



control solutions

TERACOM

TC Monitor

Software for monitoring and control of TCW/TCG devices

Freeware version

User manual

Version 1.0 / July, 2015



www.teracom.cc

1. Introduction

TC Monitor is easy to use Windows application for monitoring and control of some Teracom Ethernet (TCW) and GSM/GPRS (TCG) controllers. The supported devices are TCW122B-CM, TCW181B-CM, TCW240B and TCG120.

TC Monitor can collect and display data from controllers installed in different locations (sites). The collected data is stored in SQL database and can be displayed or exported in MS Excel format for further analysis.

TC Monitor has a simple web interface, which enables easy and fast configuration. Monitored parameters can be 1-wire sensors, digital and analog inputs and relay outputs.

The free version of TC Monitor provides 10 credits, this means up to 10 different parameters can be monitored and logged.

2. Minimum system requirements

TC Monitor requires:

- Operating system: Windows 7 or later;
- Free disk space: 1 GB;
- RAM: 2 GB (4 GB recommended);
- Internet connection;
- Free ports: 3407 (database) and 8181 (web server).

3. Basic Concept

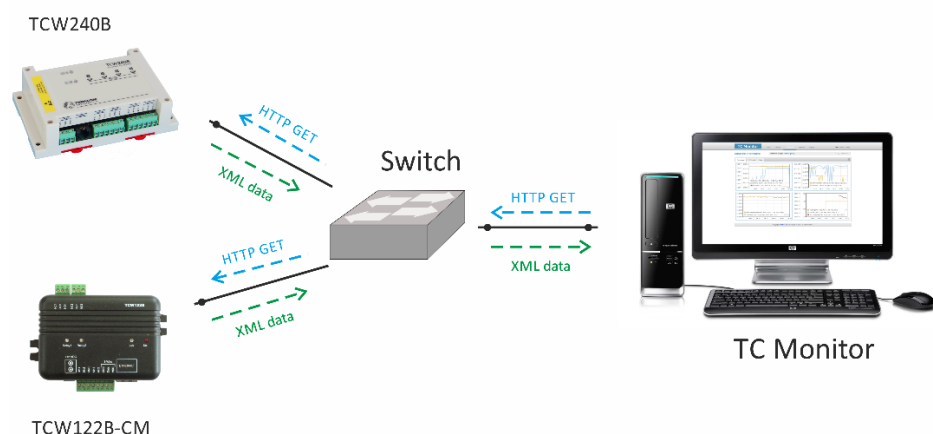
The data between TC Monitor and remote devices is exchanged using HTTP protocol. Monitored devices operate either as server or client mode.

3.1. Server mode

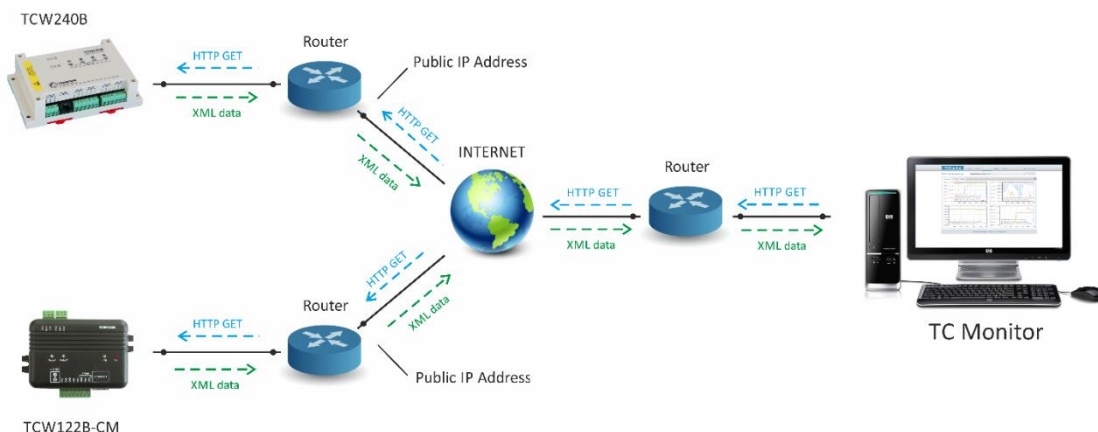
In this mode TCW/TCG device is a server and TC Monitor is a client.

TC Monitor initiates communication by sending HTTP GET request to the controller periodically. The device answers by sending XML data.

