

PROJECTA

SMART BATTERY GUAGE

12
VOLT

BATTERY METER

A sophisticated, full colour LCD monitor that accurately displays a battery's total capacity, overall health and general status. Ideal for camper trailer and caravan interiors.



P/No.BM320

*****PLEASE READ INSTALLATION SECTION OF THIS MANUAL BEFORE INSTALLING THE PRODUCT*****

WARNINGS

- Risk of explosive gas. Working in the vicinity of a lead-acid battery can be dangerous.
- Batteries might release explosive gases during normal operation and charging.
- Before using the product, read and follow the instructions carefully. Follow all manufacturer's instructions
- Do not smoke, use matches, use a cigarette lighter, or allow a spark or flame near the battery.
- Remove rings, bracelets, necklaces and watches when working with a lead-acid battery.
- Before accessing the battery leads (Red for positive and Black for negative), disconnect the all devices or power sources from sockets and dc terminals provided by the product.
- Do not submerge the product in water or expose to rain.
- Not recommended to use the product for critical power backup application.
- Designed to work with 12V lead acid battery only.
- This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance
- Ensure that all cable connections have the correct polarity and are protected against accidental short circuit
- Do not allow water or other liquids to enter the installation area
- **Must Fit Fuse. Failure to do so may cause fire**
- **Max discharge current - 320A**

Overview

Projecta BM320 - A sophisticated, full colour LCD monitor that accurately displays a battery's total capacity, overall health and **voltage**. It is Ideal for camper trailer and caravan interiors as it is housed in a modern and simple to install enclosure. The BM320 comes with all the necessary components to connect to your battery system.

It has the following features:

- 2.4" full colour LCD display
- Configurable Low battery capacity and battery health alarm
- Suitable for popular deep cycle AGM, **WET, GEL & Calcium batteries**
- Using patented technology to monitor battery characteristics like battery state of charge and state of health

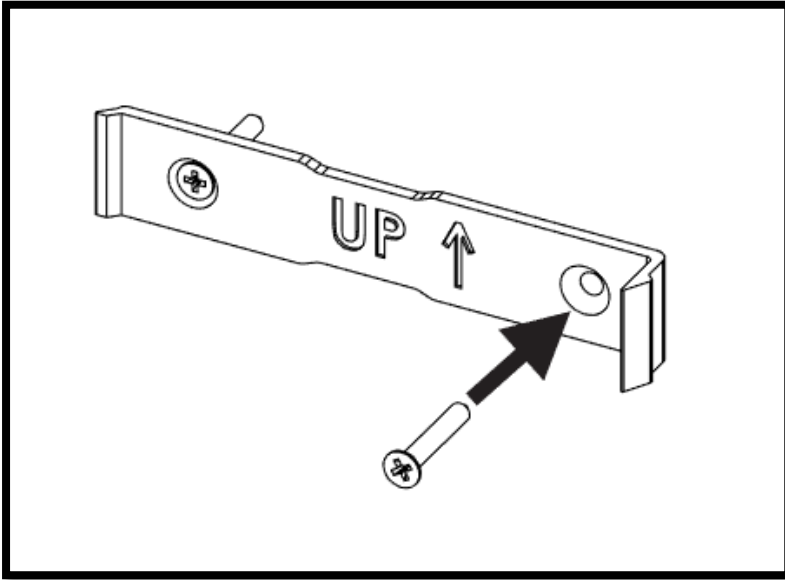
Specification

Part No.	BM320
Battery Fuel Gauge	
Input consumption current (backlight off)	12V/1.5 mAdc
Input Voltage Range	6.0--17.0 Vdc
Max discharge current	320A
Display Resolution	
Current	0.1 A
Voltage	0.1V
Battery Capacity	0.1Ah
Type of Battery Supported	Wet/AGM/Gel/Calcium
Display Physical Characteristics	
Weight	0.12 kg
External Dimension	118mm (L) x 96mm (W) x 18mm(H)
Operating Temperature	0 to 50°C
Compliance	
EMC	Certified to meet AS/NZS 61000.6.3

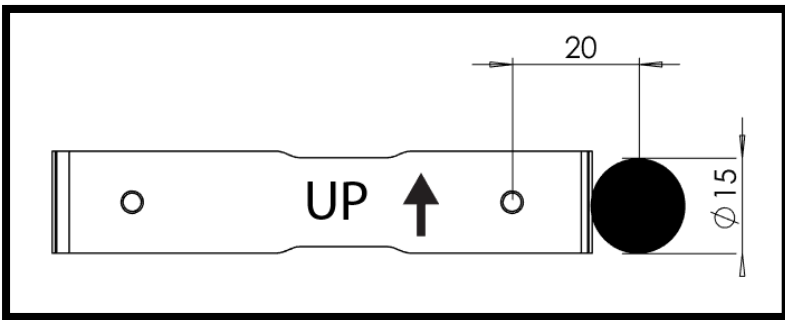
DISPLAY SCREEN INSTALLATION

Choose a flat location which is easily accessible and easy to view the display screen.
The location should be indoors away from weather.

