

# Remote Power Modules

8 Series
Remote Dimming Controls
MI Bus
N/A

HomeWorks® Remote Power Modules (RPMs) are used to control lighting, motor, and fan loads. There are several different models of RPMs. Each model controls specific load types, as noted below. The RPMs are mounted in one of four remote power panels. Model # HWI-PNL-8 and HWBP-8D house up to eight RPMs, model # HWI-PNL-5 houses up to five RPMs, and model # HWBP-2S houses up to two RPM-4Rs.

## **DIMMING MODULE**

**(MODEL # HW-RPM-4U-120)**



Each of the four outputs of the dimming module directly dims or switches incandescent<sup>1</sup>, magnetic low-voltage<sup>1</sup>, neon/cold cathode, or fluorescent (Tu-Wire®) lighting. Each of the four outputs directly switches electronic low-voltage lighting. The total capacity of a dimming module is 16 A @ 120 V~ (1920 W/VA)<sup>2</sup>, comprised of any combination of load types. The total load capacity may be divided among the four outputs in any manner.

## **ADAPTIVE DIMMING MODULE**

**(MODEL # HW-RPM-4A-120)**



Each of the four outputs of the adaptive dimming module auto-senses the load type, and can dim incandescent<sup>1</sup>, magnetic low-voltage<sup>1</sup>, electronic low-voltage or neon/cold cathode. The adaptive module uses our RTISS-TE™ technology to supply stable power to the lights even in harsh power line conditions. The total load capacity of the module is 16 A @ 120 V~ (1920 W/VA)<sup>2</sup>. The total load capacity of any individual output is 10 A (1200 W/VA)<sup>2</sup>.

## **QUIET FAN SPEED CONTROL MODULE**

**(MODEL # HW-RPM-4FSQ-120)**

Each of the four outputs of the fan module controls a single ceiling fan. Each output uses quiet speed control technology that eliminates fan motor buzzing. There are five available speeds: off, low, medium, medium-high, and high. Each output is rated to control a single ceiling fan load up to 2 A @ 120 V~.

## **MOTOR MODULE**

**(MODEL # HW-RPM-4M-120)**

Each motor module controls four 3-wire 120 V~ motors for applications such as shades, draperies, and hurricane shutters. Individual control outputs use two mechanically interlocked relays for directional control that prevents simultaneous operation of both outputs. Maximum relay contact rating is 1/4 HP, 5 A @ 120 V~ for motor loads, and 3 A @ 120 V~ for tungsten loads.

## **POWER RELAY MODULE**

**(MODEL # HW-RPM-4R)**

### **Softswitch™**

Each of the four outputs of the power relay module directly switches incandescent, neon/cold cathode, magnetic low-voltage, electronic low-voltage, fluorescent, or high intensity discharge (HID), making this module ideal for high-wattage applications, such as landscape and security lighting. The total capacity of a power relay module is 64 A @ 120 V~ (7680 W/VA). The total load capacity of any individual output is limited to 16 A @ 120 V~ (1920 W/VA), 1/3 HP.

## **CONNECTION TO MODULE INTERFACE**

All RPMs must be connected to a module interface housed within the same panel enclosure. If a processor is located in the same enclosure as RPMs, a processor with an integral module interface must be used. RPMs within an enclosure are connected to the module interface using a Lutron-provided harness. To minimize the effects of single power supply failure, each RPM is powered by its own internal power supply.

## **TECHNOLOGY**

RTISS®: Real-Time Illumination Stability System. This Lutron® patented filter circuit technology compensates for incoming line-voltage variations, such as changes in RMS (Root Mean Square) voltage, frequency shifts, harmonics, and line noise.

RTISS-TE™: Real-Time Illumination Stability System, Trailing Edge. Same as RTISS, but operates on the trailing edge of the ac sine wave. This allows for true instantaneous voltage compensation.

Softswitch™: Our exclusive *Softswitch* circuitry prevents the relay contacts from arcing. Even when fully loaded, the arc reduction extends a relay's average rated life to more than 1,000,000 on/off cycles.

<sup>1</sup> In rare cases, incandescent lamps and magnetic low-voltage transformers will "buzz" or "hum." The HW-HIFC-10-2 Filter Choke assembly reduces this hum. The Filter Choke Assembly can be installed in place of module 8 in an HWI-PNL-8 Remote Power Panel. See pg. 118 for additional information.