Picture below shows operation in same LAN:



Picture below shows operation in different LANs. In this case remote locations should have public IP addresses and appropriate port forwarding. Simple check for proper setting is accessible WEB interface of controllers.



Teracom controllers, which support server mode operation are TCW122B-CM, TCW181B-CM and TCW240B.

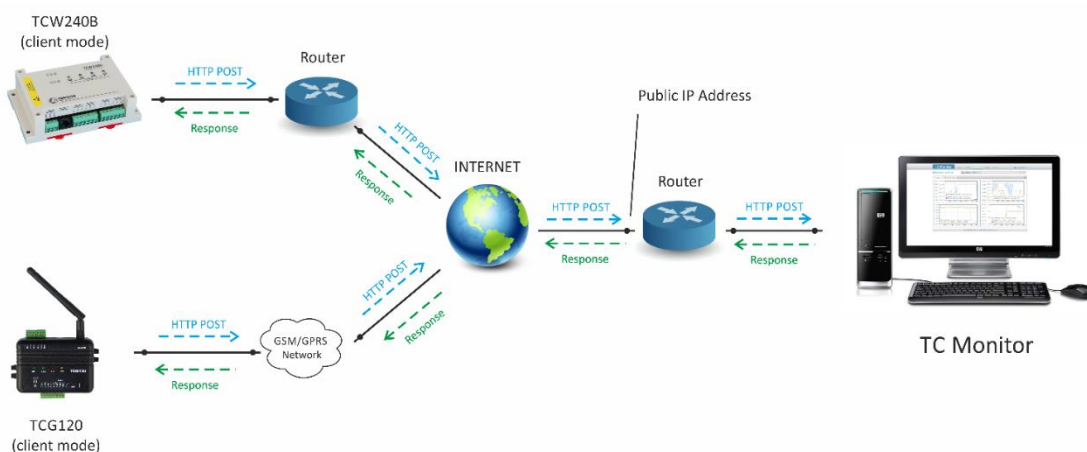
3.2. Client mode

In this mode TCW/TCG device is a client and TC Monitor is a server.

The controller initiates communication by sending HTTP POST message to TC Monitor periodically (PUSH period).

Every HTTP POST message contain XML data which is processed by the software. TC Monitor answers with HTTP response message. The response messages are used not only for confirmation, but also to send command to the controller.

The IP address (domain) of TC Monitor site should be set in the Teracom controller. If the controller is installed in different LAN, the site of TC Monitor should have public IP address. Such operation is illustrated below:



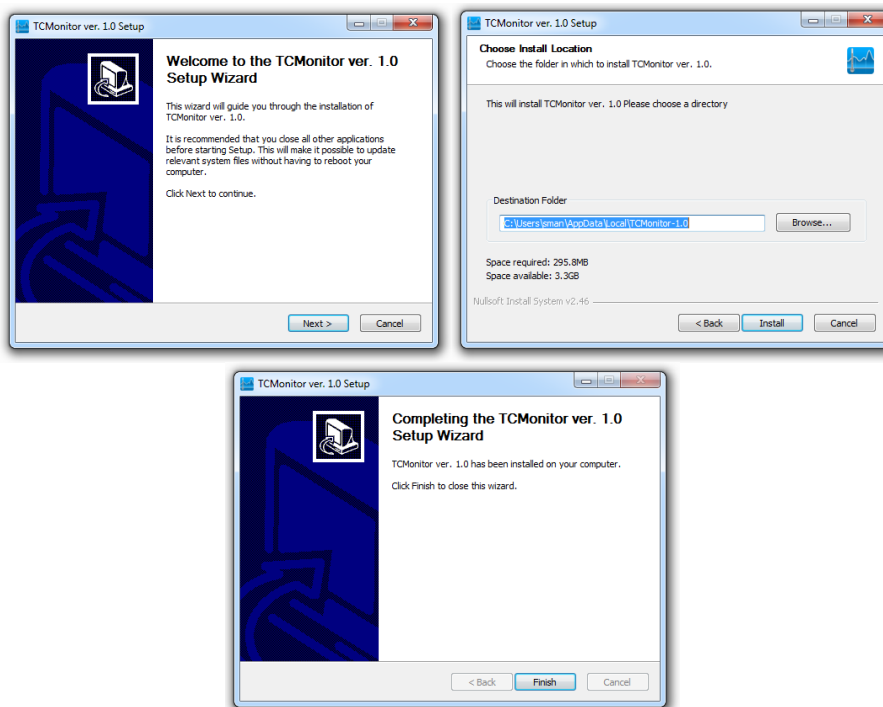
Teracom controllers, which support client mode operation are TCG120 and TCW240B.

