OPCB-221B Operating Manual

The Quality Management System of the device designing and production complies with the requirements of ISO 9001:2015.

Purpose

The Controller OPCB-221B (hereinafter referred to as the “Controller”, “Product”, “Device”, or “OPCB-221B”) provides MODBUS communication between clients and servers in TCP networks (Internet) and between devices in the RS-485 interface.

OPCB-221B is used to remotely monitor and control the operation of:

- Refrigeration controllers,
- HVAC systems controllers,
- Agricultural smart devices,
- Power network relays, meters, other electrical equipment,

- Industrial IoT devices,
- Industrial sensors and meters,
- Other MODBUS-compatible electronics.

OPCB-221B feature list:

- MODBUS RTU/TCP converter.
- Built-in Overvis cloud support (www.overvis.com).
- Serving as TCP server or client, MODBUS RTU master or slave.
- RS-485 network extension.
- MODBUS ASCII mode support.
- Supporting LAN and/or Wi-Fi connection.
- Optional 3G/LTE connection using an external USB modem.
- Wi-Fi Access Point mode.
- Web interface, accessible from the local network, via Wi-Fi Access Point or using Overvis cloud connection.
- Remote configuration (using MODBUS or web interface).
- RS-485 network settings: baud rate, parity, response timeout.
- Multiple RS-485 networks support.
- MODBUS requests debugging tools.
- Automatic or manual firmware update.
- HTTP API.

Terms and abbreviations

Wi-Fi station - a device connected to another device through Wi-Fi (access point);

Wi-Fi access point - a device enabling connection to it through Wi-Fi;

DHCP – a Protocol enabling the network units to automatically obtain TCP/IP parameters (IP address);

HTTP - the Transmission Protocol for Web pages and other data using client-server technology;

IP (address) – the address of the unit, which is unique within one network that is operated according to IP Protocol;

IPv4 - a four-byte IP address;

MAC (address) – the address used in network transmissions for device identification. As a rule, it is globally unique;

MAC-48 - a six-byte MAC address;

MODBUS - the standard Packet Communication Protocol based on the client-server technology intended for industrial electronic devices;

MODBUS RTU - the Devices Linking Protocol, over which the packet is transmitted byte by byte;

MODBUS ASCII - the Devices Linking Protocol, over which the packet is transmitted in the form of ASCII characters;

MODBUS TCP - MODBUS Packet Transmission Protocol according to TCP/IP standard;

WEB - the server documents access system used on the Internet;

Wi-Fi - a family of standards for data transmission via radio channels.

Complete set

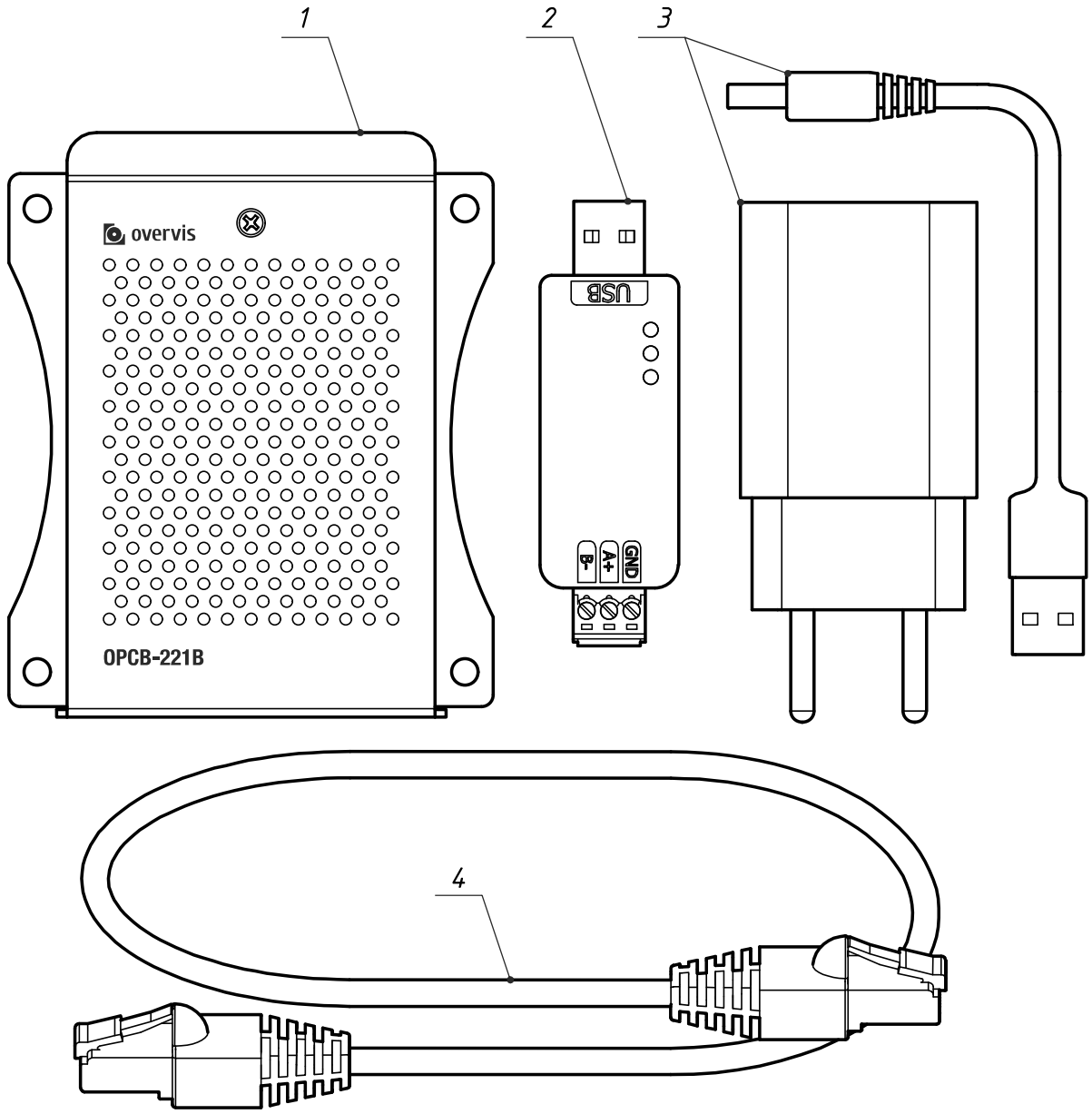
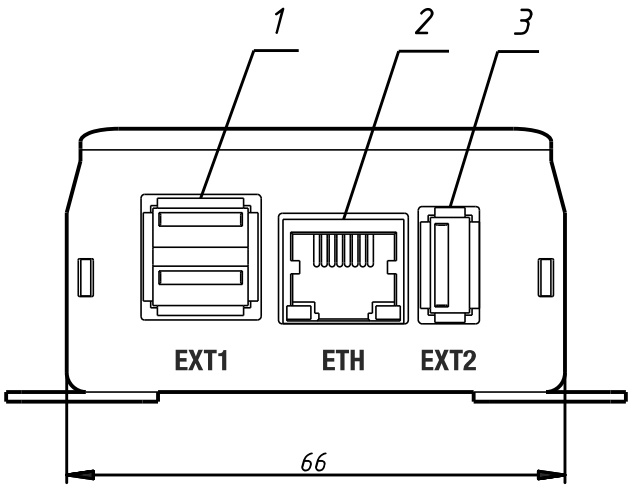


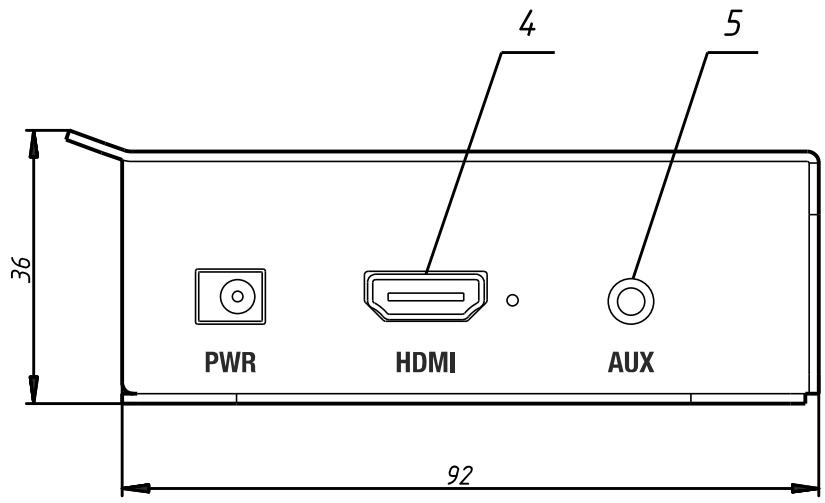
Table 1 – Product set

Name	Quantity (pcs.)
1. Controller OPCB-221B (with installed MicroSD memory card and integrated Wi-Fi antenna, 3 dbm)	1
2. USB/RS-485 extension module (supporting up to 32 connected RS-485 devices)	1
3. Power supply with USB Type-A output and DC Plug cable	1

Name	Quantity (pcs.)
4. Ethernet cable	1
5. Operation manual	1

Overall mounting dimensions and controls





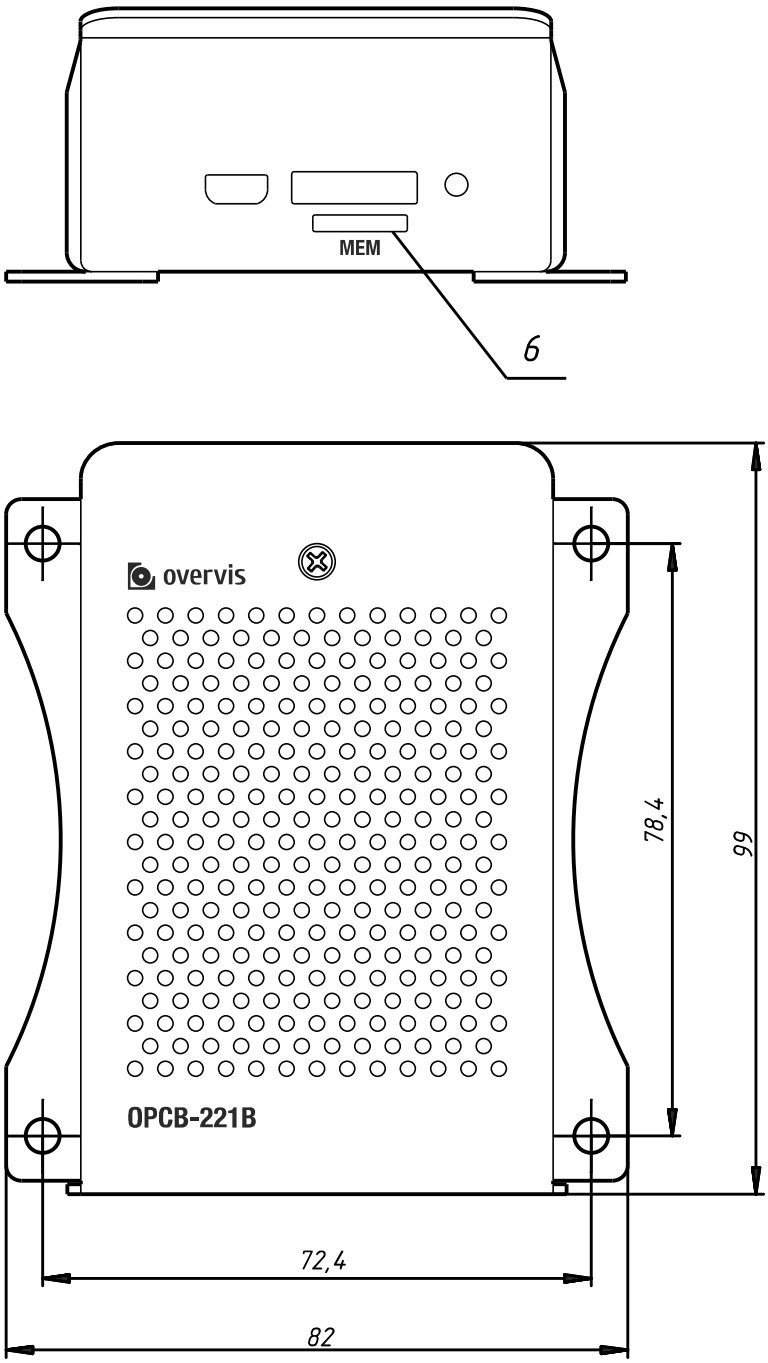


Figure 1 – OPCB-221B overall and mounting dimensions

1. "**EXT1**" connectors - 2 USB Type-A connectors for connecting additional modules (e.g., RS-485 / RS-232 serial interface converters).
2. "**ETH**" connector - 8P8C/RJ45 for wired connection to the local Ethernet network;
3. "**EXT2**" connectors - USB Type-A connector for connecting additional modules (e.g., RS-485 / RS-232 serial interface converters).
4. "**PWR**" connector - DC Plug for connecting a 5V DC power source with a power of at least 9W.
5. "**HDMI**" connector - HDMI output (not used).

6. **“AUX”** connector - Audio output (not used).
7. **“MEM”** slot - MicroSD card slot for pre-installed memory card access.