<sup>2</sup> For higher wattages or for load types other than those listed, a Power Booster or Interface is required. See pg. 107 for more information.

# Remote Power Modules (cont.)

Position	Module Output/Purpose
0	All outputs OFF
1-8	Address for normal operation
9, A	Not used
B	Output 1 ON Use for temporary lighting and zone testing
C	Output 2 ON Use for temporary lighting and zone testing
D	Output 3 ON Use for temporary lighting and zone testing
E	Output 4 ON Use for temporary lighting and zone testing
F	All outputs ON Use for temporary lighting and zone testing

**Table 1 – Address Switch position for HW-RPM-4U, 4A, 4R, 4FSQ**

Position	Module Output/Purpose
0	All relays OFF
1-8	Address for normal operation
9, A-D	Not used
E	All raise relays ON Use for directional motor testing
F	All lower relays ON Use for directional motor testing

**Table 2 – Address Switch position for HW-RPM-4M**

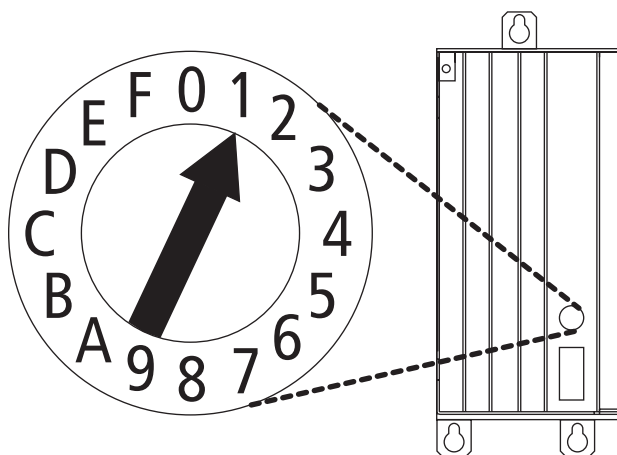
Unit LED Status	Possible Cause
Off	No Power or Defective Module
1 blink per sec.	Normal Operation “Heartbeat”
1 blink per 7 seconds “lighthouse”	Not communicating with processor: open control harness; module set on invalid or diagnostic address; system not properly configured or addressed in HomeWorks software
4 blinks; pause; repeat	Module in Manual Override

**Table 3 – Diagnostic LED status for HW-RPM-4U, 4A, 4R, 4M, 4FSQ**

Zone LED Status	Load Status	Description
Off	OFF	Normal; Load Off
Continuously On	ON	Inc./Electronic Dimmer
1 blink per second	ON	Magnetic Dimming
Error Codes		
1 blink; pause; repeat	OFF	Load Short Circuit/Overload <sup>1</sup>
2 blinks; pause; repeat	OFF	Inductive Load <sup>2</sup>
3 blinks; pause; repeat	ON Full	Shorted Component <sup>3</sup>
4 blinks; pause; repeat	OFF	DC Detection <sup>4</sup>

1. Locate and repair fault. Cycle power to RPM.
2. Check software configuration. MLV load detected with ELV software setting.
3. Replace RPM. Internal device (FET) shorted.
4. Possible faulty MLV load.

