Sensata
Technologies

SSI-12HF3.5N
Owner's Manual
Form 122185

Table of Contents:

1. Important Safety Instructions

WARNING!

Before using the inverter, please read and save these safety instructions.

1-1. General Safety Precautions

1-1-1. Do not expose the inverter to rain, snow, spray, bilge or dust. To reduce the risk of hazard, do not cover or obstruct the ventilation openings. Do not install the inverter in a zero-clearance compartment. Overheating may result.

1-1-2. To avoid a risk of fire or electrical shock, make sure that existing wiring is in good electrical condition and not undersized. Do not operate the inverter with damaged or substandard wiring.

1-1-3. There are some components in the inverter that can cause arcs and sparks. To prevent fire or explosion, do not put batteries, flammable materials, or anything that should be ignition–protected around the inverter.

1-2. Battery Safety Precautions

1-2-1. If battery acid contacts skin or clothing, you need to wash with soap and water immediately. If battery acid contacts your eyes, you need to wash it out with cold running water for at least 20 minutes and get medical attention immediately.

1-2-2. Never smoke, make a spark or create a flame in the vicinity of the battery or the engine.

1-2-3. Do not drop a metal tool on the battery. The resulting spark or short-circuit of this act may result in an explosion, spark or fire.

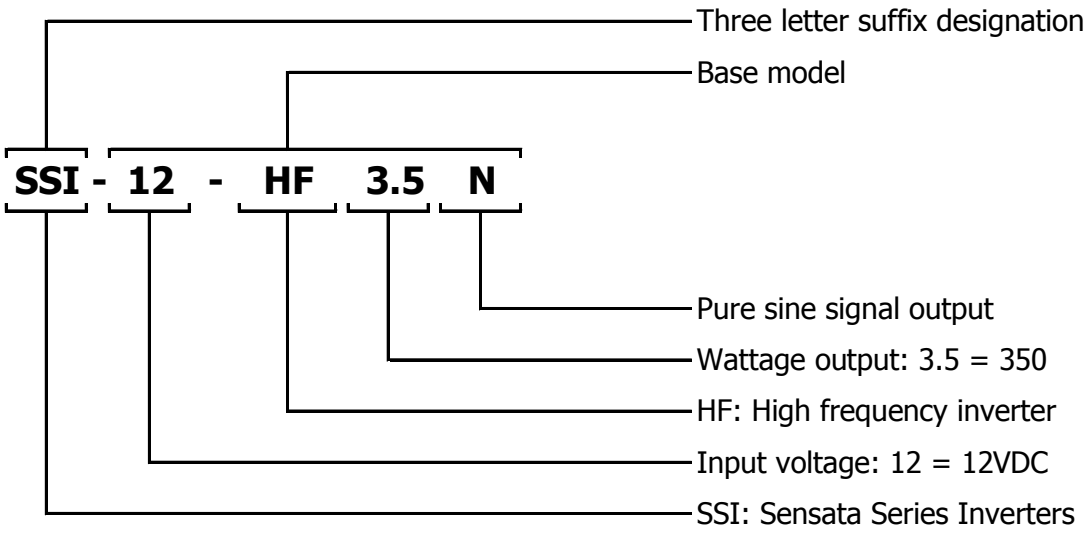
1-2-4. Remove personal metal items such as rings, bracelets, necklaces, and watches when operating with lead-acid batteries. Failure to do so may result in a spark or short circuit event, which can result in very high temperatures that can melt the metal items and potentially cause serious bodily harm.

2. Introduction

2-1 Features

- Pure sine output wave with advanced microprocessor control.
- GFCI (Ground Fault Circuit Interrupter) / NEMA5-15R receptacle.
- Optional remote control connection for power ON/OFF button.
- Output frequency 50/60 Hz switch selectable.
- Load control cooling fan.
- LED indication for input, output level & failure status.
- Input polarity reverse, short circuit, under voltage and over voltage protection.
- Output short circuit, overload, over temperature protection.
- Automatic low battery shutdown at 10.5 VDC (with in-rush delay)
- Approvals: FCC Class A approved.

