MINI Display for HUAWEI SUN2000 & LUNA2000

Manual English Version July 2024 / Device Version V1.31 / P1.31

Foreword

The BOPV.mini is designed as a convenient display for outputting real-time data from Huawei inverters and accessories. It retrieves the real-time data from the Huawei Solar System via Modbus TCP. To do this, it communicates exclusively with the Huawei SDongleA-05. This does not affect the communication inverter <> FusionSolar. Note that only one Modbus master device can communicate with the SDongleA-05 at a time. Configuration and usage are very simple.

Roland, developer PV owner

Minimum Requirements:

- Huawei SUN2000 Inverter
- Huawei SDongleA-05
- WIFI network 2.4 GHz
- Windows, Mac or Linux computer (for first configuration only)

Optional Requirements:

- Second Huawei SUN2000 Inverter (optional)
- Huawei LUNA2000 battery (optional)
- Huawei DTSU666-H (optional)

Required Prerequisites

You need the IP address of the SDongleA-05. Modbus TCP access must be activated on the dongle and the Modbus addresses of the devices must be known and set between 1 and 9. You must request this information from your installer. Only installers can change or determine this data. Try the Modbus TCP settings with the (Windows APP) BOPV.Info. If the app works, then the BOPV.mini works too.

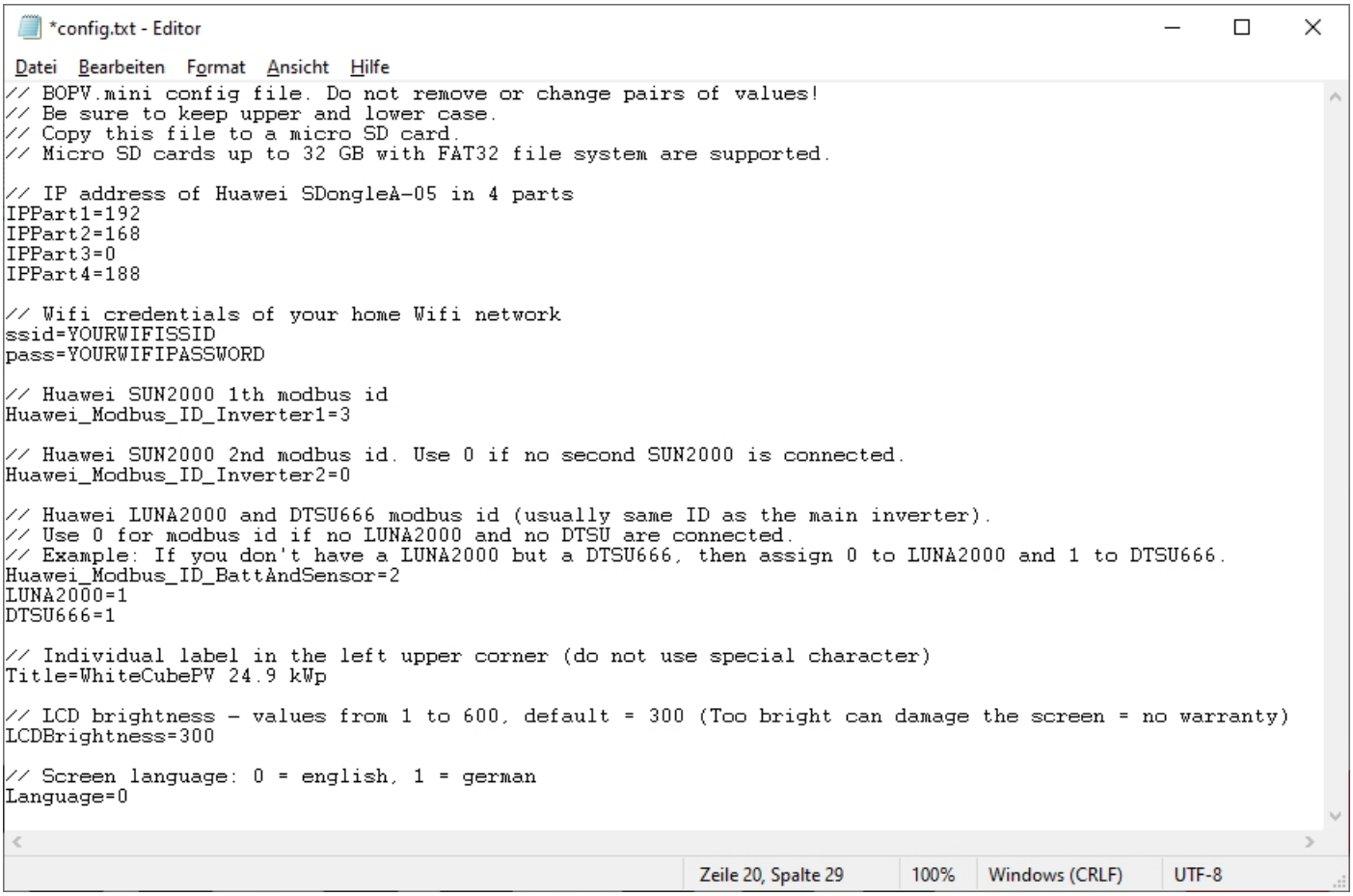
Configuration

All parameters are transferred to the BOPV.mini via the supplied micro SD card. You don't have to configure anything on the device itself.

