
Converging Systems Inc.



CS-Bus Controllers
Intelligent Motor Controllers
(Models: IMC/SMC-100x/IRC-300)

Version 4.3.b

Intelligent Motor Controller (IMC-100x Controllers)

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Safety Information

The 120 VAC versions of this product are listed by the following testing laboratories



For units with provided power cords, this warning needs to be provided.

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 BRANCEE 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

FCC Statement

This IMC-100x Controllers has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ICES

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NNB-003 du Canada

Models

100-120VAC versions

IMC-100S Intermediate Stops-Current Sensing with (3) LV Trigger Interfaces

IMC-100T Modified Motor Operation with Screen Trigger Interface (STI) and (2) LV-Trigger Interfaces

220-240VAC versions

IMC-101S Intermediate Stops-Current Sensing with (3) LV Trigger Interfaces

IMC-101T Modified Motor Operation with Screen Trigger Interface (STI) and (2) LV-Trigger Interfaces

Ratings:

Input:

IMC-100S/100T:100-120 VAC, 50-60 Hz, Single Phase

IMC-101S/101T:220-240 VAC, 50-60 Hz, Single Phase

Load Capacity:

ALL Models: 2.1A (1/3 HP)

Documentation Revision History

Revision	Date	Description
4.2.e	1/29/2009	New drawings
4.2.d	11/5/2008	
4.2.c	5/12/2008	
4.2.b	5/9/2008	

4.2.c	10/1/2008	
4.2.e	11/5/2009	
4.2.f	6/23/2009	Integration of BSKP-2000 keypads
4.2.f	8/30/2009	Updates for BSKP-2020
4.2.f	7/2/2010	Updates for BSKP-MII voltages
4.2.g	10/19/2010	Cleanup
4.3.a	8/298/2011	IRC-300
4.3.b	9/16/2011	IRC-300

Description:

The IMC-100x series of Controllers are designed to control residential and commercial bi-directional blind, drapery and projection screen single phase, bi-directional AC motors (three wire motors--open, close, neutral connections).

The IMC-100x series of Controllers can be controlled through a number of remote control devices, including keypads, dry contact outputs, low-voltage trigger outputs, local and remote Infrared control, IP (Internet Protocol), and computer-based signaling sources (serial communication) such as those manufactured by AMX, Crestron, Elan Home Systems with RS-232-C or RS-485 interfaces.

TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS**Important Information:**

- Carefully read the instructions appropriate for your needs.
- This control must be installed by a qualified electrician.
- For supply connections, use wires rated for at least 75 C.
- **WARNING—FOR CONTINUED PROTECTION AGAINST FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.**
- Use Copper or Aluminum Conductors.
- For indoor use only.
- Do not connect Low-Voltage to Line-Voltage Power.
- Article 725-54(a), (1) Exception No. 3 (NEC) or Canadian CE Code Handbook, Rule 16-212, Sub rule (4) requires segregation between line voltage and Class 2 (low voltage) circuits. Low Voltage/network wires should enter enclosure boxes through separated openings. Also, conductors shall be separated by at least ¼” or segregated by barriers. Check with your local electrical inspector or compliance with local/national codes and wiring practices.
- Earth Ground terminal connection must be made as shown in wiring diagrams.
- Proper short-circuit and overload protection must be provided at the circuit breaker distribution panel. You can use up to a 20A maximum circuit breaker with adequate short-circuit breaking capacity for your installation.

1 Mounting Instructions

Your controller may be pre-mounted in an existing device. However, in some cases, you may have to mount the controller in wall box. If so, please follow the directions below:

Directions

- a. Determine location for wall box. Determine a suitable mounting location for the IMC-100x Controller either convenient to the motor that it will be controlling or to the specific user interface control (keypad, IR receiver, etc.) that will be operating the Controller.
- b. Select suitable wall box type and install Controller. Install within either a single gang plastic J-box (14.3 cu in. - Carlon B114A or larger) or within a metal J-box (12 cu. In. - Bowers 52 or larger).

Note: If mounting Controller within a wall box, it is necessary to utilize one of several mounting options to safety support unit within wall box. Available options include the -L-M, -L-IR and -LM-P linkable options/mounting brackets.

2 AC Line and Motor Wiring Instructions

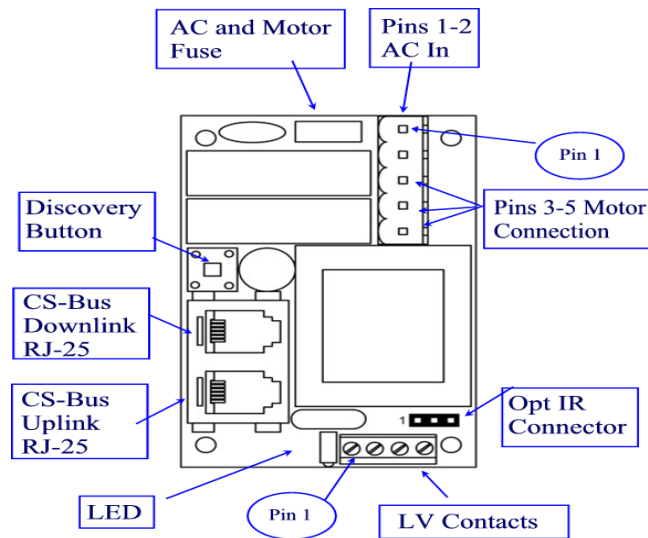


Figure 1

IMPORTANT: MAKE SURE THAT THE AC POWER IS TURNED OFF PRIOR TO CONTINUING.

Directions

- a. Strip 1/4" (6mm) of insulation from 12/2 AWG or 14/2 AWG wire suitable for installation for this type of load.
- b. Connect wires as shown below:

AC Load Side	IMC-100x (J1)	Motor Power Connectors (see Figure 2 for pin outs)
BLACK (load side)	Pin 1	AC Line +
White (neutral)	Pin 2	AC Neutral
NC	Pin 3	Motor RED Line + (Clockwise rotation to move upwards)
NC	Pin 4	Motor BLACK Line + (Counterclockwise motor rotation to move downwards)
NC	Pin 5	Motor Neutral
GREEN (Gnd)	NC	Connect Ground to "Grounding" lug on IMC-100X housing. Also connect ground wire from Motor housing to same lug.

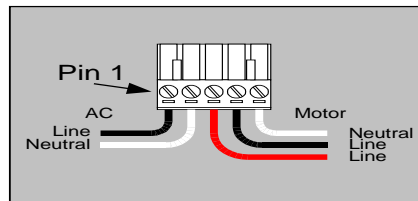


Figure 2

- c. Leave AC Power OFF to system until requested to turn ON.

3 Low Voltage and CS-Bus Wiring Instructions

General Information:

- Use 22-24 AWG CAT5 (or CAT3) interconnection wires with maximum length of bus less than 4000 feet (if using 4 pair wire, simply do not use the Brown and Brown/White of 4th pair wires). Up to 255 Controllers can be

implemented on a single leg or branch of a CS-Bus without the need for an IMC Repeater/Router (IMC-RTR) or e-Node.

- Up to 65,025 Controllers can be integrated into a single system with multiple repeaters.
- CS-Bus is based on the RS-485 protocol which may require terminating resistors (120 ohm between the two RS-485 signals) at both ends of CS-Bus if sporadic communication is experienced ([See Appendix A-4.2](#)).
- Route Low Voltage wires through a separate entry or knockout from AC Supply and Motor connections.

