

Battery Monitoring System

(Battery monitoring system for larger UPS systems)

BTMS GATEWAY MANUAL

(BM-GW)

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1. BTMS Gateway

Order code: BM-GW

Highlights & Features



- Local WEB UI
- real-time data display
- data logging
- history data display (tables, time-plots)
- history and real-time data download
- e-mail, SMS alarming
- Robust and safe connection of BTMS system to BTMS cloud platform.
- Secure access and communication (TLS encryption)
- Local data buffer, no data loss
- User data safety according to GDPR
- Secure remote access to BM-C controllers

System specifications

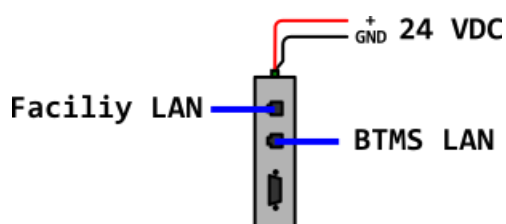
- Up to **32 strings arbitrarily distributed on several UPSs**
- **Up to 120 batteries / string** (3840 batteries / system)
- **Temperature and humidity** sensor for each string
- Logging data for one year by automatically deleting old data
- Send e-mail and SMS alarms directly from the device

HW Technical specification

Power supply in	5.5*2.1mm DC Jack & 2-Pin 3.5mm pitch connector, 12VDC input
Construction in	CNC Metal Case
CPU in	Rockchip RK3588, Quad-core ARM Cortex-A76@2.4GHz + Quad Core Cortex-A55@1.8GHz

System Memory in	1 x 64-bit LPDDR4X at 2133MHz 4GB	
Storage in	128 GB SSD	
System I/O Outlet in	USB-A: 1x USB 3.0 Type-A USB-C: 1x Full function USB Type-C™ port, support DP display up to 4Kp60, USB 3.0	
	1x Standard HDMI input port, up to 4Kp60, 2x Standard HDMI output ports	
	Ethernet 2 x RJ-45 isolated* 10/100/1000 Mbps	
	2x Standard HDMI output ports	
Working temp. in	-20 °C ... +70 °C (-4 °F ... +158 °F)	
Humidity in	0% to 95%	
Vibration Endurance in	2 Gms with storage (5 to 500 Hz, X/Y/Z direction; random, operating)	
Mounting in	DIN rail, wall	
Weight (net/gross) in	0.3 kg (0.67 lb.)/0.45 kg (0.99 lb.)	
Dimensions in	height	114.5 mm
	width	30 mm
	depth	86 mm

Wiring



Mounting

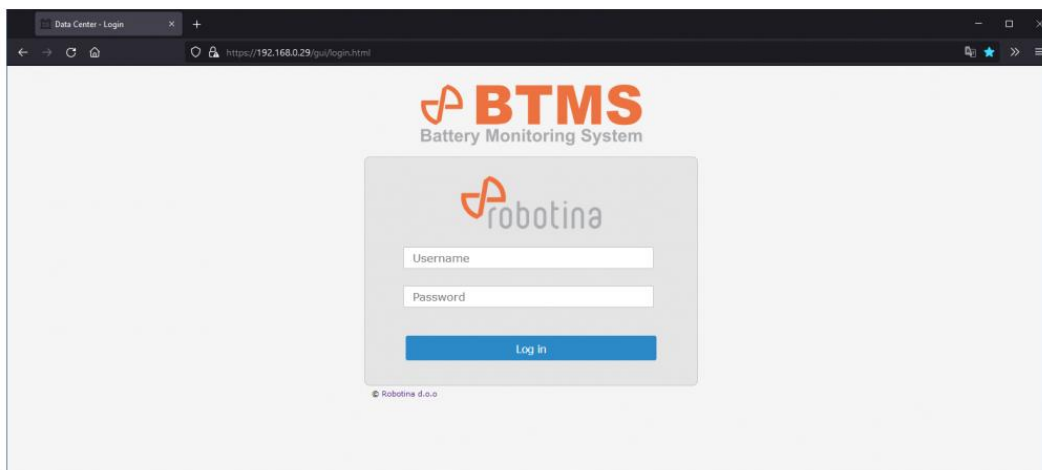
- On DIN Rail (35 mm) in control system cabinet





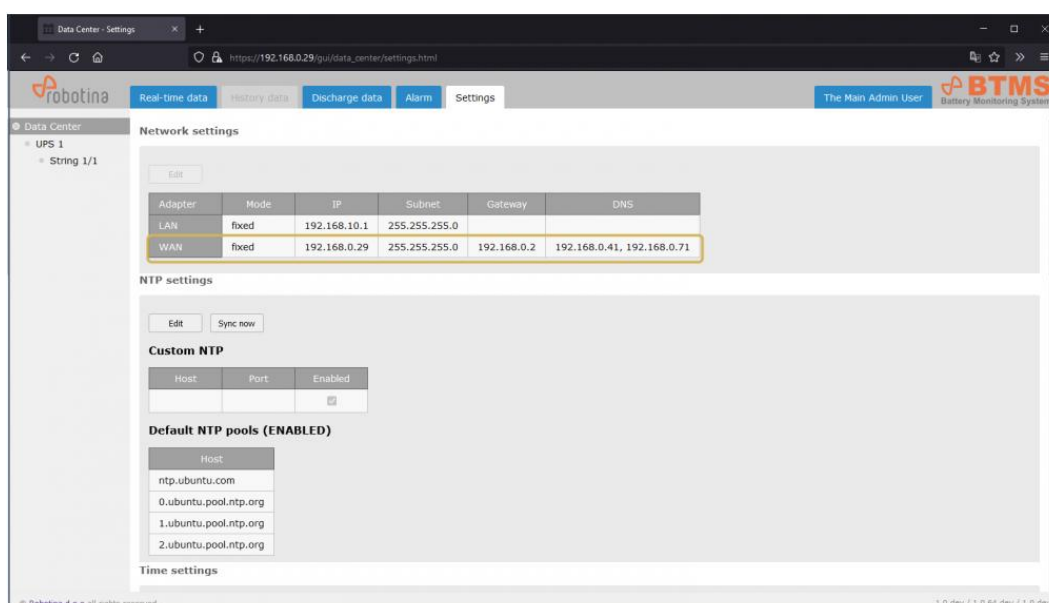
2. BTMS Gateway WEB User Interface

Log-in



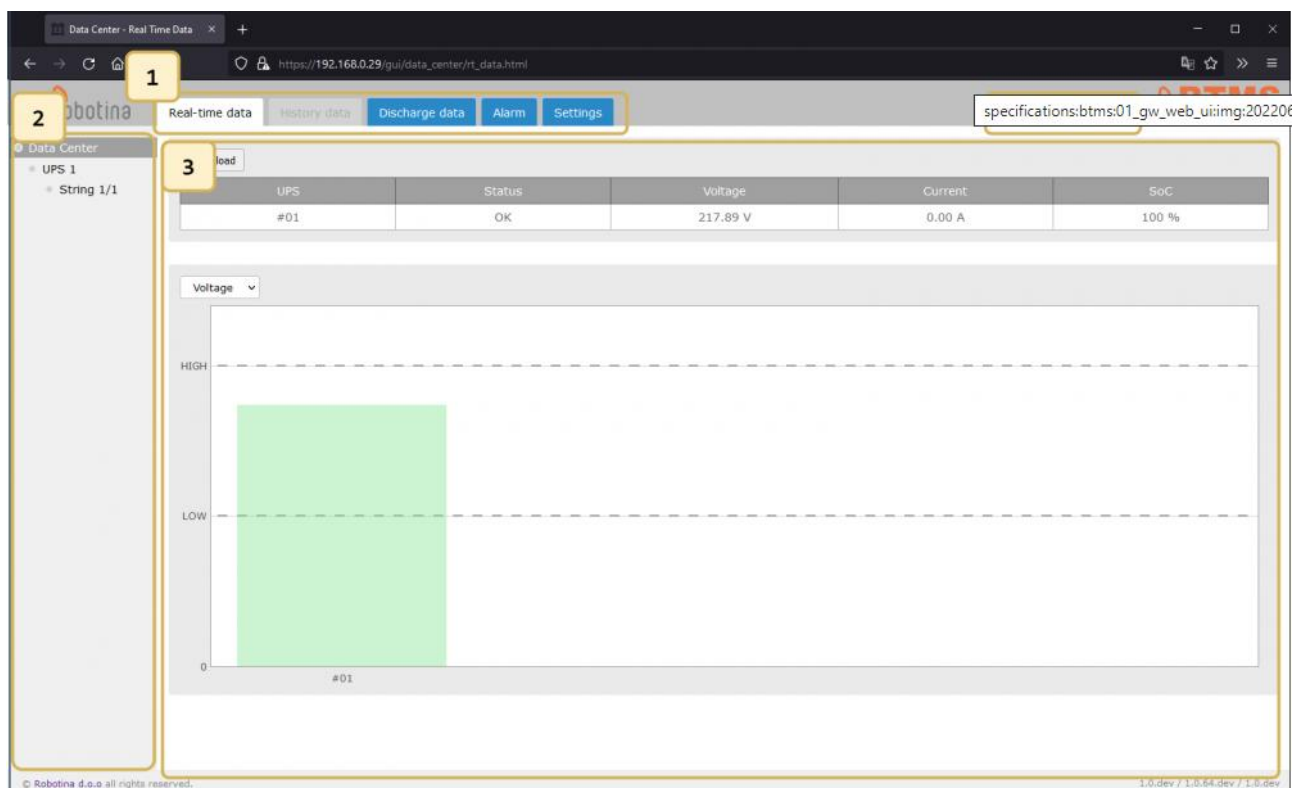
1st time log in:

- 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 192.168.10.100.
- 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



