SENS®

MicroGenius® LE

Compact Marine & Genset Battery Charger

12 Volt, 6 or 10 Amp
24 Volt, 5 Amp

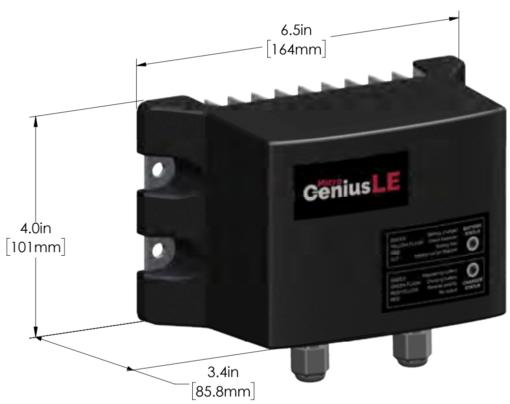
Small. Automatic. Smart.

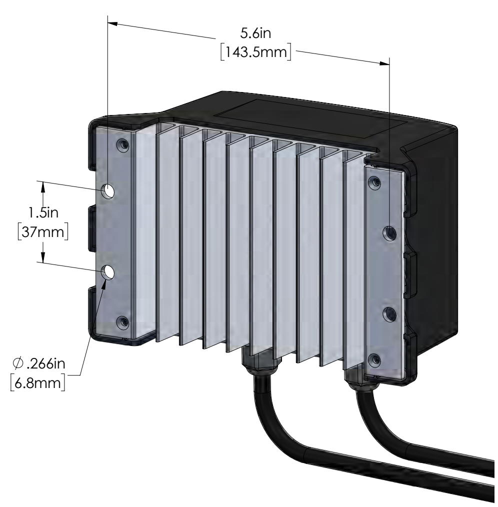
Small & light - fits practically anywhere
Protected from water & dust - ideal for harsh genset or marine duty
Advanced battery management - utilizes proven Dynamic Boost™ and HELIX™ charging
Self-adjusting output - precisely charges all types of lead-acid batteries
Battery & charger status LEDs - provide system health information at-a-glance
Superior efficiency & cooling - delivers full power even at high temperatures

MicroGenius LE battery chargers are ideal for small gensets and low power marine applications. Employing technology that was previously only available in more powerful SENS chargers, patented microprocessor control delivers fast and safe charging. MicroGenius LE also extends starting battery life and helps prevent catastrophic battery failures caused by traditional float charging.

Chargers self-adjust for flooded and AGM batteries of differing specific gravities, making MicroGenius LE compatible with most lead-acid batteries without the need for user adjustment.

MicroGenius LE meets all relevant North American regulatory requirements including $_{C}UL_{US}$ safety and California Energy Commission energy efficiency regulations.





High efficiency design and a finned metal heat sink keep internal electronics cool. Chargers deliver full power at higher ambient temperatures than potted chargers that trap heat inside.

