

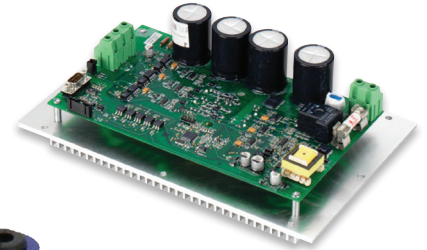
MASTERFLUX COOLING SOLUTIONS

DIRECT DC VARIABLE CAPACITY



| DIRECT DC **VARIABLE-CAPACITY COOLING SOLUTIONS FOR EMERGING APPLICATIONS**

Masterflux, a Tecumseh brand, designs and manufactures a wide range of direct DC, variable capacity compressors and systems for a variety of emerging applications. Compact and lightweight, highly efficient and reliable, our Masterflux compressors are developed for mobile applications and high COP. Masterflux also develops cooling and refrigeration systems such as eBTMS (battery thermal management system), eMRU (electric mobile refrigeration unit), and eHVAC for EV/ICE vehicle applications.



MASTERFLUX APPLICATIONS

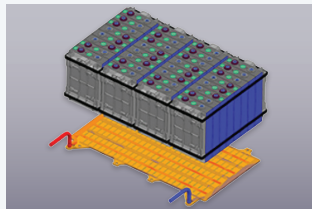
Well suited for a variety of DC applications covering the ordinary to the extraordinary:

IDLE MITIGATION



Masterflux's line of compressors is ideally suited for battery powered no-idle applications for OEM and aftermarket systems.

BATTERY THERMAL MANAGEMENT



Masterflux's compressors and Battery Thermal Management systems are designed for fast and efficient Air and Liquid Cooling of EV Battery Packs.

LAST-MILE DELIVERY



Quiet, robust and highly-efficient cooling designed for frequent deliveries with rapid-pull-downs.

MEDICAL/SCIENTIFIC



Because our compressors can be powered by low DC voltage, regulatory certification is greatly simplified.

SOLAR/OFF-GRID POWER



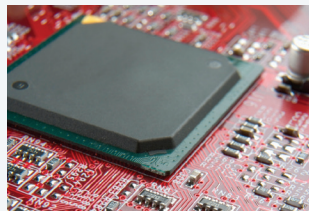
Masterflux offers a solution for DC systems running on solar, battery, or other off-grid power sources.

MILITARY



Our technology can be found in military applications from the use of chiller technology for cooling a soldier to powering thermal systems for electronic cooling.

ELECTRONICS



With demanding requirements for electronic cooling, Masterflux is at the forefront of the development of new cooling concepts for electronic systems.

MOBILE CONTAINERS

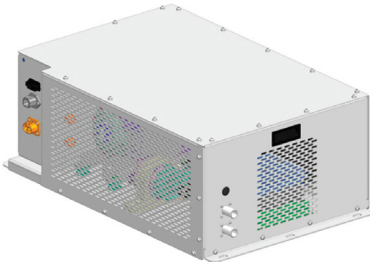


Compact and reliable Masterflux used by global logistic services.

MASTERFLUX SOLUTIONS

SYSTEMS

eBTMS



Air-cooled and Liquid-chiller systems for EV Thermal Management

eHVAC



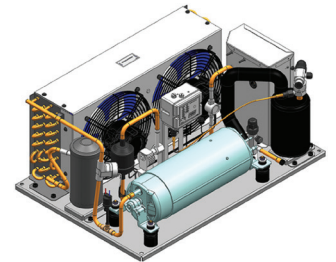
Highly energy-efficient Idle-mitigation solution optimized for commercial vehicles.

eMRU



Electric Mobile Refrigeration Units for mobile containers and Last-Mile deliveries.

SPECIALIZED



Custom cooling units for special applications such as electronics and medical chillers.

