

SMA Solar Technology with Reduxi

Reduxi-SMA integration enables flexible inverter commissioning for grid balancing, boosts efficiency and creates cost-saving arbitrage opportunities for higher profits.

🔧 SMA Data Manager, Speedwire/Webconnect Data Module or SMA inverter with LAN port · Reduxi Controller

🌐 Modbus TCP/IP 📡 Port 502



SMA Data Manager M (distributor image)

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1 Technical documentation

Manufacturer pages and manuals:

- [SMA Solar Technology website](#) – Official site of the manufacturer
- [Enable Modbus TCP/IP on the SMA Data Manager](#) – SMA online manual (see the note in Point 3.1)
- [SMA Speedwire/Webconnect Data Module](#) – Installation manual, Modbus TCP/IP on the module

2 Required equipment and connection options

2.1 Required equipment

- ☐ Reduxi Controller
- ☐ SMA Data Manager, SMA Speedwire/Webconnect Data Module or an SMA inverter with a LAN port (see Point 2.2)
- ☐ IP address of the SMA device
- ☐ Laptop or tablet with internet access to configure the device in Reduxi

2.2 Connection options

The Reduxi system supports several connection options. All of them use the Modbus TCP/IP protocol to interface with the inverters. This standard approach enables reliable, real-time data acquisition from your photovoltaic inverters and other devices.

OPTION	HARDWARE	WHAT IT DOES
1	SMA Data Manager	Bridge between inverters, energy meters and batteries. Reduxi shows all devices per category as a sum.
2	SMA Speedwire/Webconnect Data Module	Gives the inverter LAN communication and enables Modbus TCP/IP.
3	Direct LAN connection to the SMA inverter	No additional hardware. Inverters with a LAN port communicate via Modbus TCP/IP.

3 Enable Modbus TCP/IP on the SMA device

3.1 Option 1: SMA Data Manager

The devices are connected to the SMA Data Manager via RS485. The SMA Data Manager connects to the Reduxi system via Modbus TCP/IP. Reduxi sums up and shows all devices per category:

- PV
- Batteries
- Energy meters
- EVSE

Enable Modbus TCP/IP on the SMA Data Manager as described in the [SMA online manual](#).

Steps for grid measurements

SMA DATA MANAGER M

  MFE Megras 1,2,3,4  Select Device

 Dashboard

 Monitoring

 Configuration

CONFIGURATION

 MFE Megras 1,2,3,4 System

System properties

Device administration

Parameter

Device parameter adjustment

Grid management service

Meter configuration

Licensed functions

Grid management service

Active power	Configuration & activation
Reactive power	Configuration & activation
Assign analog outputs	To use this function, a I/O system with analog outputs must be implemented in your system.
Assign digital outputs	To use this function, a I/O system with digital outputs must be implemented in your system.
Recording of setpoints	Configuration & activation
Country data set	Go to Configuration

Step 1: Grid management service – Active power

Grid management service ⓘ

1. STEP

2. STEP

3. STEP

4. STEP

✖ Before you can enable the closed-loop control function, you must [set the energy meter](#).

Select operating mode

Operating mode*

☒ Open loop control

☐ Closed loop control

Selecting the setpoint

Signal sources*

☐ Analogue inputs

☐ Manual control

☐ Digital inputs

☒ Modbus

If your system participates in the direct selling, you can activate the necessary interface here in the communication device.

Direct selling interface: ☒

☒ Standard Modbus interface

☐ SMA SPOT

Cancel

Previous

Continue

Step 2: operating mode and selection of the setpoint

Grid management service ⓘ

1. STEP
2. STEP
3. STEP
4. STEP

Modification speed of the setpoint

Active ☒

Setting time*

1

s

Active power gradient*

50

%/s

Step 3: modification speed of the setpoint

3.2 Option 2: SMA Speedwire/Webconnect Data Module

The module gives the inverter LAN communication (see point 2.4 in the SMA document linked in [Point 1](#)) and enables Modbus TCP/IP.

