

Thank you for purchasing the BX-213MH. Misoperation of this equipment during rapid charging can be dangerous. For safety sake, read this manual thoroughly and store it with the charger for future reference.

1. Notes on Usage

The nature of radio controlled equipment can be dangerous if you operate incorrectly. For safe usage please note in this section described.

Danger

Failure to observe the matter discussed in such an item poses a serious threat of death or severe injury.

*If the charging current for this charger is set incorrectly, the batteries may be damaged or may leak. Always set the charging current in accordance with the instruction manual provided with the battery. *When using a car battery as the power supply, place the charger at a distance from the car. If the charger is placed in the engine compartment or in the car itself, a short circuit could be dangerous. *When cleaning this charger, use a non-flammable cleaning solution. *Sparking may occur when connecting or disconnecting the power supply or a battery. Remove any flammable or ignitable material from the charger before connecting or disconnecting the power supply or a battery. *Do not charge damaged batteries. *This charger is designed for use with Nicad or NiMh battery for radio controlled models. Do not use for other purposes. *Do not connect to AC mains. *Make sure the polarities are correct before connecting the charger to the power supply or battery.

Warning

Failure to observe the matter discussed in such an item poses a possibility of death or severe injury, and a large likelihood of damage to the equipment or property.

*Do not disassemble this unit. *Be sure to use with correct supply voltage. *Do not get this unit wet. *Do not use this unit in a high humidity area. *Do not put your face near a battery that is being charged. *Be sure to set the correct charge current. *Do not cover the cooling fan. *Do not drop the objects into cooling fan. It may result in malfunctioning of the unit. *Be sure to disconnect the unit when not in use. *Do not use this unit when the unit has overheated or malfunctioned.

Caution

Failure to observe the matter discussed in such an item poses a possibility of injury or damage to the equipment or property.

*Do not apply large force to the unit. *Only connect one battery at a time. *If this unit is sitting on a plastic sheet while charging, the heat from the unit may melt the plastic. Place this unit on a non-flammable material during use. Be sure to connect the power supply before the battery. *Be sure to prepare in case of the unit malfunctioning. *Be sure to connect only genuine KO Propo products to ext. terminal. *An adult should observe for safety when this unit is used by children. Be sure that an adult understands fully of this manual for usage. *Keep the charger out of direct sunlight and at a temperature of 0~40(C while charging. *Be sure to use the correct fuse with this unit.

2. Warranty Limitations

*No warranty is made regarding the capacity or service life of batteries charged by this charger, or regarding the operation or operation time of equipment powered by a battery charged by this charger.

*The display on this unit is not intended for use as measuring tool. The accuracy of the values displayed is not guaranteed.

*The circuit in this charger may generate electromagnetic waves. As a result, this unit may interfere with the operation of radios, cordless telephones, etc.

*This charger was designed for the batteries manufactured by Sanyo and Panasonic Nead and Ni-Mh.

*KO Propo can bear no responsibility for any consequences that arise if this charger is used to charge a battery that does not satisfy the necessary requirements, or if the instruction and warning described in this manual are not heeded.

3. Specifications

We have a right to change specifications without notice.

Type: DC/DC Converter, Step UP Down rapid battery charger.

Constant current method: High-frequency FET control and linear pulse method.

Cut off method: Microprocessor controlled intelligent fuzzy delta peak cut off.

LCD Display: 8 characters x2 lines dot matrix.

Suitable batteries: Nicad and Ni-Mh batteries. 100-5000mAh, 1-10 cells (1.2-12V packs)

Charging current: 0.2-8.0A

Input power supply: 12-16V (DC), 15A or greater stabilized power supply, or 45Ah or higher battery.

Dimensions/Weight: 149x82x35mm (excluding projections) 495g

4. Other items to prepare

Power supply. 12 to 16V (DC), 15A or greater stabilizing power supply, or 45Ah or higher battery.

