

Unicont SPb Ltd

Battery control panel BCP-136

Operating manual
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v.3.4

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Battery control panel BCP-136 (hereinafter referenced to as battery panel, or panel) is intended for indication of actual battery charging current and voltage, alarming in case of mains power failures and battery discharge.

This operating manual describes design and operating principles of the BP, contains instructions for its installation, configuration, operation, warranty and post-warranty maintenance.

The manual is intended for those involved in BP installation and configuration, as well as for BP users. BP installation requires corresponding electric safety qualification.

1. General

Battery control panel BCP-136 ensures 24/7 battery state monitoring by indication of actual charging/discharging current and voltage, as well as emission of sound and visual alarm signals in case of 220 V mains power failure, battery discharge and other abnormal situations.

2. Delivery Set

1. Battery panel BCP-136*	1 pcs.
2. Connector DB-15F	2 pcs.
3. Operating manual	1 pcs.

* *Battery panel version is defined by the customer when ordering*

Battery panel versions:

- BCP-136 (ДИШУ.468262.001) – equipped with analog and digital interface ports
 - BCP-136 (ДИШУ.468262.001-01) – equipped with digital interface ports only.
- (the versions are described in section 3)

Example of panel designation when ordering:

- BCP-136 (ДИШУ.468262.001) or “BCP-136 with analog interface”
- BCP-136 (ДИШУ.468262.001-01) or BCP-136

3. Technical specifications

Table 1 - Specifications

	BCP-136 version	
	ДИШУ.468262.001	ДИШУ.468262.001-01
General specifications:		
Power supply voltage	10.0 ... 36.0VDC	
Power consumption	3.0 W	2.5 W
Galvanic insulation of supply mains	Yes	
Reverse polarity protection	Yes	
Overvoltage protection	Yes (a fuse)	
Number of simultaneously connected batteries	2 pcs.	
Number of ports () *	2 × RS-422 / analog	2 × RS-422 (digital)
* Note – it is possible to connect external devices to one or simultaneously 2 ports of the panel, but only one of the interfaces can be used for that.		
Digital interface specifications:		
Purpose	Data exchange with CH-105, PCH-205, BMU-126	
Maximal input data rate	115200 bps	
Galvanic insulation	Yes	
Communication protocol	Proprietary (Unicont SPB)	
Devices to be connected	CH-105, PCH-205, BMU-126 (manufactured by Unicont SPB).	
Analog interface specifications (BCP-136 only):		
Purpose	Battery voltage and current measurement (by means of a shunt)	
Galvanic insulation of channels	Yes	
U_{shunt} measurement range	80 mV	
U_{bat} measurement range	0 – 36 V	
Current measurement accuracy	0.01 A	
Voltage measurement accuracy	0.01 V	
Current indication accuracy	0.1 A (XX.X format)	
Voltage indication accuracy	0.1 V (XX.X format)	
Input resistance	0.8 MΩ	
Allowed shunt resistance	1...9990 μΩ	
Devices to be connected	SB-138 (manufactured by Unicont SPB) and other shunt based devices	
General specifications:		
Overall dimensions:	211 mm × 117 mm × 55 mm	
Overall dimensions with bracket	255 mm × 143.5 mm × 65 mm	
Storage temperature	-55°C ... +70°C	
Operating temperature	-25°C ... +55°C	
Weight	At most 2 kg	

4. Principle of operation

The battery panel is an electronic device, which consists of the following units:

- digital processor (CPU),
- two data transceiving units (RS-422_1, RS-422_2),
- two battery voltage measurement units (ADC_1.2, ADC_2.2)*,
- two shunt voltage measurement units (ADC_1.1, ADC_2.1)*,
- two relay contact state detectors (for mains power failure alarming)
- LED displays (for battery parameters indication),
- control buttons,
- built-in sound and visual alarming devices,
- selected battery LED indicators (ref. Fig. 1 and Fig. 2)

* – for BCP-136 only.

Structural diagram of the battery panel is shown in Fig. 1.

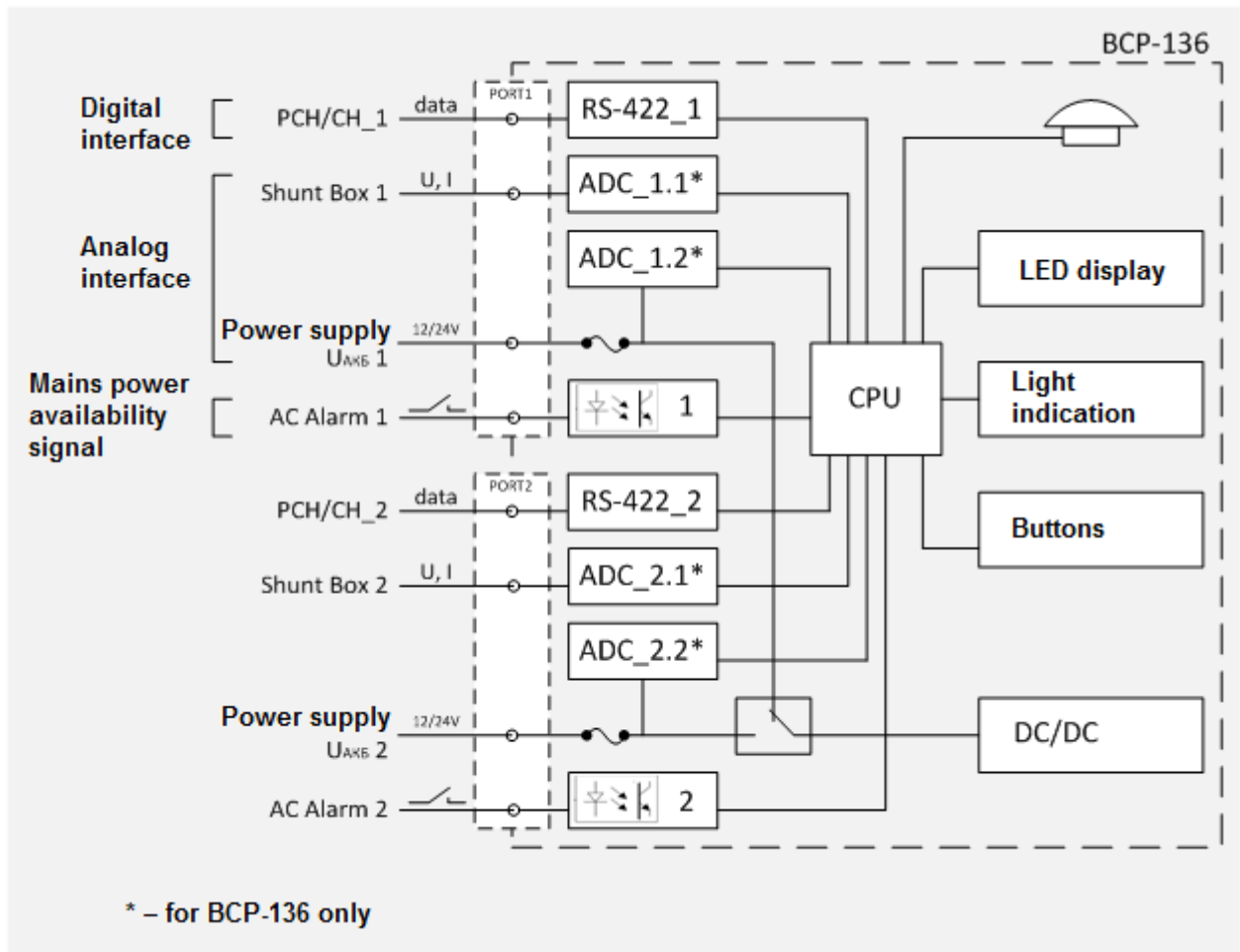


Fig. 1 Battery panel structural diagram

Battery panel performs the following functions:

- selection of operating mode of connected battery chargers,
- indication of actual state (current and voltage) of connected batteries,
- visual and signal alarming of mains power failure.

