





# Hawkeye Innovations

## *Product Catalog*

Revised: 3/1/2024



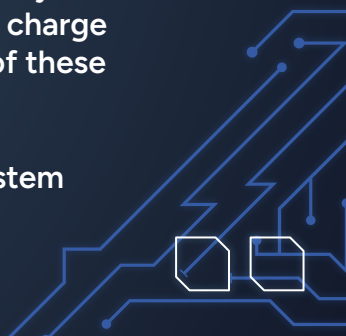
# Introduction



From our humble beginnings in a small garage, we understand how complex building an EV can be. Back then, there was very little information available. Through our early stages of learning from failures and bad quality parts, we have learned which parts are reliable and which are not, and all of the shortcomings of an EV conversion.

We carefully craft our vehicle systems with the best and safest components the industry has to offer. Our systems are led by our Systems Control Module (SCM), which creates the foundation for an 'OEM' level electric vehicle experience. The systems feature a state of the art thermal management systems built for your environment. In hot climates, a simple battery radiator is not enough if you want to operate on a hot day. In cold weather without a battery preheater system, you can't charge or use regen braking. Our meticulously engineered thermal management solutions solve all of these problems effortlessly.

Our continued development into user interface displays, telematics, battery charging, system management, and others, pave the way for new technology in the industry.







# SCM<sup>2</sup>

(Systems Control Module, MkII)

# SCM<sup>2</sup>

*The SCM is a centralized control module designed to save countless hours of time and effort while providing a clean factory look. It controls almost all aspects of your electric vehicle's (EV) 12V system, and the way it interfaces with various high voltage (HV) components.*



# SCM<sup>2</sup>



## *Centralized Logic*

Central logic for controlling key functions between the BMS and motor controller.



## *A/C Module*

Coming 2024, optional add on module for cabin A/C, battery chilling, or both using intelligent speed control.



## *I/O Simplified*

Signal Inputs/Outputs simplified with smart switching.



## *Heater/Preheater Modules*

Coming 2024, optional 5kW fluid heater modules can be used for cabin heat, and battery preheating.



## *Telematics*

Hawk-IoT compatible for data viewing via the Hawk-IoT mobile app.



## *DC/DC Control*

Intelligent control of the DC/DC converter. Built in 12V Battery Watchdog circuit to keep the battery trickle charged when the vehicle is off.

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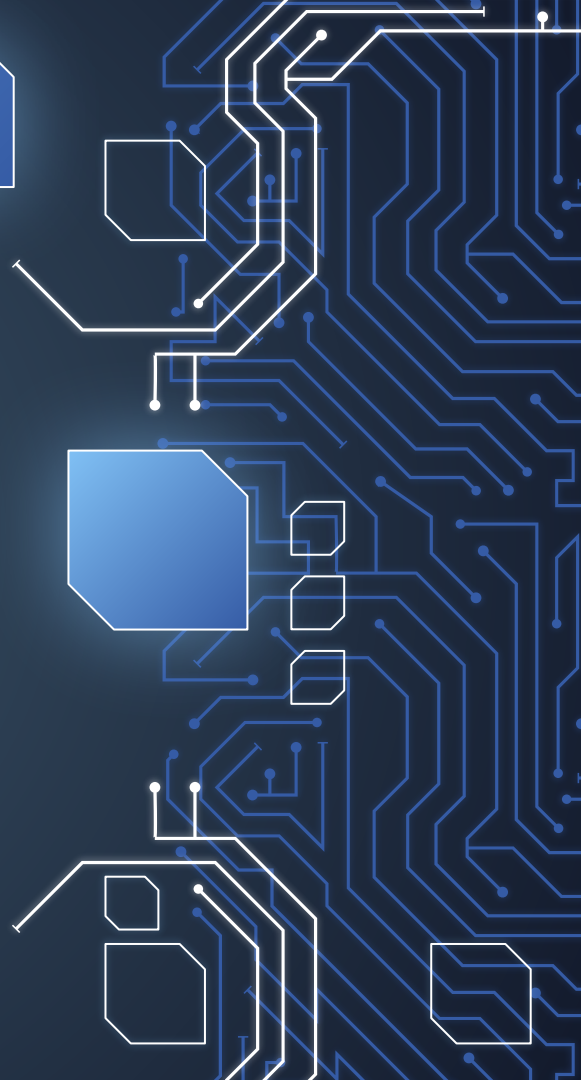
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Main power source for the traction system

