Instructions for the TWERDApp program

Edition 24/03/15 for software from version 3.0.1.0

Introduction

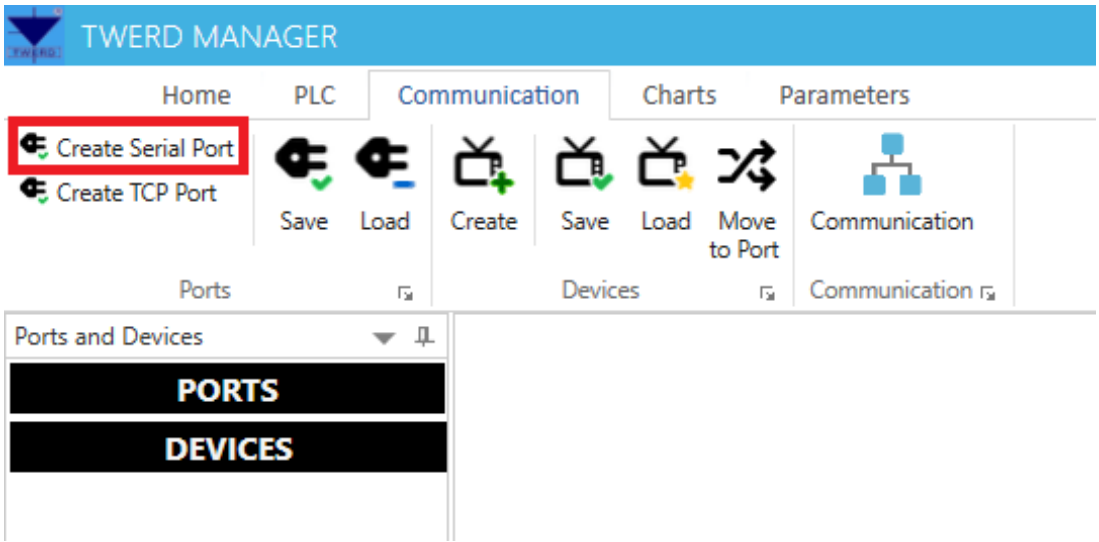
The TWERDApp program is used to communicate with devices manufactured by TWERD ENERGO-PLUS via the MODBUS RTU/TCP communication protocol. The program is compatible with the following devices: PS100, PS300, BSI1000, MFC1000, MFC710, MFC810, Energy Guard.

The program enables:
- displaying the parameters of a given device,
- editing (sending new) parameters to the device,
- presentation of parameters on a chart,
- export of device parameters to an XML/PDF file,
- import of parameters from XML to the device.

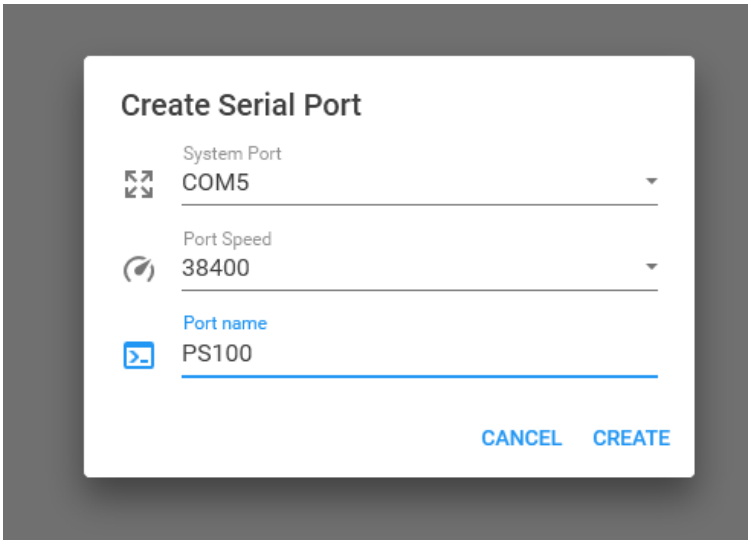
System requirements
Windows 7/10/11 32/64 bit.
The program requires .NET Framework 4.6.1. If it is not available in the system or there is an older version, the program will suggest reinstalling it.

1.1 Communication via serial connector

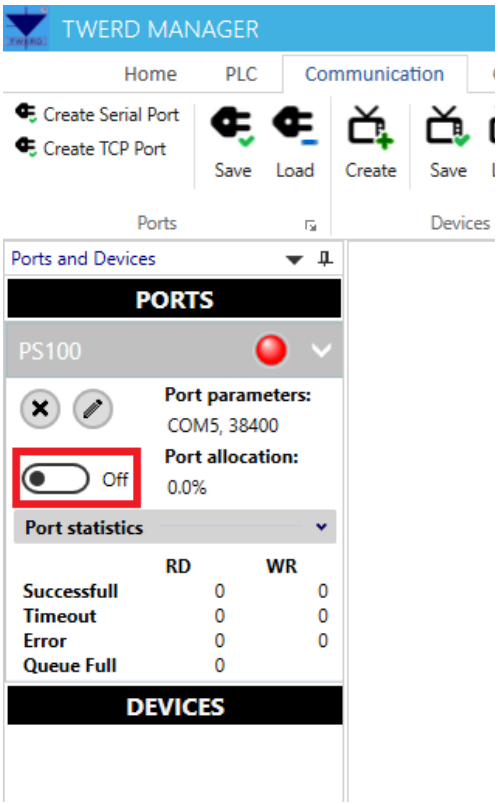
After starting the program, open the "Communication" tab and click "Create Serial Port".



Then, in the window that appears, select the port and connection speed according to the parameters of the device you want to communicate with. You can enter any port name. Below is an example configuration for the PS100 device.

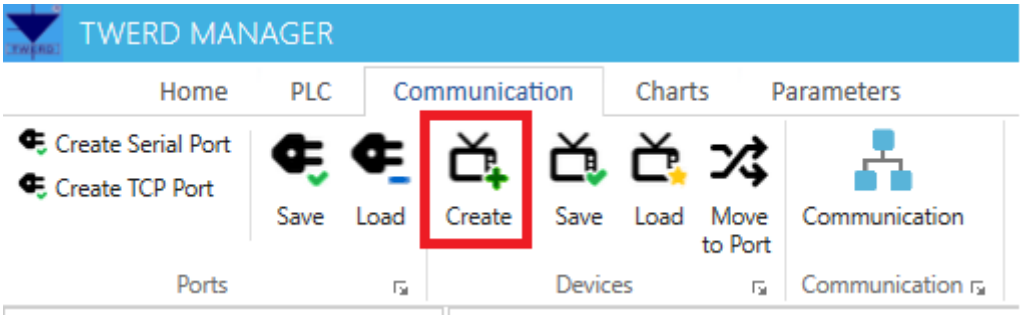


After pressing the "Create" button, a green message should appear in the upper right corner confirming that the port has been successfully added. Otherwise, correct the connection parameters. An element with the port name should appear in the Ports tab on the left side of the program window. After clicking on it, a window with port parameters should open. Then click on the switch which is currently set to "Off".

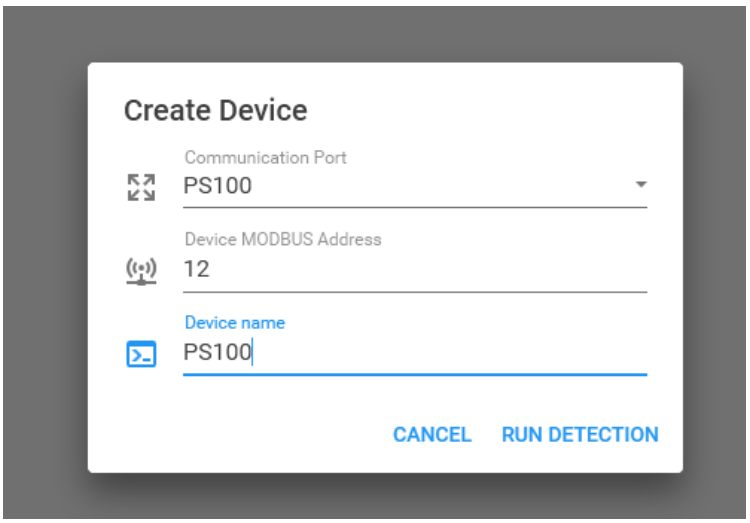


After this action, the LED should light up green.

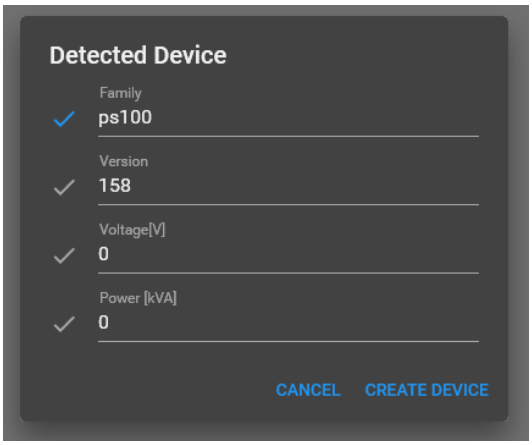
You can then start connecting the device. To do this, click "Create", "Devices" section.



Then, in the window that appears, select the port to which the device is connected, in the case of this manual it is the port created, the "PS100" port. The device address in the MODBUS bus must match the address set in the device. The device name can be anything. An example device configuration is shown in the screenshot below.

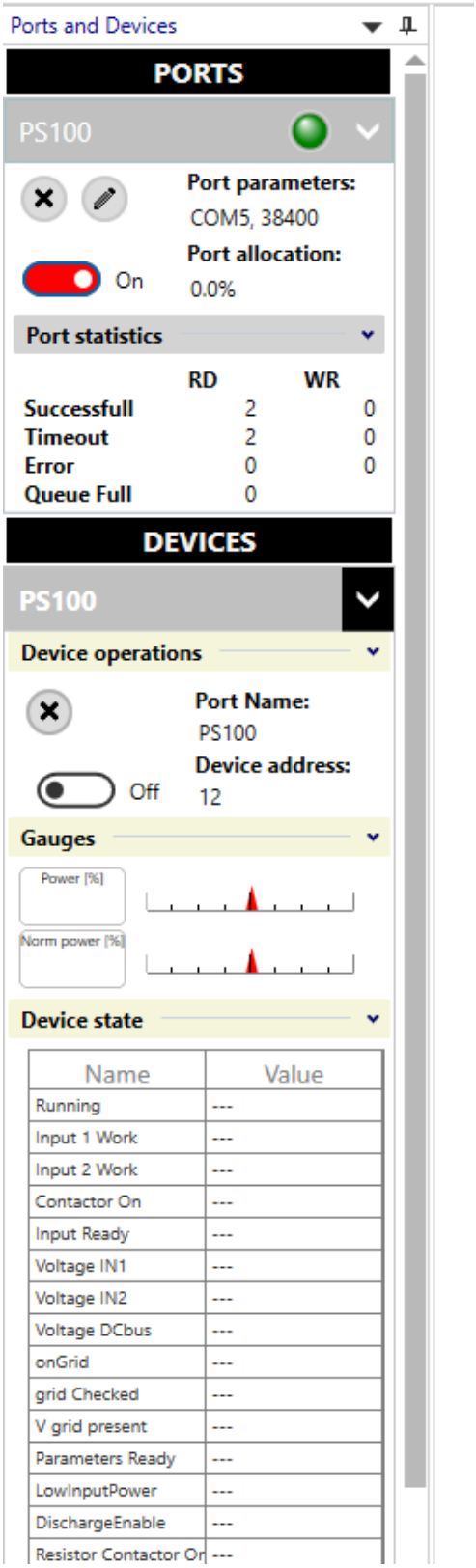


After successful connection, a window with information about the found device will be displayed. Then click "CREATE DEVICE".



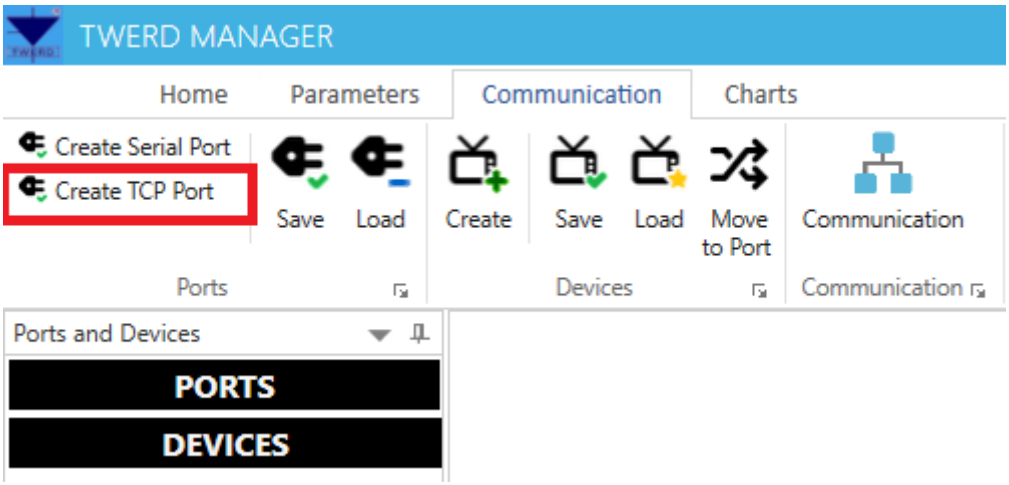
In case of incorrectly entered parameters, the message "Comunnication error:TIMEOUT" will be displayed. On the left side of the screen, in the "Device" tab, the found device should appear, and when expanded, the most important information about the device's

status and errors should appear. The displayed parameters can be modified in the file with the .xml extension for this device.

