Crestron **C2N-DB6, C2N-DB8 & C2N-DB12**

Decorator Keypads

Operations & Installation Guide

Regulatory Compliance

As of the date of manufacture, the C2N-DB6, C2N-DB8, and C2N-DB12 have been tested and found to comply with specifications for CE marking.

CE

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment 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

Industry Canada (IC) Compliance Statement

CAN ICES-3(B)/NMB-3(B)

The specific patents that cover Crestron products are listed at patents.crestron.com.

This document was written by the Technical Publications department at Crestron.

Contents

Decorator Keypads: C2N-DB6, C2N-DB8 & C2N-DB12

Introduction

Crestron® C2N-DB6, C2N-DB8, and C2N-DB12 Decorator Keypads deliver simple, versatile push button control for a broad range of residential and commercial applications. Clean, contemporary styling lends an attractive and unimposing appearance to any interior design and affords convenient electrical box installation in perfect harmony with other wall mount devices. They are offered in smooth white, almond, and black finishes, each formulated to match perfectly with popular off-the-shelf faceplates.*

Available in configurations of 6, 8, or 12 buttons, the Decorator Keypads are designed for installation using standard electrical gang boxes and decorator-style faceplates.* Multiple keypads can easily be ganged side-by-side with other wall-mount devices.

The C2N-DB6, C2N-DB8, and C2N-DB12 are functionally identical. For simplicity within this guide, the term "C2N-DB6/8/12" is used except where noted.

* Faceplate not included.

Keypad Model Availability

MODEL NUMBER	DESCRIPTION
C2N-DB6A-* C2N-DB6-A-S* C2N-DB8A-* C2N-DB8-A-S* C2N-DB12A-* C2N-DB12-A-S*	6-, 8-, or 12-Button Keypad, Smooth Almond
C2N-DB6B C2N-DB8B C2N-DB12B	6-, 8-, or 12-Button Keypad, Smooth Black
C2N-DB6W-* C2N-DB6-W-S* C2N-DB8W-* C2N-DB8-W-S* C2N-DB12W-* C2N-DB12-W-S*	6-, 8-, or 12-Button Keypad, Smooth White

* The almond smooth (-A-S) and white smooth (-W-S) finishes currently offered are not the same as on older almond (A) and white (W) models. If buttons or keypads to match the older almond or white finishes are required, contact a Crestron representative.

The following colors are available from Crestron to match Lutron® faceplate colors.

Available Colors and Textures

COLOR AND TEXTURE	MODEL # SUFFIX	MATCHING LUTRON FACEPLATE COLOR
Smooth Almond	A-S	Light Almond (LA)
Smooth Black	B-S	Black (BL)
Smooth White	W-S	White (WH)

Custom engraving of the buttons is also available to provide clear designation of each button's function. Every button is accompanied by an LED indicator, providing true status feedback for the most reliable

operation. Every button and LED is fully programmable for virtually any custom functionality, making C2N-DB6/8/12 Decorator Keypads perfect for controlling room lighting and shades, audio and video equipment, or any other application that demands simple, immediate one-touch control.

NOTE: The keypads are supplied with blank push buttons. As an option, custom engraved buttons can be designed and obtained by using the Crestron Engraver software. Version 2.1.0.1 or later is available from the Crestron website www.crestron.com/software.

Features and Functions

- Fits standard electrical gang boxes and decorator style faceplates
- Color-matched "smooth" finishes
- Available in 6-, 8-, and 12-button configurations
- Replaceable, custom-engravable button caps
- Programmable feedback LEDs
- Available in smooth black, white, and almond to match Lutron faceplates (not included)
- Easy Cresnet® wiring

Specifications

Specifications for the Decorator Keypads are listed in the following table.

