Connecting PR103 to akYtec Cloud



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1. Prerequisites

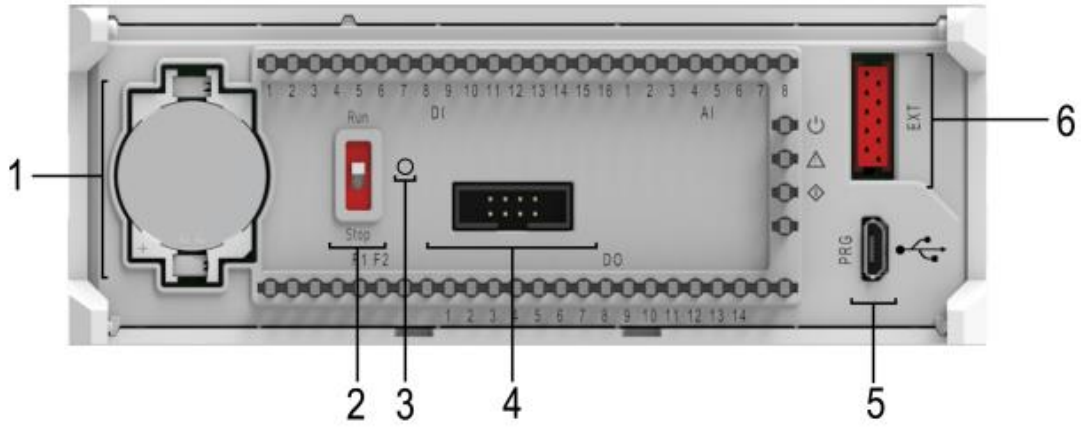
For this you will need a few items:

- akYtec PR103
- akYtec ALP
- micro-USB cable
- Ethernet cable
- Router/ethernet switch with connection to the internet
- 24V DC power supply
- PC

2. Setting up PR103 in akYtec ALP

2.1. Connecting PR103 with ALP

Connect your PC to PR103 via micro-USB cable (the location of the micro-USB port is shown in picture 1) and open ALP.



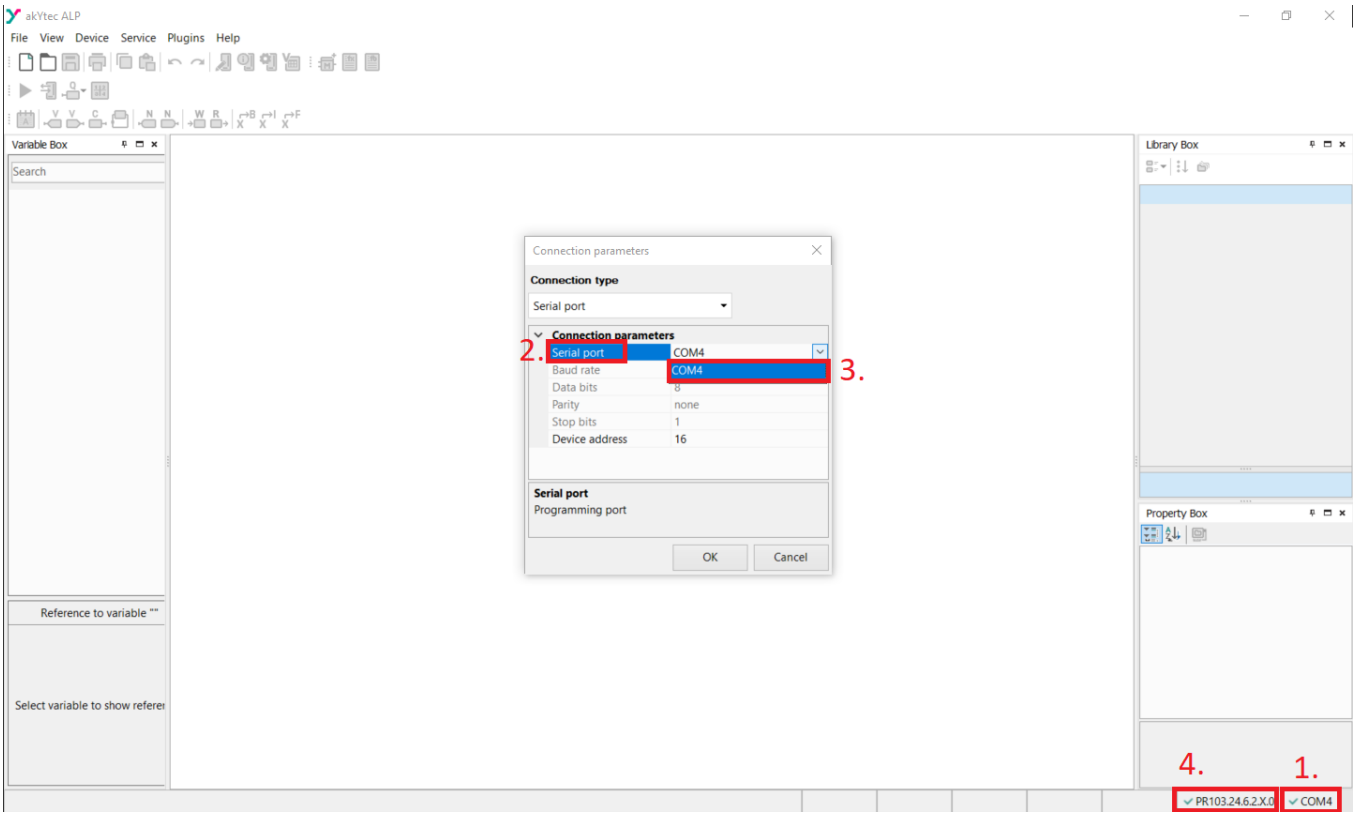
Picture 1 Location of the micro-USB port (number 5)

The first step is to connect the PR103 to ALP, to do so follow these steps:

- Click on COM in the lower right corner of ALP (1.).
- In serial port field (2.), select the COM port of the PR103 (3.)
  - In this example it is COM4.
- If the correct COM port was chosen, the field next to the COM field will change to the green mark with model of your PR103 (4.).

All the steps mentioned above are shown in Picture 2.

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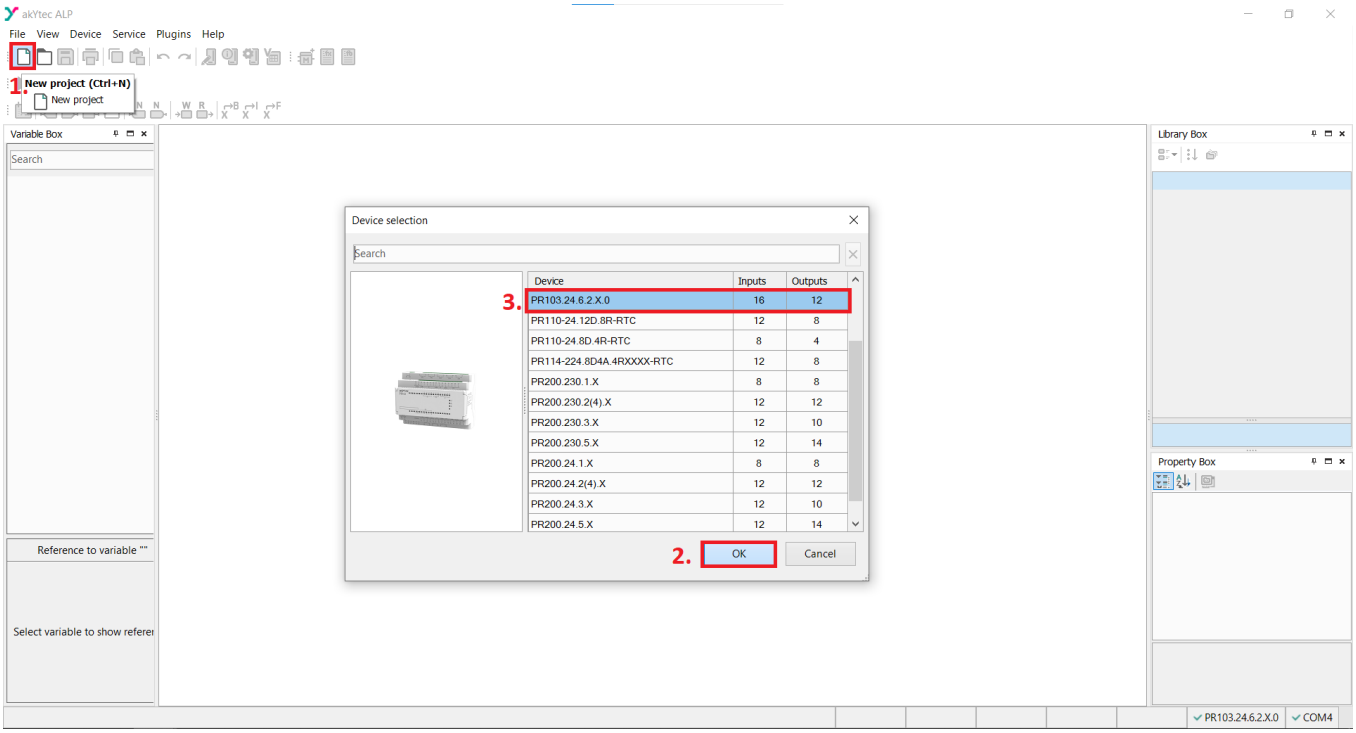
Picture 2 Establishing a connection between PR103 and ALP

Next, PR103 needs to be configured in ALP, to do so follow these steps:

- Click on the *New project* button (1.), A new window will appear.
- In the new window, click the OK button (2.) if the previous steps were done correctly.
    - ALP will automatically detect the model of the device (3.).
- If the device model is not detected, manually select the correct model of your PR103 and then click on the OK button.

All the steps mentioned above are shown in picture 3.