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

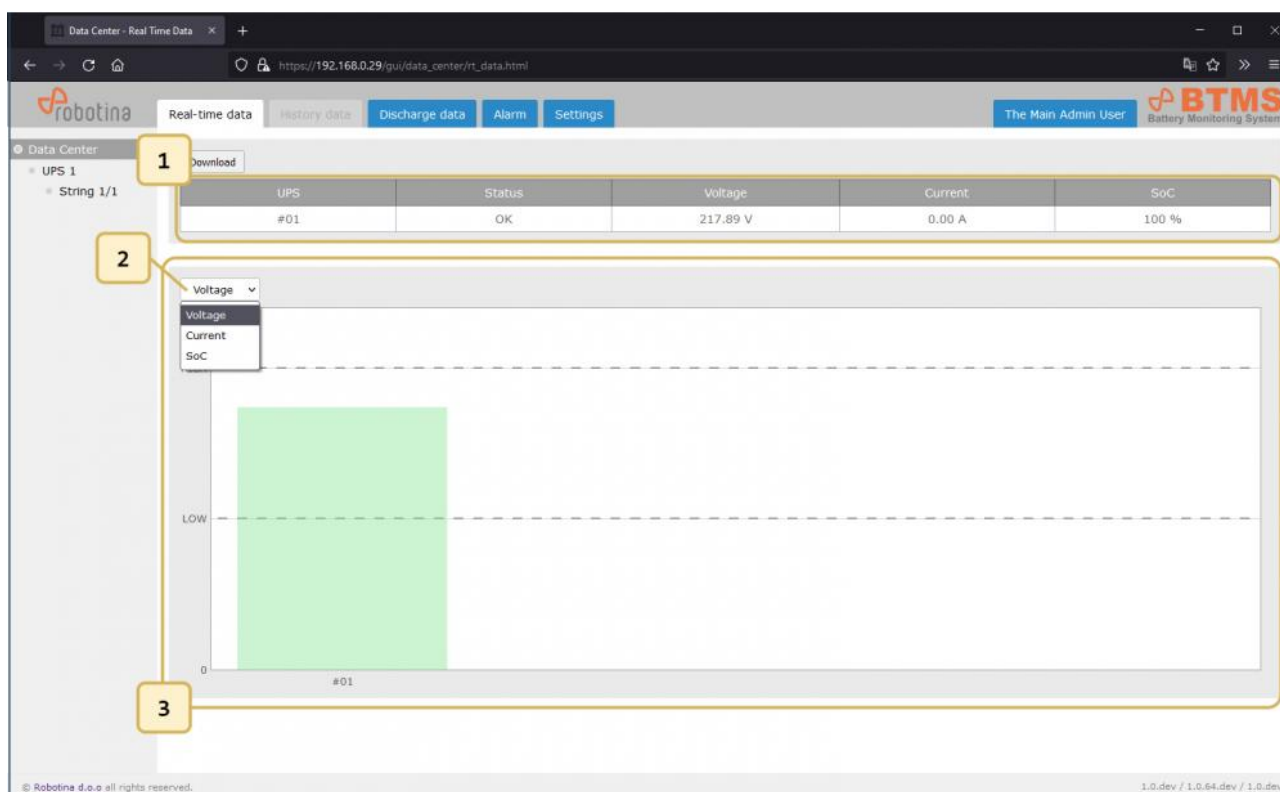
General description



1	Pages tabs
2	Data center tree structure
3	Page data

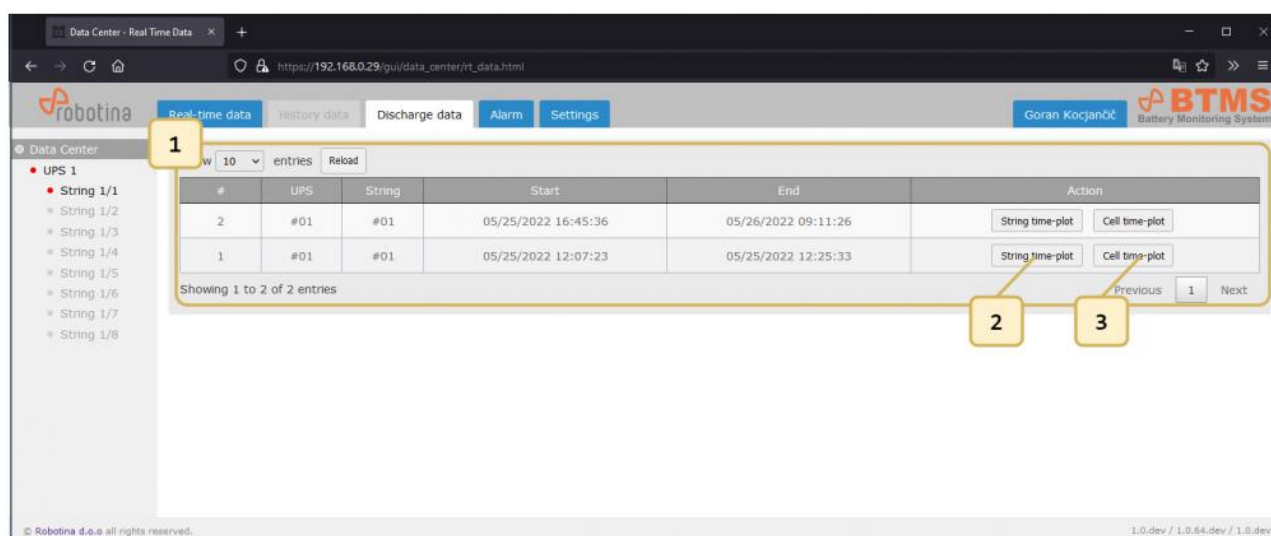
Data center

Real-time data



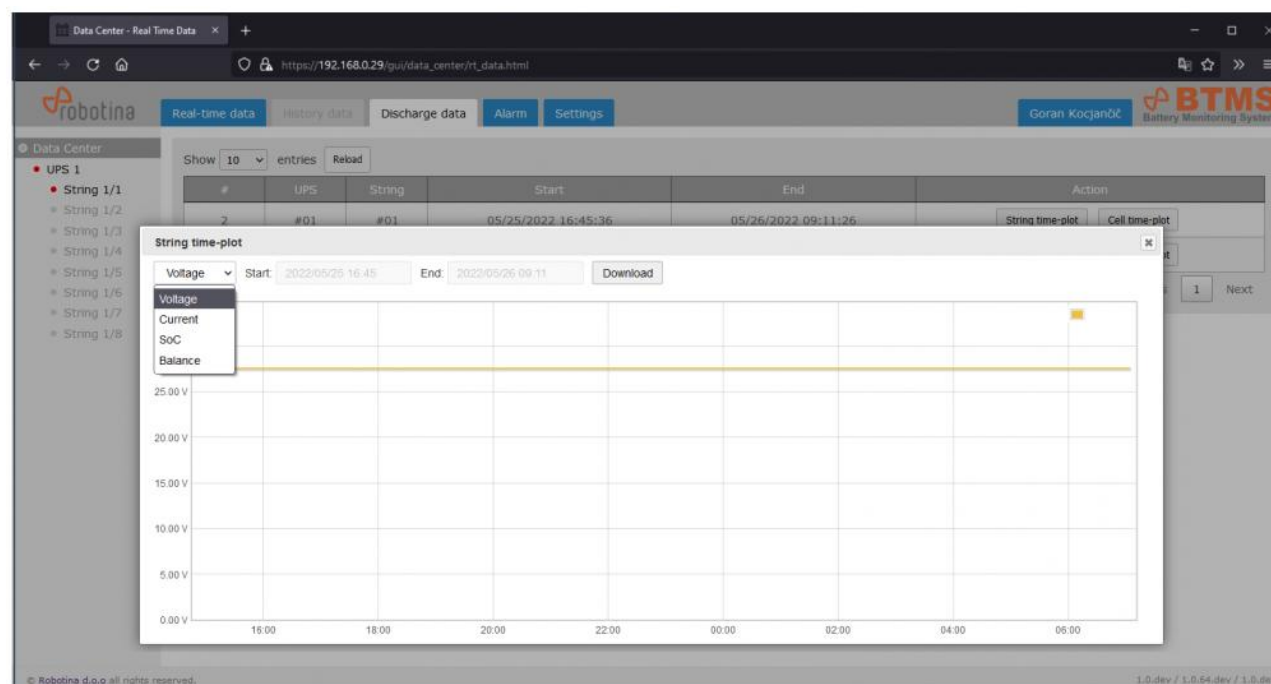
1	Tabular display of data for the Data Center
2	Select a parameter for the graphic display
3	Graphic bar-graph data display for the data center

