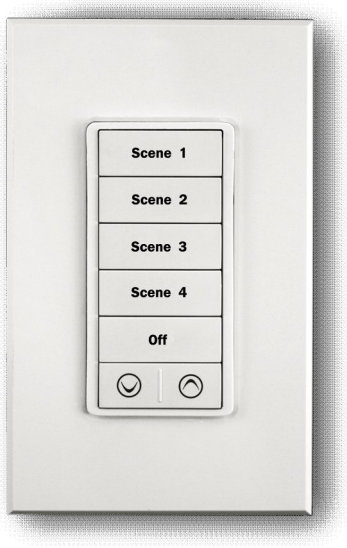
App Note 103

The KPC7 Indicators

The KPC7, KPLD7 and KPLR are much different than the previous PulseWorx keypads. Not only are they modern looking but they contain features you will want to take advantage of.

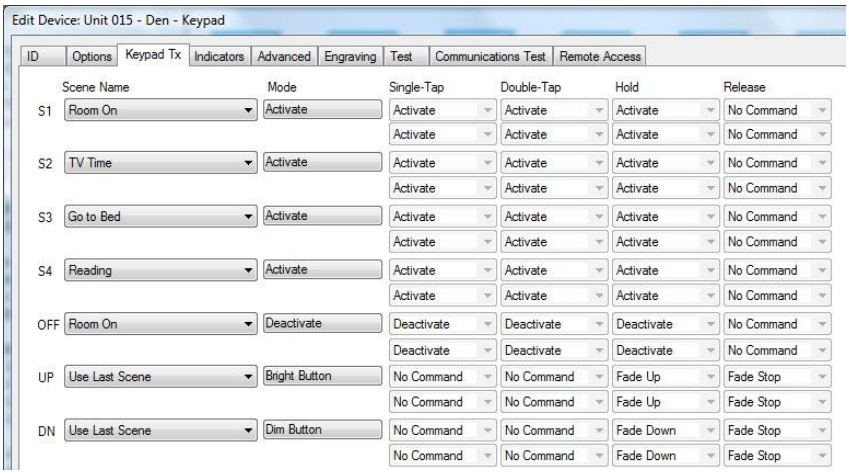


The most important aspect of the KPC7 is that the LEDs behind each button can be controlled to turn on or off *independently* of the buttons. Depending upon the configuration programmed into the KPC7, the indicator LED for a button may illuminate or extinguish when the button is pressed. This doesn't automatically happen but takes a little extra configuration. The key advantage of this feature is that a single button press can control the LED for that button **and** any of the other keypad button LEDs as well.

This allows you to use the keypad for a variety of different tasks. Before we give some real-world examples of how you can use the KPC7, let's first look at the UPStart configuration of this keypad and how it is configured. As you read the next sections it may seem confusing at first but try not to skip ahead until you understand the basic ideas - the examples that follow will make it much clearer.

Note: While the KPC7 buttons can be engraved with any text you like, for reference in this Tech Tip the top button is called the S1 button, followed by the S2, S3, S4 buttons and then the OFF button. The two half buttons are UP and DN. This is the same way that UPStart refers to the buttons.

As with all keypads, the actions of the buttons are configured on the "Keypad Tx" tab with a scene and mode.