Technical specifications

Table 2 – OPCB-221B controller main technical specifications

Name	Value
Power supply voltage DC, V	5
Motherboard	Orange Pi PC Plus 1G RAM
TCP networks link interface	Ethernet, Wi-Fi
Ethernet communication interface	10BASE-T/100BASE-T (twisted pair)
Wi-Fi frequency, GHz	2.4
Supported Wi-Fi standards	IEEE 802.11 b/g/n
Supported TCP/IP protocols	MODBUS TCP, HTTP, DNS, DHCP, WireGuard
Maximum number of incoming connections via MODBUS TCP protocol	4
Maximum number of outgoing connections via MODBUS TCP protocol	4
Maximum number of serial interfaces	3 (through individual USB ports)
Supported serial interface protocols	MODBUS RTU, MODBUS ASCII
Maximum number of connected MODBUS devices	255
Built-in servers	MODBUS RTU/TCP, HTTP
Ready time at power up, s, no more than	60
Current consumption, A, max	2

Name	Value
Weight, kg, no more than	0,200
Overall dimensions HxBxL, mm, no more than	99 x 82 x 36
The Product designation	Switchgear and control equipment
Rated operating condition	continuous
Degree of protection	IP30
Electric shock protection class	III
Climatic design version	NF 3.1
Permissible contamination level	II
Galvanic insulation, kV	
• power connector	–
• Ethernet connector	1.5
• USB	–
Installation (mounting)	panel

- The product meets the requirements of the following: EN 60947-1; EN 60947-6-2; EN 55011; EN 61000-4-2.
- The product retains its functionality in any position in space.
- Case material - aluminum.
- Harmful substances in amounts exceeding maximum permissible concentrations are absent.

Table 3 – USB-RS485 extension module technical specifications

Name	Value
Communication speed	300-921600bps
Direction control	hardware automatically determines and controls data transmission direction

Name	Value
Transmission distance (at low speed),	about 1200 meters
Transmission mode	up to 32 nodes in point pairs, repeaters are recommended for more than 16 nodes)
Interface protection	Provide 600W lightning protection, surge and 15KV static protection (onboard 120R balance resistance)
Temperature range	-15°C to +70°C
Humidity range (at +25 °C)	5% to 95%
Cross-section of wires to be connected, mm2	0,3 – 1
Tightening torque of terminal screws, N*m	0,3
Degree of protection	IP20

Table 4 – Power adapter technical specifications

Name	Value
Input AC voltage range, V	100-240
Input AC current, A	0.5
Input AC frequency range, Hz	50/60
Output voltage DC, V	5
Output current DC, A, max	3
AC inlet	EU 2 pin plug
DC connector	USB Type-A

Name	Value
Weight, kg, no more than	???
Overall dimensions HxBxL, mm, no more than	51x44x28
Degree of protection	IP20
Electric shock protection class	II
Insulation voltage	Input/Output to out case, 500VDC, greater than 10Mohm
Input to output withstand voltage	AC 3kv / 10mA, 3s

Operation conditions

The product is intended for operation under the following conditions:

- ambient temperature from -10 to +55 °C;
- atmospheric pressure from 84 to 106.7 kPa;
- relative humidity (at +25 °C) 30 to 80%.

Attention! The product is not intended to be used in the following conditions:

- significant vibrations and shock;
- high humidity;
- an aggressive environment containing acids, alkalis, etc., as well as strong contaminants (grease, oil, dust, etc.).

General instructions

ATTENTION! ALL CONNECTIONS MUST BE MADE WITH THE PRODUCT DE-ENERGIZED.

Error when performing the installation works may damage the product and connected devices.

When connecting to the RS-485 bus, use a twisted pair cable, cat. 1 or higher. The ends must be stripped of insulation by 4±0.5 mm and tightened with bushing tips. A shielded grounded cable is recommended.

DO NOT LEAVE ANY BARE WIRE PROTRUDING BEYOND THE TERMINAL BLOCK.

For reliable contact, tighten the terminal screws with the force indicated in the technical characteristics table.

When connecting to Ethernet, use the cable supplied, or twisted pair cable of cat. 5e with 8P8C (RJ45) plug.

When fixing the wires, avoid mechanical damage, twisting or wearing down the insulation of wires.

Connection

Before the start:

- Unpack and inspect the product for damage after transportation and, if found, contact the supplier or the manufacturer;
- Before connecting to the power supply keep the product under the operating conditions within two hours (in case of possible condensation on the elements).
- Carefully study the operating manual;
- If you have any questions about the installation of the product, please contact technical support by the phone number at the end of the operating manual.

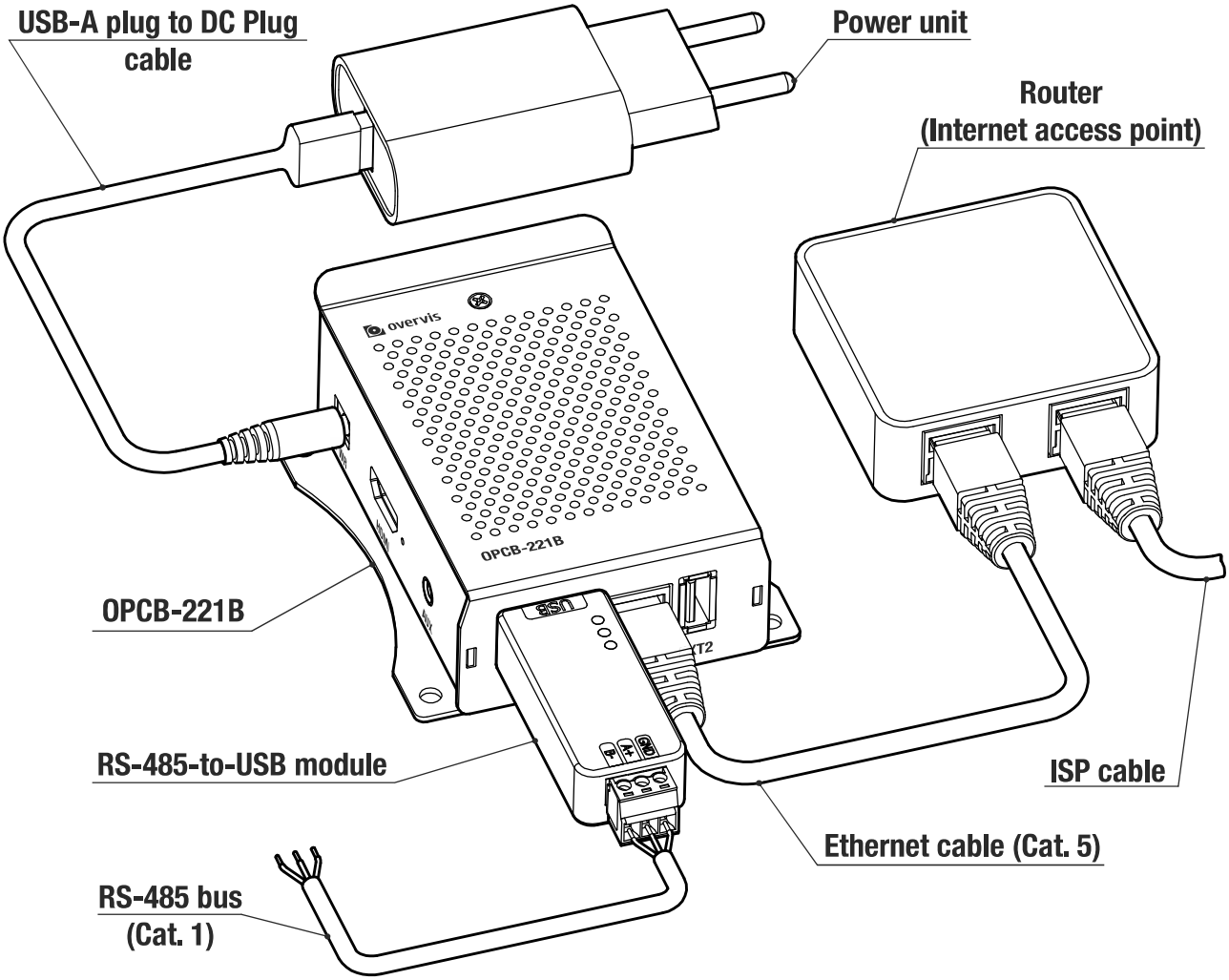


Figure 2 – product connection diagram

Connect OPCB-221B according to Figure 2, in the following order:

- Using a twisted-pair cable of category 1 or higher, connect the terminal block of the RS-485 module to the serial interface bus (or directly to a device with this interface); *Note: contact "A" for non-inverted signal (D+), contact "B" for inverted signal (D-).*
- If the product should have access to the Internet or LAN: using the Ethernet connection cable (included in the package) or twisted pair cable of cat. 5e with 8P8C (RJ45) plug, connect the **"ETH"** connector (8P8C/RJ45) to the local network or computer.
- Ensure the memory card is present in the **"MEM"** slot (installed by the manufacturer).
- Connect the RS-485 module to one of the **"EXT1"** or **"EXT2** (USB Type-A) connectors.
- Connect the power unit (included) to the **"PWR"** (DC Plug) connector.
- Optionally: secure the USB connections with plastic cable ties to avoid accidental disconnection.
- Connect the power unit to the power supply network 220-240VAC (50Hz).

OPCB-221B operation

General information

OPCB-221B has a 32-bit processor running a POSIX-compliant OS. It routes the traffic between the USB extension modules, such as serial RS-485 / RS-232 interfaces (MODBUS RTU/ASCII protocols) and Ethernet/Wi-Fi LAN interfaces (MODBUS TCP protocol), possibly routed further to the Internet.

OPCB-221B has a built-in web interface, which can be used for configuration.

OPCB-221B provides the ability to connect to a cloud server for remote monitoring and configuration of the product and connected devices.

OPCB-221B provides the Wi-Fi Access Point (hotspot), to simplify the initial setup. Wi-Fi Access Point can be disabled in the settings.

OPCB-221B stores the operating system and data on the pre-installed microSD memory card. Removing or replacing the memory card will render the product inoperable.

Power up and the reboot sequence

After the power-up, OPCB-221B loads the operating system and set up the communication interfaces. This can take up to 1 minute.

With the internet connection provided, OPCB-221B automatically connects to the cloud server, if allowed in the settings. By default, unconfigured OPCB-221B creates a Wi-Fi access point with SSID "OPCB_XXXXXX" (where XXXXXX are the last 6 characters of the device's MAC), for the initial setup as described in Appendix A.

The soft reboot of the OPCB-221B can be performed through the web interface, by pressing the "Reboot device" button in the "Actions" section. This will finish all currently ongoing operations, store the data and reboot the device within 1 minute.

A hard reboot is performed by turning the power off, waiting 5 seconds, and then turning the power on again.

Operation via HTTP

OPCB-221B provides an HTTP web interface and HTTP REST API for web applications. OPCB-221B accepts HTTP connections via Ethernet or Wi-Fi interfaces on TCP port 80.

To access the HTTP web interface either:

- Connect to the OPCB-221B WiFi access point with a PC or mobile device and open the following URL in the browser: http://setup.overvis.com/;

- Using any PC or mobile device in the local network, open the IP address of the OPCB-221B in the browser. OPCB-221B IP address can usually be found by accessing the local network router interface.

For details on connecting, configuring, and using the product via the web interface, see Appendix C. For details on using the REST API, see Appendix F.

OPCB-221B operation via MODBUS (TCP/RTU/ASCII)

OPCB-221B receives MODBUS TCP requests via Ethernet or Wi-Fi interfaces and transmits them in MODBUS RTU or MODBUS ASCII format over the serial interface. Responses are converted to MODBUS TCP and sent back to the requesting side.

OPCB-221B can be also configured to receive MODBUS RTU or MODBUS ASCII requests via the serial interface and transmit them in MODBUS TCP format to specified IP addresses via Ethernet or Wi-Fi interfaces. In that case, the responses converted to request protocol are sent back to the serial line.

Connection from a PC or mobile device can be made with any software MODBUS TCP clients. The Windows version of the MODBUS TCP client is available for download here: https://novatek-electro.com/en/software/modbus-tcp-client.html

Connection, configuration, and usage of the product via MODBUS are described in detail in Appendix D.

OPCB-221B operation using the Overvis cloud server

OPCB-221B can establish connections to the Overvis cloud server using any interface with Internet access. OPCB-221B communicates with the Overvis cloud using one or both of the following protocols:

- MODBUS TCP for communication, authentication, and data gathering.
- WireGuard (VPN). Provides full encryption of traffic between the device and the Overvis cloud server.

MODBUS TCP and WireGuard Overvis cloud connections are enabled by default and can be disabled in the settings. In that case, some of the Overvis cloud functions may be unavailable.

Connection, configuration, and usage of the product with the Overvis cloud server are described in detail in Appendix E.

Setup

The initial setup of the network connections is described in Appendices A and B.

The device can be configured via:

- the web interface (see Appendix C);
- the MODBUS interface (see Appendix D);
- Overvis cloud server (see Appendix E).

The configurable parameters are described in Appendix D. Parameter values are stored in a file on the memory card.

Note: some settings require soft-reboot, clients may lose the connection and have to reconnect.

ATTENTION! Please make sure that the Internet connection is correctly configured before disabling the Wi-Fi access point. Otherwise, an incorrect configuration may prevent any communication with the device, which can only be fixed with a factory reset.

A partial factory reset can be performed in one of the following ways:

- using a control key USB flash drive. Write an empty file or an empty folder named `"RESET_CONF"` to some USB flash drive, then connect it to one of the **"EXT1"** or **"EXT2** slots to reset the settings to the factory defaults. The reset may take up to 30 seconds, the USB flash can be disconnected afterwards.
- through the web interface, see Appendix C.

Automatic firmware update

Device firmware is updated continuously by the manufacturer. By default, the new version is installed automatically after the device is powered on or within 24h of operation. Automatic updates guarantee the backward compatibility of all OPCB-221B functions. Releases without backward compatibility require manual installation.

The currently installed version is displayed in the OPCB-221B web interface. The changes list for each version is available here: https://github.com/overvis/opcb-release/tree/OPCB-221-opipc/CHANGELOG.md

Manual firmware update and full factory reset

The manual update requires a full factory reset by uploading a new firmware image to the SD memory card. All current firmware images can be found on the release page: https://github.com/overvis/opcb-release/tags

The full factory reset procedure is described in Appendix F. In summary:

1. Download the latest image from the release page.
2. Remove the SD card from the product.
3. Write the image to the existing or new SD card (deletes all data on the card, including settings).