2-2 Nomenclature



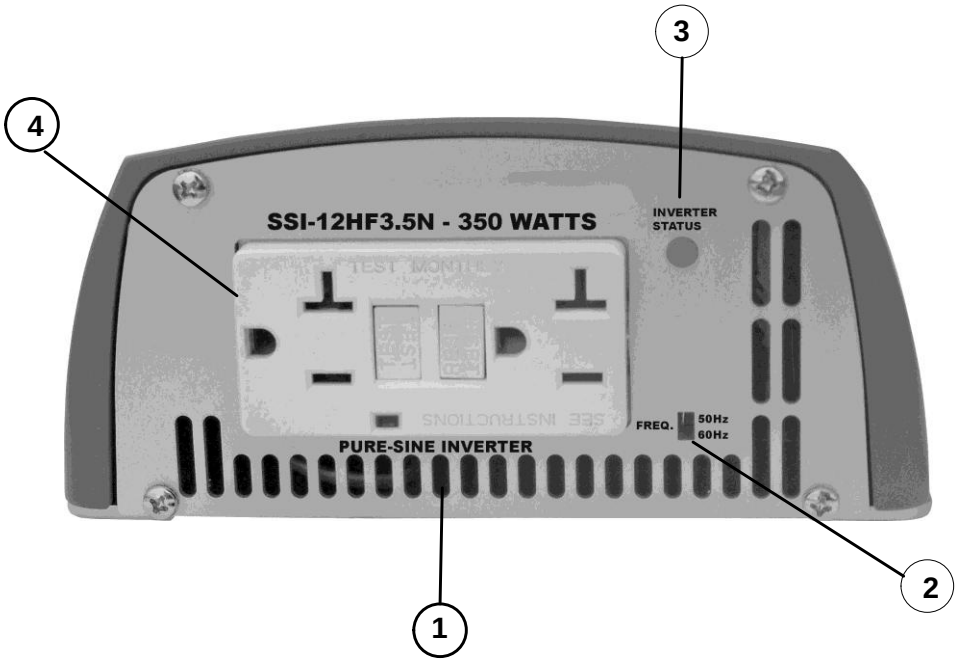
2-3 Specifications

Specification	Model No.
Item	SSI-12HF3.5N
Continuous Output Power (Watts)	350
Maximum Output Power (Watts)	385
Surge Rating (Max) (Watts)	700
Input voltage (VDC)	12
Input Current (Amps DC)	35
Output Voltage (VAC)	100 / 110 / 120Vac +/- 5%
Frequency (Switch Selectable)	50 / 60Hz +/- 0.05%
Output Waveform	Pure Sine Wave (THD < 3%)
Efficiency (full load) Max *1	84%
No Load Current Draw (Max.)	.7A
Stand-By Current Draw (Max.)	20µa
Input Voltage Regulation	10.5-15 VDC
Failure Indicator	Red LED
Protection	Overload (Shut down), Short Circuit (Shut down), Reverse Polarity (Fuse), Over / Under Input Voltage (Auto recovery), Over Temperature (Auto recovery).
Remote Control	Yes (ON / OFF mode controlled by hard wire)
EMC	FCC Class A
Operating Temperature Range	32° to 104° F (0° to 40° C)
Storage Temperature Range	-22° to 158° F (-30° to 70° C)
Cooling	FAN (Controlled by load and temperature)
Dimensions (L x W x H)	7.7 x 6 x 2.8 Inch 196.8 x 152.4 x 71mm
Weight	3.5 Lbs. / 1.6kg

Note: The specifications are subject to change without notice.
*1 : This test condition is normal DC input (13.5V) and temperature 25**° C**

3. Locating Controls and Ports

3-1. Front View



(1) Ventilation Openings:
Allows airflow passing to cool down the inside electronics.

