Converging Systems Inc.

e-Node™ DMX

e-Node Interfacing with DMX Guide

Version 1.02

Revision History

Date	Version	Description	Author
10/01/2012	1.0	Initial Version	AD
1/25/2013	1.1	Corrected use of comma vs period.	AD
2/11/2013	1.02	Added connection diagram	CS

1   Overview

The e-Node™ has built in capabilities to communicate with various DMX devices. Communication is achieved by transmitting a DMX packet stream over an RS485 cable. This section will take you through all of the steps required to set up an e-Node device to work in conjunction with DMX lighting fixtures. Control of these fixtures is achieved using CS Messages over an Ethernet "LAN" interface. Three color DMX fixtures can be controlled using existing CS Messages for color lighting. including controlling the color in an HSV color space. A built in color converter allows easily control of the RGB color fixture.

The e-Node with DMX capability can control up to 32 fixtures (the limit of the DMX cabling), each fixture using three DMX channels (slots), for red, green, and blue respectively.

The DMX capability is a replacement for the standard CS-bus interface, but can still work with a Lutron lighting system (see Lutron Interfacing Guide).

2   DMX Addressing

The DMX data packet is mapped to CS message format by assigning a unique Zone. Group. Node number to three successive DMX channels[i]. These are mapped as shown in the following table:

<div align="center">

Table 1

Fixture	DMX Channel Allocation	CS- Zone. Group. Node
1	1-3	2.1.1
2	4-6	2.2.1
3	7-9	2.3.1
4	10-12	2.4.1
5	13-15	2.5.1
6	16-18	2.6.1
7	19-21	2.7.1
8	22-24	2.8.1
9	25-27	3.1.1
10	28-30	3.2.1
11	31-33	3.3.1
12	34-36	3.4.1
13	37-39	3.5.1
14	40-42	3.6.1
15	43-45	3.7.1
16	46-48	3.8.1
17	49-51	4.1.1
18	52-54	4.2.1
19	55-57	4.3.1
20	58-60	4.4.1
21	61-63	4.5.1
22	64-66	4.6.1
23	67-69	4.7.1
24	70-72	4.8.1
25	73-75	5.1.1
26	76-78	5.2.1
27	79-81	5.3.1
28	82-84	5.4.1
29	85-87	5.5.1

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Fixture	DMX Channel Allocation	CS- Zone. Group. Node
30	88-90	5.6.1
31	91-93	5.7.1
32	94-96	5.8.1

As an example sending a CS Message **#3.4.1.LED=OFF** will turn off a fixture that is set to DMX channels 34-36. DMX fixtures do not have to be set to take sequential addresses. It is possible to have just five fixtures set as follows:

Table 2

Fixture	DMX Channel Allocation	CS- Zone. Group. Node
1	1-3	2.1.1
2	25-27	3.1.1
3	49-51	4.1.1
4	73-75	5.1.1
5	94-96	5.8.1

The CS Message addressing format (See CS Messaging Manual for more details) uses the three parts of an address to identify a device based on its Zone (Floor), a Group (Room), and a node (fixture). This allows devices or fixtures to be uniquely identified. There is also the capability to use an "ALL" address of 0. For example a CS Message of

　　　　#2.4.0.LED=RECALL,2

will set all fixtures in zone 2, group 4 to the color of preset 2. Similarly an address of

　　　　#3.0.0

will control all devices with a zone of 3. This capability has been included in to the e-Node with DMX such that an address of

　　　　#2.0.1

will control the first eight DMX fixtures defined in Table 1.

2.1 Color Presets

Every fixture has its own presets associated with it. These eight presets define a color that can be recalled and set using CS commands. Each individual color has a range from 0 (off) to 240 (fully on). and these can be stored inside the e-Node. The initial factory default for these colors are:

Table 3

Preset	R.G.B Values	Color
1	240.0.0	Red
2	240.150.0	Yellow
3	0.240.0	Green
4	0.240.160	Cyan
5	0.0.240	Blue
6	240.0.140	Magenta
7	127.80.0	Orange
8	127.127.127	Half white

2.2 DMX Color Commands

Most of the commands that apply to the CSI ILC-100 LED controller have been replicated in the DMX capable e-Node. with some exceptions. Each fixture can have separated operations. for example a fade down on fixture 1 can be processed at the same time as a hue up on fixture 2.