A typical communication session between Teracom controller in client mode and TC Monitor is shown in Appendix A.

4. Installation

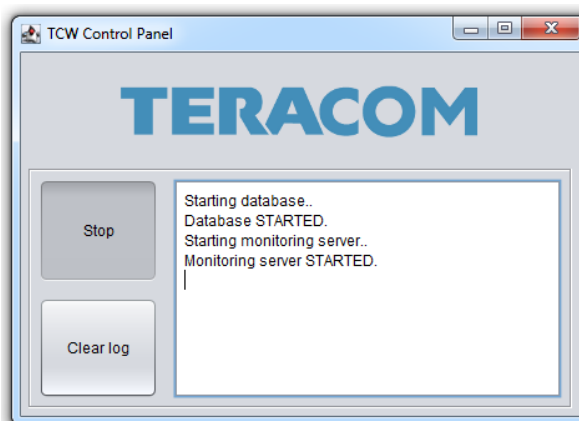
TC Monitor installation package can be downloaded from www.teracom.cc.

The installation is simple – start the installation package, choose install location and press Install button.

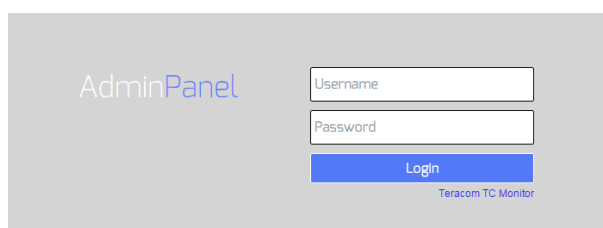


Note: The install path must not contain any spaces or Windows specific file system characters.

After installing the TC Monitor, you can start it from the start menu. The following window will appear:



The database and web server services will be started and the default web browser will open the TC Monitor Login page.



The default login details are username: admin, password: 123456 . To prevent unauthorized access to TC Monitor, it is recommended to change the password after the first login.

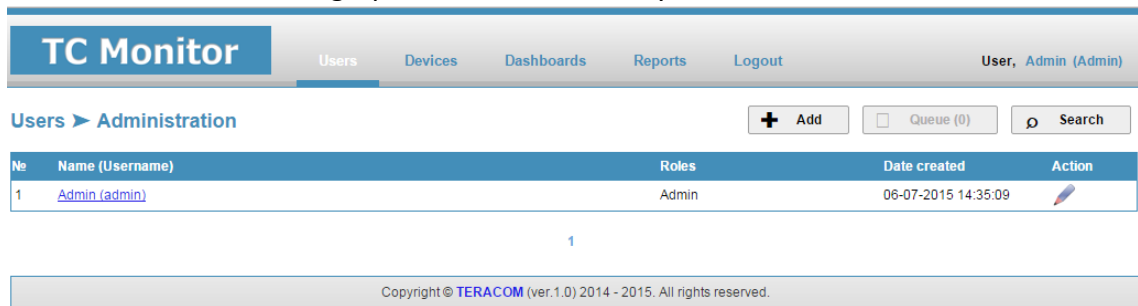
5. User interface

5.1. Users

5.1.1. Users->Administration

After successful authentication, the browser will be redirected to **Users->Administration** page. This is the page where new users can be created. TC Monitor supports the following account types:

- admin – access to all program features; only one such user can exist;
- superuser – access to all program features except create/edit of superuser and edit the admin accounts;
- user - can view data and graphical dashboards only.



The screenshot displays the 'Users Administration' interface. At the top, there is a navigation bar with 'TC Monitor' and tabs for 'Users', 'Devices', 'Dashboards', 'Reports', and 'Logout'. The current user is identified as 'User, Admin (Admin)'. Below the navigation, there are buttons for '+ Add', 'Queue (0)', and 'Search'. A table lists the users:

No	Name (Username)	Roles	Date created	Action
1	Admin (admin)	Admin	06-07-2015 14:35:09	

At the bottom, there is a footer: 'Copyright © TERACOM (ver.1.0) 2014 - 2015. All rights reserved.'

5.1.2. Users->Access Log

This page displays the access log for all active accounts.