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Picture 3 Creating a new project for the PR103

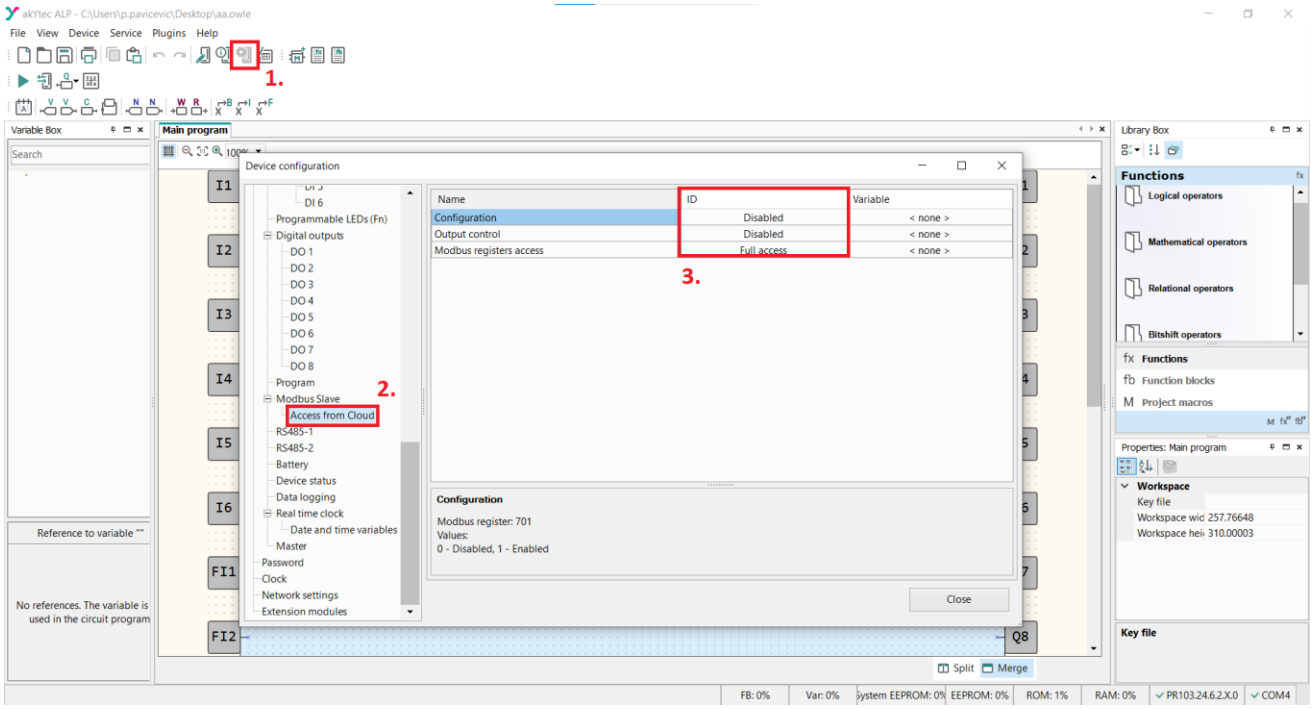
2.2. Configuring PR103 in ALP

To configure the device settings in ALP, follow these steps:

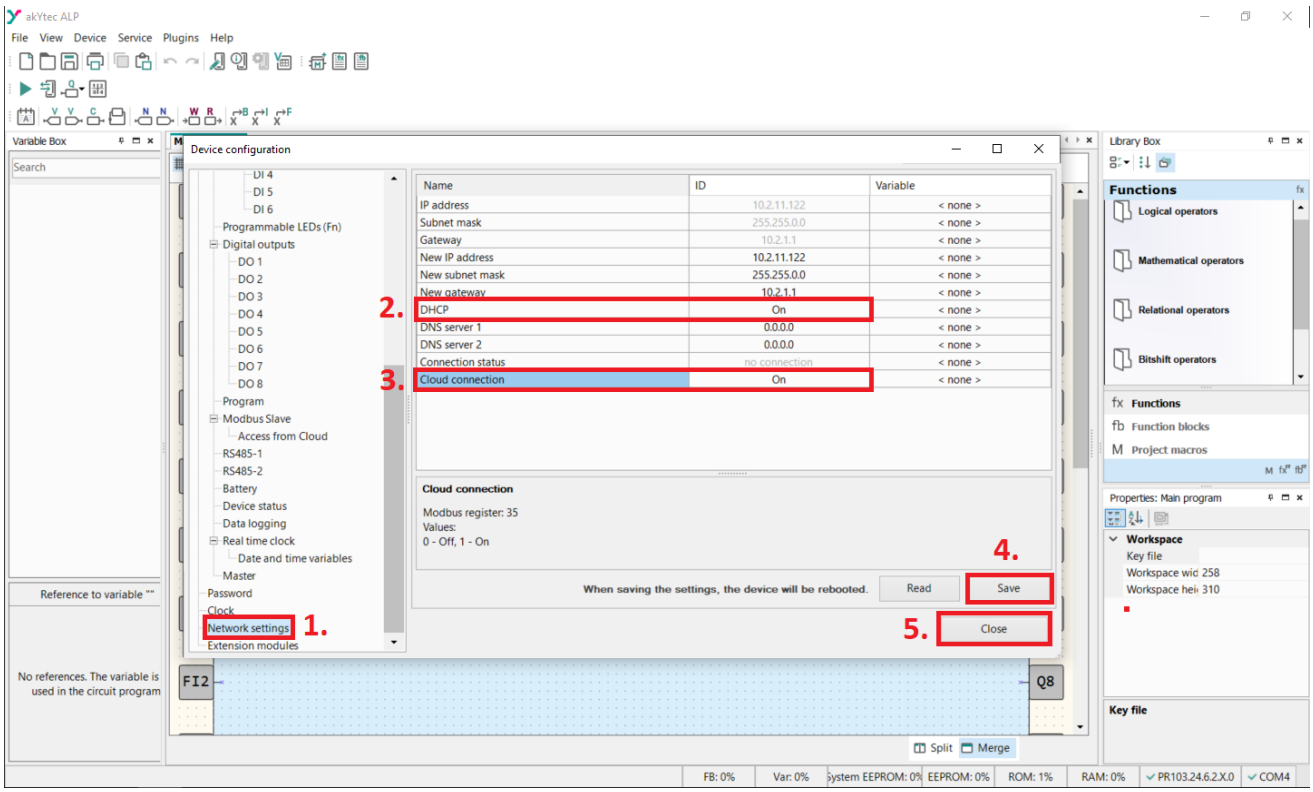
- Click on the *Device configuration* button (1.). A new window will appear.
- Go to the *Modbus Slave/Access from Cloud* section (2.).
- Based on the needs, grant akYtec Cloud the access to some or all functions (3.).
    - In this example, full access will be given only to *Modbus registers access* function. This means the Cloud has the ability to read and write values to the network variables of the PR103.
- Go to the *Network settings* (1.), then set DHCP (2.) and *Cloud Connection* (3.) to ON. C
    - Click on the Save button (4.) and then the Close button (5.).
    - **Note: this step is executed in the most basic way; more complex or advanced connection type can be done as well.**
- The final step is to set a password for PR103 which is mandatory for connection with the Cloud, to do so, go to Password (1.) and once the password is entered, click the Set button (2.).

All the steps mentioned above are shown in pictures 4, 5 and 6.

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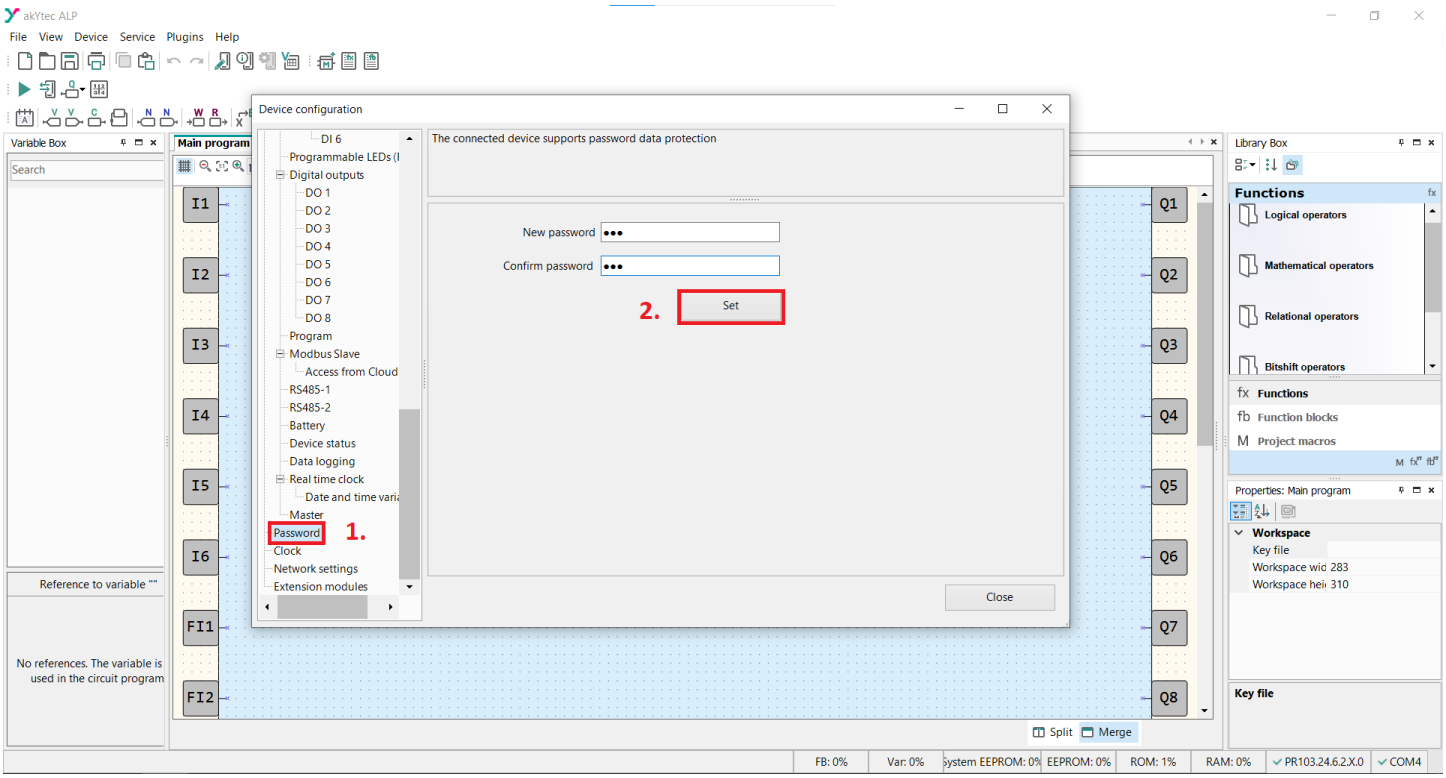


Picture 4 Enabling Cloud access for the PR103



Picture 5 Configuring network settings of the PR103

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Picture 6 Setting a password for the PR103

2.3. Creating network variables in the ALP

After configuring the network settings of the PR103, channels for the data transmission need to be created; In the ALP they are called network variables.