3.1 CS-Bus Wiring Directions (Controller to Controller wiring). ([See Figure 3 below.](#))

Directions

- a. Prepare communication wire with RJ-25 connectors on each end. (An RJ-25 connector is similar to traditional RJ-11 connector except it has 6P6C).
- b. Connect the first IMC-100x Controller's **Output** (Port 0) to the next sequential IMC-100x Controller's **Input** port (Port 1). The **Output** port is the LEFT connector of the dual connector pair as viewed in the diagram below. *In the diagram below, the first IMC-100x Controller is displayed on the right and the last IMC-100x Controller is displayed on the left.*

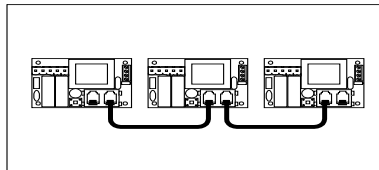


Figure 3

3.2 CS-Bus User Control Devices (Intelligent Keypads and remote IR receiver wiring **ONLY-not low voltage non-intelligent keypads**). ([See Figure 4 below.](#))

- 3.2.1 **END OR BEGINNING OF BUS METHOD.** This is the standard technique where a CS-Bus User Control Device can be simply inserted into the “beginning” or “end” of the CS-Bus. Because many CS-Bus User Control Devices have only a single Input/Output connection, it is often easier to wire this type of User Control Device to the “end” of the CS-Bus (where there is a free “Output” connector). Should you need to insert the CS-Bus Control device between two IMC-100x Controllers, follow the directions under [Section 3.2.2](#) below.

Directions

- a. If your User Control Device has **not** been pre-terminated, terminated the Control device with an RJ-25 connector as per the instructions that came with the CS-Bus User Control and then connect it to an available **Output** port on any CS-Bus Controller (in order to power the unit). See [Appendix A-3.1](#) for detail.
- b. If the User Control Device has a built-in RJ-25 connector, connect a “straight-thru” 6-pin connector harness between its connector and a free “Output” Port 1 on any CS-Bus Controller.

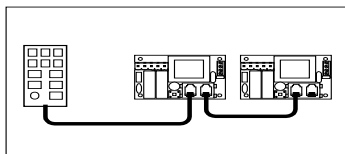


Figure 4

- 3.2.2 **CS-BUS INSERTION METHOD.** This is an alternative technique that must be used for CS-Bus User Control Devices that only have one set of pigtails or one or two RJ-25 connector(s) installed on the device and which needs by necessity or convenience to be connected to a specific IMC-100s Controller positioned closer to the “beginning” of the CS-Bus rather than the “end” of the CS-Bus. ([See Figure 5 below.](#))

Directions

- a. Decide between which two IMC-100x Controllers where you wish to “insert” the specific CS-Bus User Control.
- b. If your User Control Device has just one RJ-25 connector, you must utilize an optionally available Device Insertion Module (IMC-DIM) which provides two mirrored RJ-25 jacks (in lieu of the single jack into which the IMC-DIM is connected). In this case, plug one communication wire from either one of the available RJ-25 jacks on the back of the IMC-DIM into **Output Port 0 on an available CS-Bus device**. Next, plug a second communication wire from the other RJ-25 connector on the back of the IMC-DIM into an available **Input Port 1** on the “next” CS-Bus Controller.
- c. If your User Control Device has two RJ-25 connectors, then you can simply obey the same wiring topology shown under **Figure 3** above treating the targeted User Control Device as any other Controller. In this case you plug the communication wire from either one of the available RJ-25 jacks on the User Control Device into **Output Port 0 on an available CS-Bus device**. Plug a second communication wire from the other RJ-25 connector on the User Control Device into **Input Port 1** on the “next” CS-Bus Controller.

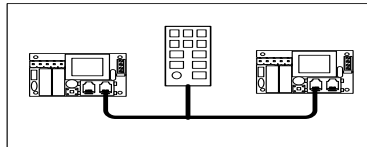


Figure 5

3.3 Wiring to External Dry Contact or non-CS-Bus non-intelligent Keypad. ([See Figure 6 below.](#))

Model Notes: The IMC-100S series Controllers’ J3 connector is designed to accept up to three (3) dry contact closures. The IMC-100T Controllers’ J3 connector is designed to accept up to two (2) dry contact closures as well as one voltage triggering input such as those available with screen trigger or external 12V contact closures.

Directions

- a. Strip ¼” (6 mm) of insulation from the 20 AWG to 24 AWG wire that you are planning to use to connect to the particular non-CS-Bus low voltage or dry contact keypad (as appropriate for your model of IMC-100x Controller).
- b. Connect as per the table in [Section A-1](#) and [Figure 6](#) below:



Figure 6

3.4 Wiring to External Home Automation System (Using RS-232C or RS-485)

The ILC-100x Controller employs a built-in RS-485 communication function. In order to connect the CS-Bus to a RS-232c communications device, you must secure either an Intelligent Bus Translator (IBT-100) or an e-Node (which has the option of configuring one RJ-25 port as RS-232c port while preserving the other port as a CS-Bus port). If you have a simple system with a single ILC-100x device, the IBT will be sufficient. The wiring for this system is described in [Section A2-4.3](#). However, should you have a more extensive system with numerous ILC-100x Controllers, you may wish to control the system with a single e-Node Internet Protocol Adapter (an Ethernet in, CS-BUS out intelligent converter). The wiring for the e-Node is detailed in [Section A2-4.4](#).

4 Power On/Testing

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

Directions

- a. Make sure that you have installed at least one IMC-100x Controller and either one Linkable Option or Standalone Option such as a keypad or IR receiver (or have connected your CS-Bus to a remote computer through either a (i) the IMC-BC-232/485 Serial Protocol Converter with a compatible device driver or the (ii) e-Node (Ethernet to IMC-100x Controller interface) with a compatible device driver.
- b. Verify that if are setting up and testing Infrared connections that you **do** have a supported Infrared remote keypad device or remote IR sensor.
- c. Power on all IMC-100x Controllers by providing AC power to all components.
- d. Verify each IMC-100x Controller has powered up properly by examining its status LED indicator. Depending upon the configuration of each IMC-100x Controller (whether or not a Linkable Paddle Switch Option Paddle has been installed in front of the IMC-100x Controller) and its current operational status (whether or not a motor is being driven currently), a colored LED will indicate the Controller's status. Please refer to the following two configuration cases below for the specific information for your installation.

State	No Linkable Option (applicable for IMC-100T) "On-board Yellow LED operation"	Linkable Option (applicable for IMC-100S) "On-board Yellow LED/Linkable Option LED"
AC power applied	<ul style="list-style-type: none"> •Yellow LED illuminates continuously 	<ul style="list-style-type: none"> • Processor board--Yellow LED is deactivated. • Faceplate BLUE or GREEN LED illuminates continuously
AC power removed	<ul style="list-style-type: none"> •Yellow LED turns off 	<ul style="list-style-type: none"> • Processor board--Yellow LED is deactivated. • Faceplate BLUE or GREEN LED turns off

5 Programming Group Address/Binding

Background: The IMC-100x Controllers and their associated User Interface Control Devices (keypads) have been designed with a rich feature set field proven in large commercial installations. A set of rich software tools and programming aides have been designed for the trained installer to customize virtually any feature within the IMC-100x controller and connected User Interface Control Device(s).

However, for the most basic installations, in field programming can be achieved with a simple push of a button on one or more devices (and without the need of additional software tools or interface devices) and the utilization of simple ZGN commands. Should your installation only require such functionality, please proceed within this section. However, if your installation requires additional customization not available with the information contained within this section, please consult your dealer. This type of programming typically utilizes UID commissioning tools available separately using the e-Node device and the e-Node Pilot application.

If you desire to proceed with basic programming and setup, please review the table at the end of this section for particular procedures supported within various released versions of User Interface Control Devices and IMC-100x Devices

Now follow the below two steps.

5.1 Step One / Insert Address onto CS-Bus

First, provide power to all IMC-100x controllers. Execute a "**BSKP Type 2 Operation**" on a Keypad (see [Table 1](#) above for specific sequence required for your particular model). This step initiates the Addressing Phase of the Binding Process. This action sends a signal to all IMC-100x Controllers on the CS-Bus to first "listen up" to initiate the process of establishing a "bus address" on the CS-Bus and then secondly, to become subsequently "Linked" or "Bound" to that (Group-related) button push.