5.2. Devices

5.2.1 Devices->Setup

This page shows the information about the monitored controllers. The following parameters are displayed: Hostname, Device Model, Device Group, Device ID, IP Address, Type (server/client), Status and Last connection time. To add a new device, **Add** button should be clicked, **Device->Setup->Add** page will appear. If the new device will work in server mode, the following parameters need to be set:

- Hostname;
- Group – only 1 group is supported in TC Monitor free version;
- Device Model – only TCW122B-CM, TCW181B-CM and TCW240B can operate in server mode;
- Connection time – shorter connection time will increase the size of the database. Recommended value is greater than 60 seconds or higher;
- Username and Password – authentication data should be set only if the XML API Authentication of the monitored controller is enabled;
- IP Address;
- Port.

The setup can be tested by clicking on **“Test connection”** button. If **“Copy sensor descriptions to sensor names”** checkbox is selected, the descriptions from the controller will be added in TC Monitor. These descriptions can be edited later. By clicking the **“Save”** button, the new device will

be added in the database. A list with the possible parameters (sensors and I/Os) will appear. To start the logging process, at least 1 parameter should be selected.

Sensors					
No	Description	Type	Value1	Value2	Name
1	room1	Sensor	✓	○	Room1 temperature
2	room2	Sensor	○	○	
3	room3	Analog Input	✓		Battery 2
4	room4	Analog Input	○		

If the new device will work in client mode, the following parameters should be set:

- Hostname;
- Group – only 1 group is supported in TC Monitor free version;
- Device Model – only TCW240B and TCG120 controllers can operate in client mode;
- Connection time – shorter connection time will increase the size of the database. Recommended value is greater than 60 seconds or higher. Note that the connection time for TCG120 is in minutes. The shortest possible connection time for TCG120 is 1 min. The recommended connection time is more than 3 min.
- Client ID – this field should contain the MAC address of the unit (if the added device is TCW240B) or IMEI number (if the added device is TCG120);
- Client Key – this key is set during the PUSH mode setup of the added device. The keys in TC Monitor and the added device should be equal.

By clicking the **“Save”** button, the new device will be added in the database. A list with the possible parameters (sensors and I/Os) will appear. To start the logging process, at least 1 parameter should be selected.

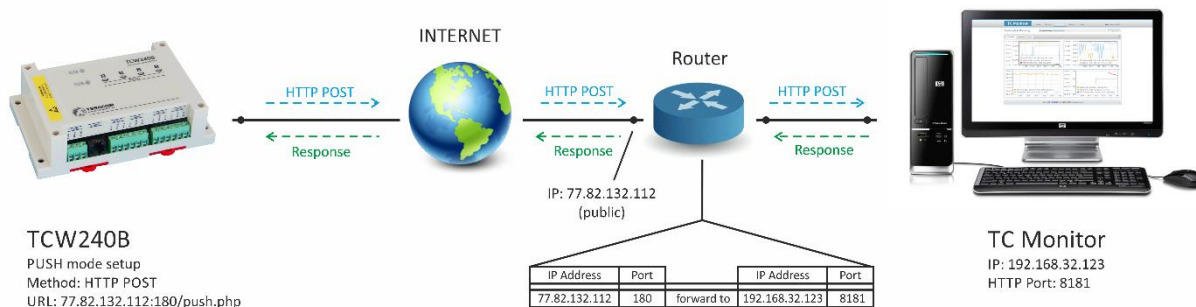
Below is a screenshot from **Devices->Setup** page with 4 added devices:

Devices ▶ Setup + Add Queue (0) 🔍 Search

No	Hostname	Device Model	Device Group	ID device	IP address	Type	Status	Last connection	Action
1	TCW240	TCW240B	TRC group			Person	🟢	30-07-2015 15:43:16	✎ 🗑
2	TCG120	TCG120	TRC group			Person	🟢	30-07-2015 15:42:48	✎ 🗑
3	TCW181	TCW181B-CM	TRC group		212.25.45.120	Server	🟢	30-07-2015 15:43:17	✎ 🗑
4	TCW122	TCW122B-CM	TRC group		212.25.45.120	Server	🟢	30-07-2015 15:43:17	✎ 🗑

TCW240B and TCG120 controllers works in client mode, the other two in server mode. All monitored controllers are online.