Specifications for MicroGenius LE: 12 & 24V Models

		MicroGenius LE 12V	MicroGenius LE 24V
AC input	Voltage, Hz	117VAC nominal (88-140VAC), 44-66Hz	
	Amps	2.0A	3.0A
	Efficiency	85% typical	88% typical
DC output	Volts, amps	12V nom., 6A; 90W max	24V nom., 3A; 90W max
		12V nom., 10A; 150W max	24V nom., 5A; 150W max
	Charging modes	Automatic Dynamic Boost fast charging; HELIX Eco-float and Refresh maintenance modes	
	Charging characteristic	Constant voltage, rectangular current limit; patented Dynamic Boost control	
	Battery compatability	12V nom. flooded & AGM lead-acid	24V nom. flooded & AGM lead-acid
	Current limit	100% of rated output. Delivers full current over entire specified ambient temperature range.	
	Float voltage	HELIX automatically modulates output voltage to maximize battery capacity and lifetime	
	Boost voltage	14.5V	29.0V
	Line & load regulation	+0.5%. Automatic output voltage compensation for line and load variation.	
	Output ripple	< 1% of nom. output voltage (10Hz to 100KHz)	
	Dead battery charge	Starts into and recharges zero volt battery without user intervention	
	Charge mode control	Fully automatic Dynamic Boost and HELIX battery management systems	
	Reverse polarity	Fully automatic. De-energized and energized chargers protected from reverse polarity.	
	Adjustments	Charger self-adjusts to different battery types. No manual adjustment is necessary.	
Status indication	LEDs	Two multi-color front panel status LEDs indicating battery status and charger status	
	Battery LED indications	"Battery charged". "Check batt/load". "Battery bad". "Battery not yet charged".	
	Charger LED indications	"Charging Battery". "Maintaining Battery". "Reverse polarity". "No output"	
Environmental	Operating temperature	-25C to +70C; 12V, 6A full spec to +50C; 12V, 10A and 24V, 5A full spec to +40C	
	Cooling	Natural convection and conduction	
	IP rating	IP 67	
	Operating vibration	Swept sine (EN60068-2-6): 4G, 18-500 Hz, 3 primary axes Random: 20-500 Hz, $0.1G^2/Hz$	
Electromagnetic compatibility	ESD protection	8 KV free air discharge to charger housing or chassis	
	EMC noise immunity	EN 61000-6-2; EN 61000-6-4	
	EMI	FCC Part 15, Class B; EN 61000-6-2; -6-4; -4-4; -4-5; -4-6; -4-11;	
Regulatory compliance	North America	C-UL Listed for US & Canada to UL 1236	
		NFPA 70	
		FCC Part 15, Class B	
		CEC Title 20 energy efficiency for California and Oregon	
Construction & connections	Housing	Aluminum heat sink baseplate with high impact sealed plastic cover	
	Connections	6' AC cord with NEMA 5-15P plug; 6' DC cord with 3/8" ring lugs for battery connection	
	Weight	Two pounds (900 grams)	

How To Order

LE – [ ] – A0 – SS Example: LE-1210-A0-SS

Output
1206 = 12V, 6A
1210 = 12V, 10A
2405 = 24V, 5A

Contact SENS or your local sales representative for additional specification, engineering and installation information, or visit SENS' website for latest available data. Specification subject to change without notice.

SENS, Stored Energy Systems, battery/rectifier logo, Dynamic Boost and MicroGenius are trademarks of Stored Energy Systems LLC. Patented US 9,270,140; 9,385,556; 9,413,186; 9,509,164. Other patents pending.

Contact Information

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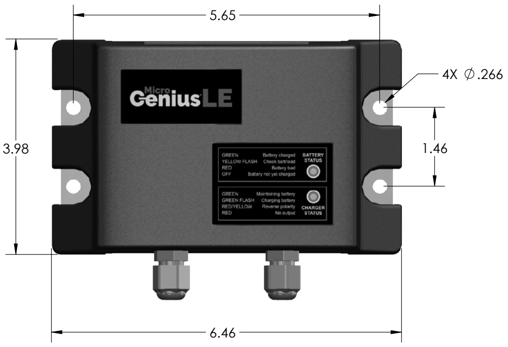
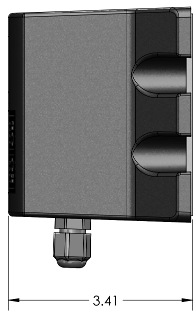
Getting Started

MicroGenius® LE
Battery Charger
PATENTED US 9,270,140; 9,385,556; 9,413,186; 9,509,164; 9,948,125

