

LCP and CCP Power Panel Module Overview

This application note is designed to help you to understand the various module types that Lutron has to offer. It will assist you in selecting the proper module for your application and also act as a troubleshooting guide in the field.

Module Overview and Ratings

	Adaptive Module LP-RPM-4A-120		Adaptive Module LP-RPM-4A-230		Dimming Module LP-RPM-4U-120		Dimming Module LP-RPM-4U-240		Dimming Module LP-RPM-4U-230-CE		ELV Dimming Module LP-RPM-4E-230-CE		Motor Module LP-RPM-4M-120		Fan Speed Module LP-RPM-4FSQ-120		Switching Module XP2-SM-4S		
Load Types																			
Incandescent	✓	✓	✓	✓	✓	✓	✓											✓	
Magentic Low-Voltage (MLV)	✓	✓	✓	✓	✓	✓												✓	
Electronic Low-Voltage (ELV)	✓	✓						✓										✓	
Neon/Cold-Cathode	✓	✓	✓	✓	✓	✓												✓	
Ceiling Paddle Fan													✓					✓	
Switched Fluorescent				✓	✓	✓												✓	
Lutron® Tu-Wire® Fluorescent	✓			✓															
Motor Loads																		✓	
AC Shade/Projector Screen Motors										✓									
Non-Dim Lighting Loads				✓	✓	✓												✓	
Compact Fluorescent Lamp (CFL)*	✓	✓	✓	✓	✓	✓												✓	
Light Emitting Diode (LED)*	✓	✓	✓	✓	✓	✓												✓	
Voltage (~)	120 V	220/ 240 V	120 V	220/ 240 V	220/ 240 V	220/ 240 V	220/ 240 V	120 V	120 V	100– 277 V									
Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60									
Minimum Load	10 W	10 W	25 W	40 W	40 W	10 W	—	0.25 A	—										
Maximum Load Per Output	10 A	8 A	16 A	16 A	10 A	10 A	5 A	2 A	16 A 1/3 HP										
Maximum Load Per Module	16 A	13 A	16 A	16 A	13 A	16 A	16 A	8 A	16 A/ circuit										
Technology (see key below)	FP, RP	FP, RP	FP	FP	FP	RP	RS	SC	RSS										

* Minimum and maximum load specifications for Lutron® dimming controls apply to traditional loads (e.g., incandescent and halogen) and do not apply to LED and CFL loads. Minimum and maximum loads for LEDs and CFLs are expressed in number of lamps and may vary, depending on the type of lamp and the model number being used. Only testing can determine the actual minimum and maximum load needed for a particular lamp and control.

Key:

FP: Forward-phase control with RTISS® line noise filtering

RP: Reverse-phase control with RTISS® line noise filtering

RS: Relay switching; mechanical-interlocked relays guarantee motor protection

SC: Switched capacitor quiet control circuitry

RSS: Relay switching with Softswitch® patented triac arc suppression technology utilized for million-cycle relay life

Ten-Volt Module (TVM) Specifications (0–10 V)

- Each GRX-TVM2 interface controls two consecutive circuits of lighting.
- Controls 0–10 V, Digital Serial Interface (DSI), Broadcast DALI®, and Pulse Width Modulated (PWM).
- 50 mA maximum low-voltage ballast control current per circuit for each GRX-TVM2 output.
- 750 mA maximum low-voltage ballast control current per panel.

Load Type Settings for Circuit Selector

GRX-TVM2 circuits are the first circuits in the panel. If a 0–10 V, PWM, or DSI circuit is required, one of the load types shown below must be used when setting the load type (at the circuit selector) for these circuits. Failure to correctly assign load type may damage loads, especially certain electronic transformers and electronic ballasts and motors.

- Load Type 2–3 Fluorescent: 0–10 V, with TVM
- Load Type 2–4 Fluorescent: PWM, with TVM
- Load Type 2–5 Fluorescent: TVM (used with switched hot ballasts)
- Load Type 2–6 Fluorescent: DSI with TVM (electronic off ballast)

DALI® intensity broadcast is available with particular load types. This function is the same as DSI; the ballasts are not addressable.

- Load Type 2–7 DALI® with TVM
- Load Type 2–8 DSI Logarithmic dimming curve with TVM (used with switched hot ballasts)
- Load Type 2–9 DALI® Logarithmic dimming curve with TVM
- Load Type 2–A 10–0 V with TVM (10 V low end; 0 V high end)

Load Type Settings for Light Control Panel (LCP) Controller

On the LCP controller it will directly call out the load type by name. For further information, please refer to the LCP128™ Setup and Operation Manual.

Troubleshooting

Table 1: Address Switch Operation

Position	Proper Module Output/Purpose
0	Internal relay ON, no output to load/used to check for shorted output device
1–6	Address for normal operation
A	Not used — All outputs OFF (internal relay open)
B	RED 1 output ON Full/Use to check wiring
C	RED 2 output ON Full/Use to check wiring
D	RED 3 output ON Full/Use to check wiring
E	RED 4 output ON Full/Use to check wiring
F	All outputs ON Full

Table 2: Unit Diagnostic LED Status

Unit LED Status	Possible Cause
Off	No power or defective module
1 blink per second "Heartbeat"	Normal operation
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
10 blinks per second "Heart attack"	Zone error active on one or more of the outputs (occurs with 4A modules only)

Table 3: Zone Diagnostic LED Status (if present)

Zone LED Status	Load Status	Description
Off	OFF	Normal; Load off
Continuously On	ON	Incandescent/Electronic Dimming
1 blink per second	ON	Magnetic Dimming
Error Codes		
1 blink; pause; repeat	OFF	Load short circuit ¹
2 blinks; pause; repeat	OFF	Inductive load ²
3 blinks; pause; repeat	ON Full	Shorted component ³
4 blinks; pause; repeat	OFF	Overload ¹
10 blinks per second	OFF	Multiple errors ⁴

Error code descriptions:

- ¹ Locate and repair fault. Cycle power to Remote Power Module (RPM).
- ² Check software configuration. MLV load detected with ELV software setting.
- ³ Replace RPM. Internal device Field Effect Transistor (FET) shorted.
- ⁴ Multiple errors exist on this output. The relay has opened to protect the module and all four outputs will be off.

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