
Converging Systems Inc.

e-Node™

e-Node™ Interfacing with BRIC Guide

Version 1.02

Revision History

Date	Version	Description	Author
3/22/2013	1.01	Initial Version	AD
3/28/2013	1.02	Version Update	TS

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1 Overview

Currently the BRIC has a wide range of device drivers in the marketplace today that communicate with the BRIC using the BRIC serial commands with the BRIC’s built-in RS-232c interface. Many of these automation drivers currently available in the marketplace today because they were developed years ago lack dedicated support for the BRIC using the more modern and functional Internet Protocol (IP). However, those same drivers often do support IP communication using an alternative messaging scheme called **CS-Bus Messaging**. CS-Bus Messaging is used to communicate with the IMC-100 family of motor controllers as well as the ILC-100 family of intelligent LED lighting controllers.

Where IP (Internet Protocol) support of the BRIC is required, the e-Node is an excellent solution without requiring new drivers to be authored and posted by automation vendors. Communication is achieved by transmitting IP messaging in CS-Bus Messaging format to the e-Node which then internally translates those commands and re-routes them over RS-232c to the BRIC’s serial port using native BRIC software protocol.

In cases where additional commands (or an expanded number of presets) may not be available in a particular CS-BUS Messaging automation driver made available by third-parties, it is easy for the installing dealer to simply add those commands to the standard IMC-100 device driver to support any required new features of the BRIC. See Appendix A for more information here.

The e-Node will work will all configurations of BRIC, including dual BRIC systems.

2 Installation

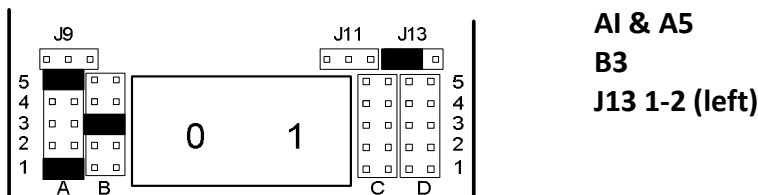
- Connect port 0 (left side) of the e-Node to the RS-232c connection on a BRIC using a straight thru RJ12 (6P4C or 4P4C) <-> RJ45 cable using 4 conductor cable **ONLY**. See [Interface cable](#) for more details.
- Connect an Ethernet (LAN) to the RJ45 port of the e-Node.
- Connect a power supply to the power connections of the e-Node.

3 e-Node configuration

The e-nodes need to be configured for BRIC operation. This requires both a hardware setup and a firmware setup.

3.1 Hardware Configuration

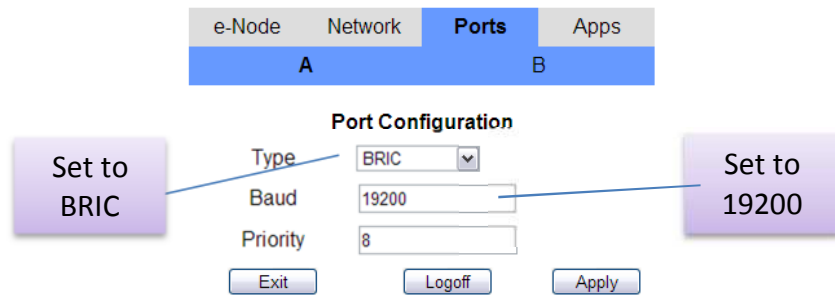
Remove the shroud covering the dual RJ-25 (6P6C CS-Bus) side of an e-Node. There are some jumpers for configuring the type of ports. Ensure the e-Node is powered off, and change the jumpers to the following:



Replace the shroud cover.

3.2 Firmware Configuration

The factory default for the e-Node is DHCP enabled. Power up the e-Node and access the web page of the e-Node by typing in the IP address assigned by the router or DHCP server. On the splash screen, click on the logo image at the bottom of the screen and when presented with a password authentication screen, enter the default password (ADMIN) or other appropriate password. Next access the “Port” set-up page, and select “BRIC” as the type. The baud rate should be 19200. For detailed information on how to access the web pages of an e-Node, see the e-Node Quick Start Guide. Alternatively the e-Node can be configured using the Pilot application, see “e-Node Commissioning Guide.”



Use the e-Node web interface to set the port type to “BRIC” and the baud rate to 19200 and Priority set to 8 (if not already set to those parameters). Click the “Apply” button. The e-Node should now be reset.

The e-Node will now accept CS-Bus messages, translate them and control the BRIC accordingly.

4 Commands

The e-Node/BRIC combination will accept the new CS-Bus command and translate them to BRIC control messages. The CS-Bus messages use a “ZGN” addressing scheme. This addressing scheme consists of three fields separated by periods. The fields are ZONE, GROUP, and NODE. Each can have a number from 1 to 254. A zero signifies an “ALL” or a broadcast number. The BRIC is fixed with a Zone = 1, and Group = 1. The node number is used to specify a motor. In some commands a node = 0 is used to specify all motors. Commands are set via UDP on port 5000. The IP address can be the e-Node specific IP address or a broadcast address (255.255.255.255) can be used.

New Command	Function	Old BRIC command	Notes
#1.1.1.MOTOR=UP	Moves channel A motor up	01UA	
#1.1.2.MOTOR=UP	Moves channel B motor up	01UB	
#1.1.3.MOTOR=UP	Moves channel C motor up	01UC	
#1.1.4.MOTOR=UP	Moves channel D motor up	01UD	
#1.1.1.MOTOR=DOWN	Moves channel A motor down	01DA	
#1.1.2.MOTOR=DOWN	Moves channel B motor down	01DB	
#1.1.3.MOTOR=DOWN	Moves channel C motor down	01DC	
#1.1.4.MOTOR=DOWN	Moves channel D motor down	01DD	
#1.1.1.MOTOR=STOP	Stops channel A motor	01SA	
#1.1.1.MOTOR=STOP	Stops channel B motor	01SB	
#1.1.1.MOTOR=STOP	Stops channel C motor	01SC	
#1.1.1.MOTOR=STOP	Stops channel D motor	01SD	
#1.1.0.MOTOR=STOP	Stops all motors	01S	

New Command	Function	Old BRIC command	Notes
#1.1.0.MOTOR=RECALL,X	Moves all motors to preset X (x = 1 to 25)	01MX	1,2
#1.1.0.MOTOR=STORE,X	Stores current motor position as preset X (x = 1 to 25)	01PX	1,2
#1.1.0.MOTOR=RETRACT	Moves all motors to “home” position	01M0	
#1.1.1.MOTOR.POSITION=?	Retrieves position of motor A as a percent (xxx.xx)	-	1,3
#1.1.2.MOTOR.POSITION=?	Retrieves position of motor B as a percent (xxx.xx)	-	1,3
#1.1.3.MOTOR.POSITION=?	Retrieves position of motor C as a percent (xxx.xx)	-	1,3
#1.1.4.MOTOR.POSITION=?	Retrieves position of motor D as a percent (xxx.xx)	-	1,3

Notes:

1. May not be implemented in some CS-Bus Messaging drivers (see Appendix for more detail).
2. The standard BRIC firmware supports 9 presets, to have 24 presets requires firmware version 4.22 or greater.
3. Not yet implemented.

5 Testing

The easy way to test the operation of the e-Node / BRIC combination is to use a freely available application e-Node Pilot (see Pilot Manual for more information).

When you initially launch the Pilot application, you will see the user interface screen pictured in [Figure 1](#) below. This is called the “Traffic View.” Various sub-segments of the user interface are identified below.

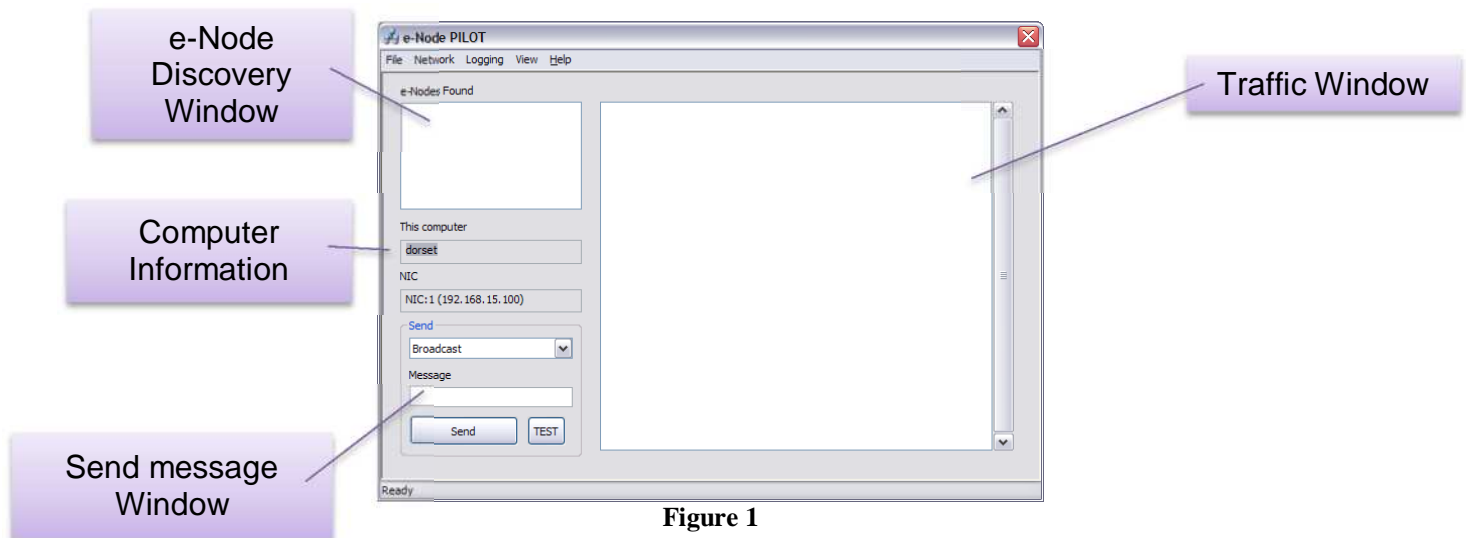


Figure 1

As soon as you see this user interface screen, it is first necessary to “search” for your e-Node on your network. Place your cursor within the top left box entitled “e-Nodes Found.” This is what we refer to as the e-Node Discovery Window. Right click on this “e-Node Found” box until you see a “Refresh” pop-up box. Then, left click on the “Refresh” pop-up box and you should immediately see any e-Nodes that are seen (i.e. “discovered”) on your network. See [Figure 2](#) below for a sample e-Node “discovered” using this process.

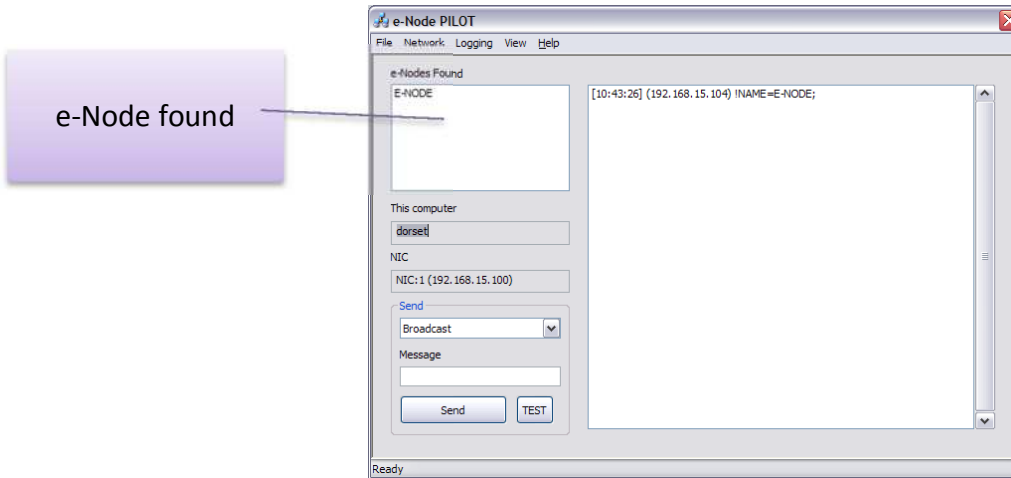


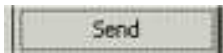
Figure 2

You will know that your e-Node is seen (i.e. “discovered”) by your network by observing messaging that appear in the “Traffic Window.” You should see the date/time stamp corresponding to the time the message passed onto the CS-Bus as well as the IP address for the e-Node found in the header of the data stream. At the end of the data stream will appear the default name of the e-Node found.

Within the “Message” Window of the Pilot Application (see figure 1 above), type in an applicable command:

#1.1.1.MOTOR=DOWN;

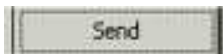
And click the send button



If the e-Node and BRIC are operational, then Motor A should move down. (If Motor A is already down, you may need to substitute the command stream below instead.)

#1.1.1.MOTOR=UP;

And click the send button



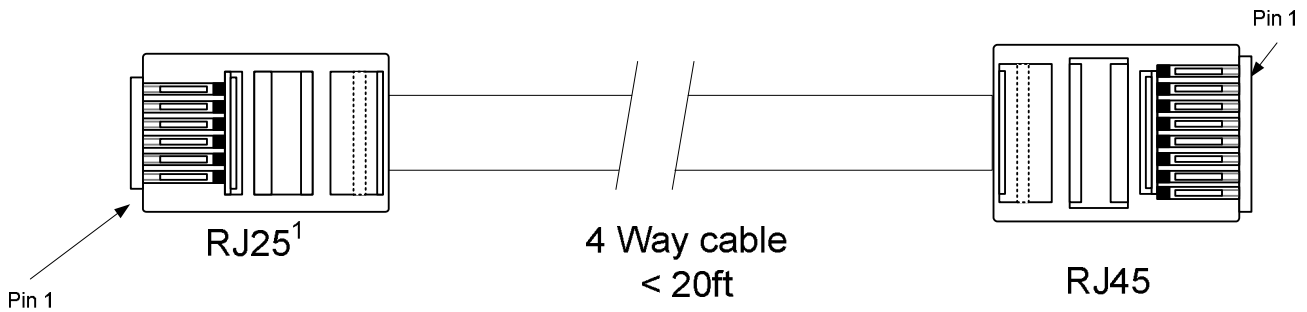
6 Interface cable

The serial port on the BRIC is an RJ-45, which can accommodate either an RJ-45 (8P8C) which is preferred or RJ-25¹ (6P4C). The connection is a 4-wire cable; one-to-one using the center four pins.

Note: You should not use 6-conductor cable for the RJ-25 connector as the outer two pins carry signals which are not compatible with the BRIC.

e-Node / BRIC interface

RJ25 ¹ – e-Node			RJ45 - BRIC	
PIN	SIGNAL		PIN	SIGNAL
			1	NC
1	NC	↔	2	NC
2	GND	↔	3	GND
3	RX	↔	4	TX
4	GND	↔	5	GND
5	TX	↔	6	RX
6	NC		7	NC
			8	NC



¹ RJ25 is the same physical connector as RJ11, RJ12, RJ13 and RJ14. These are all 6in (6P) plugs. Any of these will work. The important point is only the 4 center pins are used (4C).

APPENDIX

1 Note on Existing IMC-100 (CS-Bus) Automation Drivers (i.e. Crestron, etc.)

Depending upon the supplier of a particular automation driver for the IMC-100 employing CS-Bus Messaging language commands, one or more additional commands may need to be added to the IMC-100 device driver in order to fully take advantage of all new features available within the BRIC. See footnote #3 within Section 4 for those commands which may need to be added locally by the installing dealer.