Crestron **C2N-NPA8**
Network Poll Accelerator

Operations Guide

Contents

Network Poll Accelerator: C2N-NPA8

Introduction

Features and Functions

The Crestron® Network Poll Accelerator (C2N-NPA8) is a network device that maintains high data throughput and low data latency via Cresnet® when a large number of Cresnet devices communicate with a single 2-Series control system. When connected to a Crestron 2-Series control system via a high speed serial or Ethernet connection, the C2N-NPA8 can provide reliable, high-speed communications between the control system and up to 252 Cresnet devices.

Functional Summary

- Reliable, high-speed communications between a Crestron 2-Series control system and up to 252 Cresnet devices
- Eight segments with four mini-Cresnet connectors per segment
- Independently operated segments provide fault tolerance should an individual segment fail
- Communicates to 2-Series control system via high-speed serial or 10/100 Base-T Ethernet
- Console function to configure device settings and monitor diagnostics via DB-9 RS-232 connector
- Each Cresnet ID can be viewed with the Network Analyzer

Placing a large amount of Cresnet devices on a control system can slow down polling time as each Cresnet device is polled sequentially by the control system. By breaking down the Cresnet system into segments, multiple segments can be polled simultaneously by the control system, hence improving response time.

Similarly, high-traffic devices such as touchpanels, camera controls, and other devices require more network bandwidth as they transmit and receive larger amounts of data. By placing these devices on their own segments, other segments can be used for low-traffic devices such as wall keypads allowing Cresnet traffic to flow more efficiently.

The C2N-NPA8 is comprised of 32 Cresnet connectors spread over eight segments (NET A – NET H). These segments, along with the Cresnet port on the control system allow the connection of up to 252 Cresnet devices.

The C2N-NPA8 is powered by a 24 VDC signal (from a 2-Series control system or Creston power supply) applied to the PWR connector on either the NET A or NET B segments. Power is provided to the other segments by connecting jumper wires to each segment that requires power. Light Emitting Diodes (LEDs) indicate power and communication activity on each segment.

For detailed information on the C2N-NPA8 input and output ports/connectors, refer to "Physical Description".

Specifications

Specifications for the C2N-NPA8 are provided below.

C2N-NPA8 Network Poll Accelerator Specifications

SPECIFICATION	DETAILS
Power Requirements	10 Watts (0.42 Amp @ 24VDC)
	Supplied from control system or Crestron power supply
Connectors/Ports	
PWR	8 – 3-position mini-phoenix. Provides 24V input (from power supply or powered segment) and 24V output (to segment on C2N-NPA8). One per segment.
NET	32 – Cresnet 4-wire interface, divided over 8 segments
LAN	1 – RJ45 10/100 Base-T Ethernet port
COMPUTER	1 – DB9F PC Interface for console functions
COM	1 – DB9F Interface for high-speed serial connection to control system

Cresnet D26 BDC0tnV0 rgBT/TT5 1 Tf0 Tc -12.24 ref/P <</MCID 20g.407.722 423.1/252.3 Tm(e) 357.l snet

C2N-NPA8 Physical View

C2N-NPA8 Physical Views

12.25 in
(31.12 cm)

3.00 in   4.00 in   5.19 in
(7.62 cm)   (10.16 cm)   (13.18 cm)

12.75 in
(32.39 cm)

