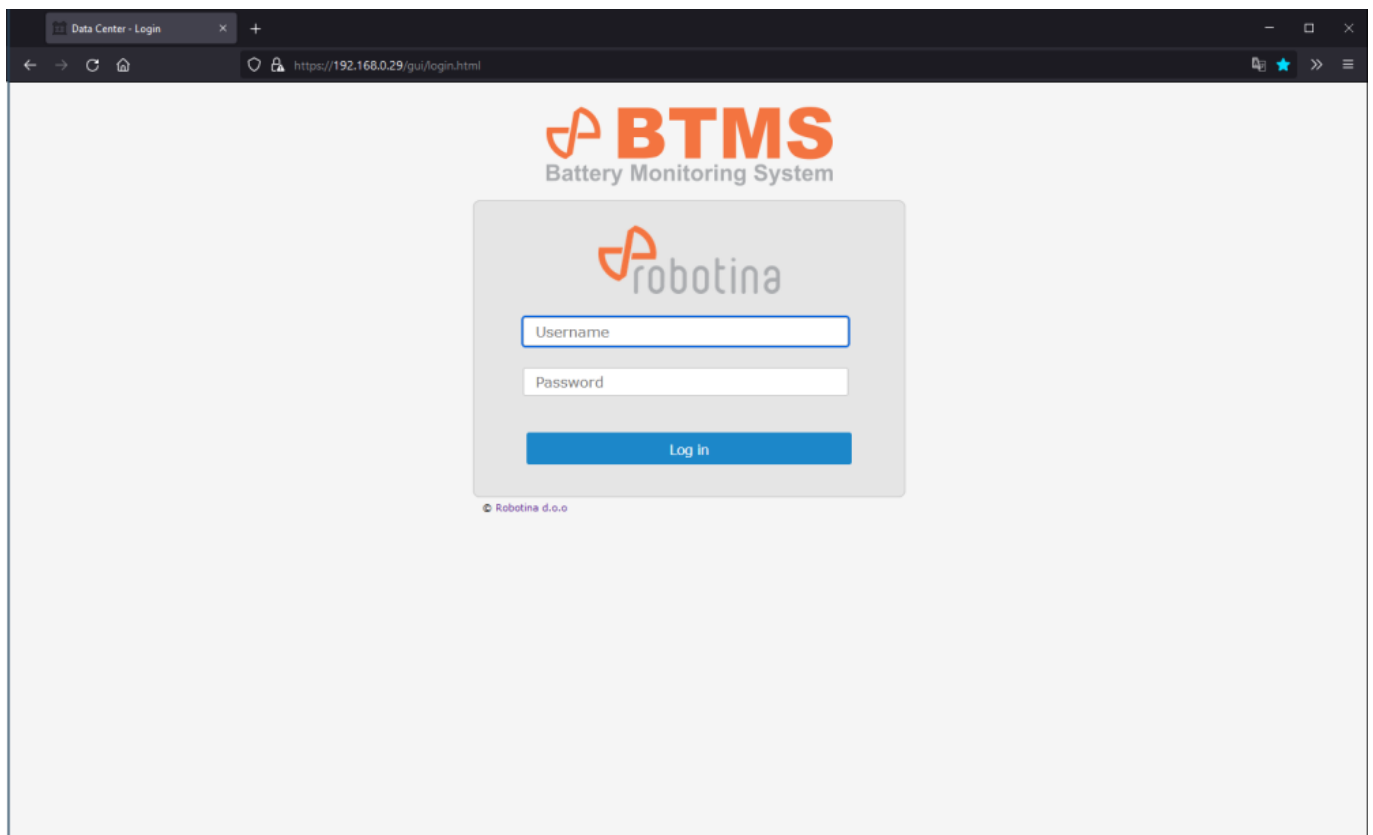


# 1. BM-GW WEB UI

- Demo: [BTMS BM-GW WEB UI demo](#)
- User: demo
- Pass: demo

## 1.1. Log-in



1st time log in:

- Connect Ethernet 2 port to facility LAN
- Connect PC to Ethernet 1 port (standard Ethernet cable between PC and BM-GW Ethernet 1 port)
- For PC Ethernet connection set fixed IP 192.168.10.200.
- Use the Internet browser to go to <https://192.168.10.1>
- Log in as:
  - user: admin
  - password: bmgw!admin
- Check the WAN IP address on the Data center - Settings page and set it if necessary

**Network settings**

| Adapter | Mode  | IP           | Subnet        | Gateway     | DNS                        |
|---------|-------|--------------|---------------|-------------|----------------------------|
| LAN     | fixed | 192.168.10.1 | 255.255.255.0 |             |                            |
| WAN     | fixed | 192.168.0.29 | 255.255.255.0 | 192.168.0.2 | 192.168.0.41, 192.168.0.71 |

**NTP settings**

**Custom NTP**

| Host | Port | Enabled                             |
|------|------|-------------------------------------|
|      |      | <input checked="" type="checkbox"/> |

**Default NTP pools (ENABLED)**

| Host                  |
|-----------------------|
| ntp.ubuntu.com        |
| 0.ubuntu.pool.ntp.org |
| 1.ubuntu.pool.ntp.org |
| 2.ubuntu.pool.ntp.org |

**Time settings**

- Connect the PC to the facility LAN and go to the <https://IP> address of the WAN port

## 1.2. General description

**Real-time data**

| UPS | Status | Voltage  | Current | SoC   |
|-----|--------|----------|---------|-------|
| #01 | OK     | 217.89 V | 0.00 A  | 100 % |

**Voltage**

HIGH

LOW

0

#01

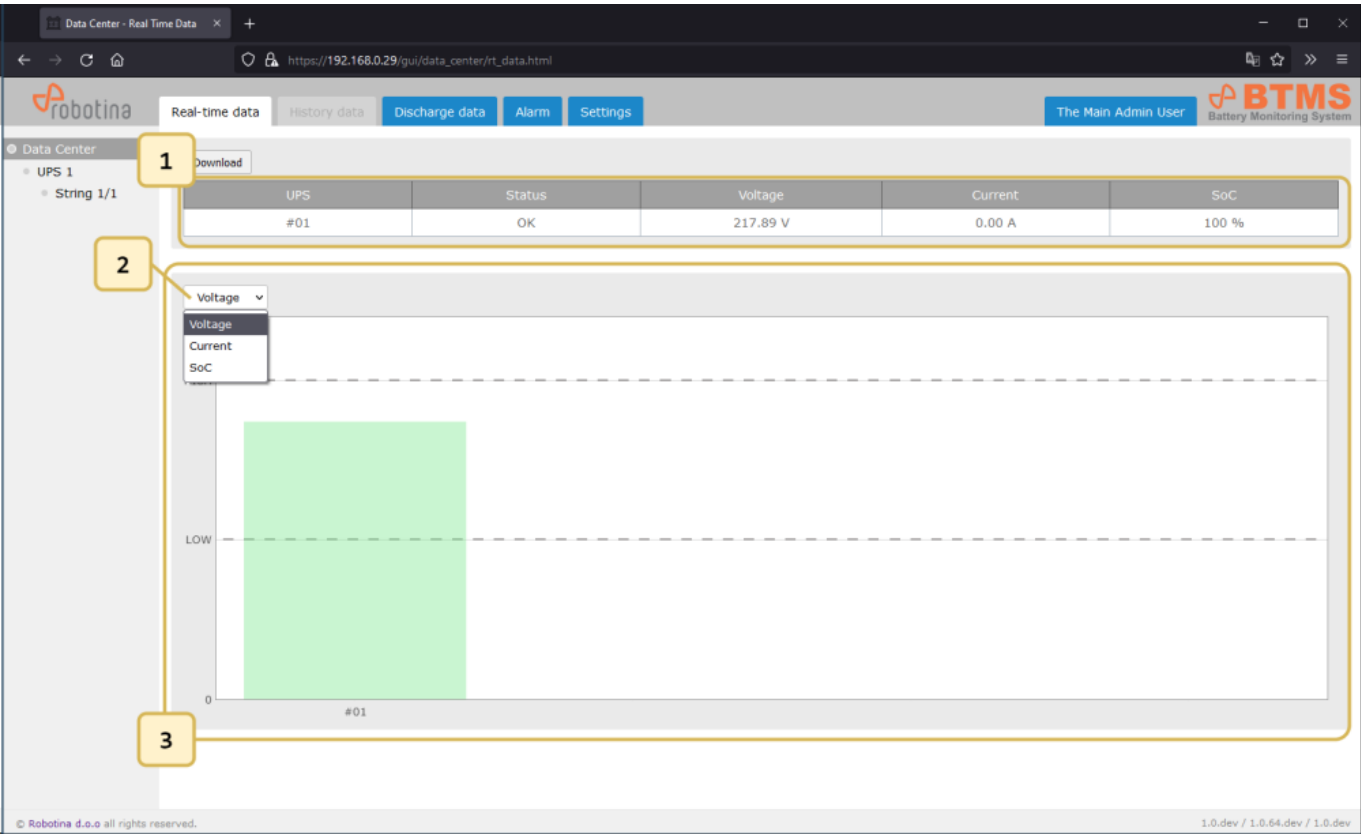
1

Pages tabs

|   |                            |
|---|----------------------------|
| 2 | Data center tree structure |
| 3 | Page data                  |