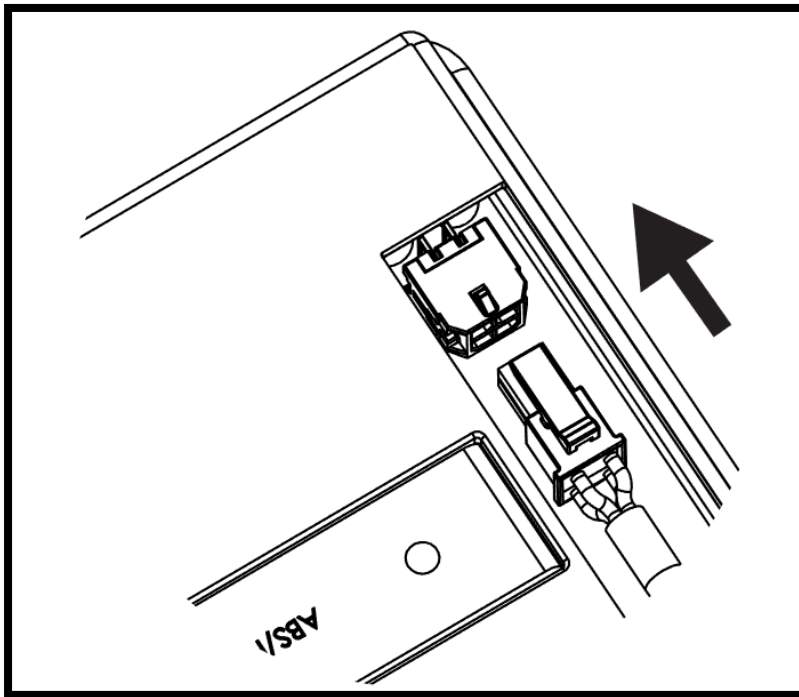
Screw the mounting clip using supplied self-tapping screws ensuring that the arrow is pointing “UP”



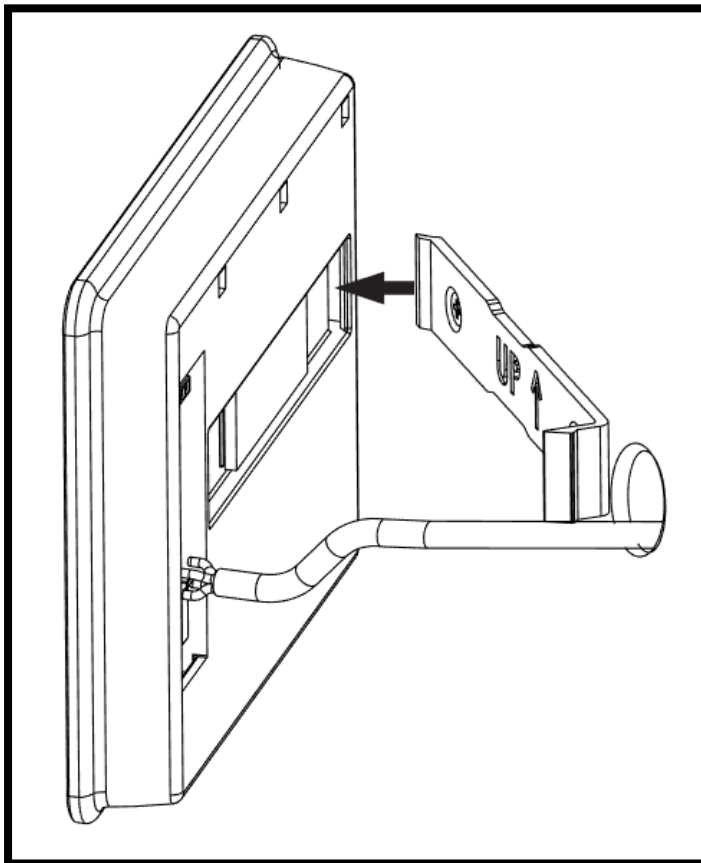
Drill a 15mm Diameter hole 20mm from the screw hole as pictured to allow the connector to pass through.



