Crestron **AV3 & PRO3**
3-Series Control Systems
Operations Guide

CRESTRON®

Regulatory Compliance

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

As of the date of manufacture, the AV3 and PRO3 have 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

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

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

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

Industry Canada (IC) Compliance Statement

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

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

Contents

3-Series Control Systems: AV3 & PRO3

Introduction

The Crestron® 3-Series Control System® presents a new benchmark in control system technology. Featuring the Core 3 OS™ control engine, the PRO3 and AV3 form the core of any modern networked home or commercial building, managing and integrating all the disparate technologies throughout the facility to make life easier, greener, more productive, and more enjoyable. The PRO3 features an enhanced feature set including a front panel color LCD display, built-in control card expansion slots, and a dedicated Control Subnet port. The AV3 features a dedicated Control Subnet port and optional control card expansion slots.

Features and Functions

- Next generation control system
- Core 3 OS ─ substantially faster and more powerful than other control systems
- Exclusive modular programming architecture
- Vector floating point coprocessor
- Onboard 1 GB RAM & 4 GB flash memory
- Expandable storage up to 1 TB
- Rear panel memory card slot
- High speed USB 2.0 host port
- Industry standard Ethernet and Cresnet® wired communications
- Control Subnet — provides a dedicated local network for Crestron devices
- Onboard e-Control® Webserver
- Supports Core 3 UI™ XPanel Web-based remote control
- Supports Crestron Mobile® control apps for iPhone®, iPad® and Android™
- Supports Fusion RV® and SNMP remote management
- Two RS-232/422/485 COM ports with hardware and software handshaking
- Four RS-232 COM ports with software handshaking only

(Continued on following page)

Features and Functions

(Continued)

- Eight IR/serial, eight relay, and eight Versiport I/O ports
- Three built-in 3-Series™ control card expansion slots[1]
- Native BACnet®/IP support[2]
- Installer setup via front panel, Crestron Toolbox™ or Internet Explorer® (PRO3 only)[3]
- Backward compatible to run existing SIMPL programs
- Full Unicode (multi-language) support
- Increased network throughput and security
- Secure access though Active Directory integration or standalone account management
- IIS v.6.0 Webserver
- IPv6 ready
- Front panel color LCD display for setup and diagnostics (PRO3 only)
- Front panel USB computer console port
- 2-space rack mountable

Core 3 OS

Today's commercial buildings and custom homes comprise more technology than ever before, and all these systems need to be networked, managed, and controlled in fundamentally new ways. The IP based Core 3® platform is engineered from the ground up to deliver a network-grade server appliance capable of faithfully handling everything from boardroom AV and home theater control to total building management.

Core 3 OS embodies a distinctively robust, dynamic, and secure platform to elevate system designs to higher levels of performance and reliability. Compared to other control systems, Core 3 OS provides a pronounced increase in processing power and speed with more memory, rock solid networking and IP control, and a unique modular programming architecture.

Modular Programming Architecture

Designed for enhanced scalability, the AV3 and PRO3 afford high speed, real time multitasking to seamlessly run multiple programs simultaneously. This exclusive programming architecture lets programmers independently develop and run device specific programs for AV, lighting, HVAC, security, etcetera, allowing for the optimization of each program, and allowing changes to be made to one program without affecting the whole. Even as a system grows, processing resources can easily be shifted from one 3-Series processor to another without rewriting any code. The end benefit is dramatically simplified upgradability with minimal downtime, whether implementing changes on site or remotely via the network.

1. AV3 requires CAGE3 Control Card Expansion Cage accessory.
2. License required. The AV3 or PRO3 supports a maximum of 2000 BACnet objects when dedicated for BACnet use only. Actual capabilities are contingent upon the overall program size and complexity.
3. Web-based installer setup requires the Microsoft Internet Explorer Web browser running on a Windows® PC.

Robust Ethernet & IP Control

IP technology is the heart of Core 3, so it should be no surprise that its networking abilities are second to none. Gigabit Ethernet connectivity enables integration with IP-controllable devices and allows the AV3 and PRO3 to be part of a larger managed control network. Whether residing on a sensitive corporate LAN, a home network, or accessing the Internet through a cable modem, the AV3 and PRO3 provide secure, reliable interconnectivity with IP-enabled touch screens, computers, mobile devices, video displays, Blu-ray Disc® players, media servers, security systems, lighting, HVAC, and other equipment — whether on premises or across the globe.

Dedicated Control Subnet

The Crestron Control Subnet is a Gigabit Ethernet network dedicated to Crestron devices. Via the AV3 or PRO3's Control Subnet port, an installer may simply connect a single touch screen or wireless gateway, or add a Crestron PoE switch (CEN-SW-POE-5, CEN-SW-POE-16, or CEN-SWPOE-24)* to handle multiple touch screens, gateways, AV components and other devices. Auto-configuration of the entire subnet is performed by the AV3 or PRO3, discovering each device and assigning IP addresses without any extra effort from the installer.

A separate LAN port on the AV3 and PRO3 provides a single-point connection to the customer's LAN, requiring just one IP address for the complete control system. The LAN port allows full interconnectivity between devices on the local subnet with other devices, systems, servers, and WAN/Internet connections outside the local subnet. For sensitive applications that require absolute security, the entire Control Subnet can be completely isolated from the customer's LAN using *Isolation* mode.

e-Control Remote Access

Years ago, Crestron pioneered the world's first IP-based control system unleashing vast new possibilities for controlling, monitoring, and managing integrated systems over a LAN, WAN, and the Internet. Today, our many e-Control solutions offer more ways than ever for our users to control their worlds the way they want.

With e-Control, anything in a home or workplace can be controlled from anywhere in the world using a smartphone, tablet, or computer. Built-in Core 3 UI XPanel technology affords virtual touch screen control through any popular Web browser running on a laptop or desktop computer. Our Crestron Mobile Pro® app delivers the Crestron touch screen experience to an iPhone, iPad, or Android device, allowing safe monitoring and control of an entire facility using the one device that goes everywhere.

Remote access is simplified using the myCrestron Dynamic DNS service to establish a friendly URL for the home system. If technical support is ever needed, a Crestron system installer can even perform diagnostics and implement updates to the system remotely without coming on site.

Fusion RV and SNMP

As part of a complete managed network in a corporate enterprise, college campus, convention center or any other facility, the AV3 and PRO3 work integrally with Crestron Fusion RV Remote Asset Management Software to enable remote scheduling, monitoring, and control of rooms and technology from a central help desk. Built-in SNMP support enables integration with third-party network management software, allowing control and monitoring in a format that is familiar to IT personnel.

* Sold separately.

Cresnet

Cresnet provides a dependable network wiring solution for Crestron keypads, lighting controls, thermostats, and other devices that don't require the higher speed of Ethernet. The Cresnet bus offers easy wiring and configuration, carrying bidirectional communication and 24 Vdc power to each device over a simple 4-conductor cable. To assist with troubleshooting, the AV3 and PRO3 include our patent pending Network Analyzer, which continuously monitors the integrity of the Cresnet network for wiring faults, marginal performance, and other errors.

Onboard Control Ports

In addition to Ethernet, the AV3 and PRO3 include six bidirectional COM ports and eight IR ports to interface directly with centralized AV sources, video displays, and other devices. Eight programmable relay ports are included for controlling window shades, projection screens, lifts, power controllers, and other contact closure actuated equipment. Eight "Versiport" I/O ports enable the integration of occupancy sensors, power sensors, door switches, or anything else that provides a dry contact closure, low voltage logic, or 0-10 volt dc signal.

Control Card Expansion Slots (PRO3 only)

Additional control ports can be added to the PRO3 using 3-Series Control Cards.[1] The PRO3 provides three control card expansion slots on its rear panel, affording great expansion capability without requiring any additional rack space.

Optional Control Card Expansion Slots (AV3 only)

Additional control ports can be added to the AV3 using 3-Series Control Cards and the CAGE3 Control Card Expansion Cage. [1] The CAGE3 accessory installs in the AV3, providing three control card expansion slots on the AV3's rear panel. Adding the CAGE3 option affords great expansion capability without requiring any additional rack space.

Front Panel Color LCD Display (PRO3 only)

The PRO3's front panel includes a color LCD display to enable extensive setup and diagnostics without having to connect a computer.

BACnet/IP

Native support for the BACnet/IP communication protocol provides a direct interface to third-party building management systems over Ethernet, simplifying integration with HVAC, security, fire & life safety, voice & data, lighting, shades, and other systems. Using BACnet/IP, each system runs independently with the ability to communicate together on one platform for a truly smart building.[2]

1. Sold separately.
2. License required. The AV3 and PRO3 support a maximum of 2000 BACnet objects when dedicated for BACnet use only. Actual capabilities are contingent upon the overall program size and complexity.

Specifications

Specifications for the AV3 and PRO3 are listed in the following table.

AV3 & PRO3 Specifications

SPECIFICATION	DETAILS
Control Engine	Core 3 OS; real-time, preemptive multithreaded/multitasking kernel; Transaction-Safe Extended FAT file system; supports up to 10 simultaneously running programs
Memory	
SDRAM	1 GB
Flash	4 GB
Memory Card	Expandable storage up to 32 GB (SD™ memory card not included)
External Storage	Up to 1 TB using USB mass storage device (not included)
Communications	
Ethernet	10/100/1000 Mbps; auto-switching; auto-negotiating; auto-discovery; full/half duplex; industry standard TCP/IP stack; UDP/IP; CIP; DHCP; SSL; IEEE 802.1X; SNMP; BACnet/IP; IPv4 or IPv6; Active Directory authentication; IIS v.6.0 WebServer; SMTP e-mail client; installer setup via Crestron Toolbox or Microsoft Internet Explorer; supports all e-Control, Core 3 UI XPanel, Crestron Mobile, and Crestron Fusion™ and RoomView® applications
Control Subnet	10/100/1000 Mbps Ethernet, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP server, DNS server, port forwarding, *Isolation* mode
Cresnet	Cresnet *Master* mode
RS-232/422/485	For 2-way device control and monitoring, all ports support RS-232 up to 115.2 kBd with software handshaking, two ports also support hardware handshaking, RS-422, and RS-485
IR/Serial	Supports 1-way device control via infrared up to 1.2 MHz or serial TTL/RS-232 (0-5 volts) up to 115.2 kBd
Power Requirements	
Main Power	2.4 amps @ 100–240 volts ac, 50/60 Hz
Available Cresnet Power	75 watts (3.125 amps @ 24 volts dc)
Net ID	02

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AV3 & PRO3 Specifications (Continued)

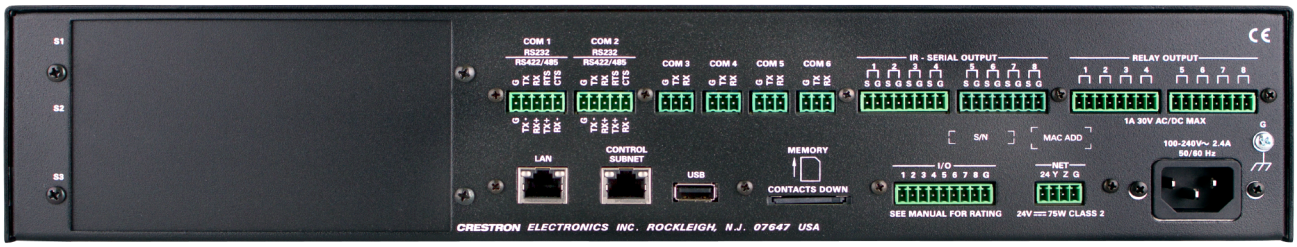
SPECIFICATION	DETAILS
Environmental	
Temperature	41º to 113º F (5º to 45º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	45 Btu/h with no Cresnet devices, no control cards; 71 Btu/h with full Cresnet load, no control cards; Refer to individual control card spec sheets for additional specifications
Enclosure	
Chassis	Metal, black finish, vented top and sides
Faceplate	Extruded metal, black finish, polycarbonate label overlay
Mounting	Freestanding or 2U 19-inch rack mountable (adhesive feet and rack ears included)
Dimensions	
Height	3.47 in (89 mm) without feet
Width	17.28 in (439 mm) 19.00 in (483 mm) with rack ears
Depth	10.06 in (256 mm)
Weight	
PRO3	5.0 lb (2.3 kg)
AV3	4.0 lb (1.9 kg)
Available Accessories	
3-Series BACnet/IP Support	3-Series Native BACnet/IP Interface License
C2N-HBLOCK	Cresnet Network Distribution Block
C3 Series	3-Series Control Cards
CAGE3	Control Card Expansion Cage for AV3
CEN-SW-POE-5	5-Port PoE Switch
CEN-SW-POE-16	16-Port Managed PoE Switch
CEN-SWPOE-24	24-Port Managed PoE Switch
CNSP-XX	Custom Serial Interface Cable
Crestron Mobile Pro	Control App for iPhone, iPad and Android Devices
CSP-LIR-USB	IR Learner
Fusion RV	Remote Asset Management Software
IRP2	IR Emitter Probe
myCrestron	Dynamic DNS Service for Crestron systems
PWE-4803RU	PoE Injector
RoomView Express	Remote Help Desk and Resource Management Software

Physical Description

This section provides information on the connections, controls and indicators available on the AV3 and PRO3.