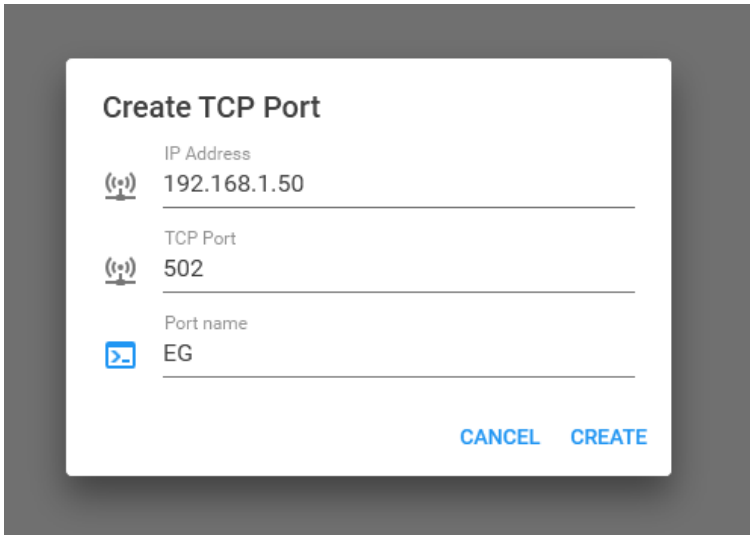


1.2 Communication via TCP connector

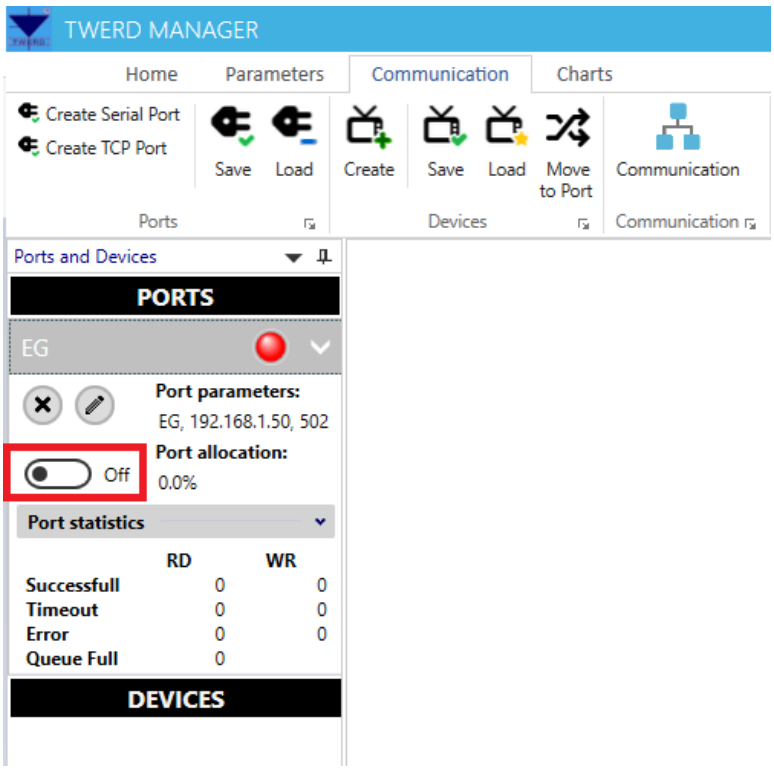
After turning on the program, open the "Communication" tab and click "Create TCP Port".



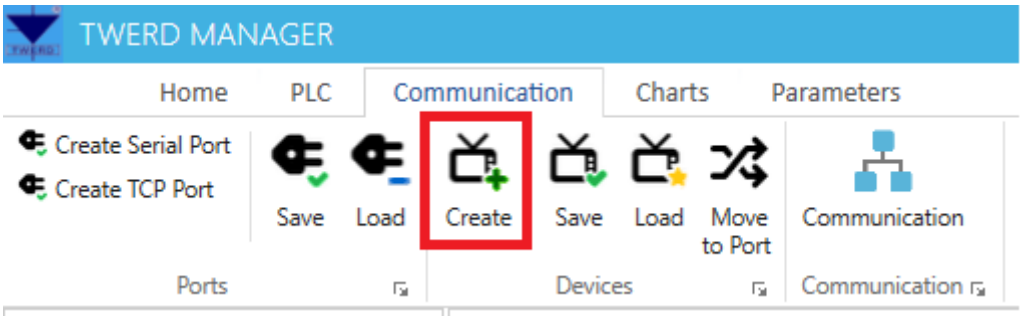
Then, in the window that appears, enter the IP address and TCP port according to the parameters of the device with which we want to communicate. You can enter any port name. Below is an example configuration for an EG device.



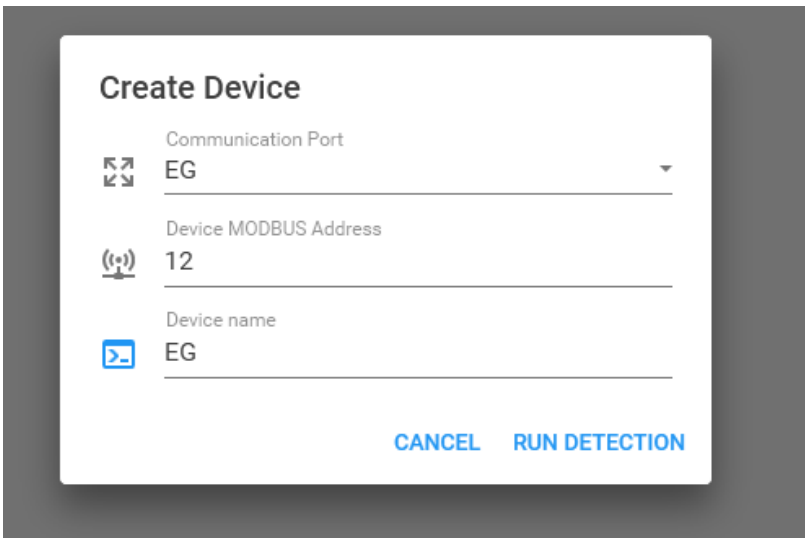
After pressing the "Create" button, a green message should appear in the upper right corner confirming that the port has been successfully added. Otherwise, correct the connection parameters. An element with the port name should appear in the Ports tab on the left side of the program window. After clicking on it, a window with port parameters should open. Then click on the switch which is currently set to "Off".



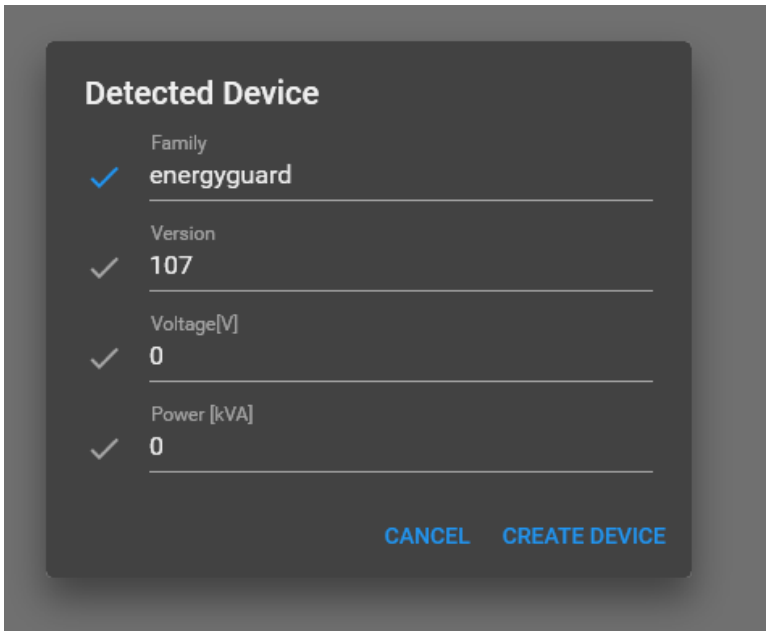
After this action, the LED should light up green. Then you can start connecting the device. To do this, click "Create", "Devices" section.