5.2 Step Two /Link IMC to BSKP

Next, execute an "**IMC Type 2 Discovery Button Operation**" on the first (or subsequent) IMC-100x itself that you wish to link (see [Table 2](#) below for specific sequences required for your particular model). After

one or more **IMC Type 2 Discovery Button Operations** are executed, each respective IMC-100x Controller is then “Linked” or “Bound” to the intended button push (Group #) selected in **Step One** above. This second step then completes the Binding Process (i.e. a particular IMC-100x Controller has been identified, and has been given an address on the CS-Bus, and has been associated with the activity of a particular button push on a Control Device).

Table 1
BSKP (Keypad) Operation Required in order to Execute Specific Functions

Intended Operation	Keypad Device		
	BSKP-2000 (Mk II keypads)	BSKP-Mk I (3 or 5 Button Keypad)	BSKP-Mk I (11 Button Keypad)
<p>“BSKP Type 1 Operation”</p> <p>Application: Set Unique ID (UID).</p> <p>Note: This BSKP Type 1 Operation is reserved for use with an external e-Node and e-Node Pilot software</p>	<p>Briefly depress and release the (STAR) or (STOP) button (“Discovery Button”) on the front of the keypad. Restrict the time this button is depressed to less than 5 seconds, preferably under 1 second is desirable.</p> <p>Warning: Do not hold the Discovery Button for a period of time exceeding 5 seconds when you will hear a beep from the keypad’s on-board speaker. If a beep is heard, you will be unable to perform a Type 1 Operation. Simply, repower device and try again.</p>	<p>UIDs cannot be set with a Mk I keypad.</p>	<p>UIDs cannot be set with a Mk I keypad.</p>
<p>“BSKP Type 2 Operation”</p> <p>Application: Set Discovery Address</p> <p>Note: This BSKP Type 2 Operation is available for standalone programming (which does not require an external e-Node and e-Node Pilot software)</p>	<p>The BSKP-2000 series keypads come from the following factory defaults</p> <p>Channel 1 UP/Down Z.G.N=1.1.0 Channel 2 UP/Down Z.G.N=1.2.0</p> <p>If you wish to link the Channel 1 up/down buttons to a separate IMC-100x, simply depress either the Channel 1 up or down button for one second and release. Similarly, if you wish to link the Channel 2 up/down buttons to a separate IMC-100x, simply depress either the Channel 2 up or down button for one second and release.</p> <p>Note: These factory default addresses are pre-programmed into the BSKP-2000 series keypads and can only be changed with e-Node Pilot software but cannot be changed within the keypad itself.</p>	<p>The BSKP-3 and 5 button keypads (Mk 1) come from the following factory defaults</p> <p>Channel 1 UP/Down Z.G.N=1.1.0 Channel 2 UP/Down Z.G.N=1.2.0</p> <p>If you wish to link the Channel 1 up/down buttons to one or more IMC-100 devices, simply depress either the Channel 1 up or down button for one second and then release. Similarly, if your keypad device is equipped with a separate Channel 2 up/down set of buttons, you can link those buttons to one or more separate IMC-100 devices, by simply depressing either the Channel 2 up or down button for one second and then releasing.</p> <p>Note: These factory default addresses pre-programmed in the BSKP-3 and 5 button (Mk I series) keypads cannot be changed with e-Node Pilot software or within the keypad itself.</p>	<p>The BSKP-11 keypad (Mk 1) come from the following factory defaults</p> <p>Group 1 Z.G.N=1.1.0 Group 2 Z.G.N=1.2.0 Group 3 Z.G.N=1.3.0 Group 4 Z.G.N=1.4.0 Group 5 Z.G.N=1.5.0 Group 6 Z.G.N=1.6.0</p> <p>If you wish to link the a particular Group button to one or more IMC-100 devices, first depress and release a selected Group button and then depress/release the Channel 1 up or down button for one second and then release. You may select up to six (6) linkages in this manner.</p> <p>Note: These factory default addresses pre-programmed in the BSKP-11 (Mk I series) keypads cannot be changed with e-Node Pilot software or within the keypad itself.</p>
<p>“BSKP Type 3 Operation”</p> <p>Application: Erase all pre-programmed Addresses (Bus Addresses)</p> <p>Note: Select this option only if you are</p>	<p><i>The BSKP-2000 Mk II keypads can be “address-erased.”</i></p> <p>If you wish to address-erase this type of keypad, simply <i>depress and hold the “*” button until you hear the second sequential beep. Then release. All addresses will have been reset to the original factory defaults.</i></p> <p><i>Note: this type of reset does not change any pre-programmed UID</i></p>	<p><i>This feature not available</i></p>	<p>This feature not available</p>

<p><i>requested to do so by factory. There may be a charge if you reset addresses and the factory is required to reprogram the device.</i></p>	<p>information.</p> <p><i>Note: With some keypads where multiple personalities can be programmed (3 button, 5 button, 11 button) , this reset does not change those parameters either.</i></p>		
<p>“BSKP Type 4 Operation”</p> <p>Application: Reset all values back to Factory Settings</p> <p>Note: Select this option only if you are requested to do so by factory. There may be a charge if you reset the device and the factory is required to reprogram the device.</p>	<p>Press and hold Discovery button for 15 seconds until three sets of beeps are heard (1 set after 5 seconds, another set after 10 seconds, and a third set after 15 seconds). After the third set of beeps, release button quickly.</p> <p>Note: With some keypads where multiple personalities can be programmed (3 button, 5 button, 11 button) , it will be necessary to follow a factory documented process after this reset to properly personalize the keypad. The keypad may not work at all without this additional programming step. .</p>	<i>This feature not available</i>	<i>This feature not available</i>

**Table 2
IMC-100x Discovery Button Operation Required in order to Execute Specific Functions**

Intended Operation	Controller Device		
	IMC-100x (FW version XX.XX and later)	IMC-100x (FW version prior to XX.XX)	Reserved
<p>“IMC Type 1 Discovery Button Operation”</p> <p>Application: Set Unique ID (UID).</p> <p>Note: This Type 1 Operation is reserved for use with an external e-Node and e-Node Pilot software</p>	<p>Provided a valid UID address is inserted onto the CS-Bus (from e-Node Pilot) AND if the procedure specified below is followed, the IMC-100x’s on-board Yellow LED will quickly Flash OFF and ON in fast succession. In such case, an IMC Type 1 Discovery Button Operation has been successfully completed.</p> <p align="center">PROCEDURE</p> <p><i>-Seq. #1:Quickly depress and release Discovery Button on the front or back of the IMC-100x</i></p> <p>Warning: Do not hold the Discovery Button for a period of time exceeding 5 seconds (when the IMC-100x on-board LED will generate a double flash). If this double flash is seen, you will be unable to perform a Type 1 Discovery Button Operation. Simply, repower device and try again.</p>	<p>Provided a valid UID address is inserted onto the CS-Bus (from e-Node Pilot) AND if the procedure specified below is followed, the IMC-100x’s on-board Yellow LED will quickly flash OFF and ON. In such case, an IMC Type 1 Discovery Button Operation has been successfully completed.</p> <p align="center">PROCEDURE</p> <p><i>-Seq. #1:Quickly depress and release Discovery Button on the front or back of the IMC-100x</i></p> <p>Warning: If you hold the Discovery Button depressed for too long, the LED will remain OFF for about 5 seconds and eventually turn back ON and another mode will have been inadvertently activated. If the occurrence is seen, you have inadvertently performed an IMC Type 3 Discovery Button Option, and you will have to return your IMC to the factory for reprogramming (at your expense).</p>	
<p>“IMC Type 2 Discovery Button Operation”</p> <p>Application: Set Discovery Address</p> <p>Note: This Type 2 Operation is available for standalone programming (which does not require an external e-Node and e-Node Pilot software)</p>	<p>Provided a BSKP Type 2 Operation was executed (and a valid address is present on the CS-Bus), AND if the procedure specified below is followed, the IMC-100x’s on-board yellow LED will FLASH 2x quickly (after about 5 seconds) In such case, an IMC Type 2 Discovery Button Operation has been successfully completed.</p> <p align="center">PROCEDURE</p> <p><i>-Seq. #1:Depress and hold the Discovery Button on the front or back of the IMC-100x for about 5 seconds. Immediately release button.</i></p> <p>Warning: Do not hold the Discovery Button for a</p>	<p>Provided a BSKP Type 2 Operation was executed (and a valid address is present on the CS-Bus), AND if the procedure specified below is followed, the IMC-100x’s on-board yellow LED will slowly turn OFF and once again turn back ON. In such case, an IMC Type 2 Discovery Button Operation has been successfully completed.</p> <p align="center">PROCEDURE</p> <p><i>-Seq. #1:Slowly depress and release Discovery Button on the front or back of the IMC-100x</i></p>	

