

Crestron C2N-CBD-P / C2N-CBD-E /
C2N-CBF-P / C2N-CBV-P
Cameo[®] Pro/Express Keypads

Operations & Installation Guide



This document was prepared and written by the Technical Documentation department at:



Regulatory Compliance

As of the date of manufacture, the C2N-CBD-P / C2N-CBD-E / C2N-CBF-P / C2N-CBV-P has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.



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

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Cameo® Pro/Express Keypads: C2N-CBD/C2N-CBF/C2N-CBV Series

Introduction

Cameo® Pro/Express from Crestron® presents a fresh, innovative concept in keypad design, featuring a highly configurable 1-gang wall mount form factor that is at once inviting to the touch and appealing to the eye.

The C2N-CBD-P / C2N-CBD-E / C2N-CBF-P / C2N-CBV-P easily installs alongside other low-voltage in-wall devices to deliver a fully customizable keypad control solution as part of a complete Crestron control system.

For simplicity within this guide, the term “C2N-CBD/CBF/CBV” is used except where noted.

Cameo Pro/Express Keypads are available in the following models:

Models

DESCRIPTION	MODEL NUMBER	COLOR
C2N-CBD-E Cameo Express Keypad, Standard Mount	C2N-CBD-E-A-S	Almond Smooth
	C2N-CBD-E-B-S	Black Smooth
	C2N-CBD-E-W-S	White Smooth
C2N-CBD-P Cameo Pro Keypad, Standard Mount	C2N-CBD-P-A-S	Almond Smooth
	C2N-CBD-P-A-T	Almond Textured
	C2N-CBD-P-B-S	Black Smooth
	C2N-CBD-P-B-T	Black Textured
	C2N-CBD-P-BRN-S	Brown Smooth

(Continued on following page)

Models (Continued)

DESCRIPTION	MODEL NUMBER	COLOR
C2N-CBD-P Cameo Pro Keypad, Standard Mount (Continued)	C2N-CBD-P-DA-S	Dark Almond Smooth
	C2N-CBD-P-DSK-T	Dusk Textured
	C2N-CBD-P-GRY-S	Gray Smooth
	C2N-CBD-P-IVR-S	Ivory Smooth
	C2N-CBD-P-LAT-T	Latte Textured
	C2N-CBD-P-W-S	White Smooth
	C2N-CBD-P-W-T	White Textured
C2N-CBF-P Cameo Pro Keypad, Flush Mount	C2N-CBF-P-A-T	Almond Textured
	C2N-CBF-P-B-T	Black Textured
	C2N-CBF-P-DSK-T	Dusk Textured
	C2N-CBF-P-LAT-T	Latte Textured
	C2N-CBF-P-W-T	White Textured
C2N-CBV-P Cameo Pro Keypad, Vimar Mount	C2N-CBV-P-B-T	Black Textured
	C2N-CBV-P-W-T	White Textured

Features and Functions

- Stylish and versatile wall mount keypad
- Ascent™ solid metal faceplates available separately
- Versatile combinations of two to eight push buttons
- Installer configurable with choice of four button sizes
- New “split” buttons for “up/down” and “on/off” functions¹
- “Button events” enable tap, double-tap, and hold functionality
- Customizable button engraving (sold separately)²
- LED feedback indicators³

(Continued on following page)

1. Split small buttons may be installed in the bottom two positions only.
2. Buttons are backlit on the C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only.
3. Green on the C2N-CBD-E, white on the C2N-CBD-P, C2N-CBF-P and C2N-CBV.

Features and Functions

(Continued)

- Built-in LED blinking and bar graph logic
- Adjustable LED intensity
- Quick and easy installation
- Cresnet® wired communications

C2N-CBD-E

- Standard electrical box installation
- Color matched almond, black and white smooth finishes

C2N-CBD-P

- Standard electrical box installation
- 12 color matched smooth and textured finishes
- Auto-dimmable backlight and LED intensity
- Ambient light sensor
- Dual Versiport interface for external sensors

C2N-CBF-P

- Slim, inconspicuous flush mount appearance
- Five color matched textured finishes available
- Auto-dimmable backlight and LED intensity
- Ambient light sensor
- Dual Versiport interface for external sensors

C2N-CBV-P

- Slim, Vimar mount
- Two color matched textured finishes available
- Auto-dimmable backlight and LED intensity
- Ambient light sensor
- Dual Versiport interface for external sensors

Customizable Buttons

Exquisitely simple yet highly customizable, a single Cameo Pro/Express Keypad can be configured easily by the installer to provide from two to eight buttons. Each keypad is actually furnished with an assortment of button caps in four different sizes to support a variety of physical layouts. Among these is a set of six button caps that are pre-labeled with icons for

lighting dimmer control functions. Button caps may also be ordered with custom engraving for any application.*

Through programming, each button can be configured to use "button events," affording up to three separate functions per button by tapping, double-tapping, or holding the button. "Shift key" functionality is even possible, allowing any button to be held while pressing another.

Auto-dimming Backlight (C2N-CBD-P, C2N-CBF-P and C2N-CBV-P Only)

High quality backlit laser engraving (sold separately) provides customizable button text that is easy to read under any lighting condition. A built-in light sensor controls the backlight intensity automatically to achieve a crisp, legible appearance in both darkened and fully lit rooms.

Enhanced LED Feedback

Six pinhead sized LEDs (green on C2N-CBD-E, white on C2N-CBD-P, C2N-CBF-P and C2N-CBV-P) afford fully customizable feedback to enable clear indication of the status of each button's function. Ten built-in blink patterns allow all kinds of blinking LED feedback while simplifying programming and minimizing traffic on the Cresnet® network. Onboard bar graph logic allows the feedback LEDs to function as a 6-segment bar graph display, providing clear level indication while adjusting lighting and audio settings. Auto-dimming LED intensity (C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only) ensures optimal visibility under varying lighting conditions.

Ambient Light Sensor (C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only)

In addition to controlling the backlight and LED intensity, the built-in light sensor can also be utilized by the control system to support basic daylight harvesting and other programmatic functions. Refer to "Ambient Light Sensor Operation" on page 36 for details.

* Custom engraving sold separately.

Versiports (C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only)

Dual Versiport control ports onboard the C2N-CBD-P, C2N-CBF-P and C2N-CBV-P provide a local interface for a range of devices including Crestron GLS Occupancy Sensors and Photocells (sold separately), or any device providing a contact closure, DC voltage logic, or 0-10 VDC analog control output. Using the Versiports, it is possible to add monitoring of room occupancy, ambient light level, door closures, and other conditions without having to run extra wiring to the central equipment location.

Cresnet

Reliable wired connectivity is afforded via the Cresnet network, utilizing a simple 4-conductor interface carrying 24 Volt DC power and bidirectional communications between the Cameo Pro/Express keypad and Crestron control system (sold separately). Cresnet supports up to 252 keypads and other devices.

Standard Wall Mount (C2N-CBD-E and C2N-CBD-P only)

Cameo Pro/Express Standard Mount Keypads are designed for installation in a standard electrical wall box, perfect for installation in a multigang box alongside other low voltage devices. Available in a selection of finishes, Cameo Pro/Express match perfectly with popular off the shelf decorator style faceplates. For the ultimate in style and elegance, Crestron offers our Ascent™ Solid Metal Faceplates for Cameo Keypads (sold separately), providing a contemporary architectural appearance in a range of luxurious designer finishes.

Cameo Pro Flush Mount (C2N-CBF-P only)

Its unique flush mount design affords Cameo Pro a very discreet appearance occupying just one third the space of a conventional keypad. Employing a smart spring clamp mounting system, the C2N-CBF-P installs easily in a drywall cutout without requiring a backbox. An optional mud ring mounting kit (MMK-CBF-T, sold separately) is available to ensure a clean installation in plaster and drywall, and can also be used to retrofit the keypad into an existing 1-gang electrical box (sold separately). Available in a selection of five textured finishes, Cameo Pro Flush Mount Keypads blend perfectly with any decor.

Cameo Pro Vimar Mount (C2N-CBV-P only)

Its unique Vimar mount design affords Cameo Pro a very discreet appearance in marine installations. Available in white and black textured finishes to match a variety of applications.

EMerge Alliance Registered

This device is EMerge Alliance registered and designed to work within a 24 VDC room level power distribution system. The EMerge Alliance is a not for profit open industry association leading the rapid adoption of safe DC power distribution in commercial buildings through the development of Emerge Alliance standards. Crestron is a proud member and supporter of the Alliance. For more information about Crestron Solutions for EMerge Alliance Applications visit: www.crestron.com/emerge.

Specifications

Specifications for the C2N-CBD/CBF/CBV keypads are listed in the following table.

C2N-CBD/CBF/CBV Specifications

SPECIFICATION	DETAILS
Power Requirements	
Cresnet Power Usage	1W
Default Net ID	03
Minimum 2-Series Control System Update File ^{1, 2}	Version 4.001.1012 or later
C2N-CBD/CBF/CBV Firmware	Version 1.002.0005 or later
Environmental	
Temperature	32° to 113° F (0° to 45° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	3.4 BTU / Hr

(Continued on following page)

* Installation in a 1-gang electrical box using the MMK-CBF-T Mud Ring requires application of drywall compound to cover gaps around the keypad faceplate.

C2N-CBD/CBF/CBV Specifications (Continued)

SPECIFICATION	DETAILS
Enclosure	
Standard Mount Model	Plastic, 1-gang mountable in a standard electrical box Requires decorator style faceplate (not included)
Flush Mount Model	Plastic, Crestron Cameo Pro Flush Mount with integral spring clamp Optional mud ring or 1-gang adapter (sold separately)
Vimar Mount Model	Plastic, 1-gang mountable in a Vimar style electrical box
Dimensions	
Standard Mount Model	
Height	4.13 in (105 mm) without faceplate
Width	1.75 in (45 mm) without faceplate
Depth	1.19 in (31 mm) without faceplate
Flush Mount Model	
Height	3.21 in (82 mm)
Width	1.76 in (45 mm)
Depth	1.18 in (30 mm) without connector
Vimar Mount Model	
Height	2.97 in (76 mm)
Width	2.06 in (53 mm)
Depth	1.27 in (33 mm) without connector

(Continued on following page)

C2N-CBD/CBF/CBV Specifications (Continued)

SPECIFICATION	DETAILS
Weight	
Standard Mount	3 oz (64 g)
Flush Mount	3 oz (75 g)
Vimar Mount	2 oz (50 g)
Available Accessories	
CB2-BTN [A,B,BRN,DA,GRY,IVR, W]-S	(1) Large Engravable Button Cap, Smooth (specify color)
CB2-BTN [A,B,DSK,LAT,W]-T	(1) Large Engravable Button Cap, Textured (specify color)
CB3-BTN [A,B,BRN,DA,GRY,IVR, W]-S	(1) Medium Engravable Button Cap, Smooth (specify color)
CB3-BTN [A,B,DSK,LAT,W]-T	(1) Medium Engravable Button Cap, Textured (specify color)
CB6-BTN [A,B,BRN,DA,GRY,IVR, W]-S	(1) Small Engravable Button Cap, Smooth (specify color)
CB6-BTN [A,B,DSK,LAT,W]-T	(1) Small Engravable Button Cap, Textured (specify color)
CB6S-BTN [A,B,BRN,DA,GRY,IVR, W]-S	(1 Pair) Split Small Engravable Button Caps, Smooth (specify color)
CB6S-BTN [A,B,DSK,LAT,W]-T	(1 Pair) Split Small Engravable Button Caps, Textured (specify color)

1. The latest versions can be obtained from the Crestron Web site. Refer to NOTE after last footnote.
2. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

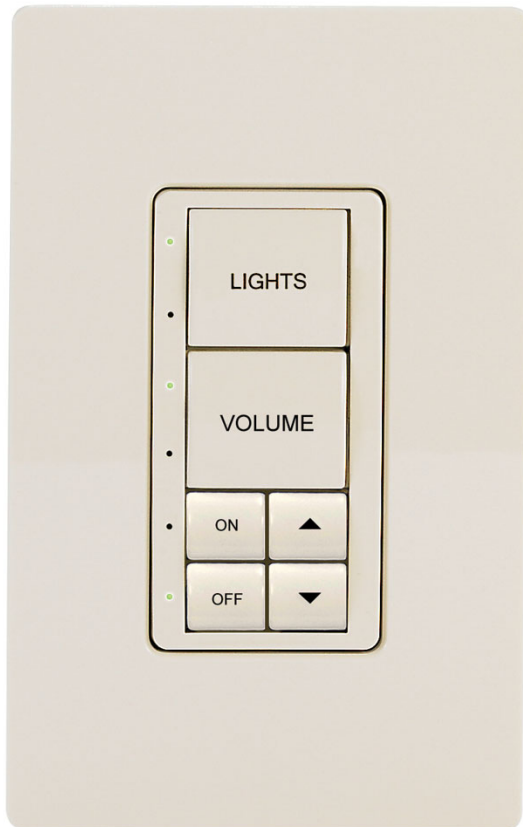
NOTE: Crestron software and any files on the Web site are for Authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIPs) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

Physical Description

This section provides information on the connections, controls and indicators available on your C2N-CBD/CBF/CBV keypads.

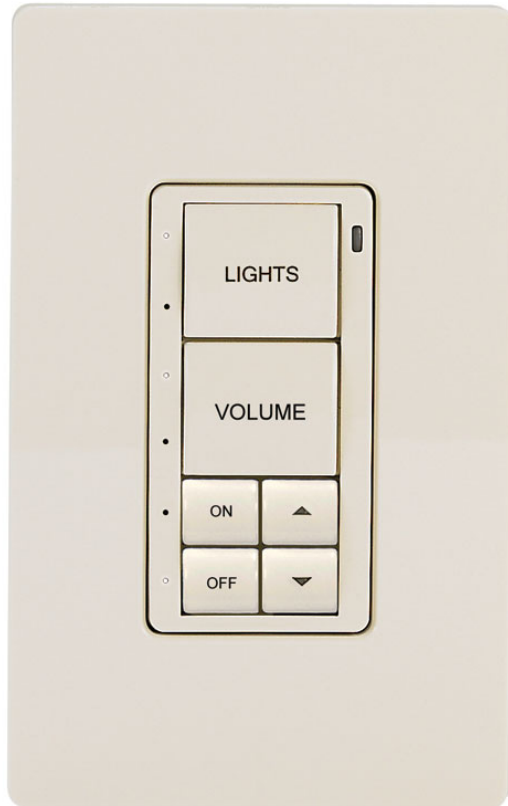
The following illustrations show the C2N-CBD-E with two double-row button caps and two rows of small split-button caps, and two triple-row button caps.

C2N-CBD-E Keypad Physical Views (Shown with Faceplate, not included)



The following illustrations show the C2N-CBD-P with two double-row button caps and two rows of small split-button caps, and six single-row buttons caps.

***C2N-CBD-P Keypad Physical Views
(Shown with Faceplate, not included)***



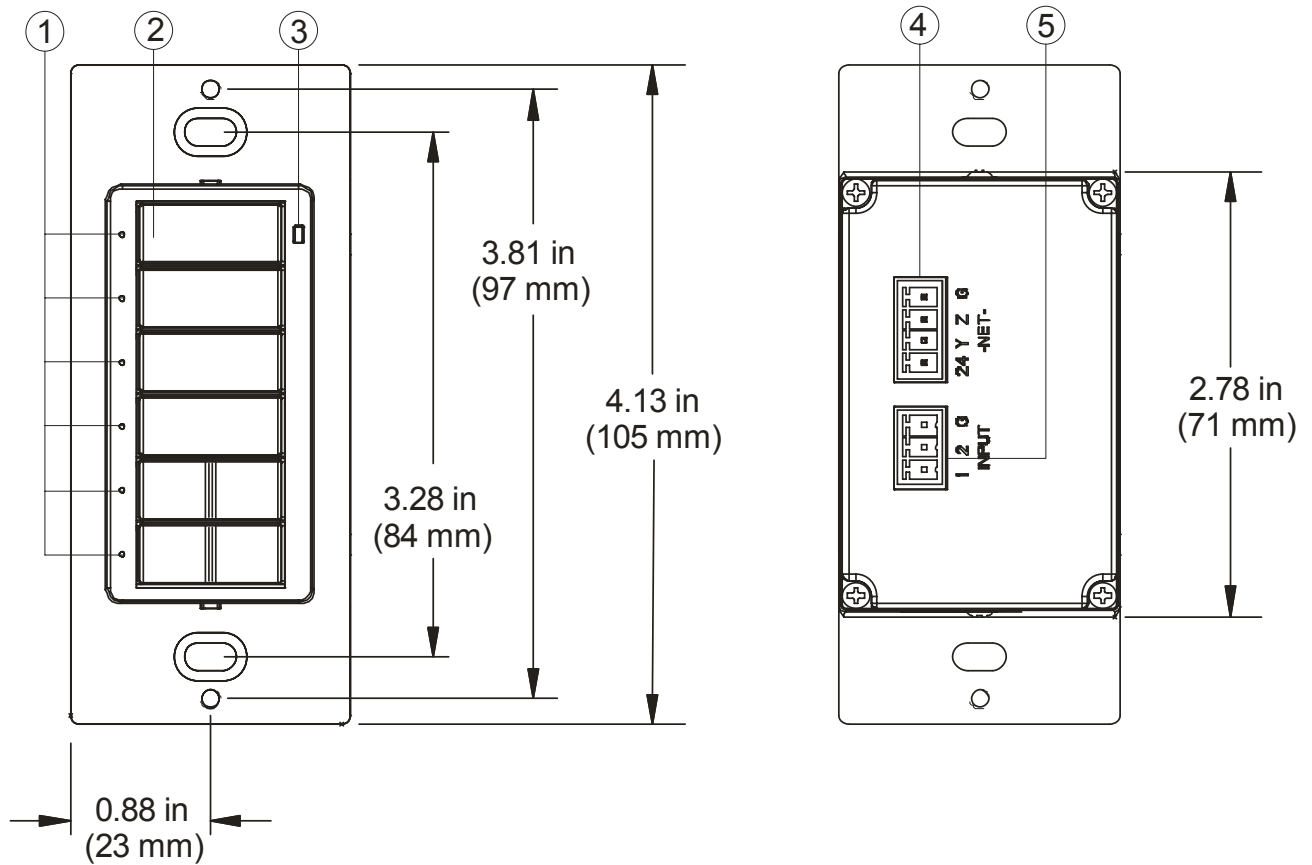
The following illustrations show the C2N-CBF-P with two double-row button caps and two rows of small split-button caps, and two triple-row button caps.