4. Insert the freshly imaged SD card into the product.
5. Connect OPCB-221B to the Internet using Ethernet cable and power on the porduct.
6. Connect to the product's web interface through the Wi-Fi Access Point (using the product label).
7. Open **"Manufacturing"** page and enter the device's private key from the label.
8. Re-configure the device's settings that are required for operation in your conditions.

Safety precautions

To ensure the product's safe operation it is strictly forbidden the following:

- to carry out installation works and maintenance without disconnecting the product from the mains;
- to open and repair the product without any professional help;
- to operate the product with the mechanical damages of the housing.

It is not allowed water penetration on terminals and internal elements of the product.

During operation and maintenance the regulatory document requirements must be met, namely:

- Regulations for Operation of Consumer
- Electrical Installations; Safety Rules for Operation of Consumer Electrical Installations;
- Occupational Safety in Operation of Electrical Installations.

LIQUID INGRESS ON TERMINALS AND INTERNAL ELEMENTS OF THE DEVICE IS UNACCEPTABLE.

Maintenance

WHEN MAINTAINING, THE PRODUCT AND DEVICES CONNECTED TO IT MUST BE DISCONNECTED FROM THE POWER SUPPLY.

Maintenance of the product should be performed by **qualified technicians**.

Recommended frequency of maintenance is every six months.

Procedure:

1. Check the connection reliability of the wires, if necessary, clamp;
2. Check the reliability of the USB connections, if necessary, fix them with plastic clamps;
3. Visually check the integrity of the housing, in case of damages the product should be taken out of service and sent for repair;
4. If necessary, clean the housing of the product with a dry cloth.

Do not use abrasives or solvents for cleaning.

Service life and manufacturer warranty

The service lifetime of the product is 10 years. At the end of its service life, please contact the manufacturer.

Shelf life is 3 years.

The warranty period of the product is 3 years from the date of sale.

During the warranty period (in case of failure) the manufacturer repairs the product free of charge.

ATTENTION! IF THE PRODUCT HAS NOT BEEN USED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS OPERATION MANUAL, THE USER WILL LOSE THE RIGHT TO WARRANTY SERVICE.

Warranty service is performed at the place of purchase or by the manufacturer.

Post-warranty maintenance of the product is performed by the manufacturer at current rates.

Before sending the product for repair, it must be packed in the factory or other packaging that prevents mechanical damage.

If returning the product or submitting it for warranty (post-warranty) service, please state in detail the reason for return in the complaint information field.

Transportation and storage

The product in the original packaging is permitted to be transported and stored at temperatures ranging from minus 45 to +60 °C and with a relative humidity of no more than 80%. During transportation, the product should be protected from mechanical damage.

Acceptance certificate

The product is manufactured and accepted in accordance with the requirements of the current technical documentation and classified as fit for operation.

Head of QCD:

Date of manufacture:

Complaint information

The company is grateful to you for information about the quality of the product and suggestions on its operation.

If you have any questions, please contact the manufacturer: NOVATEK-ELECTRO LTD. Ukraine, 65007,Odessa, Admirala Lazareva str. 59

tel. +38(048)738-00-28

tel/fax +38(048)234-36-73.

http://www.novatek-electro.com

Warranty Service Department: +38(067) 557-12-49

Technical Support Department: +38(067) 565-37-68

Date of sale

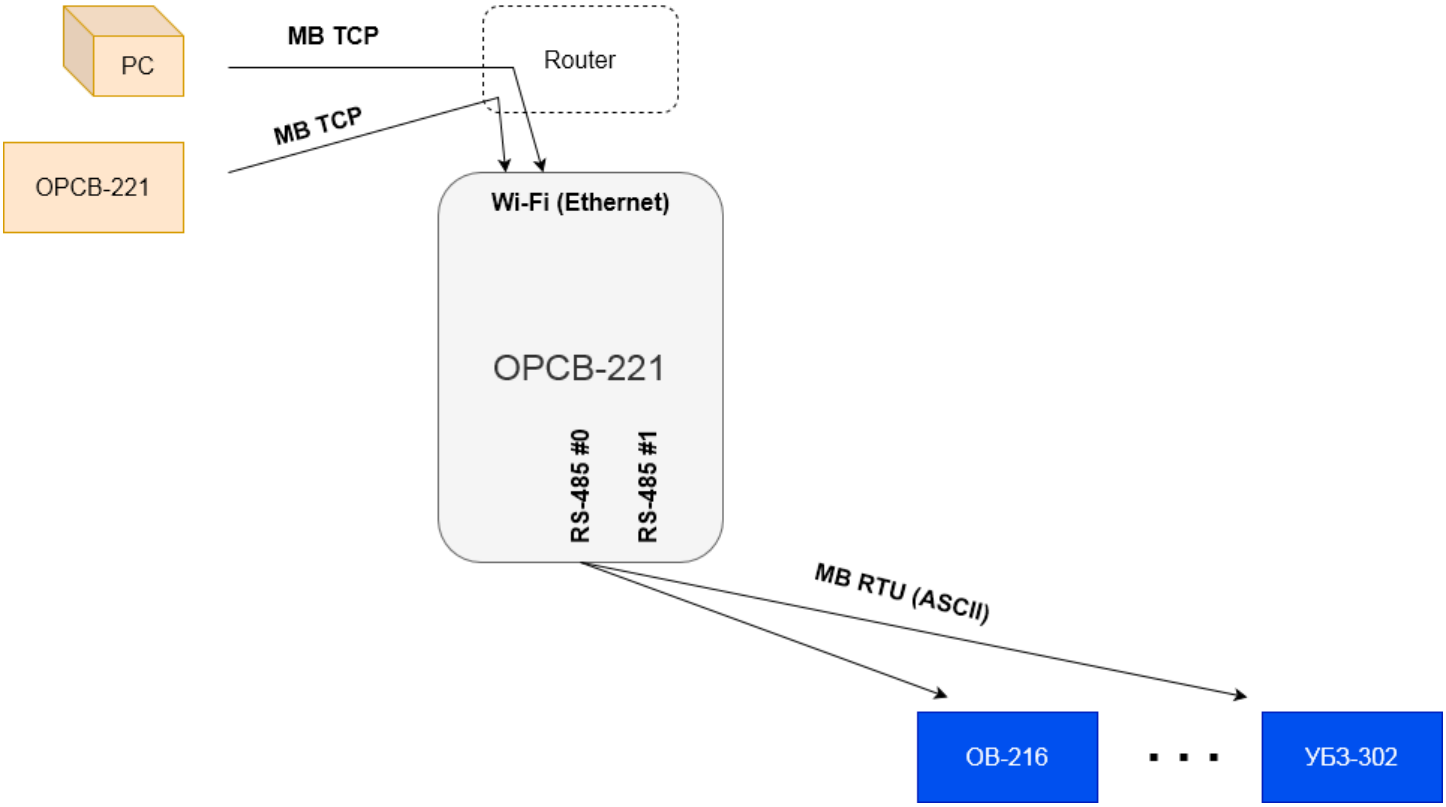
VN221012

OPCB-221 Applications

1. Modbus RTU/ASCII to Modbus TCP converter

- Local access.
- Remote access via internet.

Логическая схема отношений OPCB-221 и подключаемых к нему устройств



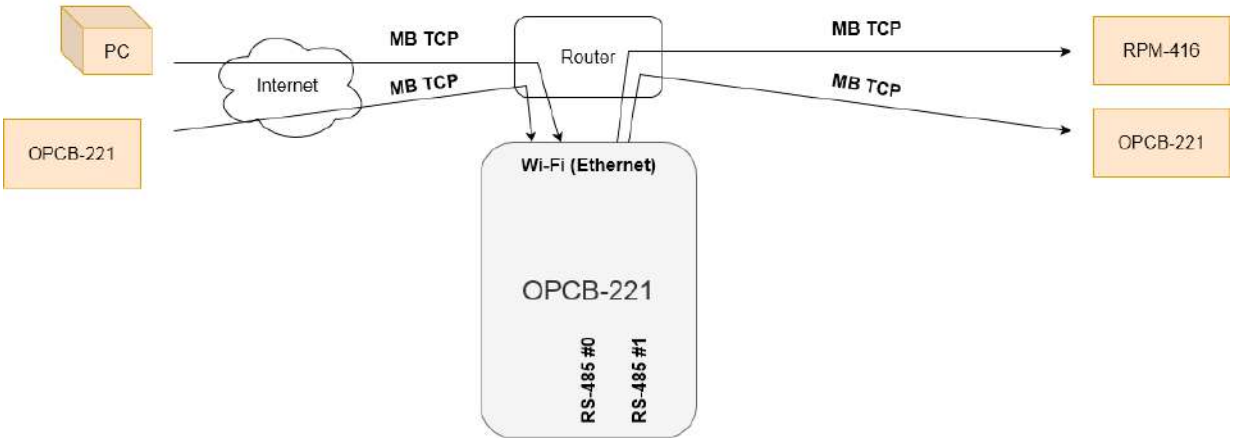
This variant is usually specified with:

- 1...2 RS-485 ports enabled in Master mode;
- Modbus TCP server enabled;
- Modbus TCP clients turned off.

The RS-485 port or ports are configured for communication with the connected devices (speed and byte format, i.e. parity and number of stop bits are specified). The gateway for RS-485 is configured for the desired Modbus address ranges.

2. Converter for remote access to Modbus TCP via Internet

Логическая схема отношений ОРСВ-221 и подключаемых к нему устройств



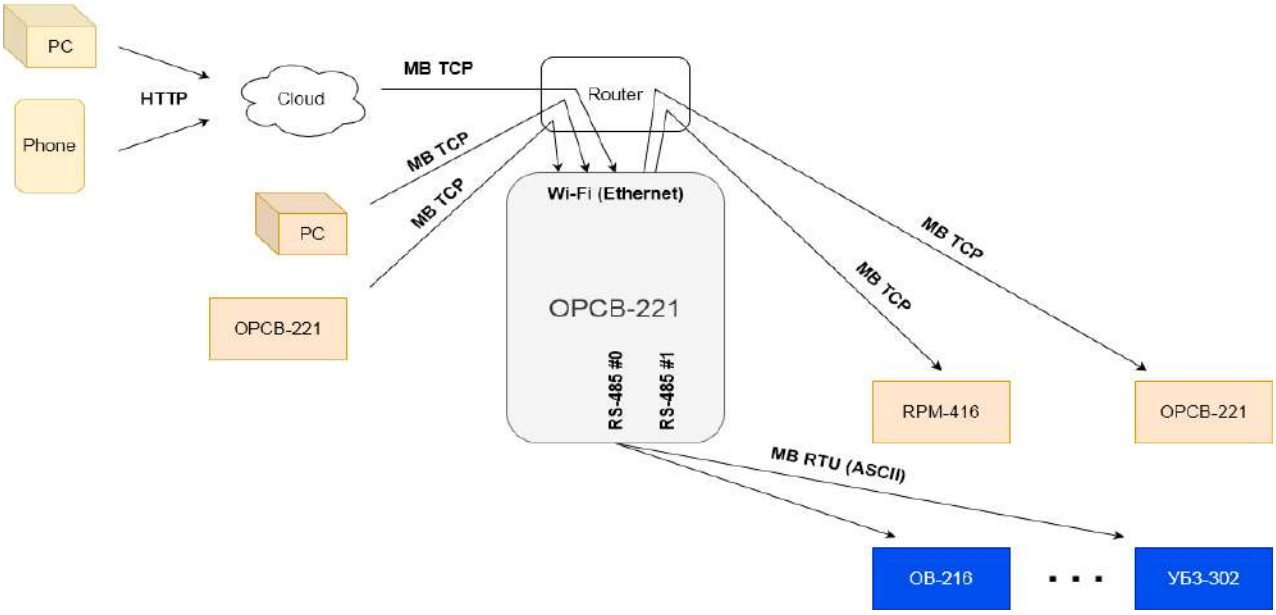
This option is usually specified with:

- OPCB-221 access to the Internet;
- 1...2 Modbus TCP clients enabled;
- Modbus TCP server enabled;
- disabled RS-485.

The Modbus TCP clients are configured to communicate with the desired remote servers or devices (IP addresses are specified). The gateway for Modbus TCP clients is configured to the desired Modbus address ranges.

3. Converter for remote access via a cloud server

Логическая схема отношений ОРСВ-221 и подключаемых к нему устройств



The variant is most often a cloud variant of any of the other modes, or a combination of them. However, when accessed exclusively through a cloud server, other ports for local control devices (such as a Modbus TCP server) are most often disabled. The option is used under the following conditions:

- The OPCB-221 has access to the Internet;
- reverse (device-to-server) connection to the cloud server is enabled.