**Table 4 – Zone Diagnostic LED Status (4A only)**



**Figure 3 – Enlarged view of Address Switch**

# Remote Power Modules (cont.)

## All Remote Power Modules

Model Numbers	HW-RPM-4U-120: Dimming Module. HW-RPM-4A-120: Adaptive Dimming Module. HW-RPM-4FSQ-120: Quiet Fan Speed Control Module. HW-RPM-4M-120: Motor Module. HW-RPM-4R: Power Relay Module.
Input Voltage	RPM-4U, RPM-4M, RPM-4E, RPM-4FSQ: 120 V $\sim$ 50/60 Hz RPM-4R: 100-277 V $\sim$ 50/60 Hz
Number of Outputs	4
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0 °C to 40 °C, 32 °F to 104 °F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Heat Generated Fully Loaded	HW-RPM-4U-120: 82 BTUs per hour HW-RPM-4A-120: 82 BTUs per hour HW-RPM-4FSQ-120: 18 BTUs per hour HW-RPM-4M-120: 18 BTUs per hour HW-RPM-4R: 18 BTUs per hour
Line-Voltage Connections	Separate line-voltage feeds at the DIN rail terminal blocks for each RPM. Terminal blocks should be tightened to 3.5 in.-lbs. to 5.0 in.-lbs. (0.40 N•m to 0.57 N•m).
Low-Voltage Communications	Via Lutron-provided communication harness.
Addressing	Via rotary switch. Counts as 1 of 8 RPM addresses per MI. <i>See pg. 124.</i>
Diagnostics	LED provided to indicate proper communications with Module Interface.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	4U, 4A, 4FSQ, 4M: Provided when all four circuits are off. 4R: Individual output airgap is provided when each circuit is off.
Fail-Safe Operation	Rotary switch on the RPM allows for manual operation of each load.
Dimensions	3 $\frac{7}{8}$ in (99 mm) wide x 7 in (178 mm) high
Mounting	HWI-PNL-8 and the HWBP-8D remote power panels will hold up to 8 RPMs. HWI-PNL-5 remote power panel will hold up to 5 RPMs. HWBP-2S remote power panel will hold up to 2 RPM-4Rs. <b>Note:</b> RPMs may hum slightly and internal relays will click when in use. Mount where such noise is acceptable. Locate at least 6 feet (1.8 m) away from sensitive electronic equipment.
Shipping Weight	2.2 lbs. (1.0 kg)
Minimum Load	25 W/VA per output.
Lamp Buzz	Lamp debuzzing coils are available from Lutron to reduce lamp filament buzzing. (Lutron® model # HW-HIFC-10-2, LDC-10-TCP, or LDC-16-TCP).

# Remote Power Modules (cont.)



## HW-RPM-4U-120 • Dimming Module

Load Types	Incandescent <sup>1</sup> , magnetic low-voltage <sup>1</sup> , electronic low-voltage <sup>2</sup> , neon/cold cathode, Lutron® Tu-Wire® Fluorescent Dimming Ballasts, or Lutron Hi-Lume® and ECO-10® Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 Interface). Outputs are compatible with Lutron NGRX-PB-WH, and HP 2•4•6 Power Boosters for higher wattage applications.
Maximum Load	For 20 A branch circuit, total load per module: 16 A continuous, total load per switch leg: 16 A continuous. For 15 A branch circuit, total load per module: 12 A continuous, total load per switch leg: 12 A continuous.
Wiring	See Fig. 1, pg. 128. Terminal blocks will accept one #18-10 AWG (1.0-2.5 mm <sup>2</sup> ) wire or two #18-16 AWG (1.0-1.5 mm <sup>2</sup> ) wires.
Technology	Forward phase control using triac technology with RTISS® line noise filtering.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.



## HW-RPM-4A-120 • Adaptive Dimming Module

Load Types	Incandescent <sup>1</sup> , magnetic low-voltage <sup>1</sup> , electronic low-voltage, and neon/cold cathode.
Maximum Load	For 20 A branch circuit, total load per module: 16 A continuous, total load per switch leg: 10 A continuous. For 15 A branch circuit, total load per module: 12 A continuous, total load per switch leg: 10 A continuous.
Wiring	See Fig. 1, pg. 128. Terminal blocks will accept one #18-10 AWG (1.0-2.5 mm <sup>2</sup> ) wire or two #18-16 AWG (1.0-1.5 mm <sup>2</sup> ) wires.
Technology	Patented Adaptive load-sensing FET technology with RTISS-TE™ line noise filtering.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

## HW-RPM-4FSQ-120 • Quiet Fan Speed Control Module

Load Type	Ceiling fan.
Maximum Load	2 A per output, single ceiling fan.
Wiring	See Fig. 1, pg. 128. Terminal blocks will accept one #18-10 AWG (1.0-2.5 mm <sup>2</sup> ) wire or two #18-16 AWG (1.0-1.5 mm <sup>2</sup> ) wires.
Technology	Switched capacitor quiet control circuitry.
Number of Speeds	Five: off, low, medium, medium-high, high.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

<sup>1</sup> In rare cases, incandescent lamps and magnetic low-voltage transformers will “buzz” or “hum”. The HW-HIFC-10-2 filter choke assembly reduces this hum. The filter choke assembly can be installed in place of the top RPM in an HWI-PNL-8 Remote Power Panel.

