



CURTIS

Motor Controllers



# Brushed DC Permanent Magnet Motor Controller

## Model 1226



# 1226



The Curtis Model 1226 Motor Speed Controllers provide efficient, optimal control of permanent magnet drive motors for battery powered vehicles. Optimized for use on light duty Class III pallet trucks and sweeper scrubber floorcare machines. Highly flexible programmability allows them to be applied on any low power PM motor application.

## FEATURES

### Easy Installation and Set-up

- ▶ Easily programmed with Model 1313 handheld or 1314 PC programming station, or can be supplied pre-programmed.
- ▶ Compatible with industrial tiller handle wig-wag throttles such as the Curtis Model ET-190E.
- ▶ Simplified troubleshooting and diagnostics.
- ▶ Industry standard Molex Mini-fit Jr. logic connectors with heavier duty M5 threaded busbars for battery and motor wiring.

### Smooth and Secure Control

- ▶ Advanced speed regulation maintains precise speed over varied terrain, obstacles, curbs and ramps.
- ▶ Linear cutback of current ensures smooth control, with no sudden loss of power during under-voltage or over-temperature.
- ▶ Proprietary algorithms help prevent gearbox wear while providing smooth starts and reversals.
- ▶ The vehicle is brought to a complete halt before the electromagnetic brake is applied, ensuring safe and secure stopping under all conditions.
- ▶ Charger inhibit input prevents driving while charger is connected.
- ▶ Key Off Decel function ensures a smooth “brake to stop” when the key is turned off or a fault occurs that requires the vehicle to stop.
- ▶ Emergency reverse with belly button switch input.
- ▶ Anti-roll back/roll-forward function provides smooth and safe vehicle control on hills and ramps.
- ▶ Temporary “Boost Current” feature provides greatly improved performance with transient loads such as starting on a hill, crossing thresholds, climbing obstacles, etc.
- ▶ Hydraulic Lift Lockout functionality to protect the vehicle’s batteries from damaging level of discharge.
- ▶ Dynamic pot fault detection (open/short wiring fault detection).
- ▶ Push input and a Push-too-Fast function which ‘loads’ the motor to prevent excessive motor speeds when the EM brake is off.



### Highly Flexible I/O

- ▶ All I/O pins are multi-function, and can be configured to provide up to:
  - 13 digital Inputs;
  - 6 Analog Inputs;
  - 1 Potentiometer Source;
  - 1 Speed limit Input;
  - 2 Active Low 2A drivers;
  - 1 Active High or Low 2 Amp driver;
  - 3 Programmable momentary switching options;
  - +5V and +14V external power (120mA).





## FEATURES continued

### Valuable Additional Features

- ▶ Automatically compensates for changes in motor condition to ensure optimum drive performance at all times.
- ▶ Multi-mode provides for two distinct and programmable control modes (indoor/outdoor modes).
- ▶ Power Saver function prevents the controller draining the battery when vehicle is inactive.
- ▶ Battery Discharge Indicator output.
- ▶ Single channel speed sensor input for limiting the max speed.
- ▶ Adjustable EM-brake hold voltage reduces heating of the Brake Coil.
- ▶ Output driver for connection of remote status LED.
- ▶ Programmable High/Low side Horn Driver (30mA).
- ▶ 3 integrated LED status indicator (15mA).
- ▶ Brake light driver output option.
- ▶ Speed limit pot input function.

### Meets or complies with relevant US and International Regulations

EMC: Designed to the requirements of EN 12895:2015+A1:2019.

UL 583.

Electronics sealed to IP54 per IEC 60529.

Regulatory compliance of the complete vehicle system with the controller installed is the responsibility of the vehicle OEM.

### MODEL CHART

Model	Nominal Voltage	Drive Current 1 min, A	Drive Current 1 hour (S2-60)	Peak current (A) 10 seconds	Internal Relay or Contactor
1226-2201	24	130	70	150	Internal Relay
1226-3101	36	90	50	110	Internal Relay
1226-5201	36/48	130	50	150	Contactor

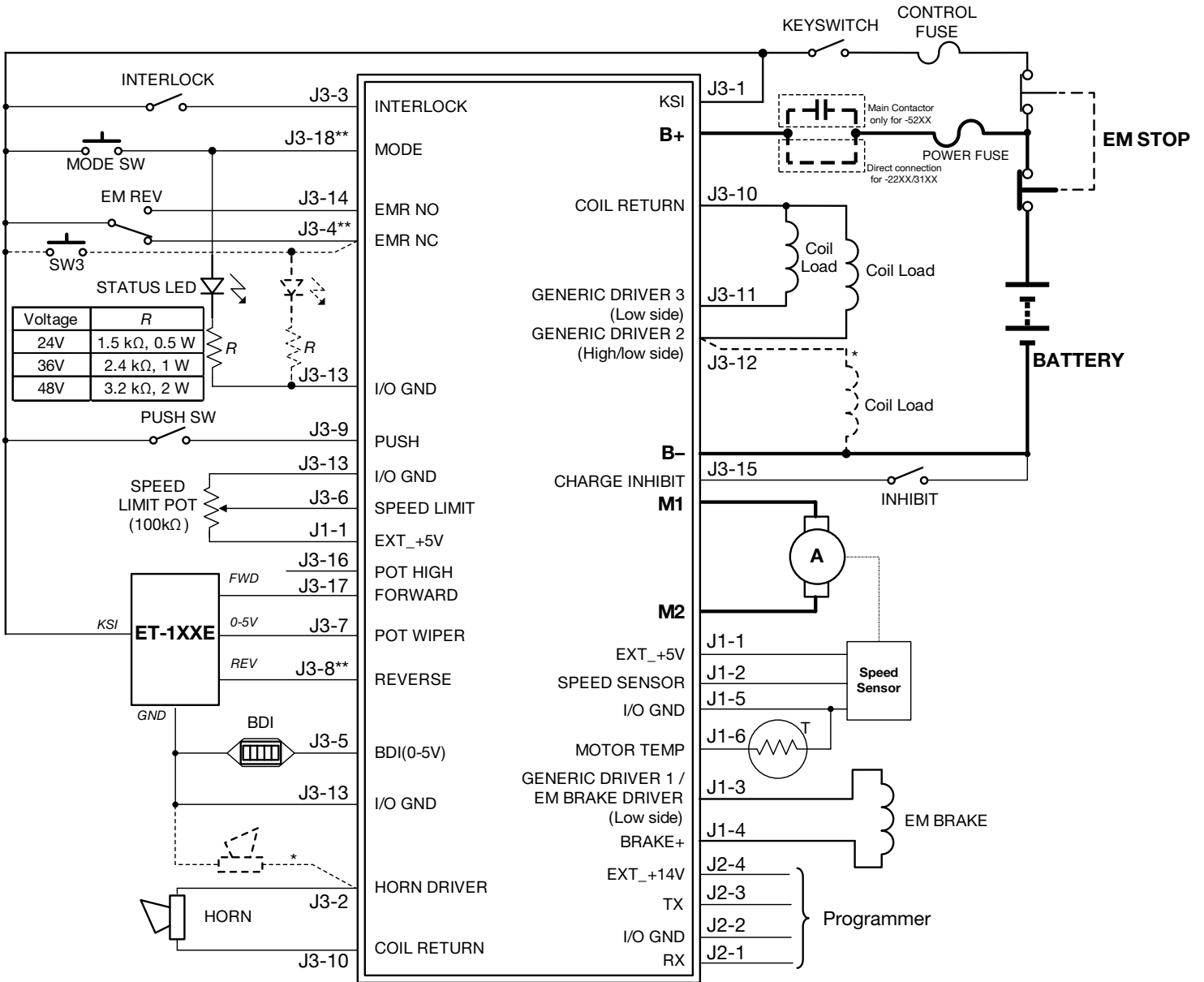
### FUNCTIONAL SAFETY DATA

Safety Function	Performance Level (PL)	Designated Architecture	MTTFd	DC
Uncommanded Powered Movement Motor Braking Torque	c	Category 2	≥ 16 years	≥ 90%



