

Smart
connections.

Operating manual

KOSTAL Smart Energy Meter

Legal notice

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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.

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1. General information

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Thank you for choosing our KOSTAL Smart Energy Meter (KSEM) from KOSTAL Solar Electric GmbH! We hope you enjoy consistently high energy yields with your photovoltaic system.

If you have any technical questions, please call our service hotline:

- Germany and other countries¹
+49 (0)761 477 44 - 222
- Switzerland
+41 32 5800 225
- France, Belgium, Luxembourg
+33 16138 4117
- Greece
+30 2310 477 555
- Italy
+39 011 97 82 420
- Spain, Portugal²
+34 961 824 927

¹ Language: German, English

² Language: Spanish, English

1.1 Proper use

The KOSTAL Smart Energy Meter is a measuring device, which determines electrical measuring values and is available to the inverter via LAN or RS485. It is not an electricity meter for measuring active consumption in the sense of the EU Directive 2004/22/EC (MID) and it may only be used for internal purposes.

The data about your system's energy generation collected by the KOSTAL Smart Energy Meter may deviate from the data of the main energy meter.

According to its classification as overvoltage category III, the KOSTAL Smart Energy Meter may only be connected in the sub-distribution / circuit distribution on the consumer side behind the energy supply company's energy meter and is only suitable for indoor use.

The KOSTAL Smart Energy Meter is approved for use in EU member states. Only use the KOSTAL Smart Energy Meter in accordance with the details provided in the enclosed documentation.

Any other form of use may result in damage to property or personal injury. For reasons of safety, the product (including the software) must not be modified and components must not be fitted if they are not expressly recommended or sold by KOSTAL Solar Electric GmbH for this product. Any form of product use other than that described in the intended use section is not considered to be intended.

Operators are prohibited from undertaking unauthorised changes, conversions and repairs as well as opening the product.

The enclosed documentation forms part of the product and must be read, noted and kept accessible at all times.

Exclusion of liability

Any use that differs from that described in the “Proper use” chapter or goes beyond the stated intended purpose is considered inappropriate. The manufacturer accepts no liability for any damage resulting from this. Modifications to the energy meter are prohibited. The energy meter may only be used if it is safe to operate and is in a technically perfect condition. Any instance of misuse will result in the termination of the warranty, guarantee and general liability of the manufacturer.

Only a qualified electrician may open the device. The device must be installed by a trained electrician (according to DIN VDE 1000-10 or BGV A3 accident prevention regulations or an internationally comparable standard) who is responsible for observing the applicable standards and regulations.

Work that could affect the electrical power system of the relevant energy supply company at the site of the solar power feed-in may only be carried out by qualified electricians expressly authorised (licensed) by the energy supply company. This includes changes to the factory-preset parameters. The installer must always observe the regulations of the energy supply company.

Factory settings may only be changed by qualified electrical installers or persons with at least comparable or higher technical qualifications, e.g. foremen, technicians or engineers. When doing so, all requirements are to be observed.



IMPORTANT INFORMATION


The KOSTAL Smart Energy Meter may only be installed, maintained and repaired by a trained and qualified electrician.

The electrician is responsible for ensuring that the applicable standards and regulations are observed and implemented. Work that could affect the electrical power system of the relevant energy supply company at the site of the solar power feed-in may only be carried out by qualified electricians expressly authorised (licensed) by the energy supply company.

This includes changes to the factory-preset parameters.

Open Source licence

This product contains Open Source software, developed by third parties and licensed using vehicles including GPL and/or LGPL.

For more details of this, a list of the Open Source software used and the related licence texts,  **Ch. 4.5** go to the Licences section on the website (Webserver) of the KOSTAL Smart Energy Meter.

1.2 EU declarations of conformity

KOSTAL Solar Electric GmbH hereby declares that the KOSTAL Smart Energy Meter described in this document complies with the basic requirements and other relevant conditions of the directives listed below.

- Directive 2014/30/EU
(on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC))
- Directive 2014/35/EU
(on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits – in short: Low Voltage Directive)
- Directive 2011/65/EU (RoHS)
on the restriction of the use of certain hazardous substances in electrical and electronic equipment

You will find a detailed EU Declaration of Conformity in the download area at:

www.kostal-solar-electric.com > [Download](#) > [Accessories](#) > [KOSTAL Smart Energy Meter](#) > [Country](#) > [Certificates](#)

1.3 About this manual

Read this manual carefully in its entirety.

It contains important information on the installation and operation of the KOSTAL Smart Energy Meter. Pay particular attention to the instructions regarding safe usage. KOSTAL Solar Electric GmbH assumes no liability for damages arising from the non-observance of this manual.

This manual is an integral part of the product. It applies exclusively to the KOSTAL Smart Energy Meter from KOSTAL Solar Electric GmbH. Keep this manual and give it to the new owner should you pass the meter on to a new operator.

The installer and the operator must have unrestricted access to these instructions at all times. The installer must be familiar with this manual and follow all instructions.

The most recent version of the manual for your product is available in the download area at www.kostal-solar-electric.com.

Target group

This manual is intended for trained and qualified electrical technicians who install, maintain and repair the KOSTAL Smart Energy Meter.

Information concerning your safety or that of the unit is specifically highlighted.

Navigation through the document

In order to enable navigation through this document, it contains clickable areas.

One of these is the navigation bar in the header of each page. By clicking here, you are taken to the overview pages of the individual chapters.

The table of contents can also be used in this way: From the index at the beginning of each chapter you can go to the indicated sub-chapter in one click.

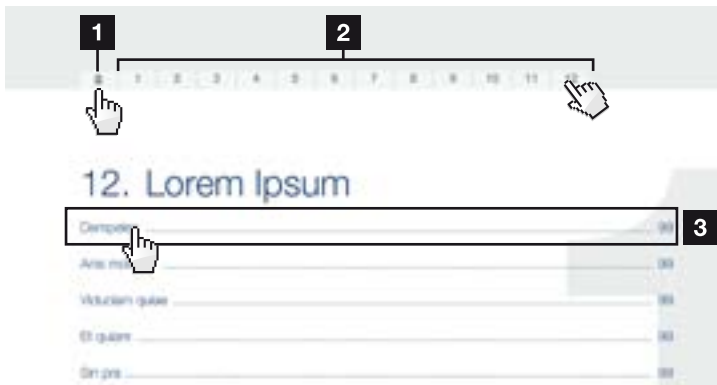


Fig. 1: Navigation through the document

- 1 Calling up the main table of contents
- 2 Navigation bar
- 3 Tables of contents

You can navigate to the referenced points in the document within the instruction text using the cross-references.

[Ch. 1](#)

[Fig. 1, It. 2](#)

Fig. 2: Examples of cross-references

1.4 Notes in this manual

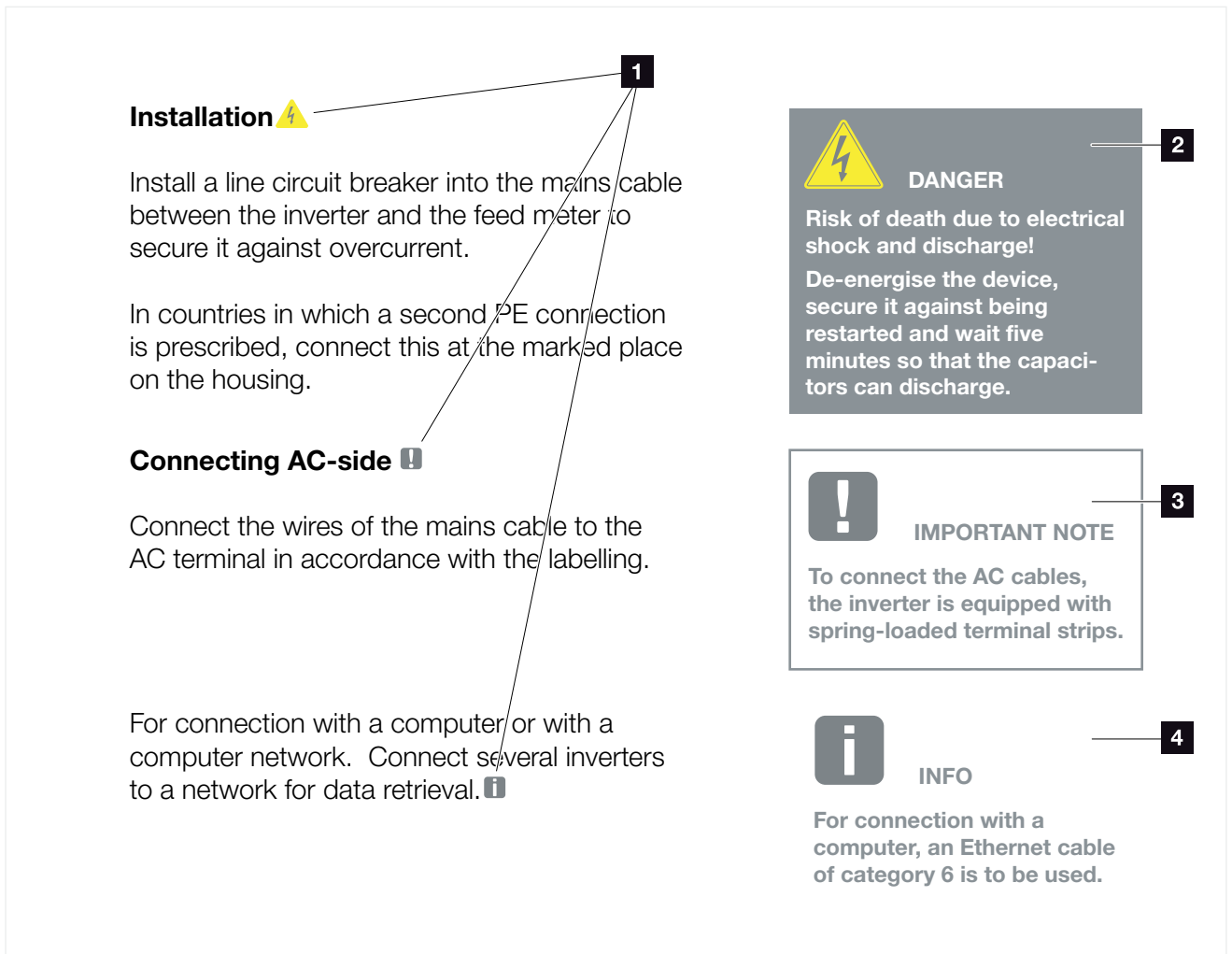


Fig. 3: Safety instructions in this manual

- 1** Note icon within the instruction text
- 2** Warning
- 3** Information note
- 4** Other notes

Notes have been incorporated into the instruction text. A differentiation is made in this manual between warnings and information notes. All notes are identified in the text line by an icon.

Warnings

The warnings refer to life-threatening dangers. Serious injuries possibly resulting in death may occur.

Each warning consists of the following elements:

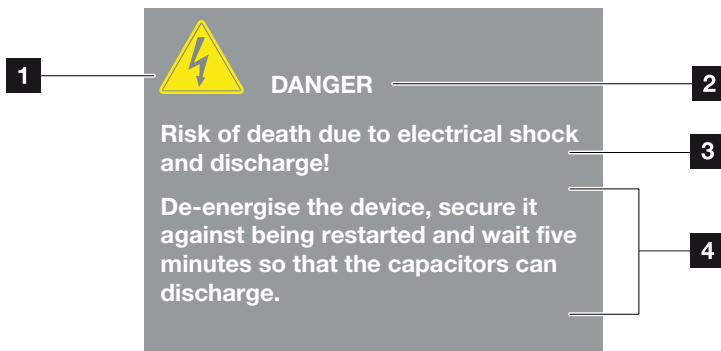


Fig. 4: Structure of the warnings

- 1** Warning symbol
- 2** Signal word
- 3** Type of danger
- 4** Corrective actions

Warning symbols



Danger



Danger due to electrical shock and discharge

Signal words

Signal words are used to identify the severity of the danger.

DANGER

Indicates a direct hazard with a high level of risk, which, when it is not avoided, may result in death or serious injury.

WARNING

Indicates a hazard with a moderate level of risk, which, when it is not avoided, may result in death or serious injury.

CAUTION

Indicates a hazard with a low level of risk, which, when it is not avoided, may result in minor or slight injury or property damage.

Information notes

Information notes contain important instructions for the installation and problem-free operation of the energy meter. These must be followed at all times. The information notes also point out that failure to observe instructions may result in damage to property or financial loss.

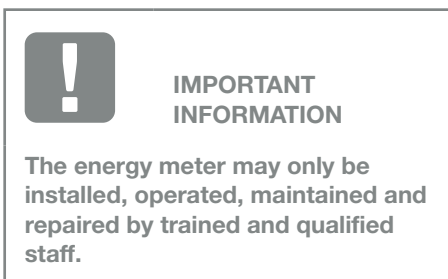


Fig. 5: Example of an information note

Symbols within the information notes



Important information



Damage to property possible

Other notes

They contain additional information or tips.



INFO

This is additional information.

Fig. 6: Example of an information note

Symbols within the additional notes



Information or tip



Enlarged view

1.5 Symbols used

Symbol	Meaning
1., 2., 3. ...	Sequential steps in a handling instruction
→	Effect of a handling instruction
✓	Final result of a handling instruction
☞	Cross-reference to other places in the document or to other documents
■	List

Tab. 1: Symbols and icons used





Abbreviations used

Abbrevia- tion	Explanation
Tab.	Table
Fig.	Figure
It.	Item
Ch.	Chapter

1.6 Labels on the energy meter



Signs and labels are attached to the housing of the energy meter. These signs and labels may not be altered or removed.

Symbol	Explanation
	Electrical installations require specialist skills
	Housing with protective insulation (protective class II).
	Device may not be disposed of with household waste. Observe the local application of disposal requirements
	CE marking The product satisfies the applicable EU requirements

2. Device and system description

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2.1 Using the KOSTAL Smart Energy Meter

The KOSTAL Smart Energy Meter (KSEM) is a measuring device, which determines electrical measuring values at the grid connection point and is available via LAN or RS485. It can be used in combination with various KOSTAL solar inverters and batteries.

This includes the following inverters:

- PLENTICORE plus
- PLENTICORE BI
- PIKO IQ
- PIKO MP plus
- PIKO 4.2-20
- PIKO CI
- PIKO EPC

These can be used in combination with the KOSTAL Smart Energy Meter for the following applications:

- Reading the current home consumption and output power
- Power curtailment of inverters down to 0 W
- If several PV systems in the same home network share a multiple-inverter connection, only one KOSTAL Smart Energy Meter is required at the grid connection point
- If using PIKO MP plus with a battery, the battery management, which controls the battery's charging / discharging, is taken over by the KOSTAL Smart Energy Meter,
- sending consumption data to the KOSTAL Solar Portal

2.2 The KOSTAL Smart Energy Meter

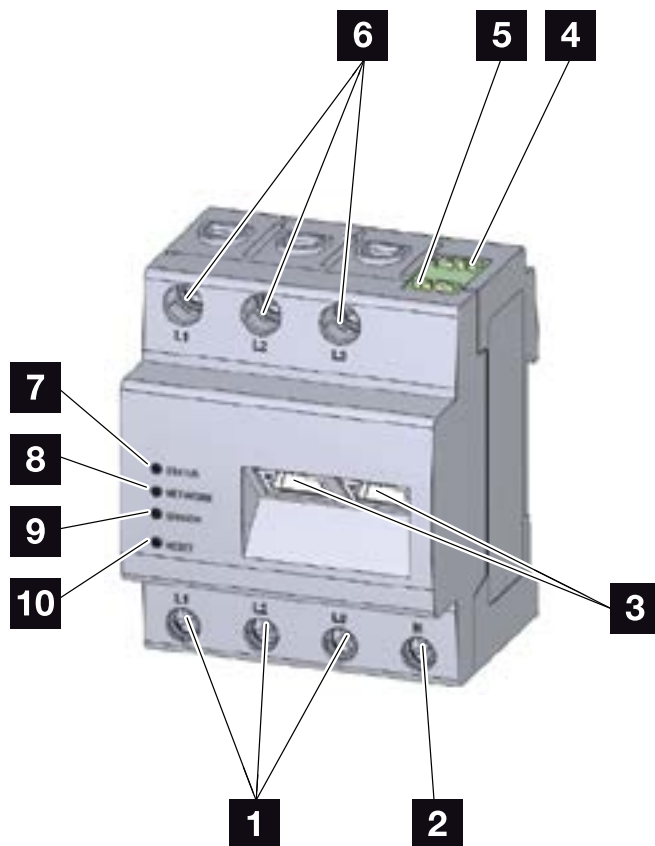


Fig. 7: Energy meter

- 1** Inputs for external wires L1, L2, L3
- 2** Neutral wire N
- 3** 2 x LAN connection
- 4** RS485 connection (A)
Pre-configured for PIKO IQ/PLENTICORE
- 5** RS485 connection (B)
Pre-configured for PIKO MP plus
- 6** Outputs for external wires L1, L2, L3
- 7** Status LED
- 8** Network LED
- 9** Sensor LED for RS485 bus
- 10** Reset button

2.3 LED statuses

The LEDs inform the user of the status of the KOSTAL Smart Energy Meter.