The picture below shows typical configuration of Teracom controller, which is installed in different LAN and works in client mode:



- The PUSH mode of TCW240B controller is enabled, the server URL is 77.82.132.112:180/push.php;
- 77.82.132.112 is the public IP address of the LAN, where TC Monitor is installed;
- port 180 is forwarded to port 8181 of the computer where TC Monitor is installed (local IP address 192.168.32.123).

5.2.2 Devices->Groups

The free version of TC Monitor supports only 1 group.

5.2.3 Devices->Available Sensors

This page displays the information about all sensors and I/Os of the added Teracom controllers. It is possible to sort and filter the information. By clicking in the red circle it is possible to enable the specific parameter for monitoring. The number of the remaining credits is shown above the table.

Devices ▶ Available Sensors

Credits: 10 Remaining credits: 0 Queue (0) Search

Filter

Controller Groups: - Please, choice controller group - Status: Enabled Type: - Please, choice type - Enter a Search It Apply filter

No	Name	Type	Device	Device Group	Status1	Status2	Time	On-line/Off-line	Action
1	TCW122_Temp	Sensor	TCW122B	Teracom group	⊙	⊙	31-07-2015 12:56:04	🟢	✎
2	Battery_1	Analog Input	TCW122B	Teracom group	⊙	⊙	31-07-2015 12:56:04	🟢	✎
3	Battery_2	Analog Input	TCW122B	Teracom group	⊙	⊙	31-07-2015 12:56:04	🟢	✎
4	Heating	Relay	TCW181	Teracom group	⊙	⊙	31-07-2015 12:54:15	🟢	✎
5	Garage	Sensor	TCW240	Teracom group	⊙	⊙	31-07-2015 12:54:06	🟢	✎
6	Production	Sensor	TCW240	Teracom group	⊙	⊙	31-07-2015 12:54:06	🟢	✎
7	Battery_3	Analog Input	TCW240	Teracom group	⊙	⊙	31-07-2015 12:54:06	🟢	✎
8	SMD Assembly	Sensor	TCW240	Teracom group	⊙	⊙	31-07-2015 12:54:06	🟢	✎
9	TSH200	Sensor	TCG120	Teracom group	⊙	⊙	31-07-2015 12:55:17	🟢	✎

5.3. Dashboards

5.3.1. Dashboards->Setup

TC Monitor supports two dashboard types:

- data – provides real time display of the latest received data from the monitored controllers. Up to 36 (6 rows x 6 columns) different parameters can be displayed in a single dashboard.
- graphics – provides graphical view of the monitored parameters. Up to 4 different graphs (2rows x 2 columns) can be displayed in a single dashboard. Every graph can display up to 4 different parameters.

To add a new dashboard, **Add** button should be clicked, **Dashboards->Setup->Add** page will appear. The following parameters should be set:

- Name;
- Type – Data/Graphics;
- Refresh rate;
- View – Rows/Columns.

The order of the displayed dashboards can be changed by setting the **order** field from 0 to 7. Maximum 8 dashboards can be created in the free version of TC Monitor. Below is a screenshot of **Dashboards->Setup** page with 5 dashboards:

No	Name	Dashboard Groups	Order	Type	Date created	Action
1	Data	Default group	0	123	31-07-2015 11:41:58	
2	TCG120	Default group	1		31-07-2015 11:45:38	
3	TCW240	Default group	2		31-07-2015 11:49:40	
4	TCW122	Default group	3		31-07-2015 11:50:29	
5	Combined	Default group	4		31-07-2015 11:50:54	

5.3.2. Dashboards->Groups

The free version of TC Monitor supports only 1 dashboard group. The editable parameters of the group are:

- Name;
- Displayed period – this is the time period for which data is displayed in the graphs.

5.3.3. Dashboards->Configuration

Once the dashboards are created, they must be filled with data. This can be made on **Dashboards->Configuration** page:

Devices Groups

- Teracom group
 - TCG120 (TCG120)**
 - LTSH200 (Sensor)
 - TCW240 (TCW240B)**
 - LSMD Assembly (Sensor)
 - LGarage (Sensor)
 - LProduction (Sensor)
 - LBattery 3 (Analog Input)
 - TCW181 (TCW181B-CM)**
 - LHeating (Relay)
 - TCW122B (TCW122B-CM)**
 - LTCW122 Temp (Sensor)
 - LBattery 1 (Analog Input)
 - LBattery 2 (Analog Input)