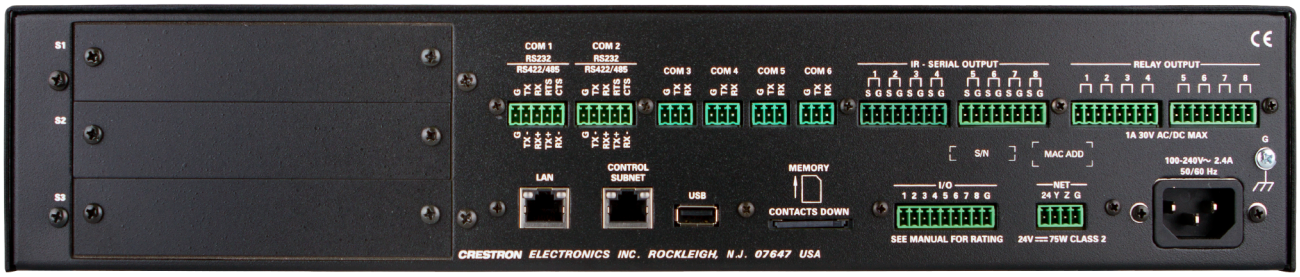
AV3 Physical View (Front View)

AV3 Physical View (Rear View)

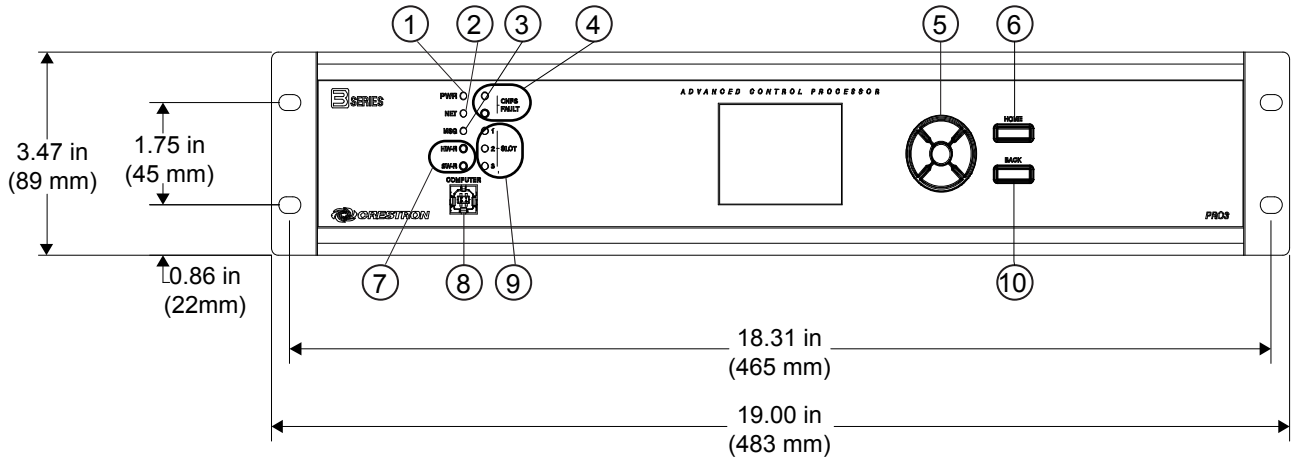


PRO3 Physical View (Front View)

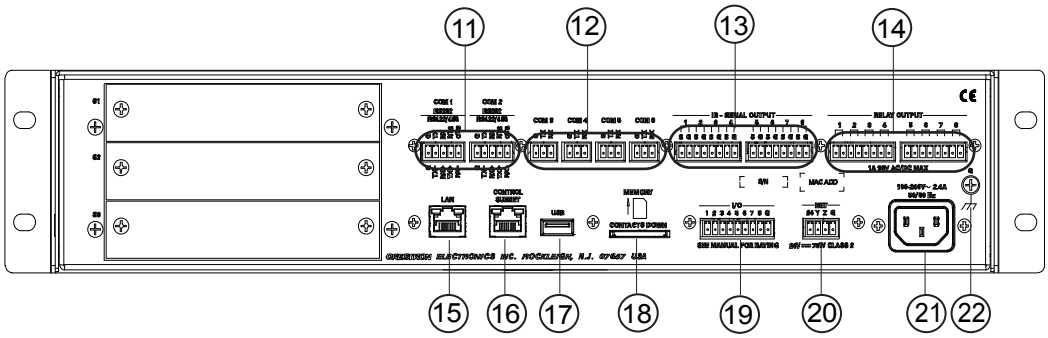
PRO3 Physical View (Rear View)



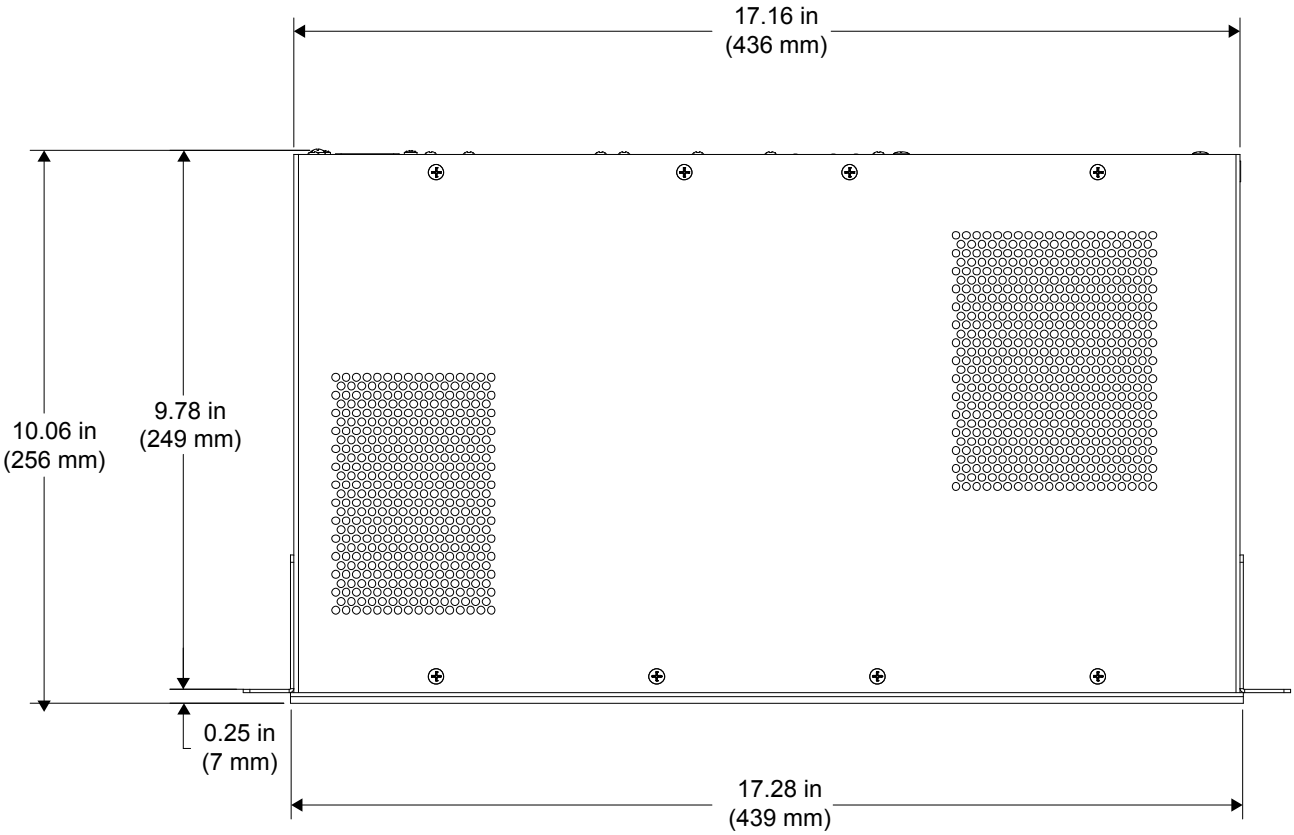
AV3 & PRO3 Overall Dimensions (Front View, PRO3 shown)



AV3 & PRO3 Overall Dimensions (Rear View, PRO3 shown)



AV3 & PRO3 Overall Dimensions (Top View, PRO3 shown)



Connectors, Controls & Indicators

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
1	PWR LED	(1) Green LED, indicates that unit is powered
2	NET LED	(1) Amber LED, indicates communication with the Cresnet system
3	MSG LED	(1) Red LED, indicates control system has generated an error message
4	CNPS FAULT (LED and Button)	(1) Red LED and (1) push button; LED indicates an excessive Cresnet load was detected at **NET** port; Push button resets the fault indication
5	NAV PAD[2]	(1) 5-way navigation pad for menu navigation and parameter adjustment
6	HOME Button[2]	(1) Push button, returns to the home menu

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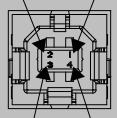
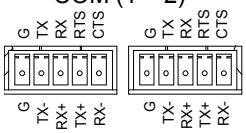
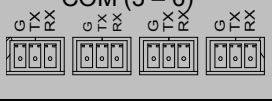
Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
7	Reset Buttons	**HW-R** – Initiates system hardware and user program reset **SW-R** – Restarts the program when pressed alone while the system is running Restarts without loading user programs when both **HW-R** and **SW-R** buttons are pressed together, **HW-R** is released, and **SW-R** button is held for an additional 30 seconds
8	COMPUTER Pin 2 Pin 1  Pin 3 Pin 4	(1) USB Type B female; USB 2.0 computer console port (6 ft cable included) **PIN** / **DESCRIPTION** 1 – +5 Vdc 2 – Data - 3 – Data + 4 – Ground
9	SLOT (1 – 3) LEDS[3]	(3) Green LEDs; Off indicates card is not installed or not responding; On indicates card is installed and is communicating with AV3 or PRO3 processor as programmed in Crestron Studio™ or SIMPL Windows; Blinking indicates card is installed, but is either not communicating with processor or not included in AV3/PRO3 Crestron Studio or SIMPL Windows program
10	BACK Button[2]	(1) push button, steps menu back one level
11	COM (1 – 2)[4]  	(2) 5-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232/422/485 ports; Up to 115.2 kBd; Hardware and software handshaking support **PIN #** / **RS-232** / **RS-422** / **RS-485** 1 – GND / GND / GND[5] 2 – TX / TX- / TX-/RX- 3 – RX / RX+ / Not used 4 – RTS / TX+ / TX+/RX+ 5 – CTS / RX- / Not used
12	COM (3 – 6)[4]  	(4) 3-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2 kBd; Software handshaking support

