Powerline Control Systems

# Multi-Module

## MM2L/S, MM2A/S, MM2F/S

## SceneMaster Version 2.1

**INSTALLATION AND OPERATING INSTRUCTIONS**

**For Models:**

**MM2L/S-800** **MM2F/S-6**

**MM2A/S-15**

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**Congratulations! You have just purchased the best quality powerline carrier remote control plug-in module available. Powerline Control Systems' Multi-Module is a high quality, X-10 compatible product that is a low cost alternative to hard-wired lighting systems. The Multi-Module can be plugged into existing homes to control everyday lamps.**

**This booklet covers all PCS models MM2L/S, MM2A/S, and MM2F/S. Please call with any questions, comments, or suggestions you have on our products.**

# CAUTION!!

**READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE INSTALLING DEVICE.**

This device is intended for installation in accordance with the National Electric Code and local regulations. **Retain these instructions for future reference.**

To reduce the risk of overheating and possible damage to other equipment, do not install the dimming version to control a receptacle, a motor-operated appliance, a fluorescent lighting fixture, or a transformer-supplied appliance. This product is for indoor use only. Connect only copper or copper clad wire to this device.

Pour re'duire le risque d'augmenter la chaleur des diffe'rents equipments, ne pas installer une piece de control, une machine `a moteur, une fixture fluorescente or un transformateur.

# INSTALLATION

## Installation Procedures

1. Remove center plate screw from duplex receptacle.
2. Remove cover plate from duplex receptacle
3. Tighten top and bottom screws of receptacle to make sure receptacle is firmly mounted.
4. Plug in MM2 and fasten with new longer center plate screw (included).

## Load Information

The total load of the two lower lamp control outlets must not exceed 800 watts. For example, if one outlet controls one 300-Watt lamp, the other outlet may control a total of 500 Watts of lamps.
The top two outlets are just an extension of the receptacle and can be used for any non-controlled loads such as TV, stereo, home theater equipment or temporary loads like vacuums. The top two outlets can supply the full 15 amp rated power of the receptacle.

## Fuse Replacement

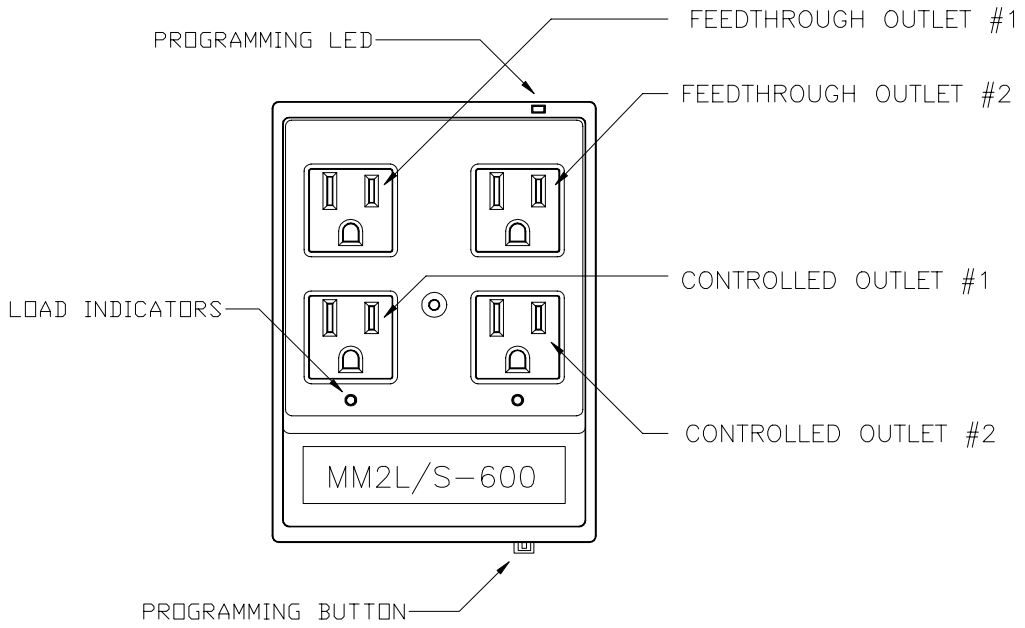
On the circuit board of the MM2 there is a fuse to protect the triacs from accidental overloading. This is a fuse selected to specifically protect the junctions of our triacs. The fuse must be replaced with a 8 amp fast blow fuse such as a Littlefuse 312-008 or Bussman AGC-8. This fuse only protects the bottom two controlled outlets.

