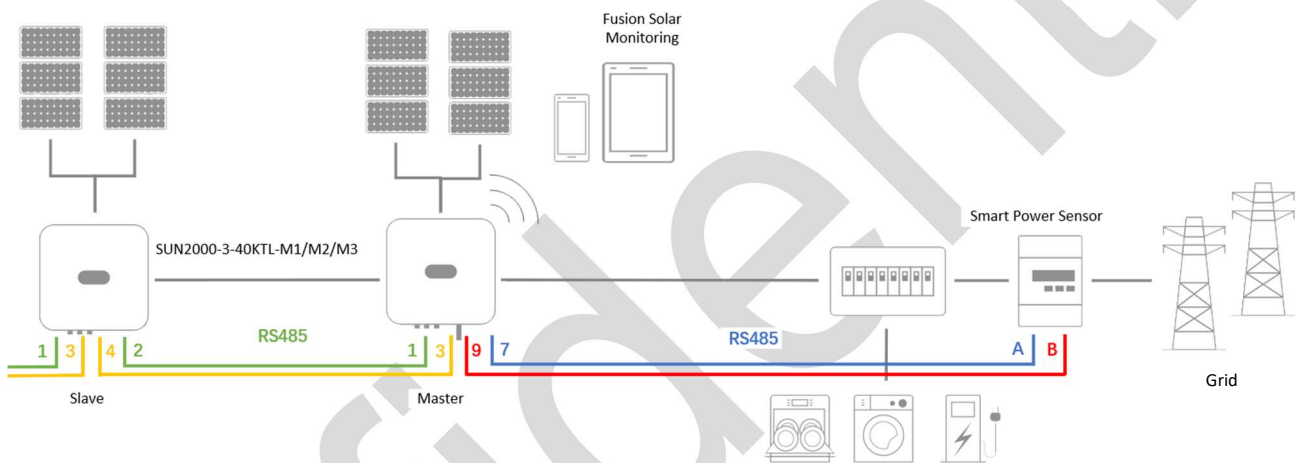


Inverter commissioning using SmartLogger 3000



Notes:

- For commissioning, a **FusionSolar account is not required.**
However, for the online monitoring of the system an account is required.
Please get in touch with your contact person at SKE for the account.
For more information, see the "**FusionSolar - Monitoring**" manual.
- Before commissioning, all **Huawei inverters** used must be correctly **cascaded via an RS485 wiring and supplied on the AC and DC sides.**
Please use a **shielded, twisted pair cable** for communication.
A CAT7 network cable is recommended.
- You find the correct Pins for the cascading in the user manual of the inverter(s)
- However, the PIN assignment below can be applied to most of the inverters from Huawei:



Step 1 – Establish connection to Smartlogger3000:

Make sure that your computer is connected to the **LAN input of the SmartLogger** and that **no static IP address is set up in your computer LAN settings.**

Open a new **browser window** of your choice and **enter the gateway IP address** of the SmartLogger in the **address bar**.

The following IP address must be entered:

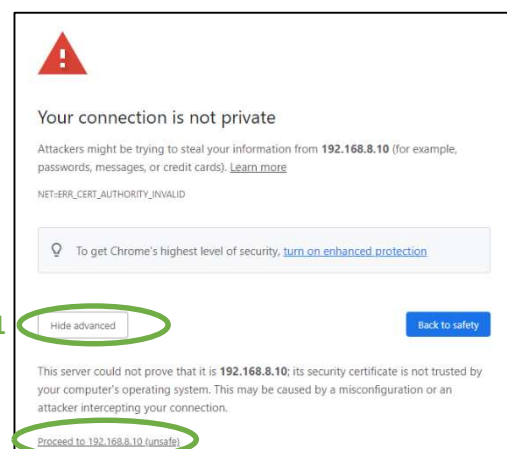
<https://192.168.8.10>

Please make sure that the <https://> is also entered correctly.

The browser will now indicate a "non-private-connection".

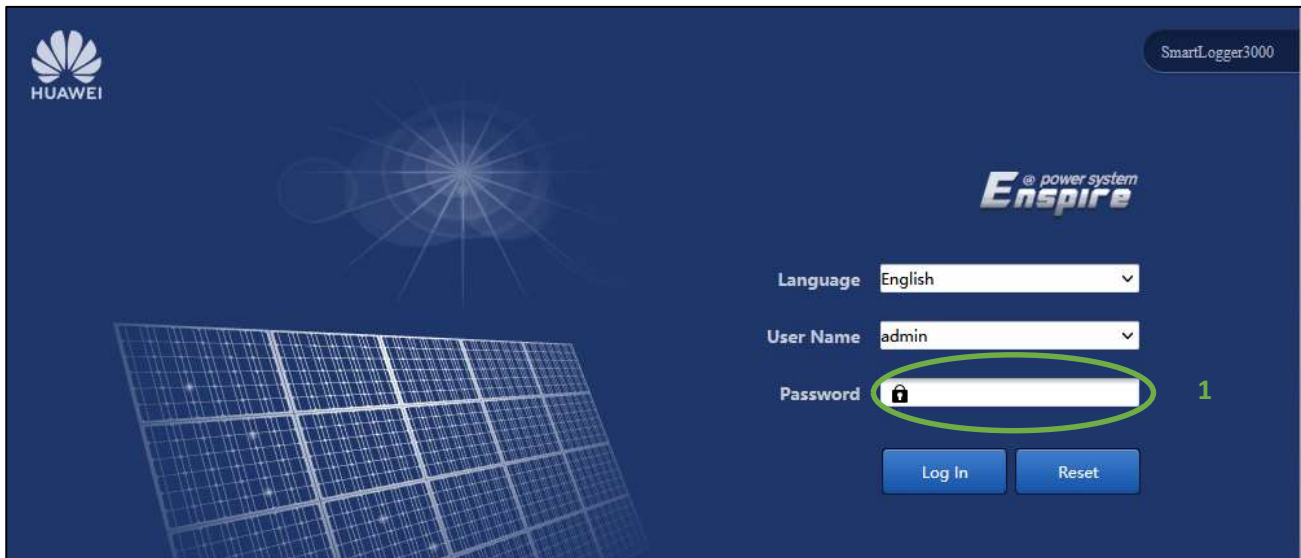
In case of the Google Chrome browser, please click on "Advanced" (1) below and then on

"Proceed to 192.168.8.10 (insecure)" (2).



The SmartLogger web interface called "Enspire" will then open properly.

Step 2 - Login window & password assignment:



The login window for SmartLogger3000 features the Huawei logo and the Enspire power system branding. It includes a language dropdown set to 'English', a user name dropdown set to 'admin', and a password field with a lock icon. A green circle highlights the password field, and a green '1' is placed next to it. 'Log In' and 'Reset' buttons are at the bottom.

The desired language can be set in advance on the login window.

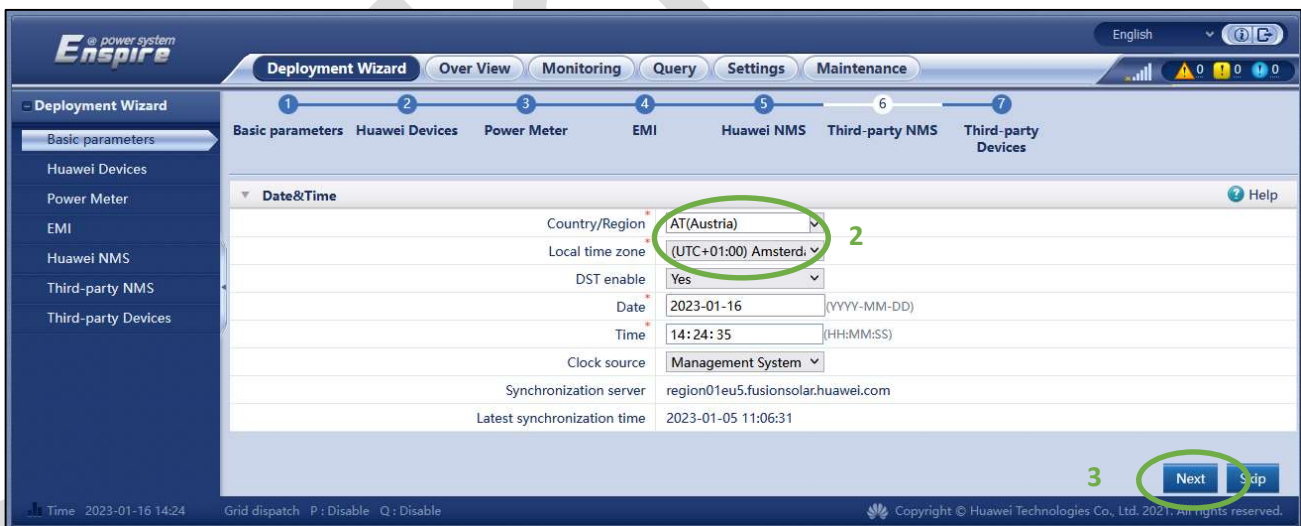
(1) The password for the already created user "admin" is **"Changeme"**.

After the **initial login**, you will be prompted to enter your **desired password**.

Please do **not** give this password to the system owner.

After **logging in again**, you will automatically be taken to the SmartLogger **deployment wizard**.

Step 3 – Deployment wizard - basic parameters:



The Deployment Wizard shows a progress bar with seven steps. The 'Basic parameters' step is active. The 'Date&Time' section includes fields for Country/Region (set to 'AT(Austria)'), Local time zone (set to '(UTC+01:00) Amsterdam'), DST enable (set to 'Yes'), Date (2023-01-16), Time (14:24:35), Clock source (Management System), Synchronization server (region01eu5.fusionsolar.huawei.com), and Latest synchronization time (2023-01-05 11:06:31). A green circle highlights the Country/Region and Local time zone fields, with a green '2' next to it. At the bottom right, a green circle highlights the 'Next' button, with a green '3' next to it.

(2) At the basic parameters, only the **country** and the **time zone** must be set correctly.

The **date** and **time** will be **automatically adopted** if the system communicates with the FusionSolar Portal later.

If it is an offline plant, please set this correctly as well.

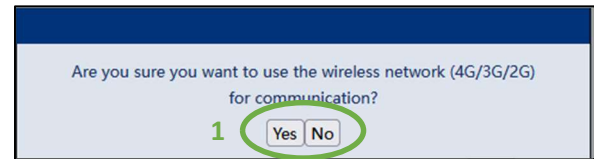
"DST enable = YES" means that the system will **automatically set the summer and winter time**.

(3) Please continue with a click on **"Next"**.

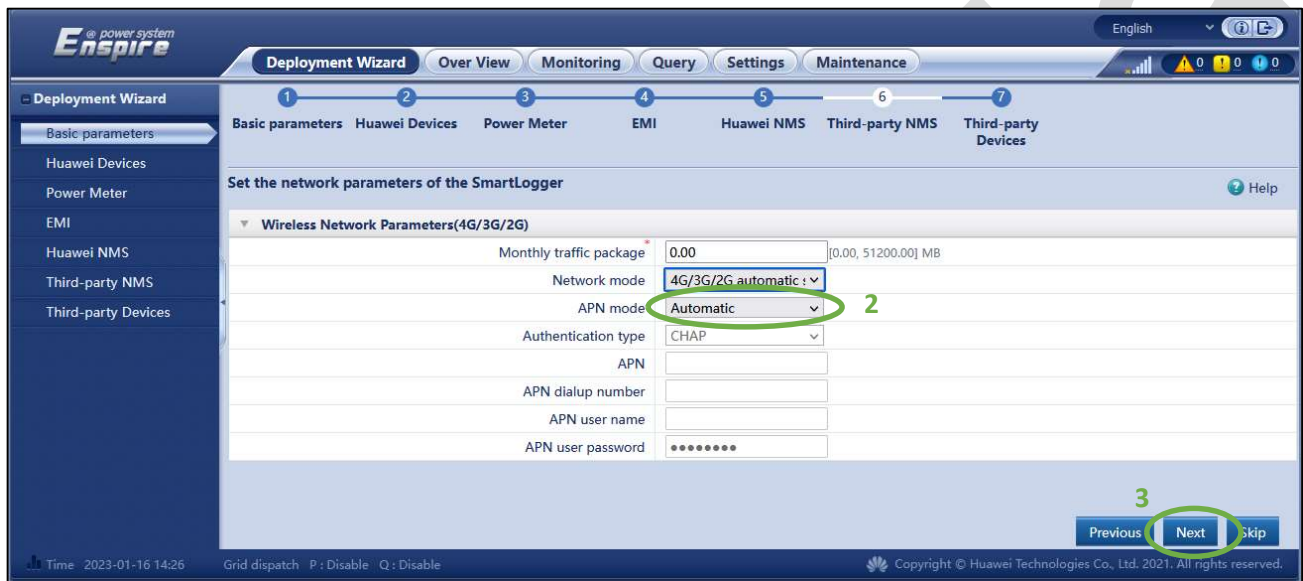
Step 4 - Deployment wizard - communication to the management system (FusionSolar):

(1) In the following window, you will be asked if you want to use a **4G/3G/2G sim card for communication**.

If the SmartLogger should communicate with FusionSolar via a **network cable**, please **press "No"**. If this is the case, please ignore the sim card parameter settings below.



4G/3G/2G sim card parameter settings:



(2) The **APN mode** here is set to "**Automatic**" by default.

Please do not forget to **mount the antenna on the SmartLogger**. It is included in the scope of the delivery.

If the SmartLogger is already connected to the Internet, you can see the **connection bar in the upper right corner** of the window.

If this is not the case, it is recommended to enter the **APN data** of the sim card provider **manually**.

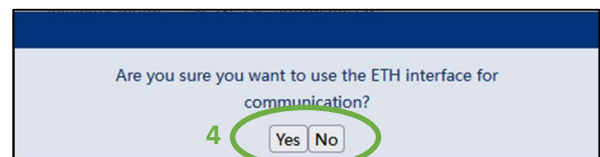
To do this, please set the APN mode to "Manual".

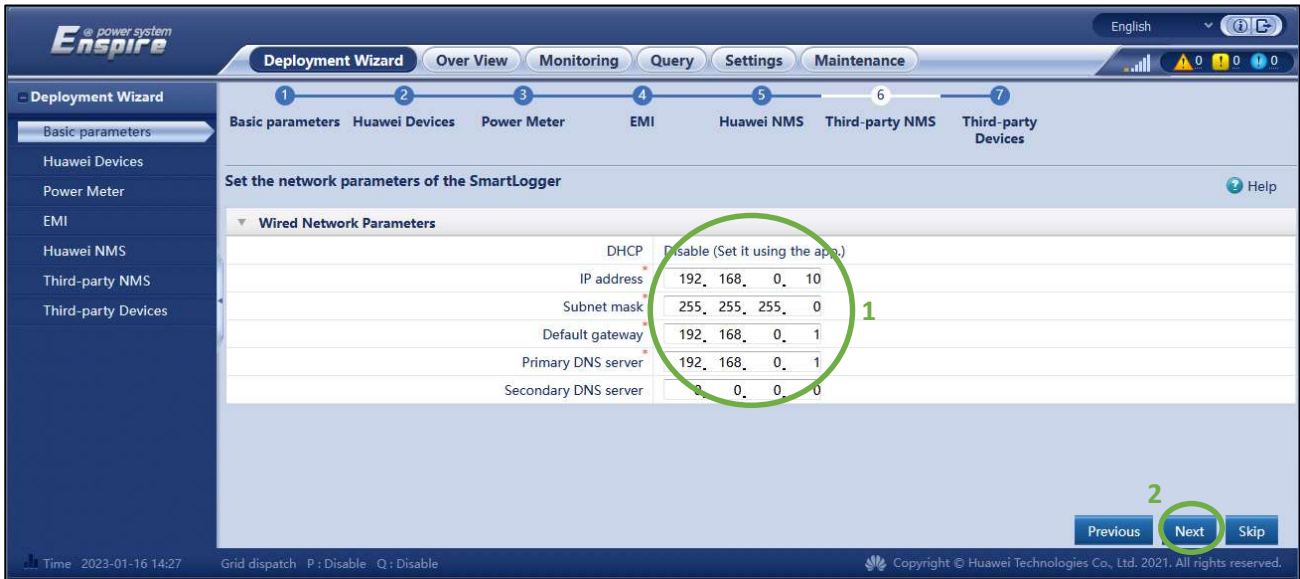
(3) Please confirm the entry by clicking on "**Next**".

Network and IP address settings:

If a **network cable** is used to communicate with FusionSolar, please connect it to the **WAN input** of the SmartLogger.

(4) Confirm the entry with "**Yes**".





Deployment Wizard

Basic parameters Huawei Devices Power Meter **EMI** Huawei NMS Third-party NMS Third-party Devices

Set the network parameters of the SmartLogger

Wired Network Parameters

DHCP	Disable (Set it using the app.)
IP address	192.168.0.10
Subnet mask	255.255.255.0
Default gateway	192.168.0.1
Primary DNS server	192.168.0.1
Secondary DNS server	0.0.0.0

Previous **Next** Skip

Time: 2023-01-16 14:27 Grid dispatch P: Disable Q: Disable Copyright © Huawei Technologies Co., Ltd. 2021. All rights reserved.

(1) Here, the IP addresses must be entered, according to the configuration of the local network. It is advisable to consult a local IT network technician here, who will tell you the correct IP addresses.

(2) Confirm the input by clicking "Next".