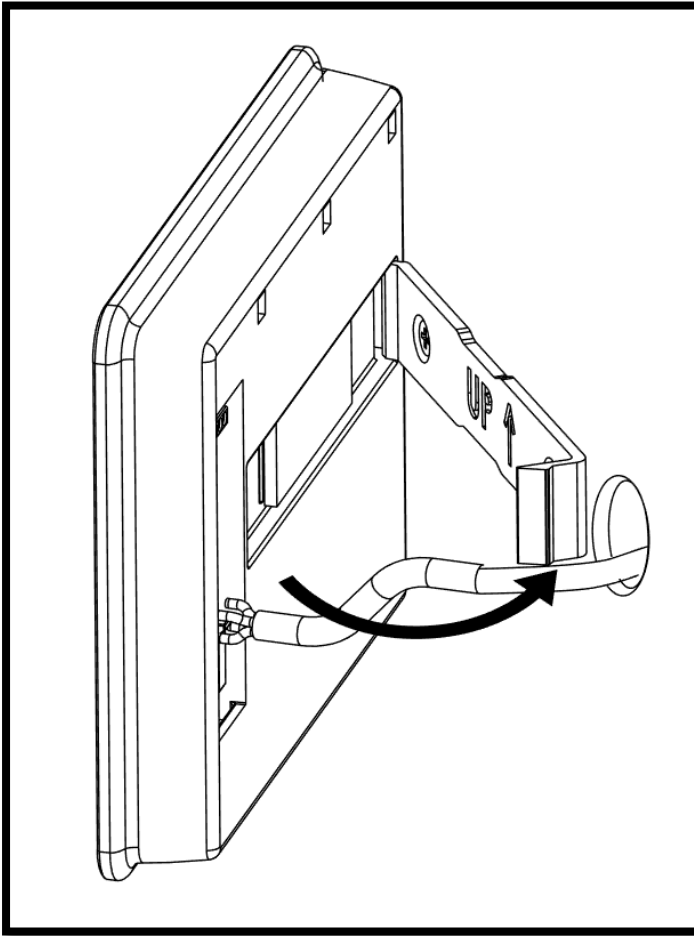
Plug in the supplied four pin connector to the receptacle at the back of the battery monitor



Feed the cable through the pre drilled hole and slide the left hand side of the battery monitor into the bracket tab.



Close the battery monitor onto the clip until you hear the “click” sound.
Make sure that the cable assembly has been fed into the hole correctly.



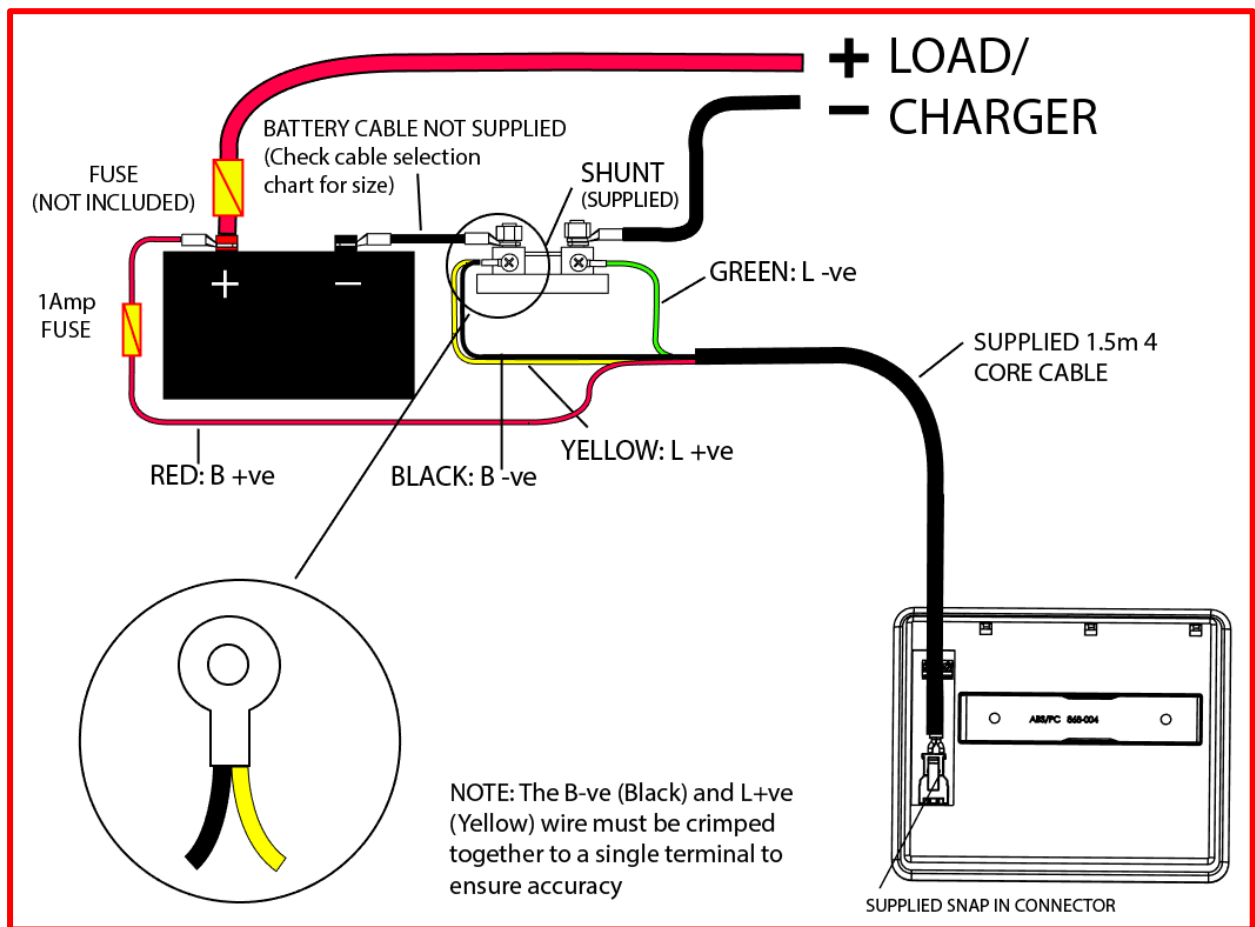
SHUNT AND WIRING INSTALLATION

IMPORTANT: to maintain accurate record of the battery capacity, all current must be passed through the shunt.