## Heat Transfer Considerations

All triac based dimming controls must dissipate 1 watt of internal power for every 100 watts of controlled load. At full load the internal and external temperatures are determined by limits imposed by Underwriters Laboratory (UL).

The most important mounting consideration is that of the area surrounding the MM2 be clear for free air flow. Guard against covering the module with any furniture that would significantly block airflow. In reality, it would be very unlikely that any normal furniture could block airflow enough to affect the module

You should also guard against the possibility that the module is installed directly over a floor heater vent or other heat-producing source. Residential heating can produce local ambient temperatures at vent outlets exceeding 150 °F.




## LED INDICATION

| Powerline condition | LED Pattern |
|---|---|
| Normal Operation | Red Continuous<br>(Green for 2 sec after power reset) |
| Receive valid X-10 Signal with primary or scene address | Blink GREEN for ½ second |
| Receive valid X-10 Signal with any other address | Blink OFF for ½ second |
| Receive corrupted X-10 Command or noise | Blink ORANGE for ½ second |

# MULTI-MODULE PROGRAMMING

## X-10 Addressing

The X-10 protocol allows units to have a unique address made up of any combination of a House Code (a letter from A to P) and a Device Code (a number from 1 to 16). Usually X-10 controlled devices within one area (i.e. a room) are given the same House Code, but different Device Codes.

## Modes of Programming

In addition to **Normal Operation**, there are five programming modes used to set the **Primary Address**, the **Scene Addresses**, the **Scene Enables,** the **Scene Ramp Rates** and the **Advanced Programming Options.**

**Normal Operation** - this is the normal operating state.

**Mode 1** - mode used to set primary address of the channel(s).

**Mode 2** - mode used to set scene addresses to the scene numbers.

**Mode 3** - mode used enable or disable individual channels to scenes.

**Mode 4** - mode used to set ramp rates to the scene numbers.

**Mode 5** - mode used to set the Advanced Programming Options.

**Scene Number** - A number from 1 to 16 representing each scene and holds settings for scene address, channel enable, ramp rate and lighting level.

**Channel Number** - A number representing the lighting channel of product. The LM4 have 4 channels (Channel Numbers 1 to 4). The MM2 have 2 channels (Channel Numbers 1 to 2). The SS1 has only one channel (Channel Number 1).

**NOTES:**

- Elementary programming can be performed using this instruction manual. To fully understand the scene features of the PCS system, please **read the SceneMaster Programming Manual (SPM-2)** which covers the complete programming of this device. This is available on the Documents page of the PCS web site (www.pcslighting.com).
- The SceneMaster system will provide visual feedback while in programming mode. **Lights will flash and the LED pattern will change** during the course of programming to give the installer feedback that his actions are being entered.
- The **Maxicontroller is the simplest controller** that can program the PCS SceneMaster system. This hand-held controller was chosen because it was cost-effective, it contained the full set of X-10 addresses and the addresses can be transmitted without an automatic following command. For details of this controller, please contact PCS.
- This PCS product comes from the factory with the Master Scene system disabled. It will function normally responding to ON, OFF, Bright, Dim, Preset Dim and MicroStep commands.

**To Enter any Mode:**

1) **Press and hold down the PROGRAM button and release it when the LED starts blinking green.** You are now in Mode 1 (Setting New Primary Address).
2) **Tap the PROGRAM button once. The LED is blinking red.** You are in Mode 2 (Setting New Scene Addresses).
3) **Tap the PROGRAM button once. The LED is blinking orange.** You are in Mode 3 (Setting Channel Enables).
4) **Tap the PROGRAM button once. The LED is alternating green and red**. You are in Mode 4 (Setting Ramp Rates).
5) **Tap the PROGRAM button once. The LED is alternating green and orange.** You are in Mode 5 (Setting Advanced Programming Options).

**LED Color Indicator**

| Program Mode | Mode Name | LED Pattern |
|---|---|---|
| | Normal Operation | Solid Red |
| Mode 1 | Setting New Primary Address | Blinking Green |
| Mode 2 | Setting New Scene Addresses | Blinking Red |
| Mode 3 | Setting Channel Enables | Blinking Orange |
| Mode 4 | Setting Ramp Rates | Alternating Green and Red |
| Mode 5 | Advanced Programming Options | Alternating Green and Orange |

**Mode 1 Programming - Setting the Primary Address**

1) **Enter Mode 1.** See To Enter any Mode section.

