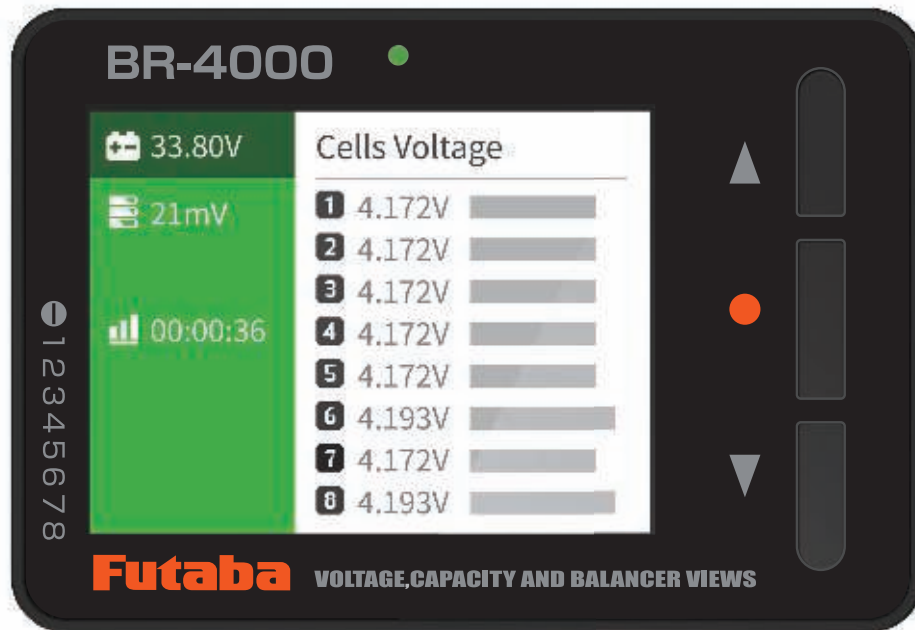


BR-4000

VOLTAGE, CAPACITY AND BALANCER VIEWS



Instruction Manual

Thank you for purchasing the BR-4000.

This product is specifically designed for RC, not appliances in other areas. The total voltage of the battery pack is displayed, and the bar graph and percentage of the remaining amount are displayed. In the case of a lithium battery pack with a balance connector, it is also possible to display the voltage for each cell. Futaba accepts no liability for damage, injury, or any legal responsibility incurred directly or indirectly from the use of this product.

We strongly recommend you read our user's guide before using BR-4000.

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Warnings and safety notes

Securely use this product. Please observe the following safety precautions at all times.

Explanation Of Symbols

Please observe the following precautions to ensure the safe use of this product.

Meaning of Special Markings: The parts indicated by the following marks in this manual require special attention from a safety standpoint.

Danger

Procedures which may lead to a high probability of dangerous conditions and cause death/serious injury, if not carried out properly.

Warning



Procedures which may lead to dangerous conditions or cause death/serious injury to the user if not carried out properly, or procedures where the probability of superficial injury or physical damage is high.

Caution

Procedures where the possibility of serious injury to the user is small, but there is a danger of injury or physical damage, if not carried out properly.

Fire Hazard!

When there is a possibility of ignition under certain conditions.

Symbols: : Prohibited : Mandatory

Warning **Fire Hazard!**

Never use this product near flammable materials.

■It is very dangerous if sparks occur when connecting or disconnecting the battery.

Before using it, be sure to read all warnings and instructions regarding this product and your battery. Before connecting the battery, pay attention to the battery safety warning and ensure all parameters are set correctly.

■Incorrect settings can cause fire, property damage, or personal injury.

Be sure to remove the battery after use.

■If it is connected for a long time, it is very dangerous if it catches fire due to over-discharge.

Be careful not to pinch the battery cord or short it.

■If it is short-circuited, the battery may overheat or catch fire.

Caution

Keep this product away from heat sources and humid environments during use. Ventilation and heat dissipation are required.

Do not connect a battery with an output voltage value that exceeds the operating range voltage of this product.

Never get this product wet.

■The inside is a precise electronic circuit, and intrusion of rainwater, etc. may cause malfunction. If it gets wet, be sure to send it for repair.

Do not leave this product within reach of small children.

<Battery Pack Care>

For safety and to extract maximum performance from the battery pack used, observe the following points:

- Discharge and store the battery pack following the battery instruction manual.
- Do not discharge a battery of more than 80%. (Remaining capacity no less than 20%)
- Use the specified charger to charge the battery pack.

<Battery Recycling>

A used battery is a valuable resource. Insulate the battery terminals and dispose of the battery by taking it to a battery recycling center.

Specifications

(Specifications are subject to change without prior notice.)