<sup>2</sup> HW-RPM-4U-120 requires ELVI-1000 to dim ELV loads. No interface required to switch ELV with the HW-RPM-4U-120. Use the HW-RPM-4A-120 to eliminate need for this interface.

# Remote Power Modules (cont.)

## HW-RPM-4M-120 • Motor Module

Load Types	Bi-directional three-wire 120 V $\sim$ motor loads, or incandescent non-dim. Outputs are not rated for switching electronic low-voltage or electronic ballasts.
Maximum Load	For 20 A branch circuit, 1/4 HP per circuit. 5 A maximum per circuit for motor loads, 3 A maximum per circuit for tungsten loads.
Wiring	Terminal blocks will accept one #18-10 AWG (1.0-2.5 mm <sup>2</sup> ) wire or two #18-16 AWG (1.0-1.5 mm <sup>2</sup> ) wires. Requires that four additional terminal blocks (included) be mounted onto the DIN rail assembly. <i>See Fig. 2, pg. 128.</i>
Technology	Relay switching, mechanical-interlocked relays guarantee motor protection.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

## HW-RPM-4R • Power Relay Module (120 V-277 V)

**Softswitch®**

Load Types	Non-dim loads.
Maximum Load	For 20 A branch circuits, total load per RPM: 64 A continuous, total load per switch leg: 16 A continuous, 1/3 hp For 15 A branch circuits, total load per RPM: 48 A continuous, total load per switch leg: 12 A continuous, 1/3 hp
Wiring	Terminal blocks will accept one #18-10 AWG (1.0-2.5 mm <sup>2</sup> ) wire or two #18-16 AWG (1.0-1.5 mm <sup>2</sup> ) wires. Requires the installation of four additional gray terminal blocks (included) and three additional black terminal blocks (included) to be mounted on to the DIN rail assembly. <i>See Fig. 3, pg. 128.</i> Gray terminal blocks accept one #18-8 AWG (1.0-10 mm <sup>2</sup> ) wire or two #16-12 AWG (1.5-4.0 mm <sup>2</sup> ) wires.
Technology	Relay switching with Softswitch patented triac arc suppression technology utilized for million-cycle relay life.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when each circuit is off.