Table 4

Device	Item	Data/Command	Comment	DMX	ILC-100
.LED		=ON	**LED ON** Turns on LED to color when OFF was issued	✓	✓
.LED		=OFF	**LED OFF** Turns LEDS OFF	✓	✓
.LED		=EFFECT,#	**EXECUTES AN EFFECTS PROCESSOR** Executes a previously stored effect. # (1-8) 1=Sequences Presets 1 through 8 2=Flame		✓
.LED		=STORE,#	**STORE PRESET LEVEL** Stores a lighting preset at # (1-8) Note: any combination of hue. saturation. brightness describing a "color" can be saved in this manner.	✓	✓
.LED		=RECALL,#	**RECALL PRESET LEVEL** Recalls a previously stored preset. # (1-8)	✓	✓
.LED	.DISSOLVE	=XX	**SET DISSOLVE RATE** Specifies the rate (in seconds) that it takes to transition from one color to another		✓
.LED	.SEQRATE	=XX	**SET SEQUENCE RATE** Used with effects to switch from one preset to another. Specifies the time (after any dissolve) that the preset color is maintained before transitioning to the next in sequence.		✓
.LED		=HUE_UP	**HUE UP** Scrolls through colors red->green->blue Note: Ramping continues until interrupted by receiving a "STOP" command	✓	✓
.LED		=HUE_DOWN	**HUE DOWN** Scrolls through colors red->blue->green Note: Ramping continues until interrupted by receiving a "STOP" command	✓	✓
.LED		=HUE,H	**SET HUE VALUE** Sets hue target. and dissolves to a hue of value H (0-240) Red = 0. Green = 80. Blue = 160	✓	✓
.LED		=SAT_UP	**SATURATION UP** Fades up saturation Note: Ramping continues until interrupted by (i) receiving a "STOP" command or (ii) until an upper or lower limit is reached	✓	✓
.LED		=SAT_DOWN	**SATURATION DOWN** Fades down saturation Note: Ramping continues until interrupted by (i) receiving a "STOP" command or (ii) until an upper or lower limit is reached	✓	✓
.LED		=SAT,S	**SET SATURATION LEVEL** Sets saturation target. and dissolves to a saturation of value S (0-240)	✓	✓
.LED		=FADE_UP	**FADE UP** Fades up brightness (lightness) Note: Ramping continues until interrupted by (i) receiving a "STOP" command[1] or (ii) until an upper or lower limit is reached	✓	✓
.LED		=FADE_DOWN	**FADE DOWN** Fades down brightness (lightness) Note: Ramping continues until interrupted by (i) receiving a "STOP" command[1] or (ii) until an upper or lower limit is reached	✓	✓
.LED		=SET,L	**SET BRIGHTNESS LEVEL** Fades to a brightness (lightness) L (0-240)	✓	✓
.LED		=STOP	**ADJUSTMENT STOP** Stops the selected auto ramping (fade. saturation. or hue as applicable)	✓	✓

| Device	Item	Data/Command	Comment	DMX	ILC-100
.LED	.COLOR	=H.S.L	***"HSL" COLOR SETTING*** Specifies the color in HSL (range is 0 to 240) and dissolves to that color.		✓
.LED	.PRESETH.X	=H.S.L	***SET PRESET (HLS Color Space)*** Specifies the color in HLS mode (range is 0-240) for preset #. (i.e. .PRESETH.X=? returns specifics of color in HLS mode for preset "X" while .PRESETH with no modifier returns the color in HLS of whatever the current color setting is). Note: Setting Presets do not affect the current LED state.		✓
.LED		=RED,R	***SET RED LEVEL*** Sets red channel target. and fades to a hue of value R (0-240).	✓	✓
.LED		=GREEN,G	***SET GREEN LEVEL*** Sets red channel target. and fades to a hue of value G (0-240).	✓	✓
.LED		=BLUE,B	***SET BLUE LEVEL*** Sets red channel target. and fades to a hue of value B (0-240).	✓	✓
.LED	.VALUE	=R.G.B	***"RGB" COLOR SETTING*** Specifies the color in RGB (range is 0 to 240) and dissolves to that color.		✓
.LED	.PRESET.X	=R.G.B	***SET PRESET (RGB Color Space)*** Specifies the color in RGB or preset # (range is 0 to 240). (i.e. .PRESET.X=? returns specifics of color for preset "X")		✓

3   Configuring e-Node

The e-node is best configured using the built-in web server.