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Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
13	IR - SERIAL OUTPUT (1 – 8)[6] 1 2 3 4 5 6 7 8 S G S G S G S G S G S G S G S G	(2) 8-pin 3.5 mm detachable terminal blocks comprising (8) IR/Serial output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0-5 volts) up to 115.2 kBd; Individual signal generator per port, allowing simultaneous firing of all ports
14	RELAY OUTPUT (1 – 8) 1 2 3 4 5 6 7 8 1A 30V AC/DC MAX	(2) 8-pin 3.5 mm detachable terminal blocks comprising (8) normally open, isolated relays; Rated 1 amp, 30 volts ac/dc; MOV arc suppression across contacts
15	LAN[4] LED LED Pin 8 Pin 1	(1) 8-wire RJ-45 jack 10/100/1000Base-T Ethernet port Left bicolor LED indicates Ethernet link status and connection speed Amber: Link – 1 Gbps Green: Link – 100 Mbps Off: No link or Link – 10 Mbps Right amber LED indicates Ethernet activity Flashing: Activity – Flash rate depends on amount of activity Off: No Activity Connects to the customer's LAN

PIN	SIGNAL	PIN	SIGNAL
1	BI_DA +	5	BI_DC -
2	BI_DA- -	6	BI_DB -
3	BI_DB +	7	BI_DD +
4	BI_DC +	8	BI_DD -

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
16	CONTROL SUBNET[4] LED LED Pin 8 Pin 1	(1) 8-wire RJ-45 jack 10/100/1000Base-T Ethernet port Provides a dedicated local network for Crestron devices Left bicolor LED indicates link status and speed Amber: Link – 1 Gbps Green: Link – 100 Mbps Off: No link or Link – 10 Mbps Right amber LED indicates Ethernet activity Flashing: Activity – Flash rate depends on amount of activity Off: No Activity

PIN	SIGNAL	PIN	SIGNAL
1	BI_DA +	5	BI_DC -
2	BI_DA- -	6	BI_DB -
3	BI_DB +	7	BI_DD +
4	BI_DC +	8	BI_DD -

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Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
17	USB	(1) USB Type A female; USB 2.0 port for storage devices
18	MEMORY	(1) Memory card slot; Accepts up to 32 GB for memory expansion (SD memory card not included)
19	I/O (1 – 8)[4] 1 2 3 4 5 6 7 8 G	(1) 9-pin 3.5 mm detachable terminal block comprising (8) "Versiport" digital input/output or analog input ports (referenced to GND); Digital input: Rated for 0-24 volts dc, input impedance 20 kΩ, logic threshold >3.125 V low/0 and <1.875 V high/1; Digital output: 250 mA sync from maximum 24 volts dc, catch diodes for use with "real world" loads; Analog input: Rated for 0-10 volts dc, protected to 24 volts dc maximum, input impedance 21 kΩ with pull-up resistor disabled; Programmable 5 volts, 2 kΩ pull-up resistor per pin
20	NET[4] 24 Y Z G 24V ⎓ 75W CLASS 2	(1) 4-pin 3.5 mm detachable terminal block; Cresnet master port, outputs power to Cresnet devices; **24**: Power (24 volts dc) **Y**: Data **Z**: Data **G**: Ground
21	100 – 240V ~2.4A 50/60 Hz	(1) IEC C14 male chassis plug, main power input; Mates with removable power cord, included
22	GROUND	(1) 6-32 screw, chassis ground lug

1. Interface connectors for **COM 1–2**, **COM 3–6**, **I/O-SERIAL OUTPUT**, **RELAY OUTPUT**, **I/O** and **NET** ports are provided with the unit.
2. PRO3 only.
3. AV3 requires CAGE3 Control Card Accessory.
4. Complies with IEC 61000-4-5 Installation Class 4 surge immunity levels.
5. A ground terminal connection is recommended but not required. Ground potential difference must be under +/-4 V.
6. Transmission levels on the infrared – serial output connectors are in the 0 to +5 Vdc range, which may not be compatible with all RS-232 devices.

Setup

Network Wiring

When wiring the Cresnet network, consider the following:

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

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

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

For more details, refer to "Check Network Wiring" which starts on page 44.

The AV3 and PRO3 can also use high-speed Ethernet on a dedicated Control Subnet for communications between the control system and Crestron Ethernet devices.

For general 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 from the Crestron Web site (www.crestron.com/manuals).

Identity Code

NOTE: The latest software can be downloaded from the Crestron Web site (www.crestron.com/software).

Net ID

The Net ID of the AV3 and PRO3 has been factory set to **02**. This Net ID is defined as the "Master" control system on the Cresnet network and cannot be changed.

IP ID

The IP ID is set within the AV3 or PRO3's IP table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file.

NOTE: The IP ID for multiple AV3s or PRO3s should be the same if the AV3s or PRO3s need to communicate with each other.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Installation

NOTE: If power needs to be removed from this product, the power cord must be disconnected; therefore, the outlet must be installed near the equipment and must be easily accessible.

Ventilation

The AV3 and PRO3 should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation and/or incrementing the spacing between units to reduce overheating. Contact with thermal insulating materials should be avoided on all sides of the unit.

Rack Mounting

The AV3 and PRO3 can be mounted in a rack or stacked with other equipment. Two "ears" are provided with the AV3 and PRO3 so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach the ears to the unit. The only tool required is a #1 or #2 Phillips screwdriver.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, observe the following guidelines:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

NOTE: Observe the following guidelines when installing equipment in a rack:

- Elevated Operating Ambient Temperature - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

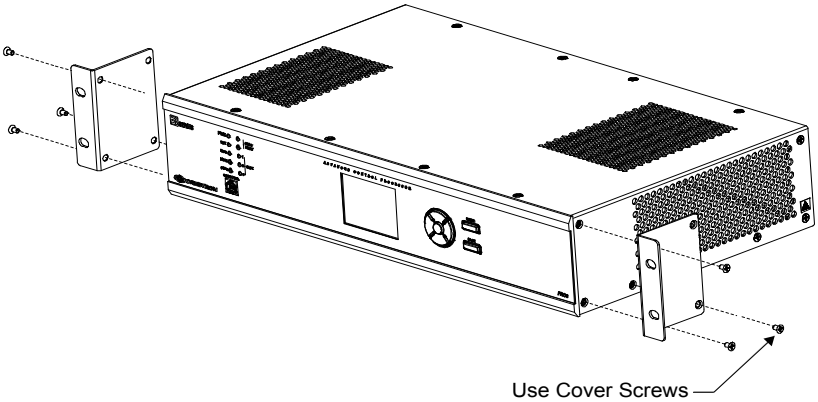
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

To install the ears, use the following procedure.

CAUTION: To prevent equipment damage, use only the rack ears Crestron provides for this device.

1. There are screws that secure each side of the AV3 and PRO3 top cover. Using a #1 or #2 Phillips screwdriver, remove the three screws closest to the front panel from one side of the unit. Refer to the diagram following step 3 for a detailed view.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Secure the ear to the unit with three screws from step 1, as shown in the diagram that follows.

Ear Attachment for Rack Mounting

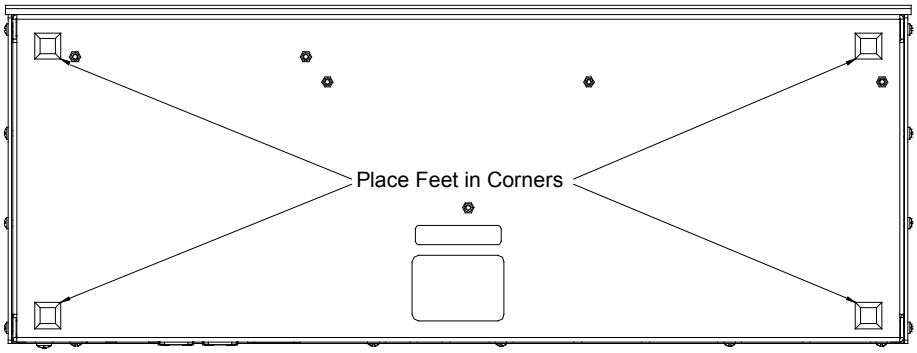


4. Repeat procedure (steps 1 through 3) to attach the remaining ear to the opposite side.

Stacking

Four "feet" are provided with the AV3 and PRO3 so that if the unit is not rack mounted, the rubber feet can provide stability when the unit is placed on a flat surface or stacked. These feet should be attached prior to the hookup procedure. Refer to the following illustration for placement of the feet.

Foot Placement for the AV3 & PRO3



NOTE: No more than two AV3 or PRO3 units should be stacked.

Hardware Hookup

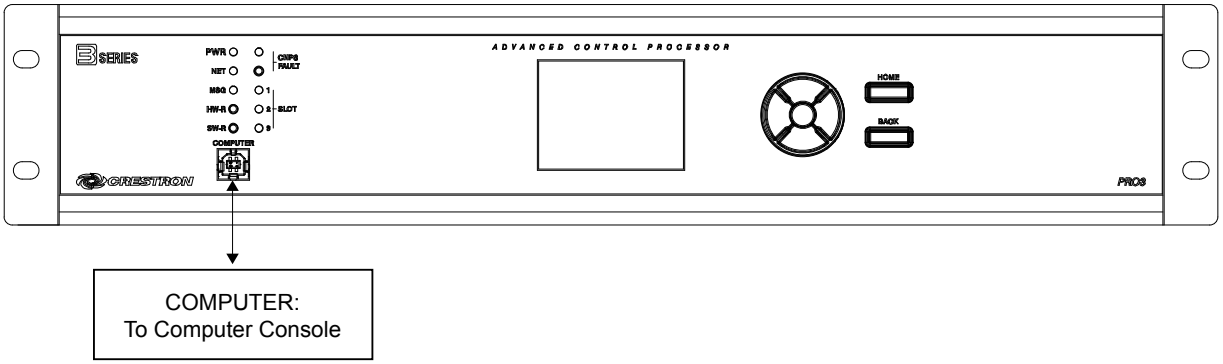
Connect the Device

Make the necessary connections as called out in the illustrations that follow this paragraph. Apply power after all connections have been made.

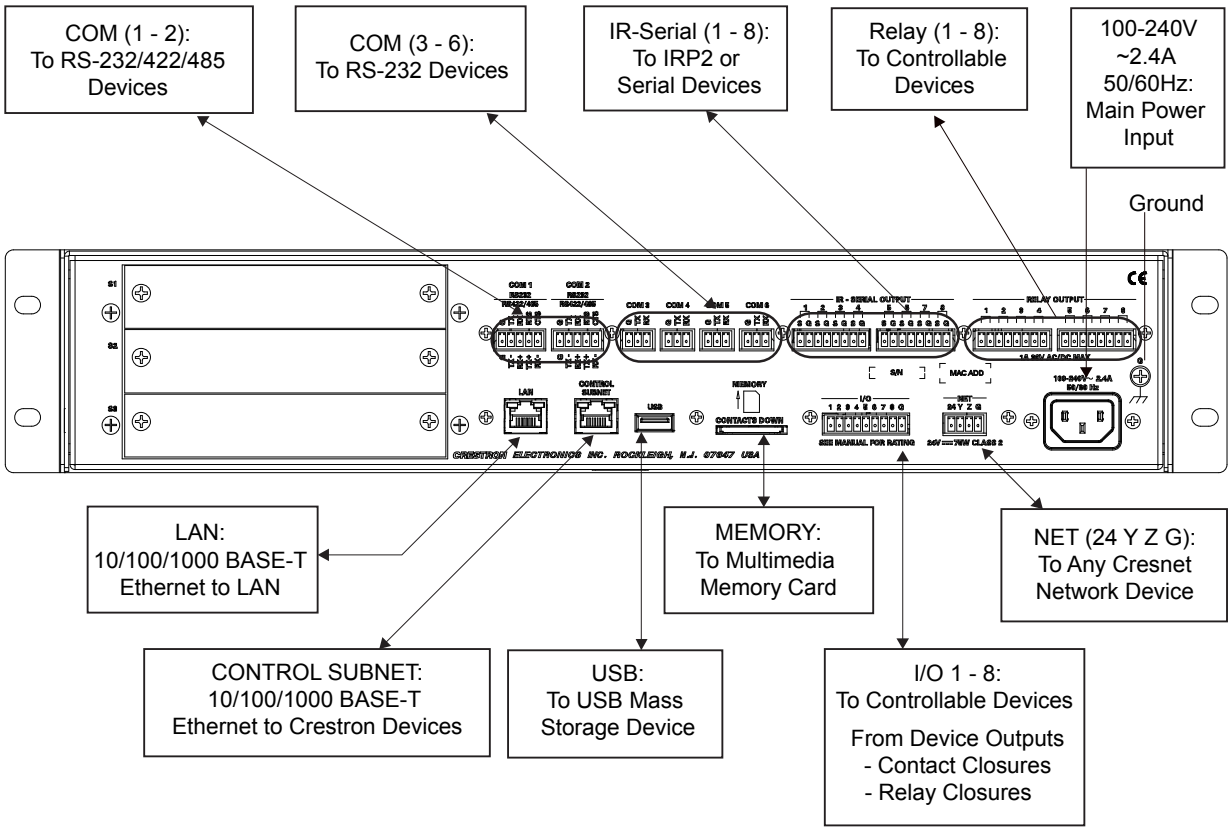
When making connections to the AV3 and PRO3, note the following:

- Use Crestron power supplies for Crestron equipment.
- The included cables cannot be extended.

