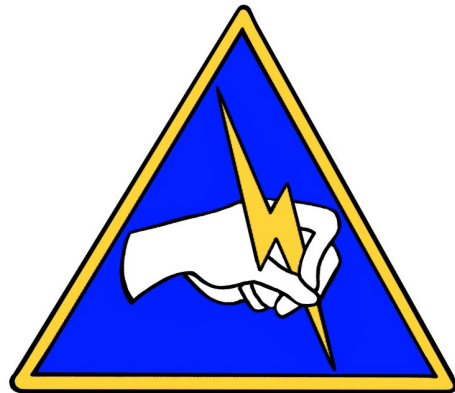


3.3kW Battery Charger

---Manual---



HAWKEYE INNOVATIONS
LLC

Table of Contents

Safety First!.....3

Charger Specifications.....5

Safety Notes.....6

Installation.....7

Charger LED States.....13

Charger Dimensions.....14

Safety First!

This list is not all inclusive. Use common sense and be responsible when working with high voltage and high voltage components. High voltage components are dangerous and can cause injury or death if not correctly or safely handled.

Always wear safety equipment such as high voltage rated shoes, gloves, and safety glasses. Be sure to remove all metal jewelry or any metal objects prior to working with any high voltage. Use insulated tools or insulate any tools that may be coming in contact with high voltage points.

Always check over the high voltage wiring and connections several times. Always use precautions when working with high voltage and/or series connected batteries. Be sure that the vehicle is off of the ground, and the wheels will not make contact with anything. It is good practice to have more than one support mechanism that supports the vehicle for extra safety.

Always refer to the component manufacturers' manuals for the most up to date information on their specific products. Please be sure to always use correct high voltage fusing and high voltage disconnect devices that are fully operational.

If you ever feel uncomfortable or uncertain in any way, STOP and seek advice from a knowledgeable person immediately.

DISCLAIMER:

Hawkeye Innovations LLC 3.3kW Battery Charger manuals can change and be updated at any time without notice. Except for Hawkeye Innovations, LLC's express warranties, if any, set forth in the manual regarding 3.3kW Battery Charger located at

https://www.hawkeyeinnovationsllc.com/store/p55/Hawkeye_Innovations_3.3kW_Battery_Charger.html , Hawkeye Innovations, LLC, makes no representations or warranties whatsoever with respect to the 3.3kW Battery Charger, including but not limited to any warranty of merchantability, warranty of fitness for a particular purpose, or warranty against infringement of intellectual property rights, whether express or implied by law, course of dealing, course of performance, usage of trade, or otherwise. Hawkeye Innovations, LLC, has no control of third-party installation or use of the 3.3kW Battery Charger. Accordingly, Hawkeye

Innovations, LLC, assumes no liability for vehicle functionality or safety during or after third-party installation of the 3.3kW Battery Charger. Additionally, Hawkeye Innovations, LLC, assumes no liability for any damage caused to the vehicle or the 3.3kW Battery Charger as a result of installation of the 3.3kW Battery Charger. Hawkeye Innovations, LLC, assumes no responsibility for this product in any use.

3.3kW Battery Charger Specifications

Features:

- >93% efficient
- Automotive grade
- IP66 rated
- Excellent protection features (output over-voltage, output over-current, output short-circuit, charger over temperature)
- Automatic power reduction when powered by 120VAC so it will not trip a standard breaker.
- Soft charge feature will reduce current at the beginning of the charge cycle for a few minutes, before charging at full current.
- Full CAD model available

Technical specifications:

Operational Temperature	-40°F - 140°F
Storage Temperature	-40°F - 194°F
Relative Humidity	5%-95%
Heat Dissipation Method	Air Cooled
Input Voltage/Current	95-260VAC <16A
Input Frequency	50-60Hz
Size	11.58 x 8.38 x 4.39 inches
Weight	13.23 lbs

Safety Notes

1. While the charger is IP66 rated, care should be taken so that the charger does not get excessive spray (i.e. mounted under the car near the wheels).
2. Ensure that the AC power input connections are good.
3. The charger should have adequate ventilation to ensure proper cooling. It is recommended to have at least 6 inches of space around the heatsink of the charger, the more the better.
4. Do not operate the charger with poor quality, high resistance, or defective batteries.
5. Do not operate the unit if charger wire harnesses are damaged.
6. Charger must be securely mounted to the vehicle.
7. Do not reverse polarity of the charger output.
8. Take caution to connect the AC input properly.
9. If you are ever unsure, STOP, and consult a technician.