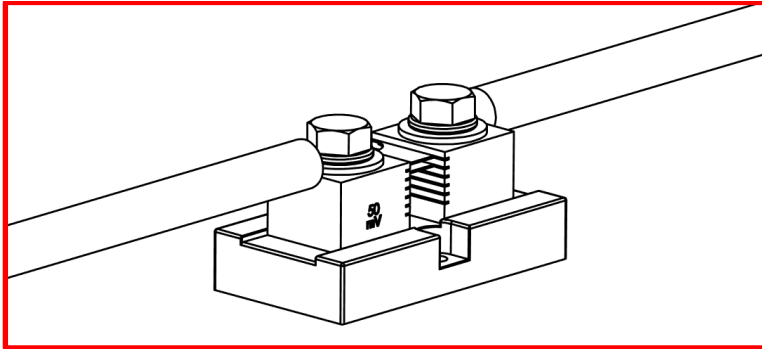
Disconnect the battery and turn off all devices before beginning the installation.

Mount the shunt in a secure location with adequate protection from damage.

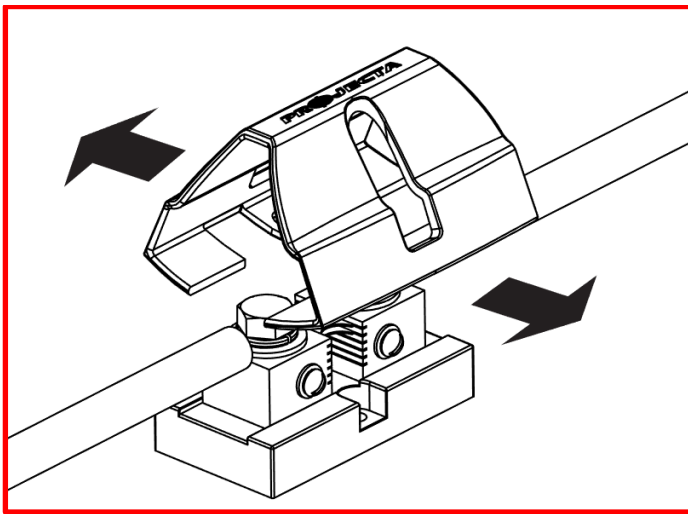
The BM320 is designed for 12V applications only.



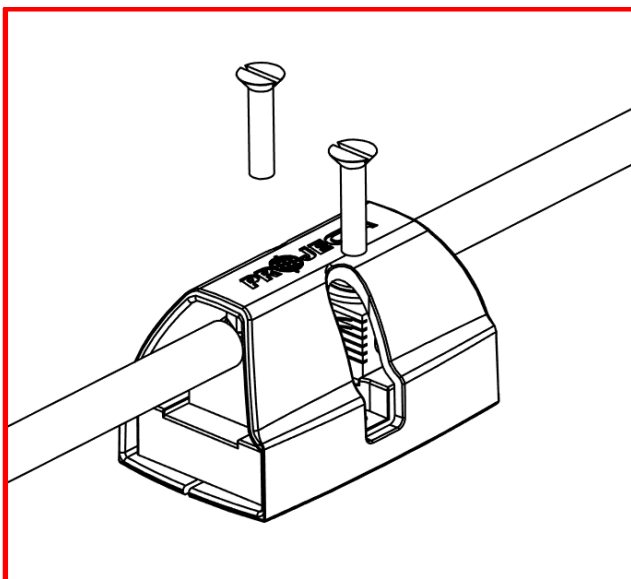
Once the shunt has been wired up to the battery and the monitor. Apply the provided shunt cover to protect the shunt.



Spread the shunt cover apart and place over the shunt.



Ensure that the shunt cover is now covering the shunt so that when the shunt is screwed down the shunt cover is held in place.