(2) AC frequency switch settings*:*

Output Frequency	Dip Switch
50 Hz	ON
60 Hz	OFF

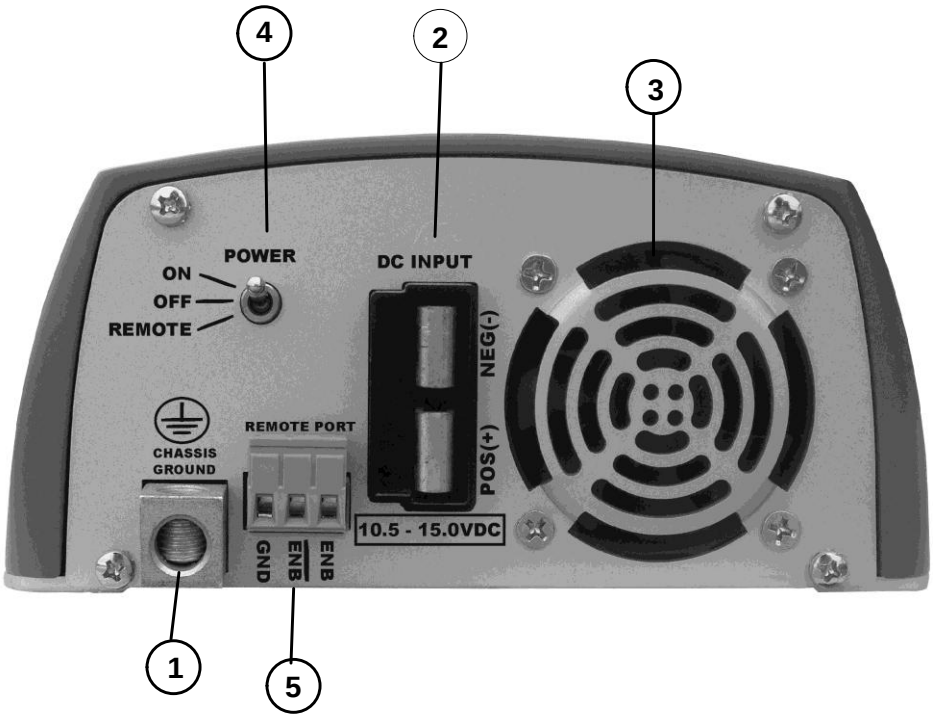
NOTE: Default frequency setting is 60Hz for USA usage.

(3) Inverter Status:

Green LED	LED Signal	Status
Solid	————————	Power OK
Red LED	**LED Signal**	**Status**
Fast Blink	– – – – – – – – – – –	Over Voltage Protection
Slow Blink	— — — —	Under Voltage Protection
Intermittent Blink	– – – – – –	Over Temperate Protection
Solid	————————	Over Load Protection

(4) GFCI Outlet: AC output power

3-2 Rear View



(1) Chassis Ground:

Use wire # 8 AWG to connect Chassis ground with vehicle chassis.

WARNING!

Operating the inverter without proper ground connection may cause an electrical hazard.

(2) DC Input Terminals:

Connect DC input terminal to 12VDC battery or other power source. Check for appropriate polarity **POS (+)** and **NEG (-)** before connecting battery cables.

WARNING!

Reverse polarity connection will damage the inverter permanently.

Model	DC Input Voltage	
	Minimum	Maximum
12 V	10.5	15.0

(3) Cooling Fan:

(4) On/Off & Remote Switch:

Before installing the inverter, ensure the main switch is set to "OFF". Before using the remote unit, ensure the main switch is set to "REMOTE".

(5) Remote Switch Hook-up:

3-3 Protection Features

Model	DC Input (VDC)					Over Temperature Protection	
	Over Voltage		Under Voltage Alarm	Under Voltage		**INTERIOR**	
	Shut-down	**Restart**		Shut-down	**Restart**	Shut-down	**Restart**
12 V	**16V**	**13V**	**11.0V**	**<10.5V**	**12.5**	**55° C**	**45° C**

Note: The specifications are subject to change without notice.

3-4 ON / OFF / REMOTE Switch Installation

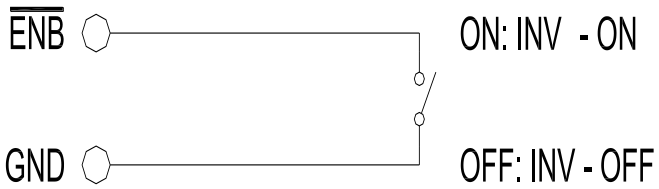
3-4-1-1. Before installing the inverter, make sure the main switch must be “OFF”.

3-4-1-2. Before using the remote unit, make sure the main switch must be “ REMOTE”.

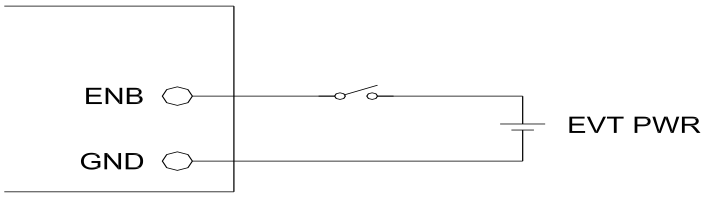
3-4-1-3. Ensure the remote control contact is off.

3-4-1-4. Remote Port : Place 0.75mm^2 and Screw type cable between the remote port and the panel.

3-4-1-5. Remote port ON/OFF inverter setup status



MODE I



MODE IV

NOTE: Only one of control mode can be presented. When operating.

4. Installation

4-1. General Installation Recommendations

The power inverter should be installed in an environment that meets the following requirements:

(a) Do not allow water to drip on or enter into the inverter.