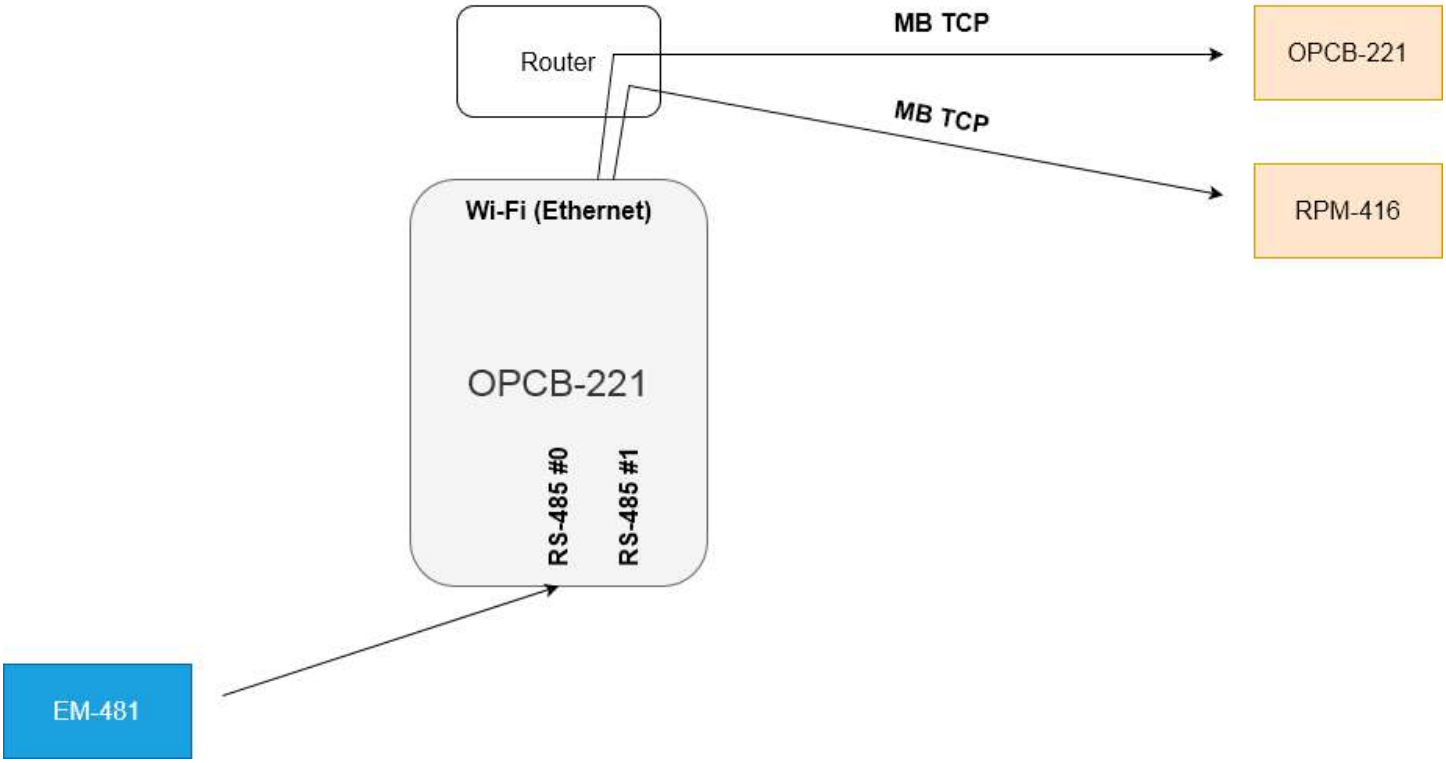
To access OPCB-221 via the cloud server, you just need to provide access OPCB-221 to the Internet and make sure that the address of the desired server is specified in the settings.

It is not recommended to disable the reverse (device-to-server) connection, even if remote user access is not required at this time.

4. Modbus TCP to Modbus RTU/ASCII converter

- connection of Modbus TCP devices to a master that has an RS-485 interface
- extension, extension or synchronization of the RS-485 by means of converter(s) OPCB-221

Логическая схема отношений OPCB-221 и подключаемых к нему устройств



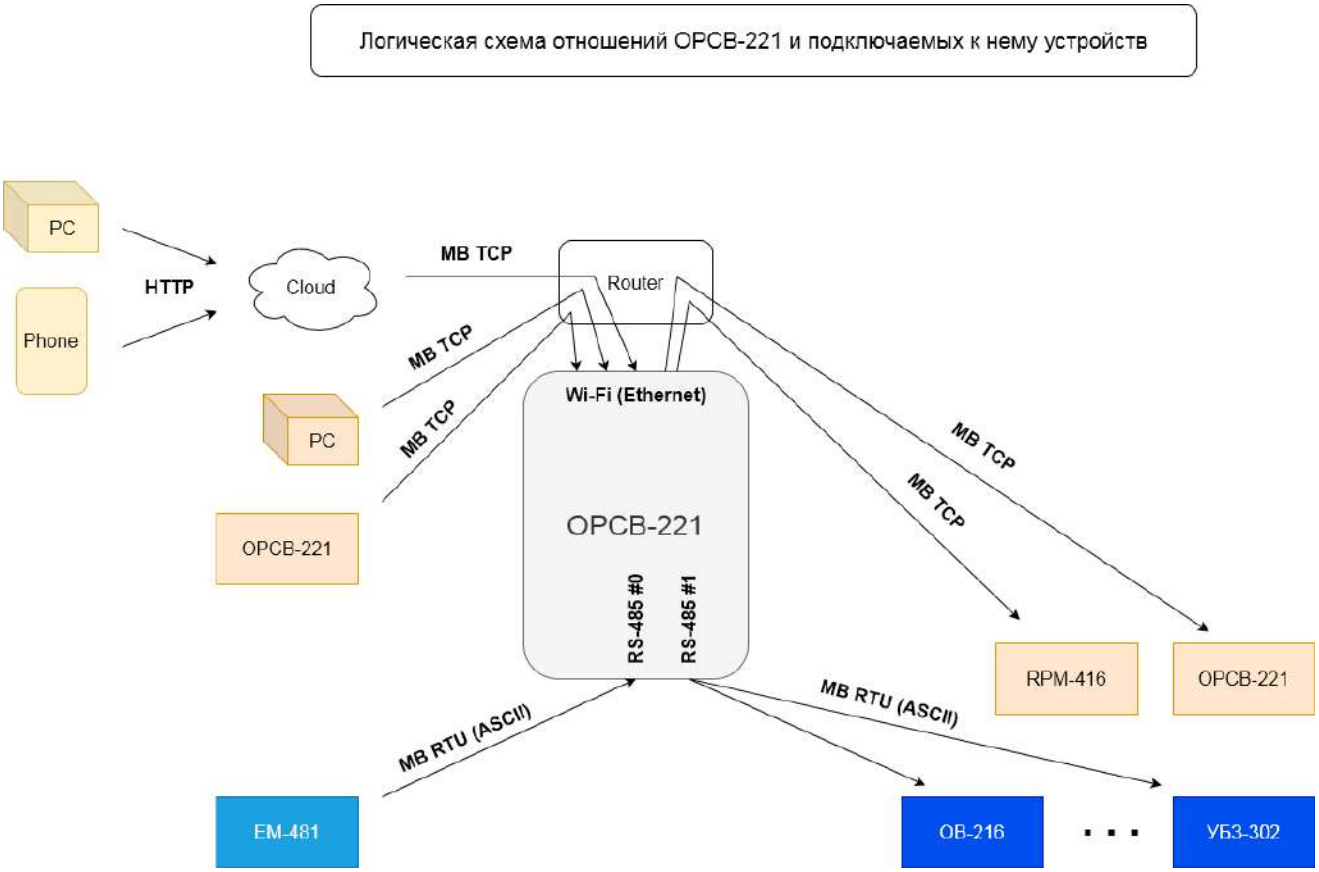
This variant is usually specified with:

- 1...2 RS-485 ports enabled in Slave mode;

- 1...2 Modbus TCP clients enabled;
- Modbus TCP server turned off;
- disabled RS-485.

The RS-485 port or ports are configured for communication with the connected master device or devices connected (the speed and byte format, i.e. parity and number of stop bit). Modbus TCP clients are configured to communicate with the desired remote servers or devices (IP addresses are specified). Gateway for Modbus TCP clients is configured to the desired Modbus address ranges.

Combinations



The number of combined variants is quite large, basically they contain different parts of the already listed variants.

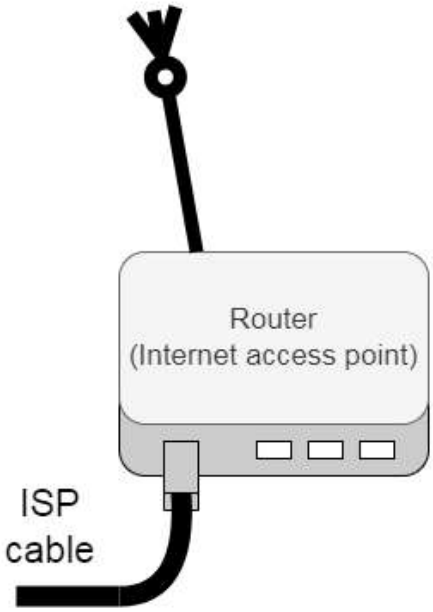
For example:

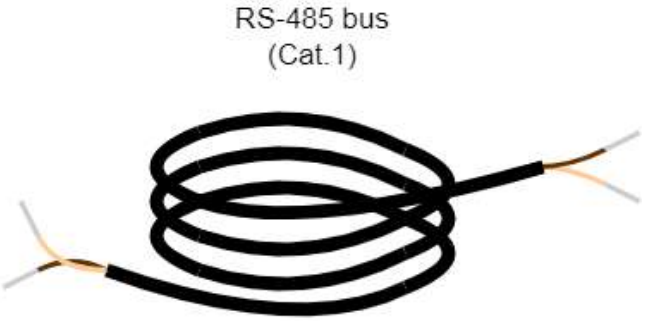
- one RS-485 can be configured as either Master or Slave, but not both both at the same time. Accordingly, depending on this, either the slaves devices from variant 1, or control devices from variant 2 may or may not present or absent in either mode;
- the same applies to the second RS-485, which is independent of the first. Therefore, a combination of Master and Slave (a mixture of variants 1 and 4) is acceptable;
- Modbus TCP devices (from variants 2 and 4) can be present or not TCP devices (variants 2 and 4) can be present or absent in any of the modes, depending on the settings of the Modbus TCP;
- Modbus TCP control devices (of variants 1 and 2) may or may not be present in any mode, depending on the settings of the Modbus TCP Modbus TCP control devices (variants 1 and 2) may or may not be present in any of the modes depending on the local Modbus TCP Modbus TCP server settings; cloud server (from option 3) may or may not be present in any of modes, depending on the settings of the return connection.

Quick start

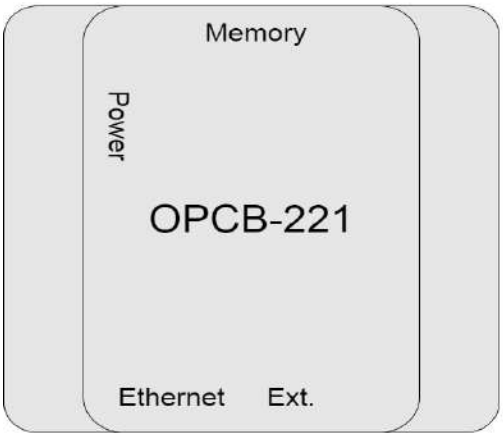
Wiring the OPCB-221

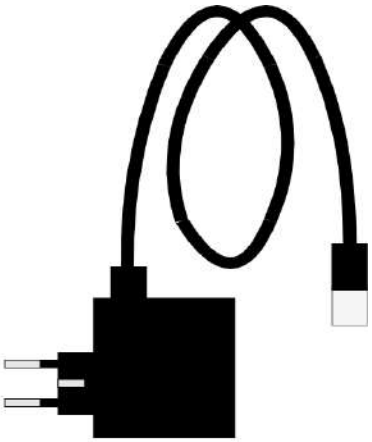
1. prepare RS485 bus, LAN / Wi-Fi router connected to Internet;

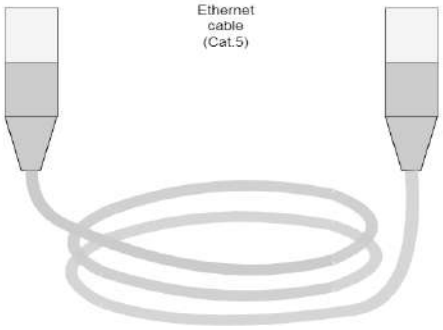


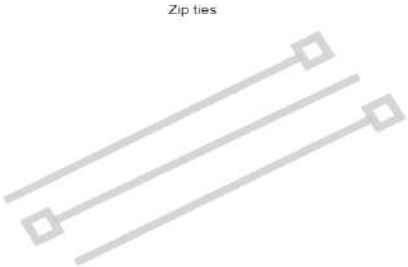


2. unpack OPCB-221;



