



MOP24/S MOP24/D

Motorized Potentiometer

The Power-Tronics MOP24 Motorized Potentiometer is a highly customizable design available with single or dual potentiometers and is designed exclusively to meet OEM requirements of obsolete or otherwise irreplaceable motorized potentiometers with a modern and repairable solution.

The MOP24 is available with different resistance values, number of potentiometer turns, and rotation speeds to suit various manufacturers' products and OEM specifications. The MOP24 is an extremely durable design to last a lifetime of demanding operation.

The Power-Tronics MOP24 is designed to accept a replacement potentiometer, gearmotor, timing belt, or clutch assembly should replacement ever be deemed necessary.

Specifications

Input Voltage:	24VDC
Burden:	≤250mA
Potentiometer Resistance††:	Specified at Time of Order
Rotation Speed:	20s or 60s stop-stop (User Selectable)
Potentiometer Configuration:	Single (MOP24/S) Dual (MOP24/D)
Physical Size:	7.5 x 4.75 x 5.25 in.
Weight:	2.5 lb.
Operational Life:	>100000 Operations
Replaceable Wear Items:	Yes

†† Available with the following optional Potentiometer Resistances:

1-Turn: 100, 250, 500, 1K, 2K, 5K, 10K, 100KΩ @ 2W
 3-Turn: 100, 200, 500, 1K, 2K, 10KΩ, 100KΩ @ 2W
 10-Turn: 100, 200, 500, 1K, 2K, 10KΩ, 100KΩ @ 2W

ALL Power-Tronics' Products use 100KΩ Potentiometer Resistance

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For Technical Support:
Visit our website at: www.power-tronics.com
Call Us at: (830) 895-4700

Introduction and Functional Description

Caution: Read This Installation Manual Carefully and Entirely!

Warning: Do not use digital equipment to read voltage, Hz, or amperage during this installation. Use only Analog sensing equipment! Failure to do so may result in damage to equipment or in personal injury!

ALWAYS perform all setup procedures off-line

ALWAYS wear eye protection

ALWAYS strip wire insulation properly or use insulated connectors

ALWAYS use analog metering equipment when setting up the regulator

ALWAYS ensure the regulator receives ample airflow

NEVER hold the regulator in your hand when energized

NEVER install the regulator in a place it can get wet or is exposed to the elements

NEVER mount the regulator over a screw, bolt, rivet, welding seam, or other fastener

NEVER remove the regulator cover while the unit is in operation

NEVER insert a screwdriver or other object under the regulator cover

NEVER install a switch in the DC portion of the regulator's wiring

NEVER touch any exposed portion of the MOP24 when in operation

NEVER USE A DIGITAL FREQUENCY METER (It can give a false reading!)

Functional Description

The Power-Tronics MOP24 is a series of motorized potentiometers that is designed to replace many varieties of other motorized potentiometers designed for a variety of manufacturers equipment. Motorized potentiometers are typically used to allow a voltage regulator (or phase controller) to be controlled by an external Genset or VAR controller utilizing dry contacts for switching or relying on a motorized potentiometer for control.

The MOP24 operates by using a 24VDC signal from an external controller such as a Genset controller, Var, Manual Switch, or Power-Factor controller. Signal voltage on the Raise terminal will turn the potentiometer(s) clockwise while signal voltage on the Lower terminal will turn the potentiometer(s) counterclockwise. The MOP24/S differs from our MOP1224HD by bringing out all 3 wires from the potentiometer to allow for generic use in any application as a 3-wire potentiometer, or 2-wire trimmer resistor. Additionally, the MOP24/D is available as a Dual-Potentiometer model to replace obsolete ganged potentiometers or allow position feedback with a different potentiometer value to a PLC or monitoring system.

The MOP24 is completely isolated from the potentiometer circuitry to increase reliability and reduce potential damage in the case of a fault situation. Due to its robust design and simple construction, the MOP24 is designed to provide reliable service for a lifetime when properly installed.

For Technical Support:

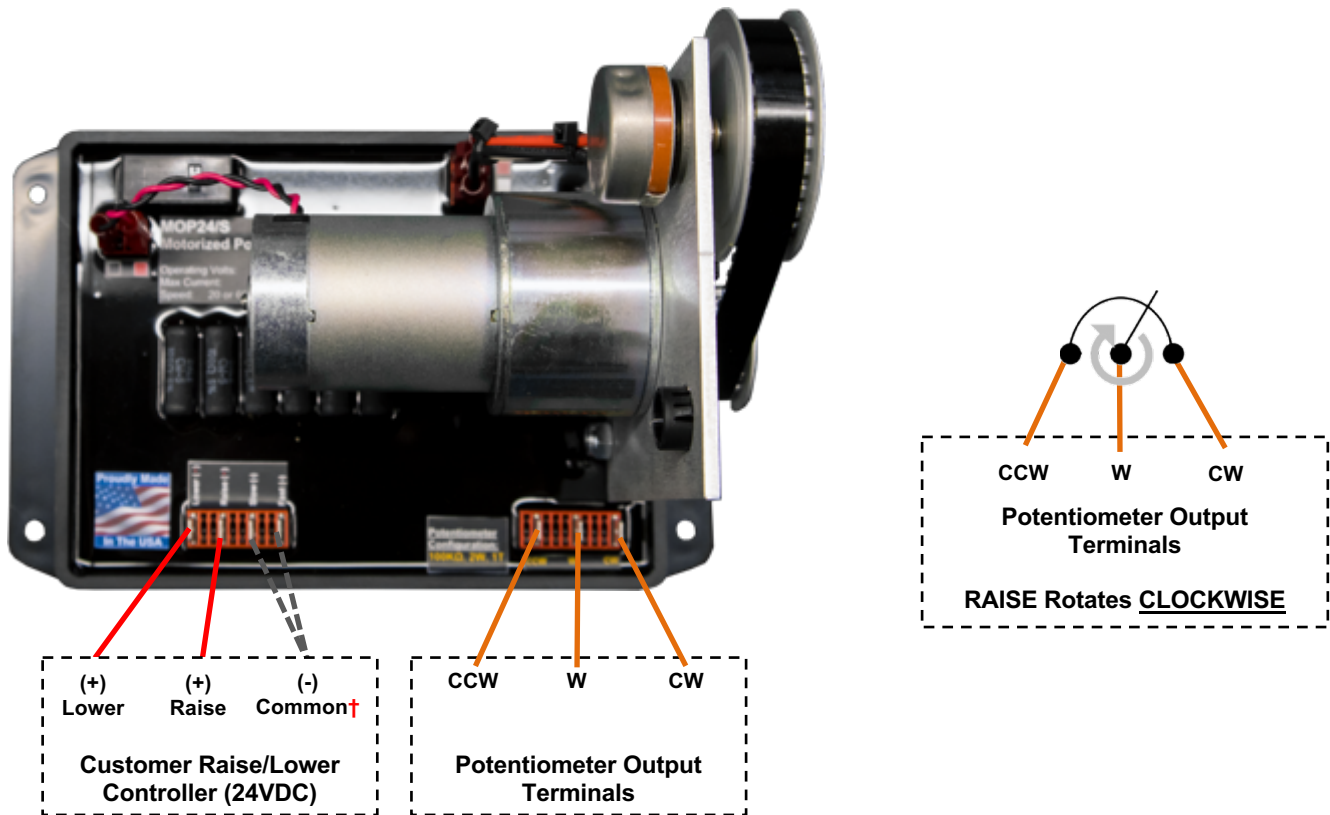
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MOP24/S Wiring Diagram

The MOP24/S is designed as a generic 6-wire motorized potentiometer with the intention of being a reliable, repairable, and flexible replacement solution for OEM motorized potentiometers and obsolete motorized potentiometers for existing equipment.

NOTE: This instruction manual only contains instructions for your MOP24/S's connection to the Raise/Lower circuitry. For wiring details regarding your equipment that the MOP24/S is interfacing with, see the instructions that came with your equipment, or contact the equipment manufacturer for assistance.



† Speed Selection:

Rotational Speed is selected with the common wire. Choose **SLOW** (60 seconds stop to stop) or **FAST** (20 seconds stop to stop). ***FAST is suitable for most applications.*** Choose **SLOW** for applications requiring fine control or to prevent excessive hunting. Speed may be changed during operation to provide a “Speedup” motion to applications using **SLOW**.

Wiring Modes

3-Wire Potentiometer:

Fully CCW, W to CCW = 0Ω, W to CW = Potentiometer Rating
Fully CW, W to CW = 0Ω, W to CCW = Potentiometer Rating

2-Wire Trimmer (CW Rotation **INCREASES** Resistance):

Join Terminals W and CW.

Fully CCW, W&CW to CCW = 0Ω

Fully CW, W&CW to CCW = Potentiometer Rating

2-Wire Trimmer (CW Rotation **DECREASES** Resistance):

NOTE: This is the standard used with all Power-Tronics Products

Join Terminals W and CCW.

