



CURTIS

Motor Controllers



Permanent Magnet Motor Speed Controller

Models 1229



CE 



Models 1229



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-micro-processor 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.



Models 1229

Permanent Magnet Motor Speed Controller



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.

Valuable Additional Features

- ▶ Emergency Stop Decel function ensures a smooth "brake to stop" when the key is turned off or a fault occurs that requires the vehicle to stop (1229-xxx5 only).
- ▶ Push-too-Fast feature restricts vehicle speed even with the key off or with batteries disconnected (1229-xxx5 only).
- ▶ Output driver for connection of remote status LED (1229-xxx5 only).

Meets or complies with relevant US and International Regulations

- ▶ EMC: Designed to the requirements of EN12895:2015.
- ▶ Safety: Designed to the requirements of
 - EN1175-1:1998+A1:2010
 - EN (ISO) 13849-1
- ▶ 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.



Models 1229

Permanent Magnet Motor Speed Controller



FUNCTIONAL SAFETY

Safety Function	Designated Architecture	MTTFd	DC	CCF	PL
Uncommanded Powered Motion	Category 2	49	93	Pass	d
Motor Torque	Category 2	22	92	Pass	c

MODEL CHART

Generic Model No.	Nominal Battery Voltage (V)	2-Minute Current (A)	10-Second Boost Current (A)	Features
1229-3101	24–36	200A	220	
1229-3105	24–36	200A	220	Push-Too-Fast / Key-Off Decl / Status Beacon
1229-3151	24–36	200A	220	without CAN termination
1229-3201	24–36	250A	275	
1229-3205	24–36	250A	275	Push-Too-Fast / Key-Off Decl / Status Beacon
1229-3251	24–36	250A	275	without CAN termination
1229-4101	48	200A	220	
1229-4105	48	200A	220	Push-Too-Fast / Key-Off Decl / Status Beacon
1229-4151	48	200A	220	without CAN termination

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.

