Crestron **MP-B10/20**
Media Presentation Button Panel
Operations & Installation Guide

CRESTRON®

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

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Regulatory Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

As of the date of manufacture, the MP-B10/20 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.

Contents

Media Presentation Button Panel: MP-B10/20

Introduction

The MP-B10 and MP-B20 are enhanced pushbutton control panels designed for installation in a wall or podium. For simplicity within this guide, these control panels are referred to as MP-B10/20 except where noted.

The MP-B10/20 is ideal for expanding a Crestron® MPC Media Presentation Controller™ or as a cost effective user interface for an MPS Multimedia Presentation System or any other Crestron system. Available in white or black, the MP-B10/20 is constructed to handle the rigors of everyday use in a typical classroom, meeting room, lecture hall or training facility.

Its "hard key" buttons (10 on the MP-B10, 15 on the MP-B20) can be freely programmed for any function such as system power, input source selection, transport control and lighting presets. Custom backlit labeling of the buttons is facilitated using an assortment of pre-printed labels or Crestron Engraver software. The 5-way directional navigation pad (MP-B20 only) enables full control of DVD players, displays and other devices that utilize an onscreen menu. Adjusting audio volume and other parameters is enabled using the continuous turn control knob and LED bar graph.

A built-in IR receiver provides a gateway for Crestron IR wireless touchpanels and handheld remotes. A light sensor is also included, programmable for controlling the MP-B10/20's backlight intensity or for providing ambient light level data to the control system for other applications. The MP-B10/20 may be powered through the network wiring using either Cresnet® or PoE (Power over Ethernet), requiring just one wire for operation.

Features and Functions

- Wall mount pushbutton control panel
- Programmable buttons with LED feedback
  (10 on MP-B10, 15 on MP-B20)
- Customizable backlit button labels
- 5-way navigation pad (MP-B20 only)
- Volume control knob and LED bar graph
- Built-in IR receiver and light sensor
- Cresnet® and 10/100 Ethernet
- 802.3af Power over Ethernet compatible
- Rugged construction
- 3-gang wall mountable

Applications

The following diagram shows a MP-B10/20 in a lecture hall application.

MP-B10/20 in a Lecture Hall Application (MP-B10 Shown)
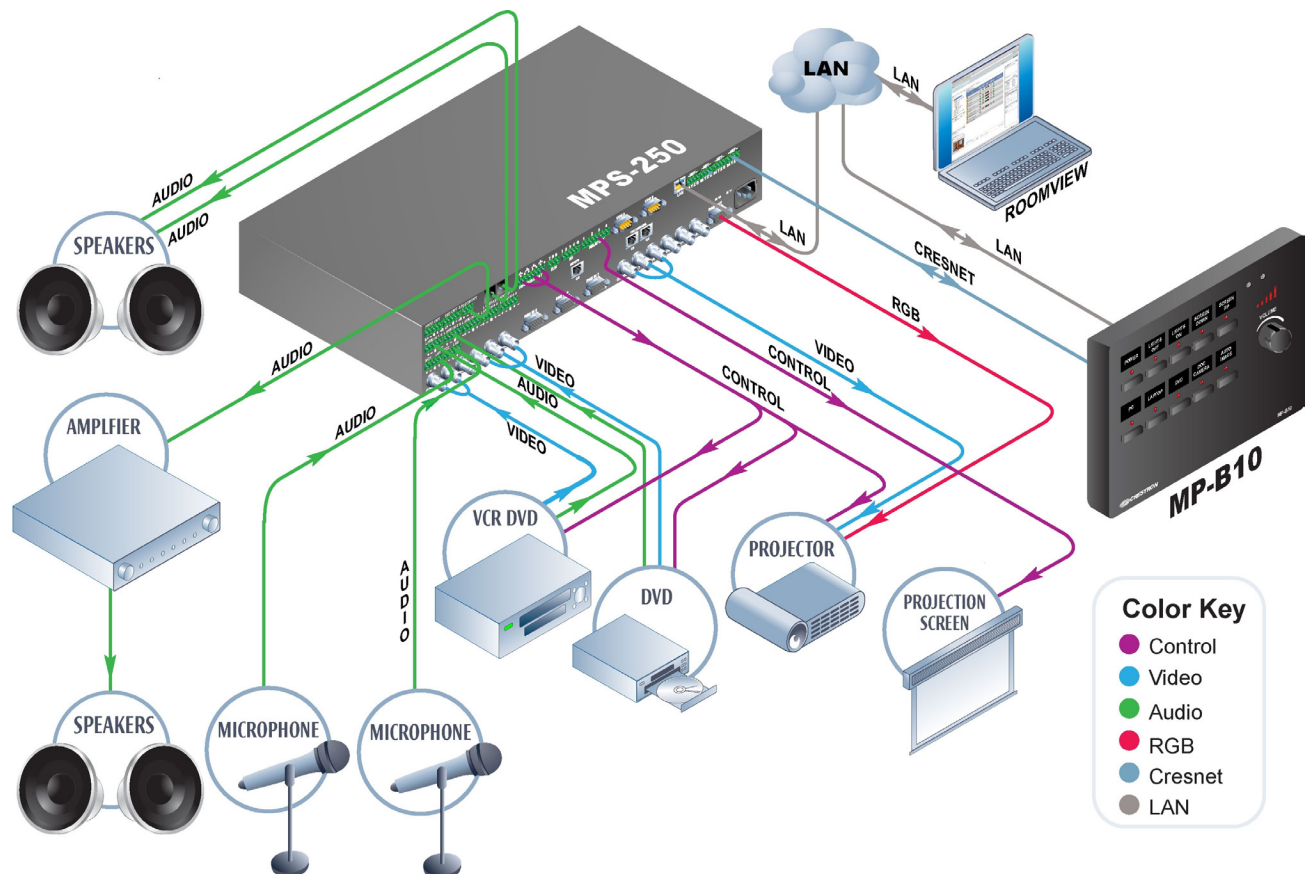
Specifications

Specifications for the MP-B10/20 are listed in the following table.