Type in the e-Node's IP address or NetBIOS address into your browser. You should see a web-page splash screen appear within your browser. This webpage should auto adjust in size depending upon your browsing device (i.e. iPad[R], iTouch[R], Android[R] phone, etc.). Below is an example of a sample splash screen:
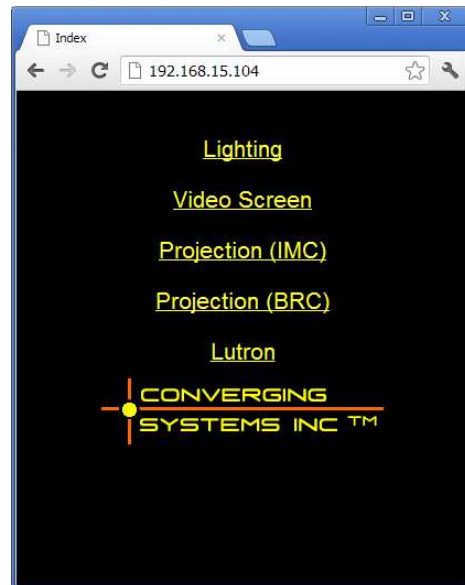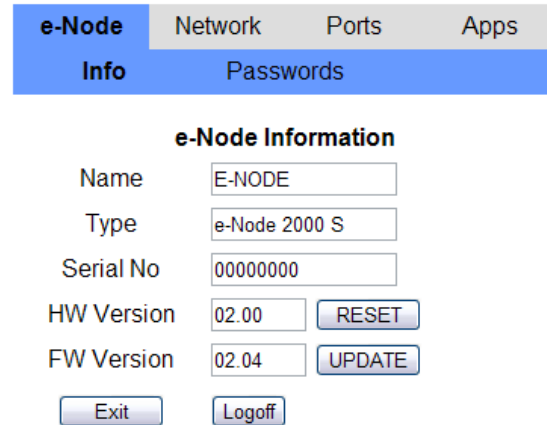
Access the e-Nodes home page, and click on the logo.

Enter the default factory password ADMIN (upper case) and select Logon. If you have changed this password type in that customized password instead. You should see the following screen appear.
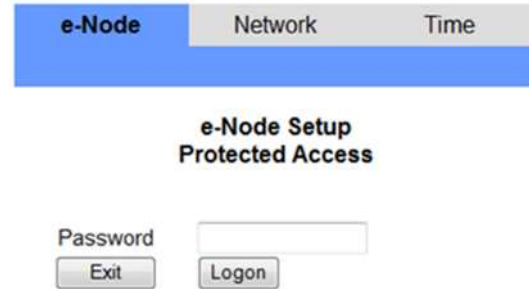
This page will display the current information about the e-Node. its hardware and firmware versions.

