

MOP1224HD

Heavy-Duty Motorized Potentiometer

Revision A



The Power-Tronics MOP1224HD Heavy-Duty Motorized Potentiometer is an optional add-on module for Power-Tronics voltage regulating systems designed to allow the voltage regulator to receive control signals from a Genset or VAR controller or other remote computerized control system that relies on a set of dry contacts or a motorized potentiometer for control.

The MOP1224HD replaces the Power-Tronics MP product line and is available with different resistance values to suit other manufacturers' products. The MOP1224HD is an extremely durable design to last a lifetime of demanding operation.

Like the previous MP12/24, the MOP1224HD offers 2 different modes of operation: Fully Automatic, and Automatic/Manual selectable for the convenience of the system operator.

The Power-Tronics MOP1224HD is designed to accept a replacement potentiometer or clutch assembly should replacement ever be deemed necessary.

The MOP1224HD is compatible with all UVR and XR series Power-Tronics Universal Voltage Regulators, PC500, XR, and UVR series Phase Controllers, and most Power-Tronics full-chassis Static Exciters.

Specifications

Input Voltage:	12 or 24VDC (User Selectable)
Burden:	≤150mA
Potentiometer Resistance††:	0-100KΩ @ 2W
Rotation Speed:	1 or 2.5 RPM (User Selectable)
Physical Size:	7.5 x 4.75 x 3 in.
Weight:	2.25 lb.
Operational Life:	>100000 Operations
Replaceable Wear Items:	Yes

†† Available with the following optional Potentiometer Resistances:
500Ω, 1KΩ, 2KΩ, 5KΩ, 10KΩ @ 2W

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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 MOP1224HD when in operation

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

Functional Description

The Power-Tronics MOP1224HD is an optional add-on module for Power-Tronics UVR and XR series voltage regulating systems, UVR, XR, PC5 series phase controllers, and SE series Static Exciters that is designed to allow the 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 MOP1224HD operates by using a 12 or 24VDC signal from an external controller such as a Genset controller, Var, or Power-Factor controller. Signal voltage on the Raise terminal will turn the potentiometer clockwise (decreasing resistance) while signal voltage on the Lower terminal will turn the potentiometer counterclockwise (increasing resistance).

The MOP1224HD is completely isolated from the voltage regulating circuitry to increase reliability and reduce potential damage in the case of a fault situation.

Due to its robust design and simple construction, the MOP1224HD is designed to provide reliable service for a lifetime when properly installed.

For Technical Support:

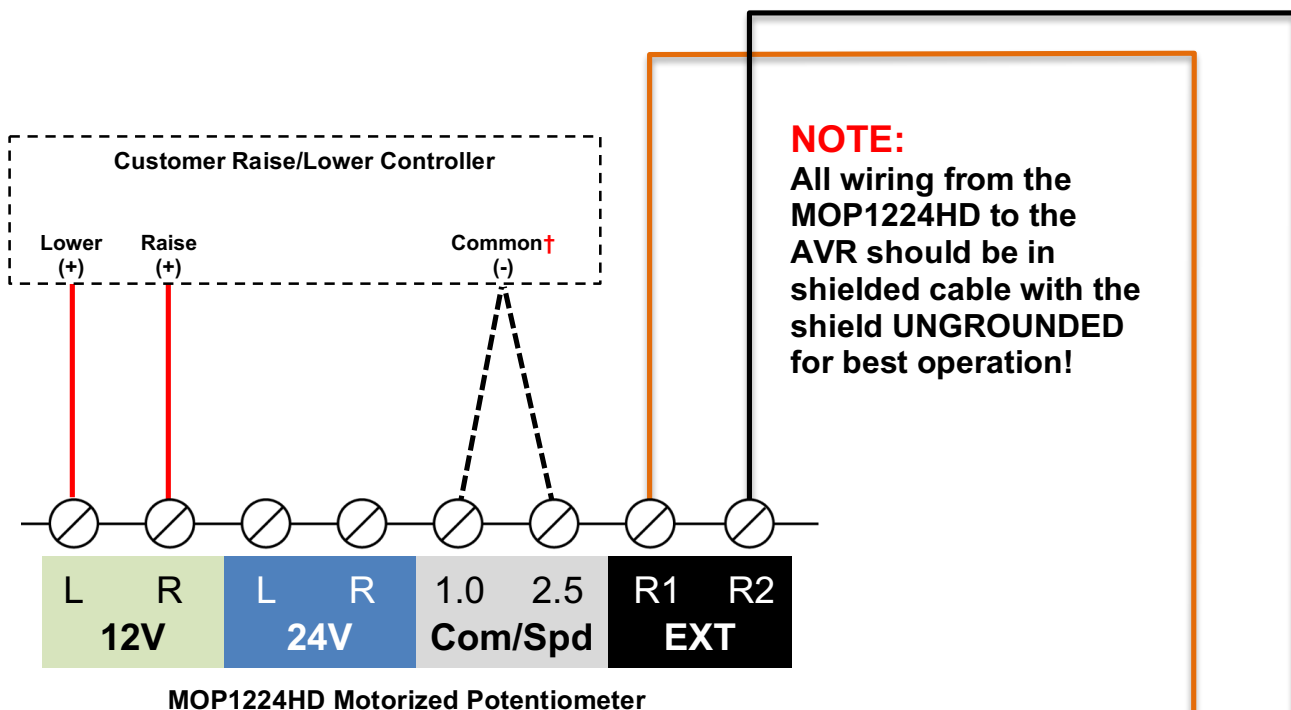
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12V Fully Automatic Operation