Enable Modbus TCP/IP on the module as described in the [SMA manual](#). Then test the connection (see [Point 3](#)).

3.3 Option 3: direct LAN connection to the SMA inverter

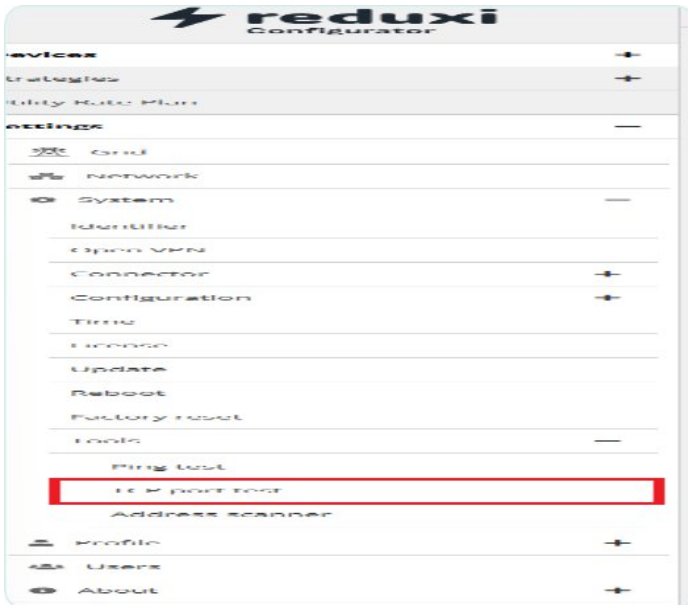
No additional hardware is needed. The inverter has a LAN port that enables communication via Modbus TCP/IP.

Connect to the software interface of the inverter and activate Modbus TCP/IP. Then test the connection (see [Point 3](#)).

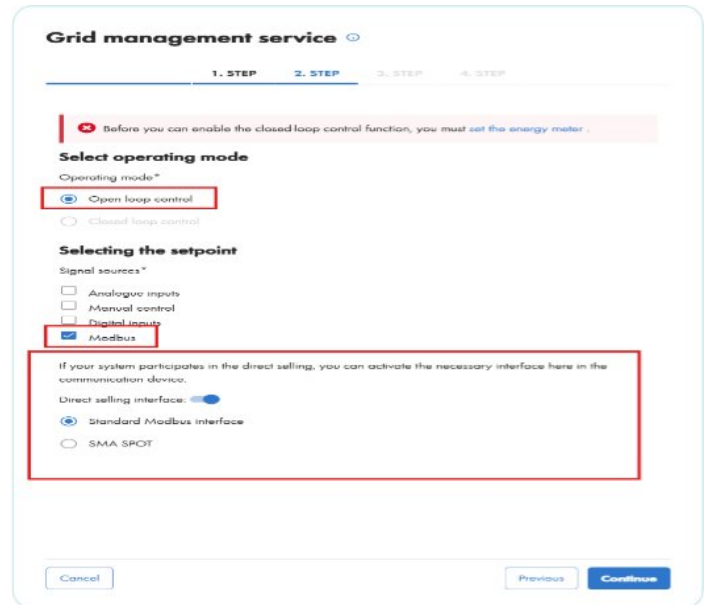
3.4 Test port 502

After you have enabled Modbus TCP/IP, test the connection in the [Reduxi Configurator](#). Use the controller IP address or `reduxi.local` to open it (see [Point 4](#)).

- Open the Reduxi Configurator.
- Go to **Settings – System – Tools**.
- Run the TCP port test with the IP of the SMA device and port `502`.

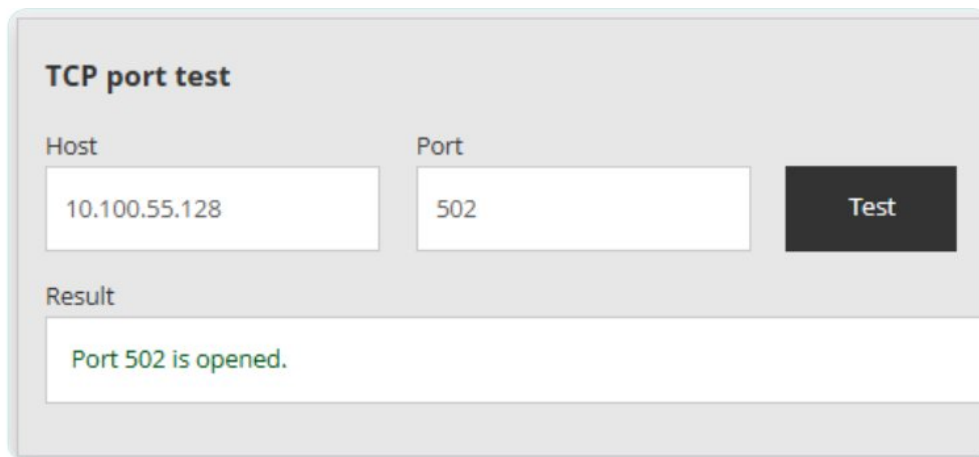


Settings – System – Tools



SMA Data Manager settings (see Point 3.1)

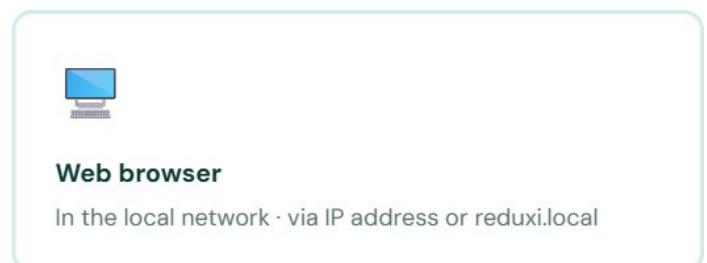
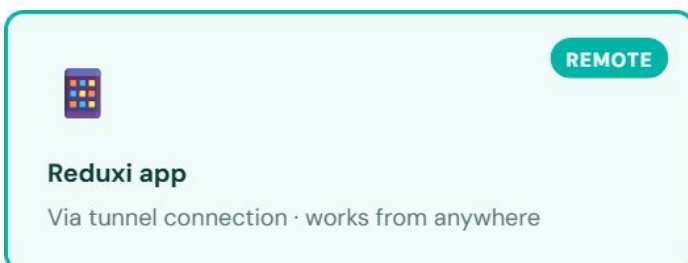
If Modbus TCP/IP is enabled, the test reports that port 502 is open. Otherwise the port is closed.



TCP port test: Port 502 is opened

4 Log in to the Reduxi web interface

You can open the Reduxi web interface in two ways:



4.1 Via the Reduxi app

1 Open the app and log in

Launch the Reduxi app on your smartphone or tablet and log in with your credentials.

2 Open Reduxi devices

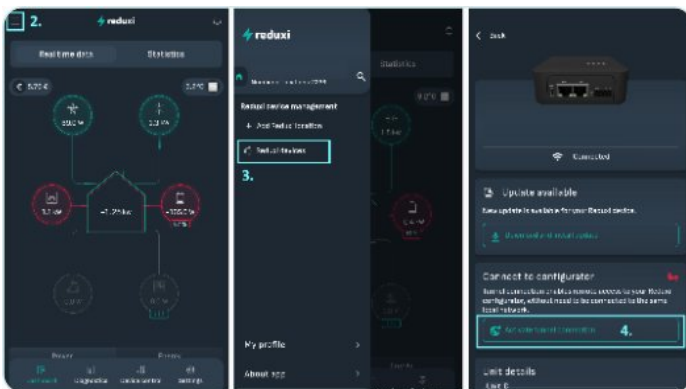
Tap the menu icon (three lines, top left) and select **Reduxi devices**.

