

NetGain Controls, Inc. 3000W HF/PFC Battery Charger

Features:

- Advanced high frequency switching design and 92% typical efficiency.
- Fully sealed enclosure provides improved reliability in demanding environments
- > 0.98 Power factor minimizes utility surcharges and maximizes use of AC power
- Approved battery charge algorithms for ideal charging (default I1, I2, U, I3a)
- Memory to store 10 unique algorithms with ability to switch between algorithms.
- Internal CPU employs advanced charging management algorithm

Technical Features:

DC Output

| | 24XX | 36XX | 48XX | 60XX | 72XX | 96XX | 120XX | 144XX |
|-----------------------------|------------------------------------|------|------|------|------|------|-------|-------|
| DC Output Voltage – nominal | 24V | 36V | 48V | 60V | 72V | 96V | 120V | 144V |
| DC Output Voltage – maximum | 34V | 51V | 68V | 85V | 102V | 136V | 170V | 204V |
| DC Output Current – maximum | 80A | 60A | 50A | 40A | 32A | 24A | 20A | 16A |
| Battery Type | Specific to selected algorithm | | | | | | | |
| Reverse Polarity | Electronic protection – auto-reset | | | | | | | |
| Short Circuit | Output closed automatically | | | | | | | |

AC Input

| | |
|----------------------------|---------------------------------|
| AC Input Voltage – range | 96-240VAC |
| AC Input Voltage – nominal | 120VAC/230VAC |
| AC Input Frequency | 45-65 Hz |
| AC Input Current – maximum | 30A |
| Current – nominal | 25A rms @ 120VAC/13A rms@230VAC |
| AC Power Factor – nominal | > 0.98 |

Mechanical

| | |
|-------------------------|--|
| Dimensions | 13.86”x9.92”x6.61” (352x252x168mm) |
| Weight | 21.5 lbs (9.75 kg) with standard output cord |
| Environmental Enclosure | IP46 |
| Operating Temperature | -30°C to +50°C (-86°F to +122°F) |
| Storage Temperature | -40°C to +85°C (-104°F to +185°F) |

LED Indicator

| | |
|---------------------------------------|-----------------------|
| Red-Green flash (one second interval) | Battery Disconnected |
| Red Flash (three seconds interval) | Repair Battery |
| Red flash (one second interval) | <80% Charge Indicator |
| Yellow flash (one second interval) | >80% Charge Indicator |
| Green flash (one second interval) | 100% Charge Indicator |

Protection Features:

1. **Overheat Protection:** When the internal temperature of the charger exceeds 80°C, the charging current will reduce automatically. If temperature exceeds 85°C, the charger will shutdown protectively. (There is no current output at this moment.) When the internal temperature decreases to 80°C charging resumes automatically.
2. **Short-circuit protection:** when the charger output encounters a short circuit, the charger will cut off the output automatically. To resume charging, power down the charger for 10 seconds then restart. Charging will then resume normally.
3. **High and Low Voltage Protection:** When the input AC voltage is higher or lower than the rated input voltage range, the charger will shutdown protectively and resume charging when the voltage reaches the rated input range.

Selecting a Charging Curve

1. Pick the appropriate Charging Curve. Choose the Amp-Hour rating which is nearest (not necessarily lower or higher) to the rating of your battery pack. i.e. select curve #5 for a 144V system with 210 Amp-hour batteries.
 - 1) 144V 40Ah
 - 2) 144V 80 Ah
 - 3) 144V 120 Ah
 - 4) 144V 180 Ah
 - 5) 144V 220 Ah
 - 6) 156V 40 Ah
 - 7) 156V 80 Ah
 - 8) 156V 120 Ah
 - 9) 156V 180 Ah
 - 10) 156V 220 Ah
2. The battery pack does not need to be connected to the charger -this process works in either case.
3. Disconnect the AC power from the charger (unplug it).
4. Peel the protective cover off of the hole covering the microswitch. This switch is on the normal bottom of the charger in the hole closest to the mounting foot.
5. Locate the LED labeled “LED indicator” on the top of the charger. Using a pen or similar, depress the microswitch, and while depressing this switch, power up the charger (plug it in). The LED indicator will begin to display GREEN flashes. Immediately after the charger has flashed as many times as you want to indicate the charging curve, release the microswitch. i.e. release the switch just after the fourth flash to select the fourth curve.
6. Disconnect the AC power from the charger (unplug it) and wait a few seconds for the charger to turn off and make an audible “click”. Now plug the charger back in and watch the LED indicator. The flash will settle with a sequence of RED flashes followed by a single GREEN flash. The number of red flashes in the sequence represents the charging curve selected.

Alarms

| | LED Flashing Sequence (One Cycle) | Indication |
|---|-----------------------------------|--|
| 1 | R G _ _ _ _ _ | Wrong Battery |
| 2 | R G R _ _ _ _ | Overcharged |
| 3 | R G R G _ _ _ _ | Battery temperature too high |
| 4 | R G R G R _ _ _ | Incorrect AC Input Voltage |
| 5 | R G R G R G _ _ | Heat Sensor error |
| 6 | R G R G R G R _ | Communication interface error |
| 7 | G R _ _ _ _ _ | Charger temperature exceeds 85°C |
| 8 | G R G _ _ _ _ | Charger relay error – maintenance required |
| 9 | G R G R _ _ _ _ | General Charger error – maintenance required |

- Note: 1. R – Red G – Green
 2.“_” denotes one second stop
 3.Above LED flashing sequence is per cycle. LED will flash repeatedly when in fault.

Installation & Safety Instructions

This charger has been designed to provide safety and reliability. Observe the following precautions and installation instructions to avoid damage to persons or the charger.

1. Mount the battery charger to a stable surface using the mounting holes on the flanges. For vehicle installation anti-vibration supports are recommended.
2. Install the charger so the radiator stands vertical. Never install the charger with the radiator facing down.
3. Ensure all ventilation components are free of obstructions to avoid overheating. Keep charger away from heat sources. Keep sufficient space around the charger to provide adequate ventilation and easy access to cable sockets
4. Protect the charger from direct contact with water.
5. Verify that available supply voltage corresponds to the voltage stated on the battery charger name plate. If necessary, consult a retailer or local electronics supply company.
6. For safety and electromagnetic compatibility, the charger has a 3-prong plug as a safety feature, and will only function with a grounded outlet.
7. Keep the charger cord free of unnecessary stress caused by pushing the cord against a wall, vehicle or human traffic, etc. If the cord becomes damaged or frayed, replace it immediately.
8. If using an extension cord or power strip, ensure that the device is rated for the amperes required by the charger.
9. Disconnect the mains supply before connecting or disconnecting from battery terminals.
10. Verify that the selected charging curve is suitable for the battery type to be recharged.
11. In order to avoid voltage surges, keep output cables as short as possible and use cabling rated for current requirements.
12. Do not attempt to service the charger. Refer servicing to a qualified technician.

13. If the charger malfunctions or has been damaged, disconnect the battery socket and mains power supply and contact a technician.
14. Place the heat sensor in the area of highest battery temperature.