Box Premium / KOSTAL Smart Energy Meter
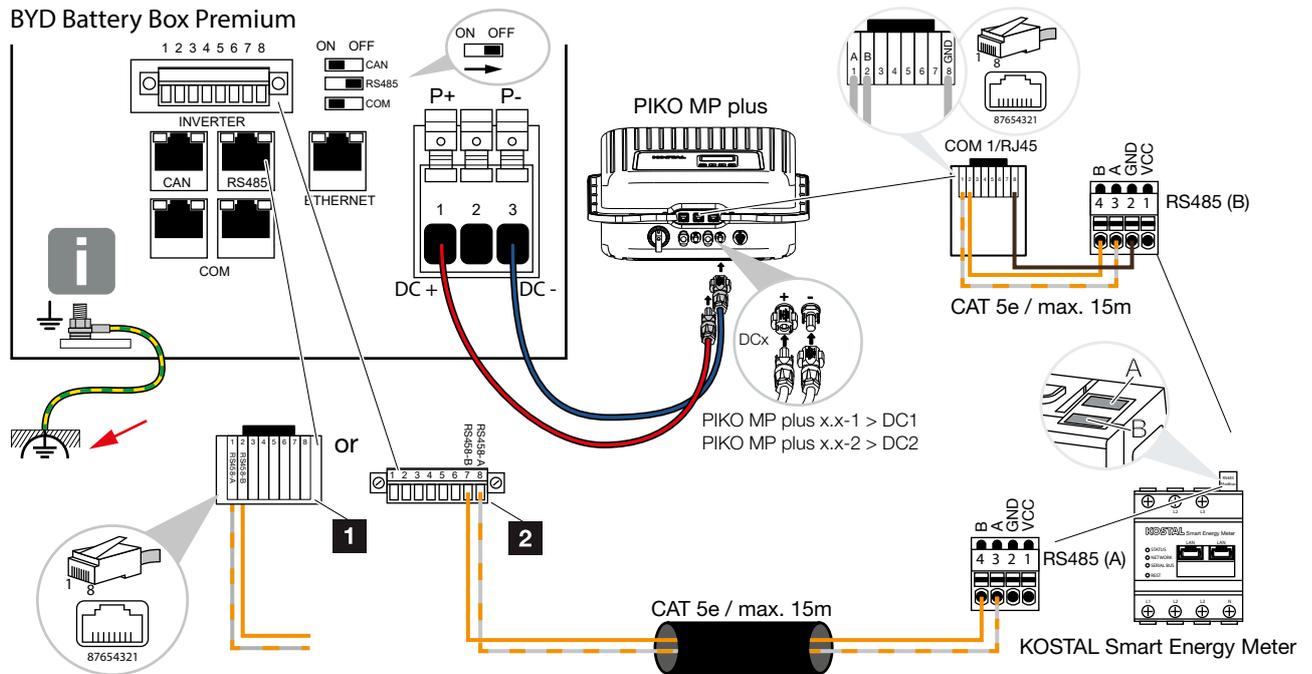
IMPORTANT!

Connect the battery earth (BCU) to the equipotential earth connection.

(1) Connection via RJ45 connector

BYD Battery-Box Premium	KOSTAL Smart Energy Meter	Connection	Cable
1	3	RS485 A	min. Cat.5e / Twisted pair max. Ø 6,8mm / max.15m
2	4	RS485 B	

(2) Connection via terminal strip

BYD Battery-Box Premium	KOSTAL Smart Energy Meter	Connection	Cable
1	3	RS485 A	min. Cat.5e / Twisted pair max. Ø 6,8mm / max.15m
2	4	RS485 B	

1. Establish and connect the RS485 communication line between the inverter and the KOSTAL Smart Energy Meter RS485 (B).

2. Establish and connect communication line RS485 between battery and KOSTAL Smart Energy Meter RS485 (A).

3. Set the terminating resistor of the RS485 interface in the battery to OFF.

4. Connect the DC cables of the battery to the inverter.

Commissioning of the entire system

Commissioning configuration of the inverter and DC input for battery

1. Commission the PIKO MP plus inverter according to the inverter installation manual and carry out the initial configuration.

2. Switch the DC input in the inverter to battery. By default, the inputs are set to PV. To switch the DC input to battery, press the SET button in the main menu of the inverter under Settings > Service > Inputs > DCx until Battery is shown in the display for the DC input. Exit the menu with the ESC key. The DC input is now switched to battery.