Panel BCP-136 supports both digital and analog communication interfaces, while panel BCP-136-01 supports digital interface only.

Interfaces and external devices to be connected:

- digital interface (ref. Fig. 5) – CH-105, PCH-205 or BMU-126. Via the digital interface, the battery panel connected to these devices receives information on actual settings, abnormal conditions, charging current and voltage, and displays it by means the indicator. By means of the panel, it is possible to adjust settings of CH-105 and PCH-205 (ref. section 8),
- analog interface (ref. Fig. 6) – SB-138. It allows to receive charge information from batteries and other (third parties') external devices.

Battery panel supports simultaneous connection of at most two devices, digital or analog, in any combination (connection diagrams are shown in section 7).

5. Alarms

Battery panel is equipped with built-in means of visual and sound alarming intended to alert on emergency conditions (ref. Table 2). Used along with CH-105 or PCH-205, the panel engages these means upon reception of alarms from these devices in digital form (via a digital channel) (ref. CH-105 and PCH-205 operating manuals, section "Alarms").

Table 2. Battery panel alarms

Emergency conditions	Connection type		
	Analog	Digital (BMU-126)	Digital (CH-105, PCH-205)
Input power failure (if potential-free contacts are used to receive signals)	+	+	Ref. CH-105 and PCH-205 operating manuals, section "Alarms"
Battery voltage exceeds the specified level	+	+	
Battery voltage falls below the specified level	+	+	
Discharge current exceeds the maximal level	-	+	
«+» – alarm (visual and sound signals) is switched on «-» – alarm is not switched on.			

In any of the above mentioned conditions battery panel automatically engages the built-in alarm devices. In order to switch sound alarm signals off, it is necessary to press MUTE button. However, visual alarm signals will stay active until the cause of the alarm is remedied.

Detailed description of the alarm devices can be found in section 6.

6. Controls and indicators

Battery panel is equipped with the following controls and indicators:

- control buttons,
- selected battery LEDs (BAT1/2),
- alarm LEDs (BAT ALARM 1/2, AC ALARM 1/2),
- two digital LED indicators.

Arrangement of indicators:

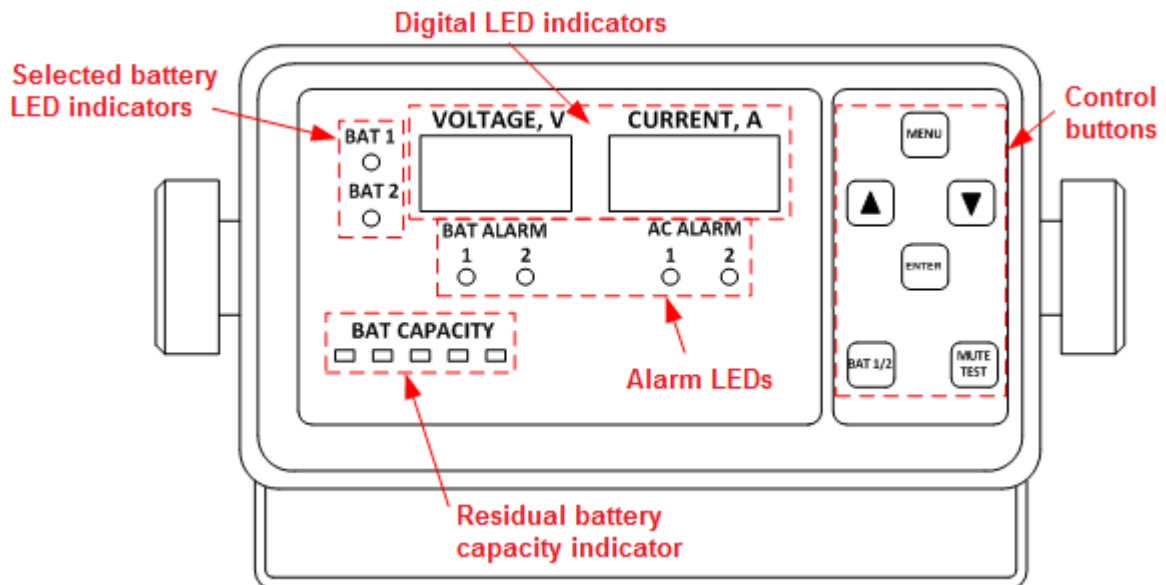


Fig. 2 Arrangement and general purpose of indicators.

○ Control buttons are used to select battery 1 or 2 to display its parameters by means of the digital indicators, acknowledge alarm sound signals, perform the lamp test, adjust brightness of LEDs and digital indicators. Menu navigation buttons make it possible to configure CH-105 and PCH-205 (connected to digital interfaces) and to adjust shunt and alarm settings (control button purposes are summarized in Table 3).

Table 3. Purposes of BCP-136 control buttons

Button	Purpose
MENU	selection of main menu items (ref. section 8.3).
▲ and ▼	adjustment of LED brightness, selection of menu item values
ENTER	saving (entering) of the selected menu item value (ref. section 8.3).
BAT 1/2	selection of battery 1 or 2 (ports PORT1 and PORT2) for indication.
MUTE/TEST	switching off (acknowledging) of alarm sound signal (ref. section 8.3.9), testing of LEDs, indicators and the beeper (the test mode, ref. section 8.3.8)

○ Alarm LEDs BAT ALARM and AC ALARM (ref. Fig. 2).

Table 4. Purposes of state indication LEDs.

LED indicator		Purpose
BAT ALARM	1 (PORT 1)	<ul style="list-style-type: none"> – if a digital interface is used (along with CH-105 or PCH-205), the LED is switched on in case of alarm conditions (ref. CH-105 and PCH-205 operating manuals, section "Alarms"), – if an analog interface is used (along with SB-138), the LED is switched on in case of a deviation from specified charge/discharge parameters.
	2 (PORT 2)	
AC ALARM	1 (PORT 1)	<ul style="list-style-type: none"> – the LED is switched on in case of power supply failure of the battery charger connected the corresponding panel port, – the LED is switched on in case of potential-free (dry) contacts disconnection of the relay connected to the corresponding panel port.
	2 (PORT 2)	

- LEDs BAT1 and BAT2 indicate the selected battery number (1 or 2), parameters of which are currently shown by digital LED indicators.
- Digital LED indicators show actual values of battery current and voltage. Negative sign on the LED indicator means negative (discharge) current.
- Residual battery capacity indicator shows residual capacity (power) of the selected battery. **(Currently not in use).**

In the standby (primary) operating mode the battery panel indicators display the following information: selected battery number, actual voltage (the left indicator) and discharge/charge current (the right indicator) of the selected battery.