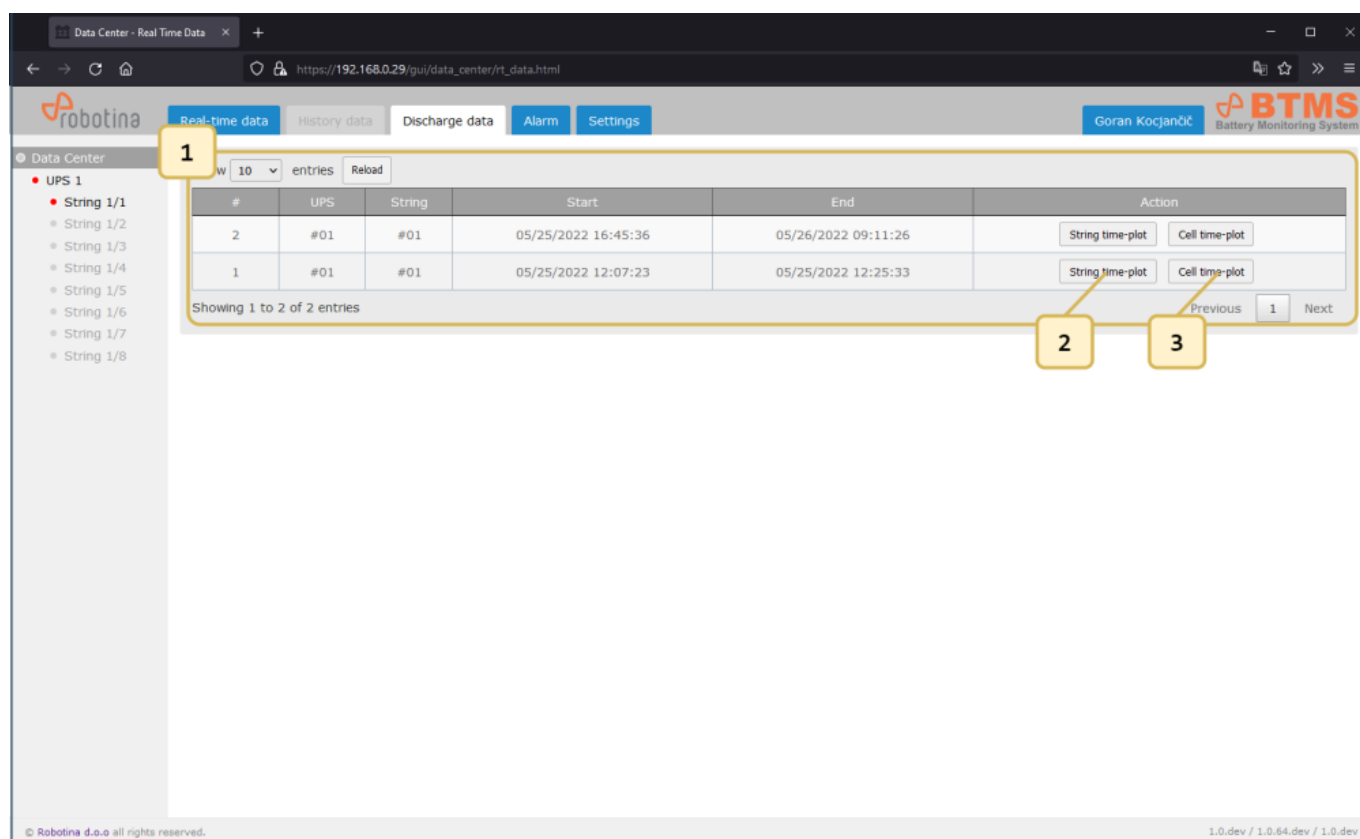
1.3. Data center

1.3.1. Real-time data



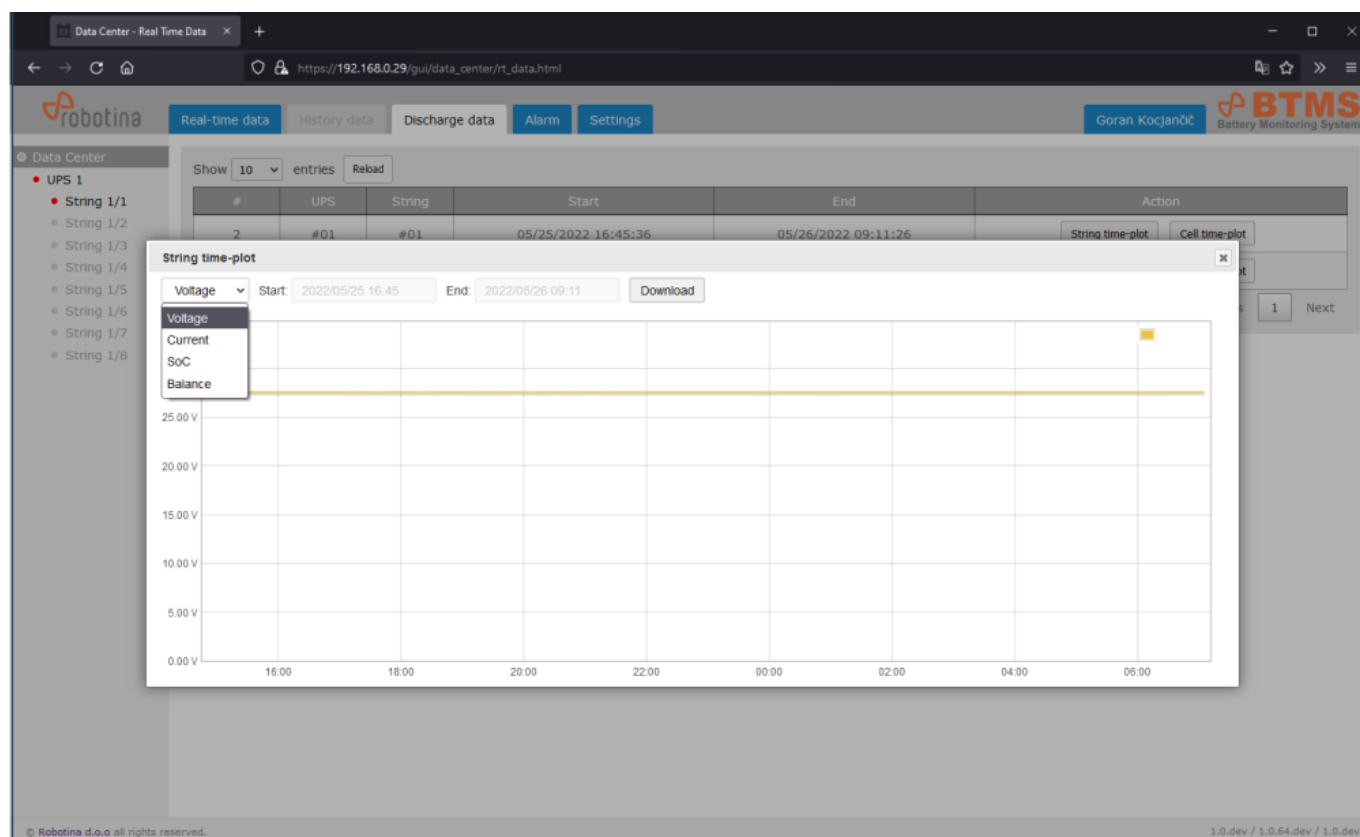
|   |                                                    |
|---|----------------------------------------------------|
| 1 | Tabular display of data for the Data Center        |
| 2 | Select a parameter for the graphic display         |
| 3 | Graphic bar-graph data display for the data center |

