



# NuGen Mobility Inc.

---

---

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

NuGen Mobility's EVC402-XXX motor controller brings years of advanced development and the latest in MOSFET technology to solar-powered racing.

The EVC402 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/EVC200-042.*
- ◇ *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*

	<b>EVC402-042</b>	<b>EVC402-092</b>
<b>Peak RMS Phase Current (Amps)</b>	215	145
<b>Peak Phase Current, Trapezoidal Mode (Amps)</b>	260	175
<b>Nominal Bus Voltage (Volts)</b>	42-54	66-108
<b>Min./Max. Operating Voltage (Volts)</b>	30/68	50/135
<b>Maximum Withstand Voltage (Volts)</b>	75	160
<b>Input Capacitance (uF)</b>	68,000	12,000
<b>Peak Efficiency %</b>	99	99
<b>Height (mm/in.)</b>	135/5.29	135/5.29
<b>Width (mm/in.)</b>	156/6.13	156/6.13
<b>Length (mm/in.)</b>	332/13.06	332/13.06
<b>Weight (kg/lbs)</b>	4.9/10.75	4.9/10.75

**For more information, contact:**

NuGen Mobility Inc.  
44645 Guilford Drive, Suite 201  
Ashburn, Virginia 20147  
(703) 858-0036 (Voice)  
(703) 858-0699 (Fax)

Email: [info@ngmcorp.com](mailto:info@ngmcorp.com)

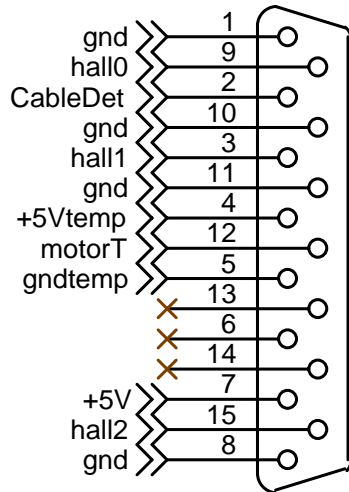
*Specifications Subject to Change Without Notice*

## Key features of the EVC402-092/-042 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

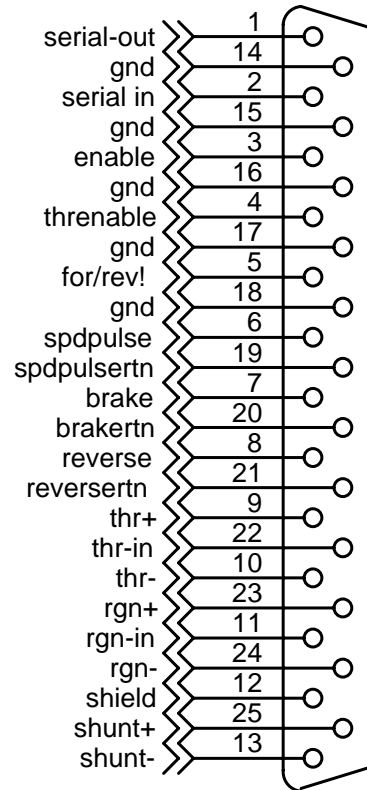
## Interface Information:

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/-042 Controller:

