



CURTIS

Motor Controllers



# Permanent Magnet Motor Speed Controller

1212S / 1212P



# 1212S / 1212P



The Curtis Model 1212P and 1212S Motor Speed Controllers provide efficient, optimal control of permanent magnet drive motors for battery powered industrial vehicles. Optimized for use on light-duty Class III pallet trucks and similar electric industrial vehicles. The 1212P & S's 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 (1212P).
- ▶ Simplified troubleshooting and diagnostics.
- ▶ Standard Mini-Fit Molex Jr control (1212P & 1212S), bolt on M4 brass power terminal connections for high current battery and motor wiring, provide proven, robust wiring connections (1212S only).

### 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.
- ▶ 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.
- ▶ Emergency stop provides immediate EM braking.
- ▶ Emergency reverse with belly button switch input.
- ▶ Anti-roll back/roll-forward function provides smooth and safe vehicle control on hills and ramps.
- ▶ Internal main relay provides secure power-off.
- ▶ Temporary "Boost Current" feature provides greatly improved performance with transient loads such as starting on a hill, crossing thresholds, climbing obstacles, etc.
- ▶ Input from Curtis 906 battery discharge indicator meter.
- ▶ Output Lift Lockout signal, can drive a relay (1212P) to prevent lift pump operation or directly drive pump contactor (1212S) to protect the vehicle's batteries from damaging level of discharge.



1212P



1212S



## 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.
- ▶ Adjustable brake hold voltage reduces heating of the brake coil.
- ▶ Reverse Beeper function alerts bystanders (1212P).
- ▶ Electronics sealed to IPX5 (connectors not sealed).
- ▶ Dedicated LED status indicators (1212S only).
- ▶ Lift Lockout Output Driver current rating 1.5A max (1212S only).

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

EMC: Designed to the requirements of EN12895.

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

UL recognized (pending for 1212S-26xx 24V 110A) .

Electronics sealed to IPX5.

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 2 min, A	Drive Current 20 Sec, A	Peak Boost, A	Max Boost Duration, Sec
1212P-25xx	24	50	90 (10s)	N/A	N/A
1212S-25xx	24	50	90	100	5
1212S-26xx	24	70	110 (60s)	125	10
1212S-35xx	36	50	90	100	5

