

# SYNKRO MOTIVE

*SYNKRO*motive  
1660DC\_beta  
DC Motor Controller  
Patents Applied for

## Features

### *Innovative Electric Vehicle Drive and Battery Systems*

A medium power DC unit designed to fill the void between Curtis 1231 and Zilla 1K controllers for high power medium weight vehicles (~3500 Lbs total weight).

- Fully Programmable Digital Controller
- Silent 20KHz Operation Eliminates Annoying Whistle and Whine
- Series / Parallel Switching allows Dual Motor Control for both Torque and Speed
- Programmable Reverse Speed Setting
- Full Contactor Control built in for Forward and Reverse with Safety Override Functions . Built in Pre-Charge Resistor and Diodes.
- Automatic Throttle Curve Calibration, for Smooth, Predictable Power Delivery
- Hall Effect Current Sensing for Fast Limit Response at High Power Levels
- USB Port Interface Adapter Included
- Intuitive, Browser based Graphical User Interface (GUI) gives Advanced Levels of Programming that runs on any Operating System (OS)
- Unit is Forced Air Cooled for better Thermal Control without Complex Liquid Cooling or Special Mounting Plate Requirements
- DC Dump Charging Feature allows High Power Charging from any DC Power Source
- Black Box reporting (Auto fault event detection and retention)
- Upwardly Compatible with Future SYNKROmotive BMS systems & In Vehicle Graphical User Interface
- Safety Features:
  - Safe Start
  - Battery Contactor Control
  - Under / Over Voltage Control
  - Over Temp Protection
  - Direction Change Lock-out
  - Reverse Speed Limiter
  - Priority Braking
  - Open Accelerator Input Blanking



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## Specifications

### *Innovative Electric Vehicle Drive and Battery Systems*

#### Dimensions

L **9" (22.86cm)**  
W **4.45" (12.06cm)**  
H **4" (10.16cm)**

- Operating Frequency — **20,000 Hz**
- Operating Temperature Range — **0c—45c** (32f - 113f)
- Operating Voltage Range — **24 - 156v**
- Standby Current — **< 5 milliamp**
- Motor Type — **Series Wound DC**
- Peak Output — **700 amp**
- Nominal/Continuous Output— **400 amp**  
30 second — **700 amps**  
2 Minute — **500**
- Voltage drop @ 100 amps — **1.5v**
- Controller Resolution — **8 bit**
- Programming Interface — **PC Compatible GUI**
- Data Connection— **USB**
- Key Input Voltage — **11 -15v**
- Throttle Input — **0 - 5kohm**
- Thermal Cutback — **70 c (158f)**



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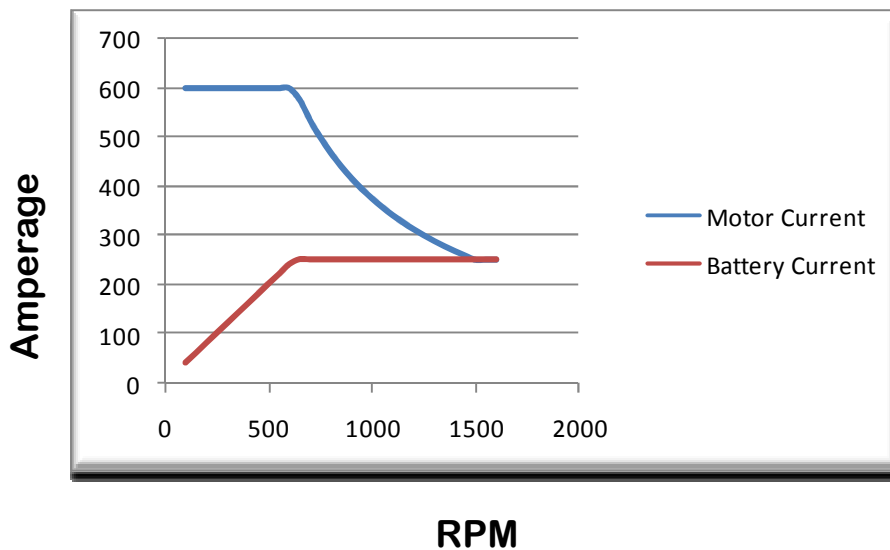
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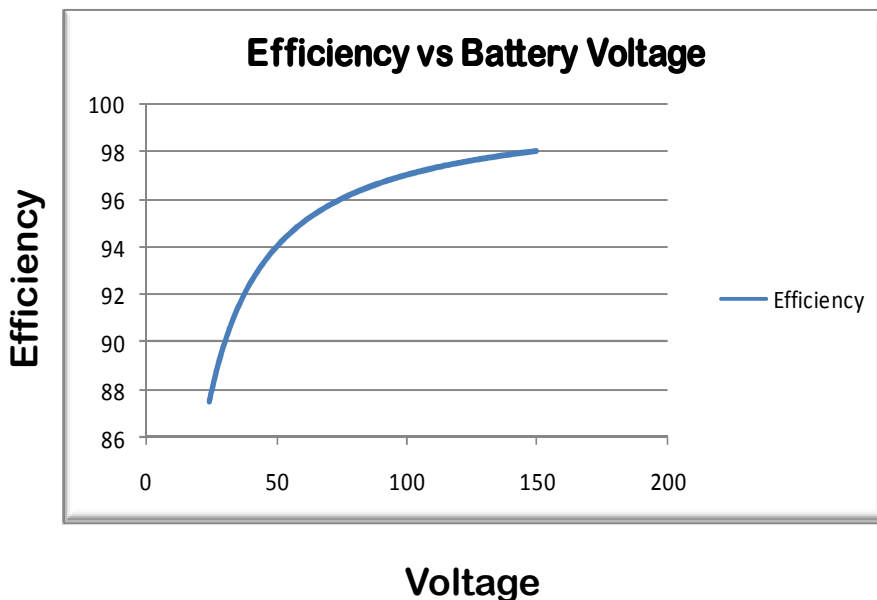
## Graphs

Innovative Electric Vehicle Drive and Battery Systems

### Example of Battery Current



### Efficiency vs Battery Voltage



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