1.3.2. Discharge data

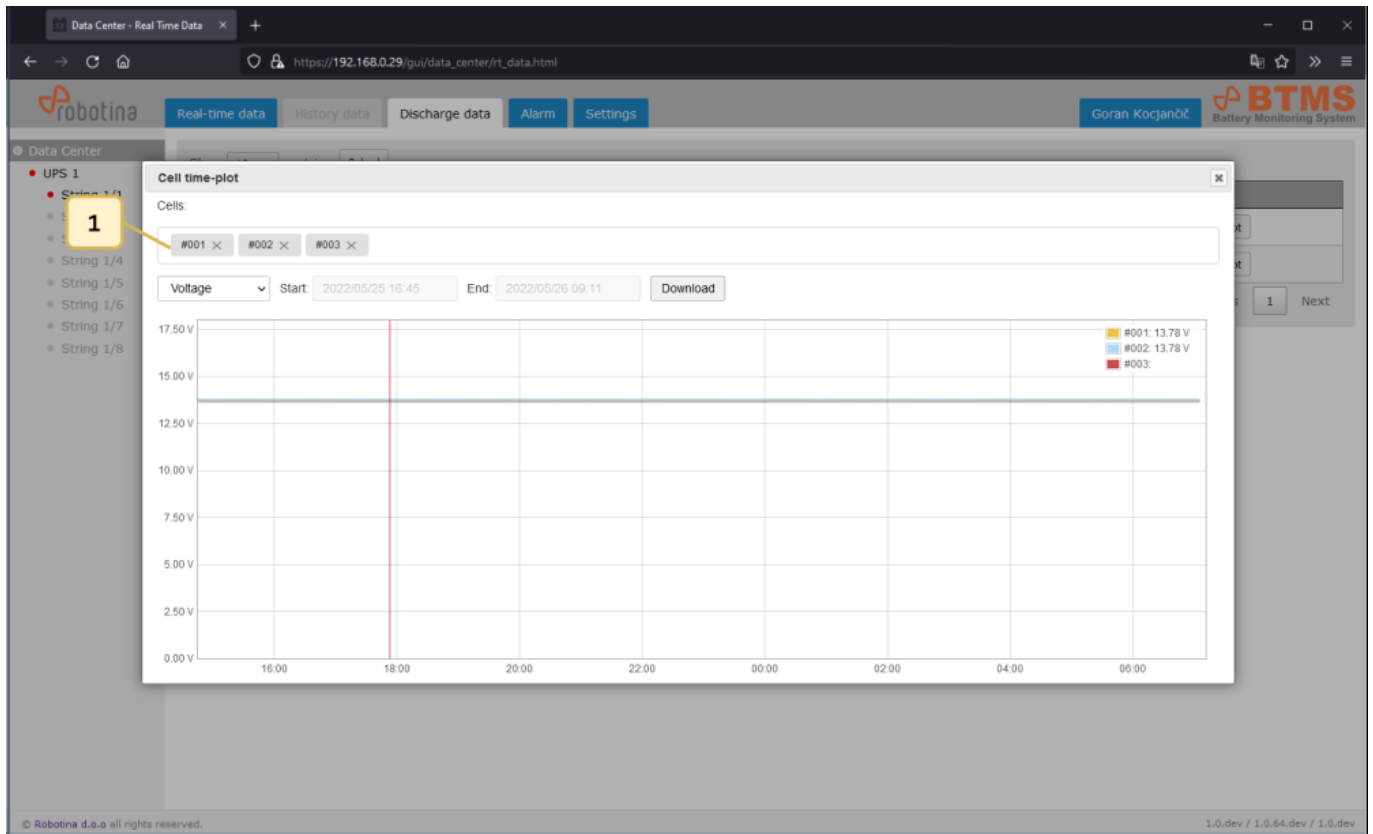


- |   |                                      |
|---|--------------------------------------|
| 1 | Discharge events table               |
| 2 | String time-plot for discharge event |
| 3 | Cell time-plot for discharge event   |

### 1.3.2.1. String time-plot for discharge event



### 1.3.2.2. Cell time-plot for discharge event



1

Cell selection

### 1.3.3. Alarm

The screenshot shows the 'Alarms' window in the Robotina BTMS interface. The window title is 'Data Center - Alarms'. The 'Alarms' tab is selected. The table displays 14 entries. A yellow box highlights the table, and a yellow circle with the number 1 is next to the 'Alarms' tab. A yellow circle with the number 2 is next to the 'Showing 1 to 10 of 14 entries' text.

| #  | UPS | String | Cell | From                | To                  | Alarm                     | Status |
|----|-----|--------|------|---------------------|---------------------|---------------------------|--------|
| 14 | #01 | #01    | #001 | 06/07/2022 14:22:20 |                     | Temperature high          | active |
| 13 | #01 | #01    |      | 06/06/2022 13:35:56 | 06/06/2022 13:38:24 | Current low (discharging) | gone   |
| 12 | #01 | #01    |      | 06/06/2022 13:29:16 | 06/06/2022 13:38:24 | Current high (charging)   | gone   |
| 11 | #01 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage low               | gone   |
| 10 | #01 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage high              | gone   |
| 9  | #01 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current low (discharging) | gone   |
| 8  | #01 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current high (charging)   | gone   |
| 7  | #01 | #01    |      | 06/06/2022 13:00:19 | 06/06/2022 13:00:51 | Voltage low               | gone   |
| 6  | #01 | #01    |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Voltage high              | gone   |
| 5  | #01 | #01    |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Current low (discharging) | gone   |

Showing 1 to 10 of 14 entries

|   |                           |
|---|---------------------------|
| 1 | Alarms sub-page selection |
| 2 | Alarms table              |

### 1.3.3.1. E-mails

The screenshot displays the 'Data Center - Sent E-mails' page. The top navigation bar includes tabs for 'Real-time data', 'History data', 'Discharge data', 'Alarm', and 'Settings'. The user is logged in as 'The Main Admin User'. The left sidebar shows the 'Data Center' structure with 'UPS 1' and 'String 1/1' selected. The main content area has tabs for 'Alarms', 'E-mails', and 'SMS'. The 'E-mails' tab is active, showing a table of sent emails. The table has columns: '#', 'UPS', 'String', 'Cell', 'Alarm', 'Time', 'Contact', 'Status', and 'Error'. There are 6 entries, all with a status of 'failed'. The error messages indicate SMTP server configuration issues and connection timeouts. The interface also includes a 'Show' dropdown set to '10 entries', 'Reload', and 'Download' buttons. The bottom of the table shows 'Showing 1 to 6 of 6 entries' and navigation buttons for 'Previous', '1', and 'Next'.

| # | UPS | String | Cell | Alarm                                                                | Time                | Contact                                | Status | Error                                                     |
|---|-----|--------|------|----------------------------------------------------------------------|---------------------|----------------------------------------|--------|-----------------------------------------------------------|
| 6 | #01 | #01    |      | current low (discharging)                                            | 06/06/2022 13:40:49 | The Main Admin User / razvoj@3-port.si | failed | SMTP server not configured                                |
| 5 | #01 | #01    |      | current low (discharging)                                            | 06/06/2022 13:40:39 | Uroš Marušič / uros.marusic@3-port.si  | failed | Couldn't connect to host, port: localhost, 25; timeout -1 |
| 4 | #01 | #01    |      | 3 events from 2022-06-06T13:14:48+02:00 to 2022-06-06T13:29:16+02:00 | 06/06/2022 13:32:05 | The Main Admin User / razvoj@3-port.si | failed | Couldn't connect to host, port: localhost, 25; timeout -1 |
| 3 | #01 | #01    |      | 3 events from 2022-06-06T13:14:48+02:00 to 2022-06-06T13:29:16+02:00 | 06/06/2022 13:32:05 | Uroš Marušič / uros.marusic@3-port.si  | failed | Couldn't connect to host, port: localhost, 25; timeout -1 |
| 2 | #01 | #01    |      | 3 events from 2022-06-06T13:00:51+02:00 to 2022-06-06T13:14:48+02:00 | 06/06/2022 13:17:06 | The Main Admin User / razvoj@3-port.si | failed | Couldn't connect to host, port: localhost, 25; timeout -1 |
| 1 | #01 | #01    |      | 3 events from 2022-06-06T13:00:51+02:00 to 2022-06-06T13:14:48+02:00 | 06/06/2022 13:17:05 | Uroš Marušič / uros.marusic@3-port.si  | failed | Couldn't connect to host, port: localhost, 25; timeout -1 |

Showing 1 to 6 of 6 entries

Previous 1 Next

### 1.3.3.2. SMS

The screenshot shows the 'Data Center - Sent SMS' interface. The top navigation bar includes 'Real-time data', 'History data', 'Discharge data', 'Alarm', and 'Settings'. The 'Alarm' tab is active. The left sidebar shows 'Data Center' > 'UPS 1' > 'String 1/1'. The main content area has tabs for 'Alarms', 'E-mails', and 'SMS', with 'SMS' selected. Below the tabs are 'Show 10 entries', 'Reload', and 'Download' buttons. A table displays 6 entries of SMS events. The table has columns: #, UPS, String, Cell, Alarm, Time, Contact, Status, and Error. All entries show a 'failed' status with the error 'Connection refused (Connection refused)'. The bottom of the interface shows 'Showing 1 to 6 of 6 entries' and navigation buttons 'Previous', '1', and 'Next'.

| # | UPS | String | Cell | Alarm                                                                | Time                | Contact                               | Status | Error                                   |
|---|-----|--------|------|----------------------------------------------------------------------|---------------------|---------------------------------------|--------|-----------------------------------------|
| 6 | #01 | #01    |      | 2 events from 2022-06-06T13:29:16+02:00 to 2022-06-06T13:38:24+02:00 | 06/06/2022 13:40:39 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |
| 5 | #01 | #01    |      | 3 events from 2022-06-06T13:14:48+02:00 to 2022-06-06T13:29:16+02:00 | 06/06/2022 13:32:05 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |
| 4 | #01 | #01    |      | 2 events from 2022-06-06T13:00:51+02:00 to 2022-06-06T13:14:48+02:00 | 06/06/2022 13:17:06 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |
| 3 | #01 | #01    |      | 2 events from 2022-06-06T12:43:25+02:00 to 2022-06-06T13:00:51+02:00 | 06/06/2022 13:03:59 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |
| 2 | #01 | #01    |      | 2 events from 2022-06-06T07:38:22Z to 2022-06-06T10:43:25Z           | 06/06/2022 12:47:57 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |
| 1 | #01 | #01    |      | 2 events from 2022-06-06T07:35:55Z to 2022-06-06T07:38:22Z           | 06/06/2022 09:42:23 | Uroš Marušič / uros.marusic@3-port.si | failed | Connection refused (Connection refused) |

## 1.3.4. Settings

### 1.3.4.1. Network settings, NTP settings

The screenshot shows the 'Data Center - Settings' interface. The top navigation bar includes 'Real-time data', 'History data', 'Discharge data', 'Alarm', and 'Settings'. The 'Settings' tab is active. The left sidebar shows 'Data Center' > 'UPS 1' > 'String 1/1'. The main content area has tabs for 'Network settings', 'NTP settings', and 'Time settings'. The 'Network settings' tab is selected, showing an 'Edit' button and a table of network configurations. The 'NTP settings' tab is also visible, showing 'Edit' and 'Sync now' buttons, and sections for 'Custom NTP' and 'Default NTP pools (ENABLED)'. The 'Time settings' tab is partially visible at the bottom.