Battery cable selection chart

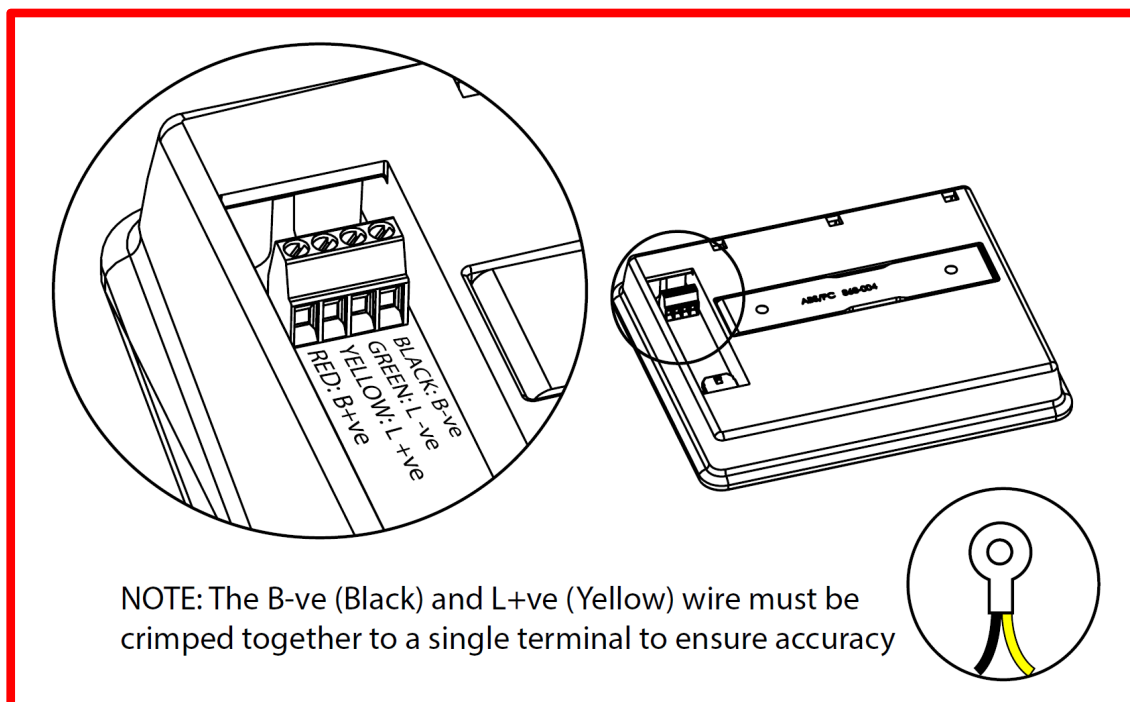
Nearest B & S	Nominal Area (mm ²)	AMP Rating (40°C)	Nominal O.D. (mm)
8	7.71	66	5.5
6	13.5	92	7.2
4	20.26	120	8.3
3	26.45	150	10.2
2	32.07	167	11.3
1	39.55	187	12.1
0	49	219	12.7
00	64.15	260	14.5
000	83.19	298	16.4

Alternative connection method:

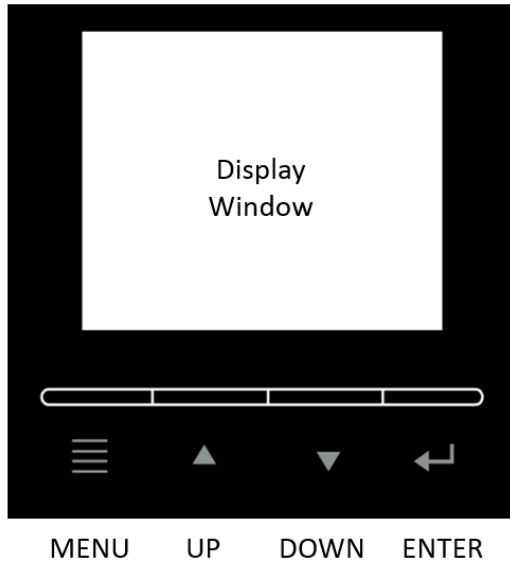
NOTE: USE ONLY ONE **CONNECTION** METHOD.

To connect using your own wiring harness use the supplied terminal block.

The terminal block is labelled, ensure you follow the wiring diagram and follow the colour coded connection sequence.



Quick Start



BM320 has four keys for user interface

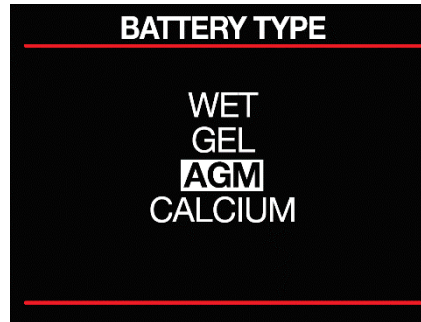
- MENU Key: for navigating to various available Modes.
- UP/DOWN Key: for navigating between various options within the Modes.
- ENTER Key: For confirming a selection.