If CH-105 or PCH-205 is connected to the digital interface of the battery panel, which operates in the standby (primary) mode, pressing on ENTER results in that letter "t" appears on the left digital indicator, while the right one displays actual battery temperature. This function is supported, provided that that CH-105 or PCH-205 is equipped with a DTS-135 battery temperature sensor (ref. section 8.3.10 for detailed information). If such sensor is not installed, the right indicator will display symbols "-- --".

7. Installation and connection

It is recommended to install and connect the battery panel in the following order:

a) The panel must be mounted on a horizontal or vertical surface or on a console. Select a place for installation and drill mounting holes in accordance with the outline drawing:

- guidelines for desktop or bulkhead installation are shown in Fig. 3,
- guidelines for console installation are shown in Fig. 4.

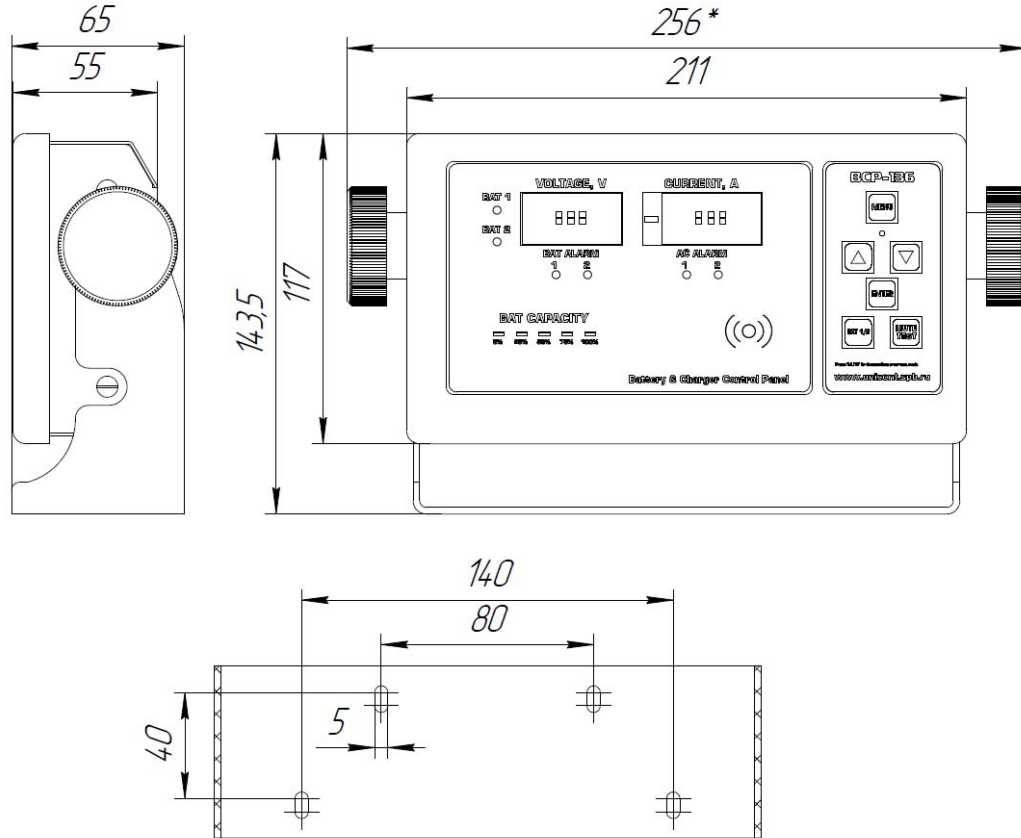


Fig. 3 BCP-136 overall and mounting dimensions for surface installation

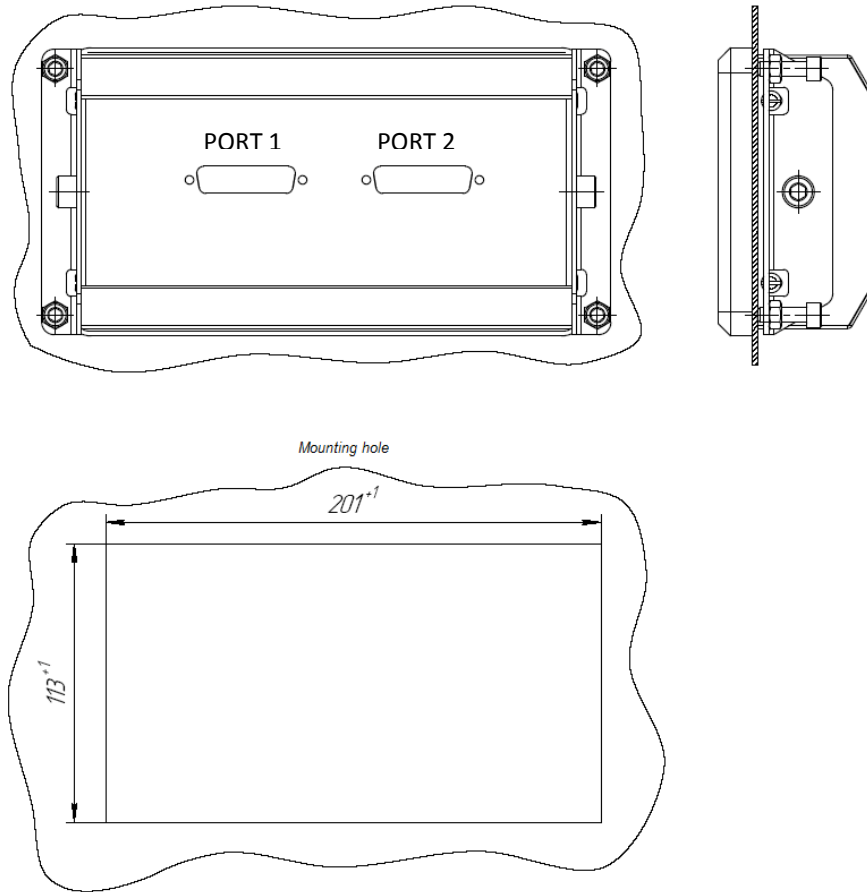


Fig. 4 Console installation of the panel

b) Wire connecting cables of external devices. Connect the cables in accordance with the connection diagram taking into account purposes of the connectors:

- digital interface connection diagram is shown in Fig. 5, Fig. 7;
- analog interface connection diagram is shown in Fig. 6.

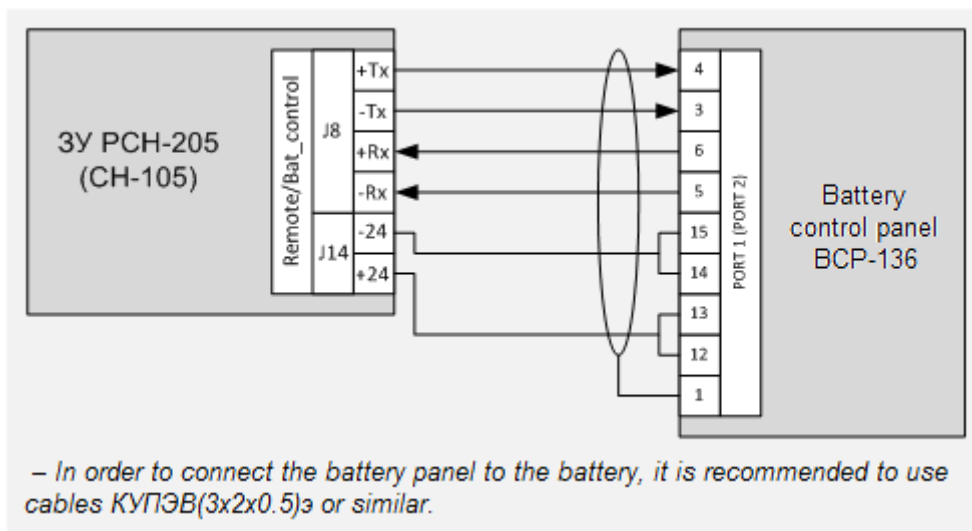


Fig. 5 Example of PCH-205 (CH-105) connection to the digital interface

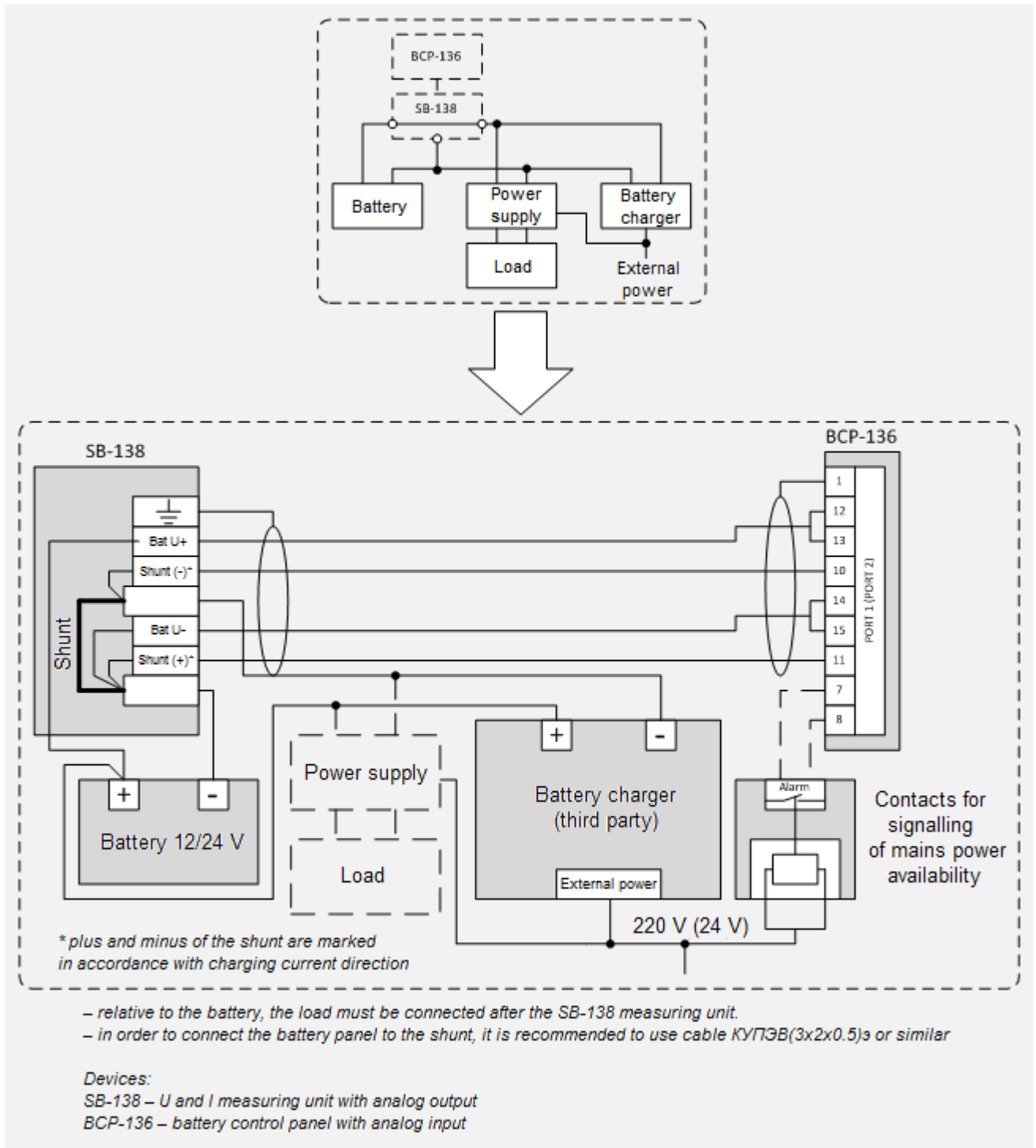


Fig. 6 Example of SB-138 connection to the analog interface

Note! Prior to connect a battery to the battery panel analog port, ensure that the battery parameters meet the analog interface specifications (ref. section 3).

