

User's Manual

8 STEP
12V 5A

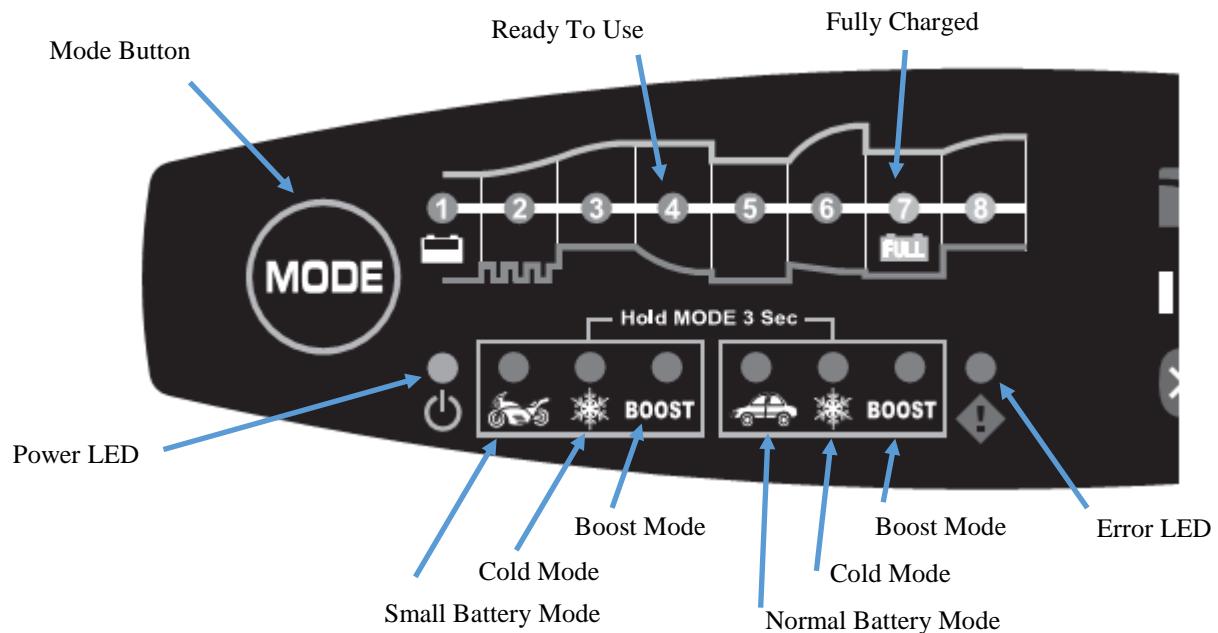
BENTON

ICEMAN 5.0 BLE

SWITCH MODE BATTERY CHARGER

For Lead acid batteries 1.2-120Ah (charging), up to 160 Ah for maintenance

User's manual and guide to professional battery charging

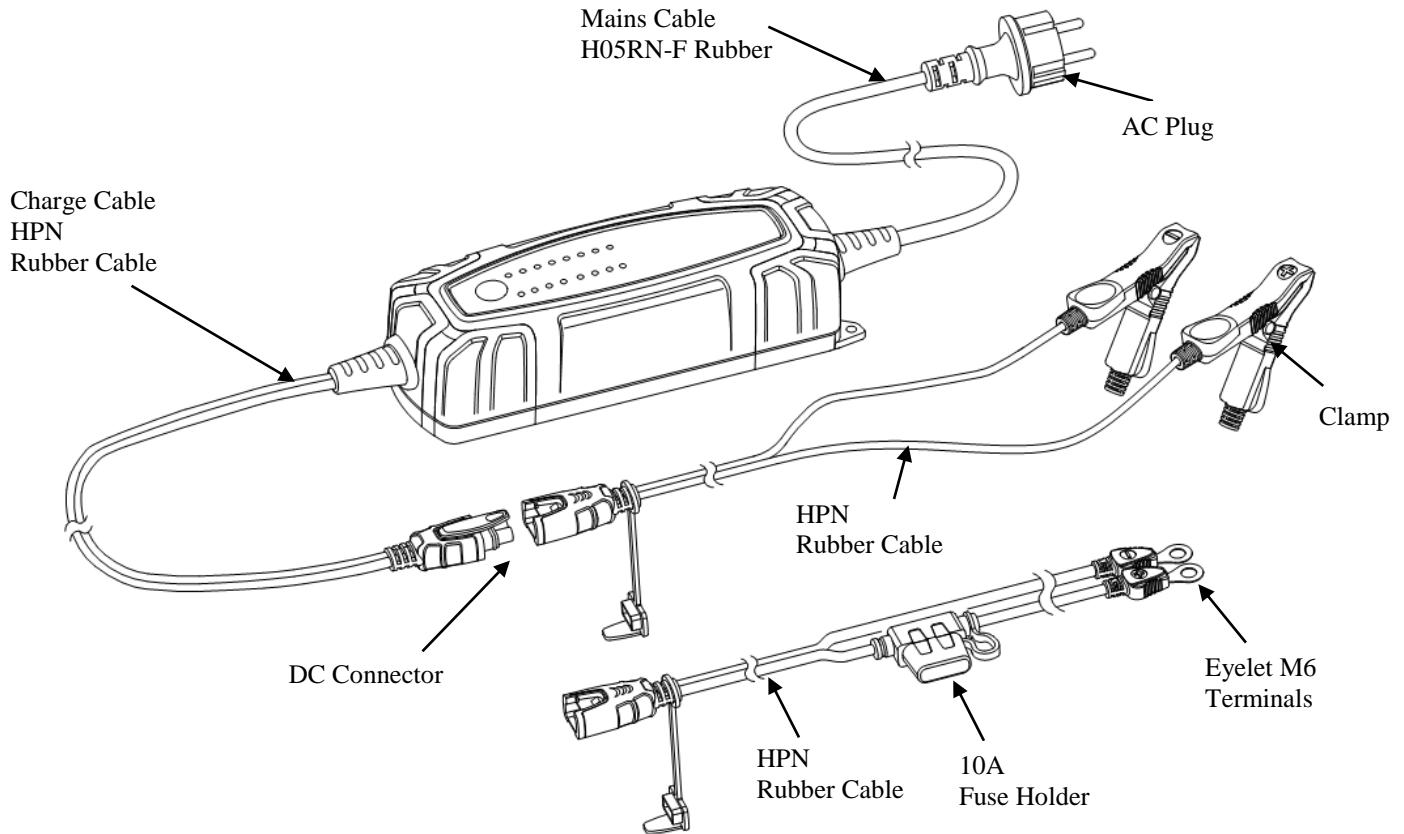


For Your Safety

This manual contains important safety and operating instructions. Read this manual carefully before using the charger for the first time and keep the manual in a safe place for future reference.

Contents

- 1) BENTON® ICEMAN 5.0 BLECharger
- 2) Quick contact battery leads with clamps
- 3) Quick contact battery leads with eyelet terminals (\varnothing 6.3mm) with in-line battery protection fuse (10A) for permanent attachment to the battery posts to allow quick connection/disconnection through snap-connector.
- 4) User Manual



Safety Information

- **BENTON® ICEMAN 5.0 BLE** charger is designed for charging 12V 1.2-160Ah Lead-Acid rechargeable batteries. Do not intend to supply power to low voltage electrical system. Do not use it for any other purpose.



WARNING! DO NOT ATTEMPT TO CHARGE A NON-RECHARGEABLE BATTERY (PRIMARY CELLS).

- **Do not** use the charger with a damaged cable. It must be replaced by the manufacturer, its service agent or similarly qualified technician in order to ensure safety.
- Normally, a battery is grounded either, on negative or positive terminal to the vehicle's chassis. The charger's DC Clips are to be connected to the battery terminal **not connected to the chassis first**. The other connection is to be made to the terminal **connected to the chassis**, far from the battery and fuel line. The battery charger is then to be connected to the power supply.
- After charging, disconnect the battery charger from supply mains. **Remove the chassis connection and the battery connection**, respectively. This will reduce back drain current.
- During charging the battery must be placed in a well ventilated area.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with appliance. Cleaning and user maintenance shall not be made by children without supervision.