**Network settings**

| Adapter | Mode  | IP           | Subnet        | Gateway     | DNS                        |
|---------|-------|--------------|---------------|-------------|----------------------------|
| LAN     | fixed | 192.168.10.1 | 255.255.255.0 |             |                            |
| WAN     | fixed | 192.168.0.29 | 255.255.255.0 | 192.168.0.2 | 192.168.0.41, 192.168.0.71 |

**NTP settings**

Custom NTP

| Host | Port | Enabled                             |
|------|------|-------------------------------------|
|      |      | <input checked="" type="checkbox"/> |

Default NTP pools (ENABLED)

| Host                  |
|-----------------------|
| ntp.ubuntu.com        |
| 0.ubuntu.pool.ntp.org |
| 1.ubuntu.pool.ntp.org |
| 2.ubuntu.pool.ntp.org |

### 1.3.4.2. Time settings, Users

The screenshot shows the 'Settings' tab in the Robotina BTMS interface. The left sidebar shows 'Data Center' > 'UPS 1' > 'String 1/1'. The main content area has two sections:

**Time settings**

Buttons: Edit

| Time     | Date       |
|----------|------------|
| 18:10:09 | 06/07/2022 |

Buttons: Edit

Timezone: Europe/Ljubljana

**Users**

Buttons: Add, Edit, Delete

| User  | Full name           | Administrator                       | Phone number | E-mail                       |
|-------|---------------------|-------------------------------------|--------------|------------------------------|
| admin | The Main Admin User | <input checked="" type="checkbox"/> |              | razvoj@3-port.si             |
| goran | Goran Kocjancic     | <input checked="" type="checkbox"/> | 041379313    | goran.kocjancic@robotina.com |
| devid | Devid Palcic        | <input checked="" type="checkbox"/> |              |                              |

**SMTP settings**

Buttons: Edit

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### 1.3.4.3. SNMP settings, SMS notifications, Project settings, Data export

The screenshot shows the 'Settings' tab in the Robotina BTMS interface. The left sidebar shows 'Data Center' > 'UPS 1' > 'String 1/1'. The main content area has four sections:

**SMTP settings**

Buttons: Edit

| Host | Port | From E-mail | Security | Username |
|------|------|-------------|----------|----------|
|      |      |             |          |          |

**SMS notifications**

Buttons: Test SMS

Your user does not have an associated phone number.

**Project settings**

Buttons: Edit, Delete logo

| Project name | Company | URL | Owner |
|--------------|---------|-----|-------|
|              |         |     |       |

**Data Export**

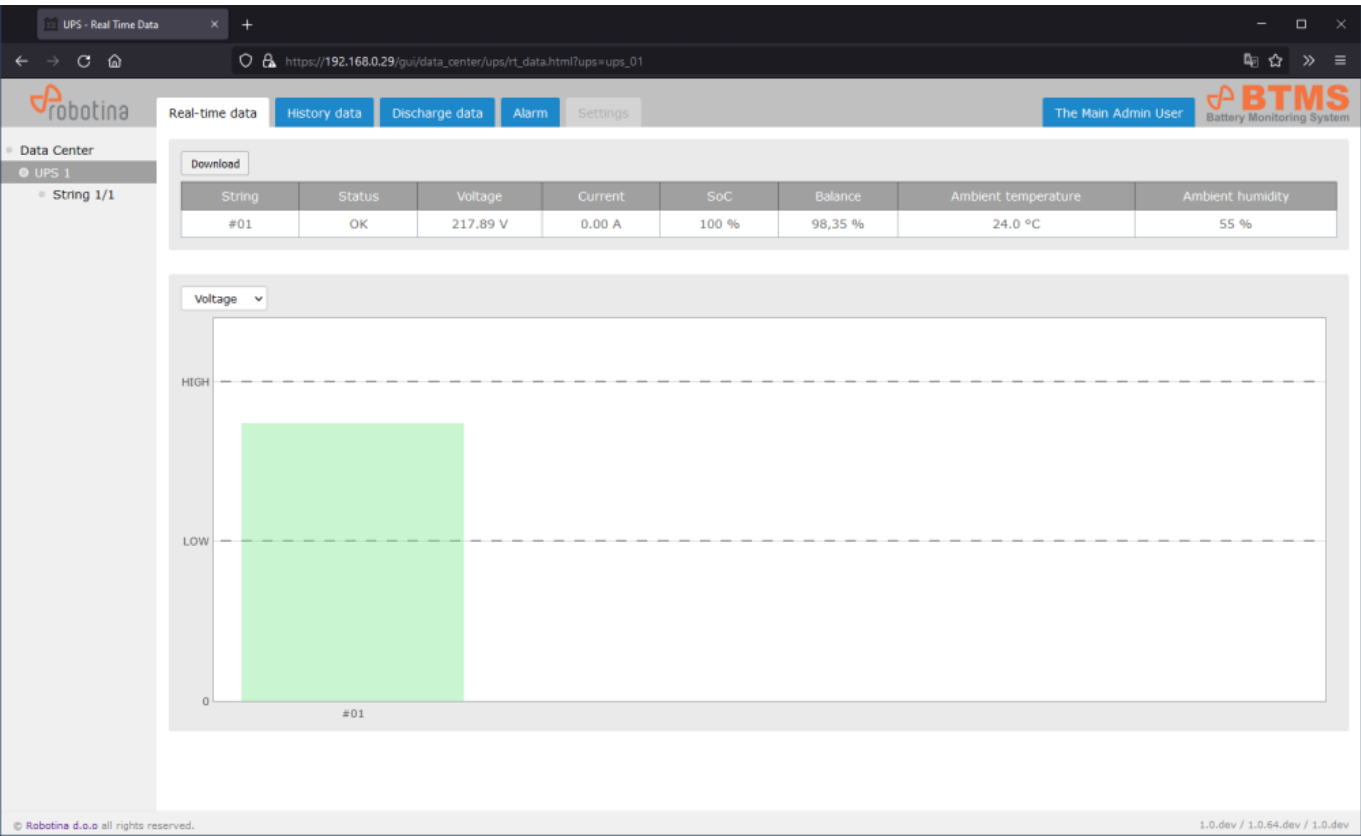
Buttons: New data export

| File                      | Size | Time |
|---------------------------|------|------|
| No data exports available |      |      |

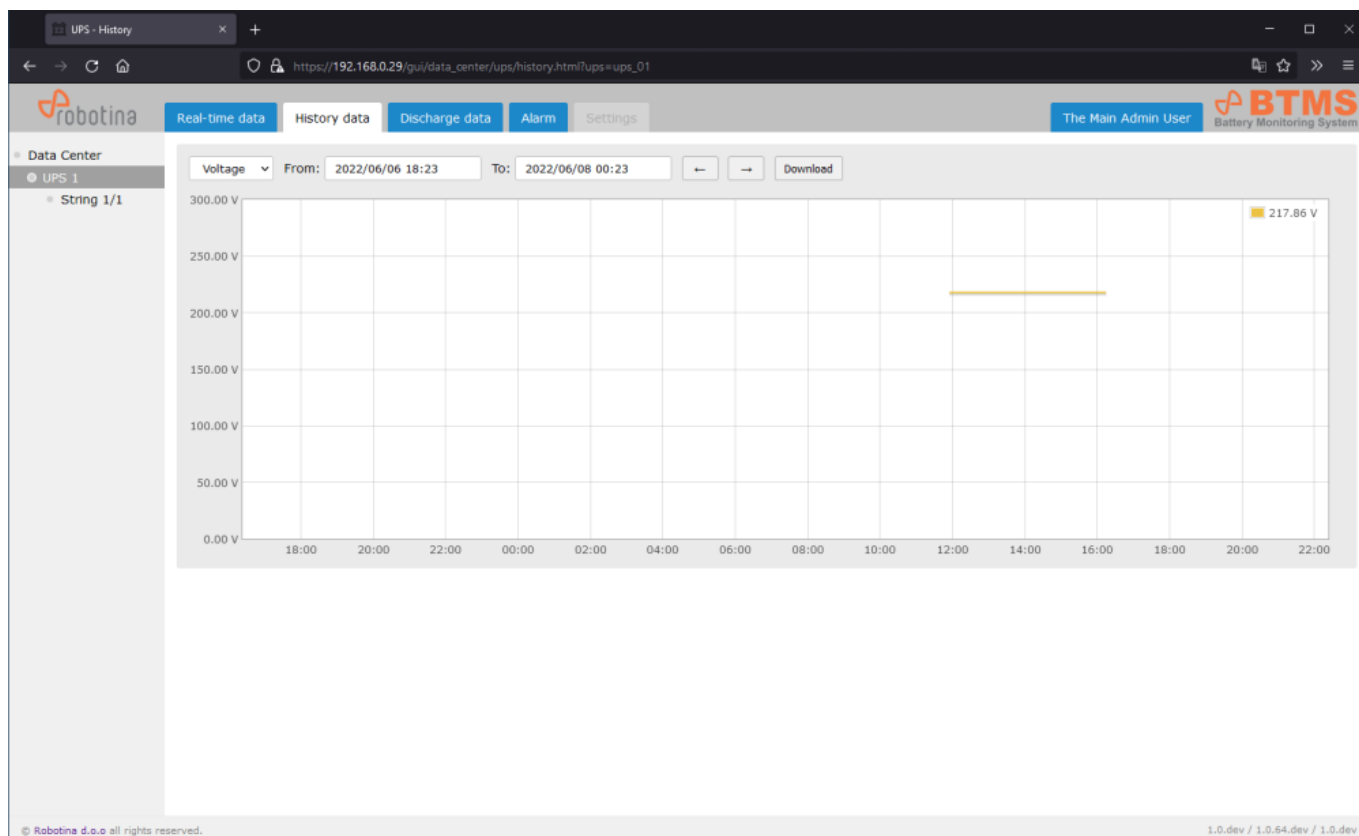
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# 1.4. UPS