***C2N-CBF-P Keypad Physical Views
(Shown with Faceplate, not included)***

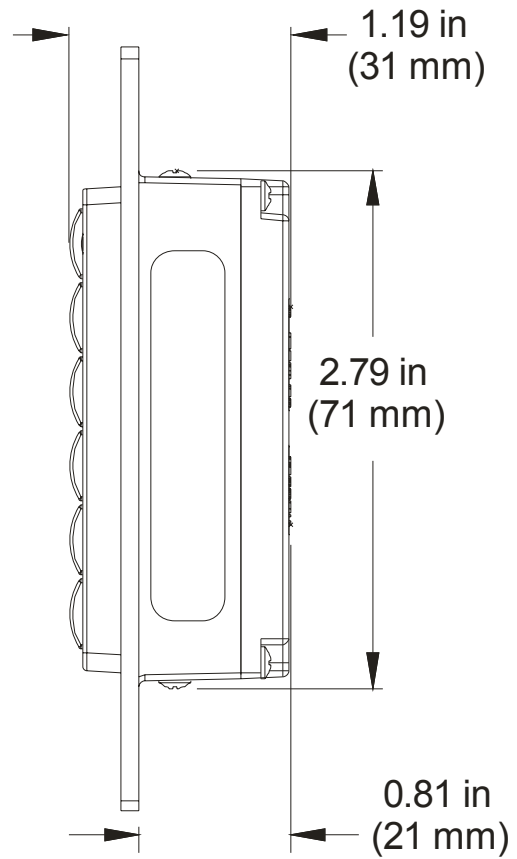
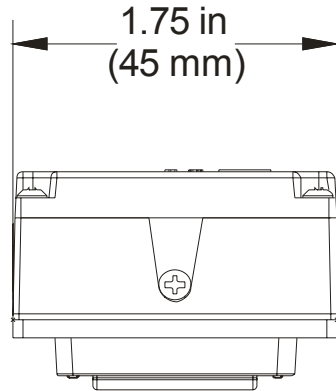


Button caps are laser engravable, designed with Crestron Engraver software. The engraving software provides a single line of up to 10 characters, including spaces, for single-button caps, two lines of characters on double and triple-button caps, and a single line of up to four characters for small split-button caps. Crestron Engraver software, Version 5.04.003.00 or later, is available from the Crestron Web site (www.crestron.com).

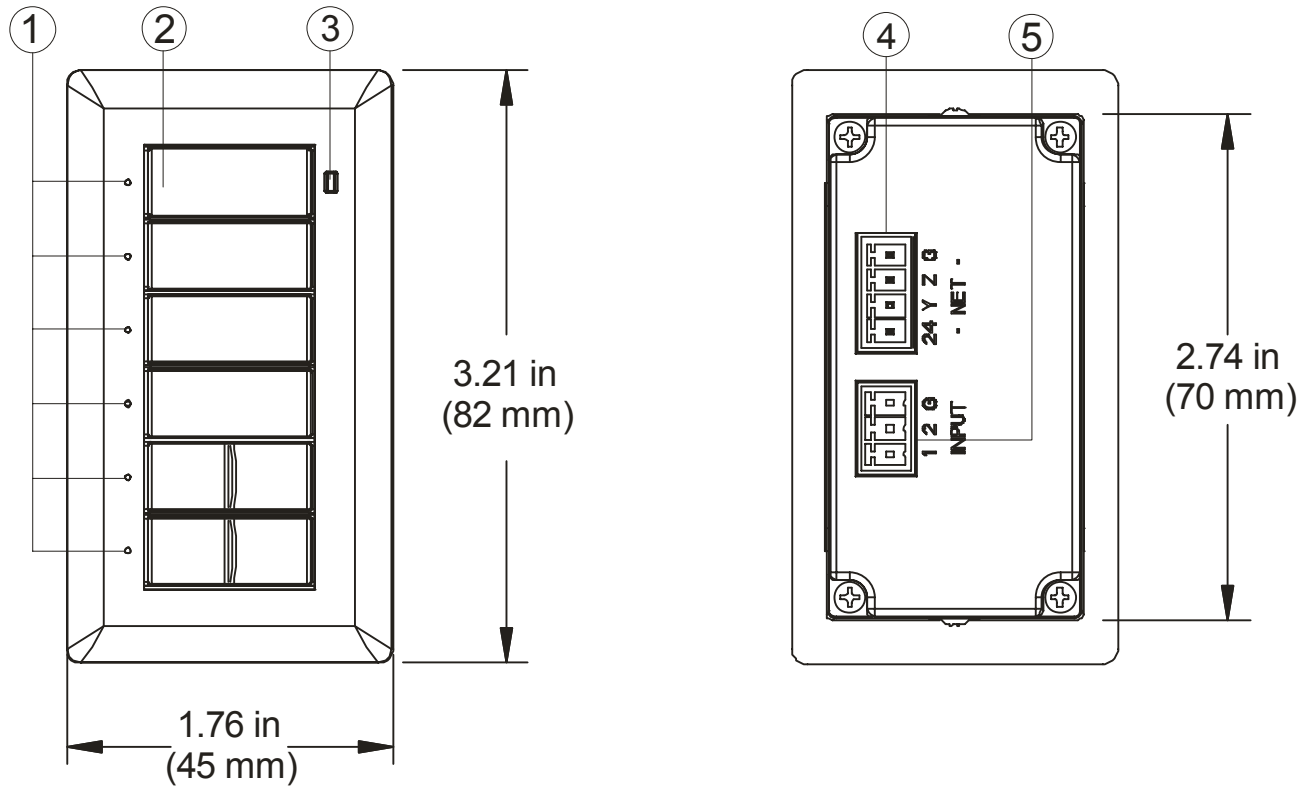
C2N-CBD Overall Dimensions (Front and Rear Views) (C2N-CBD-P Shown)



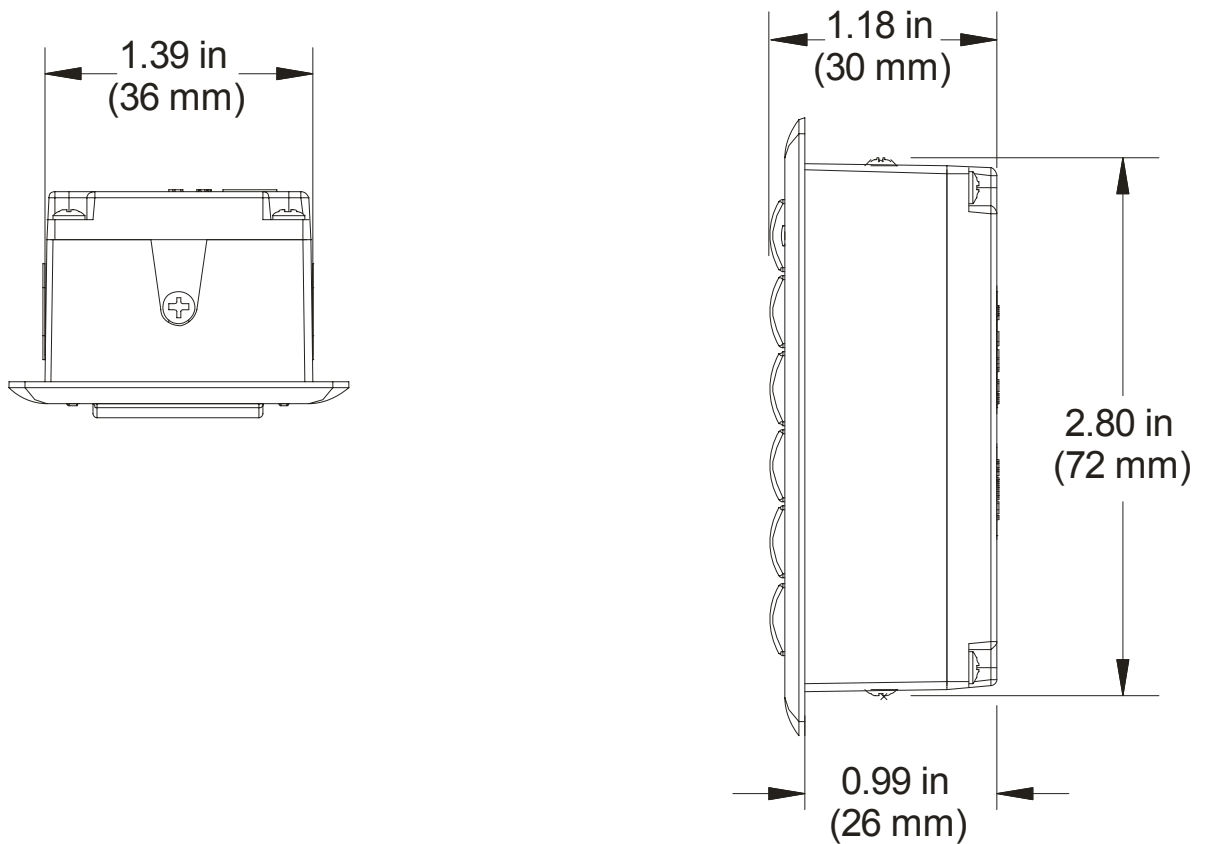
***C2N-CBD Overall Dimensions (Top and Side Views
(C2N-CBD-P Shown)***