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## ***ODM (original design manufacturer)***

Product development and production of a new design



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01



# *Thermal Management*

Battery assembly and component  
cooling and heating



# Universal Chill Plate

Our universal high flow chill plate has been designed for use with custom battery packs, and can be used on any liquid cooled battery box you're building. Beautifully machined, brazed, and polished 6061 aluminum which also gets leak tested at the factory. 1/4" NPT inlet and outlet.

P/N: UCP-K2

We also have an aluminum hole pattern template that can be used if you are hand drilling mounting holes.

P/N: UCP-PTRN





# EV Heat Exchanger

This EV Heat Exchanger allows you to 'chill' your batteries and thermal system using air conditioning refrigerant like an OEM electric vehicle. Custom designed and manufactured by us, and you can't find this item anywhere else. The coolant side of the heat exchanger are  $\frac{3}{8}$ " barb fittings, and the A/C side are #10 O-Ring fittings. The body of the heat exchanger is about  $7\frac{1}{2}$ " x  $2\frac{7}{8}$ " and  $4\frac{7}{8}$ " tall, with an additional  $1\frac{1}{4}$ " height for the fittings. Includes aluminum mounting brackets.

P/N: VBHE-5-10-38



# SCM2 A/C Kit

This A/C Kit add on for the SCM2 includes the electric A/C compressor and SCM2 CAN enabled A/C controller. When mated with the SCM2 and our EV Heat Exchanger, it will allow you to chill your batteries when needed, cool your cabin, or both. Available models for 100V and 144V systems. Compatible with our Hawk-IoT WiFi module and mobile app.

Coming early 2024.



# SCM2 Battery Preheater Kit

This compact fluid heater kit add on for the SCM2 packs a punch with a peak power of 5kW! This kit includes the heater module and heater controller. This CAN bus controlled heater allows you to control the output power from 0 - 100%. The system will preheat the batteries prior to charging, and will communicate with the BMS to monitor the battery temperatures. Battery preheating that is fully automated! 100-180VDC input, rated power at 144VDC. Coolant ports are  $\frac{3}{4}$ " barb fittings. Compatible with our Hawk-IoT WiFi module and mobile app.

Coming early 2024.



# SCM2 Cabin Heater Kit

This compact fluid heater kit add on for the SCM2 packs a punch with a peak power of 5kW! This kit includes the heater module and heater controller. This CAN bus controlled heater allows you to control the output power from 0 - 100%. The system can heat the cabin using your factory heater core. 100-180VDC input, rated power at 144VDC. Coolant ports are  $\frac{3}{4}$ " barb fittings. Compatible with our Hawk-IoT WiFi module and mobile app.

Coming early 2024.



# Coolant Pump

This is our go-to coolant pump for any conversion utilizing the Tesla Modules or any liquid cooling system! It's a **brand new pump**, and is the best performing pump we have tested. This is a brand new replacement to the Tesla Coolant Pump. Pump kit includes the connector kit, and the connector kit can also be purchased separately.

Optional pump mounting kit is available with or without the rubber.

P/N: TCP-1K



P/N: TCPCK-4P



P/N: TCP-MK



P/N: TCP-MK-R





# HyPer Controller Chill Plate

A redesigned HyPer chill plate to not only make installation easier, but to make it serviceable! Beautifully machined and polished 6061 Aluminum. Our custom made chill plate includes our custom matching high temp silicone gasket.