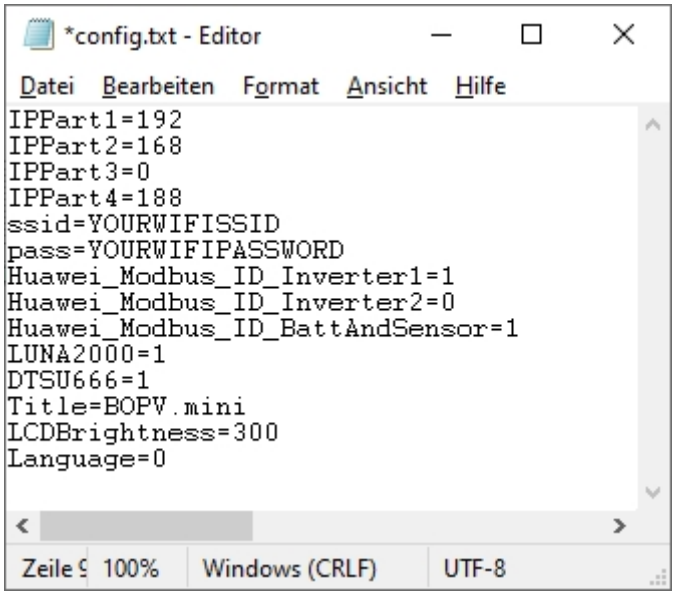
If you have a Windows computer, you can have the config file created automatically by the "BOPV.Info" app. To do this, call up the "BOPV.mini" menu item via the widget and enter all the parameters. With "test" you can test the connection parameters of the Modbus (IP address and Modbus IDs).

The configuration file is created automatically with "Create configuration". Copy this to the micro SD card and then insert it into the BOPV.mini before switching it on.

The created file has this content:



You can also create this file manually using a text editor without using the BOPV.Info application. The comments (starting with //) are not required. File name: “config.txt”.



The value identifiers (e.g. "IPPart1=") must not be changed. Upper and lower case must be preserved.

- The IP address of the SDongleA-05 has to be entered in 4 parts.
- BOPV.mini connects to your home WIFI network. BOPV.mini and SDongleA-05 must be in the same network. Enter your SSID and password.
- In the example on the right we have a SUN2000, a LUNA2000 and a DTSU666-H. All three devices are Modbus ID 1.
- If you use a cascaded second SUN2000 inverter, then also enter its Modbus ID at "Huawei_Modbus_ID_Inverter2=".
- If you don't have a battery, then "LUNA2000=0". If you don't have a DTSU666-H, then "DTSU666=0".
- Enter an individual title if you want to personalize your BOPV.mini. For example "Peter's PV".
- The screen brightness with which the BOPV.mini starts can be set between 1 and 600. The standard value is 300. ATTENTION: Excessively high brightness values can damage the screen in continuous operation (burn-in). This is then not covered by the guarantee.
- With "Language=0" you set the user interface to ENGLISH. With "Language=1" you set the user interface to GERMAN.

You can change the parameters at any time and save them again on the micro SD card. This configuration is read out again each time the BOPV.mini is started. Modbus-Addresses from 1 to 9 are possible.

Package Contents:

In addition to the BOPV.mini basic device with built-in battery, the scope of delivery includes the following items:

- Short black USB-C cable
- Short white USB-C cable
- Micro SD card with the configuration file (default values)
- Self-adhesive Velcro for mounting on objects.
  The BOPV.mini also has a magnetic back and can be attached directly to any magnetic-metallic surface.
- A practical storage and transport box is included.
  Let yourself be surprised - there are 5 different colors that are chosen at random.
- Printed instructions in English and German.

Explanation of the device functions (hardware):

- Power button on the top left. Click once to turn on. Click for 3 seconds to turn off.
- USB-C charging port left center. Can be charged and operated with any standard USB charger.
- Micro SD card slot on the bottom left.
  When inserting the memory card, the contacts point upwards towards the TFT screen.
- LED below middle.
  The LED flashes every second and lights up when a Modbus query is currently active.
  During the Modbus query, the response to the three screen buttons may be delayed.

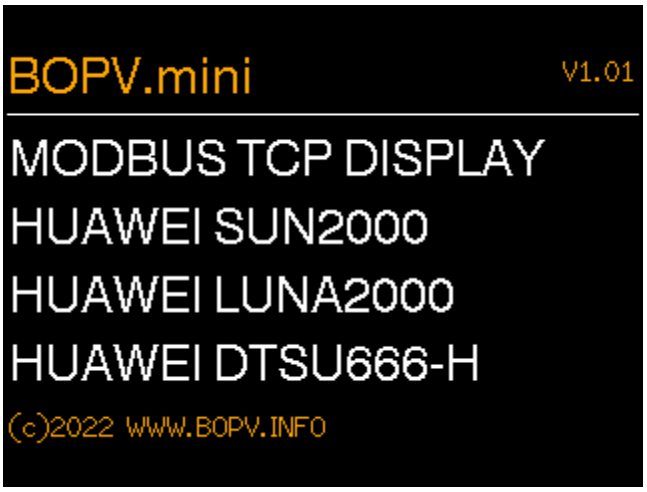
- Reset button on the bottom right.
  Press once briefly and the device restarts immediately.
- Three onscreen buttons (the touch surface is the three red circles).
  These work optimally if you run your finger lightly over them from top to bottom.
- Back: do not open, otherwise you will lose the guarantee.
- The back is magnetic.
  With this you can attach your BOPV.mini to any metallic-magnetic surface (e.g. fridge or LUNA battery).