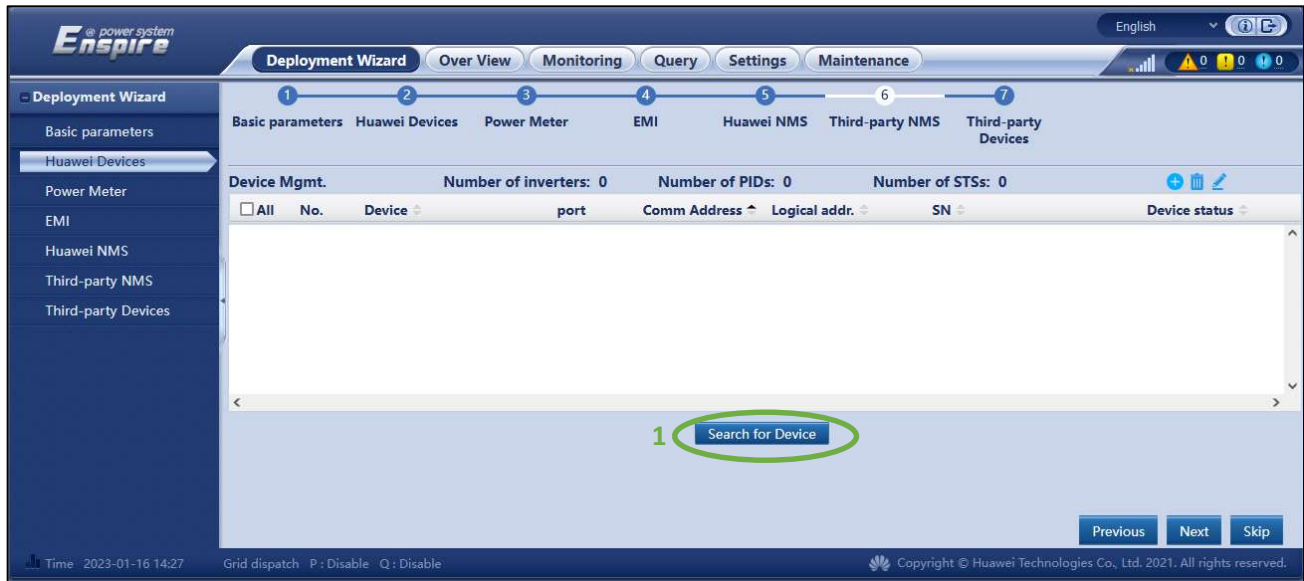
Note: Whether the SmartLogger can communicate with the management system can be viewed under "Settings" -> "Comm. parameters" -> "Management system".

Note: If the SmartLogger still cannot communicate with the management system despite correct entry of all IP addresses, it is recommended to open the following ports in the network:

27250; 27251; 2121; 2122; 50000-51000; 55000-56000; 8080; 16100; 10000-12000

The ports marked in green are more likely to be needed than the others.

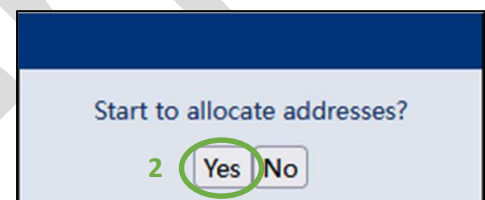
Step 5 - Deployment Wizard - Add Huawei devices (inverters):



(1) Here, all already **connected Huawei inverters** can now be found by clicking on "**Search for device**".

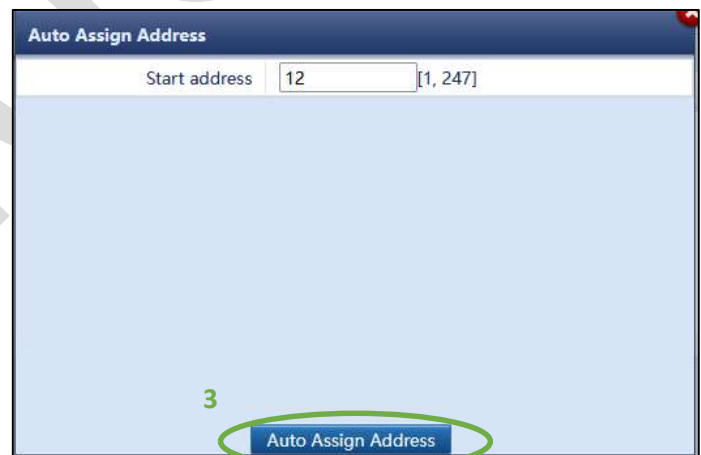
(2) You are now asked whether you want to start with the **allocation of the addresses**.

Please confirm this with "**Yes**".

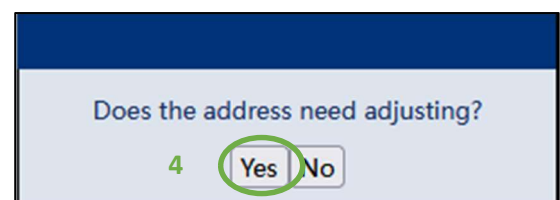


(3) In the next window, leave the "**Start address**", as suggested by the SmartLogger and confirm the entry with "**Auto Assign address**"

The desired communication addresses can also be changed after the devices have been added.



(4) In the next window, also confirm the entry with "**Yes**".



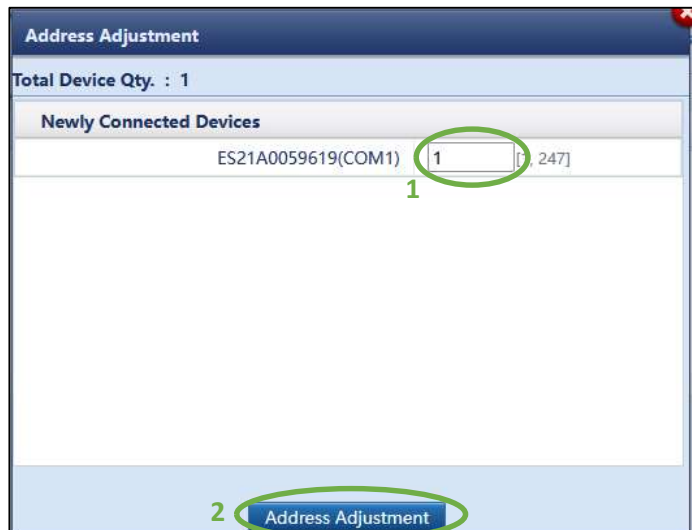
All inverters found should now be listed here:

(1) The desired **communication address** can be set either here, or **at a later time**.

(2) Please confirm the entry by clicking on "**Address adjustment**".

(3) In the following window "**Search again?**" please click on "**Yes**".

The inverter search is now completed automatically.



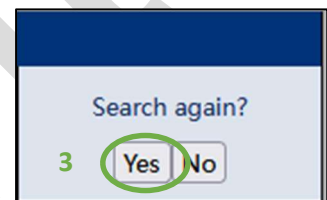
Address Adjustment

Total Device Qty. : 1

Newly Connected Devices

ES21A0059619(COM1)	1	[0, 247]
--------------------	---	----------

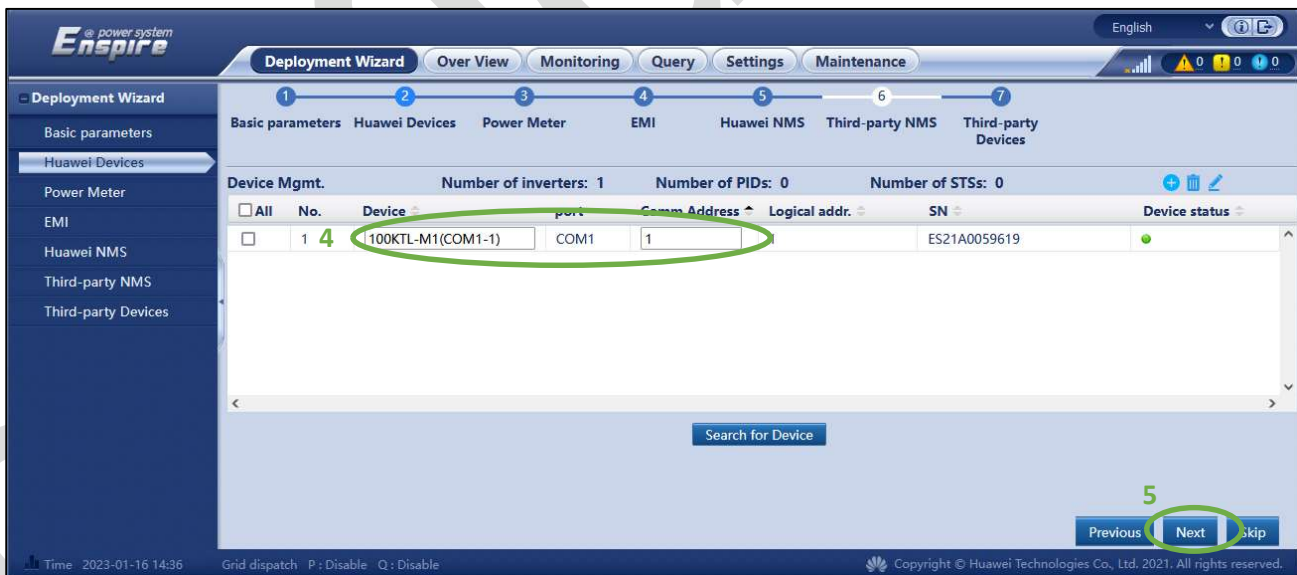
2 **Address Adjustment**



Search again?