To create network variables:

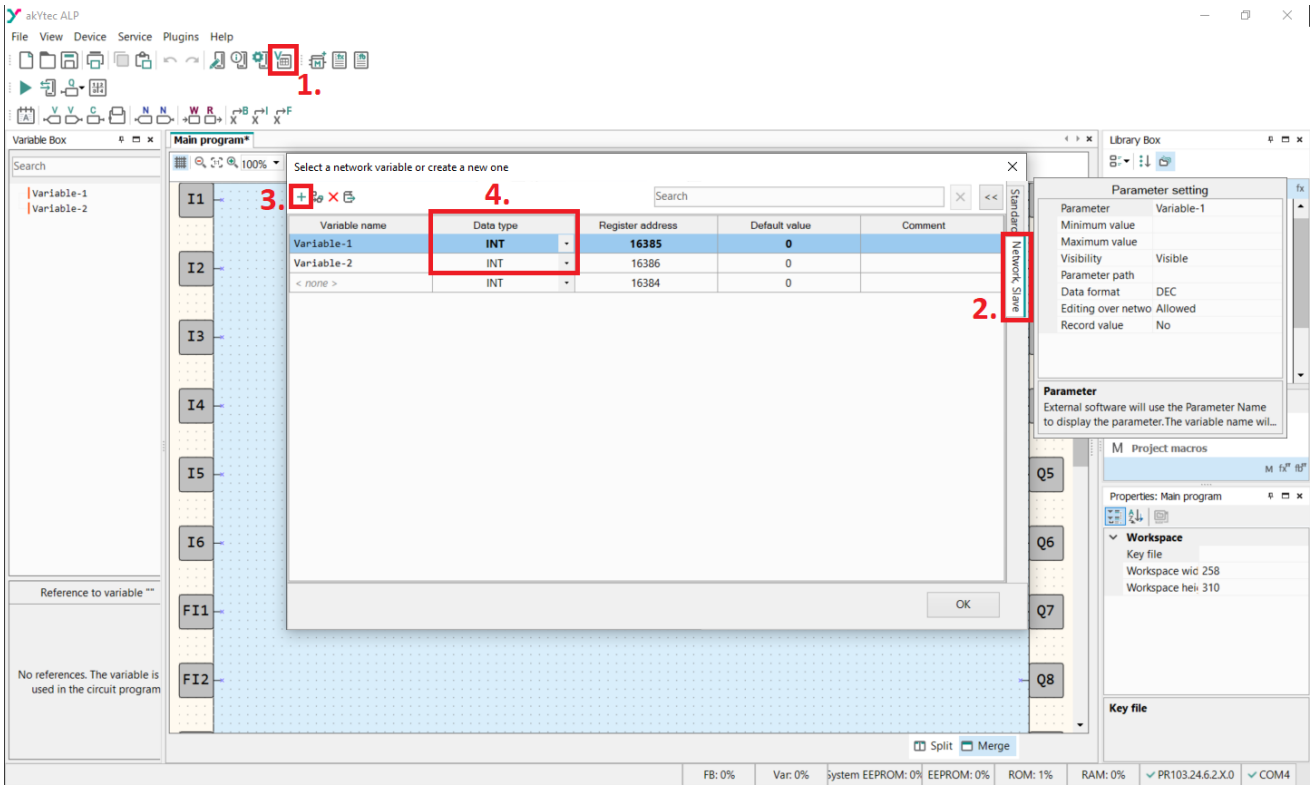
- click on the *Variable table* button (1.). A new window will appear.
  - Go to the *Network Slave* folder (2.).
  - Click on the *New variable* button (3.) to create a new variable.
  - In this example, 2 variables will be created, both of them will be integer type (4.).

All the steps mentioned above are shown in picture 7.

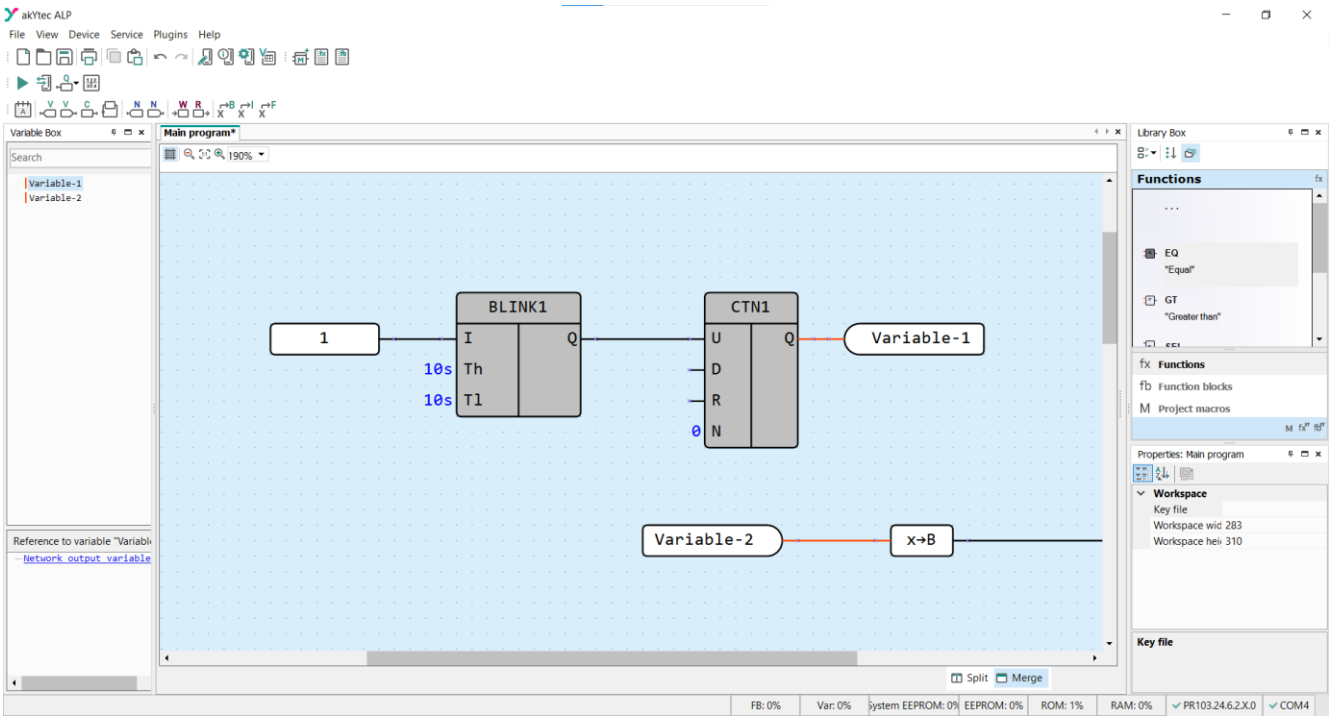
Once all the variables have been created, assign a value to each variable, in this example Variable-1 will be used to send the data to the Cloud and the Variable-2 will be used to receive the data from the Cloud. To view the end results, once all steps in this manual are executed, a logic will be created.

All the steps mentioned above are shown in picture 8.

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Picture 7 Creating network variables



Picture 8 Logic for network variables

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3. Setting up akYtec Cloud

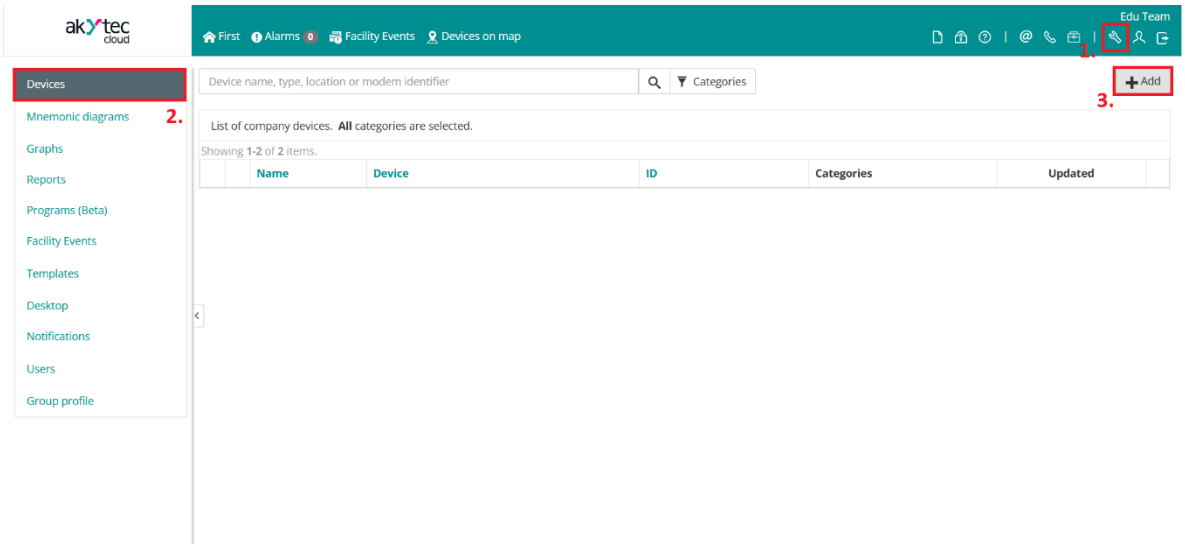
Once all the previous steps are done, it is time to log in to akYtec Cloud. If you do not know how to do that visit our web site or check the User Guide.

3.1. Adding a new device to the akYtec Cloud

Once logged into your akYtec Cloud account, follow these steps:

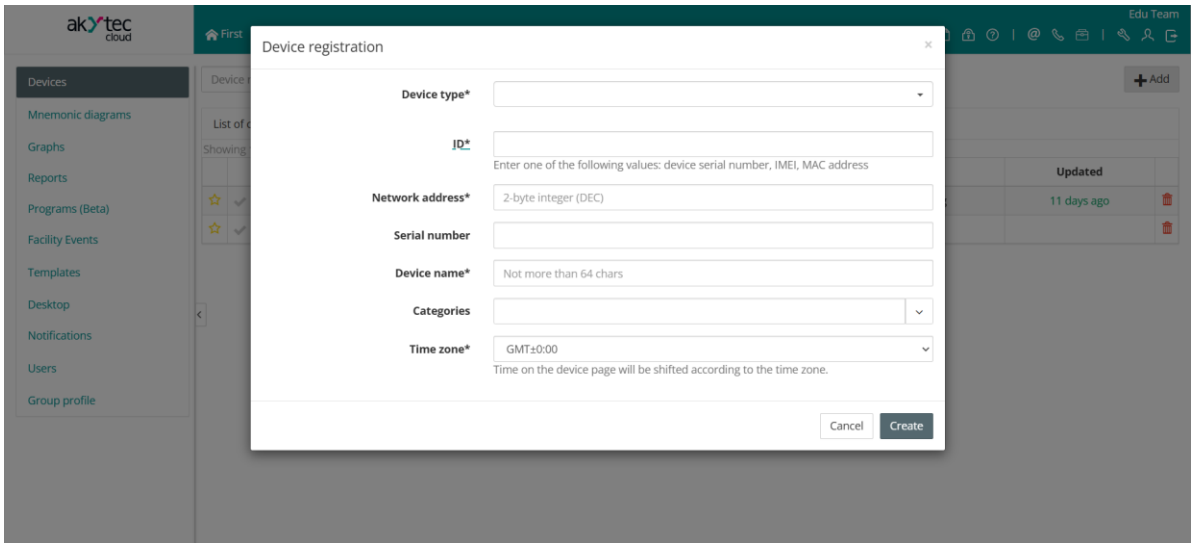
- Navigate to the *Administration* section (1).
- Open the *Devices* folder (2).
- Click the *Add* button (3) to register a new device.
    - A new window will appear—this is the *Device Registration* window.
    - Here, we will configure communication from the Cloud side.