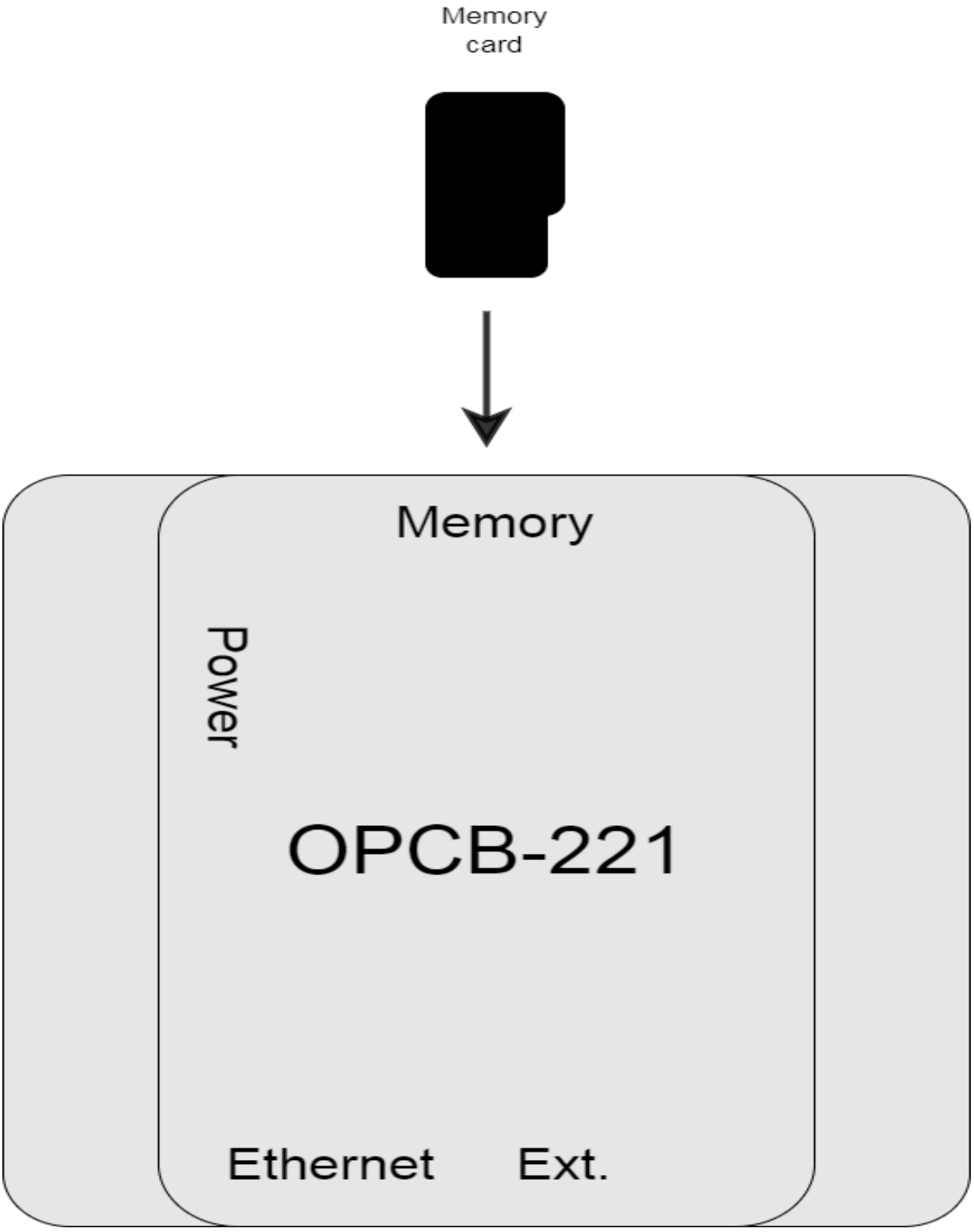




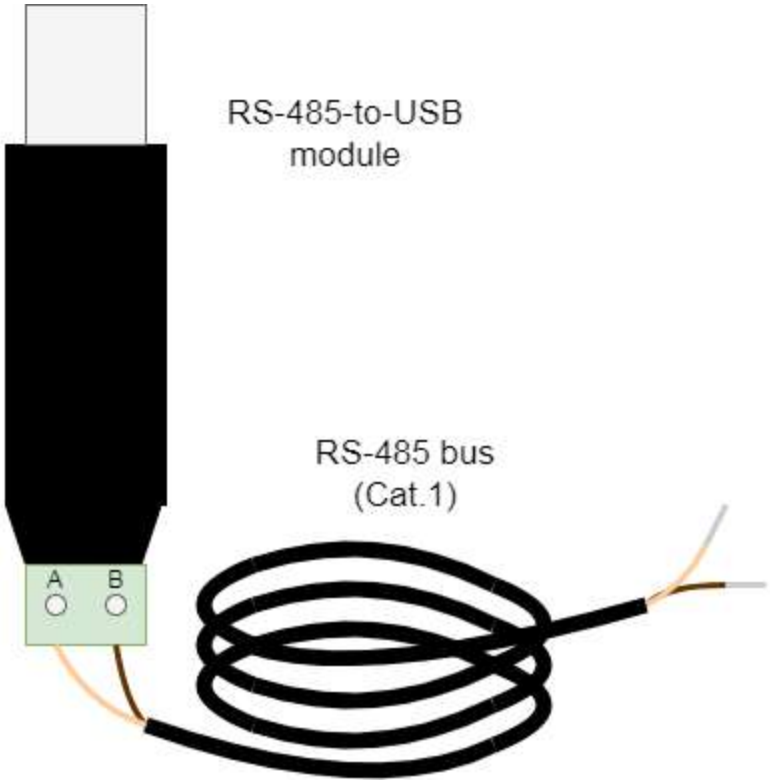


- compare OPCB-221 package contents with the manual inside, and ensure there are no traces of damage to any of the items;
- **compare the power unit characteristics with the local mains**;
- keep the device in the target environment for 2 hours (at least) before powering it;

3. Memory card is factory pre-installed into the OPCB-221 Memory slot;

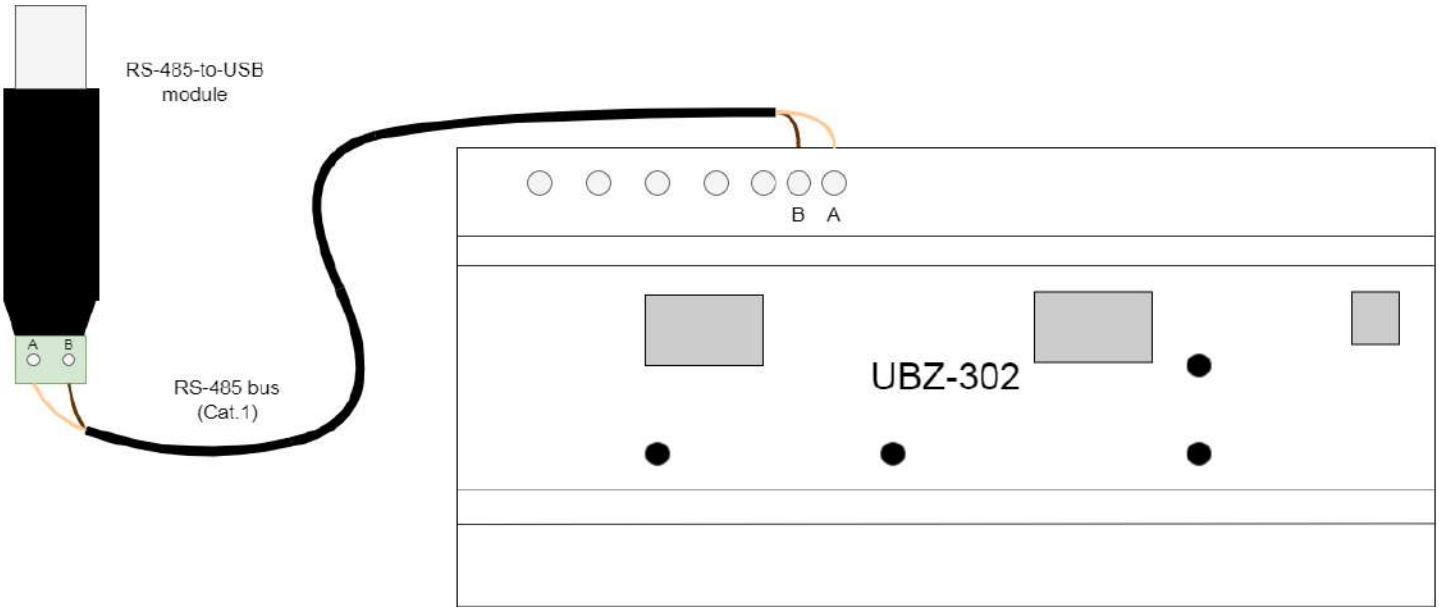


4. connect RS-485 bus to RS485-to-USB convertor module (included);



- note the direct signal contact A/A+/D+ and inverted signal contact B/B-/D- connection, the bus shield (if any) should be grounded at a single point close to the terminal;
- if the module is the last (or the first) connection on the bus line, consider adding a 120Ohm 0,25W termination resistor in parallel to improve performance for high-speed or long lines;

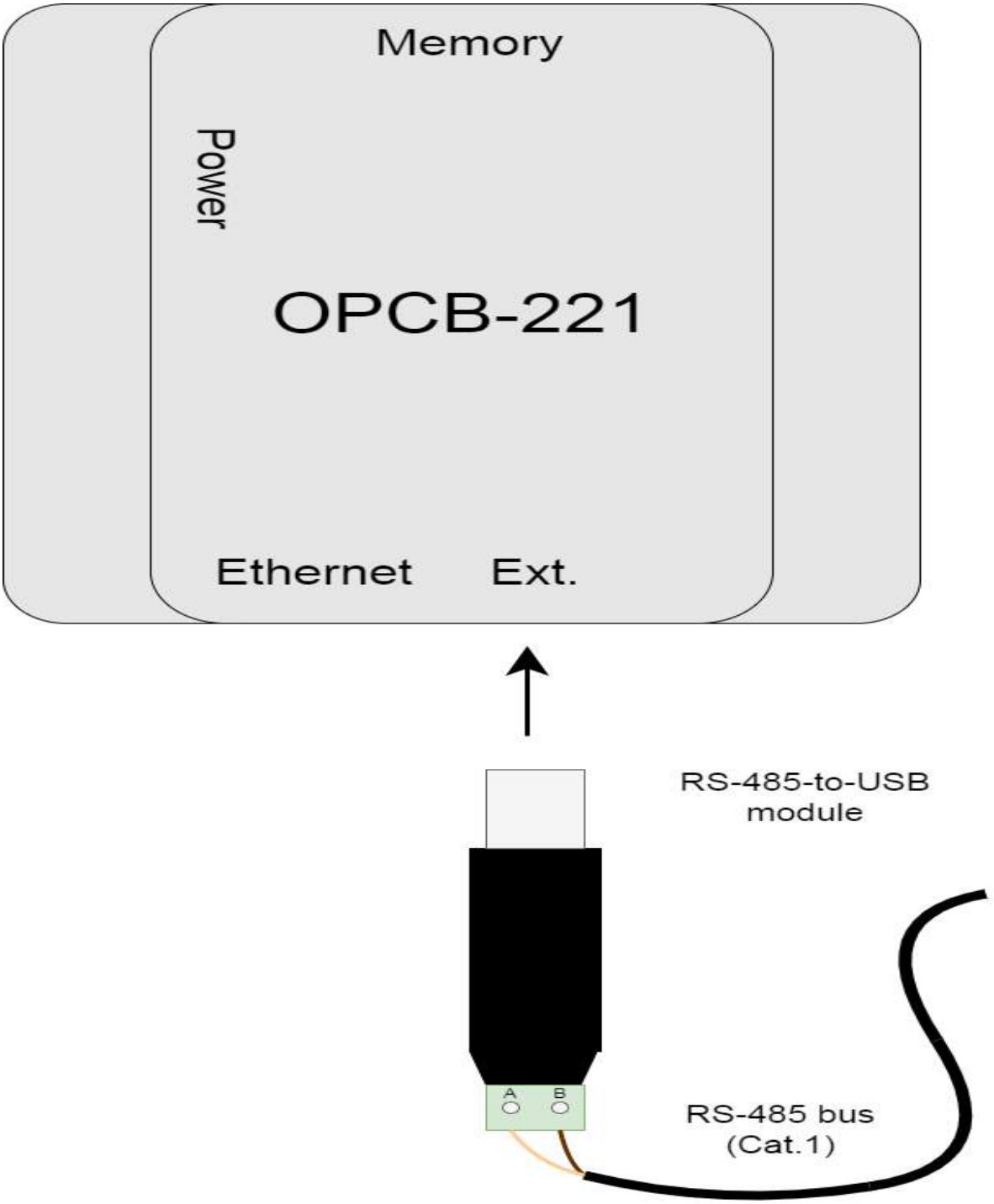
5. connect other Modbus controllable devices to RS-485 bus;



- the number of the devices sharing the same bus (without RS-485 repeater device insertion, not included) is limited by their receiver current consumption, usually at least 32 devices with 1mA consumption can be connected (more if their consumption is less than 1mA);