3 **Yes** **No**

The inverters found are now listed as follows:



Deployment Wizard | Over View | Monitoring | Query | Settings | Maintenance

1 Basic parameters | 2 Huawei Devices | 3 Power Meter | 4 EMI | 5 Huawei NMS | 6 Third-party NMS | 7 Third-party Devices

Device Mgmt. Number of inverters: 1 Number of PIDs: 0 Number of STSs: 0

All	No.	Device	port	Comm Address	Logical addr.	SN	Device status
<input type="checkbox"/>	1	100KTL-M1	COM1	1		ES21A0059619	●

4

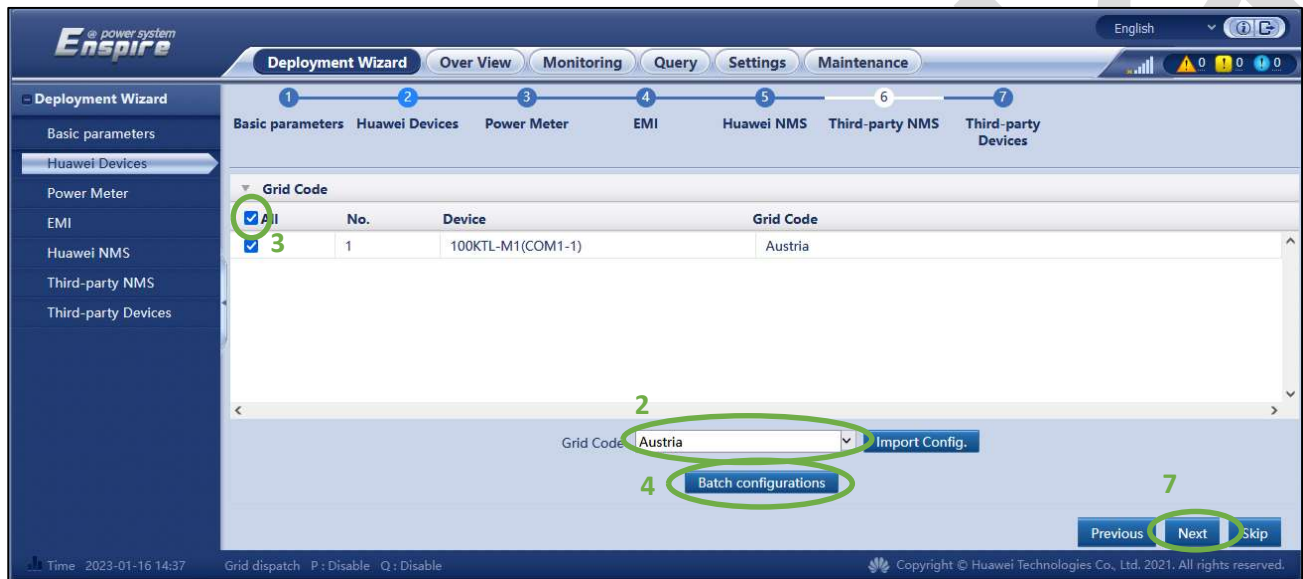
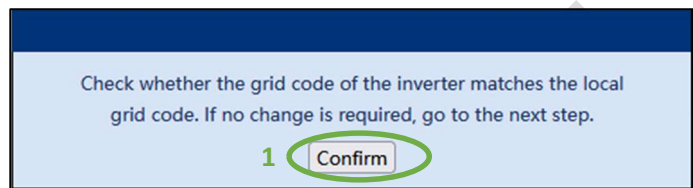
5 **Next**

(4) Here the communication address of the inverters, and also the **device name** can be **adjusted**.

(5) Please confirm the entry by clicking on "**Next**".

Step 6 - Deployment Wizard - Network Code Settings

(1) Clicking "Confirm" takes you to the **grid code settings** of the Huawei inverters.



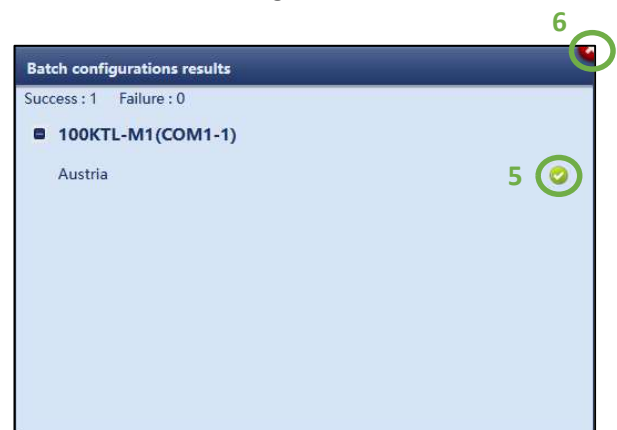
(2) Please select the correct **grid code** from the list of network codes.
 If **no grid codes** are listed here, please check the **AC connection** of the inverters again.

(3) Then **mark** all inverters with "All".

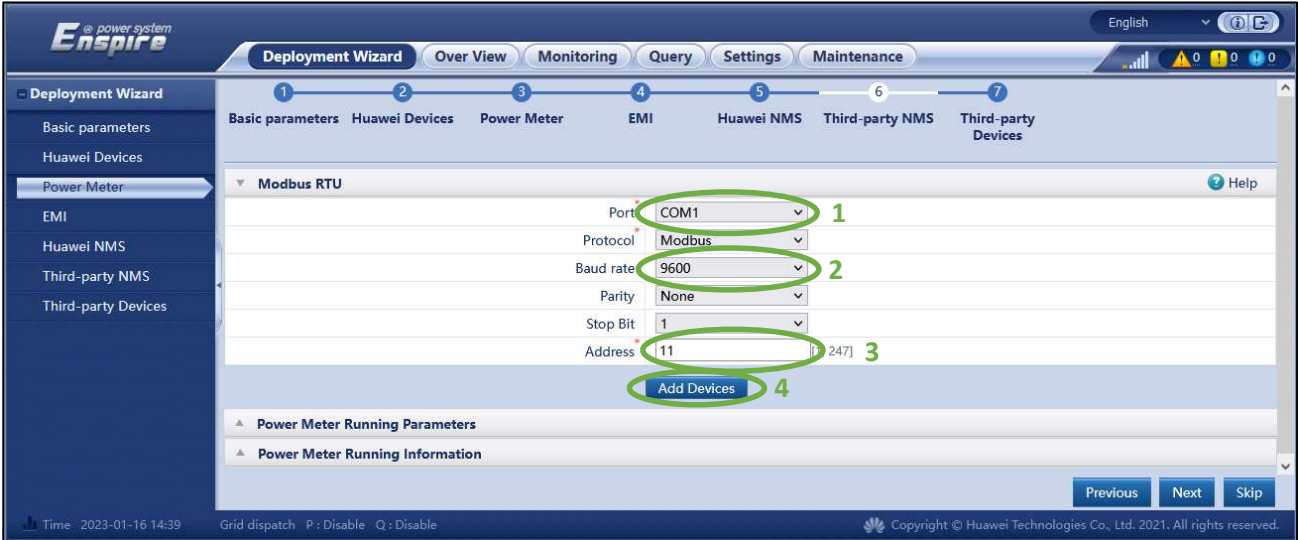
(4) To apply the **grid code** to all inverters, please click on "Batch settings". The inverters will do a quick restart.

(5) In the following window you can see whether the desired **grid code** has been applied.

(6) Close the window by **clicking on the red cross**, and then press "Next". (7).



Step 7 - Deployment Wizard - Add Power Meter:



The screenshot shows the 'Deployment Wizard' in the Huawei Enspire software. The 'Power Meter' step is selected in the left sidebar. The main area displays configuration for a 'Modbus RTU' device. The following fields are highlighted with green circles and numbered:

- 1. Port: COM1
- 2. Baud rate: 9600
- 3. Address: 11
- 4. Add Devices button

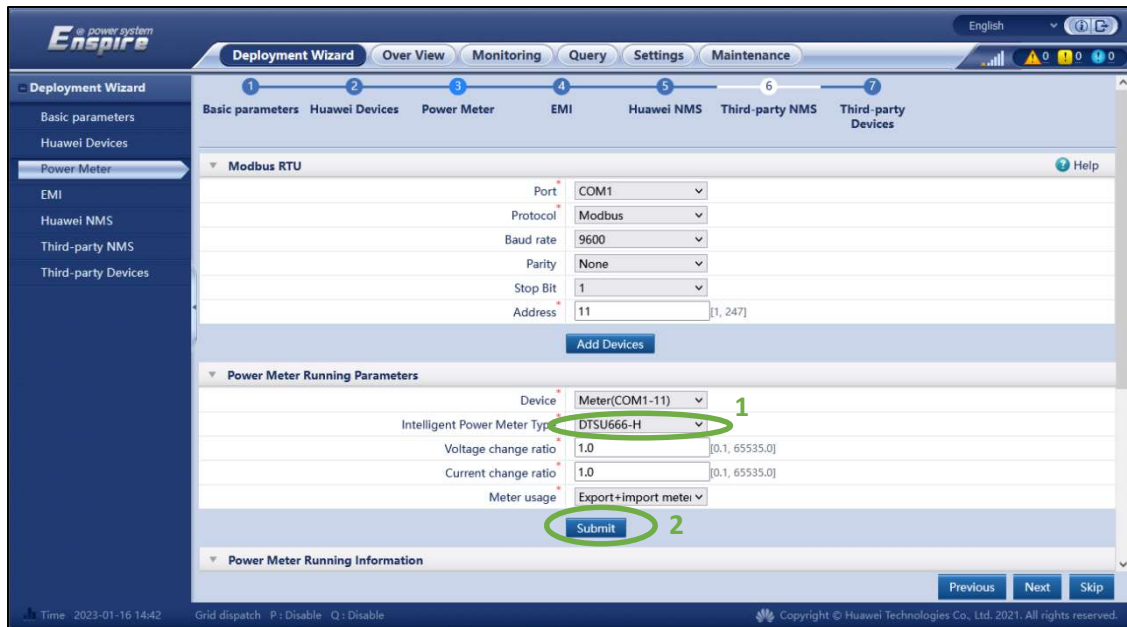
Below the configuration fields, there are sections for 'Power Meter Running Parameters' and 'Power Meter Running Information'. At the bottom right, there are 'Previous', 'Next', and 'Skip' buttons.

If you have installed a **power meter**, for **measuring consumption**, or for an **export limitation**, please connect it to a **free COM port**.

Since the SmartLogger offers communication with many **third party manufacturers devices**, it is always recommended to refer to the user **manual of the power meter** used.

Please refer to the user **manual of the SmartLogger** to find out which **power meters are compatible** with the SmartLogger.

- (1) Select the **COM port** to which the power meter has been connected to.
- (2) Check the **baud rate** input and the **communication address**.
- (3) If the Huawei **Smart Power Sensor DTSU-666-H** is used, please select the **communication address 11**.
- (4) Confirm the entry with "**Add devices**" and then wait a **few seconds** until the window automatically **refreshes**.



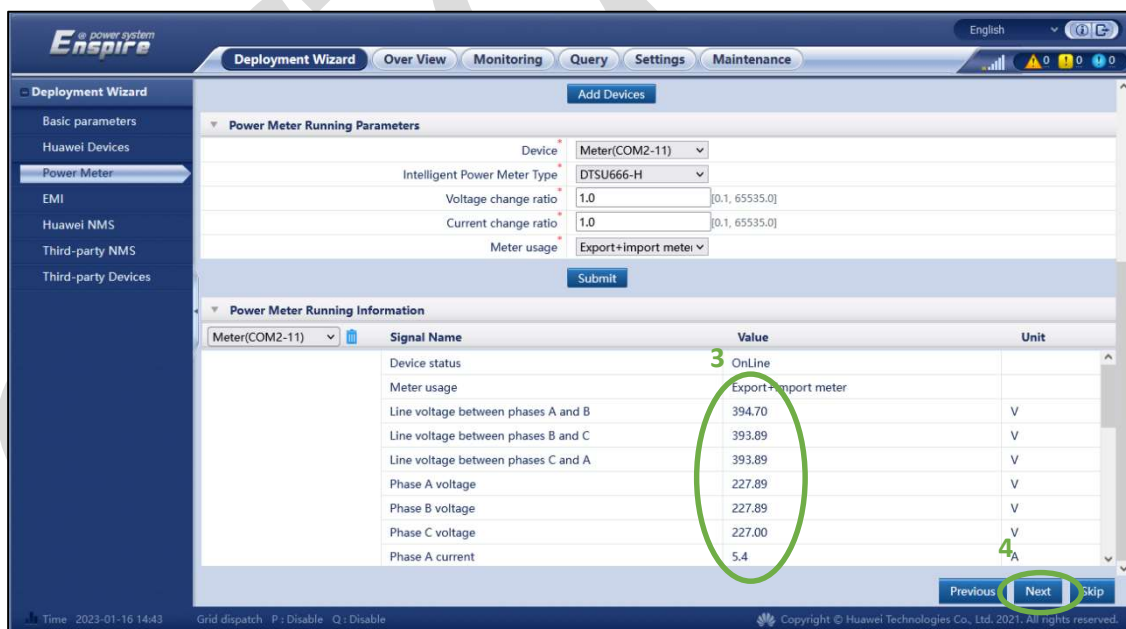
(1) Select the **power meter type** used.

Please always leave the voltage and current transformer ratio at 1.0!

If a **compatible** power meter from a **third-party manufacturer** is used, it must be configured correctly using the **manufacturer's operating instructions**.

If the Huawei **Smart Power Sensor DTSU-666-H** is used, **no further settings** need to be made.

(2) Confirm the entry by clicking on **"Submit"**.



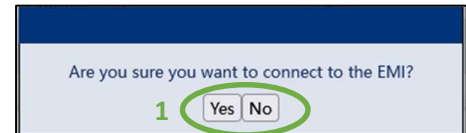
Signal Name	Value	Unit
Device status	OnLine	
Meter usage	Export+import meter	
Line voltage between phases A and B	394.70	V
Line voltage between phases B and C	393.89	V
Line voltage between phases C and A	393.89	V
Phase A voltage	227.89	V
Phase B voltage	227.89	V
Phase C voltage	227.00	V
Phase A current	5.4	A

(3) To be able to determine whether the **communication** with the power meter is **working properly**, please check the output **voltage and current values for correctness**.

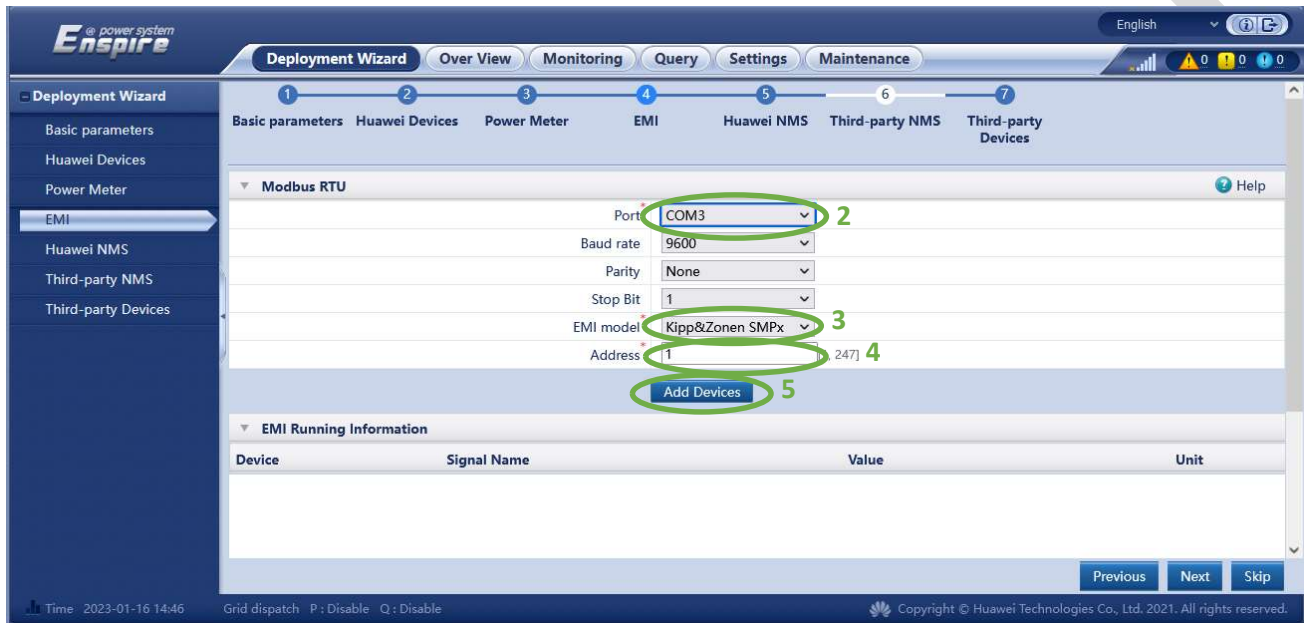
If **no values** are transmitted, please check the inputs and the communication wiring to the power meter again. A **CAT7 network cable** is recommended.

Step 8 - Deployment Wizard - Add EMI:

(1) You are asked if you want to install a **digital weather station (EMI)**.