The dimensions of the device are 54 x 54 x 16 mm. This means that it has the size of standard switch ranges and can be integrated in an optically excellent manner.

BOPV.mini is ultra mobile.
The integrated battery lasts up to 2 hours. The BOPV.mini can also always be plugged into USB-C.

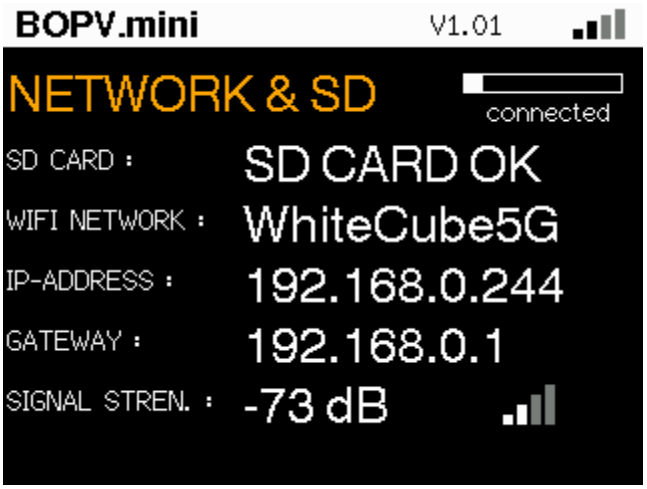
Start and program functions:

Switch on your BOPV.mini with a short press on the power button (left).

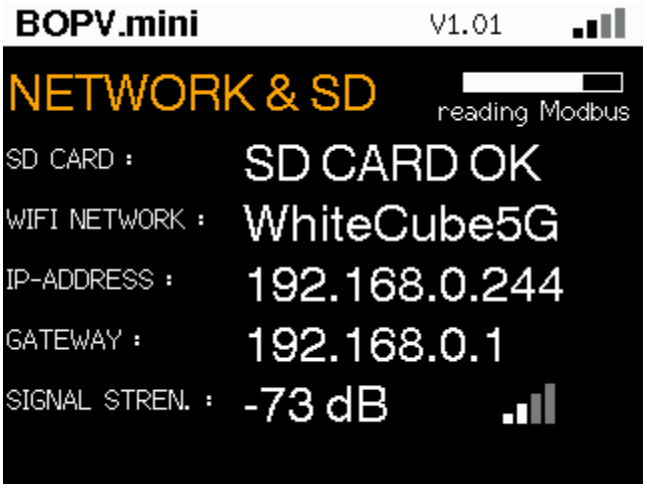


Next, it is checked whether a micro SD card is inserted and whether the config.txt file is on it. If there is a problem here, 2 beeps will sound and a message will appear on the screen. Now the BOPV.mini tries to connect to your WLAN. If the parameters on the SD card are correct, the connection parameters are displayed. Otherwise, three beeps will sound and a message will appear on the screen.

In the event of an error message, check the Config.txt and start again after clicking on the reset button.



Now the Modbus connection is established and the first values are queried.
If all parameters are correct, the main screen appears.

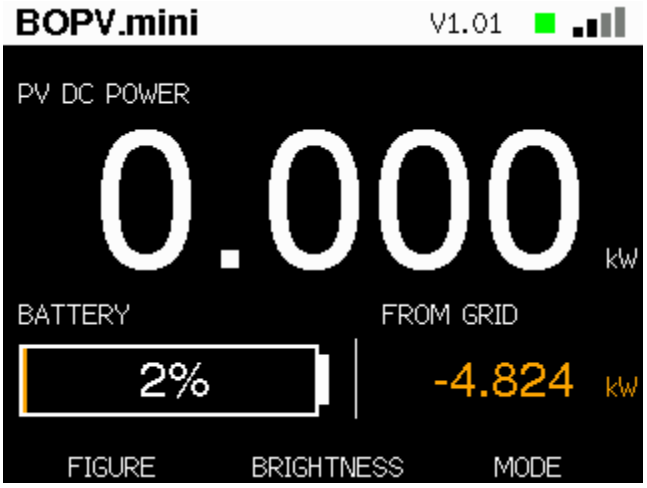


Depending on whether you are also using LUNA2000 or DTSU666-H, the view may look slightly different. The PV power is always displayed in large digits.