	<p>period of time after the first set of double Flashes are first observed. If you observe a second set of double FLASHES, you have inadvertently performed a Type 3 Discovery Button Option, and you will have to return your IMC to the factory for reprogramming (at your expense).</p>	<p>Warning: If you hold the Discovery Button depressed for too long, the LED will remain OFF for about 5 seconds and eventually turn back ON and another mode will have been inadvertently activated. If the occurrence is seen, you have inadvertently performed an IMC Type 3 Discovery Button Option, and you will have to return your IMC to the factory for reprogramming (at your expense).</p>	
<p>"IMC Type 3 Discovery Button Operation"</p> <p>Application: Erase all pre-programmed Addresses (Bus Addresses)</p> <p>Note: Select this option only if you are requested to do so by factory. There may be a charge if you reset addresses and the factory is required to reprogram the device.</p>	<p>Depress and hold the Discovery button (either on front or back of IMC-100x) while the following sequence is observed and followed:</p> <p style="text-align: center;">PROCEDURE</p> <p>-Seq. #1: Yellow LED turns OFF -Seq. #2: Yellow LED flashes 2x in fast succession. -Seq. #3 Yellow LED again flashes 2x in fast succession. -Seq. #4: IMMEDIATELY release button</p> <p>Warning: If you continue to hold the Discovery Button after Sequence #3 until such point that another set of double flashes is observed, you have inadvertently performed a Type 4 Discovery Button Option, and you will have to return your IMC to the factory for reprogramming (at your expense).</p>	<p>Depress and hold the Discovery button (either on front or back of IMC-100x) while the following sequence is observed and followed:</p> <p style="text-align: center;">PROCEDURE</p> <p>-Seq. #1: Yellow LED turns OFF -Seq. #2: Yellow LED turns back ON</p> <p>Warning: If you continue to hold the Discovery Button after Sequence #2 is FIRST OBSERVED and the LED turns OFF again, you have inadvertently performed a Type 4 Discovery Button Option, and you will have to return your IMC to the factory for reprogramming (at your expense).</p>	
<p>"IMC Type 4 Discovery Button Operation"</p> <p>Application: Reset all values back to Factory Settings</p> <p>Note: Select this option only if you are requested to do so by factory. There may be a charge if you reset the device and the factory is required to reprogram the device.</p>	<p>Depress and hold the Discovery button (either on front or back of IMC-100x) while the following sequence is observed and followed:</p> <p style="text-align: center;">PROCEDURE</p> <p>-Seq. #1 Yellow LED turns off -Seq. #2: Yellow LED flashes 2x in fast succession (after about 5 seconds). -Seq. #3 Yellow LED again flashes 2x in fast succession (after about 10 seconds). -Seq. #4 Yellow LED again flashes 2x in fast succession (after about 15 seconds). -Seq. #5: IMMEDIATELY release button</p> <p>Warning: If you perform an IMC Type 4 Discovery Button Operation, you may be required to return your IMC to the factory for reprogramming (at your expense).</p>	<p>Depress and hold the Discovery button (either on front or back of IMC-100x) while the following sequence is observed and followed:</p> <p style="text-align: center;">PROCEDURE</p> <p>-Seq. #1: Yellow LED turns OFF -Seq. #2: Yellow LED turns back ON -Seq. #3: Yellow LED turns OFF -Seq. #4: IMMEDIATELY release button</p> <p>After a few seconds, the yellow LED will turn back on. At such point, the IMC-100 has been returned to its factory defaults and all user programming will have been lost.</p> <p>Warning: If you perform an IMC Type 4 Discovery Button Operation, you may be required to return your IMC to the factory for reprogramming (at your expense).</p>	<p>This feature not available</p>

6 Additional Programming Options

Numerous other programming options exist for the IMC-100x series of Controllers. Please consult any other user documentation that may have come with your system before calling customer service for more assistance.

APPENDIX 1-Accessory Information

Please refer to appropriate section below for specific information on your specific keypad.

Note: MK II style keypads

A Mk II style keypad has an on-board RJ-25/telephone type connector on the back of the keypad.

Mk II style keypads can be remotely configured with alias (names), a unique ID (UID), and can have their functionality reprogrammed using outside software tools.

MK I style keypads

A Mk I style keypad has a four position screw terminal on the rear of the device. Mk I style keypads are hard coated with particular functions to their buttons, and those functions cannot be changed in software.

Type of Interface	Description	Model Number	Section Reference
Mach II keypads (with RJ connector)	11 button keypads	BSKP-2110/2116	A1-1.1
	3 button keypads	BSKP-2030	A1-1.2
	5 button keypads	BSKP-2050	A1-1.3
	Paddle keypad	BSKP-2020	A1-1.4
Mach I keypads (without RJ conn.)	11 button keypads	BSKP-1110/2116	A1-2.1
	3 button keypads	BSKP-1030	A1-2.2
	5 button keypads	BSKP-1050	A1-2.3
Handheld Infrared Remote	3 button handheld	IMC-IR-3W	A1-3.1
	5 button handheld	IMC-IR-5W	A1-3.2

1.0 Mach II Intelligent Keypads with RJ connectors

A1-1.1 Wall pad 11-Button Switch (Standalone Model IMC-BSKP-2110/2116 Mk II style)

Application: The BSKP-2000 series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the BSKP-2000 keypads are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.

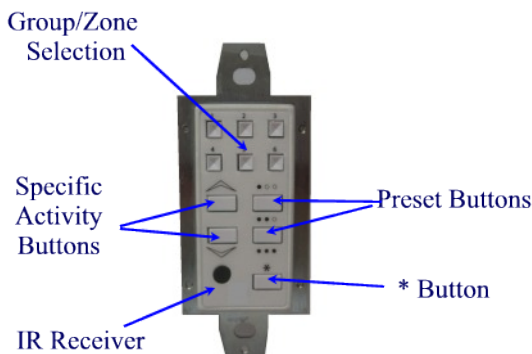


Figure 7

IMC-100S/100T

Zone/Group Buttons (top three rows/6 buttons). A specific Zone/Group button needs to be selected and pressed first before a (i) Specific Activity Button, or (ii) a Preset Button is pressed. These buttons properly identify to the system the specific motor or sets of motors that will be controlled. The factory default for these six buttons is (Zone1/Group 1) for the first button marked “1,” sequencing to (Zone 1/Group 6) for the last button marked “6” (i.e. the Zones are always the same if the factory defaults are left unmodified).

If the factory default of Zone 1 is desired to be changed (i.e. such that the entire keypad is a Zone 6 keypad for instance), select the button whose number relates to the new desired zone (i.e. pick the button marked “6”) and hold that button until you hear the first beep, then release. The keypad is now set to the new zone address such that the operation of the 6 group buttons will be as follows: button marked “1” will be (Zone 6/Group1) sequencing to the (Zone 6/Group 6) for the last button marked “6.”