Discharge data

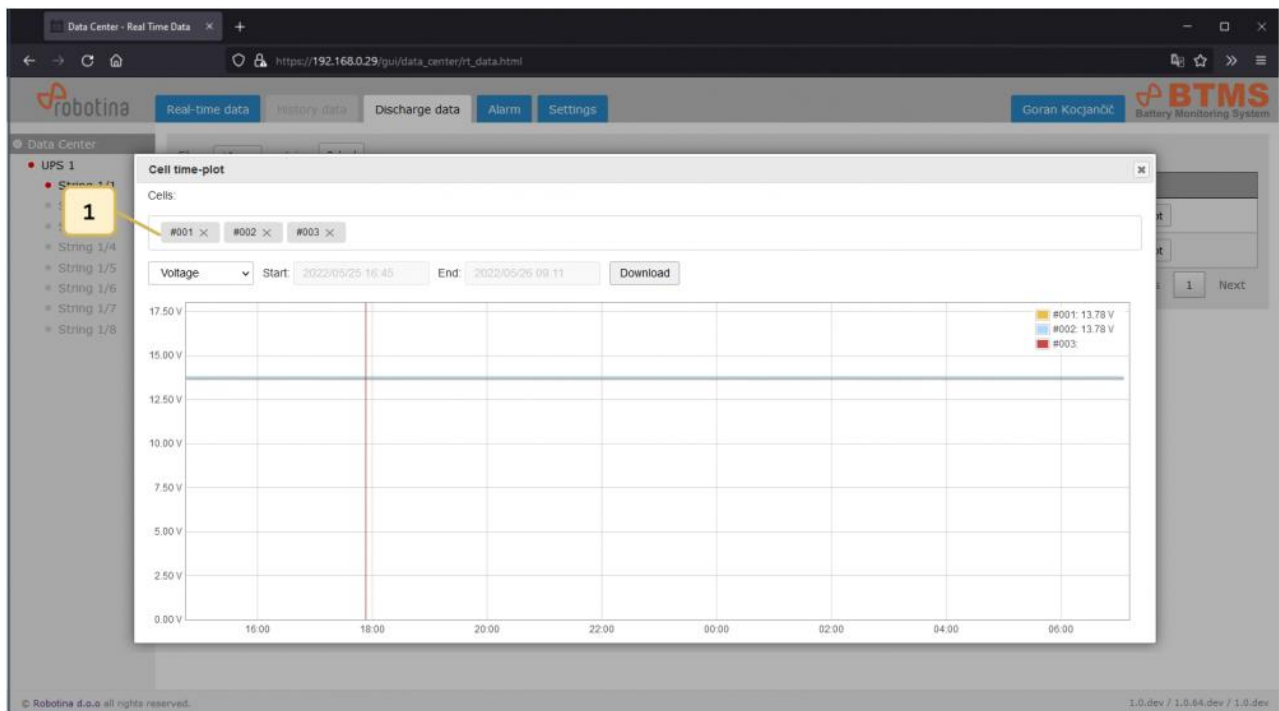


1	Discharge events table
2	String time-plot for discharge event
3	Cell time-plot for discharge event

String time-plot for discharge event

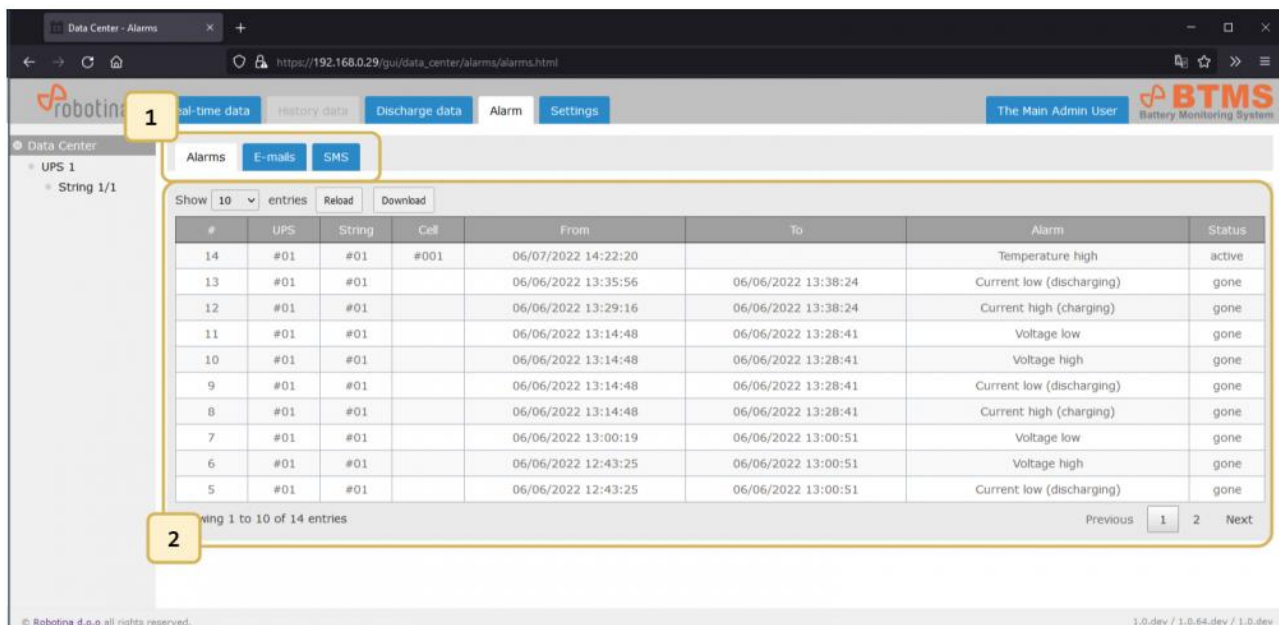


Cell time-plot for discharge event



1 Cell selection

Alarm



Alarms E-mails SMS

Show 10 entries Reload Download

#	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

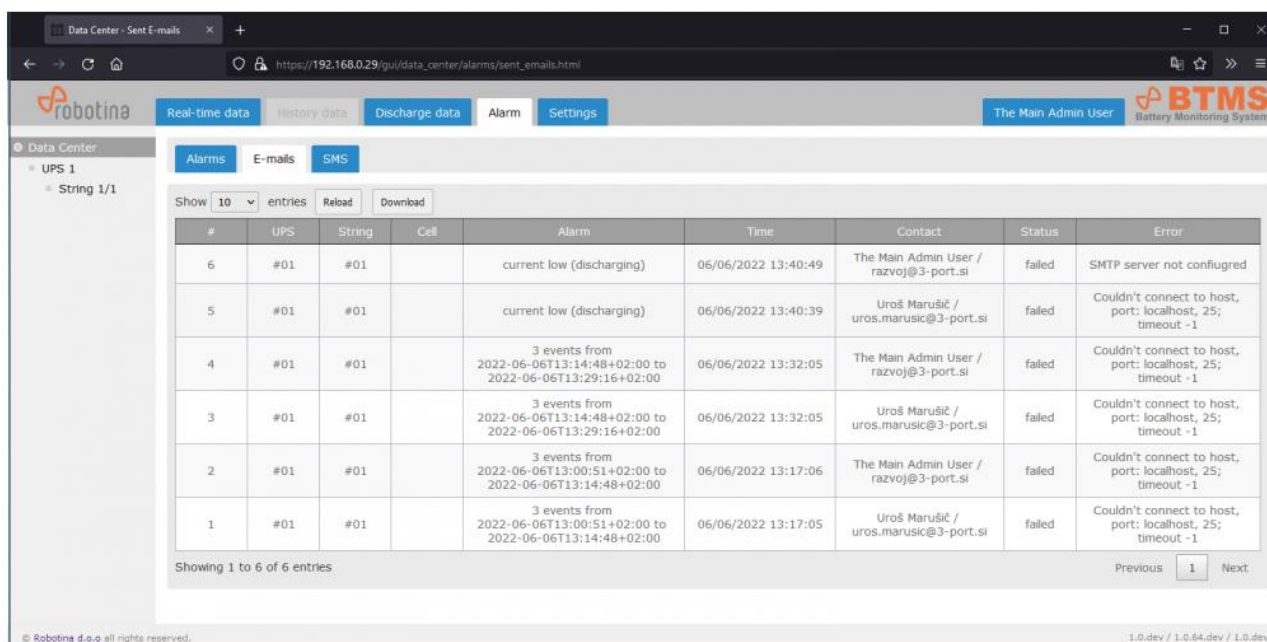
Showing 1 to 10 of 14 entries Previous 1 2 Next

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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

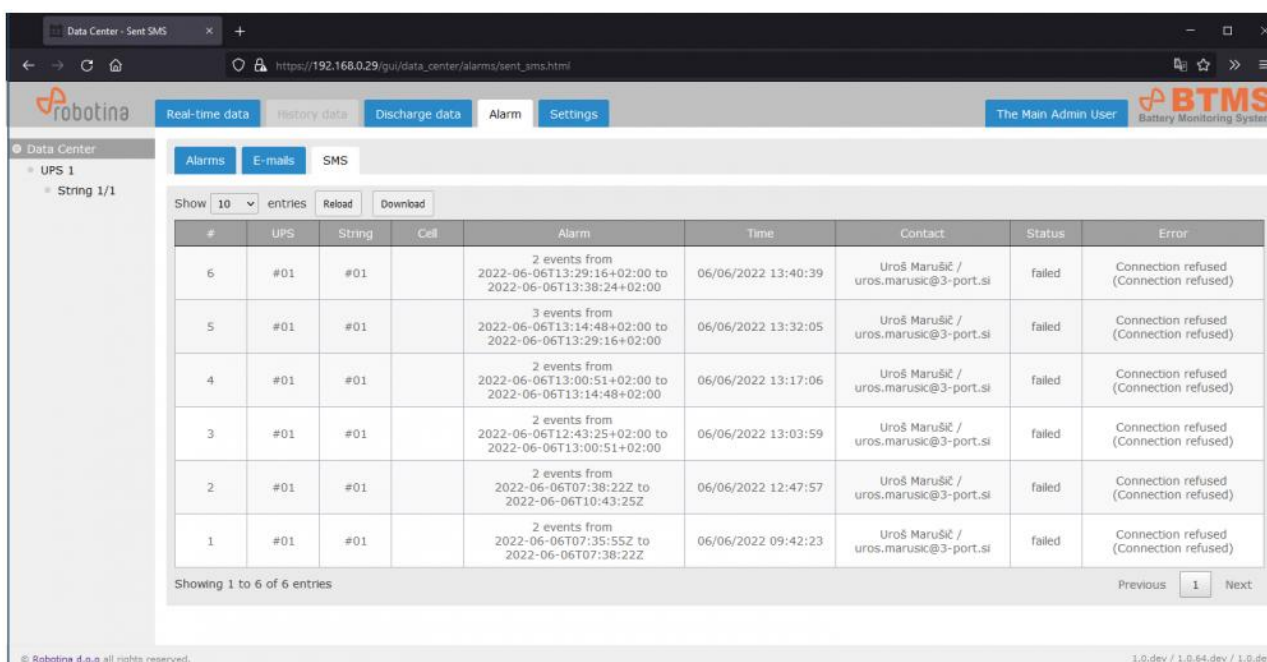
#	UPS	String	Cell	Alarm	Time	Contact	Status	Error
6	#01	#01		current low (discharging)	06/06/2022 13:40:49	The Main Admin User / razvoj@3-port.si	failed	SMTP server not configured
5	#01	#01		current low (discharging)	06/06/2022 13:40:39	Uroš Marušič / uros.marusic@3-port.si	failed	Couldn't connect to 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 2022-06-06T13:14:48+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

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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)