13.25 in
(33.66 cm)
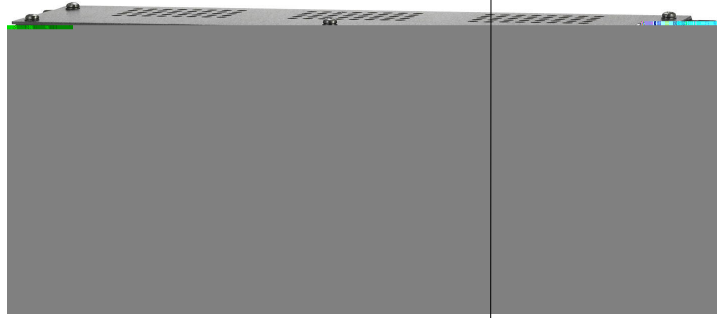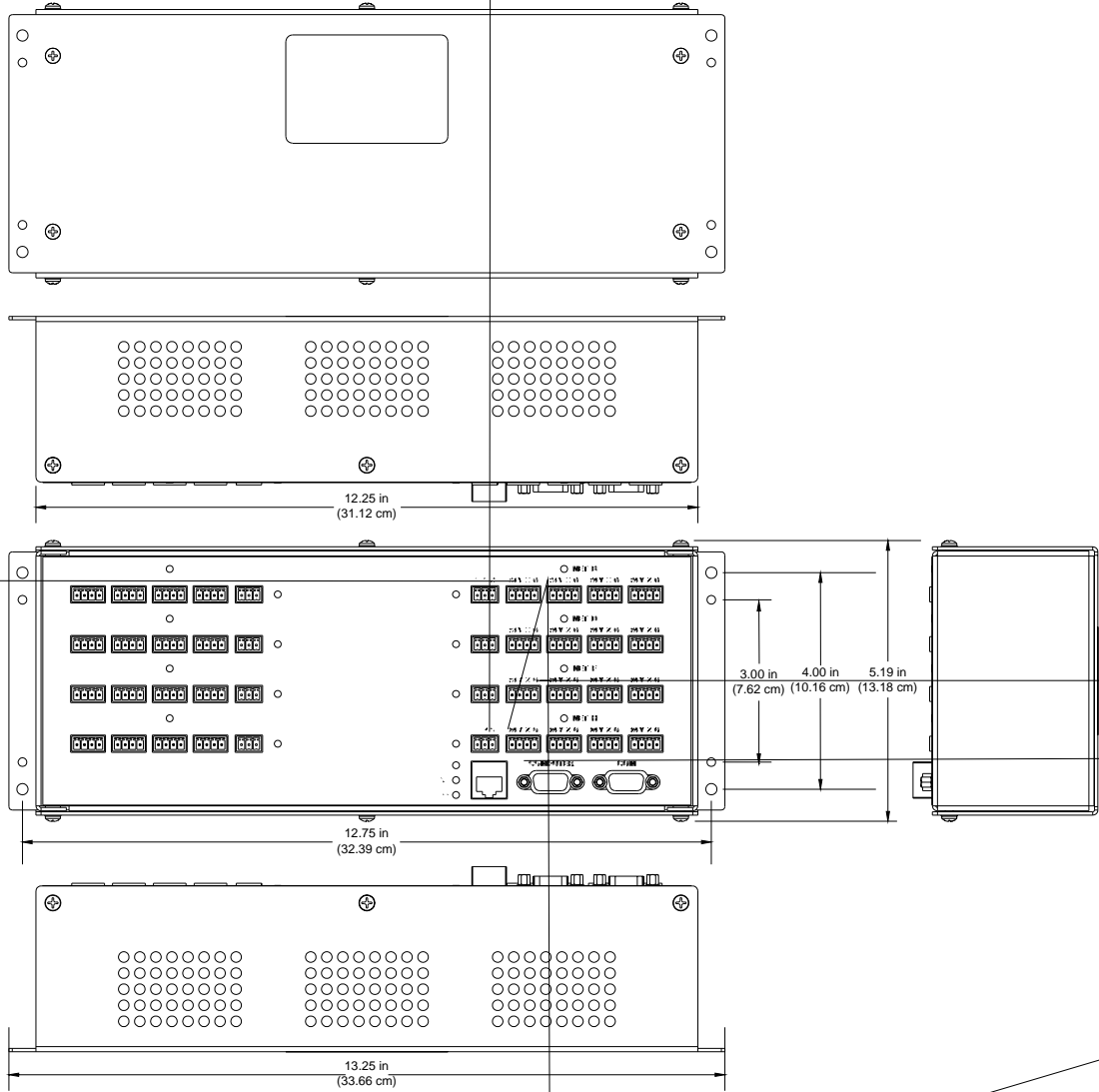
NOTE: Interface connectors for the PWR and NET ports are provided with the C2N-NPA8.

NET A - H

These eight segments provide 32 standard (24 Y Z G) Cresnet connectors (in groups of four) for Cresnet device connections. Each group of four supports 32 electrical Cresnet connections.
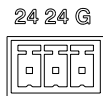
NOTE: Although there are eight segments with four connectors each, a control system can only address 252 devices (03 through FE).

POWER

These connectors (quantity eight) are used to supply 24VDC power to each segment as well as providing a jumping point for powering another segment on the C2N-NPA8. To power the C2N-NPA8, 24VDC power must be supplied to either the power connector on NET A or NET B. For more details, refer to "Power Connections" on page 9.

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

LAN

An 8-position RJ45 port is used for an Ethernet connection to a control system with Ethernet capabilities. Refer to the following table for the Ethernet connector signals and use an appropriate cable (not supplied). For information on connecting the LAN port to a control system, refer to "Communication Connections" on page 10.

NOTE: Only one C2N-NPA8 can be connected to a control system.

LAN Connector Specifications

TYPE	PIN	SIGNALS
8-Position RJ45	1	TD+
	2	TD-
	3	RD+
	4	Connected to pin 5
	5	Connected to pin 4
	6	RD-
	7	Connected to pin 8
	8	Connected to pin7

NOTE: To determine which is pin 1 on the cable, hold the cable so that 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.