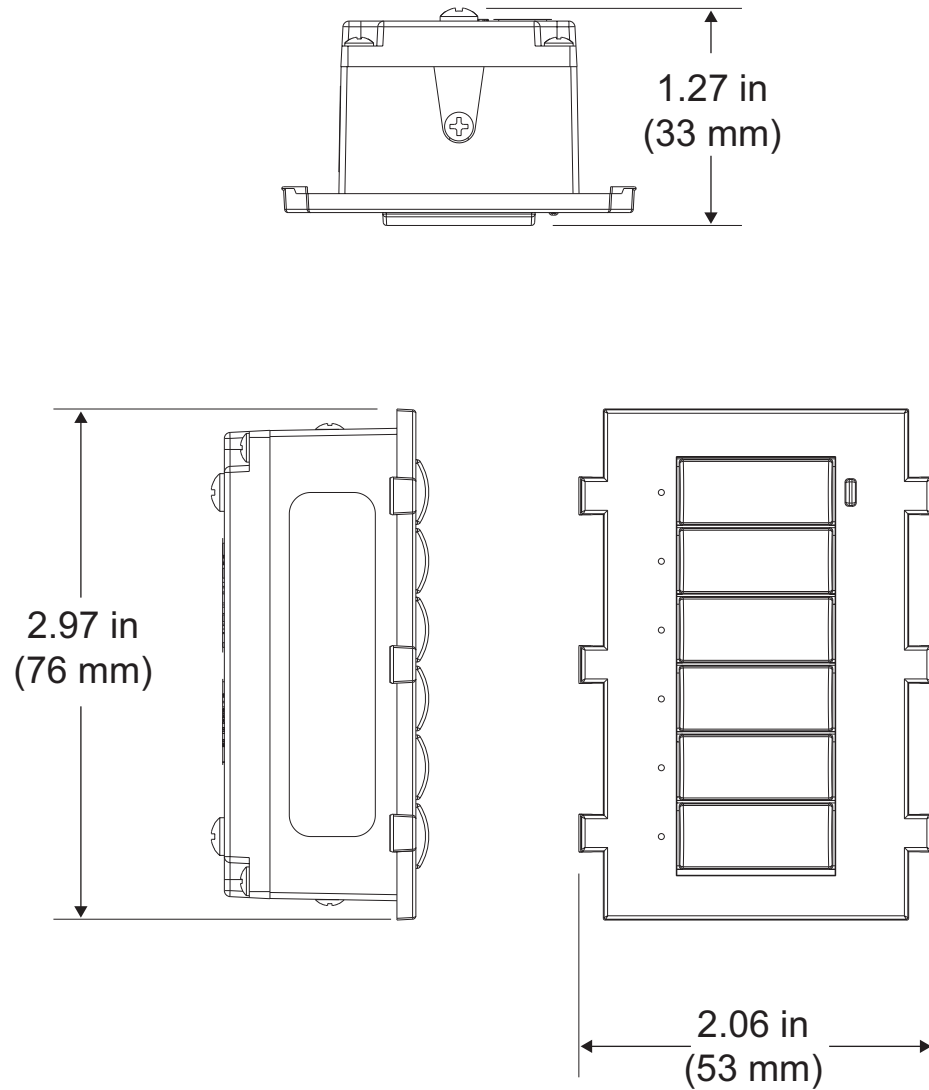
C2N-CBF-P Overall Dimensions (Front and Rear Views)



C2N-CBF-P Overall Dimensions (Top and Side Views)



C2N-CBV-P Overall Dimensions (Top, Side and Front Views)

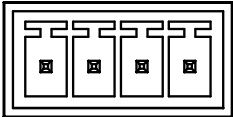
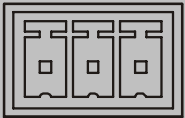
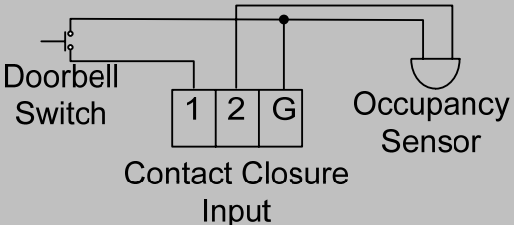


Connectors, Controls & Indicators

#	CONNECTORS ¹ , CONTROLS & INDICATORS	DESCRIPTION
1	LED Indicators	<p>Feedback - (6) LEDs², one per each of six small button positions Programmable, auto-dimmable³, adjustable intensity, 10 blinking patterns</p> <p>Bar Graph - (1) 6-segment bar graph display utilizing the six feedback LEDs</p>
2	Buttons	<p>Keypad Buttons - Configurable for two to eight single action push buttons</p> <p>Button Events - Programmable for normal, tap, double-tap, and hold</p> <p>Button Caps⁴ - Includes (2) large, (3) medium, (5) small, and (2) pairs of split button caps</p> <p>Engraving - Custom engraved button caps available separately</p> <p>Backlight³ - White LED backlight for button engraving, software adjustable intensity, auto-dimmable</p>
3	Ambient Light Sensor ³	<p>Photosensor for control of auto-dimming function</p> <p>Can be configured to report ambient light level to control system</p>

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS ¹ , CONTROLS & INDICATORS	DESCRIPTION
4	<p style="text-align: center;">NET</p>  <p style="text-align: center;">24 Y Z G</p>	<p>(1) 4-pin 3.5 mm detachable terminal block</p> <p>Cresnet slave port, connects to Cresnet control network</p> <p>24: Power (24 Volts DC) Y: Data Z: Data G: Ground</p>
5	<p style="text-align: center;">INPUT (1-2)³</p>  <p style="text-align: center;">1 2 G</p>	<p>(1) 3-pin 3.5 mm detachable terminal block</p> <p>Comprises (2) dry contact closure inputs</p>  <p style="text-align: center;">Contact Closure Input</p>

1. Interface connectors for the **NET** and **INPUT** ports are provided with the unit.
2. Feedback LEDs are green on the C2N-CBD-E, and white on the C2N-CBD-P, C2N-CBF-P and C2N-CBV-P.
3. C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only.
4. Button caps are backlit on the C2N-CBD-P, C2N-CBF-P and C2N-CBV-P.
5. Split small buttons may be installed in the bottom two positions only.

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

For more details, refer to “Check Network Wiring” which starts on page 38.

Identity Code

The Net ID of the C2N-CBD/CBF/CBV has been factory set to **03**. The Net IDs of multiple C2N-CBD/CBF/CBV devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via Crestron Toolbox™ (refer to “Establishing Communication” on page 34).

When setting the Net ID, consider the following:

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

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

Assembly and Installation

Assembly of the keypad consists of placing the button caps in position on the rear housing assembly, based on how the unit is programmed, and attaching the bezel.

Installation consists of connecting the unit to the Cresnet system, connecting the contact closure input cable, if any, and then inserting the unit into the mounting surface or attaching it to an electrical box, depending on the keypad configuration.

The following items are required for all installations:

- Cresnet network cable (sold separately)
- No. 2 Phillips screwdriver (not supplied)

NOTE: Verify that you have sufficient Cresnet power to support your Cresnet devices.

Standard Mounting Installation

The standard mount Cameo Pro/Express is supplied partially assembled along with several items as listed in the following table.

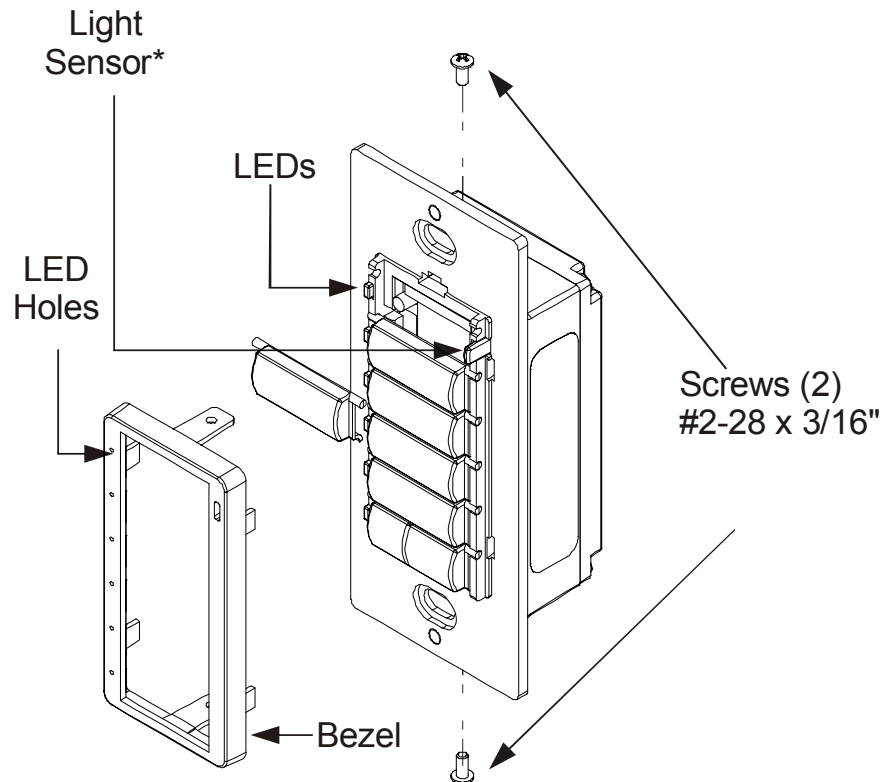
Supplied Hardware for the C2N-CBD-E and C2N-CBD-P

DESCRIPTION	USE	QTY
Bezel	Bezel assembly	1
4-pin female mini network connector	Used to connect Cresnet network cable to the keypad	1
3-pin female mini network connector (C2N-CBD-P only)	The cable is to be used to connect contact closure to the keypad	1
Screws, Zinc, Phillips Pan Head, 2-28 x 3/16"	Used to attach the bezel to the keypad rear housing assembly	2
Screws, Steel, Truss Combo Head, 6-32 x 3/4"	Used to attach the assembled keypad to an electrical box	2
Single-row button cap	Switch cover for a single row switch	5
Double-row button cap	Switch cover for two switches that function as one	3
Triple-row button cap	Switch cover for three switches that function as one	2
Split-row button caps (pair)	Switch cover for a single row of two switches	2

Assemble the keypad as described in the following steps. Refer to the accompanying illustration.

1. Arrange the button caps in position on the rear housing assembly according to the program plan.
2. Carefully position the bezel over the button caps on the rear housing assembly.
3. Install and tighten the two supplied #2-28 x 3/16" screws, as shown in the illustration.
4. Press each button and release to ensure that the button caps move freely.

Assembling the Keypad (C2N-CBD Shown)



* C2N-CBD-P only

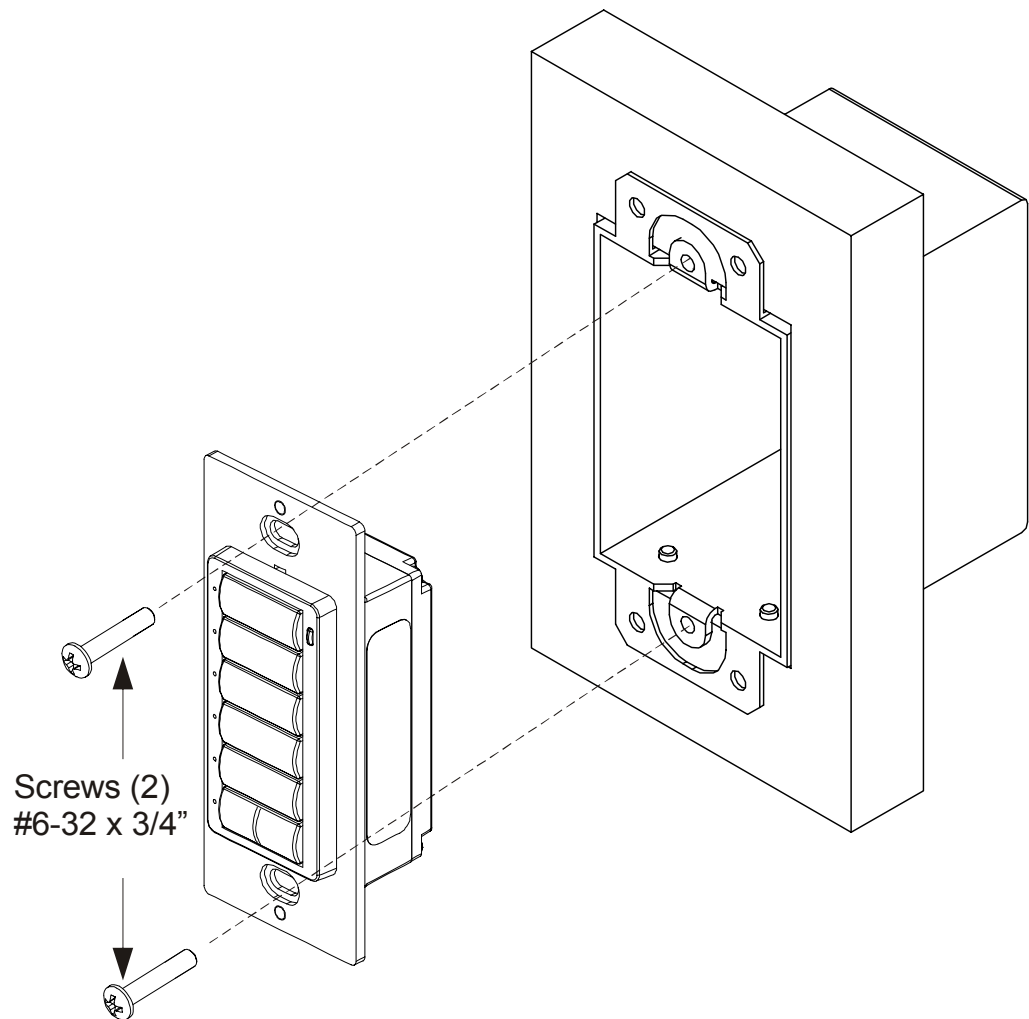
After the Cresnet network wiring has been installed and verified, use the following procedure to install the keypad in a standard, single-gang electrical box.

1. Turn Cresnet system power **OFF**.
2. Connect the Cresnet cable to the keypad's **NET** port, using the supplied mating connector.

3. Connect the contact closure input cable (if any) to the keypad's **INPUT** port using the supplied mating connector.
4. Make sure the keypad is oriented properly (note the location of the LEDs and light sensor), place it in the electrical box, and attach it using the included #6-32 x 3/4" screws.

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

Mounting the Keypad



5. Attach the desired decorator style faceplate (not supplied).
6. Turn Cresnet system power **ON**.

Flush Mounting Installation

The flush mount Cameo Pro keypad is supplied partially assembled along with several items as listed in the following table.

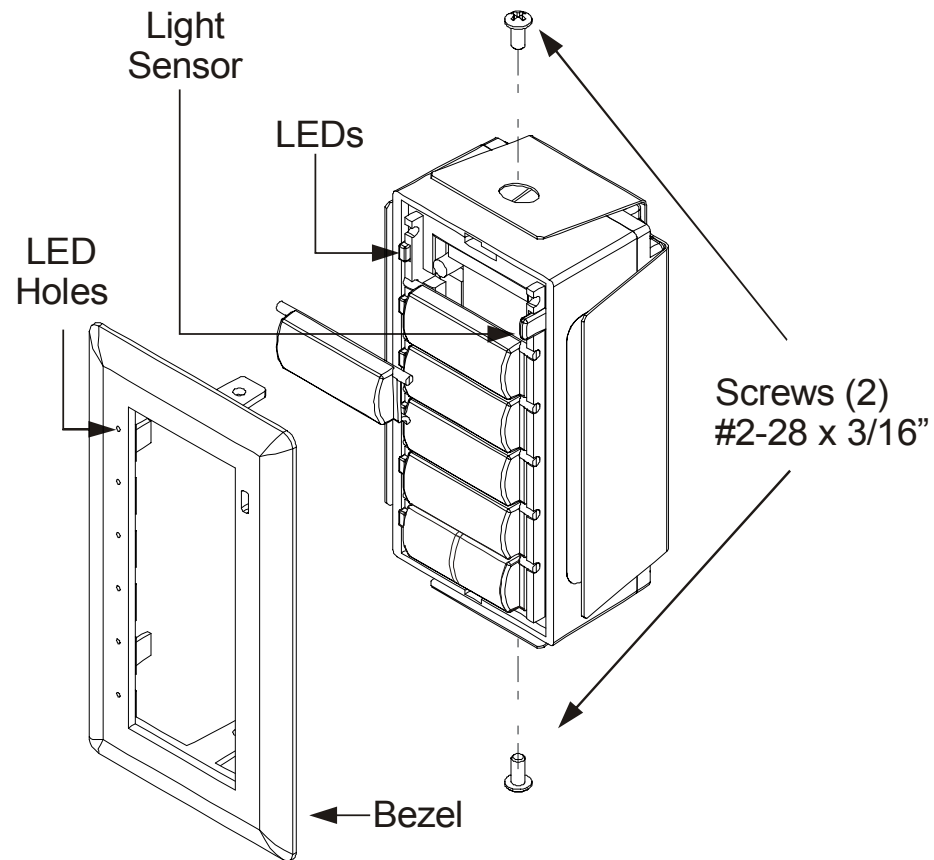
Supplied Hardware for the C2N-CBF-P

DESCRIPTION	USE	QTY
Bezel	Bezel assembly	1
4-pin female mini network connector	Used to connect Cresnet network cable to the keypad	1
3-pin female mini network connector	The cable is to be used to connect contact closure to the keypad	1
Screws, Zinc, Phillips pan head, 2-28 x 3/16"	Used to attach the bezel to the keypad rear housing assembly	2
Template	Used to mark correct hole size in the mounting surface	1
Single-row button cap	Switch cover for a single row switch	5
Double-row button cap	Switch cover for two switches that function as one	3
Triple-row button cap	Switch cover for three switches that function as one	2
Split-row button caps (pair)	Switch cover for a single row of two switches	2

Assemble the keypad as described in the following steps. Refer to the accompanying illustration.

1. Arrange the button caps in position on the rear housing assembly according to the program plan.
2. Carefully position the bezel over the button caps on the rear housing assembly.