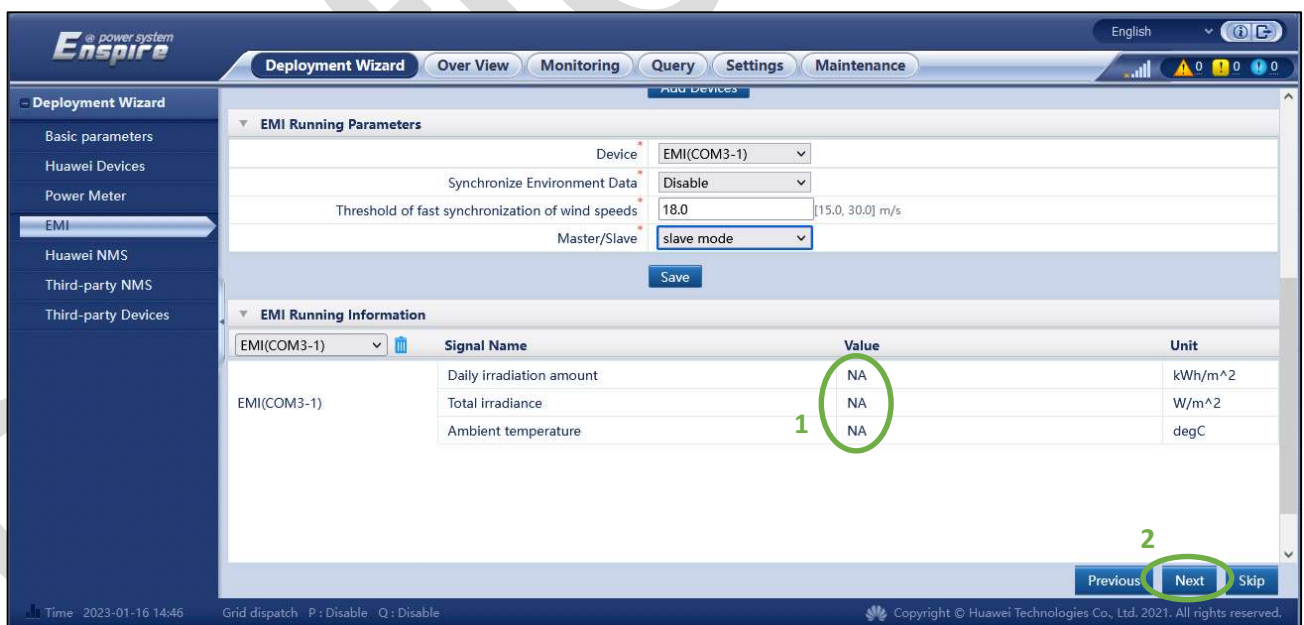
If this is not the case, please click on "No" and skip step 8.



(2) First select the correct **COM port**.

(3) Then select the **EMI model** used from the drop-down menu. You can find all compatible **EMIs** in the SmartLogger manual.

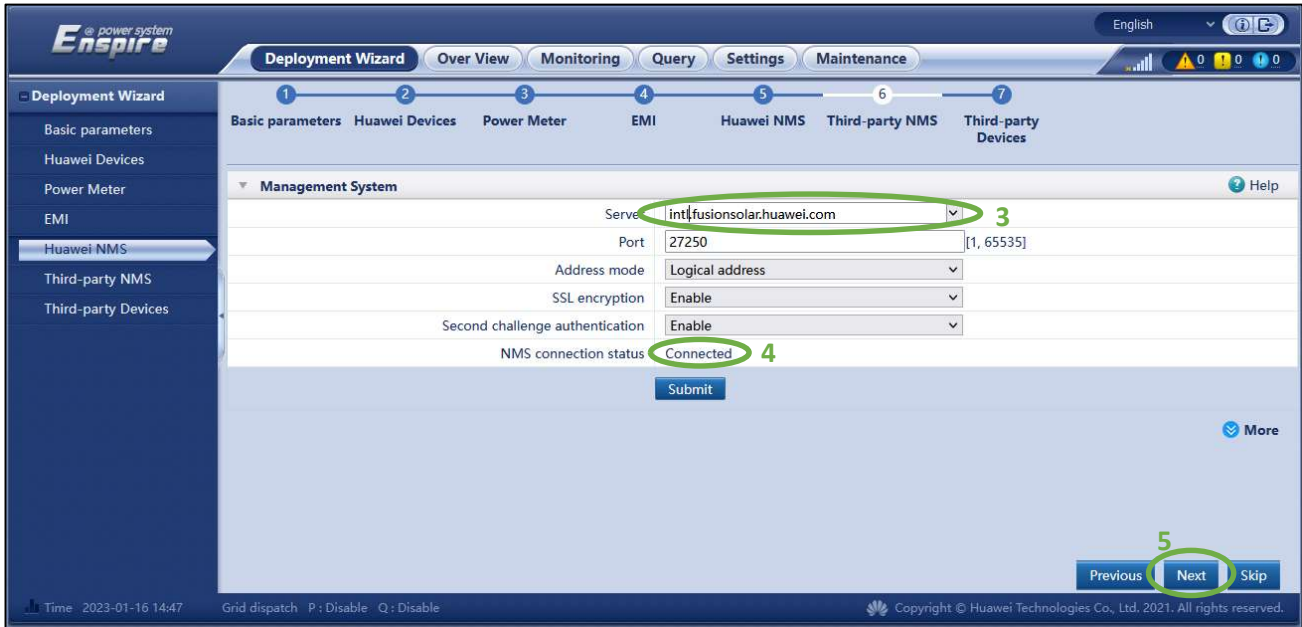
(4) Select the correct **communication address** and confirm the details by clicking on "Add device." (5)



(1) Under the EMI operating information you can now see whether the weather station already provides correct values.

(2) Confirm your entry by clicking „next“.

Step 9 - Deployment wizard - connection to the management system (FusionSolar):



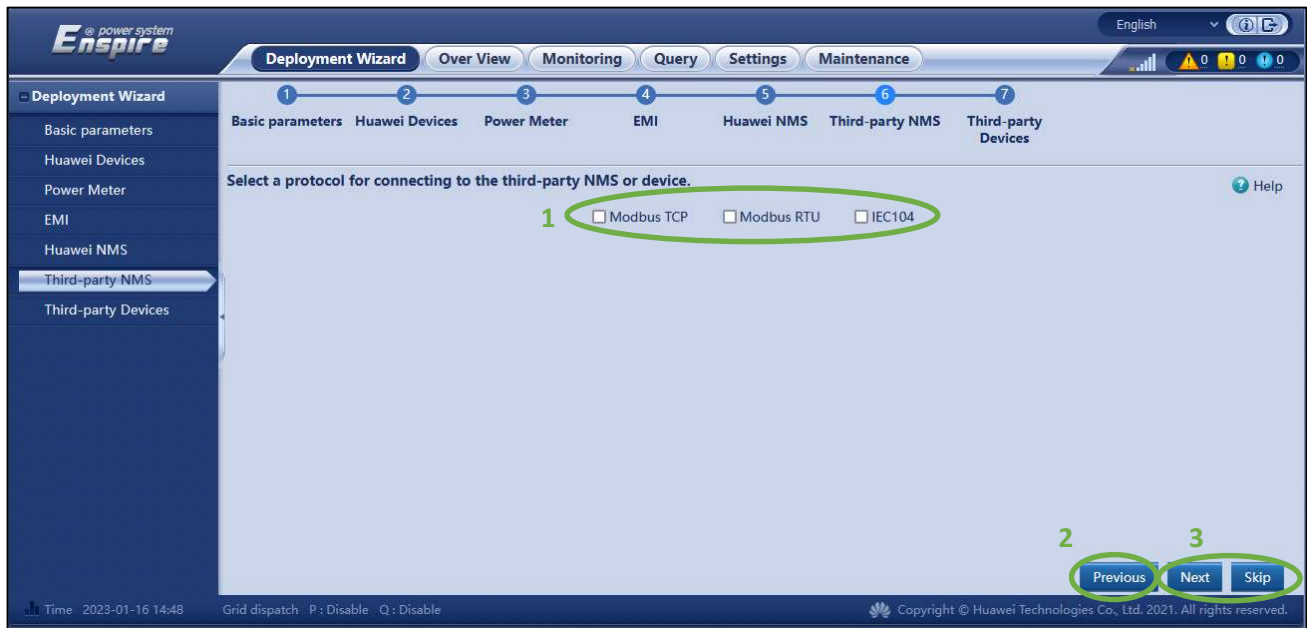
(3) Make sure that the server address "**intl.fusionsolar.huawei.com**" is typed in and confirm this entry with "**Submit**".

(4) You can also check under "**NMS connection status**" whether the SmartLogger **has been able to connect to the management system**.

If this is not the case, please observe the notes under step 4.

(5) Confirm the entries by clicking on "**Next**".