3 Activate the tunnel connection

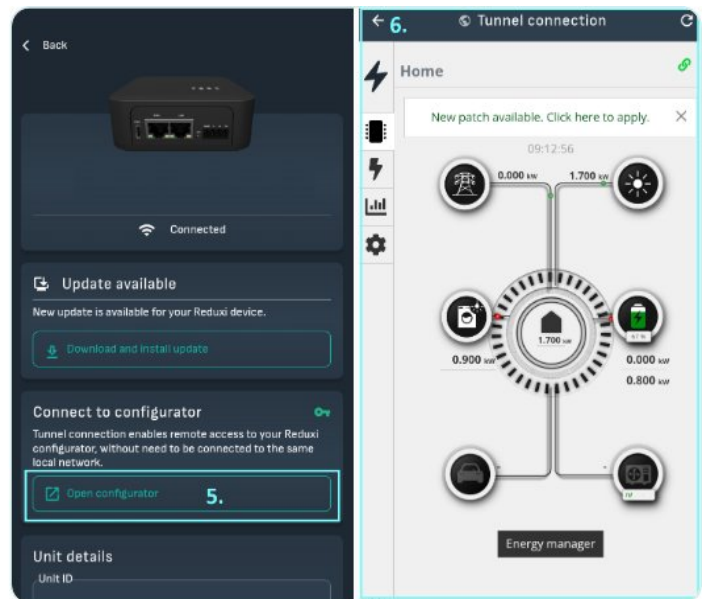
Switch on the tunnel connection and wait a moment until it is active.

4 Open the configurator

Tap **Open configurator**. The Reduxi web interface opens.



Activate the tunnel connection (step 3)



Open configurator (step 4)

4.2 Via a web browser

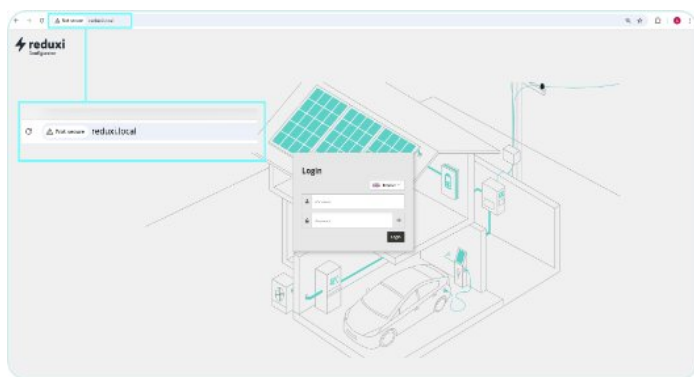
1 Open the login page

On a device in the same network, open a web browser and enter the controller's IP address or <http://reduxi.local>. You can find the controller's IP address in your router's device list or in the Reduxi app under **Reduxi devices**.

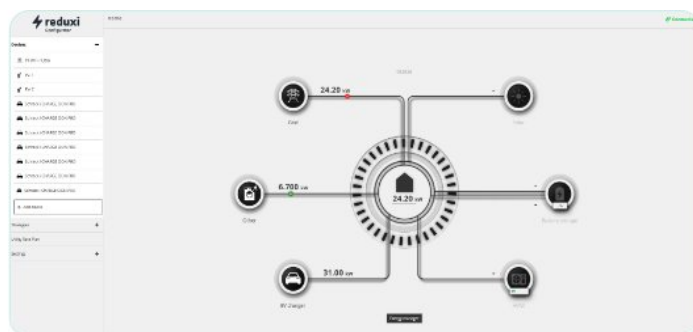
2

Log in

Username: **admin** · Password: **admin** (factory default)



