

Description

The GRX-PWM provides 12 V \equiv Pulse Width Modulated (PWM) control and ballast switching capabilities in one enclosure. With the GRX-PWM, a *GRAFIK Eye* 3000 Series Control Unit* can control PWM ballasts powered by 100-277 V \sim and provide switching relays that can handle the in-rush current for a full circuit of ballasts. The GRX-PWM can also be used to switch any of the load types listed below.

*GRX-PWM will also work with Lutron GP or LP panel outputs.

Product Specifications

FEATURES.....Provides a PELV (Class 2: USA) isolated 12 V \equiv 1 kHz PWM output signal that conforms to IEC60929 and JIS C8120-2.
Accepts a constant-gate drive fluorescent signal

| | |
|--|-------------------------------|
| INPUT VOLTAGE RATING | 100/120 V \sim , 50/60 Hz |
| SWITCHED VOLTAGE RATING | 100-277 V \sim , 50/60 Hz |
| H2 TERMINAL INPUT RATING | 200 mA max |
| DH2 TERMINAL INPUT RATING | 100 mA |
| 12 V\equiv PWM OUTPUT RATING | 400 mA - sources current only |

| Source/Load Type | Switched Hot Current 100-277 V \sim |
|--|--|
| Fluorescent: Lutron Eco-10™ (TVE Series) | 16 A |
| Electronic Capacitive Non-Dim Other Manufacturer's 12 V \equiv PWM Ballasts (12 V \equiv PWM source only) | 16 A |
| Incandescent | 16 A |
| Low-Voltage | 16 A |
| Metal Halide | 16 A |
| Neon/Cold Cathode | 16 A |
| Motors | 1/4 HP @ 100-120 V \sim 1/2 HP @ 200-277 V \sim |

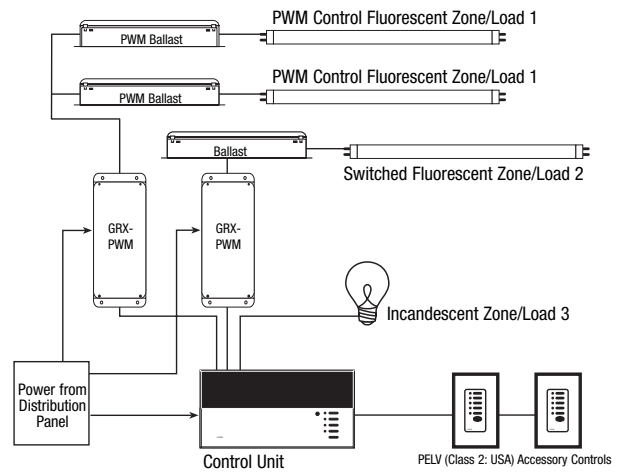
TERMINALS Two #12-20 AWG (0.5-2.5 mm²) conductors per terminal.
MOUNTING NEMA Type 1 enclosure, indoor use only.
ENVIRONMENTAL 32-104°F (0-40°C).
WEIGHT 4.25 lb. (2 kg)

Mounting

Find a suitable location for mounting.

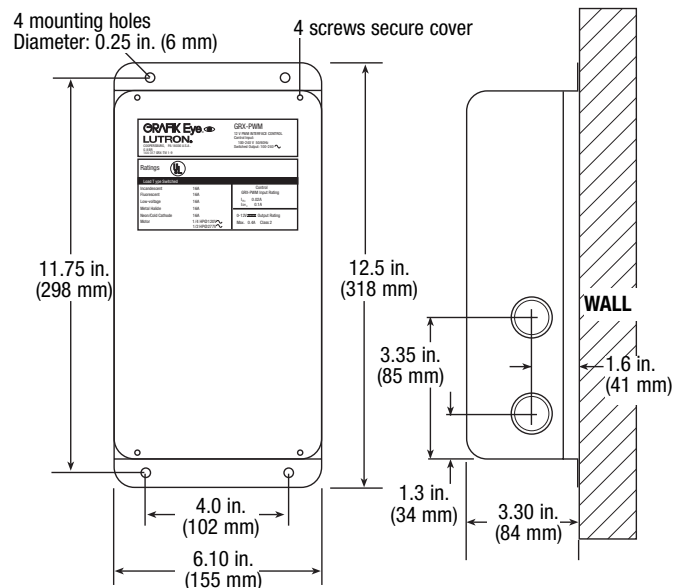
- Decide on the proper location for the GRX-PWM (NEMA Type 1 enclosure, indoor use only). See System Wiring Layout below.
- The environment where the GRX-PWM is placed must have an ambient temperature range of 32-104°F (0-40°C).
- Mount the enclosure vertically on a wall (screws not provided). See Mounting Diagram below.
- Mounting method must be able to support weight and forces applied during installation.
- Internal relays will click while in operation; mount where audible noise is acceptable.