C2N-DB6/8/12 Keypad Specifications

SPECIFICATION	DETAILS
Power Requirements	
Cresnet Power Usage	3 watts (0.125 A @ 24 Vdc)
Default Net ID Models	
C2N-DB6	73
C2N-DB8	72
C2N-DB12	71
Environmental	
Temperature	32º to 113º F (0º to 45º C)
Humidity	10% to 90% RH (non-condensing)

(Continued on following page)

C2N-DB6/8/12 Keypad Specifications (Continued)

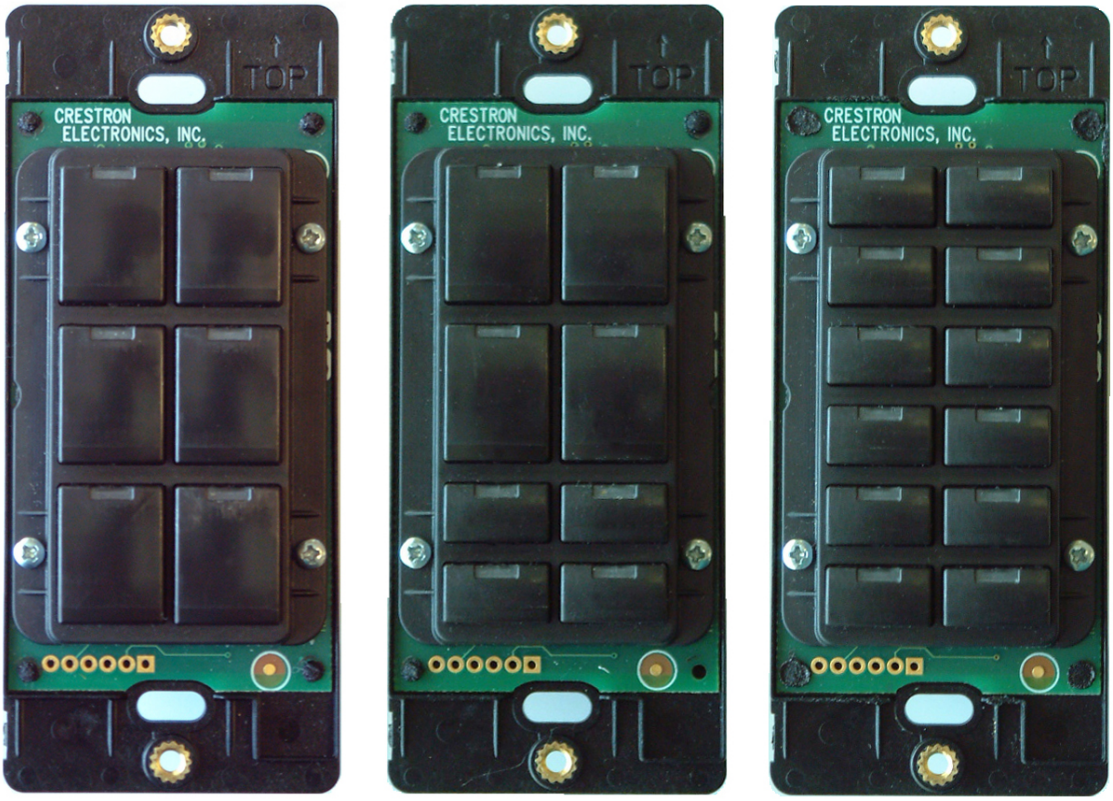
SPECIFICATION	DETAILS
Enclosure	
Chassis	Plastic
Mounting	Mounts in a 1-gang or larger electrical box or mud ring
Faceplate	Requires decorator style faceplate (not included)
Dimensions	
Height	4.16 in (106 mm)
Width	1.79 in (46 mm)
Depth	1.53 in (39 mm) without connector*
Weight	2.6 oz (75 g)
Available Accessories	
CCR-L-1	Crestron Color Ring
CRESNET-HP-NP	Cresnet “High Power” Control Cable, plenum, available in teal in varying lengths
CRESNET-NP	Cresnet Control Cable, non-plenum, available in teal, black, orange, and yellow in varying lengths and packaging
CRESNET-P	Cresnet Control Cable, plenum, available in teal, black, orange, and yellow in varying lengths
DB6/8/12-BTN-A-S	Engravable Button Cap for C2N-DB6/8/12 Smooth Almond
DB6/8/12-BTN-B	Engravable Button Cap for C2N-DB6/8/12 Smooth Black
DB6/8/12-BTN-W-S	Engravable Button Cap for C2N-DB6/8/12 Smooth White

* The depth of the keypad is listed without the Cresnet connector (which would add approximately 0.45 in (12 mm) plus clearance for the wiring).

Physical Description

This section provides information on the connections, controls, and indicators available on the C2N-DB6/8/12. Refer to page 12 for button arrangement details.