All the steps mentioned above are shown in pictures 9 and 10.



Picture 9 Adding new device in akYtec Cloud

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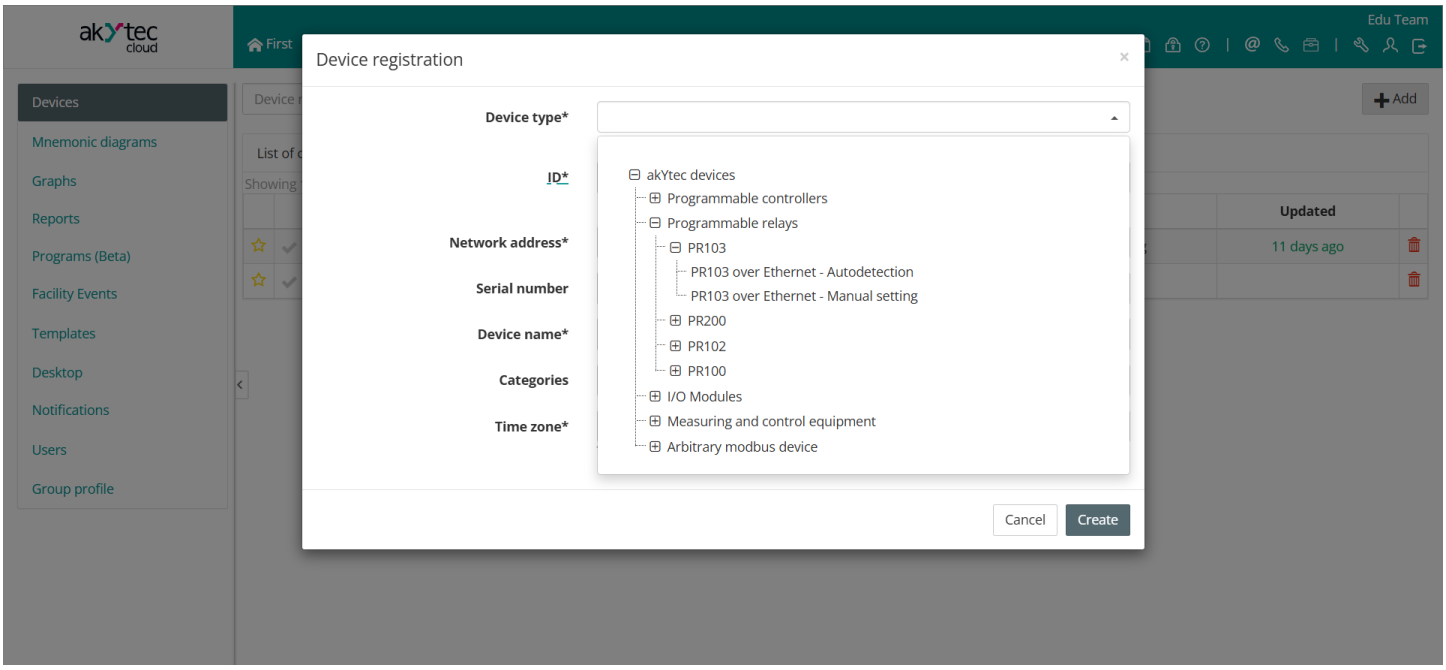
Picture 10 Device registration window

In this example, the *Device Registration* window will be used to complete only the mandatory steps for a successful connection (optional steps are not covered). The required steps are:

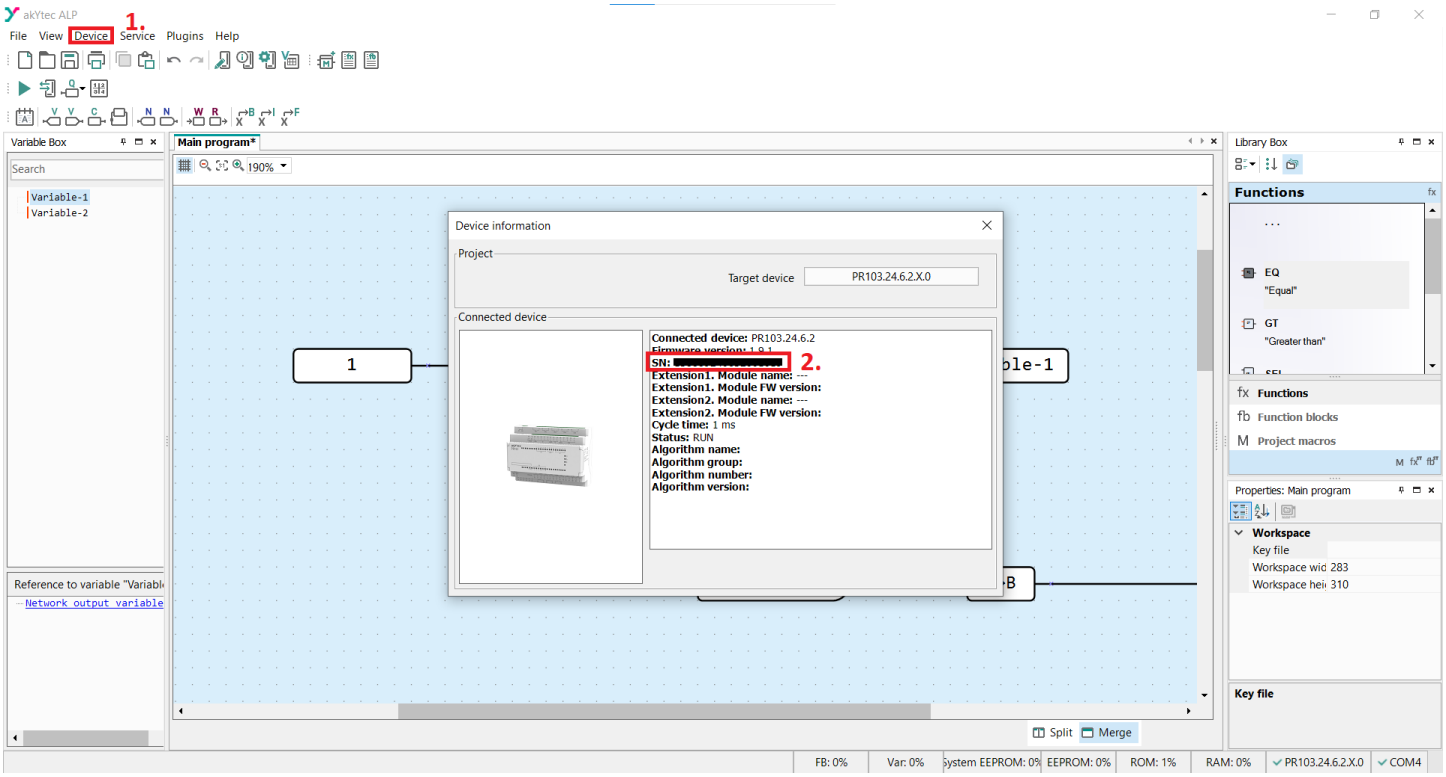
- *Device Type* – Specifies which device is being connected to the Cloud. For the PR103 (1.), there are two connection options:
  - *Autodetection* mode (2.): In this mode, user does not need to manually create communication channels (network variables), instead, the cloud will extract all data possible automatically. In this example this mode will be covered first.
  - *Manual* mode (3.): In this mode, user has to manually create communication channels (network variables).
- *ID*: Enter the serial number of the device needs to be entered. S/N can be read from the side of the device or from the ALP.
- *Network address*: this field is automatically filled and should not be changed (default value is 1).
- *Device Name*.
- Click on the *Create* button.

All the steps mentioned above are shown in pictures 11 and 12.

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Picture 11 Device type



Picture 12 Serial number of the device in ALP

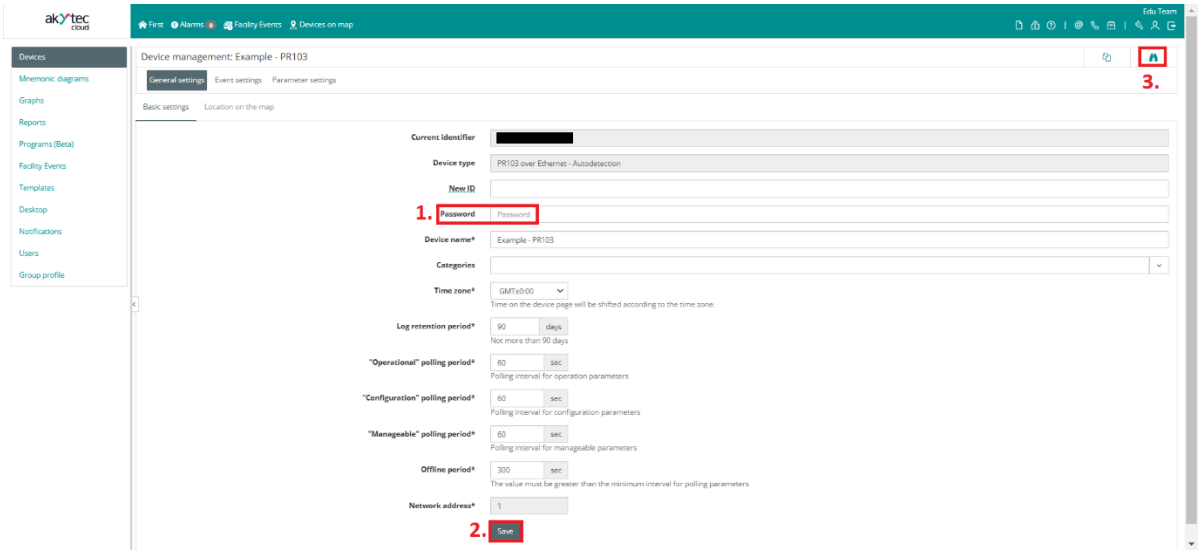
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3.2. Autodetection mode

Once the device has been successfully added, a new window will open. Follow these steps:

- Enter the password (1.).
- Click the *Save* button (2.) to store the password.
- Once saved, click on the *View Device* button (3.).

All the steps mentioned above are shown in picture 13.