MP-B10/20 Specifications

SPECIFICATION	DETAILS
Ethernet	10BASE-T/100BASE-TX, static IP or DHCP, DNS, full duplex, auto-switching, auto-negotiating, auto-discovery, TCP/IP, UPD/IP, CIP, IEEE 802.3u and 802.3af compliant
IR Receiver	
Reception Frequency	36 to 38 kHz IR
Formats	Crestron format, RC5
Range	Up to 50 feet (15 meters) line of sight (typical), dependent upon angle, obstructions, IR interference and IR remote signal strength
Power Requirements	
Cresnet Power Usage	4 W (0.17 A @ 24 VDC)
Power over Ethernet[1]	IEEE 802.3af Class 2 PoE powered device
Default Net ID	03
Minimum 2-Series Control System Update File[2, 3]	Version 4.000.0251 or later
Environmental	
Temperature	32º to 104º F (0º to 40º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	14 BTU/Hr
Enclosure	
Faceplate	High impact plastic, black or white with polycarbonate label overlay
Chassis	Injection molded plastic with steel mounting plate
Mounting	Requires 3-gang plaster ring or electrical box, ≥ 2 in (51 mm) deep recommended
Dimensions	
Height	4.50 in (115 mm)
Width	6.70 in (171 mm)
Depth	2.23 in (57 mm)
Weight	
MP-B10	17 oz (475 g)
MP-B20	17 oz (467 g)
Available Models	
MP-B10-B-T	Media Presentation Button Panel B10, black textured (with 10 buttons)
MP-B10-W-T	Media Presentation Button Panel B10, white textured (with 10 buttons)

(Continued on following page)

MP-B10/20 Specifications (Continued)

SPECIFICATION	DETAILS
Available Models (Continued)	
MP-B20-B-T	Media Presentation Button Panel B20, black textured (with 15 buttons and 5-way navigation pad)
MP-B20-W-T	Media Presentation Button Panel B20, white textured (with 15 buttons and 5-way navigation pad)
Available Accessories	
MP/MPC/IPAC_FRONT-LABEL-(BLANK, ENGRAVED)-B-T	Set of custom engravable backlit labels, white on black
MP/MPC/IPAC_FRONT-LABEL-(BLANK, ENGRAVED)-W-T	Set of custom engravable backlit labels, black on white

1. If both PoE and Cresnet power are connected, power will be drawn from Cresnet.
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. 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 website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) 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 MP-B10/20.