COMPRESSORS

MESA



High Temp
Cooling Capacity:
1600 Btu/h
500 W

VHG



High Temp
Cooling Capacity:
12300 Btu/h
3600 W

SIERRA



High Temp
Cooling Capacity:
14000 Btu/h
4100 W

ALPINE



High Temp
Cooling Capacity:
30000 Btu/h
8800 W

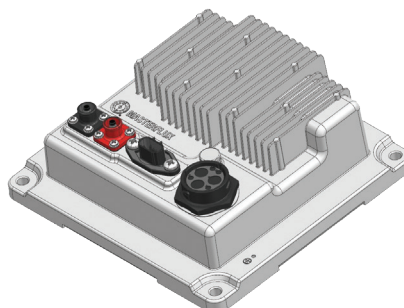
Cooling capacity information provided at ARI HBP condition, considering 7.2C evaporating temp., 54.4C condensing temp., and R134a refrigerant.

CONTROLLERS

Masterflux controllers are designed and developed in-house, optimized for specific Masterflux compressors.

For each model of compressor, there may be several versions of the controller to choose from.

Ask us about custom controller development for your specific application.

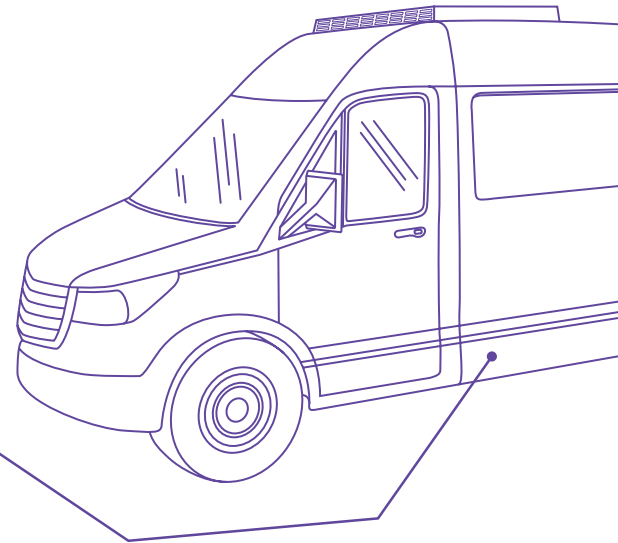


| DIRECT DC SYSTEMS

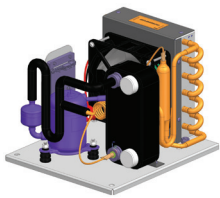
eBTMS (ELECTRIC BATTERY THERMAL MANAGEMENT SYSTEMS)

Highly efficient active-cooling systems with Direct-DC compressors ensure precise temperature control to optimize battery life of EV applications.

From micro-compressors to full-sized tandem setups, Masterflux offers a wide range of variable-cooling capacities for your applications.



PLATFORM A



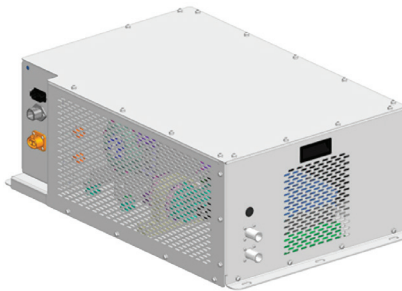
High Temp
Cooling Capacity:
Up to 500 Watt
(1700 Btu/h)
Air cooled and liquid
cooled version
12, 24 or 48 VDC

PLATFORM B



High Temp
Cooling Capacity:
Up to 2500 Watt
(8500 Btu/h)
Liquid cooling version
12, 24 or 48 VDC