## WIRING DIAGRAM

1226-22xx, 1226-31xx and 1226-52xx



---- Option wirings

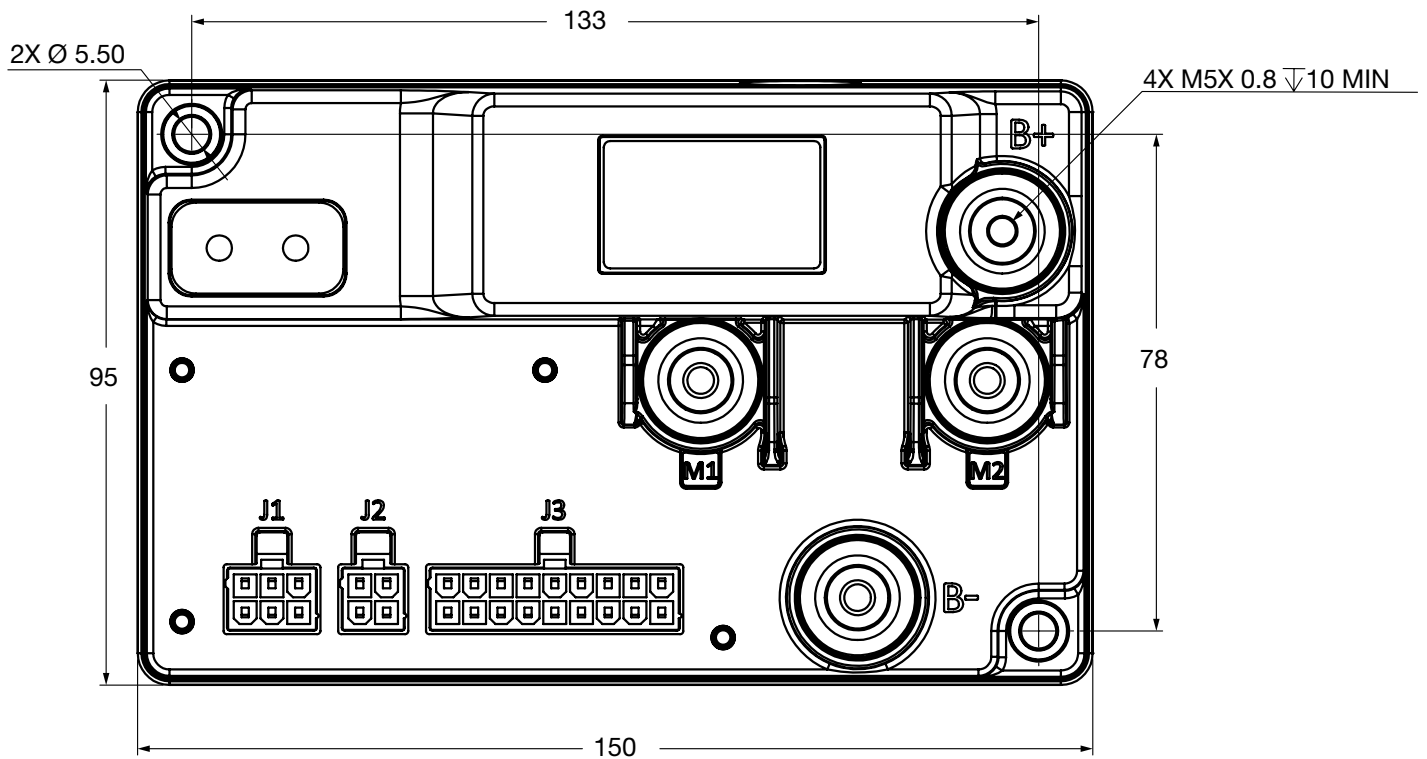
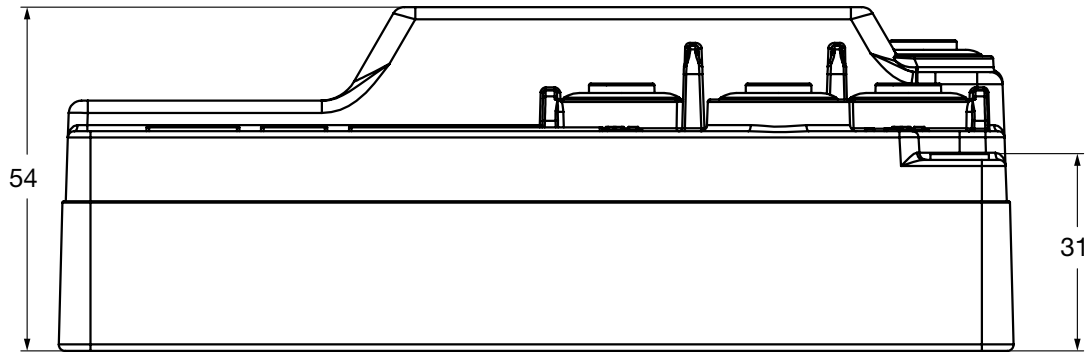
\* Option for high side drive

\*\* Option for Using momentary switch with status LED

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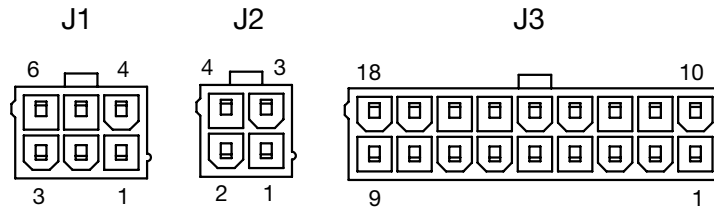


**DIMENSIONS mm**





## CONNECTOR PINOUT CHARTS



### J1

Pin	Description
1	EXT +5V
2	Speed Sensor Input/ Switch6/Analog6
3	Generic Driver 1
4	Brake +
5	I/O Ground
6	Motor Temp Sensor Input/Switch5/Analog5

NOTE: Molex #39-28-8060, mating connector: Molex #39-01-2065 with appropriate 45750 series crimp terminals.

### J2

Pin	Description
1	Serial Rx/CAN L
2	I/O Ground
3	Serial Tx/CAN H
4	EXT +14V

NOTE: Molex #39-28-8040, mating connector: Molex #39-01-2045 with appropriate 45750 series crimp terminals.

### J3

Pin	Description	Pin	Description
1	KSI	10	Coil Return
2	Horn Driver	11	Generic Driver 3
3	Interlock Input/Switch 7	12	Generic Driver 2
4	EMR NC Input/ LED3 Driver/Switch 3/Analog3	13	I/O Ground
5	BDI Output	14	EMR NO Input/Switch 10
6	Speed Limit Pot Input/ Switch 2/Analog 2	15	Charge Inhibit/Switch 11
7	Pot Wiper/ Switch1/Analog1	16	Pot High/Switch 4/Analog 4
8	Reverse Input/LED2 Driver/Switch 8	17	Forward Input/Switch 12
9	Push Input/Switch 9	18	Mode Input/LED1 Driver/Switch 13

NOTE: Molex #39-28-8180, mating connector: Molex #39-01-2185 with appropriate 45750 series crimp terminals.

**WARRANTY** Two year limited warranty from time of delivery.