Note: if additional customization is required, you will need to use the e-Node Ethernet adapter and the e-Node Pilot application which permits basically any type of additional customization to be performed.

IMC-100T

Preset Buttons (top/bottom or combination of both). N/A

IMC-100S

Preset Buttons (top/bottom or combination of both). The right pair of Preset Buttons activates one or more connected motor controllers whose zone and/or group have been previously selected using the “Group/Zone Selection” buttons to move motor(s) with matching address(es) to the selected preset. The top button directs the specific controller to move to Preset 1, while the bottom button directs the controller to move to Preset 3. If both buttons are depressed simultaneously, a command is generated that moves the controller to Preset 2

IMC100T/100S

Specific Activity Buttons- Selected Zone/Group (UP/DOWN). The pair of UP/DOWN buttons activates one or connected motor controllers whose zone and/or group has been previously selected using the “Group/Zone Selection” buttons to move motor(s) with matching address(es) in the selected direction. In the factory default

settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the motor controller will activate connected bi-directional motor(s) with matching addresses to travel in that appropriate direction until the motor(s) reaches its desired (fully UP or fully DOWN) position.

IMC-100T/IMC-100S

* **Button.** Selecting the * button before selecting either a (i) Specific Activity Button, or a (ii) Preset Button directs the keypad to transmit an “All” command to all Group addresses currently configured within the keypad **plus** the Specific Activity Command or Preset Command selected.

In addition, additional features are available with * button. See table below.

Type of Operation	Details
<p>UID Assignment Mode Hold and quickly release * button within 100 ms (you should hear no beeps during this period)</p>	<p>If in <i>UID assignment mode (by using e-Node and Pilot application)</i>, hold and release * button within specific time and keypad will be linked to the UID address (initially) broadcasted onto bus.</p> <p>Note: After initial UID assignment has been made, either a factory reset is required or the use of e-Node and e-Node Pilot application is required</p>
<p>One beep mode. Hold and release * button after you hear the first beep</p>	N/A
<p>Two beep mode. Hold and release * button after you hear the second beep</p>	Previously set addresses are reset to the factory default. No UID assignments are affected.
<p>Three beep mode. Hold and release * button after you hear the third beep</p>	<p>Full factory reset. UID is reset.</p> <p>Note: <i>With some keypads where multiple personalities can be programmed (2030.2050, and 2110-L), it will be necessary to follow a factory documented process after this reset to properly personalize the keypad for the correct operation. The keypad may not work at all without this additional programming step. The 2110-B and the 2116 keypads do not require this additional step.</i></p>

IMC-100T/IMC-100S

Infrared Receiver. This is a build-in Infrared Receiver to be used with compatible Infrared remote.

Additional Features

Feature	Operation
Store Position	<p>Move specific motor to desired position and hold specific preset button until you hear the first beep.</p> <p>Note: up to three (3) stored positions can be stored in this manner</p>
Activate Calibrate Mode	Press and hold the UP button until you hear the first beep. The one-time automatic calibration function will be initiated.
Toggle Normal/Uniform Mode*	Press and hold the DOWN button until you hear the first beep. The system will toggle from the current motor controller mode (i.e. either normal mode or uniform mode) to the alternative mode (i.e. uniform mode or normal mode).

A1-1.2 Wall pad 3-Button Switch (Standalone Model IMC-BSKP-2030/Mk II style)

Application: The BSKP-2000 series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the Channel 1 UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the BSKP-2000 keypads are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.

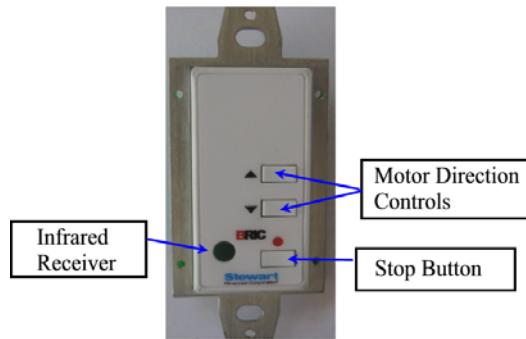


Figure 7

IMC-100T/100S

Specific Activity Buttons-Channel 1 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 1* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

● Button. Depress this button anytime while a motor moving and the motor will stop.

IMC-100T/IMC-100S

Infrared Receiver. This is a built-in Infrared Receiver to be used with compatible Infrared remote.

A1-1.3 Wall pad 5-Button Switch (Standalone Model IMC-BSKP-2050/Mk II style)

Application: The BSKP-2000 series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the Channel 1 and Channel 2 UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the BSKP-2000 keypads are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.

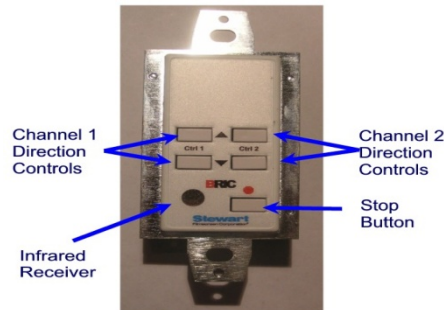


Figure 8

IMC-100T/100S

Specific Activity Buttons-Channel 1 (UP/DOWN). The left pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 1* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

Specific Activity Buttons-Channel 2 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 2* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

● Button. Depress this button anytime while a motor moving and the motor will stop.

IMC-100T/IMC-100S

Infrared Receiver. This is a built-in Infrared Receiver to be used with compatible Infrared remote.

A1-1.4 Wall pad 2-Button Paddle Switch (Standalone Model IMC-BSKP-2020-M) (Mk II style)

Application: The BSKP-2000 series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the BSKP-2000 keypads are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.



Figure 11

IMC-100T/100S

Specific Activity Buttons-Channel 1 (UP/DOWN). The UP/DOWN buttons activates one or connected motor controllers *designated as Channel 1* to move motor in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the motor controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

2.0 Mach I Intelligent Keypads without RJ connector

A1-2.1 Wall pad 11-Button Switch (Standalone Model IMC-BSKP-11/Mk I style)

Application: The BSKP-2000 series of keypads can control one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the BSKP-2000 keypads are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.

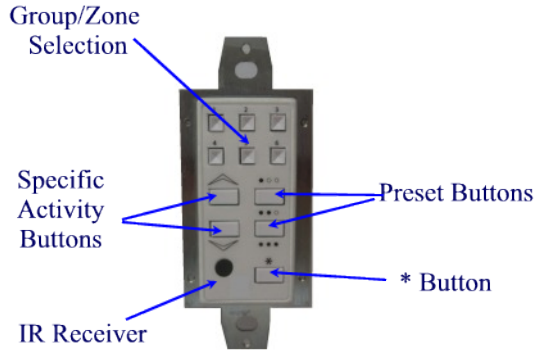


Figure 7

IMC-100S/100T

Zone/Group Buttons (top three rows/6 buttons). A specific Zone/Group button needs to be selected and pressed first before a (i) Specific Activity Button, or (ii) a Preset Button is pressed. These buttons properly identify to the system the specific motor or sets of motors that will be controlled. The factory default for these six buttons is (Zone1/Group 1) for the first button marked “1,” sequencing to (Zone 1/Group 6) for the last button marked “6” (i.e. the Zones are always the same if the factory defaults are left unmodified).

If the factory default of Zone 1 is desired to be changed (i.e. such that the entire keypad is a Zone 6 keypad for instance), select the button whose number relates to the new desired zone (i.e. pick the button marked “6”) and then depress the * button, then release the * button and finally release the zone/group button. The keypad is now set to the new zone address such that the operation of the 6 group buttons will be as follows: button marked “1” will be (Zone 6/Group1) sequencing to the (Zone 6/Group 6) for the last button marked “6.”

Note: No additional customization is required with Mach I keypads.

