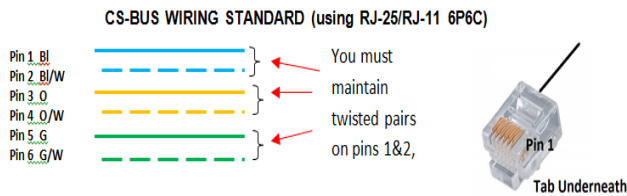**CONVERGING SYSTEMS**

ILC –xxx Family Quick Reference Installation Guide (with e-Node for commissioning) *with SN Addressing*

The Converging Systems ILC-x00™ family of LED lighting controllers are networkable devices which can provide support for Converging Systems' Flexible Linear Lighting Arrays™ (FLEX) RGB, RGBW, and monochrome LED devices. The devices are supported using either RS-232 serial connection (IBT-100) or Ethernet (e-Node). Typically for systems with more than one ILC-x00 controller or in cases where you wish to have bi-directional communication, initially you must set up with e-Node™ even though you will be using the IBT-100™ within the system. *Full Installation Manuals are available for ILC-xxx family controllers, the e-Node, and IBT-100 at http://www.convergingsystems.com/lighting_install_library.php*

HARDWARE SETUP of ILC-x000 Controller using e-Node for commissioning and either e-Node or IBT-100 for control thereafer
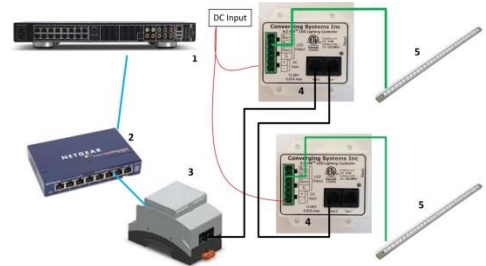
Figure 1
CS-BUS Wiring Standard

ILC-x00 to ILC-x00 interconnections. Interconnect LED lighting controllers sequentially in a daisy-chain fashion (without "Y"s or "T"s) by connecting Port **1** of one device to Port **0** of the next sequential device. Utilize standard CAT5 (or better) wiring and maintain 1/1 pinouts between ends (see **CS-Bus Wiring Standard** above). Also maintain twisted pairs as shown above (1&2, 3&4, 5&6).

Note: The **CS-Bus** uses standard RJ-25 (RJ-11) 6P6C connectors available at Home Depot, and all electrical distributors. **You cannot use standard flat telephony cable for telephony cable (i) does not have twisted pairs and (ii) utilizes typically a swapped wiring pinout (1-6, 2-5, 3-4, etc. which is not compatible with the CS-Bus). Failure to follow the CS-BUS wiring standard will void your warranty**. If you return a unit to Converging Systems with its communication chip destroyed this is a telltale sign that you used Telephone cabling. **REPEAT--DO NOT USE TELEPHONY CABLE**. Also, do **not** attempt to use standard Ethernet cabling (568B or 568A) and simply chop off the browns for this will leave the twisted pairs inconsistent with our CS-BUS Wiring Standard (the middle two lines will not be a twisted pair and data integrity will be lost). If you do not have 6P6C RJ11/RJ-25 modular connectors and still wish to proceed, refer to the ILC-x00 family controller Instruction manual for more information.
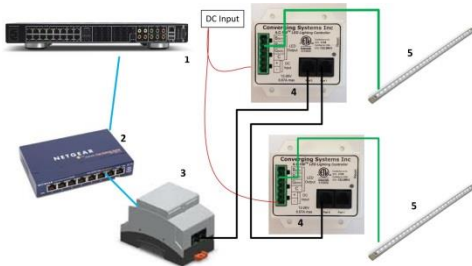
Figure 2
e-Node/IBT-100 Connectivity

e-Node connections. Interconnect **Port 0**-CS-Bus (RJ-25 not RJ-45) port on the e-Node to an available/unused CS-Bus on the first or last ILC-x00 controller using a fabricated CAT 5(or better) cable wired as per the **CS-Bus Wiring Standard**. Connect the supplied 12vdc power adapter to the mating 2-pin connector on the e-Node. Connect a standard Ethernet wire from your network switch to the RJ-45 connector on the e-Node. (In case you wish to share power supplies, the e-Node can operate from 24vdc as well.)

IBT-100 connections. If you are using serial connectivity, connect a **CS-BUS Standard** cable from Port 0 on the first ILC-x00 controller to the single RJ-25 port on the IBT-100. Plug the IBT-100's DB-9 connector directly onto your computer or controller's serial port or to a USB/Serial adapter connected to your system (57,600,n.8,1,n).

