

JF5028-00

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STANDARD SAMPLE SPECIFICATION

SCR/SCRF Series Float Battery Charger (single or three phase input)

I. Scope

Provide a silicon controlled rectifier battery charger capable of recharging any stationery, secondary battery type. The charger is designed to operate automatically, and shall be a constant voltage device equipped to provide automatic current limiting. The battery charger shall be all solid state, employing integrated circuitry for maximum performance.

II. Basic Design Features

- A. MTBF of 30,000 hours minimum (20 year life expectancy).
- B. Modular construction: control circuits and alarm assemblies shall be printed circuit boards that are modularized with plug and socket connections.
- C. Recessed front panels to protect all controls and meters.
- D. Color-Coded PVC wiring: test point identification and circuit symbol labeling of internal components (optional switchboard wiring with numbered wire markers may be specified).
- E. No transformer tap adjustments are to be required.
- F. Adjustments for all charger output settings, float and equalize voltages, current limit and alarm thresholds shall be via potentiometers. Float and equalize potentiometers shall be located on the front panel and shall employ lock nuts to mechanically maintain the settings once achieved.
- G. Internal Components shall be accessed though either a hinged or removable door in the front. Side or rear access shall not be necessary.
- H. Enclosures are to be equipped with knockouts for cable and conduit entry. Alarm and power connections shall be made via internal terminal blocks that are easy to access.

III. Environmental Specifications

- A. Operating temperature without derating:
32 deg F to 122 deg F (0 deg C to 50 deg C)
- B. Operating Altitude to 3,300 feet without derating.
- C. Relative Humidity - 5% to 95% without condensation.
- D. Audible noise less than 65dBa at any point 5 feet from any vertical surface of the enclosure, while operating at full load.
- E. Ventilation: Convection cooled except if unit output rating is 400A_{dc} or more or if rating is 125A_{dc} or higher and in a Style-3 enclosure, then fan assisted convection cooling is required. Fan equipped units must have an audible alarm and remote alarm contacts for overheating notification.

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IV. Output Regulation

- A. Shall be +/- 0.5% of Vdc voltage setting maintained with input line variations of +/-10% voltage and/or +/-5% frequency, or load variations from no load to full load. A combination variation of line, plus load, plus temperature will allow for +/-1% regulation.

V. Transient Response and Recovery

- A. +/-5% maximum of Vdc voltage setting maintained with step load changes from 20% to 100% load with battery connected.
B. Recovery to +/- 2.0% of Vdc voltage setting (typically 200msec).
C. Recovery to steady state Vdc voltage setting (typically 500msec).
D. Overshoot of Vdc voltage setting is not present at turn on due to “soft-start” feature.

VI. Transient Voltage Protection

- A. Shall employ MOV type suppressors on the input and output capable of achieving the following withstand:
- 1 - AC withstand - 240vac or less = 1500Vpk - 1.2 x 20 µsec pulse.
- Over 240 vac = 3000Vpk - 1.2 x 20 µsec pulse.
 - 2 - Vdc withstand 4000Vpk - 1.2 x 10 µsec pulse.

VII. Output Current Limit

- A. Shall be factory set at 110% of rating and be adjustable from 90% to 120%.

VIII. Random Parallel Operation

- A. This feature allows for random parallel operation with other chargers with the same output voltage and similar regulation and current limit characteristics. Equal load sharing shall not be necessary.

IX. Output Electrical Noise

- A. Unfiltered model, output ripple shall be less than 10% rms for single phase input and 3% rms for 3 phase input models, with battery connected.
B. Filtered model shall have an output ripple voltage of 30mV rms or less. Electrical voice band noise is less than 32dBnC using C - message weighting network, when measured with a battery connected that has an 8 hour amp-hour rating equal to no less than 4 times the battery charger's output current rating.
C. Battery eliminator model shall have a maximum output ripple voltage of 30mV rms or 0.06% whichever is greater. Electrical voice band noise is less than 32dBnC using C - message weighting network.

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X. Standard Equipment to be provided with all Battery Chargers

- A. AC pilot lamp
- B. AC circuit breaker (2-pole for single phase, 3-pole for 3 phase, shall be UL-listed or recognized type)
- C. Vdc fuse (fast acting type rated for appropriate Vdc service)
- D. AC & DC surge suppressors (MOV type)
- E. Vdc output Voltmeter and Ammeter (2%, 3.5in panel type)
- F. Manual switch for selection of float and equalize modes
- G. Internally mounted current limit adjustment potentiometer
- H. Externally mounted float and equalize potentiometers with adjustment locking collar nuts
- I. Vdc output blocking diode
- J. Vdc output protection diode
- K. Color-coded internal wiring
- L. I/O power terminal block

XI. Charger Options

A - Typical Options

1 - **CASM, Combined Alarm Status Monitor**, includes,

- a. High - Low AC voltage alarm relay
- b. Hi Vdc voltage alarm relay
- c. Low Vdc voltage alarm relay
- d. Ground Detection alarm relay
- e. Charger Failure alarm relay
- f. Common alarm relay
- g. Relays have 1 set of isolated dry, form C contacts (SPDT), rating 125 Vac/Vdc @ 0.5A.
- h. Relays all have 15 second time delay except for Charger Failure which has a 30 second time delay. All time delays are fixed.
- i. Each alarm function is displayed via an LED on the charger's front panel.

2 - Equalize Timer Options

- a. 0-72 hour manual equalize timer, specify either with or without indicating lamps.
- b. 0-72 Automatic equalize timer with float/equalize lamps and switches. Timer is enabled when AC input power fails for a period greater than 10 seconds.

3 - Vdc circuit breaker (specify kAIC rating as required)

4 - Forced load sharing

5 - High dc voltage charger shutdown

6 - Filtered or Filtered battery eliminator

7 - Input lightning arrestor

8 - SWC to IEEE - 472 / ANSI 37.90a

9 - AC voltmeter or ammeter

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B. Additional Optional Accessories;

- 1 - Special input or output voltage
- 2 - Special high AIC breakers (AC or DC)
- 3 - Meters (1% analog switchboard or 0.1% digital)
- 4 - Common alarm buzzer
- 5 - Engraved functional nameplates
- 6 - Component fungus proofing
- 7 - Enclosure rodent protection
- 8 - Enclosure drip shield(s)
- 9 - Special or custom enclosures, both style and type (e.g. NEMA-4, NEMA-12, etc.)
- 10 - Cabinet heaters
- 11 - Special painting requests
- 12 - Switchboard wiring
- 13 - Special packaging, export etc.