### FUNCTIONAL SAFETY DATA

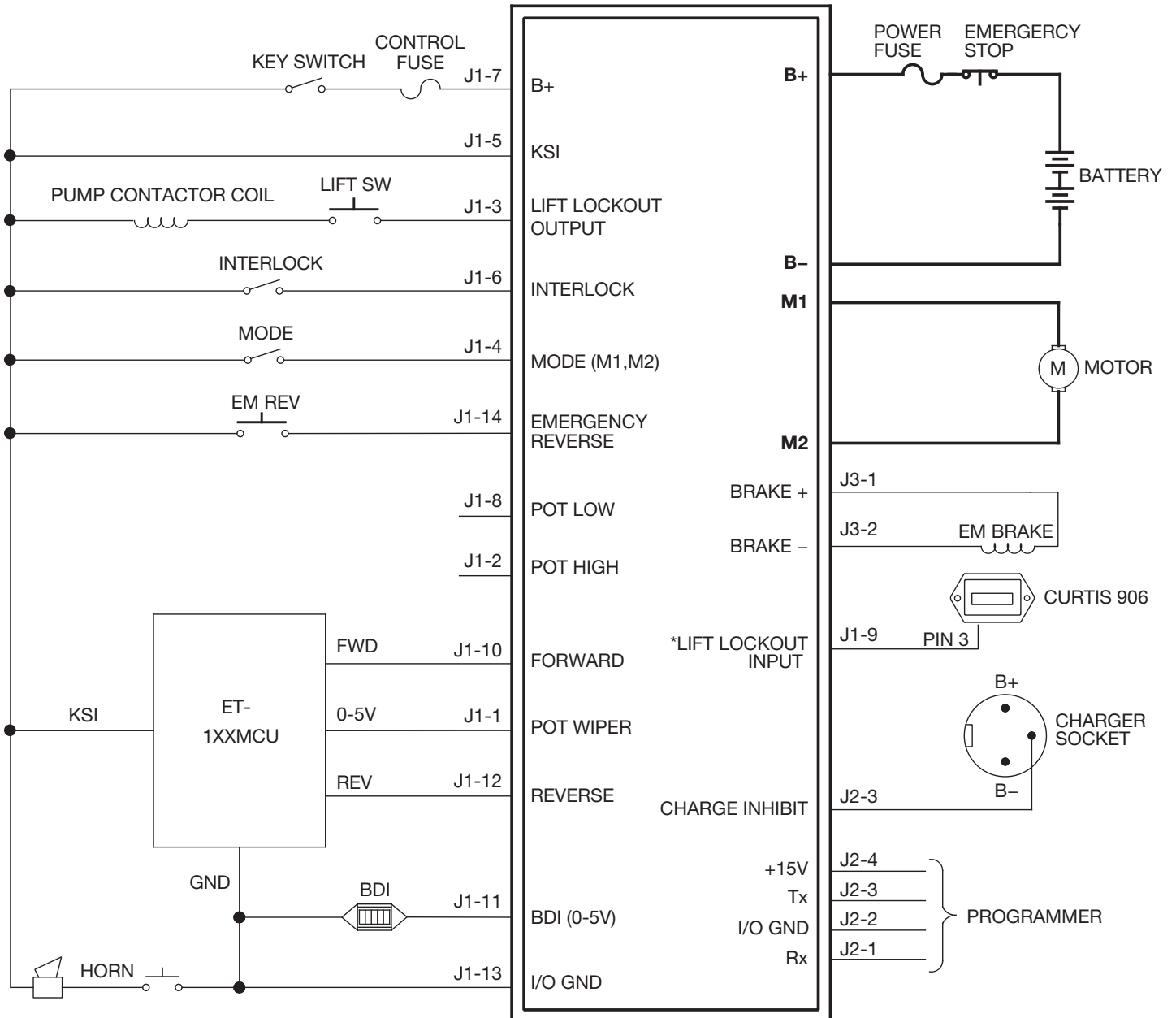
Safety Function	Performance Level (PL)	Designated Architecture	MTTFd	DC
Uncommanded Powered Movement Motor Braking Torque	b	Category 2	≥ 22 years	≥ 60%

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## WIRING DIAGRAM

### 1212S



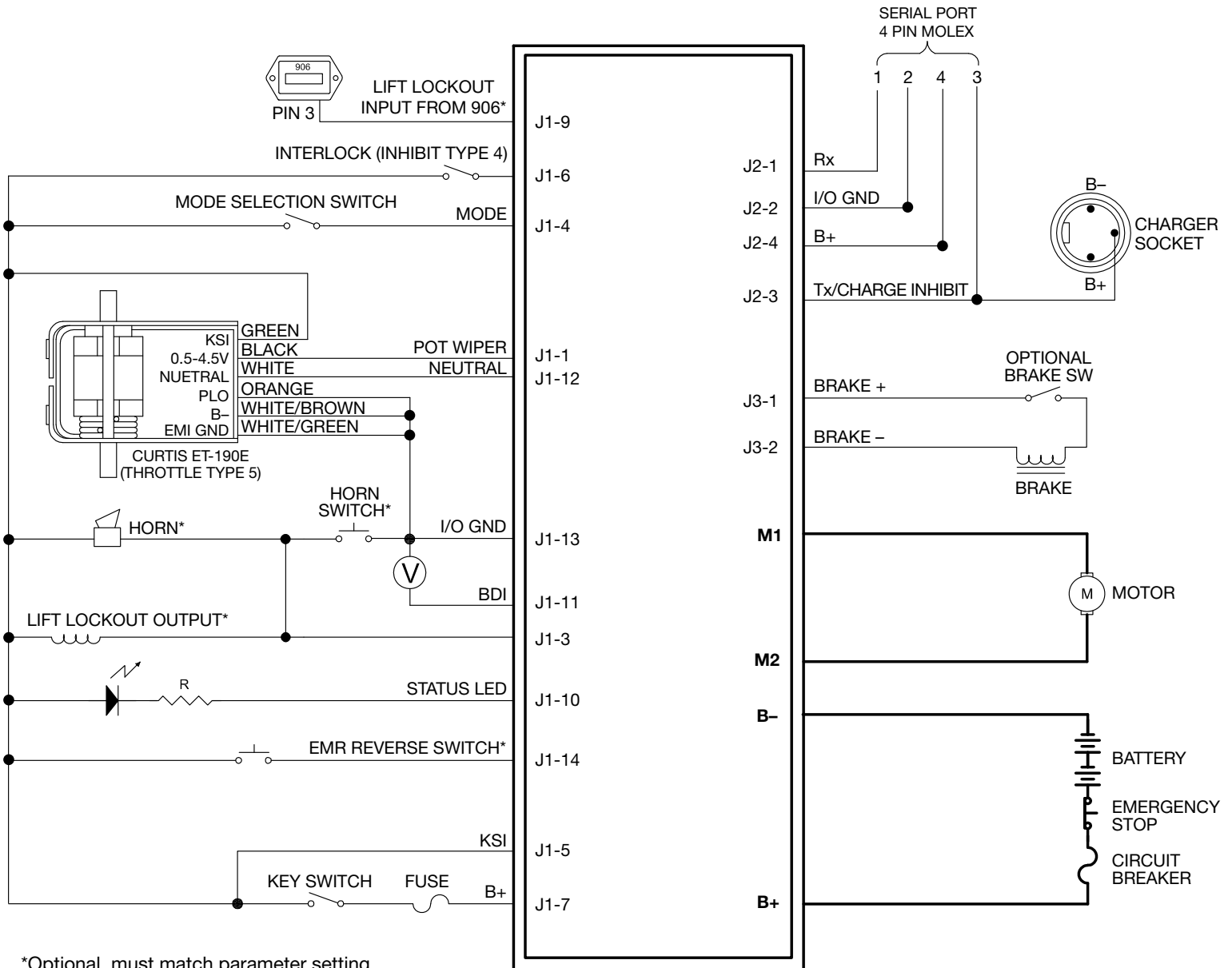
\* Optional, must match parameter setting.