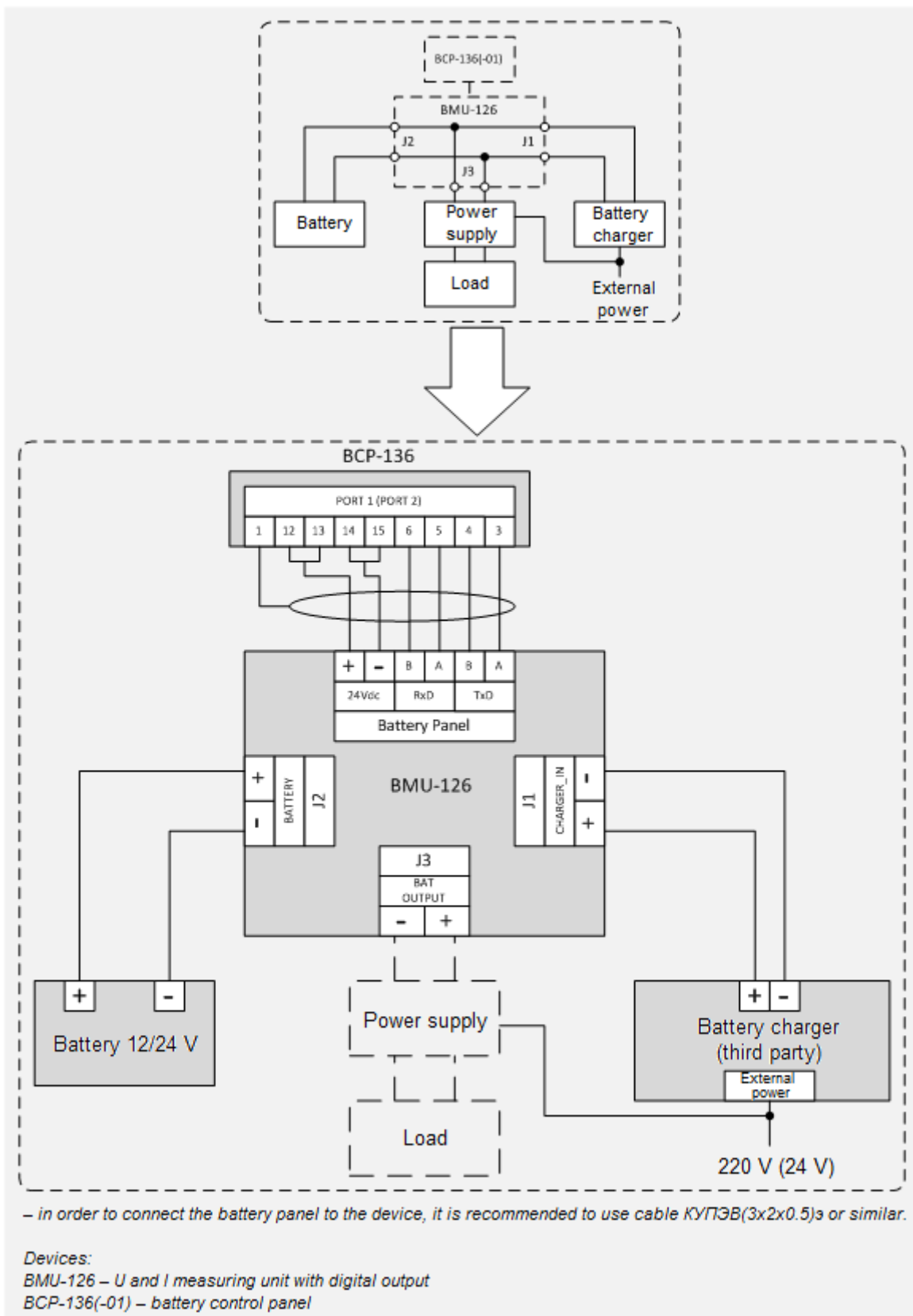
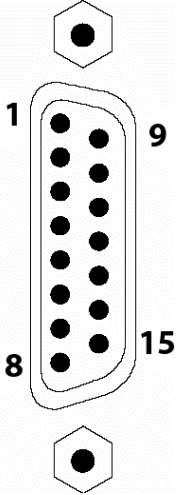


Fig. 7 Example of BMU-126 connection to the analog interface

Assignment of PORT 1 and PORT 2 connector pins:

Table 5. Assignment of PORT 1 and PORT 2 (type DB-15F) connector pins

	Pin No.	Circuit	Purpose		
			Digital interface	Analog interface*	Power
	1	GROUND	+	+	-
	2	NC	-	-	-
	3	Rx -	+	-	-
	4	Rx +	+	-	-
	5	Tx -	+	-	-
	6	Tx +	+	-	-
	7	Rele	-	+	-
	8	Rele	-	+	-
	9	NC	-	-	-
	10	SHUNT -	-	+	-
	11	SHUNT +	-	+	-
	12	VSUP +	++	++	++
	13	VSUP +	++	++	++
	14	VSUP -	++	++	++
	15	VSUP -	++	++	++

* – only BCP-136 (ДИШУ.468262.001) panels are equipped with an analog interface

** – Battery panel power supply and battery voltage measuring circuits are combined in order to decrease the number of connecting cable wires (to make installation more convenient).

c) Configure the battery panel ports (PORT 1 and PORT 2) for operation with the corresponding external devices. In order to do it, use the panel service menu (ref. section 8) to select the connected device type (dCH, dBU, A1, A2) or to switch the unused off (select OFF)

IMPORTANT! If only one port of the panel is used for connection of an external device, the second, unused port must be switched off. This will prevent the built-in alarm devices from false operation.

d) Configure the battery panel to receive information from external devices:

1 Battery panel operation with digital interface (operation with CH-105 / PCH-205, setting of the battery charging specifications)

In order to configure the panel for operation with CH-105 or PCH-205, its **main menu** is used.

- Enter the main menu (ref. section 8).
- By means of BAT1/2 button select the battery, charging specifications are to be set for.
- Specify the necessary charging current and voltage (menu items U and I).

IMPORTANT! Prior to set the charging specifications, it is necessary to read the battery documentation.

Note! Battery charging current and voltage can be set by means of the battery panel or built-in controls of CH-105 and PCH-205.

2 Battery panel operation with digital interface (operation with BMU-126, setting of alarm limits)

In order to configure the panel for operation with BMU-126, its **service menu** is used.

- Enter the service menu (ref. section 8, Fig. 9, Table 7).
- Activate the necessary alarms (supported by BMU-126).
- Configure the necessary voltage and current alarm limits: Uh, UL, Cth.

3 Battery panel BCP-136 operation with analog interface (operation with SB-138, shunt settings and alarm limits)

In order to configure the panel for operation with SB-138, its **service menu** is used.

- Enter the service menu (ref. section 8, Fig. 9, Table 7).
- Configure the necessary SB-138 shunt resistance (this resistance is specified in SB-138 documentation).
- Configure the necessary voltage alarm limits: Uh, UL.

Note! BCP-136 can be connected to other than SB-138 (non-original) shunt based measuring devices, provided that shunt parameters meet those specified in section 3.

e) Switch on the panel and check if the readings are correct.

8. Configuration

8.1 Panel menu

In order to configure the battery panel for operation with external devices, its built-in menu is used.

The panel menu consists of two sections: the main menu and the section menu.

Any of them can be entered when panel operates in the standby (primary) mode (ref. section 8.3).

Main menu

The main menu of the battery panel is accessible if PCH-205 or CH-105 is connected. It is used to configure external devices to operate at necessary currents and voltages.

In order to enter the main menu, press MENU button at the panel keyboard (ref. section 8.3).

Service menu

The service menu is used for initial configuration of the battery panel, in order to configure types and parameters of connected devices.

The service menu allows to perform the following operations:

- configure ports of the battery panel for operation with connected external devices by setting the corresponding dCH, dBU, A1, and A2 values (ref. Table 7),
- switch off unused ports (CH1, CH2 - OFF),
- enter shunt parameters of SB-138 (or other device), adjust alarm limits.

In order to enter the service menu, press the corresponding combination of control buttons (ref. section 8.3).

8.2 Menu structure

The main menu structure is as follows.

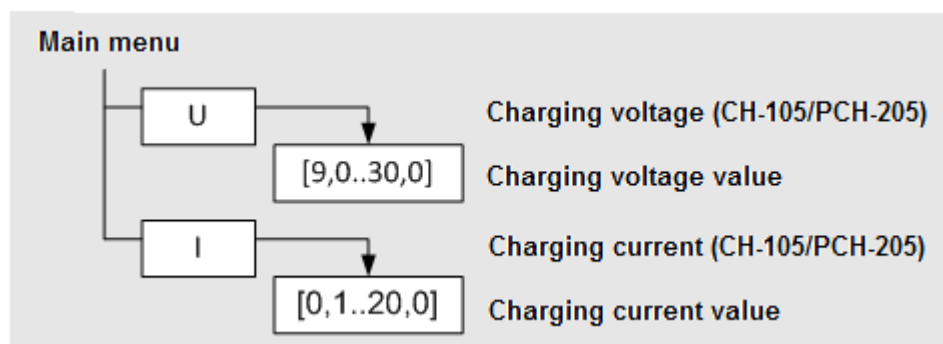


Fig. 8. Structure of the main BCP-136 menu.

