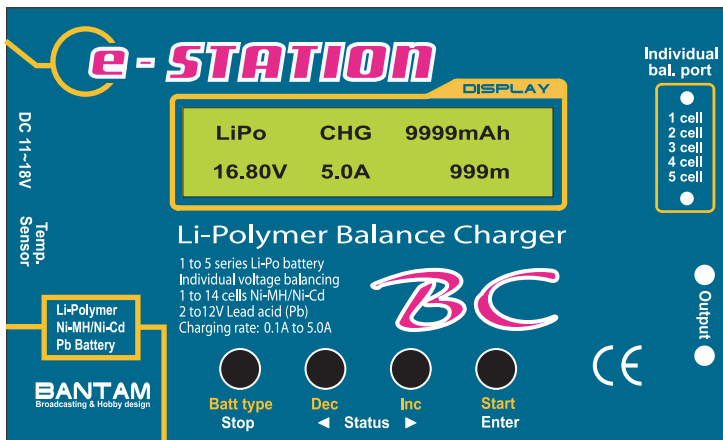


Operating Manual

e - STATION BC5

Microprocessor controlled high-performance rapid charger/balancer for NiCd/NiMH/Li-polymer/Pb batteries with cell voltage balancer.

Charge current up to 5A, 1 to 5 series of Li-poly, 1 to 14 cells of NiCd/NiMH, 2 to 12V of Lead-acid (Pb)



Thank you for purchasing the e-STATION BC5. You get a rapid charger that is computerized with a high performance microprocessor and specialized operating software. It can maintain your battery at its best condition and also control them safely.

Please read this entire operating manual completely and attentively as it contains a wide variety of specific programming and safety information.

You need to keep this manual in a safe place, and be sure to pass it on to the new owner if you ever dispose of BC5.

● Special features

- Voltage balancer for Li-polymer battery inside

BC5 has an individual-cell-voltage balancer inside. So it does not need any balancer separately when charging Li-po battery for cell balancing.

- Maximum safety

Delta-peak sensitivity : The automatic charge termination program works on the principle of the Delta-peak voltage detection.

Capacity limit : The charging capacity always calculated by multiple of the charging current and time. If the charging capacity exceeds the limit the process will be terminated automatically when you set the maximum value.

Temperature limit(*) : The temperature of the battery on charging will raise by its internal chemical reaction. If you set the limit of temperature the process will be expired forcibly when the limit has reached.

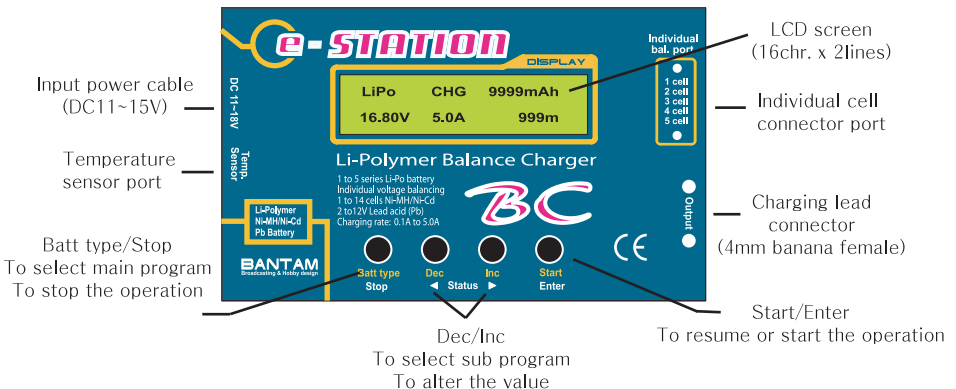
Processing time limit : You can also restrain the maximum process time to prevent from any possible defect.

Input power monitor : To protect the car battery using as input power from being damaged the voltage of it always monitored. If it drops below the lower limit the process will be ended automatically.

- High-power and high-performance circuit

BC5 employs the circuit that has maximum output power of 50W. As a result it can charge or discharge up to 14 cells of NiCd/NiMH and 5 series of Li-poly batteries with maximum current of 5.0A.