(b) Ambient air temperature should be between 0°C and 40°C, the cooler the better.

(c) Do not install the inverter in a battery compartment or other areas where flammable fumes may exist, such as fuel storage areas or engine compartments. These gases are very corrosive, and prolonged exposure will damage the inverter.

(d) Keep the inverter a distance (as least 1 inch) away from surrounding things. Ensure the ventilation shafts on the front and rear of the unit are not obstructed.

(e) Do not install the inverter in a dusty environment. The dust can be inhaled into the unit when the cooling fan is working.

(f) Avoid excessive cable lengths. Use the recommended wire lengths and sizes (see section 3-5). Do not mount the inverter where it will be exposed to the gases produced by the battery.

WARNING!

Shock hazard; before proceeding further, carefully check that the inverter is NOT connected to any batteries, and that all wiring is disconnected from any electrical sources. Do not connect the output terminals of the inverter to an incoming AC source.

4-2. DC Wiring Connections

4-2-1 Follow this procedure to connect the battery cables to the DC input terminals of the inverter. The cables should be as short as possible (less than 10 feet / 3 meters ideally) and large enough to handle the required current in accordance with the electrical codes or regulations applicable to the installation.

(a) Cables that are not an adequate gauge (too narrow) or too long will deteriorate inverter performance such as poor surge capability and frequent low-input voltage warnings and shutdowns.

(b) These low input voltage warnings are due to DC voltage drop across the cables from the inverter to the batteries.

(c) The longer and narrower the cables, the greater the voltage drop. Increasing DC cable size helps improve the situation.

(d) Sensata Technologies recommends the following cables for optimum inverter performance:

Model #	Wire AWG 1-10′	Wire AWG 11-15′	Wire AWG 16-20′	Inline Fuse or Circuit Breakers
SSI-12-HF3.5N	# 8	# 6	# 6	Up to 40 amps

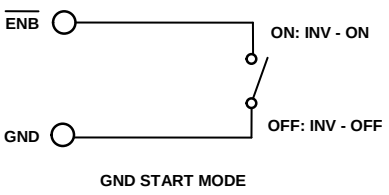
4-2-2 Connect the cables to the power input terminals on the rear panel of the inverter. The red terminal represents positive **POS. [+]** and black terminal represents negative **NEG**. **[–]**. Insert the cables into the terminals and tighten the screw to clamp the wires securely.

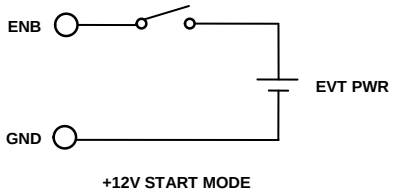
Sensata Technologies recommends using only high quality (SGX) insulated copper wire and keep the cable length short, a maximum of 3 to 6 feet.

The installation of a fuse must be on a positive cable. Failure to place a fuse on "+" cables running between the inverter and battery may cause damage to the inverter and will void warranty.