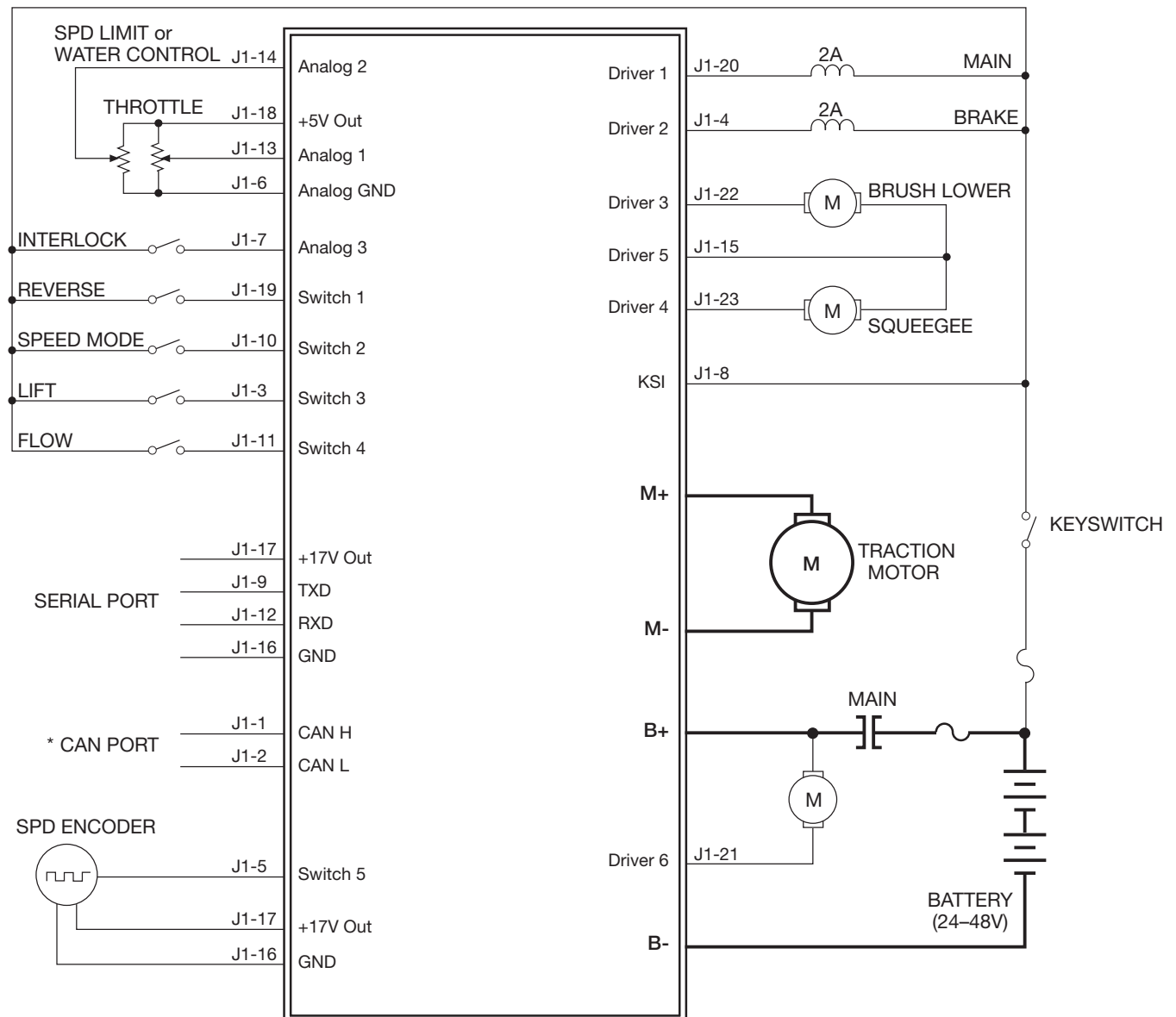
Models 1229

Permanent Magnet Motor Speed Controller



TYPICAL WIRING DIAGRAM

Floor Care



* Generic 1229-xx51 models are WITHOUT internal CAN termination.

A 5x5 grid with a diagonal of colored squares. The squares are colored as follows: (1,1) is blue, (2,3) is orange, (3,2) is green, (4,4) is blue, and (5,5) is green. All other squares are white.

TYPICAL WIRING DIAGRAM

The diagram illustrates the electrical architecture of a vehicle control system, featuring a central control unit interfaced with various sensors, actuators, and power sources.

Input Section (Left):

- Control Switches:** FORWARD (J1-19), REVERSE (J1-10), RABBIT (J1-3), INTERLOCK (J1-11), REDUNDANT EM REV (J1-14), EM REV (BB) (J1-7).
- Emergency Stop:** LIFT (J1-5).
- Communication:** SERIAL PORT (TXD: J1-17, RXD: J1-12, GND: J1-16), *CAN PORT (CAN H: J1-1, CAN L: J1-2).
- Throttle:** THROTTLE (J1-18, J1-13).
- Power:** +5V Out (J1-18), Analog 1 (J1-13), Analog GND (J1-6).

Central Control Unit (Middle):

- Switches:** Switch 1-5.
- Analog Inputs:** Analog 2, Analog 3.
- Drivers:** Driver 1-6.
- Other Inputs:** KSI, M+, M-, B+, B-.

Output Section (Right):

- Power Distribution:** MAIN, EM BRAKE, TRAVEL ALARM, PUMP, TRACTION MOTOR, KEYSWITCH, MAIN (with fuse), LOWER, HORN, LOAD HOLD, BATTERY (24-48V).
- Wiring Details:** Wires are labeled with junction points (J1-1 through J1-23) and components like 2A fuses, relays, and diodes.