2) **Transmit X-10 address.** This address will be the new Primary Address for channel 1. The next sequential address will automatically be assigned to channel 2. For example, if "F13" is selected the Primary Address for channel 1. Channel 2 will automatically be assigned "F14".

3) **Press All-Lights-On key.** The product stores new Primary Address into memory.

4) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

## Mode 2 Programming - Setting Scene Addresses

1) **Enter Mode 2.** See To Enter any Mode section.

2) **Press Scene Number.** A number between 1 and 16 representing scene of product.

3) **Press All-Lights-On key.** Product confirms Scene Number is entered.

4) **Transmit X-10 address.** Address will be the address of the scene number selected.

5) **Press All-Lights-On key.** The product stores new Scene Address into memory.

6) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

## Mode 3 Programming - Setting Channel Enables

1) **Enter Mode 3.** See To Enter any Mode section.

2) **Press Scene Number.** A number between 1 and 16 representing scene of product.

3) **Press All-Lights-On key.** Product confirms Scene Number is entered.

4) **Press all applicable Channel Numbers.** SS1s have only channel number 1, so press the "1" key.

5) **Press the ON key or OFF key.** Pressing ON or OFF key will determine if the channel will respond or not respond to the Scene Address.

6) **Press All-Lights-On key.** The product stores new Channel Enables into memory.

7) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

## Mode 4 Programming - Setting Ramp Rates

1) **Enter Mode 4.** See To Enter any Mode section.

2) **Press Scene Number.** A number between 1 and 16 representing scene of product.

3) **Press All-Lights-On key.** Product confirms Scene Number is entered.

4) **Press Ramp Rate number.** A number between 1 and 16 representing the ramp rate duration. The "1" key is an instant-on, "2" is 3 seconds, "3" is 6 seconds, "7" is 20 seconds, "12" is 7 minutes, "15" is 13 minutes, "16" is the security flashing mode.

5) **Press All-Lights-On key.** The product stores new Ramp Rate into memory.

6) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

## Mode 5 Programming - Setting Advanced Programming Options

The Advanced Programming Options are given the following table. The sequence of programming is different for these options, so we will separate them as follows.

### Advanced Programming Options 1 through 7

1) **Enter Mode 5.** See To Enter any Mode section.

2) **Press Advanced Programming Option number.** A number between 1 and 7 as defined in the following table.

3) **Press All-Lights-On key.** Product confirms Option Number is entered.

4) **Press all applicable Channel Numbers.** SS1s have only channel number 1, so press the "1" key.

5) **Press the ON key or OFF key.** Pressing ON or OFF key will determine if the channel will respond or not respond to the Scene Address.

6) **Press All-Lights-On key.** The product stores new setting into memory.

7) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

### Advanced Programming Options 8 and 10

1) **Enter Mode 5.** See To Enter any Mode section.

2) **Press Advanced Programming Option number.** Number 8 or 10 as defined in the following table.

3) **Press All-Lights-On key.** Product confirms Option Number is entered.

4) **Press the ON key or OFF key.** Pressing ON or OFF key will determine if the channel will respond or not respond to this option.

5) **Press All-Lights-On key.** The product stores new setting into memory.

6) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

**Advanced Programming Option 9**

1) **Enter Mode 5.** See To Enter any Mode section.

2) **Press Advanced Programming Option 9.** Number 9 is defined in the following table.

3) **Press All-Lights-On key.** Product confirms Option Number is entered.

4) **Press the Receive Level.** A number between 1 and 16 representing the voltage receive level of the product. The default is "4" (50mV). The "1" key is 5mV, "7" is 125mV, "11" is 225mV, "14" is 300mV, and "16" is 350mV.

5) **Press All-Lights-On key.** The product stores new setting into memory.

6) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

| Numbered Key on Transmitter/Controller | Advanced Programming Option | Default Setting |
|---|---|---|
| 1 | Soft Start | Enabled |
| 2 | All Lights On | Enabled |
| 3 | All Lights Off | Enabled |
| 4 | All Units Off | Enabled |
| 5 | Universal All Lights On | Disabled |
| 6 | Universal All Lights Off | Disabled |
| 7 | Universal All Units Off | Disabled |
| 8 | Master Scene Enable | Disabled |
| 9 | Receive Level | 4 |
| 10 | Remote Access | Disabled |

**ADVANCED PROGRAMMING OPTIONS**

## RESET TO DEFAULT SETTINGS

The following steps will return this product to its default settings as given on the next page.

1) **Enter Mode 1.** See To Enter any Mode section.

2) **Press All-Units-Off key 3 times.** This will reset to factory defaults.

3) **Press All-Lights-On key 3 times.** The product is transferred out of programming mode and into normal operation.

# Default Settings

The default settings for the four channel modules (i.e. LM4s, LM1s) are shown in the tables below. For MM2s channels 3 and 4 do not apply.

## Primary Address Defaults

| | Channel 1 | Channel 2 | Channel 3 | Channel 4 |
|---|---|---|---|---|
| **Primary Address** | A1 | A2 | A3 | A4 |

## Scene System Defaults

| SCENE NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCENE ADDRESSES | | | B1 | B2 | B3 | B4 | P5 | P6 | P7 | P8 | H1 | H2 | H3 | H4 | H5 | H6 | H7 | H8 |
| RAMP RATES | | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 16 |
| CHANNEL 1 ENABLE | | | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On |
| CHANNEL 2 ENABLE | | | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On |
| CHANNEL 3 ENABLE | | | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On |
| CHANNEL 4 ENABLE | | | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On | On |
| **XCHAN NO.** | **CIRCUIT NAME** | **PRIME ADDR** | **LIGHTING LEVELS** | | | | | | | | | | | | | | | |
| **Ch 1** | Channel 1 | A1 | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 100% |
| **Ch 2** | Channel 2 | A2 | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 100% |
| **Ch 3** | Channel 3 | A3 | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 100% |
| **Ch 4** | Channel 4 | A4 | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 20% | 100% | 70% | 40% | 100% |

## Advanced Programming Defaults

| CHANNEL ADVANCED PROGRAMMING | | | 1 Soft Start | 2 All Lts ON | 3 All Lts OFF | 4 All Uts OFF | 5 Univ Lts ON | 6 Univ Lts OFF | 7 Univ Uts OFF | 8 MstrScn Enable | 9 Receive Level | 10 Rmt Acs Enable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CHAN NO.** | **CIRCUIT NAME** | **PRIME ADDR** | **OPTION SETTINGS** | | | | | | | | | |
| **Ch 1** | Channel 1 | A1 | On NOTE 1 | On NOTE 2 | On NOTE 2 | On | Off | Off | Off | Off | 4 | Off |
| **Ch 2** | Channel 2 | A2 | On NOTE 1 | On NOTE 2 | On NOTE 2 | On | Off | Off | Off | | | |
| **Ch 3** | Channel 3 | A3 | On NOTE 1 | On NOTE 2 | On NOTE 2 | On | Off | Off | Off | | | |
| **Ch 4** | Channel 4 | A4 | On NOTE 1 | On NOTE 2 | On NOTE 2 | On | Off | Off | Off | | | |

NOTE 1: Advanced Programming Option 1 does not apply to appliance (relay) modules.
NOTE 2: This setting is off for the MM2A/S and MM2F/S modules.

# TROUBLESHOOTING TIPS

| Symptom | Potential Causes/Remedies |
|---|---|
| **MM2 does not respond to the scene addresses** | • The Master Scene enable is off. Check Mode 5, option 8 to enable this feature.<br>• X-10 signal may be too weak. |
| **LED indicator blinks different colors sometimes** | • The LED indicates what the module sees on the powerline indicating X-10 signals or noise. See page 5. If the LED blinks continuously and steadily in any color it is in one of the five programming modes. Pull MM2 out of the outlet and replace to reset to normal operating mode. |
| **LED indicator and light circuit is not working** | • Circuit breaker has been turned off.<br>• MM2 is not well seated in the outlet.<br>• An overload has occurred and the fuse must be changed. |
| **LED indicator is on, but light can not be controlled from my transmitter** | • Lamps (bulbs) in the lighting circuit are defective.<br>• There is insufficient load (minimum 60W of load is required).<br>• X-10 signal may be too weak. MM2 receive level can be changed to accept low signal. Check controller and confirm correct transmission level.<br>• X-10 signal source may be on the different phase of the transformer. |
| **Lights on all the time, instant on (no soft start)** | • Triac has been shorted. Return MM2 to PCS. Please read the section on Returned for Repair, Exchange, Refund. |
| **Multi-Module remains on after it heats up but works initially** | • The lighting load is greater than the rating of the Multi-Module. Ensure that the load does not exceed Multi-Module's power ratings of 800W. |
| **My controller doesn't have MicroStep or Preset Dim features** | • The controller transmitter must have the capability to support these features. Popular controllers such as JDS, ECS and LYNX currently support these features. Contact your controller manufacturer and request that they support these commands. PCS will supply all controller companies with necessary information. |
| **The lights turns on or off by itself** | • The light may be responding to signals from adjacent homes. The sensitivity setting should be raised (see SceneMaster Programming Manual) or a blocking device should be installed to filter out the signal. |