Caution

*Be sure to use the power supply designed for usage of radio controlled models. *This unit cannot be used as power supply. *Do not connect to cigar socket of a car. *Be sure to use optional extension charge cord and keep distance from a car

Battery connector. Prepare suitable connector for battery to use.

Caution

*The lead wire connected to the output terminals must be solder-plated. If they are not soldered, poor contact may result.

5. About Charging Current

The charging current of the BX-213MH can be set between 0.2~8.0A. Set up the value according to the battery.

Determining Charging Current (example only)

For Nicad, Capacity x3 = charging current. For example 1000mAh Nicad battery's charging current is 1000m x3 = 3000mA. Therefore charging current should be 3A.

For Ni-Mh, Capacity x1 = charging current. For example 700mAh Ni-Mh battery's charging current is 700m x1 = 700mA. Therefore charging current should be 0.7A.

Danger

*If the charging current is set incorrectly, the batteries may be damaged or may leak. Always set the charging current in accordance with the instruction manual provided with the battery.

Actual Charging Current

The correct charging current may vary depending on manufacturer or type of battery, be sure to set the charging current in accordance with the instruction manual provided with the battery.

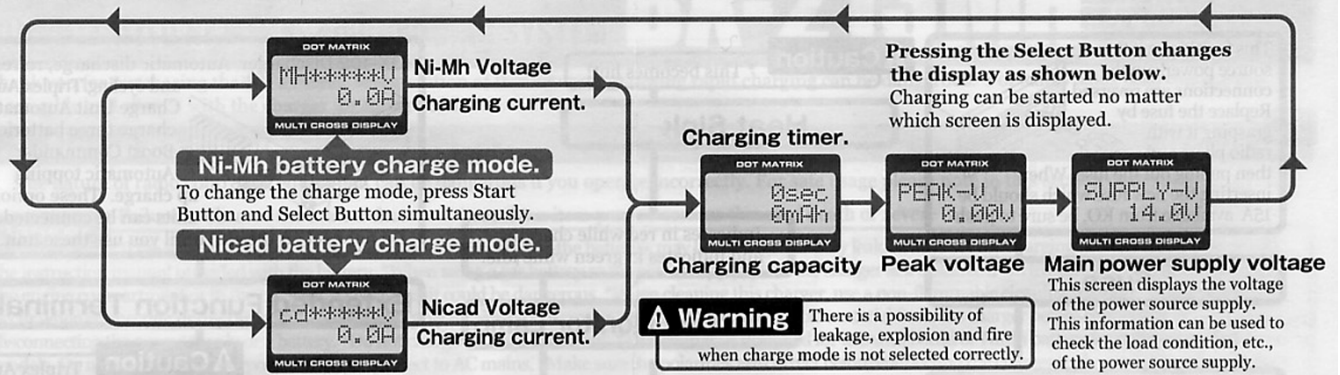
Charging current for transmitter, receiver battery.

Do not charge transmitter or receiver batteries at more than 1.5A even large capacity batteries.