Reduxi Controller login screen



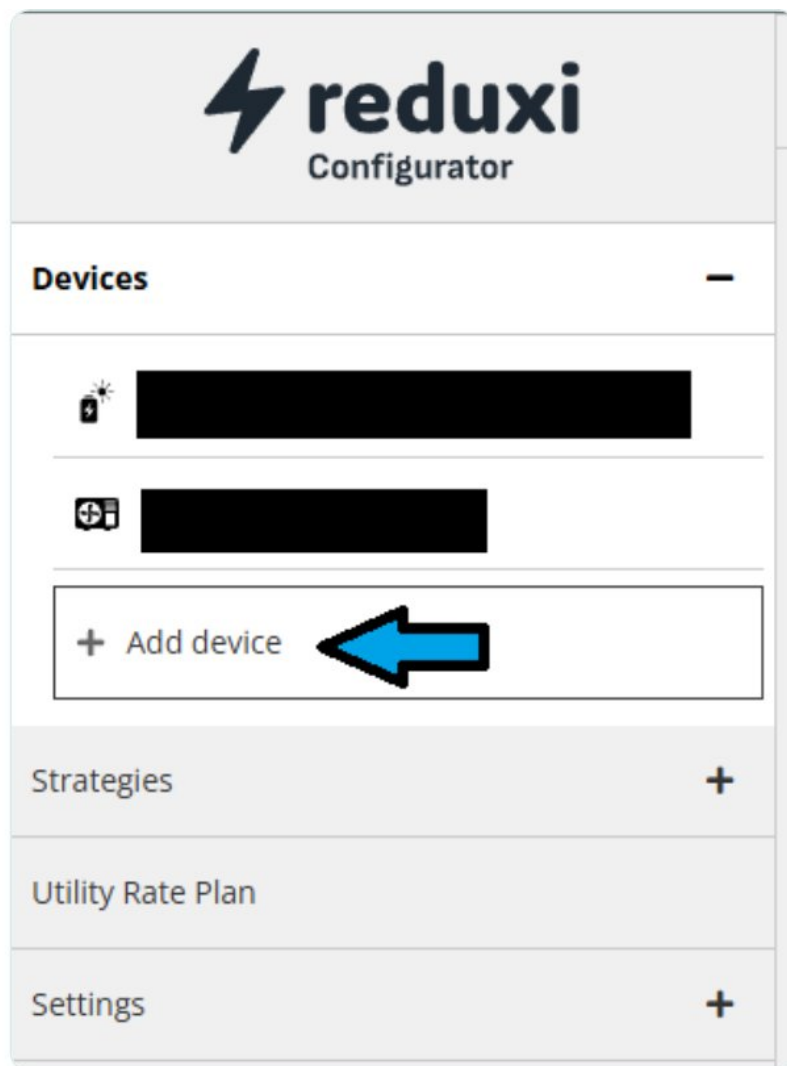
Controller web interface after login

5 Add the SMA device to Reduxi

The process is the same for all devices, because the Modbus TCP/IP protocol is used. The IP address of the device is the necessary input.

5.1 Basic settings

Log in to the [Reduxi Configurator](#) (see [Point 4](#)) and click **+ Add device**.



The + Add device button

Option 1: SMA Data Manager

The SMA Data Manager works as a logger. In the Reduxi system it operates as a **Hybrid Inverter**, because it supports connections to several device types. Communication runs via IP and Reduxi shows the aggregated values of each group. You can also access individual devices through the SMA Data Manager. In this case, define the slave address of the specific device.

- Device type: **Hybrid Inverter**
- Type: **SMA Data Manager**
- Name: **SMA Data Manager**, rename if needed

1
Basic settings
2
Communication channel

Basic settings

Device type *

Hybrid inverter

Type *

SMA Data Manager

Name *

SMA Data Manager

Back
Next

Basic settings: SMA Data Manager

Options 2 and 3: SMA inverter

You do not add the SMA Speedwire/Webconnect Data Module itself. The module only provides LAN connectivity to a specific inverter. Select the type of the inverter you want to connect. The example adds an SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41) as an individual inverter.

- Device type: **Solar power plant**
- Type: **SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41)**
- Name: **SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41)**, rename if needed

1
Basic settings
2
Communication channel

Basic settings

Device type *

Solar power plant

Type *

SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41)

Name *

SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41)

Back
Next

Basic settings: SMA Sunny Tripower CORE1

Click **Next**.

5.2 Communication settings

OPTION	IP ADDRESS TO ENTER
1: SMA Data Manager	IP of the SMA Data Manager
2: Speedwire/Webconnect Data Module	IP of the SMA Speedwire/Webconnect Data Module
3: direct LAN connection	IP of the LAN port of the inverter (newer inverter versions)

For options 2 and 3, all other settings are the same as for the inverter in Point 5.1.