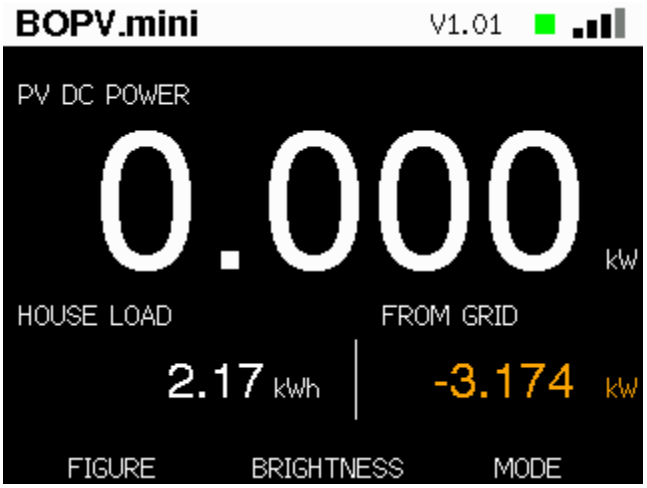
1 or 2 SUN2000, LUNA2000, DTSU666-H:
Bottom left battery, bottom right from the mains / into the mains

1 or 2 SUN2000, DTSU666-H:
Bottom left daily yield, bottom right from/to the grid

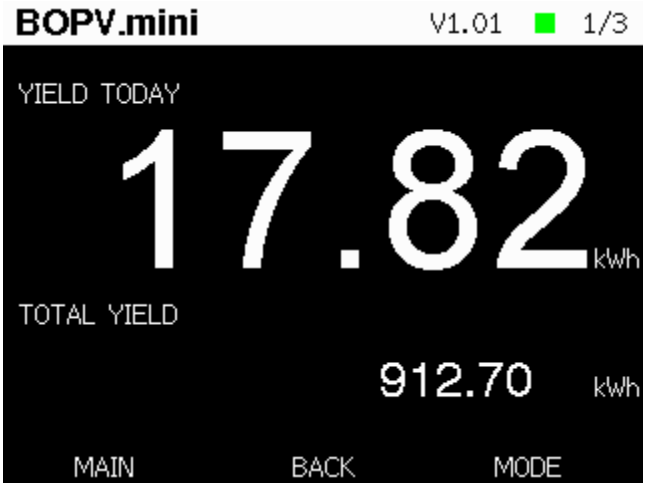
1 or 2 SUN2000:
Bottom left daily yield, bottom right nothing



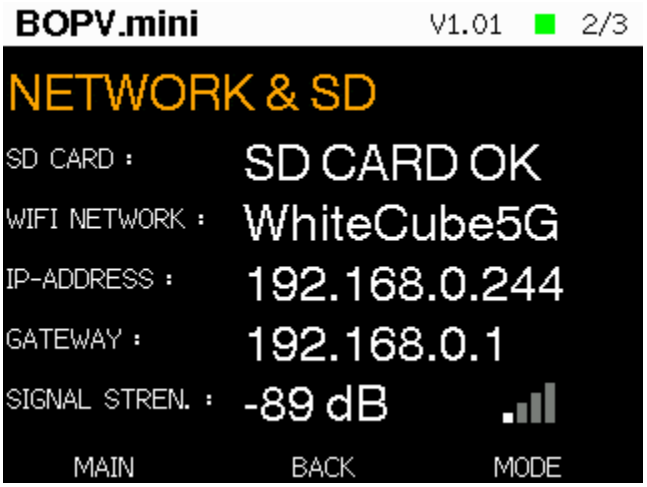
A click on the left screen button switches the display from battery (or daily yield) to house load.



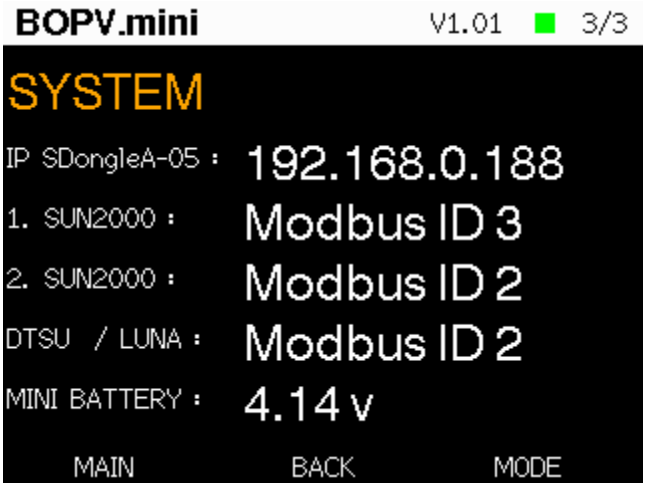
The first click on the right button (MODE) switches to the screen with daily yield and total yield.



The second click on the right button (MODE) toggles the network overview.

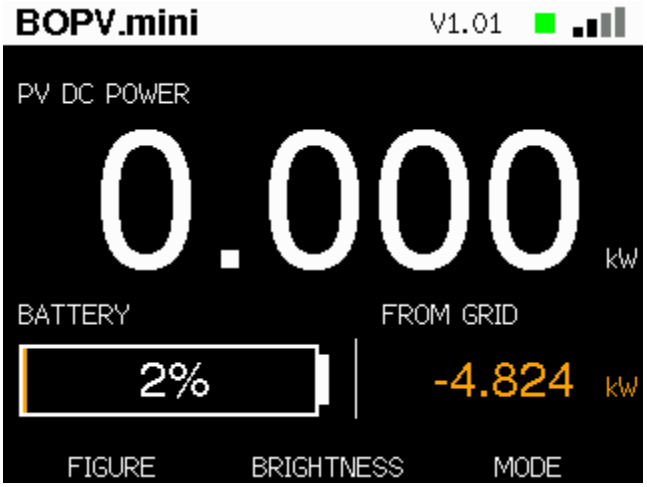


The third click on the right button (MODE) toggles the system view.



The fourth click on the right button (MODE) switches back to the main display.

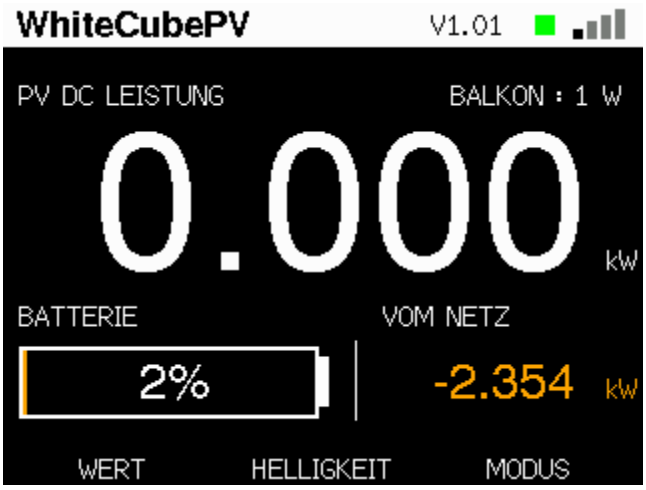
On the main display, you can use the middle screen button to adjust the brightness in 6 levels.
The brightness is reset to the setting in config.txt when the device starts up.



Special function balcony power plant (optional)

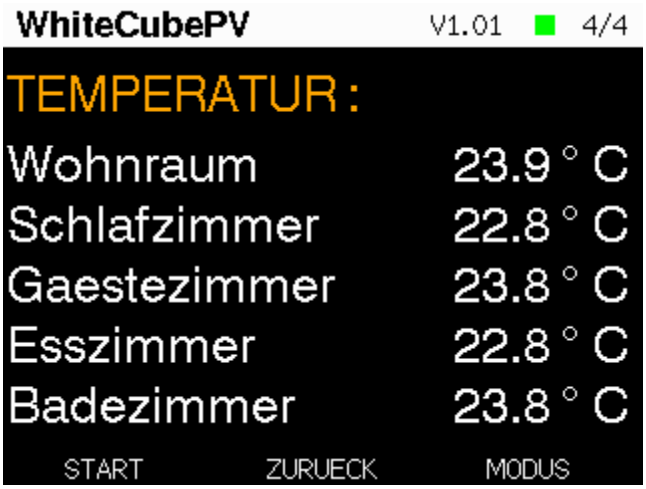
If you have a balcony power plant, you can also display its yield on BOPV.mini.
In the screenshot you can see "BALKON : 1 W" at the top right. This is the indicator for the balcony power plant.

The data comes from one of the following measuring devices:
Shelly PRO 4 PM (BalconyMode=0) | Shelly Plug S (BalconyMode=1) | myStrom Switch (BalconyMode=2)



Temperature sensors via myStrom Switch (optional)

If you want to read out the temperature via myStrom switches, you can integrate up to 5 devices. These are displayed on the fourth page, which you can reach via the "MODE" button.



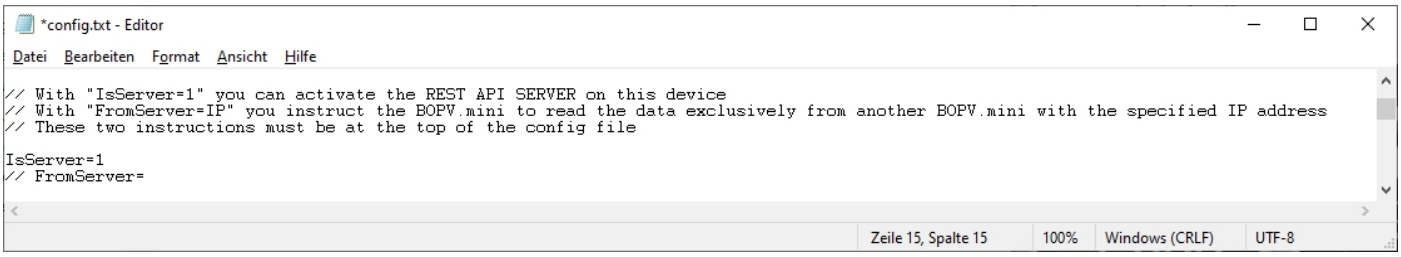
The measurement is active as soon as an IP address has been specified in the config .txt. The config .txt parameters for the SD card are as follows:

```
// PV2 (Shelly or myStrom Switch)
// Modes: 0: Shelly Pro 4 PM (channel 0) | 1: Shelly Plug S | 2: myStrom Switch
BalconyIP=192.168.0.240
BalconyMode=0
BalconyLabel=BALKON

// (5) Temperature myStrom Switch sensors
TemperatureIP1=192.168.0.203
TemperatureIP2=192.168.0.226
TemperatureIP3=192.168.0.227
TemperatureIP4=192.168.0.226
TemperatureIP5=192.168.0.227

TemperatureLabel1=Wohnraum
TemperatureLabel2=Schlafzimmer
TemperatureLabel3=Gaestezimmer
TemperatureLabel4=Esszimmer
TemperatureLabel5=Badezimmer
```