In dependence of the current operating mode and type of the battery panel (BCP-136 or BCP-136-01), general structure of the service menu may dynamically change. Accessible settings are show in the service menu diagram (ref. Fig. 9).

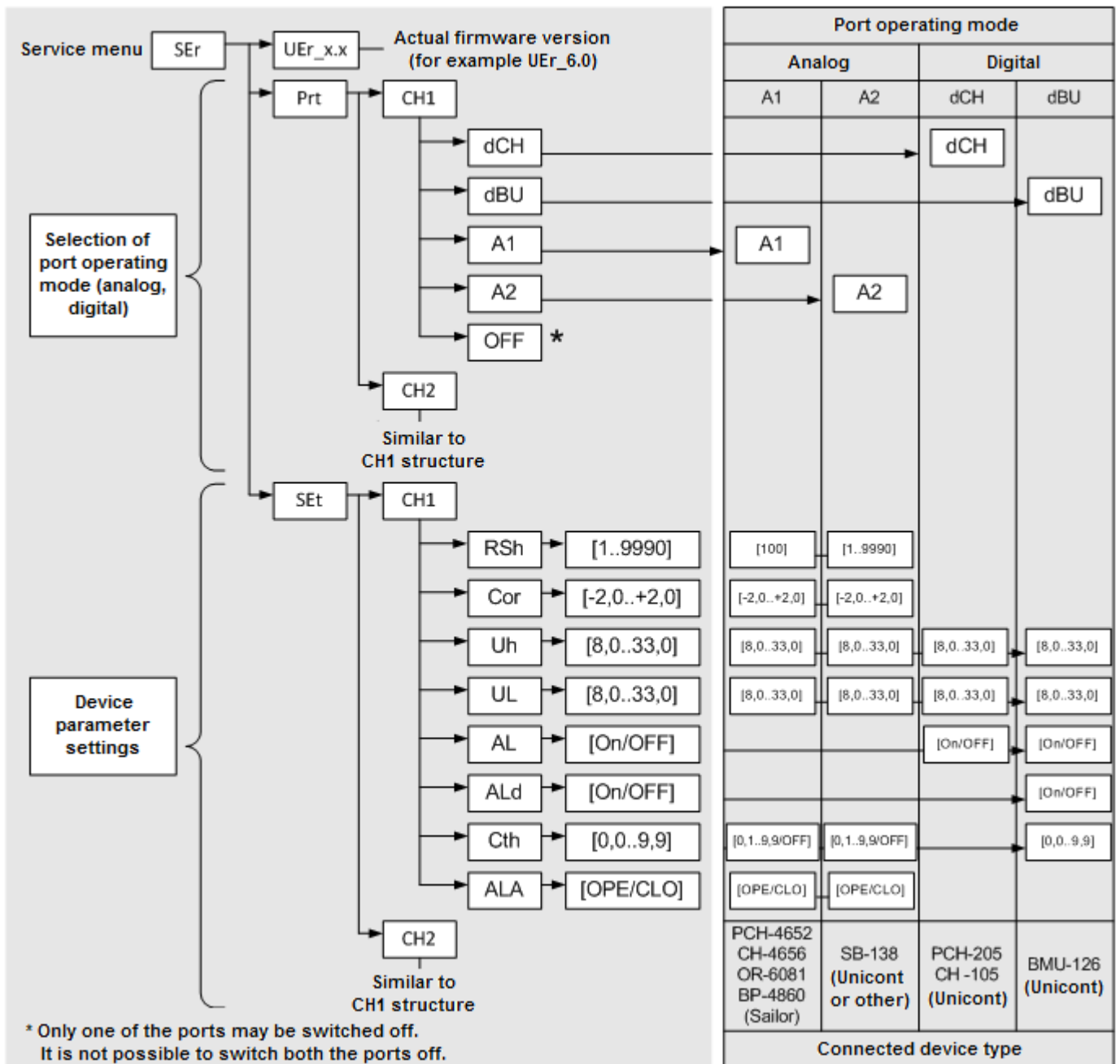


Fig. 9. General structure of the service BCP-136 menu.

Items of the battery panel menu and their functions are briefly described in Table 6 and Table 7.

Table 6. Description of the main menu items

Menu item	Description
I	Selection of battery charging current (varies in a range of 0.1 – 20.0 A)
U	Selection of battery charging voltage (varies in a range of 9.0 – 30.0 V)

IMPORTANT! Prior to set the charging current and voltage, it is necessary to get familiar with the corresponding recommendations of the battery manufacturer.

Note! It is necessary to take into account that charging current and voltage (their maximal and minimal values) are limited in dependence of the connected device type (ref. CH-105 and PCH-205 operating manuals).

Note! In case the configured parameters do not meet the selected operating mode of the port, the error message ("Err") is shown by the indicator.

Table 7 Description of the service menu items.

Menu item	Description	Note	
UEr_x.x	Actual firmware version	x.x (number)	
Prt	Selection of operating mode of the battery panel port (PORT 1, PORT 2)		
	dCH	Digital port operating mode (via RS-422 interface)	Connection of external devices CH-105, PCH-205
	dBU	Digital port operating mode (via RS-422 interface)	Connection of BMU-126 (digital shunt)
	A1*	Analog port operating mode	Connection of ZU 6081, 4652, 4656, Sailor. The panel is connected to the battery panel BP-4680 terminal, RSh = 100 $\mu\Omega$ (does not change)
	A2*	Analog port operating mode	Connection of SB-138
	OFF	The port is switched off	External device is not connected
Set	Selection of the battery panel settings related to reception of analog data from external devices connected to the analog panel interface (PORT 1, PORT 2)		
	RSh*	Shunt resistance setting 1...9990 $\mu\Omega$	For analog shunt SB-138, set RSh = 150 $\mu\Omega$
	Cor*	Zero current correction (varies in a range of -2.0 – +2.0 A)	
	ALA*	Alarm setting for connection/disconnection of terminals	
	Uh	Upper voltage alarm limit (varies in a range of 8.0 – 33.0 V)	Activation of alarm if voltage exceeds the specified value
	UL	Lower voltage alarm limit (varies in a range of 8.0 – 33.0 V)	Activation of alarm if voltage falls below the specified value
	Selection of the battery panel settings related to alarms of BMU-126 connected to the digital panel interface (PORT 1, PORT 2)		
	AL	Activation/deactivation of all possible alarms	
	ALd	Activation/deactivation of alarm caused by too high discharge current	Used only if the battery panel is connected to BMU-126
	Cth	Maximal discharge current alarm limit (varies in a range of 0.0 – 9.9 A)	Activation of alarm if voltage exceeds the specified value (accessible for dBU and ALd – ON port connection types; accessible for A1 and A2 connection types, provided that the specified value is higher than 0.0)
* – These menu items are supported by BCP-136 only			

8.3 *Battery panel configuration*

8.3.1. Port operating mode configuration (enter the service menu)

In order to configure the port for operation with the connected external device type, perform the following actions:

- press ▲ and ▼ buttons simultaneously and hold them pressed for 5 seconds, until "Prt" message is shown on the left indicator.
- press ENTER to confirm the selection ("Prt" message is shown on the left indicator).
- by means of ▲ and ▼ buttons select the port ("CH1" or "CH2" message shown on the right indicator, which corresponds PORT1 and PORT2 of the panel, respectively), for which it is necessary to specify a connection type.
- press ENTER to confirm the selection.
- by means of ▲ and ▼ buttons select the necessary connection type (dCH, dBU, A1, A2). Accessible connection options are described in Table 7.
- press ENTER to confirm the selection.
- Press MENU button until the panel is switched to the primary operating mode.