Assembling the Keypad (C2N-CBF Shown)



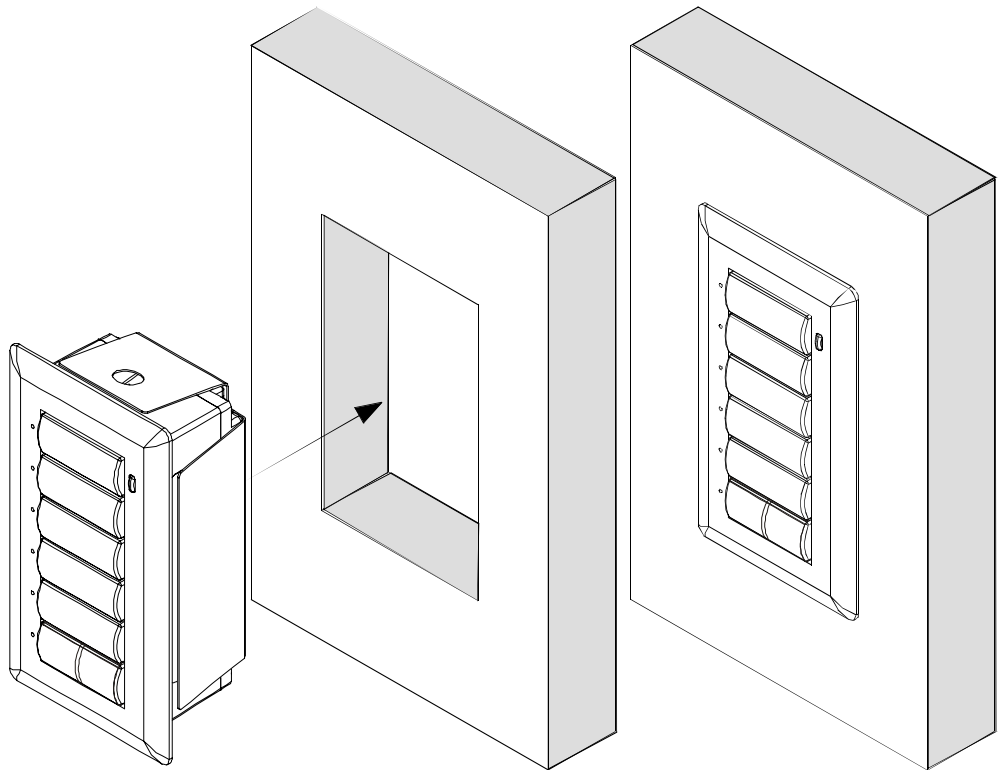
3. Install and tighten the two supplied #2-28 x 3/16" screws, as shown in the illustration.
4. Press each button and release to ensure that the button caps move freely.
5. Use the included template to prepare the hole in the mounting surface. (Refer to "Appendix: Template for Flush Mount Hole" which starts on page 41 for an illustration of the template.)

NOTE: Be very careful when cutting the hole. There are no adjustments for alignment with the spring clamp. The optional MMK-CBF-T Mud Mount Kit (sold separately) may be used if the cutout in the mounting surface is too large for the keypad.

After the Cresnet network wiring has been installed and verified, use the following procedure to install the keypad in the prepared hole.

1. Turn Cresnet system power **OFF**.
2. Connect the Cresnet cable to the keypad's **NET** port, using the supplied mating connector.
3. Connect the contact closure input cable (if any) to the keypad's **INPUT** port using the supplied mating connector.
4. Make sure the keypad is oriented properly (note the location of the LEDs and light sensor), and insert the keypad in the hole. The natural action of the spring clamp holds the keypad in position (Refer to the illustration that follows this step.)

Mounting the C2N-CBF Keypad



5. Turn Cresnet system power **ON**.
6. If the keypad needs to be removed from the mounting surface, use a small flat blade screwdriver to pry the keypad away from the mounting surface, being careful to avoid damage to the mounting surface, then use your fingers to remove the keypad.

Vimar Style Electrical Box Mounting Installation

The Vimar mount Cameo Pro keypad is supplied partially assembled along with several items as listed in the following table.

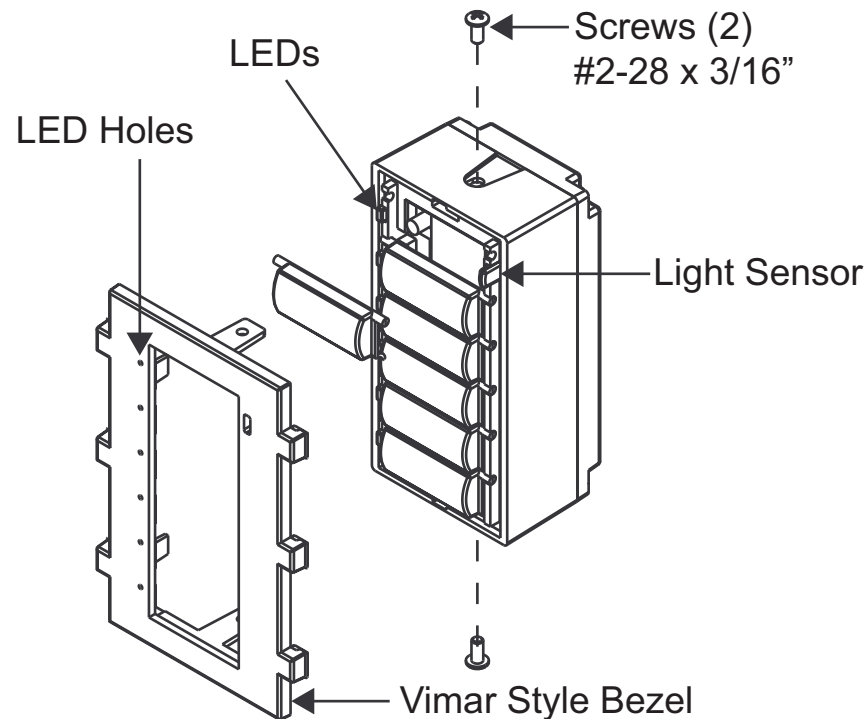
Supplied Hardware for the C2N-CBV-P

DESCRIPTION	USE	QTY
Vimar Style Bezel	Bezel assembly	1
4-pin female mini network connector	Used to connect Cresnet network cable to the keypad	1
3-pin female mini network connector	The cable is to be used to connect contact closure to the keypad	1
Screws, Zinc, Phillips pan head, 2-28 x 3/16"	Used to attach the bezel to the keypad rear housing assembly	2
Single-row button cap	Switch cover for a single row switch	5
Double-row button cap	Switch cover for two switches that function as one	3
Triple-row button cap	Switch cover for three switches that function as one	2
Split-row button caps (pair)	Switch cover for a single row of two switches	2

Assemble the keypad as described in the following steps. Refer to the accompanying illustration.

1. Arrange the button caps in position on the rear housing assembly according to the program plan.
2. Carefully position the bezel over the button caps on the rear housing assembly.

Assembling the Keypad (C2N-CBV Shown)



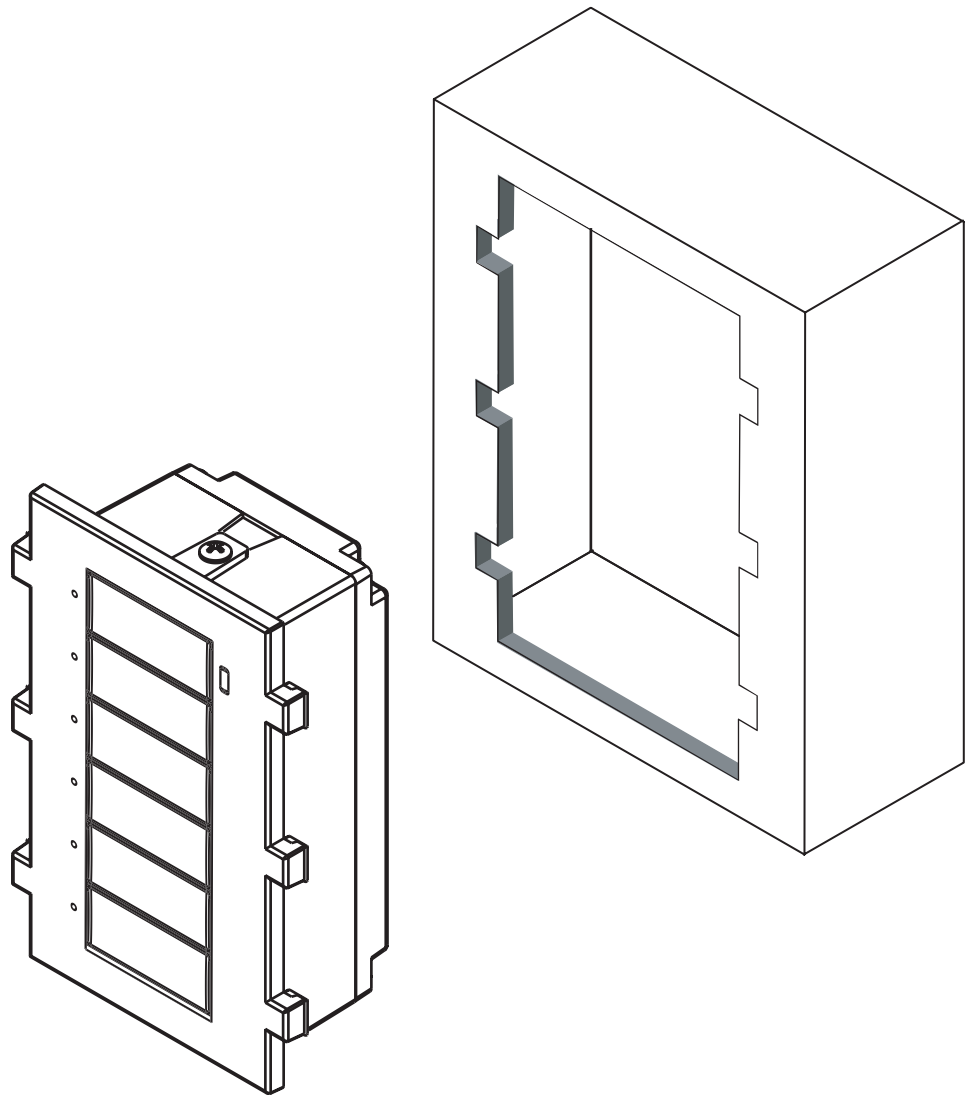
3. Install and tighten the two supplied #2-28 x 3/16" screws, as shown in the illustration.
4. Press each button and release to ensure that the button caps move freely.