C2N-DB6, C2N-DB8, and C2N-DB12 Physical Views (Shown Left to Right)

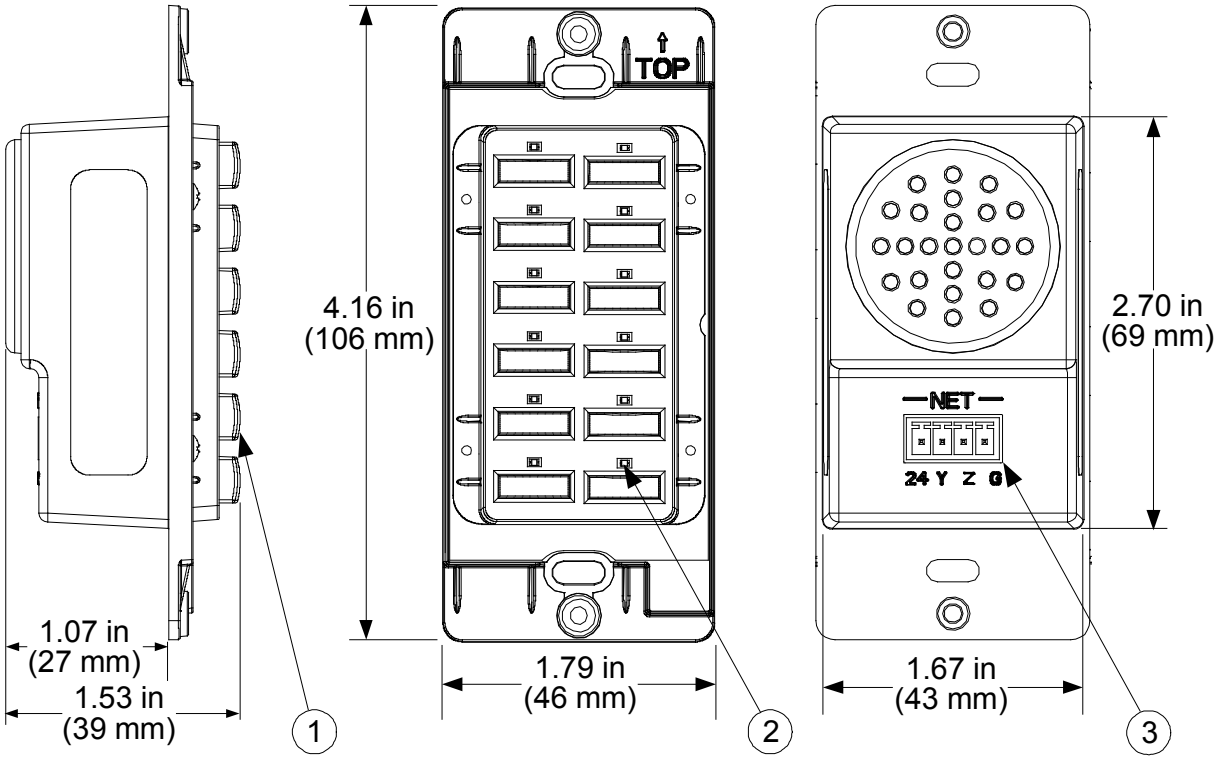


C2N-DB6/8/12 Overall Dimensions

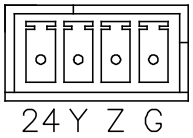
Side View with Buttons Installed

Front View with Divider and Buttons Removed

Back View



Connectors, Controls, and Indicators

#	CONNECTORS,* CONTROLS, and INDICATORS	DESCRIPTION
1	Buttons	6, 8, or 12 (depending upon model) programmable push buttons
2	LED Indicators	(1 per button) red LED, programmable, software-adjustable intensity
3	NET 	(1) 4-pin 3.5 mm detachable terminal block; Connects to Cresnet control network; **24**: Power (24 Vdc) **Y**: Data **Z**: Data **G**: Ground

* Interface connector for **NET** port is provided with the unit.

Setup

Network Wiring

When wiring the Cresnet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

For Cresnet networks with 20 or more devices, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to "Check Network Wiring" on page 16.

Identity Code

The Net ID of the C2N-DB6/8/12 keypad has been factory set to 73, 72, and 71 respectively. The NET IDs of multiple C2N-DB6/8/12 devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via the Crestron Toolbox™ (refer to "Establishing Communication" on page 13).

When setting the Net ID, consider the following:

- The Net ID of each unit must match an ID code specified in the Crestron Studio™ or SIMPL Windows program.
- Each network device must have a unique Net ID.