Fully CCW, W&CCW to CW = Potentiometer Rating

Fully CW, W&CCW to CW = 0Ω

For Technical Support:

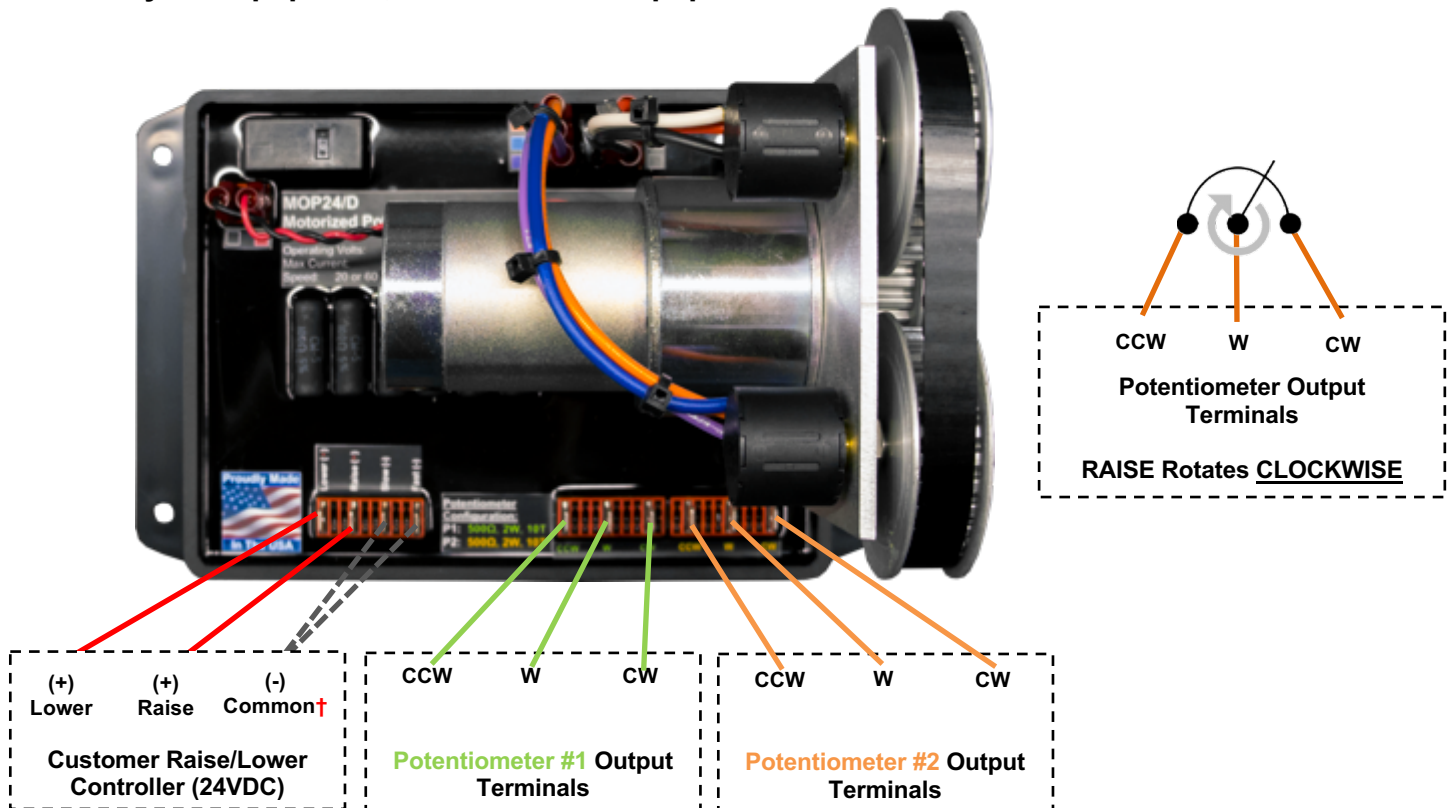
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MOP24/D Wiring Diagram

The MOP24/D is designed as a generic 9-wire motorized potentiometer with the intention of being a reliable, repairable, and flexible replacement solution for OEM motorized potentiometers and obsolete motorized potentiometers for existing equipment.

NOTE: This instruction manual only contains instructions for your MOP24/D's connection to the Raise/Lower circuitry. For wiring details regarding your equipment that the MOP24/D is interfacing with, see the instructions that came with your equipment, or contact the equipment manufacturer for assistance.



† Speed Selection:

Rotational Speed is selected with the common wire. Choose **SLOW** (60 seconds stop to stop) or **FAST** (20 seconds stop to stop). ***FAST is suitable for most applications.*** Choose **SLOW** for applications requiring fine control or to prevent excessive hunting. Speed may be changed during operation to provide a “Speedup” motion to applications using **SLOW**.

Wiring Modes

3-Wire Potentiometer:

Fully CCW, W to CCW = 0Ω, W to CW = Potentiometer Rating
Fully CW, W to CW = 0Ω, W to CCW = Potentiometer Rating

2-Wire Trimmer (CW Rotation **INCREASES** Resistance):

Join Terminals W and CW.