↵

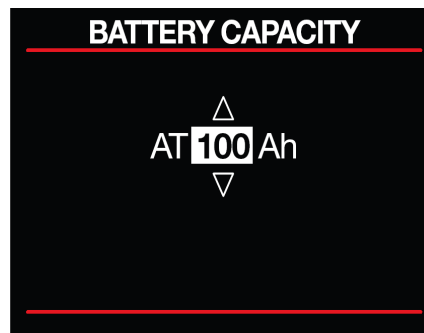
2. Select the type of battery (AGM,WET,GEL,CAL)
3. Enter the battery capacity and press ENTER button to confirm
4. Set the time and date of the clock (12Hr) – use the up and down arrows to adjust and press ENTER to move to the next setting
5. Enter value for the low battery capacity alarm and press ENTER button to confirm
6. Enter the value for battery health warning alarm and press ENTER button to confirm
7. *The battery settings and alarm settings will now be locked and unable to change unless the power is removed and the start-up sequence is completed again. Press enter to continue or menu to adjust the values.*
8. For most accurate results - Charge the battery to full with any multi-stage battery charger
9. Disconnect the battery charger when the battery is full
10. Unit is ready to use

SETUP SCREENS

Battery Settings



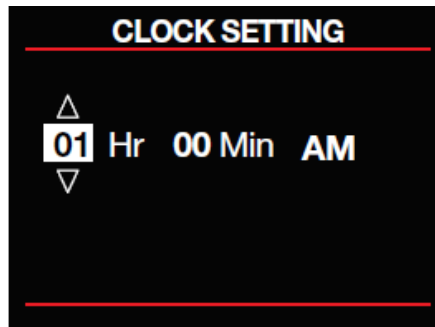
Use Up and Down buttons to choose your battery type which is marked on the battery case. Press ENTER button to apply the changes. The default type is AGM



Use Up and Down buttons to change the value of battery capacity which is marked on the battery case. Press ENTER button to apply the changes. The default value is 100Ah. **Range is 5Ah to 320Ah**

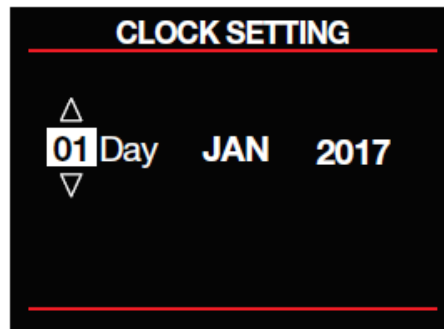
Clock settings

Select the clock settings from the menu screen



Use the Up and Down arrows to enter the correct value, press ENTER when the desired value is displayed this will prompt you to the minutes section, adjust the value as required and press ENTER again and set the AM/PM.

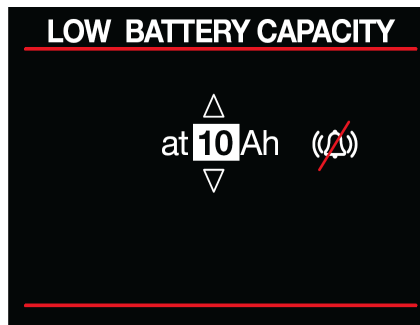
Press ENTER to move to the next screen which is to set the DATE



Set the Date using the up and down and press ENTER after the desired value is reached. Once complete press ENTER to complete the setup.

Alarm Settings

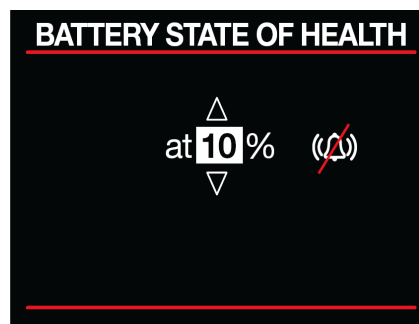
Low battery capacity



Use Up and Down buttons to change the value of low battery capacity alarm. Reduce the value to 0 to disable the alarm. Press ENTER button to apply the changes. The default value is 10Ah.

When the battery depletes its capacity to the set level, an audio alarm is activated. The audio alarm can be muted by pressing **ENTER** button.

Battery state of Health



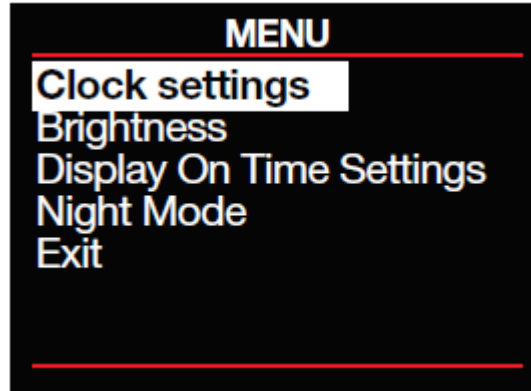
Use Up and Down buttons to change the value of battery state of health alarm. Reduce the value to 0 to disable the alarm. Press ENTER button to apply the changes. The default value is 30%.

The audio alarm can be muted by pressing **ENTER** button.

Battery Gauge User Interface

Main Menu

To enter into the main menu press the menu button \equiv on the display screen. To move through the menu press the up and down buttons. Press the Enter \rightarrow button to change the settings.



