



Battery Charger 12-72BC20A

Introduction

Sinetrac Battery Chargers are SCR controlled and essentially consist of a double wound transformer, an SCR/Diode bridge, smoothing choke, capacitors and electronic circuits for controlling the voltage and current. All these components are housed in a sheathed steel cabinet suitable for floor mounting and fitted with a Voltmeter, an Ammeter, fuses etc. The transformers and coils are double wound and contain lamination worldwide acknowledged for good efficiency.

Principle of Operation :

The AC supply from the Mains is applied to the primary of main transformer to obtain the required voltage. This is followed by a bridge circuit comprising of two diodes and two silicon controlled rectifiers (SCR). Surge suppression circuits made up of resistances and capacitors are used to protect the power device from the transients and surges. The output of the bridge is connected to conventional LC filter

network. The output of this circuit depends upon the firing angle of the SCRs. There are two basic modes of operation.

- Constant Voltage (Float mode)
- Constant Current (Boost mode)

Constant Voltage Mode :

The voltage across the output is sensed by the feedback and is compared with a comparator. The error voltage controls the firing angle of the SCR to maintain a constant voltage. Output voltage can be adjusted in this mode from 2V to 2.3 V /Cell with the help of Trimpot.

Constant Current Mode :

The output current is sensed by a shunt. The voltage developed across this shunt is again compared with a constant voltage reference, which is used to properly fire the SCRs to maintain a constant current. In this mode current can be adjusted by a current control Trimpot and relatively the load voltage changes from 1.7v to 2.4v /cell.

To start with the charger functions in float mode. However if the battery charging current requirement is more than $1/10^{th}$ of the boost charging current then the charger will automatically switch over to the boost mode for charging. It shall continue under Boost mode till the battery voltage reaches 2.4v /cell and consequently charging current comes down to $1/10^{th}$ of the boost charging current.

Readily Available Models

Models	Battery Charging Capacity	Models	Battery Charging Capacity
12-24 BC10A	1 No. or 2 No's 12 volts upto 100Ah	12-24 BC10A	1 No. or 2 No's 12 volts upto 200Ah
12-48 BC10A	1, 2, 3 or 4 No's 12 volts upto 100Ah	12-48 BC10A	1, 2, 3 or 4 No's 12 volts upto 200Ah
12-72 BC10A	1, 2, 4 or 6 No's 12 volts upto 100Ah	12-72 BC10A	1, 2, 4 or 6 No's 12 volts upto 200Ah

Indications :

- | | |
|------------------------------|---------------------------------------|
| i. Mains supply | ii. Mode of charging (Float or Boost) |
| ii. Polarity Battery Reverse | iv. Over load condition |

Protections

- i) Over load protection
- ii) Reverse Polarity protection
- iii) Short circuit protection
- iv) Surges & Transient protection

Installation & Commissioning

The Battery charger should be installed at a place where the ambient temperature doesn't exceed 45° C. After opening the packing case, it should be ensured that no physical damage has been caused to the battery charger during transportation. Avoid excessive corrosive fumes and ensure free air circulation. Adequate space to be provided for effective ventilation. Before plugging the charger to AC Mains, check all fuses, meters and if possible the insulation resistance using a megger.

Operating Instruction

- Before connecting the charger to the AC Mains, make a thorough physical check for any missing/broken Fuse and Meter etc.
- Connect the Input Lead of charger to an AC Mains socket of rated input current of the charger while the power supply voltage should range between 180-270V. Input AC Mains indicator will glow. Though the charger will still charge but not all that efficiently on lower voltage.
- Connect the battery(ies) to be charged to the output terminals of the charger with correct polarities and commence charging.
- If the batteries are not connected properly to the output terminals of the charger, MCB will trip and indication of reverse polarity will glow.
- If there is any short circuit on the output side of the charger in this condition MCB will also trip and charging will not commence.

Technical Specification :

Input working voltage	-	180-270 Volts
Nominal Input Voltage	-	230V AC, 50Hz, 1
On load input Power Factor	-	>0.8
On load unit watt efficiencies	-	>80%
No load losses of complete charge	-	< 10%
Ripple contents on the load (rms)	-	1% to 5%
Over load	-	110% for 30 minutes and will give visual indication for over load condition.
Boost Charging	-	2.4 V/cell
Float charging	-	2.15 V/cell
Float cum Boost Charging	-	Automatically changes from one state to another state as per battery condition and will give the visual indication for either float or Boost based on charging mode.
Reverse Polarity	-	No damage will be caused. A visual indication for Reverse polarity will appear with an audio alarm
Short circuit	-	MCB protection provided.

Due to continuous upgradation specifications may change without prior notice

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