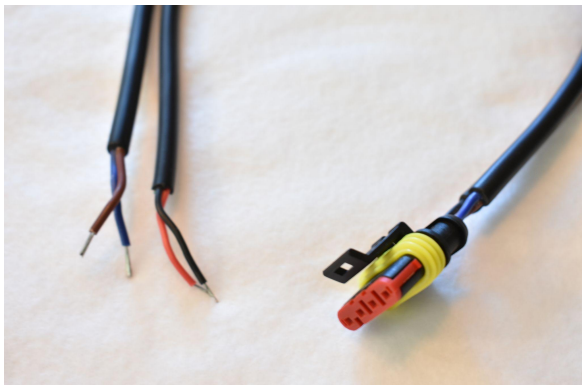
Installation



(SIGNAL) (DC OUTPUT) (AC INPUT)

1. Without any power present on your 12V system or CAN bus network, wire up the included charger signal harness as follows in **figure 1**.

Figure 1



4 Pin Signal Connector:

1. CAN High (Red)
2. CAN Low (Black)
3. +12V 1A Supply (Brown)
4. -12V Supply Ground (Blue)



Figure 2

2. Once you have verified that your 4 pin signal harness has been wired up correctly, plug that harness into the black 4 pin plug coming out of the signal port of the charger **shown in Figure 2**.

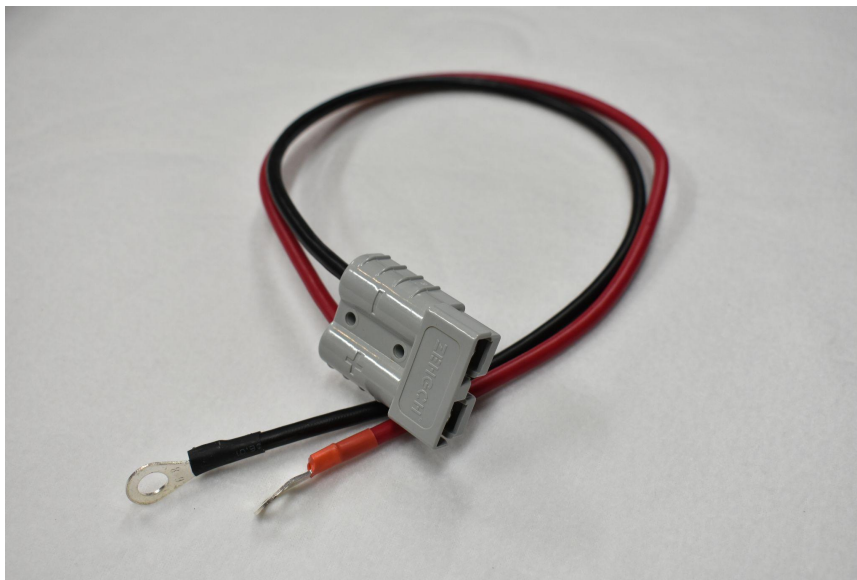


Figure 3

3. With your high voltage (HV) disconnect switched off, and no live voltage present, wire up the included HV Battery Output harness **shown in figure 3** to your battery pack. Ensure that the polarity is correct. It is recommended to add a fuse here in between the charger DC output and your battery pack. The fuse should be sized accordingly depending on the output current of your model charger.

