Supply (Line Input) and LED (Load Output) Wiring Instructions

**DC Power Source Connections**
1. If the AC-DC power supply does not have a pre-installed 2-pin power connector attached, strip 1/4" (6mm) of insulation from DC power cord.
2. Connect wires as shown in Figure 1.
3. Connect a ground to the DC- Pin

**LED Connection Block**
1. If the interconnect wire furnished with your LED strip does not have a pre-installed 4-pin power connector attached, strip 1/4" (6mm) of insulation from DC power cord.
2. Connect these wires as shown below: pin 1 is on the top as shown
   - Pin 1: Blw1
   - Pin 2: Rw2
   - Pin 3: Dw3
   - Pin 4: C
   - BLUE LED LEAD (+)
   - RED LED LEAD (-)
   - GREEN LED LEAD (-)
   - COMMON LEAD (+) COMMON ANODE

User Control Wiring and Setup Instruction

In order to control the ILC-100x, a User Interface needs to be connected.

The ILC-100x series of Controllers as well as intelligent controllers manufactured by Converging Systems implement a sophisticated bus architecture (i.e. the CS-Bus) that permits reliable communication using CAT5 wiring, without the need for repeaters, on wiring runs up to 4000 feet. There are two communication ports on each ILC-100x-- one socket is a **Powered connector** (Port 0) which provides DC power to connected Interface Devices while the other socket (Port 1) is an **Unpowered connector** which does not provide external power to other devices but is designed to relay communication data from one ILC device to another. It is important that proper wiring convention is used when connecting one or more devices. See the appropriate section below for more information here. For ILC-100x to ILC-100x connections, use 3-pair **straight wiring** (1-1, etc.)

**Wiring Pinouts**

![Figure 2](image)

**Important:** With CAT5 wiring maintain twisted pairs as shown above.

**Note:** If multiple ILC-100x controllers (lighting controllers) or if multiple ILC-100x controllers (motor controllers) are required for the installation or if one or more User Control Modules (i.e. keypads, serial adapters, IR receivers, Internet Adapters, etc.) are required for control purposes, communication wire needs to be utilized between the above components in order to enable proper operation. For more information, see the ILC Installation Manual or the ILC Installation Manual for more information here.

**Keypad (BSKP-210L)** -- “Intelligent 11-button Keypad for Lighting Control”

The BSKP-2110 is a CS-BUS compatible intelligent keypad that can be used to control the Hue, Saturation and Brightness of any shade of color. In addition, the keypad allows up to 6 presetts to be stored and recalled and enables a particular light setting to be turned OFF and ON with a simple push of a button. Finally, a highly sensitive IR receiver is built into the front of the device so that a supported IR handheld device can be supported as well.

**Keypad Wiring**

1. Create a straight-thru 6 connector cable with RJ-25 (6P6C) connectors on both ends. White flat phone wire can be used for shorter runs (<5ft) CAT5 wire is highly recommended and should be used for longer runs. For CAT5 installations, maintain twisted pairs for pins 1/2, pins 3/4 and pins 5/6.
2. Plug one end of the communication cable into the back of the BSKP-2110L and the other into Port 0 of the ILC-100.

**Note:** If you plug the communication cable into Port 1 on the ILC-100, no power will be provided to the BSKP-2110L and the keypad will not operate.

**Intelligent Bus Translator (IBT-100) -- “RS-232c to CS-Bus Adapter/Firewall”**

The Intelligent Bus Translator (IBT)™ is a robust standalone RS-232-C serial interface converter/firewall for CS-BUS devices. The IBT-100™ is designed to provide the highest degree of circuit protection, isolation and remote connectivity for interconnected equipment. The CS-BUS (based upon the hardware specifications of RS-485) forms the communication backbone for a number of Converging Systems’ controller devices including the BRIC and the IMC-100™ intelligent motor controllers.