Click on the "Ports" tab to view the port configuration. The default factory type is "CS_BUS". Click on the drop down box and select "DMX"
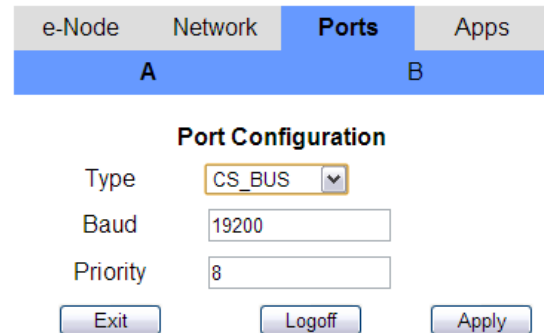
After selecting the "DMX" type click on Apply. The "baud" and "Priority" boxes are irrelevant, these are set automatically. Once the port is set you should either power cycle the e-Node or force a reset (see e-Node Quick start Guide for more information).
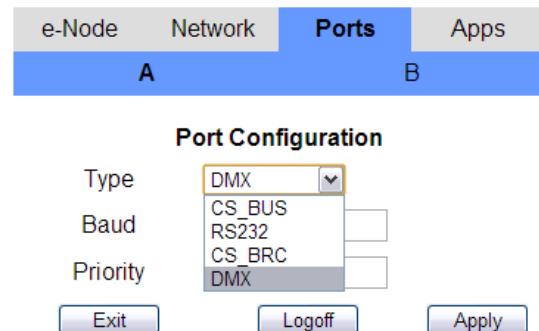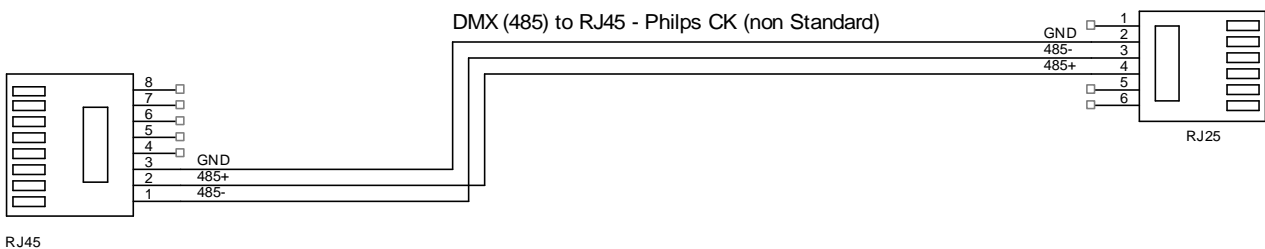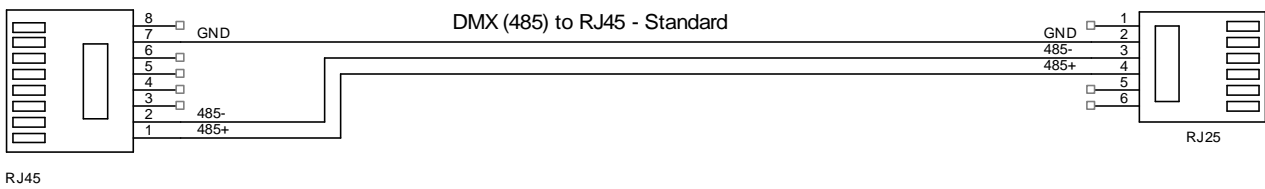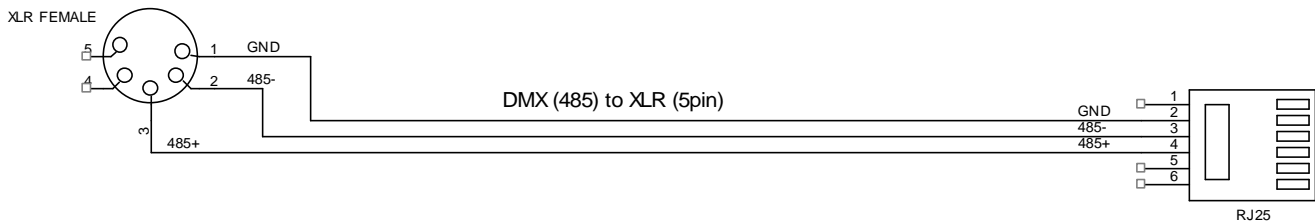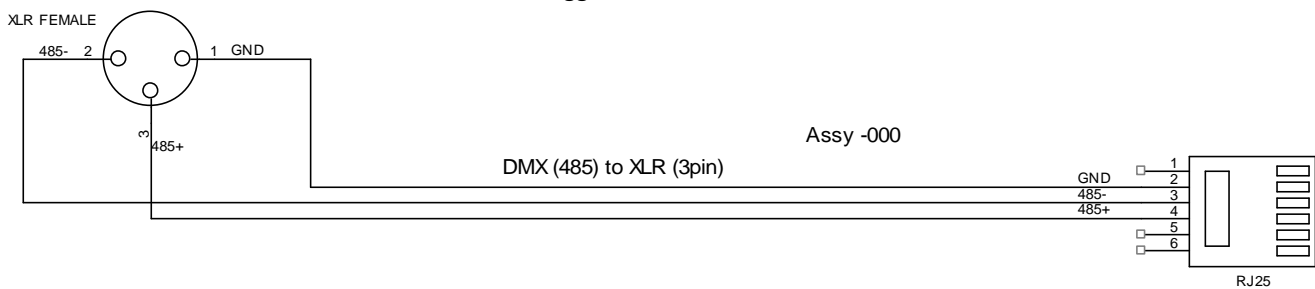
4 Output Connections

The port on the e-node provide an RS485 DMX compatible connections.

Pin	Signal
1	Not Used
2	DMX Ground
3	RS485 -
4	RS485 +
5	Not Used
6	Not Used

Suggested connections

DMX (485) to XLR (3pin)

DMX (485) to XLR (5pin)

DMX (485) to RJ45 - Standard

DMX (485) to RJ45 - Philps CK (non Standard)

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[i] This may change with later revisions of firmware to support 4 or more channel fixtures.