For more details, refer to the Crestron Toolbox help file.

NOTE: The latest software can be downloaded at www.crestron.com/software.

Supplied Hardware

The hardware supplied with the C2N-DB6/8/12 keypad is listed in the following table.

Supplied Hardware for the C2N-DB6/8/12

DESCRIPTION	PART NUMBER	QUANTITY
Screws, 06-32, steel, 1 inch Phillips, pan head	2007251	2
Connector, plug, 4-pin	2003576	1

Installation

The following tools or hardware are required for installation:

- Cresnet network cable (not supplied)
- Phillips screwdriver (not supplied)
- Two 1-inch pan head Phillips screws (supplied)
- One 4-pin 3.5 mm terminal block connector plug (supplied)
- Faceplate (not supplied)

After the Cresnet network wiring has been installed and verified, use the following procedure to install the keypad in a standard electrical box (refer to the illustrations on the following page).

NOTE: Verify that sufficient Cresnet power to support the device(s) is provided.

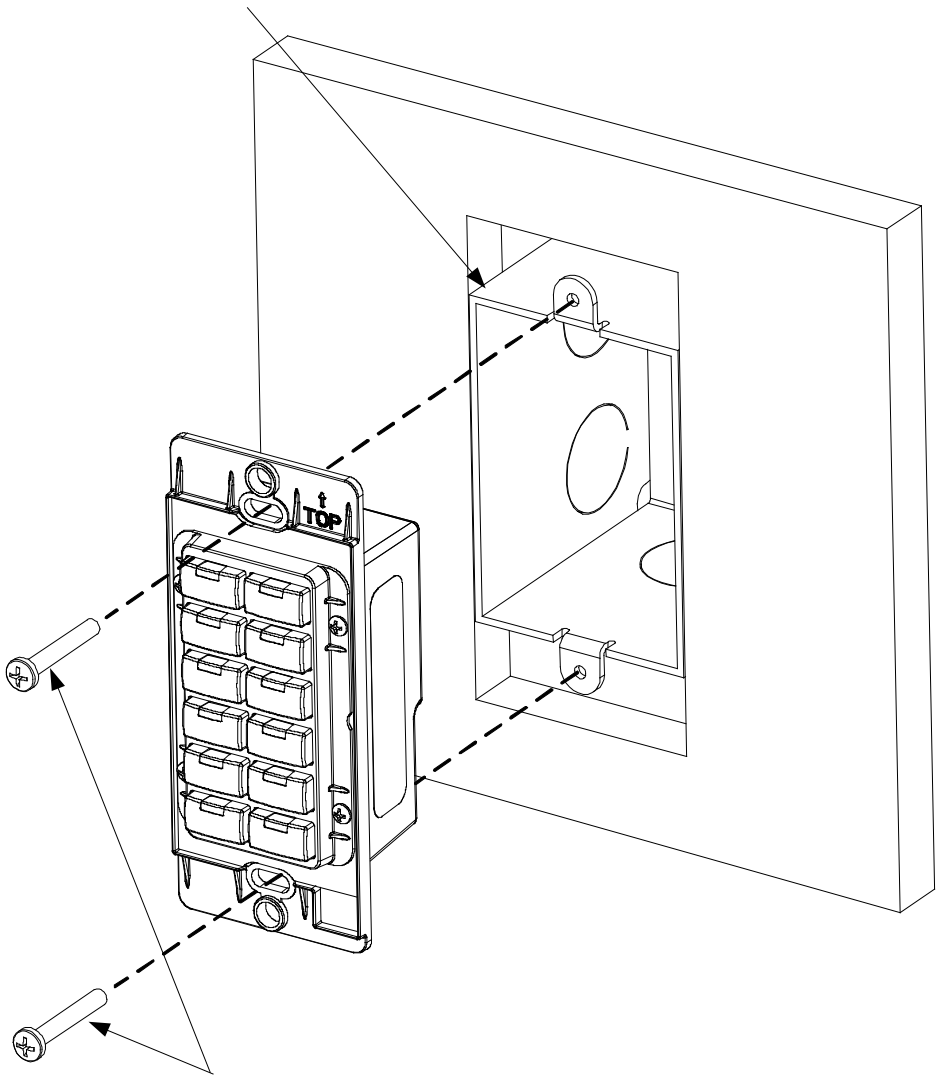
NOTE: Keypads can also be mounted in multi-gang electrical boxes.