IMC-100T

Preset Buttons (top/bottom or combination of both). N/A

IMC-100S

Preset Buttons (top/bottom or combination of both). The right pair of Preset Buttons activates one or more connected motor controllers whose zone and/or group have been previously selected using the “Group/Zone Selection” buttons to move motor(s) with matching address(es) to the selected preset. The top button directs the specific controller to move to Preset 1, while the bottom button directs the controller to move to Preset 3. If both buttons are depressed simultaneously, a command is generated that moves the controller to Preset 2

IMC100T/100S

Specific Activity Buttons-Selected Zone/Group (UP/DOWN). The pair of UP/DOWN buttons activates one or connected motor controllers whose zone and/or group has been previously selected using the “Group/Zone Selection” buttons to move motor(s) with matching address(es) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the motor

controller will activate connected bi-directional motor(s) with matching addresses to travel in that appropriate direction until the motor(s) reaches its desired (fully UP or fully DOWN) position.

IMC-100T/IMC-100S

* **Button.** Selecting the * button before selecting either a (i) Specific Activity Button, or a (ii) Preset Button directs the keypad to transmit an “All” command to all Group addresses currently configured within the keypad **plus** the Specific Activity Command or Preset Command selected.

In addition, additional features are available with * button. See table below.

Feature	Operation
Store Position	Move specific motor to desired position and hold specific Preset Button (or combination of two Preset Buttons for Preset #2) and hold * button for 5 seconds, then release * button and finally release Preset Button(s) Note: up to three (3) stored positions can be stored in this manner
Activate Calibrate Mode	Press and hold the UP button and hold * button for 5 seconds, then release * button and finally release UP Button. The one-time automatic calibration function will be initiated.
Toggle Normal/Uniform Mode*	Press and hold the DOWN button and hold * button for 5 seconds, then release * button and finally release DOWN Button. The system will toggle from the current motor controller mode (i.e. either normal mode or uniform mode) to the alternative mode (i.e. uniform mode or normal mode).

IMC-100T/IMC-100S

Infrared Receiver. This is a built-in Infrared Receiver to be used with compatible Infrared remote.

A1-2.2 Wall pad 3-Button Switch (Standalone Model IMC-BSKP-3/Mk I style)

Application: The BSKP-Mk I series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. This series of keypads, however, are not designed to control ILC-100x Intelligent Lighting Controller(s). If you wish to control ILC-100 Intelligent Lighting Controllers, you will need to secure a BSKP-2000 series keypad.

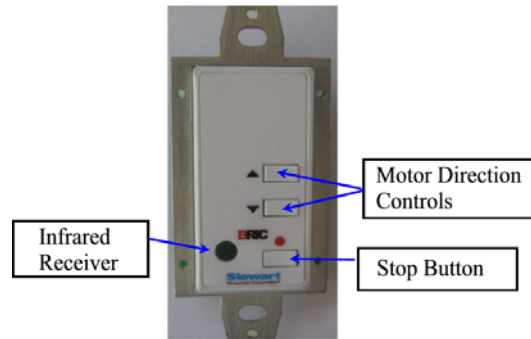


Figure 9

IMC-100T/100S

Specific Activity Buttons-Channel 1 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 1* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

● Button. Depress this button anytime while a motor moving and the motor will stop.

IMC-100T/IMC-100S

Infrared Receiver. This is a built-in Infrared Receiver to be used with compatible Infrared remote.

A1-2.3 Wall pad 5-Button Switch (Standalone Model IMC-BSKP-5/Mk I style)

Application: The BSKP-Mk I series of keypads can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. This series of keypads, however, are not designed to control ILC-100x Intelligent Lighting Controller(s). If you wish to control ILC-100 Intelligent Lighting Controllers, you will need to secure a BSKP-2000 series keypad (Mk II).

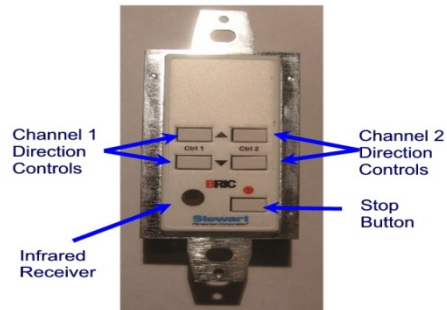


Figure 10

IMC-100T/100S

Specific Activity Buttons-Channel 1 (UP/DOWN). The left pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 1* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

Specific Activity Buttons-Channel 2 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected motor controllers *designated as Channel 2* to move those motor(s) in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T/100S

● Button. Depress this button anytime while a motor moving and the motor will stop.

IMC-100T/IMC-100S

Infrared Receiver. This is a built-in Infrared Receiver to be used with compatible Infrared remote.

A1-3.1 Handheld 12-button Infrared Remote (IMC-IR-10W1)



Figure 12

Several models of IR handhelds may be available to control IMC-100x Controllers. Depending upon the number of buttons provided, the specific functionality of the device will vary; however, the following directions will generally apply to all Converging Systems' Infrared remotes.

Application: The IR-10WI series of infrared transmitters can control of one more IMC-100 intelligent motor controllers linked together on a CS-Bus. When used in conjunction with one or more ILC-100x Intelligent Lighting Controller(s), the Channel 1 and Channel 2 UP and DOWN buttons can also trigger particular lighting presets. Depending upon how the IR-10WI remotes are programmed, motors can be programmed to run independently or in conjunction with specific LED activity. Consult the ILC-100 manual for more information here.

IMC-100T

A-D Buttons. This buttons are reserved for future use such as utilization with LED lighting and alternative Zone/Group control.

IMC-100T

Specific Activity Buttons-Channel 1 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected IMC-100x Controllers *designated as Channel 1* to move motor in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T

Specific Activity Buttons-Channel 2 (UP/DOWN). The right pair of UP/DOWN buttons activates one or connected IMC-100x Controllers *designated as Channel 2* to move motor in the selected direction. In the factory default settings, if you tap the switch once in one of the applicable directions (UP or DOWN) and then release, the IMC Controller will activate a connected bi-directional motor to travel in that appropriate direction until it reaches its desired (fully UP or fully DOWN) position.

IMC-100T

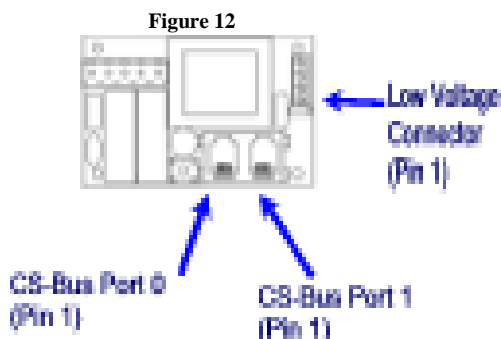
STOP/* Button. Depress this button anytime while a motor moving and the motor will stop.

IMC-100T/IMC-100S

Toggle Button. Reserved for future use.

Appendix 2 Technical Information-Low Voltage Wiring Diagrams

The IMC has both low-voltage connections as well as CS-Bus connections. Refer to following diagram to understand location of Pin 1 on all connectors.



A2-1 Low-Voltage Switch and Voltage Trigger Interfaces (STI)

A2-1.1 Low-Voltage Output Connections (IMC-100T only)

Low Voltage Connector (on IMC-100T Controller) (see Figure 10)	Simple SPST Momentary Push Button (UP)	Simple SPST Momentary Push Button (Down)	5V to 12V Screen Trigger Interface
Pin 1 (left) Ground	Pin A (Ground)	Pin A (Ground)	Ground
Pin 2 Channel 1 input	Pin B (UP)		
Pin 3 Channel 2 input		Pin B (DOWN)	
Pin 4 Screen Trigger Input			3-15VDC 10ma (min)

A2-1.2 Low-Voltage Connector to Simple 3-Button Control (IMC-100S only)

Low Voltage Connector (on IMC-100S Controller) (see Figure 10)	Simple SPST Momentary Push Button (UP)	Simple SPST Momentary Push Button (Mid)	Simple SPST Momentary Push Button (Down)
Pin 1 (left) Ground	Pin A (Ground)	Pin A (Ground)	Pin A (Ground)
Pin 2 Channel 1 input	Pin B (UP)		
Pin 3 Channel 2 input		Pin B (Midpoint)	
Pin 4 Channel 3 input			Pin C (DOWN)

A2-2 Infrared Connections

A2-2.1 Supplemental IR Header

Model Notes: The IMC-100T series Controllers has a built-in optional IR attachment connector. External IR can be brought in through the CS-Bus Downlink port as well as through the on-board 3-pin connector as seen in Figure 1.