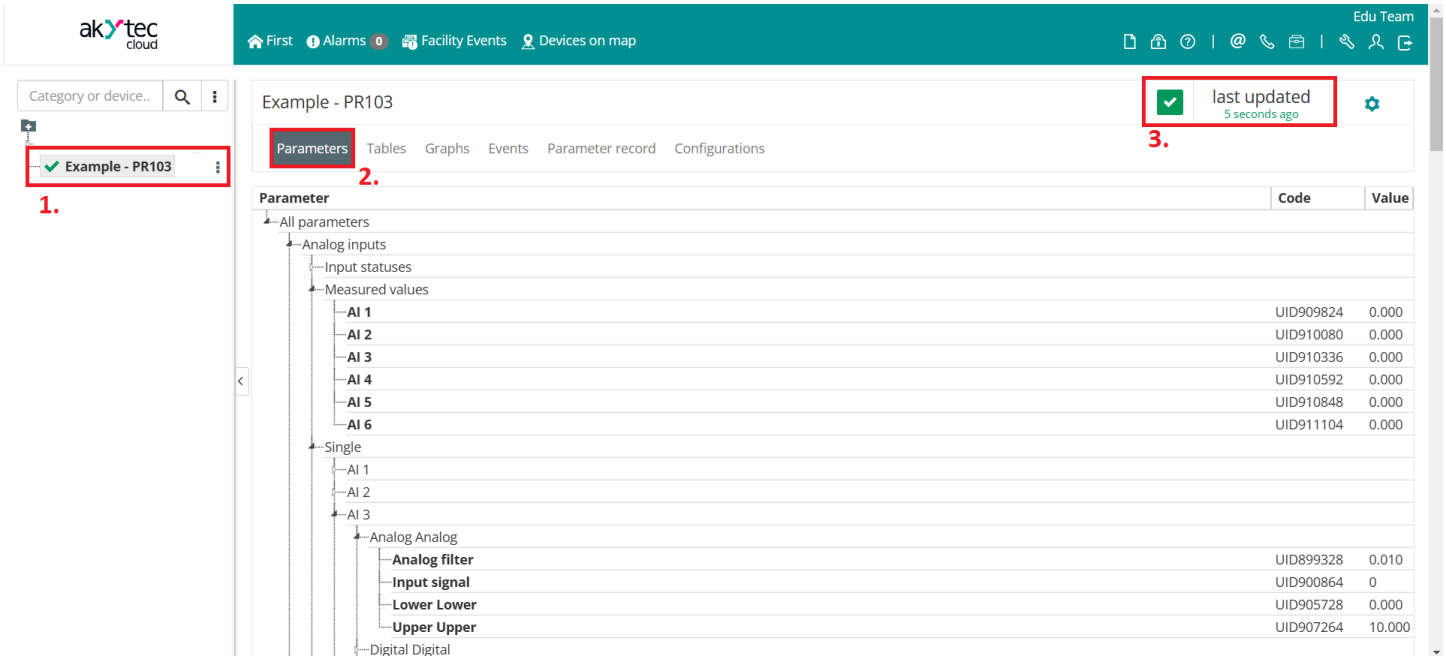
Picture 13. Entering password of the device

If everything was done correctly, the device node will appear in the main window of akYtec Cloud (1.).

- The Cloud requires a few seconds to establish a connection with the PR103 and extract all available data.
- If two minutes have passed and the *Parameters* node (2.) does not display any data or an indicator showing when the device status was *last updated* (3.), something was not set up correctly.
- The most likely issues are incorrect device configuration or improper network settings in previous steps.

All the steps mentioned above are shown in picture 14.

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Picture 14 Successfully added PR103

To monitor the data being transferred, follow these steps:

- Navigate to the *Graphs* folder (1.).
- Select the data you want to display (2.).
- Click the *Show* button (3.).
- If *Program Variables* (4.) are not listed, click the *Device Management* button (5.).

All the steps mentioned above are shown in picture 15.

- In the *Device Management* window, go to the *Parameter Settings* folder (1.).
- Scroll down and check the *Show in Graphs* checkbox (2.) for the variables that should be displayed.
- Click the *View Device* button (3.) to confirm the selection.

All the steps mentioned above are shown in picture 16.

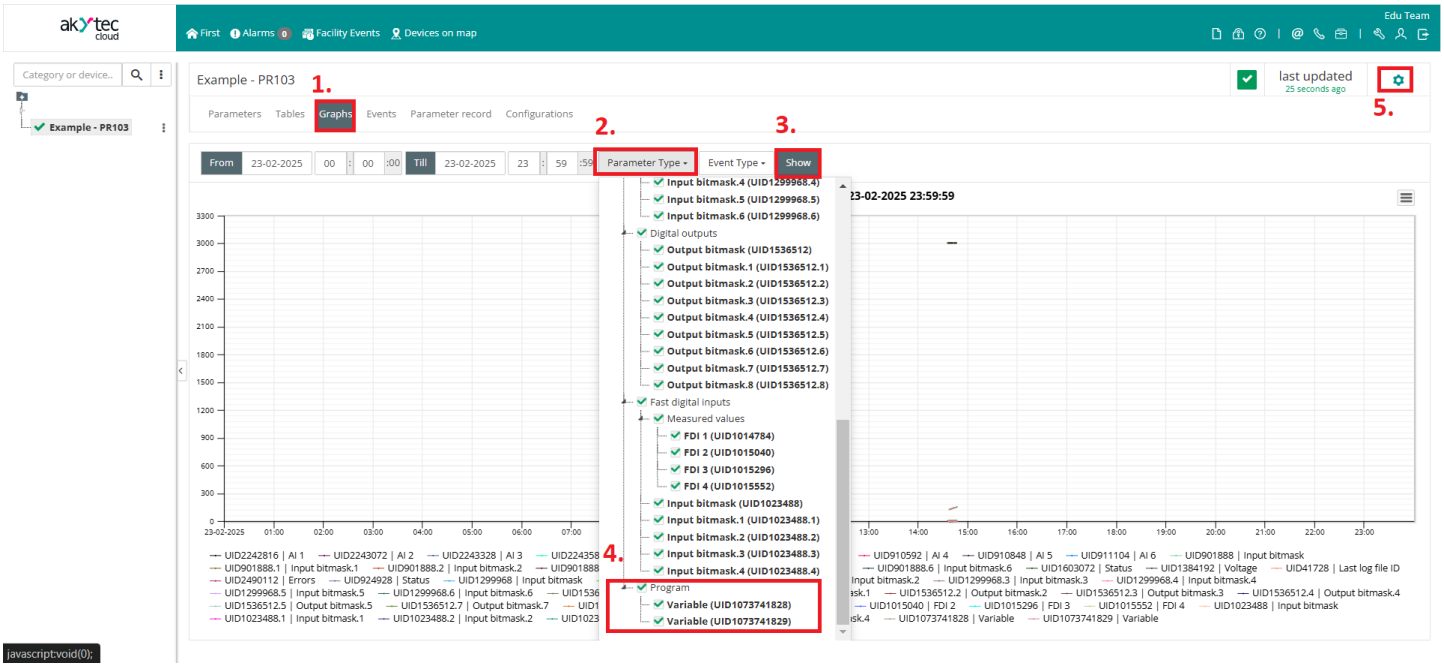
Before graphs are displayed, write a value to Variable-2 by following these steps:

- Open the *Parameter Record* (1.) card.
- In the *New Value* field for Variable-2 (2.), enter the desired value.
- Click the *Record* button (3.).
- A new window will appear—click the *Record* button again to confirm.

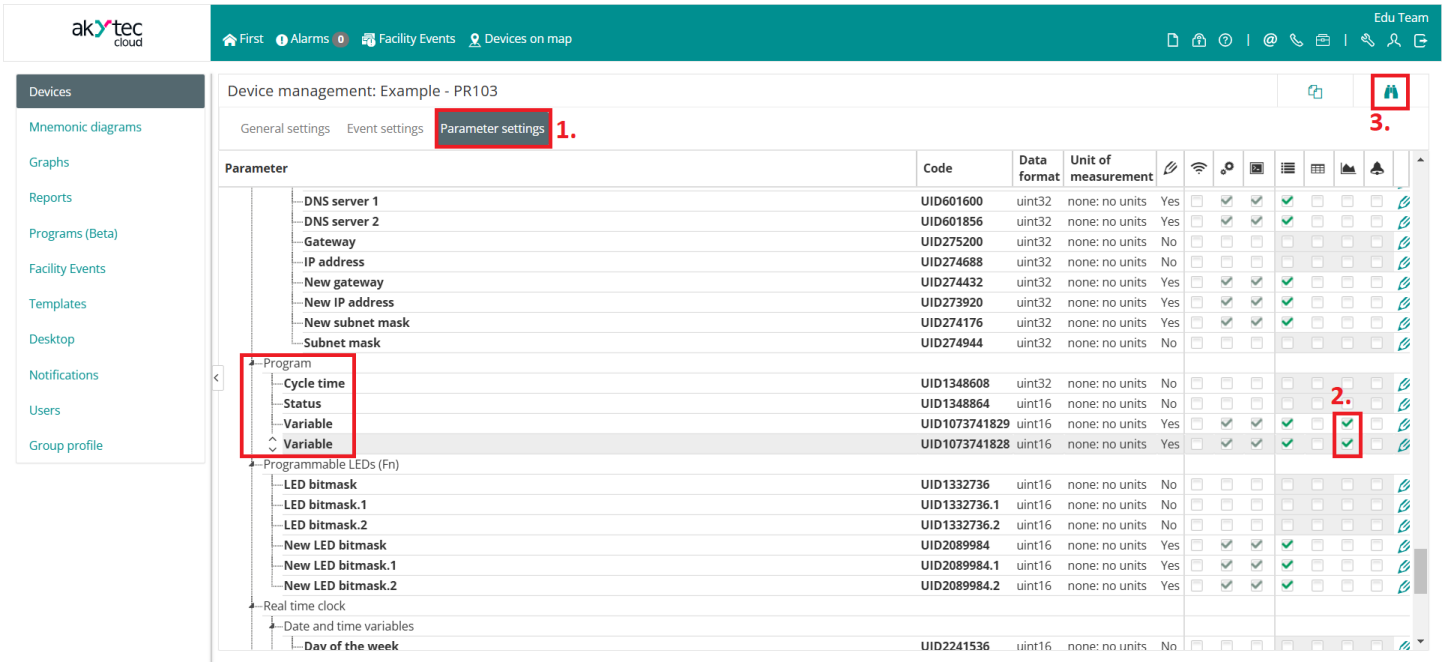
All the steps mentioned above are shown in picture 17.

Now, variable values can be seen in graphs, as shown in Picture 18.