The following statuses are indicated:

	Col-our	State	Description
Status LED	Orange	On (<10 s)	Device starting
	Green	Flashes slowly	
	Green	On	Device ready
	Green	Flashes quickly	Firmware update active
	Red	On	Error – see “Troubleshooting” section
	Red	Flashes	
	Orange	On (>10 s)	
	Orange	Flashes 2 x	Confirmation that the network settings or online interface password have been reset using the reset button

	Col-our	State	Description
Network LED	-	Off	No connection
	Green	On	Network connection is being established
	Green	Flashes	Network connection is active

	Col-our	State	Description
Serial bus LED	-	Off	No connection
	Green	Flashes quickly	Connection active
	Green	Flashes slowly	Scan process active
	Red	On	Error - overload at 9 V output VCC
	Orange	Flashes	Error – receiver not responding

2.4 Functions

Recording home consumption

Using the KOSTAL Smart Energy Meter enables the inverter to monitor the flow of energy in the home for 24 hours and to control it in an optimum manner.

The inverter takes precedence in control matters. The PV energy generated is used firstly for self-consumption (such as lighting, washing machine or TV). Only once self-consumption is covered can the energy generated above and beyond this be stored in a battery or fed into the public grid.

- Using energy meter (Modbus RTU) to record home consumption
- 24-hour measurement

Multiple-inverter connection

With a multiple-inverter connection, there are several KOSTAL solar inverters in the same home network. By installing the KOSTAL Smart Energy Meter at the grid connection point, the flow of energy from all KOSTAL solar inverters present in the home network can be measured and regulated by the KOSTAL Smart Energy Meter using control information, e.g. for power limitation in order to limit the feed-in to the public grid. The benefit of this setup is that only one energy meter is required for all KOSTAL solar inverters in the home network.

- Simultaneous power curtailment of several KOSTAL solar inverters in the same home network
- Saving costs by using just one energy meter

Battery management for PIKO MP plus with connected battery

The PIKO MP plus is not able to control a connected battery itself. In order to do this, the PIKO MP plus also needs the KOSTAL Smart Energy Meter and a battery activation code, both of which can be obtained from our KOSTAL Solar online shop. The KOSTAL Smart Energy Meter then handles battery management and transmits control information to the PIKO MP plus for this purpose.

Communication between KOSTAL solar inverters and KOSTAL Smart Energy Meter

The KOSTAL Smart Energy Meter provides various interfaces for communication purposes. These establish a connection to other KOSTAL solar inverters, sensors or the Internet.

- LAN
LAN connects the KOSTAL Smart Energy Meter to the local home network, via which it can then access other inverters or the Internet and Solar Portal.
- RS485/Modbus (RTU)
Inverters or other devices approved by KOSTAL Solar Electric, via which information or control commands are communicated, are connected to the Modbus interface.

The Webserver

The Webserver is the graphic interface in the browser (e.g. Firefox, Edge, Internet Explorer or Google Chrome) for querying and configuring the KOSTAL Smart Energy Meter.

The Webserver provides the following functions:

- Logging into the energy meter
- Querying the status
- Current yield values / consumption values
- Configuring the KOSTAL Smart Energy Meter (e.g. software updates, releasing options, incorporating PV systems for multiple-inverter connection etc.)
- RS485/Modbus (RTU)
Inverters, batteries or other devices approved by KOSTAL Solar Electric, via which information or control commands are communicated, are connected to the Modbus interface.
- Release of extra options
This function (which can be found by going to Inverter > Activation code) can be used to release additional options. This may include e.g. releasing battery management in the KOSTAL Smart Energy Meter to connect a battery to the PIKO MP plus.
- Calling up the error log file
- Backup for saving data and the configuration

For more information  **Ch. 4**

The data logger

A data logger is integrated in the KOSTAL Smart Energy Meter. The data logger is a data storage system, which collects and stores the error information. Such information is required by the service team in the event of an error.

For more information  **Ch. 5.3**

KOSTAL Solar Portal

The KOSTAL Solar Portal protects your investment in a PV system against yield loss, e.g. through active e-mail alerts of events.

You can log into the KOSTAL Solar Portal for free at www.kostal-solar-portal.com.

Functions include:

- Worldwide online access to the portal
- Graphic representation of the power and yield data
- Visualisation of data and thus being made aware of how to optimise self-consumption
- Notification of events by e-mail
- Data export
- Sensor evaluation
- Display and proof of a potential active power reduction by the grid operator
- Storage of log data for long-term and reliable monitoring of your PV system


You can find additional information about this product on our website www.kostal-solar-electric.com by going to Products > Tools and software > Monitoring.

3. Connection variants

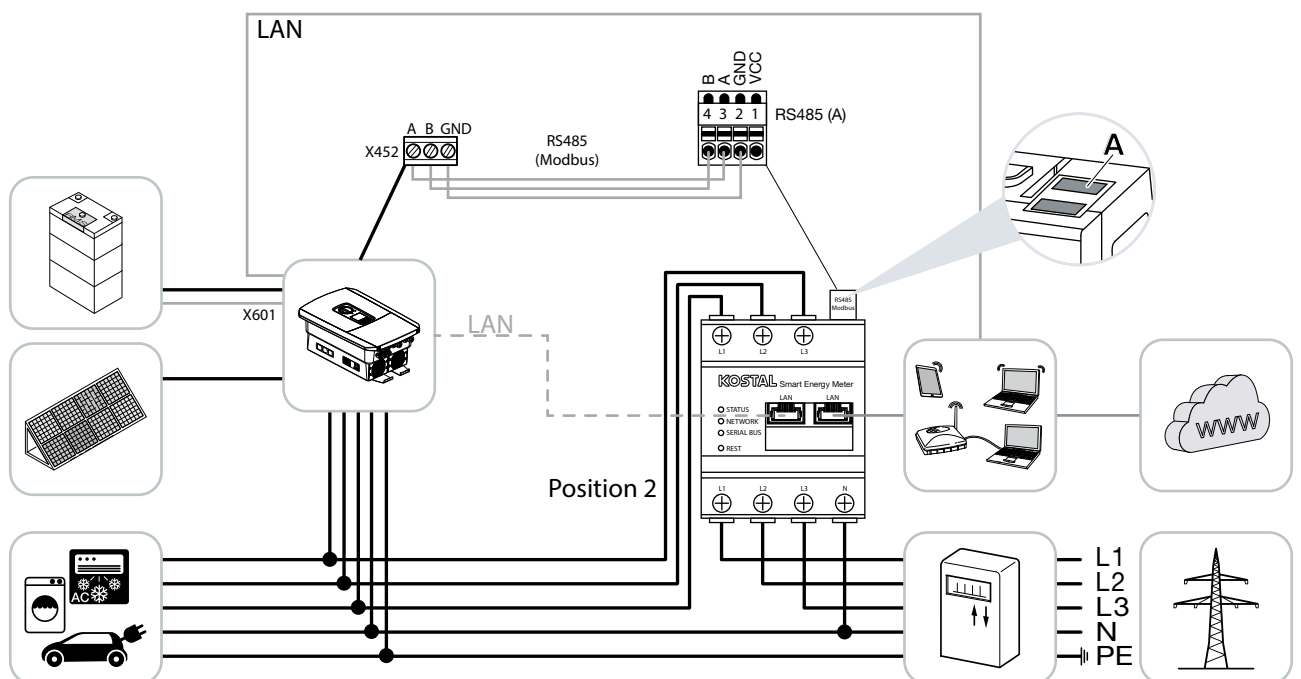
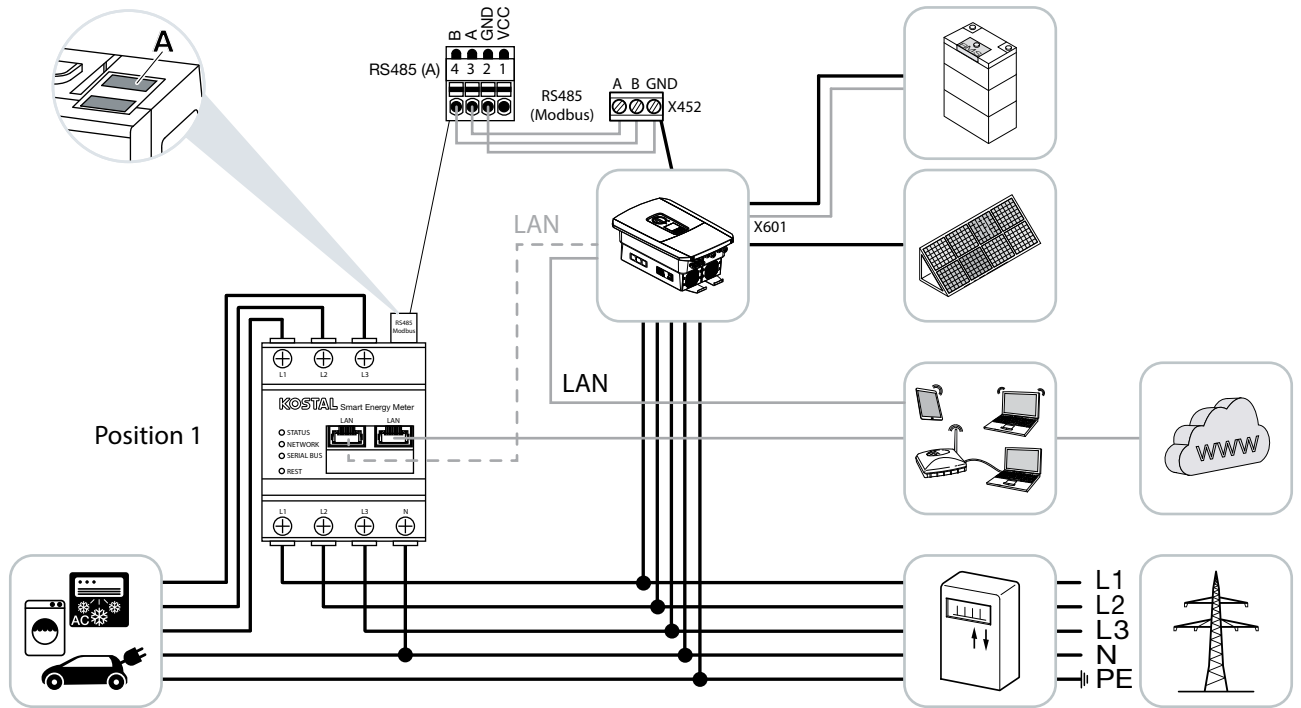
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3.1 The KSEM with the PLENTICORE plus

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PLENTICORE plus in the following variants.


- 24-hour load / generation measurement
(measuring the current home consumption and output power)
- DC energy storage (from your own PV system)
- Scope for storage from AC energy sources (e.g. from PV systems, wind turbines, combined heat and power units)
- Multiple-inverter connection
(several KOSTAL solar inverters in the same home network: only one KOSTAL Smart Energy Meter is required).  **Ch. 3.7**
- Dynamic active power control
- Provision of measurement data when using battery functionality in combination with PLENTICORE plus

PLENTICORE plus - load / generation measurement



Install KOSTAL Smart Energy Meter as shown for home consumption (position 1) or at the grid connection point (position 2) in the home network. 



Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect.

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). 

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.

The inverter does not have to be set up in the KOSTAL Smart Energy Meter because it is pre-configured to the Modbus RTU RS485 interface (A) as standard.

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO IQ/PLENTICORE from drop-down list 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO IQ/PLENTICORE
Slave address	1
Baud rate	38400
Data bits	8
Parity	None
Stop bit	2



INFO

The installation position of the KOSTAL Smart Energy Meter is set in the inverter.



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

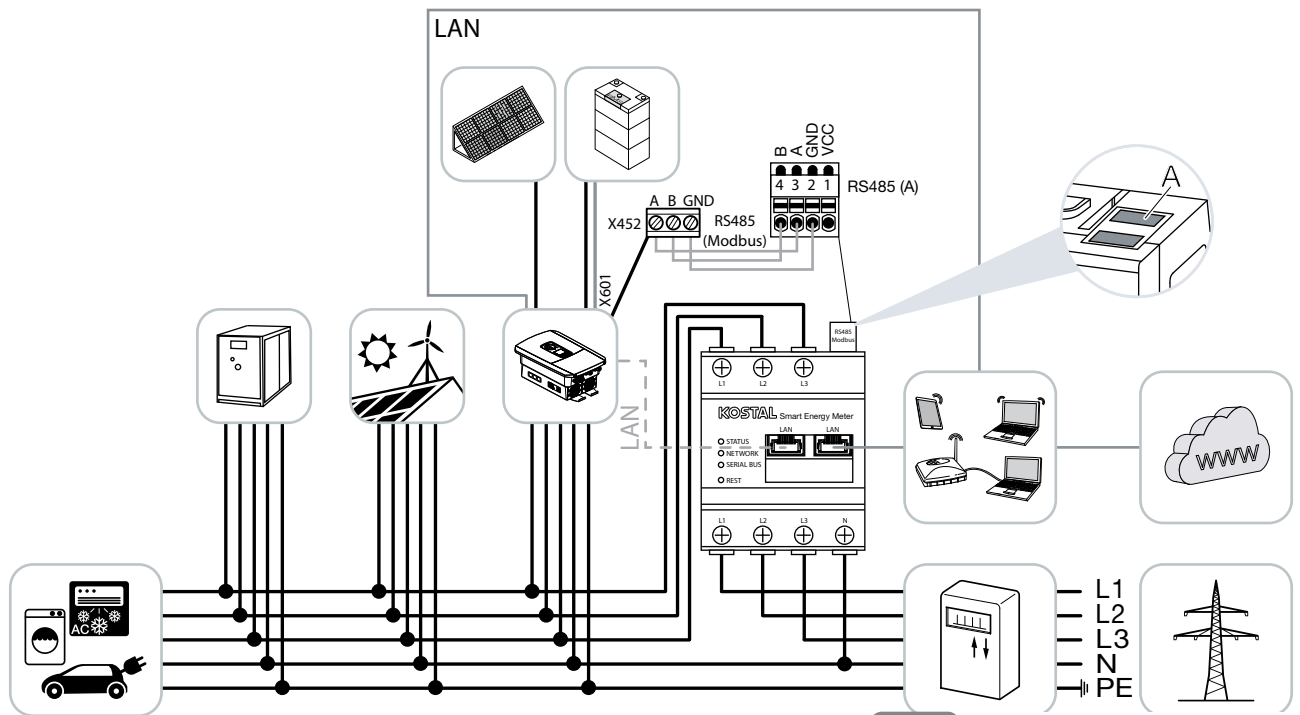


INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

4. Press “Save” button to accept settings.
- ✓ The inverter has been set up.

PLENTICORE plus - additional scope for storage from AC energy sources



Install KOSTAL Smart Energy Meter as shown at the grid connection point (position 2) in the home network. **i**

Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect.

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). **i**

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.

The inverter does not have to be set up in the KOSTAL Smart Energy Meter because it is pre-configured to the Modbus RTU RS485 interface (A) as standard.




INFO

The installation position of the KOSTAL Smart Energy Meter is set in the inverter.





INFO


For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

In the inverter, “Storage of excess AC energy from local generation” must be activated by going to Service menu > Energy management. 

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO IQ/PLENTICORE from drop-down list. 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO IQ/PLENTICORE
Slave address	1
Baud rate	38400
Data bits	8
Parity	None
Stop bit	2

4. Press “Save” button to accept settings.
 5. In the inverter, activate “Storage of excess AC energy from local generation” by going to Service menu > Energy management. 
- ✓ The inverter has been set up.



INFO

For details, refer to the inverter’s operating manual. Setting on inverter only possible after logging in as an installer.



INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.