Warning: Typical 3 wire IR receivers available from Xantec are not compatible. You will damage your unit if you connect these devices. Please refer to your dealer for a compatible device.

Pin	IMC-100S (J3)	IMC-100T (J3)
#1 (left)	Not supported	IR signal
#2	Not supported	Ground
#3	Not supported	VCC+

A2-2.2 CS-Bus to Standalone Remote IR Receiver Module (IMC-RIR)

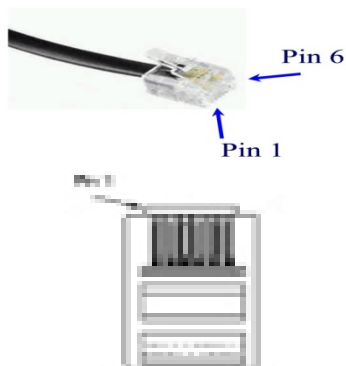


Figure 13

IR Receiver Compatibility Warning: This connection provides a custom IR connection port for a remote IR receiver device. **UNDER NO SITUATION SHOULD EXTERNAL IR SIGNALS SUCH AS THOSE AVAILABLE FROM XANTECH SYSTEMS OR OTHERS BE CONNECT TO THIS PORT AS THE VOLTAGES AND SIGNALS ARE INCOMPATIBLE. You will damage your unit is you connect these devices. Please refer to your dealer for a compatible device**

CS-Bus Connection (on IMC-100x Controller). (LEFT Port "0" or "OUTPUT" port ONLY) (see Figure 10)	IMC-RIR (4 pin terminal connector) (see Figure 11)
#1 (left) IR	Connection-pin 1
#2 GND	Connection-pin 2
#3 485-	
#4 485+	
#5 5V DC (regulated)	Connection-pin 3
#6 9V DC (unregulated)	

A2-3 Intelligent Peripheral Connections

A2-3.1 CS-Bus TO IMC-BSKP-2030 (3 button), IMC-BSKP-2050 (5-button) or IMC-BSKP-2110-M (Intelligent Keypads) [Mk II Keypads]



Figure 14

CS-Bus RJ-12 Connection (on CS-Bus Controller) (LEFT or "OUTPUT" PORT 0) (see Figure 12)	IMC-BSKP-xx Keypad (RJ-25 connector) Pin #1 on RJ-25 plug is as marked above
#1 (left) IR	#1 No connection
#2 GND	#2 GND
#3 485-	#3 485-
#4 485+	#4 485+
#5 5V DC (regulated)	#5 5V DC (regulated)
#6 9V DC (unregulated)*	#6 9V DC (unregulated)*

IMPORTANT: maintain twisted pairs for pins 1/6, pins 2/5, and pins 3/4.

Note: Pin #6 voltage is only available on IMC-100. BSKP-MII keypad can operate with either Pin #5 or Pin #6 voltage.

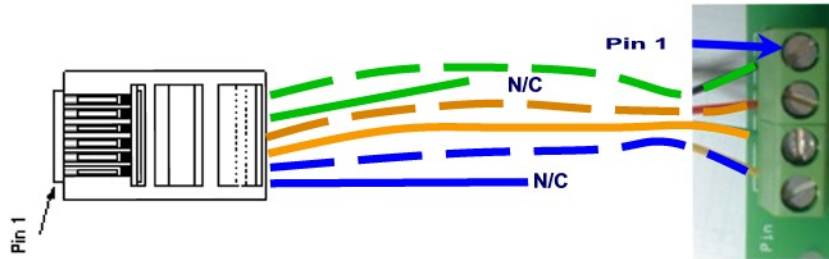
A2-3.2 CS-Bus TO IMC-BSKP-3, IMC-BSKP-5 or IMC-BSKP-11 Keypad (Intelligent Keypads) [Mk I Keypads]



Figure 14

CS-Bus RJ-12 Connection (on IMC-100x Controller) (LEFT or "OUTPUT" PORT 0) (see Figure 12)	IMC-BSKP-xx Keypad (4 pin terminal connector). Pin #1 is marked as "J2" 1 on PCB
#1 (left) IR	No connection
#2 GND	Pin 4 (right side of connector)
#3 485-	Pin 3
#4 485+	Pin 2
#5 5V DC (regulated)	No connection
#6 9V DC (unregulated)	Pin 1 (left side of connector)

IMPORTANT: maintain twisted pairs for pins 1/6, pins 2/5, and pins 3/4.



Note: If using CAT5, do not connect Brown and Brown/White wires

A2-4 CS-Bus Connections

A2-4.1 IMC-100x Controller to IMC-100x Controller Communication Wiring

Wiring Note: The preferred method of connection between multiple IMC-100x devices is to connect the “**Output**” Port 0 of one unit to the “**Input**” Port 1 of the next unit (see directions under Section 3.1 above). As long as you **do not plan on adding any devices** onto the CS-Bus such as IR receivers, RS-232C-RS485 adapter or Intelligent keypads (which all regard power), you may freely interconnect one IMC-100x Controller to another similar IMC-100x Controller without regard to the “**Output**” or “**Input**” port designation. You should routinely use 8-conductor CAT5 wire and simply cut 1 pair (the Brown and Brown/White wires) and therefore populate the RJ-25 connectors that are used to interconnect the IMC-100x Controllers with 3 twisted pairs (6 wires). For shorter runs you can use flat 6-conductor telephone line cord and appropriate RJ-25 connectors.

CS-Bus Connection (on IMC-100x Controller) (LEFT or “OUTPUT” Port 0) (see Figure 10)	CS-BUS Connection (on IMC-100x Controller) (Right or “INPUT” Port 1) (see Figure 10)
#1 No Signal	#1 No Signal
#2 GND	#2 GND
#3 485-	#3 485-
#4 485+	#4 485+
#5 5V DC (regulated)	#5 5V DC (regulated)
#6 9V DC (unregulated)	#6 9V DC (unregulated)

A2-4.2 RS-485 Terminators

Applicability Note: RS-485 communication 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 more than one IMC-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 connectors so long as they are at the very beginning of the bus and the very end of the bus.

RJ-25 connector terminator wiring) (See Figure 13)	
#1	---
#2	---
#3	120 ohm resistor connection
#4	120 ohm resistor connection
#5	---
#6	---

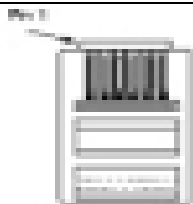


Figure 13

A2-4.3 CS-Bus (RS-485) to Remote External (RS-232-C) Control Device (“Intelligent Bus Translator) or IBT-100)

Example: ILC-100x to IBT-100 Intelligent Bus Translator

Note: Two alternative connection schemes can be used to connect the IBT-100 to your IMC-100x Controller network. Both work similarly (see Alternative #1 and Alternative #2 for wiring diagram).

See “IBT-100 to PC” for the wiring diagram from this device to a PC or an automation controller.

Alternative #1

CS-Bus Connection (on IMC-100x and ILC-100x Controller) (LEFT or “OUTPUT” PORT 0 ONLY)	Intelligent Bus Translator (IBT-100) with RJ-25 connector
#1 No Signal	#1 No Signal
#2 GND	#2 GND
#3 485-	#3 485-
#4 485+	#4 485+
#5 5V DC (regulated)*	#5 5V DC (regulated)
#6 9V DC (unregulated)	#6 9V DC (unregulated)

Note: Pin #6 voltage is only available on IMC-100. IBT-100 devices can operate with either Pin #5 or Pin #6 voltage.