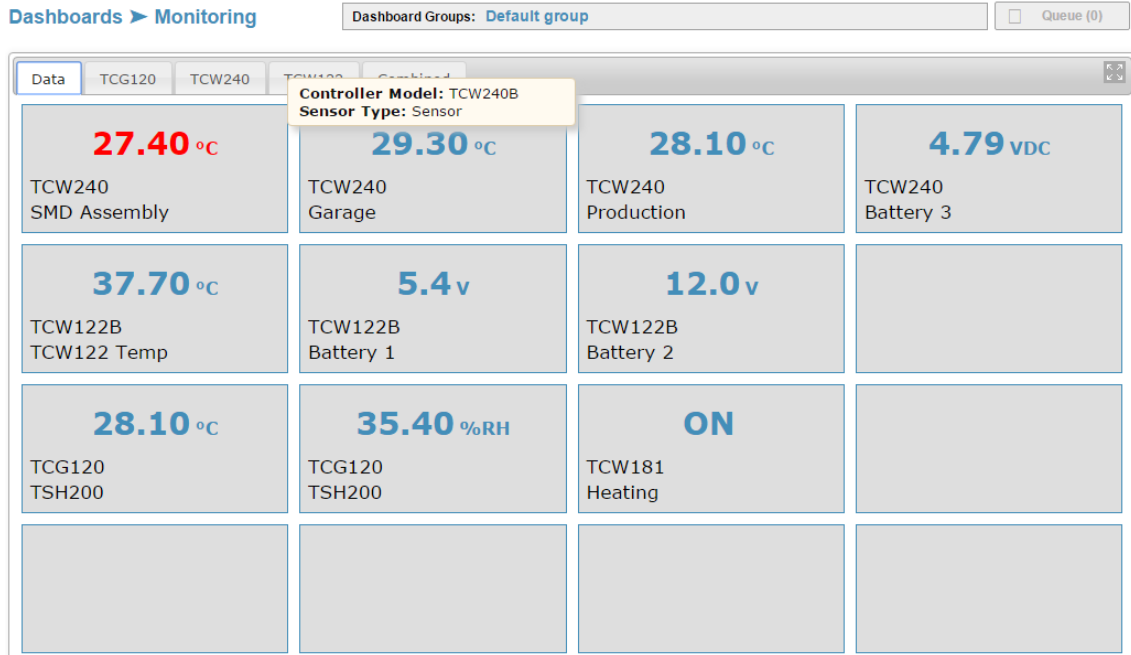
Default group

Data	TCG120	TCW240	TCW122	Combined
LSMD Assembly (Sensor) Value1	LGarage (Sensor) Value1	LProduction (Sensor) Value1	LBattery 3 (Analog Input)	
LTCW122 Temp (Sensor) Value1	LBattery 1 (Analog Input)	LBattery 2 (Analog Input)		
LTSH200 (Sensor) Value1	LTSH200 (Sensor) Value2	LHeating (Relay)		

The monitored parameters (on the left side) can be added to the dashboards by using a drag and drop method. A single parameter can be added to more than 1 dashboards. To remove a parameter from the dashboard, drag it to the bin icon in the top right corner.