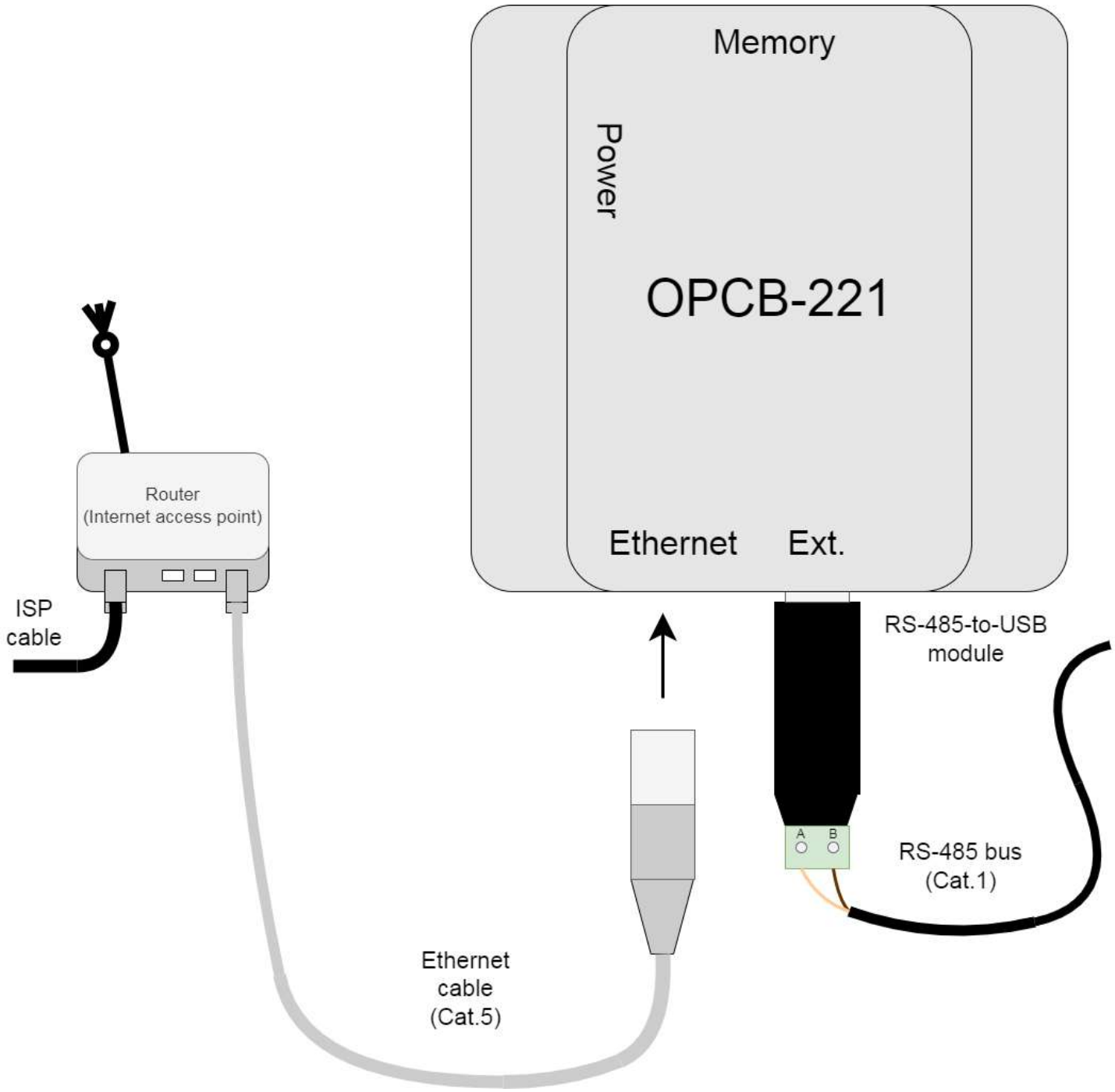
- each device should be added on either of the two ends of the bus (instead of the termination resistor), avoiding junctions and branches;
- the direct and inverted contacts should be connected accordingly, otherwise some or all of the bus devices would be inaccessible;
- if the bus contacts order is unknown for a custom device, it is safe to test it later (by trying it the both ways);
- the bus shield part between any two devices should be grounded separately instead of connecting it to the other shield parts;
- consider adding a 120Ohm 0,25W termination resistor in parallel to the terminal contacts of the uttermost device (that is, two resistors on the both ends of the RS-485 bus) to improve performance for high-speed or long lines;

6. connect RS-485-to-USB convertor module to OPCB-221;



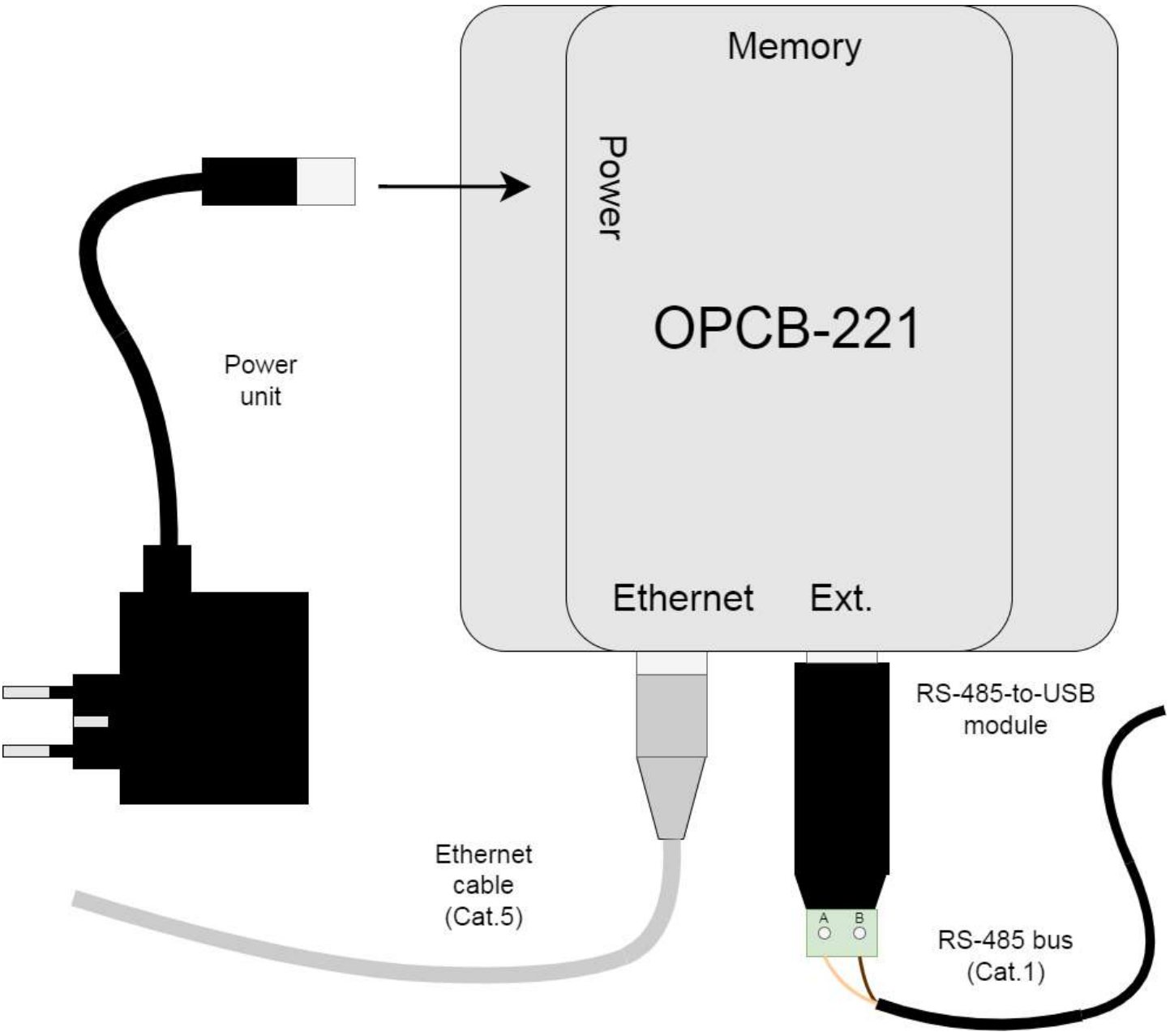
- any of the OPCB-221 USB jacks marked Ext. can be used;
- consider fixing the module in place with the zip ties (included) to avoid accidental disconnection;

7. optional: if using Ethernet instead of Wi-Fi, connect OPCB-221 to the router with the LAN cable (included);

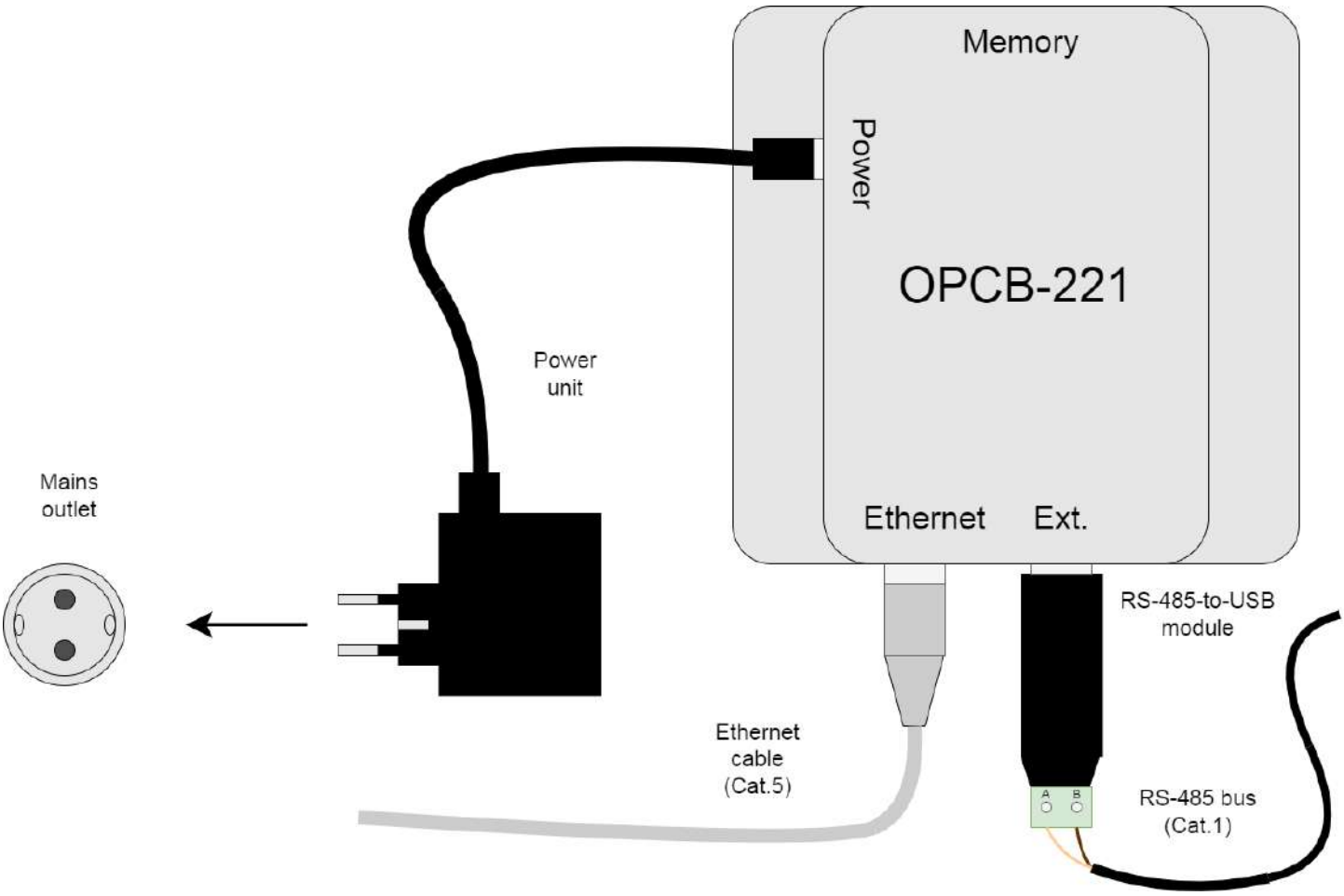


- do not connect to the router jack WAN/Internet, but use the conventional LAN jack instead;

8. connect power unit (included) to OPCB-221 Power jack;



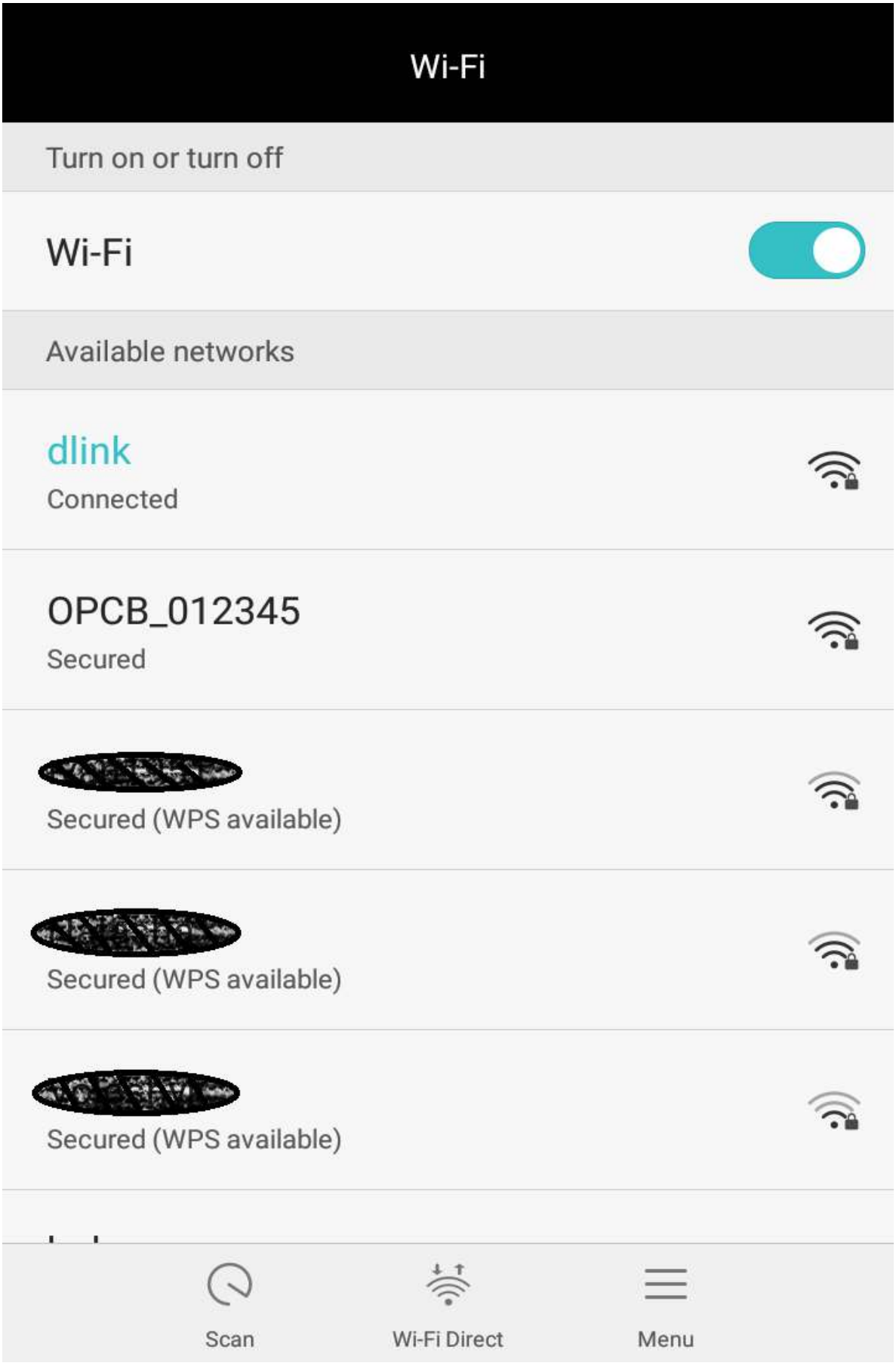
9. connect power unit to the mains, power on OPCB-221 and other RS-485 bus devices.