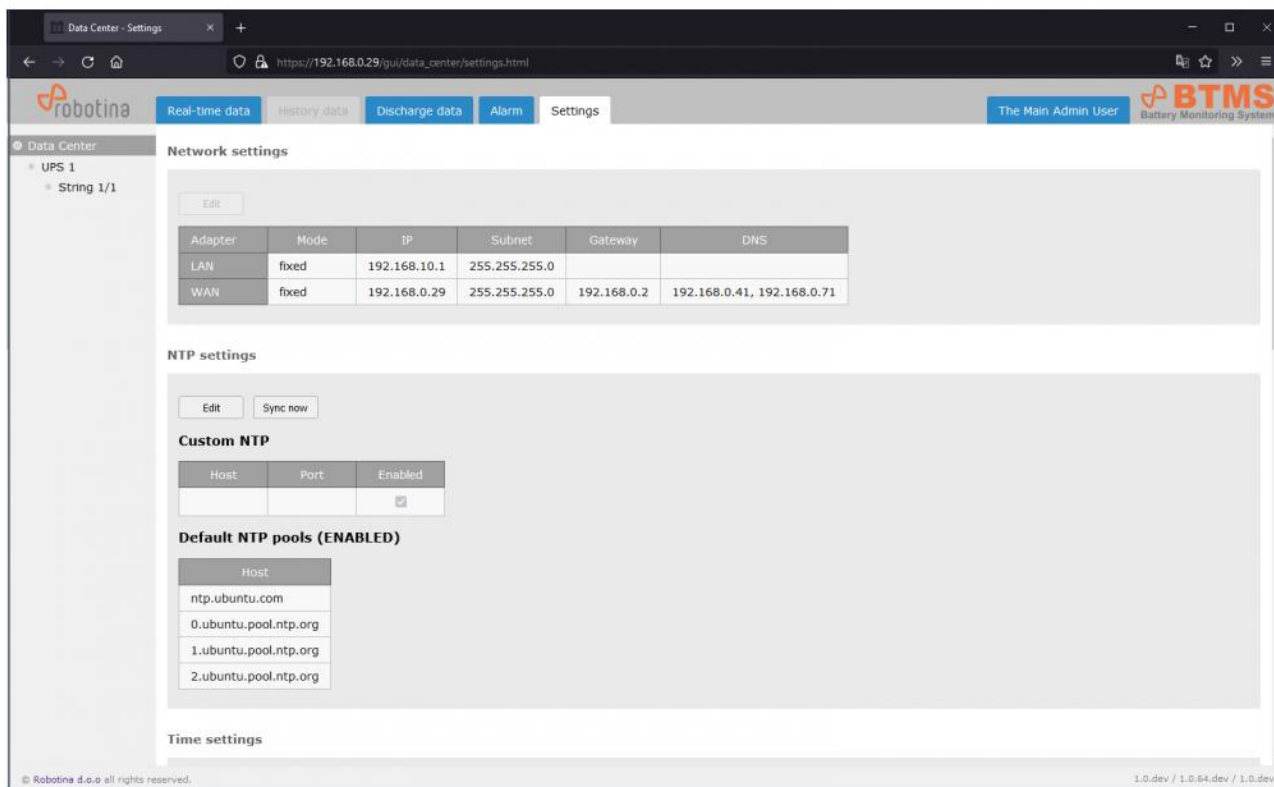
Showing 1 to 6 of 6 entries

Previous 1 Next

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Settings

Network settings, NTP settings



The screenshot shows the 'Settings' tab in the Robotina BTMS interface. The left sidebar shows 'Data Center' with 'UPS 1' and 'String 1/1'. The main content area is divided into three sections: Network settings, NTP settings, and Time settings.

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

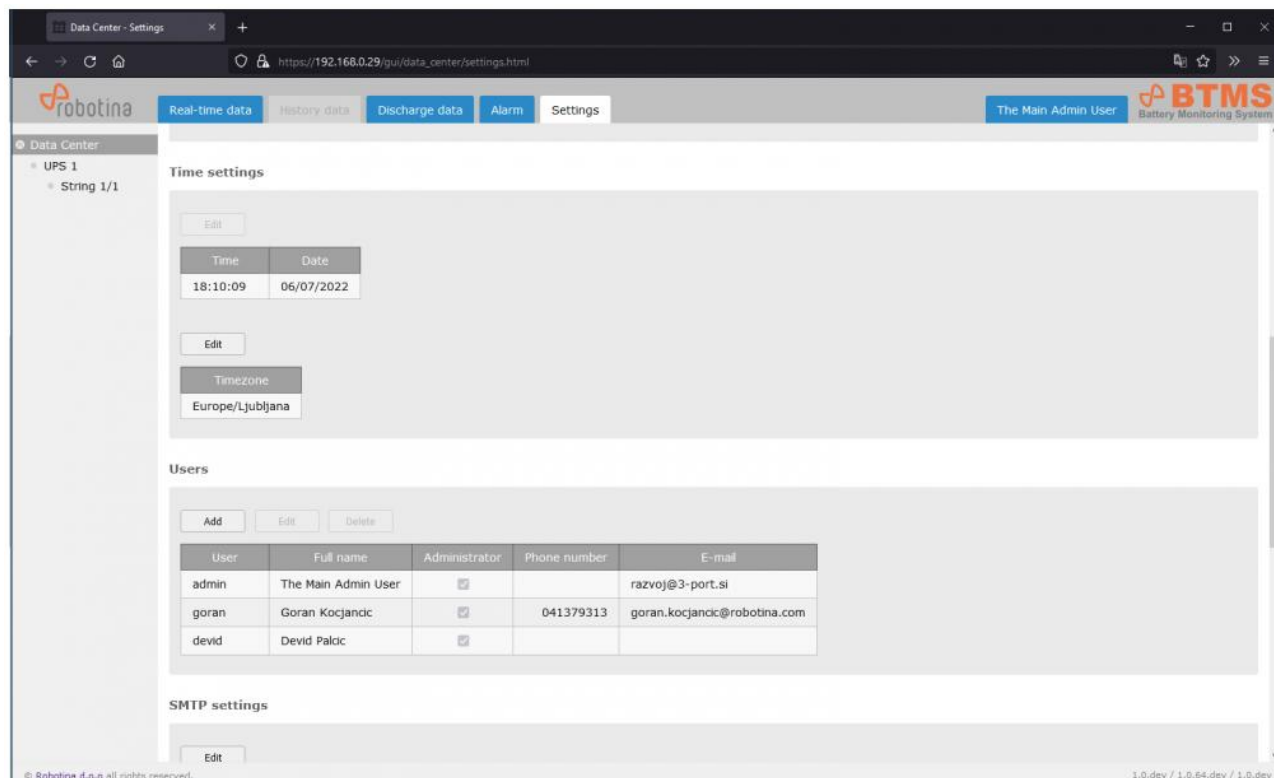
Host	Port	Enabled
		☒

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

Time settings, Users



The screenshot shows the 'Settings' tab in the Robotina BTMS interface, specifically the 'Time settings' and 'Users' sections.

Time settings

Time Date

18:10:09	06/07/2022
----------	------------

Timezone

Europe/Ljubljana

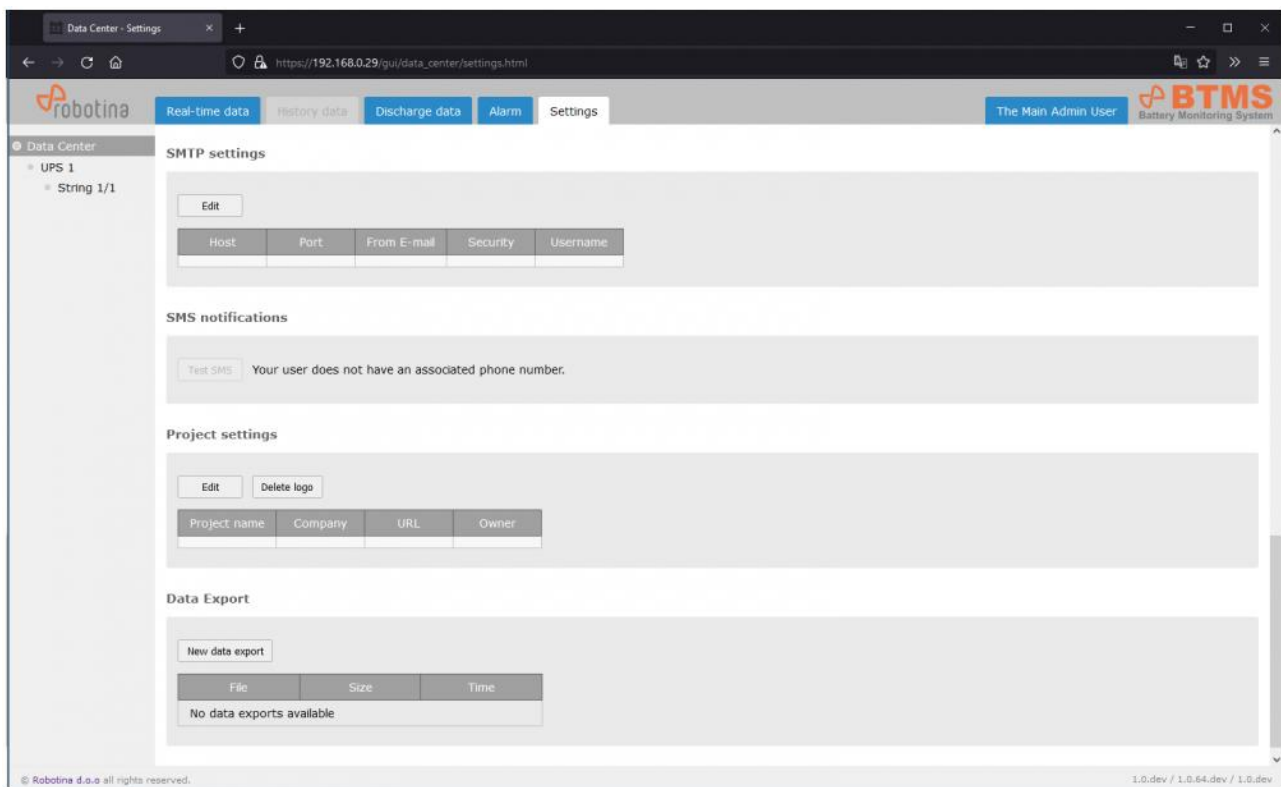
Users

Add Edit Delete

User	Full name	Administrator	Phone number	E-mail
admin	The Main Admin User	☒		razvoj@3-port.si
goran	Goran Kocjancic	☒	041379313	goran.kocjancic@robotina.com
devid	Devid Palcic	☒		

SMTP settings

SNMP settings, SMS notifications, Project settings, Data export



The screenshot shows the 'Data Center - Settings' page of the Robotina BTMS (Battery Monitoring System). The interface includes a sidebar with 'Data Center' and 'UPS 1' (String 1/1). The main content area is divided into four sections: SMTP settings, SMS notifications, Project settings, and Data Export.

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

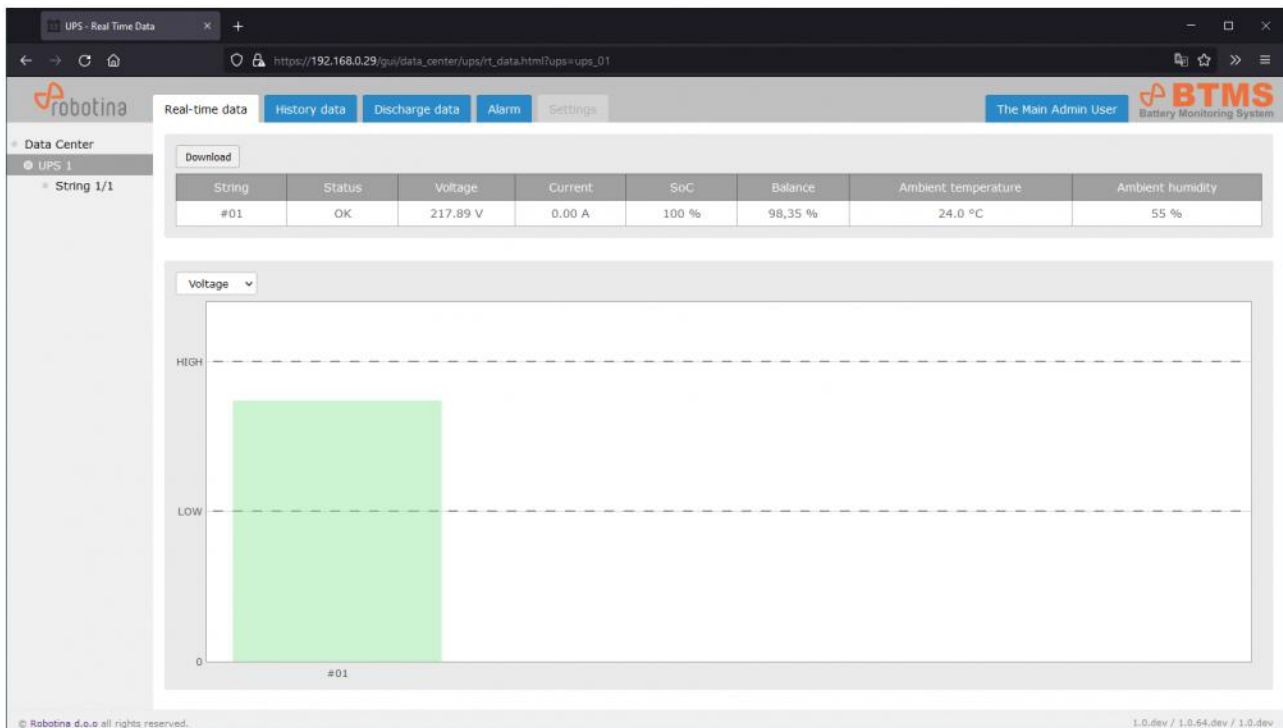
Buttons: New data export

File	Size	Time
No data exports available		

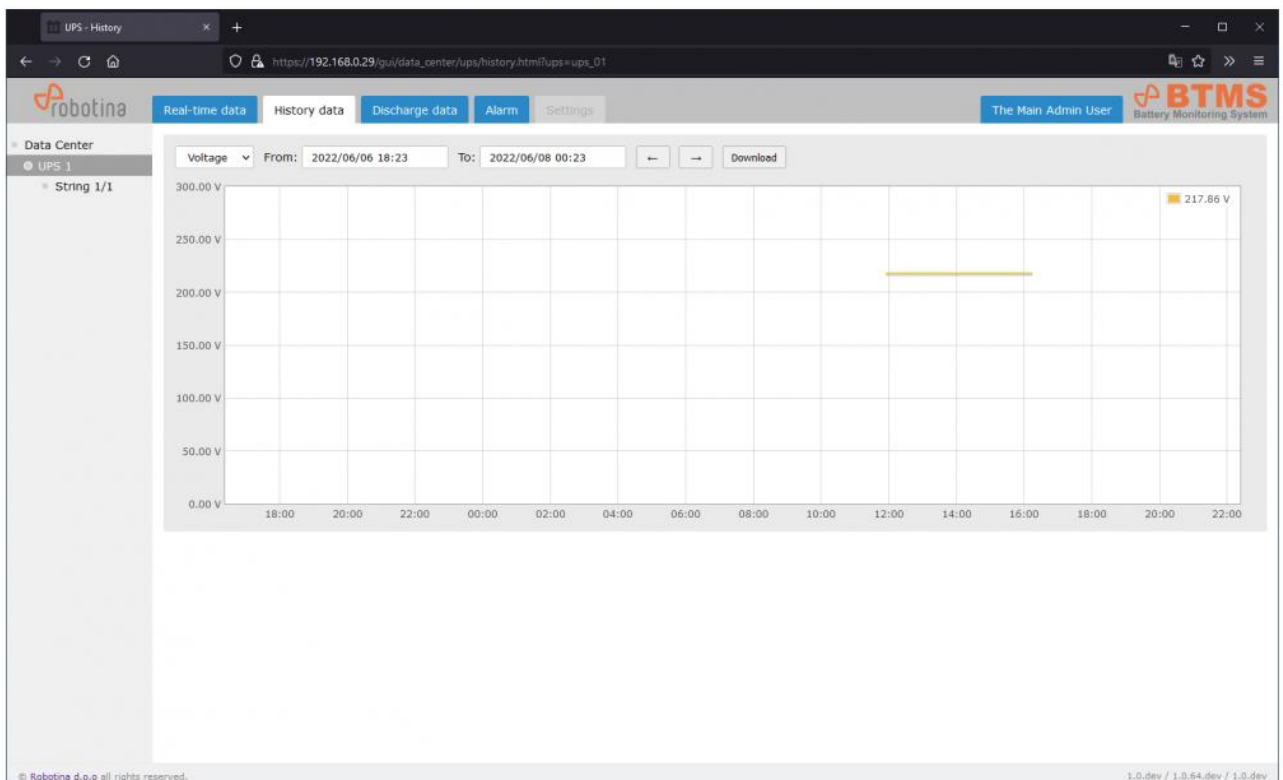
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UPS

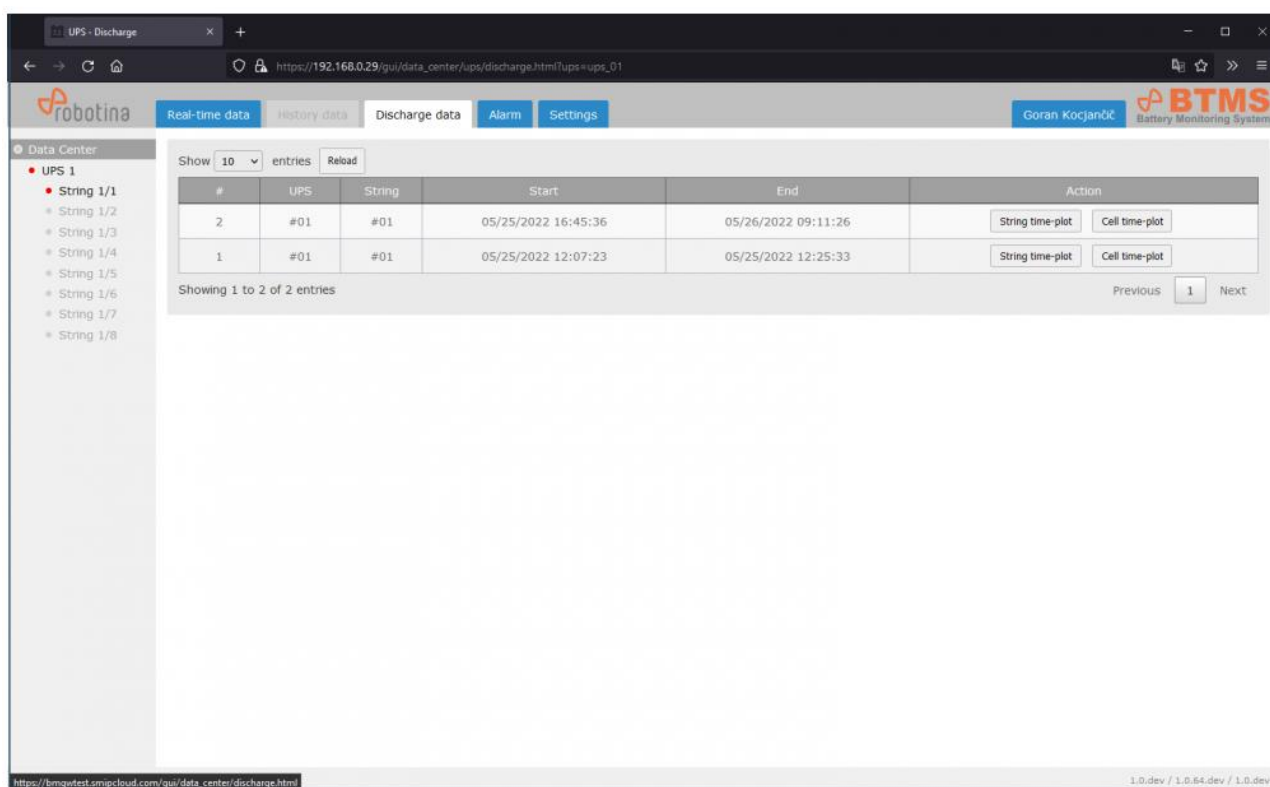
Real-time data



History data



Discharge data



The screenshot shows the 'Discharge data' tab in the Robotina BTMS interface. The left sidebar lists 'UPS 1' and its strings (1/1 to 1/8). The main area displays a table of discharge events for String 1/1.

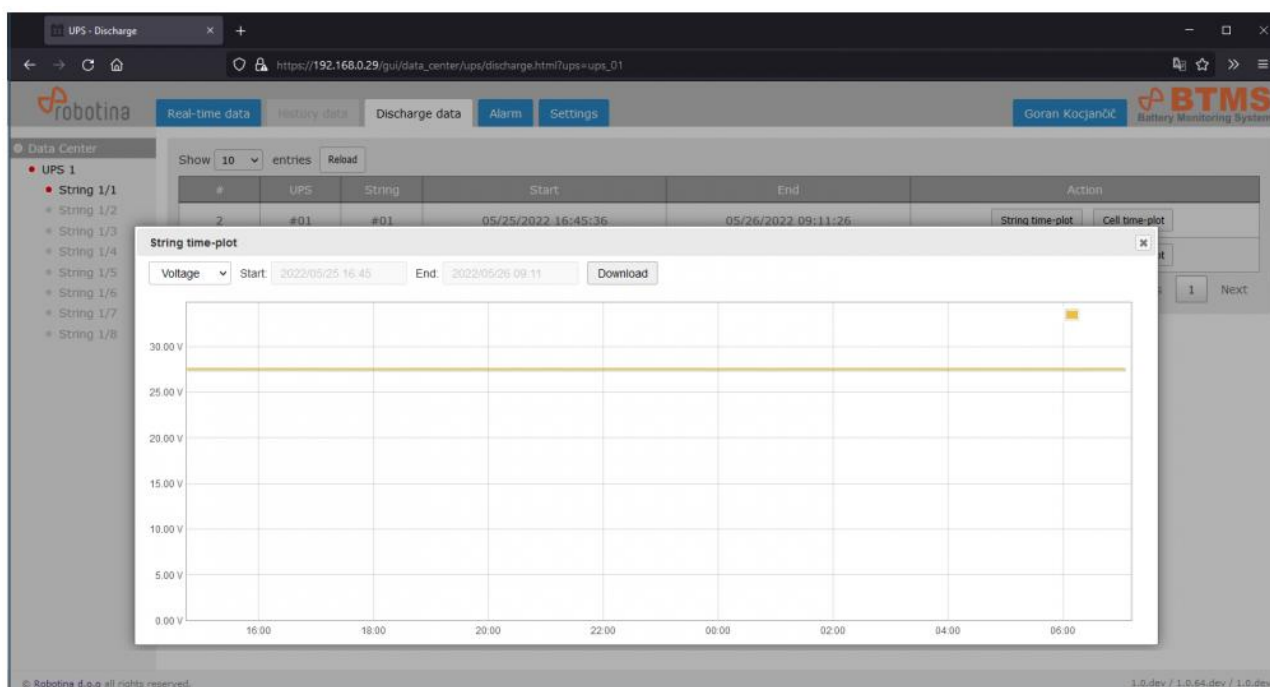
#	UPS	String	Start	End	Action
2	#01	#01	05/25/2022 16:45:36	05/26/2022 09:11:26	String time-plot Cell time-plot
1	#01	#01	05/25/2022 12:07:23	05/25/2022 12:25:33	String time-plot Cell time-plot