Option 1: SMA Data Manager. Enter the IP of the SMA Data Manager.

1 Basic settings 2 Communication channel

Communication channel and device configuration

Connection *
TCP/IP

IP *
←

Port *
502

Modbus unit ID *
2

Is electricity meter installed? *
☒ No

Is battery installed? *
☒ No

Back Test communication Done

Communication settings: IP of the SMA Data Manager

Then define which device types are connected to the SMA Data Manager:

- Electricity meter: YES / NO
- Battery: YES / NO

1 Basic settings
2 Communication channel

Communication channel and device configuration

Connection *

IP *

Port *

Modbus unit ID *

Is electricity meter installed? *
☒ No

Is battery installed? *
☒ No

Back
Test communication Done

Connected electricity meter and battery

Options 2 and 3: SMA inverter. Enter the IP of the SMA Speedwire/Webconnect Data Module, or the IP of the LAN port of the inverter.

1 Basic settings
2 Communication channel

Communication channel and device configuration

Connection *

IP *

Port *

Back
Test communication Done

Communication settings: IP of the module or inverter

5.3 Test communication

Click **Test communication** to check whether data is received. It reads the device once and saves nothing. If the test succeeds, click **Done**: only **Done** creates the device.

1 Basic settings 2 Communication channel

Communication channel and device configuration

Connection *
TCP/IP

IP *

Port *
502

Modbus unit ID *
2

Is electricity meter installed? *
☐ No

Is battery installed? *
☐ No

Back Test communication Done

The **Test communication** button

SMA Data Manager

Test communication

Successful readout from device

Inverter active power: -165521.0 W
Inverter max. power: 300000.0 W
Inverter min. power: -300000.0 W
PV active power: -165521.0 W
PV export active energy: 1.180973964E9 Wh
PV min. active power: -300000.0 W

Additional parameter - PV_POWER_ACTIVE_MAX: 0

Close

Test OK

Test communication

Unable to communicate with device.

Unable to communicate with 172.16.233.148 on port 502.
Check if service is enabled on device, port number is correct and device is reachable on the network.

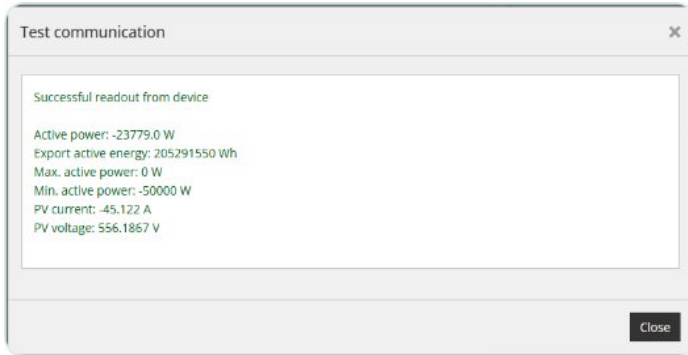
PING 172.16.233.148 (172.16.233.148) 56(84) bytes of data:

--- 172.16.233.148 ping statistics ---
2 packets transmitted, 0 received, 100% packet loss, time 1070ms

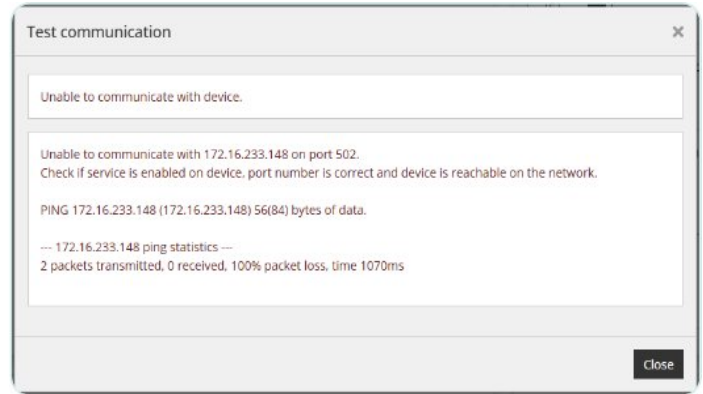
Close

Test not OK

SMA inverter (options 2 and 3)



Test OK



Test not OK

6 Check the readings

6.1 Last measurements

This step shows how to check the readings of the devices.