PLATFORM C

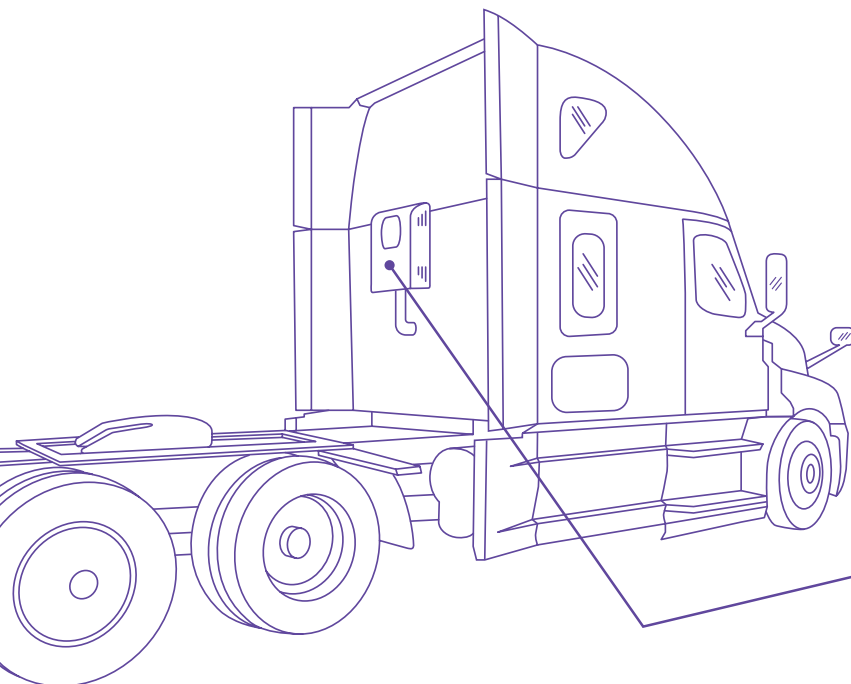


High Temp
Cooling Capacity:
Up to 7000 Watt
(23900 Btu/h)
Liquid cooling and heating version
HV: 400, 650 or 850 VDC
LV: 24 VDC

PLATFORM D



High Temp
Cooling Capacity:
Up to 9000 Watt
(30700 Btu/h)
Liquid cooling and heating version
HV: 400, 650 or 850 VDC
LV: 24 VDC



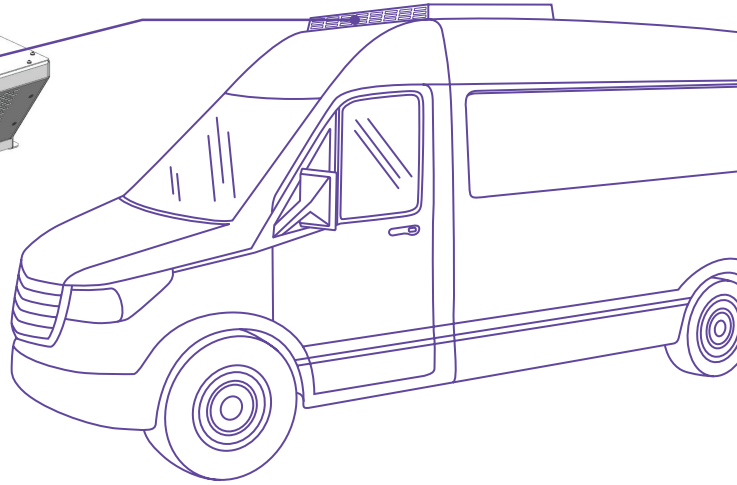
eHVAC (ELECTRIC HVAC SYSTEMS)

There is no secret that Masterflux DC Compressors have been used for “non-idle” air conditioning for decades by major truck manufacturers. Masterflux is extending the offering by packaging idle-mitigation systems for your needs.

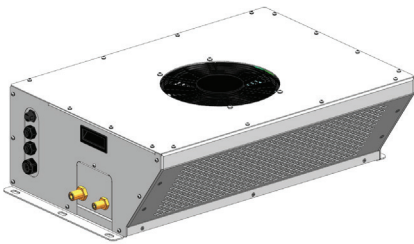


eMRU (ELECTRIC MOBILE REFRIGERATION UNITS)

Fresh or frozen, Masterflux eMRU along with its low-profile evaporators, offers a variety of efficient, reliable and compact electric refrigeration system. Our solution is perfect for food trucks, micro-systems for mobile containers, full refrigeration systems for TRU and other last-mile transports.