* When using the thermal probe (product no.: EAC110)

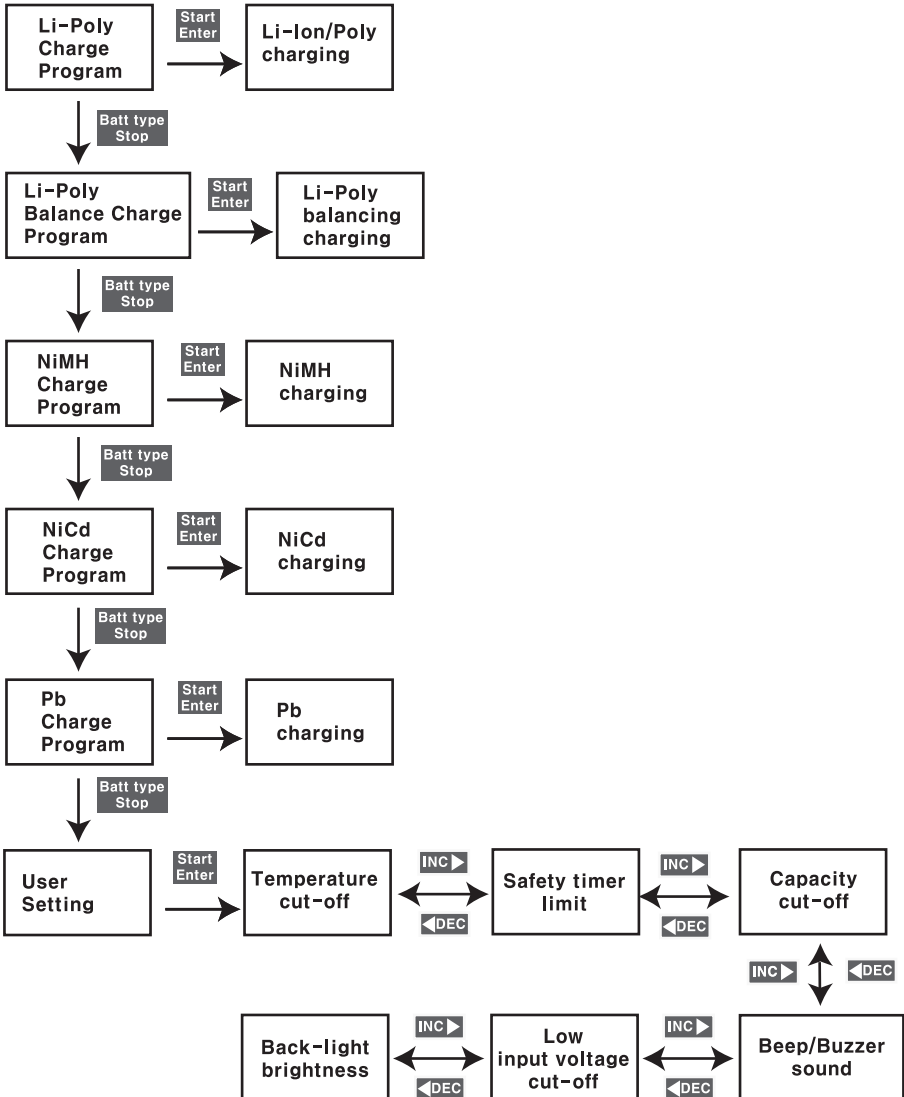


● Warnings and safety notes

- Never leave the charge unsupervised when it is connected to its power supply. If any malfunction is observed immediately terminate the process and refer to the operation manual.
- Keep away the unit from dust, damp, rain, heat direct sunshine and vibration. Do not drop it.
- The circuit of the unit is designed to be powered by a 12V DC only.
- This unit and the battery to charge or discharge should be set up on a head-resistant, non-inflammable and non-conductive surface. Never place them on a car seat, carpet or similar. Keep all the inflammable volatile materials well away from operating area.
- Be sure to understand the information of the battery to be charged or discharged accurately. If the program is set up incorrectly the battery can severely be damaged. Especially Lithium battery can cause a fire or an explosion by over-charging.
- To avoid short-circuits between the charge lead, always connect the charge cable to the unit first and only then to the battery to be charged or discharged. Reverse the sequence when disconnecting.
- Do not connect more than one battery pack to the charge lead at any one time.
- Do not attempt to charge or discharge the following types of battery.
 - Battery pack, which consists of different types of cell (including different manufacturers).
 - Battery, which is already fully charged or just slightly discharged.
 - Non-rechargeable batteries (Explosion hazard).
 - Batteries that require a different charge technique from NiCd, NiMH, Li-Poly or Pb.
 - Faulty or damaged battery.
 - Battery fitted with an integral charge circuit or a protection circuit.
 - Batteries installed in a device, or which are electrically linked to other components.
 - Batteries that are not expressly stated by the manufacturer to be suitable for the currents the charger delivers during the charge process.
- Please bear in mind of checking the following point before charge operation.
 - Did you select the appropriate program, which are suitable for the type of battery?
 - Did you set up adequate current for charging or discharging?
 - Lithium battery pack can be composed with parallel and series circuits mixed. You have to check the composition of the battery pack carefully before charging.
 - Are all connections firm and safe, or is there an intermittent contact at any point in the circuit?

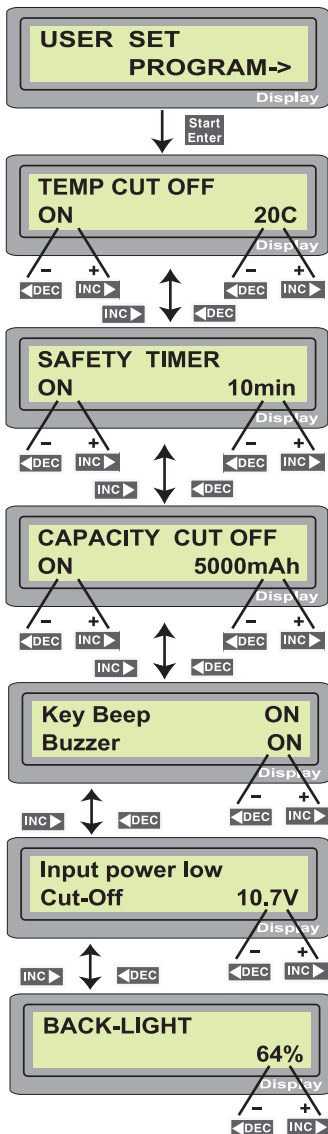
Those warnings and safety notes are particularly important. Please follow the instructions for a maximum safety; otherwise the charger and the battery can be damaged violently. And also it can cause a fire to injure a human body or to lose the property.

● Program flow chart



● Initial parameter set up

BC5 will be operated with the default value of the essential user settings when it is connected to a 12V battery for the first time. The screen displays the following information in sequence and the user can change the value of parameter on each screen. When you are willing to alter the parameter value in the program, press **Start Enter** key to make it blink then change the value with **◀DEC** or **INC▶** key. The value will be stored by pressing **Start Enter** key once.



This informs you of its designation

An optional feature using temperature probe contacting the surface of battery, the temperature cut-off can be on or off. If it is on, set the maximum temperature at which the charger should allow battery to reach during charge. Once a battery reaches this temperature during charge, the process will be terminated to protect the battery.

When you start a charge process, the integral safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit cannot detect the battery full. The value for the safety timer should be generous enough to allow a full charge of the battery.

This program sets the maximum charge capacity that will be supplied to the battery during charge. If the delta-peak voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value.

The beep sounds at every time pressing the buttons to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes. These audible sounds can be on or off.

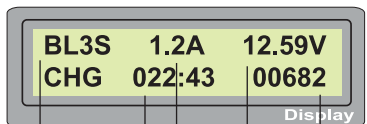
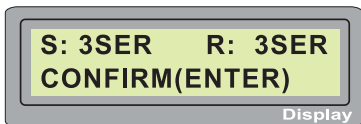
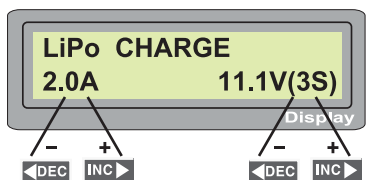
This program monitors the voltage of input battery. If the voltage drops below the value you set the operation forcibly terminated to protect the input battery.

You can adjust the brightness of LCD screen at the charger.

