

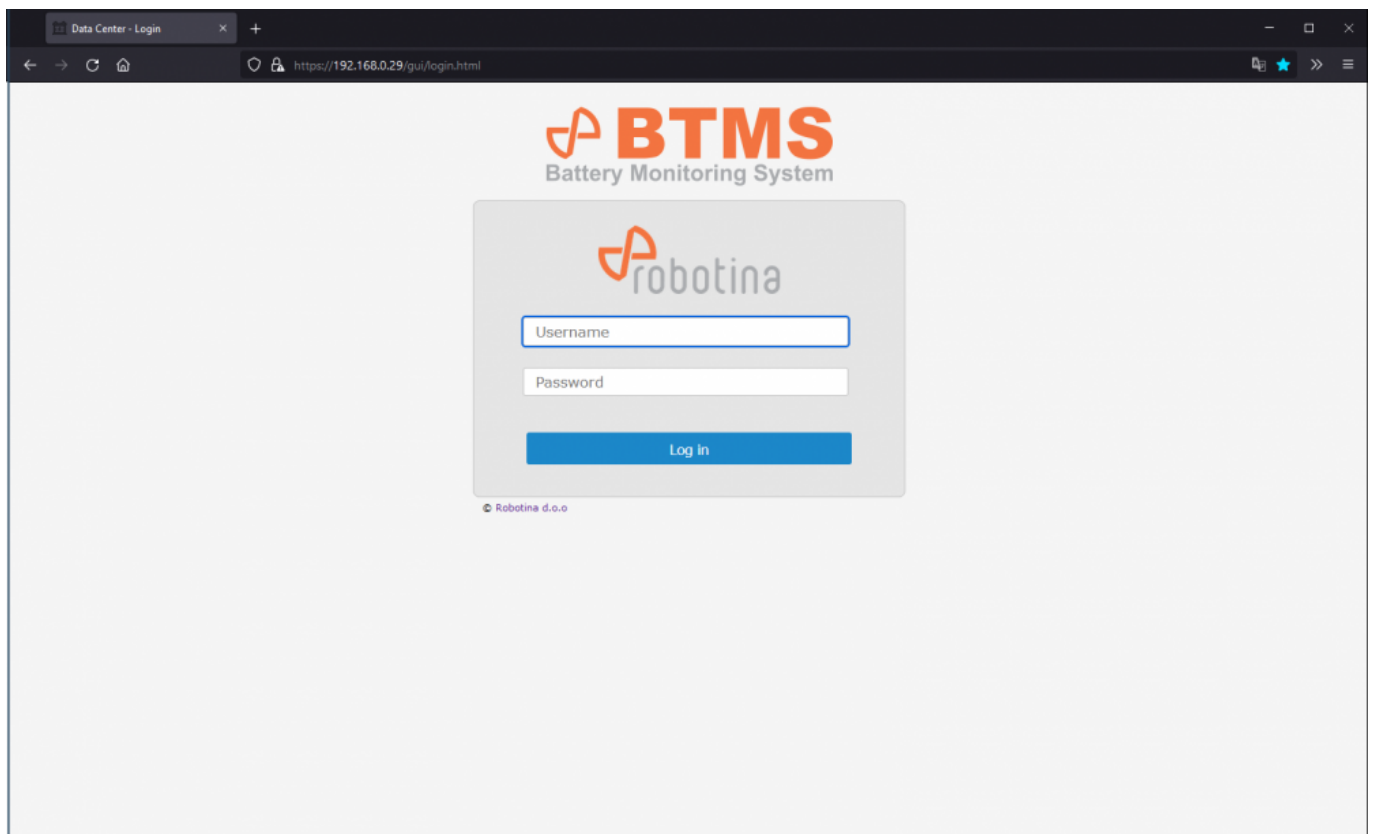
Monitoring & Management

BM-SM and BM-GW collect sensor data for visualization via HTTP interface or HMI. Users can monitor all battery metrics in real-time, configure thresholds, and manage system behavior.