COMPUTER
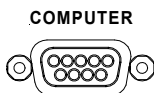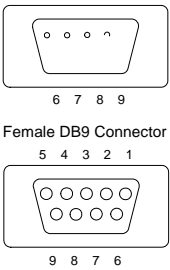
This DB9F connector is used for console purposes. The C2N-NPA8's Ethernet configuration settings and diagnostics can be accessed through this port. The port is modem compatible. The modem and/or PC program cable are not included. Supports baud rate of up to 115 Kb. Use with a standard DB9 straight through cable. Refer to

the following table for the cable pinouts.

Standard DB9 Pin Assignments

PIN #	ABBREVIATION	DESCRIPTION
1	DCD	Data Carrier Detect
2	RD	Receive Data
3	TD	Transmit Data
4	DTR	Data Terminal Ready
5	SG	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	Ring	Ring Indicator

6 7 8 9

Female DB9 Connector

5 4 3 2 1

9 8 7 6

PWR (Power)

This LED illuminates when a segment is connected to and receives 24 VDC power from an external power pack or a Crestron control system.

LNK

This LED illuminates when there is a connection to the LAN port.

ACT

This LED illuminates when there is communication (activity) at the LAN port with an Ethernet network.

ERR

This LED illuminates when an error condition is detected. This may be the result of hardware or software failure, or a programming error. To determine the actual error condition, examine the message available through the Viewport menu **Functions | 2-Series | Error Log | Show Error Log.**

NOTE: The Viewport utility performs multiple system tasks, primarily via a serial or TCP/IP connection between the control system and a PC. It is used to observe system processes, upload new operating systems and firmware, change system and network parameters, and communicate with network device consoles and touchpanels, among many other tasks. Viewport can also function as a terminal emulator for generic file transfer. All of these functions are accessed through the commands and options in the Viewport menus. Viewport is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

Industry Compliance

As of the date of manufacture, the C2N-NPA8 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling (N11785).

> **NOTE:** When installing network wiring, refer to the latest revision of the wiring diagram(s) appropriate to your specific system configuration, available from the Downloads | Product Manuals | Wiring Diagrams section of the Crestron website (www.crestron.com).

> **NOTE:** Do not power up system until all wiring is verified. Care should be taken to ensure data (Y, Z) and power (24, G) connections are not crossed.

> **NOTE:** All network 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.

When calculating the wire gauge for a particular network run, the length of the run and the power factor of each network unit to be connected must be taken into consideration. If network units are to be daisy-chained on the run, the power factor of each network unit to be daisy-chained must be added together to determine the power factor of the entire chain. The length of the run in feet and the power factor of the run should be used in the following resistance equation to calculate the value on the right side of the equation.

Resistance Equation

$$R \ < \ \frac{40,000}{L \ x \ PF}$$

Where: R = Resistance (refer to table below).
L = Length of run (or chain) in feet.
PF = Power factor of entire run (or chain).

The required wire gauge should be chosen such that the resistance value is less than the value calculated in the resistance equation. Refer to the following table.

Wire Gauge Values

RESISTANCE (R)	WIRE GAUGE
4	16
6	18
10	20
15	22
13	Doubled CAT5
8.7	Tripled CAT5

> **NOTE:** 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.

Mounting Options

Rack Mounting

There is a rack mount kit for the C2N-NPA8 known as C2N-RMAK. For installation instructions, refer to the latest version of the Installation Guide (Doc. 6131) which is available from the Crestron website (www.crestron.com).

CAEN Enclosure Mounting

The C2N-NPA8 can also be installed in a Crestron Automation Enclosure (CAEN). To install the C2N-NPA8 in a CAEN enclosure, the CAEN Mounting Kit (CAEN-MK) must be used. For installation instructions, refer to the latest version of the Installation Guide (Doc. 6130) which is available from the Crestron website (www.crestron.com).

Hardware Hookup

Refer to the following hookup diagram and, aside from attaching power last, complete the connections in any order. Refer to "Network Wiring" on page 6 when making network connections.

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the rack environment may be greater than the room ambient. Contact with thermal insulating materials should be avoided on all sides of the unit.

NOTE: The maximum continuous current from equipment under any external load conditions shall not exceed a current limit that is suitable for the minimum wire gauge used in interconnecting cables. The ratings on the connecting unit's supply input should be considered to prevent overloading the wiring.

Hookup Connections for the C2N-NPA8
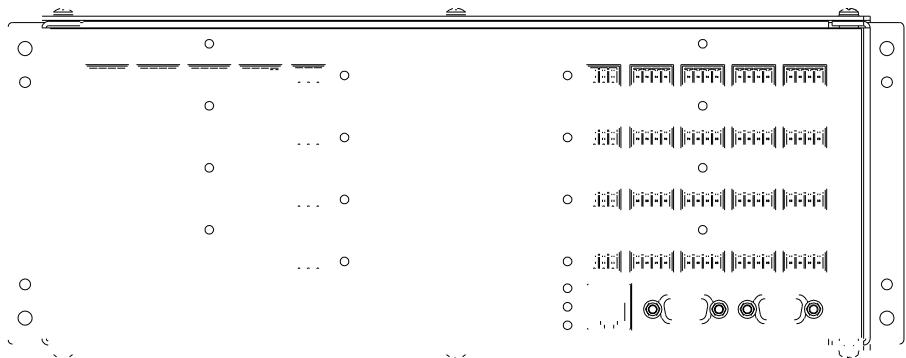
Cresnet communication. The eight **NET (A-H)** activity LEDs illuminate when a device on the respective segment transmits data.

Segments that are not in use or have devices that are not polled by a Crestron SIMPL Windows program are logically 'disconnected' from the other segments in operation. The LEDs for these segments are not illuminated.

Configuration Tip   When connecting Cresnet devices to the C2N-NPA8, high-traffic devices such as touchpanels, camera controls, and other devices that require longer network polling times should be put on their own segment (space permitting) while Cresnet devices that require short polling times (such as button pads) should be grouped together. This will allow less complex devices to communicate with the control system while the control system polls the high-traffic devices.

The overall Cresnet traffic should be equally balanced over the network.

Power Connections

To provide power to the C2N-NPA8, connect 24VDC power from either a Crestron power supply or a 2-Series control system to the PWR port on either segment A or B.

Other segments can be powered by connecting a jumper wire from a powered segment's power connector to an unpowered segment's power connector. The following diagram illustrates how jumper wires are used to power unpowered segments.

Wiring Power Connectors on C2N-NPA8
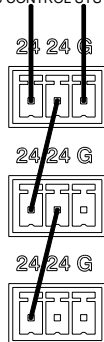
CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

NOTE: As an option, Crestron recommends using the C2N-SPWS300 External 300 Watt Power Supply. It features eight power outputs, which can be used to control power to each of the eight segments on the C2N-NPA8. Using the C2N-SPWS300's control functions, each segment on the C2N-NPA8 can be activated or deactivated by the program running in the control system. If the C2N-SPWS300 is being used to power each segment on the C2N-NPA8, power must always be applied to segment A or segment B on the C2N-NPA8 first for activation. Jumpers as described in this section are not required if the C2N-SPWS300 is being used to individually power segments on the C2N-NPA8.

NOTE: If a Cresnet device connected to a powered segment has its own power source, remove the 24V line from the Cresnet connector on the C2N-NPA8. Although equipment damage is unlikely, Crestron does not recommend applying two power sources to the same segment.

NOTE: When powering a segment, 24VDC power should always be applied to the PWR port, not a Cresnet connector on the segment.

Communication Connections

When using a PC for console operations on the C2N-NPA8, refer to "Making a Serial Connection" on page 10.

When using serial communications between the C2N-NPA8 and the control system, a straight serial cable should be used. Refer to "COM" on page 5 for pinout details.

NOTE: The C2N-NPA8 can be connected to any built-in COM port on a PRO2 or AV2 control system except for COM A and COM B. The C2N-NPA8 cannot be connected to any of the ports on any plug-in card. Any built-in COM port can be used on other 2-Series control systems (MC2E/W or MP2/MP2E).

The C2N-NPA8 can be connected to any control system with an Ethernet port.

Communicating with the C2N-NPA8

The C2N-NPA8 can communicate with the control system over serial or TCP/IP communication.

If the control system is to communicate with the C2N-NPA8 over TCP/IP, a serial connection must be established before configuring TCP/IP communications.

Making a Serial Connection

Connect the COMPUTER port on the C2N-NPA8 to one of the COM ports (usually COM 1) on the PC. Use a straight-through serial cable with a DB9 male connector on one end and a DB9 female connector on the other. Most commercially available cables are acceptable. Refer to "COMPUTER" on page 4 for pinout details.

NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

> Belkin (large model) F5U103
> I/O Gear GUC232A
> Keyspan USA-19QW

Other models, even from the same manufacturer, may not yield the same results.

Open the Crestron Viewport and click **Setup | Communication Settings** to display the "Port Settings" window. Then click **RS-232** as the connection type.

The PC communication settings specified here should match the protocol that the C2N-NPA8 uses. The settings are as follows:

- Port = COM 1 through COM 8. Select the correct COM port on the PC.

- Baud rate = 115200 (You can set the PC and the control system to a different baud rate, by using the **Functions | Set Baud Rate** command.

- Parity = None.

- Number of data bits = 8.

- Number of stop bits = 1.

- Hardware handshaking (RTS/CTS) enabled.

- Software handshaking (XON/XOFF) not enabled.

"Port Settings" Window: Settings for RS-232 Communication with the C2N-NPA8

To verify communication, click **Diagnostics | Establish Communications (Find Rack)**. This should display a window that gives the COM port and baud rate.

Setting Up TCP/IP Connection

Before communicating with the C2N-NPA8 over TCP/IP, the RS-232 connection previously described must be used to configure the C2N-NPA8 TCP/IP settings.

NOTE: The terms used in the following steps are explained in detail in the Crestron e-Control Reference Guide (Doc. 6052). The latest version is available as a PDF on the Crestron website (www.crestron.com).

1. Open Viewport and click **Functions | Set Control System IP Information**.

2. Enter the IP address, IP Mask, Router IP address, Hostname, and Domain name in the applicable fields and click **OK**.

3. After saving the IP address, an entry must be added to the C2N-NPA8 IP table to enable communications between the control system and the C2N-NPA8. To add an IP table entry, click **Functions | Setup IP Table.**

4. Click **Add** and enter the IP ID and IP address/Hostname of the control system in the relevant fields. *Set as Master* must be checked to indicate that the C2N-NPA8 is controlled by the device using the IP address. Select *Connect Using TCP* and click **OK.**

5. Click **Send** to send the IP table to the C2N-NPA8. If an entry does not already exist, add a corresponding entry for the C2N-NPA8 in the control system's IP table.

Once the IP settings have been defined in the IP tables of the C2N-NPA8 and the control system, the C2N-NPA8 can communicate with the control system using a TCP/IP connection.
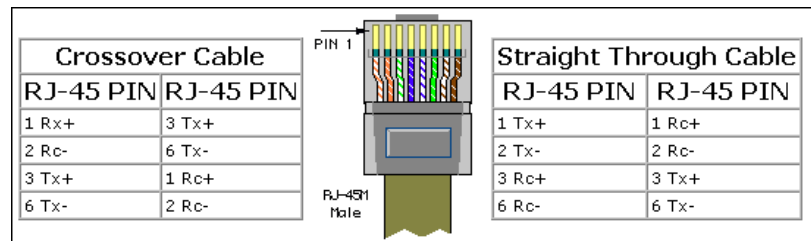
NOTE: An entry in the control system's IP table **must** be added for the C2N-NPA8.

NOTE: If an IP table is defined in the C2N-NPA8, then serial communication between the C2N-NPA8 and a control system is disabled. To enable high-speed serial communications, remove the IP table entry from the C2N-NPA8's IP table. TCP/IP communications between the C2N-NPA8 and the control system will be disabled while serial communication will be enabled.

NOTE: Only one IP table entry is allowed on a C2N-NPA8. The C2N-NPA8 cannot be shared over multiple control systems.

For TCP/IP, use CAT5 straight through cables with 8-pin RJ45 connectors to connect the LAN port on the C2N-NPA8 and the LAN port on the control system to the Ethernet hub. Alternatively, you can use a CAT5 crossover cable to connect the two LAN ports directly, without using a hub. The following figure illustrates pinouts for straight through and crossover RJ45 cables. Pins 4, 5, 7, and 8 are not used.

RJ45 Pinouts

Crossover Cable		PIN 1	Straight Through Cable	
RJ-45 PIN	RJ-45 PIN		RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+		1 Tx+	1 Rc+
2 Rc-	6 Tx-		2 Tx-	2 Rc-
3 Tx+	1 Rc+	RJ-45M	3 Rc+	3 Tx+
6 Tx-	2 Rc-	Male	6 Rc-	6 Tx-

Once the cable connections are made, open the Crestron Viewport and click **Setup | Communication Settings** on the menu to display the "Port Settings" window. Then click **TCP/IP** as the connection type. Enter the IP address of the C2N-NPA8.

"Port Settings" Window
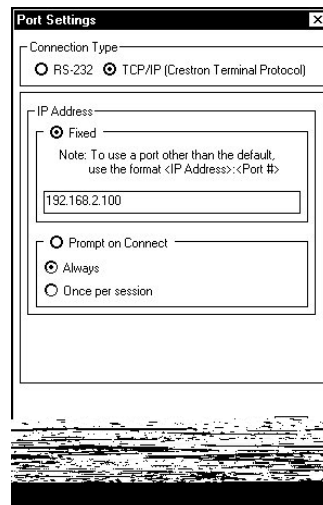
Port Settings

Connection Type
○ RS-232 ◉ TCP/IP (Crestron Terminal Protocol)

IP Address
◉ Fixed
Note: To use a port other than the default, use the format <IP Address>:<Port #>

192.168.2.100

○ Prompt on Connect
◉ Always
○ Once per session

To verify communication, click **Diagnostics | Establish Communications (Find Rack).** This should display a window that gives the IP address and port number.

Troubleshooting Communications

Use the following checklist if communication cannot be established with the C2N-NPA8.