## 1.4.1. Real-time data



## 1.4.2. History data



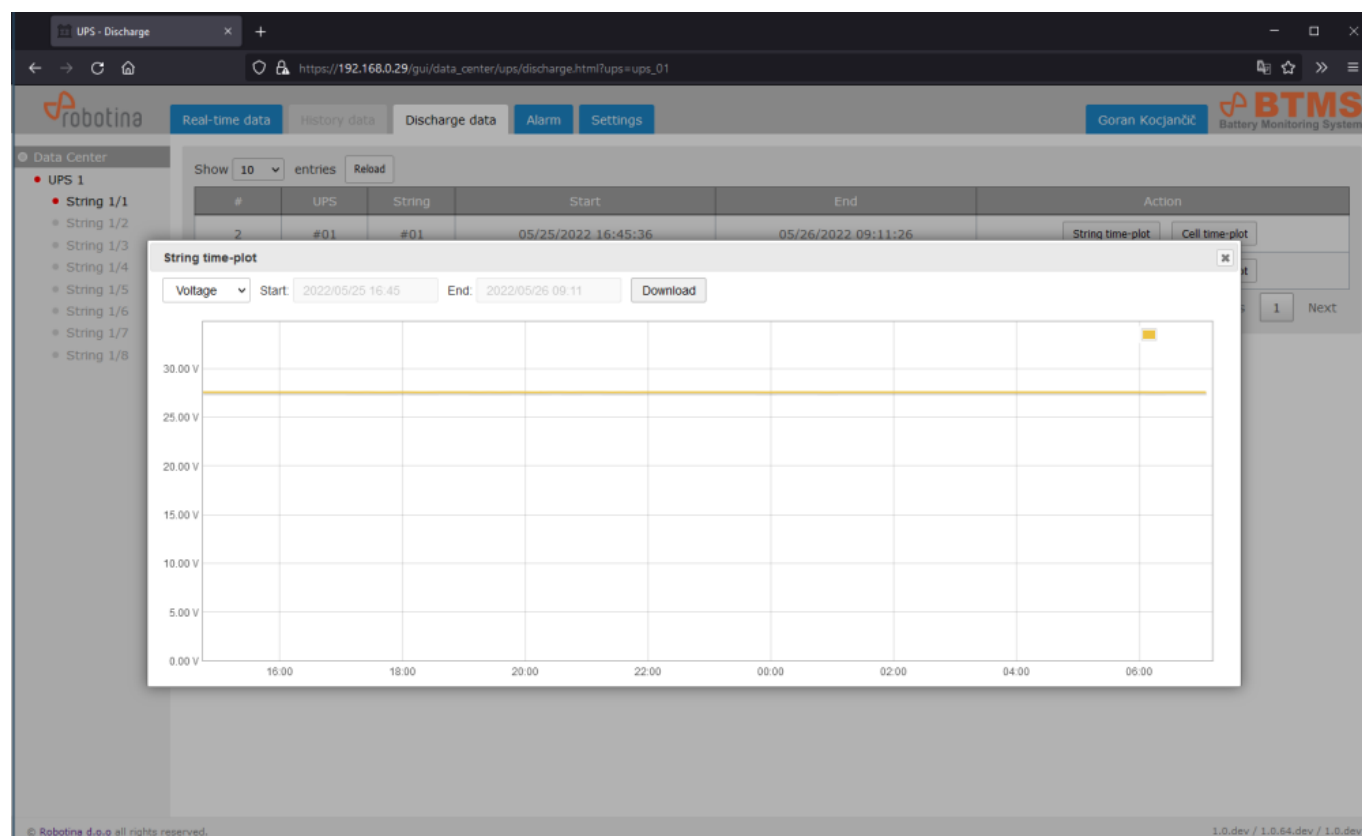
### 1.4.3. Discharge data

The screenshot shows the 'Discharge data' tab. It displays a table with two entries. The table has columns for #, UPS, String, Start, End, and Action. The first entry is for UPS #01, String #01, starting on 05/25/2022 at 16:45:36 and ending on 05/26/2022 at 09:11:26. The second entry is for UPS #01, String #01, starting on 05/25/2022 at 12:07:23 and ending on 05/25/2022 at 12:25:33. The interface includes a sidebar with 'Data Center' and 'UPS 1' sections, and a top navigation bar with tabs for Real-time data, History data, Discharge data, Alarm, and Settings.

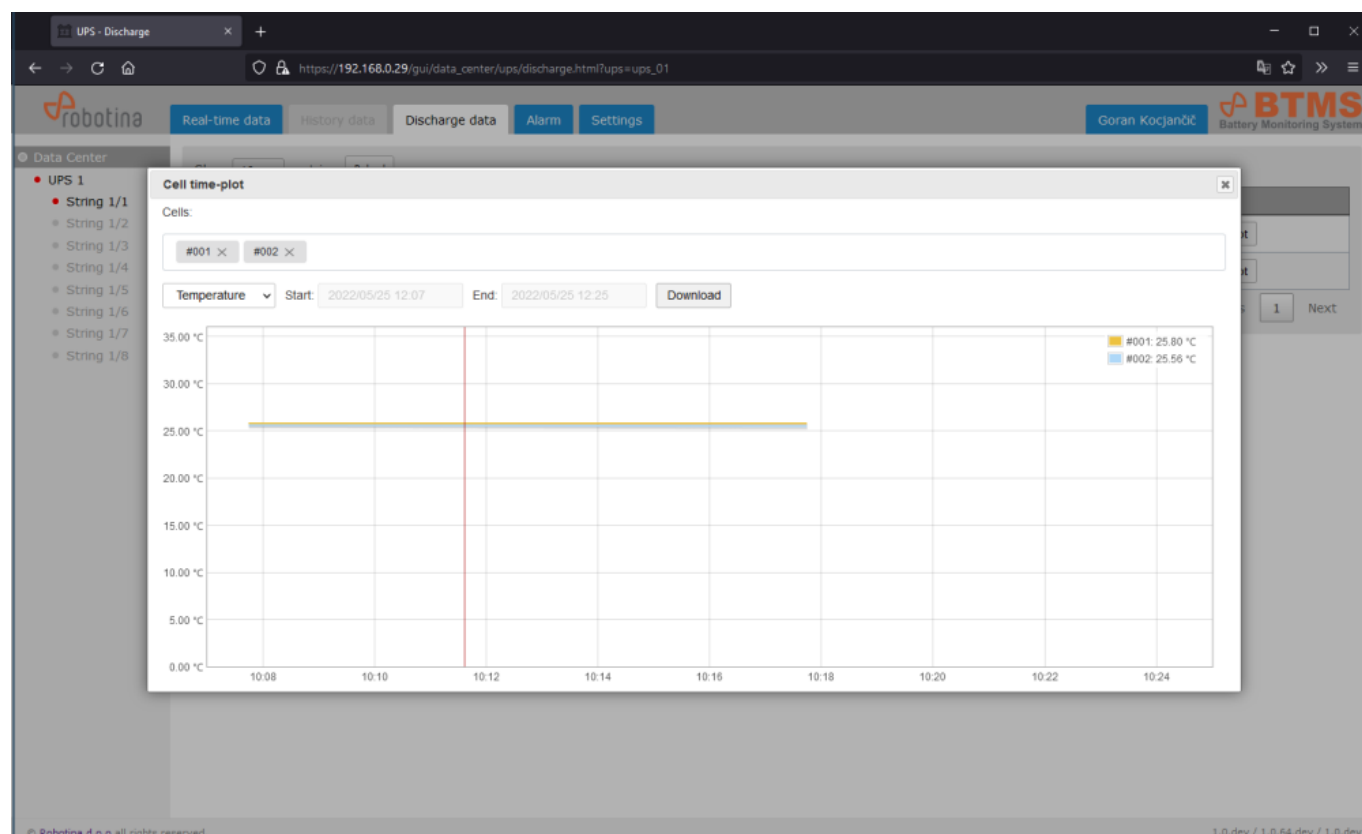
| # | UPS | String | Start               | End                 | Action                          |
|---|-----|--------|---------------------|---------------------|---------------------------------|
| 2 | #01 | #01    | 05/25/2022 16:45:36 | 05/26/2022 09:11:26 | String time-plot Cell time-plot |
| 1 | #01 | #01    | 05/25/2022 12:07:23 | 05/25/2022 12:25:33 | String time-plot Cell time-plot |