Function	Description
Clock Settings	Set Time and date
Brightness	Set the brightness of the LCD Display (50% as default value)
Display On Time Settings	Set the LCD Display On Time (10 mins as default on time, 0 mins is "always on")
Night Mode	Set the time in which the screen turns off to eliminate light while sleeping – press the ENTER button to wake up the screen
Exit	Exit Menu Screen and return to Default Screen

Default Screen

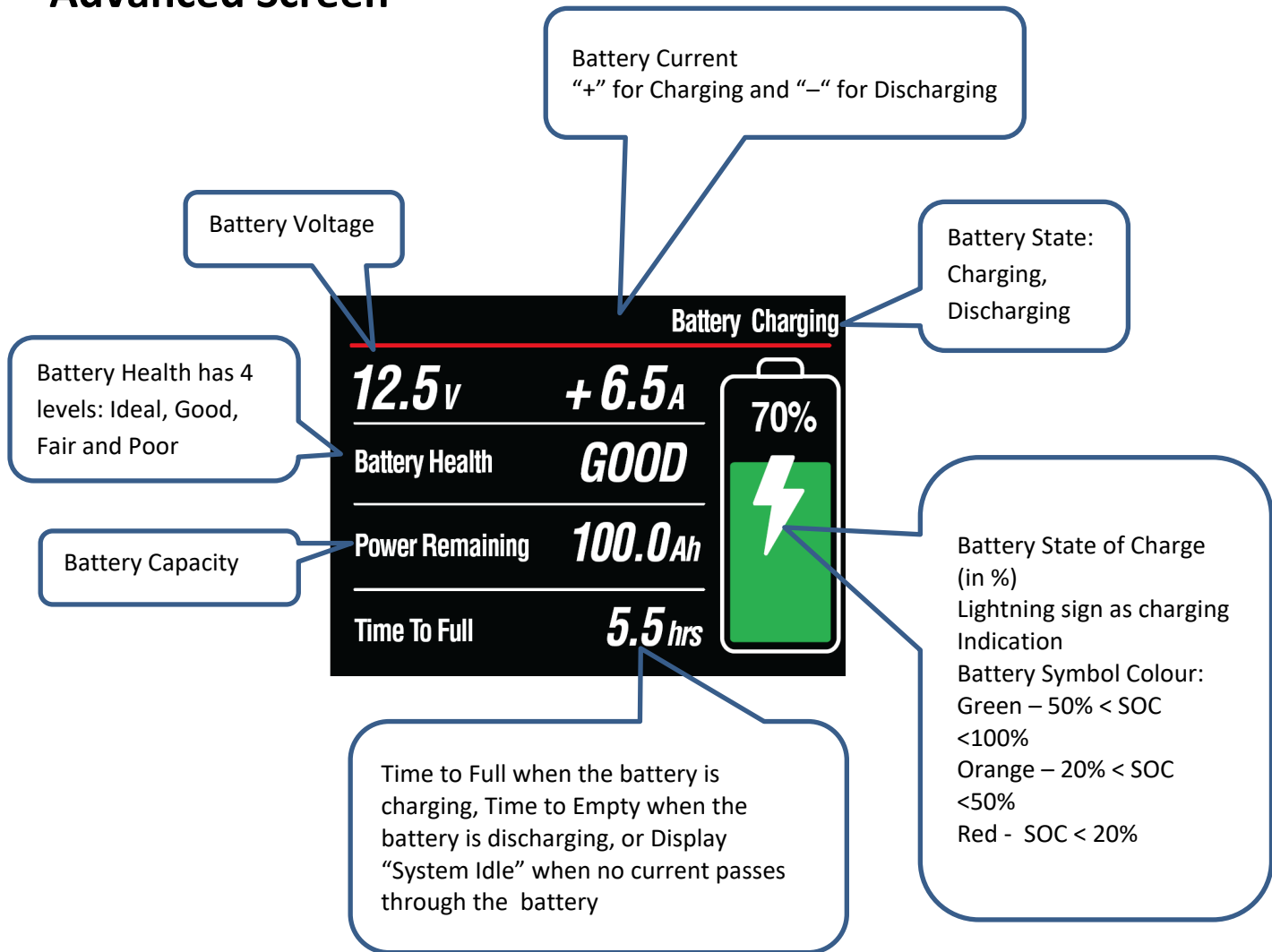
The image shows a black screen with the following information displayed in white and green text:

- Top right: Battery Charging
- Top left: 12.5V
- Top right: +6.5A
- Center: 70% with a lightning bolt icon
- Bottom left: Time To Full
- Bottom right: 5.0 hrs

Callouts and descriptions:

- Battery Voltage:** 12.5V
- Battery Current:** +6.5A
- Battery State:** Charging, Discharging
- Lightning sign as charging Indication:** The lightning bolt icon indicates the battery is charging.
- Battery State of Charge (SOC) in %:** 70%
- Battery Symbol Colour:** Green – 50% < SOC < 100%, Orange – 20% < SOC < 50%, Red - SOC < 20%
- Time to Full when the battery is charging, Time to Empty when the battery is discharging, or Display "System Idle" when no current passes through the battery.** 5.0 hrs