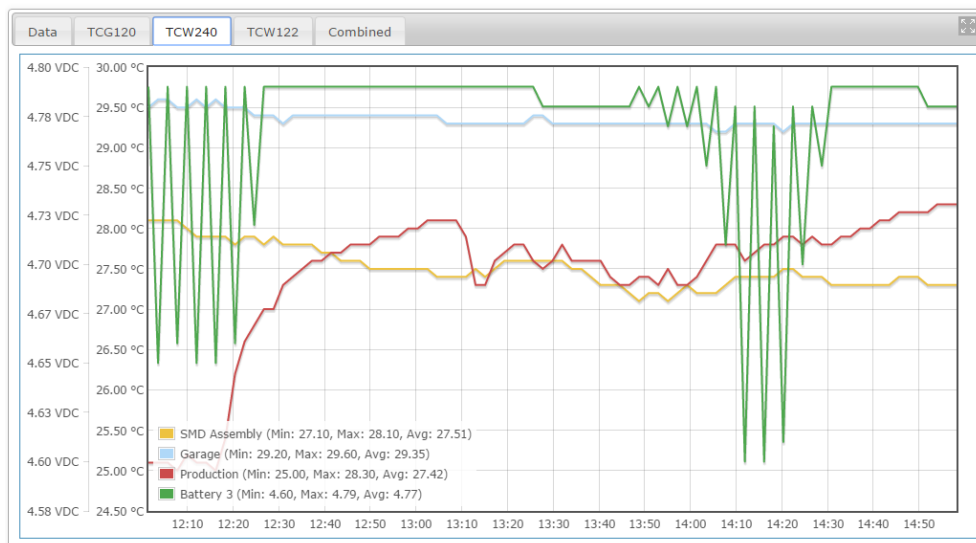
5.3.4. Dashboards->Monitoring

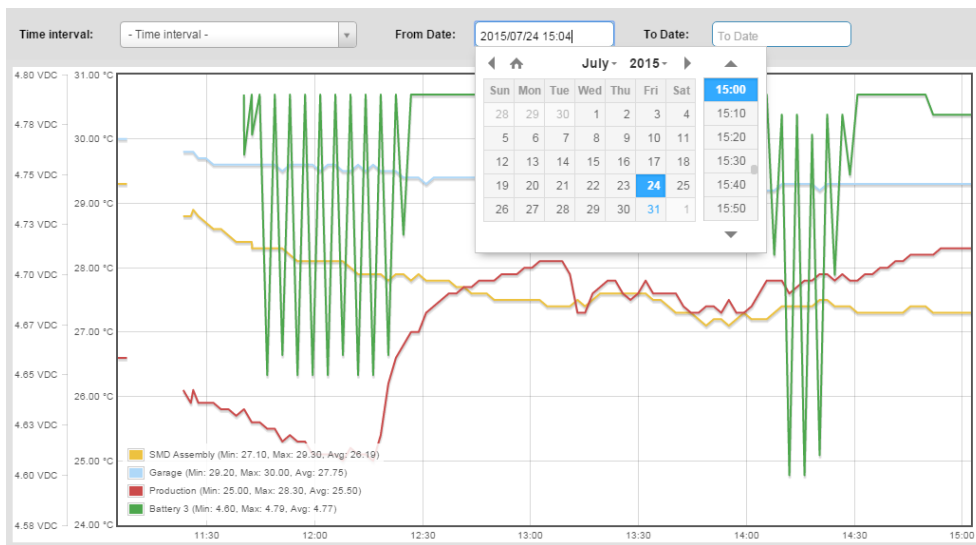
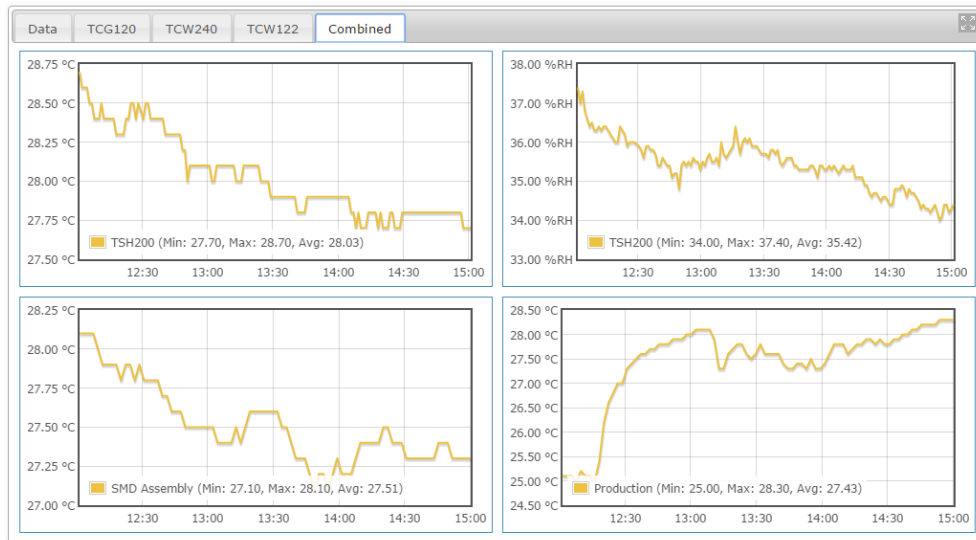
The **Monitoring** page is where the monitored and logged data is displayed. The created dashboards are accessed by clicking on the tabs on the top of the dashboard area. A typical data dashboard below:



The state of the relay outputs can be changed by clicking on the ON/OFF button, which appears once the mouse points the Relay field. If the controlled device operates in server mode – the ON/OFF command will be sent immediately. If the controller is in client mode, the command will be saved in the Queue and it will be sent to the controller during the next HTTP session. Detailed description of the HTTP session can be found in Appendix A.