Note: The IBT-100 requires power to operate which is only available from **Port 0** of the ILC-x00 controllers. Should **Port 0** be unavailable on a convenient ILC-x00 device, unplug the existing wire plugged into Port 0 and swap it into Port 1 of the target ILC-x00 controller and in a sequential fashion reverse the connections **of all other** connections from Port 1/Port 0 to Port 0/ Port 1 across the lighting CS-Bus network.
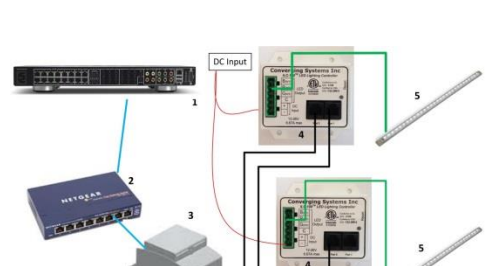
Figure 3
FLLA LED Lighting Connections

FLLA connections. Connect the flying leads from the header end of the FLLA device to the ILC-x00 controller using recommended cabling (typically 16 awg or 18 awg). See Voltage Drop table for more info.
http://www.convergingsystems.com/marketinginfotoc.php

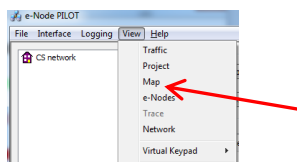| RGB (4 pin)	ILC-100c (**C, G, R, B**) ILC-400m (**C, G, R, B, W**)	Note: **C** is positive common
RGBW (5 pin)	ILC-400 (**C,G,R,B, W**)	Note: **C** is positive common
Mono (2 pin)	ILC-400 (**C,1**) &/or (**C,2**) &/or (**C,3**) &/or (**C,4**) ILC-100m (**C,W**)	Note: **C** is positive common

Figure 4
Remote Power Supply Connection

DC Constant Voltage Power Supply Connection. Connect power supply which provides the same voltage as the FLLA LED rating (typically 24vdc). Obey the polarity printed on the ILC-x00 case. If your controller has a 3-pin power connection (+,– and **GND**), you should connect a separate GND lead from a solid earth ground to the ILC-x00 Ground connection.

SOFTWARE SETUP-Commissioning Requires the e-Node, Operation with control systems (except Lutron) is OK with IBT-100 or e-Node
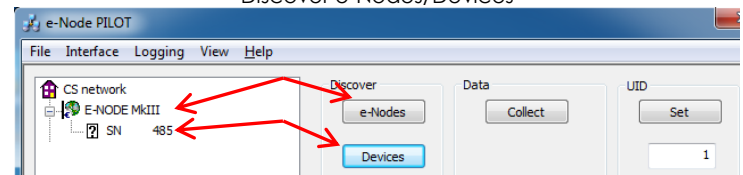
Figure 5
e-Node Pilot Commissioning Process

Download and Launch Pilot. Download and launch the (PC compatible) e-Node Pilot application available from the Converging Systems website. Before running, please make sure you **unzip** the file.
http://www.convergingsystems.com/downloads_library.php

Note: It is highly advised to make a *hardwired* Ethernet connection from the e-Node to your network switch and another *hardwired* Ethernet connection from your switch to your computer running the Pilot application. Data may be lost or corrupted otherwise.
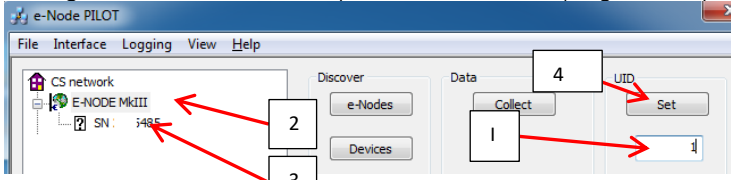
Figure 6
Discover e-Nodes/Devices

Discover e-Node. From the **View/Map** window, select the **Discover e-Node** button and any e-Nodes that have been powered-up and which exist on the same subnet as your computer will be populated within the left window.
Discover e-Node. Select the Discover Devices and any (SN Addressing Scheme) Devices that have been powered-up and are connected to the e-Node will be populated in the left window. If you have a device *without* SN Addressing Scheme firmware, proceed to Figure 7 (Note) for more information.

Figure 7
Assign UID to **EACH** Controller (so that each can be programmed)
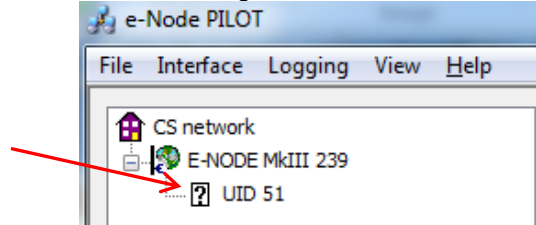

Assign UID to Controller. Next, (1) assign an unused **UID** (unique ID) to the ILC device to be addressed (generally start with the UID value of "1" and work up sequentially) and enter this number into the UID window, then (2) **highlight the e-Node** to which the device is connected, then (3) **select the device with SN** displayed and then (4) select "**SET.**" The initial ILC device with a SN "name" will be updated to a programmed **UID n** entry.