Step 10 - Deployment Wizard - Connecting to a Third Party management system:



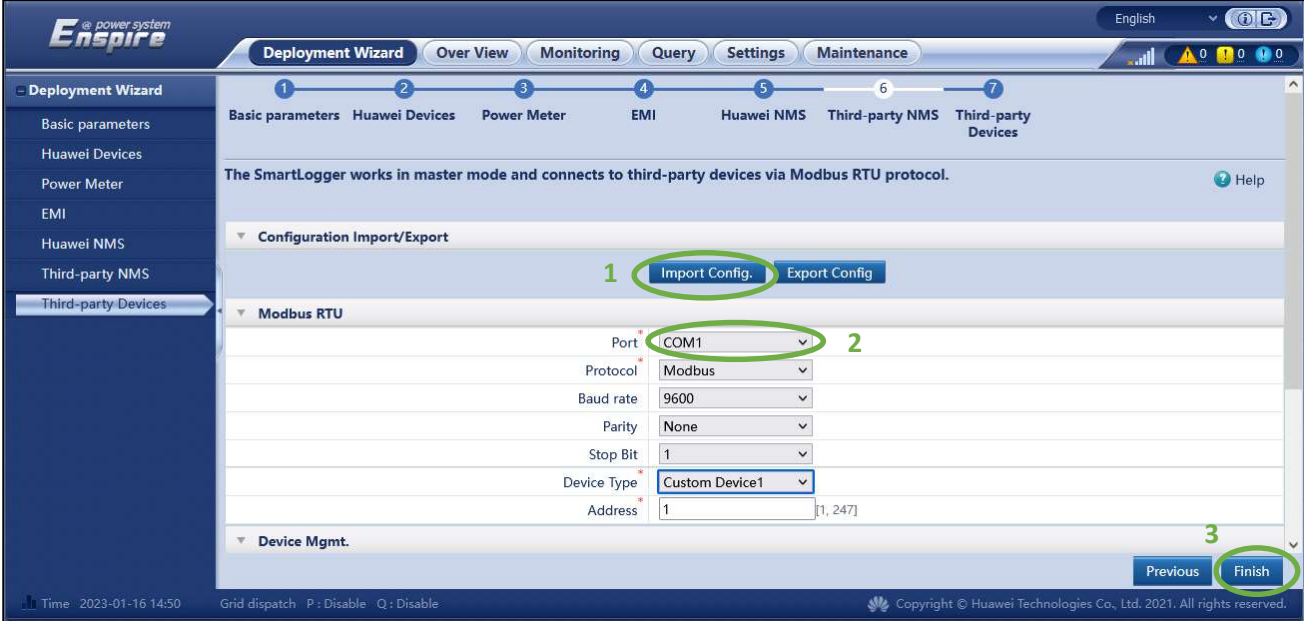
If a plant manager is used, it must be able to communicate with the SmartLogger via **Modbus TCP** or **Modbus RTU**.

(1) Please select the **desired communication protocol** and confirm it by clicking on "Next" (2).

(3) If this is **not required**, the point can also be **skipped**.

Note: These settings can also be configured **after the commissioning** under "Settings" -> "Comm. parameters".

Step 11 - Deployment Wizard - Third Party Devices:



The screenshot shows the 'Deployment Wizard' interface for 'Third-party Devices'. The wizard is at step 6 of 7. The 'Modbus RTU' section is expanded, showing configuration options for a third-party device. The 'Import Config.' button is highlighted with a green circle and labeled '1'. The 'Port' dropdown menu is highlighted with a green circle and labeled '2', showing 'COM1' selected. The 'Finish' button is highlighted with a green circle and labeled '3'. The 'Device Mgmt.' section is also visible at the bottom.

(1) If you have **other third-party devices** installed on one of the three **COM ports**, they can be added here.

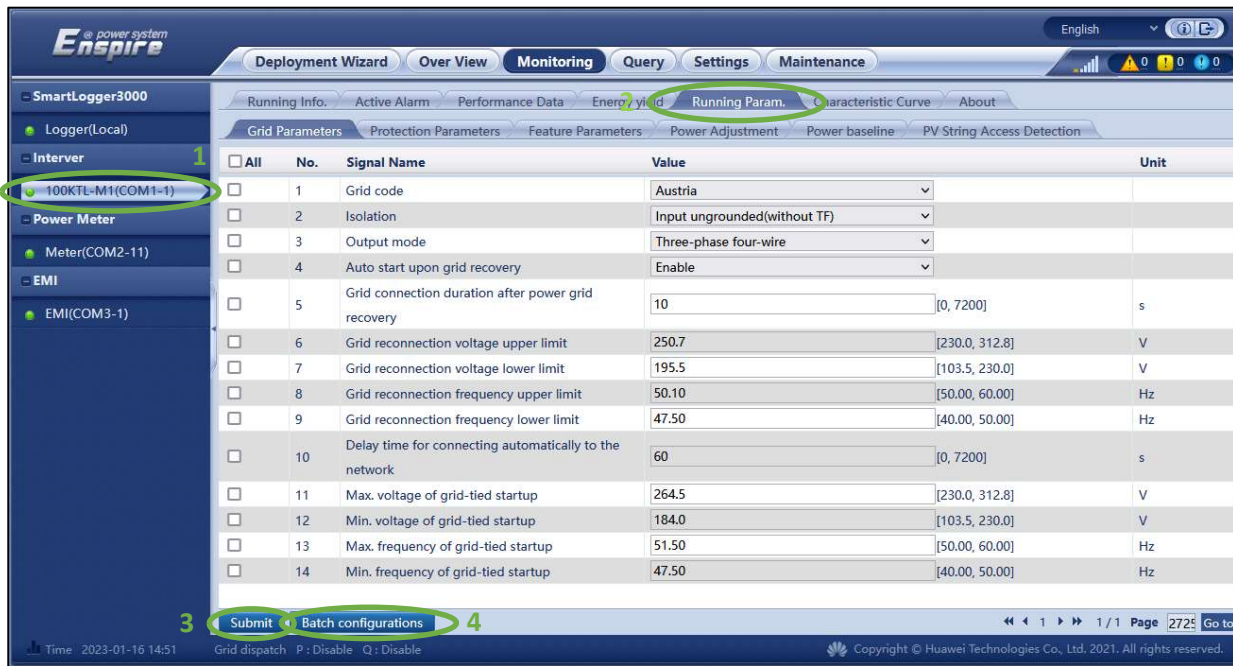
(2) For this purpose, either a **preset configuration file can be imported**, or all **register addresses can be entered manually** at the section "Device management".

(3) Confirm the entry with "Finish".

The commissioning of the inverters is thus successfully completed!

Note: For any power adjustments, such as a export limitation, ripple control receivers, or reactive power control, please refer to step 13.

Step 12 - Change device settings:



The screenshot shows the 'Enspire' software interface. The left sidebar lists devices under 'SmartLogger3000', including 'Logger(Local)', 'Inverter', 'Power Meter', 'Meter(COM2-11)', 'EMI', and 'EMI(COM3-1)'. The 'Inverter' section is expanded, and '100KTL-M1(COM1-1)' is selected (marked with a green circle and '1'). The top navigation bar has tabs for 'Deployment Wizard', 'Over View', 'Monitoring', 'Query', 'Settings', and 'Maintenance'. The 'Settings' tab is active, and the 'Running Param.' sub-tab is selected (marked with a green circle and '2'). The main area displays a table of 14 parameters for the selected inverter. At the bottom, there are buttons for 'Submit' (marked with a green circle and '3') and 'Batch configurations' (marked with a green circle and '4').

No.	Signal Name	Value	Unit
1	Grid code	Austria	
2	Isolation	Input ungrounded(without TF)	
3	Output mode	Three-phase four-wire	
4	Auto start upon grid recovery	Enable	
5	Grid connection duration after power grid recovery	10	s
6	Grid reconnection voltage upper limit	250.7	V
7	Grid reconnection voltage lower limit	195.5	V
8	Grid reconnection frequency upper limit	50.10	Hz
9	Grid reconnection frequency lower limit	47.50	Hz
10	Delay time for connecting automatically to the network	60	s
11	Max. voltage of grid-tied startup	264.5	V
12	Min. voltage of grid-tied startup	184.0	V
13	Max. frequency of grid-tied startup	51.50	Hz
14	Min. frequency of grid-tied startup	47.50	Hz

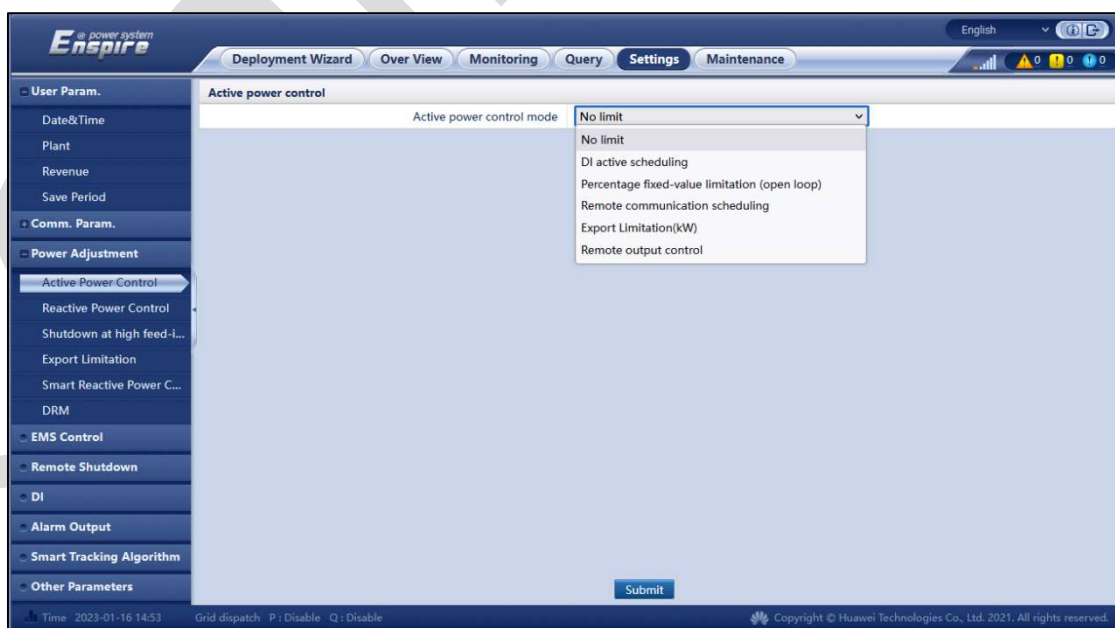
After successful commissioning, you will see the tab "Monitoring". Here you can check whether all devices are working properly.