1. Verify that you are using the correct cables. As described previously, an RS-232 connection requires a straight-through serial cable. That is, pin 1 on one end is connected to pin 1 on the other end. Pin 2 connects to pin 2, etc. With a TCP/IP connection, you must use a CAT5 cable with 8-pin RJ45 connectors.

2. With a serial connection, verify that the correct COM port on the PC has been selected. Some computers have more than one COM port; some may be internal (e.g., for a modem). Consult the manufacturer's documentation for further information about the COM ports on your PC.

3. Check the **ERR** LED indicator on the C2N-NPA8. If this LED is illuminated before a program is loaded, unplug the unit and reapply power after a few seconds. To determine the actual error condition, examine the message available through the Viewport menu **Functions | 2-Series | Error Log | Show Error Log.** If the LED illuminates again, call Crestron customer service.

4. If communication still cannot be established, contact Crestron customer service.

Updating the Operating System

The operating system files for the C2N-NPA8 have a .cuz extension. You can obtain .cuz updates (when available) from the software downloads area of the Crestron website. To download an update, click the .cuz file and choose the **Save to Disk** option, then specify the directory where the update will be stored.

NOTE: In some cases Microsoft's Internet Explorer may append a .zip extension to a downloaded .cuz file. For example, a file called "c2n-npa8.v3057.cuz" may appear as "c2n-npa8.v3057.cuz.zip." If this happens, rename the file, removing the .zip extension.

NOTE: Even though the C2N-NPA8 uses a .CUZ file, it cannot be loaded with a SIMPL Windows or SIMPL+® program

To upload the new .cuz to the control system:

1. Open Viewport and select **File Transfer | Update Control System** or press **ALT + O**.

2. Browse to the .cuz file and click **Open** to start the transfer.

3. After the transfer is complete, the C2N-NPA8 will automatically reboot. To confirm the transfer, click **Diagnostics | Check Ops Version**. The Viewport console should display the new .cuz version number.

System Monitoring/Diagnostics with the C2N-NPA8

A C2N-NPA8 in a Cresnet system provides improved troubleshooting abilities for monitoring Cresnet devices. A common problem in building a system is the use of devices with identical Cresnet IDs. In a system without a C2N-NPA8, Cresnet IDs that are duplicated are not reported by the system when using the **REPORTCRESNET** command in Viewport. A system with a C2N-NPA8 recognizes the existence of a duplicated Cresnet ID if the devices are on different legs of the C2N-NPA8. If the duplicated IDs are on the same leg, the Cresnet ID will not be displayed when using the **REPORTCRESNET** command in Viewport. The **REPORTCRESNET** command lists each Cresnet ID in the system along with identifying the C2N-NPA8 segment where the device is located. The illustration below shows a REPORTCRESNET report indicating where a device is located on the C2N-NPA8.

REPORTCRESNET with C2N-NPA8

```
Crestron Viewport - COM1 115200 N81  RTS/CTS                         _ □ ×
File  Edit  Setup  Diagnostics  Functions  File Transfer  Remote  Help

reportcresnet

03:     TPS-6000  Touch Panel [v1.012 (Release)]     (NPA net A)
04:     TPS-3000  Touch Panel [v1.016 (Release)]     (NPA net A)
50:     C2N-DAP8 [v1.04.44,#F0009104] 5/22/2003 (NPA net A)

SerNPA>|

Port Settings:
COM1 115200 N81  RTS/CTS
```

NOTE: Devices that are connected to the control system's Cresnet connector (not on the C2N-NPA8) will be identified as being installed on the "MAIN" segment.

The C2N-NPA8 console can be accessed through the Viewport utility to perform diagnostics. At the control system prompt, type **PASSTHRU NPA**. For a list of available commands, type **HELP ALL**.

NOTE: If a control system has been rebooted and it does not have a program that contains a C2N-NPA8, it must be told via console command that a C2N-NPA8 is present. To do this, open Viewport (while connected to a control system) and type:

        NPA ADD PORT Y

        Where "Y" is the letter designating the serial port on the control system For example, NPA ADD PORT C installs the C2N-NPA8 on port C of a control system).

        or

        NPA ADD IPID 0xYY

        Where "YY" is the IP ID in the control system's IP table when using TCP/IP communications. For example, **NPA ADD IPID 0x03** installs the C2N-NPA8 at IP ID 03.

NOTE: The C2N-NPA8 must be defined in the control system's IP table and the control system must be listed in the C2N-NPA8's IP table before using the **NPA ADD IPID** command.

NOTE: For more information on console commands, refer to the latest version of the 2-Series Console Commands Reference Guide (Doc. 6002), available from the Downloads | Product Manuals section of the Crestron website (www.crestron.com).