P/N: H9CP-GSK

Gasket only P/N: H9CP-GSK-1-S

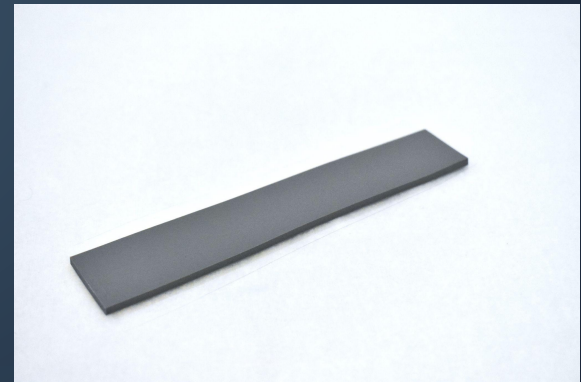


# Battery Thermal Pad

This battery thermal pad is designed to be used with our 58Ah batteries placed on the bottom of the cell. It is a silicone based material that can be isolated electrically, but has a high thermal conductivity of 3W/mK. Thickness of 3mm

P/N: NMCBTP-3M-3W

Custom sizes can be special ordered.



# Quick Connect Fittings

Quick connect fittings for the Tesla 5.3kWh modules. 90 degree, straight, straight male, and tee fittings are available.

Straight Male



P/N: TQC-STR-M

Straight



P/N: TQC-STR

P/N: TQC-T



Tee

P/N: TQC-90



90  
Degree

# 1/4" NPT to Quick Connect Fitting

1/4 NPT to male quick connect adapter, works with all of our quick connect fittings. Made of brass.

P/N: TQC-M-14-2





02



## *Charging/DCDC*

On board charging and high voltage DC  
to low voltage DC conversion



# Hawkeye 6.6kW + 1.2kW Combo

Our new Charger/DCDC combo unit features a 6.6kW charger and powerful 1.2kW DC/DC converter integrated into one beautiful liquid cooled enclosure. Liquid cooling provided by our universal high flow chill plate to ensure longer life of the internal components. Fitted with connectors that are easy to connect and work with.

Integrated CAN bus control of the charger, 12V enable for the DC/DC converter, and CAN bus information of the DC/DC.  
Compatible with our Hawk-IoT telematics.

Available in 108VDC 60A and 144VDC 45A models.

P/N: HCDC-6612-108V

P/N: HCDC-6612-144V



# TC 6.6kW Charger

4th Generation air cooled CAN bus charger by TC Charger.  
Default CAN speed is 250kbps, can be special ordered at other rates.

**HK-LF-108-60** provides 65-140VDC output 60A max

**HK-LF-144-46** provides 90-195VDC output 45A max

**HK-LF-312-20** provides 250-450VDC output 20A max

**HK-LF-540-14** provides 350-680VDC output 14A max





# TC 1kW DC/DC Converter

1kw DC/DC Converter from TC Charger, uses +12V enable to turn on and off the output. Available in 108V and 144V models.

P/N: TDC-IY-108-12

P/N: TDC-IY-144-12



The background is a dark blue gradient with a complex white circuit board pattern. The pattern consists of numerous lines, some straight and some curved, with small circles at various points, resembling a printed circuit board (PCB) layout. The lines are more prominent on the left and right sides, framing a central area.

03



# *Wiring Components*

Power connectors, signal connectors,  
and fusing



# 90° Flange Power Connector Set



This is a high quality industrial power connector set that is perfect to install on a battery box so that the HV connection and batteries inside are shielded from the elements. Silver plated for superior performance.

Available in the following sizes: 8 AWG, 6 AWG, 4 AWG, 2 AWG, 1 AWG, 2/0 AWG.  
Available colors: orange (ORG), black (BLK), and red (RED).

Example P/N:  
FSPC-2/0-S-ORG, FSPC-8-BLK



# J1772 Port with 1.5m Cable

J1772 port with cable pre-installed, rated at 32A (6.6kW). Standard length is 1.5 meters (~5 ft), but length can be customized.

P/N: J1772-1.5M



# Deutsch Style Connector Sets



We have a large inventory of Deutsch connectors, primarily in the DT and DTP series, but also some DTM.