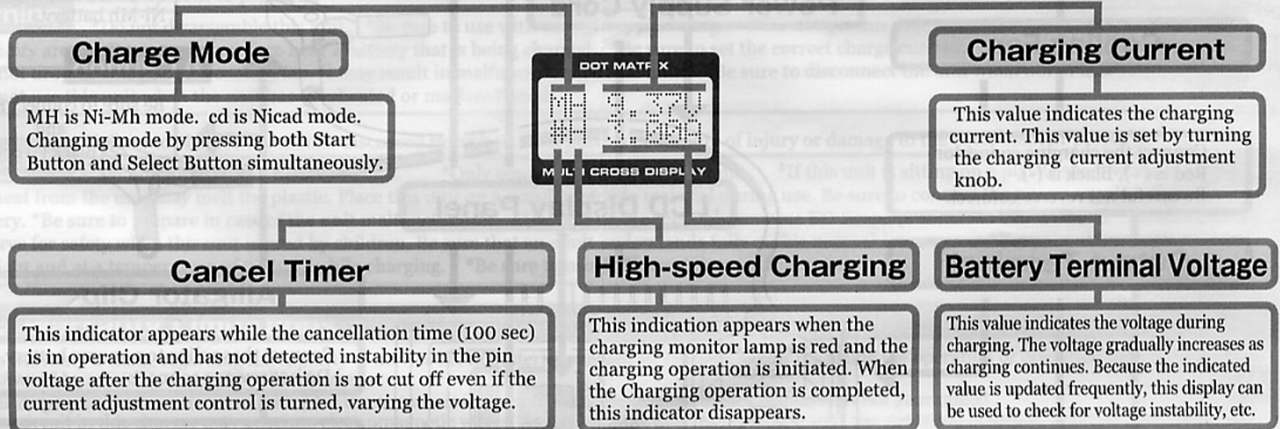
Danger

*Excess charging current to thinner lead wire may result in melting or fire.

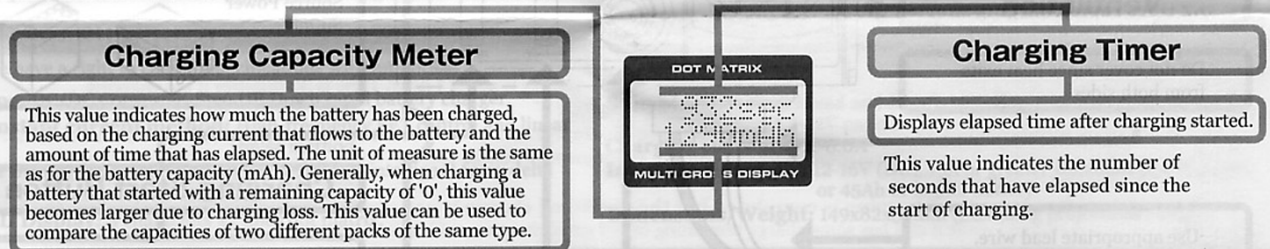
6. Explanation of LCD Screens



Battery Voltage/Charging Current Screen



Charging Timer/Charging Capacity Meter Display



Battery Peak Voltage Screen

This screen first appears 100 seconds after charging has started.



During charging, the highest battery pin voltage detected up to that point is displayed. After charging is completed to the delta peak, the auto cutoff junction will be activated and displayed. These values are reset the next time charging is started.

*The peak voltage value becomes high in the following circumstances. Use these as guidance regarding battery deterioration and internal resistance.

1. When the charging current is high compared with other packs of the same type.
2. When the battery's internal resistance is high.
3. When the battery is charged once and is then charged again without being used in the meantime.
4. As the battery deteriorates (while the charging current remains the same)

7. Start Charging

- 1 Connect the charger's red alligator clip red (+) to the positive power supply terminal, and the black alligator clip (-) to the negative power supply terminal. Make certain that the connection are not reversed. Some sparking when the connections are made is normal.
- 2 Select charge mode for Nicad or Ni-Mh by pressing both Start Button and Select Button simultaneously. The LCD display on upper left shows MH as Ni-Mh mode and cd as Nicad mode. Please read next section for detail of charging Ni-Mh battery before start charging.
- 3 Connect the red solder-plated lead of the battery charging connector to the positive (+) output terminal and the black solder-plated lead to the negative (-) terminal. Make certain that the connections are not reversed.
- 4 Turn the charging current adjustment control knob all of the way to the left, and then connect the battery to the charging connector. Some sparking when the connections a made is normal. Two or more battery packs cannot be connected.
- 5 Press and hold Start Button until the 'H' indicates, the charging monitor lamp changes from green to red and charging starts.
- 6 Slowly turn the charging current adjustment knob to set the proper charging current. The charging timer will disappear after 100 seconds from start. The charging may stop if you turn the charging current adjustment knob after the indication of cancel timer ('#' on LCD) has disappeared.
- 7 While charging is in progress the Select Button can be used to change the display screens.
- 8 When charging is completed, the buzzer sounds. After charging is completed, disconnect the battery from the charger. Do not leave the fully charged battery connected to the charger.