BM-GW WEB UI

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

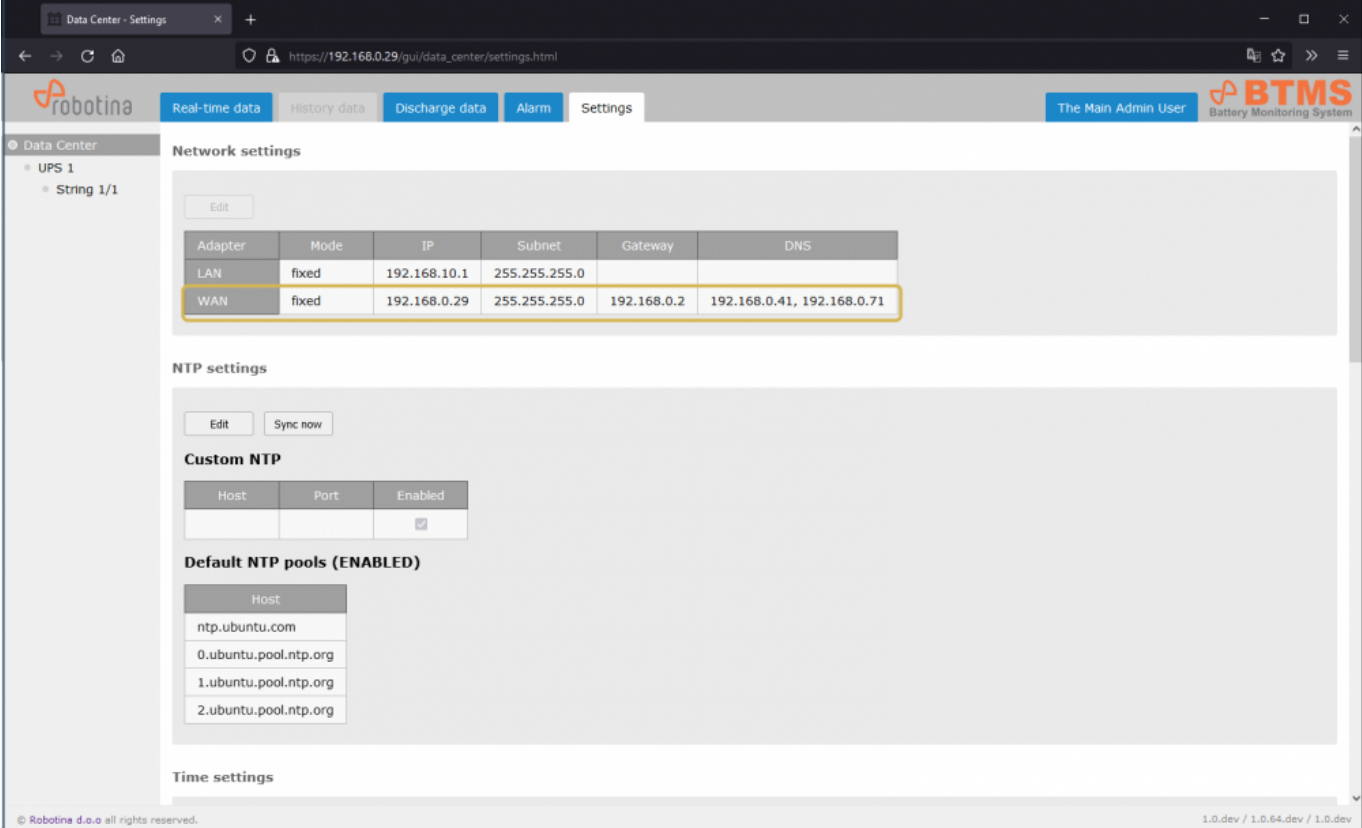
Log-in



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



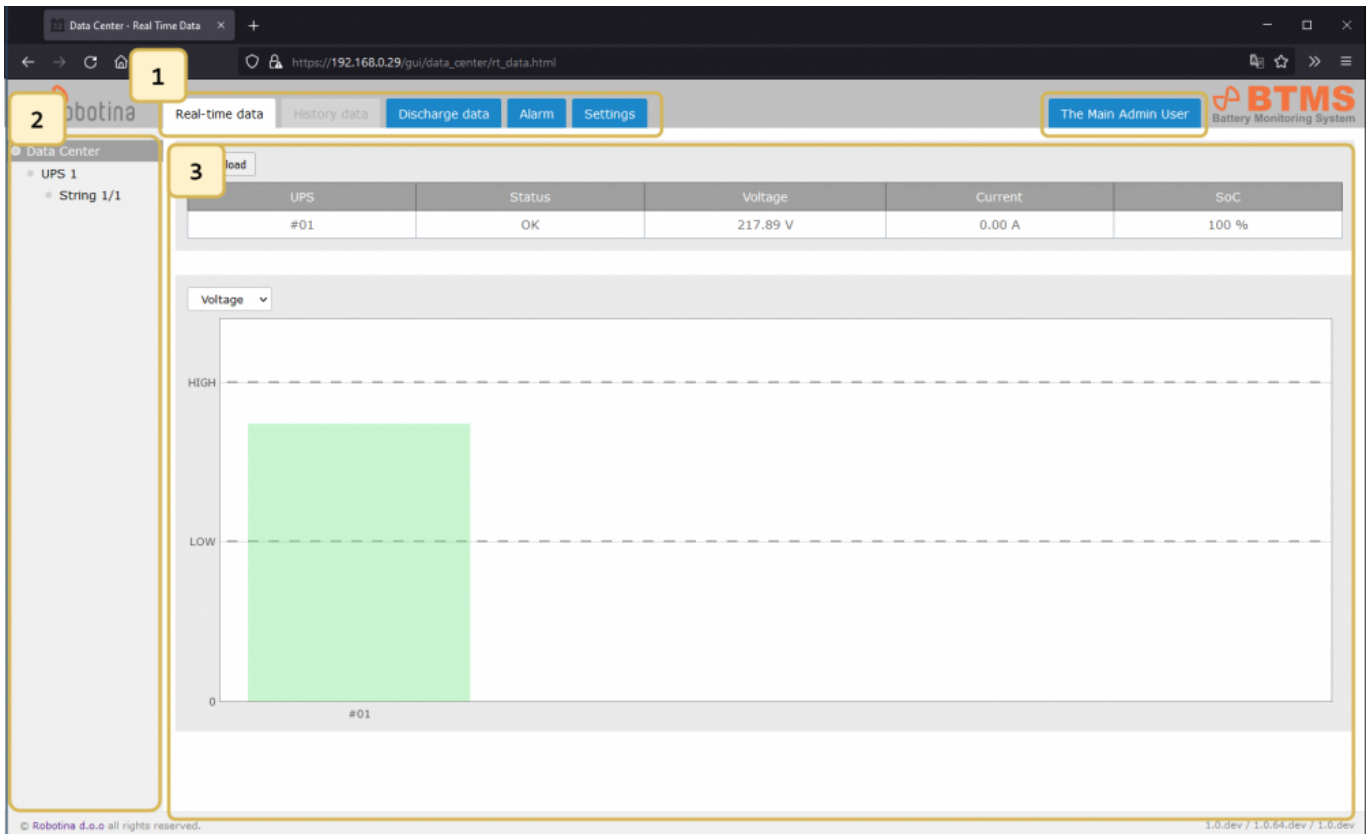
The screenshot shows the Robotina BTMS Settings page. The browser address bar displays https://192.168.0.29/gui/data_center/settings.html. The page has a navigation bar with tabs for Real-time data, History data, Discharge data, Alarm, and Settings. The Settings tab is active, and the user is logged in as 'The Main Admin User'. The left sidebar shows a tree view with 'Data Center' expanded to 'UPS 1' and 'String 1/1'. The main content area is titled 'Network settings' and contains an 'Edit' button and a table with the following data:

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

Below the table are sections for 'NTP settings' (with 'Edit' and 'Sync now' buttons), 'Custom NTP' (with a table for Host, Port, and Enabled), and 'Default NTP pools (ENABLED)' (with a list of hosts). The footer of the page contains the copyright notice '© Robotina d.o.o all rights reserved.' and version information '1.0.dev / 1.0.64.dev / 1.0.dev'.