MP-B10 Physical View (Front)
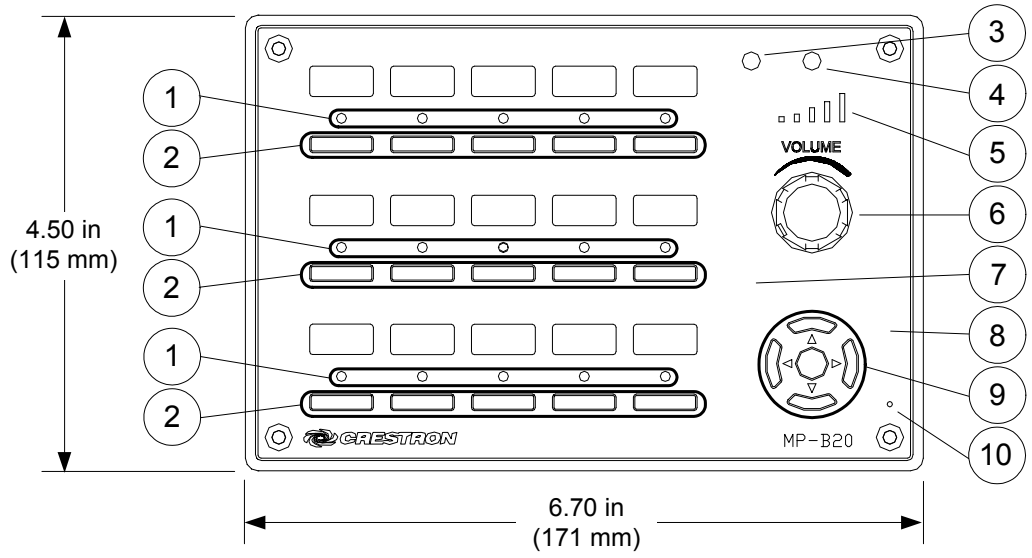

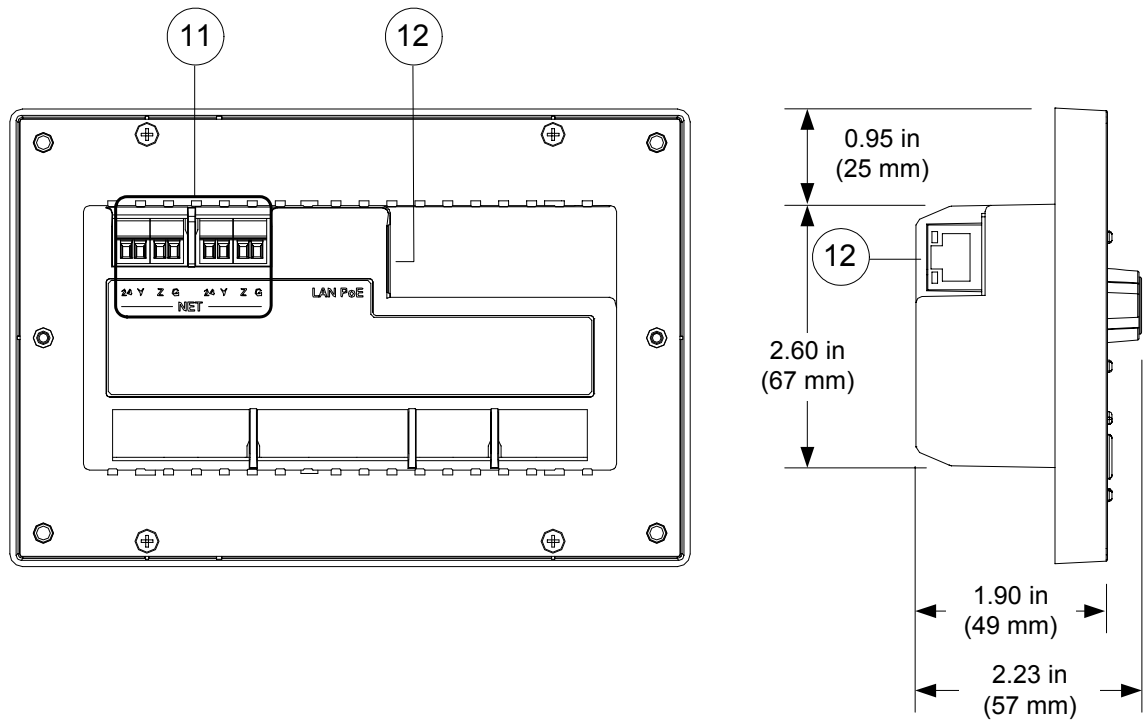*MP-B10 Physical View (Rear)*

MP-B20 Physical View (Front)
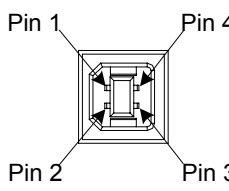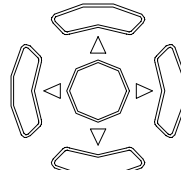

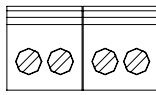*MP-B20 Physical View (Rear)*

MP-B10/20 Overall Dimensions (Front View of MP-B20 Shown)

MP-B10/20 Overall Dimensions (Rear and Side Views of MP-B20 Shown)

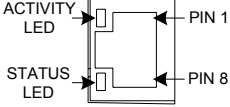*Connectors, Controls & Indicators*

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	FEEDBACK INDICATORS[1]	Programmable red LEDs (one per hard key)
2	HARD KEYS[1]	Programmable buttons with backlit labeling
3	LIGHT SENSOR	Photo sensor, programmable for auto-dimming of front panel labeling and other functions
4	IR RECEIVER	Receives signals from IR transmitter
5	BAR GRAPH	(1) Programmable red 5-segment LED bar graph
6	VOLUME	(1) Programmable continuous turn rotary encoder
7	COMPUTER Pin 1 Pin 4 Pin 2 Pin 3	(1) USB Type B female (behind front cover); USB 1.1 computer console port for firmware upgrade | PIN	DESCRIPTION
---	---
1	+5 VDC
2	Data -
3	Data +
4	Ground	
8	SETUP	(1) Recessed miniature pushbutton (behind front cover) for setting up connection with the control system via Cresnet or Ethernet
9	NAVIGATION PAD[2]	(5) Programmable pushbuttons for 4-way directional navigation and "enter"
10	HW-R	(1) Recessed miniature pushbutton for hardware reset
11	NET[3]	(2) Sets of (4) captive screw terminals; Cresnet slave port with parallel pass-through; **24**: Power (24 VDC) **Y**: Data **Z**: Data **G**: Ground

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
12	LAN PoE[3, 4, 5] ACTIVITY LED → — PIN 1 STATUS LED → — PIN 8	(1) 8-wire RJ-45 with two LED indicators; 10BASE-T/100BASE-TX Ethernet port, 802.3af Power over Ethernet compliant; Top green LED indicates Ethernet activity; Bottom green LED indicates link status

PIN	DESCRIPTION
1	RX +
2	RX -
3	TX +
4	N/C
5	N/C
6	TX -
7	N/C
8	N/C

1. 10 on MP-B10, 15 on MP-B20.
2. MP-B20 only.
3. If both PoE and Cresnet power are connected, power will be drawn from Cresnet.
4. To determine which is pin 1 on the cable, hold the cable so the end of the eight pin modular jack is facing away from you, with the clip down and copper side up. Pin 1 is on the far left.
5. The pin out table indicates signal connections. DC power applied by Ethernet power sourcing equipment (PSE) can connect to either signal pins of N/C pins.

Setup

Network Wiring

When wiring the Cresnet® and Ethernet 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. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

Cresnet

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" on page 25.

Ethernet

The MP-B10/20 can also use high-speed Ethernet for communications between the device and a control system, computer, digital media server and other IP-based devices.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available for download from the Crestron website (www.crestron.com/manuals).

Identity Code

Net ID

The Net ID of the MP-B10/20 has been factory set to **03**. The Net IDs of multiple MP-B10/20 devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via Crestron Toolbox™ (refer to "Establishing Communication" which starts on page 21).

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.

IP ID

The IP ID is set within the MP-B10/20's table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple MP-B10/20 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the SIMPL Windows program.

- Each device using IP to communicate with a control system must have a unique IP ID.

Supplied Hardware

The hardware supplied with the MP-B10/20 is listed in the following table.

Supplied Hardware for the MP-B10/20

DESCRIPTION	PART NUMBER	QUANTITY
Mounting Plate with Ground Wire	4506280	1
Button Identification Labels, Sources, 100	4509400	1
Button Identification Labels, Actions, 100	4509402	1
Screws, 06-32 x 3/4", Combo Head	2009211	4
Screws, 04-40 x 1/4", Pan, Phil	2007156	2
Screws, 04-40 x 1/2", Btn Head	2021395 / 2021396*	4
Prod Tool, 1/16" Allen Wrench, L-Key	2022867	1

*   2021395 with black models, 2021396 with white models.

Installation

The following tools and accessories are required for installation of an MP-B10/20:

- Standard 3-gang electrical box (not included)
- Philips screwdriver (not included)
- 1/16" allen wrench (included)
- Button labels (included)

After the wiring has been installed and verified, use the following procedure to install the MP-B10/20 in a standard, 3-gang electrical box.

1. Turn system power **OFF**.
2. Use the four included 06-32 x 3/4" screws to attach the mounting plate to the electrical box.