This configuration should be used if the MOP1224HD is to be used in an unattended application, or if manual voltage control is not needed on your application.

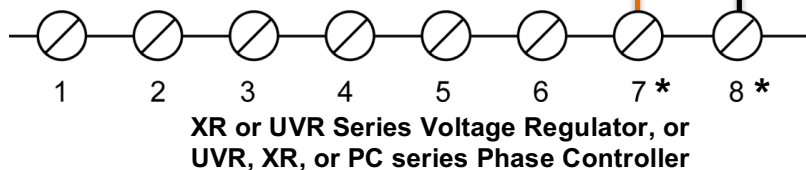
NOTE: This instruction manual only contains instructions for your MOP1224HD's connection to the voltage regulator or phase controller. For wiring details regarding your voltage regulator or phase controller, see the instructions that came with your model.



† Speed Selection:

Rotational Speed is selected with the common wire. Choose 1.0 RPM or 2.5 RPM rotational speed.

2.5 RPM is suitable for most applications. Choose 1.0 RPM for applications requiring fine control or to prevent excessive hunting.



Note:
See Page 8 for Terminal Compatibility Chart

For Technical Support:

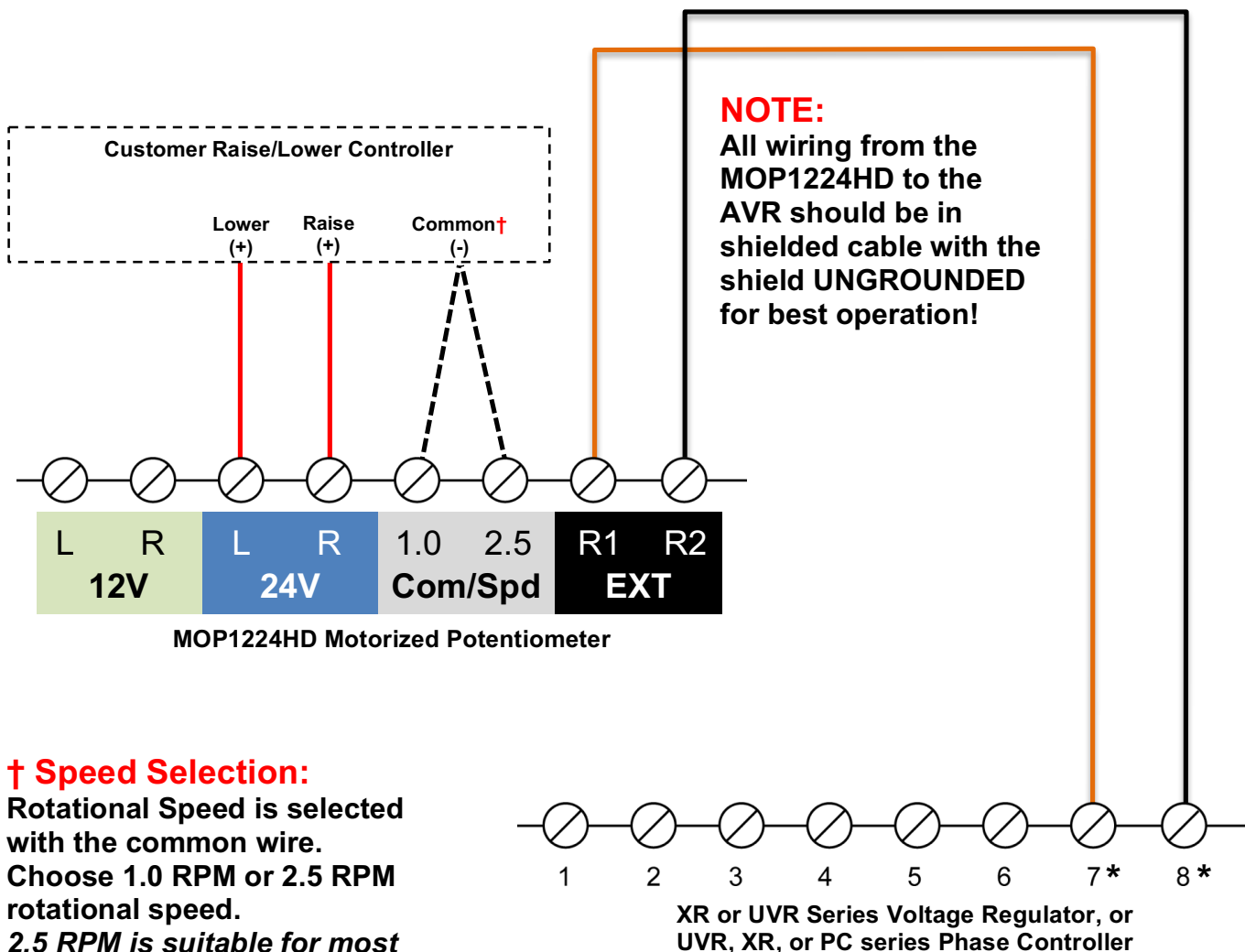
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24V Fully Automatic Operation

This configuration should be used if the MOP1224HD is to be used in an unattended application, or if manual voltage control is not needed on your application.

NOTE: This instruction manual only contains instructions for your MOP1224HD's connection to the voltage regulator or phase controller. For wiring details regarding your voltage regulator or phase controller, see the instructions that came with your model.



† Speed Selection:

Rotational Speed is selected with the common wire.

Choose 1.0 RPM or 2.5 RPM rotational speed.

2.5 RPM is suitable for most applications. Choose 1.0 RPM for applications requiring fine control or to prevent excessive hunting.

Note:
See Page 8 for Terminal Compatibility Chart

For Technical Support:

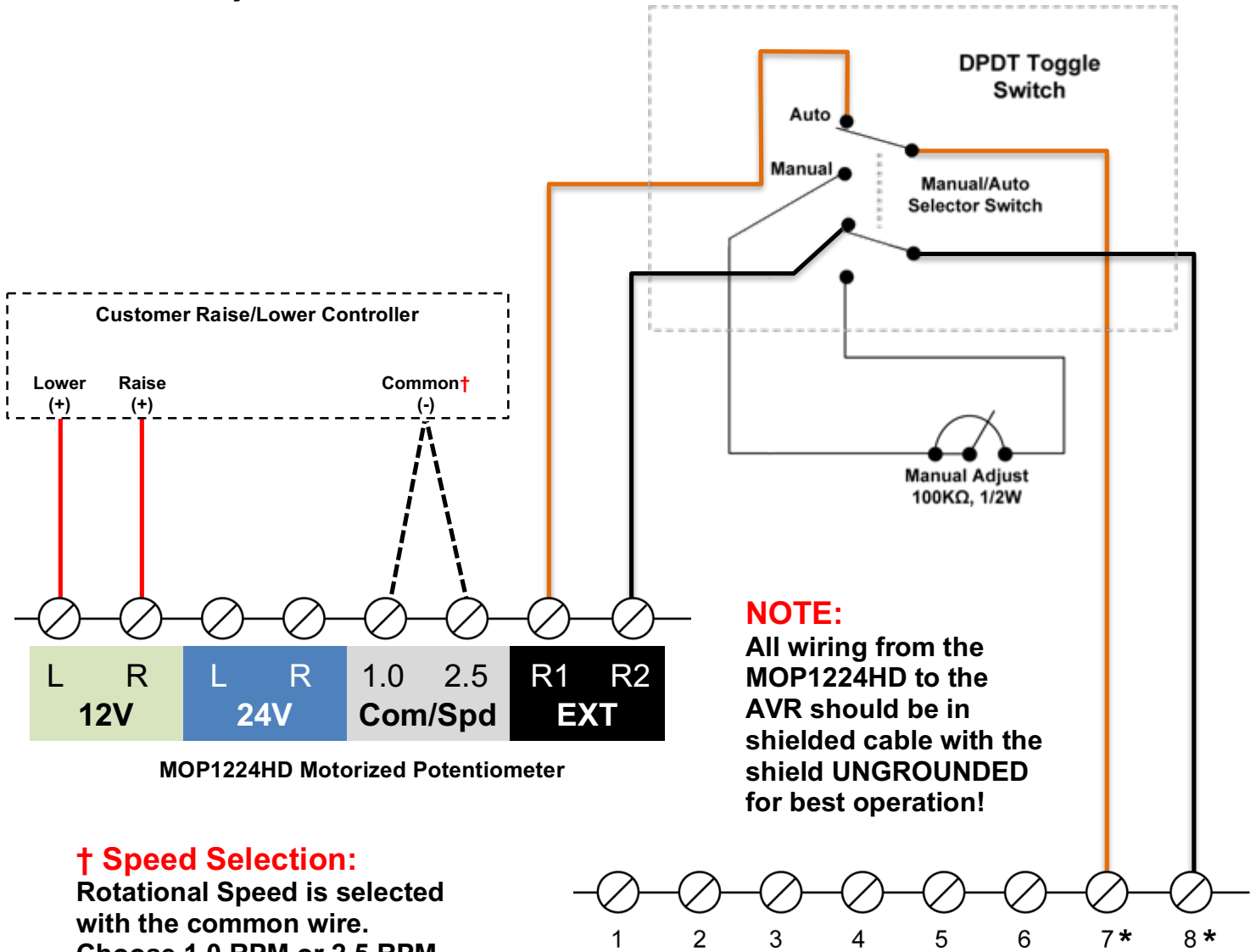
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12V Automatic/Manual Selectable Operation

This configuration should be used if the MOP1224HD is to be used in an installation where manual voltage adjustment is required or is important for redundancy.

NOTE: This instruction manual only contains instructions for your MOP1224HD's connection to the voltage regulator or phase controller. For wiring details regarding your voltage regulator or phase controller, see the instructions that came with your model.



NOTE:
All wiring from the MOP1224HD to the AVR should be in shielded cable with the shield **UNGROUND**ED for best operation!

† Speed Selection:
Rotational Speed is selected with the common wire. Choose 1.0 RPM or 2.5 RPM rotational speed. 2.5 RPM is suitable for most applications. Choose 1.0 RPM for applications requiring fine control or to prevent excessive hunting.