● Lithium polymer battery program

These programs are only suitable for charging and discharging Lithium-polymer batteries with a nominal voltage of 3.7V/cell. These batteries need to adopt different charge technique is termed a constant voltage(CV) and constant current(CC) method. The charge current varies according to the battery capacity, and is usually C/2 rate (half capacity as a charge current). The final voltage of charge process is also very important; it should be 4.2V/cell for the nominal voltage of 3.7V/cell. If the final voltage exceeds by more than 1% during charge at any reason the battery will explode. **The charge current and nominal voltage as for cell count set on the charge program must always be correct for the battery to be charged.**

When you are willing to alter the parameter value in the program, press **Start Enter** key to make it blink then change the value with **◀DEC** or **INC▶** key. The value will be stored by pressing **Start Enter** key once.



number of cells charging time charging current battery voltage charged capacity

The value on the left side of second line sets a charge current and the value on the right side of second line sets the voltage of the battery pack.

After setting the current and voltage press **Start Enter** key for more than 3 seconds to start the process. (Charge current: 0.1~5.0A, Voltage: 1~5 series)

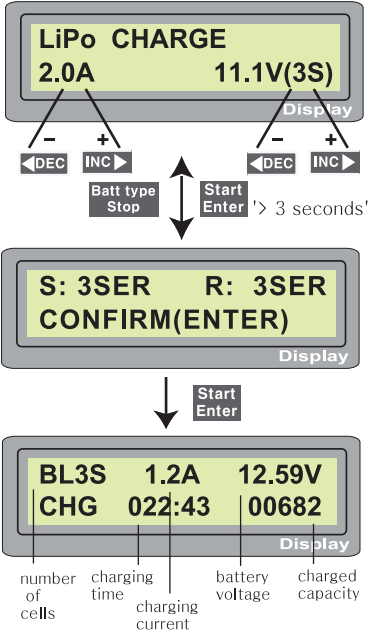
This shows the number of cells you set up and the processor detects. 'R:' shows the number of cells found by the charger and 'S:' is the number of cells selected by you at the previous screen. If both numbers are identical you can start charging by press **Start Enter** button. If not, press **Batt type Stop** button to go back to previous screen. Then carefully check the number of cells of the battery pack to charge again.

The screen shows the present situation during charge process. To stop charging press **Batt type Stop** key once.

● Charging Li-Poly battery at balancing mode

This is for balancing the voltages of Lithium batteries of the battery pack to be charged. To do this, the battery pack being charged should have the individual cell connector. And connect it to the individual port at the right side of charger. You do not need connect the battery output jack to the output of charger at this program.

In this mode, the charging process will be different from ordinary charging mode. The internal processor of the charge will monitor the voltages of each cell of the battery pack and control the charging current feeding to each cell to normalize the voltage.



The value on the left side of second line sets a charge current and the value on the right side of second line sets the voltage of the battery pack.

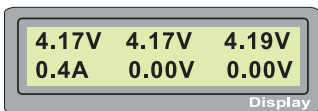
After setting the current and voltage press **Start Enter** key for more than 3 seconds to start the process. (Charge current: 0.1~5.0A, Voltage: 1~5 series)

This shows the number of cells you set up and the processor detects. 'R:' shows the number of cells found by the charger and 'S:' is the number of cells selected by you at the previous screen. If both numbers are identical you can start charging by press **Start Enter** button. If not, press **Batt type Stop** button to go back to previous screen. Then carefully check the number of cells of the battery pack to charge again.

The screen shows the present situation during charge process. To stop charging press **Batt type Stop** key once.

Inquiry the voltage of individual cells

You can monitor the present voltage of individual cell by pressing **DEC** or **INC** button during the process.

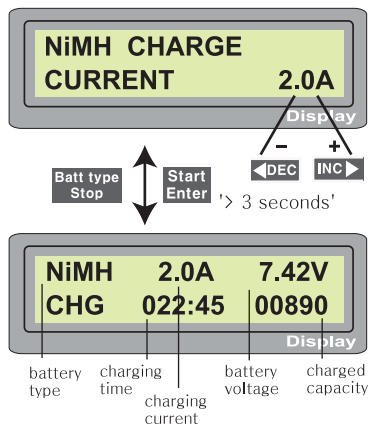


The first line of display shows the voltage of no. 1 cell, no. 2 cell and no. 3 cell from the left. And the left of second line shows the charging current. The next shows the voltage of no. 4 and no. 5 cell.

● NiMH/NiCd battery charging program

These programs are for charging NiMH (Nickel–Metal–Hydride) or NiCd (Nickel–Cadmium) battery commonly used for R/C model applications.

To change the charging current, press **Start Enter** key to make it blink then change the value using **◀DEC** or **INC▶** key. The value will be stored by pressing **Start Enter** key once. To start charging, press **Start Enter** button for more than 3 seconds.

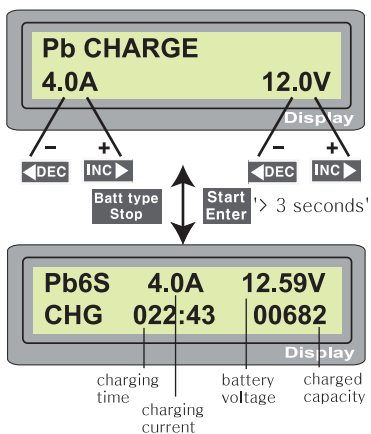


This program simply charges the battery using the current you set. The charge current ranges from 0.1 to 5.0A.

The screen displays the current state of charging. To stop the process, press **Batt type Stop** key once. The audible sound indicates you the end of

● Pb (lead-sulphuric acid) battery charging program

This is programmed for charging Pb (lead-acid) battery with nominal voltage from 2 to 12V. Pb batteries are totally different from NiCd or NiMH batteries. They can only deliver relatively lower current compare to their capacity, and similar restrictions definitely apply to charge. So the optimal charge current will be 1/10 of the capacity. Pb batteries must not be charged rapidly. Always follow the instruction is supplied by the manufacturer of battery.



Set up the charge current on the left and the nominal voltage of the battery on the right. The charge current ranges from 0.1 to 5.0A and the voltage should match with the battery being charged.

Start the charge process by pressing **Start Enter** key for more than 3 seconds.

The screen displays the state of charging process. To stop charging forcibly, press **Batt type Stop** key once. The audible sound indicates you the end of process.

● Warning and error messages

BC5 incorporates a various functions of protective and monitoring the system to verify functions and the state of its electronics. In any case of occurring error, the screen displays the cause of error that is self-explanatory with audible sound.

Reversed polarity

Display

The output is connected to a battery with incorrect polarity.

Connection break

Display

This will be displayed in case of detecting an interruption of the connection between battery and output or voluntarily disconnecting the charge lead during the operation of charge or discharge on output.

SHOT ERR

Display

There was a short-circuit at OUTPUT.

IN Voltage ERR

Display

The voltage of input power lowers the limit.

VOL SELECT ERR

Display

The voltage of Lithium battery pack was selected incorrectly. Verify the voltage of battery pack

BREAK DOWN

Display

There happens malfunction at the unit by any reason.

**BATTERY CHECK
LOW VOLTAGE**

Display

The processor detects the voltage difference during charging.

**BATTERY CHECK
OVER VOLTAGE**

Display

The processor detects the voltage difference during charging.

BATTERY VOL ERR

Display

The voltage of one of the cell in the Li-poly battery pack raised over the limit.

● Specifications

Operating voltage range :	10.0 ~ 18.0 Volt
Circuit power:	max. 50W
Charge current range :	0.1 ~ 5.0A
Current drain for balancing Li-po:	200mAh/cell
NiCd/NiMH battery cell count :	1 ~ 14 cell
Li-Ion/Polymer cell count :	1 ~ 5 Series
Pb battery voltage :	2 to 12V
Weight :	350 g
Dimensions :	130 X 90 X 28 mm

● Warranty and service

We warrant this product for a period of **one year (12 months)** from the date of purchase. The guarantee applies only to such material or operational defects, which are present at the time of purchasing the product. During that period, we will repair or replace without service charge any product deemed defective due to those causes. You will be required to present proof of purchase (invoice or receipt). This warranty does not cover the damage due to wear, overloading, incompetent handling or using of incorrect accessories.

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Date of purchase/delivery :

Dealer :