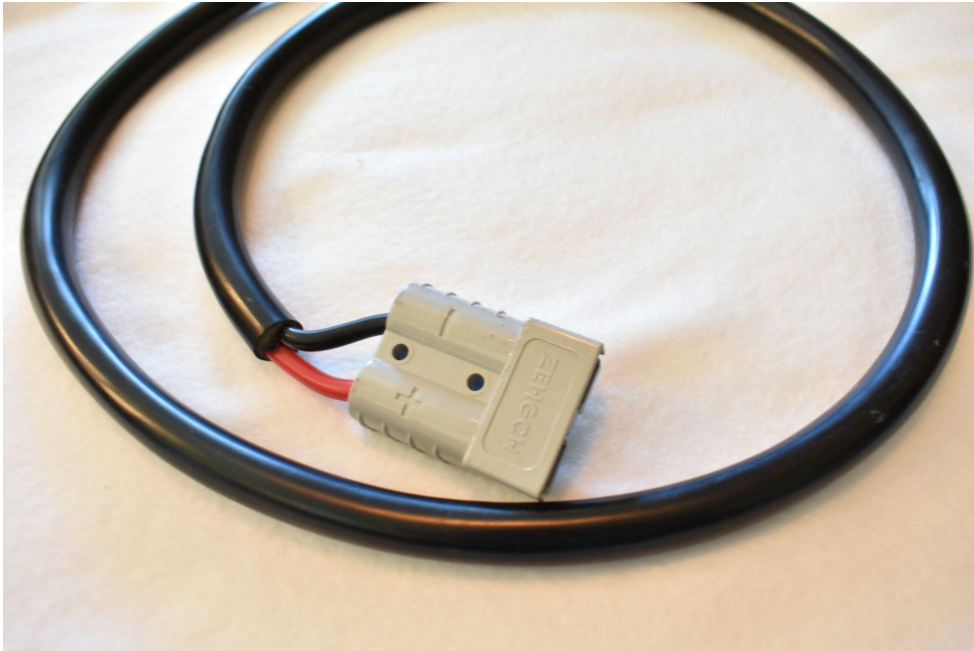


Figure 4

4. Once your HV Battery output harness **shown in figure 3** is connected to your pack, plug in the Charger HV Output harness **shown in Figure 4**. (exits the charger)

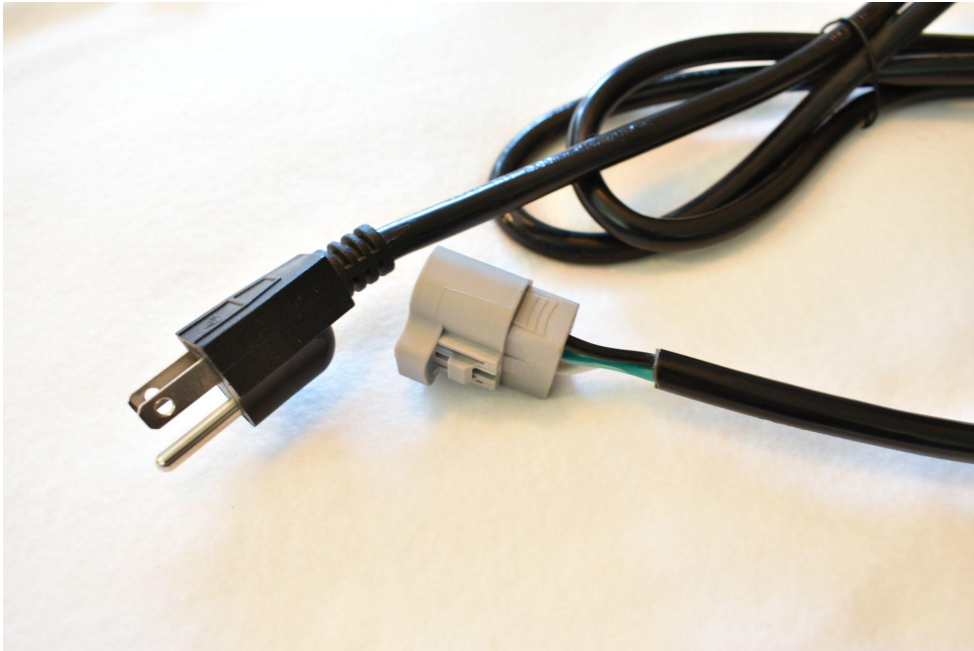


Figure 5

5. Connect the AC input harness **shown in figure 5** to the AC input source (usually to your J1772 port). This harness can be directly connected to a standard 120VAC outlet, but for most applications, you will need to cut off this black plug to wire directly to the J1772 port. Once you have verified these AC input connections, the harness can be plugged into the Charger AC Input **shown in figure 6**.

The AC input color coding is as follows (240VAC):

Black - Hot

White - Hot

Green - Ground (Earth)

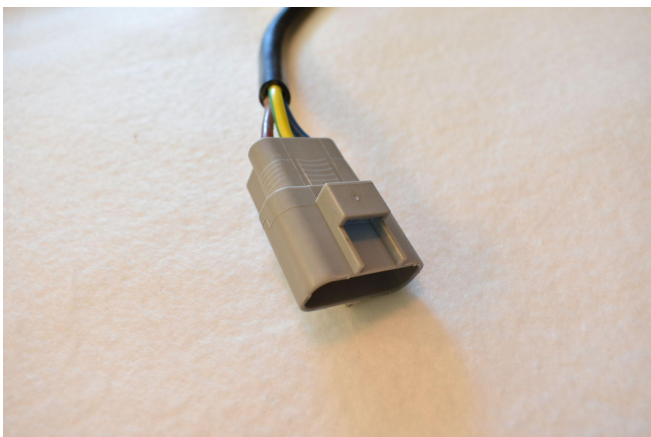


Figure 6

6. If you want to use the optional remote LED module **shown in figure 7**, simply plug it into the matching connector on the charger signal harness.