Mounting





Dimensions in inches

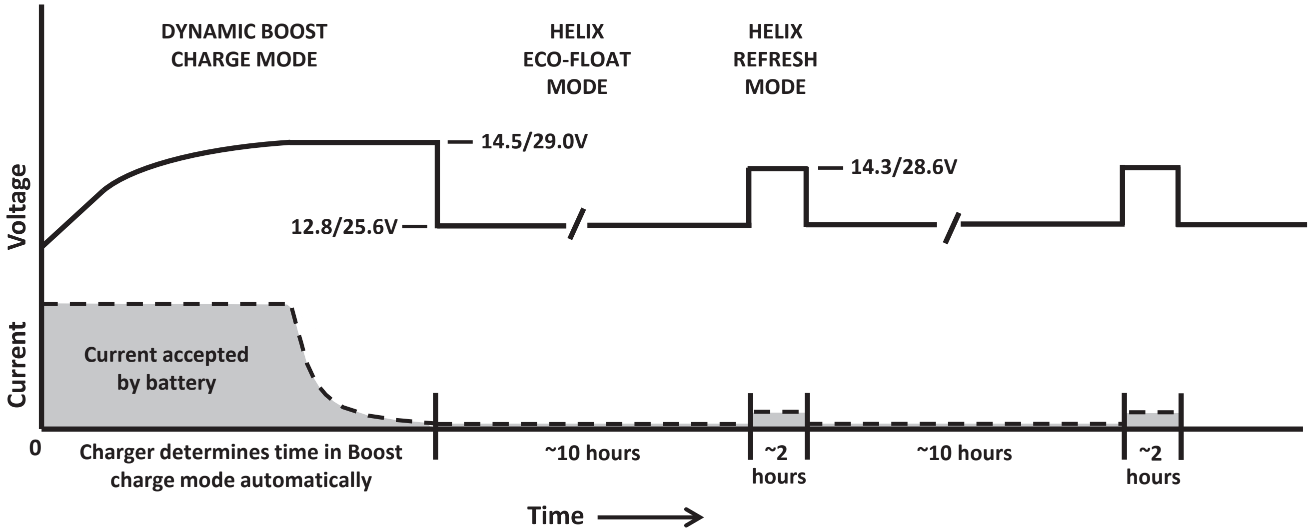
Enclosure rated IP67

Mount vertically for optimal cooling using #8 - 1/4-20 inch or M4 - M6 metric screws

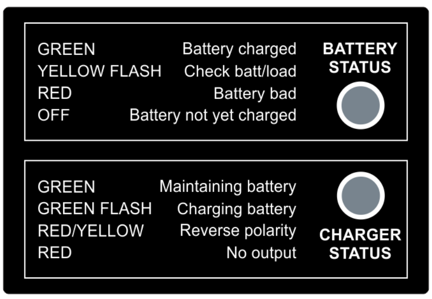
Operating Temp -25C to +70C
- **12V, 6A full spec to +50C**
- **12V, 10A and 24V, 5A full spec to +40C**

Operation

The charger automatically starts in Boost mode at power-on or after a battery discharge. It remains in Boost mode until the battery is fully charged. The charger then shifts to Eco-float mode to lengthen battery life. Refresh mode runs periodically to insure that the battery remains fully charged. This cycle continues until the next discharge event. A one-time 36-hour Refresh charge is conducted after the first failed battery check prior to setting an alarm.



LEDs/Troubleshooting



GREEN - Battery is charged. Boost cycle complete, charger now in Eco-float.
GREEN FLASH - 36 hour battery recovery charge in process due to low battery voltage
YELLOW FLASH - Check battery or load. Boost mode time limit expired indicating excessive load, battery capacity is too large or battery has an internal short.
RED/RED FLASH - Battery bad or disconnected. Battery voltage dropped below preset threshold within one hour of boost termination. Verify battery connected. Battery unable to hold charge or has an internal short.
OFF - Battery charging not yet complete.

Note - battery status updated every 100 seconds

GREEN FLASH - Battery is charging in either Boost (steady flash LED) or Refresh mode (2x short flash LED)
GREEN - Maintaining battery in Eco-float mode.
RED/YELLOW - Battery is connected backwards. Correct connections and retry.
YELLOW - Charger in initial power-on sequence.
RED - No charger output. Verify battery and source voltage are connected.
GREEN/YELLOW - Overvoltage Protection, charger will return to normal operation once externally caused over voltage condition is removed.
OFF - AC source not connected. Verify source is connected and has proper voltage and frequency.