For further diagnostics, the Network Analyzer tool that is built into SIMPL Windows can be used to analyze the signal quality of each Cresnet ID in a system. For more information on how to use the network analyzer, refer to the SIMPL Windows help file and use the index to search for "Network Analyzer".

Programming Software

Have a comment about Crestron software?

Direct software related suggestions and/or complaints to Crestron via email (software@crestron.com). Do not forward any queries to this address. Instead refer to "Further Inquiries" on page 20 for assistance.

Setup is easy thanks to Crestron's Windows®-based programming software. The following are recommended software version requirements for the PC:

- SIMPL Windows version 2.04.14or later with Library Update 232 or later. Requires SIMPL+ Cross Compiler version 1.1.

- Crestron Database version 16.0.0 or later.

NOTE: The following assumes that the reader has knowledge of SIMPL Windows. If not, refer to the extensive help information provided with the software.

NOTE: The following are acceptable file extensions for programs that include a C2N-NPA8, developed for specific control system types:

  .smw *projectname*.smw (source file)
  .spz *projectname*.spz (compiled file for 2-series)
  .usp *projectname*.usp (source code module for SIMPL+)
  .ush *projectname*.ush (compiled SIMPL+ file)
 .umc *projectname*.umc (user macro)

NOTE: In the following, the PRO2 control system is used.

SIMPL Windows is Crestron's primary software for programming Crestron control systems. It provides a well-designed graphical environment with a number of workspaces (i.e., windows) in which a programmer can select, configure, program, test, and monitor a Crestron control system. SIMPL Windows offers drag and drop functionality in a familiar Windows® environment.

This section explains how to create a SIMPL Windows program that includes the C2N-NPA8.

Configuration Manager is where programmers "build" a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated communication ports is displayed in the *System Views* upper pane.

PRO2 System View with C2ENET-1 Installed
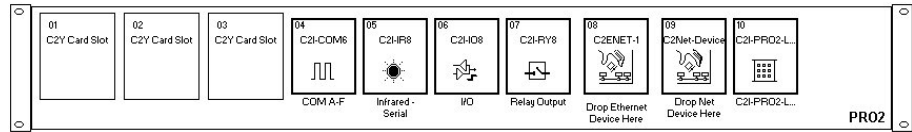
The *System Views* lower pane displays the PRO2 system tree. This tree can be expanded to display and configure the communications ports.

Expanded PRO2 (with C2ENET-1 Installed) System Tree
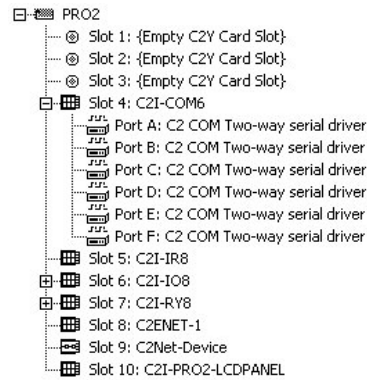
When a C2N-NPA8 is added to a system in Configuration Manager, the *Cresnet Units* icon in System Views changes as shown in the following diagram to indicate that a C2N-NPA8 is present.

"Cresnet Units" Icon Indicating a C2N-NPA8 is Installed

Adding a C2N-NPA8 to a 2-series control system is as easy as dragging and dropping the device into the appropriate device slot in the 2-Series system tree.

Serial Connection between the Control System and C2N-NPA8

If the C2N-NPA8 is to be connected to a control system via serial communications, perform the following:

In Configuration Manager, drag the C2N-NPA8 from the *Serial Drivers (General)* folder of the *Device Library* and drop it onto an available serial port of the control system. SIMPL Windows displays the C2N-NPA8 in the target slot.

NOTE: The C2N-NPA8 can be connected to any built-in COM port on a PRO2 or AV2 control system except for COM A and COM B. The C2N-NPA8 cannot be connected to any of the ports on any plug-in card. Any built-in COM port can be used on other 2-Series control systems (MC2E/W or MP2/MP2E).

Ethernet Connection between the Control System and C2N-NPA8

If the C2N-NPA8 is to be connected to a control system via Ethernet, perform the following:

In Configuration Manager, drag the C2N-NPA8 from the *Ethernet Control Modules | Ethernet Modules (Crestron)* folder of the *Device Library* and drop it onto the C2ENET-1 slot of the control system. SIMPL Windows displays the C2N-NPA8 in the C2ENET-1 slot of the control system.

NOTE: Ethernet devices can only be added to Ethernet-equipped control systems.

NOTE: An IP table entry for the control system must exist on the C2N-NPA8's IP table. Refer to "Setting Up TCP/IP Connection" on page 11 for more information.

Setting the IP ID in Device Settings

Double-click the C2N-NPA8 icon to open the "Device Settings" window. This window displays the C2N-NPA8 device information. Select the *IP Net Address* tab to change the IP ID and other IP information, as shown in the following figure.