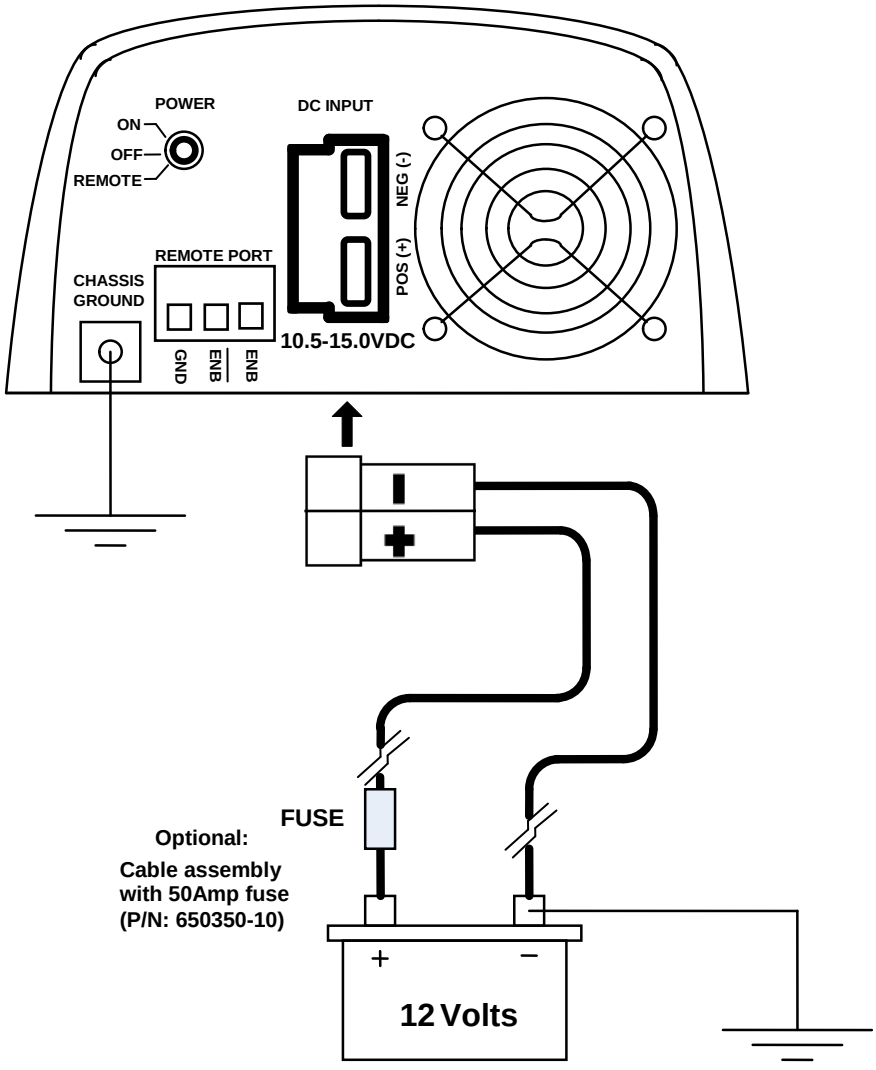
4-3. Wiring Diagram

Remote Switch Hook Up (Optional)
(Rear View)





Rear View



4-4. AC Safety Grounding

The AC output ground wire should go to the grounding point for your loads (for example, a distribution panel ground bus).

3-6-1. The neutral conductor of the AC output circuit of the inverter is automatically connected to the safety ground during inverter operation. This conforms to National Electrical Code requirements that separately derived from AC sources (such as inverters and generators) which have their neutral conductors tied to ground in the same way as the neutral conductors from the utility tied to ground at the AC breaker panel.

4-5. Inverter Operation

To operate the power inverter, use the ON / OFF switch on the front panel to turn the power ON. The power inverter is now ready to deliver AC power to your loads. If there are several loads in use, turn them on separately after the inverter is "ON" in order to prevent over voltage protection (OVP) resulting from the surge power.

4-5-1. Set the power switch to "ON" position and the buzzer will send out "beep" sound. Then the inverter will perform a self-diagnostic, and the LED indicators will also appear various colors. Finally the buzzer will "beep" again and the Input Level and Status LED indicators will turn to "green" in color, then the inverter starts to work successfully.

3-7-2. Set the power switch to the OFF position, and then the inverter stops and all the lights go off.

3-7-3. Set the power inverter switch to ON position and turn the test load ON. The inverter should supply power to the load. If you plan to accurately measure the true output R.M.S. voltage of the inverter, a meter such as FLUKE 87 or better, or any Multi-Meter marked as "True RMS" must be used.

Troubleshooting

WARNING!

Do not open or disassemble the inverter. Attempting to service the unit yourself may cause the risk of electrical shock or fire.

Problems / Symptoms	Possible Cause	Solutions
There is no AC power output, and the status indicator LED is :		
a. RED, blinking fast	Over input voltage (OVP)	Check the input voltage, reduce input voltage
b. RED, blinking slowly	Low input voltage (UVP)	Recharge the battery, check connections and the cable
c. RED, blinking intermittently	Over Temperature (OTP)	Improve ventilation, make sure inverter vents are not obstructed, lower ambient temperature
d. RED, solid ON	Short circuit, overload or wiring error (OLP)	Check AC wiring for short circuit, reduce the load

Maintenance

To keep your inverter operating properly, there is very little maintenance required. You should clean the exterior periodically with a damp cloth to prevent accumulation of dust and dirt; please note to have the inverter turned OFF and not to allow excessive moisture enter the inverter. At the same time, check connections and tighten the screws on the DC input terminals if necessary.

Warranty

Sensata Technologies guarantees this product against defects in materials and workmanship for a period of 24 months from the date of purchase and will repair or replace any defective power inverters if directly returned to us with postage pre-paid. Please call Sensata technical support for an RMA number (800-553-6418)

Please note that Sensata Technologies is only responsible for ensuring our products are operational before delivering. This warranty will be considered void if the unit has been misused, altered, or accidentally damaged. Sensata Technologies is not liable for anything that occurs as a result of the user's fault.

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