    DCx = DC1 for PIKO MP plus xx-1 (AC-storage mode with 1 MPP tracker)
           DC2 for PIKO MP plus xx-2 (AC- or hybrid storage mode with 2 MPP trackers)

    INFO

    To access the service menu, press the arrow keys ⇧ and ⇩ on the keyboard simultaneously for a few seconds in the Service menu.
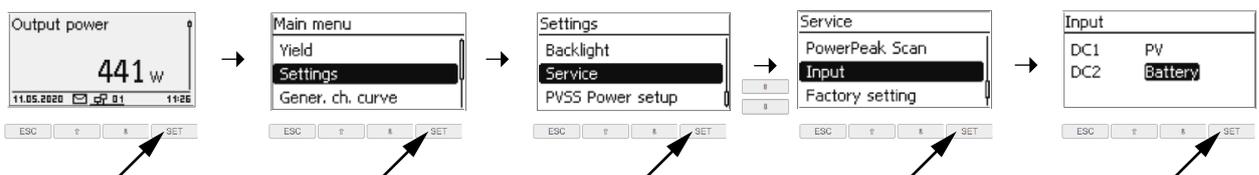
➔ After this configuration, the display of the inverter lights up in red and shows the following error message because the inverter and the battery in the KOSTAL Smart Energy Meter have not yet been configured.

3. Set the inverters DC switch of the PIKO MP plus to OFF (0).

4. Switch on the battery using the main switch on the side of the BCU.

5. Open the web server of the KOSTAL Smart Energy Meter via the internet browser. To do this, you can call up the KOSTAL Smart Energy Meter (KSEM) appearing on your PC via the file explorer under Devices.

6. In the KOSTAL Smart Energy Meter menu, call up the menu item „Modbus settings"> „Modbus RTU" and deactivate both RS485 interfaces and confirm with Save.
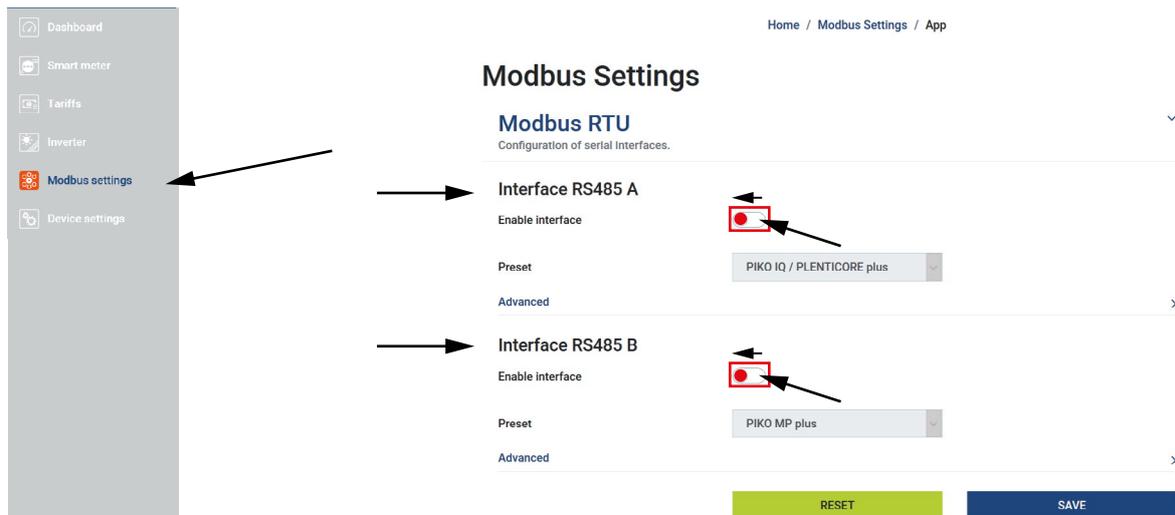
7. In the KOSTAL Smart Energy Meter menu, call up the menu item „Inverter" > „Activation code". The activation code, which is subject to a charge, must be purchased in advance via our web shop **shop.kostal-solar-electric.com**