# TROUBLESHOOTING TIPS

| Symptom | Potential Causes/Remedies |
|---|---|
| **MM2 pulls too easily out of the wall** | • Install the long screw that comes with the MM2. This will make MM2 secure to the wall. |
| **While in programming, device does not fully accept programming changes** | • Check your controller, so that the keys do not inadvertently send multiple signals when a button is pressed. In this event, press keys quickly to minimize sticking.<br>• If there is another controller in your house that initiates macros, it is possible that macros are being sent during the programming of the PCS product. The other controller must be disabled. |
| **Constant orange colored LED even when not transmitting.** | • The orange LED indicates X-10 signal collision or corrupted signals. It's possible that two sources are sending signals at the same time or it is a high noise environment. |
| | • |

# SPECIFICATIONS

| Model Number | MM2L/S-800 | MM2A/S-15 | MM2F/L-6 |
|---|---|---|---|
| **Feed Thru Outlets** | 2 | 2 | 2 |
| **Controlled Outlets (Operation)** | 2 (Dimming - Triac) | 2 (Non-dimming - Relay) | 2 (Non-dimming - Triac) |
| **Max Feed Thru Load** | 15 A | 15 A | 15 A |
| **Max Total / Controlled Load** | 800W / 800VA | 15 A | 8A |
| **Standard Load Types** | Incandescent | Appliance | Fluorescent |
| **Input Power** | 125 VAC | 125 VAC | 125 VAC |
| **Min Load** | 60 W | Not Applicable | 60 W |
| **Min Receive Level** | 5 mV | 5 mV | 5 mV |
| **Max Noise Rejection** | 350 mV | 350 mV | 350 mV |
| **Connections** | Std Duplex Receptacle | Std Duplex Receptacle | Std Duplex Receptacle |
| **Dimensions** | 5.31" X 3.88" X 1.31" | 5.31" X 3.88" X 1.31" | 5.31" X 3.88" X 1.31" |
| **Weight** | 1.25 lbs. | 1.25 lbs. | 1.25 lbs. |
| **Operating Temp** | -40 °F to °104 F | -40 °F to °104 F | -40 °F to °104 F |

## LIMITED WARRANTY

Seller warrants this product, if used in accordance with all applicable instruction, to be free from original defects in materials and workmanship for a period of five years from the date on serial number, or purchase date if no S/N date is given. If the product should prove defective in material or workmanship within that period, Seller will repair or replace the product, at its sole discretion. Service under this warranty can only be obtained by delivering or shipping the product (with all shipping or delivery charges prepaid) to: Powerline Control Systems, 19215 Parthenia St., Suite H, Northridge, CA 91324. Seller will pay return shipping charges.

This warranty does not apply to normal wear or to damage resulting from accident, misuse, abuse or neglect. Seller makes no express warranties other than those expressly set forth herein. Except to the extent prohibited by applicable law, all implied warranties, including all warranties of merchantability or fitness, are limited in duration to the warranty period set forth above; and this warranty expressly excludes all incidental and consequential damages. (Some states do not allow limitations on how long an implied warranty lasts, and some states do no allow the exclusion or limitations of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from jurisdiction to jurisdiction.)

## Returns for Repair/Exchange/Refund

You must call for a Return Material Authorization number (RMA #). This number should be written on the package exterior and on any enclosed paperwork. Please include a note explaining the problem so that we may more quickly improve the product design if the problem is caused by something inherent in the design.