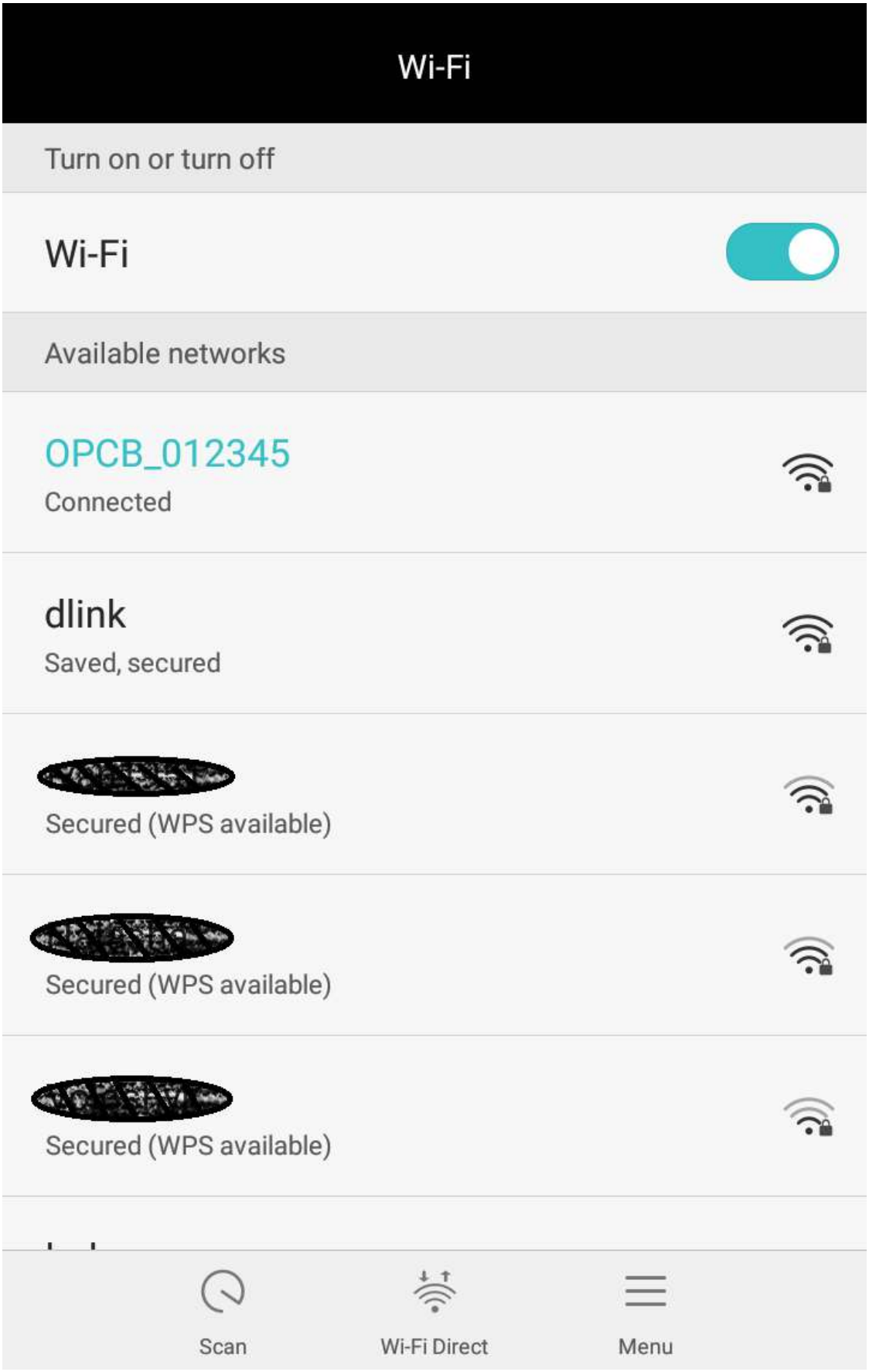
- **ensure the mains connection is rotected (with the 1A current limiter)**;

Getting OPCB-221 to Internet

1. use your telephone or another Wi-Fi smart device to scan for access point `OPCB_XXXXXX` to appear (where XXXXXX are the last 6 digits in the labelled device MAC address, the startup can take up to 1 minute);

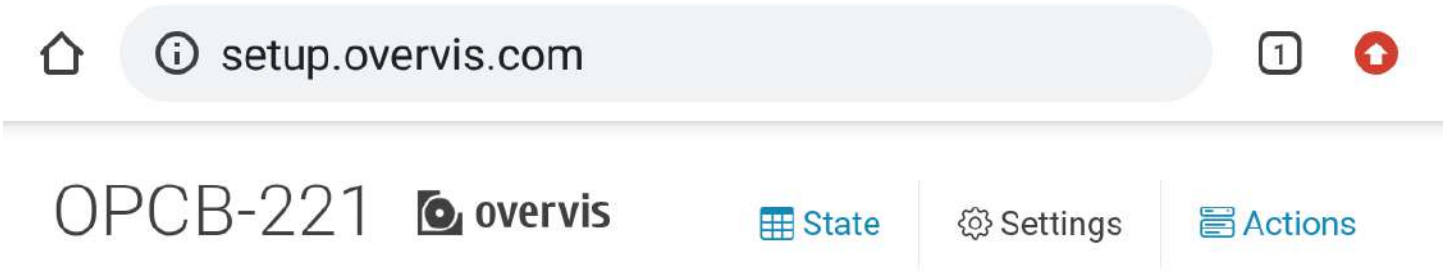

Wi-Fi
Turn on or turn off
Wi-Fi
Available networks
dlink
Connected
OPCB_012345
Secured
Secured (WPS available)
Secured (WPS available)
Secured (WPS available)
Scan
Wi-Fi Direct
Menu

2. connect to the access point;



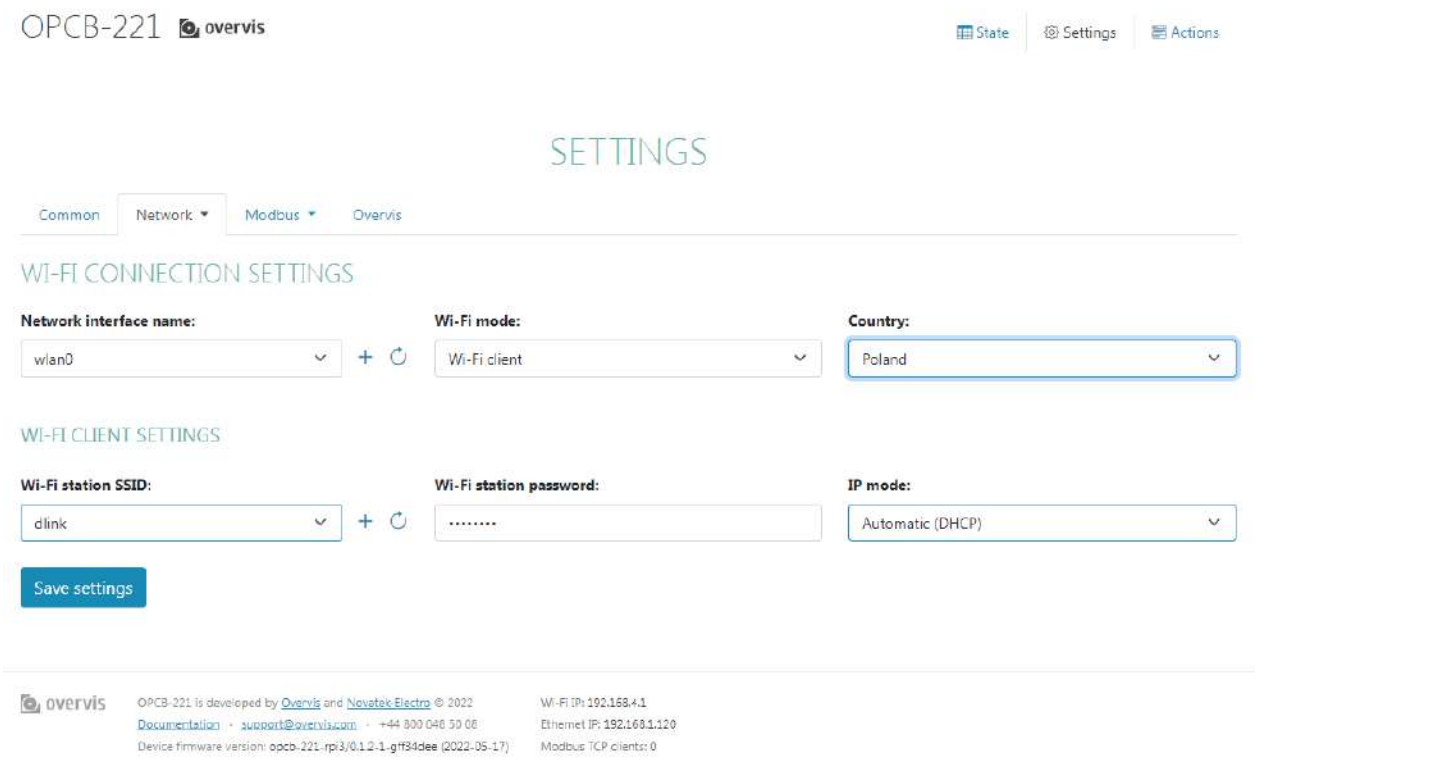
- the default password is 12345678;

3. follow the setup.overvis.com link to open OPCB-221 setup page;



- if the warning page opens with misdirection explanation, try disconnecting your smart device from the Internet first;
- the direct address 192.168.4.1 can also be used to avoid misdirections;

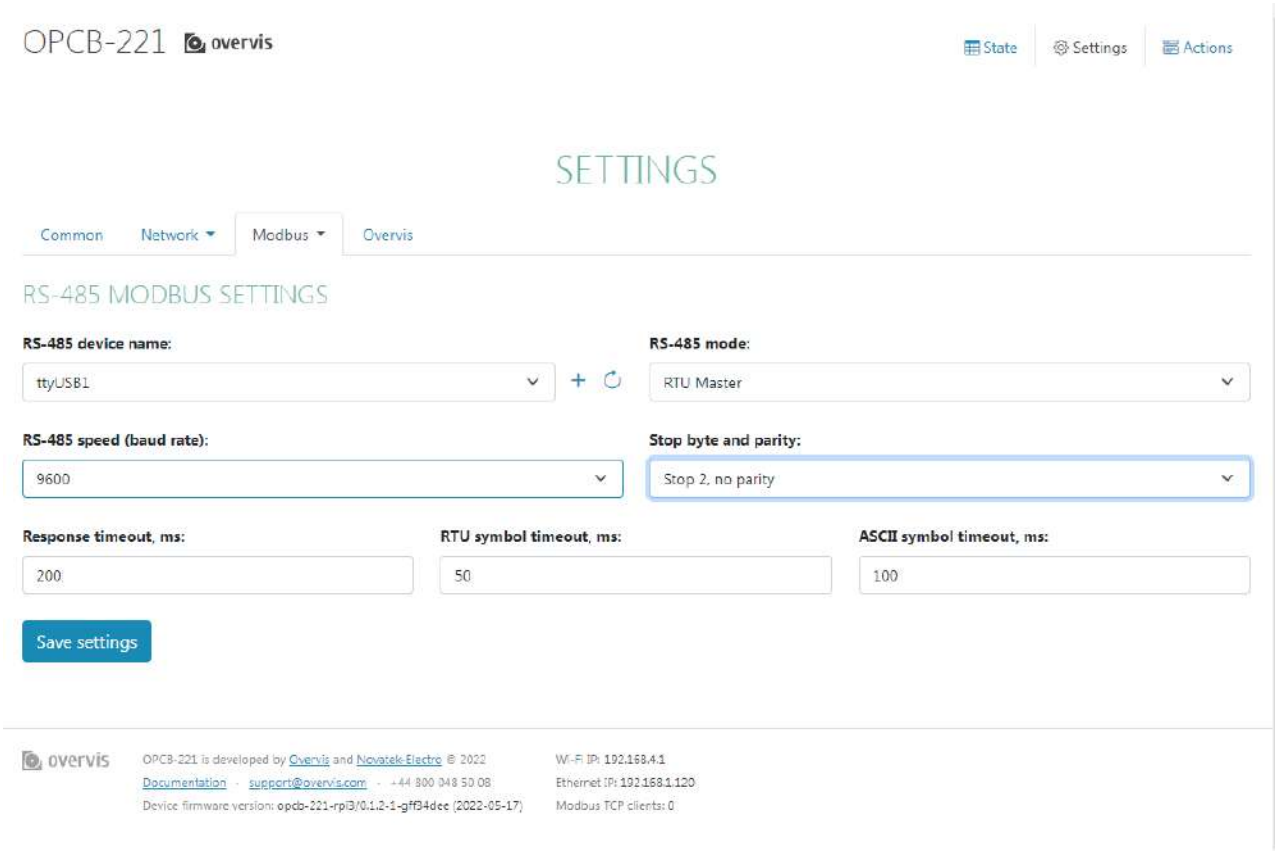
4. setup OPCB-221 network interfaces to match your router configuration;



