Permanent Magnet Motor Speed Controller

Models 1229

www.curtisinstruments.com
Permanent Magnet Motor Speed Controller

The Curtis Model 1229 is a sealed, heavy-duty permanent magnet motor speed controller intended for demanding traction applications in hostile environments. It utilizes an advanced powerful dual-microprocessor logic architecture for maximum functional safety and accurate speed control.

The Curtis Model 1229 is designed for large industrial permanent magnet motor applications, such as floor care machines, utility tugs/pushers, burden carriers, and small material handling vehicles and AGVs.

FEATURES

High Power Capability

▶ Class-leading power density gives maximum power output from smallest possible package.

▶ Models available from 200–250A output at 24–36V, and 200A at 48V. These are true 2 minute ratings, not short-term boost values. 10% boost current for 10 seconds.

▶ Insulated Metal Substrate (IMS) power base provides superior heat transfer for increased reliability and highest possible continuous current ratings.

▶ Uses a heavy-duty external power isolation contactor to provide maximum safety and performance, eliminating the overheating and reliability problems often found with other manufacturer's high-current controllers that use internal board-mounted isolation relays.

Rugged Construction

▶ Heavy duty threaded M6 busbars for battery and motor connectors eliminate reliability issues often found with push-on power connectors.

▶ All logic connections via reliable, IP65 sealed 23-pin AmpSeal connector.

▶ Robust IP65 sealed enclosure provides excellent chemical resistance and protection from harsh environments.

▶ Designed to withstand high levels of bump, shock and vibration.
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**FEATURES** continued

**Powerful, Flexible I/O**
- Four 10A peak rated output drivers allow bi-directional PWM control of up to 2 linear actuators, or unidirectional control of up to 4 small motor-type loads.
- Two additional 2A rated PWM-control auxiliary outputs for line contactor, EM brake, solenoid valves or other relay and contactor coils.
- Integrated fly-back diodes on all auxiliary outputs.
- Highly programmable analog and digital inputs, including a motor speed sensor input for closed-loop control.
- Short circuit protection and integral ESD protection on all I/O.
- CANopen compatible CANbus connection allows use as a ‘CAN slave’ on any CANopen system.
- CANopen EDS (Electronic Data Sheets) available.

**Flexibility and Safety**
- Dual-microprocessor architecture cross-checks critical circuits, logic, and software functions to ensure the highest possible functional safety performance level is achieved.
- Advanced Pulse Width Modulation (PWM) techniques minimize heating losses and torque ripple, resulting in high efficiency and ensures lowest possible EMC emissions.
- Logic I/O mapping function allows vehicle developers to write powerful combinational and sequential logic functions.
- Curtis handheld or PC Windows programming tools provide easy programming and powerful system diagnostic tools.
- Simple motor set-up programming.
- Field-upgradeable software.
- Integrated battery state-of-charge algorithm, plus hours-run and service interval timers.
- Integrated overvoltage, undervoltage and thermal cutback protection.

**Meets or complies with relevant US and International Regulations**
- EMC: Designed to the requirements of EN12895.
- IP65 rated per IEC 60529.
- UL recognized per UL583.
- Regulatory compliance of the complete vehicle system with the controller installed is the responsibility of the vehicle OEM.
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FUNCTIONAL SAFETY

<table>
<thead>
<tr>
<th>Safety Function</th>
<th>PL</th>
<th>Designated Architecture</th>
<th>MTTFd</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncommanded Powered Motion</td>
<td>d</td>
<td>Category 2</td>
<td>≥40 yrs</td>
<td>≥90%</td>
</tr>
<tr>
<td>Motor Braking Torque</td>
<td>c</td>
<td>Category 2</td>
<td>≥20 yrs</td>
<td>≥90%</td>
</tr>
</tbody>
</table>

MODEL CHART

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Battery Voltage (V)</th>
<th>10 Sec Boost (A)</th>
<th>2 Min Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1229-31XX</td>
<td>24/36</td>
<td>220</td>
<td>200</td>
</tr>
<tr>
<td>1229-32XX</td>
<td>24/36</td>
<td>275</td>
<td>250</td>
</tr>
<tr>
<td>1229-41XX</td>
<td>48</td>
<td>220</td>
<td>200</td>
</tr>
</tbody>
</table>

SYSTEM ACCESSORIES

The Curtis enGage® II Model 3100R is a CAN based instrument that displays vehicle performance and status information.

The DC Contactor SW80 is rated for 100 amps in severe switching applications and 125 amps in light-duty switching applications.

The Curtis Model 1313 Handheld Programmer is ideal for setting parameters and performing diagnostic functions.
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TYPICAL WIRING DIAGRAM

Floor Care

* With CAN bus, additional I/O pins will be available.
TYPICAL WIRING DIAGRAM

Pallet Mover

* With CAN bus, additional I/O pins will be available.
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CONNECTOR WIRING

Warranty
Two year limited warranty from time of delivery.