Individual contacts and sealing plugs are also available.

# Rincon HV Disconnect

This Rincon disconnect is very useful for servicing your pack, or wanting to safely and easily disconnect your pack when gone for long periods of time. Highly recommended for an electric drive system. Rated at 1000VDC at 400A continuous.

Matching rubber gasket also available.

P/N: HVBD-GSK



P/N: HVBD4AXR





# HV Fusing (high current)

Eaton is a highly trusted brand internationally in the electrical and industrial/heavy equipment industries. These fuses are from their Electric Vehicle line. Rated at 500VDC maximum.

Available in 400A, 500A, and 600A sizes.  
P/N: HVF-400 , HVF-500 , HVF-600

Matching fuse holder is also available (not Eaton brand).  
P/N: HVFH-1



# HV Fusing (low current)



500VDC rated low current fuses. Ideal for A/C compressors, DC/DC Converters, and other HV components.

Available in sizes 10A, 15A, 20A, 30A sizes.

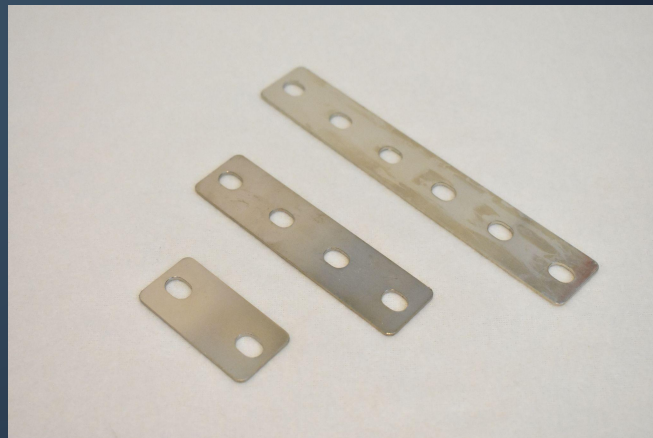
P/N: SHVF-10 , SHVF-15 , SHVF-20 , SHVF-30

Matching fuse holder is also available.  
P/N: SHVFH-1

# Busbars

Our busbars are manufactured to be used with our 58Ah NMC batteries, with 1/16" polycarbonate/PETG plastic spacer between each cell. Busbars are nickel plated for durability.

Example P/N: BB-6P-N  
(6 cell parallel, nickel plated)



# Compact Contactor



Rincon Power 60A, 750VDC high voltage contactor.



04



# *Instrumentation*

Human Machine Interface (HMI) and  
telematics



# CAN Bus Display Kit MkII

This CAN bus display kit is all you need for your instrumentation! Designed with simplicity in mind, this kit is very easy to install with your Orion BMS and HyPer 9 Controller. 2 wires for 12V power, and 2 wires for CAN bus, and that's it! Also available in HyPer 9 only version. Standard model is 3.5" touchscreen display.

P/N: CBDK35ES

P/N: CBDK35ES-NGM (HyPer 9 only)

Custom graphics and displays up to 10.1" can be customized.





# CAN Bus Display Faceplate



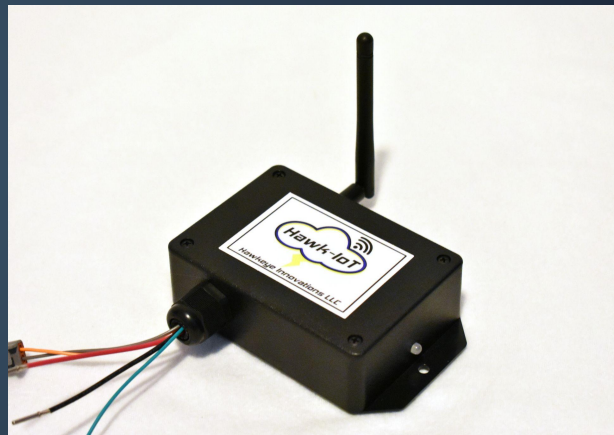
This new display case has been precision CNC cut out of billet aluminum, and polished to a beautiful finish. Available for the 3.5E series displays/