SMA Data Manager: open **Devices – SMA Data Manager** in the [Reduxi Configurator](#).

reduxi Configurator

Devices / SMA Data Manager

Connected

Last measurements Analyze Archive Details

Control type

Auto Manual

20.06.2025 13:02:08

Battery

Battery maximum capacity (Wh)	0.0 kWh	20.06.2025 13:02:12
Battery min. state of charge	0.00 %	20.06.2025 13:02:12
Battery max. state of charge	100.00 %	20.06.2025 13:02:12
Battery active power setpoint	kW	20.06.2025 13:02:12

PV

PV active power	-182.0 kW	20.06.2025 13:02:12
PV export active energy	1,183,606.3 ...	20.06.2025 13:02:12
PV min. active power	-300.0 kW	20.06.2025 13:02:12

Inverter

Inverter power active	-182.0 kW	20.06.2025 13:02:12
Inverter max. power	300.0 kW	20.06.2025 13:02:12
Inverter min. power	-300.0 kW	20.06.2025 13:02:12

Grid

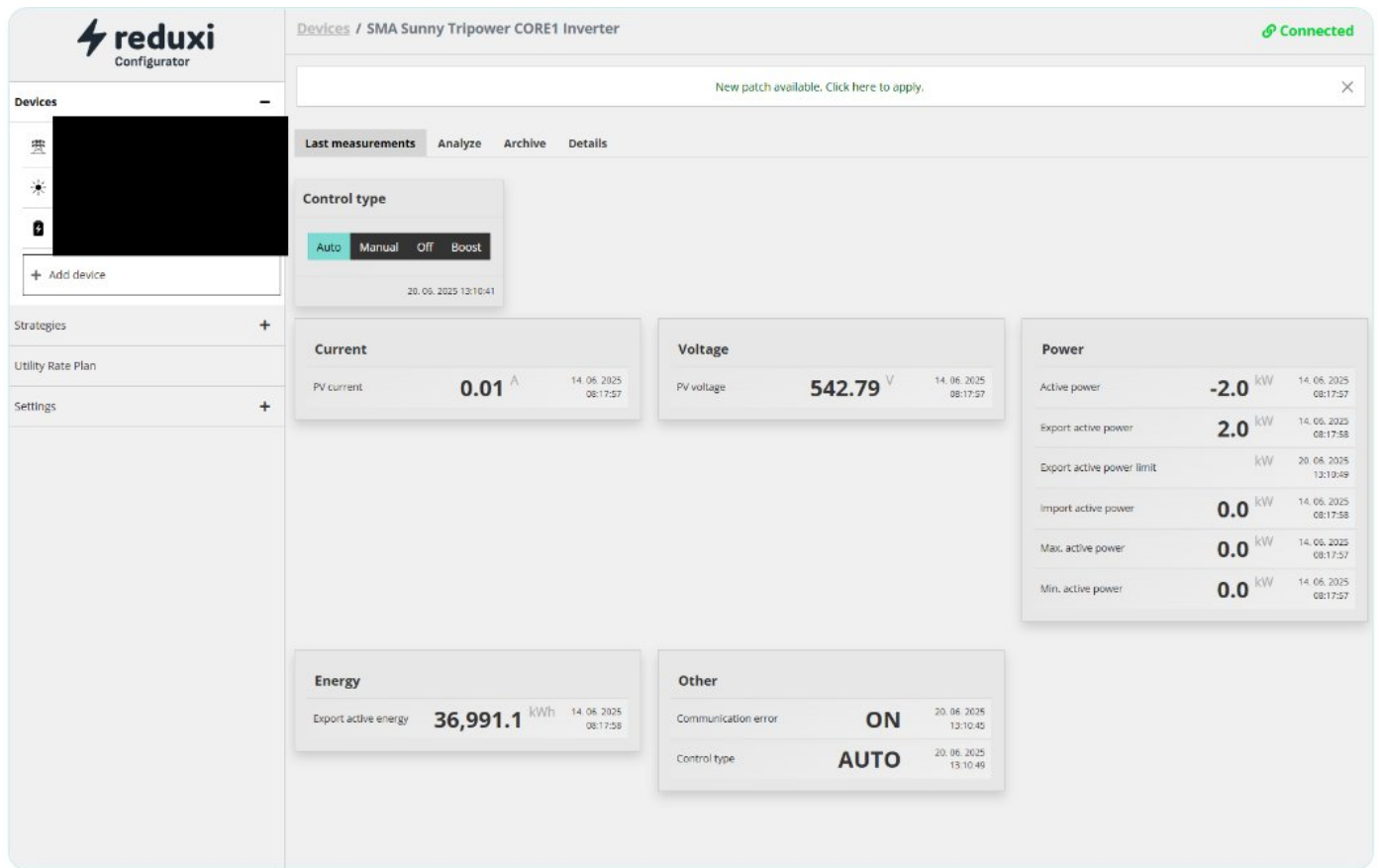
Grid import active power limit	kW	20.06.2025 13:02:12
Grid export active power limit	kW	20.06.2025 13:02:12