Note: If your device **does not** have SN Addressing, (i) **highlight the e-Node** to which the device is connected. (ii) **enter a unique UID** in the window, and (iii) **press** for ½ second the **discovery/reset** button on the ILC-x00 device using a paper clip(the on-board PCB LED will blink off for a moment then re-light which indicates success) and Select OK to the pop-up window. Once ID'd, the discovered device will appear on the left window.

Note: *Make sure all control systems are powered off during this process for they may be issuing similar beacons on the bus which will interfere with this process.*

Figure 8
Program Controllers

Expand Data Fields of ID'd controller. Click on the "**?**" mark and/or the "**+**" mark in front of the targeted controller to expand its data fields. Select the **BUS** tab, to expose the BUS properties window.
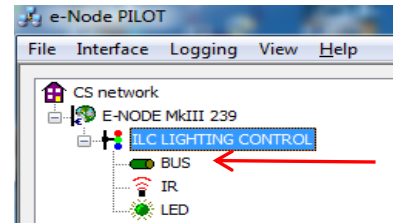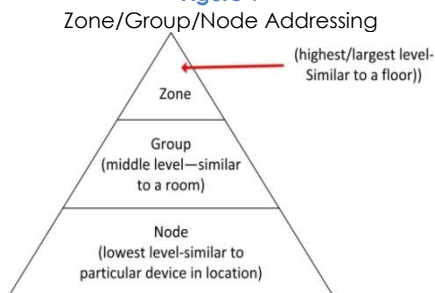

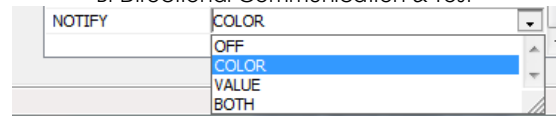## Figure 9
Zone/Group/Node Addressing

Assign Z/G/N Address. Enter a discrete **Z**one/**G**roup/**N**ode address for each Lighting Controller identified within the previous pane. For more information on addressing, review the *Instruction Manual* or applicable *Integration Note*.

The factory default for Lighting Controllers is **2.1.0** with the "0" acting as a wildcard **and** as an undefined address (with no bi-directional capability). Typically, if you identify your first controller as a **2.1.1** and work upwards (**2.1.2**; **2.1.3**; … **2.1.254**) sequentially among controllers, you will be fine for most installations.

Enter the Zone/Group/Node address separated by **PERIOD**s and hit **ENTER**. When the field turns BLUE you know the data has been successfully entered.
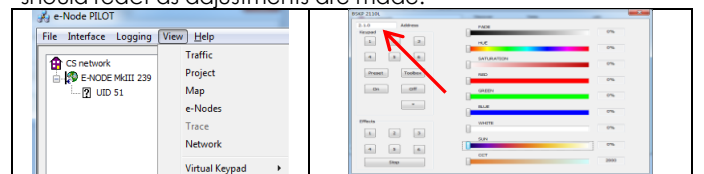
Figure 10
Bi-Directional Communication & Test

Enable Bi-directional Communication. In order to invoke bi-directional communication so that a control system with compatible sliders can show feedback when there are changes in ILC-x00 controller's color state (i.e. colors change or states), set the **NOTIFY** Flag to either **COLOR** (for the HSV or Hue, Saturation, Value color space) or to **VALUE** (for the old school Red, Green, Blue Value color space—*old school because there is no dimmer in this color space*). If you want to have both sets of sliders (not really recommended in larger systems where bus traffic may become excessive), set the flag to **BOTH**.

Test. Launch the **Virtual Keypad/Lighting** and test by entering an appropriate (**Z.G.N**) address and adjust sliders. Connected LEDS should react as adjustments are made.

Important Safety Information

The ILC-x00 LED Controller and specified associated components are listed under UL File-325 and has been tested by the following safety agency:

TO REDUCE THE RISK OF ELECTRIC SHOCK, THIS EQUIPMENT HAS A GROUNDING TYPE PLUG THAT HAS A THIRD (GROUNDING) PIN. THIS PLUG WILL ONLY FIT INTO A GROUNDING TYPE OUTLET. IF THE PLUG DOES NOT FIT INTO THE OUTLET, CONTACT A QUALIFIED ELECTRICIAN TO INSTALL THE PROPER OUTLET. DO NOT CHANGE THE PLUG IN ANY WAY.

POUR REDUIRE LES RISQUES DE CHOC ELECTRIQUE, CET APPAREIL EST QUIPE D'UNE FICHE AVEC MISE A LA TERRE COMPORTANT UNE TROISIEME BROCHE (BROCHE DE TERRE). CETTE FICHE NE PEUT ETRE BRANCE QUE DANS UNE PRISE AVEC MISE A LA TERRE. S'IL N'EST PAS POSSIBLE DE LA BRANCHER DANS LA PRISE, FAIRE POSE UNE PRISE APPROPRIEE PAR UN ELECTRICIEN QUALIFIE. NE PAS MODIFIER LA FICHE
*UTILISER A L'INTERIEUR SEULEMENT