

# Technical Note

**Subject: Residential Wiring for PCS SceneMaster Lighting System**

**Date: 9/2/97**

This tech-note explains a method of pre-wiring that will insure a simple, speedy, reliable installation of a lighting control system in the finishing stages of residential construction. The method described below will not only produce excellent results with the PCS SceneMaster system but is also designed to provide for the installation of various other systems. To summarize the benefits this pre-wiring scheme:

1. Provides for simple wiring and installation of PCS SceneMaster systems based on the PCS LM4L/S-2000 and LM4A/S-20 Lighting Controllers, PCS SSR slave switches and Leviton/ACT/X-10 Pro wall transmitters.
2. Provides the necessary wiring layout for alternative systems including standard powerline carrier equipment, such as that manufactured by X-10, Leviton and ACT. This wiring scheme also will work with various hard-wired systems such as various Lutron products including the Grafix Eye series and scene systems from Leviton and Lightolier.
3. Allows for “control point” wiring of either a remote slave switch, PLC transmitter or standard wall switch.
4. Produces the best possible coupling between lighting controllers and scene transmitters by having them on the same feed line and on the same leg of the transformer.
5. Reduces noise and signal “sinks” by having dedicated 20A feeds for lighting circuits.
6. If it is ever necessary to remove all electronic control equipment, the lighting circuits can be quickly reconfigured by any electrician so that they are controlled by conventional wall switches without adding any additional wiring. It is only necessary to remove the “controllers” and “transmitters” and re-wire the load circuits in series with standard wall switches installed in place of the transmitters and slave switches.

A typical wiring diagram for one room might be as shown in Figure 1.

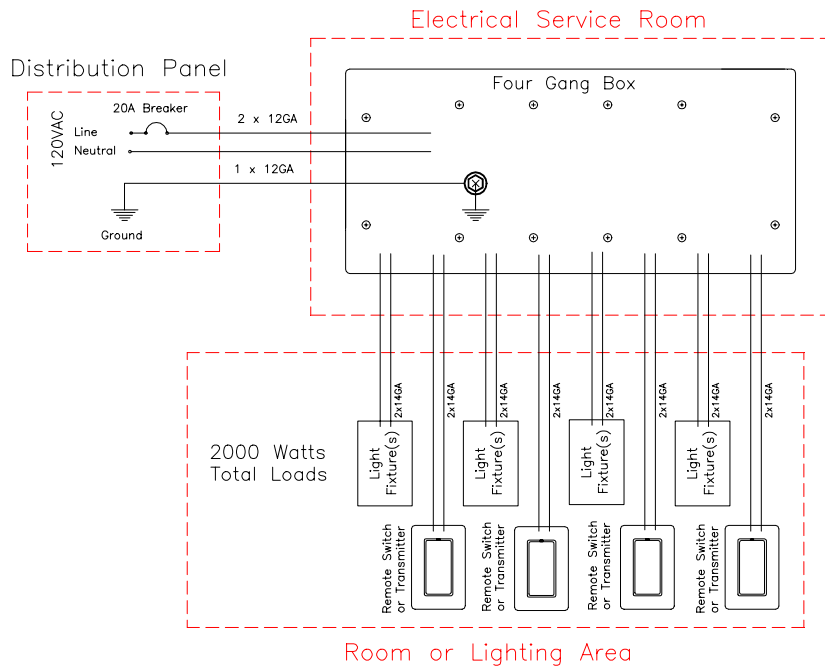


Figure 1

This wiring scheme is very different than the conventional method, which typically taps as many fixture/switch sets as possible off of each 20A supply circuit. This is the least expensive method of getting the required control point/fixture sets throughout the house but allows for no other method of control. The method proposed in this tech note cost somewhat more in both time and material but is so versatile that anything from complex scene systems to simple switch/fixture arrangements can be easily implemented.

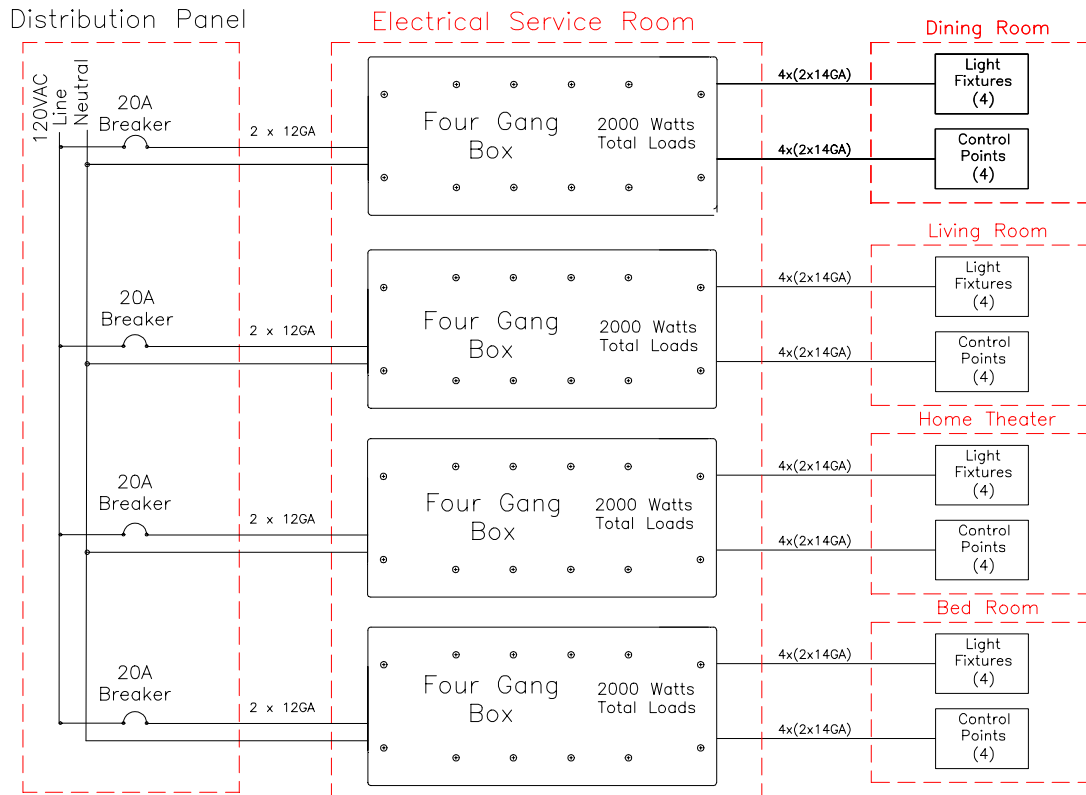


Figure 2

The three important things to remember when wiring for controlled lighting are:

1. Wire fixture (load) circuits and control (transmitter/switch) circuits separately back to a common location.
2. Use a deep four gang box or boxes as the junction point for loads, controls and power. This is for the following reasons:
  - a. four gang box is relatively inexpensive
  - b. allows for a very clean wiring arrangement
  - c. allows for the greatest variety of both single gang and four gang control devices including those manufactured by PCS, Lutron, Lightolier, Leviton, X-10, and ACT
  - d. provides ample wiring room for large number of wire nut connections often required
  - e. circuits can be easily rewired to function with no electronic control should it ever be necessary to remove all controls
3. Provide common area or areas for installation of multiple four gang boxes. This area should be relatively cool (not in an attic) and have adequate ventilation to dissipate 1 watt of controller heat for 100 watts of lighting to be controlled. This also allows for simple coupling of different circuits, isolation of noise sources, easy programming and easy repair and replacement, and simple reconfiguration.