Input voltage XT60i connector: 5.0V-15V

Input voltageXH 2.54 Balance port (1S): MAX 15V

(2-8S): MAX 4.8V par cell

voltage measurement accuracy: $\pm 0.005V$ @ 4.2V

Balancing cells accuracy: $< 0.005V$

Support USB charging: QC 2.0/3.0, BC1.2, Maximum output12V / 2A

Support battery: LiHv (1-8S) / LiPo (1-8S) / LiFe(1-8S)

Lilon (1-8S) / NiMH/Cd(3-10S)

Dimension: 80 X 55 X 19 mm

Weight: 59g

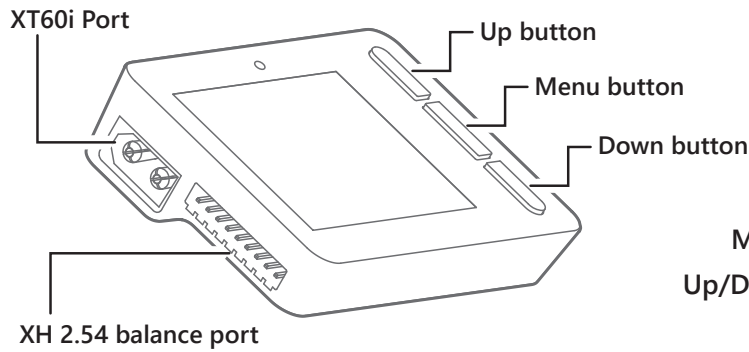
Operating temperature: 0-40°C

Operating humidity: 10%-90%RH (No condensation)

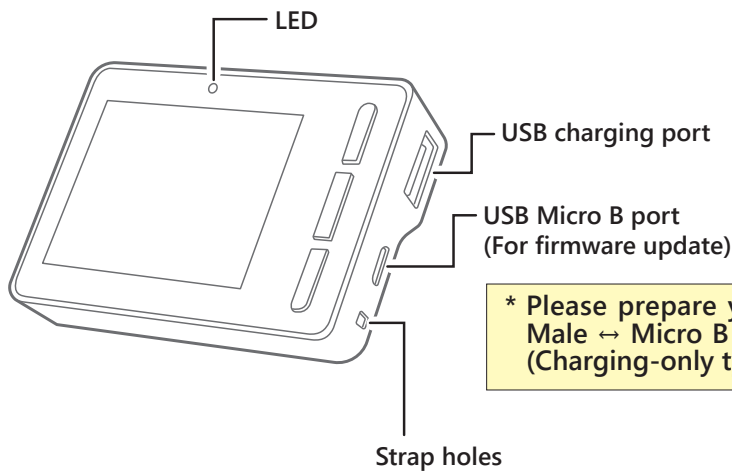
Storage temperature: -20-60°C

Storage humidity: 5%-90%RH (No condensation)

Nomenclature



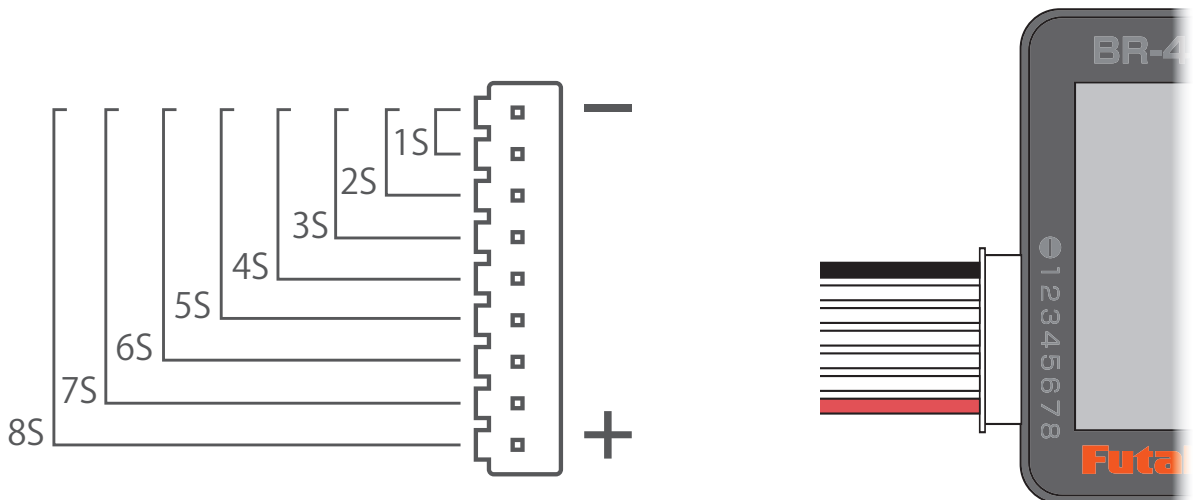
Menu button : Enter setting menu.
Up/Down button : Go up down, choose different setting options.



* Please prepare your cable for updating. USB (A) Male ↔ Micro B Male charging/data transfer type (Charging-only type cannot be available.)