www.tecknowledgey.com

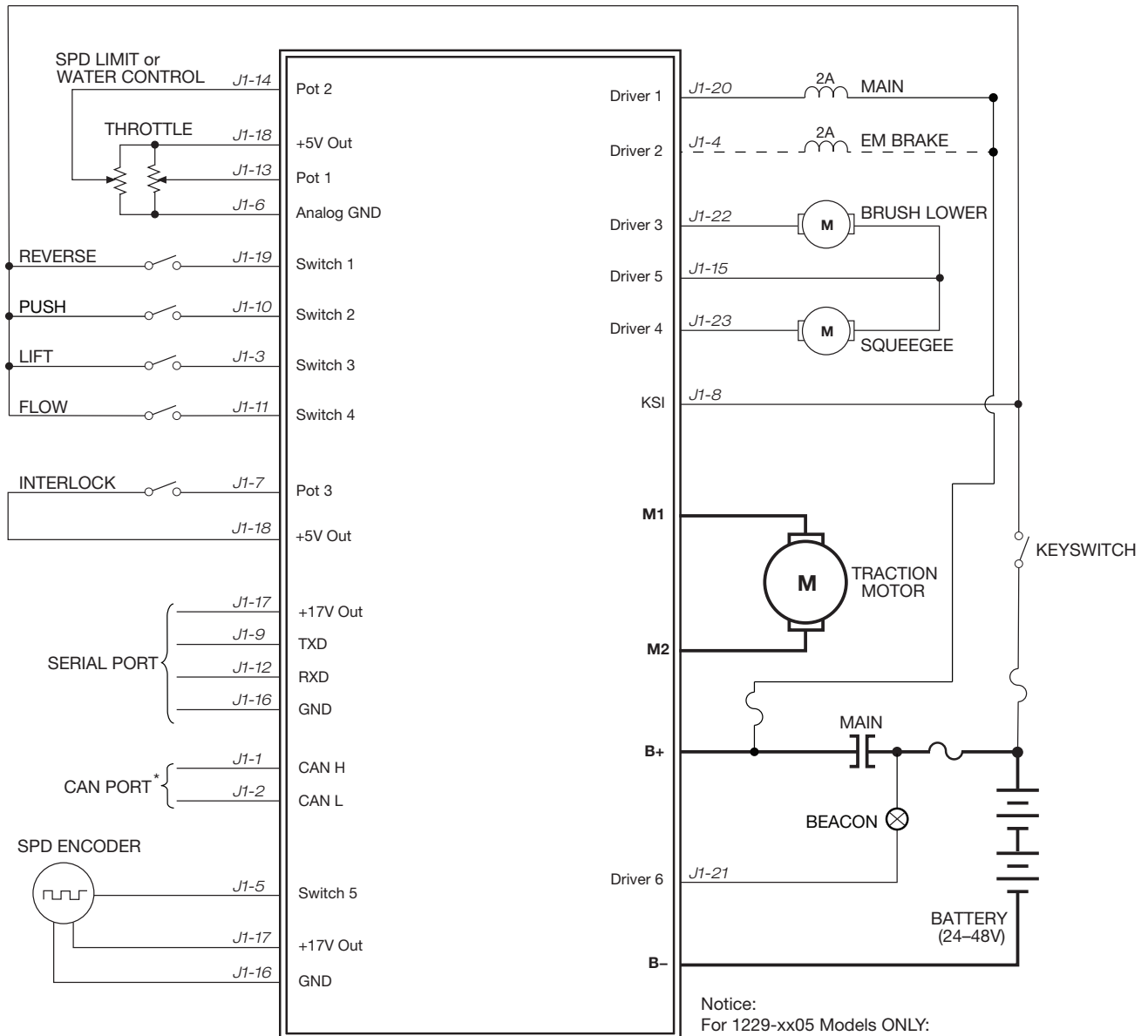
Models 1229

Permanent Magnet Motor Speed Controller



TYPICAL WIRING DIAGRAM

Floor Care (push enable)



* Generic 1229-xx51 models are WITHOUT internal CAN termination

Notice:
For 1229-xx05 Models ONLY:
Connect (wire) the Main and EM Brake drivers
to the Vcap (B+) as illustrated to enable:
1) Key-Off Decel
2) Push-too-Fast with KSI = Off
3) Status Beacon (Driver 6)

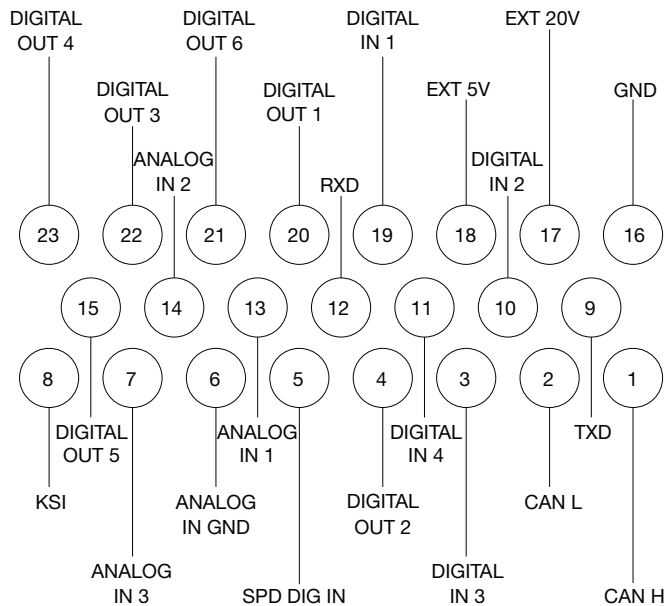
- The PUSH input is Switch 2 in this example.
- To use the PUSH with the KSI = Off feature,
do not install an EM Brake. Use a mechanically-
released brake instead (see manual text).

