



App Note 123

What your electrician needs to know about UPB installation

Installation of UPB switches and keypads can be a simple process if the following is communicated to your electrician or installer:

- At each installation point a neutral wire (white) must be present in addition to line and ground. Given the larger size of UPB switches an extra deep box may make installation simpler.
- Depending upon the load to be controlled there are three possible switch models to use:
 - WS1DL is designed to operate dimmable LED and CFL "twisted" bulbs, incandescent, halogen, fluorescent, inductive and magnetic LV loads. The minimum low dimming level can be set using the UPStart program to compensate for most low level dimming issues in LED and CFL bulbs and fixtures.
 - WS1E is designed to control of electronic low voltage AC lighting ballasts or transformers. The WS1E is a reverse-phase dimmer and should only be used with fixtures that require reverse-phase dimming. Please note that all LED fixture drivers that are called "electronic" or "low voltage" do not necessarily require reverse-phase dimming.
 - WS1R is a relay based device designed to control not only lighting but also motors pumps, or ceiling fans that may hum when using a dimming switch. This switch uses a relay to control the output power and can control any load. The 120V power is switched directly to the load, ON and OFF only with no dimming.
- Existing switches that control loads can be replaced by UPB switches or a keypad load dimmer or keypad load relay in order to maintain direct control of the load and also offer scene control via the other keypad buttons.
- To create multi-way control there are two choices: A Remote Wall Switch (RWS) is available to create a 3-way using only traditional wiring methods. The RWS can be a slave to any PCS Master Switch (WS1DL, WS1E, or WS1R). The RWS is connected to the master switch with a line-voltage traveler wire. More complex n-way control can be created using UPB switches programmed for scene activation. This has the advantage of not needing traveler wires.

If you are installing UPB devices in a single area, if possible place all transmitters and receivers on circuits that are on one phase of the power panel. This creates the most economical and reliable installation possible.

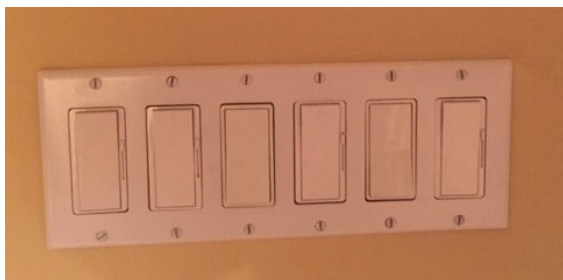
If you are installing receivers and transmitters on circuits that are on different phases of the power panel, then you should install a coupler (PPC-1) or a split-phase repeater (SPR-1). Which one to choose? Some general guidelines:

- Both the PPC-1 and SPR-1 install in a conventional single-gang switch box so there is no savings on installation costs of choosing one over the other. Both require connection to both phases (L1 and L2) of the house 240V panel.
- A PPC-1 coupler is a less expensive (about 1/3 the cost), of a SPR-1 repeater.
- A repeater ensures greater signal strength on both sides of the power panel than a coupler does in almost all circumstances. This creates a more reliable installation.
- If you install a SPR-1 you do not need to install any couplers in your system. If you do then the signal transmission and reception may be somewhat worse or may be somewhat better than if only a repeater was installed.

In addition to this basic information, in new or major retrofit construction there are two possible options when designing for multiple load controllers in a room. Each individual load can be controlled by a switch or keypad located in the room. Or the load controllers can be located remotely and in the room itself a keypad programmed for scene control is installed.

Here is an example. A media room that has overhead lighting divided into 2 areas, accent lighting, several wall sconces, and a ceiling fan. When the room is in use all the different lighting sources are used to create several scenes based upon the current use – “Movie time”, “TV time”, “Kids play time”, etc. Rather than have a row of six switches, the power for each load can be run to a wiring room and controlled by a switch installed into a lighting control panel. In the media room itself a keypad is installed to control those loads by scene activation.

The effect can be quite different:



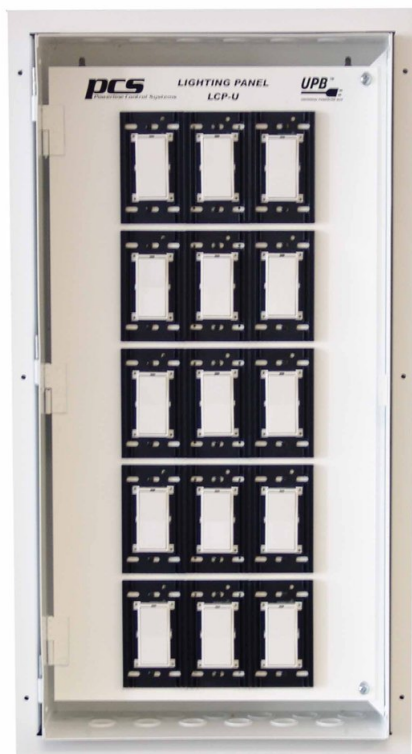
All loads controlled by switches in the room

vs



all loads controlled by a single keypad.

The switches to control the room loads are installed in a separate location. A keypad is installed in the room for scene control.



To implement the second option, PCS makes a lighting panel (LCP-U). The Lighting Control Panel provides room to house up to ten WS1DL-24, fifteen WS1DL-15, or twenty WS1DL-6 dimmers controlling a maximum of 20 individual circuits and delivering 24,000W or 18,000VA of power. A total of thirty-three ($\frac{1}{2} \times \frac{3}{4}$ combo type) knockouts are provided on the top, bottom and back of the enclosure for simplified wiring.

The question you have to ask: Is it necessary to be able to control each load directly in ways that can't be integrated into a scene? If you do, then for those loads at least, the controller for each must be in the room. But for loads that can be integrated into scenes, the switch can be moved to another location and this may result in a cleaner installation and easier for the homeowner to control.

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