INFO

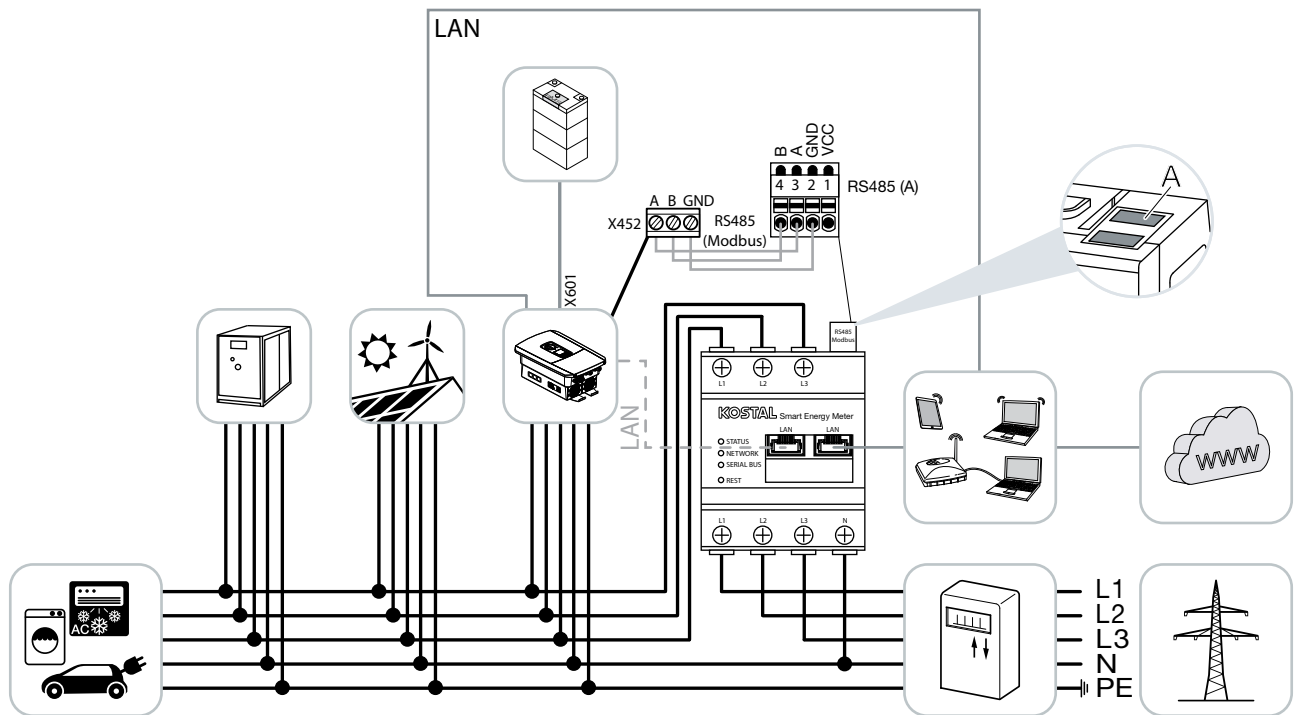
For details, refer to the inverter’s operating manual. Setting on inverter only possible after logging in as an installer.

3.2 The KSEM with the PLENTICORE BI

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PLENTICORE BI in the following variants.

- Scope for storage from AC energy sources (e.g. from PV systems, wind turbines, combined heat and power units)
- Provision of measurement data

PLENTICORE BI - scope for storage from AC energy sources



Install KOSTAL Smart Energy Meter as shown at the grid connection point (position 2) in the home network.

Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect.

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). **i**

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.



The inverter does not have to be set up in the KOSTAL Smart Energy Meter because it is pre-configured to the Modbus RTU RS485 interface (A) as standard.



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO IQ/PLENTICORE from drop-down list. 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO IQ/PLENTICORE
Slave address	1
Baud rate	38400
Data bits	8
Parity	None
Stop bit	2

4. Press “Save” button to accept settings.
- ✓ The inverter has been set up.




INFO

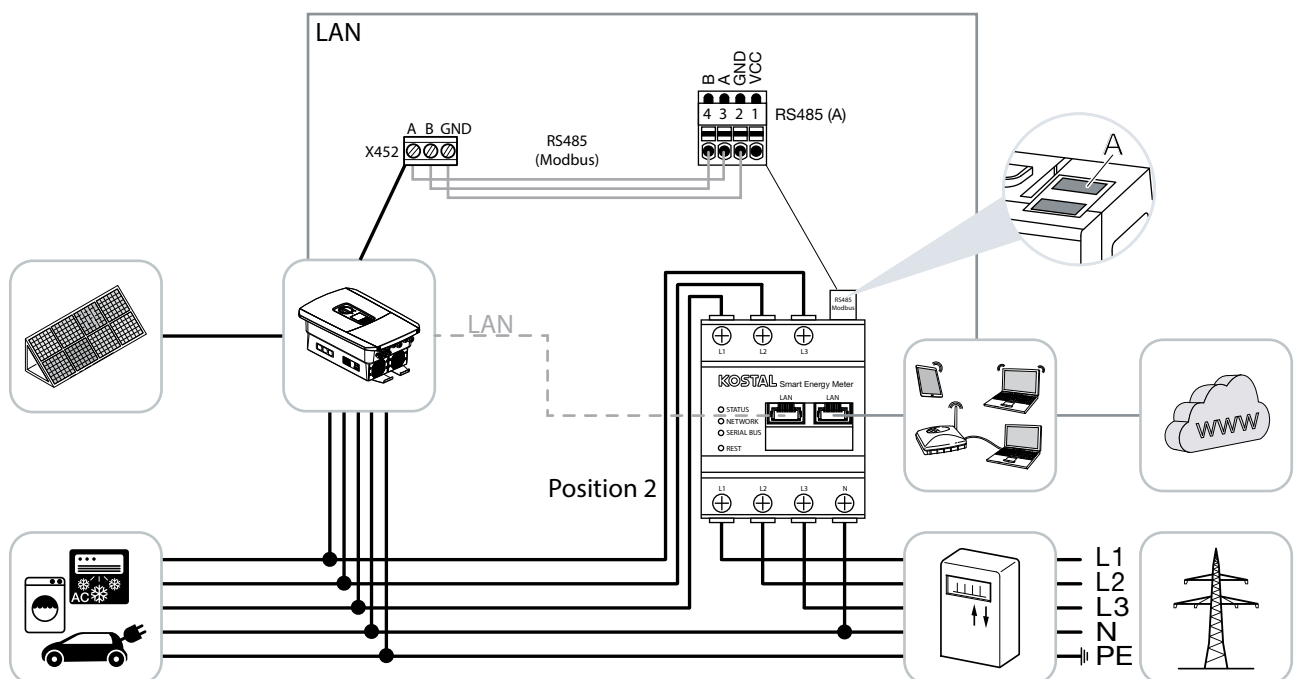
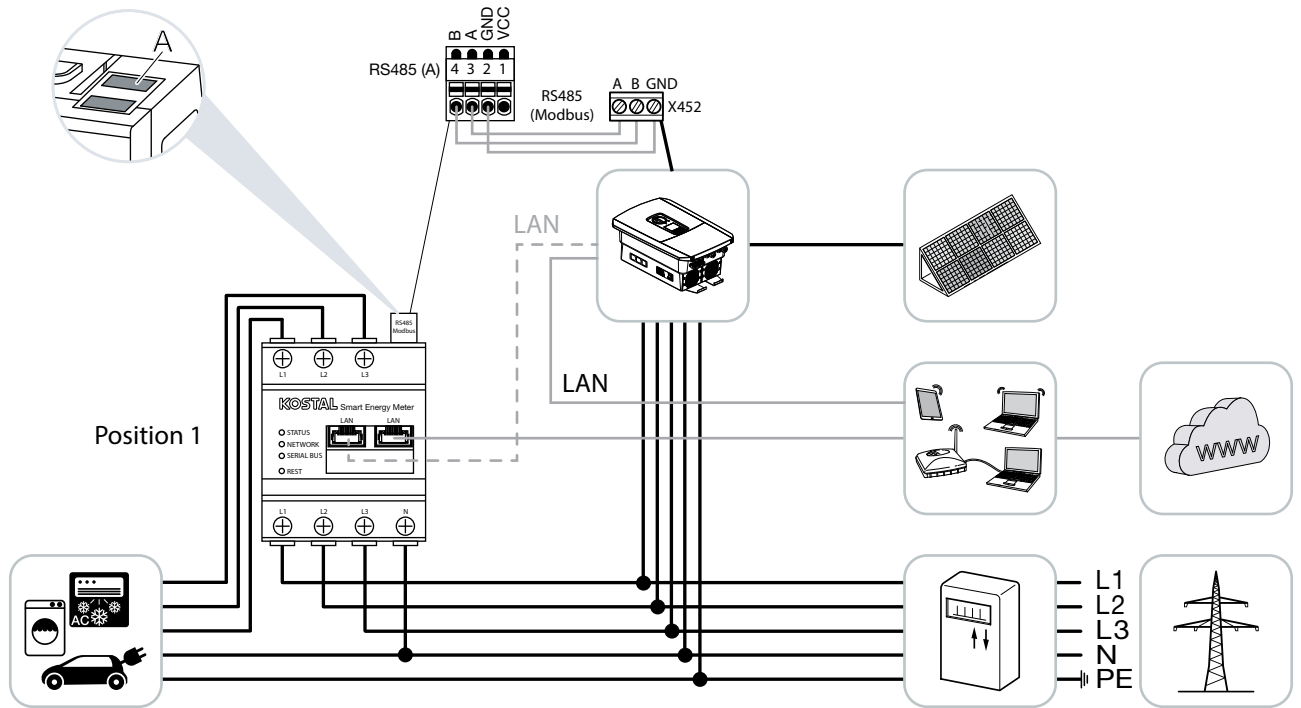
When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.


3.3 The KSEM with the PIKO IQ

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PIKO IQ in the following variants.


- 24-hour load / generation measurement
(measuring the current home consumption and output power)
- Multiple-inverter connection
(several KOSTAL solar inverters in the same home network, only one KOSTAL Smart Energy Meter is required)  **Ch. 3.7**
- Dynamic active power control

PIKO IQ - load / generation measurement



Install KOSTAL Smart Energy Meter as shown for home consumption (position 1) or at the grid connection point (position 2) in the home network. 



Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect.

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). 

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.

The inverter does not have to be set up in the KOSTAL Smart Energy Meter because it is pre-configured to the Modbus RTU RS485 interface (A) as standard.

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO IQ/PLENTICORE from drop-down list 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO IQ/PLENTICORE
Slave address	1
Baud rate	38400
Data bits	8
Parity	None
Stop bit	2



INFO

The position of the KOSTAL Smart Energy Meter is set in the inverter.



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.





INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

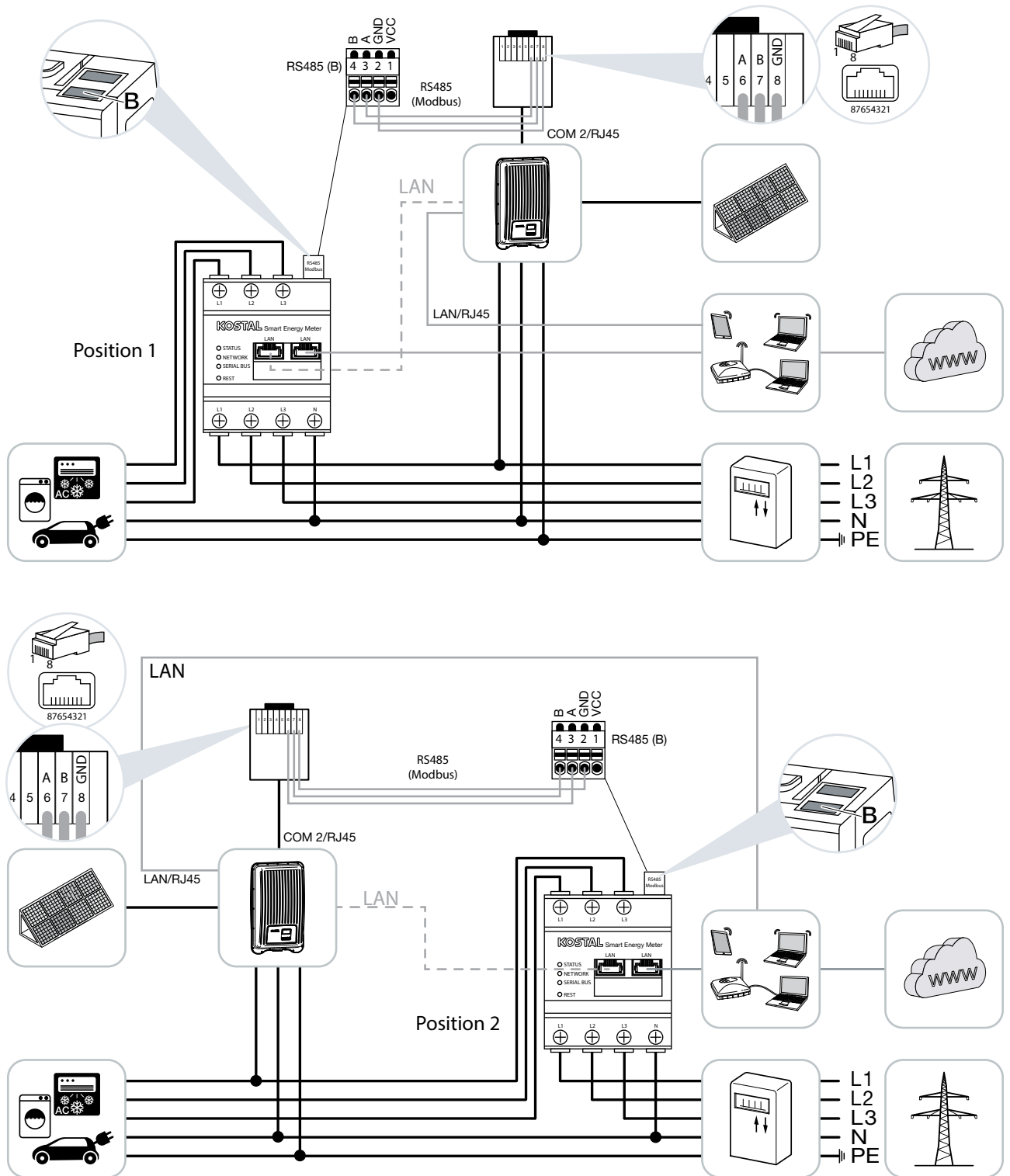
4. Press “Save” button to accept settings.
- ✓ The inverter has been set up.


3.4 The KSEM with the PIKO MP plus

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PIKO MP plus in the following variants.


- 24-hour load / generation measurement
(measuring the current home consumption and output power)
- Multiple-inverter connection
(several KOSTAL solar inverters in the same home network, only one KOSTAL Smart Energy Meter is required)  **Ch. 3.7**
- Dynamic active power control
- Control (charge / discharge) a battery connected to the PIKO MP plus.  **Page 45**
- Provision of measurement data during battery functionality.

PIKO MP plus - load / generation measurement



Install KOSTAL Smart Energy Meter as shown for home consumption (position 1) or at the grid connection point (position 2) in the home network. 



Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect.

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). 

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.

The inverter does not have to be set up in the KOSTAL Smart Energy Meter because it is pre-configured to the Modbus RTU RS485 interface (B) as standard.

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO MP plus from drop-down list 

Parameter	Value
Interface	RS485 B
Mode	Slave
Presetting	PIKO MP plus
Slave address	247
Baud rate	19200
Data bits	8
Parity	Even
Stop bit	1



INFO

The installation position of the KOSTAL Smart Energy Meter is set in the inverter.