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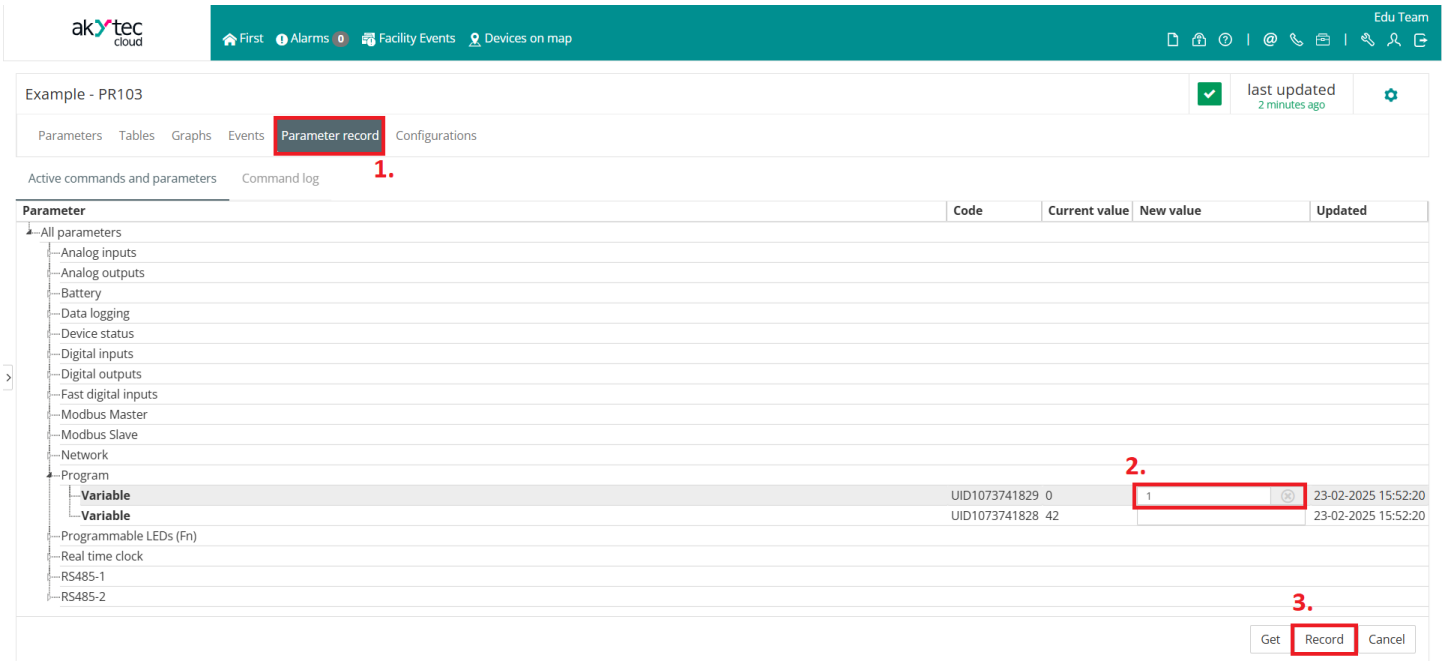


Picture 15 Displaying program variables

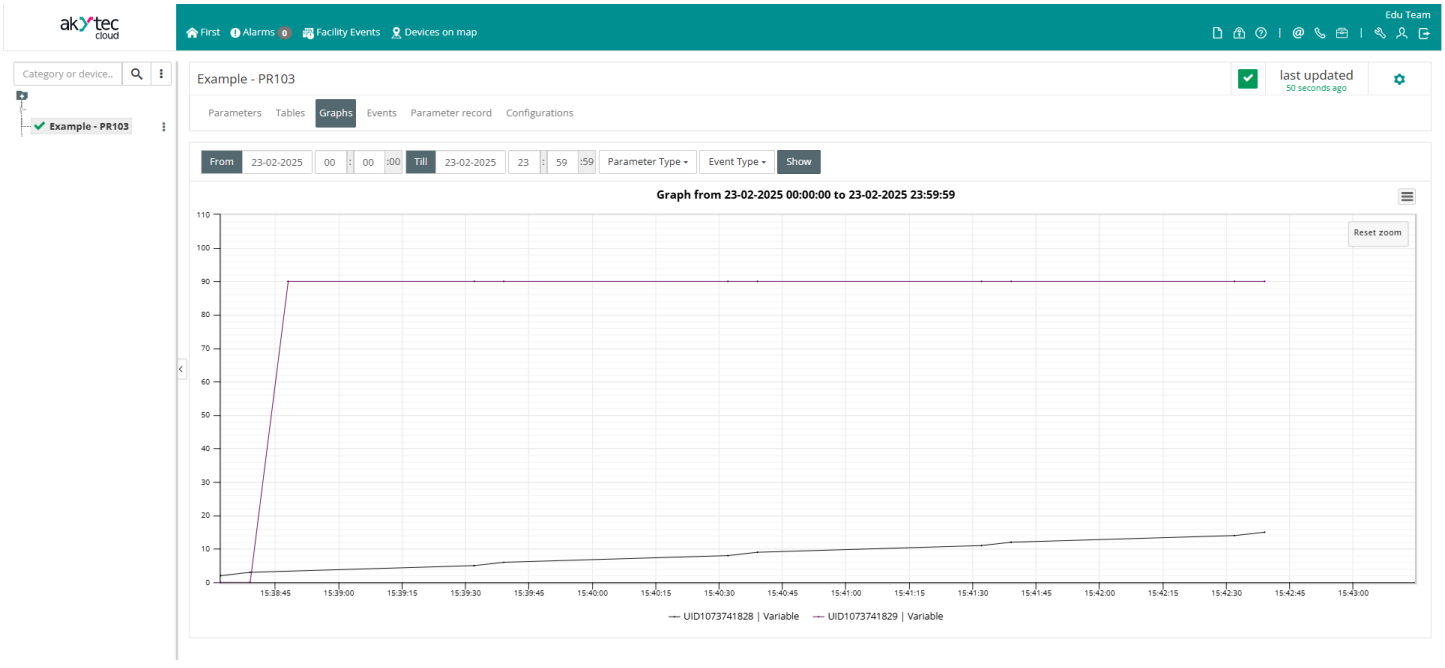


Picture 16 Enabling *Show in graphs* option for variables

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Picture 17 Writing a value to a Variable-2



Picture 18 Values of Variabe-1 and Variable-2 shown on graph

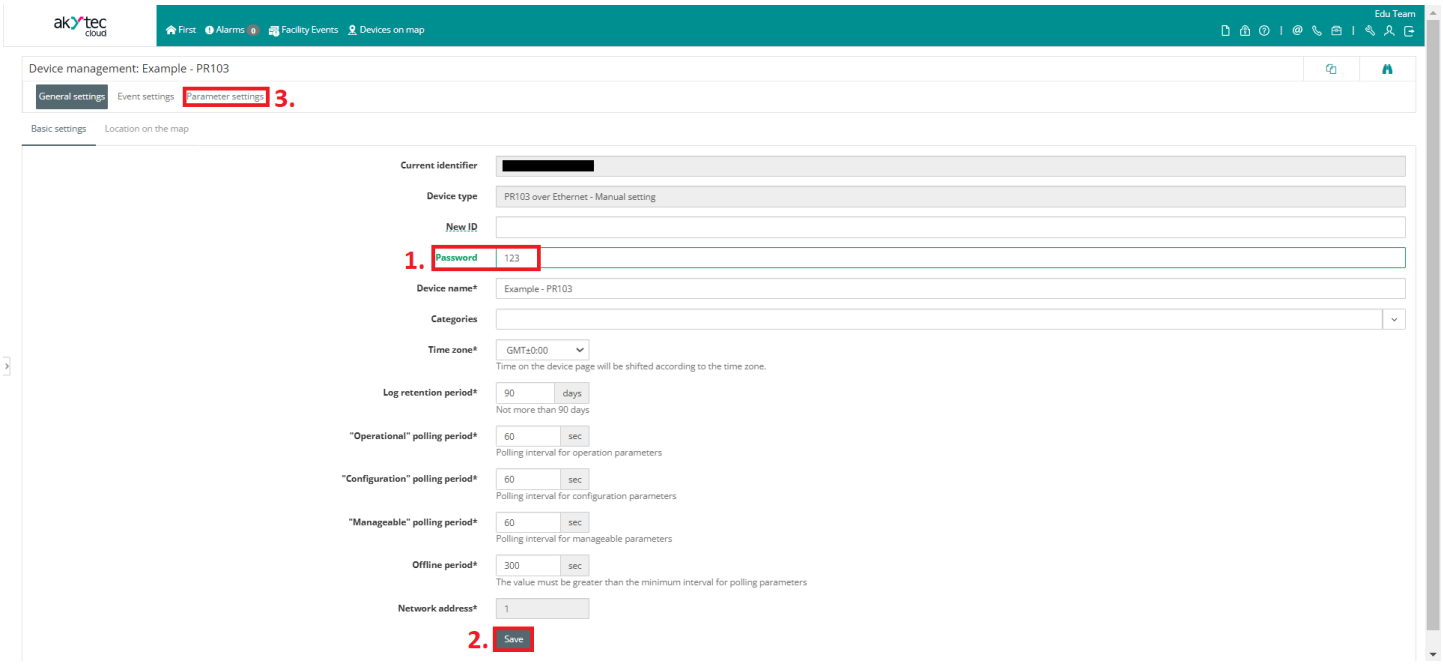
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3.3. Manual mode

Once the device has been successfully added, follow these steps:

- In the newly opened window, enter the password (1.).
- Click the *Save* button (2.) to store the password.
- Once saved, click the *Parameter Settings* button (3.).

All the steps mentioned above are shown in picture 19.