Balance port

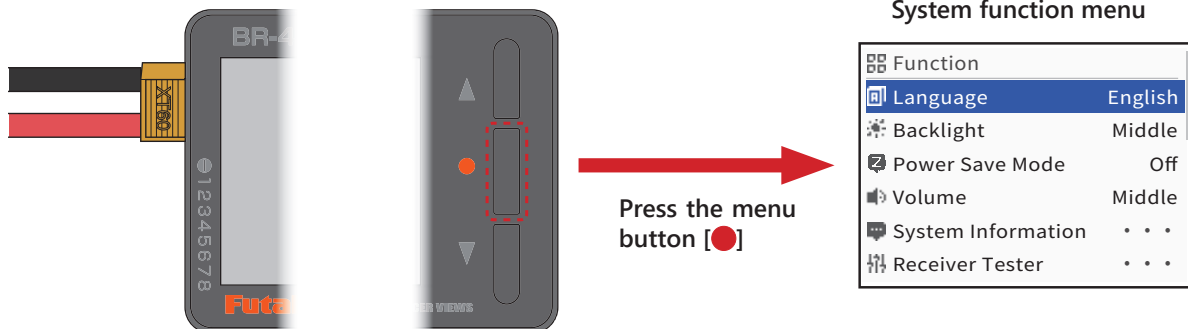
This product is suitable for the lithium battery, which has the XH 2.54 balance port, connect the balance port align from BAT- as shown in the figure. When connecting the 1S battery, the input Voltage from XT60i must be more than 5V.



System function screen

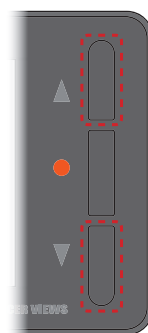
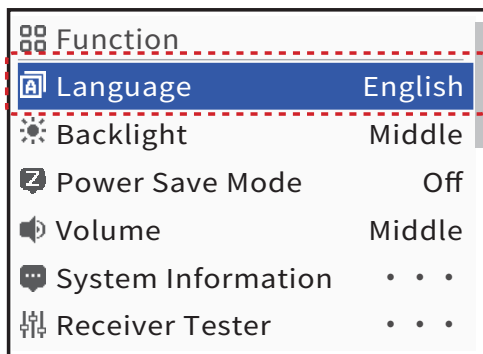
Connect the battery to the XT60i port or balance port of BR-4000 and press the menu button to display the following system function screen.

Connect the battery to the XT60i port or the balance port.

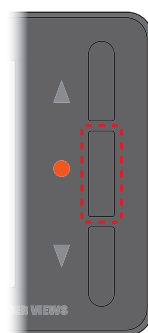
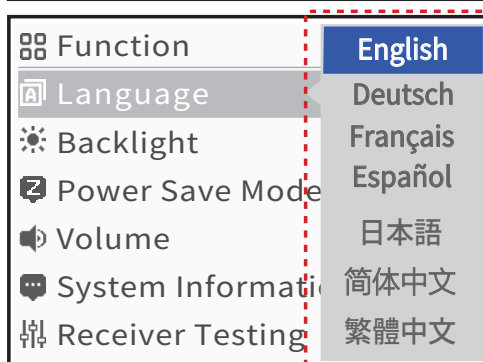


How to set system functions

* The following is an explanation using the "Language" setting as an example.

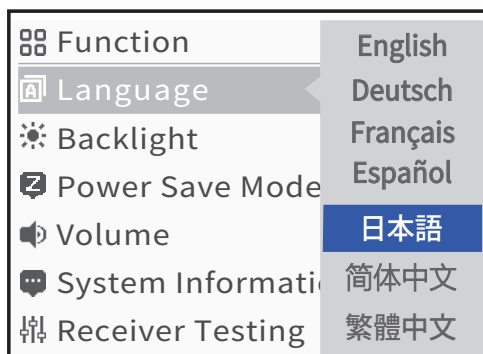


Press the up button [▲] or the down button [▼] to move the menu on the system screen



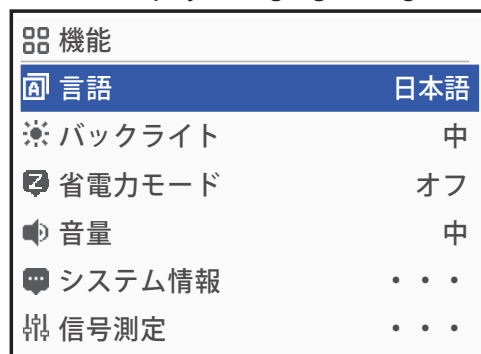
Once you have navigated to the item you want to use, press the Menu button [●] to display the "Language" list.

Use the up button [▲] / down button [▼] to select from the list, and press the menu button [●] to confirm.

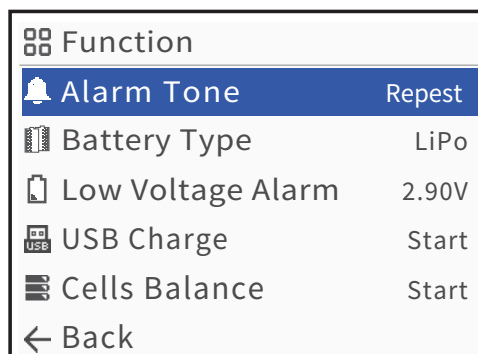
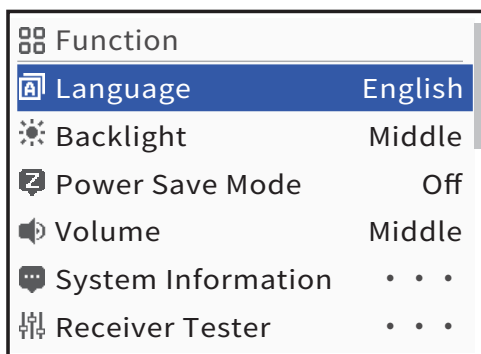


Press the menu button [●]

The displayed language changes.



Function menu



Function	Settings
language	Select from English /Deutsch /Français /Español / 日本語 (Japanese)/ 中国語 簡体 (Chinese Simplified) / 中国語 繁体 (Traditional Chinese)
Backlight	Low / Meddle / High 3 level setting
Power Save Mode	On--The backlight turns off automatically after no operation for 2 minutes. The backlight turns off automatically if there is no operation for 20 seconds while the balance function operates. (The LED blinks when the backlight is off.) Off--Backlight is always on
Volume	Select from Off / Low / Middle / High. (The alarm sound cannot be turned off.)
System Information	Shows the firmware version.
Receiver Tester	Connect the receiver signal to the balance port to detect the PWM output and pulse width. It also supports S.B protocol analysis, servo control data analysis of up to 18 channels, and failsafe servo tests.
Alarm Tone	Off Single--- The alarm sounds only once. Repeat-- The alarm sounds every minute.
Battery Type	Select from 4 types: LiHV / LiPo / Lilon / LiFe.
Low Voltage Alarm	*When connecting to the XT60i port, select the voltage, 5-30V. *When connecting to a balanced port, the user selects a single cell voltage of 2.5 to 3.9V as the boundary value for the low voltage alarm.
USB Charge	If you connect the battery to the XT60i port, you can charge the battery from the USB charging port. (Start / Stop)
Cells Balance	If you have the battery connected to the balance port, you can perform cell balancing. (Start / Stop)
Back	Exit the function menu.

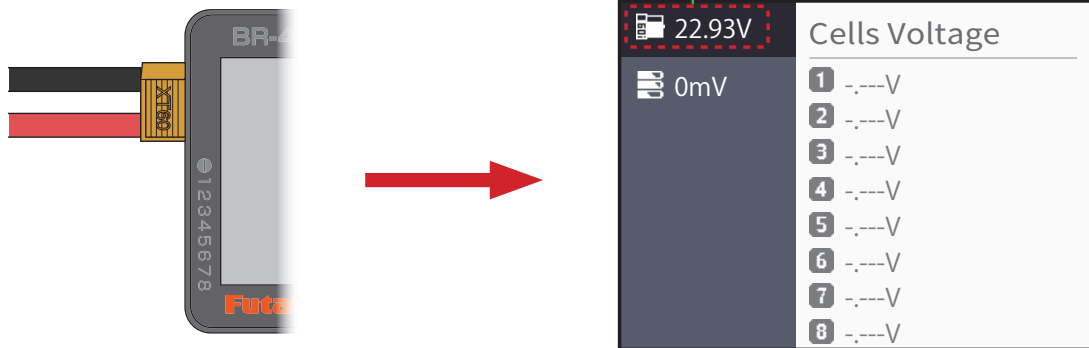
Measurement display

<Battery connection>

• When a battery is connected to the XT60i port

If you connect the battery to the XT60i port, only the total voltage is displayed. To check the voltage of each cell, you need to connect the balance connector of the battery to the balance port.

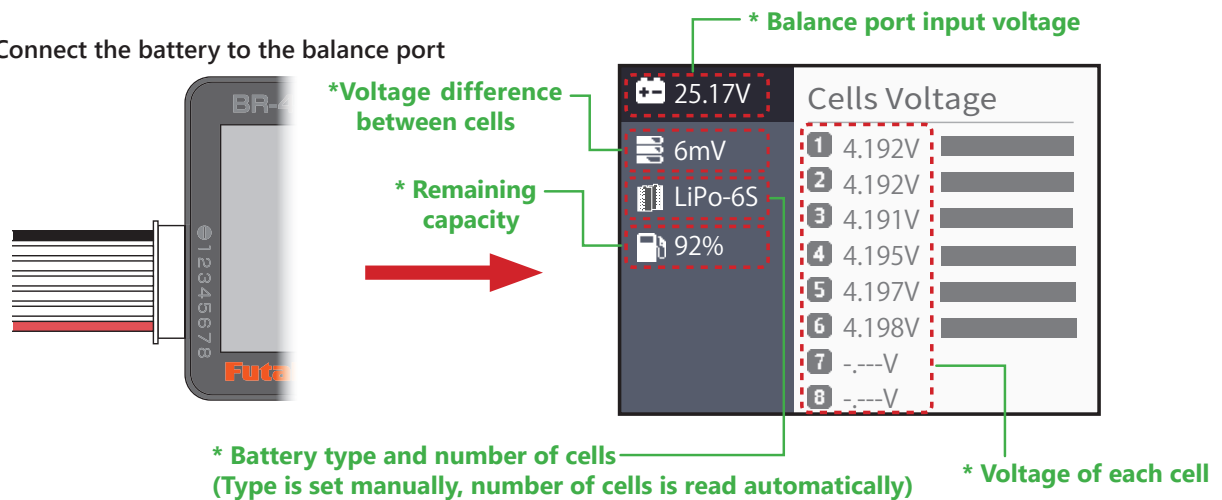
* Connect the battery to the XT60i port



• When a battery is connected to the balance port

When you connect the battery to the balance port, it displays the total battery voltage, the maximum voltage difference between each cell, and the voltage of each cell.

* Connect the battery to the balance port



The icon displayed at the top of the left side of the screen differs depending on the port where the battery is inserted.

You will see the following icons when you connect the XT60i port alone or both the XT60i port and the balanced port.



If only the balance port is connected, the icon below will be displayed.



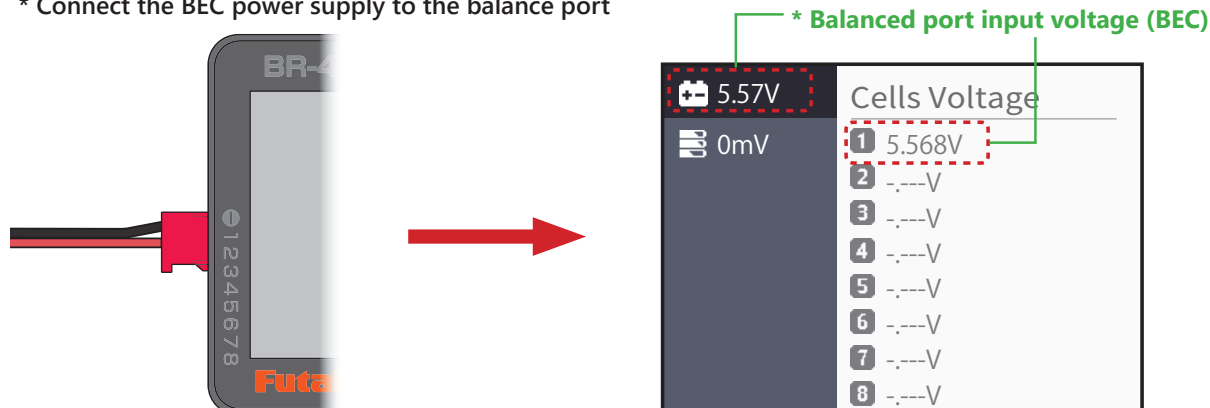
* If the battery is connected only to the balance port, you can start cell balancing by briefly pressing the menu button [●] twice. (page.11)

* If the battery is connected to the XT60i port, you can start USB charging by briefly pressing the menu button [●] twice. (page.13)

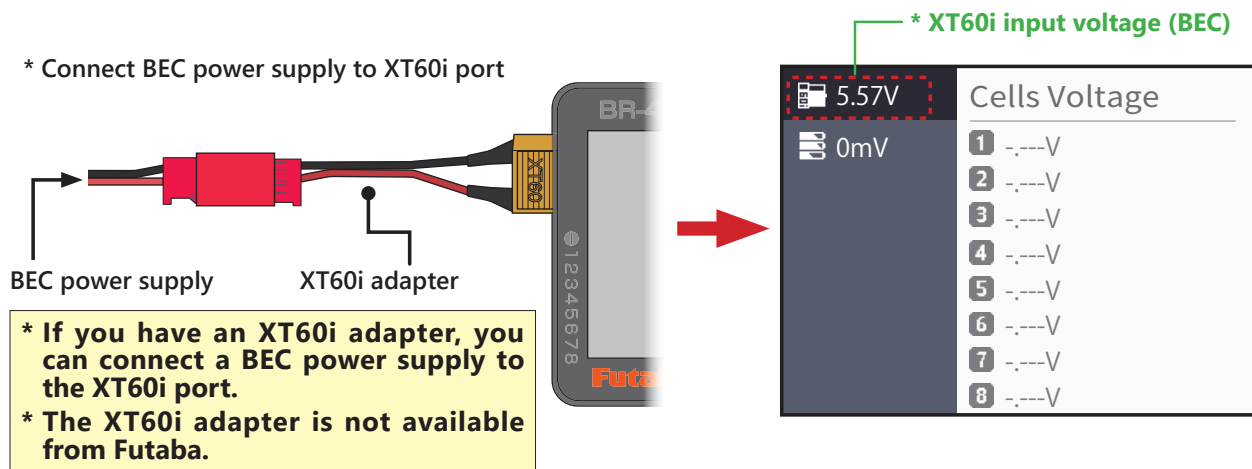
<BEC power supply connection>

When you connect a BEC power supply to the XT60i port or balanced port, it displays the BEC output voltage.