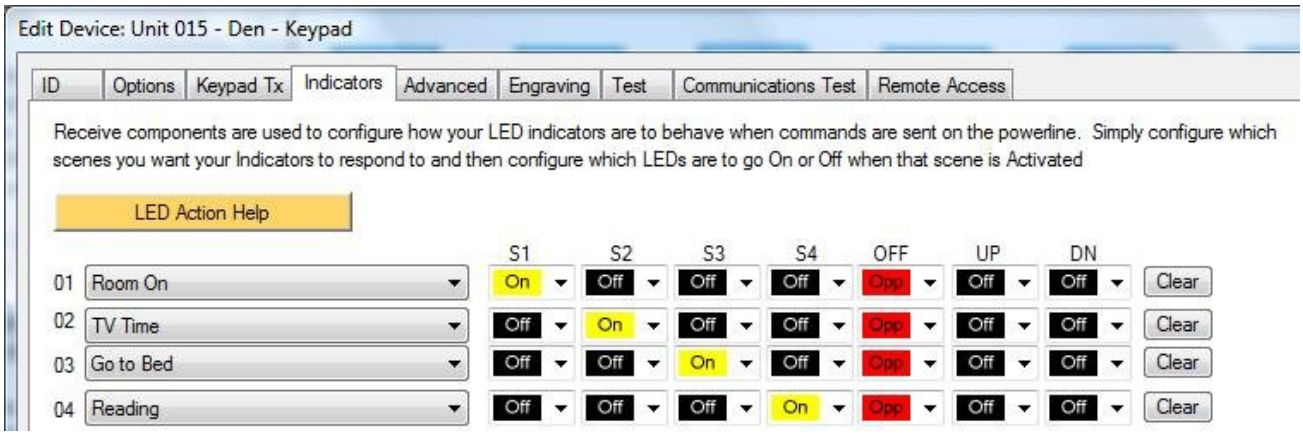
PCS Powerline Control Systems

The Inventors Of: UPB® Universal Powerline Bus

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

The indicators are configured on the "Indicators" tab.



The first point to notice is that there are 16 presets for scenes – the picture above shows only the first 4. Having 16 reinforces the concept that the indicator actions are independent of the button actions.

When a scene activates, deactivates, or go-to command is received by the keypad, it looks in the indicators table to find that scene. If it is found, then each of the 7 LED buttons are controlled based upon the settings chosen for that scene. If the scene isn't found then nothing happens.

Let's take an example and look at one row of an indicator table:

Suppose that the scene "Room On" is activated. In this case the S1 button LED illuminates or turns on, the S2, S3, S4, OFF, UP, and DN buttons extinguish or go off. "On" says for the button LED to illuminate/go on and "Off" causes the button LED to extinguish/go off as you might expect.

What happens if the "Room On" scene is deactivated? The S1 button LED goes off and the other buttons go off as well. But why did the S1 button go off since it was sent to ON? Because of this rule: *When an indicator is configured as ON and the scene is deactivated then the ON becomes an OFF.*

PCS Powerline Control Systems

The Inventors Of: UPB® Universal Powerline Bus

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

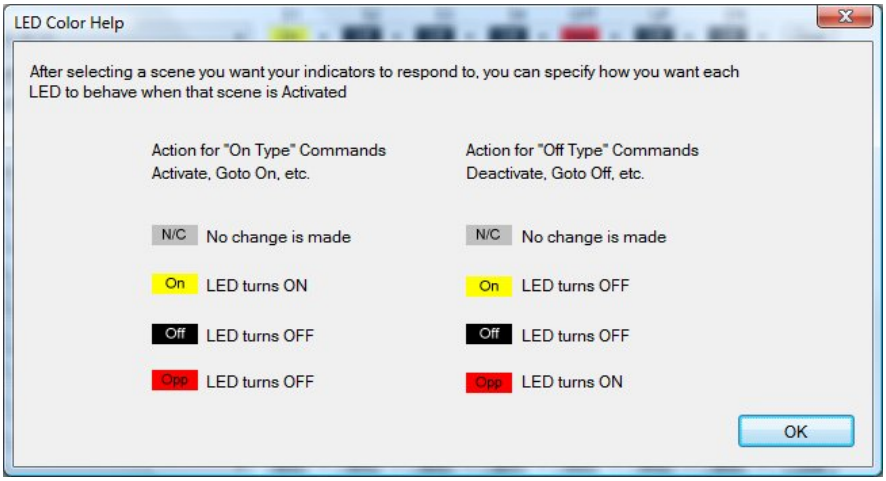
Let's change this example slightly to make the keypad behave a bit better. When the scene was deactivated then the S1 button went off, but the OFF button didn't go on and we wanted it to. What we would like is a way to say that an indicator should do the opposite of what the command does. The keypad has such an option called "Opp" for "opposite". Here is the modified indicators tab row:

With the "Opp" choice, the activate command causes the button LED to go OFF and the deactivate command causes the button LED to go ON.

To bring this all together here is what happens when the "Room On" scene is activated: The S1 button goes on, the OFF button goes off since it acts opposite of the command (the activate command in the "Opp" case means "go off"). The other buttons just go off.

When the scene is deactivated then the S1 button goes OFF as described above and the OFF button goes ON since it acts opposite of the command (the deactivate command in this case means "go on").

To help you remember the actions of the indicators, there is a helpful LED Color Help table in UPStart:



In this example, the button was configured with the same scene as in the indicator table. So when the button was pressed the keypad "heard" the transmission and updated the LEDs as configured.