Attach the Mounting Plate
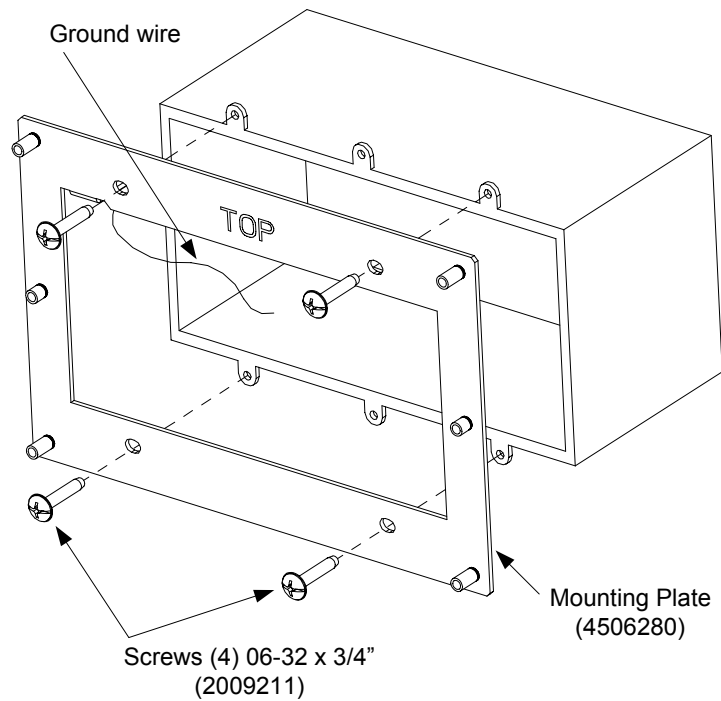
3. Attach the ground wire from the mounting plate to the electrical box.

NOTE: Ensure the unit is properly grounded.

4. Attach cables to the rear of the MP-B10/20.

5. Use the two included 04-40 x 1/4" screws to attach the MP-B10/20 to the mounting plate.

CAUTION: Excess wire that is pinched between the MP-B10/20 and the electrical box could short out. Make sure that all excess wire is completely inside the electrical box and not between the box and the MP-B10/20.

Attach the MP-B10/20 (MP-B20 Shown)

Label Strips (3)

Button Label

Screws (2) 04-40 x 1/4"
(2007156)
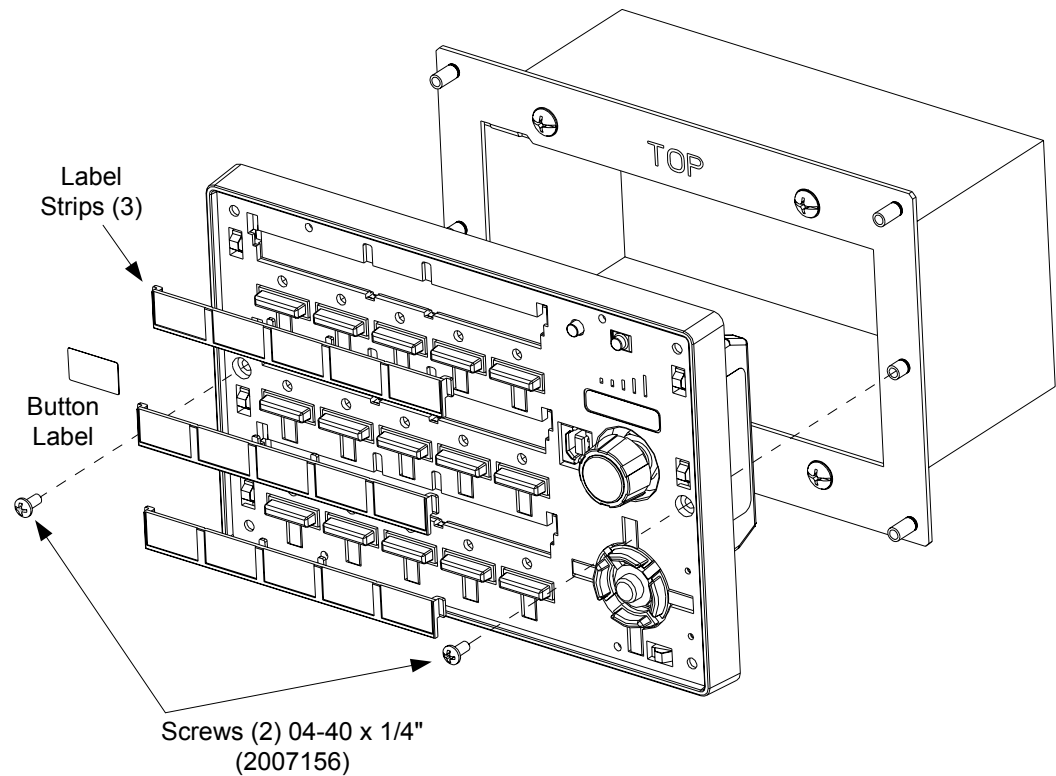
6.   Attach the included labels to the label strips, in the appropriate positions on the MP-B10/20. For ease in label placement, the label strips can be removed by sliding each one upward to release it. When labels are attached, place each strip over its respective slot and slide it downward into position.

7.   Perform any necessary programming using the **COMPUTER** (USB) connection prior to attaching the front panel of the MP-B10/20. (Programming can also be performed via the **LAN** port.)

8.   Use the four included #04-40 x 1/2" screws and the included 1/16" Allen wrench to attach the front panel to the MP-B10/20.