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

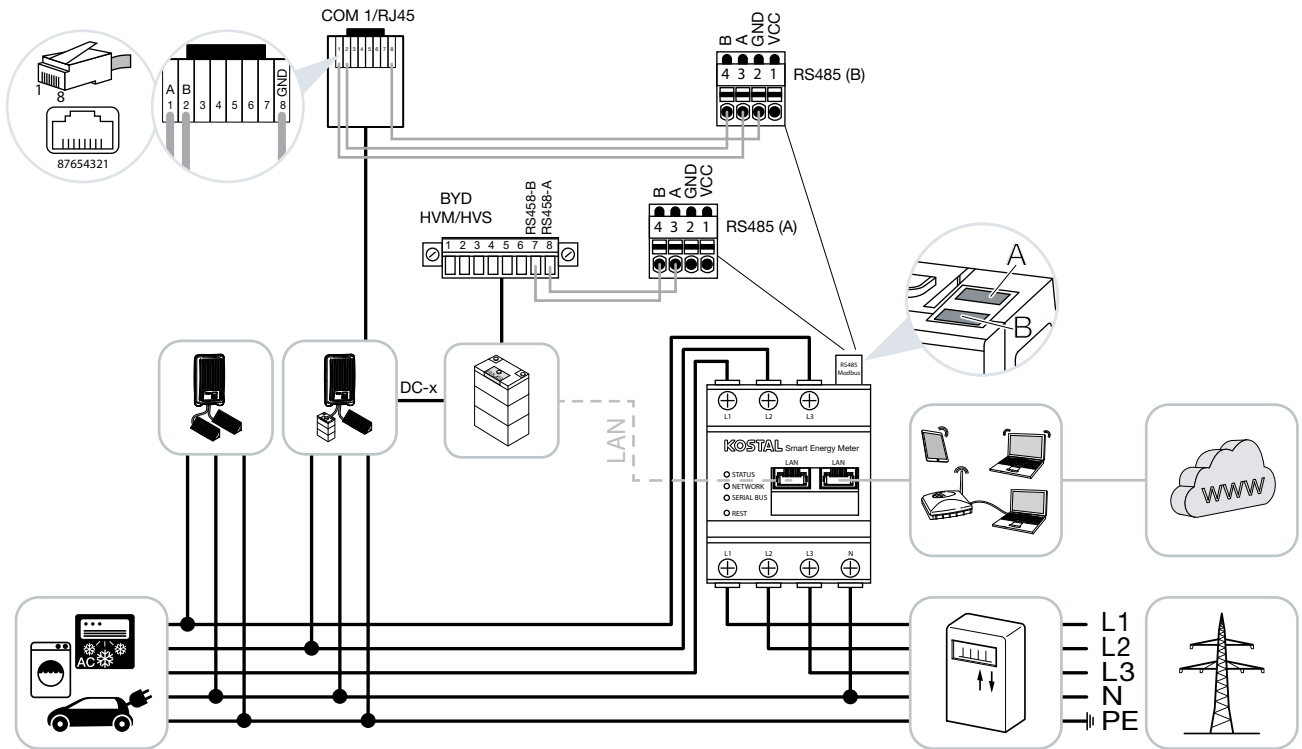


INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

4. Press “Save” button to accept settings.
- ✓ The inverter has been set up.

PIKO MP plus - battery control



Install KOSTAL Smart Energy Meter as shown at the grid connection point in the home network. **i**

Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter RS485 (B) and connect.

Set up RS485 communication cable between battery and KOSTAL Smart Energy Meter RS485 (A) and connect.

Establish LAN connection from KOSTAL Smart Energy Meter, battery and inverter to the Internet. As an option, the LAN connection from the inverter or battery can also be connected directly to the KOSTAL Smart Energy Meter (switch function). **i**

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




The installation position of the KOSTAL Smart Energy Meter can no longer be set in the PIKO MP plus when battery management is activated in the KOSTAL Smart Energy Meter. It is absolutely essential that the KOSTAL Smart Energy Meter is fitted at the grid connection point.





For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

When setting up, note the following installation order: 

- Switch off inverter by pressing DC switch
- Switch off battery using main switch
- Switch on battery using main switch
- Set up inverter and battery in KOSTAL Smart Energy Meter
- Switch on inverter by pressing DC switch 

The PIKO MP plus and battery must be set up in the KOSTAL Smart Energy Meter.

Do this by performing the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. For a battery to be used with the PIKO MP plus, the function for this must be released in the KOSTAL Smart Energy Meter. To do this, release the battery management by going to Inverter > Activation code. 
3. Then you can set up the devices. To do this, go to Inverter > Devices (manage the inverters used).



INFO

The battery must be assigned to a DC input in the PIKO MP plus. This is done in the PIKO MP plus by going to Settings > Service > Inputs > DCx > Battery.



INFO


If the battery is manually switched off for any reason, observe the following order for switching on:


- Switch off inverter
- Switch on battery
- Switch on inverter



INFO

Input of an activation code, e.g. to connect a battery. This first has to be purchased from the KOSTAL Solar online shop.

4. Use the plus symbol to add an inverter. 

Parameter	Value
Series	Select PIKO MP plus.
Type	Select the appropriate type/ power class of the inverter. This automatically sets the maximum AC output power of the inverter.
Serial interface 	Select the RS485 interface at which the PIKO MP plus is connected to the KOSTAL Smart Energy Meter.
Timeout	Accept default value.
Maximum output power	It is essential that this value is set for every connected inverter. By selecting the type/inverter power class, the maximum output power of the inverter is automatically set. The maximum output power is the maximum output which the inverter being configured is able to deliver.
Battery management	Activate battery support.
Serial interface for battery	Specify the RS485 interface of the KOSTAL Smart Energy Meter to which the communi- cation line of the battery has been connected.
Battery type	Select the battery type, e.g. BYD HVM or BYD HVS.
Number of modules	Select the number of mod- ules that are installed in the battery.



INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.



INFO

The preassigned interfaces have to be switched off beforehand. To do this, click on the corresponding interface in the note that appears.

Parameter	Value
Max. SOC (charging status)	Set the maximum charging status of the battery (default 100%).
Min. SOC (charging status)	Set the minimum charging status of the battery. Note the details provided by the battery manufacturer (default 5%).
Nominal charging/final charging capacity of battery	This value is set automatically and does not need to be changed. It is calculated by the battery type and the number of modules. However, it can be adjusted if the values do not match the battery.
Open advanced settings	
RS485 address	Enter the inverter's RS485 address. This must be unique for each device and must not already exist.

5. Press "OK" button to accept settings.
- ✓ The PIKO MP plus and battery have been set up in the KOSTAL Smart Energy Meter.

Setting up a new battery with an existing PIKO MP plus

If just one battery is to be set up for an existing PIKO MP plus, this is done via the battery device type.

1. Use the plus symbol to add the battery.

Parameter	Value
Series	Battery
Link to inverter	Select the PIKO MP plus to which the battery is connected.
Serial interface of battery	Select the RS485 interface at which the battery is connected to the KOSTAL Smart Energy Meter.
Battery type	Select the battery type, e.g. BYD HVM or BYD HVS.
Number of modules	Select the number of modules that are installed in the battery.
Max. SOC (charging status)	Set the maximum charging status of the battery (default 100%).
Min. SOC (charging status)	Set the minimum charging status of the battery. Note the details provided by the battery manufacturer (default 5%).
Nominal charging/final charging capacity of battery	This value is set automatically and does not need to be changed. It is calculated by the battery type and the number of modules. However, it can be adjusted if the values do not match the battery.


2. Press “OK” button to accept settings.
- ✓ The battery has been set up in the KOSTAL Smart Energy Meter and linked to a PIKO MP plus. Finally, the battery still needs to be assigned to the correct DC input in the PIKO MP plus.




INFO

The battery must be assigned to a DC input in the PIKO MP plus. This is done in the PIKO MP plus by going to Settings > Service > Inputs > DCx > Battery.

3.5 The KSEM with the PIKO 4.2-20 / PIKO EPC

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PIKO 4.2-20 or PIKO EPC in the following variants. 

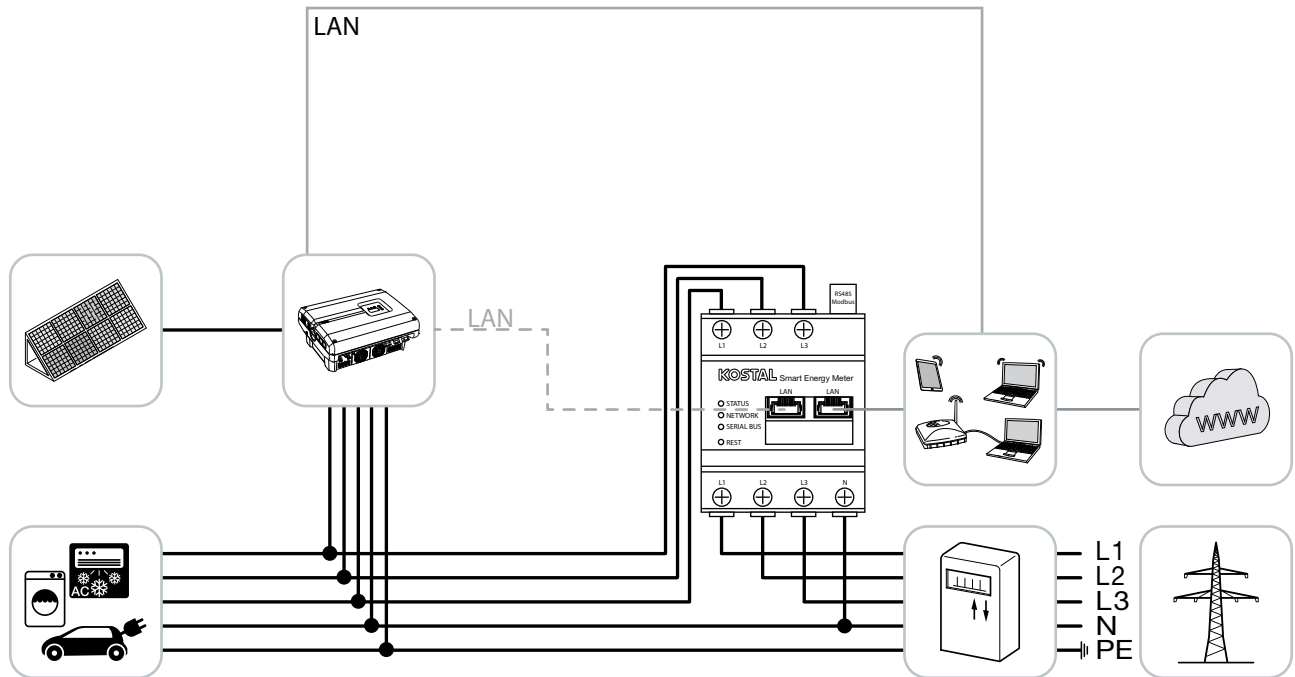
- 24-hour load / generation measurement
(measuring the current home consumption and output power)
- Multiple-inverter connection
(several KOSTAL solar inverters in the same home network, only one KOSTAL Smart Energy Meter is required)  **Ch. 3.7**
- Dynamic active power control
- Sending measurement data to the KOSTAL Solar Portal



INFO

It is possible to use the KOSTAL Smart Energy Meter in conjunction with the PIKO 4.2-20 or PIKO EPC as of inverter FW5.0.

PIKO 4.2-20 / PIKO EPC - load / generation measurement



Install KOSTAL Smart Energy Meter as shown at the grid connection point in the home network.

Set up LAN communication cable between inverter and KOSTAL Smart Energy Meter and connect. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). **i**


In this variant, the KOSTAL Smart Energy Meter runs as a master and controls the inverter (e.g. to limit power).



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

Set up inverter in KOSTAL Smart Energy Meter. Do this by performing the following steps:


1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Go to Inverter > Devices and use Plus (+) to add the PIKO 4.2-20 or PIKO EPC.

Parameter	Value
Type	Select PIKO 4.2-20 / PIKO EPC
IP address	Enter the inverter's IP address.
Maximum output power	Enter the inverter's max. output power. This is required if a power limitation is set at the grid connection point and has to be calculated.
Open advanced settings	
RS485 address	Enter the inverter's RS485 address. This has to be unique for each device (255 by default).

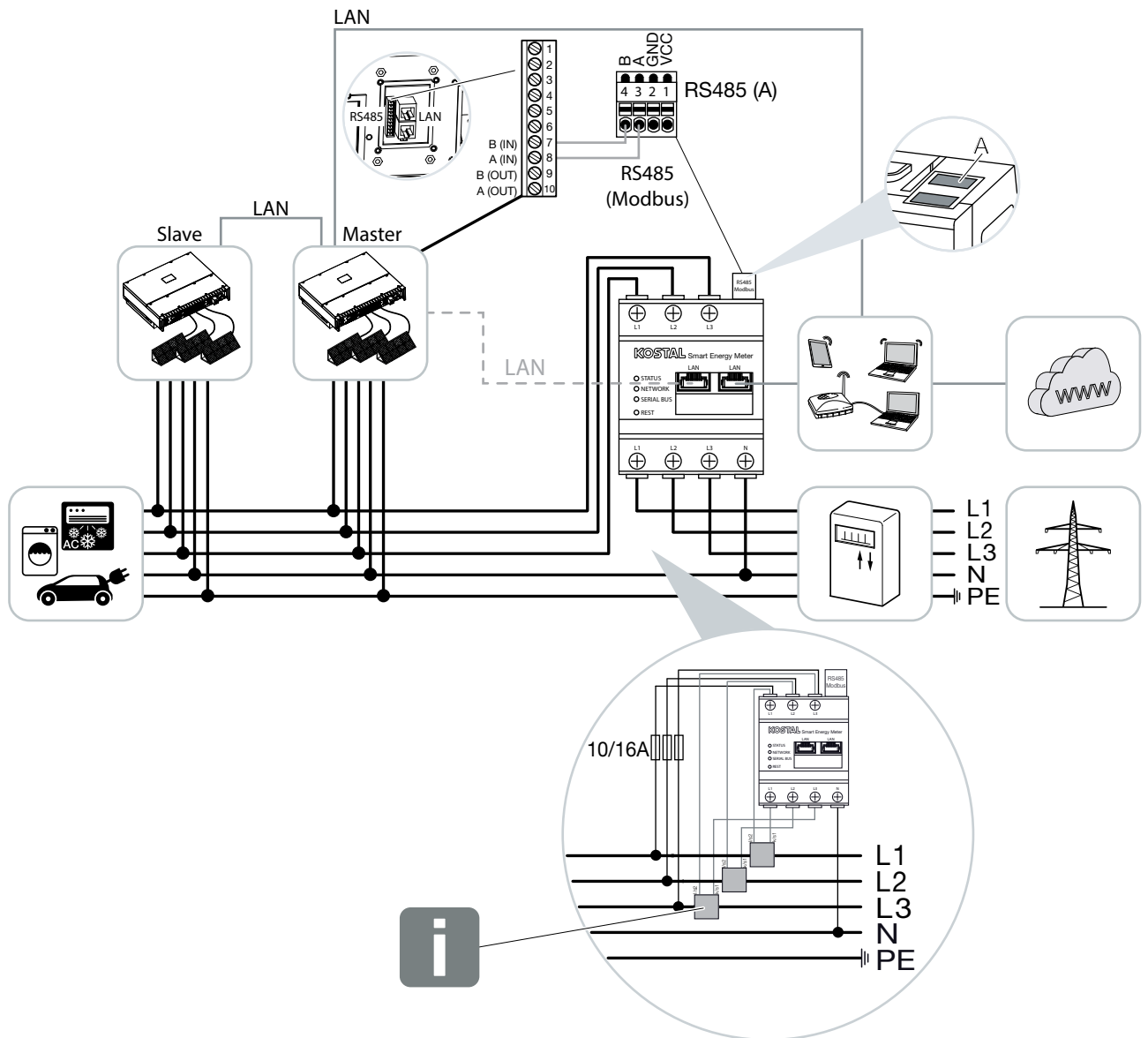
3. Press "OK" button to accept settings.
- ✓ The inverter has been set up.

3.6 The KSEM with the PIKO CI

The KOSTAL Smart Energy Meter (KSEM) can be used in conjunction with the PIKO CI in the following variants.

- 24-hour load / generation measurement
(measuring the current home consumption and output power)
- Multiple-inverter connection
(several KOSTAL solar inverters in the same home network, only one KOSTAL Smart Energy Meter is required)  **Ch. 3.7**
- Dynamic active power control

PIKO CI - load / generation measurement




Install KOSTAL Smart Energy Meter as shown at the grid connection point in the home network.



INFO



For currents above 63A, transformers must be used for measurement on the KOSTAL Smart Energy Meter. Further information on this can be found in the installation instructions for the KOSTAL Smart Energy Meter and at [Ch. 4.10](#).

Set up RS485 communication cable between inverter and KOSTAL Smart Energy Meter and connect. 

Establish LAN connection from KOSTAL Smart Energy Meter and inverter to the Internet. As an option, the LAN connection from the inverter can also be connected directly to the KOSTAL Smart Energy Meter (switch function). 

In this variant, the KOSTAL Smart Energy Meter runs as a slave and transmits data to the inverter.

In the KOSTAL Smart Energy Meter, the PIKO CI still has to be selected for the RS485 interface (A). Do this by performing the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Under Modbus RTU, select PIKO CI from drop-down list for RS485 A interface 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO CI
Slave address	1
Baud rate	19200
Data bits	8
Parity	None
Stop bit	2

4. Press “Save” button to accept settings.
- ✓ The inverter has been set up.



INFO

In the KOSTAL CI App for the PIKO CI inverter, which you will find in your APP Store, the terminating resistor for the last inverter must be activated via the software. The installation position and use of the KOSTAL Smart Energy Meter must also be set in the inverter.

