

NRG

Intelligent Engine Start Battery Charger



The Smart Choice for Mission-Critical Engine Starting

- **Fast, accurate, mission-critical charging** – gives best starting reliability
- **Replace nearly any charger** – without planning ahead
- **Industry-first battery-fault alarm** - helps dispatch service early
- **1 million hour observed MTBF** – means longest charger life
- **Smart design** – stops load dump and other damaging transients



NRG Battery Charger Benefits and Features



Failure to start due to battery problems is the leading cause of inoperable engine generator sets.

SENS NRG battery charger maximizes starting system reliability while slashing genset servicing costs:

One NRG replaces almost any charger without extra site visits. Installers can select or change at any time 120, 208 or 240 volts AC input, 12 or 24-volt battery and output settings optimized for nearly any lead-acid or nickel cadmium battery.

Easy to understand user interface provides state-of-the-art system status – including digital metering, NFPA 110 alarms and a battery fault alarm that can send service personnel to the site before failure to start.

Batteries charged by NRG give higher performance and last longer. In uncontrolled environments precision charging by SENS increases battery life and watering intervals 400% or more.

NRG meets all relevant industry standards – including UL, NFPA 110 and CE. All units are either C-UL listed or C-UL recognized. 50/60 Hz units add CE marking to UL agency marks.

EnerGenius reliability technology built into every charger includes:

- All-electronic operation with generous component de-rating
- Disconnected/reversed/incorrect voltage battery alarm and protection
- Protection of connected equipment against load dump transients
- Widest temperature rating, and overtemperature protection
- Superior lightning and voltage transient protection
- Demonstrated field MTBF > 1 million hours
- Standard 3-year warranty and available reimbursement of customer field service costs

Earn the best return on your charger investment – choose SENS NRG

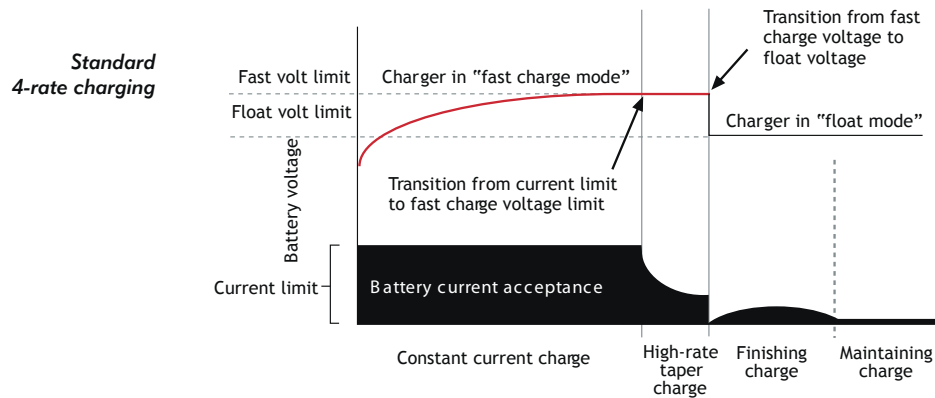
NRG Specifications

AC Input

Voltage	110-120/208-240 VAC, $\pm 10\%$, single phase, switch selectable
Input current	10A charger: 6.6/3.3 amps maximum 20A charger: 12.6/6.3 amps maximum
Frequency	60 Hz $\pm 5\%$ standard; 50/60 Hz $\pm 5\%$ optional
Input protection	1-pole fuse, soft-start, transient suppression

Charger Output

Nominal voltage ratings	12 or 24 volt nominal
Optional voltage rating	12/24 volt, field selectable
Battery settings	Six discrete battery voltage programs - Low or high S.G. flooded - Low or high S.G. VRLA - Nickel cadmium 9, 10, 18, 19 or 20 cells
Regulation	$\pm 0.5\%$ (1/2%) line and load regulation
Current	10 or 20 amps nominal
Electronic current limit	105% rated output typical – no crank disconnect required
Charge characteristic	Constant voltage, current limited, 4-rate automatic equalization
Temperature compensation	Enable or disable anytime, remote sensor optional
Output protection	Current limit, 1-pole fuse, transient suppression



User Interface, Indication and Alarms

Digital meter	Switch-selectable meter for output volts, amps
Accuracy	$\pm 2\%$ volts, $\pm 5\%$ amps
Alarms	LED and Form C contact(s) per table:



Front panel status display

Alarm System Functions

	Alarm code "1" ¹	Alarm code "C" (meets requirements of NFPA 110)
AC good	LED	LED
Float mode	LED	LED
Fast charge	LED	LED
Temp comp active	LED	LED
AC fail	LED ²	LED and Form C contact
Low battery volts		LED and Form C contact
High battery volts		LED and Form C contact
Charger fail	LED ²	LED and Form C contact
Battery fault ³	LED ²	LED and Form C contact