* Connect the BEC power supply to the balance port



* Connect BEC power supply to XT60i port

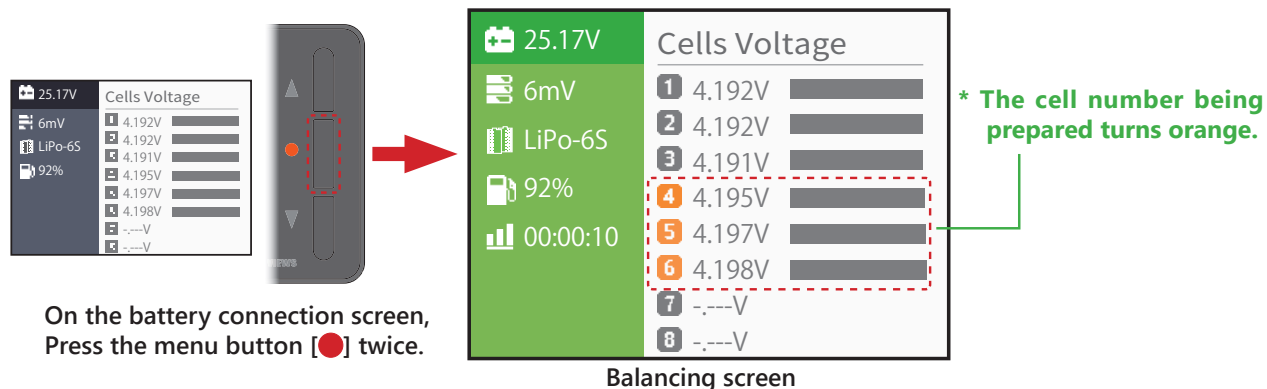


Cell balance

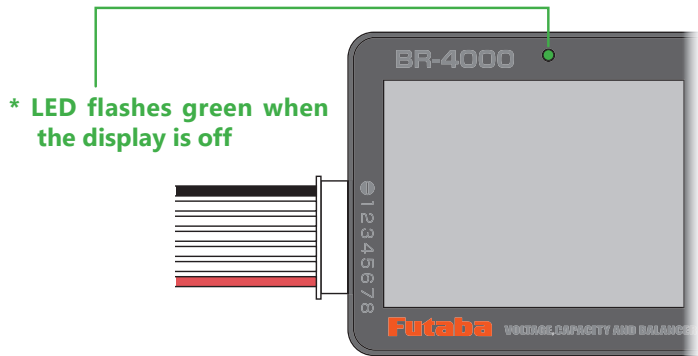
If the battery is connected to the balance port, you can start cell balancing.

<Start of cell balance>

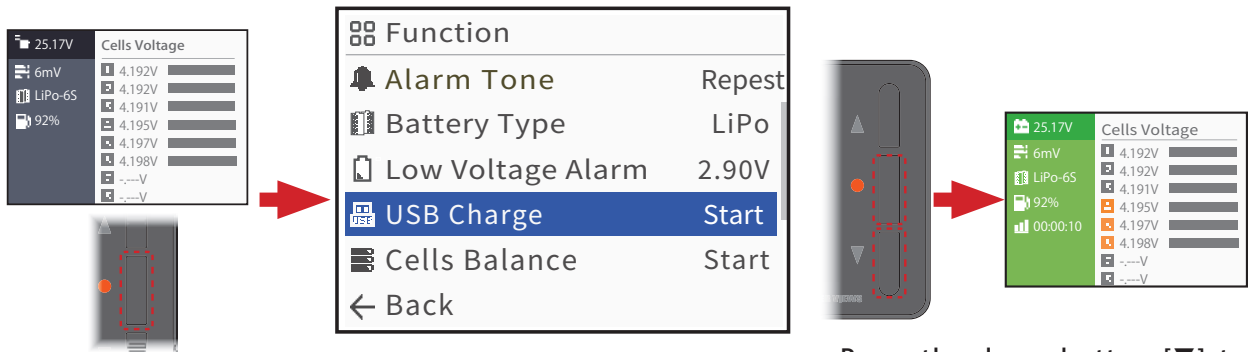
If the battery is connected only to the balance port, briefly press the menu button [●] twice to start cell balancing. Alternatively, select "Cell Balance" from the "Function" menu, check the "Start" display, and press the menu button [●] once. During the cell balancing operation, the left side of the screen turns green, and the cell number being prepared on the right side of the screen is displayed in orange.