Picture 19 Entering the password for the PR103

3.3.1. Export device to akYtec Cloud

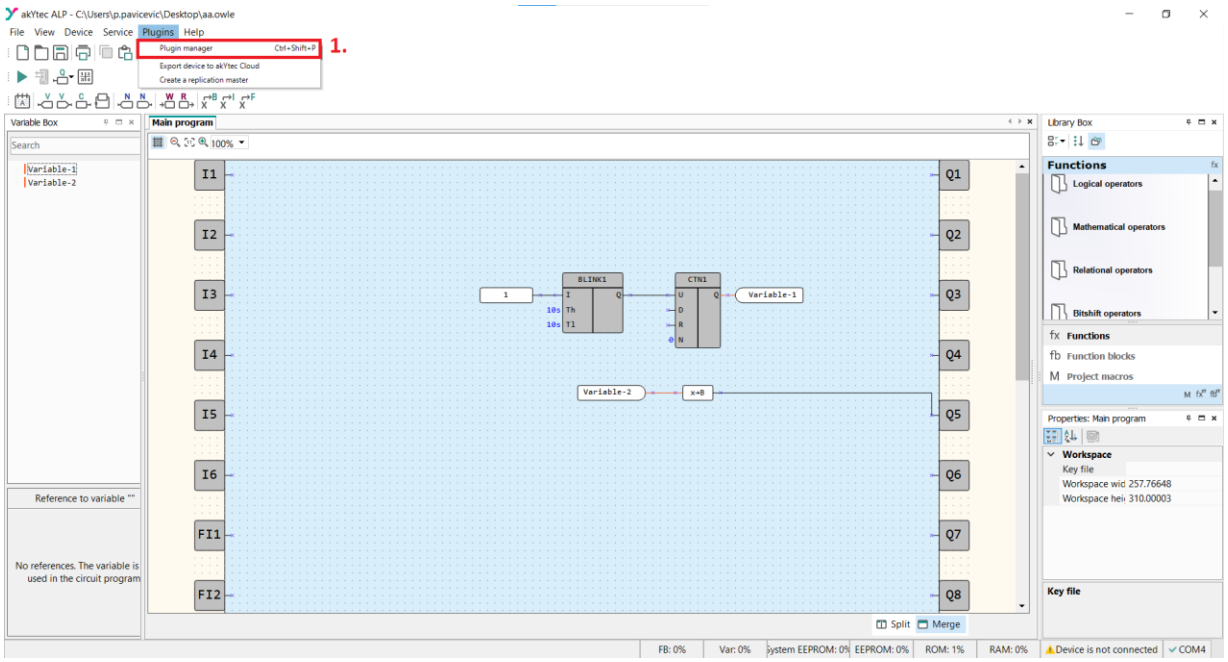
This method is semi-automatic, meaning that ALP will generate a JSON file containing all the network variables. The only remaining step is to import this file into the Cloud.

To generate the JSON file:

- Open the *Plugins* card.
- Click on *Export Device to akYtec Cloud* (1.).
- ALP will generate the file automatically.

All the steps mentioned above are shown in picture 20.

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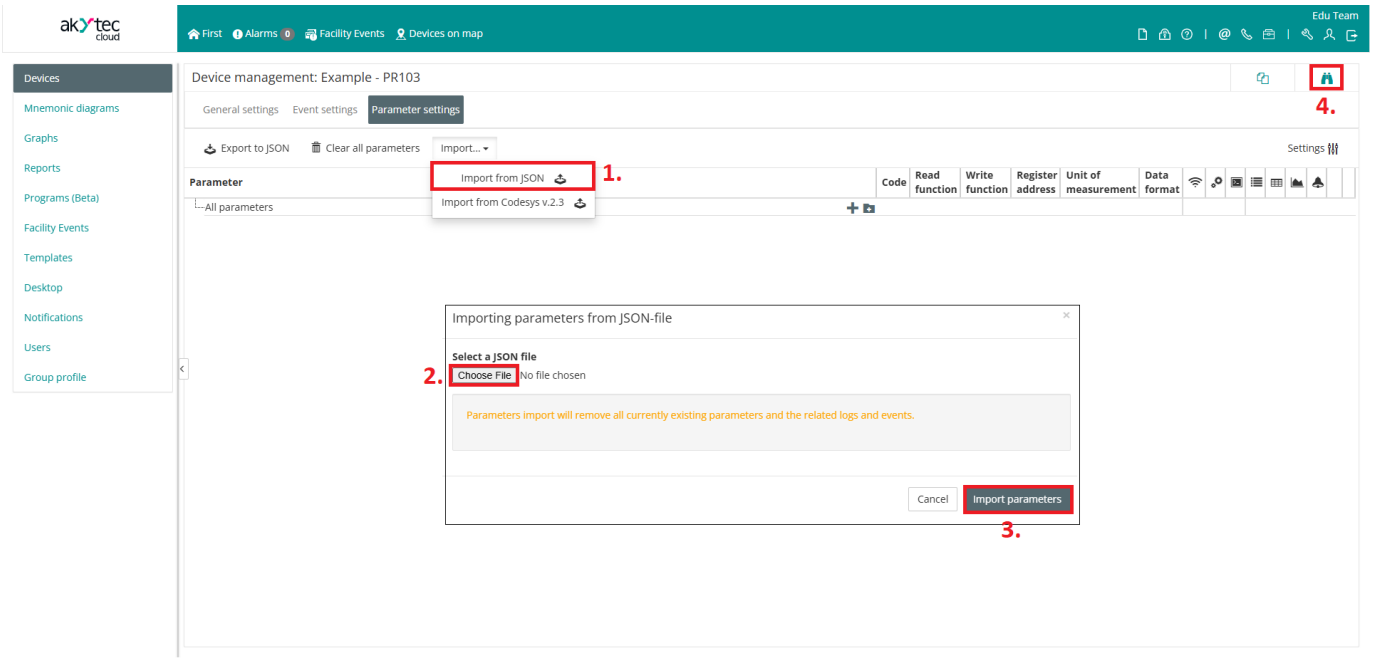
Picture 20 Generating JSON file

To import the previously generated JSON file into the Cloud, follow these steps:

- In the *Parameter Settings* card, go to the *Import* field and select *Import from JSON* (1.).
- Click on *Choose File* (2.) and select the JSON file generated by ALP.
- Once selected, click the *Import Parameters* button (3.).
- When the import is complete, click the *View Device* button (4.).

All the steps mentioned above are shown in picture 21.

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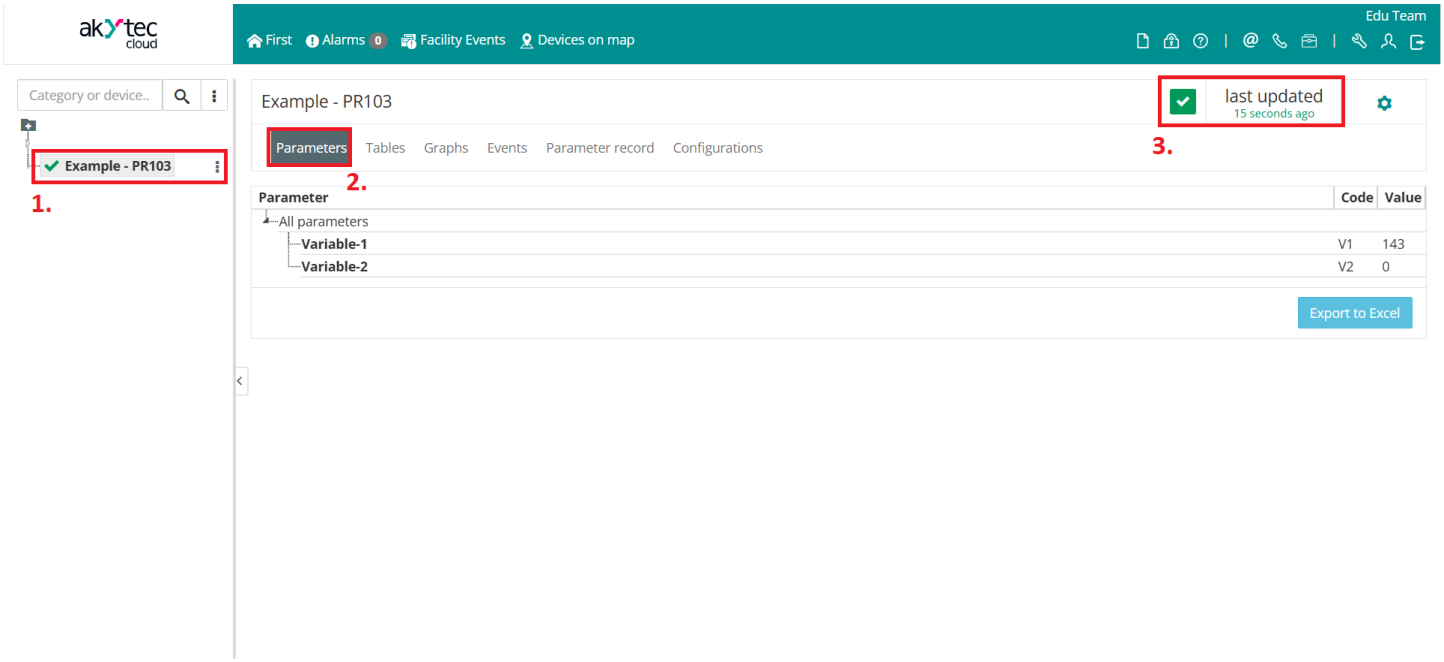
Picture 21 Importing JSON file

If everything was done correctly, the device node will appear in the main window of akYtec Cloud (1.).

- The Cloud requires a few seconds to establish a connection with the PR103 and extract all available data.
- If two minutes have passed and the *Parameters* node (2.) does not display any data or an indicator showing when the device status was *last updated* (3.), something was not set up correctly.
- The most likely issues are incorrect device configuration or improper network settings in previous steps.

All the steps mentioned above are shown in picture 22.

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Picture 22 Successful connection between akYtec Cloud and PR103

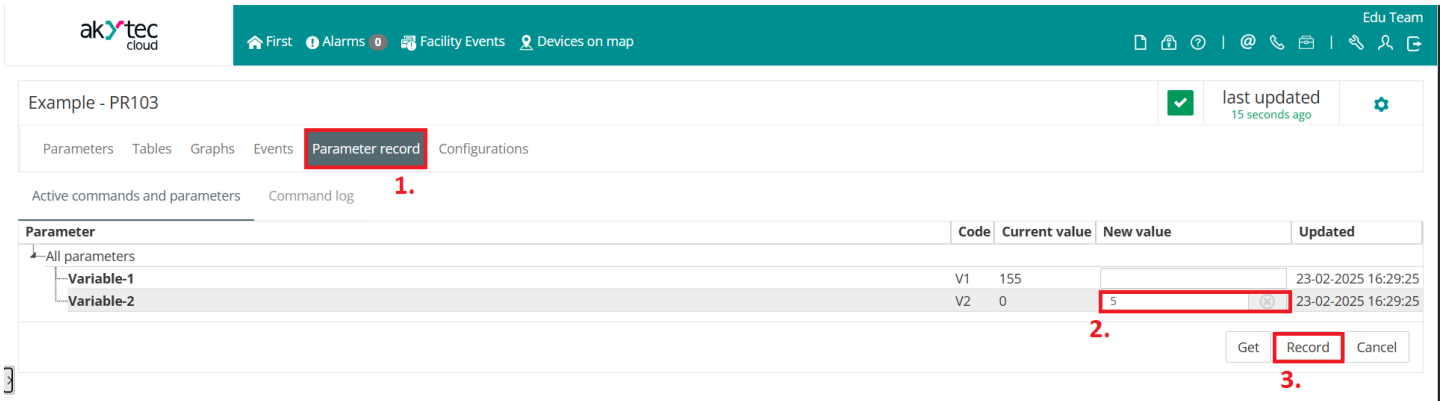
To write data to the variables, follow these steps:

- Open the *Parameter Record* card (1.).
- In the *New Value* field (2.), enter the new data.
- Click the *Record* button (3.).
    - A new window will appear—click the *Record* button again to confirm.