The graph dashboards displays the logged values of the monitored parameters. Up to 4 different parameters with different dimensions can be displayed in a single graph. Clicking on the graph with the left mouse button will open the selected graph in a single window with an option to select the time interval for the displayed data. Below are shown some screenshots from graphic dashboards:





The graph dashboards show also information about the minimum, maximum and average value of the monitored parameter in a specified time period.

5.4. Reports

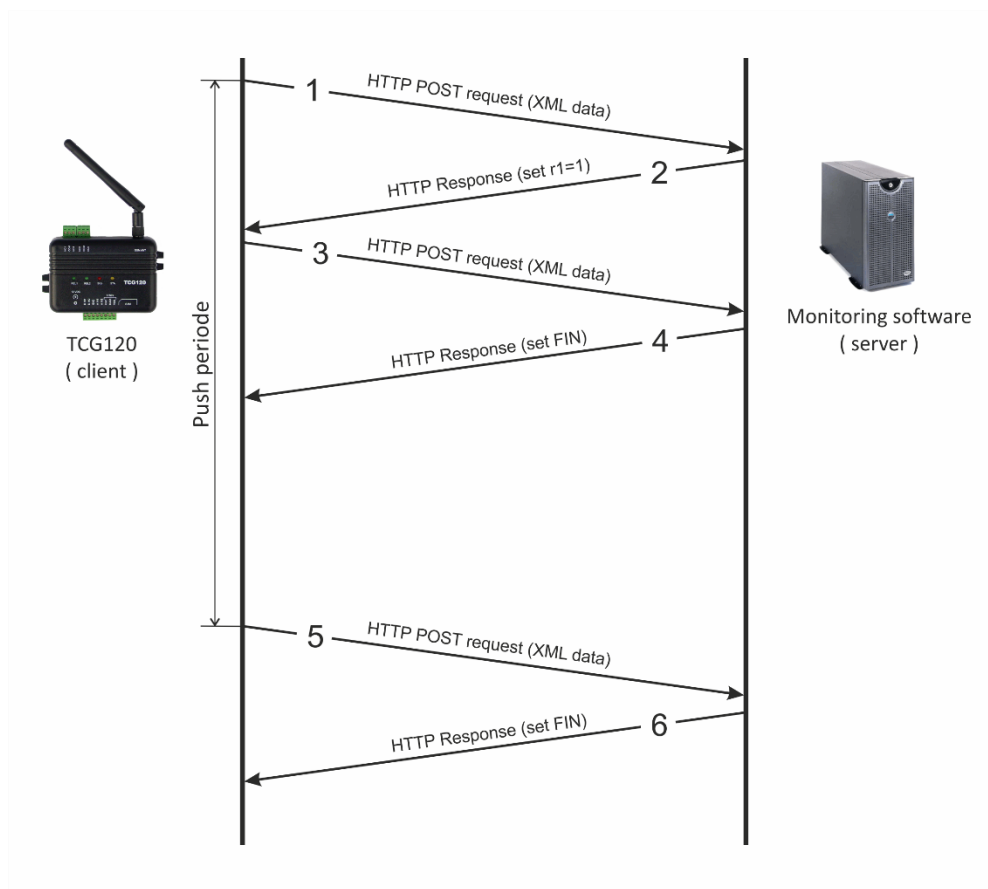
5.4.1. Reports->Tasks

This page shows the latest commands which are sent from TC Monitor to the monitored controllers. The possible commands are: toggle relay output, update connection time etc.

5.4.2. Reports->Latest Data

This page shows the latest received data from the monitored controllers. The data can be sorted, filtered and exported in MS Excel format for further analysis.

A typical HTTP session between TCG120 (**client mode**) and TC Monitor is shown below:



- 1** TCG120 sends HTTP POST request with XML data to the remote server;
- 2** SERVER returns HTTP response message, which contains “set r1=1” command as a brief text in the message body;
- 3** TCG120 sends HTTP POST request to confirm receiving of the “set r1=1” command;
- 4** SERVER sends HTTP response, which includes “set FIN” in the message body. This indicates that there are no pending commands and the session can be closed;
- 5** TCG120 sends next HTTP POST request to the server in connection with Push period timer;
- 6** SERVER answers with “set FIN” - there is no pending commands and the session can be closed.