Fully CCW, W&CW to CCW = 0Ω

Fully CW, W&CW to CCW = Potentiometer Rating

2-Wire Trimmer (CW Rotation **DECREASES** Resistance):

NOTE: This is the standard used with all Power-Tronics Products

Join Terminals W and CCW.

Fully CCW, W&CCW to CW = Potentiometer Rating

Fully CW, W&CCW to CW = 0Ω

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Initial Setup and Commissioning

1. Install the MOP24 and wire according to the wiring diagram for your equipment.
2. Set the adjustment knob pointer on the MOP24 to the mid position (12 o'clock).
3. Verify that "Raise" and "Lower" commands operate the MOP24 in the correct direction and at the correct speed.
4. Commission your equipment according to the manufacturer's instructions.

Adjusting Belt Tension and Slip Clutch

Belt tension and clutch friction are adjustable on the MOP24 to allow for taking up wear or allowing service in the future.

Adjusting the slip clutch should not be necessary in service, however, should the friction become low enough that drive of the primary sprocket is unreliable, friction can be restored by adjusting 2 setscrews on the primary sprocket. See **Figure 1** below. **DO NOT OVERTIGHTEN** the setscrews. Secondary sprocket(s) should turn with the primary without binding on the motor shaft!

Adjustment of the drive belt tension may be necessary with age or high usage. Tension should be left with the belt slightly slack and easy to deflect with the finger. To adjust tension, loosen 2 Phillips screws shown in **Figure 2** and rotate the motor body to adjust belt tension. Tighten screws securely. **Excessive tension in the belt will result in rapid wear to the potentiometer shaft bearings, leave slight slack in the belt to avoid premature wear!**

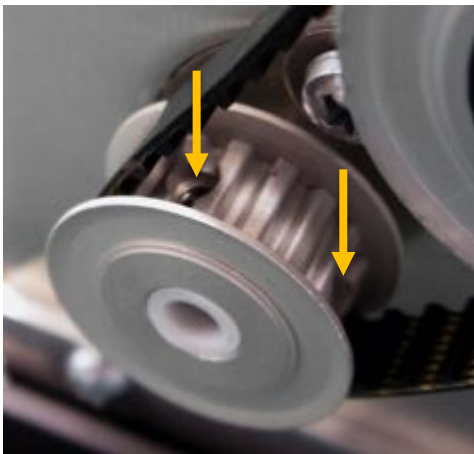


Figure 1



Figure 2

Replacement Belt Part Numbers:

Part # 5R2-860 (MOP24/S), 5R2-861 (MOP24/D)

Generic Belt Part Numbers:

90XL037 (MOP24/S), 110XL037 (MOP24/D)

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PRODUCT WARRANTY

Power-Tronics, Inc., assumes no liability for damages due to incorrect voltage or other voltage related damages resulting from either output of the generator or input to the generator exciter system. These problems should be protected with external devices provided by the customer such as **fuses, surge suppressors, over/under voltage and frequency controls**.

Power-Tronics, Inc., warranties **only parts and workmanship** of this product for a **period of 3 years from the original date of purchase from Power-Tronics, Inc.** Under warranty, Power-Tronics, Inc. will replace, exchange or repair the defective product **without labor or parts cost to the customer**. Remaining warranty of the original product will be transferred to the replaced or repaired product. To obtain warranty, a copy of the original Installation Warranty Form must be sent in with the defective product, which clearly shows the purchase date and serial number of the defective part. A repair request form must be sent in with the product before repairs will begin. You can obtain this form by contacting Power-Tronics, Inc.

Send repairs to: Power-Tronics, Inc., 2802 Cobbler Ln., Kerrville Texas USA 78028.

Send in repairs only by UPS or FedEx. USPS will NOT deliver to our facility!

Any one of the following conditions will void the warranty:

- ❖ Overheating of the power supply resistor on the printed circuit card.
- ❖ Unauthorized repairs or modifications to the printed circuit card or components.
- ❖ Physical damage to the printed circuit card, housing or components.
- ❖ Unauthorized repair or alteration of printed circuit card.
- ❖ Installation by anyone other than a qualified professional generator service technician.
- ❖ Conductive or corrosive contamination of the circuit card.
- ❖ Removal of our company identification from the product.
- ❖ Removal of any conformal coating of the printed circuit card or components.
- ❖ Overheating of foil on the printed circuit card.
- ❖ Inappropriate or infeasible application.
- ❖ Use with any external device other than manufactured by Power-Tronics, Inc.
- ❖ Failure to fill out the attached warranty card during installation

No other warranty is expressed or implied.

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