Showing 1 to 2 of 2 entries

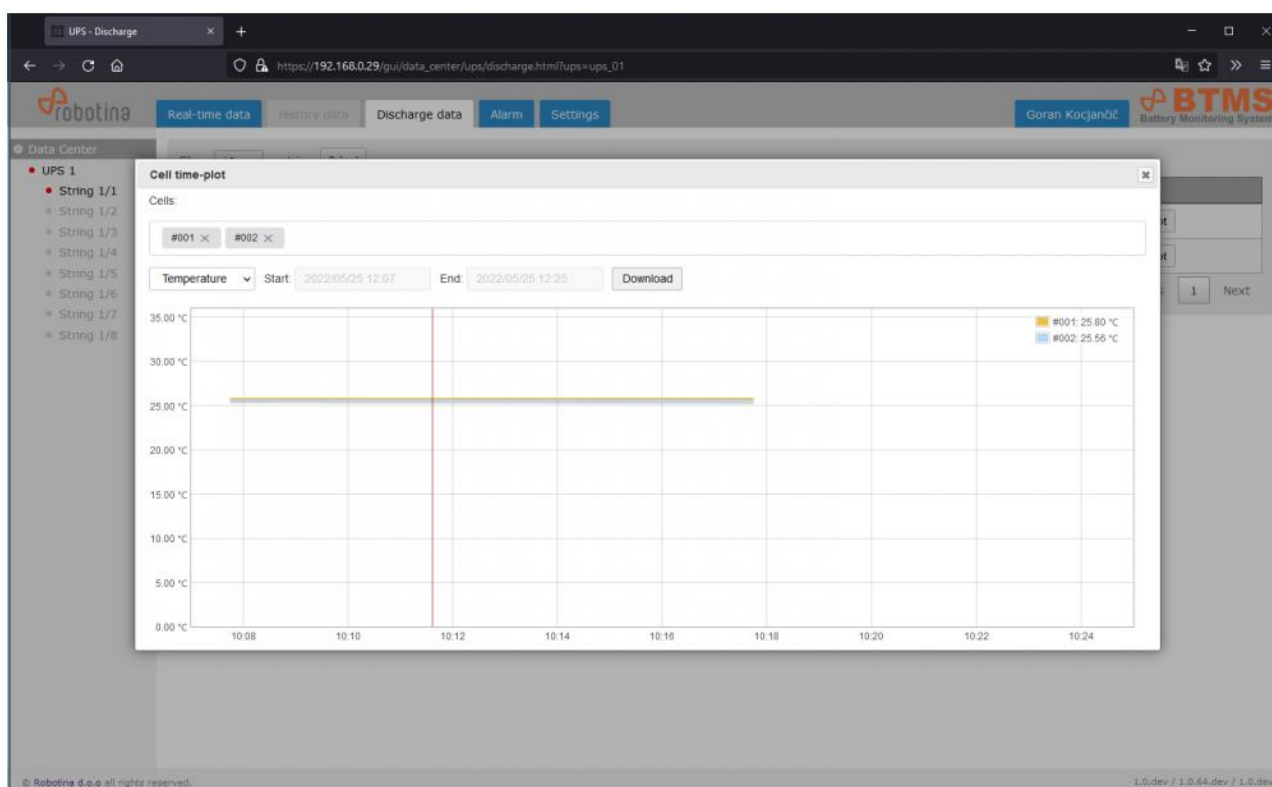
Navigation: Previous 1 Next

Footer: https://bmgtest.smpcloud.com/gui/data_center/discharge.html 1.0.dev / 1.0.64.dev / 1.0.dev