Hardware Connections for the AV3 & PRO3 (Front Panel)



Hardware Connections for the AV3 & PRO3 (Rear Panel)



NOTE: Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

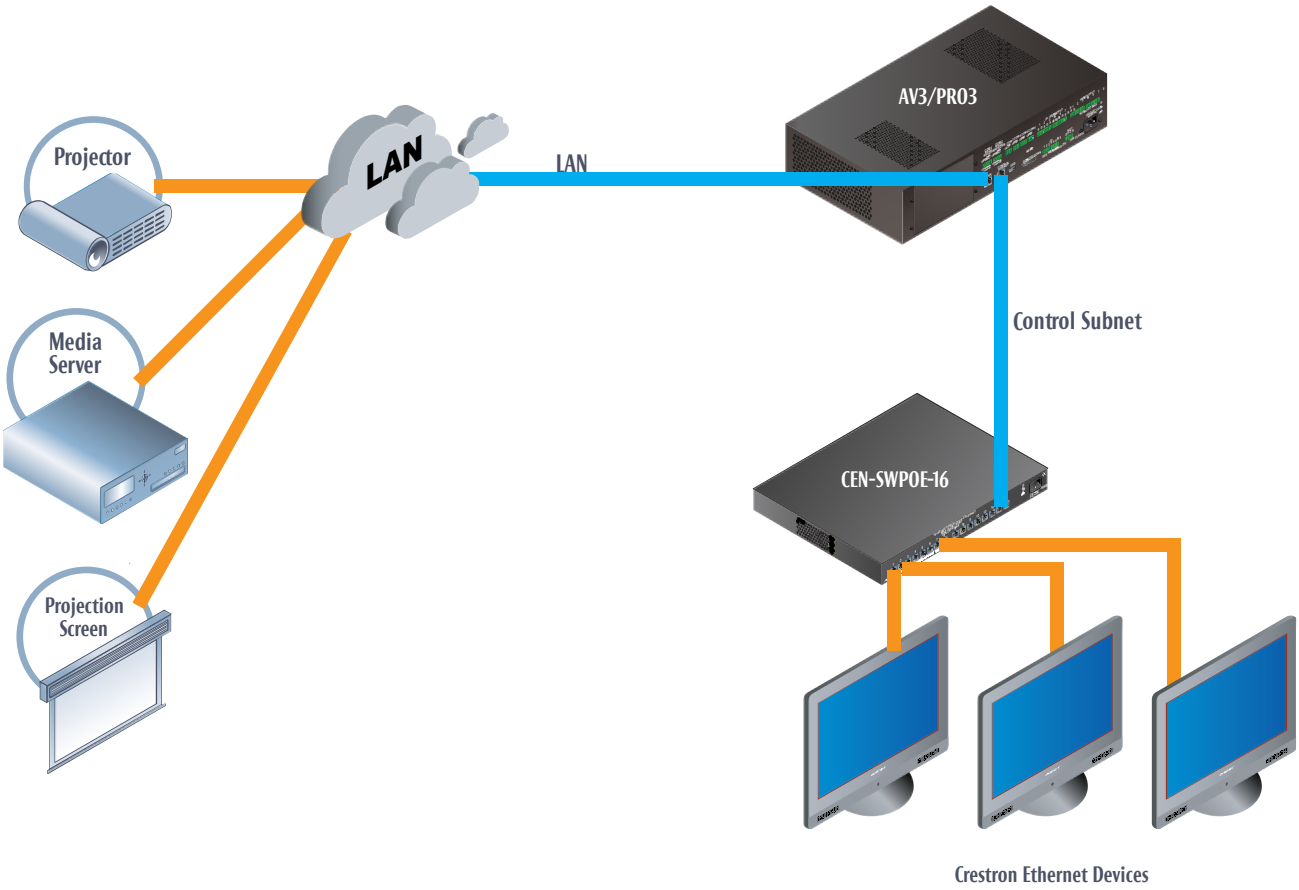
NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

Control Subnet

The AV3 and PRO3 have a dedicated Control Subnet which allows for dedicated communication between the control system and Crestron Ethernet devices without interferences from other network traffic on the LAN.

CAUTION: Do not connect the **CONTROL SUBNET** port to the LAN. The **CONTROL SUBNET** port must only be connected to Crestron Ethernet devices.

Control Subnet Application



The Control Subnet can host up to 64000 Crestron Ethernet devices. Connect a Crestron Ethernet switch such as the CEN-SWPOE-16 16-Port Managed PoE Switch (sold separately) to the AV3 or PRO3's **CONTROL SUBNET** port to use as a connection point for a variety of Crestron Ethernet devices.

NOTE: If the AV3 or PRO is operating in *Isolation* mode, Crestron Ethernet devices that require Internet access should not be connected to the **CONTROL SUBNET** port (either directly or indirectly). Any Crestron Ethernet device that requires an Internet connection should be connected to the local area network. For details, refer to "Control Subnet" which starts on page 19.

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.

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

While the next section provides an overview for communication, refer to "Establishing Communications with the Control System" in the latest version of the Crestron 3-Series Control Systems Reference Guide (Doc. 7150) for connection details. If communications cannot be established, refer to "Troubleshooting Communications" in the same guide.

Establishing Communication

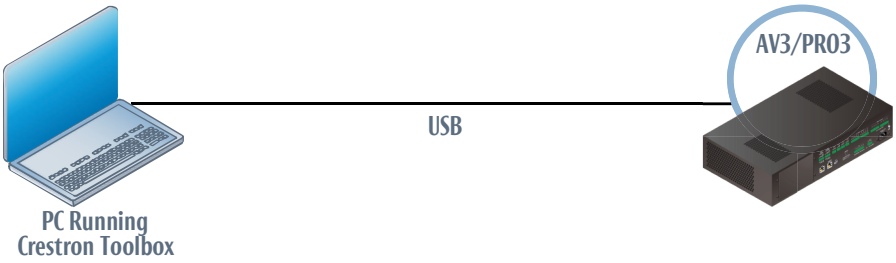
Use Crestron Toolbox for communicating with the AV3 or PRO3; refer to the Crestron Toolbox help file for details. There are two methods of communication: USB and TCP/IP.

USB

NOTE: Required for initial setup of Ethernet parameters.

NOTE: Required for loading projects and firmware.

USB Communication



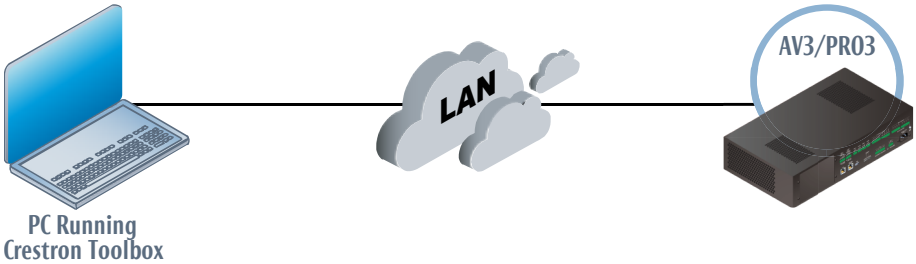
The **COMPUTER** port on the AV3 and PRO3 connects to the USB port on the PC via the included Type A to Type B USB cable:

1. Click **Tools | System Info**.
2. Click the icon.
3. For *Connection Type*, select *USB*. When multiple USB devices are connected, identify the AV3 or PRO3 by entering "AV3" or "PRO3" in the *Model* text box, the unit's serial number in the *Serial* text box or the unit's hostname (if known) in the *Hostname* text box.

4. Click **OK**. Communications are confirmed when the device information is displayed.

TCP/IP

Ethernet Communication



The AV3 and PRO3 connect to PC via Ethernet:

1. Use the Device Discovery Tool (click the icon) in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.
2. Click on the AV3 or PRO3 to display information about the device.

Control Subnet

The AV3 and PRO3 have a **CONTROL SUBNET** port which can be used to communicate with Crestron Ethernet devices on a subnet that is independent of the local area network connected to the **LAN** port. When using the Control Subnet, observe the following:

- The AV3 and PRO3 act as a DHCP server to all devices connected to the Control Subnet and assign IP addresses as needed.
- A DNS server is built in to the AV3 and PRO3 to resolve hostnames.
- Only Crestron Ethernet devices should be connected to the Control Subnet.

The AV3 and PRO3 can operate in *Isolation* mode. When operating in *Isolation* mode:

- Devices on the Control Subnet do not have access to any resources on the LAN side. This means that if a touch screen with a smart object that requires Internet access is installed on the Control Subnet operating in Isolation mode, the smart object cannot work.
- Devices on the LAN do not have access to any devices on the Control Subnet. This includes Crestron Toolbox when it is connected to the LAN. To configure devices on the Control Subnet with Crestron Toolbox, the PC running Crestron Toolbox must be physically connected to the Control Subnet.
- Any NAT/Portmapping rules that were previously created do not work when the AV3 or PRO3 is in *Isolation* mode.

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 Crestron Studio help file, the SIMPL Windows help file or the Crestron Toolbox help file.

Crestron Studio / SIMPL Windows

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

Firmware

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

Upgrade AV3 and PRO3 firmware via Crestron Toolbox.

1. Establish communication with the AV3 or PRO3 decribed in "Establishing Communication" which starts on page 18.
2. Select **Tools | Package Update Tool…** to upgrade the AV3 or PRO3 firmware or double click on an appropriate Package Update File (PUF) located on the hard drive. The Package Update Tool is loaded as a standalone application.

Operation

Before setting up the AV3 and PRO3 the time and time zone must be configured. Use the Crestron Toolbox to connect to the AV3 or PRO3; refer to "Establishing Communication" which starts on page 18 for additional details. Select **Tools** | **System Info** | **System Clock…** and make the appropriate changes.

Configuration by Web Based Setup

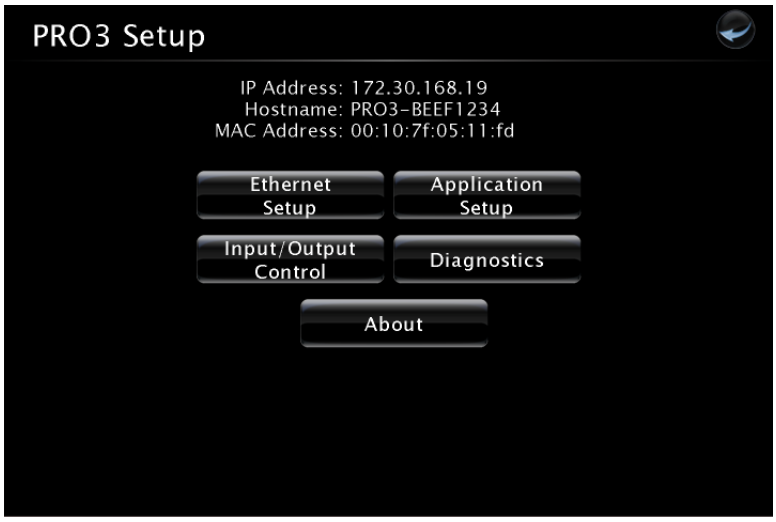
Configuration can be completed through the use of the Web based setup. The following screen appears on the Web page after communication is established. Navigate the screens and make the appropriate selections. To access the configuration pages, enter the IP address of the controller in the Web browser followed by '/setup' (for example, 'http://172.30.168.19/setup'). The control system's initial screen is displayed.