- Alarms "1" available only on 10A charger
- Form C contact provides summary alarm of these conditions. BBHH chargers include this alarm configuration. Contacts rated 2A @ 26 VDC resistive
- Battery fault alarm indicates these fault conditions:
 - Battery disconnected - Battery polarity reversed - Mismatched charger battery voltage - Open or high resistance charger to battery connection
 - Open battery cell or excessive internal resistance

Controls

AC input voltage select
Optional 12/24-volt output select
Battery program select
Fast charger enable/disable
Temp compensation enable
Remote temp comp enable

Field-selectable switch
Field-selectable two-position jumper
Field-selectable six-position jumper
Field-selectable two-position jumper
Standard. Can be disabled or re-enabled in the field
Connect optional remote sensor to temp comp port



Simple field adjustments

Environmental

Operating temperature
Over temperature protection
Humidity
Vibration (10A unit)
Transient immunity

-20C to +60C, meets full specification to +45C
Gradual current reduction to maintain safe power device temperature
5% to 95%, non-condensing
UL 991 Class B (2G sinusoidal)
ANSI/IEEE C62.41, Cat. B, EN50082-2 heavy industrial

Agency Standards

Safety

Agency marking

EMI
NFPA standards
Optional agency compliance

C-UL listed to UL 1236 (required for UL 2200 gensets), CSA standard 22.2 no. 107.2-M89
CE: 50/60 Hz units DOC to EN 60335
60 Hz: C-UL-US listed
50/60 Hz: C-UL-US listed plus CE marked
FCC Part 15 Class B; EN 50081-2
NFPA 70, NFPA 110. (NFPA 110 requires Alarms "C")
Units with Alarms "1" configuration available with additional compliance to UL category BBHH and NFPA 20

Construction

Housing/configuration

Packaging
Dimensions
Printed circuit card
Cooling
Protection degree
Damage prevention
Electrical connections

Material: Heavy clear anodized aluminum. Configuration options:
• Fully enclosed: C-UL listed enclosure
• Open frame: C-UL recognized
• Slimline: C-UL recognized open frame construction with remote isolation transformer
Open-frame and Slimline configurations only available in bulk OEM quantities and packaging
See Drawings and Dimensions page for details
Surface mount technology, conformal coated
Natural convection
Listed housing: NEMA-1 (IP20). Optional NEMA 3R enclosure
Fully recessed display and controls
Compression terminal blocks

Warranty

Standard warranty
Optional warranty

Three year parts and labor warranty from date of shipment
If specified at time of order, warranty coverage is increased to reimburse customer's documented field service costs up to the original charger price. Contact the factory for full details

Optional features

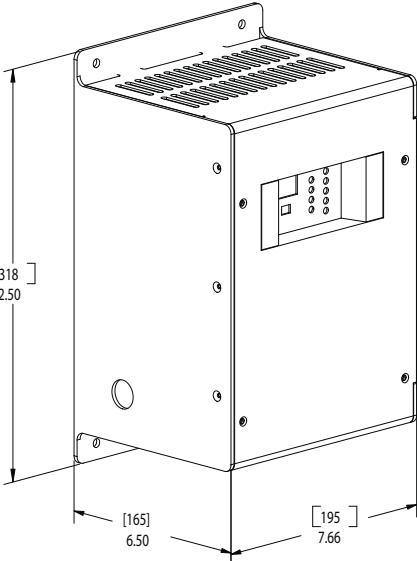
Input
Remote temp comp sensor
Drip shield
NEMA 3R housing
UL BBHH listing
Field service warranty

Input frequency, 50/60 Hz
Recommended where battery and charger are in different locations
Protects from dripping water
Enables outdoor installation (remote temp sensor recommended)
Available in 10A units with Alarms "1"
Reimbursement of customer field service expenses up to charger price