**IBT Wiring**

2. Plug one end of the communication cable into the back of the IBT-100™ and the other into Port 0 of the ILC-100.

**Note:** If you plug the communication cable into Port 1 on the ILC-100, no power will be provided to the BSKP-2110L and it will not operate.
Infrared Keypad (ILC-IR-10W) -- "Handheld IR 10 Button Keypad for Lighting Control"

The ILC-IR-10W is an infrared remote device customized to control the ILC-100x family of lighting controllers. It requires an infrared receiver that exists in most BSKP keystops. In addition, it is compatible with the standalone IR-EYE (IMC-RIR).

Warning: Typical 3-wire IR receivers available from Xantech are not compatible. You will damage your unit if you connect these types of devices. Your warranty will be void if it is determined that you have used these types of devices.

Infrared Eye Wiring

1. If you are using a BSKP-type keypad with built-in IR receiver, see the instructions above under "BSKP-2110L" for proper wiring.
2. If you are using an MC-RIR standalone IR receiver, simply plug the provided connector into Port 0 of the ILC-100.

Note: If you plug the communication cable from either the BSKP or the IR into Port 1 on the ILC-100, no power will be provided to the receiving device, and it will not operate.

End-of-Bus Line Terminators

The CS-Bus is designed around end-of-bus resistor termination. This guarantees error-free communication despite external noise and other sources of interference. It is highly advised that when a single one ILC-100x Controller is interconnected, one terminator is placed on one end of the bus and another terminator is placed on the other end of the bus. It does not matter into which CS-Bus port these terminators are connected so long as they are at the very beginning of the bus and the very end of the bus.

**User Interface Device**

**Action**

<table>
<thead>
<tr>
<th>User Interface Device</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSKP-2110L Keypad</td>
<td>Depress a preset button</td>
</tr>
<tr>
<td>ILC-IR-10W IR Handheld remote (with attached IR-EYE)</td>
<td>Depress a preset button</td>
</tr>
<tr>
<td>BT-100 with remote computer *</td>
<td>#0.0.0.0.LED=RECALL?2=CR&gt;</td>
</tr>
<tr>
<td>e-Node with remote computer using Pilot app *</td>
<td>#0.0.0.0.LED=RECALL?2=CR&gt;</td>
</tr>
</tbody>
</table>

Controlling the ILC-100x

The ILC-100x Controllers contain a sophisticated color computer that can be used to select any “color” from a palette of nearly 16 million possible choices. Rather than expecting the user to be a seasoned color scientist who well understands how to precisely mix the three primary colors of Red, Green, and Blue, (the constituent components from which all color of light can be created), the ILC-100x Controller implements a unique color selection tool similar to what is integrated within a color television works.

On each of User Interface Controls that can be used to choose, save and recall a color within the ILC-100x Controllers, there are three basic controls that must be understood in order to proceed. These controls are as follows:

**Hue Control**

Hue is the color. There are two controls available with this operator —UP and DOWN. Selecting UP, shifts from red —> green —> blue, while selecting DOWN shifts red —> blue —> green

**Lightness Control**

Lightness is typically synonymous with the relative darkness or lightness of a color.—UP and DOWN. Selecting UP increases the Lightness, while selecting DOWN decreases the Lightness.

**Saturation Control**

Saturation is typically synonymous with the purity of the hue; degree of difference from a gray of the same lightness or brightness. There are two controls available with the operator—UP and DOWN. Selecting UP increases the Saturation the color becomes more pure, while selecting DOWN, decreases the Saturation, and the color becomes more “washed out” or paler.