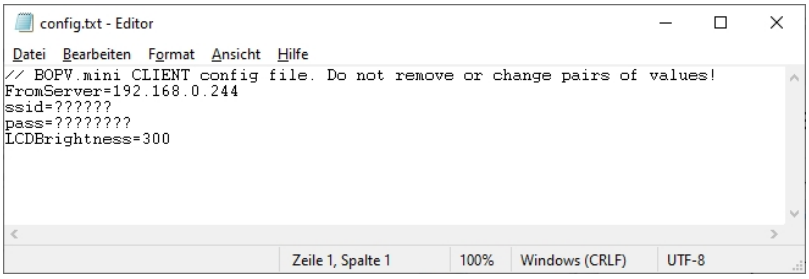
BOPV.mini - family

A separate BOPV.mini for each family member. Or simply query the data from other systems via the integrated web server. It's easy.

Set up the main unit normally as described in the instructions above. Add the option "IsServer=1" in the config .txt. This activates the internal web server. After that, more BOPV.mini can access it.

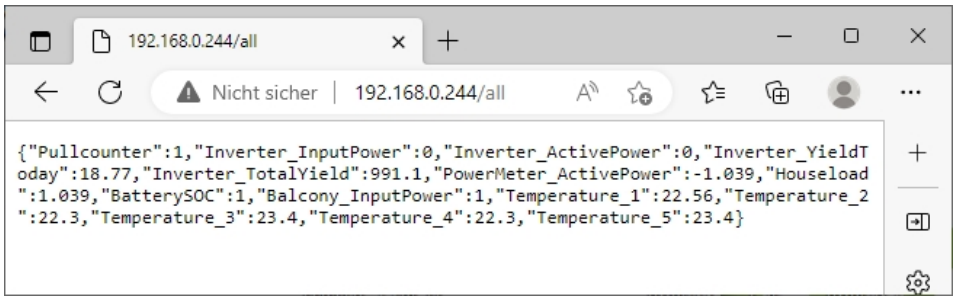


The config .txt of the subordinate BOPV.mini terminals (clients) is kept very short. This contains only the WLAN access data and the option "FromServer=0.0.0.0". Simply enter the IP address of the main BOPV.mini.



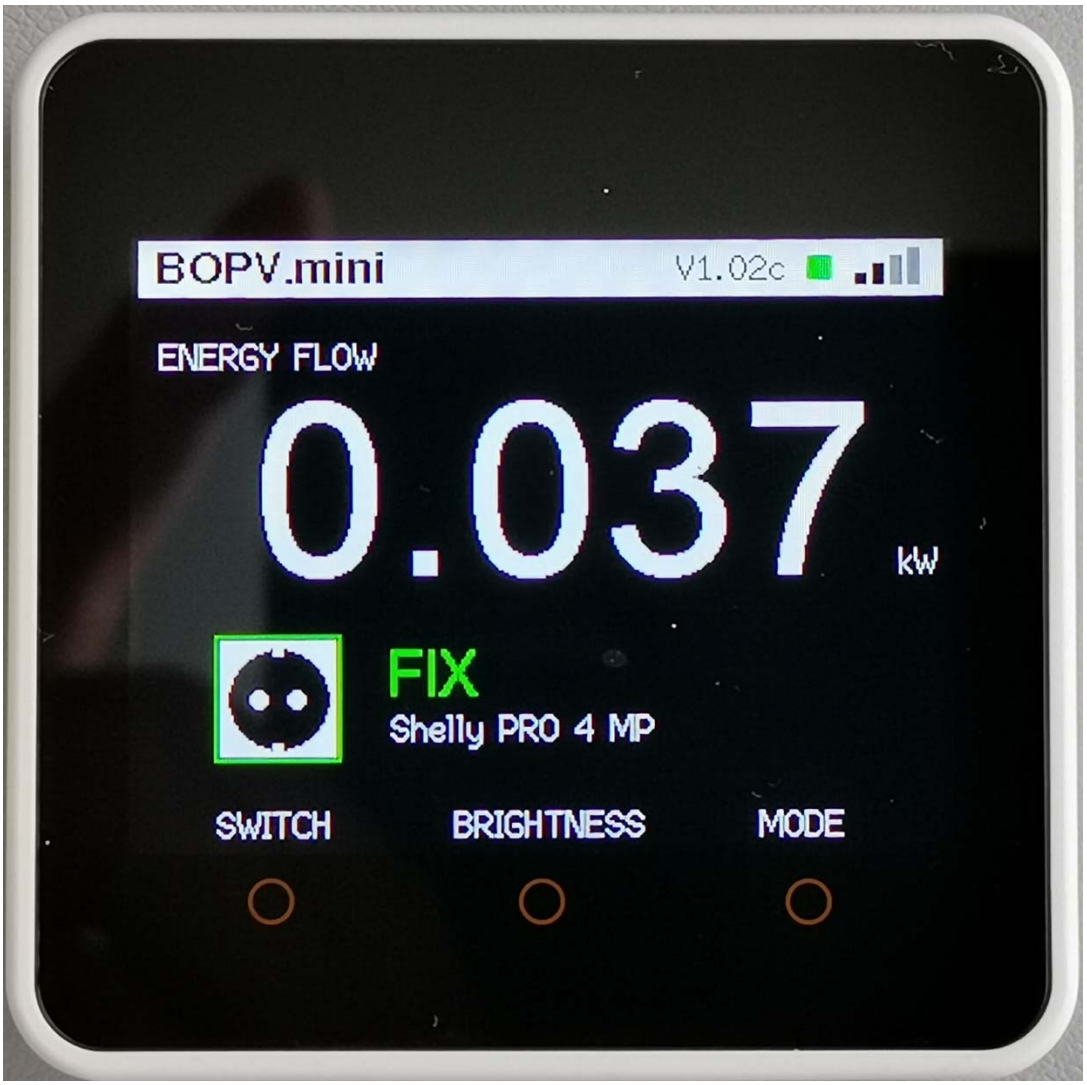
Optionally, you can also define the LCD brightness. All other settings and descriptions are automatically taken over by the server BOPV.mini.