8.3.2. Switching off of a port

In order to switch a port off, perform the actions described in section 8.3.1, but select OFF instead of dCH, dBU, A1, or A2.

8.3.3. Analog interface configuration (accessible for BCP-136 only)

In order to use the battery panel analog interface, it is necessary to specify several additional parameters (ref. section 7) as follows:

- press ▲ and ▼ buttons simultaneously and hold them pressed for 5 seconds, until "Prt" message is shown on the left indicator.
- by means of ▲ and ▼ buttons select "SEt" message on the right indicator.
- press ENTER to confirm the selection ("SEt" message is shown on the left indicator).
- by means of ▲ and ▼ buttons select the port ("CH1" or "CH2" message shown on the right indicator, which corresponds PORT1 and PORT2 of the panel, respectively), for which it is necessary to specify a connection type.
- press ENTER to confirm the selection.
- by means of ▲ and ▼ buttons select the necessary parameter: RSh, Cor, Uh, UL, Cth, or ALA. Accessible parameters are described in Table 7.
- press ENTER to confirm the selection
- by means of ▲ and ▼ buttons set the necessary value (ref. Table 7).
- press ENTER to confirm the selection
- Press MENU button until the panel is switched to the primary operating mode.

8.3.4. Digital interface configuration (connection of BMU-126)

In order to use the battery panel along with BMU-126 connected to the digital interface, it is necessary to specify several additional parameters as follows:

- press ▲ and ▼ buttons simultaneously and hold them pressed for 5 seconds, until "Prt" message is shown on the left indicator.
- by means of ▲ and ▼ buttons select "SEt" message on the right indicator.
- press ENTER to confirm the selection ("SEt" message is shown on the left indicator).
- by means of ▲ and ▼ buttons select the port ("CH1" or "CH2" message shown on the right indicator, which corresponds PORT1 and PORT2 of the panel, respectively), for which it is necessary to specify a connection type.
- press ENTER to confirm the selection.
- by means of ▲ and ▼ buttons select the necessary parameter: AL, ALd, Cth, Uh, or UL. Accessible parameters are described in Table 7.
- press ENTER to confirm the selection
- by means of ▲ and ▼ buttons set the necessary value (ref. Table 7).
- press ENTER to confirm the selection
- Press MENU button until the panel is switched to the primary operating mode.

8.3.5. Charging current setting (enter the main menu)

In order to set the necessary charging current, perform the following actions:

- press MENU button until "I" message is shown on the left indicator.
- by means of ▲ and ▼ buttons set the necessary charging current.
- press ENTER to save the specified value in the nonvolatile memory of the battery panel.

8.3.6. Charging voltage setting

In order to set the necessary charging voltage, perform the following actions:

- press MENU button until "U" message is shown on the left indicator.
- by means of ▲ and ▼ buttons set the necessary charging voltage.
- press ENTER to save the specified value in the nonvolatile memory of the battery panel.

8.3.7. Indicator brightness adjustment

Brightness can be adjusted when panel operates in the standby (primary) mode.

1. Decreasing the brightness

In order to decrease the brightness by one level, press ▼ button. In order to decrease it by several levels (or down to the minimum), press this button multiple times or hold it.

2. Increasing the brightness

In order to increase the brightness by one level, press ▲ button. In order to increase it by several levels (or up to the maximum), press this button multiple times or hold it.

Note! Upon each activation (startup) of the battery panel the brightness is set to the maximal level regardless of the settings made prior to the last switching off.

8.3.8. Test function activation

In order to check if the visual and sound elements (LEDs, indicators and the beeper), the panel supports the Test function. In order to activate it, perform the following actions:

- press MUTE/TEST button and hold it pressed for 3 seconds, until all LEDs are switched on, and the built-in beeper emits continuous sound,
- release MUTE/TEST button, and the battery panel will return to the primary operating mode.

8.3.9. ALARMS ACKNOWLEDGEMENT

In case of alarm (ref. Table 4), press MUTE button to switch the sound off.

The beeped stops emitting sound. Visual alarm devices will remain functioning until the cause of the alarm is remedied. However, they start to light continuously instead of flashing.

8.3.10. Reading the actual battery temperature

The battery panel supports the special function for measuring of charged battery temperature. It receives the corresponding data from CH-105 or PCH-205 via the digital interface. These devices monitor the battery temperature by means of digital sensors (mechanically) fixed directly on the batteries and (electrically) connected to CH-105 or PCH-205.

In order to activate this function, perform the following actions:

- While the battery panel operates in the primary standby mode, press ENTER. This results in that letter "t" appears on the left digital indicator, while the right one displays actual battery temperature. In absence of the temperature sensor the right indicator shows "-- --" message.
- 10 seconds after that or upon repeated pressing of ENTER the panel will return in the primary standby operating mode, and the indicators will display actual charging current and voltage.

8.3.11. Factory panel settings

The battery charged is delivered configured for operation with PCH-205 or CH-105. It is assumed that the devices will be connected to port 1. By default, the menu is configured as follows:

Default configuration

Setting	Item	Value
PORT operating mode	CH1	dCH
	CH2	OFF

Factory (default) panel settings if the analog channel is activated.

A1 parameter (upon activation)	RSh	100 $\mu\Omega$
	Cor	- 0.9 A
	Uh	29.5 V
	UL	23.5 V
	Cth	OFF
	ALA	Ope
A2 parameter (upon activation)	RSh	150 $\mu\Omega$
	Cor	- 0.9 A
	Uh	29.5 V
	UL	23.5 V
	Cth	OFF
	ALA	Ope

9. Transportation and Storage

The device shall be stored in heated space at air temperature of +5 °C to +35 °C (maximum values of -55 °C to +70 °C), at relative humidity of air not exceeding 95 % at temperature of +25 °C and content of dust, oil, moisture and aggressive admixtures in the air not exceeding the norms envisaged by GOST 12.1.005-88 for the working zone of production areas.

The device shall be transported in transport container of the manufacturer in closed transport.

Means of transport:

- automobile and railway closed transport (covered wagons, universal containers)
- by air (in pressurized and heated bays of airplane)
- by sea (in dry service spaces).

The device shall be transported in accordance with the transport regulations in force for the particular transport.

During handling operations and transportations strictly observe the requirements of handling marks on boxes and do not allow bumps and impacts which can affect preservation and serviceability of the device.

Packed devices shall be reliably secured in vehicles.

After storage in stores or transportation at temperature below +10 °C the devices shall be unpacked only in heated spaces after keeping them unpacked in under normal climatic conditions for 12 hours.