For more information about settings in the inverter, refer to the inverter's operating manual.



INFO

For details, see the inverter's operating manual and the KOSTAL Smart Energy Meter's installation instructions.

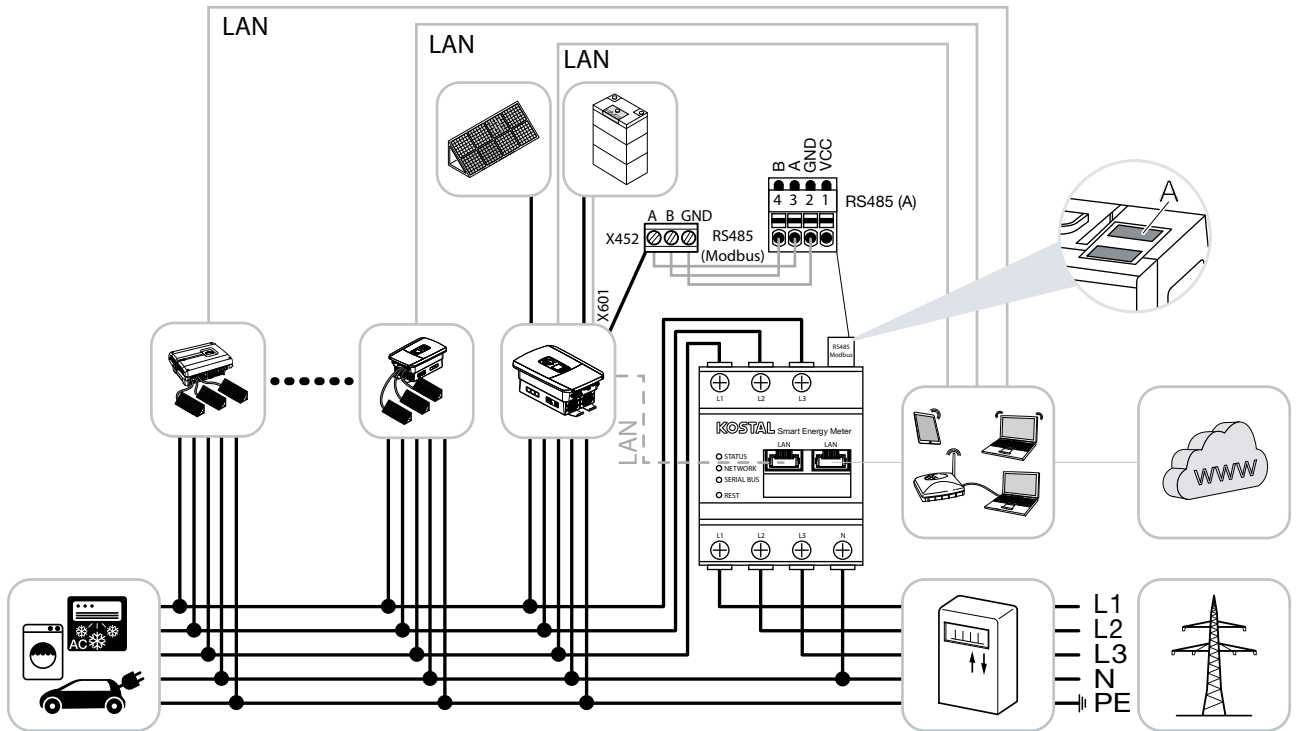


INFO

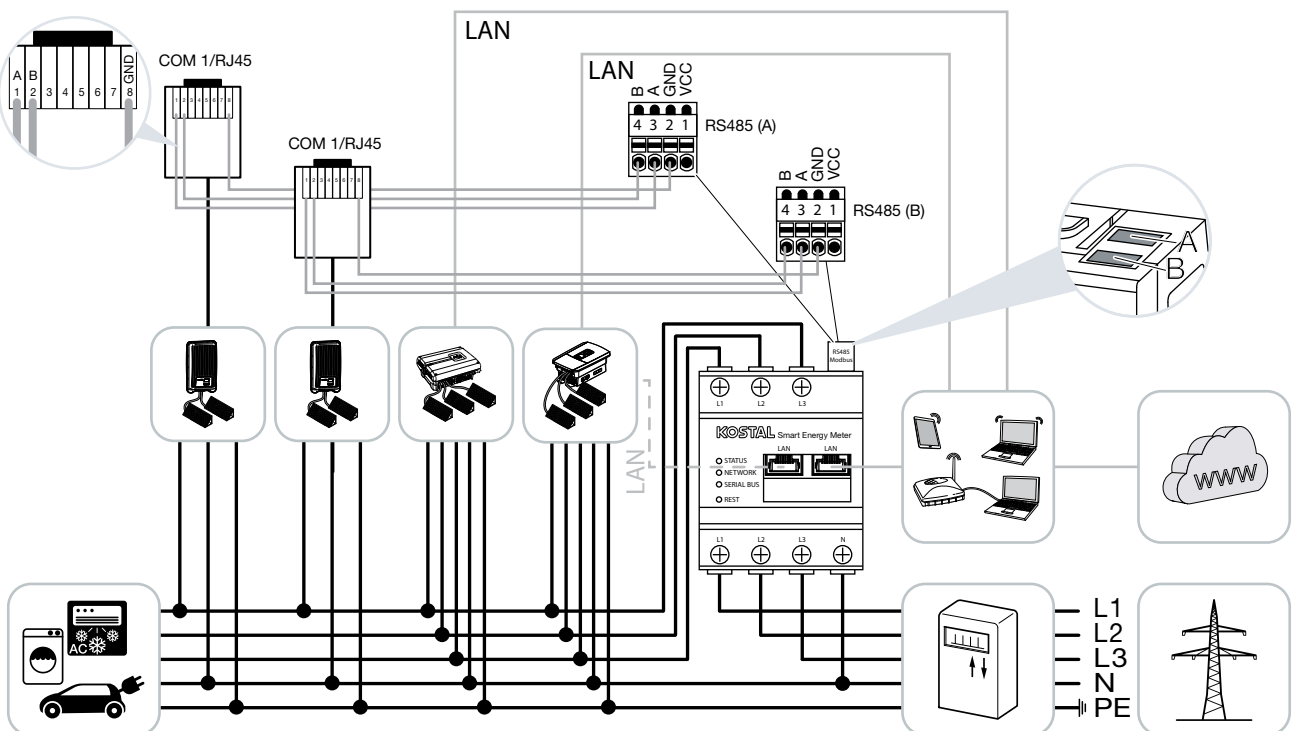
When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

3.7 Multiple-inverter connection of KOSTAL inverters


With battery storage



Without battery storage



In a multiple-inverter connection, up to 10 KOSTAL inverters can be used in the same house grid.

Only one KOSTAL Smart Energy Meter is required to monitor power and limit feed-in at the grid connection point. This is installed at the grid connection point in the house grid as shown in the illustrations. 

Approved KOSTAL inverters for a multiple-inverter connection with battery storage

In a multiple-inverter connection with battery storage, a maximum of one hybrid/battery inverter (PLENTICORE plus or PLENTICORE BI) with connected battery may be used.

- 1 x PLENTICORE plus with battery or
1 x PLENTICORE BI with battery

The following KOSTAL inverters may be used in addition to the hybrid/battery inverter:

- PLENTICORE plus without battery
- PIKO IQ
- PIKO 4.2-20
- PIKO EPC

Approved KOSTAL inverters for a multiple-inverter connection without battery storage

The following KOSTAL inverters can be used in a multiple-inverter connection without battery storage:

- PLENTICORE plus without battery
- PIKO IQ
- PIKO 4.2-20
- PIKO MP plus
- PIKO EPC



INFO

In this variant, the KOSTAL Smart Energy Meter runs as a master and transmits data to all KOSTAL inverters in the house grid.


To visualize the overall data, the KOSTAL Smart Energy Meter and all KOSTAL inverters must be added in the KOSTAL Solar Portal as devices of a PV system.

Procedure

The following steps must be taken to set up a multiple-inverter connection with KOSTAL inverters:

- Install all KOSTAL inverters in the house grid (see circuit diagram at the beginning)
- Install KOSTAL Smart Meter at the grid connection point (see circuit diagram at the beginning)
- Connect all devices to the KOSTAL Smart Meter and the Internet via LAN
- If a hybrid/battery inverter with connected battery is being used, also connect it to the KOSTAL Smart Energy Meter via the RS485 interface
- If a PIKO MP plus is being used (only for multiple-inverter connection without battery), it must also be connected to the KOSTAL Smart Energy Meter via the RS485 interface
- When using a hybrid/battery inverter with connected battery, enable storage of excess AC energy from local generation
- Activate Modbus protocol in PIKO IQ, PLENTICORE
- Configure settling time in the KOSTAL inverters
- Set up all KOSTAL inverters in the KOSTAL Smart Energy Meter
- Set power limitation/feed-in limitation for the grid connection point in the KOSTAL Smart Energy Meter
- Assign all KOSTAL inverters and the KOSTAL Smart Energy Meter to a PV system in the KOSTAL Solar Portal

Communication connection

The following devices must be connected to the KOSTAL Smart Energy Meter and the Internet via a LAN connection. 

LAN interface connection:

- PIKO IQ/PLENTICORE plus/PLENTICORE BI
- PIKO 4.2-20 and PIKO EPC
- PIKO MP plus (only for data transfer to the KOSTAL Solar Portal)

The communication cable between the hybrid/battery inverter and the KOSTAL Smart Energy Meter must be established via the RS485 connection interface (A).

RS485 interface connection (A):

- PLENTICORE BI or
PLENTICORE plus with battery

The communication cable between the PIKO MP plus and the KOSTAL Smart Energy Meter must be established via the RS485 connection interface.

Connection for RS485 interface (B) standard or (A):

- PIKO MP plus




INFO

For details, see the KOSTAL inverter operating manual and the KOSTAL Smart Energy Meter installation instructions.

Activating Modbus protocol

Hybrid/battery inverter (PLENTICORE plus with battery/PLENTICORE BI)

In the Webserver, activate “Storage of excess AC energy from local generation” by going to Service menu > Energy management. 

PIKO IQ/PLENTICORE plus/PLENTICORE BI

To enable communication between the KOSTAL Smart Energy Meter and the inverter, the Modbus protocol must be activated.

Activate the Modbus (TCP) protocol by going to the following menu item in the Webserver:

Settings > Modbus / SunSpec (TCP) > Activate Modbus. 

PIKO MP plus/PIKO 4.2-20/PIKO EPC

No further settings are required for the inverters.



INFO

More information can be found in the inverter's operating manual.

Settings on the inverter are only possible after logging in as an installer.



INFO


More information can be found in the inverter's operating manual.

The byte order is to be left as standard Modbus (little-endian).

Configuring settling time

For the KOSTAL Smart Energy Meter to achieve a rapid type of control with a set feed-in limitation (power limitation) or zero feed-in, the settling time must be configured in the KOSTAL inverters.

This configuration is undertaken as follows: 

- For PIKO 4.2-20 and PIKO EPC, using the PARAKO user software 
- With PIKO IQ, PLENTICORE plus or PLENTICORE BI, via the Webserver

Do this by performing the following steps:

1. In the Webserver, go to Settling time in the Service menu.
In the PARAKO application, call up the settling time by going to "Change settings > Power limitation and reactive power feed-in > Settling time (external control)".
 2. Set the settling time to 1s.
 3. For external control of active power, select "Power gradient" under mode.
 4. Enter the value 1000 W/s in the specifications for low priority.
 5. Save the settings.
- ✓ The settling time has been set.



INFO

The setting is only needed when using two or more KOSTAL solar inverters and can only be configured by installers using the personal service code.



INFO

More information about the PARAKO parameterisation software for PIKO inverters can be found on our homepage in the download area for your product under operating manual applications.

Settings in the KOSTAL Smart Energy Meter



RS485 interface

By default, no changes have to be made to the RS485 interfaces. These arrive preconfigured.

The following devices can be connected to the RS485 interfaces:

- RS485 (A): PLENTICORE plus / PLENTICORE BI
- RS485 (B): PIKO MP plus

If changes are to be made to the settings, perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Call up Modbus configuration under Modbus settings.
3. Select PIKO IQ/PLENTICORE from drop-down list. 

Parameter	Value
Interface	RS485 A
Mode	Slave
Presetting	PIKO IQ/PLENTICORE
Slave address	1
Baud rate	38400
Data bits	8
Parity	None
Stop bit	2

4. Press “Save” button to accept settings.





INFO

When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

Adding KOSTAL inverters in the KOSTAL Smart Energy Meter

All KOSTAL inverters in a multiple-inverter connection, which are to be measured and controlled using the KOSTAL Smart Energy Meter, must be set up in the KOSTAL Smart Energy Meter.

Do this by performing the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
2. Go to Inverter > Devices (manage the inverters used).
3. Use the plus symbol to add an inverter. 

Parameter	Value
Type	Select inverter
IP address	Enter the inverter's IP address. The IP address can be read on the inverter's display.
Maximum output power	Enter the inverter's max. output power. This is required if a power limitation is to be set and calculated at the grid connection point.
Open advanced settings	
Unit ID	If using Unit ID, the default value 71 should be used.


4. Add more inverters using the same function.
 5. Press "OK" button to accept settings.
- ✓ The inverters have been set up in the KOSTAL Smart Energy Meter.



INFO


When an inverter is selected, the pre-defined default values are adopted. These can be adapted if necessary.

Setting up feed-in limitation

To set up a feed-in limitation (power limitation) at the grid connection point for the public grid, this function only has to be set up in the KOSTAL Smart Energy Meter. 

More information can be found in  **Ch. 4.8**

Perform the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
 2. Go to Inverter > “Power limitation”.
 3. Enter feed-in capacity limit for entire system. Use the calculator to easily set this to a specific percentage (e.g. 70%).
 4. Activate the power limitation.
- ✓ The feed-in limitation at the grid connection point has been set up for all inverters.



INFO

For all other KOSTAL inverters in a multiple-inverter connection, no reduction needs to be activated/set, as these are controlled by the KOSTAL Smart Energy Meter. This applies exclusively for multiple-inverter operation.

Setting up devices in the KOSTAL Solar Portal


All KOSTAL inverters and the KOSTAL Smart Energy Meter now simply have to be assigned to a PV system in the KOSTAL Solar Portal.

- To do this, log on to the KOSTAL Solar Portal
- Create a new system
- Now add all KOSTAL inverters that are in the multiple-inverter connection to this system and also the KOSTAL Smart Energy Meter.


For further information, please read the KOSTAL Solar Portal operating manual. You can find them in the download area.

3.8 Configuring settings in the Webserver

After commissioning, further settings can be configured using the KOSTAL Smart Energy Meter's online interface.

To do this, use your PC or tablet to log into the KOSTAL Smart Energy Meter. You will find a detailed description in [↗ Ch. 4](#). 

The following settings should be configured by the installer after the initial commissioning:

- Configure prescribed settings relating to the grid feed-in/power limitation specified by the energy supply company (e.g. for dynamic limitation for PIKO 4.2 - 20, PIKO EPC and for multiple-inverter connection of solar inverters) if this has not already been done in the inverter.
- Log into the KOSTAL Solar Portal. In this case, the measurement data is transmitted from the KOSTAL Smart Energy Meter to the portal 
- Set date / time zone
- Update device firmware [↗ Ch. 5.4](#)
- Change password of KOSTAL Smart Energy Meter. This can be done by going to "Profile" > "Change password" [↗ Ch. 5.5](#)



IMPORTANT INFORMATION

To log in, you will need the password from the energy meter's type plate, which can be found on a separate instruction leaflet in the packaging.