8. Enter the previously purchased activation code for the battery function under the „Activation code" item.
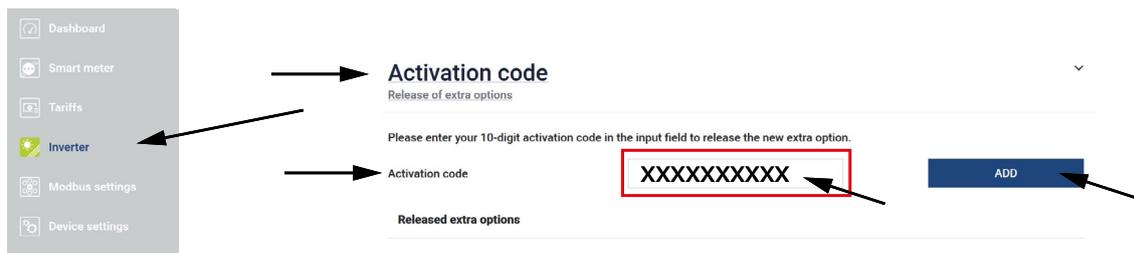
➜ The „Battery management" field then appears under „Activated additional options".
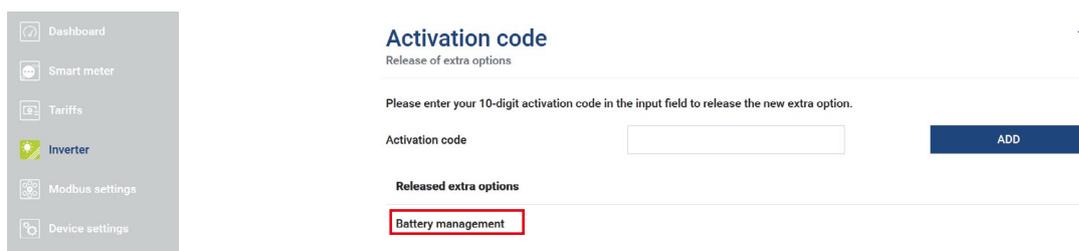
9. In the KOSTAL Smart Energy Meter menu, call up the menu item „Inverters" > „Devices" and add a new device using ✚.
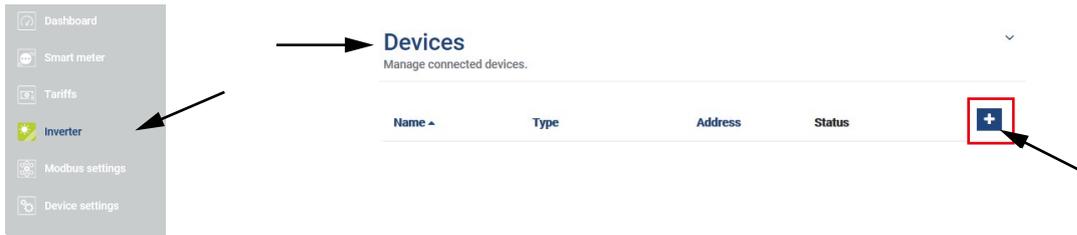
10. Enter values for new devices and confirm with OK.

Parameter	Value
Typ	Select **PIKO MP plus**.
Serial interface	Select **RS485 B**
Maximum output power	Enter the max. output power of the inverter (e.g. for the PIKO MP plus 4.6 =**4600**)
Battery management	☑ Enable battery support
Serial interface of the battery	Select **RS485 A**
Min. SOC (state of charge)	Set the desired value for the minimum battery discharge depth (**default 5%**). Please note the information from the battery manufacturer (BYD Battery-Box Premium = 5%).
Advanced	
RS485 address	Enter **1**

11. Set the DC switch on the PIKO MP plus inverter to ON (|).

12. In the inverter view under „Status overview" all values of the battery including the state of charge are shown.
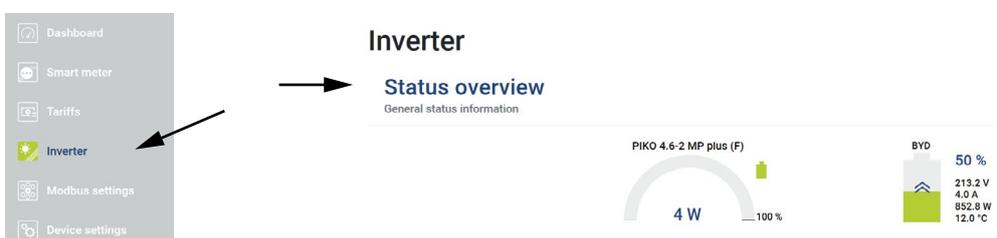
**13.** The two devices - inverter and battery - are displayed in the inverter view under „Devices".

<table>
<tr><td>Name ▲</td><td>Type</td><td>Address</td><td>Status</td></tr>
<tr><td>BYD</td><td>Battery</td><td>RS485 A</td><td>✓</td></tr>
<tr><td>PIKO 4.6-2 MP plus (F)</td><td>PIKO MP plus</td><td>RS485 B</td><td>✓</td></tr>
</table>
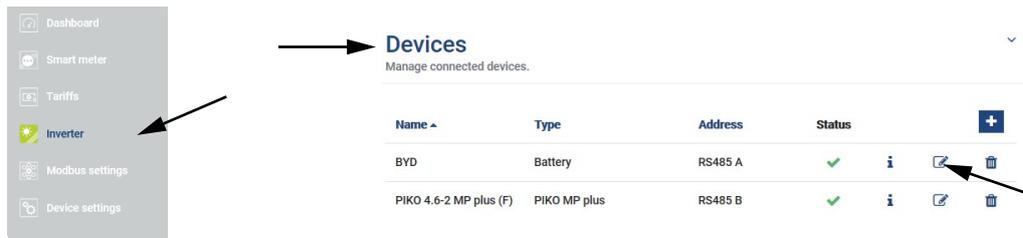
INFO

If the SOC for the battery is to be changed, this can be done via the modify button (pin) in the battery device line.