Initial Screen

Click the **Setup** button to display the "AV3 Setup" or "PRO3 Setup" menu.

The "AV3 Setup" or "PRO3 Setup" menu displays the IP address, hostname and MAC address of the device. It also allows access to various setup and programming screens. The "AV3 Setup" or "PRO3 Setup" menu contains buttons for **Ethernet Setup**, **Application Setup**, **Input/Output Control**, **Diagnostics**, and **About**, as shown in the illustration on the following page. Each button is described in subsequent paragraphs.

"PRO3 Setup" Menu

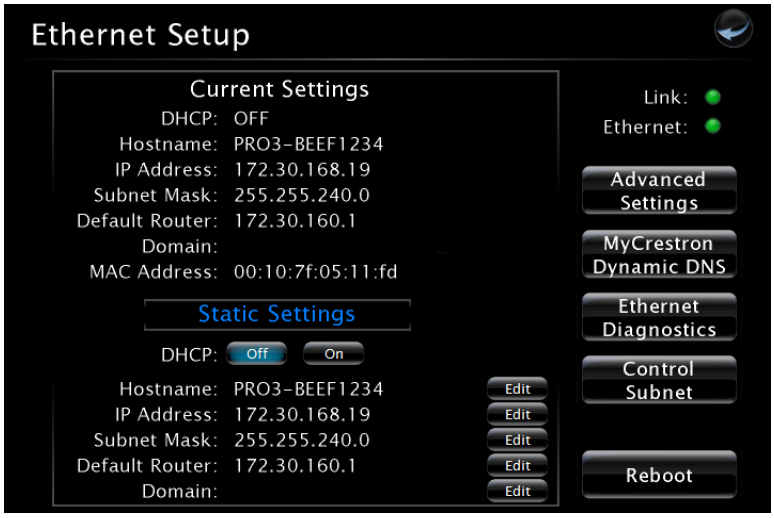


Click the icon to return to the previous screen.

Ethernet Setup

From the "AV3 Setup" or "PRO3 Setup" menu, click **Ethernet Setup** to enter the "Ethernet Setup" menu. The "Ethernet Setup" menu displays *DHCP*, *Hostname*, *IP Address*, *Subnet Mask*, *Default Router*, *Domain*, and *MAC Address* settings.

"Ethernet Setup" Menu



The "Ethernet Setup" menu also allows the following actions:

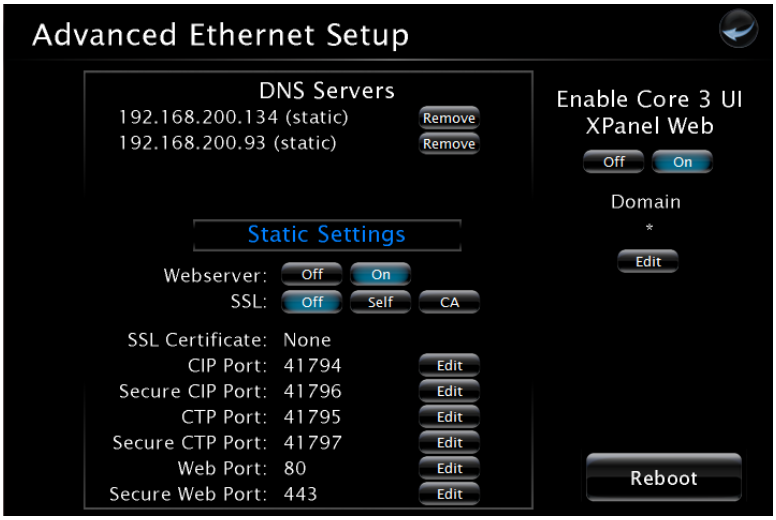
- Select **Off** or **On** for the DHCP server (default is off), as shown in the illustration above.
- Click **Edit** to the right of *Hostname* to change the hostname.
- Click **Edit** to the right of *IP Address* to change the IP address.
- Click **Edit** to the right of *Subnet Mask* to change the subnet mask.
- Click **Edit** to the right of *Default Router* to change the default router.

- Click **Edit** to the right of *Domain* to change the domain name.
- Click **Advanced Settings** to specify DNS servers, Webserver settings, and SSL settings.
- Click **MyCrestron Dynamic DNS** to configure the myCrestron.com Dynamic DNS service.
- Click **Ethernet Diagnostics** to test Ethernet communications.
- Click **Control Subnet** to view and edit Control Subnet settings.
- Click **Reboot** to reboot the AV3 or PRO3.

Advanced Settings

From the "Ethernet Setup" menu, click **Advanced Settings** to add, remove, or change the settings for the DNS servers and to change SSL security settings or Core 3 UI XPanel Web settings. Refer to the following illustration.

"Advanced Ethernet Setup" Screen



Change the *Webserver* state by clicking the **On** or **Off** button. The default setting is on. Turning the Webserver off disables access to setup from a Web browser.

NOTE: Setting the Webserver to the "Off" state results in disabling access to this setup program from a Web browser. To re-enable it, use Crestron Toolbox to connect to the control system and turn the Webserver back on.

To set the *SSL* settings click the **Off**, **Self**, or **CA** button.

- **Off** turns off the SSL capabilities of the AV3 or PRO3.
- **Self** sets up self signing certificates.
- **CA** uses an authority to assign the SSL settings.

Refer to the latest version of the 3-Series Control Systems Reference Guide (Doc. 7150) for more details on SSL settings. Using the **Edit** buttons change the port numbers to match the network settings.

NOTE: Changing the CIP Port to something other than 41794 results in disabling access to this setup program from a Web browser. In order to re-enable it, use Crestron Toolbox to connect to the control system, and set the CIP Port back to 41794.

Enable or disable Core 3 UI XPanel Web by clicking the **On** or **Off** button. Enabling this allows a Core 3 XPanel running in a web browser to connect to the control system. Edit the Core 3 UI XPanel Web domain by clicking **Edit**.

Click **Reboot** to reboot the AV3 or PRO3 or the icon to return to the previous menu.

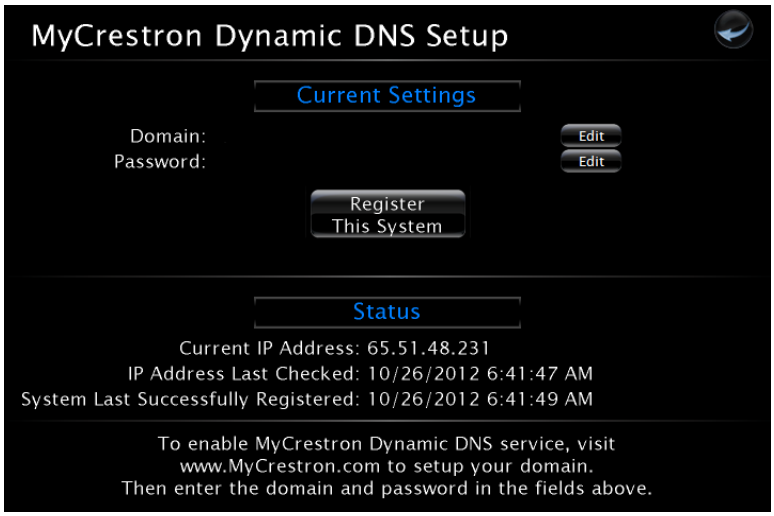
MyCrestron Dynamic DNS

Using a PC with Internet Explorer navigate to http://www.mycrestron.com and register the system with Crestron.

From the "Ethernet Setup" menu, click **MyCrestron Dynamic DNS** to configure the settings for the dynamic DNS server. Use the information provided from the MyCrestron home page to complete the information on the "MyCrestron Dynamic DNS Setup" screen. Press **Edit** to the right of *Domain* and enter the domain name that was chosen. Click **Edit** to the right of *Password* and enter the password that was chosen.

Every five minutes, the control system attempts to register itself with MyCrestron. To force an immediate registration, click **Register This System** to register the system with Crestron.

"MyCrestron Dynamic DNS Setup" Screen



Once completed the text on the screen updates and confirms that the DNS setup was successful.

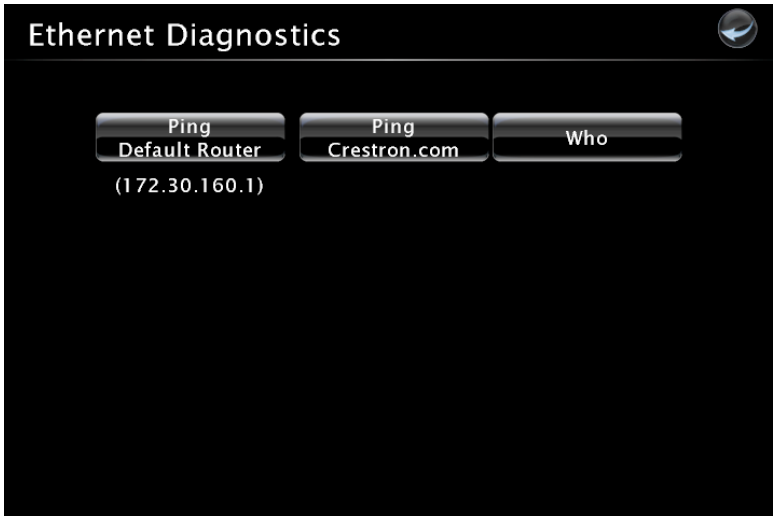
Click the icon to return to the previous menu.

Ethernet Diagnostics

From the "Ethernet Setup" menu, click **Ethernet Diagnostics** to perform various troubleshooting steps; refer to the following illustrations.

Tests can be run on the AV3 and PRO3 to verify connections. Click **Ping Default Router** to ping the router. To verify external communications, the Crestron Web site may be pinged by clicking **Ping Crestron.com**.

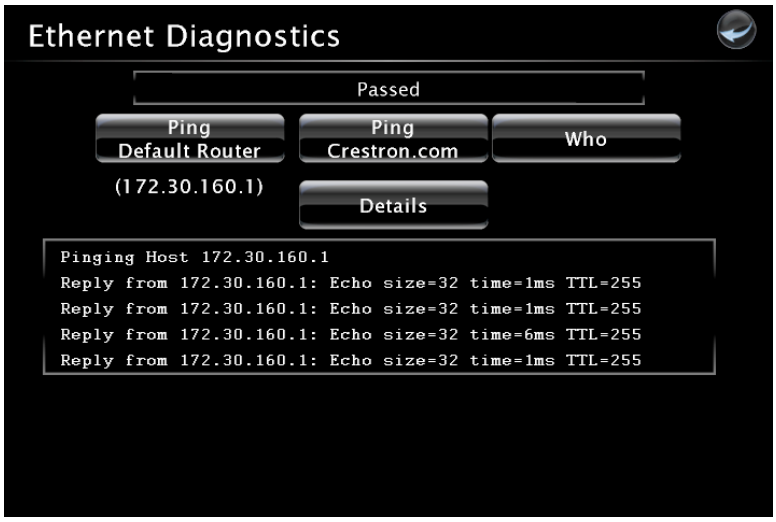
"Ethernet Diagnostics" Screen



Communications is verified when the message *Passed* is displayed. Refer to the image below for details.

Click **Who** to display a list of devices that are connected to the PC via the Ethernet connection. These devices may be Crestron Ethernet devices, third-party Ethernet devices and PCs (including any PC using Crestron Toolbox to connect to the processor over Ethernet).

"Ethernet Diagnostics" Screen with List of Connected Devices



Click **Details** to view a detailed text window that displays the status of the ping operation, including the time that it took to get a response.

Click the icon to return to the previous menu.

Control Subnet

From the "Ethernet Setup" menu, click **Control Subnet** to edit the Control Subnet settings and to view information on the devices connected to the Control Subnet. Refer to the image below for details.