# 1212S / 1212P



## WIRING DIAGRAM

### 1212P

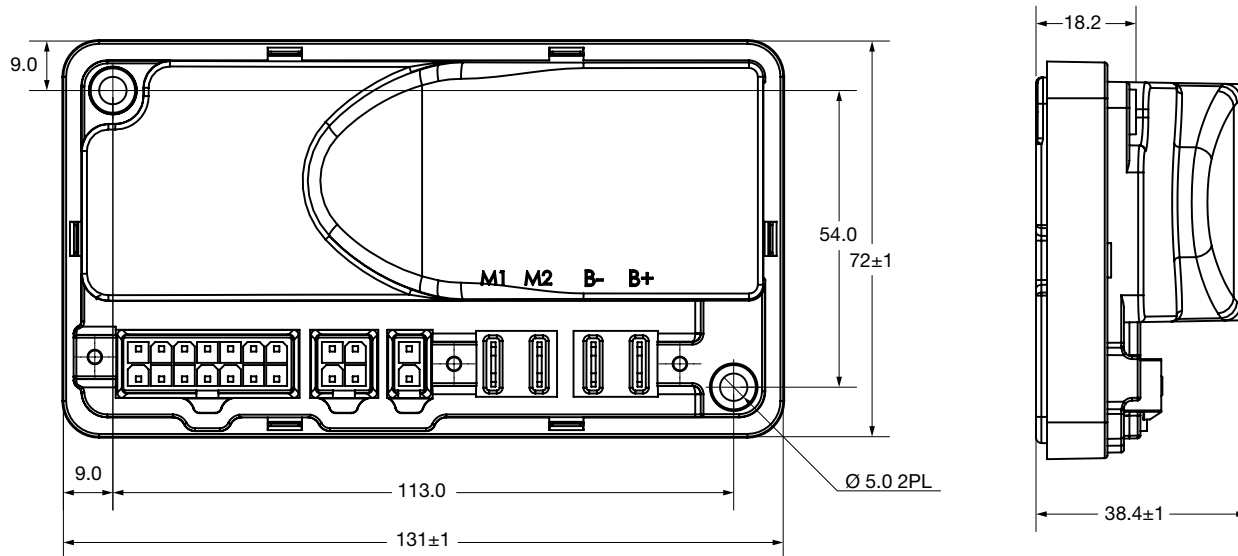


# 1212S / 1212P

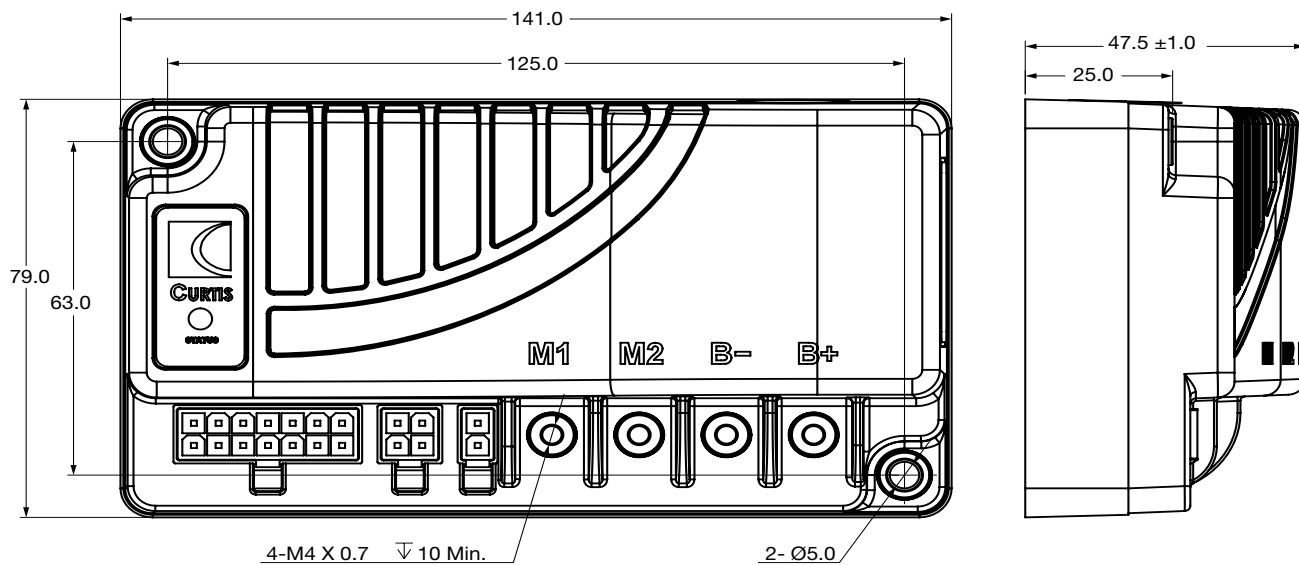


## DIMENSIONS mm

### 1212P

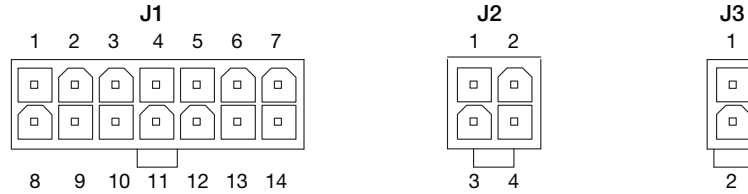


### 1212S





## CONNECTOR PINOUT CHARTS



### 1212S J1

Pin	Description	Pin	Description
1	POT Wiper	8	POT Low
2	POT Hi	9	*Lift Lockout Input/ Pump SRO Input
3	Lift Lockout Output	10	Forward Input
4	Mode Switch (Open= M1, Closed= M2)	11	BDI
5	KSI	12	Reverse Input
6	Interlock Input	13	I/O GND
7	B+	14	Emergency Reverse

\* Optional, must match parameter setting.

### 1212S J2

Pin	Description
1	Rx
2	I/O GND
3	Tx / Charge Inhibit
4	+15V

### 1212S J3

Pin	Description
1	Brake +
2	Brake -

### 1212P J1

Pin	Description	Pin	Description
1	POT Wiper	8	POT Low
2	POT Hi	9	Lift Lockout Input/ Pump SRO Input*
3	Horn/Lift Lockout Output *	10	Status LED
4	Mode Switch (Open= M1, Closed= M2)	11	BDI
5	KSI	12	Reverse / Neutral*
6	Interlock Input	13	I/O GND
7	B+	14	Emergency Reverse *

\* Optional, must match parameter setting.

### 1212P J2

Pin	Description
1	Rx
2	I/O GND
3	Tx / Charge Inhibit
4	Battery +

### 1212P J3

Pin	Description
1	Brake +
2	Brake -

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

The Curtis Difference   
You feel it when you drive it