The Inventors Of:

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

As described above there are 16 presets for the indicators. This means that the keypad can look for other scenes that are transmitted by other controllers and have the button LEDs respond without a keypad button being pressed. Here is an example of how that might be used. Suppose you have a controller in the home – this could be a keypad or the PulseWorx Gateway scheduler – and an "all off" scene is activated. This could be done by a scheduled action at 2am or when you leave home. You could add a row to the keypad indicator table for this scene and turn off all of the keypad LED buttons except the OFF LED which you could turn on.

To show what can be done with the KPC7 and the indicator options, let's take three examples.

1. A Room Controller- This keypad configuration is useful when you have a one or more devices to control in a room and want them to respond to a number of scenes. At any given time the room reflects one scene. Because of that only one LED is illuminated on the keypad at a given time.

2. A House Controller- This keypad configuration uses each button on the keypad to control a different scene and those scenes effect devices anyplace in a home. Because of this any number of buttons on the keypad can be on simultaneously.

3. A mixed use keypad - This keypad configuration used the top (S1) and bottom button (OFF) to control one set of devices either ON or OFF. The other buttons activate other scenes and they act in the same manner as the House Controller buttons while the S1 and OFF buttons act like the Room Controller Buttons.

PCS Powerline Control Systems

The Inventors Of: UPB® Universal Powerline Bus

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

Example 1- A Room controller:

In a room controller the room devices reflect one scene at a time.

	Scene Name	Mode	Single-Tap	Double-Tap	Hold	Release
S1	Room On	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
S2	TV Time	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
S3	Go to Bed	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
S4	Reading	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
OFF	Room On	Deactivate	Deactivate	Deactivate	Deactivate	No Command
			Deactivate	Deactivate	Deactivate	No Command
UP	Use Last Scene	Bright Button	No Command	No Command	Fade Up	Fade Stop
			No Command	No Command	Fade Up	Fade Stop
DN	Use Last Scene	Dim Button	No Command	No Command	Fade Down	Fade Stop
			No Command	No Command	Fade Down	Fade Stop

Note that none of the buttons toggle they all just activate scenes. Each button either activates a scene or, in the case of the OFF button, deactivates the scene. This is the configuration of the indicators:

		S1	S2	S3	S4	OFF	UP	DN	
01	Room On	On	Off	Off	Off	Opp	Off	Off	Clear
02	TV Time	Off	On	Off	Off	Opp	Off	Off	Clear
03	Go to Bed	Off	Off	On	Off	Opp	Off	Off	Clear
04	Reading	Off	Off	Off	On	Opp	Off	Off	Clear

Note that the scenes in the indicators table are the same scenes as transmitted by the buttons on the Keypad Tx tab. This table may look complex but it is simple if we go slowly. While not used in this example, the UP and DN buttons could also be programmed to illuminate when the scene is triggered.

For buttons S1, S2, S3, and S4: Each scene when activated controls one button LED. The LED for that button illuminates/goes on when the button is pressed – that scene is the active scene. The other LED buttons extinguish/go OFF.

For the OFF button it acts opposite to the scene command in all cases. If the scene is activated then the OFF button extinguishes. When the scene is deactivated – accomplished when the OFF button is pressed – the OFF button LED illuminates.

Powerline Control Systems

The Inventors Of: UPB® Universal Powerline Bus

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

In a room controller there is always one button LED illuminated. The LED button that is ON shows which scene is the active scene except in the case of the OFF button which shows no scene is active.

Example 2- A House controller:

In a house controller each button activates a scene that is independent of the other scenes.

	Scene Name	Mode	Single-Tap	Double-Tap	Hold	Release
S1	Bedroom On	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
S2	Deck Lights	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
S3	Go to Bed	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
S4	Prep Work	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
OFF	Everything Off	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
UP	Use Last Scene	Bright Button	No Command	No Command	Fade Up	Fade Stop
			No Command	No Command	Fade Up	Fade Stop
DN	Use Last Scene	Dim Button	No Command	No Command	Fade Down	Fade Stop
			No Command	No Command	Fade Down	Fade Stop

Note that in this case the S1 to S4 buttons toggle. Pressing the button activates the scene and when pressed again it deactivates the scene. You don't have to configure the buttons to toggle but it is convenient for uses like these. This is the configuration of the indicators:

		S1	S2	S3	S4	OFF	UP	DN	
01	Bedroom On	On	N/C	N/C	N/C	Off	Off	Off	Clear
02	Deck Lights	N/C	On	N/C	N/C	Off	Off	Off	Clear
03	Go to Bed	N/C	N/C	On	N/C	Off	Off	Off	Clear
04	Prep Work	N/C	N/C	N/C	On	Off	Off	Off	Clear
05	Everything Off	N/C	N/C	N/C	N/C	On	Off	Off	Clear
06	Unused	N/C	N/C	N/C	N/C	N/C	N/C	N/C	Clear

PCS Powerline Control Systems

The Inventors Of: UPB® UNIVERSAL POWERLINE BUS

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

Note that the scenes in the indicators table are the same scenes as transmitted by the buttons on the Keypad Tx tab.

For buttons S1, S2, S3, and S4: Each scene when activated controls one button LED. The LED for that button goes on when the button is pressed – that scene is the active scene. The S1-S4 buttons don't change. In a house controller activating a scene doesn't affect the other scenes.

To make this example a bit more interesting, the OFF button is different since we have configured it for an "Everything Off" scene. Let's assume that the scenes associated with the first 4 buttons turn devices on, then it wouldn't make sense for the "Everything Off" button to be illuminated when one of these scenes is activate so this LED turns off.

However, suppose we used the OFF button for just another scene. In that case each button scene would control just that button LED and none of the others. The indicators table would then look like this. Note that the change to the OFF column.

		S1	S2	S3	S4	OFF	UP	DN	
01	Bedroom On	On	N/C	N/C	N/C	N/C	Off	Off	Clear
02	Deck Lights	N/C	On	N/C	N/C	N/C	Off	Off	Clear
03	Go to Bed	N/C	N/C	On	N/C	N/C	Off	Off	Clear
04	Prep Work	N/C	N/C	N/C	On	N/C	Off	Off	Clear
05	Outside Night	N/C	N/C	N/C	N/C	On	Off	Off	Clear
06	Unused	N/C	N/C	N/C	N/C	N/C	N/C	N/C	Clear

PCS Powerline Control Systems

The Inventors Of: UPB® UNIVERSAL POWERLINE BUS

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com

App Note 103

Example 3- A mixed-use keypad:

In this example the top button turns on one or more devices, the bottom button turns them off, and the other three buttons control other scenes.

	Scene Name	Mode	Single-Tap	Double-Tap	Hold	Release
S1	Bedroom On	Activate	Activate	Activate	Activate	No Command
			Activate	Activate	Activate	No Command
S2	Deck Lights	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
S3	Go to Bed	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
S4	Prep Work	Toggle Button	Activate	Activate	Activate	No Command
			Deactivate	Deactivate	Deactivate	No Command
OFF	Bedroom On	Deactivate	Deactivate	Deactivate	Deactivate	No Command
			Deactivate	Deactivate	Deactivate	No Command
UP	Use Last Scene	Bright Button	No Command	No Command	Fade Up	Fade Stop
			No Command	No Command	Fade Up	Fade Stop
DN	Use Last Scene	Dim Button	No Command	No Command	Fade Down	Fade Stop
			No Command	No Command	Fade Down	Fade Stop

The indicator settings are:

		S1	S2	S3	S4	OFF	UP	DN	
01	Bedroom On	On	N/C	N/C	N/C	Opp	Off	Off	Clear
02	Deck Lights	N/C	On	N/C	N/C	N/C	Off	Off	Clear
03	Go to Bed	N/C	N/C	On	N/C	N/C	Off	Off	Clear
04	Prep Work	N/C	N/C	N/C	On	N/C	Off	Off	Clear
05	Unused	N/C	N/C	N/C	N/C	N/C	N/C	N/C	Clear

Note that the first row of the indicators is the same as used in the Room Controller example. The S1 and OFF buttons act oppositely (when one is on the other is off). And note that the other rows of the indicators are the same as in the house controller example. Each button LED operates independently of the others.

These three examples are only the start of what can be done with the KPC7and it could be configured for use in other ways. For example, have buttons paired so that the two buttons act like a mini room controller – the top of the pair to turn the room on and the bottom of the pair to turn it off. In this way you could have two room controllers in one keypad and use the OFF button to turn them both off. The possibilities are endless.

Powerline Control Systems

The Inventors Of: UPB® Universal Powerline Bus

19201 Parthenia St. Suite J
Northridge, CA 91324
P: 818.701.9831 F: 818.701.1506
pcssales@pcslighting.com
www.pcslighting.com