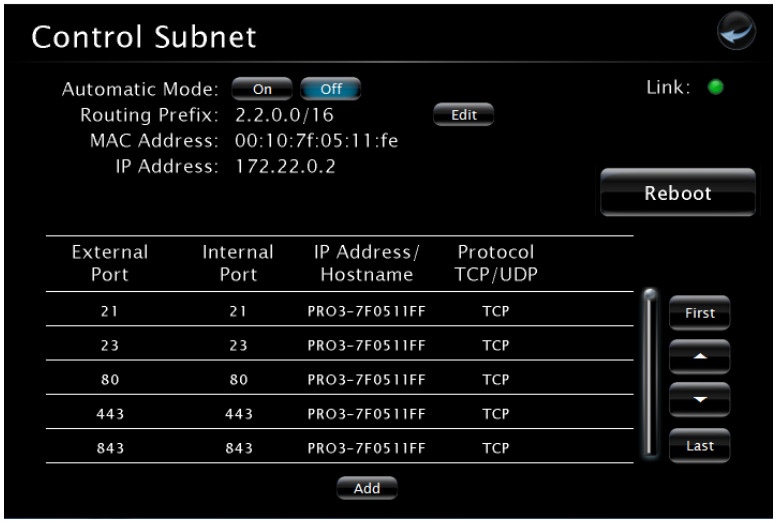
Click **On** or **Off** to turn *Automatic* mode on or off. If *Automatic* mode is on, the routing prefix cannot be edited manually.

Click **Edit** to change the routing prefix.

To navigate through the list of ports dedicated to the Control Subnet, use the **Last** button to jump to the end of the list, the **First** button to jump to the beginning of the list, or the up / down arrows to scroll through the list.

Click **Add** to add a device to the Control Subnet.

"Control Subnet" Screen



Click **Reboot** to reboot the AV3 or PRO3 or the icon to return to the previous menu.

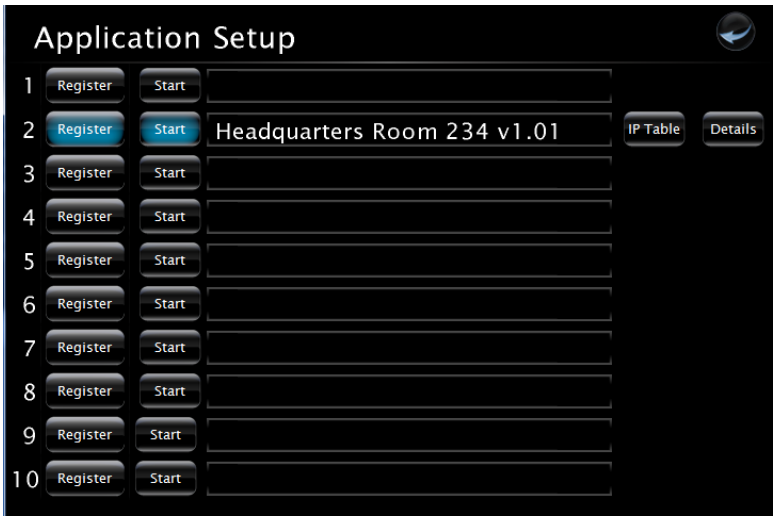
Application Setup

From the "AV3 Setup" or "PRO3 Setup" menu, click **Application Setup** to open the "Application Setup" menu. The "Application Setup" menu allows the up to ten programs that are loaded onto the AV3 and PRO3 to be viewed. This menu enables or disables programs' ability to run when the device boots; programs can also be started or stopped. The menu also displays essential IP table information and details about the program.

Click **Register** to enable the program to load on the device. A registered program starts when the AV3 or PRO3 boots. Click **Unregister** to prevent the program from loading when the AV3 or PRO3 boots.

To start or stop a program click the **Start** or **Stop** button next to the desired program. Refer to the illustration on the next page.

"Application Setup" Menu



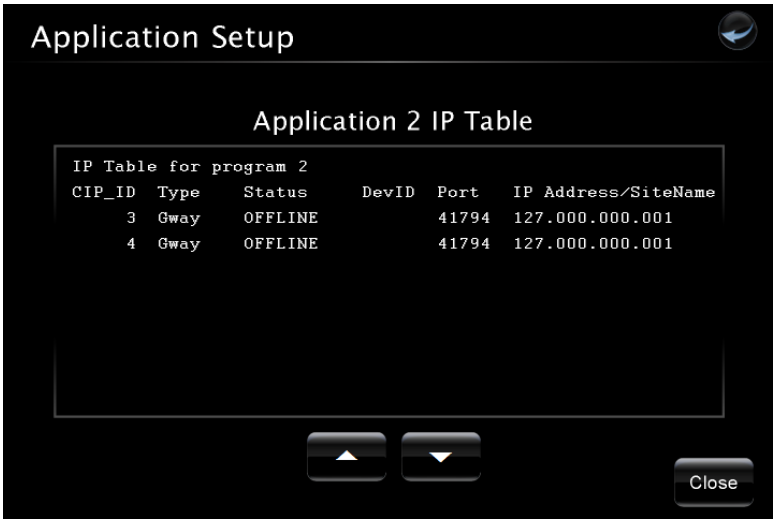
Click the icon to return to the previous menu.

Application Setup – IP Table

From the "Application Setup" menu, click **IP Table** to view the IP table associated with the specific program. Refer to the following illustration.

The "Application Setup" (IP Table) screen allows viewing of the IP table. Use the up or down arrow to scroll through the screen.

"Application Setup" (IP Table) Screen



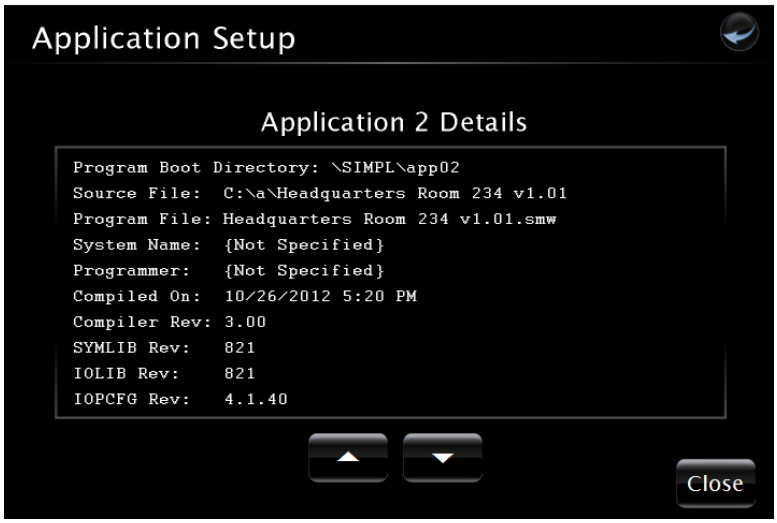
Click the icon to return to the "AV3 Setup" or "PRO3 Setup" menu or click **Close** to return to the "Application Setup" menu.

Application Setup - Details

From the "Application Setup" menu, click **Details** to view specific source and program information of a program. The "Application Setup" (Details) screen permits

a detailed view of the program. Use the up or down arrow to scroll through the screen. Refer to the following illustration.

"Application Setup" (Details) Screen

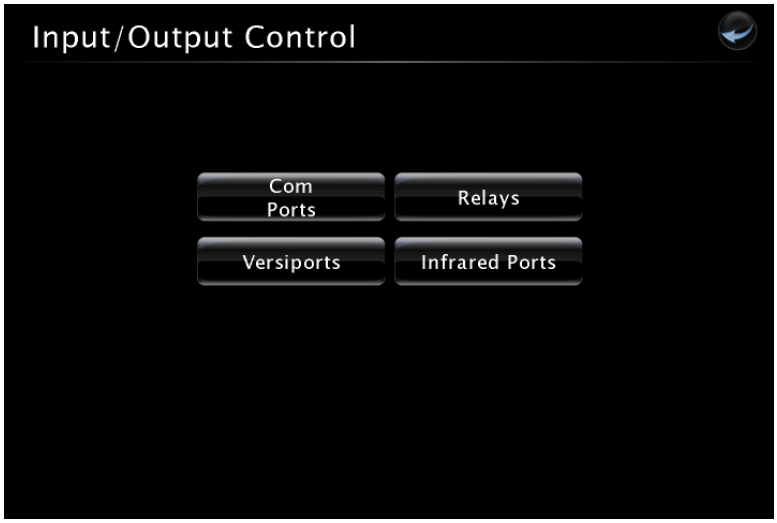


Click the icon to return to the "AV3 Setup" or "PRO3 Setup" menu or click **Close** to return to the "Application Setup" menu.

Input/Output Control

From the "AV3 Setup" or "PRO3 Setup" menu, click **Input/Output Control** to open the "I/O Control" menu. The AV3 and PRO3 allow control over a wide array of devices that may require specific communication settings. Use this menu to navigate to the control settings screens for **Com Ports**, **Relays**, **Versiports**, and **Infrared Ports**.

"Input/Output Control" Menu



Com Ports

Select **Com Ports** from the "Input/Output Control" menu to make changes to COM port settings.

Choose **Com 1** – **Com 6** and make the appropriate selections for the device connected to the AV3 or PRO3. The screen displays communication messages that are made between the device and the AV3 or PRO3. Use the record button to store the last 20 lines of data.

NOTE: Twenty lines of data are stored on the AV3 and PRO3, but only five are displayed on the screen.

Click the pause button to interrupt the recording but allow the data log to remain intact. The **Clear** button clears the data stored in the screen. Refer to the following illustration.

"Com Ports" Screen

Click the icon to return to the previous menu.

Versiports

Select **Versiports** from the "Input/Output Control" menu to view Versiport configurations. When a port is in use, the port configuration (*Digital In*, *Digital Out*, or *Analog In*) is displayed for that port number.

Relays

Select **Relays** from the "Input/Output Control" menu to view control relay port activity. Click **Open** or **Close** to open or close the corresponding relay on the control system.

Infrared Ports

Select **Infrared Ports** from the "Input/Output Control" menu to view IR port activity. The port number's "light" turns green when there is activity on the corresponding IR port.

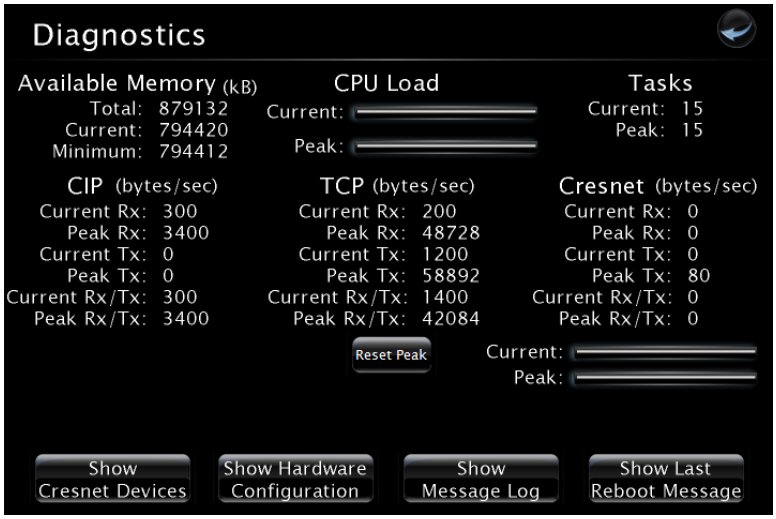
Diagnostics

From the "AV3 Setup" or "PRO3 Setup" menu click **Diagnostics** to enter the "Diagnostics" menu. The "Diagnostics" menu contains buttons that provide

information about the connected devices, hardware configuration and error logs. Refer to the following illustration.