After the Cresnet network wiring has been installed and verified, use the following procedure to install the keypad in Vimar style electrical box.

1. Turn Cresnet system power **OFF**.
2. Connect the Cresnet cable to the keypad's **NET** port, using the supplied mating connector.
3. Connect the contact closure input cable (if any) to the keypad's **INPUT** port using the supplied mating connector.
4. Make sure the keypad is oriented properly (note the location of the LEDs and light sensor), place it in the Vimar style electrical box. The keypad will snap into place.

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

Mounting the Keypad



5. Turn Cresnet system power **ON**.

Programming Software

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron Web site. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at www.crestron.com/support. First-time users will need to establish a user account.

Earliest Version Software Requirements for the PC

NOTE: Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Crestron Web site (www.crestron.com/software).

Crestron provides an assortment of Microsoft Windows®-based software tools to develop a customized system. Use Crestron SystemBuilder™, D3 Pro® or SIMPL Windows to create a program to control the C2N-CBD/CBF/CBV. Customers whose focus is on lighting systems may prefer to use the D3 Pro software since it is designed especially for creating lighting and environmental system control applications. Customers already familiar with SIMPL Windows who are including a lighting system as part of an overall control system project may prefer to continue using SIMPL Windows.

Programming with Crestron SystemBuilder

SystemBuilder is a comprehensive programming environment. Appropriate for most systems, it can quickly and easily generate a complete working program including both control processor logic and touch screen graphics.

Programming with D3 Pro

Crestron's D3 Pro lighting software provides all the tools necessary to create a complete Crestron lighting system for residential applications. The lighting system includes the control system logic program, touch

screen projects and keypad programming, documentation and real-time lighting adjustment capabilities.

As with all Crestron software, D3 Pro provides extensive right-click and drag-and-drop functionality in addition to convenient keyboard shortcuts for frequently used functions and commands.

Programming is organized into six system **Views** of the lighting system, each providing a moveable toolbox of devices such as interfaces, fixtures and control modules. You can add a device to your system simply by selecting it from one of the toolboxes and dragging it to a room. The available toolboxes differ depending on the View but all Views include a "General" toolbox that allows you to add areas and rooms at any time.

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the Cameo Pro/Express Series keypads, it is recommended to use SystemBuilder for configuring a system.

SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers": Configuration and Program.

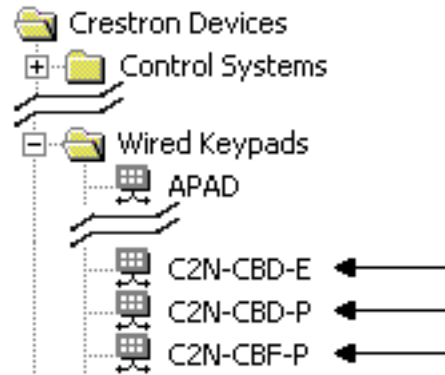
Configuration Manager

Configuration Manager is the view where programmers "build" a Crestron control system by selecting hardware from the *Device Library*.

NOTE: The C2N-CBF-P and C2N-CBV-P share identical firmware. When configuring and programming a system with a C2N-CBV-P, use the symbol for the C2N-CBF-P.

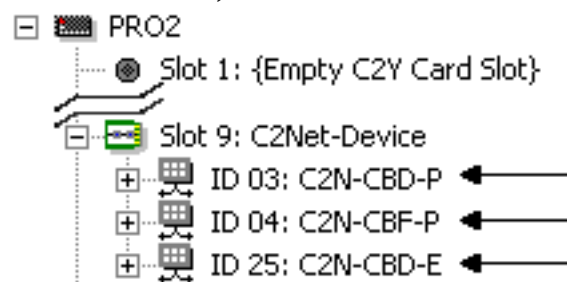
1. To incorporate the C2N-CBD/CBF keypad into the system, drag the C2N-CBD/CBF from the Wired Keypads folder of the *Device Library* and drop it in the *System Views*.

Locating the C2N-CBD/CBF in the Device Library



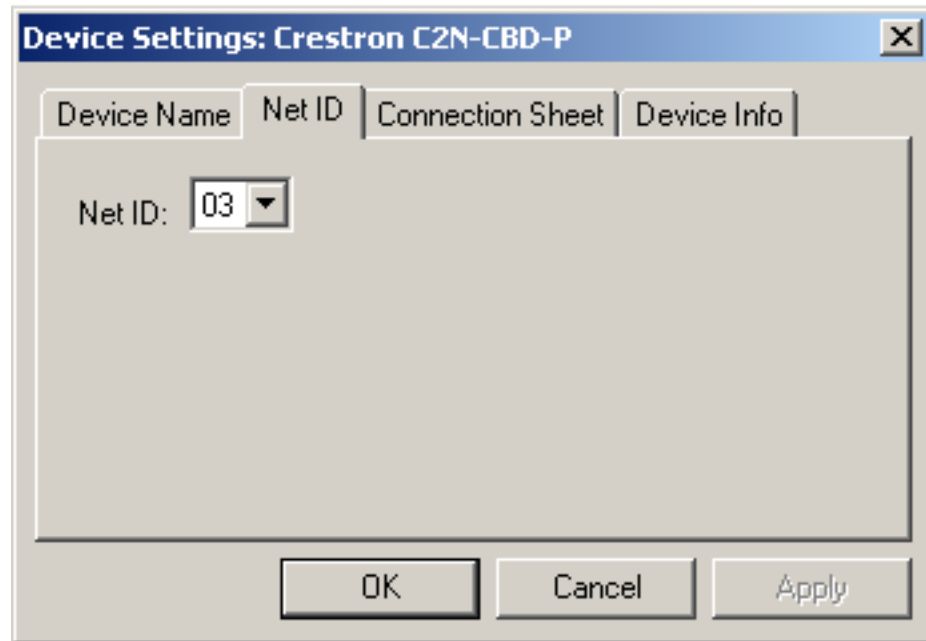
The system tree of the control system displays the device in the appropriate slot with a default Net ID as shown in the following illustration.

C2Net Device, Slot 9



2. If additional C2N-CBD/CBF devices are to be added, repeat step 1 for each device. Each C2N-CBD/CBF is assigned a different Net ID number as it is added.
3. If necessary, double click a device to open the “Device Settings” window and change the Net ID, as shown in the following illustration.

“Device Settings: Crestron C2N-CBD-P” Window



NOTE: The ID code specified in the SIMPL Windows program must match the Net ID of each unit. Refer to “Identity Code” on page 18.

**Program
Manager**

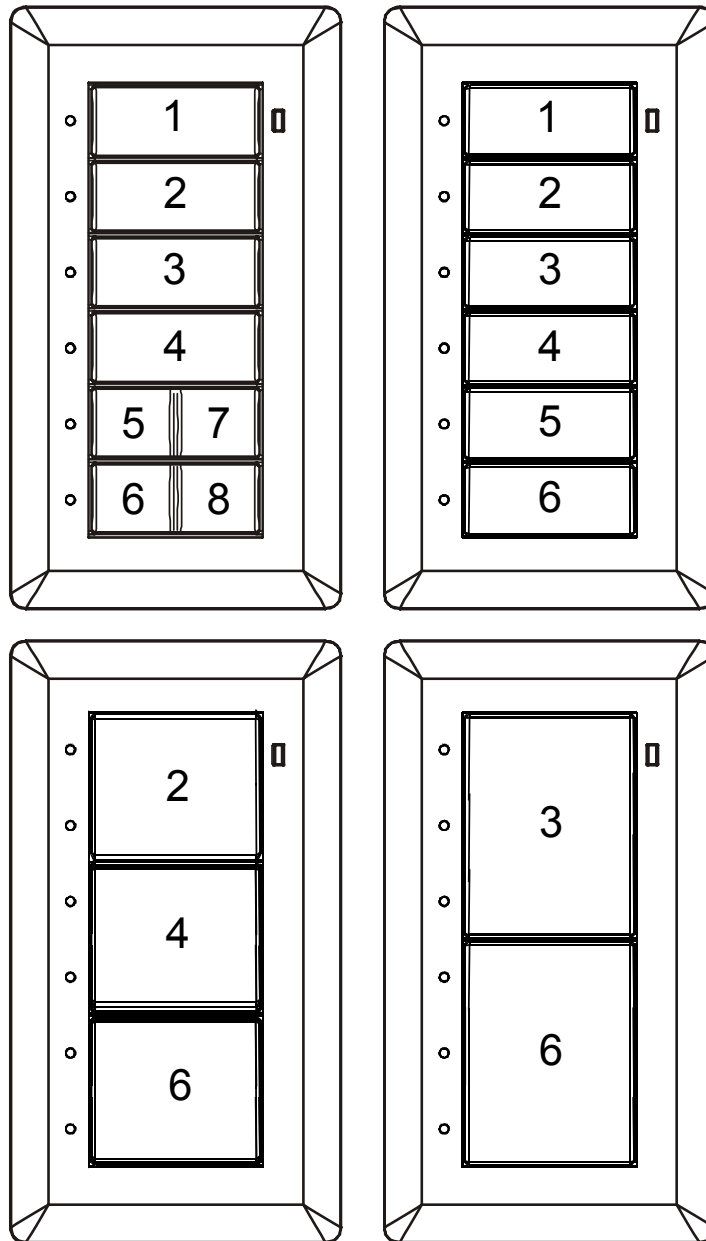
Program Manager is the view where programmers “program” a Crestron control system by assigning signals to symbols.