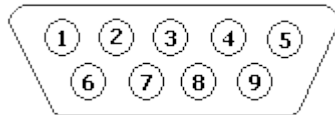
Alternative #2

CS-BUS Connection (on IMC-100x Controller and ILC-100x Controller)	Intelligent Bus Translator (IBT-100) with RJ-25 connector RJ-25 connector (RS-485 only)
#1 No Signal	#1 No Signal
#2 GND	#2 GND
#3 485-	#3 485-
#4 485+	#4 485+
#5 No Connect	#5 No Connect
#6 9V DC (unregulated)	#6 9V DC (unregulated)

IBT-100 to PC Serial Port Wiring

CS-BC-232/485 Module (DB-9 Connector)	Computer RS-232C Connector (DB-9) (see Figure 14)
1 Not required	1 Not required
2 Controller Tx	2 PC Rx
3 Controller Rx	3 PC Tx
4 Not required	4 Not required
5 GND	5 GND
6 Not required	6 Not required
7 Not required	7 Not required
8 Not required	8 Not required
9 Not required	9 Not required

RS232 DB9 (EiA/TIA 574)



(view into male end)

Figure 14

A2-4.4 IMC-100x Controller to e-Node (Internet Protocol Adapter)

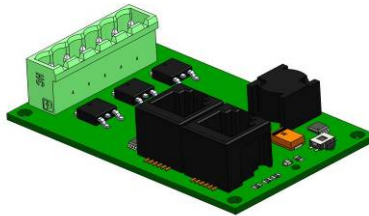
A straight-thru 6-conductor wire (RJ-25 to RJ-5) should be used to connect any one IMC-100X controller to the e-Node. This will in effect interconnect all IMC-100x controllers to the e-Node. You do not need to obey any wiring restrictions relating to **Input** or **Output** connectors on the IMC-100x Controller because the e-Node has its separate power source.

Appendix 3 Updates for IRC-300 Intelligent Relay Controller

The IRC-300 has a slightly different form factor from the IMC-100 family controller. It is designed to control third-party relays. Please refer to the below simplified directions for this device.

1. Mounting Instructions

The IRC-3100 controllers come in two versions. One is a pre-configured PCB ready to be device mounted (IMC-300pcb) and the other is the same PCB mounted in a self-contained metal enclosure (IRC-300m). See [Figure 1a](#) and [Figure 1b](#) below for layout details. If you are utilizing the IRC-300m, please follow the directions below:



IRC-300pcb--Standard PCB mount
Figure 7a



IRC-300m in self-contained metal enclosure
Figure 1b

Directions

- a.** Determine a suitable mounting location for IRC-300m close to the LED elements that you wish to control.
- b.** Utilize the built-in mounting ears and use appropriate screws to affix the unit to a stable surface.

Note: For convenience, the IMC-300m Controller may be mounted with a double gang wall box. If you are mounting the IMC-300m within a double gang junction box, route Low Voltage wires through a separate entry or knockout from any AC supply lines present

2. Supply (Line Input) and Relay (Output) Wiring Instructions

IMPORTANT: MAKE SURE THAT THE DC POWER SOURCE IS UNPLUGGED FROM THE MLC-300x PRIOR TO CONTINUING.

2.1 DC Power Source Connection

Directions

- a. If the AC/DC power supply does not have a pre-installed 2-pin power connected attached, strip 1/4" (6mm) of insulation from DC power cord.
- b. Connect wires as shown below:

DC Input Connection Block	DC
Pin 1 (left position on connector)	+ 12 to 48V DC
Pin 2	Ground

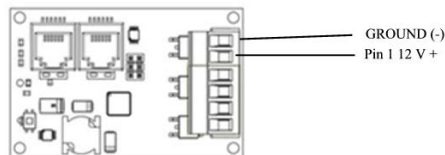


Figure 2

- c. Leave AC/DC Power Adapter unplugged until requested to turn plug into AC source.

3.2 Relay Connection Block

Directions

- a. If the interconnect wire furnished with your external motor controller does not have a pre-installed 4-pin power connected attached, strip 1/4" (6mm) of insulation from DC power cord.
- b. Connect these wires as shown below:

	LV-Output Connection Block (4-pin)	Pins
Low Voltage 4-pin connector block	Pin 1 (left position on connector)	Channel "A" DOWN (-)
	Pin 2	Channel "A" UP (-)
	Pin 3	Channel "A" STOP (-)
	Pin 4	n/c
Power Connector (2-pin connector)	Pin 1 (left position of 2-pin connector) + terminal	Definitely NO CONNECTION
	Pin 2 (ground/-)	Common

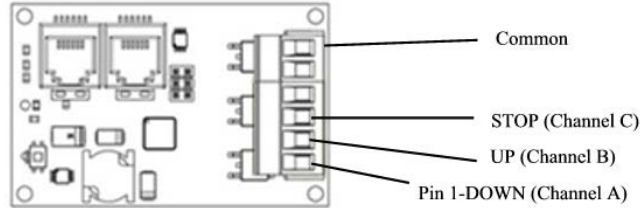


Figure 3

4 Communication with 3rd party devices

As with the IMC-100 family of controllers, one or more interface adapters should be secured to communicate with the IRC-300. These interfaces include the following:

Type of Interface	Product Name	References
Keypads	BSKP-2030 (3 button keypad)	See Keypad reference manual
RS-232-C interface	IBT-100 Intelligent Bus Translator	See IBT-100 manual
Ethernet Interface	e-Node Ethernet Interface	See e-Node Reference manual
Lutron Interface single channel connectivity (no webpages)	IBE-1000	See IBE-1000 manual
Lutron Interface multi-channel connectivity (no webpages)	e-Node Ethernet Interface with Lutron firmware update	See e-Node Reference manual

4.1 Syntax

Commands are transmitted to IRC-100 Controllers on the CS-Bus. The below software examples demonstrate connectivity using the IBT-100 serial interface adapter. Consult the IBT-100 manual for more information on setting up the IBT-100

A Zone/Group/Node (“ZGN”) packet is defined as:

#	Z	.	G	.	N	.	P	=	CC	↵
---	---	---	---	---	---	---	---	---	----	---

# Z	Mandatory; specifies the Zone number (i.e. 0 is broadcast, 1-255 possible zones)
. G	Mandatory; specifies the Group number (i.e. 0 is broadcast, 1-255 possible groups)
. N	Mandatory; specifies the Node number (i.e. 0 is broadcast, 1-255 possible nodes)
. P	Mandatory; Function (see commands listed under “Function” in Table 1 below)
= CC	Mandatory; Function (see commands listed under “Command” in Table 1 below)
↵	Mandatory; specifies a return character

Note: all characters are ASCII UPPER CASE. Wildcard of #0.0.0 sends a “broadcast” to all connected CS-Bus Controllers. Not valid for inquiries.

4.2 Sample Software Commands

TABLE 2-ZGN Commands

Function	Command	Notes
Motor Control	A Down	DOWN Commands port to send relay DOWN
	UP	UP Commands port to send relay UP
	Stop	STOP Commands port to send relay STOP
	Move Preset (Location 1)	RECALL,1 Commands port to send to (predefined) Preset #1

4.3 Operational Example

4.3.1 Motor Move Example in a IRC-300 environment

This example commands a single motor to move. (This assumes the device has the default factory defaults of Zone1/Group1/Node1 (1.1.1.)

Command	Action
#1.1.1.A=DN	Screen motor will move DOWN
#1.1.1.A=ST	Screen motor will STOP
#1.1.1.A=UP	Screen motor will move UP
#1.1.1.A=Recall,1	Screen motor will move to Preset 1*

*Note: Recall, "X" commands are only available on the IRC-300 and specific models of the IMC-100 (i.e. IMC-100C and IMC-100S).