Attach the Front Panel (MP-B20 Shown)
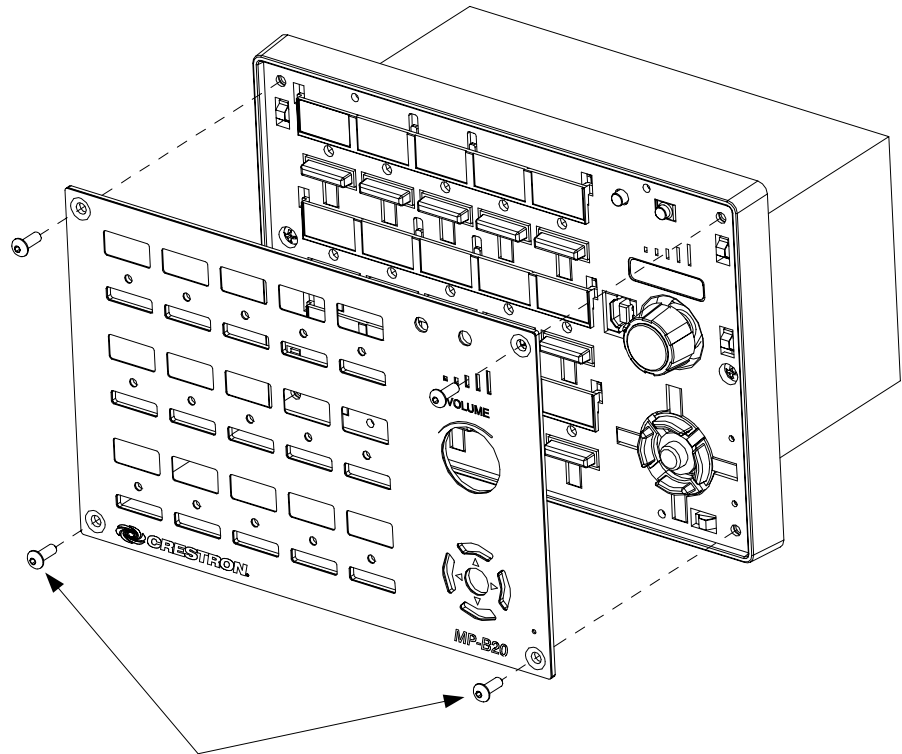
Screws (4) 04-40 x 1/2"
(2021395 or 2021396)

Hardware Hookup

Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to "Network Wiring" on page 10 before making connections to the 4-position captive screw terminal connectors. Apply power after all connections have been made.

When making connections to the MP-B10/20, use Crestron power supplies for Crestron equipment.

Hardware Connections for the MP-B10/20 (Front View of MP-B20 Shown)
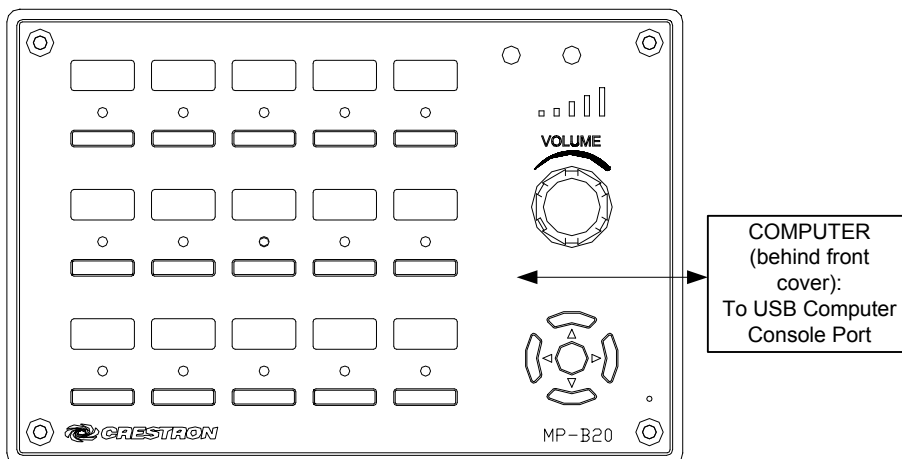
Hardware Connections for the MP-B10/20 (Rear View)
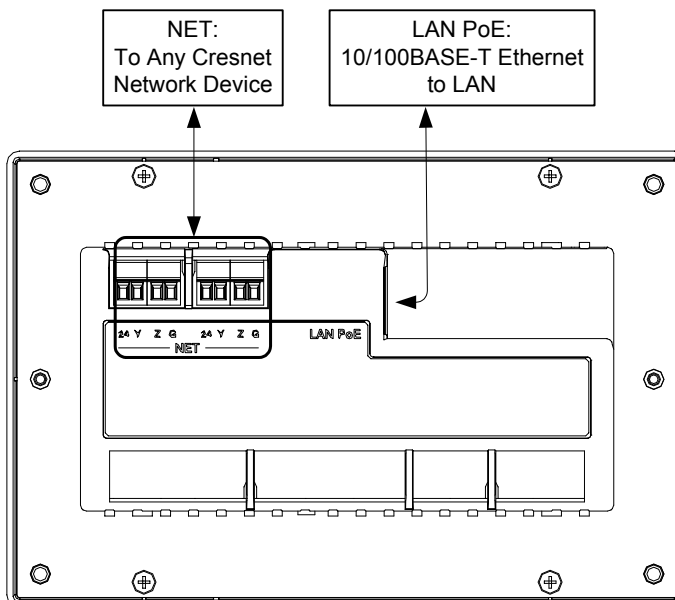
Label the Buttons

Optional custom engraved labels for the MP-B10/20 can be ordered separately by using Crestron Engraver software, available from the Crestron website (www.crestron.com).

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 website. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at http://support.crestron.com. 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 website.

Crestron has developed an assortment of Windows®-based software tools to develop a Cresnet system. You can create a program to control the MP-B10/20 control system using the Crestron programming tools SystemBuilder™ or SIMPL Windows. For the minimum recommended software versions, visit the Version Tracker page of the Crestron website (www.crestron.com/versiontracker).

Programming with Crestron SystemBuilder

Crestron SystemBuilder is the easiest method of programming but does not offer as much flexibility as SIMPL Windows. For additional details, download SystemBuilder from the Crestron website and examine the extensive help file.

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the MP-B10/20, 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 Manager

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

1. To incorporate the MP-B10/20 into the system, drag the MP-B10/20 from the Wired Keypads folder of the *Device Library* and drop it in the *System Views*.

