

Precision Lighting Systems, Inc.

The Performer™ MR4 2400w Digital Dimming System

Users Manual

For Model #

PLS MR4 2400 STD

**Automatic Current Limiting
Detects Short Circuits**

Installing and Operating Instructions

Table of Contents:

Warnings and Cautions	2
Warranty	2
Installation and Wiring	3
General Operation Set-Up	4
Programming the Dimmer	5 - 7
Options	5 - 7
Manually Enter Data	5 - 7
One-Shot™	5
L3 and L4 Kicker	6, 7
Automatic Current Limiting and Detecting Short Circuits	8

Attention

Warnings, and Cautions:

Electricity is dangerous. Make sure the installer is qualified to work with electrical equipment, has a solid understanding of damage electricity can do to equipment, animals, and people. Improper understanding can lead to damage, injury, or death. Ensure that your installer can and will follow installation instructions. **Improper installation will damage your dimmer and void the warranty.** If you have questions regarding installation, contact your equipment distributor, or call the manufacture for **Tech Support at 800-737-1837.**

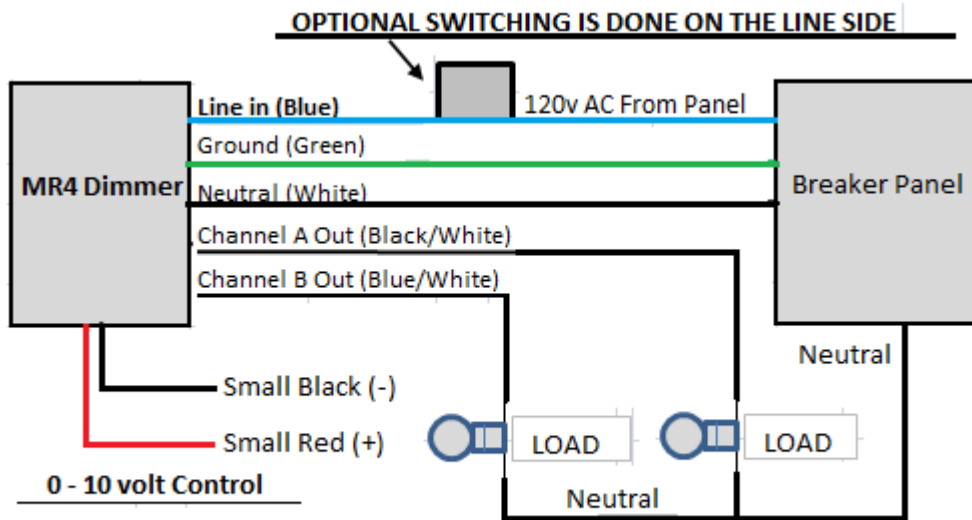
Warranty:

The Performer™ MR4 series of dimmers carry a one-year limited warranty against defects in materials and workmanship. Acts of God, improper installation, damage from direct hits of water, lightning strikes, power surges, direct shorts, damage or interference from other equipment, and all other **non-material and non-workmanship issues are not included.** Precision Lighting determines warranty circumstances and repairs legitimate warranty issues. **Non-warranty repairs will be invoiced.** Do not replace disabled units with new units, as disabled units will be repaired, not replaced. Before shipping a disabled unit to Precision Lighting, call for Return Authorization. Units received without a Return Authorization Number may be greatly delayed in repair and return turnaround time.

Installation Wiring

PLS MR4 2400 PTC or STD

The MR4 hard wires differently than ALL previous PLS models. Follow diagram to prevent internal damage and risk voiding warranty.



Dimmer and lights must be powered by the same 120v phase of your Breaker Panel.

For Technical Support
800-737-1837

NEUTRAL WIRES SHOULD BE RUN DIRECTLY TO BREAKER BOX BUS BAR

0-10v low voltage wires connect to the computer/controller

Attention: If you are NOT using the two low voltage wires, they must be capped off, individually.

1200w (10a) Load A

2400w (20 amp) Max

Load B 1200w (10a)

The Performer™ PLS MR4 series dimmer is designed to power from a 20 amp breaker, via the solid blue wire.

Operating Dimmer With or Without Controller/Computer

With “0-10v/Manual/Enter” button engaged and red status light **on**, the dimmer is controlled remotely by 0-10v signal from Controller/Computer. Zero is two dashes (--), which is OFF. In this “automatic 0-10v mode,” the light level display becomes a volt meter display, showing output from the Controller, to one tenth of a volt: 3.2v is 32% output, and can be approximately 32% light level. 5.2v is 52%, etc. This continues to a maximum Controller output of 10v, which is 0.0 on the display and 100% light output.

3-Phase Operation – Use only ONE of 3 phases to power lights and dimmer. It must measure 120v to earth ground. The solid blue dimmer line wire then connects to one 20 amp breaker.

Quick Trouble Shooting Checklist

- 1 If inoperable, first confirm breaker is turned on, and then go back through the above Wiring Diagram.
- 2 Be sure dimmer switches A & B are in proper mode and responding correctly to the red status lights (On, Off, or Flashing). Check to ensure the bottom 0-10v/Manual button is in the correct mode.
- 3 If lamps are burning unsuitably:
 - a. Be certain you have a ground rod at the breaker box
 - b. Make sure you have a dedicated neutral and that it is not tied to the ground at the breaker box.
 - c. Measure for voltage between the neutral and ground. Any positive reading must be corrected
 - d. If operating through a controller, be certain DC voltage is transmitting from the controller to the dimmer’s small red and black 0-10v input wires.

GENERAL OPERATION SET-UP

For The Performer™ MR4 LED Digital Dimmer Models:

PLS 2400 MR4 PTC

PLS 2400 MR4 STD

The **INSTALLATION** of the MR4 series is NOT the same as the previous model.

If you need further instructions, please call Technical Support (800-737-1837).

After installing the unit, following the new installation instructions, set the dimmer Tier (dimming curve) you are using. The choices are:

"L1" = Mid Phase, Curve 1

"L2" = Mid Phase, Curve 2

"L3" = Forward Phase

"L4" = Reverse Phase

Press **BOTH** the up and down arrows, at the same time, for 4 seconds, then release. You will see the L1, L2, L3, or L4 flash in the **Light Level** display. Use **EITHER** the UP **OR** DOWN button to scroll to the Tier you want. Press the **ENTER** key, located in the lower left corner.

Set "A Side" and "B Side" to the correct lighting mode: OFF, DIM, or HIGH (100% on).

Press "A" and "B" to cycle through the three choices

Off = Off

Flashing light = Dim mode

Solid light = 100% on, non dim

The first **red status light** shows what lighting mode "A Side" is set on and the second **red status light** shows lighting what mode "B Side" is set on.

Next, select the correct operating mode. If operating manually, press the bottom **"0-10v Manual/Enter"** button to turn **off** the bottom **red status light**. If operating through an appropriate environmental controller, press the button to turn **on** the **red status light**. If the dimmer will operate by its programmable time controller (only for PTC model), the "0-10v/Manual/Enter" **red status light** should be **off**. [See "Set Internal Time Clock", and "PLS GUI" instructions page 5, 7-10.]



OPTIONS:

ONE-SHOT™

L4 and L3 Kicker

- Make sure the dimmer has been properly installed and is powered.

ONE-SHOT™

Enter One-Shot™ Level and Duration (see below, Activating the One-Shot™)

While performing a daily walk through in the barn, many users turn the lights up to see well. Unfortunately, many also forget to turn them back down. The ONE-SHOT™ solves this by allowing the user to predetermine the length of time and light level needed for the walk through.

- Press and hold **both** the “UP” and “DOWN” arrows together for 4 seconds.

This puts the dimmer in a programming mode, including the TIER selection mode. At this time, you may use the “UP” or “DOWN” arrow to select the TIER you want [L1, L2, L3, L4]. However, the TIER selection mode does not affect any of the further Options.

Press and Release “A”. [NOTE: You must PRESS and RELEASE the “A” button]

You are now in the Options Menu.