Then, in the window that appears, select the port to which the device is connected, in the case of this instruction it is the port created, the "EG" port. The device address in the MODBUS bus must match the address set in the device. The device name can be anything. An example device configuration is shown in the screenshot below.



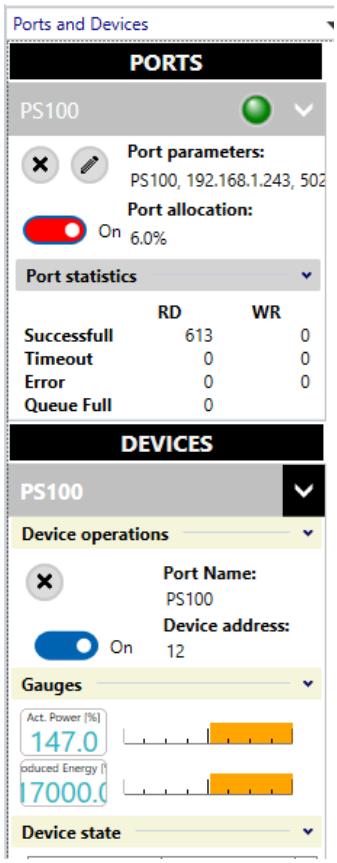
After successful connection, a window with information about the found device will be displayed. Then click "CREATE DEVICE".



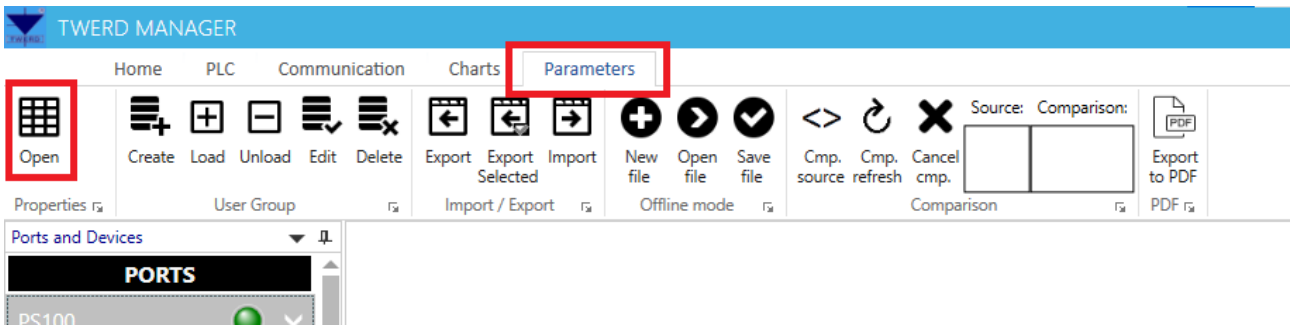
In case of incorrectly entered parameters, the message "Comunnication error:TIMEOUT" will be displayed. On the left side of the screen, in the "Device" tab, the found device should appear, and when expanded, the most important information about the device's status should appear.

2. Reading and sending parameters in ONLINE mode

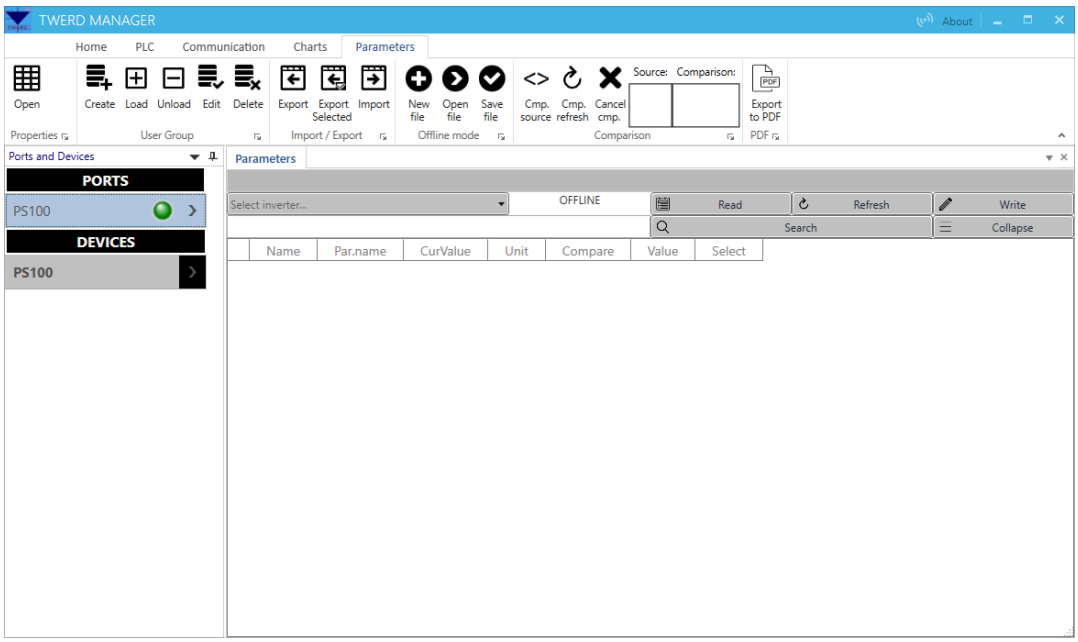
Before reading the parameters, check whether the port and device are enabled.



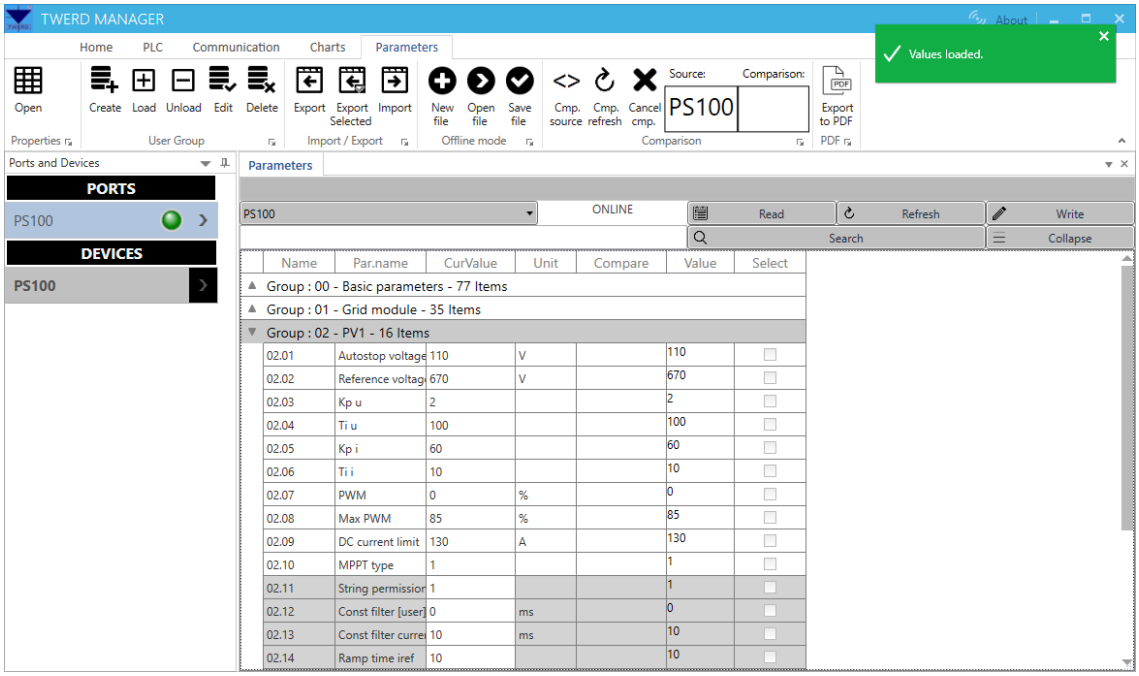
To view the device parameters, go to the "Parameters" tab and open the table there by selecting the "Open" option.