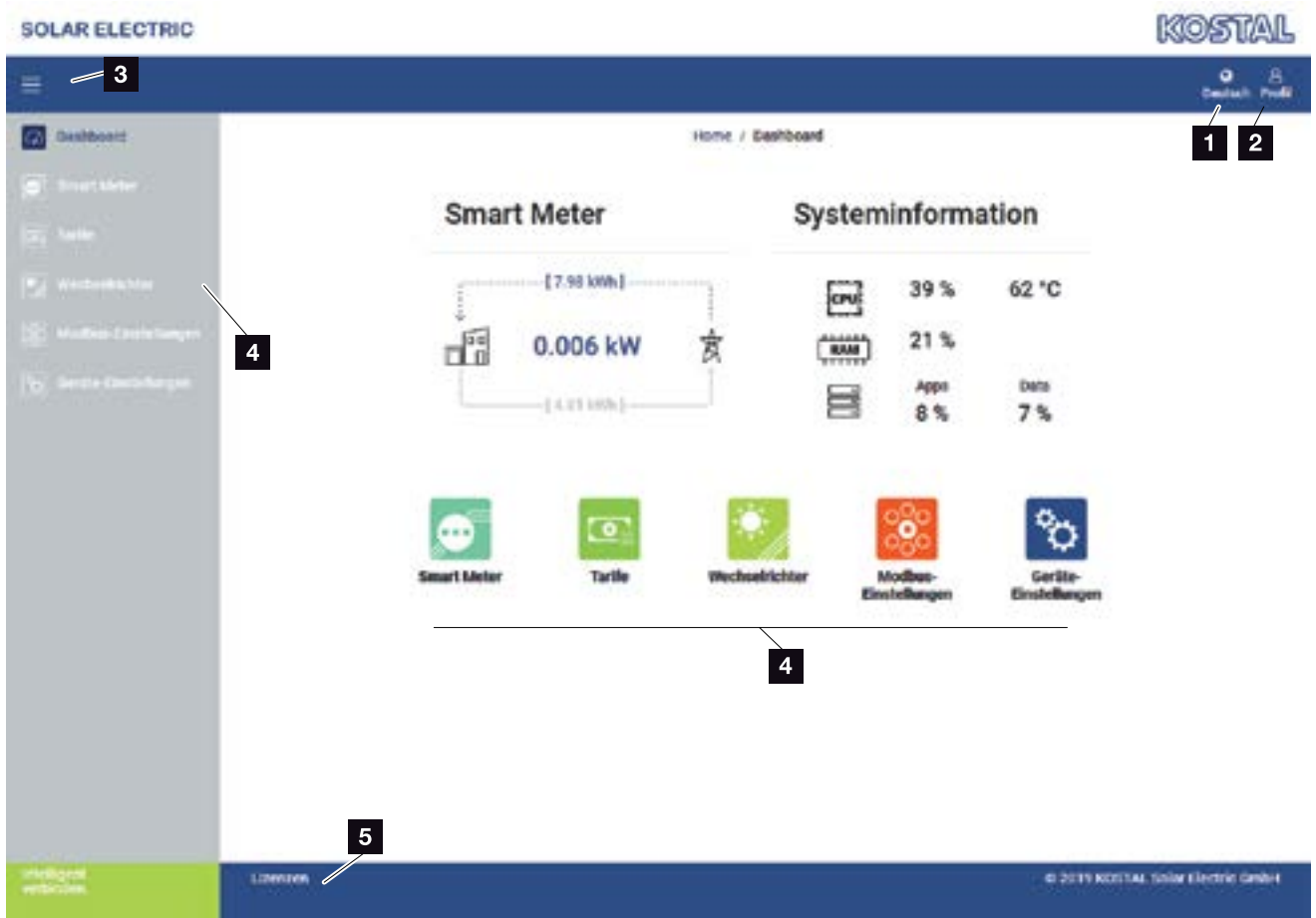
INFO

You only need to log into the KOSTAL Solar Portal when using PIKO MP plus with a battery or using KOSTAL solar inverters in a multiple-inverter connection.

4. Operation


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4.1 The Webserver



- 1 Language selection
- 2 Webserver login/logout, change password
- 3 Show / hide menu at side
- 4 Menus
- 5 Information about licences

The Webserver forms the graphic interface between the KOSTAL Smart Energy Meter and user.

Go to Login to log in to the KOSTAL Smart Energy Meter. 



INFO

For the energy values to be displayed accurately, the KOSTAL Smart Energy Meter has to be installed at the grid connection point because otherwise not all consumers in the home network can be recorded.



IMPORTANT INFORMATION

To log in, you will need the password from the energy meter's type plate, which can be found on a separate instruction leaflet in the packaging.


4.2 Preparing KOSTAL Smart Energy Meter

The KOSTAL Smart Energy Meter has to be connected to an existing local network in order for you to access it.

This requires the following steps:


- 1.** Install the KOSTAL Smart Energy Meter in a distributor box on the top-hat rail according to the installation instructions provided and connect by cable.
 - 2.** Cover KOSTAL Smart Energy Meter with the cover or protection against accidental contact of the sub-distribution in the distributor box.
 - 3.** Connect network cable to KOSTAL Smart Energy Meter's grid connection (LAN port).
 - 4.** Connect the other end of the network cable to a router/switch.
 - 5.** Reconnect sub-distribution to power supply. Wait for the KOSTAL Smart Energy Meter's launch process to end.
- ✓ The KOSTAL Smart Energy Meter is connected to the network.

4.3 Calling up user interface

The user interface is called up using a standard browser on a PC, tablet or mobile phone. To do this, enter host name or IP address of the KOSTAL Smart Energy Meter in your browser's address line. The factory-set host name is made up of the product name and serial number. 


Example: KSEM-712345678


Calling up online interface via network environment in Windows 10

In Windows, in File Explorer click on "Network" or call up "Devices and Printers" via a search. 

An icon with the name of the KOSTAL Smart Energy Meter (e.g. KSEM--712345678) should be visible. Click on the KOSTAL Smart Energy Meter's icon. The standard browser opens with the KOSTAL Smart Energy Meter log-on page.

Using HTTPS in the browser

To use the KOSTAL Smart Energy Meter with HTTPS in the browser, you have to enter "https://" rather than "http://" in the address line. 

1. Enter the host name or IP address of the KOSTAL Smart Energy Meter in the browser's address line.
 2. Press the ENTER key.
- The login window is opened.
3. Enter the password and press the ENTER key 
- ✓ The KOSTAL Smart Energy Meter's user interface opens.



INFO

This function depends on the router settings and may not be available in larger administered networks under some circumstances.



INFO

The target network must also not be classified in the PC as "Public network" otherwise this function will be blocked by Windows.



INFO

Because the KOSTAL Smart Energy Meter's online interface is not a website registered on the Internet, the browser will display it as unsafe.

To call up the online interface anyway, the browser's warning must be ignored and a one-off or permanent exception added under "Advanced settings".



IMPORTANT INFORMATION

To log in, you will need the password from the energy meter's type plate, which can be found on a separate instruction leaflet in the packaging.

4.4 Configuring settings

If a PIKO IQ or PLENTICORE is to be connected to the RS485 A interface or a PIKO MP plus is to be connected to the RS485 B interface, no further settings are required because these devices are already preconfigured for these interfaces upon delivery.

If you want to make changes to the settings on the KOSTAL Smart Energy Meter interfaces, you can select an inverter for the interface under the Modbus settings. The appropriate values are stored as standard. You can also adapt the values if necessary.

4.5 The dashboard



- 1 Language selection
- 2 Webserver login/logout, change password
- 3 Show / hide menu at side
- 4 Call up menus
- 5 Display current energy flow
Call up smart meter menu
- 6 Display current system information
Call up device settings
- 7 Licence information

The dashboard provides the user with an overview of the current most important KOSTAL Smart Energy Meter data. **i**



INFO

The value in the centre of the diagram shows the power in kW (active power). Viewed together with the arrow animations, the value either means feed-in or purchase. The values on the lines with arrows show the energy in kWh (active energy), which was fed in or purchased over the entire operating period.

4.6 Menu - smart meter



- 1 Active power display (total of all phases)
- 2 Active energy display, shown by consumption or purchase per phase
- 3 Measuring values per phase
- 4 Enhanced mode, measuring values with apparent and reactive power/energy

The graphics provide the user with an overview of whether the entire system is purchasing or feeding in power at the present time.

All power and energy values are indicated separately as purchase (+) and feed-in (-).

Active power

The diagram shows totals for the power of the individual phases. The active power (P) is the amount of converted power actually used by the consumer. It is measured in watts.

Active energy

The diagram and table show the power values for the entire system per phase as a total for consumption or feed-in. The active energy is the power generated over a certain period. It is stated in watt-hours.

Measuring values per phase

The table shows all measuring values recorded by the system per phase. In enhanced mode, apparent and reactive power / energy are also displayed.

4.7 Menu - tariff

Overview



- 1 Switch between viewing feed-in and consumption (purchase)
- 2 Select time period (hour, day, week, month, year)
- 3 Diagram
- 4 Select time period (view depends on choice of time period view)
- 5 Call up tariff settings
- 6 Show and hide the energy/costs by selecting them via the key

Consumption and tariff information for the feed-in and consumption. The tariffs for feed-in and consumption (purchase) are stated under the tariff setting. **i**



INFO

The diagram also shows the energy in kWh and the costs in the configured currency.

Tariff input

1 Select currency

2 Enter monthly basic charge

3 Select time zone

4 Switch between feed-in / consumption tariff

5 View of tariff entered

6 Edit tariff

7 Go back to overview

	12:00 AM	3:00 AM	6:00 AM	9:00 AM	12:00 PM	3:00 PM	6:00 PM	9:00 PM	11:59 PM	
Mon	0.24				0.25				0.24	✎
Tue	0.24				0.25				0.24	✎
Wed	0.24				0.25				0.24	✎
Thu	0.24				0.25				0.24	✎
Fri	0.24				0.25				0.24	✎
Sat	0.24				0.25				0.24	✎

All values in this table are in EUR.

- 1** Select currency
- 2** Enter monthly basic charge
- 3** Select time zone
- 4** Switch between feed-in / consumption tariff
- 5** View of tariff entered
- 6** Edit tariff
- 7** Go back to overview

Here you select the currency and set the monthly basic charge for the tariff. The energy rate for the tariff for feed-in or consumption (purchase) can be set using the pen symbol next to the tariff view.

Managing energy rates

The screenshot shows the 'Edit working prices' interface. At the top, there is a title 'Edit working prices' and a close button 'X'. Below this is the 'Weekdays' section, which asks to 'Select the weekdays this timetable is valid for.' It lists days from Sun to Sat, each with a checkbox. Callout 1 points to the Sun checkbox. The 'Timetable' section asks to 'Select the hours you want to change, and then assign a working price.' It features a grid of 24 time slots (from 12:00 AM to 11:00 PM) with their corresponding energy rates. Callout 2 points to the 12:00 AM slot. Below the grid are two input fields for 'Working price 1' and 'Working price 2', each with a dropdown menu and a unit selector 'EUR'. Callout 3 points to the '0.18' value in the first field. To the right of these fields are two 'Assign' buttons. Callout 5 points to the top 'Assign' button. Below the input fields is a text input field labeled 'New working price'. Callout 4 points to this field. At the bottom of the interface are two large buttons: 'CANCEL' and 'SAVE'. Callout 6 points to the 'SAVE' button.

- 1 Choice of days for which the tariff is to apply
- 2 Choice of time period for which the tariff is to apply
- 3 Energy rate (tariff) input
- 4 Create a new energy rate
- 5 Assign energy rate to the selected days/hours
- 6 Save settings

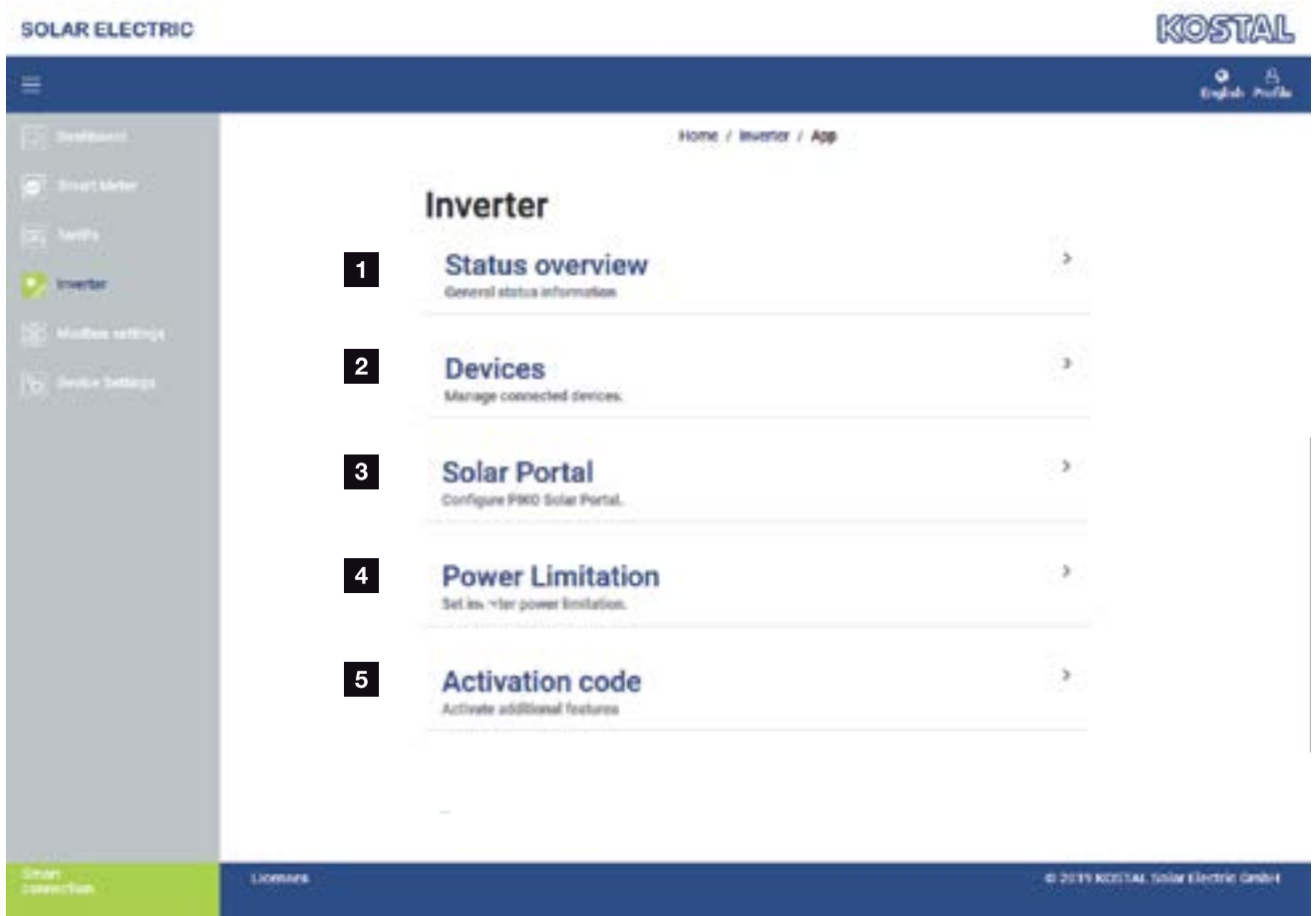
Start by entering an energy rate. Several rates can be created for feed-in and consumption. Then select the days and hours for which the energy rate is to apply and assign these using the “Assign” button. The colours indicate which energy rate/tariff applies to which time period. **i**




INFO

If a created energy rate is not assigned a time window, it is automatically deleted after saving.

4.8 Inverter menu



- 1** Inverter status overview
Battery status overview (only for PIKO MP plus with battery)
- 2** Set up inverter/battery (e.g. for power limitation, multiple-inverter connection or battery use in combination with the PIKO MP plus) and display the inverter/batteries set up.
- 3** Activate/deactivate KOSTAL Solar Portal
- 4** Set up power limitation
- 5** Release additional functions via activation code 



INFO

This function can be used to release additional options. This may include e.g. releasing battery management to connect a battery storage system together with the PIKO MP plus.

The KOSTAL Smart Energy Meter is linked to the KOSTAL solar inverters to reduce the feed-in capacity of inverters if required or to control the battery when using the PIKO MP plus.

In addition to this, the KOSTAL Smart Energy Meter can be connected to the KOSTAL Solar Portal to transfer data from the KOSTAL Smart Energy Meter and inverter to the portal.


Status overview menu


In the “Status overview” menu, the KOSTAL Smart Energy Meter provides general information about the devices.

Devices menu

Connected inverters or batteries are set up and managed in the “Manage connected devices” menu.

New devices can be added using the Plus (+) button. The type of communication (TCP or RS485) used between the inverter and KOSTAL Smart Energy Meter is determined by the choice of inverter (e.g. PIKO IQ or PIKO MP plus).

If the battery management function is selected in addition to the PIKO MP plus, you can select the communication interface to the battery and a depth of discharge (SOC). 

Different parameters have to be configured depending on the device type. If all relevant settings have been configured, detection of the inverter can be started by pressing the “OK” button. 





INFO

Battery management is only displayed if the additional battery option has been activated for the PIKO MP plus using an activation code.



