

Mx-MRB1

HVAC STEP-DOWN BOARD

DESCRIPTION

The Magnum MRB series relay boards are used with HVAC equipment to transform the line voltage to a 24 VAC, Class 2 power source for use with thermostats and other low voltage control devices. There are three (3) versions available: 120V, 240V and 277V. The version must be ordered per the line voltage of the existing equipment. There are no field adjustable options.

TECHNICAL INFORMATION

There are three (3) line voltage models: 120VAC, 240VAC and 277 VAC. Power is provided to the low voltage side via a 10 VA Class 2 transformer. The 277 VAC version has a dropping network to reduce the line voltage to apply 240 VAC to the transformer primary. This is a factory installed configuration.

All line voltage connections are made using ¼" quick connect tab connections. Relays K4 and K5 connect with quick connect tabs as well. Low voltage connections are made using a terminal block. There are three relays (K1-K3) to drive fans or other valves. These are rated at 1/2 Hp / 16A general purpose at 120 VAC, 1 Hp / 16 A at 250 VAC. There are two relays (K4, K5) to drive a contactor, heat strip or small compressor directly. These are rated at 20A (minimum) 120/240V, 1 Hp 120/240VAC.

FIELD WIRING

Tab L1: The leg of line voltage power **to be switched** to the loads is connected to the "L1" tab, and also must be jumpered to one tab on each of the Heat (K4) and CP (K5) relays (if used). "L1" also connects internally to one side of the transformer primary. Each relay switches the voltage on "L1" and provides the switched power at the tabs. As an example, when 24 VAC is applied to the terminal block position "F3/RV", line voltage will appear at the corresponding tab "FAN3/RV".

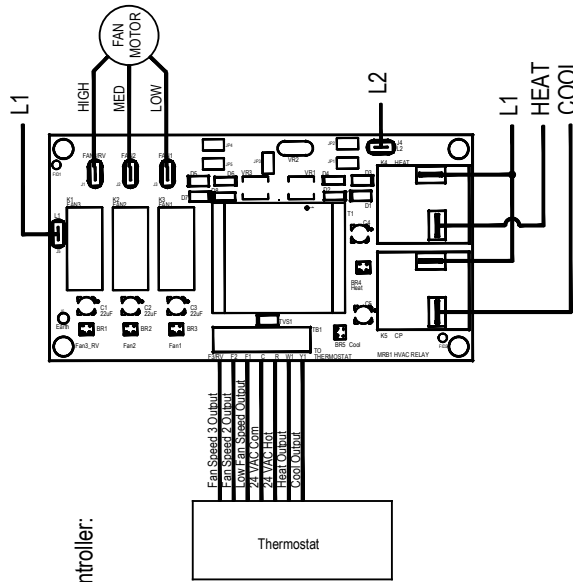
Tab L2: The non switched leg of AC power connects to the L2 (J4) tab. It only connects to the other side of the transformer primary to make the 24 VAC on the secondary. The actual 24 VAC value varies with line voltage and load fluctuations.

Low Voltage Connections: The terminal block is where all the low voltage connections are made. Only 24 VAC class 2 devices are to be connected. Total connected load cannot exceed 10 VA.

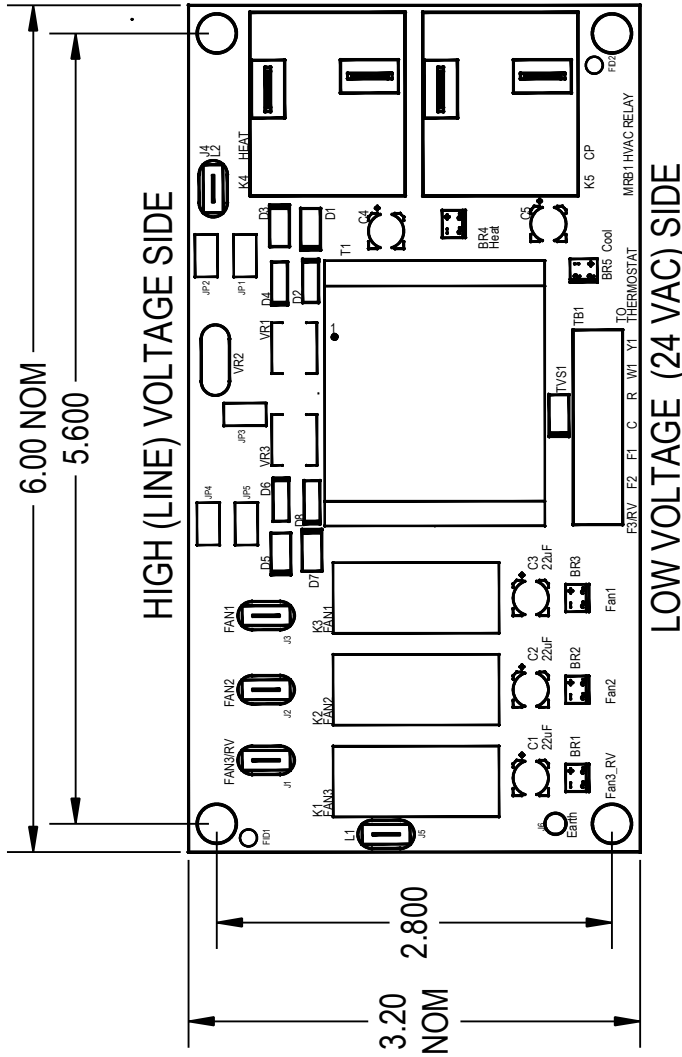
Connection Correspondence:

Low Voltage Side	Line Voltage Side
F3/RV	FAN3/RV
F2	FAN2
F1	FAN1
C is 24 VAC Common	
R is 24 VAC Hot. The low voltage devices switch the "R" line.	
W1	HEAT
Y1	CP

CONNECTIONS



- Low Voltage (24 VAC) Connections to/from thermostat or controller:
- F3/RV Relay coil drive to 3rd fan speed or RV relay.
 - F2 Relay coil drive to 2nd fan speed relay.
 - F1 Relay coil drive to Lowest fan speed relay.
 - C 24 VAC Common.
 - R 24 VAC Hot (often Red wire).
 - W1 Relay coil drive to Heat relay.
 - Y1 Relay coil drive to Cool relay.



- All Line voltage connections to board are 1/4 female tab connectors.
- Line Voltage Connections:
- L1 Power Leg switched by relays
 - L2 Power Leg, only used by transformer on MRB1.
 - EARTH Switched power to 3rd fan speed or RV.
 - FAN3/RV Switched power to 2nd fan speed.
 - FAN2 Switched power to Lowest fan speed.
 - FAN1 Switched power for Heating. Requires wire jumper from L1 tab to relay.
 - HEAT Switched power to Cooling. Requires wire jumper from L1 tab to relay.
 - COOL