XR or UVR Series Voltage Regulator, or UVR, XR, or PC series Phase Controller

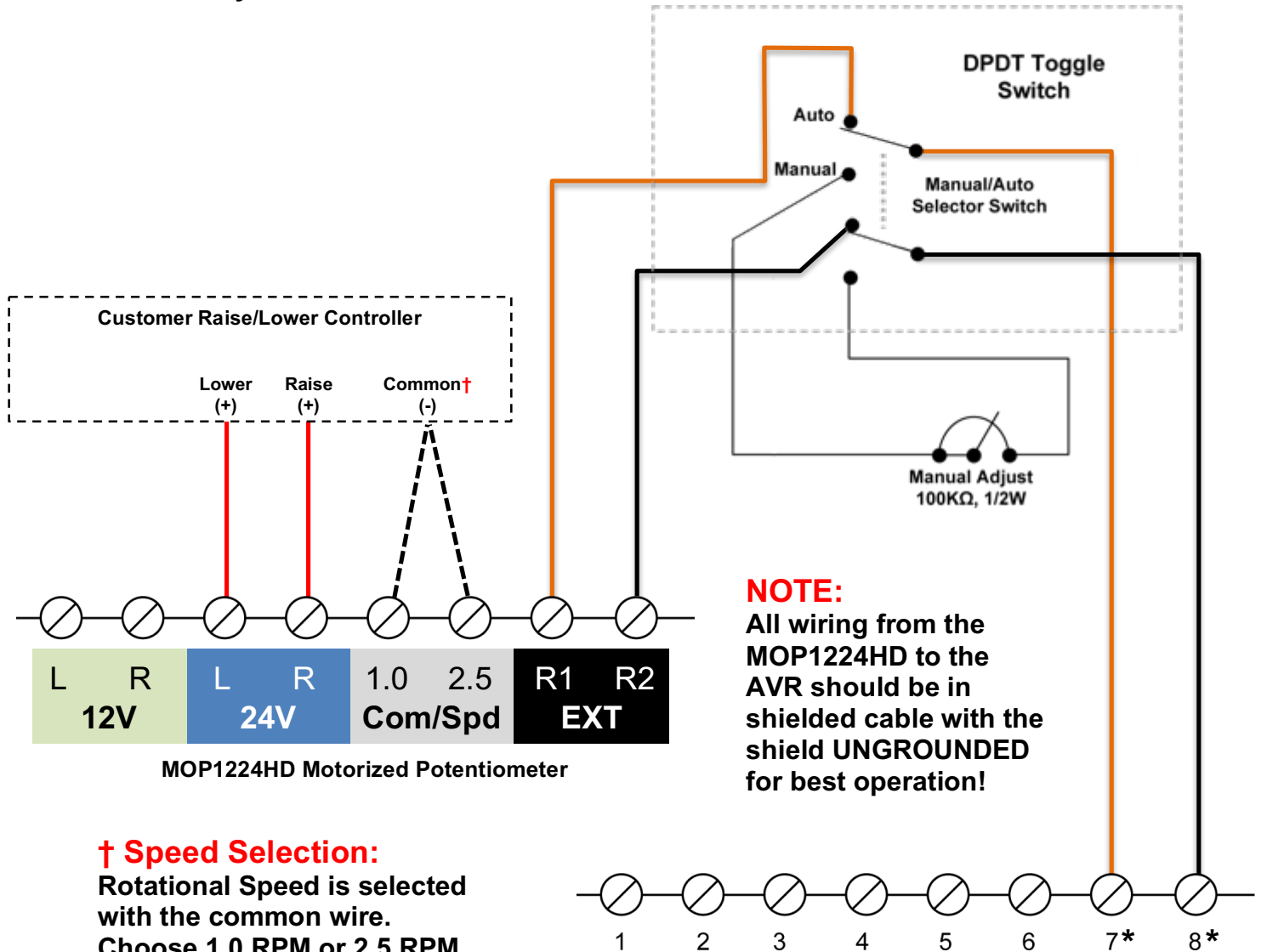
Note:
See Page 8 for Terminal Compatibility Chart

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24V Automatic/Manual Selectable Operation

This configuration should be used if the MOP1224HD is to be used in an installation where manual voltage adjustment is required or is important for redundancy.

NOTE: This instruction manual only contains instructions for your MOP1224HD's connection to the voltage regulator or phase controller. For wiring details regarding your voltage regulator or phase controller, see the instructions that came with your model.



