



EV-BATTERY CHARGER

BMS

BATTERY CHARGER USER'S MANUAL MODEL: BMS-16020

Features:

- Constant Current- Constant Voltage (CC-CV) type battery charging Profile.
- Selectable no of batteries from 2 to 10.
- Selection of Charging Current from 5A to 20A.
- MCU Based Intelligent Charger.
- LCD display for displaying charger operational activities.
- User Friendly Parameter Selection Interface.
- Various protections incorporated for robust operation.
- Transformer based Input – Output Isolation.
- Rugged Construction for Industrial Usage.

How to Use the Charger

Before using the charger make please go through the below picture to identify various operational components –
Description of Front Panel:



1. LCD Display:- LCD display for displaying parameters of charger including set battery voltage vs actual battery voltage, set current limit vs actual current limit and other operational activities i.e. any faults, timer, mains voltage.
2. START Switch :- This switch is used to Start or Stop the charging operation.
3. MAINS ON:- This MCB is used to connect the mains input to charger.
4. BATTERY ON:- This DC MCB is used to disconnect the charger from the battery string in case of any over-current or reverse connection fault.
5. Output Connector:- This terminal is used to connect the battery string with the charger system
6. MENU:- This switch is used to select the parameter settings of Voltage, Current, number of battery and Timer.
7. UP SWITCH:- This switch is used to increase the selected setting parameter.
8. DN SWITH:- This switch is used to decrease the selected setting parameter
9. CHARGING:- This indicator will be ON when charger is ON and charging the battery.
10. STOPPED :- This indication will be ON when charger is in OFF condition.
11. FAULT:- This indicator will be ON when any of fault like mains low voltage, high voltage, Temperature cut off, over-current or in any of other faults.

Back Panel Description:



1. **MAINS INPUT:-** This terminal is used for connecting the input mains with the system.

Important Safety Instructions:

1. Make Input phase and neutral connection with minimum 6 Sq mm cross section copper wire to safely carry rated current.
2. Preferably use the interconnectors provided with the system for making connection between battery string and charger. Use only provided 6mm² Battery wire sets for battery connections.
3. All connections should be properly tightened before turning on the Charger.
4. Always ensure before starting the charger correct setting of charging voltage and current as per the number of batteries connected in the string.
5. Use the charger in area having dust free, moisture free area. Don't expose charger to water splash.
6. Give few inches gap across all sides of charger for proper ventilation of air.

Turning ON The Charger:

1. Turn ON MAINS ON MCB provided on front panel. Make sure the input AC mains are in its acceptable range. Startup screen on LCD Display will appear every time at power-up.
2. Before turning on the charger switch ensure about the charger voltage and current settings. These setting should be as per no of batteries connected.
3. Turn ON the DC MCB provided on front panel to connect the battery string with the system. Charger will not start charging if Batteries are not connected with the charger.
4. After fixing the settings press the Charger START switch to start charging. Charger will be on with Charger ON Green indication.
5. Pressing the Charger START switch again stops the Charger.

Charger Parameter Setting Procedure:

Charging parameters of voltage, current and timer can be selected with the use of three switches provided on front panel. Please note the system will allow changing the settings only when the charger is in stopped condition by using the Start/Stop switch. Detail functional Description of these switches are given as below –

1. Press the MENU switch repeatedly till the desired setting parameter of Voltage , Current, number of battery or Timer is displayed.
2. While the required parameter is displayed on LCD, press the UP or Down switch to increase or decrease the setting parameter.
3. If the parameter is already at maximum, pressing the UP switch will have no effect. Similarly, if the parameter is already at minimum pressing the DN switch will have no effect. For example, if the voltage setting is already 60V, then pressing the UP switch will have no effect.
4. If number of batteries selected with respect to actual number of battery, the charger will not allow the charging. It will show battery setting fault. So be ensure while selecting number of batteries.
5. If the timer is set to 00hr, the timer will be disabled. This means the charging will indefinitely continue till it is stopped by user by pressing the Start/Stop switch.
6. If no switch is pressed for more than 6 Seconds, then the menu returns to the default screen displaying setting vs actual values.

LCD DISPLAY DESCRIPTION:

SCREEN	DESCRIPTION
BATTERY CHARGER CHG 16020DV0	<input type="checkbox"/> This screen will appear every time at power-up.
SET: 60V 20A 00h ACT: 00V CHG OFF	<input type="checkbox"/> This screen will appear after start up screen. First row in display is showing set value of voltage, current and timer. <input type="checkbox"/> Second row is showing actual voltage of battery string. CHG OFF is also indicated in this second row.
SET: 60V 20A 18h ACT: 52V 19.8A 10h	<input type="checkbox"/> First row in display is showing set values of voltage current and timer <input type="checkbox"/> Second row is showing actual voltage, current and actual hour completion.
MAINS VOLTAGE 230VAC	<input type="checkbox"/> This screen will appear when set charging timer value is completed.
CHANGE SETTING VOLTAGE: 160V	<input type="checkbox"/> This screen will appear when SET switch is pressed to select voltage setting.
CHANGE SETTING CURRENT: 20A	<input type="checkbox"/> This screen will appear when SET switch is pressed to select current setting.
CHANGE SETTING NO OF BATTERY 10	<input type="checkbox"/> This screen will appear when SET switch is pressed to number of battery selected.

<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>CHANGE SETTING TIMER : 00h</p> </div>	<input type="checkbox"/> This screen will appear when SET switch is pressed to select timer setting.
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>!! FAULT !! TEMPERATURE</p> </div>	<input type="checkbox"/> This screen will appear in case of over temperature of system.
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>!! FAULT !! MAINS HIGH</p> </div>	<input type="checkbox"/> This screen will appear in case of mains input over voltage presence at system input terminal.
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>!! FAULT !! MAINS LOW</p> </div>	<input type="checkbox"/> This screen will appear in case of mains input under voltage presence at system input terminal.
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>!! FAULT !! BATT CONN</p> </div>	<input type="checkbox"/> This screen will appear when battery DC MCB is OFF or loose connection at battery string.

Specifications:

Parameter	Specification
Charging Voltage	160VDC \pm 2% Max
Adjustable Range	28V-160V (2-10nos 12V Batteries)
Charging Current	20A \pm 5% Max
Adjustable Range	5A-20A
Charging Profile	Constant Current, Constant Voltage
Input Voltage	160-280V AC Single Phase.
Input Frequency	50Hz Nominal
Cooling	Forced Air Cooled
Indications	LCD DISPLAY along with indicators.
Isolation	Transformer based Input-Output Isolation
Protections	Electronically Reverse Battery protection, mains under voltage, mains over voltage