Steps to Select and Recall a “Color” using a BSKP-2110L Keypad or ILC-IR-10W1 IR Remote

1. Activate LED. To quickly activate one or more default factory presets and further test your system, depress the Preset button and then select one of six keypad or IR presets (i.e., 1,2,3,4,5,6). The connected LEDs should change color from their previous setting to a factory programmed default for that particular preset. If the LEDs do not illuminate, check your wiring, and make sure that your power supply is properly connected. If you may have inadvertently written over an “OFF” setting to a particular Preset, try each additional preset until the LEDs come alive. Now proceed to the next step.
2. Select Hue. Provided that there is some illumination being generated from the LEDs, press and release the Tool button and then press and hold the Hue + button and you should see a distinct color shift over the next 10-15 seconds which will automatically circle around the entire color wheel. Once you have found a “color” which is roughly what you desire, release the Hue + button and the newly discovered color will “freeze.” You can alternatively push the Hue – button (within a six second window) when more restrained colors to see them return to the lightest of all colors. Once you have “rediscovered” the original “color” that you previously selected, proceed to the next step.
3. Select Lightness. Next, alter the Lightness of the previously selected “color,” press and release the Tool button and then press and hold the Lightness + button and you should see a distinct brightening of the previously selected “color.” Alternatively, select the Lightness – button (within a six second window) and you should see a distinct darkening of the previously selected “color.” You can always return an previously selected “color” by either selecting the Saturation + button or the Lightness – button. Once you have “rediscovered” the original “color” that you previously selected proceed to the next step.
4. Select Saturation. Next, to alter the Saturation of the previously selected “color,” press and release the Tool button and then press and hold the Saturation + button and you should see a distinct brightening of the previously selected “color.” Alternatively, select the Saturation – button (within a six second window) and you should see a distinct darkening of the previously selected “color.” You can always return an previously selected “color” by either selecting the Lightness + button or the Lightness – button. Once you selected the correct Saturation value, you can now save the chosen “color” made up of discrete parameters relating to Hue, Lightness, and Saturation. If you decide at any time that you wish to tweak your newly discovered "color,” simply revisit steps 2, 3 or 4 once again.
5. To Save a Color. On the BSKP-2110L, press and hold a preset button for 6 seconds until you hear a beep, then release. On the ILC-IR-10W1 IR remote, press and release the bottom left “Store” button and then toggle one of the top 6 preset buttons. These special keypad actions will store that particular color into that particular Preset location. Once you have saved your “color,” you can recall that specific “color” by following the above directions again for your particular User Interface Device.
6. To Recall a Color. On the BSKP-2110L, toggle the “Preset” button and then select one of the six Preset buttons into which a particular color has been stored. On the ILC-IR-10W1 IR remote, toggle the “P” (Preset) button and then select one of the six Preset buttons into which a particular color has been stored. You can recall up to six colors through this process.

Resetting and Discovery of the ILC-100x

There is a small hole on the side of the ILC next to the LED indicator. Place a small tool (paper clip) into the hole to sense a push button. Pushing this button is used primarily for commissioning and setting addresses (see commissioning manual). However it can also serve as a reset of the ILC to the factory default. After pushing the button the LED will go off. Maintain depressing the button, and after a short time the LED will flash. Keep the button depressed until the LED has flashed three times, and then release. The ILC will set all its parameters to the factory default, and reset itself.

**Power On/Testing**

IMPORTANT: MAKE SURE THAT THE DC POWER TO ALL CONTROLLERS IS TURNED OFF PRIOR TO CONTINUING.

1. Make sure that you have installed at least one ILC-100x Controller and one User Interface Control (BSKP-2110L, IR-EYE with IR remote, or BT or e-Node® with external computer).
2. Verify that you have connected an approved LED lighting strip into the ILC-100 controller.
3. Power on all ILC-100x Controllers (and e-Node® if connected to system).
4. Issue the following command from any connected User Interface Control and verify that the LED illuminates and starts going through a color shifting test pattern. If you see this pattern, you have confirmed the proper operation of your ILC-100 system.

© Converging Systems. 2012. All Rights Reserved. Version 1.4 Printed in USA. Converging Systems, IMC-100x™, ILC and e-Node® trademarks of Converging Systems, Inc. Other trademarks are those of their respective owners.