Advanced Screen



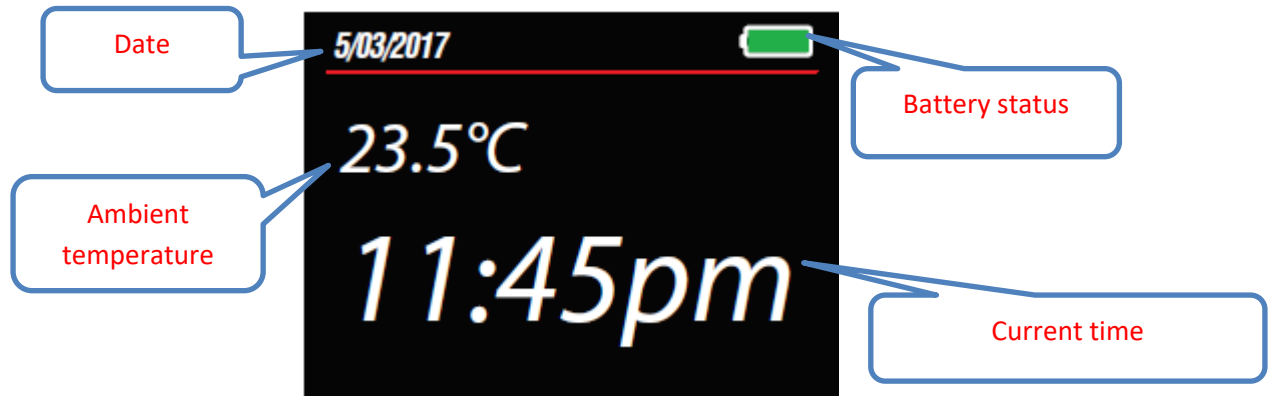
Battery Health

It is an indicator to show if the battery requires rejuvenation or replacement.

Indication	Description
Ideal or Good	No action is needed
Fair	Try to rejuvenate the battery
Poor	Try to rejuvenate the battery as soon as possible. If the battery health indicator is still Poor after rejuvenation, the battery is close to its end of life, replace the battery as soon as possible

Clock Screen

If you want the display screen to be always on - set the "display on time" settings to 0 mins. (Night mode will override the display on settings)

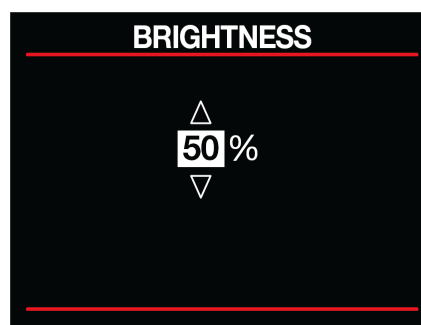


Display On Time Setting



Use Up and Down buttons to change the LCD display on time. Press ENTER button to apply the changes. The default value is 10 mins (0 mins is "always on").

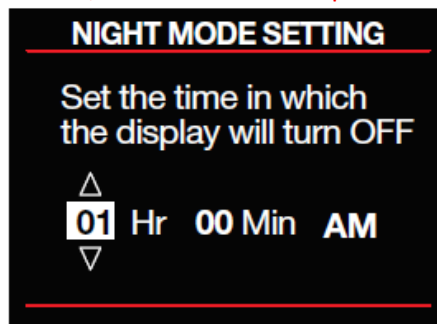
Brightness



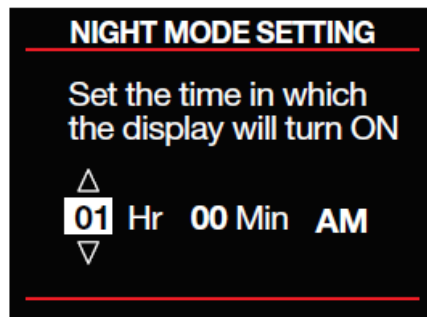
Use Up and Down buttons to change the brightness of LCD display. Press ENTER button to apply the changes. The default value is 50%.

Night Mode

Night Mode disables the display screen from displaying the battery status during set times. The alarm is still functional and will sound, to mute the sound press ENTER.



Use the Up and Down arrows to enter the time in which you want the screen to turnoff, press ENTER when the desired value is displayed this will prompt you to the next screen.



Set the time in which you want the screen to re engage to normal operation using the up and down buttons and press ENTER. Once complete press ENTER to complete the setup.

Frequently Asked Question

Q: What is state of charge (SOC)?

A: It is the remaining battery capacity expressed as a percentage of full charge capacity.

Q: What is State of Health (SOH) or Battery Health?

A: It is expressed as a percentage of the ratio of predicted full charge capacity over the design capacity. The BM320 uses 4 levels to represent the battery health: Ideal, Good, Fair and Poor. Please look at the battery health section for more detail.

Q: What is the low battery capacity alarm for?

A: The unit uses audio alarm to remind the user that the battery capacity is reduced to the set level.

Q: What is the battery health alarm for?

A: The unit uses audio alarm to remind the user that the battery state of health is reduced to the set level.

