▪ Troubleshooting

WARNING: Electric shock hazard

Do not disassemble any of the HF chargers. The chargers do not contain any internal user-serviceable parts and attempting to service the unit yourself could result in electrical shock or burn.

- **Power LED does not come on when the power switch is flipped to ON:**
  Check fuse.
  Check cord and input power.

- **Charge LED will not illuminate:**
  The battery is not connected.
  The battery is below 4.0V.

- **Charging LED remains orange and never turns green:**
  This happens when the battery cannot be completely charged in a 10-hour period at the selected charge rate. Ensure the battery polarity is correct. If the error persists, replace the battery.

HF Charger Series User Guide

For Use With These *Intelli*CHARGER Models:

HF1215 ▪ HF1415 ▪ HF1615

Microprocessor Controlled Three-Stage 12V/14V/16V Automatic Battery Chargers

The HF Charger series is a group of advanced battery chargers designed specifically for high performance 12V, 14V or 16V sealed lead-acid batteries. These chargers combine the reliability of a High Frequency MOSFET rectified assembly with an advanced microprocessor control board to create a battery charger that can rapidly and safely recharge 12V, 14V and 16V maintenance free, deep cycle, gel-cell, and AGM (Absorbed Glass Mat) batteries in several sizes.

Three Stage Charging
At the heart of the technology in all HF Chargers is the three distinct charging stages. During the first stage, called “Bulk” charging, the current is fixed and the voltage is allowed to float. During this stage, 80% of the battery’s capacity is restored. When the battery’s cell voltage is up to the correct level, the second stage called “Absorption” charging is engaged. During this stage the voltage is fixed and the current is allowed to float. The battery is brought to 100% during this stage and the cells are equalized. The third stage is “Float” charging. During this stage the voltage and current are reduced to a level that will maintain the battery indefinitely.

Several microprocessors are used to tightly control the entire process. This is the same technique that battery manufacturers recommend and use in the production of new batteries and it is the fastest and safest technique for battery charging.

Compatible With Most Lead-acid Batteries Including AGM
Lead-acid batteries have different charging requirements based on their specific design. Overcharging will reduce the life of any battery as sealed valve regulated batteries are especially sensitive to high charging voltages and overcharging. Overcharging an AGM or gel-cell battery will cause permanent damage.

Voltage Monitoring
The battery’s terminal voltage is measured every five minutes by the on-board microprocessors and this information is analyzed in addition to the elapsed time to dynamically control the battery charger for optimum charging performance.

Automatic Computer Analysis/Auto Shutdown
The microprocessors will analyze the battery when connected. If the battery’s voltage is below 4V the charger may not recognize the battery is connected and will not begin charging. Likewise, if the battery will not come up to the correct voltage in a ten-hour period the microprocessor control board will automatically shut the charger off.

UL Approved Battery Cables
Six feet of durable battery cables are provided that are resistant to cuts and abrasion. The copper plated battery clamps are compact and custom designed easy connections. All clamp connections are soldered for maximum current flow.

Internal Cooling Fan
A cooling fan automatically operates during charging to keep the circuit and other internal components at a constant safe temperature.

▪ Important Safety Instructions

The HF Charger series generates a low DC voltage and high DC current to the battery being charged. Operating the charger incorrectly or misusing it may damage the charger or create hazardous conditions for the user.

WARNING: EXPLOSION HAZARD

• The HF Charger series is designed to charge 12V, 14V and 16V lead-acid batteries of all types. Do not attempt to use with batteries with voltages not matching the chargers specified voltage.

• Do not use this product where there are flammable fumes or gases.

• Do not use this product in an enclosure containing lead-acid batteries. These batteries vent explosive hydrogen gas, which can be ignited by sparks from electrical connections.

• Never attempt to charge a frozen battery.

• Do not connect DC clamps to the carburetor, fuel lines, or sheet metal body parts.

WARNING: SHOCK HAZARD. KEEP AWAY FROM CHILDREN.

• Do not expose charger to water or rain or temperatures over 104 °F (40 °C).

• Do not open the charger. There are no user serviceable parts inside the unit. For service see the Returns policy in the back of this guide.

WARNING: HEATED SURFACE - Ensure at least 2" (5 cm) air space is maintained on all sides of the charger.

• An extension cord should not be used unless absolutely necessary. Use of an undersized extension cord will adversely affect the output of the product and could prove to be dangerous. If an extension cord must be used, make sure that pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger. We recommend a minimum of a 16AWG cord for lengths up to 50' and a minimum of a 14AWG cord for lengths up to 100'. We do not recommend cords over 100'. Do not use this product with an ungrounded extension cord.