MX-150



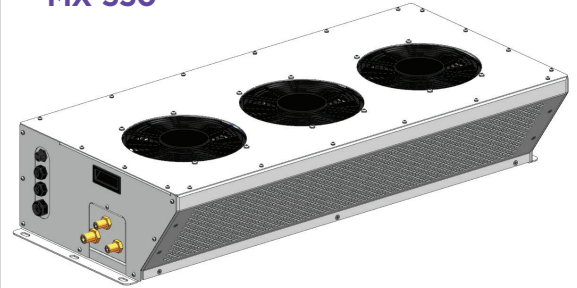
Cooling capacity:
1500 Watt (@ 0°C)
5000 Btu/h (@ 32°C)
12 VDC

MX-250



Cooling capacity:
2500 Watt (@ 0°C)
8500 Btu/h (@ 32°C)
48 VDC

MX-550



Cooling capacity:
5500 Watt (@ 0°C)
19000 Btu/h (@ 32°C)
400 VDC

MXE-150



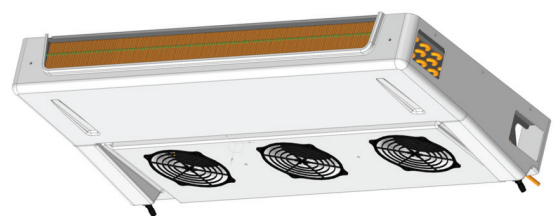
Refrigerant: R134a
Voltage: 12/24 VDC
Defrost: Air Defrost

MXE-250



Refrigerant: R134a / R452A
Voltage: 12/24 VDC
Defrost: Air Defrost / Hot Gas Defrost

MXE-550



Refrigerant: R134a / R452A
Voltage: 12/24 VDC
Defrost: Air Defrost / Hot Gas Defrost

I COMPRESSORS & CONTROLLERS



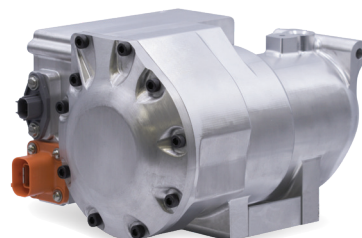
MESA



VHG



SIERRA



ALPINE

MESA

Our Mesa family of compressors are the perfect choice for small DC-powered refrigerators used in recreational vehicles, buses, trains, trucks and boats, as well as medical and telecommunications applications. The Mesa compressor is rugged, light-weight and can fit any unique installation requirements.

FEATURES & BENEFITS

- Micro/Mini rotary BLDC compressors one-fourth the size of conventional compressors
- High-efficiency motors with optimized pumping mechanisms results in industry leading EERs
- Stable and low vibration mechanisms coupled with reduced friction cylinder components minimize noise

TECHNICAL INFO

Refrigerant: R134a
 Application: High Temp
 High Temp: 1600 Btu/h
 500 W
 Evap 7.2C, Cond 54.4C
 Refrig. R134a
 Voltage Range: 12 VDC,
 24 VDC, and 48 VDC

VHG

The VHG is a variable speed, rotary compressor with a direct DC drive. Our customers choose the VHG compressor because it eliminates the need to convert DC voltage to AC voltage to drive the compressors. VHG is the perfect choice for rooftop AC and rooftop refrigeration units used in recreational vehicles and last-mile delivery. With its light weight, low profile and wide capacity range, the VHG reduces overall power consumption, increases battery life and can fit a wide variety of customer applications.