XR or UVR Series Voltage Regulator, or UVR, XR, or PC series Phase Controller

Note:
See Page 8 for Terminal Compatibility Chart

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Terminal Compatibility Chart

This chart gives terminal compatibility and crossover information for all Power-Tronics voltage regulators and Static Exciters that are compatible with the MOP1224HD Heavy Duty Motorized Potentiometer

MOP1224HD Terminal:

R1

Connects To:



All UVR & XR Series Voltage Regulators:

Terminal 7

All SE1500 and Single-Phase SE2000AX/F, SE2000BX/F, SE3000BX, SE6000BX Static Exciters:

Terminal E on TB2

All 3-Phase SE2000, SE3000, SE6000 Static Exciters WITHOUT internal UIC200 Option:

Terminal F on TB3

All Static Exciters using VRMSE series Control Module:

Terminal R1

All Phase Controls using PCM series Control Module:

Terminal R1

SPXR-DC10, DC125i & DC250i:

Terminal R1

MOP1224HD Terminal:

R2

Connects To:



All UVR & XR Series Voltage Regulators:

Terminal 8

All SE1500 and Single-Phase SE2000AX/F, SE2000BX/F, SE3000BX, SE6000BX Static Exciters:

Terminal F on TB2

All 3-Phase SE2000, SE3000, SE6000 Static Exciters WITHOUT internal UIC200 Option:

Terminal G on TB3

All Static Exciters using VRMSE series Control Module:

Terminal R2

All Phase Controls using PCM series Control Module:

Terminal R2

SPXR-DC10, DC125i & DC250i:

Terminal R2

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Initial Setup and Commissioning

1. Install the MOP1224HD and wire up to the correct wiring diagram for your control voltage (Fully Automatic, or Selectable Automatic/Manual). Leave the Raise and Lower wires disconnected from Terminals R and L for the time being.
2. Set the adjustment knob pointer on the MOP1224HD to the mid position (12 o'clock).
3. Place the Manual/Automatic switch in the Automatic position if used.
4. Start up the generator and bring the engine up to design speed, then manually adjust the voltage regulator as shown in the instructions supplied with it. (See the manual that came with your voltage regulator for this information).
5. Turn off the voltage regulator and connect your Raise and Lower wires to the appropriate terminals on the MOP1224HD.
6. If you are using the Manual/Automatic connection place the Manual/Automatic switch in the Manual position. Otherwise skip to step 9.
7. Turn on the voltage regulator and use the external potentiometer to return the generator to its original voltage from step 4.
8. Switch the Manual/Automatic switch into the Automatic position.
9. Run the generator and turn on the voltage regulator, then verify control with your raise/lower control. DO NOT Adjust the voltage with the MOP1224HD control knob!
10. Place the generator online and observe its operation. If control is satisfactory, the installation is complete.

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Installation Warranty Form

It is very important that you fill out this form completely when installing a voltage regulator. This form serves as a history record on the application. This form also contains the information needed by Power-Tronics, Inc., for repair and troubleshooting of any product you may be having problems with.

Failure to fill out this form during installation will result in a cancellation of your warranty coverage! Filling out this form takes only minutes but will save hours or days later on if your product should require service!

Submit Online at: www.power-tronics.com/warranty

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Product Model:	Additional Module(s) or Options:
Serial #:	
Date of Installation:	
<u>This Section for Brushless Generators Only</u>	
Exciter Field Voltage:	Exciter Field Resistance:
<u>This Section for Brush-Type Generators Only</u>	
Shunt-Field Voltage:	Shunt-Field Resistance:
Rotor Resistance @ Brush Leads:	Rotor Resistance on Slip-Rings:
Rotor Excitation Voltage:	
<u>Generator Wiring/Usage Information</u>	
Generator Leads (Check One:) <input type="checkbox"/> 12 <input type="checkbox"/> 10 <input type="checkbox"/> 6 <input type="checkbox"/> 4 (3 ϕ) <input type="checkbox"/> 4 (1 ϕ) <input type="checkbox"/> 3	
Generator Wiring Mode (Check One:) <input type="checkbox"/> High-Wye <input type="checkbox"/> Low-Wye <input type="checkbox"/> Series Delta <input type="checkbox"/> Zig-Zag <input type="checkbox"/> Double-Delta <input type="checkbox"/> Single-Phase <input type="checkbox"/> Other	
Terminal Voltage:	Residual AC Voltage:
Rated KW:	Rated KVA:
Primary Load (Please Explain):	
<u>Repair/Warranty Request Information</u>	
Company Name:	
Contact Person:	
Telephone Number:	
Email Address:	
Ship-To Address (City, State, Zip, Country):	
Problem Description/History (Please be detailed!!!):	

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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.
- ❖ Overheating of the SCR or freewheeling diode.
- ❖ 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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