1. Turn control network power OFF.
2. Connect the Cresnet cable with supplied connector plug to the keypad's **NET** port and the other end to the control system.
3. Make sure the keypad is oriented as marked with the arrow at top and place it in the electrical box.

CAUTION: Excess wire pinched between the keypad and electrical box could short out. Make sure that all excess wire is completely inside the electrical box and not between the box and the side of the keypad.

4. Using the screwdriver, attach the keypad using the supplied 1-inch pan head screws.
5. Attach the faceplate (sold separately).
6. Turn control network power ON.

Installation View (Single-Gang Electrical Box Shown)



Button Replacement

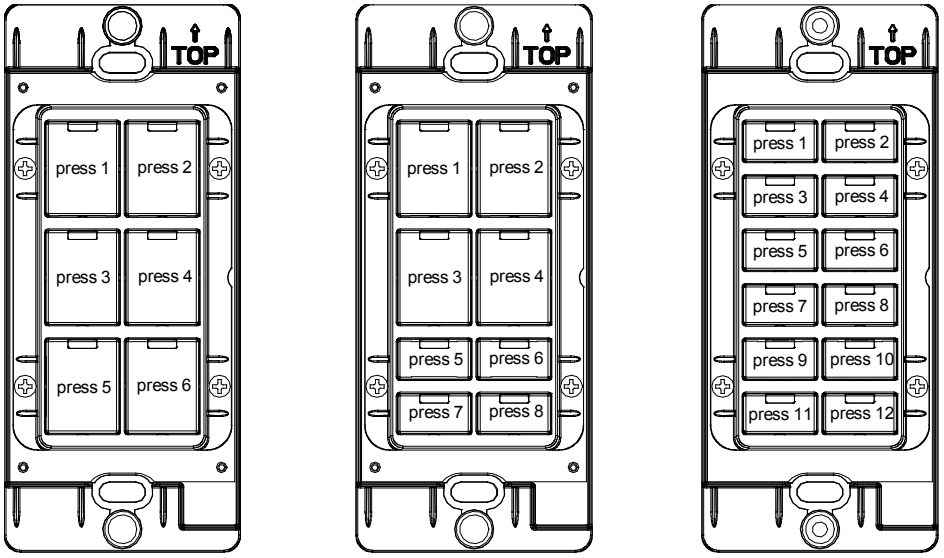
Replacing or changing the removable buttons in a keypad is a simple process. Refer to the illustration on the following page and the following procedure.

1. Turn control network power OFF.
2. If the keypad is installed in an electrical box, remove the two 1-inch screws and carefully pull the keypad from the electrical box.
3. Disconnect the Cresnet cable from the **NET** port.
4. Remove the four 3/16-inch screws that attach the divider, and remove the divider.
5. While holding adjacent buttons in place, carefully pull the button(s) to be replaced from the rubber membrane.

CAUTION: The removable buttons fit snugly on the rubber membrane and must be removed carefully to avoid pulling the membrane from the unit. Once the membrane is detached, reattachment may be difficult.

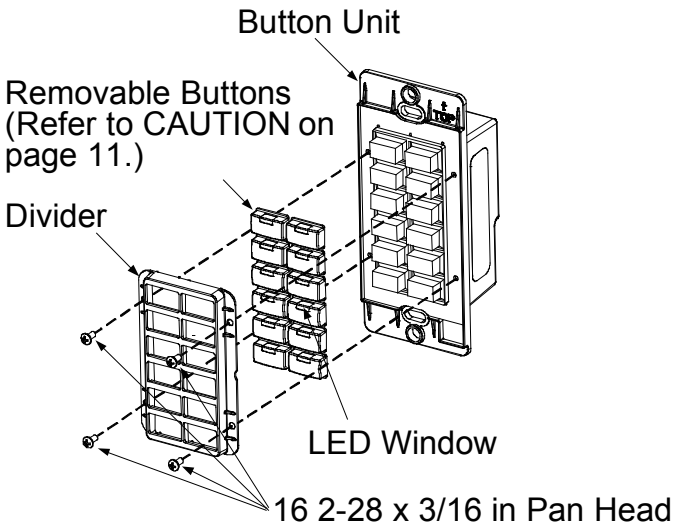
6. Carefully press the replacement button(s) in place, making sure LED window's orientation is correct. Button arrangements are shown on the following image.