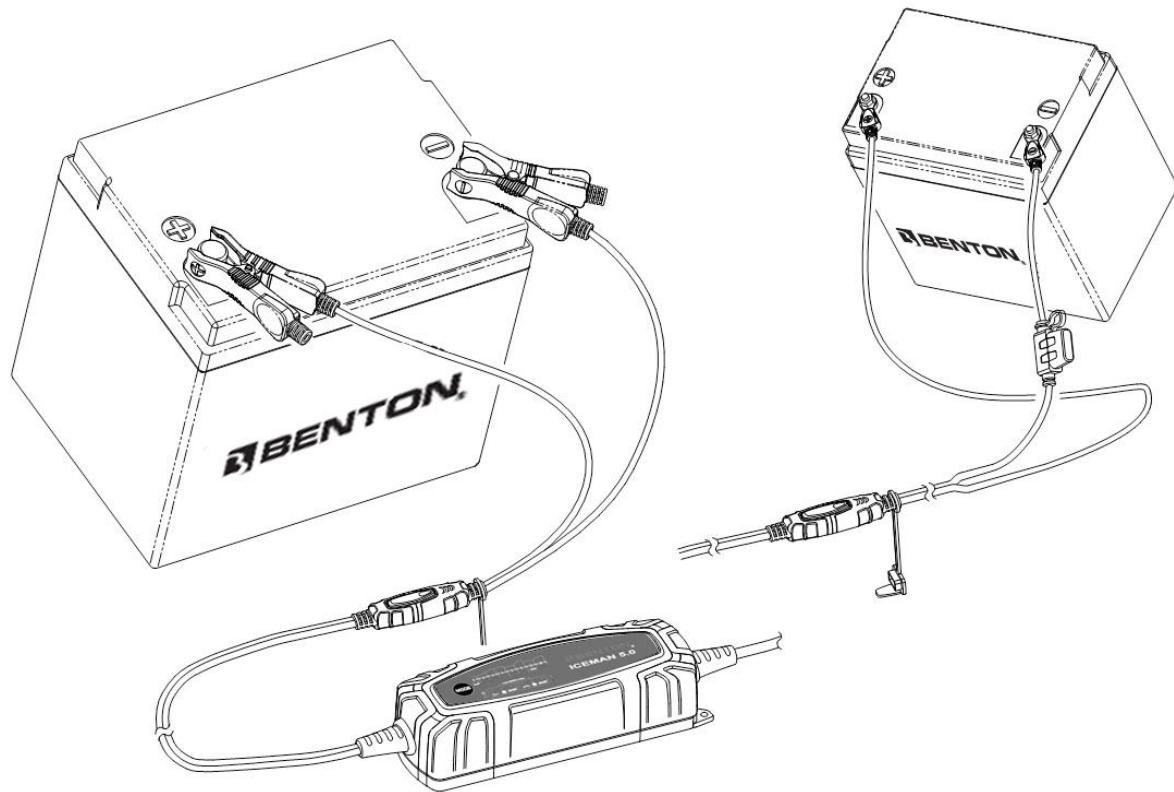
Charging Modes

	Mode 14.4V/0.8A This mode is normally suitable for batteries less than 14 Ah
	Mode 14.7V/0.8A This mode is recommended for AGM batteries less than 14 Ah. This mode is also suitable for charging batteries in sub-zero temperatures.
 BOOST	Mode 14.4V/0.8A + 16.0V/0.3A, This mode is suitable to recover severely discharged batteries smaller than 14 Ah. Recommended to boost at least once a year.
 BOOST	Mode 14.7V/0.8A + 16.0V/0.3A This mode is suitable to recover severely discharged AGM batteries smaller than 14 Ah or charging in sub-zero temperatures.

	Mode 14.4V/5.0A This mode is normally used for WET, MF, VRLA, AGM, GEL and Calcium batteries
	Mode 14.7V/5.0A This mode is recommended for AGM batteries. This mode is also suitable for charging batteries in sub-zero temperatures.
 BOOST	Mode 14.4V/5.0A + 16.0V/1.5A This mode is suitable to recover severely discharged batteries. Recommended to boost atleast once a year.
 BOOST	Mode 14.7V/5.0A + 16.0V/1.5A This mode is suitable to recover severely discharged AGM batteries or charging in sub-zero temperatures.