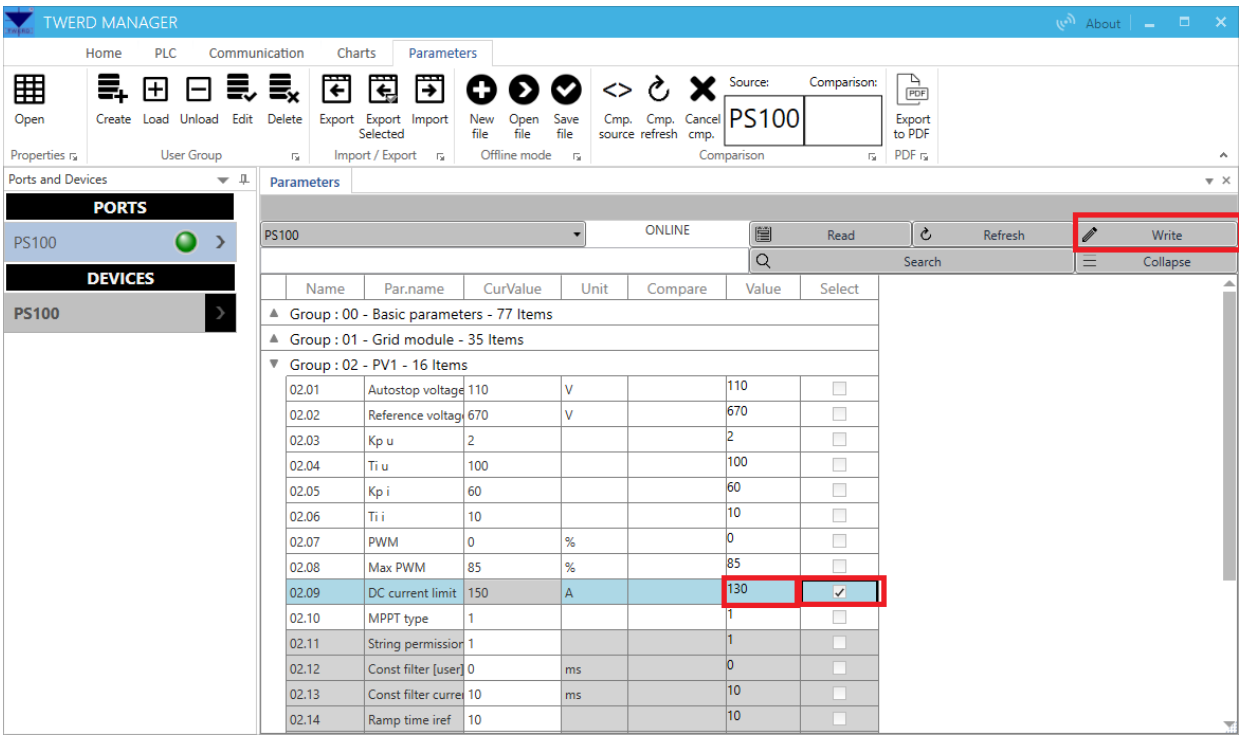
Once selected, a control panel will appear on the screen with the option to select the device and the "Read", "Refresh", "Write", "Search" and "Collapse" functions. Below the panel there are columns of an empty table.



To read the parameters, select the target device in the "Select inverter..." drop-down list. Drop-down parameter groups should appear immediately. After selecting the appropriate groups, the corresponding parameters should appear.



The data is read automatically, and the "Refresh" button is used to update it. You can also set automatic refresh in the device-specific .xml file. The white lines in the table indicate parameters that can be overwritten from the program level, while the gray lines are read-only. To save a parameter change from the program level, enter the new "Value" value, select the parameter in the "Select" column or press enter and click the "Write" button.
It is also possible to preview the maximum and minimum values after moving the cursor over a given parameter in the "Par.name" column.

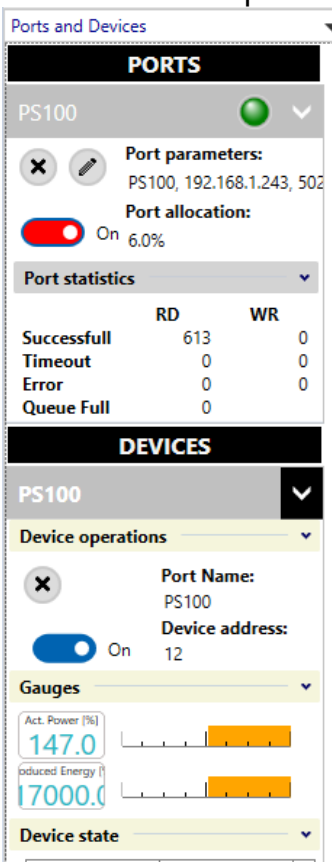


After correct saving, a green message saying "Register saved" should appear in the upper right corner. The program can send several parameters at once.

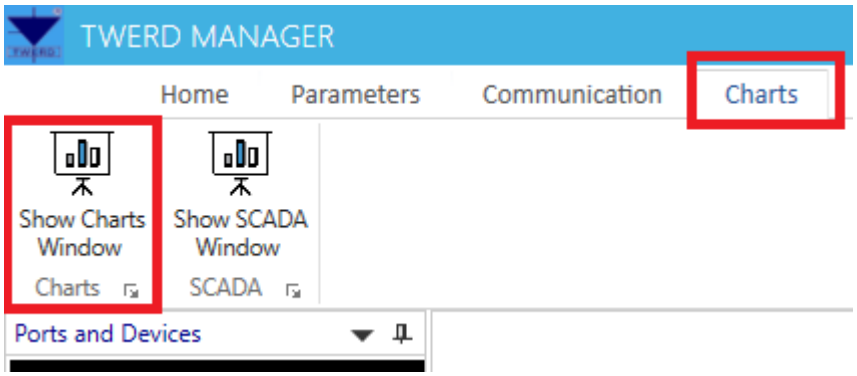
NOTE!!!: The program is not designed to distinguish between different versions of device software, so it may happen that some displayed parameters may not exist in the current version. An error will occur when you try to write such a parameter.