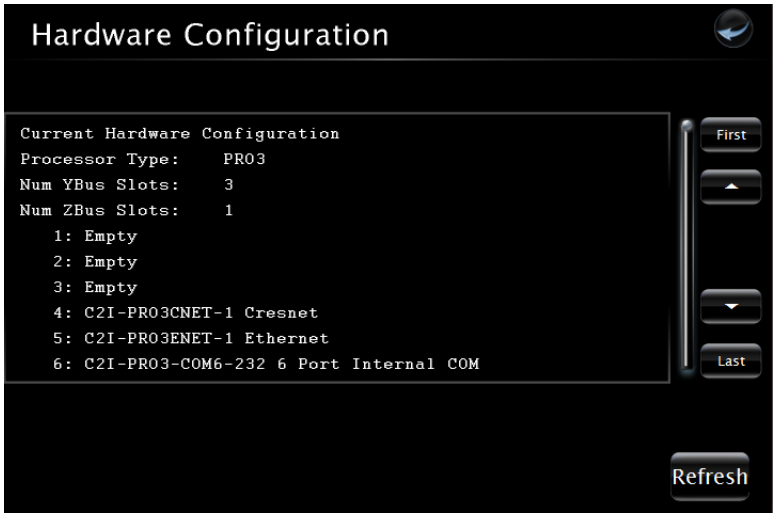
Click **Show Cresnet Devices** to display the Cresnet devices that are connected to the network.

"Diagnostics" Menu



Click **Show Hardware Configuration** to display a list of cards in the AV3 or PRO3. Refer to the following illustration for more details.

"Hardware Configuration" Screen



To navigate through the device list use the **Last** button to jump to the end of the list, the **First** button to jump to the beginning of the list, or the up / down arrows to scroll through the list.

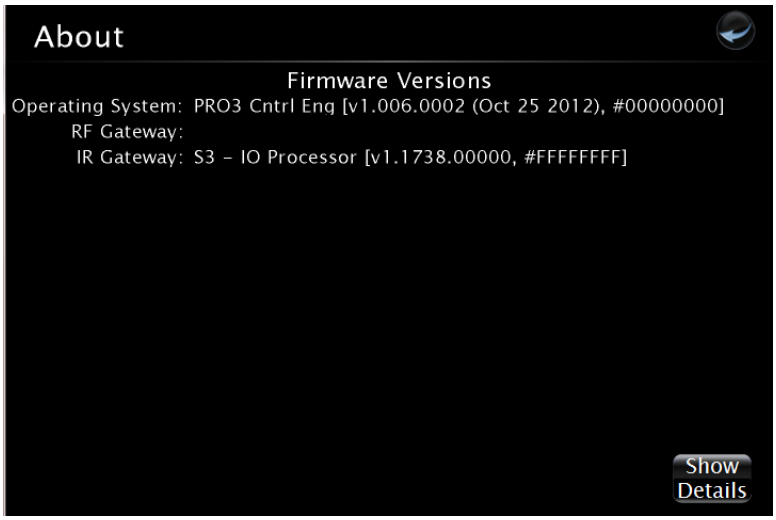
The AV3 or PRO3 stores and displays vital system information that can be referred to when troubleshooting the device or performing diagnostics on the system. From the "Diagnostics" menu, click **Show Message Log** to display events that have been stored by the AV3 or PRO3. **Show Last Reboot Message** displays the final message stored before the device was reset.

Click the icon to return to the previous menu.

About

From the "AV3 Setup" or "PRO3 Setup" menu, click **About** to open the "About" screen. This screen displays firmware versions for the *Operating System*, *RF Gateway*, and *IR Gateway*. Click **Show Details** to display low level firmware information about each device. Refer to the following illustration.

"About" Screen



Click the icon to return to the previous menu.

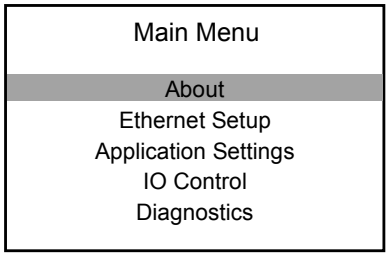
Configuration by Front Panel Setup (PRO3 Only)

Configuration of the PRO3 can be completed through the use of the device's front panel. After communication is established, the "Main Menu", illustrated below and on the following page, appears on the front panel. Navigate the menus and screens and make the appropriate selections.

The "Main Menu" allows access to five main setup screens: *About*, *Ethernet Settings*, *Application Settings*, *I/O Control*, and *Diagnostics*. It also offers the option of rebooting the device. Each subsequent setup menu or screen is described in subsequent paragraphs.

Use the "up" and "down" buttons on the navigation pad to highlight the desired selection and press the center "Select" button to select it. If the menu contains more than five options, scroll down to view further selections. Press **HOME** at any time to return to the "Main Menu". Press **BACK** at any time to return to the previous screen.

"Main Menu"



"Main Menu" (Continued)

Main Menu

Ethernet Setup
Application Settings
IO Control
Diagnostics
Reboot

About

Select *About* from the "Main Menu" to display the IP address, hostname, MAC address and firmware version of the device.

"About" Screen

About

IP Address: 10.0.0.1
Hostname: PRO3-7F28F3E9
MAC Address: 00:10:7f:28:f3:e7
Firmware Version: v1.006.0003
Firmware Details

To view complete firmware version details, use the "up" and "down" buttons to highlight *Firmware Details* and press the "Select" button.

Ethernet Settings

Select *Ethernet Settings* from the "Main Menu" to enter the "Ethernet Settings" menu. The "Ethernet Settings" menu displays the *Link* status; a status box lights green when link is active. The menu also allows navigation to additional menus and screens to view and edit *LAN*, *Control Subnet*, *DNS Servers*, *Advanced Settings*, *MyCrestron*, and *Ethernet Diagnostics*. Use the "up" and "down" buttons to scroll through the menu as needed.

"Ethernet Settings" Menu

Ethernet Settings
Link ■
LAN
Control Subnet
DNS Servers
Advanced Settings
MyCrestron

"Ethernet Setup" Menu (Continued)

Ethernet Settings
Link
Control Subnet
DNS Servers
Advanced Settings
MyCrestron
Ethernet Diagnostics

LAN

Select *LAN* from the "Ethernet Settings" menu to edit LAN settings. The "LAN Settings" menu offers two options. Select *Current Settings* to view the current LAN settings. Select *Static Settings* to manually change the LAN settings.

"LAN Settings" Screen

LAN Settings
Current Settings
Static Settings

The "LAN Current Settings" screen displays whether DHCP is currently ON or OFF. It also displays the current host name, IP address, subnet mask, and default router.

"LAN Current Settings" Screen

LAN Current Settings
DHCP: ON
Host Name: PRO3-7f28F3E9
IP Address: 10.0.0.1
Subnet Mask: 255.0.0.0
Def Router: 10.0.0.254

The "LAN Static Settings" screen allows editing of the DHCP settings, host name, IP address, subnet mask, default router, and domain name.

"LAN Static Settings" Screen

LAN Static Settings
DHCP: ON
Host Name: PRO3-7f28F3E9
IP Address: 10.0.0.1
Subnet Mask: 255.0.0.0
Def Router: 10.0.0.254

- *DHCP*: Default is *ON*. Highlight *DHCP* and press "Select" to toggle it on or off.
- *Host Name:* Select *Host Name* to edit the hostname. The "Edit Host/Domain Name" screen appears. Use the "left" and "right" buttons to select a character to change. Use the "up" and "down" buttons to move forward or backward through the list of possible characters. Press and hold the "left" button to delete a character. Press "Select" to select one or **BACK** to cancel.
- *IP Address*: Select *IP Address* to edit the IP Address in a new screen. Use the "up" and "down" buttons to change the IP address. Press "Select" to save or **BACK** to cancel.
- *Subnet Mask:* Select *Subnet Mask* to edit the subnet mask in a new screen. Use the "up" and "down" buttons to change the subnet mask. Press "Select" to save or **BACK** to cancel.
- Select *Def Router* to edit the PRO3's default router in a new screen. Use the "up" and "down" buttons to change the default router. Press "Select" to save or **BACK** to cancel.
- Select *Domain* to edit the domain name. The "Edit Host/Domain Name" screen appears. Use the "left" and "right" buttons to select a character to change. Use the "up" and "down" buttons to move forward or backward through the list of possible characters. Press and hold the "left" button to delete a character. Press "Select" to select one or **BACK** to cancel.

Control Subnet

Select *Control Subnet* from the "Ethernet Settings" menu to edit Control Subnet settings and to view information on the devices connected to the Control Subnet.

"Control Subnet" Menu

```
Control Subnet

MAC Address: 00:10:7f:28:f3:e8
IP Address: 10.0.0.1
Automatic Mode: On
Routing Prefix: 0.0.0.0/0
Port Forwarding
```

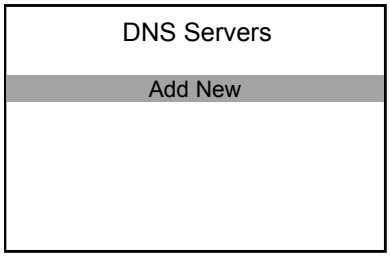
- *MAC Address*: Displays the unique address assigned to the Control Subnet.
- *IP Address:* Displays the current IP address. This field is not editable.
- *Automatic Mode*: Highlight and press "Select" to toggle *Automatic* mode on and off. If *Automatic* mode is on and "Select" is pressed, a new screen prompts the user to enter a routing prefix. *Automatic* mode turns off when the prefix is saved. If *Automatic* mode is off and "Select" is pressed, the mode turns on after a brief pause for the system to update.
- *Routing Prefix:* Select *Routing Prefix* to edit the routing prefix in a new screen. Use the "up" and "down" buttons to change the subnet mask. Press "Select" to save or **BACK** to cancel. If *Automatic* mode is turned on, the routing prefix cannot be manually edited.
- *Port Forwarding*: Select *Port Forwarding* to view the list of ports dedicated to the Control Subnet. Highlight a port and press "Select" to view details

about that port in a new screen. Details include the external port number, internal port number, IP address/hostname, and protocol.

DNS Servers

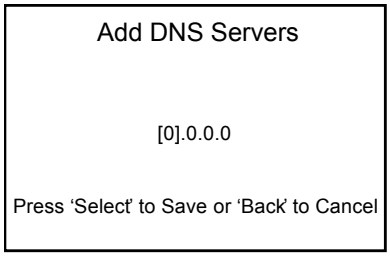
Select "DNS Servers" from the "Ethernet Settings" menu to delete or add primary and secondary DNS servers. If there are existing DNS servers, use the "up" and "down" buttons to highlight a DNS server and press "Select" to delete it. If there are no existing DNS servers, highlight and select *Add New*.

"DNS Servers" Menu



To edit the DNS server, use the "left" and "right" buttons to select a digit to change. Press the "up" and "down" buttons to scroll through possible digits. Press "Select" to save or **BACK** to cancel.

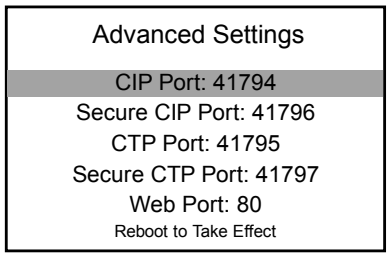
"Add DNS Servers" Screen



Advanced Settings

Select *Advanced Settings* from the "Ethernet Settings" menu to display the port numbers of regular and secure CIP, CTP, and Web ports. Select a port to edit the port number. The PRO3 must be rebooted for changes to take effect.

"Advanced Settings" Menu



"Advanced Settings" Menu (Continued)

Advanced Settings

Web Port: 80
Secure Web Port: 443
WebServer: ON
SSL: Off
SSL: None
Reboot to Take Effect

- Select *CIP Port* to edit the CIP port. Use the "up" and "down" buttons to change the port number.

"Edit CIP Port" Screen

Edit CIP Port

[41794]

NOTE: Changing the CIP Port to something other than 41794 results in disabling access to this setup program from a Web browser. In order to re-enable it, use Crestron Toolbox to connect to the control system, and set the CIP Port back to 41794.