OPERATION

Charging



1) Charging of a permanently installed battery in a vehicle

- a) Before connecting or disconnecting the battery leads, the power cord should be removed from the mains.
- b) Check polarity of battery post. A positive ("+") battery post usually has a larger diameter than a negative ("−") post.
- c) Identify the pole of battery which is connected to the chassis (earth). Normally the negative terminal is connected to the chassis.
- d) Charging of negative earthed battery:
 - Make sure the black clamp or eyelet terminal ("−" pole connection) has not contact with the fuel line or the battery.
 - Connect the red clamp or eyelet terminal ("+") to the positive ("+") pole of the battery and the black clamp or eyelet terminal ("−") to the vehicle chassis.

e) Charging of positive earthed battery:

- Make sure the red clamp or terminal (“+” pole connection) has no contact with the fuel line or the battery.
- Connect the black clamp or eyelet terminal (“-”) to the negative (“-”) pole of the battery and the red clamp or eyelet terminal (“+”) to the vehicle chassis.

2) Charging of a battery not connected to a vehicle

- a) Before connecting or disconnecting the battery leads, the power cord should be removed from the mains.
- b) Connect the red clamp or eyelet terminal (“+”) to the positive (“+”) pole of the battery and the black clamp or eyelet terminal (“-”) to the negative (“-”) pole.

3) Connect charger to the mains.

4) Select charging mode

 For Small batteries less than 12Ah

Press MODE button for 3 second to change charge from small batteries to normal batteries

 For normal batteries larger than 12Ah

By pressing MODE button several times combination of Cold charge  and BOOST charge options could be selected.

5) At step 4 battery is ready to use and step 7 it is fully charged.

Bulk Charging Time

Battery size (Ah)	Mode	For About 80% Charge (hours)
6		7
8		9
12		14
20		4
60		12
80		16
120		24

Batteries below 12 Ah should not be charged with 5A current

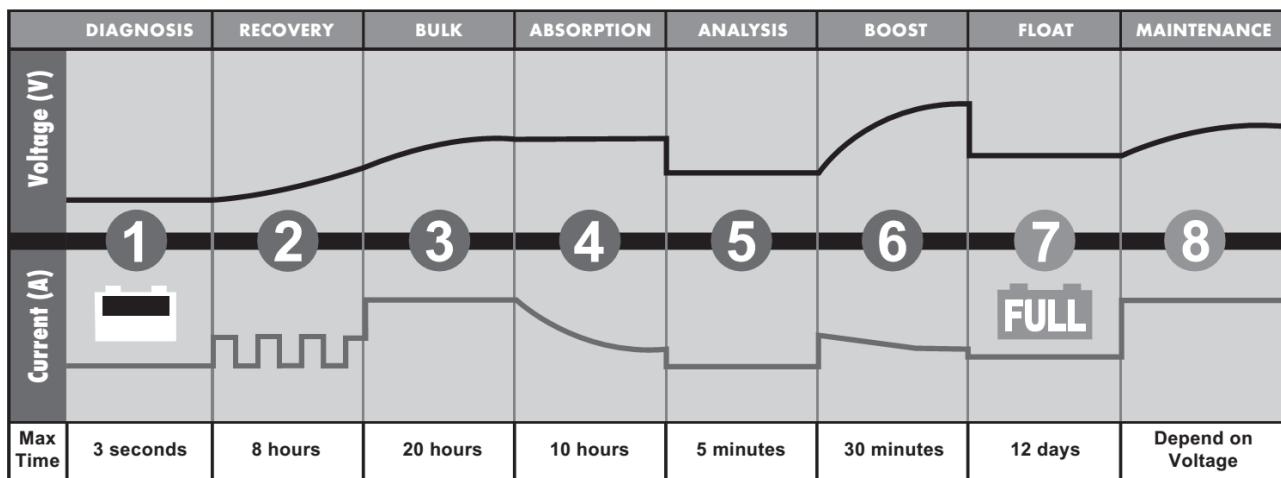
Technical Data

MODEL	ICEMAN 5.0 BLE
Input Voltage AC	220-240VAC, 50/60Hz
Output Voltage	Nominal: 12V
Input Current	0.65A RMS max
Minimum Battery Voltage	2.0V
Output Power	60W
Efficiency	80%
Charging Voltage	  14.4V,  14.7V, BOOST 16V
Charging Current	5A max
Back Current Drain*	5 mA
Ripple Voltage	< 2%
Ambient Temperature	-30°C to 50°C, Reduced output power at higher temperature
Type of Charger	Eight step, fully automatic, switch mode with maintenance charging
Type of Batteries	12V Lead-acid rechargeable batteries (WET, MF, VRLA, AGM, GEL and Calcium)
Battery Capacity	1.2-120Ah (charging), up to 160 Ah for maintenance
Dimensions (LxWxH)	187x63x48mm
Housing Protection	IP65 (Dust and Splash proof) Outdoor
Weight	0.75kg
Noise Level	<50 dB (Tested from a distance of 50cm)

* = Back current drain is the amount of current drawn by the charger from battery, when the charger is connected to the battery, without power cord connected. BENTON® ICEMAN 5.0 BLE has extremely low back current drain.