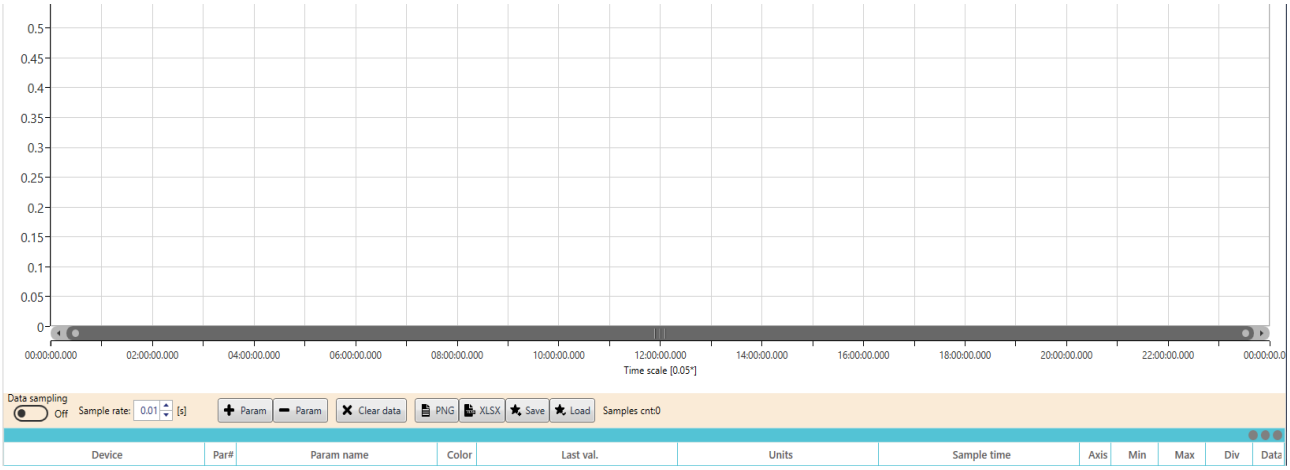
3. Displaying parameter data on a graph

Before reading the parameters, check whether the port and device are enabled.



To display parameter data on a chart, go to the "Charts" tab and click on the board with the inscription "Show Charts Window"





Then the window shown above should appear. At the bottom of the application we can notice several buttons that are responsible for:

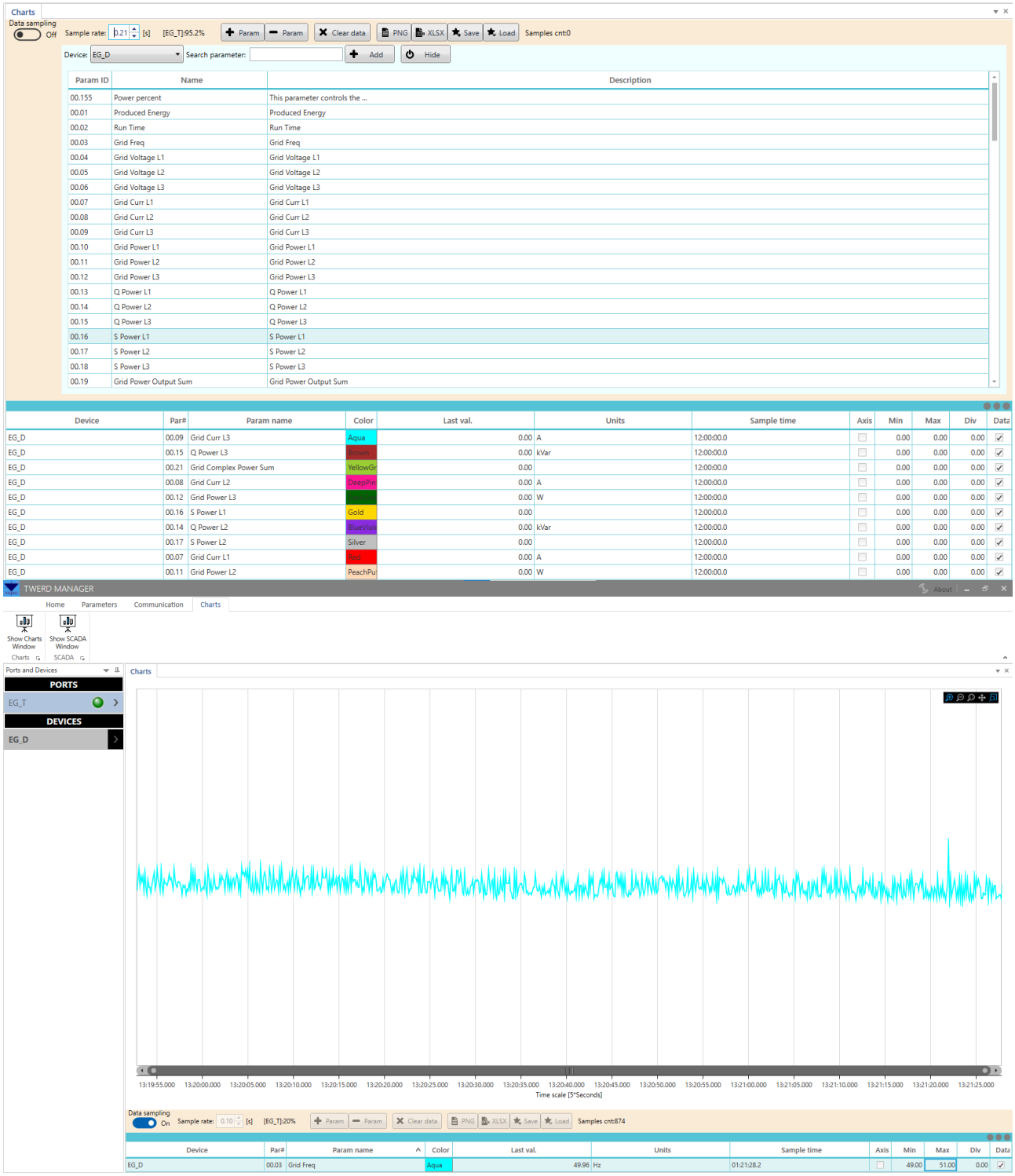
- "Data sampling" – switching on parameter reading (data sampling),
- "Sample rate" – sampling period (depending on the number of added parameters should be adjusted),
- "+ Param" – adding a new parameter,
- "- Param" – deletion of the selected parameter,
- "Clear data" – clearing the chart,
- "PNG" and "XLSX" – saving the chart to a PNG/XLSX file,
- "Save" and "Load" – responsible for saving and reading chart settings.

W celu dodania nowego parametru do wyświetlania na wykresie należy kliknąć przycisk „+ Param”, który załaduje okno umożliwiające wybranie urządzenia (domyślnie wybrane będzie urządzenie pierwsze na liście). Chcąc dodać parametr klikamy na niego dwukrotnie lub zaznaczamy i klikamy przycisk „+ Add” (maksymalna ilość parametrów wynosi 10). Po dodaniu parametrów z prawej strony „Sample rate” wyświetli się nazwa portu oraz procent CPS (należy tak dobrać czas próbkowania, aby osiągnąć poniżej 100%). Możliwe jest również edytowanie kolumn:

- Axis – wyświetlenie wartości na wykresie w programie,
- Min, Max – minimalna oraz maksymalna wartość skali osi Y,
- Div – dzielnie wartości przez wprowadzony dzielnik.