P/N: CANBDK35ES-C

# Hawk-IoT WiFi Module

Hawk-IoT is an Internet of Things product that is designed to access all of the data on your compatible devices in the vehicle. Not only does it provide a beautiful user interface in the iOS and android apps, but it also allows us to help troubleshoot issues much quicker

P/N: HAWK-IOT-K





05



# *Battery Management*

Lithium cell monitor, balance, and  
thermal measurement



# Orion BMS 2



In our opinion, the best, safest, and most robust BMS on the market. Commercial grade, and designed for an OEM experience. Extensive customization of settings, and custom CAN bus all through the BMS Utility interface.

Please contact us for ordering options, available from 24-180 cell configurations.

# LEM 1000A Current Sensor

Compatible with the Orion BMS 2, this current sensor is rated up to 1000A. Can also be used in other applications.

P/N: LEMS137-K



# Orion BMS 2 Cell Tap Tool



This is a very useful tool to have when building your pack. It will check the wiring of each of your cell tap harnesses to verify that they are wired correctly. Incorrectly wiring your cell tap harnesses without verifying could ruin your BMS unit!

Please contact us for ordering.



The background features a dark blue field with intricate white and light blue circuit board traces. These traces form a complex network of lines and nodes, some of which are highlighted with small blue dots. A large, white-outlined rectangular frame is positioned in the center of the image, containing the main text elements.

06



# *Motor/Controller*

Vehicle/machine traction drive motor  
and control



# HyPer 9 Motor/Controller Kit

The Hyper 9 by NetGain motors has been the most sought after motor on the market for the last 2 years in a row! Excellent HP, torque, and best in class efficiency all coupled with a competitive price, make this motor worth every penny.

Please contact us for ordering.



The background features a dark blue field with a complex network of white and light blue lines representing circuit traces. These lines are interconnected with small circular nodes, creating a technical, high-tech aesthetic. The lines vary in thickness and form, some branching out like a tree, others forming loops or straight paths.

07



# *Traction Battery*

Main power source for the traction system



# Hawkeye NMC 58Ah Battery

Parameter	Value	Notes
Nominal capacity	58Ah	1C @ 25°C
Nominal voltage	3.7V	
Internal resistance	≤0.8mΩ	
Cycle life	≥2000	To 80% of rated capacity
Standard discharge current	25A	
Maximum constant discharge	75A	1.5C (See section 1.1)
Maximum pulse discharging current	450A	10 second pulse
Standard discharge voltage	3.0V	
Minimum discharge voltage	2.75V	

From years of testing lithium batteries, we have never tested anything quite like this cell. It is the best battery we have ever tested - period. Wave days of voltage sag behind with this beast of a battery.

Standard charge current	15A	0.3C
Maximum constant charge current	50A	1C (See section 1.1)
Standard charge voltage	4.25V	
Maximum charge voltage	4.3V	
Discharging temperature	-30~122°F	-30~50°C (See section 1.1)
Charging temperature	14~122°F	-10~50°C (See section 1.1)
Weight	2.05 lbs	(930g) (includes stud terminal)
Energy Density	231 wh/kg	
Shell	Aluminum Alloy	
Chemistry	Lithium nickel manganese cobalt oxide	

This has been the go-to battery for the past few years, and a must have for high performance builds where power and/or energy density is important.



**Please contact us for ordering. We also design and build complete battery assemblies.**

The background is a dark blue gradient with a complex white circuit pattern. The pattern consists of various lines, dots, and geometric shapes resembling electronic components and traces, creating a high-tech, digital aesthetic.

08



## ***ODM (original design manufacturer)***

Product development and production of a new design







## **ODM, Engineering, and Development**

**ODM service is idea to complete product ready to ship, we take care of everything from A to Z for you.**

**We can also engineer our existing products to fit your application.**

**Please contact us for more information.**