Drawings and Dimensions

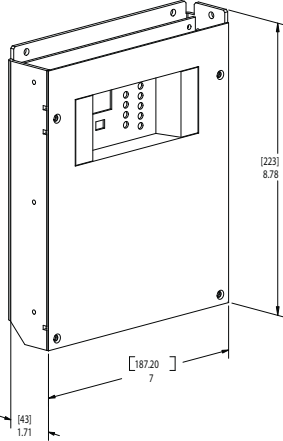
10A Chargers

Enclosed and Open Frame Configurations



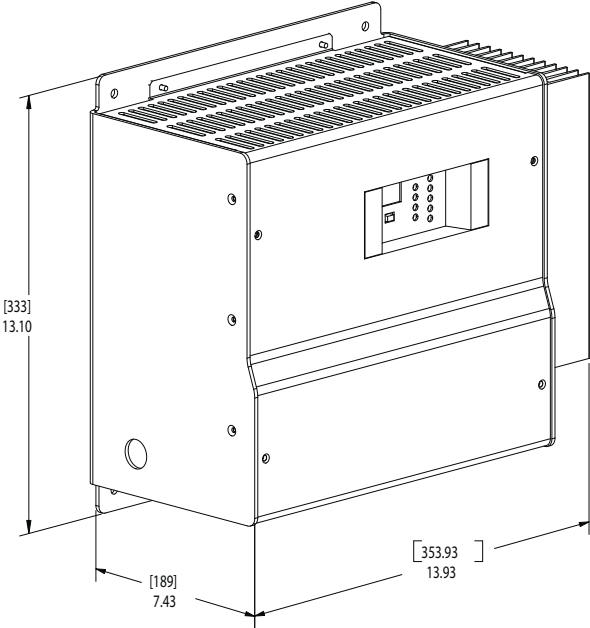
10A Chargers

Slimline Open Frame Configuration



Slimline can be mounted either flat or edgewise

Open-frame configuration omits front cover



Open-frame configuration omits front cover

20A Chargers

Enclosed and Open Frame Configurations

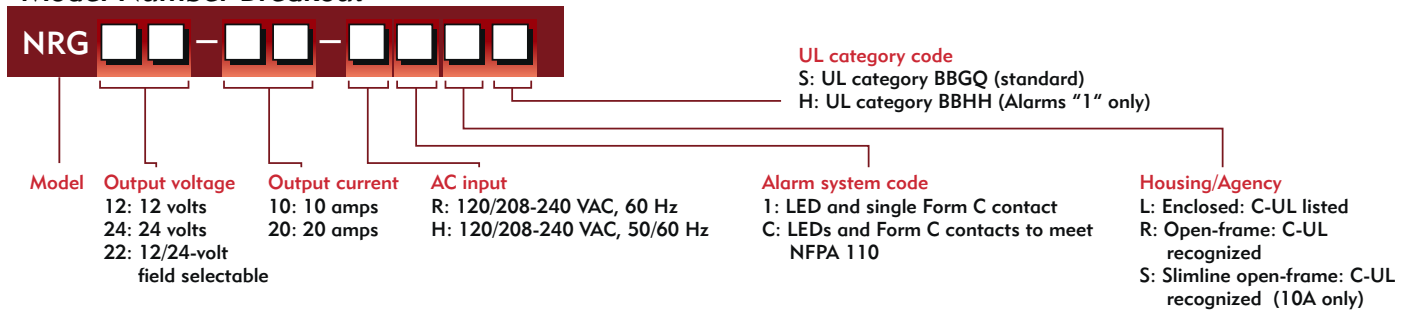
Housing Dimensions Table				
Amps	Configuration	Width	Depth	Height
10	Enclosed	7.66" (195 mm)	6.50" (165 mm)	12.50" (318 mm)
10	Open-frame	7.66" (195 mm)	6.50" (165 mm)	12.50" (318 mm)
10	Slimline – flat mount	7.00" (187 mm)	1.71" (43 mm)	8.78" (223 mm)
10	Slimline – edge mount	1.71" (43 mm)	7.00" (187 mm)	8.78" (223 mm)
20	Enclosed	13.93" (354 mm)	7.43" (189 mm)	13.10" (333 mm)
20	Open-frame	13.93" (354 mm)	7.43" (189 mm)	13.10" (333 mm)

NRG Ordering Information

Output volts	Output amps	Model	Available configurations	NFPA 110 Alarms	Lbs/Kg
12	10	NRG12-10-R1	Enclosed, Open-frame, Slimline	No	19 / 8.7
12	10	NRG12-10-RC	Enclosed, Slimline	Yes	19 / 8.7
24	10	NRG24-10-R1	Enclosed, Open-frame, Slimline	No	24 / 10.9
24	10	NRG24-10-RC	Enclosed, Slimline	Yes	24 / 10.9
12/24	10	NRG22-10-R1	Enclosed, Open-frame, Slimline	No	24 / 10.9
12/24	10	NRG22-10-RC	Enclosed, Slimline	Yes	24 / 10.9
12	20	NRG12-20-RC	Enclosed, Open-frame	Yes	39 / 17.7
24	20	NRG24-20-RC	Enclosed, Open-frame	Yes	42 / 19.1
12/24	20	NRG22-20-RC	Enclosed, Open-frame	Yes	42 / 19.1

All models offer field-selectable input 120/208-240 volts. 60 Hz input is standard with C-UL listing. Optional 50/60 Hz input includes C-UL listing and adds CE mark.

Model Number Breakout



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Additional Information

Contact SENS or your local sales representative for additional specification, engineering and installation information



Contact Information

For information and service on any SENS product, please contact us at:
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