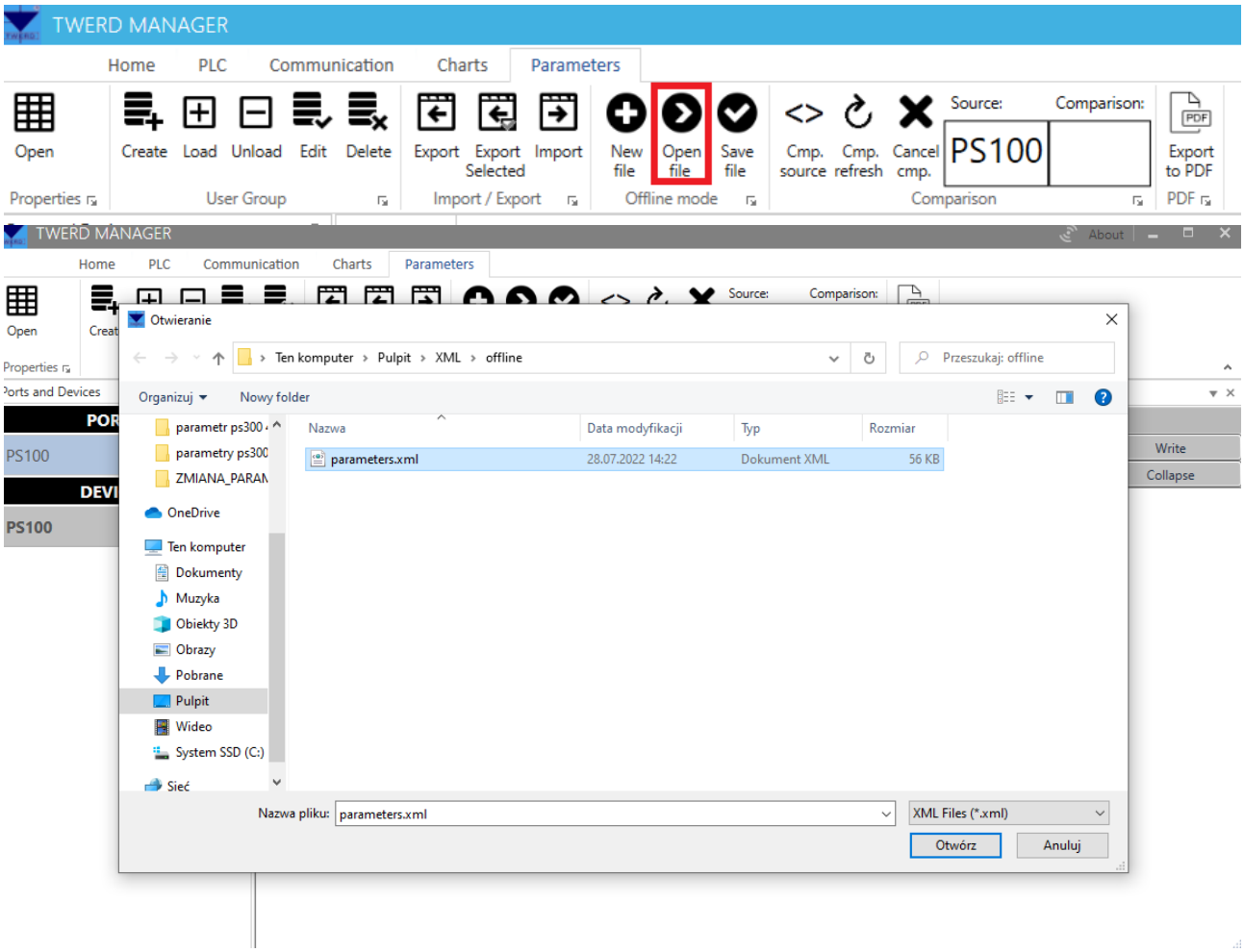
To add a new parameter to be displayed on the chart, click the "+ Param" button, which will load a window allowing you to select a device (by default, the first device on the list will be selected). To add a parameter, double-click on it or select it and click the "+ Add" button (the maximum number of parameters is 10). After adding the parameters, the port name and CPS percentage will be displayed on the right side of "Sample rate" (the sampling time should be selected to achieve below 100%). It is also possible to edit columns:

- Axis – displaying values on a graph in the program,
- Min, Max – minimum and maximum value of the Y axis scale,
- Div – divide values by the entered divisor.