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

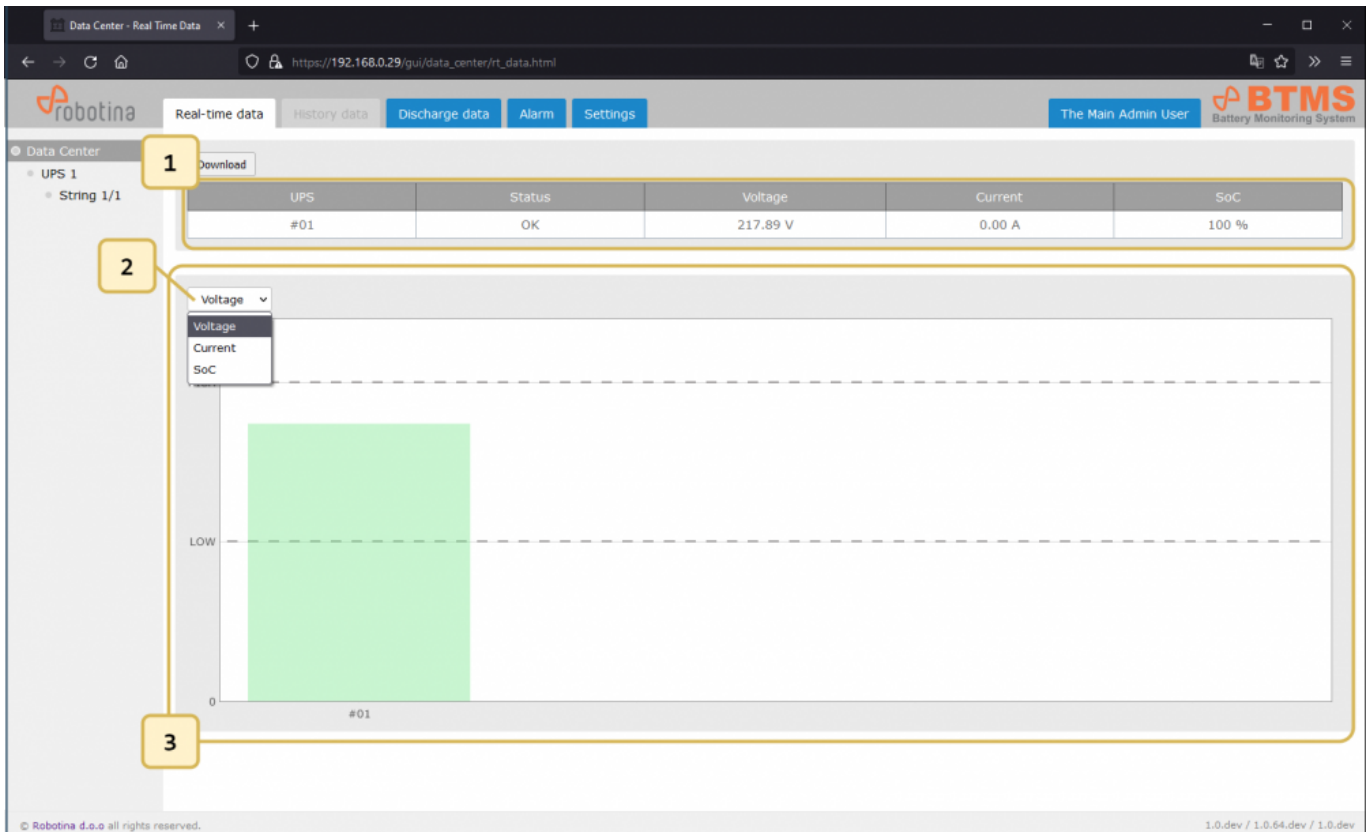
General description



1	Pages tabs
2	Data center tree structure
3	Page data

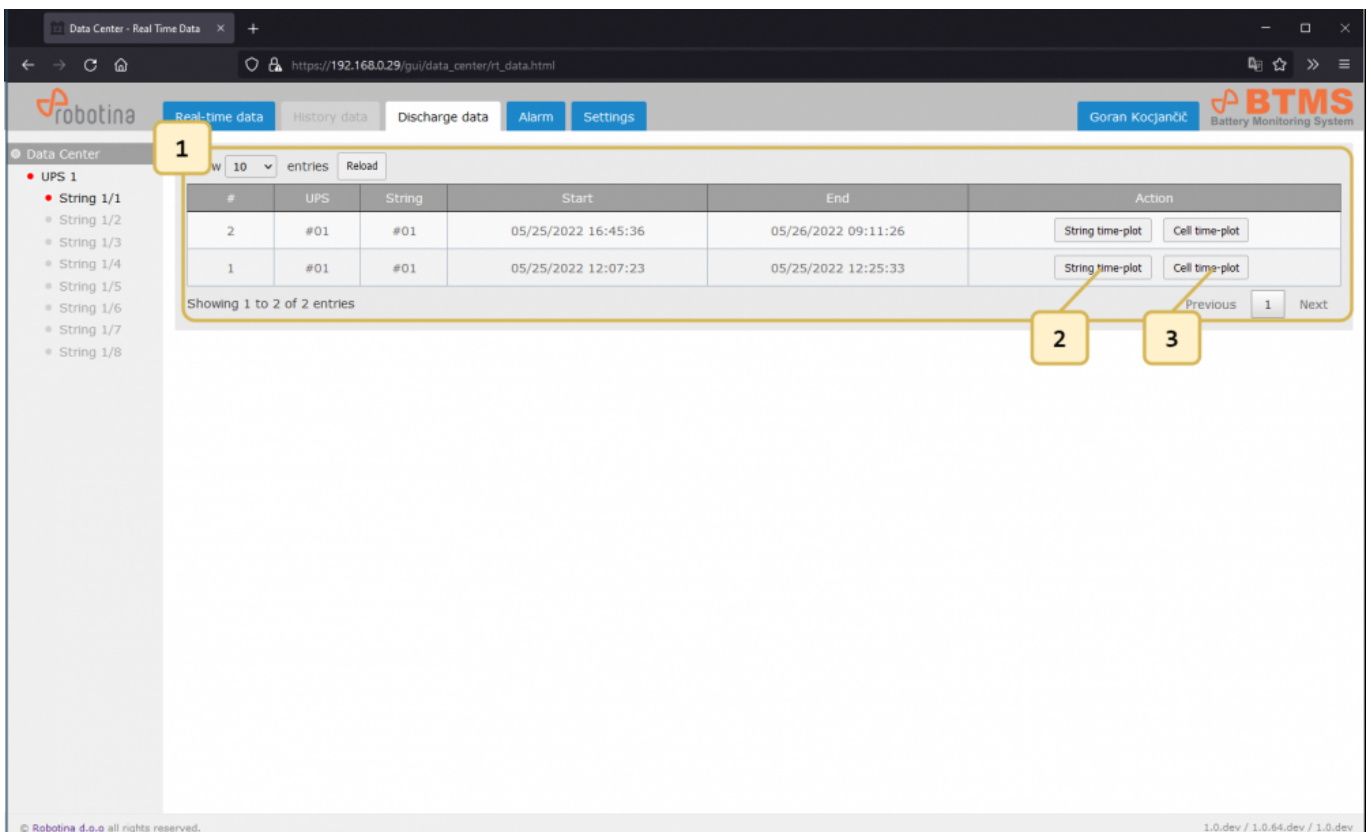
Data center

Real-time data



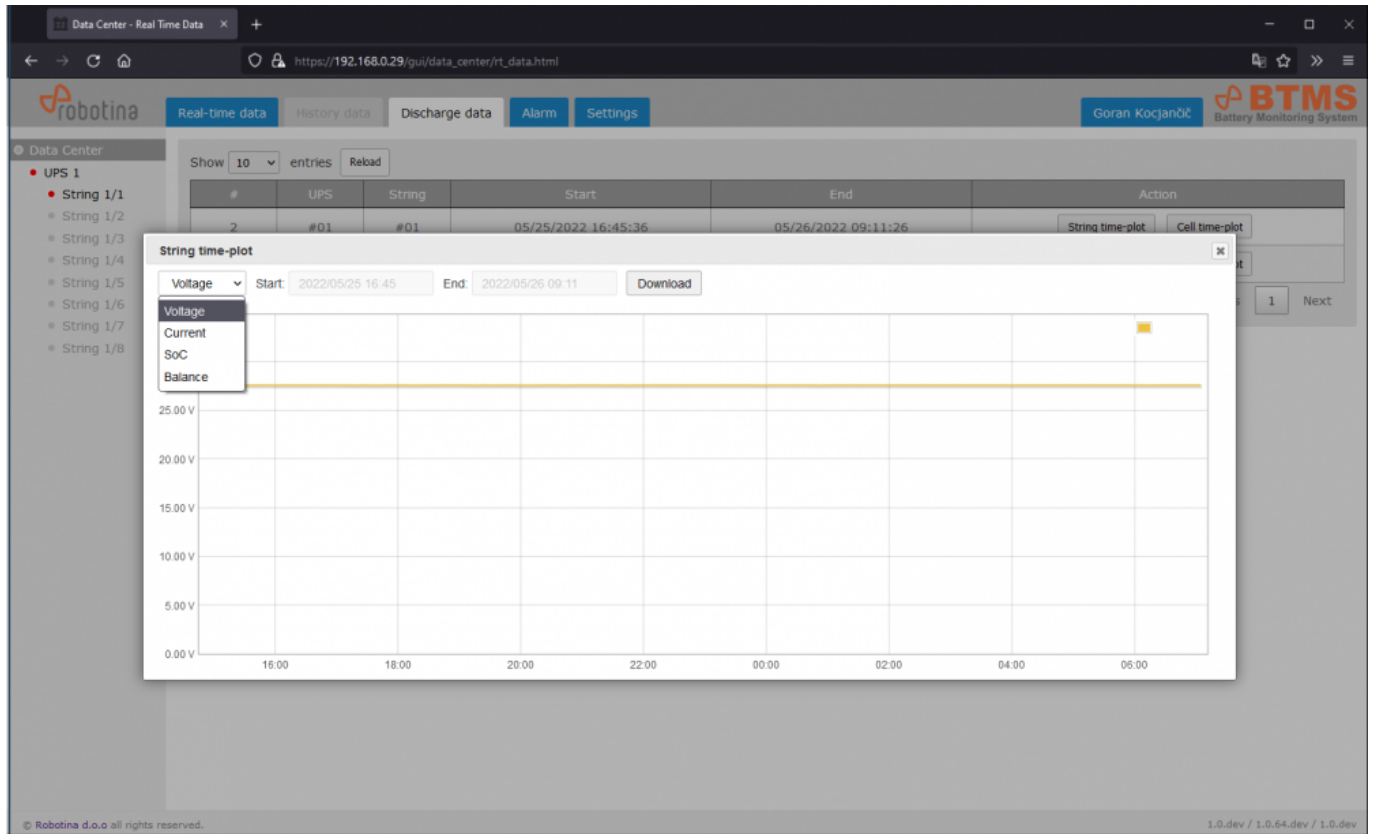
1	Tabular display of data for the Data Center
2	Select a parameter for the graphic display
3	Graphic bar-graph data display for the data center