Other

Communication error	OFF	20.06.2025 13:02:08
Control type	AUTO	20.06.2025 13:02:12
Mode name setpoint		20.06.2025 13:02:12

Last measurements: SMA Data Manager

SMA inverter via Speedwire/Webconnect Data Module: open **Devices – SMA Sunny Tripower CORE1 (STP 50-40 / STP 50-41)**, as added in [Point 5](#).



Last measurements: SMA Sunny Tripower CORE1

6.2 Enable control by Reduxi

For advanced control of all devices, integrate the devices into the optimization modes of the Reduxi system. Under **Devices – all devices** in the [Reduxi Configurator](#), set the **control type** to **AUTO**. Only then do commands from the optimization modes take effect on the devices.

To achieve maximum flexibility and energy cost reduction with dynamic prices and dynamic tariffs, define a strategy as described in [Strategies for Reduxi controller](#).

After you have added the device, you can also monitor and control it via the [Reduxi application](#).

✓ Summary

Preparation (Points 1–2): Choose the connection option: SMA Data Manager, SMA Speedwire/Webconnect Data Module or direct LAN connection to the inverter.

SMA (Point 3): Enable **Modbus TCP/IP** on the SMA device and test that port **502** is open.

SMA Data Manager **Test communication** and click **Done**.

Go live (Point 6): Check the last measurements and set the **control type** to **AUTO**.

→ Common issues

ISSUE	SOLUTION
The port test shows port 502 as closed	Modbus TCP/IP is not enabled on the SMA device. Enable it (see Point 3) and run the test again.
Test communication fails: unable to communicate on port 502	Check that the service is enabled on the device, that the port number is correct and that the device is reachable on the network.
A device behind the SMA Data Manager shows no values	To access an individual device through the SMA Data Manager, define the slave address of that device (see Point 5).
Strategy commands have no effect	Set the control type of the devices to AUTO (see Point 6).
Open configurator does not open or stays empty	The tunnel is not active yet. Wait about 30 seconds and check that the controller is online.
Login with admin is rejected	The password was changed during installation. Ask the installer. The Reduxi account password does not work here.
reduxi.local does not load	Your device is not in the same network as the controller. Use the IP address or the tunnel connection.
Communication test fails, device shows offline	Check reachability, IP address / port / unit ID, and that the protocol is enabled on the device.



Related articles

Matching guides from the Reduxi knowledge base:



SMA Speedwire/Webconnect Data Module manual

Installation manual of the module from the manufacturer



Device setup guides

All step-by-step guides for connecting devices to the Reduxi Controller



List of supported devices

All devices that work with the Reduxi Controller



Strategies for the Reduxi Controller

Energy manager and other strategies explained