System Wiring Layout



Note: When using a Control Unit, a GRX-PWM is required for each 12 V \equiv PWM fluorescent zone. (A 3-zone Control Unit with two fluorescent zones and one incandescent zone is shown as an example.)

Mounting Diagram



100-277 V \sim Control Interface

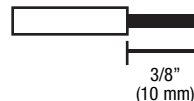
Important Installation Information

- Install in accordance with all national and local electrical codes.
- Check for short-circuited loads during new installations before wiring the GRX-PWM.



Caution: Multiple feeds may enter this enclosure. Locate and lock each feed circuit breaker/MCB in the OFF position before wiring the Interface.

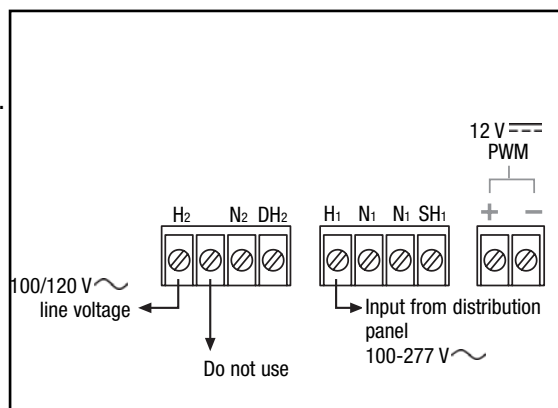
- Proper short-circuit and overload protection must be provided at the distribution panel. You can use up to a 20 A maximum circuit breaker/MCB or equivalent (tripping curve C according to IEC 898/EN60898 is recommended) with adequate short-circuit breaking capacity for your installation.
- Terminal blocks are rated for two #12-20 AWG (0.5-2.5 mm²) wires per terminal.
- Strip 3/8 in. (10 mm) of insulation from wires.
- Wiring Diagram A shows a GRX-PWM wired from one distribution panel. If the power requirement of the complete system is less than an MCB/circuit breaker rating, one feed can be jumpered inside the enclosure (as shown).
- Wiring Diagram B shows a GRX-PWM wired from two separate distribution panels that may be different phases or voltages.



- Use the internal terminal block label to see where to land wires.
 - The label shows two separate Hot terminals (H1 & H2).
 - H1 is the Hot feed to power the lighting load.
 - H2 is the Hot feed that powers internal circuitry of the GRX-PWM.
 - H2 has a 100/120 V \sim connection. Do **not** use the unlabeled terminal.

Note 1: Not all terminal blocks receive a connection.

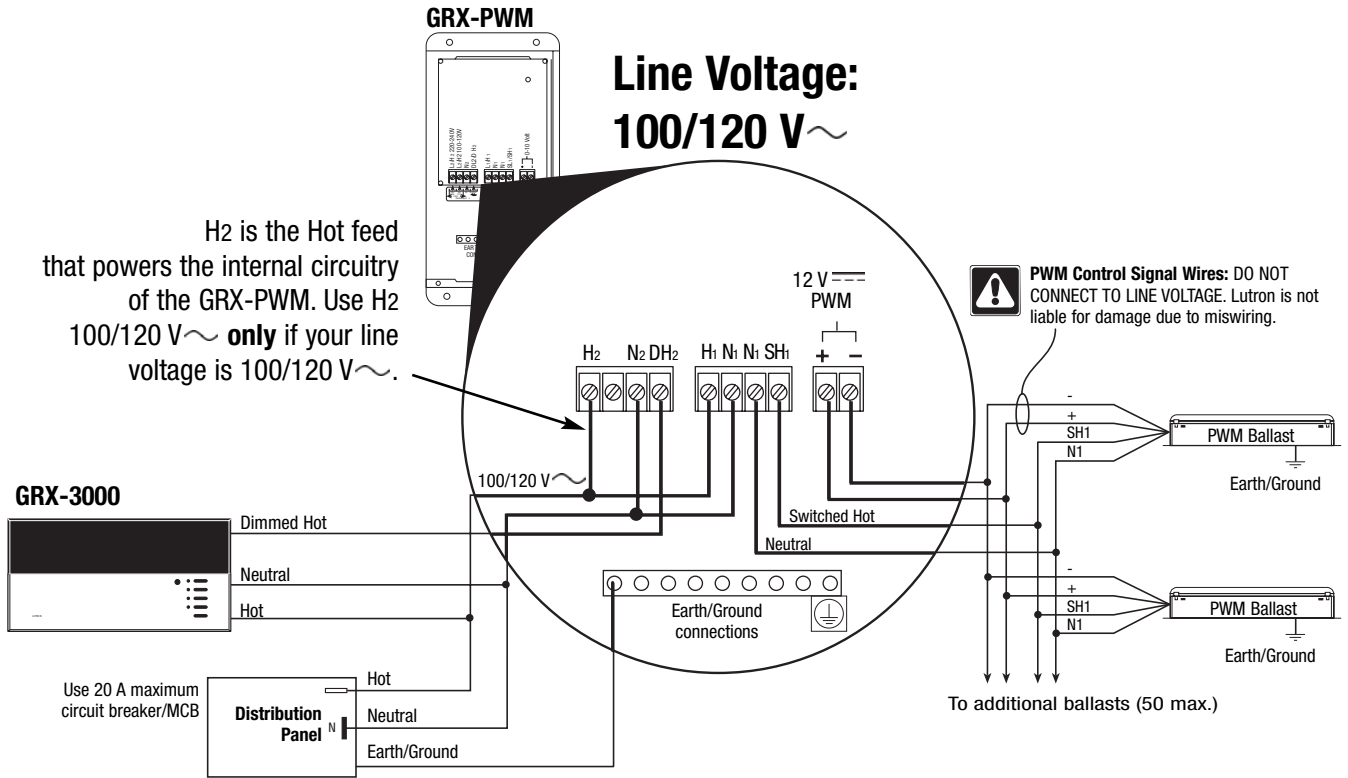
Note 2: The power feed to the Control Unit and H2 of the GRX-PWM must be the same phase! PELV (Class 2: USA), 12 V \equiv PWM wiring from a ballast to the GRX-PWM must be separated from the power wiring. Enter the PELV (Class 2: USA) wires through the knockout adjacent to the 12 V \equiv PWM terminal blocks. The Nomex[®] barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.