Discharge data

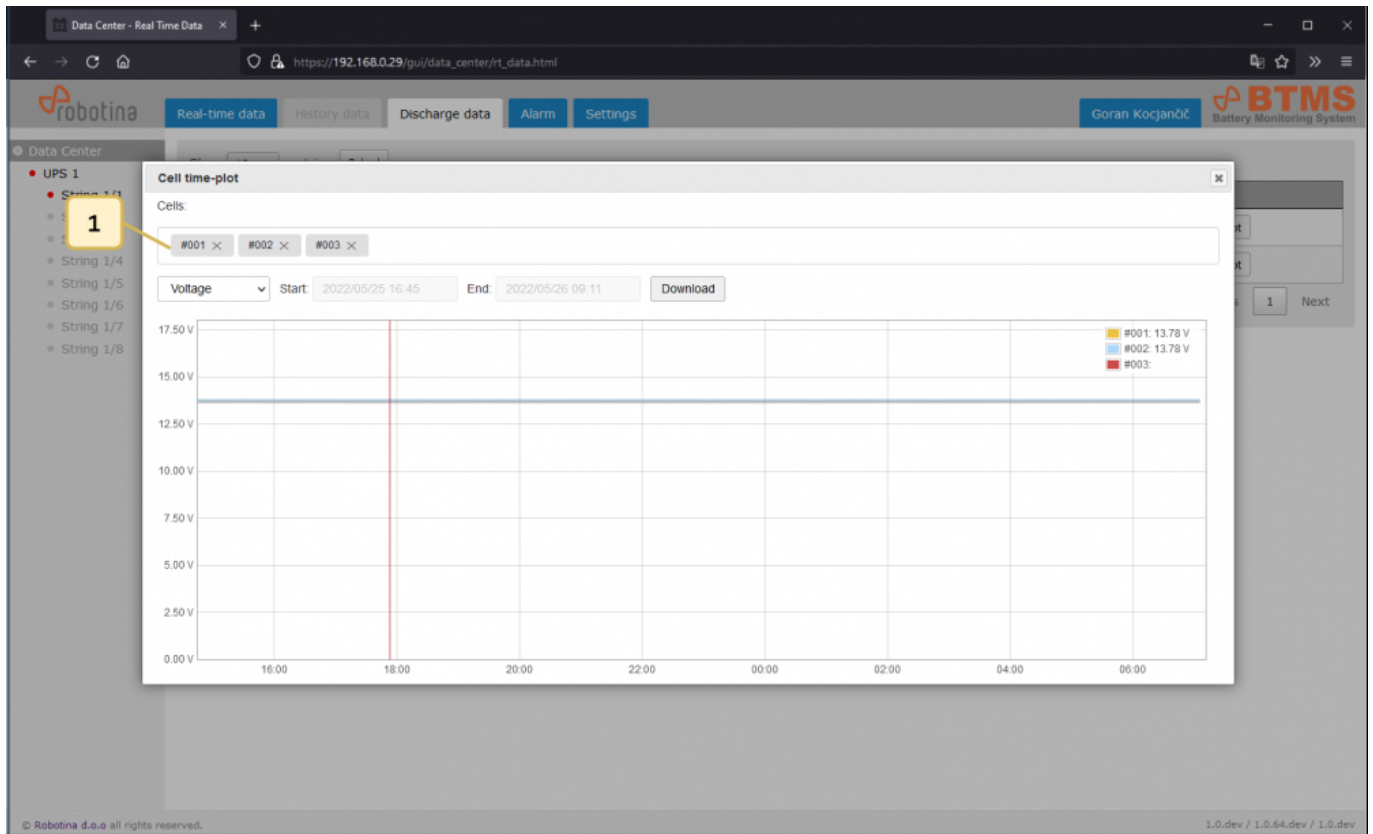


1	Discharge events table
2	String time-plot for discharge event
3	Cell time-plot for discharge event

String time-plot for discharge event



Cell time-plot for discharge event



1

Cell selection

Alarm

The screenshot shows the 'Alarms' sub-page in the Robotina BTMS interface. The page title is 'Data Center - Alarms'. Below the title, there are three tabs: 'Alarms', 'E-mails', and 'SMS'. Below the tabs, there is a 'Show' dropdown menu with the value '10', a 'Reload' button, and a 'Download' button. The main area of the page is a table with the following columns: '#', 'UPS', 'String', 'Cell', 'From', 'To', 'Alarm', and 'Status'. The table contains 14 entries. A yellow box with the number '1' is positioned over the 'Alarms' tab, and another yellow box with the number '2' is positioned over the table. Below the table, there is a pagination bar showing 'Showing 1 to 10 of 14 entries' and 'Previous 1 2 Next'.

#	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

1

Alarms sub-page selection

2

Alarms table

E-mails

Robotina BTMS Battery Monitoring System

The Main Admin User

Alarms E-mails SMS

Show 10 entries Reload Download

#	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 2022-06-06T13:00:51+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

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SMS

Robotina BTMS Battery Monitoring System

The Main Admin User

Alarms E-mails SMS

Show 10 entries Reload Download

#	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)

Showing 1 to 6 of 6 entries

Previous 1 Next

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Settings

Network settings, NTP settings

The screenshot displays the 'Settings' page of the Robotina BTMS web interface. The browser address bar shows the URL `https://192.168.0.29/gui/data_center/settings.html`. The interface includes a navigation menu with tabs for 'Real-time data', 'History data', 'Discharge data', 'Alarm', and 'Settings'. The 'Settings' tab is active, and the user is identified as 'The Main Admin User'. The left sidebar shows a tree view with 'Data Center' expanded to 'UPS 1' and 'String 1/1'. The main content area is divided into three sections: 'Network settings', 'NTP settings', and 'Time settings'. The 'Network settings' section features an 'Edit' button and a table with columns for Adapter, Mode, IP, Subnet, Gateway, and DNS. The 'NTP settings' section includes 'Edit' and 'Sync now' buttons, a 'Custom NTP' table with columns for Host, Port, and Enabled, and a list of 'Default NTP pools (ENABLED)'.

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

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Time settings, Users

The screenshot shows the 'Settings' tab in the Robotina BTMS interface. The left sidebar indicates the configuration is for 'UPS 1' under 'Data Center'. The main content area is divided into three sections:

- Time settings:** Includes an 'Edit' button and a table for Time and Date.

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

 Below this is another 'Edit' button and a 'Timezone' dropdown set to 'Europe/Ljubljana'.
- Users:** Features 'Add', 'Edit', and 'Delete' buttons. Below is a table of users:

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:** Includes an 'Edit' button.

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SNMP settings, SMS notifications, Project settings, Data export

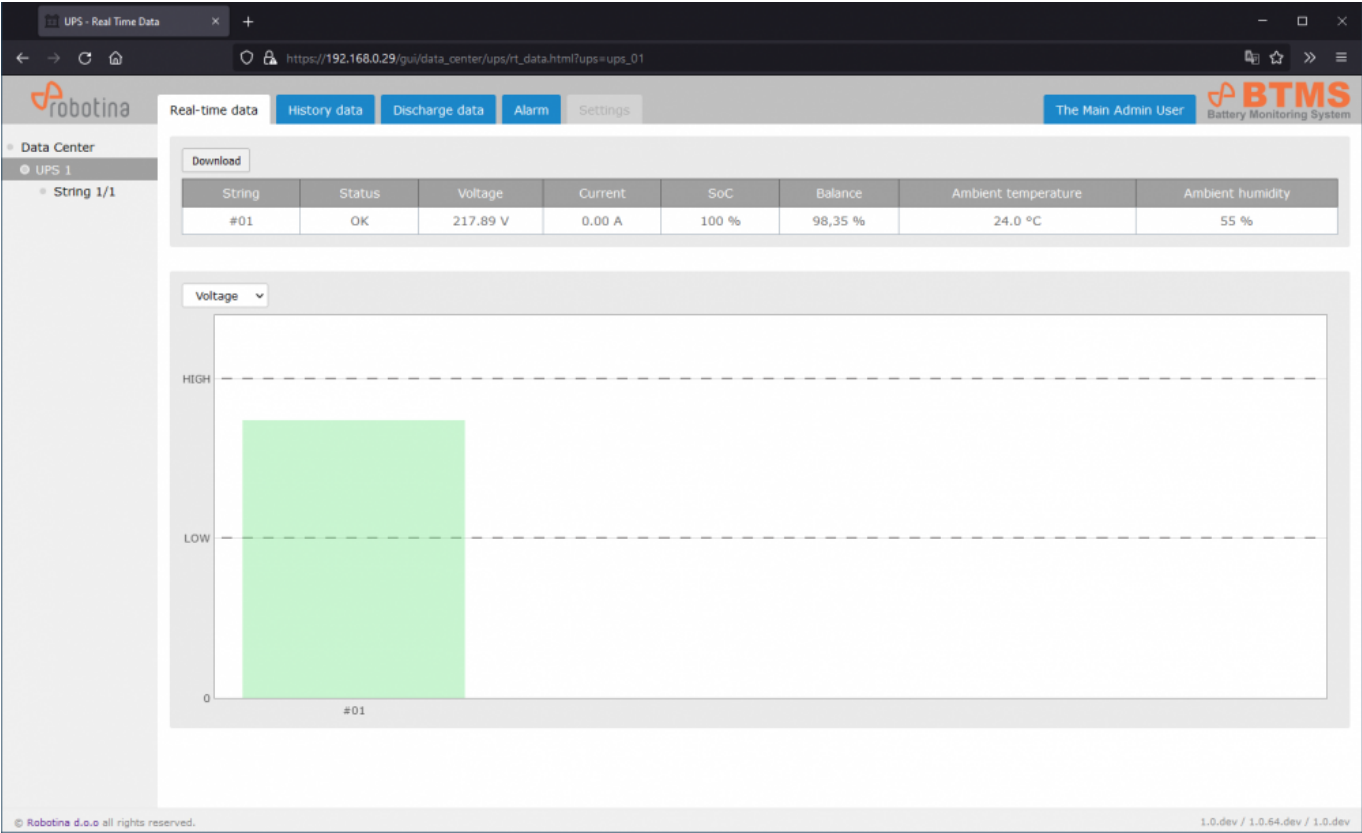
The screenshot shows the 'Settings' tab in the Robotina BTMS interface, displaying the following sections:

- SMTP settings:** Includes an 'Edit' button and a table with columns: Host, Port, From E-mail, Security, Username.
- SMS notifications:** Includes a 'Test SMS' button and a message: 'Your user does not have an associated phone number.'
- Project settings:** Includes 'Edit' and 'Delete logo' buttons. Below is a table with columns: Project name, Company, URL, Owner.
- Data Export:** Includes a 'New data export' button and a table with columns: File, Size, Time. The table currently shows 'No data exports available'.