14. Finally, the transfer of the data to the KOSTAL Solar Portal must be set up.

Set up data transfer to the KOSTAL Solar Portal

The yield data of the overall system can be called up via the KOSTAL Solar Portal or the KOSTAL Solar App. To do this, the inverter and the KOSTAL Smart Energy Meter must be configured to send data to the KOSTAL Solar Portal.

1. The transfer of data (yield data) is activated in the PIKO MP plus as follows:
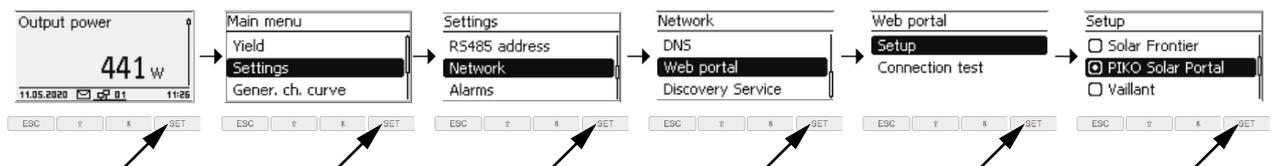
2. The transfer of data (house consumption, self-consumption and battery values) is activated in the KOSTAL Smart Energy Meter via the menu item „Inverter „Solar Portal".
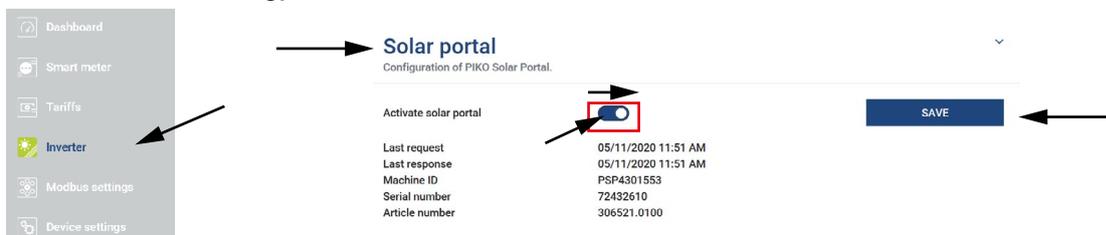
Set up the PIKO MP plus inverter and the KOSTAL Smart Energy Meter in the KOSTAL Solar Portal via the menu item „System list" > „Inverter"

Via the **+** symbol, the devices can be added based on their article number and serial number. The inverter and KOSTAL Smart Energy Meter must be added to the same system.

> **INFO**
>
> With the PIKO MP plus you will find the necessary data (article number / serial number) on the type label.
>
> With the KOSTAL Smart Energy Meter, please use the data from the internal web server of the KOSTAL Smart Energy Meter, which can be found under Inverters > Solar Portal.

KOSTAL Solar Portal: www.piko-solar-portal.com

✓ **Commissioning of the entire system has now been completed.**

KOSTAL

KOSTAL Solar Electric GmbH
Hanferstr. 6
79108 Freiburg i. Br.
Deutschland
Telefon: +49 761 47744 - 100
Fax: +49 761 47744 - 111

KOSTAL Solar Electric Ibérica S.L.
Edificio abm
Ronda Narciso Monturiol y Estarriol, 3
Torre B, despachos 2 y 3
Parque Tecnológico de Valencia
46980 Valencia
España
Teléfono: +34 961 824 - 934
Fax: +34 961 824 - 931

KOSTAL Solar Electric France SARL
11, rue Jacques Cartier
78280 Guyancourt
France
Téléphone: +33 1 61 38 - 4117
Fax: +33 1 61 38 - 3940

KOSTAL Solar Electric Hellas Ε.Π.Ε.
47 Steliou Kazantzidi st., P.O. Box: 60080
1st building – 2nd entrance
55535, Pilea, Thessaloniki
Ελλάδα
Τηλέφωνο: +30 2310 477 - 550
Φαξ: +30 2310 477 - 551

KOSTAL Solar Electric Italia Srl
Via Genova, 57
10098 Rivoli (TO)
Italia
Telefono: +39 011 97 82 - 420
Fax: +39 011 97 82 - 432

KOSTAL Solar Electric Turkey
Mahmutbey Mah. Taşocağı Yolu
No:3 (B Blok), Ağaoğlu My Office212,
Kat:16, Ofis No: 269
Bağcılar - İstanbul / Türkiye
Telefon: +90 212 803 06 24
Faks: +90 212 803 06 25

www.kostal-solar-electric.com