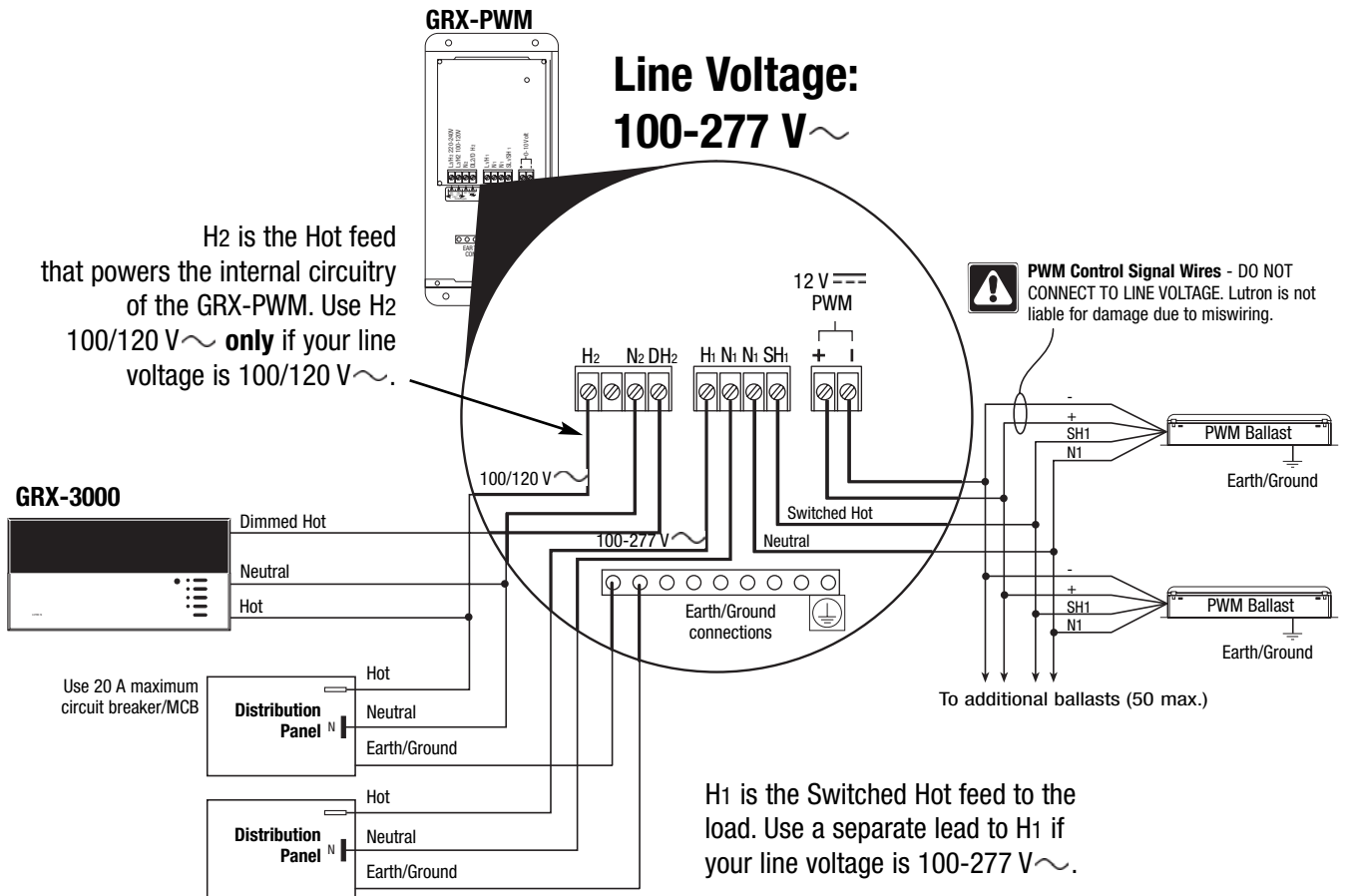
GRX-PWM Internal Terminal Block Label Definitions