FEATURES & BENEFITS

- High efficiency BLDC motor
- Ready for mobile applications
- Smart controller (voltage, frequency, serial interface) 16cc displacement

TECHNICAL INFO

Refrigerant:
 Low Temp: R404A, R452A
 High Temp: R134a, R1234yf, R513A
 Application: Low, Med, High Temp
 High Temp: 12300 Btu/h
 3600 W
 Evap 7.2C, Cond 54.4C
 Refrig. R134a
 Voltage Range: 12 VDC,
 24 VDC, and 48 VDC

SIERRA

No matter the requirement, the Sierra family of compressors is the solution. Pound for pound, Sierra has the widest operating range and the most capacity of any compressor on the market, so it is no surprise you can find it in hundreds of applications. Sierra is well suited for transport applications such as electric vehicles, trains, buses and aircrafts but is also used in the military, battery cooling and telecommunications industries. By integrating diagnostics into the variable speed drive, the Sierra family of compressors has set the standard for reliability.

FEATURES & BENEFITS

- High-efficiency, high-capacity, BLDC compressor line
- Robust rotary design ideally suited for mobile and transport applications
- Dual compressor configurations for increased capacity range

TECHNICAL INFO

Refrigerant: R134a, R404A,
 R-290, R1234yf, R513A
 Application: Low, Med, High Temp
 High Temp: 14000 Btu/h
 4100 W
 Evap 7.2C, Cond 54.4C
 Voltage Range: 12 VDC, 24 VDC,
 48 VDC, 400 VDC, and 650 VDC

ALPINE

Alpine brings the best capacity and efficiency to the market, delivering a reliable and compact DC cooling and heat pump solution for **e-mobility, transport refrigeration** and **last-mile delivery**. The applications include HVAC, heat pump, battery thermal management, and power train component cooling, both for on and off-road electric vehicles. Designed to be the best in class with a brushless DC motor and a wide voltage range up to 850 VDC, offering a light-weight solution with CANBUS communication, IP67 rating and a variety of low-GWP refrigerants.

FEATURES & BENEFITS

- Designed for EV and transport applications
- Light-weight solution, IP67 rating and integrated controller
- CANBUS communication

TECHNICAL INFO

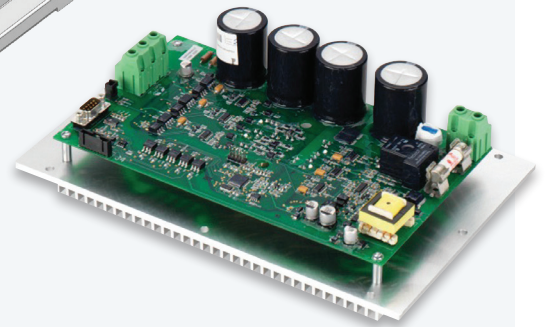
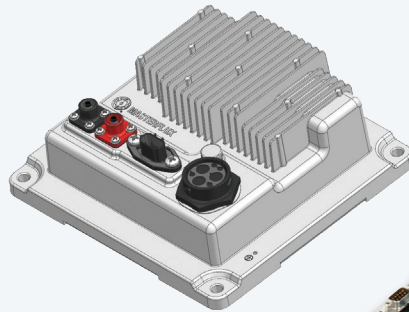
Refrigerant:
 High Temp: R134a, R513A, R1234yf
 Application:
 High Temp/ Heat pump
 High Temp: 30000 Btu/h
 8800 W
 Evap 7.2C, Cond 54.4C
 Refrig. R134a
 Voltage Range: 400 VDC, 650 VDC,
 and 850 VDC

CONTROLLERS

Each Masterflux compressor requires a Masterflux sensorless BLDC motor controller to operate. For each model of compressor, there may be several versions of the controller to choose from. These controllers are specifically tested and optimized for each compressor and ensure optimal performance.

KEY FEATURES

- Compressor initiation and operation
- Variable speed control
- Locked-rotor protection
- Limits power and current draw
- Thermal protection and shutdown of compressor and controller
- Provides diagnostic information
- Low-voltage and high-voltage shutdown



OPTIONAL ACCESSORIES

- Compressor harnesses
- Manual control devices
- Serial and USB diagnostic devices



Tecumseh

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