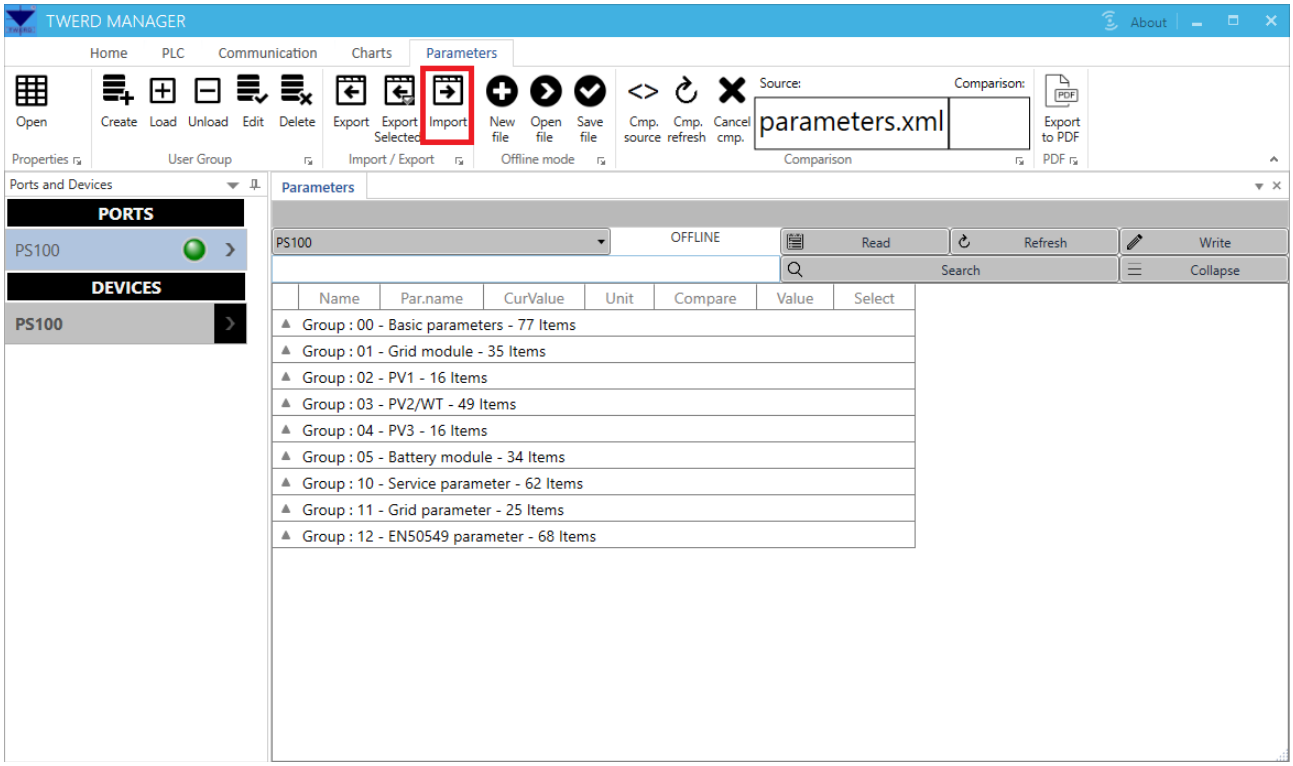

Charts
Data sampling
Off
Sample rate: 0.21 [s]
[EG_T]:95.2%
Param
Param
Clear data
PNG
XLSX
Save
Load
Samples cnt:0
Device: EG_D
Search parameter:
Add
Hide
Param ID
Name
Description
00.155 Power percent This parameter controls the ...
00.01 Produced Energy Produced Energy
00.02 Run Time Run Time
00.03 Grid Freq Grid Freq
00.04 Grid Voltage L1 Grid Voltage L1
00.05 Grid Voltage L2 Grid Voltage L2
00.06 Grid Voltage L3 Grid Voltage L3
00.07 Grid Curr L1 Grid Curr L1
00.08 Grid Curr L2 Grid Curr L2
00.09 Grid Curr L3 Grid Curr L3
00.10 Grid Power L1 Grid Power L1
00.11 Grid Power L2 Grid Power L2
00.12 Grid Power L3 Grid Power L3
00.13 Q Power L1 Q Power L1
00.14 Q Power L2 Q Power L2
00.15 Q Power L3 Q Power L3
00.16 S Power L1 S Power L1
00.17 S Power L2 S Power L2
00.18 S Power L3 S Power L3
00.19 Grid Power Output Sum Grid Power Output Sum
Device Par# Param name Color Last val. Units Sample time Axis Min Max Div Data
EG_D 00.09 Grid Curr L3 Aqua 0.00 A 12:00:00.0 0.00 0.00 0.00
EG_D 00.15 Q Power L3 Brown 0.00 kVar 12:00:00.0 0.00 0.00 0.00
EG_D 00.21 Grid Complex Power Sum YellowGr 0.00 12:00:00.0 0.00 0.00 0.00
EG_D 00.08 Grid Curr L2 DeepPin 0.00 A 12:00:00.0 0.00 0.00 0.00
EG_D 00.12 Grid Power L3 Green 0.00 W 12:00:00.0 0.00 0.00 0.00
EG_D 00.16 S Power L1 Gold 0.00 12:00:00.0 0.00 0.00 0.00
EG_D 00.14 Q Power L2 BlueViol 0.00 kVar 12:00:00.0 0.00 0.00 0.00
EG_D 00.17 S Power L2 Silver 0.00 12:00:00.0 0.00 0.00 0.00
EG_D 00.07 Grid Curr L1 Red 0.00 A 12:00:00.0 0.00 0.00 0.00
EG_D 00.11 Grid Power L2 PeachPu 0.00 W 12:00:00.0 0.00 0.00 0.00
TWERD MANAGER
About
Home
Parameters
Communication
Charts
Show Charts Window
Show SCADA Window
Charts
SCADA
Ports and Devices
PORTS
EG_T
DEVICES
EG_D
Charts
13:19:55.000 13:20:00.000 13:20:05.000 13:20:10.000 13:20:15.000 13:20:20.000 13:20:25.000 13:20:30.000 13:20:35.000 13:20:40.000 13:20:45.000 13:20:50.000 13:20:55.000 13:21:00.000 13:21:05.000 13:21:10.000 13:21:15.000 13:21:20.000 13:21:25.000
Time scale [5*Seconds]
Data sampling
On
Sample rate: 0.10 [s]
[EG_T]:20%
Param
Param
Clear data
PNG
XLSX
Save
Load
Samples cnt:874
Device Par# Param name Color Last val. Units Sample time Axis Min Max Div Data
EG_D 00.03 Grid Freq Aqua 49.96 Hz 01:21:28.2 49.00 51.00 0.00

4. Saving parameters from a file (OFFLINE mode)

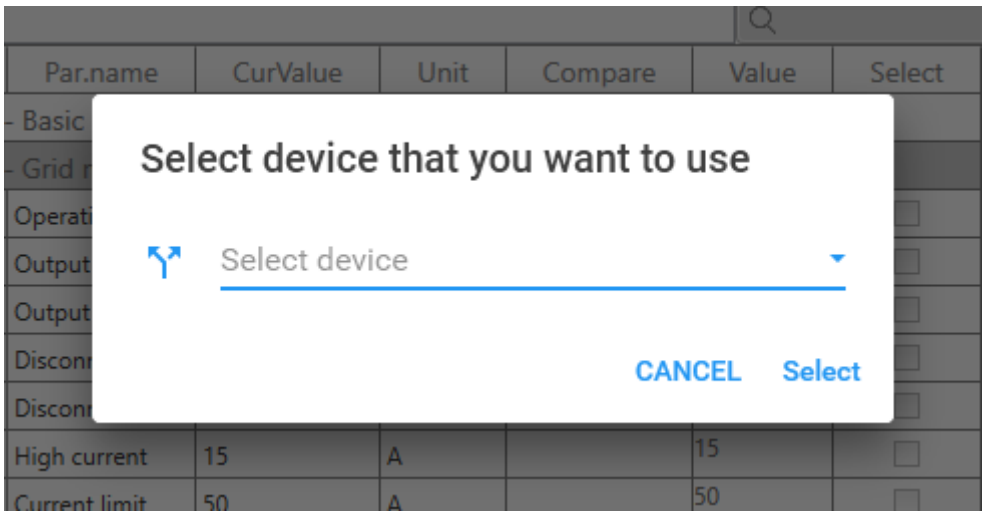
To upload parameters from an existing parameter file, click the "Open file" option in the "Offline mode" section of the "Parameters" tab and select the XML file with the parameters.



After selecting the file, the table should be filled with data from the file. Now, to send, just click "Import"



A window will appear where you must select the device to which the data is to be sent.

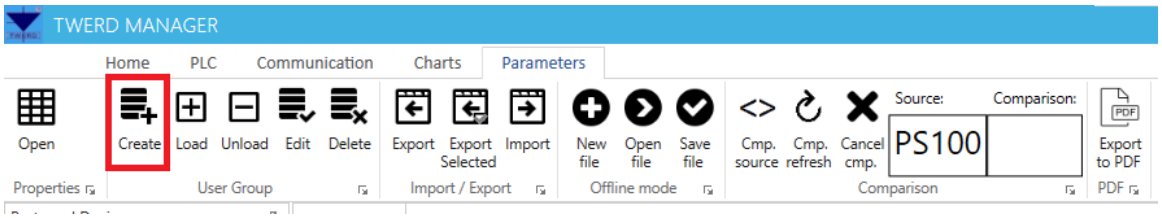


After clicking "Select", the data will be transferred to the device.

NOTE!!!: Data will not be sent to a device other than those defined in the XML file. The device is determined by 6 registers that are located at the end of the file. The first two are particularly important, i.e. device ID and software version, respectively. For data to be transferred, it must be consistent with the device and software parameters.

5. Creating user groups

To create a user group, first select the parameters that are to be included in this group in the "Select" column, and then click the "Create" option in the "User Group" section of the "Parameters" tab.



You will be asked to enter the name of the new group. After clicking "Create", the group will be created and automatically added to the table.