You will see “OP” in the display window, for a second, followed by a random number.

Press and Hold “A.” [NOTE: Now, you PRESS and HOLD the “A” button.]

“01” appears in the display.

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 6. This is Option 6.

Release both buttons. The dimmer display will read, most likely, “00,” but, as long as you are in Option 6, it does not matter what the number currently is.

Option 6: With the “UP” arrow, only, enter your One-Shot™ light #. (Example: I want my One-Shot to run at # 50 light level).

Press and Hold “A.”

“06” appears in the display.

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 7. This is Option 7.

Release both buttons. The dimmer display will read, most likely, “00,” but, as long as you are in Option 7, it does not matter what the number currently is.

Option 7: With the “UP” arrow, only, enter your One-Shot™ light increase duration. (Example: I want my One-Shot to run for 20 minutes).

Press the “Enter” button once. Your tier number will display. **Press the “Enter” button a second time** and your dimmer will reboot with the new ONE-SHOT™ option.

Activating the ONE-SHOT™ Mode

The ONE-SHOT™ is ideal for times when increased light levels for short periods, are needed (maintenance or discarding carcasses, for example). With the ONE-SHOT™ there is no need to go back to the dimmer to return the lights to DIM Mode, as the timer will count down to zero, and the lights will automatically go back to the proper setting. **In Option 6, you entered the increase in light level. In option 7 you entered how long that increase lasts, in minutes.**

Simply press and hold “A” or “B”, or “A” and “B” for 4 seconds. Release. A number will appear in the display window (the duration minutes entered in Option 7). The light level changes to the # you entered in Option 6. The dimmer display window will show a circling of the readout as the ONE-SHOT™ timer counts down to zero. **To end the ONE-SHOT™ early, press the “Enter” button to return to the previous operating mode.**

L3 and L4 KICKER

Understanding the L4 and L3 Kicker

“My lights won’t come back on in the morning.”

When dimmed very low and then turned off, most brands of LEDs are unable to restart at that low level. Those LEDs have a higher voltage requirement to restart than they do to stay on at a dim level. If you are dimming on the L4 or L3 tiers, the MR4 Dimmer can help overcome this flaw in LED engineering. If you are experiencing a restart problem, you will need to test your LEDs for a proper restart setting. How high on the dimmer display do you need to go to for ALL of the LED lamps to restart? Jot down that light level number. That light level # is your **Option 8 (if you are using L4) or Option 10 (if you are using L3)**. Some brands of LEDs with this flaw require a longer voltage ‘kick’ to restart, than others. Some will restart with as little as .3 seconds. Others take 2.5 seconds, or longer. Most fall into the 1 to 2 second range. You will need to test this voltage kick duration by entering a test number in **Option 9 (for L4) or Option 11 (for L3)**. Enter tenths of a second as a whole number (example: .8 seconds = 8, 1.2 seconds = 12, etc.). Using 25 (2.5 seconds) is a good option.

After the “Kicker” duration is over, the lamps will drop back down to the original setting.

Enter L4 and L3 Kicker

- **Press and hold both the “UP” and “DOWN” arrows together for 4 seconds.**

This puts the dimmer in a programming mode, including the TIER selection mode. At this time, you may use the “UP” or “DOWN” arrow to select the TIER you want [L1, L2, L3, L4]. However, the TIER selection mode does not affect any of the further Options.

Press and Release “A”. [NOTE: You must PRESS and RELEASE the “A” button]

You are now in the Options Menu.

You will see “OP” in the display window, for a second, followed by a random number.

Press and Hold “A.” [NOTE: Now, you PRESS and HOLD the “A” button.]

“01” appears in the display.

If you are using L4:

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 8. This is Option 8.
Release both buttons. The dimmer display will read, most likely, “00.”

Option 8: With the “UP” button, only, enter the light level # required to restart your LED. (Example: When my LEDs are off and then turned back on, the LEDs have to go to 28 to restart). It is always a good idea to give an additional 5 to 10 cushion to allow for any electric provider voltage drop. So, in this example, you would enter 33 to 38.

Press and Hold “A.”

“08” appears in the display.

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 9. This is Option 9.
Release both buttons. The dimmer display will read, most likely, “00.”

Option 9: With the “UP” button, only, enter the length of time (in tenths of a second) your LEDs require the “KICKER” to last. (Example: It takes 1.5 seconds (enter 15) to restart my LEDs).

If you are using L3:

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 10. This is Option 10.
Release both buttons. The dimmer display will read, most likely, “00.”

Option 10: With the “UP” button, only, enter the light level # required to restart your LED. (Example: When my LEDs are off and then turned back on, the LEDs have to go to 28 to restart). It is always a good idea to give an additional 5 to 10 cushion to allow for any electric provider voltage drop. So, in this example, you would enter 33 to 38.

Press and Hold “A.”

“10” appears in the display.

While HOLDING DOWN “A”, Press the “Up” arrow until the number reads 11. This is Option 11.
Release both buttons. The dimmer display will read, most likely, “00.”

Option 11: With the “UP” button, only, enter the length of time (in tenths of a second) your LEDs require the “KICKER” to last. (Example: It takes 1.5 seconds (enter 15) to restart my LEDs).

Press “Enter” once to exit the Options editing mode and return to the Tier mode, then press “Enter” a second time to exit the Tier mode and reboot the dimmer with the new ‘kicker’ option and to return to normal dimmer operations.

Understanding the New Technology

Automatic Current Limiting

Detects Short Circuits

Your Precision Lighting Systems, Inc. Performer™ MR4 2400 LED dimmer is now designed to help overcome two of the biggest LED lighting electrical issues facing today's modern poultry barn.

Most LED brands are engineered to operate alongside a handful of LED lamps in your personal home. They are not engineered to operate alongside 50 or 100 other LED lamps, to dim 95%, or more, or to dim for 18+ hours a day. Quite simply, they are not designed for poultry, despite how they are presented by many lamp sellers. Due to this, clusters of LED lamps that operate at 5 or 6 amps, will initiate at 800 or more amps. Some brands register over 1300 initial amps with only 52 lamps operating. These massive inrush currents can overcome and damage electrical components.

The second big electrical issue is short circuits. While large starting amps can damage like a short circuit, there are additional precautions to take to help reduce actual short circuits. Most load side short circuits will occur due to damaged or worn lamp sockets or the failure of the LED electronics.

Precautions:

- 1 Never install or uninstall a lamp into a socket while the power to that socket is live.**
- 2 Inspect sockets between flocks. Sockets that have loose screw shells, lose or damaged contact tabs, or broken housing are all short circuits waiting to happen.**

Your new MR4 has been engineered to help alleviate problems of inrush current and short circuits. .

“My dimmer has “SH” in the display window and one side of the lights are off.”

Your new MR4 is engineered to take large inrush of amperage and spread it out while slowing it down. This is the Automatic Current Limiting ability of the dimmer. By spreading out the amps and slowing them down, the dimmer protects itself from being overpowered by the massive inrush issue. Occasionally, the inrush amps may be so great that even the Automatic Current Limiting may not be able to slow it down enough. In these cases, the dimmer will react to protect itself. It will shut down the side of the dimmer being affected and give an “SH” code in the display.

Your new MR4 will also detect short circuits from the load side. If a socket is broken or a lamp blows, instead of being damaged by the short circuit, the dimmer will protect itself by turning that side of the dimmer off and will display “SH” in the window.

When you see “SH,” power down the dimmer (cut the power, do not just turn the lights off). Wait 10 seconds and power back up. The dimmer will reboot and normal operation should be restored. If, however, the “SH” shows back up upon reboot, it means you have an active direct short occurring on that side of the barn. This direct short should be corrected immediately. The dimmer will not allow you to operate it under a short circuit condition, as doing so would permanently damage the dimmer.

If your new MR4 displays “SH” occasionally, but reboots and operates normally, it means you have at least one lamp that has failing electronics. Keep your eye out for that expected lamp failure.