Locating the MP-B10/20 in the Device Library

> Crestron Devices (DvcLib 584)
> ⊞ Control Systems
> ⊞ Cresnet Control Modules
> ⊞ DigitalMedia
>
> ⊟ Wired Keypads
>   APAD
>   C2N-CB
>   C2N-CB-TS (Cameo 2)
>
>   MP-B10 (Cresnet) ◄───────
>   MP-B10 (Ethernet) ◄───────
>   MP-B20 (Cresnet) ◄───────
>   MP-B20 (Ethernet) ◄───────
> ⊞ Wireless Receivers
> ⊞ Wireless Remotes
> ⊞ User Devices
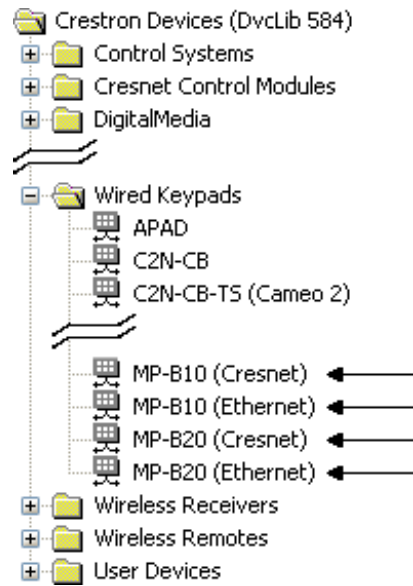
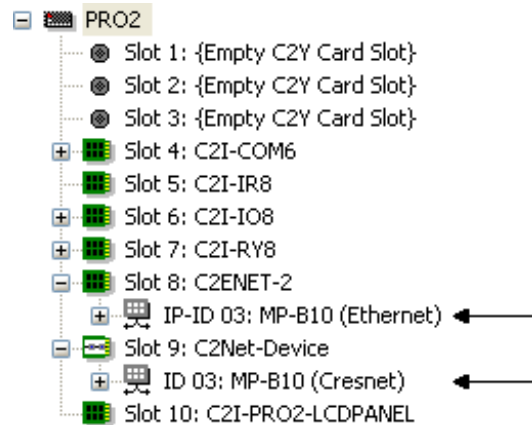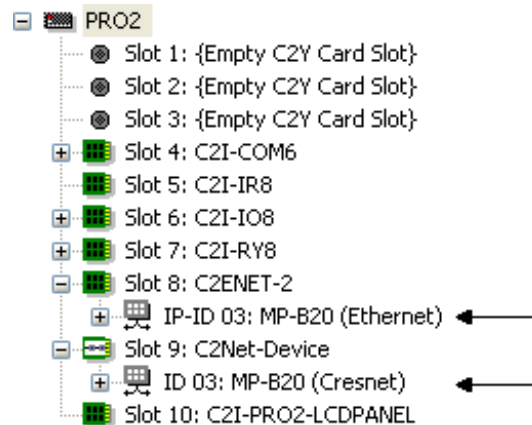2. The system tree of the control system displays the device in the appropriate slot(s) with a default Net ID or IP ID as shown in the following illustration.

C2Net Device, Slots 8 and 9 (MP-B10 Shown)

> ⊟ PRO2
>   ◉ Slot 1: {Empty C2Y Card Slot}
>   ◉ Slot 2: {Empty C2Y Card Slot}
>   ◉ Slot 3: {Empty C2Y Card Slot}
>   ⊞ Slot 4: C2I-COM6
>   Slot 5: C2I-IR8
>   ⊞ Slot 6: C2I-IO8
>   ⊞ Slot 7: C2I-RY8
>   ⊟ Slot 8: C2ENET-2
>   ⊞ IP-ID 03: MP-B10 (Ethernet) ◄───────
>   ⊟ Slot 9: C2Net-Device
>   ⊞ ID 03: MP-B10 (Cresnet) ◄───────
>   Slot 10: C2I-PRO2-LCDPANEL

C2Net Device, Slots 8 and 9 (MP-B20 Shown)

> ⊟ PRO2
>   ◉ Slot 1: {Empty C2Y Card Slot}
>   ◉ Slot 2: {Empty C2Y Card Slot}
>   ◉ Slot 3: {Empty C2Y Card Slot}
>   ⊞ Slot 4: C2I-COM6
>   Slot 5: C2I-IR8
>   ⊞ Slot 6: C2I-IO8
>   ⊞ Slot 7: C2I-RY8
>   ⊟ Slot 8: C2ENET-2
>   ⊞ IP-ID 03: MP-B20 (Ethernet) ◄───────
>   ⊟ Slot 9: C2Net-Device
>   ⊞ ID 03: MP-B20 (Cresnet) ◄───────
>   Slot 10: C2I-PRO2-LCDPANEL