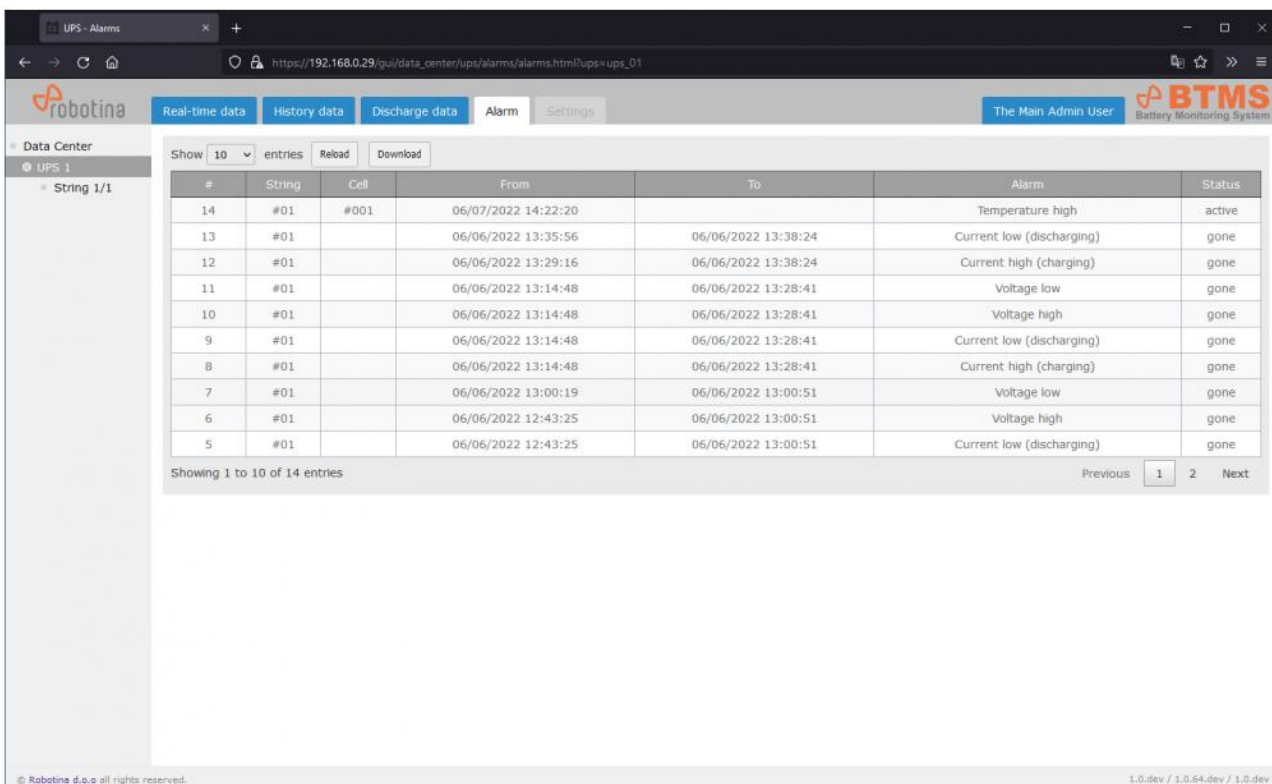
String time-plot



Cell time-plot



Alarm



UPS - Alarms

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

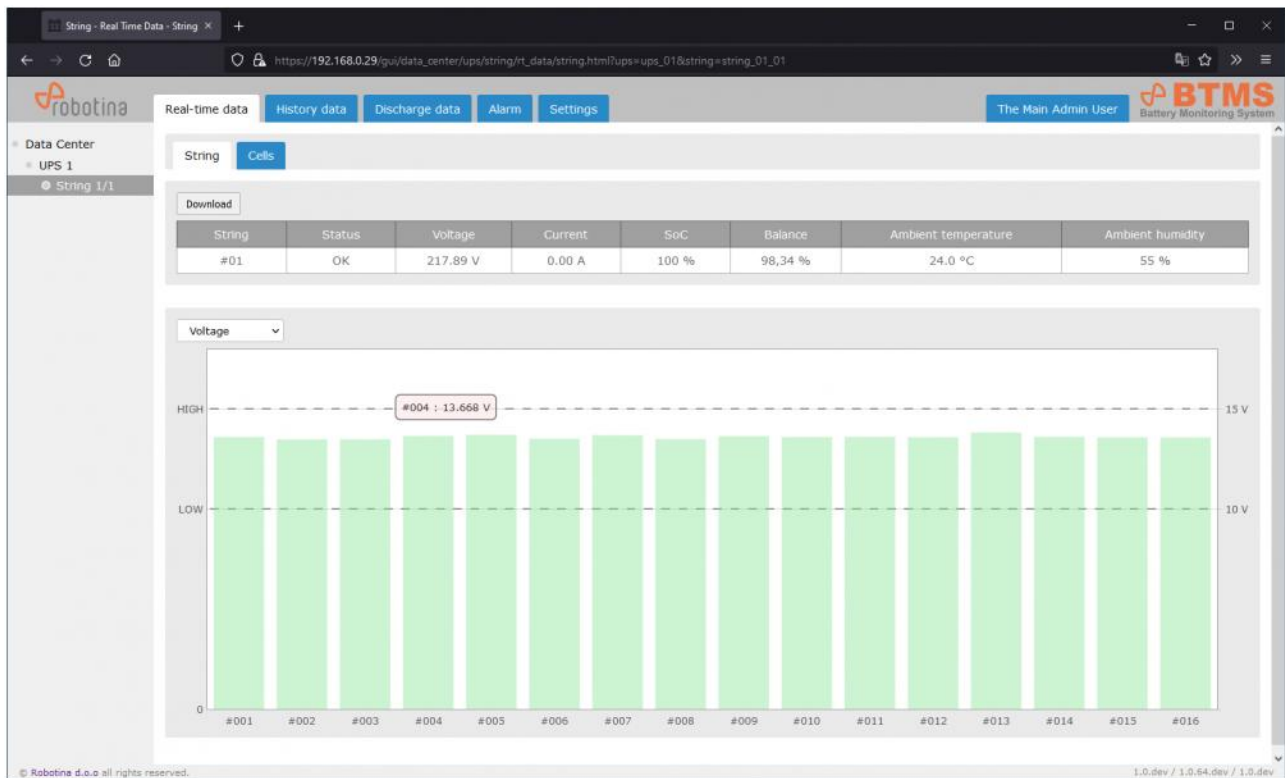
Previous 1 2 Next

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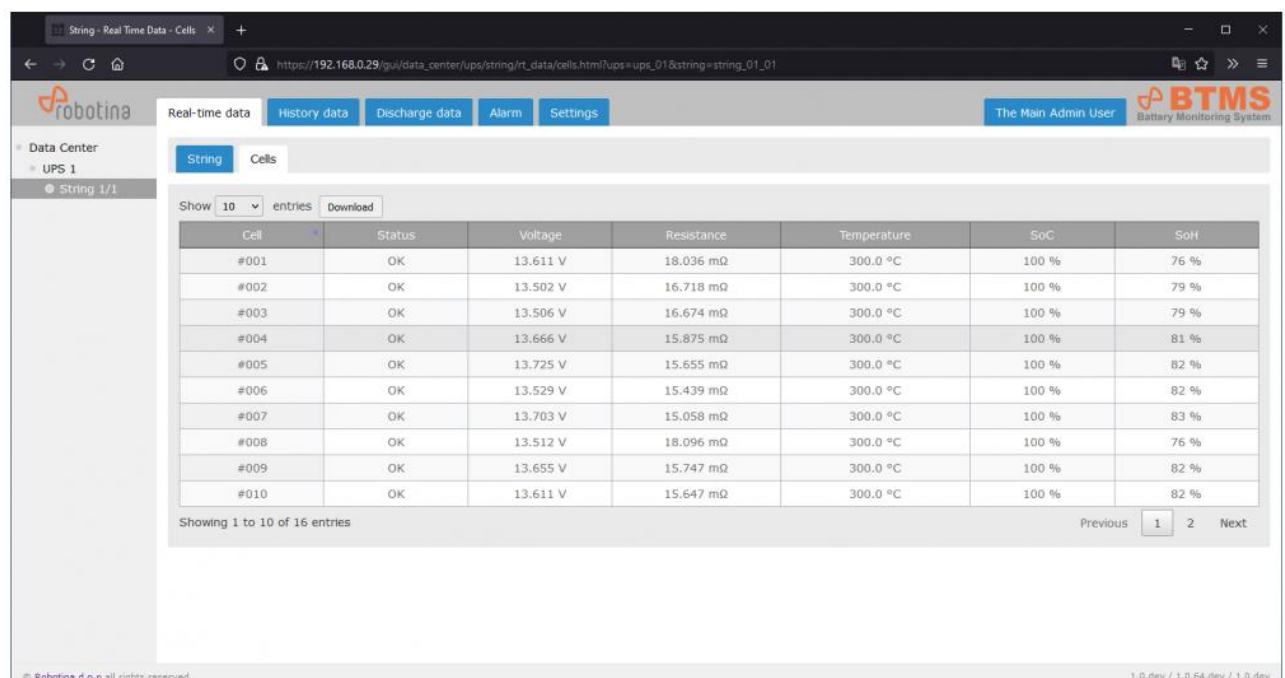
String

Real-time data

String



Cells



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 %

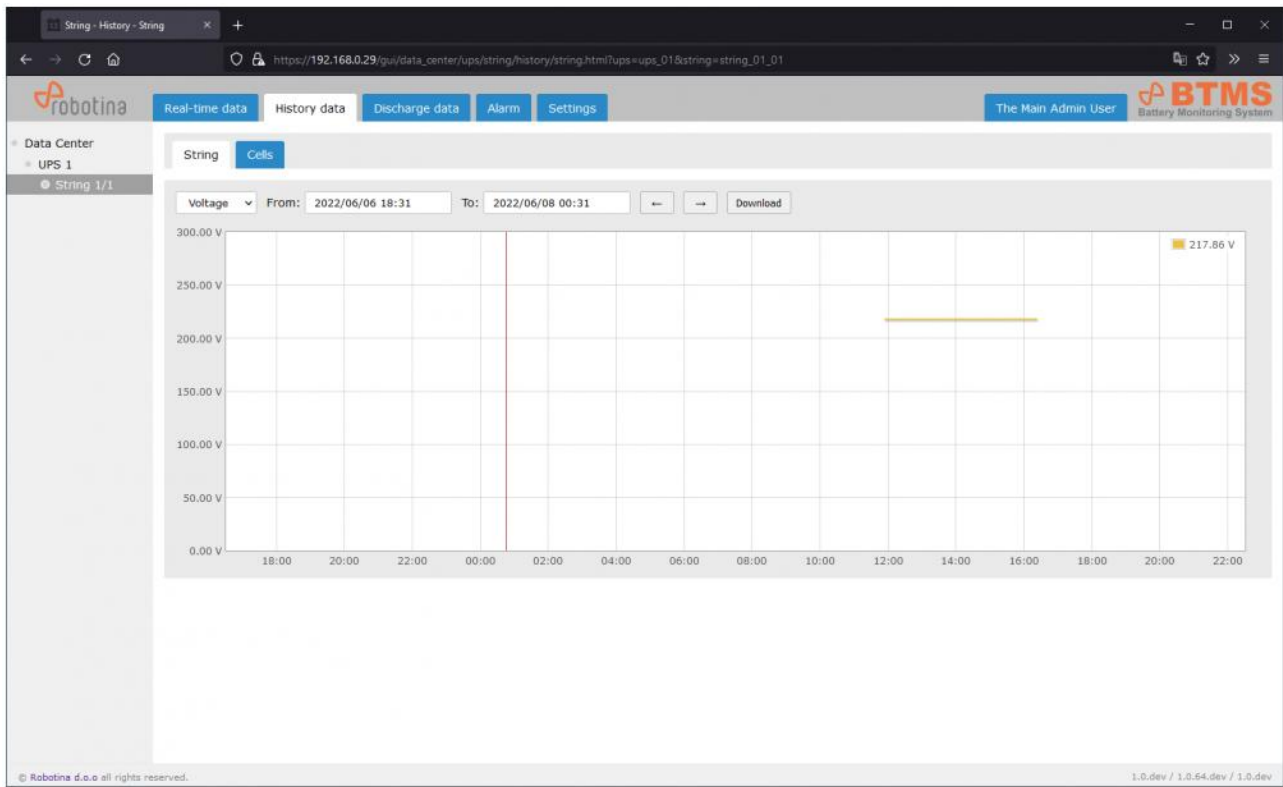
Showing 1 to 10 of 16 entries

Previous 1 2 Next

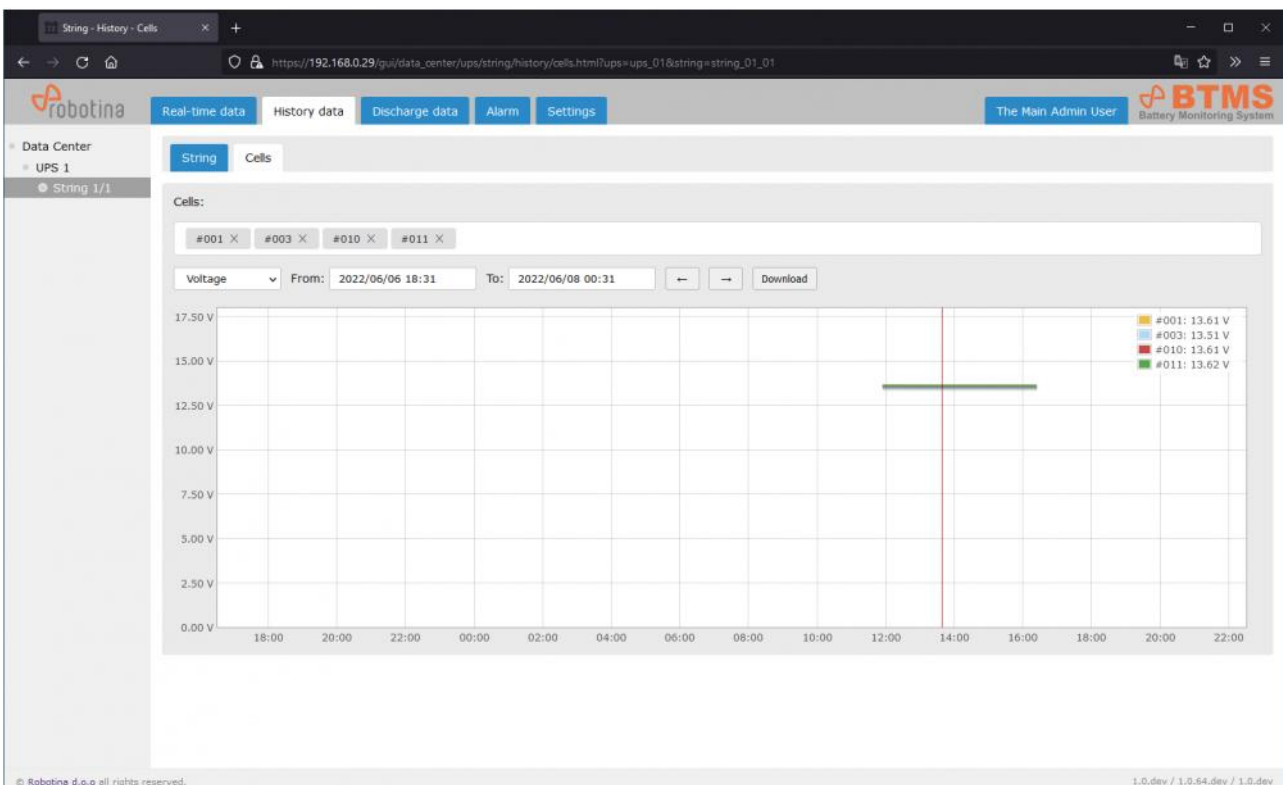
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History data