"Device Settings" Window for the C2N-NPA8

Any information entered in this window is used to create the control system's default IP table.

NOTE: The control system's IP table must list the C2N-NPA8's IP address. This can be done using the *Device Settings* window or through Viewport.

NOTE: SIMPL Windows automatically chooses the IP ID values of devices added to a program. Always ensure that the hardware and software settings of the IP ID match. For IP ID hardware settings details, refer to "Setting Up TCP/IP Connection" on page 11.

Problem Solving

Problems may occur with the 2-Series automation control system itself or there may be serial communication difficulties with other devices connected to the control system. The next two sections address possible problem solving tools or procedures for each situation.

Troubleshooting the C2N-NPA8

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

C2N-NPA8 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Unexpected response from control system.	Network devices are not communicating to the control system.	From the Viewport, poll the network (F4) to verify communication.
Intermittent communication with Cresnet device.	Possible wiring fault.	Use Network Analyzer to check connection with Cresnet device.
PWR LED does not illuminate.	Segment is not receiving power.	Verify that 24V power is applied to either segment A or B of the C2N-NPA8. Verify that the segment is connected to a powered segment.
ERR LED illuminates.	Hardware failure, software failure, or programming error.	Verify that the hardware configuration matches software configuration. Poll the network (F4) from the Viewport; check error log for SIMPL, SIMPL+ program reload errors.
System does not function.	Various.	Refer to the "Troubleshooting Non-Functioning Units" procedure following this table.
	Incorrect power supply.	Use power from a Crestron power source.
C2N-NPA8 does not communicate with control system.	Used wrong serial port.	Verify that a Poll-Accelerator-compatible port is used if using serial communications.
	Serial cable miswired.	Verify that serial cable is wired correctly if using serial communications.
	Serial cable pins do not make proper contact with DB9 socket.	Remove the two standoffs on either side of the DB9 socket.
	Incorrect IP information.	Verify correct IP information on control system and C2N-NPA8.
	Incorrect Network Cable.	Use cable with pinouts described in "Setting Up TCP/IP Connection" on page 11.

Troubleshooting Non-Functioning Units

Perform the following procedure to correct system lock-up problems that are not resolved via the procedures in "Troubleshooting Communications" on page 13.

1. Connect a DB9 straight-through RS-232 cable between the C2N-NPA8 and a PC. Refer to "Making a Serial Connection" on page 10 for more information.

2. Open Viewport and select **Setup | Communication Settings** to open the "Port Settings" window.

3. In the window, select **RS-232** (Connection Type), **57600** (Baud Rate), **N** (Parity), **8** (Data Bits) and **1** (Stop Bits) and click **OK**.

4. Power down the C2N-NPA8.

5. While powering up the C2N-NPA8, press and hold **ALT** + **K** on the keyboard until the following text (or similar) appears in Viewport:

```
System Monitor [v1.001 (0001)]
12-19-01 16:25:23 32 MB RAM, 4MB FLASH

CS>
```

NOTE: After this, you can increase the baud rate to 115200 (for faster communication) by pressing F8 on the keyboard and then selecting 115200 from the "Set Baud Rate" window.

6. At the Viewport prompt, type **erase** and press Enter. The following text appears in Viewport.

```
CS>erase
->25%->50%->75%->100%
Done
CS>
```

7. Press **ALT** + **O** (not zero) on the keyboard. The "Open" window appears.

8. Find and select the correct CSU file (CE*.CSU, extracted from the .CUZ file using WinZip or other ZIP file extraction tool) and click **Open**.

Once "Completed Successfully" appears in Viewport, type **quit** at the Viewport prompt and press Enter.

Network Analyzer

To assist with troubleshooting, the unit contains Crestron's patent-pending network analyzer to continuously monitor the integrity of the Cresnet network for wiring faults and marginal system performance or other network errors. For more information on how to use the network analyzer, refer to the SIMPL Windows help file and use the index to search for "Network Analyzer".

NOTE: The Network Analyzer can be used when directly connected to the C2N-NPA8 or when connected to Cresnet via a control system.

NOTE: The C2N-NPA8's network analyzer will monitor the devices connected in the network, not the segments of the C2N-NPA8.

Further Inquiries

If after reviewing this Operations Guide, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team in your area. Dial one of the following numbers.

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876].

- In Europe, call Crestron International at +32-15-50-99-50.

- In Asia, call Crestron Asia at +852-2341-2016.

- In Latin America, call Crestron Latin America at +5255-5093-2160.

- In Australia and New Zealand, call Crestron Pacific at +613-9480-2999.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the C2N-NPA8, 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 (www.crestron.com) periodically for manual update availability and its subjective value. Updates are available from the Downloads | Product Manuals section and are identified as an "Addendum" in the Download column.

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