When the "Power Save Mode" function is on, if no operation is detected during operation, the display will turn off, and the LED will start blinking green to signal that balancing is in operation.



If the battery is connected to the XT60i port, press the menu button [●] once to display the system function screen. Use the down button [▼] to move to cell balance, and press the menu button [●] once to start cell balancing.

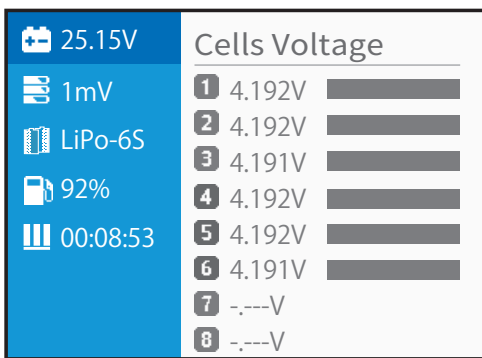


On the battery connection screen, Press the menu button [●] once to display the system function screen.

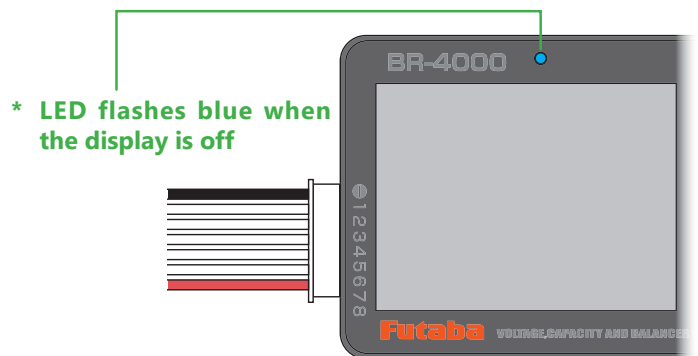
Press the down button [▼] to move to cell balance, and press the menu button [●] once to start cell balancing.

<End of cell balance>

When cell balancing is complete, the left side of the screen turns blue, and an alarm sounds. This alarm sound will continue to sound at regular intervals until the cell balance is stopped by the following operation. While the display is off, the LED will start blinking blue to signal the end of balancing.



Balancing end screen



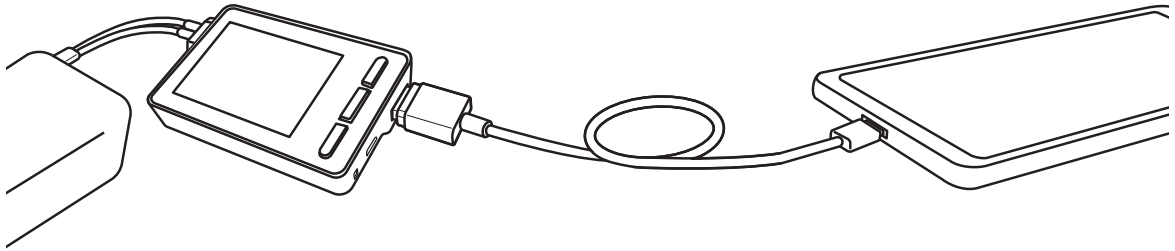
<Stop cell balance>

Pressing the menu button [●] twice briefly during or after cell balancing is in operation will stop cell balancing and return you to the battery connection screen.

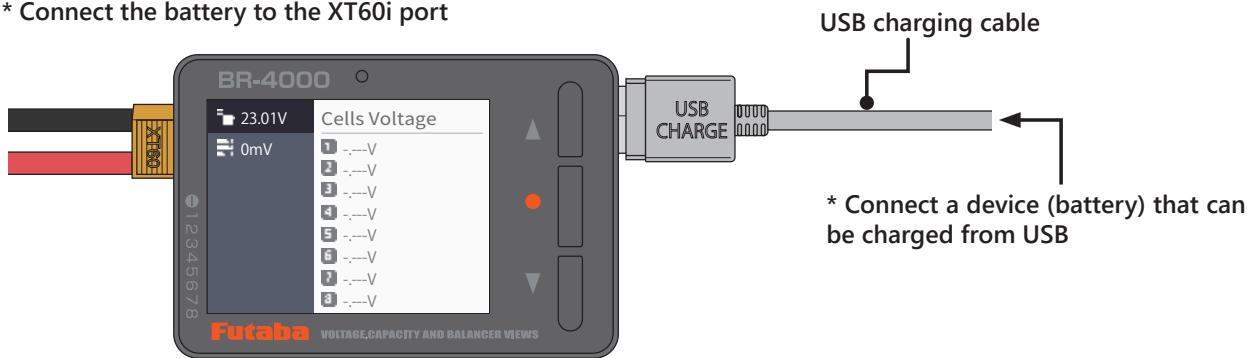
! After balancing is complete, stop immediately and be sure to remove the battery.
 ■ If it is connected for a long time, it is very dangerous if it catches fire due to over-discharge. Also, the battery will deteriorate.

USB Charge

Using the battery connected to the XT60i connector as a power source, you can charge a device (battery) that supports USB charging from the USB charging port.

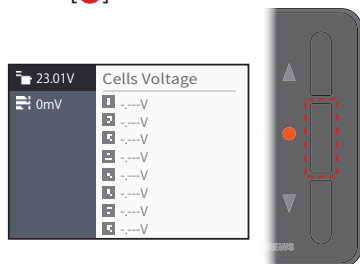


* Connect the battery to the XT60i port



<Start of USB charging>

Connect the battery to the XT60i connector, connect the battery to the USB charging port with the charging cord, and device or battery press the menu button [●] twice to start USB charging. Alternatively, select "USB Charge" from the "Function" menu, check the "Start" display, and press the menu button [●] once.



On the battery connection screen, Press the menu button [●] twice.

* XT60i port input voltage

* XT60i port input battery cell voltage difference

* USB connection battery information and total charge time

USB Charging

- 23.01V
- 0mV
- 00:03:48
- 6.3V
- 2.0A
- 12.6W
- 3.60V / Cell

* USB port output voltage

* Charging current

* Power output

* XT60i port input alarm voltage

USB connection device (battery) information:



: The device (battery) connected to the USB charging port supports Qualcomm QC 2.0/3.0



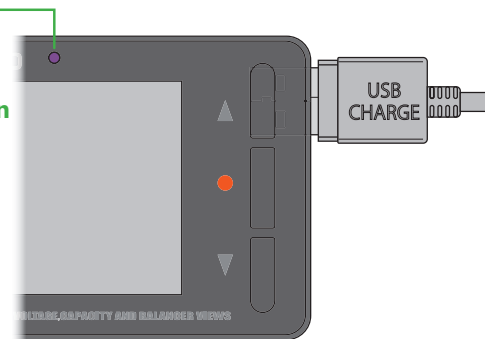
: The device (battery) connected to USB charging port does not support Qualcomm QC 2.0/3.0

XT60i port input alarm voltage:

- * If a NiMH or Pb battery is connected or the balance port is not connected, set it to the minimum operating voltage (5.0V) of BR-4000.
- * When the balance port is connected Set to the single cell voltage set in "Low voltage alarm" in the system function menu.

When the "Power Saving Mode" is on, the display turns off after 2 minutes of inactivity, and the LED starts blinking purple to indicate that USB charging is in operation.

* LED flashes purple when the display is off



USB charging will stop in the following cases.

- * If the current exceeds 3A, USB charging will stop.
- * USB charging will stop when the power exceeds 26W.

<Stop USB charging>

Usually, the device (battery) does not accept charging from the BR-4000 once charging is complete, but the USB charging operation of the BR-4000 itself has not stopped.

To stop charging, use the following method.

Press the menu button [●] twice briefly during or after USB charging is in operation to stop USB charging and return to the battery connection screen. Alternatively, select "USB Charge" from the "Function" menu, check the "Stop" display, and press the menu button [●] once.

❗ After charging is complete, stop charging immediately and be sure to remove the battery from the XT60i port.

- If connected for a long time, it is very dangerous if it catches fire due to over-discharge. Also, the battery will deteriorate.

Receiver signal testing

If you connect the receiver's channel connector or S.BUS connector to the balanced port of BR-4000 with the optional DSC cable for T7PX / 10PX, you can check the RC control signal's PWM and S.Bus signal.

DSC cable for T7PX / 10PX

Connect to the receiver

Receiver Tester

- PWM
- S.Bus
- Back

*To check the PWM signal, connect it to any channel connector of the receiver.
*To check the S.BUS signal, connect it to the S.BUS connector of the receiver.

<PWM>

You can check the RC control signal PWM of the system. The servo receiver output signal is connected to the balance port, and the BR-4000 detects the PWM output frame rate (cycle) and pulse width.

Receiver Tester

- PWM
- S.Bus
- Back

Use the up button [▲] or down button [▼] to move to PWM, and press the menu button [●] once to display PWM.

PWM 5.10V

R 0%

F 334Hz

W 1520us

<S.BUS>

You can check the S.BUS signal. The S.BUS output signal is connected to the balance port, and the BR-4000 displays up to 18 channels of servo control data, allowing you to check the signal position during F/S operation.

Receiver Tester

- PWM
- S.Bus
- Back

Use the up button [▲] or down button [▼] to move to S.BUS, and press the menu button [●] once to display S.BUS.

S.Bus

1	-2		9	128	
2	0		10	128	
3	97		11	0	
4	0		12	0	
5	-46		13	0	
6	97		14	0	
7	128		15	0	
8	19		16	0	

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