3. Additional MP-B10/20 devices are assigned different Net ID or IP ID numbers as they are added.
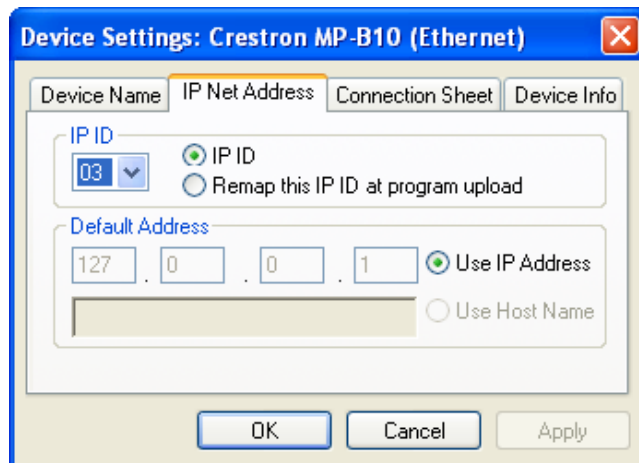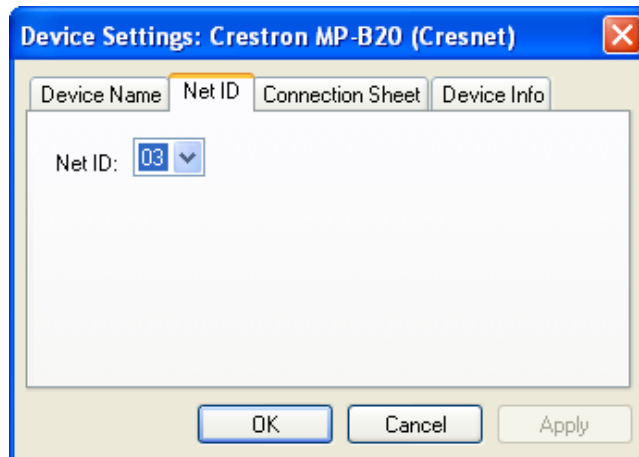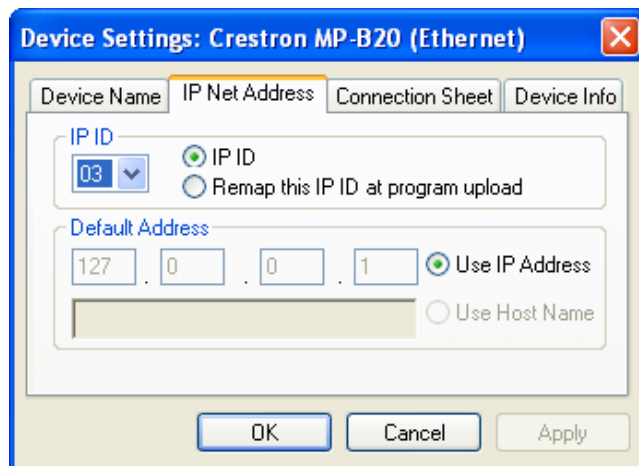
4. If necessary, double click a device to open the "Device Settings" window and change the Net ID or IP ID, as shown in the following figures.

"Device Settings: Crestron MP-B10 (Cresnet)" Window
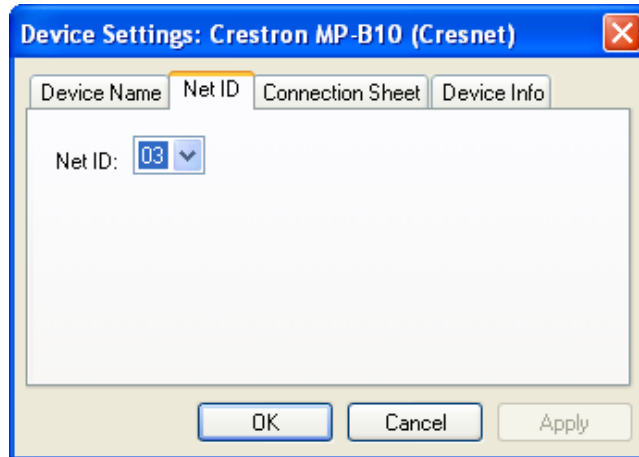
"Device Settings: Crestron MP-B10 (Ethernet)" Window

"Device Settings: Crestron MP-B20 (Cresnet)" Window

"Device Settings: Crestron MP-B20 (Ethernet)" Window

5. The ID code specified in the SIMPL Windows program must match the Net ID or IP ID of each unit. Refer to "Identity Code" on page 10.

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**).

Pushbutton Programming

The hard pushbuttons and the five-way thumbpad (MP-B20 only) are programmable and can provide tactile control of many functions such as audio volume, channel selection, OSM navigation or even pan/tilt cameras. Refer to the following illustration for their assigned join numbers. A description for each button signal is described in the SIMPL Windows help file (**F1**).

MP-B10 Pushbutton Layout and Join Assignment
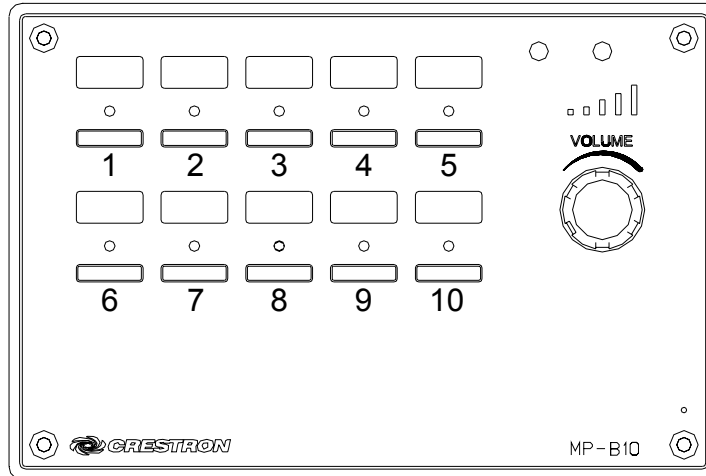
MP-B20 Pushbutton Layout and Join Assignment
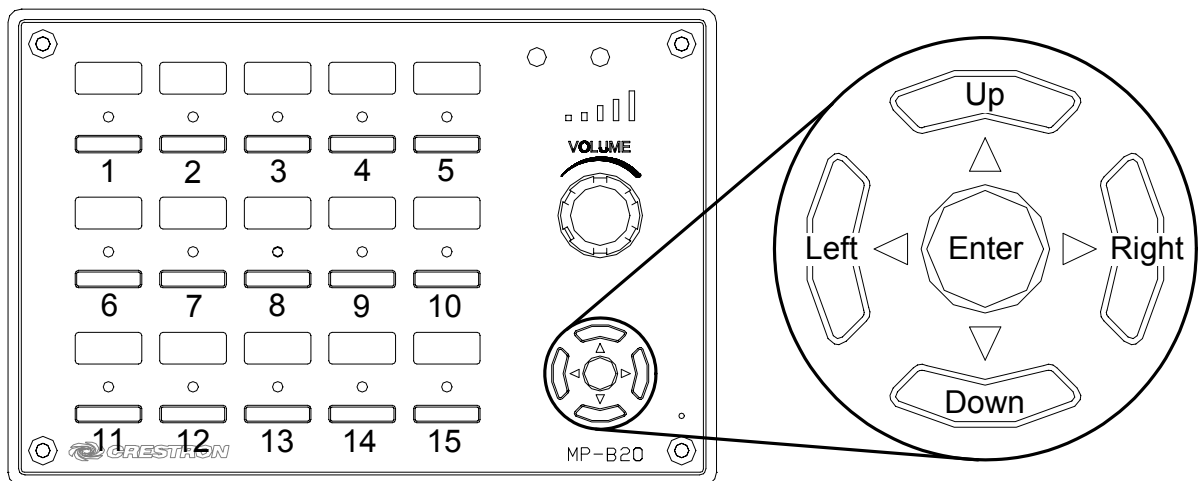
Example Program

An example program for the MP-B10/20 is available from the Crestron website (www.crestron.com/exampleprograms).