Showing 1 to 2 of 2 entries

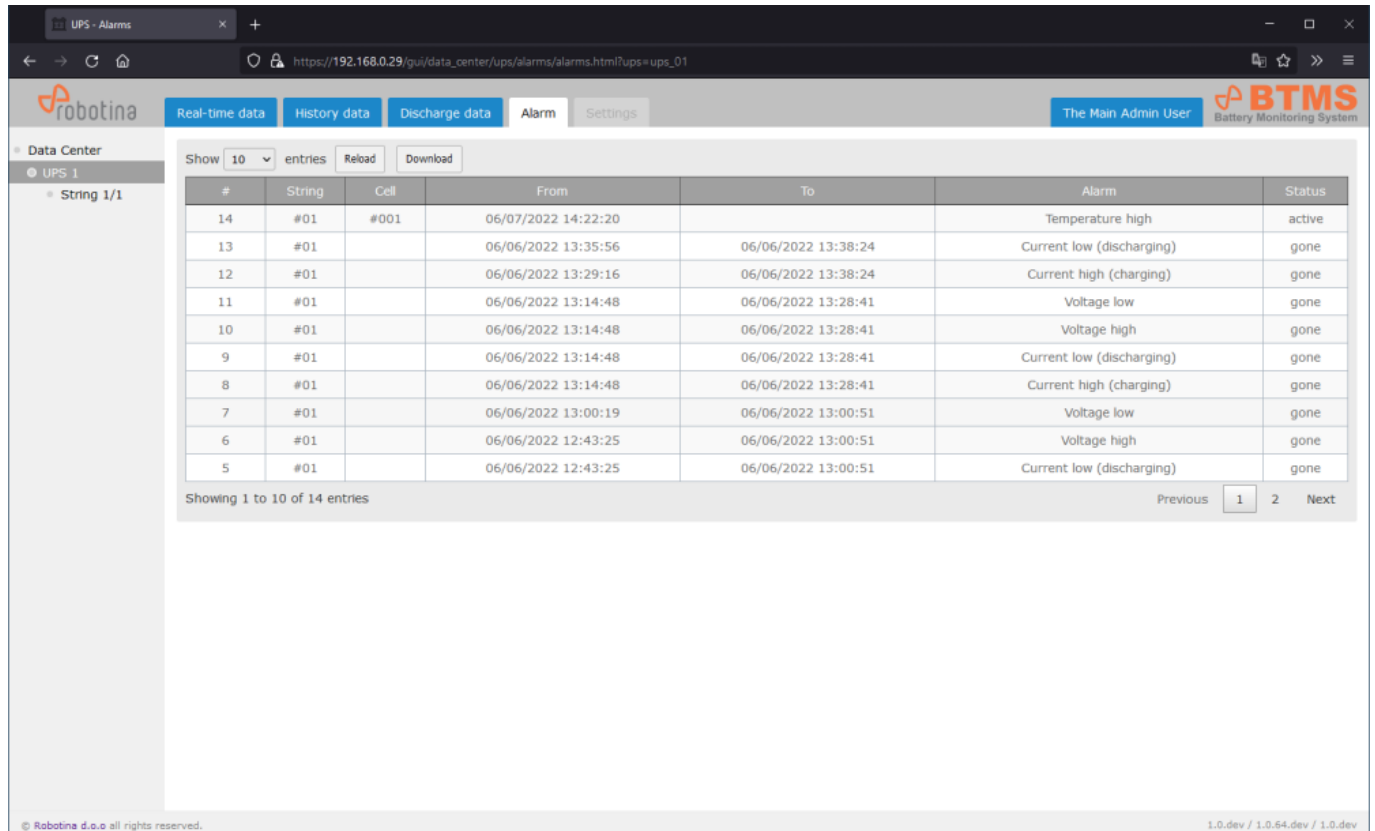
### 1.4.3.1. String time-plot



### 1.4.3.2. Cell time-plot



## 1.4.4. Alarm



The screenshot shows the 'Alarm' tab in the Robotina BTMS interface. The page displays a table of 14 alarm entries, sorted by time. The table columns are: #, String, Cell, From, To, Alarm, and Status. The entries show various alarms such as 'Temperature high', 'Current low (discharging)', 'Current high (charging)', 'Voltage low', and 'Voltage high'. The status of the alarms is either 'active' or 'gone'.

| #  | String | Cell | From                | To                  | Alarm                     | Status |
|----|--------|------|---------------------|---------------------|---------------------------|--------|
| 14 | #01    | #001 | 06/07/2022 14:22:20 |                     | Temperature high          | active |
| 13 | #01    |      | 06/06/2022 13:35:56 | 06/06/2022 13:38:24 | Current low (discharging) | gone   |
| 12 | #01    |      | 06/06/2022 13:29:16 | 06/06/2022 13:38:24 | Current high (charging)   | gone   |
| 11 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage low               | gone   |
| 10 | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage high              | gone   |
| 9  | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current low (discharging) | gone   |
| 8  | #01    |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current high (charging)   | gone   |
| 7  | #01    |      | 06/06/2022 13:00:19 | 06/06/2022 13:00:51 | Voltage low               | gone   |
| 6  | #01    |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Voltage high              | gone   |
| 5  | #01    |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Current low (discharging) | gone   |

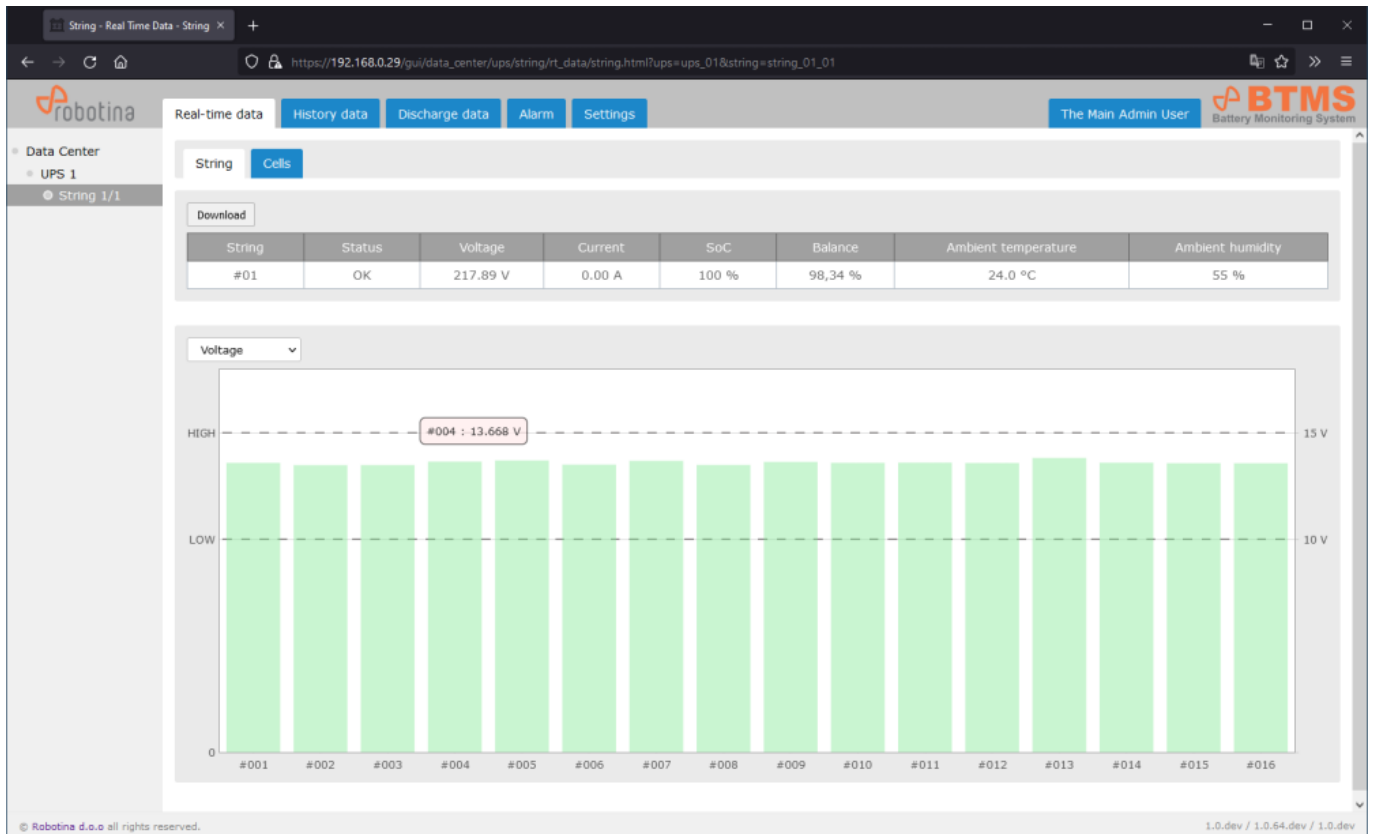
Showing 1 to 10 of 14 entries

Previous 1 2 Next

## 1.5. String

### 1.5.1. Real-time data

#### 1.5.1.1. String



### 1.5.1.2. Cells

String - Real Time Data - Cells

https://192.168.0.29/gui/data\_center/ups/string/rt\_data/cells.html?ups=ups\_01&string=string\_01\_01

Robotina BTMS Battery Monitoring System

The Main Admin User

Real-time data | History data | Discharge data | Alarm | Settings

String | Cells

Show 10 entries | Download

| Cell | Status | Voltage  | Resistance | Temperature | SoC   | SoH  |
|------|--------|----------|------------|-------------|-------|------|
| #001 | OK     | 13.611 V | 18.036 mΩ  | 300.0 °C    | 100 % | 76 % |
| #002 | OK     | 13.502 V | 16.718 mΩ  | 300.0 °C    | 100 % | 79 % |
| #003 | OK     | 13.506 V | 16.674 mΩ  | 300.0 °C    | 100 % | 79 % |
| #004 | OK     | 13.666 V | 15.875 mΩ  | 300.0 °C    | 100 % | 81 % |
| #005 | OK     | 13.725 V | 15.655 mΩ  | 300.0 °C    | 100 % | 82 % |
| #006 | OK     | 13.529 V | 15.439 mΩ  | 300.0 °C    | 100 % | 82 % |
| #007 | OK     | 13.703 V | 15.058 mΩ  | 300.0 °C    | 100 % | 83 % |
| #008 | OK     | 13.512 V | 18.096 mΩ  | 300.0 °C    | 100 % | 76 % |
| #009 | OK     | 13.655 V | 15.747 mΩ  | 300.0 °C    | 100 % | 82 % |
| #010 | OK     | 13.611 V | 15.647 mΩ  | 300.0 °C    | 100 % | 82 % |