10. Recycling

Do not recycle the packing of a new product, its parts with defects identified during its operation as well as the overage product as common household waste since they contain materials and raw materials suitable for their recovery.

Decommissioned and unused components should be delivered to a specialized waste collection center licensed by local authorities. You can also send the overage equipment to the manufacturer for its further recycling.

Proper recycling of the product components will prevent potential negative consequences for human health and the environment, as well as provide recovery of the product component materials while substantially saving on energy and resources.

The product does not endanger human life and health or the environment during and after its service life.

This product should be recycled following the requirements applicable to electronic equipment.



Products marked with a crossed-out recycle bin should be recycled apart from common household waste.

11. Warranty

The manufacturer guarantees the unit BCP-136 complies with this manual provided that the operation, transportation and storage conditions are adhered to during the warranty period.

The unit's warranty period expires 24 months from the date of its shipping from the manufacturer's storehouse.

Within the warranty period, the owner is entitled for a free repair, or a replacement of a separate part, provided that the malfunction occurred through the manufacturer's fault.

Warranty repair is provided if the unit is submitted with the manufacturer's label and a legible serial number available on it, as well as this operating manual.

The manufacturer is not responsible and cannot guarantee the unit's operation:

1. After the warranty period is over;
2. In case of the failure to observe the unit's operation, transportation, storage and installation rules and conditions;
3. If the unit is in an unmarketable condition, or has a damaged body, and other causes beyond the manufacturer's control;
4. If self-made electrical devices were used.
5. If there was an attempt to repair the unit by a person who is not an authorized representative of the manufacturer.

If the owner loses this operating manual or the manufacturer's label with a serial number, the manufacturer shall not provide their copies, and the owner shall be divested of the right for a free repair during the warranty period.

Upon the warranty expiry, the manufacturer shall facilitate the repair of the unit at the owner's expense.

Note: in case of warranty repair, the unit's disassembling from the installation site and its delivery to the manufacturer's service center are done at the owner's expense.

Visit the manufacturer's website www.unicont.spb.ru (section "support/warranty") to find:

- forms to fill in claims,
- full warranty description;
- full description of the warranty service rendering procedure.

The manufacturer service center's address and contact details:

Unicont SPb, Ltd.

Bld. 26E Kibalchich Str., Saint Petersburg, 192174, Russia

tel.: + 7 (812) 622 23 10, +7 (812) 622 23 11

fax: +7 (812) 362 76 36

e-mail: service@unicont.spb.ru

12. DATE OF PACKING

Battery control panel _____ BCP-136 _____ № _____
 name of article designation serial number

Packed _____
 Manufacturer

according to the requirements of the current technical documentation.

_____ post _____ signature _____ clarification of signature

_____ year, month, day

13. ACCEPTANCE DETAILS

Battery control panel _____ BCP-136 _____ № _____
 name of article designation serial number

was manufactured and accepted in accordance with the regulatory requirements of the state standards and applicable technical documentation, and is suitable for operation.

Quality control representative

Stamp _____
 here signature clarification of signature

_____ year, month, day

14. DATE OF COMMISSIONING

Battery control panel _____ BCP-136 _____ № _____
 name of article designation serial number

The unit has been put into operation.

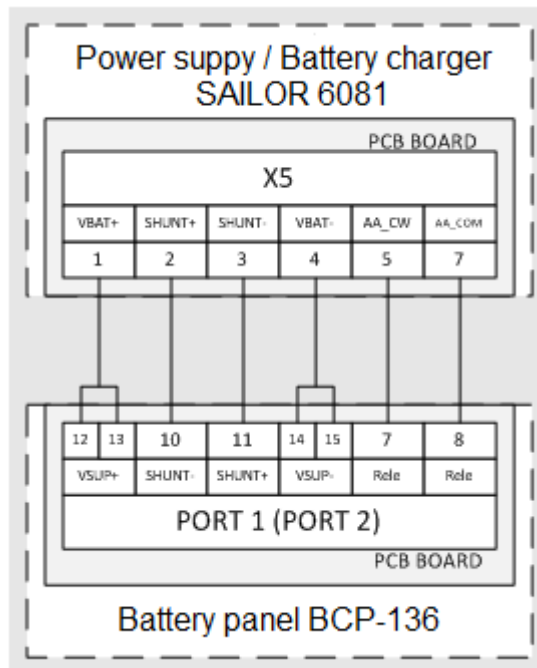
Date of installation: _____

Place of installation: _____

Person in charge of installation: _____

APPENDIX A SAILOR 6081 TO BCP-136 CONNECTION EXAMPLE

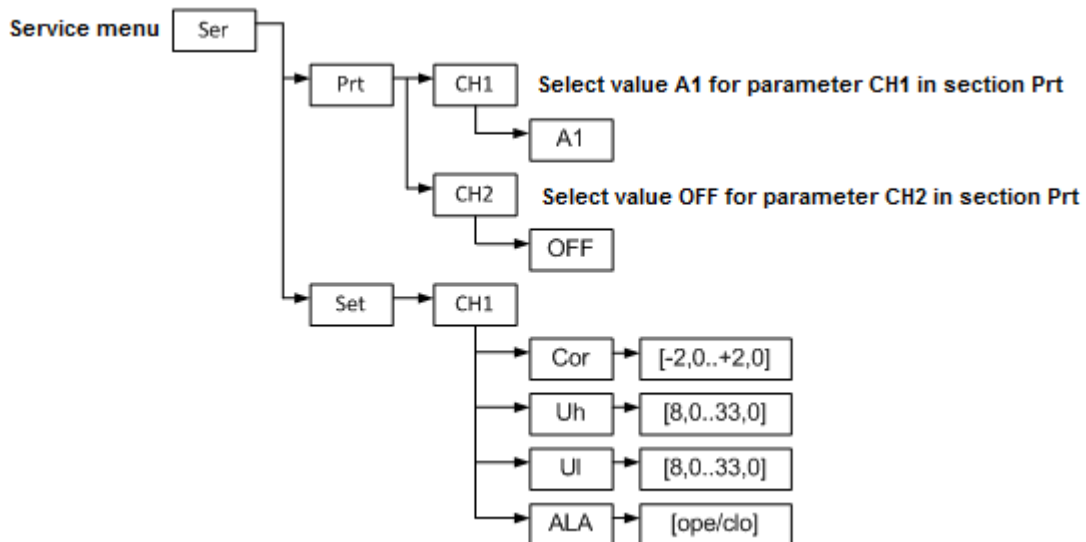
Connection diagram



The device is connected to port 1 or 2. Settings for the first port are listed below.

BCP-136 configuration

In order to enter the service menu, press ▲ and ▼ buttons simultaneously and hold them pressed for 5 seconds, until "Prt" message is shown on the left indicator.



Parameter Cor B (of section Set) of menu item CH1 allows to set the current offset (in order to correct the current readings).

Parameters Uh and Ul (of section Set) of menu item CH1 allow to set the upper and the lower alarm limits (for the minimal and the maximal voltage levels).

Parameter ALA (of section Set) of menu item CH1 allows to set the alarm level (for connection and disconnection of terminals).