- use ELAN (Ethernet) or WLAN (Wi-Fi) interface page, or both;

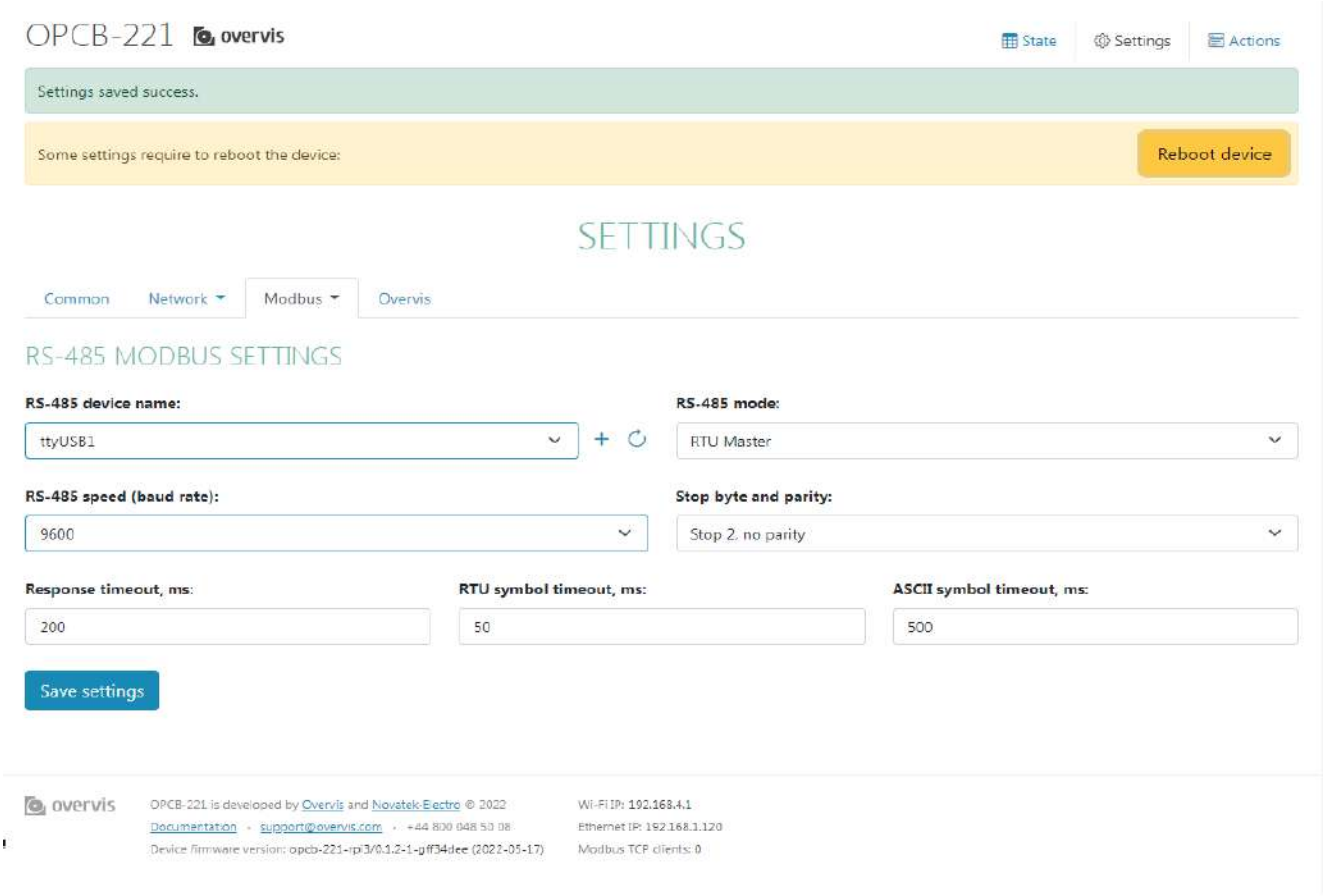
- to use Wi-Fi, switch off access point mode;
- save the settings after completing each page;
- contact your local network administrator to determine the interfaces correct configuration;

5. optional: setup RS485 for baudrate and exchange format of the RS485 bus (this can be done later);



- all the bus devices should share the same baudrate and format;
- save the settings after completing each page;

6. reset OPCB-221 for the changes to take effect.

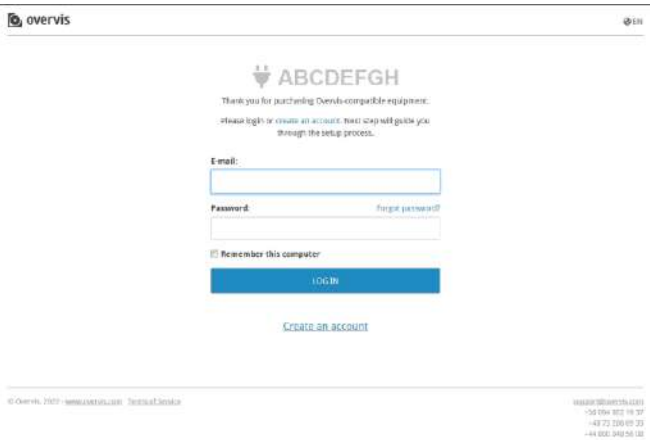


Using Overvis to access OPCB-221

1. follow the labelled link to get to the cloud server;

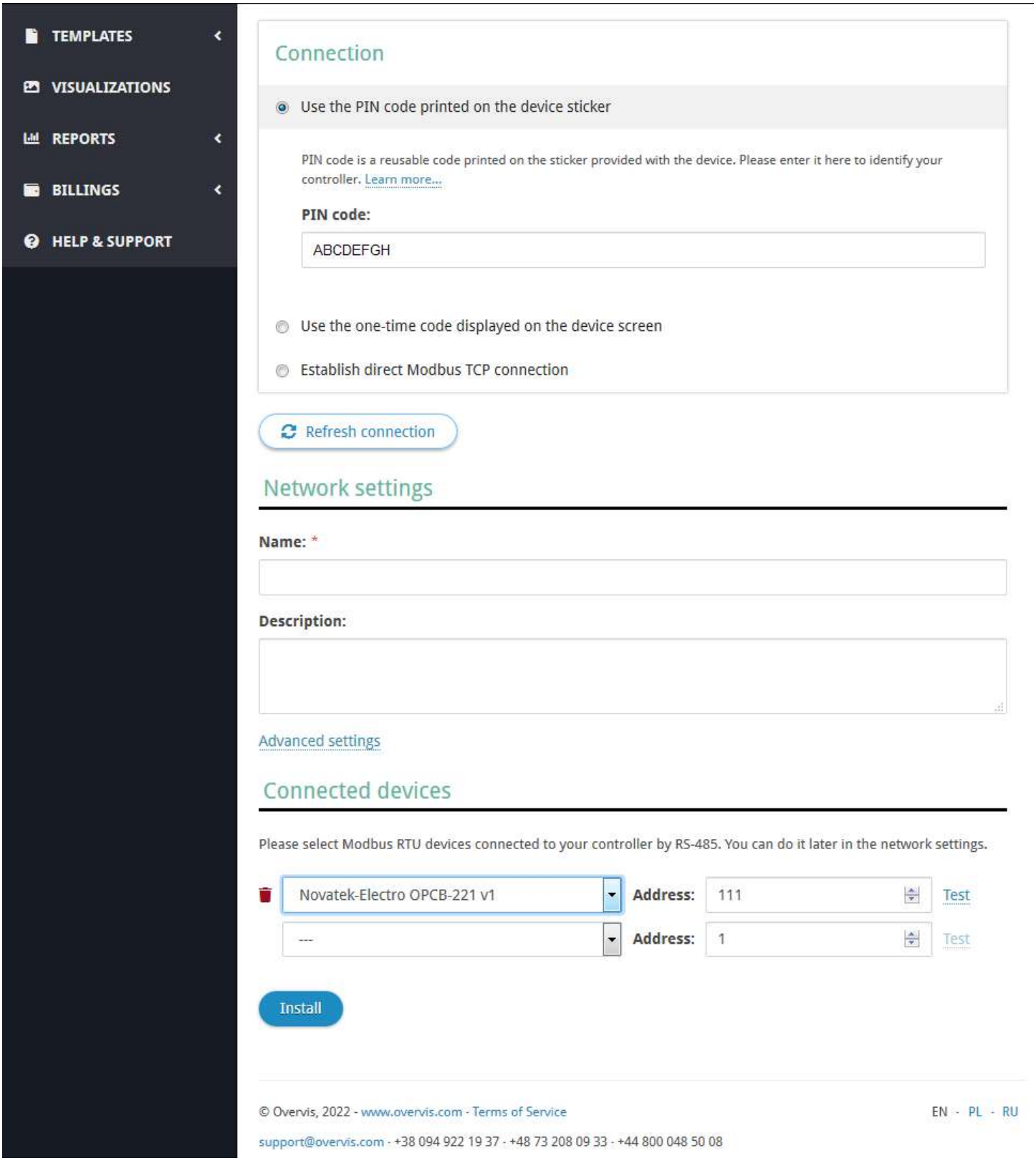
- scan the labeled QR code to follow the link;
- or open the browser on your smart device, then type in the link printed on the label;

2. if not logged in, authorize at the cloud server;



- if password forgotten, restore your password by email with an option at the server login page;
- if no account yet, register a new account with an option at the server login page;

3. on a new Modbus network settings page, type in the new network name in the “Name” field;

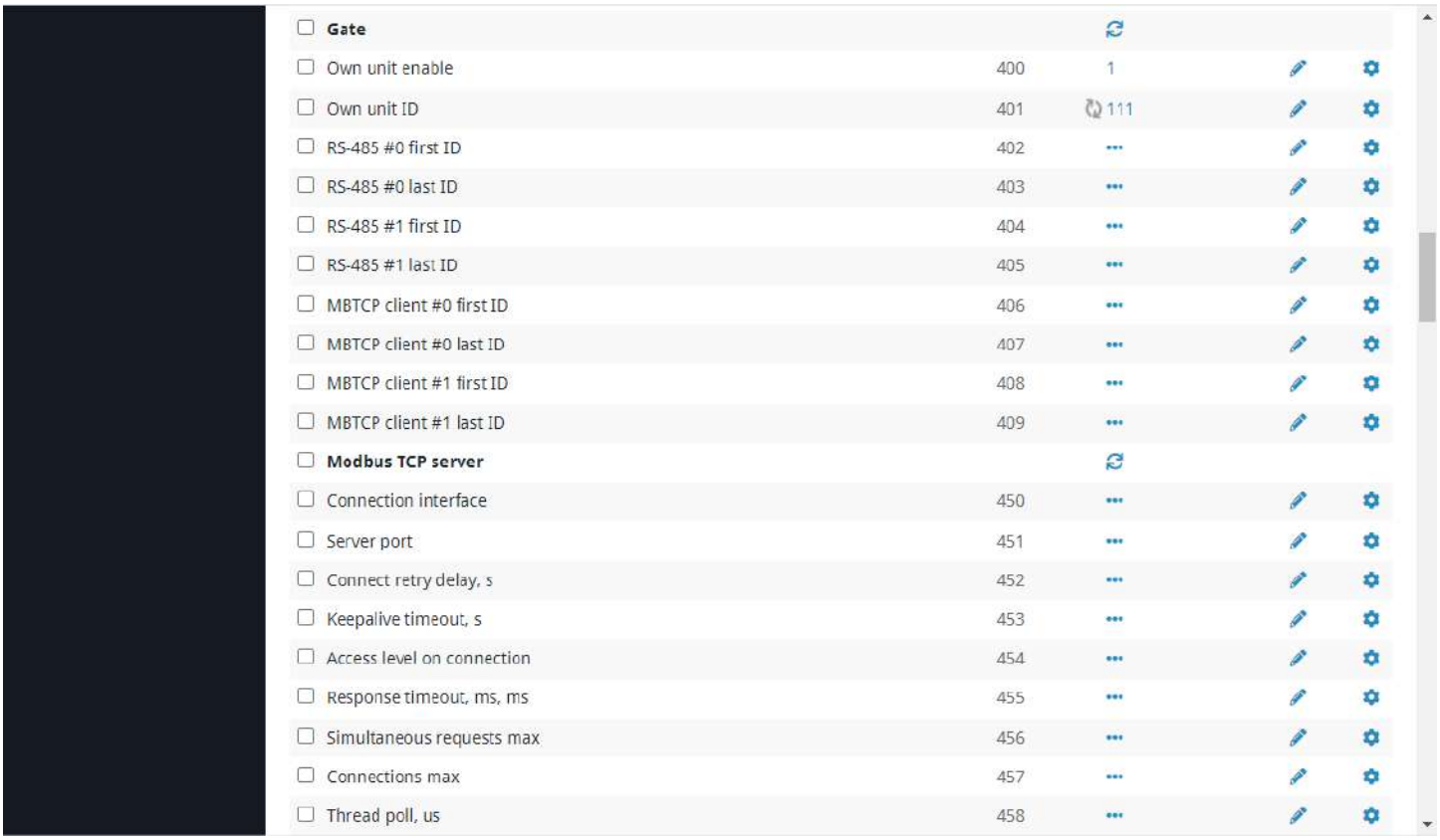


- ensure the connection is established, and the device version is displayed at the top of the Modbus network settings page;

4. optional: add devices connected to the OPCB-221 (via Modbus RTU/ASCII or Modbus TCP) to the "Connected devices" list (this can be done later);

5. press the "Install" button;

6. finally test the connection by pressing any OPCB-221 parameter value in the table below;



- ... is displayed in the values column if no value is known yet, otherwise a value (e.g. a number) is displayed;
- the value would then update continuously (until it is pressed again).