



## NEW GENERATION MOTORS CORPORATION

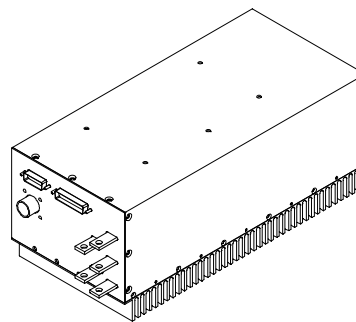
### *New EVC402-XXX 3-phase Motor Controller*

The New Generation Motors (NGM) EVC402-XXX motor controller brings years of advanced development and the latest in MOSFET technology to solar-powered racing.

The EVC402-XXX controller uses breakthrough technology to smoothly transition from trapezoidal control at low-speed to efficient sinusoidal control at higher speeds. Slew-rate control eliminates the noise and vibration associated with six-step control and reduces eddy-current losses. Advanced MOSFETs reduce conduction losses by over 40% as compared to the EVC200-092.

Standard features include:

- ◇ *Environmentally sealed to IP65 when properly connected.*
- ◇ *Mechanically and electrically interchangeable with EVC200-092.*
- ◇ *Designed especially for the SCM150-XX wheel motor.*
- ◇ *Motor Current Limiting (MCL) logic limits battery charge and discharge current based on battery voltage, a must for advanced lithium and NiMH batteries.*
- ◇ *High-speed over-voltage detection protects controller against instantaneous battery disconnection, even under regenerative braking.*
- ◇ *State-Of-Charge tracking with programmable battery profile.*
- ◇ *Flexible battery current measurement circuit utilizes external high or low-side current shunt.*
- ◇ *Serial Interface for configuration, control, and data acquisition.*



✳ **Specifications** w/o fans & connectors

	EVC402-092	EVC402-092
Peak RMS Phase Current (Amps)	215	145
Peak Phase Current, Trapezoidal Mode (Amps)	260	175
Nominal Bus Voltage (Volts)	42-54	66-108
Min./Max. Operating Voltage (Volts)	30/68	50/135
Maximum Withstand Voltage (Volts)	75	160
Input Capacitance (uF)	68,000	12,000
Peak Efficiency %	99	99
Height (mm/in.)	135/5.29	135/5.29
Width (mm/in.)	156/6.13	156/6.13
Length (mm/in.)	332/13.06	332/13.06
Weight (kg/lbs)	4.9/10.75	4.9/10.75

**For more information, contact:**

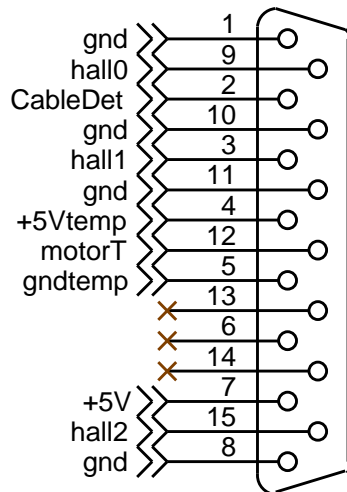
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## Key features of the EVC402-092 Controller:

- \* Full I/O isolation from batteries
- \* Ultra high efficiency
- \* Synchronous switching
- \* Fixed-frequency control
- \* Regenerative braking
- \* Active discharge circuit
- \* Instrumentation data available through serial port:
  - Battery voltage
  - Battery current
  - State-Of-Charge
  - Motor speed and temperature
  - Controller temperature
  - Drive state
  - Hours of operation
  - Throttle position
  - Brake position
- \* Programmable torque or speed control
- \* Programmable thermostatic fan control with internal power supply
- \* Low power sleep mode when disabled
- \* Built-in protection features:
  - Extreme over/under voltage protection
  - Motor interface connection verification
  - Thermal limiting protection
  - Over- and under- voltage limiting with soft shutdown
  - Abrupt start-up inhibition
  - Programmable Battery Protection
  - User configurable Throttle input based on speed
  - Speed Governor
  - Reverse Speed Limiting

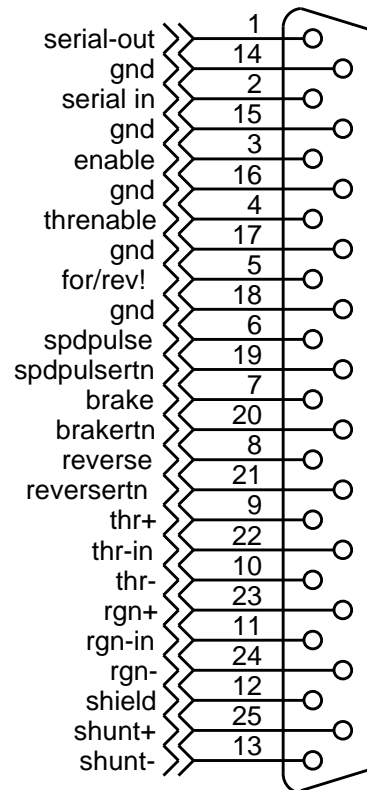
## Interface Information:

J1 – Motor communication link,  
15 pin Female D-Sub. Connector



J3 – Fan power for cooling,  
Amp Series 1 CPC 11-4, Reversed sex

J2 – Control signals (vehicle)  
25 pin Female D-Sub. Connector



## Key Dimensions of the EVC402-092 Controller:

