

TECHNICAL NOTE

HOW TO REPROGRAM VARIOUS CS-BUS DEVICE WITH NEW FIRMWARE USING AVAILABLE FIELD PROGRAMMING TOOLS

Revision: 2.2

Date: September 3, 2009

Background. Converging Systems manufactures several field programming type devices that are currently available or are planned to be available to update many CS-Bus devices in the field. The status of their current firmware or programmed functionality to execute field programming is listed in **Table 1** below.

Table 1

Model	Description	Status for Executing Field Programming
IBT-100	Intelligent Bus Translator	As of 6/1/2009
BT-PROG	BT-Programmer	As of 1/1/2005
eNode	Ethernet Adapter	Not available for field programming of ancillary equipment currently

Theory of Operation. Updating CS-Bus devices with the use of one of the above programming devices easily updates a portion of the CS-Bus' device memory while preserving intact some other non-volatile components for other system operations. Provided you have one of the devices specified below in **Table 2**, you may update your firmware within your CS-Bus device by following the below directions.

Refer to the specific referenced under the type of devices within **Table 2** below for specific directions for updating the firmware on your specific device. If your device is listed under "Devices Unable to be Field Programmed" no field updates are possible.

Table 2

Device Type			
Powered Devices (see Section A)	Unpowered Devices (see Section B)	Special Case Devices (see Section C)	Devices Unable to be Field Programmed
IMC-100 Series	BSKP-2000 Mk II keypads (with RJ connector on back)	e-Node Ethernet Adapter	BSKP-Mk I keypads (without RJ connector on back)
ILC-100	IBT-100		BT-PROG
IMC-300 Series	BSKP-2001 IR receivers		

Please note: when you reprogram firmware, you may lose some dealer or user installed parameters. In some cases, these parameters can be preserved. See directions below for information here.

Section A

DIRECTIONS TO UPDATE CS-BUS POWERED DEVICES WITH NEW FIRMWARE

- 1 Make sure the Powered Device has its power removed or switched off before continuing.
- 2 Connect a straight 6-conductor interconnect cable (with RJ-25 6P6C connectors on both ends) between your Programming Device (of those specified within **Table 1** above) and Port 0 of the specific **Powered Device** (listed under "Powered Device in **Table 2** above). Where you have a choice of two RJ ports on a CS-Bus device, you must choose the Powered Port¹, if you have only one RJ port, simply plug in your cable into that single port.

¹**Note:** The LEFT port (Port 0 or Powered Port) can be located by looking at your CS-Bus device with both RJ (6 pin) connectors facing you directly and with the indented “tab” or “key” oriented upwards. The Powered Port is the left of the two RJ connectors

- 3 Connect a serial (straight thru) DB-9 cable from your Programming Device (listed in **Table 1** above) to your computer's serial port.

Note: If your computer does not have a serial port, obtain a low-cost USB-to Serial adapter. We recommend those adapters which use the Prolific Chipset.

- 4 Depress Programming button (or Discovery Button which it is sometimes called) on Powered Device (see **Table 3** below for specific requirement per device and location of programming button) and power on Powered Device while button is depressed². For some devices, there will be a specific feedback indicator (i.e. LED light on the device itself) that might signal that you are in this mode. Again see **Table 3** below for specific directions here.

- 5 Run application called **xxPROG** (where xx is the name of your particular device that you have downloaded) and in just about a minute you will have successfully programmed the targeted Device. All you need to know is what COM (serial) port your serial cable is plugged into. The default here is COM1. If you are using another COM port (besides COM1), simply select that appropriate COM port from the pull down menu on your **xxPROG** program.

- 6 After the CS-Bus device has been programmed, you will receive feedback that the programming was successful. Finally, just power off the CS-Bus device and power it back on and it will have been successfully programmed.

Note: you may be asked if you want to reset your device to Factory Defaults. If you have an eNode and can reprogram your device, answer “YES” otherwise answer “NO.” Typically, “NO” is the right answer here.

Section B

DIRECTIONS TO UPDATE CS-BUS UNPOWERED DEVICES WITH NEW FIRMWARE

- 1 Make sure the Unpowered Device has *no* power running to it from a separate device before continuing.
- 2 Connect a straight 6-conductor interconnect cable (with RJ-25 6P6C connectors on both ends) between your Programming Device (of those specified within *Table 1* above) and Port 0 of the specific *Unpowered Device* (listed under “Unpowered Device in *Table 2* above). Where you have a choice of two RJ ports on a CS-Bus device, you must choose the Powered Port¹, if you have only one RJ port, simply plug in you cable into that single port.

Note: The LEFT port (Port 0 or Powered Port) can be located by looking at your CS-Bus device with both RJ (6 pin) connectors facing you directly and with the indented “tab” or “key” oriented upwards. The Powered Port is the left of the two RJ connectors

- 3 **Special Instruction for Providing Power to System in Order to “Power” an Unpowered Device.** Unpowered devices and (unpowered Programming Devices) still need power in order to update their firmware. A special procedure has been designed to “borrow power” for this special situation. Depending upon the target device that you wish to reprogram the specific instructions vary. See the relevant section below within this Section #3 for directions.

TARGET DEVICES

- 3.1 **IBT-100.** In this case an IBT-100 can be reprogrammed directly without using another (external) Programming Device (like another IBT-100). However, in order to “borrow” DC power to power the IBT-100, simply connect a straight 6-conductor interconnect cable (with RJ-25 6P6C connectors on both ends) between the RJ connector on the IBT-100 and some other Powered Device (such as an IMC-100 or an ILC-100). ***Make sure the power to the external device is OFF before you make this connection.***
- 3.2 **BSKP-2000 (Mk II series keypads)/BSKP-2001 IR Receivers.** In this case one of the Programmers specified in *Table 1* can be used to update the BSKP-2000 series keypads. However, in this case, since there is only one RJ connector on the target device (the BSKP-2000 keypad), it is necessary to secure a Device Insertion Module (DIM) from Converging Systems. The DIM is basically a straight-thru “Y” connector with all 6 pins active.
 - (a) Plug the DIM into the back of the BSKP-2000 Series keypad and connect one straight 6-conductor wire (with RJ-25 6P6C connectors on both ends) between one port of the DIM and a Powered Device’s Port 0. ***Again make sure that before you make this connection, the Powered Device’s power is turned OFF.***
 - (b) Connect another similar straight thru 6-conductor wire (with RJ-25 6P6C connectors on both ends) between the other port on the DIM to the Programming Device’s available RJ port.
- 4 Connect a serial (straight thru) DB-9 cable to your computer's serial port to the Programming Device DB-9 connector (provided it has a serial port). If you Programming Device does not have a DB-9 connector, consult the documentation that came with that device for more information.

Note: If you computer does not have a serial port, obtain a low-cost USB-to Serial adapter. We recommend those adapters which use the Prolific Chipset.

- 5 Depress Programming Button on target Device (see **Table 3** below for specific requirement per device and location of programming button) and power on **connected Powered Devices while** button is depressed. For some devices, there will be a specific feedback indicator (i.e. LED light on the device itself) that might signal that you are in this mode. Again see **Table 3** below for specific directions here.
- 6 Run application called **xxPROG** (where xx is the name of your particular device that you have downloaded) and in just about a minute you will have successfully programmed the targeted Device. All you need to know is what COM (serial) port your serial cable is plugged into. The default here is COM1. If you are using another COM port (besides COM1), simply select that appropriate COM port from the pull down menu on your **xxPROG** program.
- 7 After the CS-Bus device has been programmed, you will receive feedback that the programming was successful. Finally, just power off the CS-Bus device and power it back on and it will have been successfully programmed.

Note: You may be asked if you want to reset your device to Factory Defaults. If you have an eNode and can reprogram your device, answer “YES” otherwise answer “NO.” Typically, “NO” is the right answer here. However, if you are reprogramming a BSKP-2000 Mk II Series of keypads, you will have to answer “YES“ because a single code base is shared among several different incarnations of that keypad. For BSKP-2000 MII Series of keypads, you will need to toggle its personality to customize the downloaded programming to the exact personality of the keypad type you have chosen. Consult Converging Systems for more information here.

Section C

DIRECTIONS TO UPDATE SPECIAL CS-BUS DEVICES (i.e. eNODE) WITH NEW FIRMWARE

In the event that an e-Node needs to be reprogrammed in the future, please follow the below steps.

Please note: Current re-programming procedures require that you have some driver files pre-installed on your computer. Contact Converging Systems in advance of following these steps for information on how to download these drivers. Once your computer has the necessary drivers to recognize the USB connector on eNode, you may proceed. It is also important that you follow all of the steps below so that you do not erase some important parameters that are located within your eNode such as its Ethernet address and its MAC address. *See directions below under Steps #2 and #4 for VERY information here*

- 1 Connect a USB cable from under the protective shroud that covers the RJ-45 connector (which can be easily removed using your finger nail) on the e-Node and power on e-Node with the programming button depressed (also under the protective shroud). When the e-Node powers on it will be ready for programming (e.g. its YELLOW LED will be constantly on in this case).
- 2 Launch, e-Node PROG and first select button that says "READ INFO." This will read and store important variables that will need to be downloaded in the next step back into the e-Node to preserve the e-Node's unique personality.
- 3 Next hit the "PROGRAM FLASH" Button to download new code into the e-Node. When it has finished it will say "Complete."
- 4 Next hit the "WRITE INFO" tab to reprogram originally read variables back into e-Node. This is important or else the eNode will have lost some of its set-up variables that have been previously stored such as STATIC or DYNAMIC DHCP.
- 5 Finally hit the button near the bottom right of menu called "RESTART" After you do this it will take the eNODE out of programming mode and if you have the eNode connected to your network the Yellow LED will start flashing fast and then slow down once it has found a network connection. (If it is not connected to your network or cannot find a network address, the FAST YELLOW LED will continue flashing FAST.)
Note: in some versions, the Restart and the Exit steps may be consolidated.
- 6 Hit "EXIT" Button and you are now done.

Table 3

Device	Type	Programming /Discovery Button	Location	LED signaling indicator
BSKP-2001	IR Receiver	Yes	Underneath left bottom side of paddle through small hole. ³	Yes
BSKP-2020	Paddle Keypad	Yes	Underneath left bottom side of paddle through small hole. ³	Yes
BSKP-2030	(3 button keypad)	Yes	* button (lower right hand corner)	No
BSKP-2050	(5 button keypad)	Yes	* button (lower right hand corner)	No
BSKP-1110	(11 button ILC keypad)	Yes	* button (lower right hand corner)	No
IMC-100 Family	Single Channel Motor Controller	Yes	Between relay and RJ-25 connector on PCB	Yes (light will go off)
ILC-100 Lighting Controller	LED Lighting Controller	Yes	On edge of board opposite power connectors	No
IBT-100	RS-232-C to CS-Bus Firewall	No	N/A	No
e-Node	Ethernet to CS-Bus Firewall	Yes	Underneath plastic shroud behind power connector ⁴	

Note: ³ use a non-metallic screwdriver to depress discovery button

⁴ use finger nail to pop off shroud which covers power connector