Charging Phases

BENTON® ICEMAN 5.0 BLE charger performs 8-step fully automatic charging cycle.



1) Diagnosis

The unique diagnostic function checks status of battery and ascertains if battery can accept charging.

2) Recovery: A deeply discharged battery of over 2.0V can be recovered and charged

with pulse charging of small current.

3) Bulk : 80% of energy is returned in this phase with maximum charging current.

4) Absorption: With use of declining current charging up to almost 100% is achieved.

5) Analysis: Checks status of charge. If battery does not retain energy, it must be replaced.

6) Boost: Recovers severely discharged batteries under high voltage charge.

Recommended to apply it at least once a year.

7) Float: Battery is fully charged and ready to use. The battery is maintained at maximum level by applying low current charge.

8) Maintenance Charge: As charger continuously monitors the terminal voltage in order to determine if a maintenance charging should be initiated to keep battery fully charged.

Trouble Shooting

Problem	Indication	Possible Cause	Solution
Charger does not work	Indicator lights are not on	a) Charger is not plugged in b) Poor electrical connection c) AC outlet is dead	a) plug in b) Check AC connections and make sure mains is switched on c) Check receptacle
Charger has no DC output	 Flashing 	a) Battery is connected with reverse polarity poles b) Poor contact from charger to battery c) MODE button is not pressed d) Charging is interrupted in Phase1 e) Charging is interrupted in Phase 2 f) Charging is interrupted in Phase 5	a) Check DC connection between charger and battery and make sure they are not short circuited b) Check if connectors are not greasy or corroded and making a clean connection and there are no loose or damaged connection c) Select MODE d) Battery is extremely sulphated, it must be replaced e) Battery cannot accept charge, it must be replaced f) Battery cannot retain charge, it must be replaced
No charging current		a) Battery may be defective / excessive current draw b) Battery may be severely sulfated	a) Dead battery, it should be replaced b) If battery cannot be de-sulfated, it must be replaced
No charging Phases	 Flashing	Charger is not connected to battery over 2 mins	Charger is in energy save mode

For ICEMAN 5.0 BLE (Bluetooth Description)

Battery Charging Manager Manual

1. Connect charger to MAINS. Make sure unit is powered on. Control panel "Power LED" lights should be on at this stage.
2. Turn on Bluetooth on desired hand held device or laptop.
3. Open Benton "Battery Charging Manager" Apps and press "select" language and set desired language option. There are 15 different languages to choose from.
4. Select Benton Battery Charger Model connected to battery to be charged. There are several model options.
5. Once Apps detects model being used to charge battery, it will show process status
6. If there exists any problem with the connection of the charger to the battery, (reverse polarity), or if the battery is beyond recovery, (dead battery), an ERROR message will appear to indicate situation.
7. After ERROR message has been dealt with and there is no issue preventing the charging process, the monitor will show the active process.
8. Choose "Motorcycle" or "Car Mode".
9. You may also choose "Cold" mode for cold environment or "Boost" mode for depleted battery.
10. You may opt to input ON/OFF command to stop charging or to proceed with charging process.

CE0700

Declaration of Compliance

Tested and approved by TÜ V/GS and conforms to

EN 60335-1

EN 60335-2-29

EN 55014-1

EN 55014-2

EN 61000-3-2

EN 61000-3-3

EN 60950

EN 55022

EN 55011

EN 62233

FCC Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

BENTON PRODUCTS ARE PROTECTED BY: Patents, Designs, Trade Marks

Premier Merchandises Limited
Unit 2305-15, 23/F Metro Loft, 38 Kwai Hei Street,
Kwai Chung, N.T. Hong Kong

REV. A4