All possible **device-related settings** can now be set here by **clicking on the device (1)** on the left-hand side and then under "Running parameters" (2).

(3) Please note, that if you change settings, you also need to **apply the settings to the selected inverter**, by clicking on "Submit".

(4) With a click on "Batch configurations" you can **select multiple inverters** for the application of the settings.

Step 13 - Power adjustments: Active power control:



The screenshot shows the 'Enspire' software interface. The left sidebar has a tree view with 'User Param.', 'Comm. Param.', 'Power Adjustment', and 'Other Parameters'. Under 'Power Adjustment', 'Active Power Control' is selected. The main area shows the 'Active power control' settings. A dropdown menu for 'Active power control mode' is open, showing options: 'No limit', 'DI active scheduling', 'Percentage fixed-value limitation (open loop)', 'Remote communication scheduling', 'Export Limitation(kW)', and 'Remote output control'. A 'Submit' button is at the bottom right.

Under "**Settings**" you will find the most important **power adjustment features** on the left side of the menu.

Under "**Active power control**" you will find all common control methods:

DI active scheduling = Configuration of a **ripple control receiver**, which is connected to the **DI inputs** of the SmartLogger.

Remote communication planning = This function must be enabled If a **plant manager** is used to **control** and **monitor** the plant. Furthermore, a communication method such as Modbus TCP must be activated.

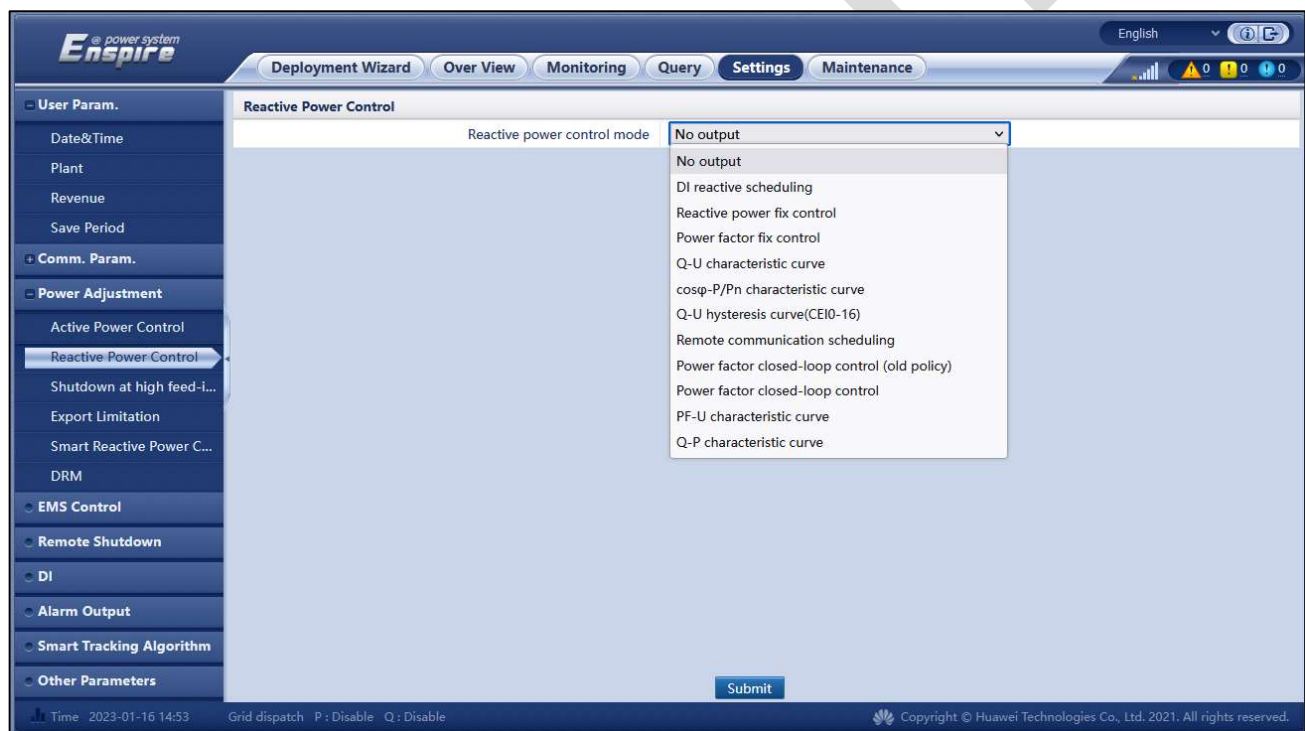
Export limitation = Provided that a **compatible power meter** has been installed at the grid feed-in point and that it has been correctly **configured** an **export limitation** can be enabled here.

Note: The SmartLogger can only execute **one active power control mode at a time**.

If **more than one** active power control method is required by your grid operator, it is recommended to install a **plant manager**, which usually communicates with the SmartLogger via **Modbus TCP**.

A **Modbus interface register address list** can be requested from your **contact at SKE**.

Reactive power control:



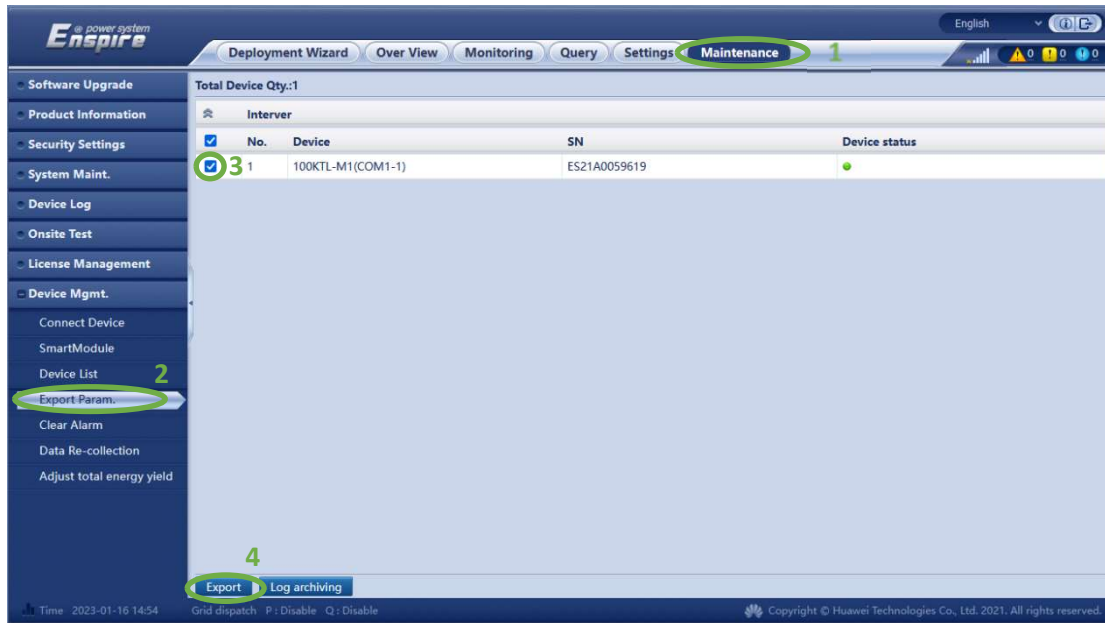
Under "power adjustment" you also find all **reactive power control methods**, which might be **requested by grid operators**.

Click on "**Submit**" to apply the set control method to the system.

Note: The **parameters and power adjustment methods** shown, can also be adjusted **remotely, by using FusionSolar**.

The **pv-plant** must be **created** virtually in **FusionSolar** after **commissioning**

Schritt 14 – Parameter-export for your grid operator:



(1) Under "Maintenance" and "Export param." (2) you have the possibility to export all set parameters.

(3) Select all inverters on the left-hand side and then click on "Export" (4).

The required **time** for the export **depends** on the number of inverters.

The **file** that can be downloaded afterwards is in the **.csv format** and can be **converted to a readable form** with a **spreadsheet software**.

Note: Please note that a **connection to FusionSolar** is required to **virtually create and monitor a plant**.

For more information, please refer to the manual "**Huawei Inverter FusionSolar Monitoring**".