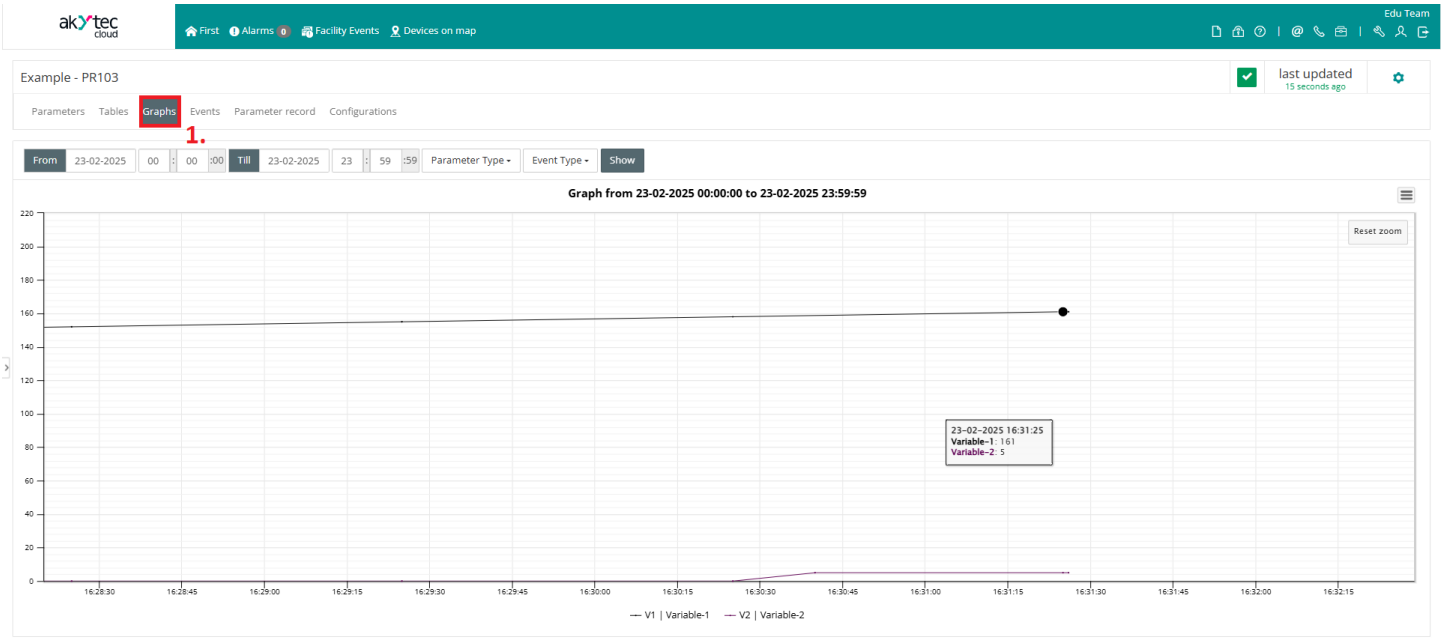
All the steps mentioned above are shown in picture 23.

To view the recorded data, navigate to the *Graphs* card, as shown in Picture 24.

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Picture 23 Writing a value to the variable



Picture 24 Graphs with variable's data

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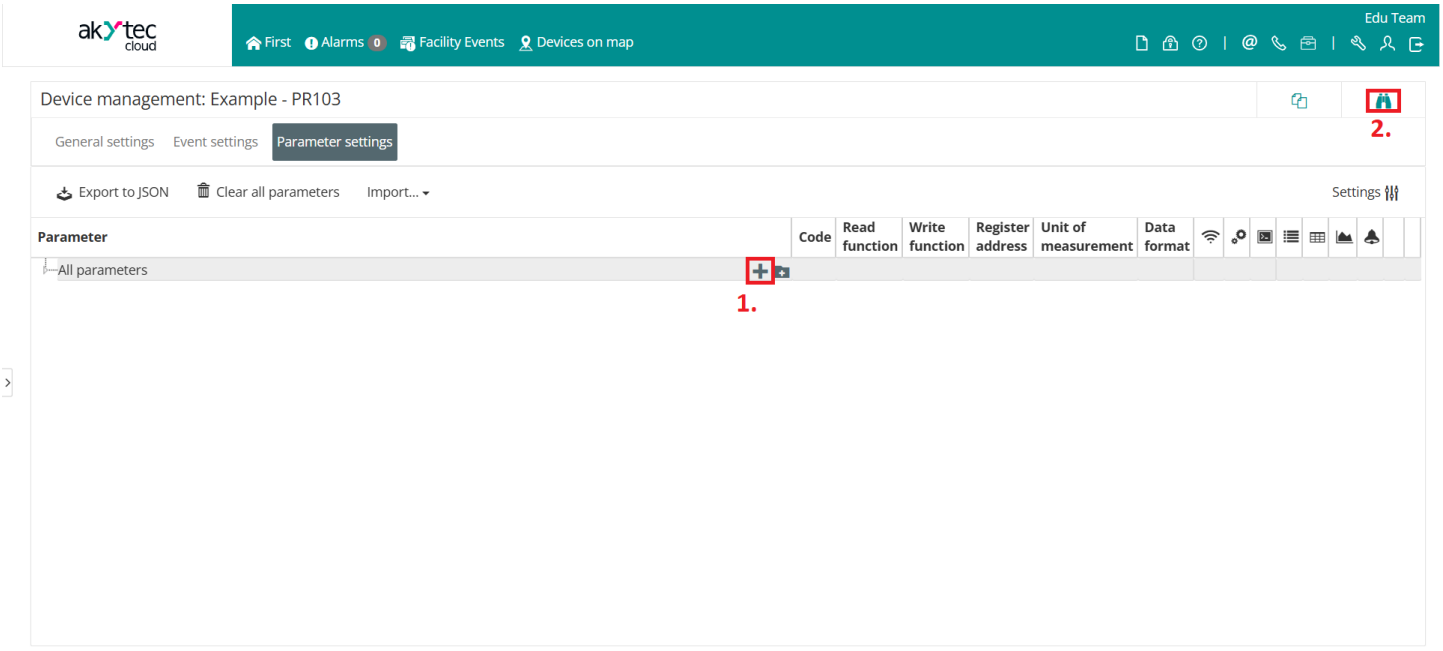
3.3.2. Manual parameter setting

In the *Parameter setting* card, to create a new channel (network variable), click on the plus symbol (1.) as shown in the picture 25, a new window will appear.

In the new window, several parameters must be configured:

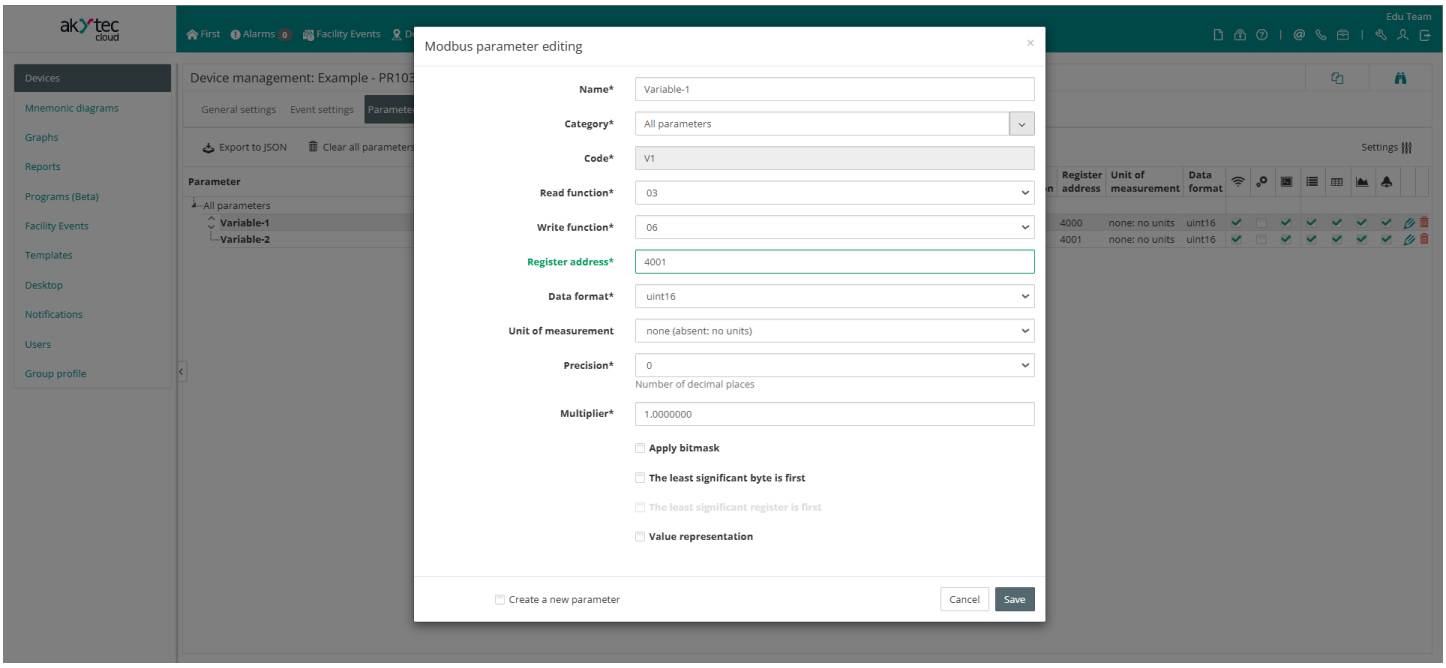
- Name, name of the variable.
  - Variable-1
  - Variable-2
- Code, unique identifier for the variable.
  - V1
  - V2
- Read function, here 03 will be chosen since both variables are integer type.
- Write function, here 06 will be chosen since both variables are integer type.
- Register address
  - 4001 in hexadecimal (16385 in decimal (ALP))
  - 4002 in hexadecimal (16386 in decimal (ALP))
- Data format, here uint16 will be left.

At the end click on the Save button, all the steps mentioned above are shown in picture 26.



Picture 25 Creating a new channel (network variable)

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Picture 26 Setting up a new channel (network variable)

Once done, click on the *View device* button (2.) shown on the picture 25.

Rest of the steps are same as in *Export device to akYtec Cloud* section, starting after picture 21.

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