Warning There is a possibility of leakage, explosion and fire when charge mode is not selected correctly.

8. About Ni-Mh battery.

Because of the characteristics of Ni-Mh battery, it may stop charging before complete charge. In this case, restart charging.

⚠ Caution

*The charging has completed if Ni-Mh is warm. *Do not charge batteries while they are still warm. Be sure to charge if they have cooled. *Ni-Mh batteries cannot be charged if Triplex Auto Charger or Boost Commander Unit is installed with BX-213MH charger.

9. LCD Error Display

If an abnormality arises, and error is displayed on the LCD and the alarm sounds; if charging is in progress, charging is interrupted. Afterwards pressing any button returns the display to the normal screen and charging can be restarted. However, if the cause of the original error is not resolved, the same error will be displayed.

LCD Display	Error 01	Error 02	Error 03	Error 04	Error 05	Error 06	Error 07
Description of problem	The source supply voltage is 10V or less.	The source supply voltage is 25.6V or more.	The charging current is 10A or more.	There is a problem with the electronic circuitry.	The battery is not connected or the connections are reversed.	The charging capacity has been exceeded.	The battery voltage is 19.9 or more.
The First Action to be taken	Adjust the source supply voltage to 11-16V.	Adjust the source supply voltage to 11-16V.	Disconnect the battery immediately.	Send the unit in for repairs.	Make sure to connect correctly.	Select Ni-Mh mode for charging 5000 mAh battery.	Contact to us
The Second Action to be taken					Contact to us		
Alarm sound	Three beeps	Three beeps	One long beep	One long beep	No sound	Four short beeps	Four short beeps

10. Extension Terminal

The extension terminal can be used with additional equipment. Please see instruction manual for connection procedures.

*DX-102 Level can be used for refresh charging (discharge - charge), cycle charging (charge - discharge) automatically.

*For connection optional Power Link Cord must be used.

*Triplex Auto Charge Unit can be used for three batteries to charge automatically.

*Ni-Mh batteries is not suitable with Triplex Auto Charge Unit.

*Boost Commander Unit can be used for topping up cells automatically.

*Ni-Mh batteries is not suitable with Boost Commander Unit.

11. Q&A

The following are explained in the Q&A section to solve any problems.

Q.1 Can not switch charging mode and start to charge.

Be sure to press both Start and Select button correctly.

Q.2 Does rapid charging shorten the service life of a battery?

As long as the charging current is set properly, the service life of the battery will not be shortened.

Q.3 How long does charging time normally take?

Varies according to battery capacity and charging current. For a 1000mAh battery is about 1 hour. Time is 30 minutes if the charging current is 2A. However, faster charging will reduce operating time per charge.

Q.4 What does it mean when charging is completed but the displayed charge is less than the capacity indicated on the LCD?

When a battery is charged while it still has some charge remaining, the amount of charge that was added as indicated on the charge will differ from the capacity shown on LCD.

Q.5 What does it mean when charging is completed but the displayed charge is not same as the capacity indicated on the LCD?

When a battery is charged while it still has some charge remaining or restarted charging, will differ from the capacity shown on LCD.

Q.6 Why does charging sometimes stop before it is completed?

If no error message was displayed, then charging has basically been completed. If the battery is old and the cell capacity fluctuates, the delta peak may be generated for some of the cells before all of the cells are fully charged, which would cause the charger to terminate the charging process. Also Ni-Mh battery may cause stop charging immediately after charging has started because of the nature of Ni-Mh battery which initial voltage fluctuates.

Q.7 Why do strange characters sometimes appear on the screen?

This happens when the internal computer is not operating properly. Disconnect the power source, wait one minute, and then connect the power supply again.

Q.8 What is 'Memory Effect'?

If a battery is repeatedly charged before it is fully discharged, the 'memory effect' occurs, which results in reduced capacity. Use of a discharger is recommended in order to prevent this phenomenon from occurring.

Q.9 What should I do if charging is interrupted and an error message appears?