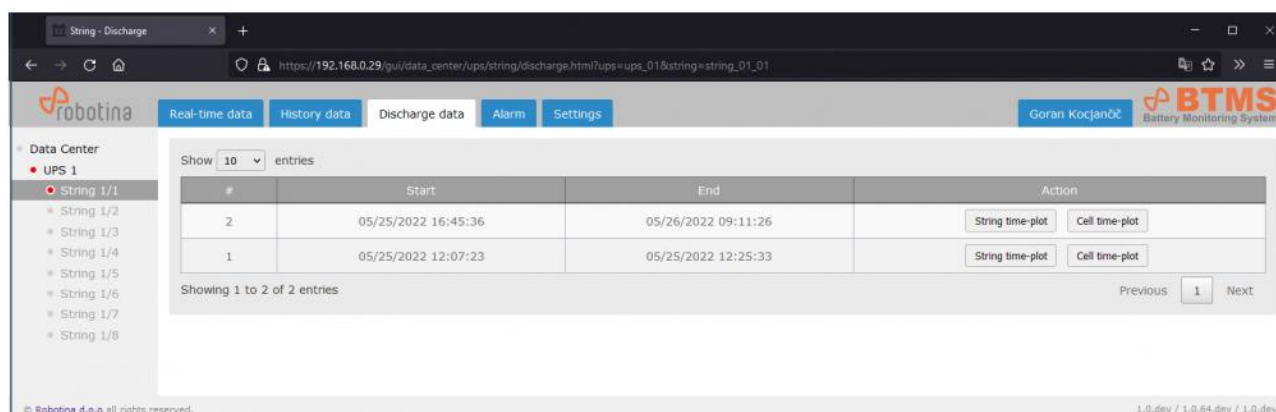
String



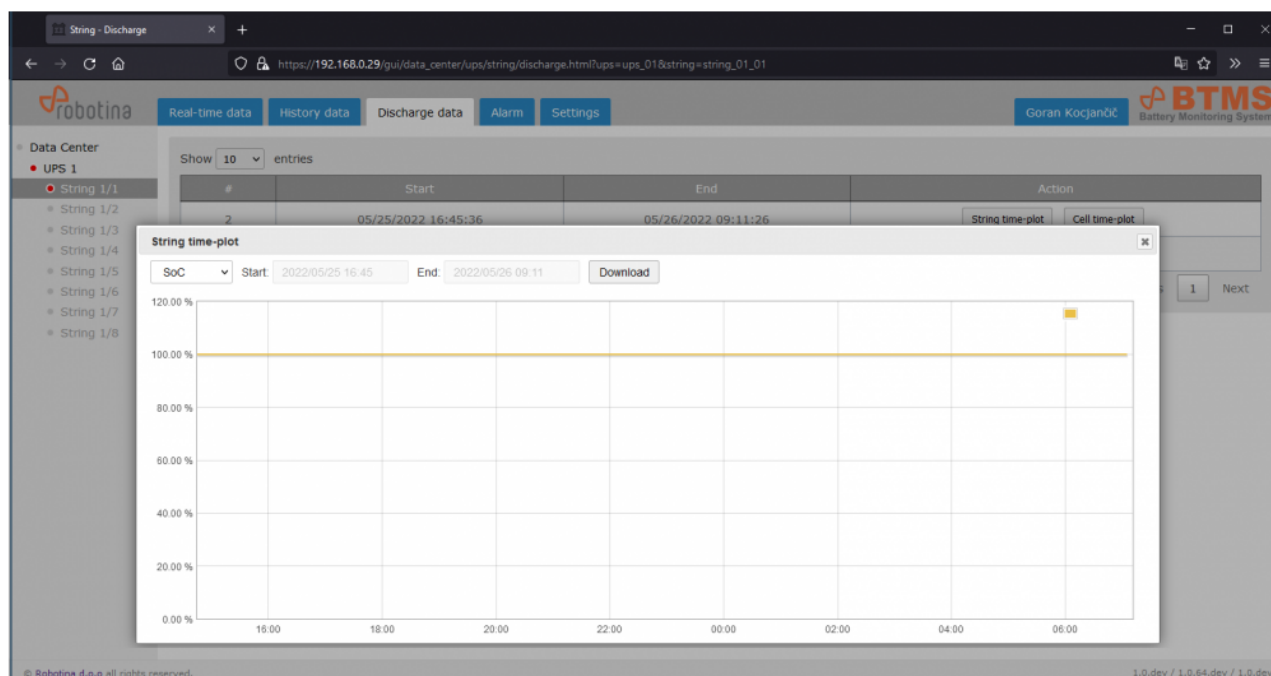
Cells



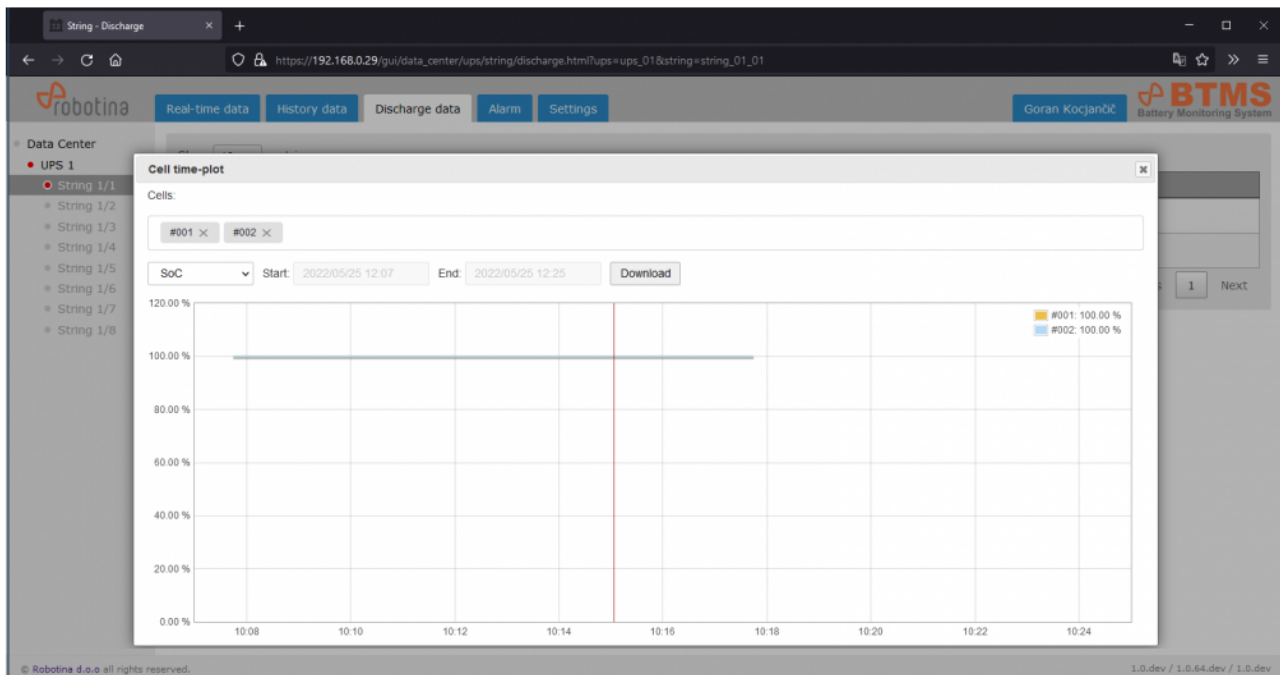
Discharge data



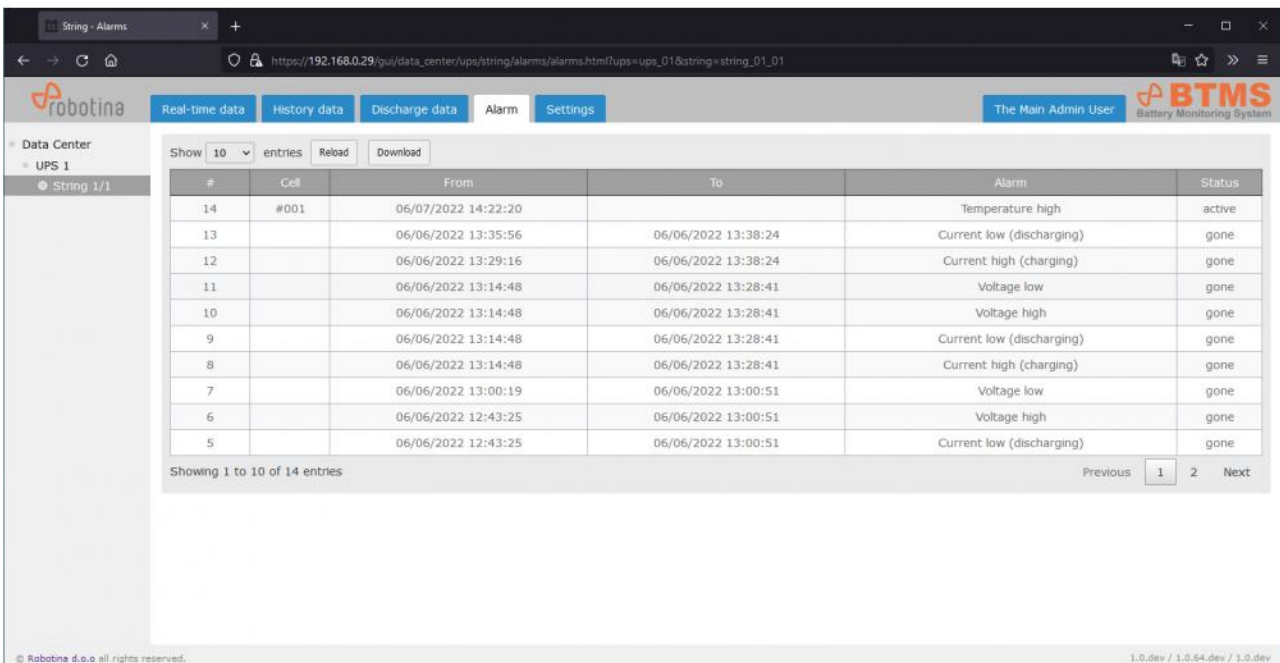
String time-plot



Cell time-plot



Alarm



The screenshot shows the 'Alarm' window in the Robotina BTMS interface. The window displays a table of alarm events. The table has columns for #, Cell, From, To, Alarm, and Status. The data is as follows:

#	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

The interface includes a sidebar with a tree view of the data center hierarchy, a top navigation bar with tabs for Real-time data, History data, Discharge data, Alarm, and Settings, and a footer with copyright information and version numbers.

Settings

String - Settings

[Real-time data](#)
[History data](#)
[Discharge data](#)
[Alarm](#)
[Settings](#)

The Main Admin User
BTMS
Battery Monitoring System

- Data Center
 - UPS 1
 - String 1/1

Alarm settings

	SMS	e-mail
String current charge limit	☒	☒
String current discharge limit	☒	☒
String voltage high limit	☒	☒
String voltage low limit	☒	☒
String SoC low limit	☒	☒
Hall alarm enable	☒	☒
Cell voltage high limit	☐	☐
Cell voltage low limit	☐	☐
Cell resistance high limit	☐	☐
Cell SoC low limit	☐	☐
Cell SoH low limit	☐	☐
Cell temperature high limit	☐	☐

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