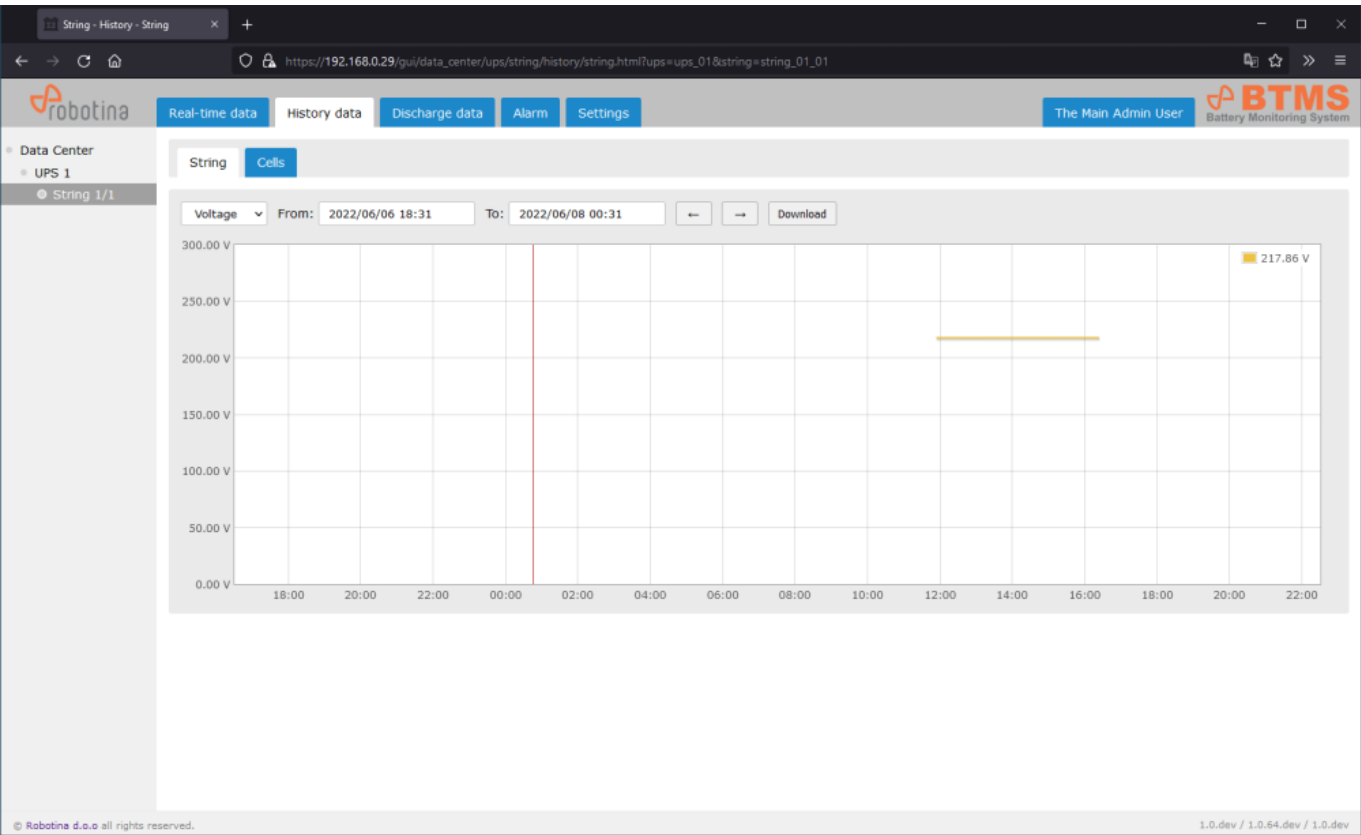
Showing 1 to 10 of 16 entries

Previous 1 2 Next

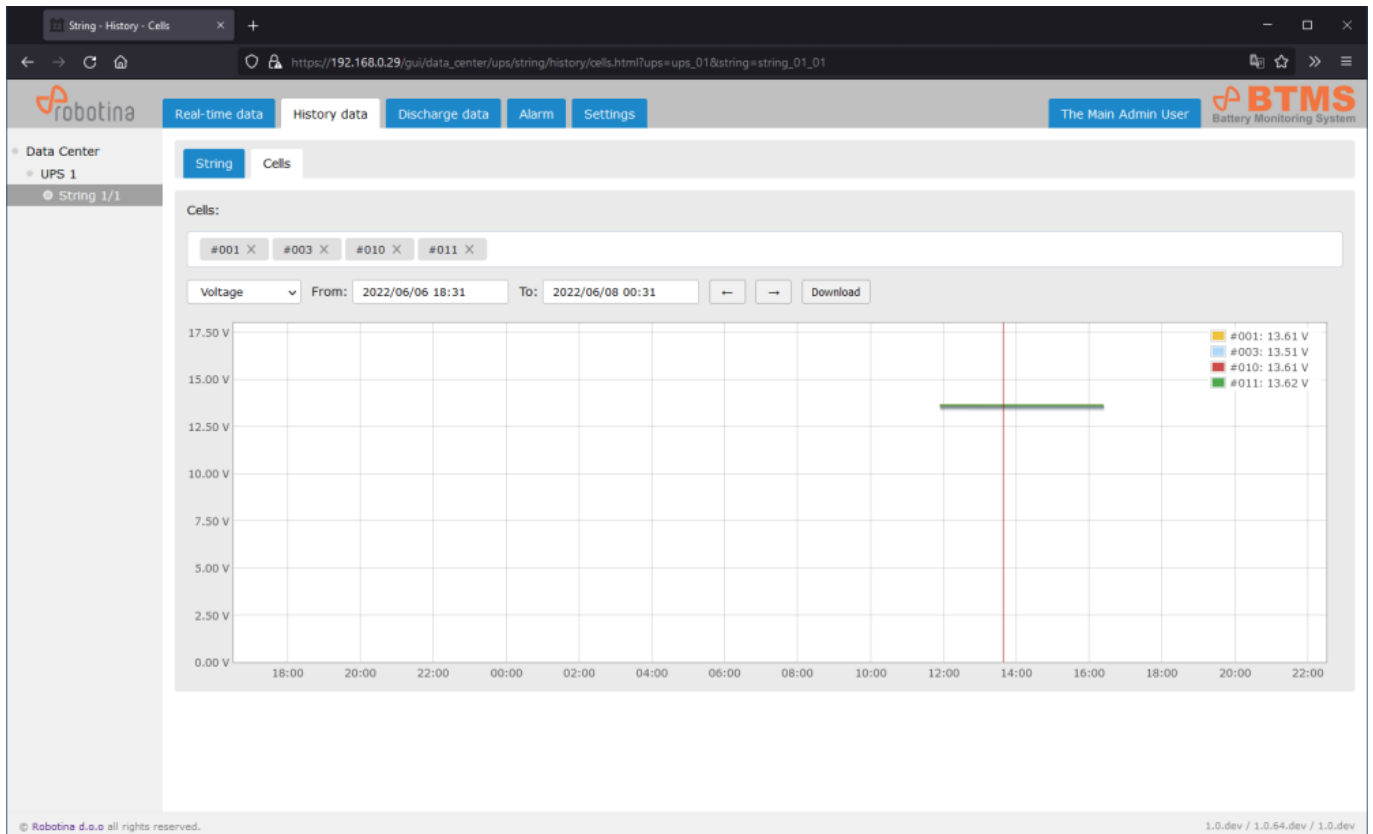
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## 1.5.2. History data

### 1.5.2.1. String



### 1.5.2.2. Cells



### 1.5.3. Discharge data

String - Discharge

https://192.168.0.29/gui/data\_center/ups/string/discharge.html?ups=ups\_01&string=string\_01\_01