The symbol can be viewed by double-clicking on the icon or dragging it into *Detail View*. Each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Button Arrangement

The illustrations below show the basic arrangement of the buttons on the keypad.

C2N-CBD/CBF/CBV Keypad Button Arrangement



Button caps for the C2N-CBD/CBF/CBV are supplied as loose button covers: a set of five single button caps, three double button caps, two triple button caps, and two pairs of small split row button caps. You can mix or match the arrangement of the buttons to suit the needs of the installation.

NOTE: Split small buttons may be installed in the bottom two positions only.

When a button cap covers two or three buttons, the bottom button of the set is activated. For example:

- For a two-button cap, if buttons 1 and 2 are covered, when the button is pressed, this will activate button 2.
- For a three-button cap, if buttons 4, 5 and 6 are covered, when the button is pressed, this will activate button 6.
- For a single-button cap, if button 7 is covered, when the button is pressed, this will activate button 5.
- For a single-button cap, if button 8 is covered, when the button is pressed, this will activate button 6.

NOTE: No LED feedback will be provided for buttons 7 and 8.

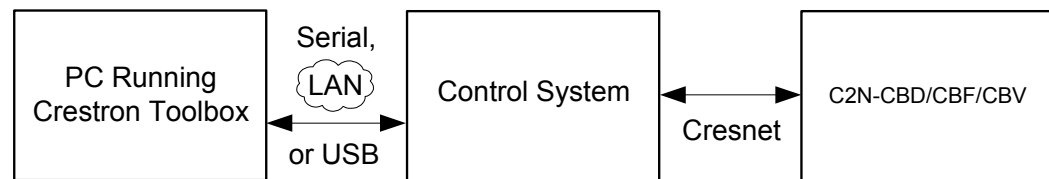
Uploading and Upgrading

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 or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID) to ensure proper functioning.

Establishing Communication

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

Indirect Communication



The C2N-CBD/CBF/CBV connects to control system via Cresnet.

1. Establish communication between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).
2. Use the Address Book in Crestron Toolbox to create an entry for the C2N-CBD/CBF/CBV using the expected communication protocol (indirect). Select the Cresnet ID of the C2N-CBD/CBF/CBV and the address book entry of the control system that is connected to the C2N-CBD/CBF/CBV.
3. Display the C2N-CBD/CBF/CBV's "System Info" window (click the **i** icon); 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 Web site as new features are developed after product releases. One has the option 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 SIMPL Windows help file or the Crestron Toolbox help file.

SIMPL Windows

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

Firmware

Check the Crestron Web site to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

Upgrade C2N-CBD/CBF/CBV firmware via Crestron Toolbox.

1. Establish communication with the C2N-CBD/CBF/CBV and display the “System Info” window.
2. Select **Functions | Firmware...** to upgrade the C2N-CBD/CBF/CBV firmware.

Program Checks

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

Ambient Light Sensor Operation

As noted previously, the C2N-CBD/CBF/CBV Series keypads have an ambient light sensor* that can be used to automatically configure the backlight to operate in either *Day* mode or *Night* mode.

Backlight operation is based on ambient light level and a programmed threshold. Presets based on the keypad color set the optimum backlight level for *Day* mode and *Night* mode.

When using presets, the following occurs:

- For light colored keypads with dark engraving, the backlight turns on dim when in *Night* mode and off when in *Day* mode.
- For dark colored keypads, the backlight turns on dim when in *Night* mode and on bright when in *Day* mode.

NOTE: Backlight levels can also be set manually.

The indicator LEDs automatically adjust their brightness based on ambient light, going bright when the keypad is well lit and going dim when the room is dark.

Finally, if you plan to install two or more keypads side by side, you may want to ensure that the backlights on all units are always in sync. To do this, there are signals available on the programming symbol to allow one unit to act as the master backlight controller, and the rest as slaves.

Refer to the SIMPL Windows help file for more information.

* C2N-CBD-P, C2N-CBF-P and C2N-CBV-P only.

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-CBD/CBF/CBV Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
The keypad does not function.	The wrong power supply is being used.	Use a Crestron power supply.
	The unit is not receiving power, or is receiving insufficient power.	Verify 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 the cable plugged into the NET port is secure.
The keypad does not function. All six feedback LEDs are on low.	Improper Net ID used.	Verify the C2N-CBD/CBF/CBV Net ID matches the Net ID in the software program.
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.

Check Network Wiring

**Use the
Right Wire**

To ensure optimum performance over the full range of your 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 (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 mm²))
 or 1.6 Ohms (Cresnet HP: 12 AWG (4 mm²))
 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 Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

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 or 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).

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron Web site (www.crestron.com/manuals).

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876]. For assistance in your region, please refer to the Crestron Web site (www.crestron.com/offices) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron Web site (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to 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-CBD/CBF/CBV 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 Web site periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

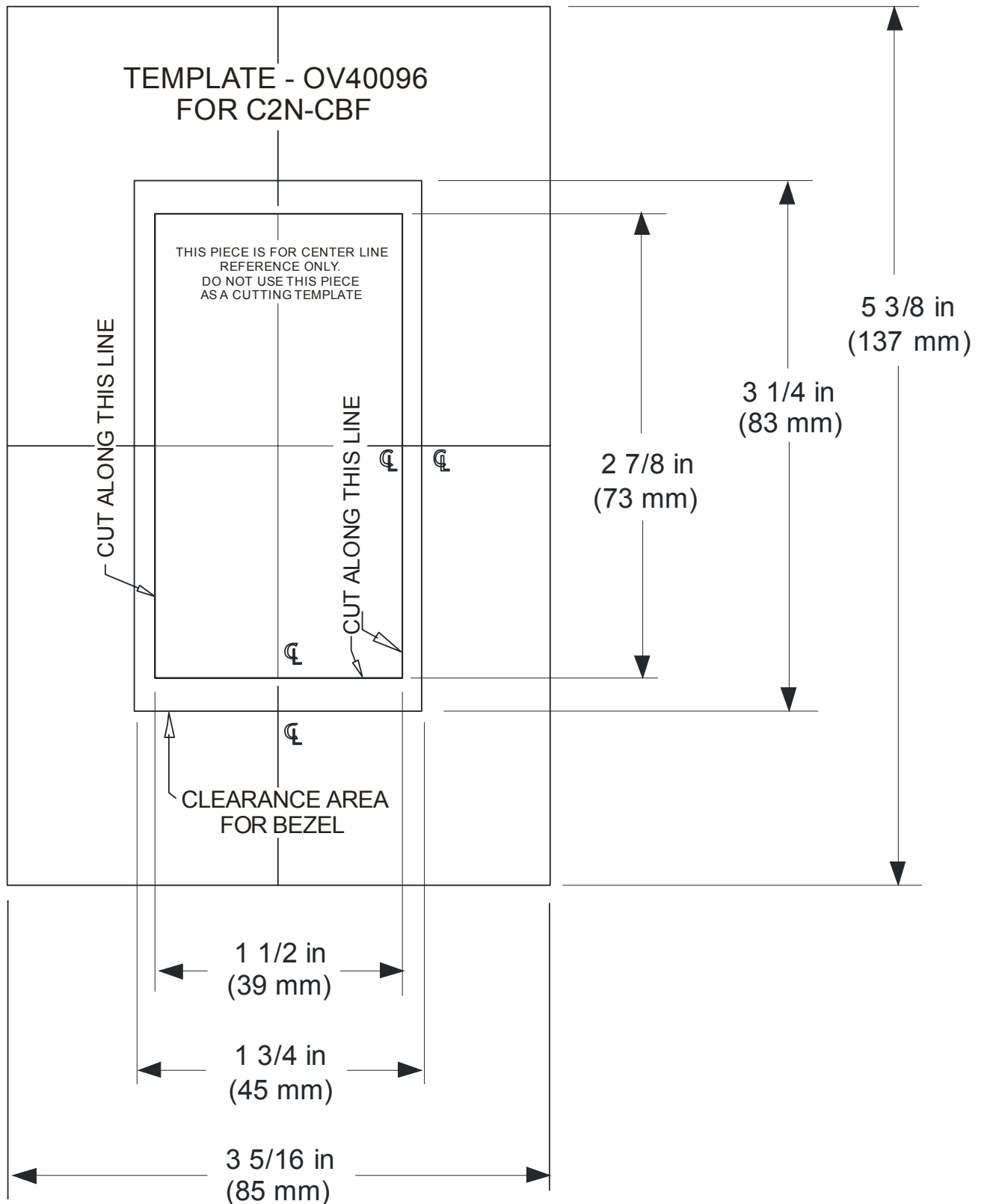
Appendix: Template for Flush Mount Hole

The figure on the following page (not to scale) illustrates the supplied template used to prepare the hole in the wall or other mounting surface for the flush mount Cameo Pro keypad.

NOTE: Use only the original template to prepare the hole, not a photocopy. Photocopies usually alter the size of the image slightly, which would make the hole the wrong size.

Be careful when cutting the hole; the spring clamp on the keypad does not have provision for positioning adjustment. Also, ensure that there is a sufficient clearance area behind the mounting surface as shown on the template.

Cutout Template (Not to Scale)



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. 7063C
(2028549)**

12.11

Specifications subject to
change without notice.