SENS®
STORED ENERGY SYSTEMS

Need Help?

CONTACT SENS CUSTOMER SERVICE:
800-742-2326 / 303-678-7500 / service@sens-usa.com

IMPORTANT SAFETY INSTRUCTIONS
INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ

1. **SAVE THESE INSTRUCTIONS** –This guide contains important safety and operating instructions for MicroGenius®LE battery chargers.

   Conserver ces instructions. Ce manuel contient des instructions importantes concernant la sécurité et le fonctionnement.
2. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
3. This charger is intended for commercial and industrial use. ONLY TRAINED AND QUALIFIED PERSONNEL MAY INSTALL AND SERVICE THIS UNIT.
4. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
5. Do not operate charger with damaged cord/plug – replace charger immediately.
6. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; shut off power at the branch circuit protectors and have the unit serviced or replaced by qualified personnel.
7. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
8. External connections to charger shall comply with the United States Coast Guard electrical regulations (33CFR183 SUB PART I).
9. WARNING – RISK OF EXPLOSIVE GASES

9.1 WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. STORAGE BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU READ THIS DOCUMENT AND FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.

IL EST DANGEREUX DE TRAVAILLER A PROXIMITÉ D'UNE BATTERIE AU PLOMB. LES BATTERIES PRODUISENT DES GAZ EXPLOSIFS EN SERVICE NORMAL. IL EST AUSSI IMPORTANT DE TOUJOURS RELIRE LES INSTRUCTIONS AVANT D'UTILISER LE CHARGEUR ET DE LES SUIVRE À LA LETTRE.

9.2 To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of a battery. Review cautionary markings on these products and on engine.

Pour réduire le risque d'explosion, lire ces instructions et celles qui figurent sur la batterie.

10. PERSONAL PRECAUTIONS

10.1 Someone should be within range of your voice or close enough to come to your aid when you work near a storage battery.

10.2 Have plenty of fresh water and soap nearby in case battery electrolyte contacts skin, clothing, or eyes.

10.3 Wear complete eye protection and clothing protection. Avoid touching eyes while working near a storage battery.

10.4 If battery electrolyte contacts skin or clothing, wash immediately with soap and water. If electrolyte enters eye, immediately flood the eye with running cold water for at least 10 minutes and get medical attention immediately.

10.5 NEVER smoke or allow a spark or flame in vicinity of battery or engine.

Ne jamais fumer près de la batterie ou du moteur et éviter toute étincelle ou flamme nue à proximité de ces derniers.

10.6 Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause explosion. Using insulated tools reduces this risk, but will not eliminate it.

10.7 Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a storage battery. A storage battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.

10.8 Use charger for charging 6 and 12 cell LEAD-ACID batteries only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injuries to persons and damage to property.

Utiliser le chargeur pour charger une batterie au plomb uniquement. Ce chargeur n'est pas conçu pour alimenter un réseau électrique très basse tension ni pour charger des piles sèches. Le fait d'utiliser le chargeur pour charger des piles sèches pourrait entraîner l'éclatement des piles et causer des blessures ou des dommages.

10.9 NEVER charge a frozen battery.

11. PREPARING BATTERY FOR CHARGE

11.1 Be sure area around battery is well ventilated while battery is being charged.

11.2 Ensure battery terminals are clean and properly tightened. Be careful to keep corrosion from coming in contact with eyes.

11.3 Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.

11.4 Study all battery manufacturer specific precautions such as removing or not removing cell caps while charging and recommended rate of charge.

12. CHARGER LOCATION

12.1 Locate the charger as far away from the battery as DC cables permit.

12.2 Never place charger directly above or below battery being charged; gases from battery will corrode and damage charger.

12.3 Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.

12.4 Do not operate charger in a closed-in area or restrict ventilation in any way.

12.5 Do not set anything on top of the charger.

13. GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS – Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

14. DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

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For information and service on any SENS product, please contact us at:
1.866.736.7872 • 303.678.7500 • Fax 303.678.7504 • www.sens-usa.com • info@sens-usa.com

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