Via the IP address and the option /all you can also query the data of the server BOPV.mini from external applications.



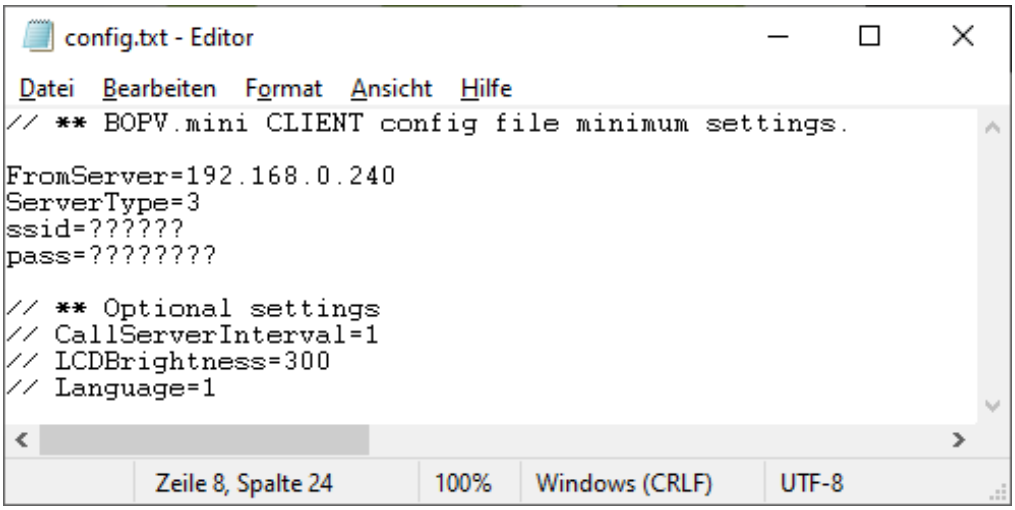
BOPV.mini – balcony mode

You can also use the BOPV.mini without HUAWEI photovoltaics for your balcony power plant. It supports the myStrom WiFi Switch, Shelly Plug S and Shelly PRO 4 pm.



The setup is as simple as with family mode: "FromServer=IP" is the IP address of your meter (myStrom Switch or Shelly). "ServerType=x" refers to the device that provides the data.

ServerType: 0 = BOPV.mini (default), 1 = Shelly Plug S, 2 = Shelly Pro 4 PM (all PLUS and PRO der 1th Channel), 3 = myStrom Switch



With the button "SWITCH" you can also switch the myStrom and the Shelly Plug S off and on.

BOPV.app

In Version 1.11 or above, it is possible to send the data of the BOPV.mini to the cloud and retrieve it via a web app on any browser anywhere in the world. The advantage over FusionSolar is that the app is much easier to call up and starts much faster and that the data is no more than 40 seconds old. With FusionSolar, the data is at least 300 seconds (5 minutes) old.

How to config

Add the AppLogin= and AppPassword= parameters to the config .txt. Login and password must be at least 10 characters long and must not contain any special characters, spaces or commas.

```
// ** Optional credentials for BOPV.app upload from BOPV.mini
// ** minimum 10 chars for credentials

AppLogin=RolandBETALogin
AppPassword=mypassword
```

How it works

When activated, BOPV.mini sends its collected real-time data to the server on www.bonit.at (server location in austria) every 40 seconds.