Models 1229

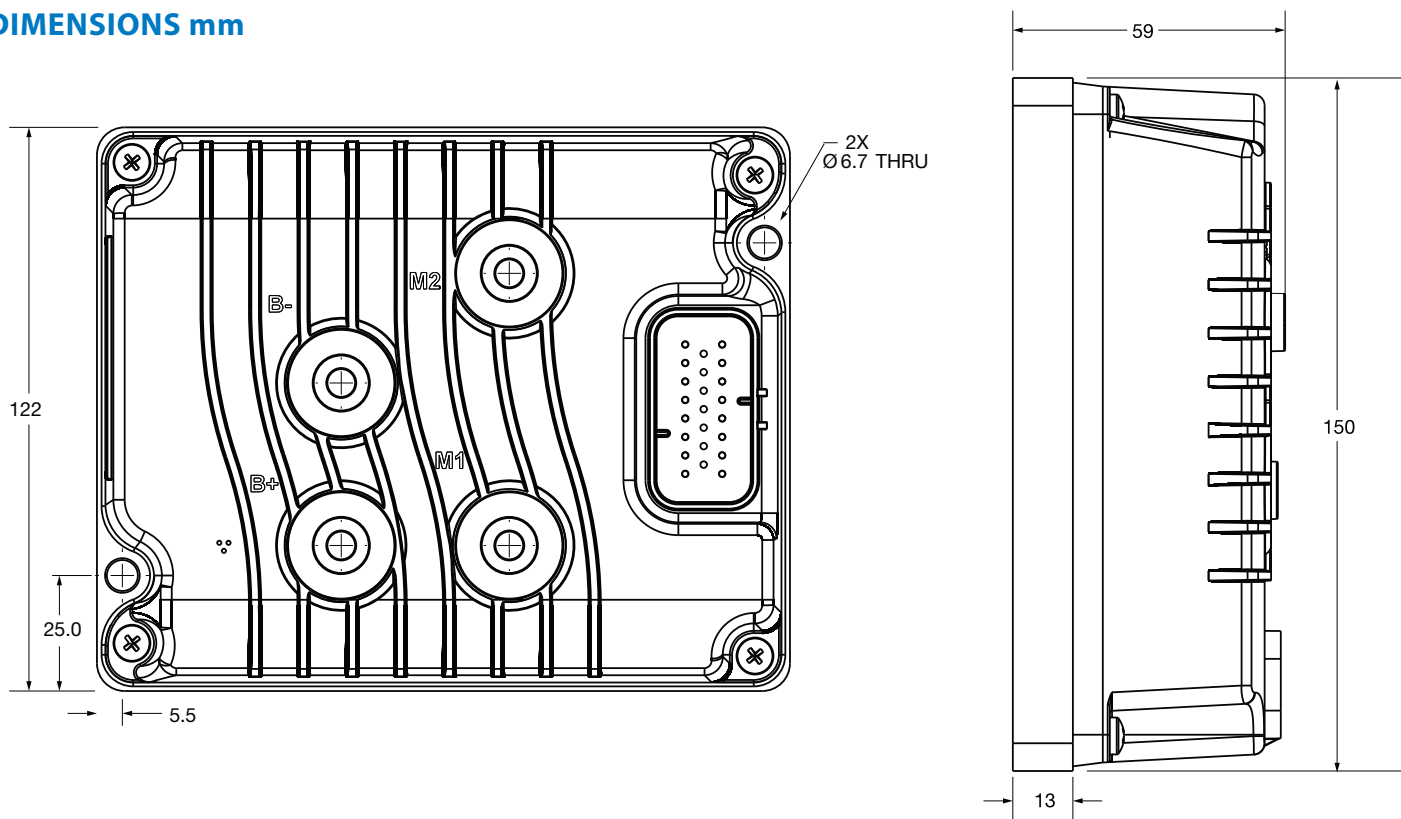
Permanent Magnet Motor Speed Controller



CONNECTOR WIRING



DIMENSIONS mm



WARRANTY Two year limited warranty from time of delivery.



is a trademark of Curtis Instruments, Inc.

Specifications subject to change without notice

©2019 Curtis Instruments, Inc.

50215 REV D 12/19