Check the meaning of the error and then take the appropriate action.

Q.10 Is there a problem if sparks appear when I connect the power supply or a battery?

This does not indicate a problem.

Q.11 What should I do if the charger doesn't work?

Make sure that the power supply is connected properly, make sure that the fuse has not been blown, and check the supply voltage.

Q.12 What causes the fuse to blow?

The fuse blows if the power supply connections are reversed.

Q.13 What is the flickering on the LCD that occurs during charging?

This is not a symptom of problem. The flickering can be diminished by reducing the LCD contrast.

12. Requesting Repair Service

* If a problem arises with the charger, either as a result of accident or as a result of natural wear, and you send it in for repair, describe the problem in as much detail as possible.

Doing so will allow our technicians to pinpoint the cause of the problem faster, reducing the length of time that we will have to hold the unit for repairs.

KONDO KAGAKU CO.,LTD.

4-17-7,Higashi-Nippori,Arakawa-ku,Tokyo,116-0014,Japan

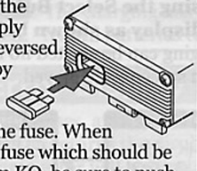
For more information **FAX:03-3807-8155**

Business hours: From Monday to Friday (Except for Sundays, and Japanese national holiday)

e-mail address:infox@kopropo.co.jp website:www.kopropo.co.uk

Name of Each Part, and How to Connect Them

This fuse blows if the source power supply connections are reversed. Replace the fuse by grasping it with radio pliers and then pulling out the fuse. When inserting the new fuse which should be 15A available from KO, be sure to push



Fuse

Do not insert any object into cooling fan.

Cooling Fan

Connect the charging connector. Red is (+), Black is (-). Be careful not reverse connect.

Output Terminal

Ventilation

Do not cover since heat exits from both sides.

Use appropriate lead wire.

Charging Connector

This is not included in the unit. Prepare appropriate lead wire with matching connector type of a battery. The lead wires connected to the output terminals must be soldered. If they are not soldered, poor contact may result.

Caution * This becomes hot!

Heat Sink

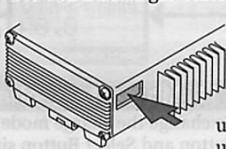
Indicates in red while charging and indicates in green while idle.

Charging Monitor Lamp

Power Supply Cord

LCD Display Panel


DX-102 Discharger Automatic discharge, refresh and cycling. Triplex Auto Charge Unit Automatic charge three batteries. Boost Commander Automatic topping up charge. These option units can be connected. Do not peel off the seal until you use these unit.



Extended Function Terminals

Caution Triplex Auto Charge Unit and Boost Commander Unit cannot be used when charging Ni-Mh battery.

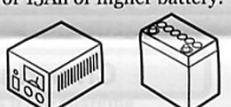
Caution Be sure to connect Red (+) and Black (-) correctly.



Alligator Clip

Connect these clips to a source battery. Do not reverse connect.

Use 12 -16V (DC), 15A or greater stabilized power supply, or 15Ah or higher battery. Source Power Supply



Charging Start Button

Press for start.

Select Button

Press to select LCD display

Charging Current Adjustment Knob

Turn all of the way to the left for the minimum, and all of the way to the right for the maximum. Adjust to minimum position before you start charging.

Caution Setup charging current must be in accordance with instruction manual of the battery.

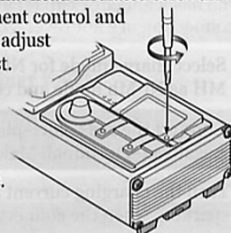
Battery to be charged

100~5000mAh
Nicaid or Ni-Mh battery.

Caution Be sure to connect while the unit connects to source battery.

LCD Contrast Adjustment

Insert the 2.4 ϕ flat head insulated screwdriver into the adjustment control and turn it slowly to adjust the LCD contrast. The intensity of the LCD contrast change according to the temperature.



Optional Equipment

The optional charger stand and cooling fan can be used.