# Remote Power Modules (cont.)

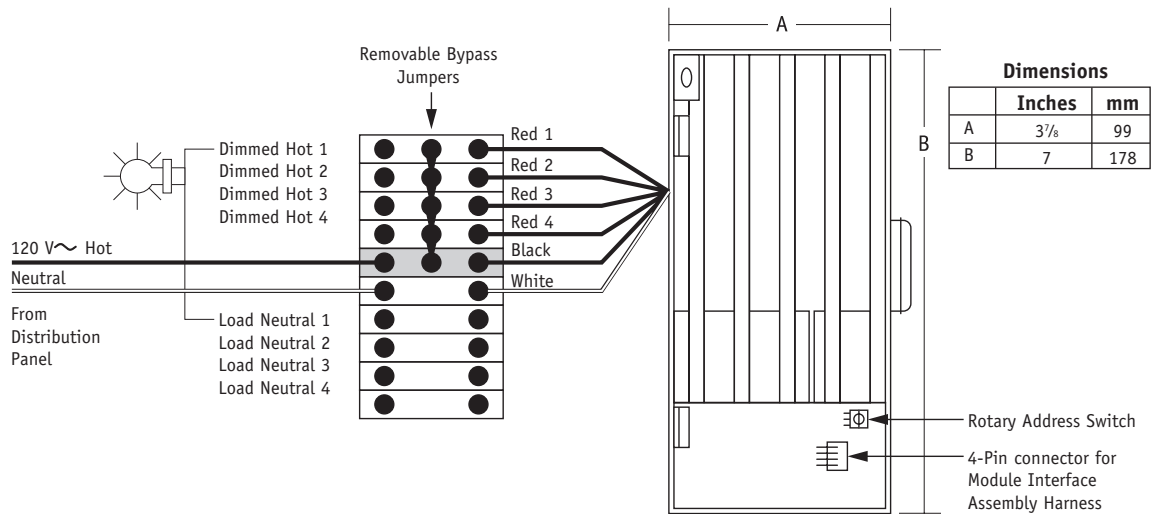


Figure 1 – HW-RPM-4U-120, HW-RPM-4A-120 and HW-RPM-4FSQ-120

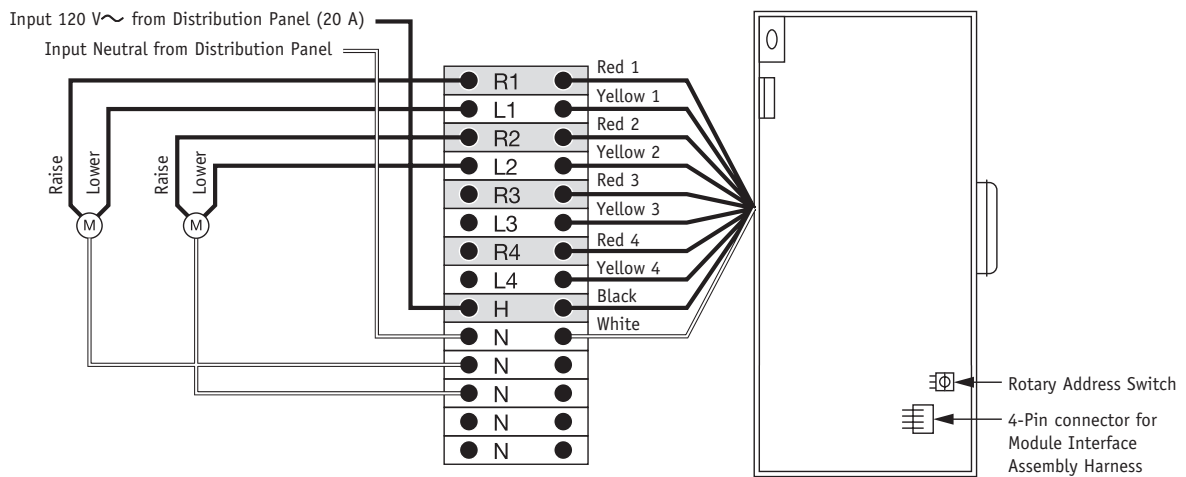


Figure 2 – HW-RPM-4M-120

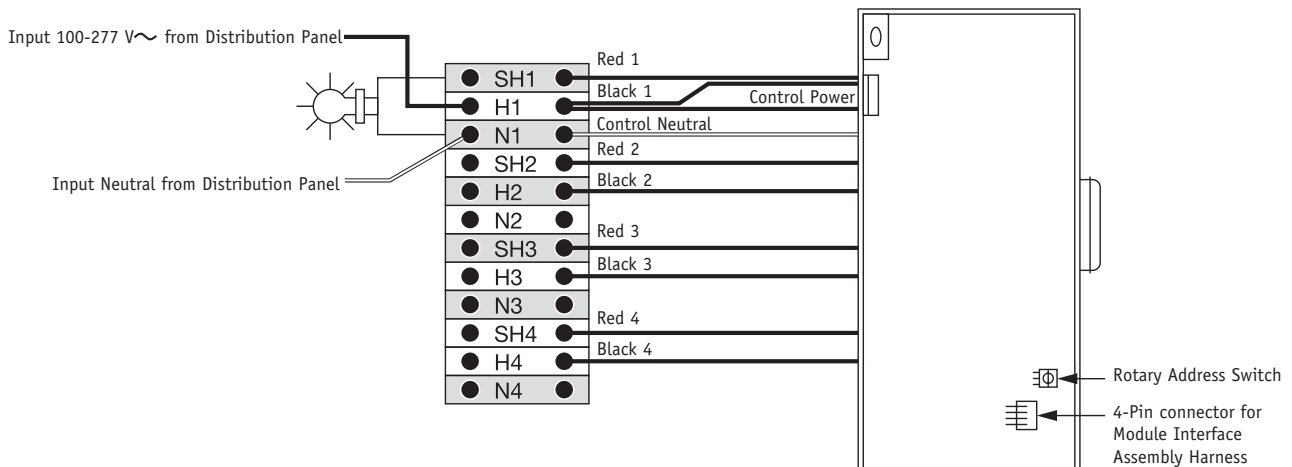


Figure 3 – HW-RPM-4R

BACK ROOM