INFO

Only then is a device added to the KOSTAL Smart Energy Meter if the inverter was detected successfully.

Parameter	Explanation
PIKO MP plus 	<p>A PIKO MP plus inverter is to be set up.</p> <p>Select the appropriate type/power class of the inverter. This automatically sets the maximum AC output power of the inverter.</p> <p>This type of inverter communicates using the RS485 interface. To connect the inverter, you will need to state the RS485 interface of the KOSTAL Smart Energy Meter to which the inverter was connected.</p> <p>If there are several inverters, different RS485 addresses should be used.</p> <p>The value for Timeout does not need to be changed. For more information, see Timeout on the next pages.</p> <p>Battery management: </p> <p>If a battery is to be set up for the PIKO MP plus, you can activate battery support for this here.</p> <p>You should then select the communication interface (RS485) of the KSEM to which the battery's communication cable is connected.</p> <p>For more information on the settings, see Battery on the next pages.</p>



INFO


Here the PIKO MP plus must only be set up with a multiple-inverter connection or using a battery system.



INFO

Battery management is only displayed if the additional battery option has been activated for the PIKO MP plus using an activation code.

If a battery is set up using this item, it is automatically connected to the inverter once confirmed.

Parameter	Explanation
PLENTICORE plus PIKO IQ PLENTICORE BI 	<p>A PIKO IQ/PLENTICORE plus or PLENTICORE BI inverter is to be set up.</p> <p>Select the appropriate type/power class of the inverter. This automatically sets the maximum AC output power of the inverter.</p> <p>This inverter communicates using TCP. The IP address has to be stated for the connection.</p> <p>The unit ID does not have to be changed.</p>
PIKO FW >= 5.0	<p>A PIKO 3.0-20 or PIKO 36 EPC inverter is to be set up.</p> <p>Select the appropriate type/power class of the inverter. This automatically sets the maximum AC output power of the inverter.</p> <p>This type of inverter communicates using TCP (LAN). The IP address has to be stated for the connection.</p>



INFO

The inverter only needs to be set up here if using a multiple-inverter connection.

Parameter	Explanation
Battery	<p>A battery is to be set up for a set-up PIKO MP plus.</p> <p>Link to inverter</p> <p>Select the inverter to which the battery is connected. This must be set up beforehand in order to be displayed here.</p> <p>Serial interface</p> <p>The battery communicates using the RS485 interface. To connect the battery, you will need to specify which RS485 interface of the KOSTAL Smart Energy Meter the battery's communication cable was connected to.</p> <p>Battery type</p> <p>Select the battery type e.g. BYD HVM or BYD HVS.</p> <p>Number of modules</p> <p>Select the number of modules installed in the battery.</p> <p>Max. SOC (charging status)</p> <p>The maximum charging status of the battery must be set here (default 100%).</p> <p>Min. SOC (charging status)</p> <p>The minimum charging status of the battery must be set here. Note the details provided by the battery manufacturer (default 5%).</p> <p>Nominal charging/final charging capacity of battery</p> <p>This value is set automatically and does not need to be changed. It is calculated by the battery type and the number of modules. However, it can be adjusted if the values do not match the battery.</p>


Parameter	Explanation
Timeout	This value in seconds indicates the time after which an error message is output in the event of a fault in communication with the configured device.
Maximum output power	<p>It is essential that this value is set for every connected inverter.</p> <p>By selecting the type/inverter power class, the maximum output power of the inverter is automatically set.</p> <p>The maximum output power is the maximum output which the inverter being configured is able to deliver.</p> <p>The value for the max. output power only depends on the inverter type and design. The actual capacity of the connected solar modules is not relevant for this setting.</p>

Explanation of device overview

Parameter	Explanation
Name	<p>Indication of name which the user has given to the KOSTAL solar inverter.</p> <p>The name is assigned via the inverter menu interface.</p>
Type	Shows the type designation of the inverter/battery.
Address	Either the IP address or RS485 address of the inverter is shown.

Parameter	Explanation
Status	<p>Indication of status of communication with the inverter. Two statuses are possible:</p> <p>OK (✓) indicates that communication with the inverter is working normally.</p> <p>Error (!) means that communication with the inverter is interrupted.</p>
Info (i)	<p>Additional information, such as serial number, hardware and software versions can be retrieved via the Info symbol.</p> <p>OK (✓) indicates that communication with the inverter is working normally.</p> <p>Other values are an error code.</p>
Edit (pen symbol)	<p>The edit symbol (✎) can be used to modify the configuration of a connected inverter/battery. Any modifications only take effect once confirmed with "OK".</p>
Delete (bin symbol)	<p>The bin symbol can be used to delete an inverter from the KOSTAL Smart Energy Meter.</p>

Solar portal

The connection to the solar portal can be activated or deactivated in the “Configuration of KOSTAL Solar Portal” menu. Information about the connection status is also displayed. 

The connection to the KOSTAL Solar Portal is only made or broken after clicking on the “Save” button. 

Parameter	Explanation
Last request	Time of last query to the solar portal. A “-” means that there haven't been any queries yet.
Last response	Time of portal's last response.
Machine ID	An ID issued for the KOSTAL Smart Energy Meter by the solar portal.
Serial number	Serial number of the KOSTAL Smart Energy Meter
Article number	Article number of the KOSTAL Smart Energy Meter.
Activate solar portal	Activate or deactivate connection/transfer to the solar portal.



INFO

In order for the data in the solar portal to display the correct time values, it is important that the correct time zone and time are selected in the KOSTAL Smart Energy Meter under "Device Settings > Device > Date and Time".




INFO

In the solar portal, the items and serial numbers of the inverter must be stated for logging in.

Power limitation

A feed-in limit for the entire system with a multiple-inverter connection measured by the KOSTAL Smart Energy Meter can be set in the “Manage feed-in capacity” menu.

The power limitation monitors the feed-in of the entire system. If the value set for the feed-in limit is exceeded, the KOSTAL Smart Energy Meter calculates the amount by which each connected inverter needs to reduce its output to avoid exceeding the feed-in limit. The “maximum output power” value set for each individual inverter provides the basis for calculating the amount by which each inverter needs to reduce its output. 

- The feed-in check and communication with the inverters is started by selecting “Activate power limitation”.
- The maximum amount which may be fed in by the entire system is entered in the “Feed-in capacity limit” field. The feed-in capacity calculator can be used to simplify calculations.
- Under “Advanced”, the interval for communication between the KOSTAL Smart Energy Meter and inverters can be changed and a time period selected for calculating the mean value. This should only be done if problems arise.



INFO

Note regarding power limitation with several inverters

When limiting power, every connected inverter is reduced by the same amount (as a percentage) of its maximum output power.


If the connected inverters have different amounts of maximum output power, the power reduction for each inverter is individual.

Power limitation - Advanced settings

Parameter	Explanation
Transmit interval	Transfer interval of set power limitation to inverters entered under "Inverter".
Inverter time slot	Length of time period in which the inverter output data is collected to produce a moving mean.
KOSTAL Smart Energy Meter time slot	Length of time period in which the KOSTAL Smart Energy Meter performance data is collected to produce a moving mean.

Activation code

This function can be used to release additional options. This may include e.g. releasing battery management to connect a battery to the PIKO MP plus.

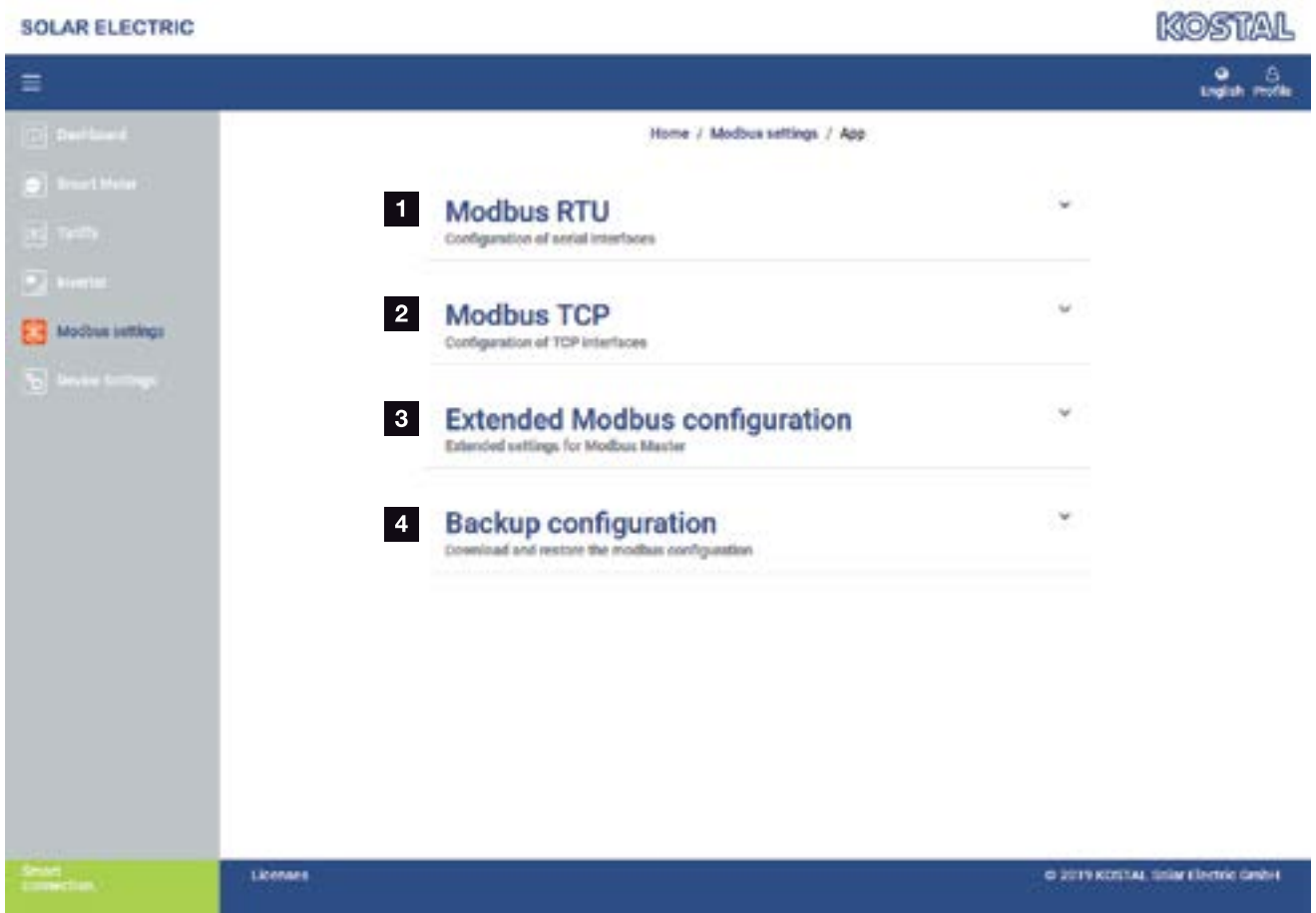
Parameter	Explanation
Activation code	Input of an activation code, e.g. for battery management. The activation code first has to be purchased from the KOSTAL Solar online shop. 
Released extra options	Overview of options currently released in the KOSTAL Smart Energy Meter.



INFO

Input of an activation code, e.g. to connect a battery. This first has to be purchased from the KOSTAL Solar online shop.

4.9 Menu - Modbus settings



- 1** Set up the Modbus RTU (RS485) interface
The RS485 A interface is preconfigured for the PIKO IQ/PLENTICORE and the RS485 B for the PIKO MP plus as standard
- 2** Set up the Modbus TCP interface
- 3** Advanced Modbus configuration
- 4** Download / restore the Modbus configuration

Select the devices which are connected to the RS485 Modbus RTU interfaces or activate the Modbus TCP functionality if the devices use the Ethernet (LAN) for communication purposes. In this case, Modbus TCP communication must also be activated in the inverter.



INFO

You will find a detailed description of the Modbus log and how it works in the Modbus specification (e.g. see www.modbus.org). Modbus TCP forms part of the IEC 61158 standard.

Modbus RTU

KOSTAL solar inverters, but also other devices, can be connected to the Modbus RTU RS485 interface.

In the “Modbus RTU slave” mode, the KOSTAL Smart Energy Meter provides the measurement data via the RS485 interface. In the “Modbus RTU Master” mode on the other hand, measurement data is sent and written to other slave devices in order to control them. The Modbus master is only available with user-defined settings.

Both RS485 interfaces A and B can be configured individually. **i**

When an inverter is selected for RS485 interface A or B, all fields are populated with predefined values. These can be adapted if necessary.

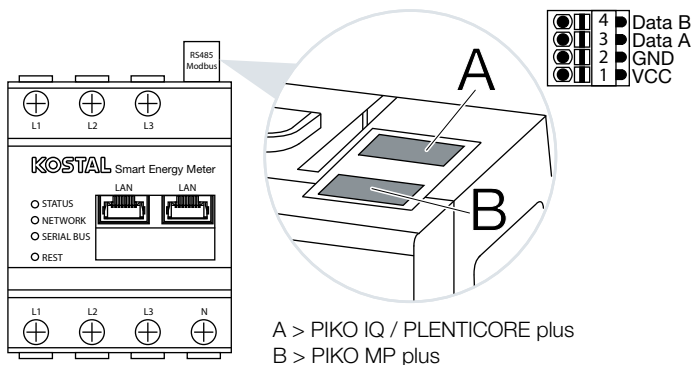


Fig. 8: RS485 interfaces




INFO

You will find details of how to connect the communication cable from the inverter to the RS485 socket in the KOSTAL Smart Energy Meter's installation instructions.

Depending on the cable length and number of participants on the bus, we would recommend terminating the bus at both ends with a 120 Ohm resistor. Termination reduces reflections in the connection. Under certain circumstances, this may be absolutely essential for application reliability.

Settings for Modbus RTU via RS485

Parameter	Explanation
Interface	<p>RS485 (A) Pre-configured for PIKO IQ/ PLENTICORE</p> <p>RS485 (B) Pre-configured for PIKO MP plus</p>
Enable interface	<p>Activated The Modbus slave functionality on the respective RS485 interface is activated. Data can only be retrieved from the KOSTAL Smart Energy Meter via the interface once the interface has been activated and the settings have been saved.</p> <p>Deactivated The Modbus interface is deactivated. </p>
Presetting	Selection of connected device. When a device is selected, all fields are populated with predefined values. These can be adapted if necessary.
Mode	<p>Slave (default value) / master The interface operates either as a Modbus master (data is sent and written to slave devices) or as a Modbus slave (only data which can be accessed from other devices is made available).</p>
Slave address	<p>Sets the address of the Energy Manager in the Modbus.</p> <p>The value may be between 1 and 247.</p>
Baud rate	Sets the connection's baud rate.
Data bits	Sets the number of data bits.
Parity	Sets the connection's parity.
Stop bits	Sets the number of stop bits.




INFO

If using a PIKO MP plus with connected battery, the interface has to be deactivated here. You are asked whether you want to do this when setting up the battery via devices.

Modbus TCP

KOSTAL solar inverters can be connected to the Modbus TCP (LAN) interface, e.g. for a multiple-inverter connection, but so too can other devices, which evaluate the KOSTAL Smart Energy Meter's data or are controlled by the meter.


Mode - master

In "Master" mode, the KOSTAL Smart Energy Meter sends and writes information to the registers of the configured slaves. These are added by entering the slave IP address (e.g. inverter IP address and port). 

Parameter	Explanation
Slave address	Sets the address of a TCP slave. This can be specified in the form of an IP address or URL.
Port	Sets the TCP port to the port on which the slave is anticipating Modbus communication.
x	Deletes the line
Add	Adds a line

Up to 10 TCP slaves can be configured.

Modus - slave

In the "Slave" mode, the Energy Manager provides its measurement data via the LAN interface (TCP/IP). The Modbus TCP communication functionality must also be activated in the inverter. 

Parameter	Explanation
Enable TCP Slave	<p>Activated</p> <p>The Modbus slave functionality on the Ethernet (LAN) interface is activated. Data can only be retrieved from the KOSTAL Smart Energy Meter via the interface once the interface has been activated and the settings have been saved.</p> <p>Deactivated</p> <p>The Modbus interface is deactivated.</p>



INFO

The internal current value registers and the internal energy value registers can be transmitted and written. The KSEM/RM PnP registers and the SunSpec registers are not transmitted via the Modbus TCP master. You will find information about the respective registers in the "KOSTAL Smart Energy Meter - Interface Description Modbus" documentation in the download area for the KOSTAL Smart Energy Meter.



