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## INSTRUCTION MANUAL MODEL PS-24 24 VDC POWER SUPPLY

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### 1.0 Introduction

The MAGPOWR Model PS-24 is a controllable current regulator for 24 vdc magnetic particle clutches and brakes. The PS-24 also provides a small amount of reverse current to maximize the torque range of the clutch / brake.

The PS-24 may be powered from either 24 vac or 24 vdc.

The Model PS-24 has three jumper selectable current ranges. Maximum outputs for the individual ranges are 0.5, 1.0 and 2.0 adc. The appropriate range is determined by the current rating of the clutch or brake to be controlled. For best torque control resolution, the lowest current range providing sufficient current for maximum operating torque should be selected. When using 24 vdc input power the maximum current output will be slightly less than the selected range.

The PS-24 accepts either a remote adjustment potentiometer, or a 0 to 10 vdc analog control signal. An isolation card is required when the PS-24 is connected to an external non-isolated control signal.

Connections are provided for an external 1 madc current meter. The meter display will indicate output current as a percentage of the output range selected.

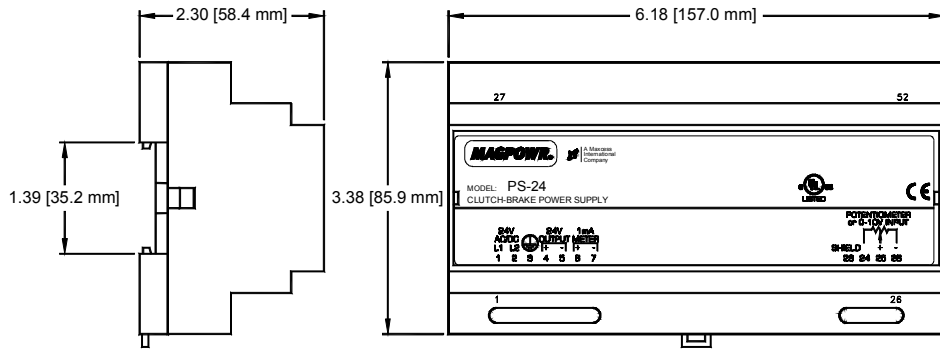
The control circuits are not electrically isolated from the power circuits. The control circuit negative is connected to the P.E. connection, i.e., control input circuits are not floating.

### 2.0 Installation

The PS-24 is intended for installation on a vertical panel with a DIN 35 rail, with the wiring terminals facing down. Figure 1 shows the enclosure dimensions.

Wiring to and from the PS-24 must be done with double or reinforced insulation or protective screening which provides protective separation. All wiring should comply with the essential requirements of the appropriate standard(s) and is the responsibility of the installer.

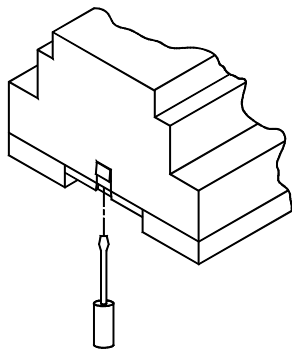
Route input power away from control signal wiring. Connect shields of shielded cable to the terminals indicated as "SHIELD". Maximum exposed shield length and maximum length of wires outside of the shield is 3 in. (75 mm).



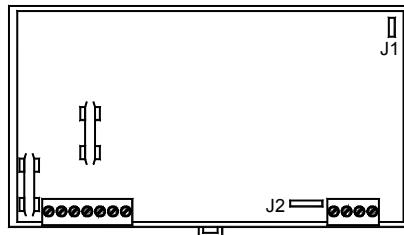
**Figure 1**  
**Enclosure Dimensions**

### 3.0 Setup

Remove the enclosure top by inserting a flat blade screwdriver under the retaining tabs in the base (See figure 2). Set the J1 input voltage selection jumper to either AC or DC depending on input voltage type. Set the current range selection jumpers to the range appropriate for the clutch / brake connected to the PS-24 (See figure 3 for J2 current range settings). The factory setting is 1/2 amp range. Replace the enclosure top.



**Figure 2**  
**Enclosure Top Removal**



J2 CURRENT RANGE					
	1	2	3	4	5
AMP					
1/2	•	•	•	•	•
1	•	•	•	•	•
2	•	•	•	•	•

**Figure 3**  
**J2 Current Range Settings**

## 4.0 Electrical Connections

Figure 4 shows the connections that are required for the basic system. They are:

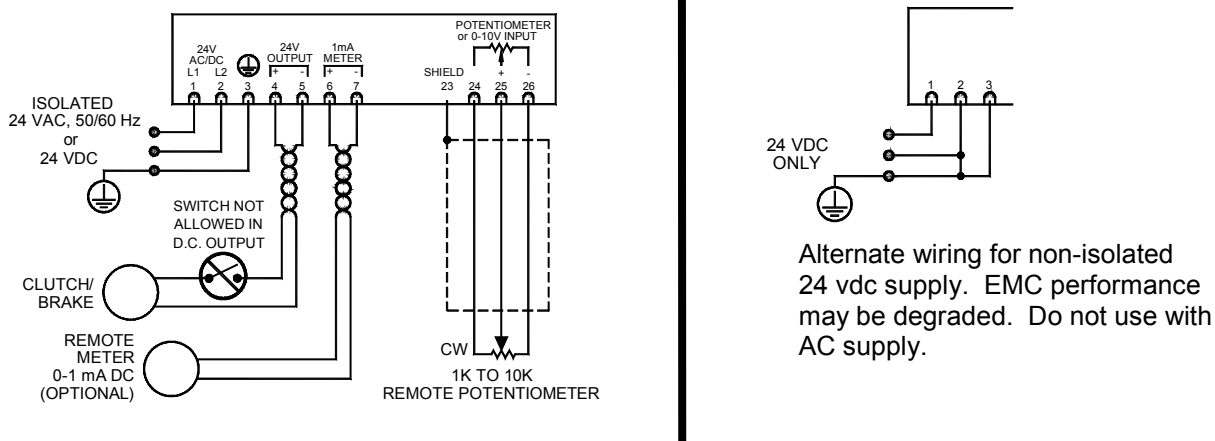
- 24 vac/vdc power
- 24 vdc output for clutch / brake
- 1 to 10 kohm Potentiometer

Route input power away from control wiring. The clutch / brake wires and the remote meter wires should be twisted pair. Run the signal input wiring in shielded cable. Connect the shield to the provided terminal marked "SHIELD". The maximum shield length and maximum length of wires outside of the shield is 3 in. (75 mm).

When using a 0 to 10 vdc input instead of a potentiometer, connect the negative of the input to terminal 26 and the positive of the input to terminal 25. The 0 to 10 vdc signal should be isolated from PE. If not isolated from PE, EMC performance may be degraded.

The 0 to 1 mdc output and the potentiometer input negative lead is ground referenced. The 24 vdc output must be floating with respect to ground.

When using multiple PS-24's, each one must have its own power supply.



**Figure 4**  
**Electrical Connections for PS-24**

## 5.0 Maintenance

The only maintenance that may be required on the PS-24 is fuse replacement. Replacement of the fuse(s) requires first removing input power, then opening the enclosure. The enclosure must be re-installed to maintain the IP rating. The enclosure may be opened by inserting a flat blade screwdriver under the retaining tabs in the base (See figure 2).

## 6.0 Troubleshooting

Symptom	Possible Cause	Solution or Diagnostic
No clutch / brake output.	No input power.	Verify incoming power is correct voltage and frequency.
	J1 selection wrong.	Verify J1 is set to AC or DC to match the type of power input.
	Fuses blown.	Clutch / brake wires shorted together or shorted to ground.
	Clutch / brake wires open circuit.	Disconnect clutch / brake wires at the PS-24 and check for proper clutch / brake resistance between the wires.
	Remote potentiometer or external power supply not wired correctly, or shorted together.	Voltage between terminal 24 and 26 should be 10 vdc.  Voltage between terminal 25 and 26 should vary from 0 to 10 vdc as the potentiometer or external 0 to 10 vdc power supply is moved through its range of travel.
Remote meter not working.	Incorrect type of meter.	Meter should be a current meter with 1 mADC full scale and no more than 100 ohm resistance.
	Meter wires shorted or open.	Disconnect meter wiring at the PS-24 and check for proper meter resistance between the wires.

## 7.0 Specifications

Supply Voltage:	24 vdc, 2.1 amp maximum, 49 va with clutch or brake coil 24 vac, +/- 10%, 50/60 Hz, 2.1 amp maximum, sinusoidal, 49 va with clutch or brake coil
Fuses: F1	2.5 amp, Littelfuse Part No. 21602.5, or Wickmann Part No. 19194-058-FS
F2	5.0 amp, Littelfuse Part No. 216005, or Wickmann Part No. 19194-063-FS
Enclosure:	IP20
Climatic Class:	3K3 (EN60721)
Temperature Range:	
Operating:	0° C to 50° C
Storage:	-30° C to 80° C
Relative Humidity:	5% to 85%
Pollution Degree:	2 (IEC664-1)
Altitude:	0 to 2000 m
Compatible Residual Current Device Types:	A or B (IEC755)
Worst Case Fault Current:	2.5 amp
Inputs:	
Signal	Potentiometer: 1 to 10 kohm, ¼ watt minimum or Voltage: 0 to 10 vdc, 100 kohm input impedance
Outputs:	
Clutch / Brake	
Voltage:	-1.2 to 24 vdc, duty cycle/phase controlled
Current:	Adjustable in three ranges: -0.016 to 0.5 adc -0.032 to 1.0 adc -0.064 to 2.0 adc
Regulation:	< 1% of range
Current Drift:	0.024 %/° C
Meter Signal:	0 to 1 madc, +/-3% into 100 ohm maximum
Potentiometer Supply Voltage:	10 vdc +/-3%, 10 madc maximum



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