Figure 7

7. Finally, after verifying all of the wiring is connected correctly, turn on your HV disconnect switch. Log into your Orion BMS, and once connected, select the Elcon Charger under ‘third party devices’ **shown in figure 8**. If you need more assistance with the Orion BMS, please contact your Orion BMS dealer. This charger is a drop in replacement for the Elcon 3.3kW charger. We only recommend the Orion BMS, but if you need the CAN byte structure, please contact a technician for more information. The default CAN speed for this charger is 500kbps.

Figure 8

Charger LED States

Normal Operation States:

Red flash every 1 second: Battery estimated <80%.

Green flash every 1 second: Battery estimated >80%.

Green solid: Battery estimated 100%, charge complete.

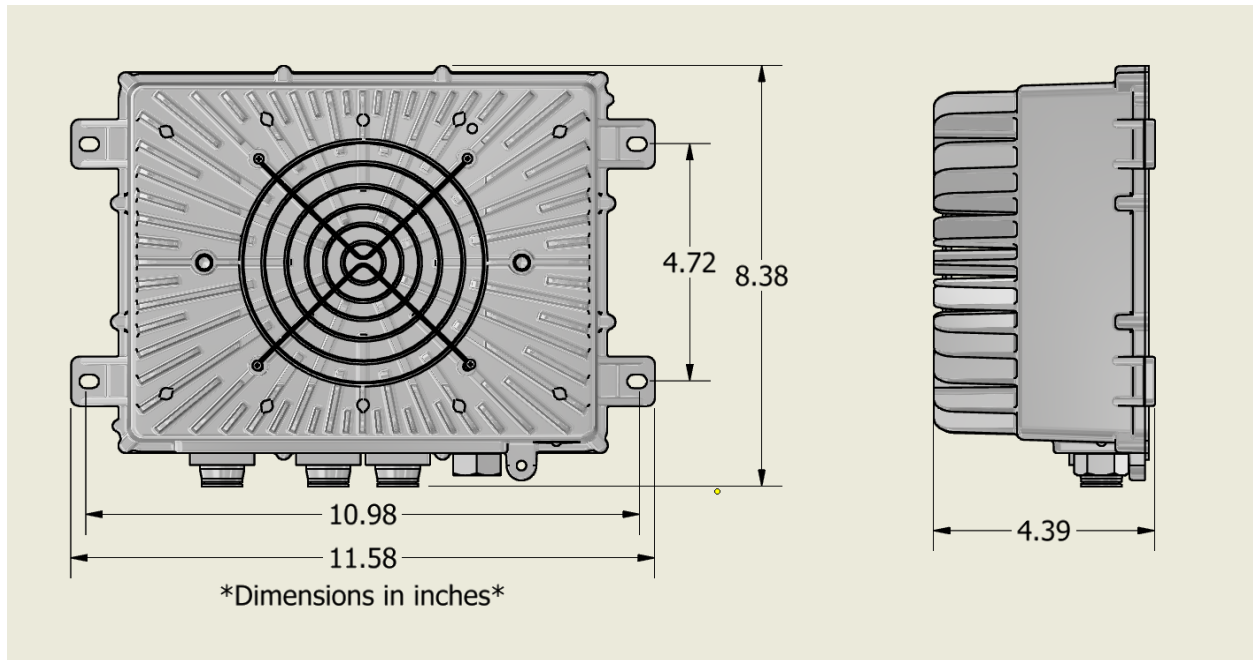
Fault States:

Red flash every 3 seconds: Battery fault, possible short circuit, bad connection, or battery voltage too low.

Yellow flash every 3 seconds: AC Input fault, incorrect input voltage/does not conform to specifications, or bad connection.

Green flash every 3 seconds: Charger overheated.

Charger Dimensions



3D STEP file can be downloaded from our 'Downloads' via the link below.

https://www.hawkeyeinnovationsllc.com/store/p55/Hawkeye_Innovations_3.3kW_Battery_Charger.html

The 3.3kW Battery Charger should now be fully operational and set up with your system. If you have any questions, please feel free to contact us!

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