• Be sure AC and DC cords are not pinched or otherwise damaged by hoods, doors, or other moving engine components.

• Observe battery polarity.

IMPORTANT If this charger is to be used with a portable generator, it should be equipped with automatic voltage regulation to ensure consistent output of the product.

▪ Specifications

ELECTRICAL SPECIFICATIONS	12V	14V	16V
Absorption Voltage	14.4VDC	16.8VDC	19.2VDC
Float Voltage at no Load	13.2VDC	15.4VDC	17.6VDC
Maximum Output Voltage	14.4VDC	16.8VDC	19.2VDC
Current	15A +/- 0.5A		
Wattage	210 W or 252 W at full load		
Efficiency	>87% at full load		

Physical Specifications
Dimensions (W x H x D): 8.46" x 2.54" x 3.54" (215mm x 64.5mm x 90mm)
Weight: 3.16 lbs (1.43 kg)
AC Input Connections: 5.0' (1.5 m) AWG 16
DC Output Connections: 5.0' (1.5 m) AWG 10

AC Input Specifications
AC Input Voltage: 100-120 VAC, 47-63 Hz
AC Input Current: 10A RMS fuse protected

Protection
Battery Reverse: YES
Short Circuit: YES
Overload: YES
Speed controlled cooling fan by charge stage

IMPORTANT: SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

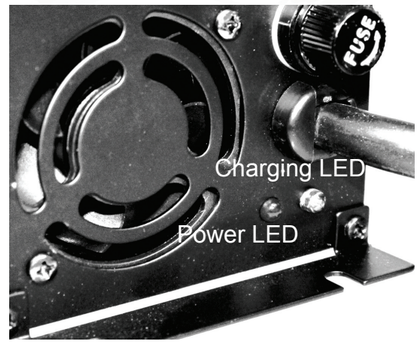
▪ Back Power Switch and Front LED Indicators

1) **Power LED Indicator:** Illuminates red when power cord is plugged in and power switch on back of unit is turned on.

2) **Charging LED Indicator:** Illuminates orange or red when in charge mode and changes to green when battery charging is in the final stage*. During this stage a 1 hour minimum in this stage is required, however 24 hours is recommended for 100% charge. If the Charging LED Indicator remains orange or red after a 10 hour period switch the charger OFF and remove the battery connections. Insure the battery polarity is correct, and if so, replace the battery.

3) **Power Switch:** (on back) Power is ON when switched to "I" and OFF when switched to "O"

4) **Fuse holder:** Contains a 10A fuse in case of overload.



LED STATUS INDICATORS

POWER LED	CHARGING LED	POWER LED	CHARGING LED	POWER LED	CHARGING LED	POWER LED	CHARGING LED
○	○	RED ◉	○	RED ◉	◉ ORANGE OR RED	RED ◉	◉ GREEN
STATUS: OFF OR NO POWER		STATUS: POWER ON (RED)		STATUS: POWER ON (RED) CHARGING (ORANGE OR RED)		STATUS: POWER ON (RED) FINAL CHARGING STAGE* (GREEN)	

*The LED Status Indicator will illuminate green indicating the final charging stage and a 1 hour minimum in this stage is required, however 24 hours is recommended for 100% charge.

▪ Operation

The HF Charger Series has been designed to provide fully automatic recharging of most 12V, 14V or 16V maintenance free, deep-cycle, AGM and gel-cell batteries. If possible, disconnect all loads from the battery by removing battery cables, opening a disconnect switch, or switching loads off.

To charge your 12V, 14V or 16V battery:

1) With the charger's power switch in the OFF position plug the charger into a grounded wall receptacle.

2) Connect the red positive (+) clip of the charger cables to the positive (+) terminal of the vehicle battery.

3) Connect the black negative (–) clip of the charger cables to a solid chassis ground. If this is not possible, connect it to the negative (–) battery terminal.

4) Flip the power switch on the back panel to ON. The Power LED will illuminate red while the microprocessors analyze the battery and after a short delay, the Charging LED Indicator on the front panel will illuminate orange, beginning the three-stage charging sequence. *Note that the charger will automatically restart the charging sequence if the charge current rises above a factory preset threshold.

9) When complete, the Charging LED Indicator will turn green, flip the power switch to OFF.

10) Remove the black negative (–) clip and the red positive (+) clip from the vehicle's battery terminals.