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 or creating an IP table) to ensure proper functioning.

Establishing Communication

Use Crestron Toolbox for communicating with the MP-B10/20; refer to the Crestron Toolbox help file for details. There are two methods of communication.

USB

USB Communication
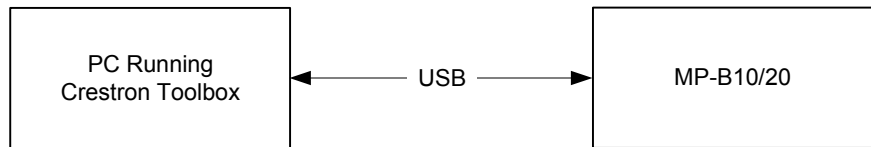
The **COMPUTER** port on the MP-B10/20 connects to the USB port on the PC via a Type A to Type B USB cable (not included):

1. Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the MP-B10/20 by entering (for example) "MP-B10" in the *Model* textbox, the unit's serial number in the *Serial* textbox or the unit's hostname in the *Hostname* textbox. The hostname can be found in the "System Info" window in the section marked *Ethernet* however, communications must be established in order to see this information in the "System Info" window.

2. Display the MP-B10/20's "System Info" window (click the [i] icon); communications are confirmed when the device information is displayed.

TCP/IP

Ethernet Communication
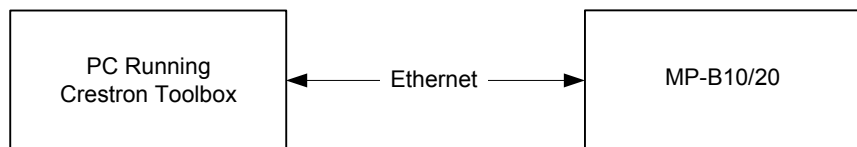
Ethernet Communications (Without Hub or Router)
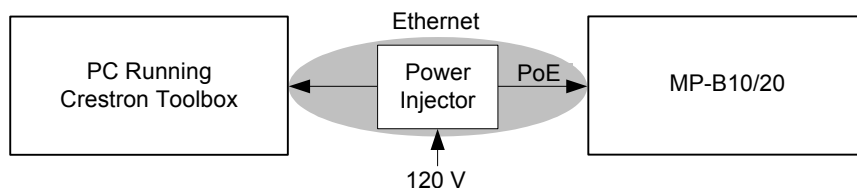
The MP-B10/20 connects to PC via Ethernet:

1. Establish serial communication between MP-B10/20 and PC.

2. Enter the IP address, IP mask and default router of the MP-B10/20 via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.

3. Confirm Ethernet connections between MP-B10/20 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router (via static IP and a power injector, if not other power is supplied).

   NOTE: Some PCs may not require a crossover cable. Check with PC manufacturer.

4. Use the Address Book in Crestron Toolbox to create an entry for the MP-B10/20 with the MP-B10/20's TCP/IP communication parameters.

5. Display the "System Info" window (click the ◼ icon) and select the MP-B10/20 entry.

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. 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 website 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 MP-B10/20 firmware via Crestron Toolbox.

1. Establish communication with the MP-B10/20 and display the "System Info" window.

2. Select **Functions | Firmware…** to upgrade the MP-B10/20 firmware.

Program Checks

Actions that can be performed on the MP-B10/20 vary depending on whether it is connected via Cresnet or Ethernet.

Cresnet Connections

For Cresnet connections, 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 MP-B10/20 to display actions that can be performed on the MP-B10/20.

Ethernet Connections

For Ethernet connections, using Crestron Toolbox, display the "System Info window (click the ![i icon] icon) and select the **Functions** menu to display actions that can be performed on the MP-B10/20.

Be sure to use Crestron Toolbox to create the MP-B10/20 IP table.

1. Select Functions | IP Table Setup.

2. Add, modify or delete entries in the IP table. The MP-B10/20 can have only one IP table entry.

3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the MP-B10/20. The entry should list the MP-B10/20's IP ID (specified on the MP-B10/20's IP table) and the internal gateway IP address 127.0.0.1.

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.

MP-B10/20 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Top left LED on front panel does not illuminate.	MP-B10/20 is not receiving sufficient Cresnet power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.
	MP-B10/20 is not receiving sufficient Ethernet power.	Verify appropriate Ethernet power sourcing equipment (PSE) Power over Ethernet indicator is ON.
Cresnet device does not respond.	Device not wired correctly.	Verify Cresnet wiring.
	Improper Net ID used.	Verify that device ID matches Net ID in the program.
A/V system device does not respond.	Used wrong IR port.	Verify that proper IR port is defined.
	Device is not receiving power from a Crestron power source.	Use a Crestron power source. Verify connections.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. 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. Please 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 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 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 website. This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
Crestron e-Control 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].

You can also log onto the online help section of the Crestron website (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 MP-B10/20, 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; touchscreen 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.

Trademark Information
All brand names, product names and trademarks are the sole property of their respective owners. Windows is a registered trademark of Microsoft Corporation. Windows95/98/Me/XP/Vista/7 and WindowsNT/2000 are trademarks of Microsoft Corporation.