Robotina BTMS Battery Monitoring System

Goran Kocjančič

Real-time data History data Discharge data Alarm Settings

Data Center

UPS 1

String 1/1

String 1/2

String 1/3

String 1/4

String 1/5

String 1/6

String 1/7

String 1/8

Show 10 entries

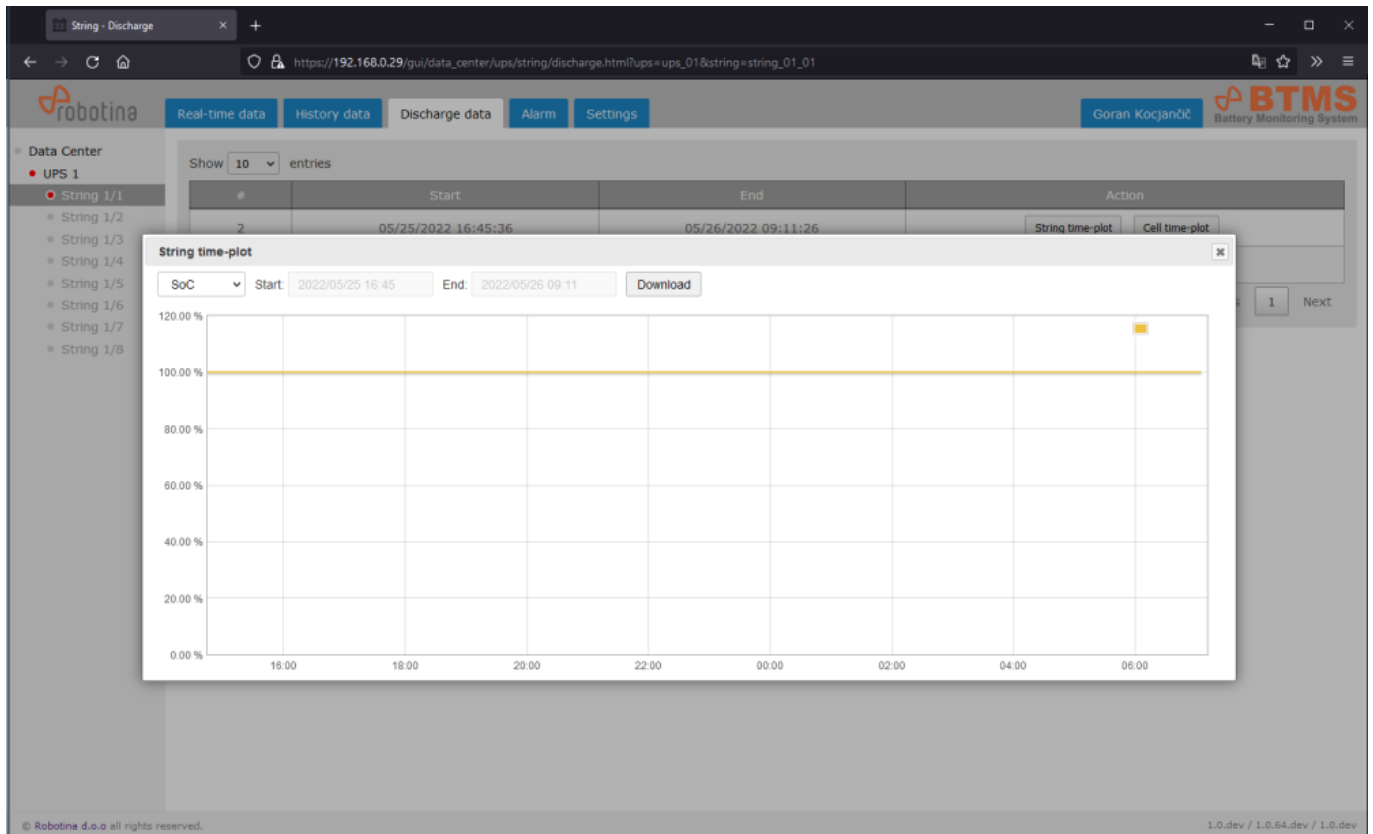
| # | Start               | End                 | Action                          |
|---|---------------------|---------------------|---------------------------------|
| 2 | 05/25/2022 16:45:36 | 05/26/2022 09:11:26 | String time-plot Cell time-plot |
| 1 | 05/25/2022 12:07:23 | 05/25/2022 12:25:33 | String time-plot Cell time-plot |

Showing 1 to 2 of 2 entries

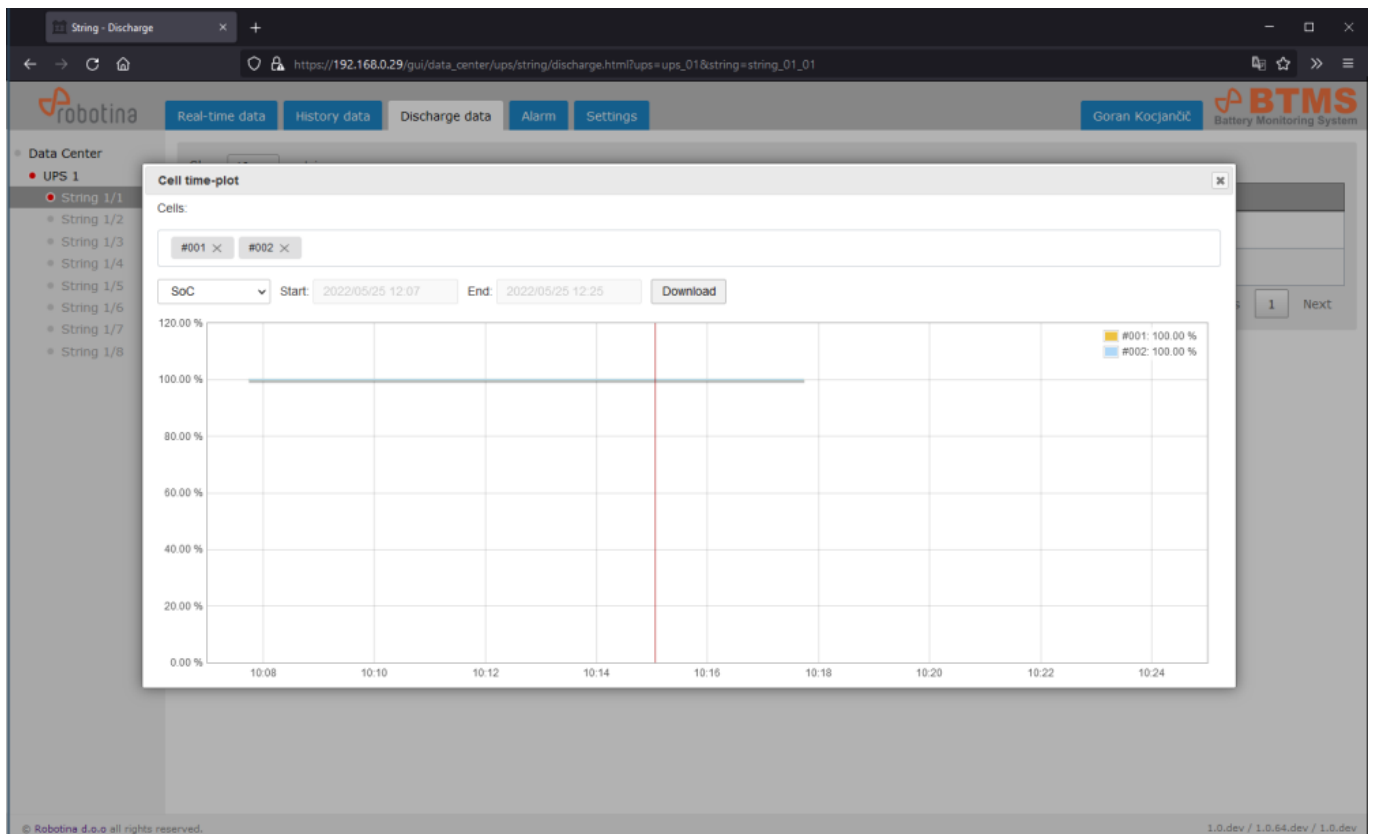
Previous 1 Next

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### 1.5.3.1. String time-plot



### 1.5.3.2. Cell time-plot



1.5.4. Alarm

String - Alarms

https://192.168.0.29/gui/data\_center/ups/string/alarms/alarms.html?ups=ups\_01&string=string\_01\_01

robotina

Real-time dataHistory dataDischarge dataAlarmSettings

The Main Admin UserBTMSBattery Monitoring System

Data CenterUPS 1String 1/1

Show10entriesReloadDownload

| #  | Cell | From                | To                  | Alarm                     | Status |
|----|------|---------------------|---------------------|---------------------------|--------|
| 14 | #001 | 06/07/2022 14:22:20 |                     | Temperature high          | active |
| 13 |      | 06/06/2022 13:35:56 | 06/06/2022 13:38:24 | Current low (discharging) | gone   |
| 12 |      | 06/06/2022 13:29:16 | 06/06/2022 13:38:24 | Current high (charging)   | gone   |
| 11 |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage low               | gone   |
| 10 |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Voltage high              | gone   |
| 9  |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current low (discharging) | gone   |
| 8  |      | 06/06/2022 13:14:48 | 06/06/2022 13:28:41 | Current high (charging)   | gone   |
| 7  |      | 06/06/2022 13:00:19 | 06/06/2022 13:00:51 | Voltage low               | gone   |
| 6  |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Voltage high              | gone   |
| 5  |      | 06/06/2022 12:43:25 | 06/06/2022 13:00:51 | Current low (discharging) | gone   |

Showing 1 to 10 of 14 entriesPrevious12Next

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1.5.5. Settings

String - Settings

https://192.168.0.29/gui/data\_center/ups/string/settings.html?ups=ups\_01&string=string\_01\_01

robotina

Real-time dataHistory dataDischarge dataAlarmSettings

The Main Admin UserBTMSBattery Monitoring System

Data CenterUPS 1String 1/1

Alarm settings

|                                | SMS                                 | e-mail                              |
|--------------------------------|-------------------------------------|-------------------------------------|
| String current charge limit    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| String current discharge limit | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| String voltage high limit      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| String voltage low limit       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| String SoC low limit           | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Hall alarm enable              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cell voltage high limit        | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cell voltage low limit         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cell resistance high limit     | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cell SoC low limit             | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cell SoH low limit             | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cell temperature high limit    | <input type="checkbox"/>            | <input type="checkbox"/>            |

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Enable for which alarm SMS / e-mail will be sent.