OSU's Electric Motorcycle

Built by '07-'08 Senior Design Group #1

Senior Design Expo "People's Choice Award" Winner 2008

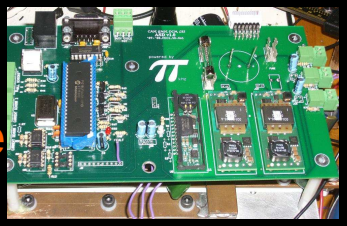
Project Features

- Self-Contained 120 VAC Battery Charging
  - -4 Hour Charge Time (Drained to Full)
- 48 Volt Configured 16x 12 Volt Batteries
- 3456 Watt Hours Energy Storage
- Control System Battery Backup
- Complete AMD 500Mhz Computer
  - -Linux Operating System - Debian
- 7" VGA LCD Display
  - -Digital Gage Display
  - -System Performance / History Feedback

Motor / Drive Combinations Used

- Mars PMAC Motor // ASD Controller (current)
  - -10 HP, 200 Amp (30 sec) Peak Power
  - -75 MPH Max Speed (calculated)
  - -25 to 50 Miles Max Travel Dist. (calculated)
- Etek BDC Motor // Alltrax DC Controller
  - -8 HP, 150 Amp (30 sec) Peak Power
  - -50 MPH Max Speed (calculated & tested)
  - -over 25 Miles Travel Dist. (calculated & tested)

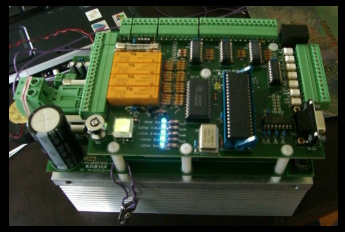
Adjustable Speed Drive



Features:

- Brushless DC (PMAC) Motor Controller
- Fully Regenerative Braking Capable
- 18 MOSFETs for distributed 225 Amp Switching
- 3-Phase Six-Step Switching Scheme
- Armature Angle Hall Sensor Input Monitoring
- Dual Current Transducer Current Monitoring
- RS-232 Serial Control Interface
- 40Mhz 8-bit RISC Processor (PIC)
- Desired Speed Analog Potentiometer Input
- Multiple Control Source Voltage Capable

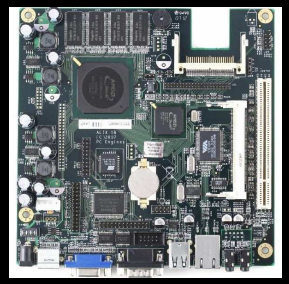
Break Out Board



Features:

- Complete Power System Management & Control
- System Lighting Control & CDS Ambient Light Monitoring
- Multiplexed Independent Battery Voltage Measurement
  - -20 Cell Capacity Up To 48 Volts (16 batteries used)
- +/- 200 Amp Current Measurement
- Performs System Energy Coulomb Counting
- LCD Display Brightness Control
- RS-232 Serial Control Interface
- 40Mhz 8-bit RISC Processor (PIC)
- Desired Speed A-to-D Management
- Dual 12 Volt Supply Bus For Added Stability
- Battery Backup For Smooth Operation
- 120 Volt AC System Charging Automatic Safety Control

Motherboard



Features:

- Debian Operating System
- AMD Geode LX 500 Mhz
- 256 MB SDRAM Integrated
- 2 Gigabyte Flash Drive (Compact Flash)
- Built-In DC-DC Converter
- Average Power Consumption: 5 Watts
- 2x RS-232 Communication Ports

OSU Electrical Engineering

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Glenn Walters — Linn Gear
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-Lab Support

Electric Motorcycle 2007 to 2008 Team from Left to Right:
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