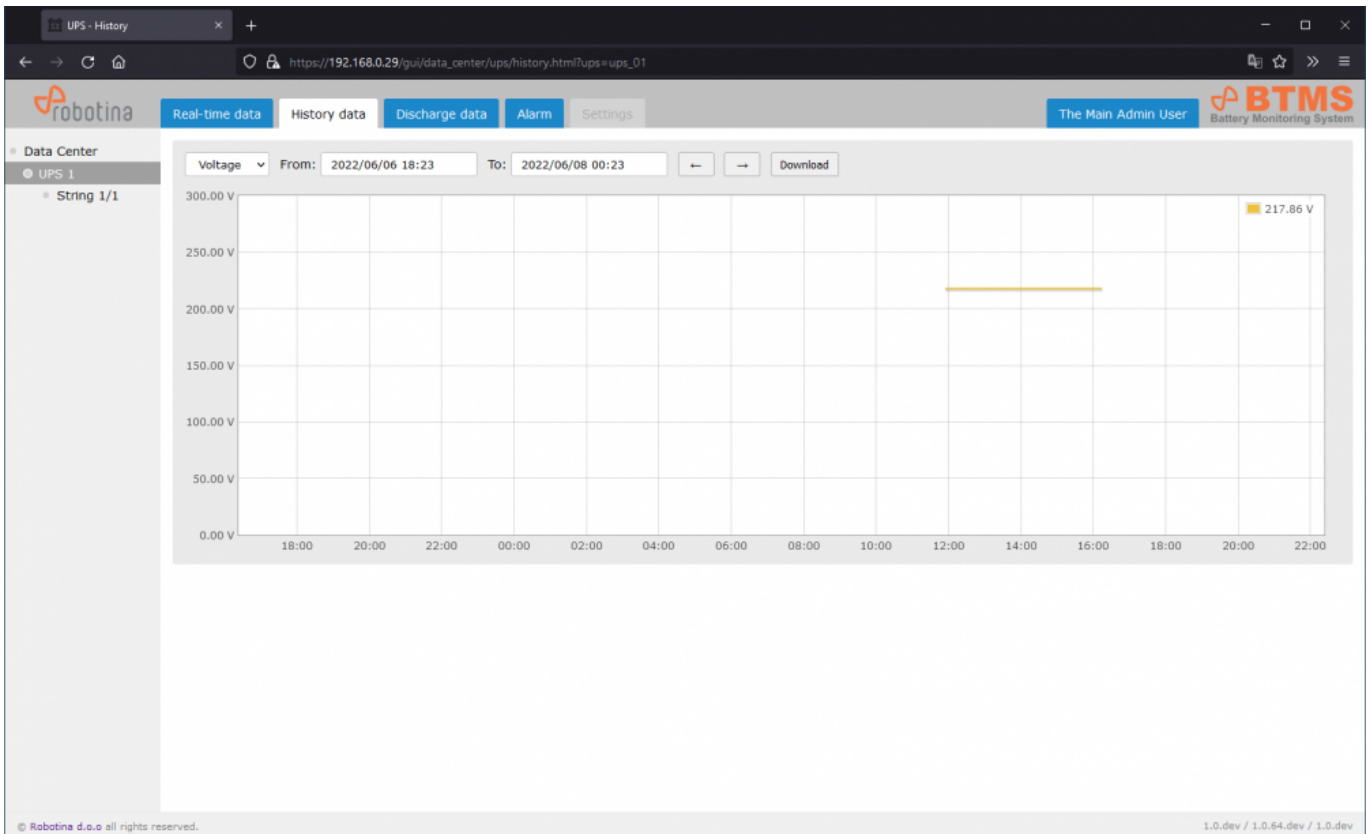
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UPS

Real-time data



History data



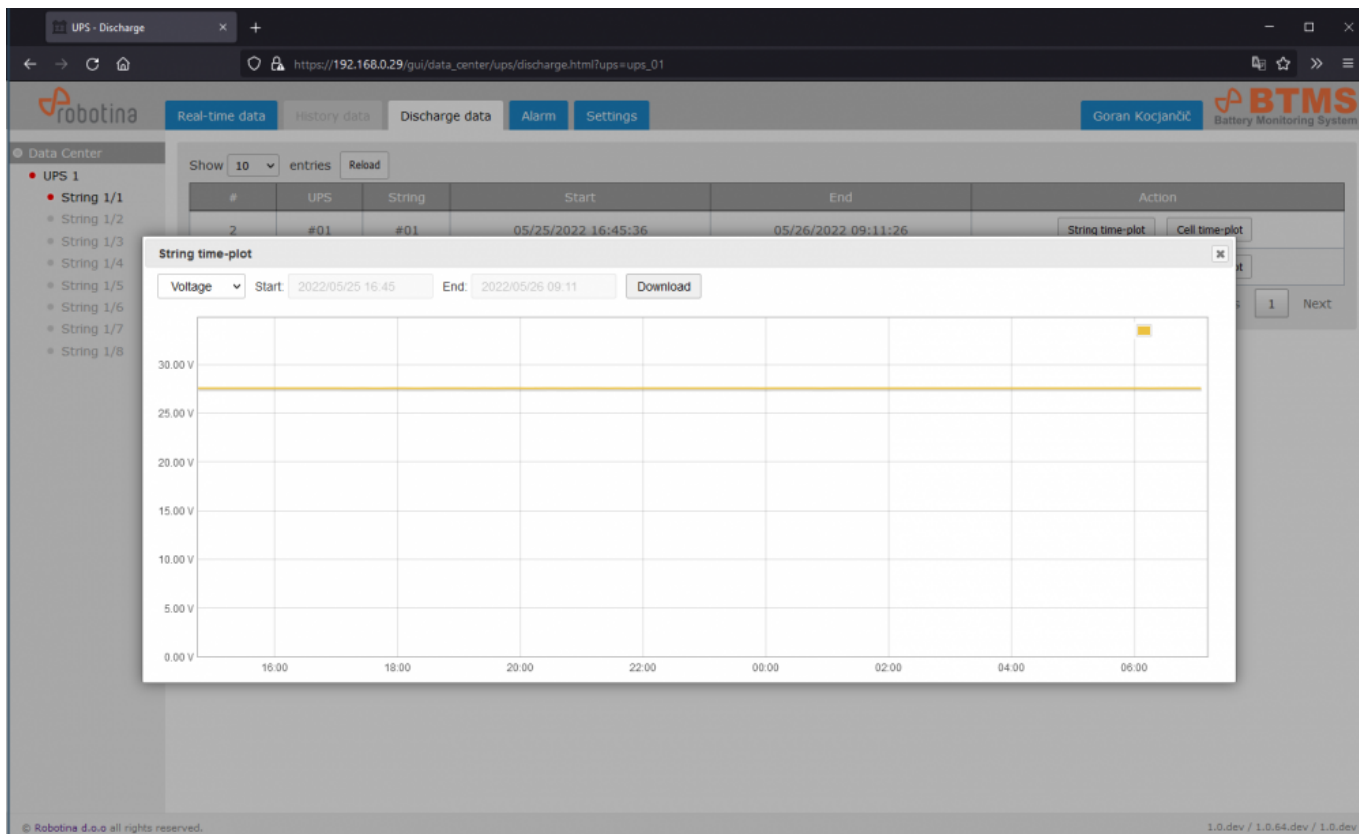
Discharge data

The screenshot displays the 'Discharge data' tab for 'UPS 1'. The table shows two entries of discharge data.

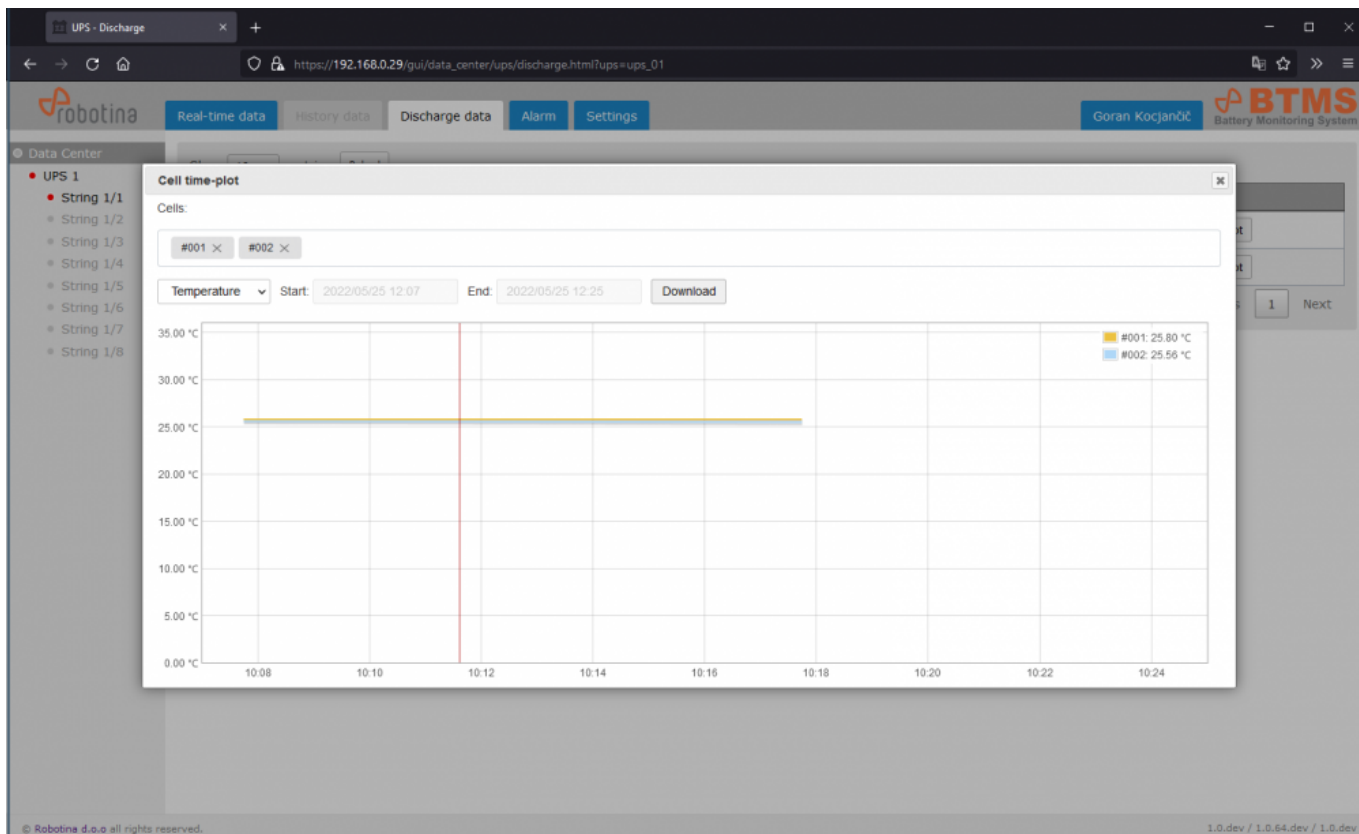
#	UPS	String	Start	End	Action
2	#01	#01	05/25/2022 16:45:36	05/26/2022 09:11:26	String time-plot Cell time-plot
1	#01	#01	05/25/2022 12:07:23	05/25/2022 12:25:33	String time-plot Cell time-plot

Showing 1 to 2 of 2 entries

String time-plot



Cell time-plot



Alarm

UPS - Alarms

https://192.168.0.29/gui/data_center/ups/alarms/alarms.html?ups=ups_01

robotina

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

The Main Admin User

BTMS
Battery Monitoring System

Data Center

- UPS 1
 - String 1/1

Show 10 entries Reload Download

#	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

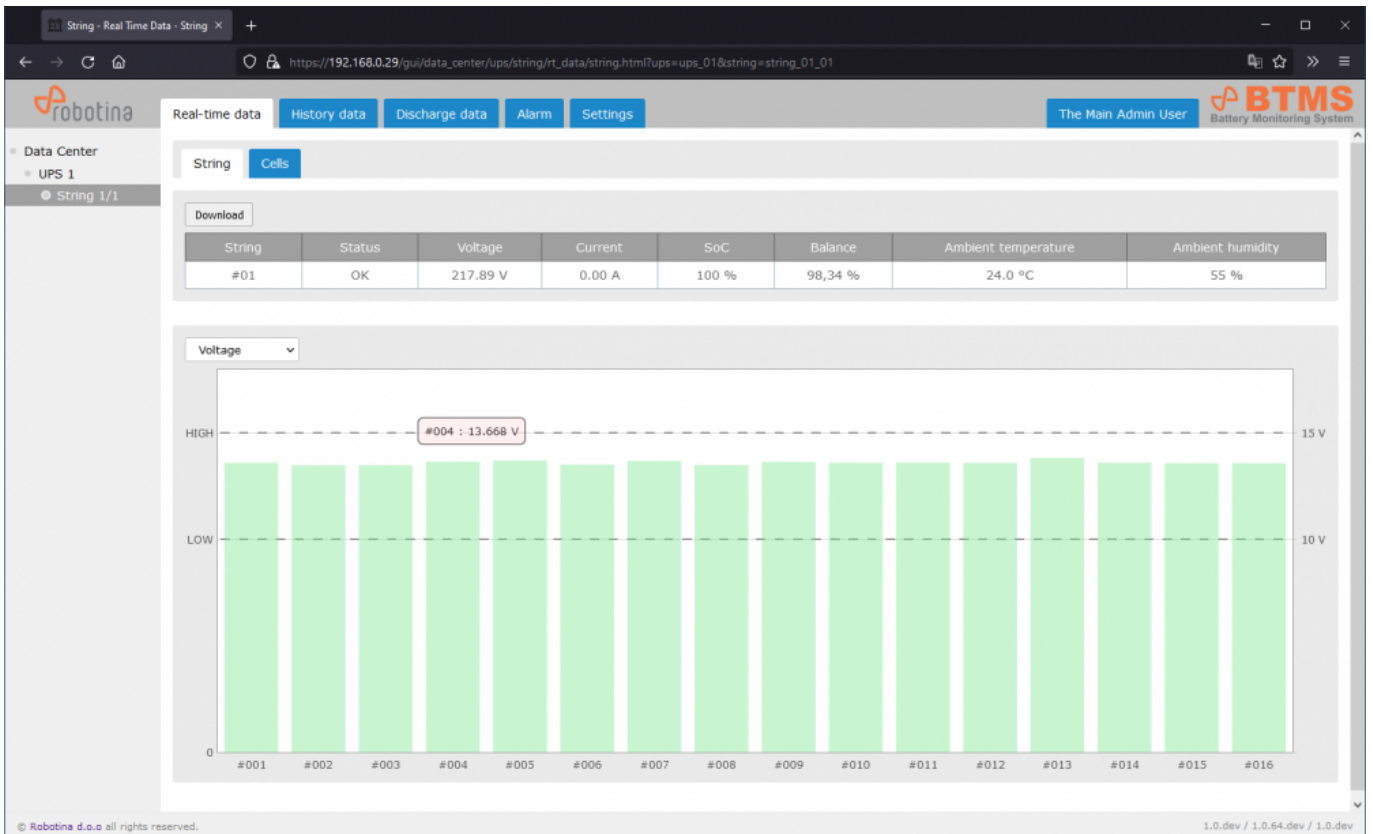
Previous 1 2 Next

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String

Real-time data

String



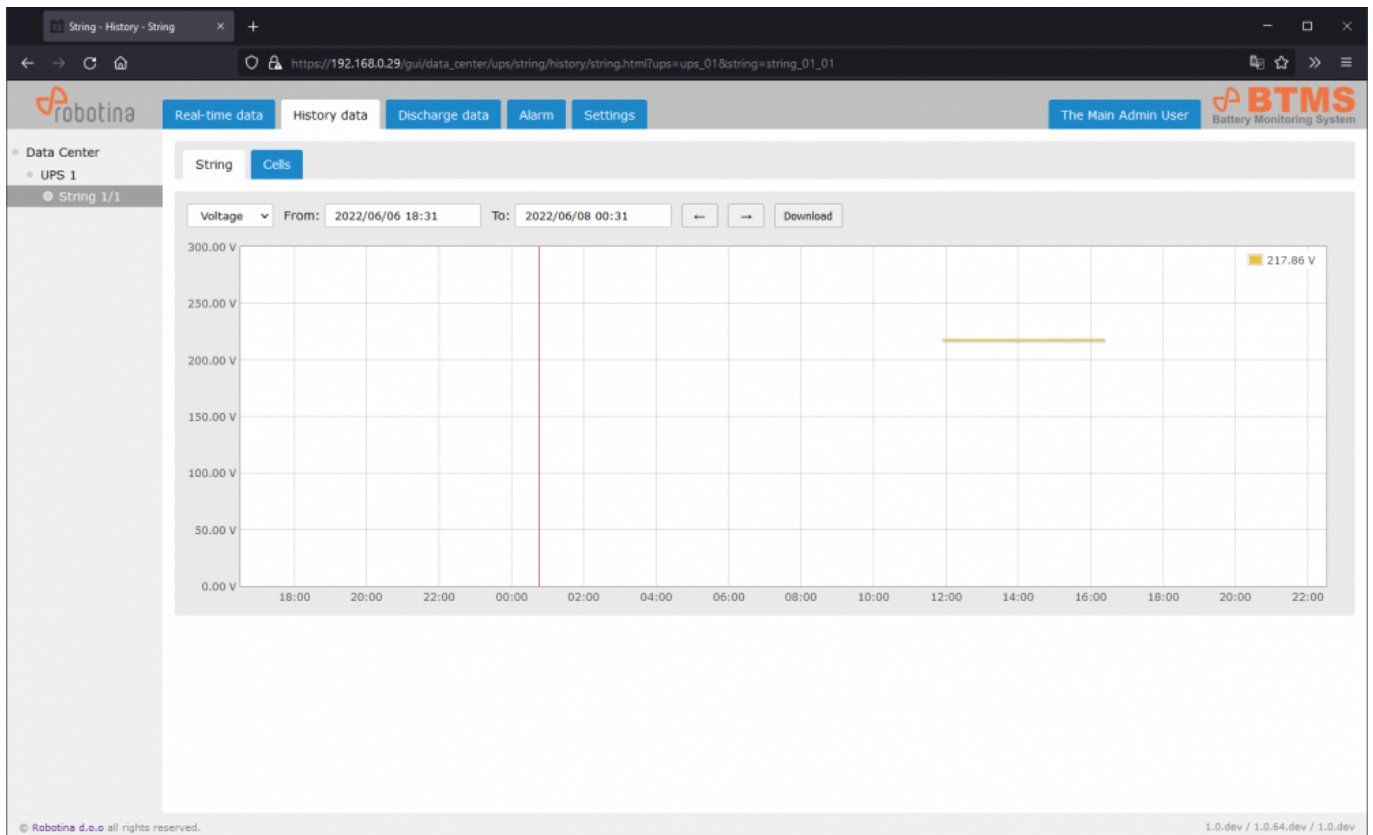
Cells

The screenshot shows the 'Cells' view in the BTMS interface. It features a 'Show 10 entries' dropdown and a 'Download' button. The main content is a table with 7 columns: Cell, Status, Voltage, Resistance, Temperature, SoC, and SoH. The table displays data for 16 cells, with cell #004 highlighted. At the bottom, there is a pagination control showing 'Showing 1 to 10 of 16 entries' and 'Previous 1 2 Next'.

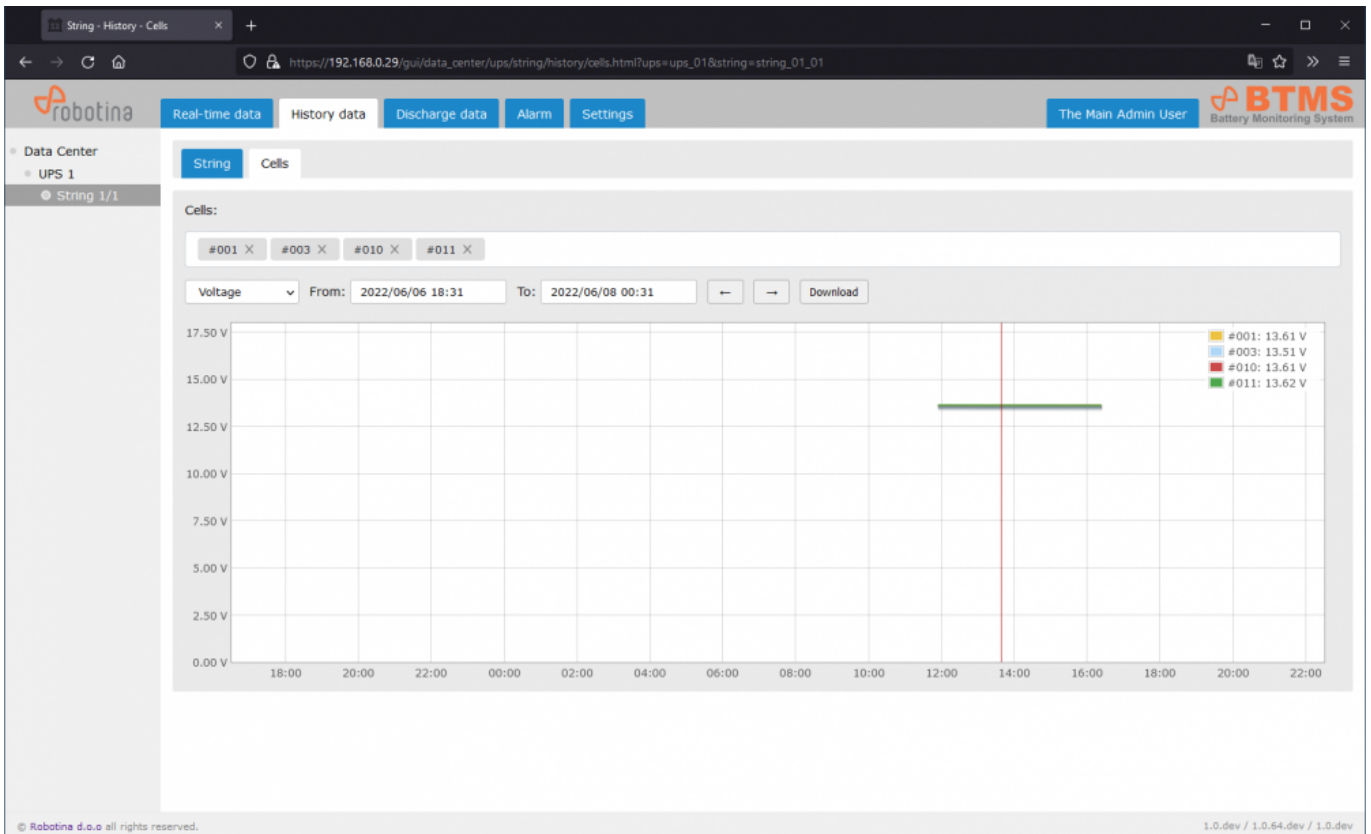
Cell	Status	Voltage	Resistance	Temperature	SoC	SoH
#001	OK	13.611 V	18.036 mΩ	300.0 °C	100 %	76 %
#002	OK	13.502 V	16.718 mΩ	300.0 °C	100 %	79 %
#003	OK	13.506 V	16.674 mΩ	300.0 °C	100 %	79 %
#004	OK	13.666 V	15.875 mΩ	300.0 °C	100 %	81 %
#005	OK	13.725 V	15.655 mΩ	300.0 °C	100 %	82 %
#006	OK	13.529 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 %

History data

String



Cells



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

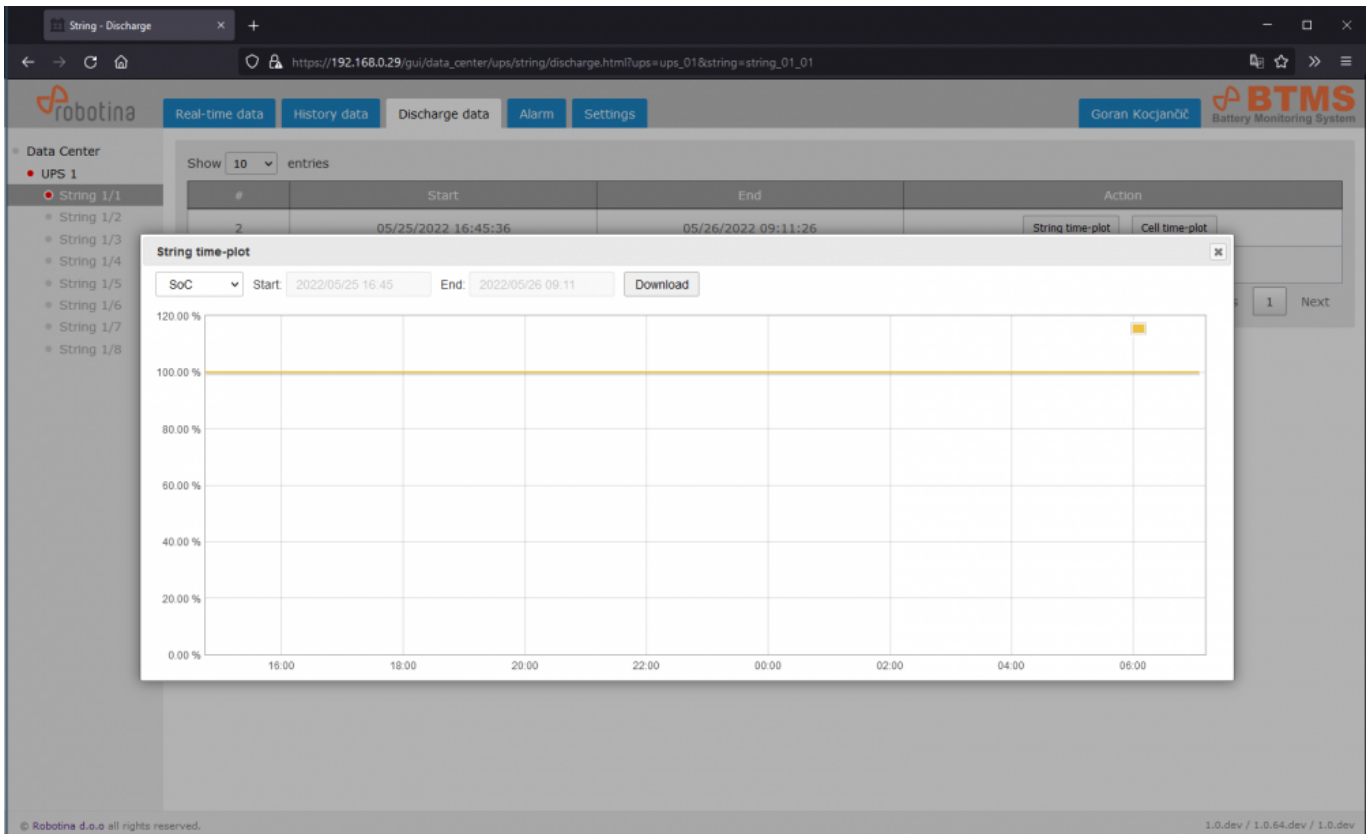
Show 10 entries

#	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

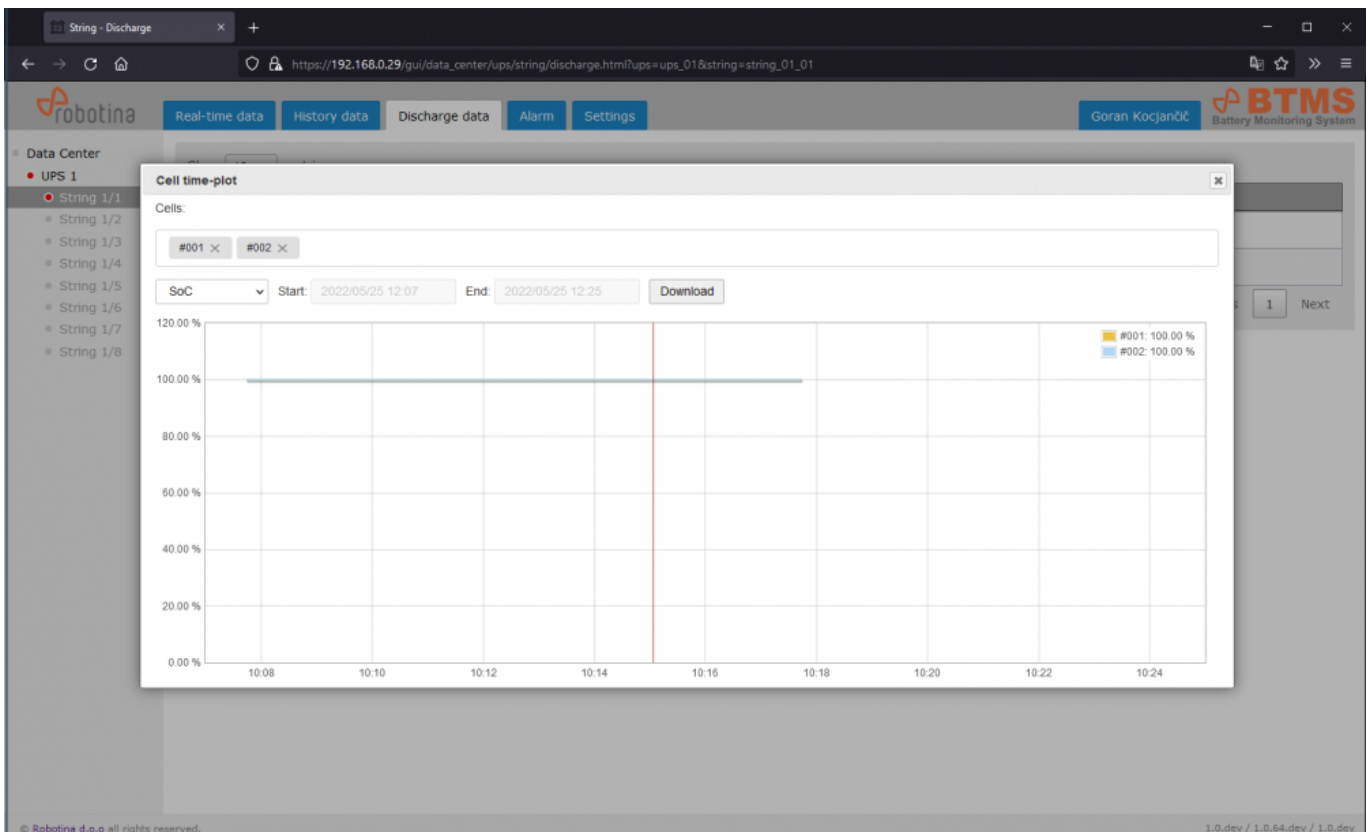
Showing 1 to 2 of 2 entries Previous 1 Next

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String time-plot



Cell time-plot



Alarm

The screenshot shows the 'Alarm' tab in the BTMS interface. The page displays a table of alarm events for String 1/1. The table has columns for '#', 'Cell', 'From', 'To', 'Alarm', and 'Status'. The events are listed in descending order of time, with the most recent at the top.

#	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 entries

Previous 1 2 Next

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Settings

The screenshot shows the 'Alarm settings' page in the BTMS interface. The page allows users to configure various alarm settings for String 1/1. The settings are organized into two columns: 'SMS' and 'e-mail'. Each setting has a checkbox to enable or disable it.

	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.