C2N-DB6, C2N-DB8, and C2N-DB12 Button Arrangement (Shown Left to Right)



7. Attach the divider using the four screws removed in step 4.

Button Replacement



8. Reinstall the keypad in the electrical box.
9. Turn control network power ON.

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects, or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

Establishing Communication

Use Crestron Toolbox for communicating with the C2N-DB6/8/12; refer to the Crestron Toolbox help file for details. There is a single method of communication: indirect communication.

Indirect Communication

The C2N-DB6/8/12 connects to the control system via Cresnet.

1. Click **Tools | System Info**.
2. Click the  icon.
3. For *Connection Type*, select *Cresnet ID*. In the *Through* drop-down menu, select the control system.
4. Click **OK**. Communications are confirmed when the device information is displayed.

Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. Options are available to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, the SIMPL Windows help file, or the Crestron Toolbox help file.

Crestron Studio or SIMPL Windows

If a Crestron Studio (or SIMPL Windows program) is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

Firmware

Check the Crestron website to find the latest firmware. (New users must register to obtain access to certain areas of the site, including the FTP site.)

Upgrade C2N-DB6/8/12 firmware via Crestron Toolbox.

- Establish indirect communications with the C2N-DB6/8/12 keypad and display the "System Info" window.
- Select **Functions** | **Firmware…** to upgrade the C2N-DB6/8/12 firmware.

NOTE: During firmware loads, all LEDs blink at a slow rate.

Program Checks

Using Crestron Toolbox, display the network device tree (**Tools** | **Network Device Tree View**) to show all network devices connected to the control system. Right-click on the C2N-DB6/8/12 to display actions that can be performed on the C2N-DB6/8/12.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

C2N-DB6/8/12 Keypad Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
The keypad does not function.	The wrong power supply is in use.	Use a Crestron power supply.
	The unit is not receiving power, or is receiving insufficient power.	Verify that the cable plugged into the **NET** port is secure. Verify that the power supply is correct.
	There is a loose connection in the network.	Verify that the cable plugged into the **NET** port is secure.
The keypad does not function. All feedback LEDs are on low.	An improper Net ID is used.	Verify that the device's Net ID matches the Net ID in the software program.
The keypad does not function, or does not function as expected. However, it reports on Cresnet at the proper Net ID.	The unit is not programmed correctly.	Use SIMPL Debugger to check the behavior when buttons are pressed. Revise and reload the program as needed to correct the behavior.
	The keypad is mounted upside down.	Check keypad orientation.

(Continued on following page)

C2N-DB6/8/12 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
All LEDs are blinking at a slow rate.	Firmware is loading.	Wait until firmware load is complete.
	The keypad has reverted to its bootloader firmware.	Reload firmware.
All LEDs are blinking at a fast rate.	The keypad is in TSID mode.	Press any button to complete the TSID action.
Feedback indicators do not light.	Indicator intensity is set too low.	Set Min Auto Backlight Intensity to 1% or higher, or set Indicator Intensity analog input to 1% or higher if Auto Intensity has been disabled.

Check Network Wiring

Use the Right Wire

To ensure optimum performance over the full range of the installation topology, use Crestron Certified Wire only. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Use the Crestron Power Calculator to help calculate how much power is needed for the system (http://www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy chained on the run, the Cresnet power usage of each network unit to be daisy chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

$$L < \frac{40{,}000}{R \times P}$$

Where: L = Length of run (or chain) in feet
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM^2))
or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM^2))
P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet (101 meters). If Cresnet HP is used for the same run, its length could extend to 1250 feet (381 meters).

NOTE: All certified Crestron Cresnet wiring must consist of two twisted pairs. One twisted pair is the **24** and **G** pair and the other twisted pair is the **Y** and **Z** pair.

Strip and Tin Wire

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires because the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

Add Hubs

Use of a Cresnet Hub/Repeater (CNXHUB) is advised whenever the number of Cresnet devices on a network exceeds 20 or when the combined total length of Cresnet cable exceeds 3000 feet (914 meters).

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the C2N-DB6, C2N-DB8, and C2N-DB12 keypads, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

Crestron Electronics, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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Operations & Installation Guide – DOC. 6154C
(2008093)
03.14
Specifications subject to
change without notice.