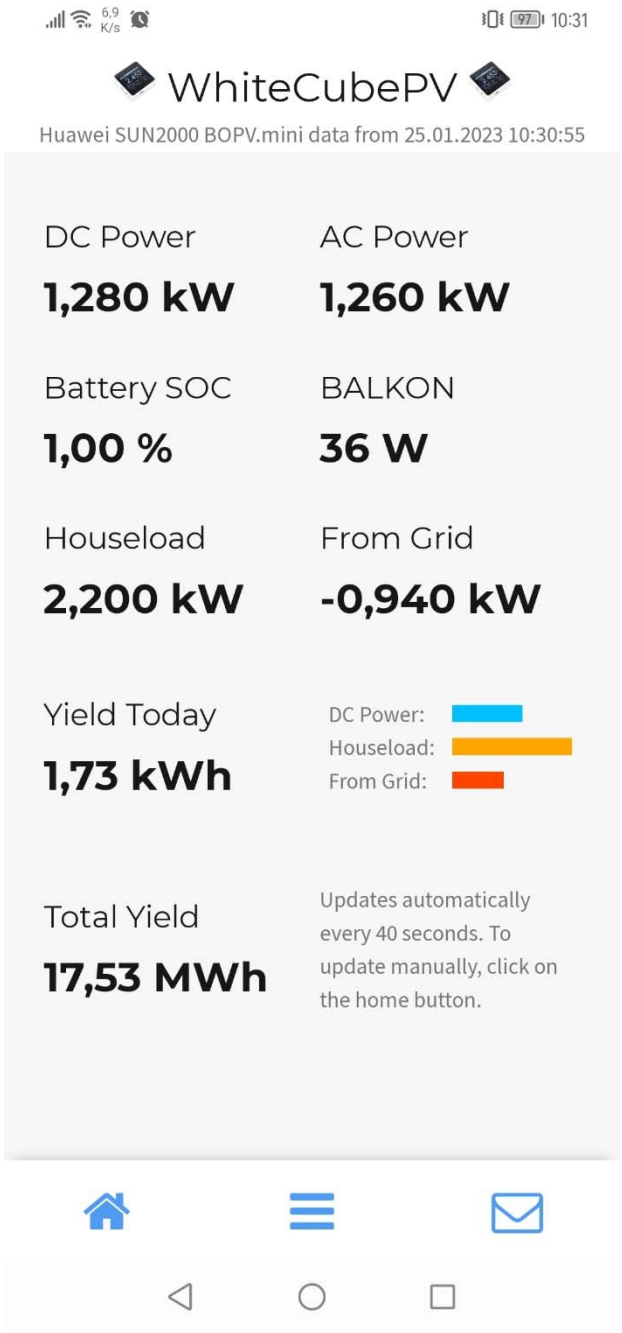
The web app reads the data and displays it clearly.

The address for the web app is:

https://www.bopv.app

Simply log in to the web app once with the access data stored in the config .txt – done.

The web app runs on all smartphones, tablets and computers. Whether Android, iOS, Apple, Linux or Windows.



Field of application of the hardware

The BOPV.mini is only suitable for indoor use. Do not expose the BOPV.mini to extreme heat, moisture or frost. Operating temperature 5-40 degrees, non-condensing. Avoid direct sunlight on the display. Damage caused by UV radiation is not covered by the guarantee or warranty.

Closing remarks

The manual is deliberately kept short and crisp in order not to bore the users. BOPV.mini is self-explanatory in many points, so long explanations in the manual are omitted. If you have questions, simply login to the Facebook group and exchange ideas with other users. Of course, I also answer myself:
https://www.facebook.com/groups/1160839111137832

Troubleshooting WIFI

The WIFI connection of the BOPV.mini is extremely stable. The connection quality is still good even with only one bar in the WLAN display.
Nevertheless, it is possible that the WLAN connection is interrupted by external influences. In most cases, the connection will be restored automatically by a reset. If the BOPV.mini no longer restarts by itself, then the Wi-Fi connection has been down for too long.

If the connection cannot be reestablished, this is indicated by the LED no longer flashing. In this case, simply press the reset button and the connection will be established again after the restart. An uninterrupted 2.4 GHz WLAN connection is required for operation. Unfortunately, we cannot provide support or guarantee functionality when using Fritz!boxes and Unify routers and access points. We recommend the use of standard WLAN products - e.g. from TP-Link.

Troubleshooting Modbus TCP

Modbus TCP is designed for a single access only. If another system (home automation or BOPV.Info App) accesses the Modbus TCP of the SDongleA-05 at the same time, then the BOPV.mini stop working.

If there is a data collision, the LED will stop flashing. In such a case switch off the BOPV.mini, end all other Modbus TCP accesses, wait 10 minutes and then switch on the BOPV.mini again.

Warranty, Guarantee and Repair

If the device does not work to your satisfaction, please contact us directly. We will find a solution together. Please do not send the device back to us without prior consultation. You should check the requirements before purchasing and set up the necessary rights and information on your Huawei solar system with your installer. Do not purchase unless these requirements have been verified. Do not expose your BOPV.mini to direct sunlight, otherwise the display could be damaged.

Software reinstallation

If you have mistakenly overwritten a BOPV.mini purchased from us with other software or would like to have a newer software version installed, then send us the BOPV.mini and we will install the latest software. The costs for this service can be found in our online shop.

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