| | | |
|-----|------------------|---|
| H2 | 100/120 V \sim | Power input for GRX-PWM control (line voltage must be 100/120 V \sim only) |
| N2 | | Neutral for GRX-PWM control |
| DH2 | | GRAFIK Eye 3000 Series Control Unit Lighting Zone connection (Phase Control Input to GRX-PWM) |
| H1 | | Power input for lighting load (switched voltage can be 100-277 V \sim) |
| N1 | | Neutral for lighting load (2 terminals provided and internally tied together — one for input neutral, and one for load neutral) |
| SH1 | | Switched output to power lighting load |
| + - | | PWM control signal terminals |

Wiring Diagram A: 100/120 V ~ GRX-PWM: 1 Distribution Panel



Wiring Diagram B: 100-277 V ~ GRX-PWM: 2 Distribution Panels



Operation

After wiring is complete, supply power to the GRX-PWM to check for proper operation.

- With the cover removed, an LED will provide visual feedback about the operation of the system.
- When power is first applied, the LED will turn on for 8 seconds to indicate start-up mode and then start to flash in one of two ways to indicate the status of the system:

1. Standard Operation

- The LED will flash at a rate of twice per second to signify proper communication between the Control Unit and the Interface.

2. Incorrect Operation - No Active Input

- The LED will repeatedly turn on for 1 second, then off for 1 second, to indicate that there is not an active phase control input to the GRX-PWM. Make sure that the phase control dimmer is ON and connected to the GRX-PWM at the terminal block marked DH2. Check that the corresponding zone for the DH2 terminal is ON and the light level is not set at the minimum output.
- When the LED indicates proper input of a phase control signal, then the output can be checked by looking at the load and checking operation from the Control Unit.
- For non-dimming ballasts, select non-dim load type on the *GRAFIK Eye* Control Unit and do not connect ballasts to PWM's + and - terminals.



Make sure that the Control Unit is set for **Fluorescent Load Type**. (Refer to *GRAFIK Eye* 3000 Series Installer's Guide.) If the load type is not set correctly, proper dimming will not occur.

Troubleshooting

| Symptom | Possible Cause | Solution |
|--|-------------------------|---|
| PWM Ballast does not dim or control unit to the Interface. | Miswire | Verify that LED pulses twice per second. If not, check wiring from phase control unit to the Interface. |
| | Power is OFF | Make sure that the <i>GRAFIK Eye</i> 3000 Series Control Unit is ON. |
| | Miswire | Check for proper polarity of PWM signals at terminal blocks. Does it match what is at every ballast? A miswire at any ballast will cause all ballasts to go to the low end. |
| | Incorrect control setup | <i>GRAFIK Eye</i> 3000 Series Control Unit is not configured for fluorescent load type. |
| Light does not switch on | Miswire | Check that the SH1 connection goes to the ballasts. |
| | Miswire | Check that the DH2 connection is actually wired to a phase control input. |
| Light does not switch off | Miswire | Check that load is connected to SH terminal. |
| | Miswire | Check that the DH2 connection is actually wired to a phase control input. |
| LED is not illuminated | No power input | Check that power is applied to the Interface. |

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LIMITED WARRANTY
Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, postage pre-paid.
This warranty is in lieu of all other express warranties, and the implied warranty of merchantability is limited to one year from purchase. This warranty does not cover the cost of installation, removal or reinstallation, or damage resulting from misuse, abuse, or improper or incorrect repair, or damage from improper wiring or installation. This warranty does not cover incidental or consequential damages. Lutron's liability on any claim for damages arising out of or in connection with the manufacture, sale, installation, delivery, or use of the unit shall never exceed the purchase price of the unit.
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