INFO

For the KOSTAL Smart Energy Meter to be able to receive data via the TCP interface, the inverter must also transfer this data via this interface.

For the PIKO IQ/PLENTICORE, this has to be activated e.g. in the Webserver by going to Settings > Modbus / SunSpec TCP (see inverter's operating manual).

Advanced Modbus configuration

Here, further settings can be selected for the Modbus master functionality. These settings apply to all configured Modbus masters.

Transmit interval


Here, you can set an interval, at which the measurement data is to be transmitted from the KOSTAL Smart Energy Meter. The Energy Manager usually transmits its measurement data via the Modbus master as soon as it is available. If the interval is activated, the data is transmitted at a regular interval instead, regardless of when it is available. Only the current measuring values at the transmit time are ever communicated. Mean values are not produced for the interval.

Parameter	Explanation
Activate fixed transmit interval	<p>Activated KOSTAL Smart Energy Meter data is transmitted at a fixed transmit interval. Selection of interval from drop-down menu.</p> <p>Deactivated KOSTAL Smart Energy Meter data is transmitted after each measurement cycle (200ms or 500ms).</p>
Measuring values	<p>Current measurement cycle Current measuring values transmitted at transmit time.</p> <p>Mean values for transmit interval Calculates and transmits a mean value for all measurement cycles within the set transmit interval.</p>

Register configuration

Groups of registers can be selected here, which are to be written in master mode. The system load of the KOSTAL Smart Energy Meter can therefore be reduced if all of the registers are not required. This may be necessary if lots of devices are connected to the KOSTAL Smart Energy Meter.

The arrow on the right can be used to drop down a detailed list of registers, which are contained in the respective groups.

The following registers can be activated or deactivated: 

Parameter	Explanation
Current values total	The current values for the entire system (registers 0–27)
Current values phases	The current values itemised by phase (registers 40-145)
Energy values total	The energy values for the entire system (registers 512-551)
Energy values phases	The energy values itemised by phase (registers 592-791)



INFO

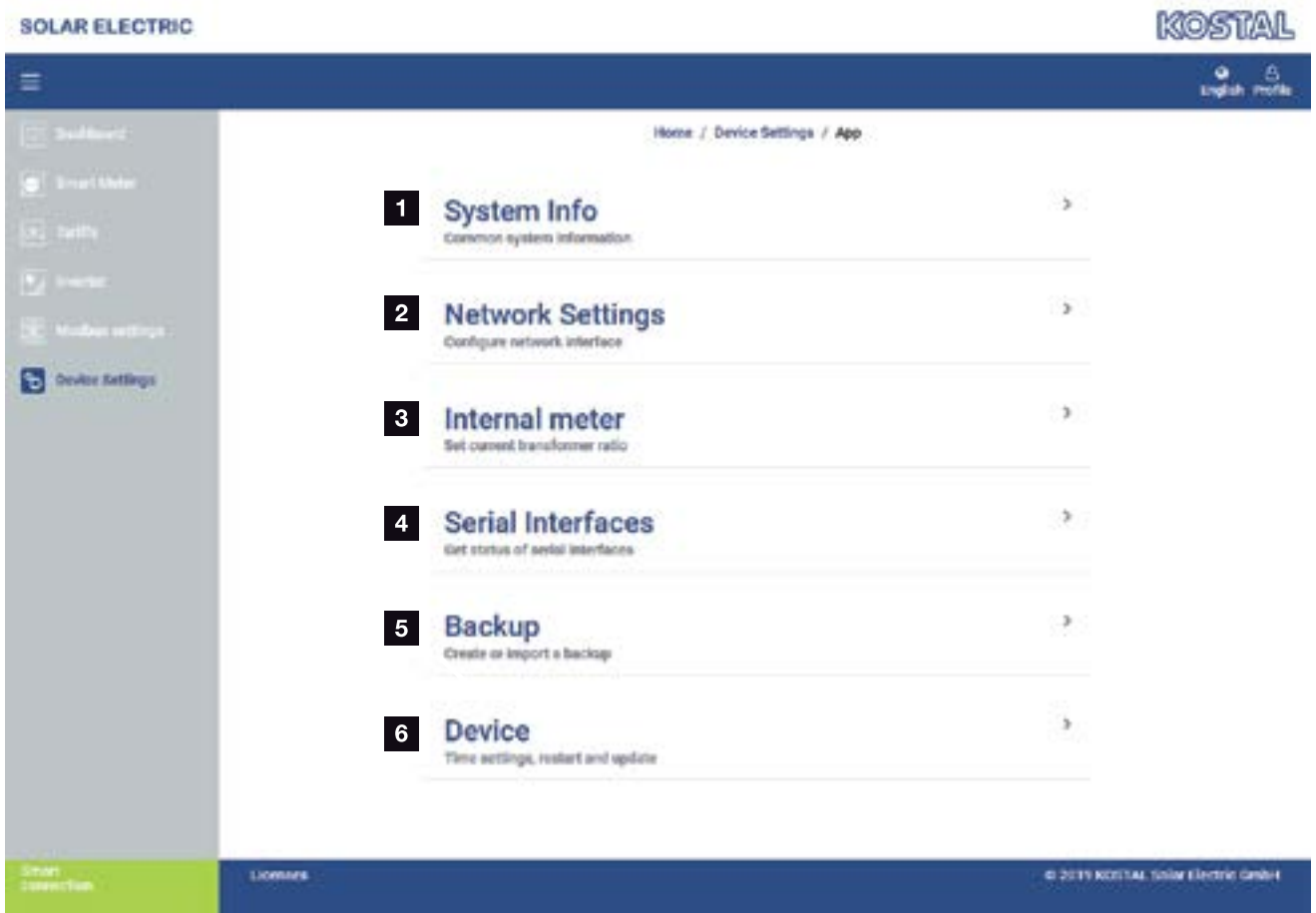
You will find information about the respective registers in the “KOSTAL Smart Energy Meter - Interface Description Modbus” documentation in the download area for the KOSTAL Smart Energy Meter.


Backup configuration

This item can be used to import or export the entire configuration of the Modbus configuration.

- Exporting the configuration allows the configuration currently saved to be downloaded as a file.
- Importing the configuration allows the configuration to be adopted from a previously exported file.


4.10 Menu - device settings



- 1 Shows general system information
- 2 Configuration of network interface
- 3 If your device is connected to a transformer, the transformer ratio can be specified here  **Ch. 3.7**
- 4 Shows the status of the serial interface
- 5 Create or import a backup
- 6 Device can be used for time settings, a restart, to import updates or produce system logs

System information

General system information as well as information about the current status of the system.

Parameter	Explanation
Product name	Indication of product name
Version	Version of the firmware installed
Serial number	Serial number of device
CPU usage	Current CPU load
RAM usage	Current RAM usage
Host name	Device name in network. Ex factory, this is set as KSEM-serial number designation. The name can be modified under the network settings.
IP address	IP address of the KOSTAL Smart Energy Meter, which was issued manually or by a DHCP server. 
MAC address	MAC address of the KOSTAL Smart Energy Meter



INFO

More information about the network settings can be accessed via the (i) next to the IP address.

A window opens containing the current settings for subnet mask, standard gateway and DNS server.

Network settings

Changes to the IP settings can be undertaken here. 

Parameter	Explanation
Host name	<p>The host name is the device's unique designation in the network.</p> <p>Any name can be chosen and may contain upper-case letters, lower-case letters, numbers and hyphens.</p>
DHCP	<p>When DHCP is activated, the device automatically obtains an IP address, e.g. from a router. No further settings are needed in this case.</p> <p>If a static IP address is to be set, DHCP must be deactivated and the "Advanced settings" opened. A static IP address, subnet mask, standard gateway and DNS server can be configured here.</p> <p>If UPnP is activated, the device is automatically detected by PCs in the same network and displayed in the network environment. This makes it easier for the user to find the device in the network if he or she doesn't know the IP address.</p>



INFO

Please note that improper settings may result in the user interface no longer being available.

E-mail settings

If an event occurs, the KOSTAL Smart Energy Meter can inform you of it. To do this, you can set up configuration to your SMTP server (mail server) here, which will then inform you of various events via e-mail.

Setting up SMTP configuration

Parameter	Explanation
E-mail address	Enter your e-mail address here
SMTP server	Enter the name of the SMTP server here (e.g. securesmtp.t-online.de).
Port	Enter the port here (e.g. 465).
Use encrypted connection (TLS)	If encryption (SSL/TSL) is required, enable it here.
The server requires authentication	If a login is required, activate it here.
User name	Enter your login parameters for your SMTP server (mail server) here.
Password	


After the SMTP configuration, the settings should be tested. Use the test button to send a test message to the configured e-mail address. If you have received a test message, the settings are correct. Otherwise, correct them.



INFO

You will receive the data needed for the setup from your provider.

Internal power meter / transformer

The KOSTAL Smart Energy Meter can directly measure up to 63A per external wire. External transformers are used for higher currents. If your device is connected to a transformer, this can be set here. 

To do this, activate “Use transformer” and set the transformer ratio. Common transformer ratios are provided in the drop-down list. If the ratio is not included in the list, click on “Other” and enter it manually. The primary current may be in a range of 1 to 5000 and the secondary current in a range between 1 A and 5 A.

Serial interface

Status information about the serial interfaces. This may either be assigned freely or by a particular application, the name of which is displayed here. The serial interface is configured in the respective menus (e.g. Modbus settings or inverter)



INFO

You will find a description of the electrical connection for transformers with an indirect measurement in the KOSTAL Smart Energy Meter's installation manual.

If transformers are being used, the following requirements are recommended:

- 100 A primary
- 5 A secondary
- Accuracy class 1

A [List](#) containing recommended transformers can be found in the download area for the product.

Backup



Produce a password-protected backup to save the data and settings of the KOSTAL Smart Energy Meter.

Parameter	Explanation
Create	<p>This function can be used to save the system settings and data captured. As an option, the Password field can be used to issue a password to protect the data backup.</p> <p>While the backup file is being produced, the system does not take any measurements and there is a temporary interruption in communication.</p> <p>Press the "Create" button to start the backup process. Once the backup process is complete, a backup file (Backup.bak) can be downloaded from the browser.</p>
Import a backup	<p>A backup file can be selected using the Browse button.</p> <p>Clicking on Import opens the dialogue for importing a backup file.</p> <p>The password for the backup file can be entered here (if issued). Pressing the "Import" button starts the process.</p> <p>Please observe the information provided in the dialogue. All data and configurations are reset to those applicable at the time when the backup was created. Any data and configurations generated after this time are lost.</p> <p>Once the backup file has been successfully imported, the device restarts.</p>

Device

Configure general settings on the KOSTAL Smart Energy Meter.

Parameter	Explanation
Date and time	<p>Set date and time of device.</p> <p>Your time zone Set the time zone so that calendar-based adjustments, such as changes between summer and winter time, can be taken into account by the system.</p> <p>NTP If the KOSTAL Smart Energy Meter is permanently connected to the Internet via a network, we would recommend activating the “NTP” option. The time is then automatically obtained from the Internet via a server. Under the advanced settings, you can also set an alternative NTP server.</p> <p>Set time The KOSTAL Smart Energy Meter runs internally with the UTC time only. This is converted into your local time zone for display purposes. If the KOSTAL Smart Energy Meter is not connected to the Internet, or if automatic time synchronisation is not to be used, the time can also be set manually. The current system time and your current browser time are displayed on the interface for this purpose. Click on “Set time” to synchronise the two times. Your browser time is automatically converted into UTC and set as the KOSTAL Smart Energy Meter’s system time.</p>

Parameter	Explanation
Reset - device restart	Click on "Restart" to restart the device. This may take several minutes. The online interface then has to be reloaded.
Reset - reset device to state in which it was delivered	Clicking on "Reset" resets the device to state in which it was delivered. The default password then applies again. To log in again, you will need the password from the energy meter's type plate, which can be found on a separate instruction leaflet in the packaging.
Update device firmware	This menu item can be used to load a new device firmware for the KOSTAL Smart Energy Meter  Ch. 5.4.
System logs	This menu item can be used to download system log data as a text file for certain time periods  Ch. 5.3.

5. Faults / maintenance

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5.1 Functions of the Reset button

Restarting KOSTAL Smart Energy Meter


Press and hold the RESET button for more than 6 seconds with a sharp object.

The device will then start.

Resetting the online interface password

Press the Reset button as follows:

- once for a lengthy period (between 3 and 5 seconds) and then
- once briefly (half a second).

The gap between the two should be no more than one second. If the command was detected correctly, the status LED flashes orange twice. The online interface password is reset to what it was upon delivery (see type plate on device). 


Resetting the network settings

Press the Reset button as follows:

- once briefly (half a second) and then
- once for a lengthy period (between 3 and 5 seconds).

The gap between the two should be no more than one second. If the command was detected correctly, the status LED flashes orange twice. One result of resetting the network settings is that the DHCP is activated.

Resetting KOSTAL Smart Energy Meter to state in which it was delivered

Call up the Webserver. The device is reset by going to Device settings > Device > Reset device to state in which it was delivered and clicking on "Reset". 



IMPORTANT INFORMATION

To log in, you will need the password from the energy meter's type plate, which can be found on the separate instruction leaflet in the packaging.



IMPORTANT INFORMATION

After resetting, the default password applies again. To log in again, you will need the password from the energy meter's type plate, which can be found on a separate instruction leaflet in the packaging.

5.2 Error messages / displays

Status LED is not lighting up

The KOSTAL Smart Energy Meter is not connected to the power supply.

- Ensure that at least the external wire L1 and neutral wire N are connected to the KOSTAL Smart Energy Meter.

Status LED is lit up or flashing red

There is an error.

- Restart KOSTAL Smart Energy Meter.
Use a pointed object to press the Reset button for at least 6 s.
- Please contact your service technician or installer.

Network LED is not lit up or the KOSTAL Smart Energy Meter is not found in the network

The network cable is not correctly connected to the grid connection.

- Ensure that the network cable is correctly connected to the grid connection.

The KOSTAL Smart Energy Meter is not in the same local network.

- Connect KOSTAL Smart Energy Meter with the same router / switch.

Serial bus LED is lit up red or flashing orange

In the user interface check whether there are any error messages about communication with the receiver.

- If necessary, check cabling to receiver.

KOSTAL Smart Energy Meter is providing unrealistic measuring values

The KOSTAL Smart Energy Meter has been installed the wrong way round.

- Recheck how L1 to L3 are connected.
- The transformers are not configured. Go to Device settings > Transformer ratio, activate transformer and set the correct transformer ratio.


User interface cannot be called up using the KOSTAL Smart Energy Meter's IP address or name

- Contact the network administrator.

5.3 Exporting log data

For service purposes, the log files can be downloaded from the KOSTAL Smart Energy Meter. The log data is then used by the service team for error rectification.

Do this by performing the following steps:

1. Call up online interface of KOSTAL Smart Energy Meter  **Ch. 4.3**
 2. Go to “Device settings” > “Device” > “System logs”.
 3. Select the time under “Logs since”.
 4. Press the “Download” button to start the download.
 5. Save the data to your PC.
- ✓ The download is complete. Now you can make the data available to the service team.

5.4 Updating device firmware

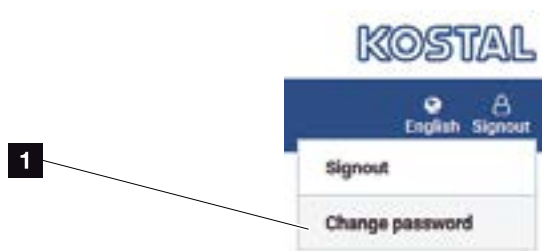
This menu item can be used to load a new device firmware for the KOSTAL Smart Energy Meter.

Do this by performing the following steps:

1. Download the current firmware from our website by going to Download > Accessories > KOSTAL Smart Energy Meter.
 2. Use the "Browse" button to select the file on your PC.
 3. Press "Update" to start the update.
 4. Once a prompt has been accepted, the new firmware is uploaded and installed on the KOSTAL Smart Energy Meter.
- Finally the KOSTAL Smart Energy Meter is restarted. This process may take several minutes. The website then has to be reloaded.
- ✓ The software is installed.

5.5 Change password

The password can be changed by going to the following menu item.



- 1** Change password
1. Call up “Change password” under the “Log out” menu item.
2. Start by entering the current password.
3. Enter the new password. This must contain at least 8 letters and a mixture of upper- and lower-case letters.
4. Enter the password again under “Confirm”.
5. Confirm the input by selecting “Send”.
- ✓ You have changed your password.

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