- Select *Secure CIP Port* to edit the secure CIP port. Use the "up" and "down" buttons to change the port number.
- Select *CTP Port* to edit the CTP port. Use the "up" and "down" buttons to change the port number.
- Select *Secure CTP Port* to edit the secure CTP port. Use the "up" and "down" buttons to change the port number.
- Select *Web Port* to edit the Web port. Use the "up" and "down" buttons to change the port number.
- Select *Secure Web Port* to edit the secure Web port. Use the "up" and "down" buttons to change the port number.
- Select *WebServer* to turn the Webserver on or off. The default setting is *ON*. Turning the Webserver off disables access to setup from a Web browser. To re-enable it, use Crestron Toolbox to connect to the control system and turn the Webserver back on.
- Highlight *SSL* to change the SSL settings. Press "Select" to move through the possible settings.
  - *Off* turns off the SSL capabilities of the PRO3. This is the default.
  - *Self* sets up self signing certificates.
  - *CA* uses an authority to assign the SSL settings.
- *SSL Certificate Info* displays SSL certificate information.

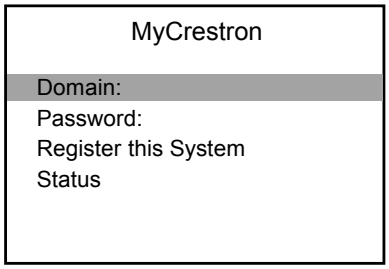
Refer to the latest version of the 3-Series Control Systems Reference Guide (Doc. 7150) for more details on SSL settings.

MyCrestron

Using a PC with Internet Explorer navigate to http://www.mycrestron.com and register the system with Crestron.

From the "Ethernet Settings" menu, select *MyCrestron* to configure the settings for the dynamic DNS server.

"MyCrestron" Screen



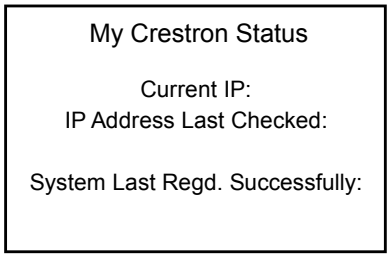
Use the information provided from the MyCrestron home page to complete the information on the "MyCrestron" screen. Select *Domain* to open a new screen and enter the domain name that was chosen. Select *Password* to open a new screen and enter the password that was chosen. When entering the domain name and password, use the "left" and "right" buttons to select a character to change. Use the "up" and "down" buttons to move forward or backward through the list of possible characters. Press "Select" to select a character.

Once entered, the domain and password are displayed on the "MyCrestron" screen.

Every 5 minutes, the control system attempts to register itself with MyCrestron. To force an immediate registration, select **Register This System** to register the system with Crestron.

Select *Status* to view the "My Crestron Status" screen. This displays the current IP address, the IP address when the system last checked, and when the system last registered successfully with Crestron.

"My Crestron Status" Screen



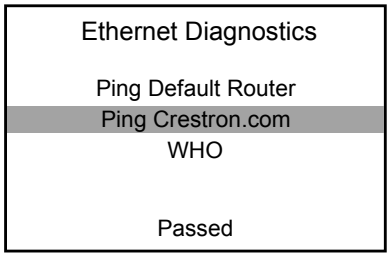
Ethernet Diagnostics

From the "Ethernet Settings" menu, select *Ethernet Diagnostics* to perform various troubleshooting steps.

Tests can be run on the PRO3 to verify connections. Select *Ping Default Router* to ping the router. The results appear on a new, "Pinging Default Router" screen.

To verify external communications, the Crestron Web site may be pinged by selecting *Ping Crestron.com*. Communication is verified when the message *Passed* is displayed at the bottom of the screen. If communication fails, *Failed* is displayed. Refer to the image that follows for details.

"Ethernet Diagnostics" Menu

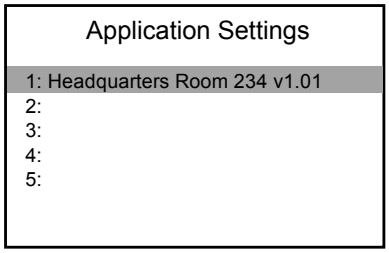


Select *WHO* to display a list of devices that are connected to the PC via the Ethernet connection. These devices may be Crestron Ethernet devices, third party Ethernet devices and PCs (including any PC using Crestron Toolbox to connect to the processor over Ethernet).

Application Settings

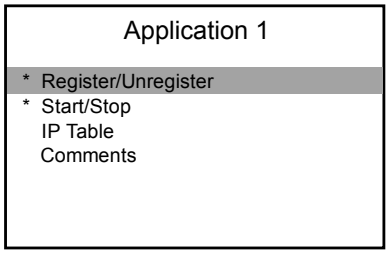
Select *Application Settings* from the "Main Menu" to view the up to ten programs loaded onto the device.

"Application Settings" Screen



Highlight and select a program to edit its settings in a new screen. The new screen allows enabling or disabling programs' ability to run when the device boots; programs can also be started or stopped. The screen also provides access to essential IP table information and details about the program.

"Application 1" Screen



Highlight *Register/Unregister* and press the "Select" button to register or unregister a program. When a green asterisk appears to the left of *Register/Unregister* as shown in the image above, the program is registered. A registered program starts when the PRO3 boots. An unregistered program cannot load when the PRO3 boots.

Highlight *Start/Stop* and press the "Select" button to start or stop the program. When a green asterisk appears to the left of *Start/Stop* as shown in the image above, the program is running.

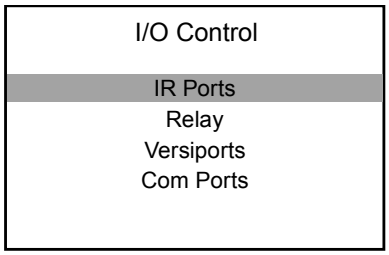
Select *IP Table* to open a new screen displaying the IP table associated with the specific program. Use the "up" and "down" arrows to scroll through the IP table information.

Select *Comments* to open a new screen displaying details about a program such as source information. Use the "up" and "down" arrows to scroll through the information.

IO Control

Select *IO Control* from the "Main Menu" to view port activity and edit port settings. The PRO3 allows control over a wide array of devices that may require specific communication settings. Use this menu to navigate to the control settings screens for IR ports, relays, Versiports, and COM ports.

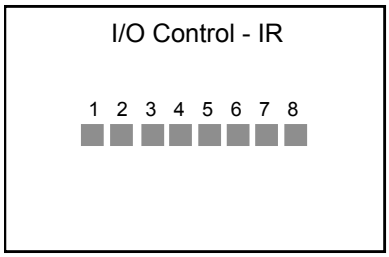
"I/O Control" Menu



IR Ports

Select *IR Ports* from the "I/O Control" menu to view activity on IR ports 1 – 8. Each port has a corresponding "LED" that turns red when data is sent to the port.

"I/O Control – IR" Screen

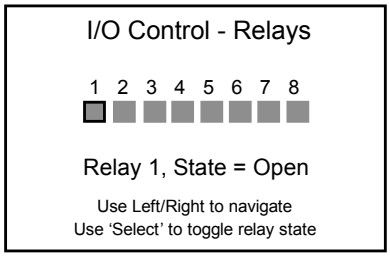


Relays

Select *Relay* from the "I/O Control" menu to view the status of relay ports 1 – 8 and to open or close relay ports.

Each port has a corresponding "LED" that turns red when the relay is closed. To open or close a relay port, use the "left" and "right" buttons to select a port number. Press "Select" to open or close the selected port.

"I/O Control – Relays" Screen

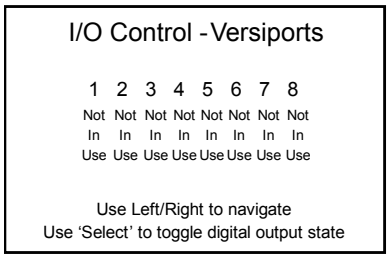


Versiports

Select *Versiports* from the "I/O Control" menu to view activity on Versiports 1 – 8. When a port is in use, the port configuration (*Digital In*, *Digital Out*, or *Analog In*) is displayed for that port number. If the port is not in use, *Not In Use* is displayed.

To edit the port configuration, select a port number using the "left" and "right" buttons. Press the "Select" button to change the digital output state.

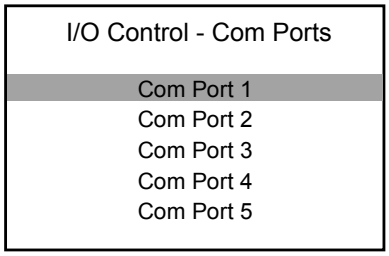
"I/O Control – Versiports" Screen



Com Ports

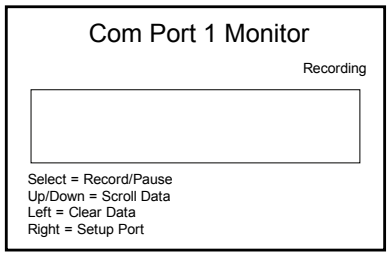
Select *Com Ports* from the "I/O Control" menu to view and edit COM port information.

"I/O Control – Com Ports" Screen (Selections 1 – 5 Shown)



Select *Com Port 1 – Com Port 6* from the "I/O Control – Com Ports" menu to advance to the corresponding "Com Port Monitor" screen.

"Com Port 1 Monitor" Screen

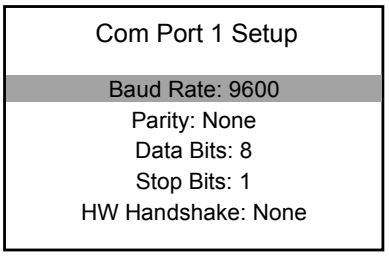


The center screen displays communication messages that are made between the device and the PRO3. Transmitted text is displayed in red and received text is displayed in green.

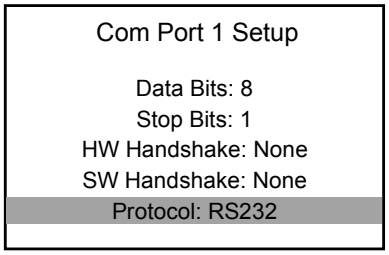
The following actions are available on the "Com Port Monitor" screens.

- Press the "Select" button to begin recording data or to pause the recording.
- Scroll through the data using the "up" and "down" buttons.
- Press the "left" button to clear all data.
- Press the "right" button to go to the "Com Port Setup" screen. The "Com Port Setup" screen for COM ports 1 and 2 allows editing of more varied settings than the "Com Port Setup" screen for COM ports 3 – 6. The different selections are shown in the following images.

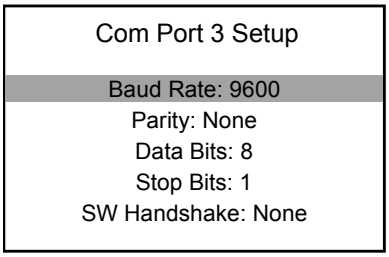
"Com Port 1 Setup" Screen



"Com Port 1 Setup" Screen (Continued)



"Com Port 3 Setup" Screen



- Select *Baud Rate* to enter a new screen and set the baud rate of the PRO3. Minimum baud rate is 1200 and maximum is 115200.
- Select *Parity* to enter a new screen and set parity to *None*, *Even*, or *Odd*.
- Select *Data Bits* to enter a new screen and set data bits to *7* or *8*.
- Select *Stop Bits* to enter a new screen and set stop bits to *1* or *2*.
- Select *HW Handshake* (COM ports 1 and 2 only) to enter a new screen and set hardware handshaking to *None*, *RTS*, *CTS*, or *RTS/CTS*.
- Select *SW Handshake* to enter a new screen and set software handshaking to *None*, *XON*, *XONR*, or *XONT*.
- Select *Protocol* (COM ports 1 and 2 only) to enter a new screen and set protocol to *RS232*, *RS422*, or *RS485*.

Diagnostics

From the "Main Menu" select *Diagnostics* to enter the "Diagnostics" menu. The "Diagnostics" menu contains buttons that provide information about the connected devices, hardware configuration and error logs.

- Select *Reset Peak to* reset the peak values of RAM, Tasks, and TX and RX values for CIP, TCP, and Cresnet.
- Select *RAM* to open a new screen that displays the total, current, and minimum RAM used by the PRO3.
- Select *CPU Load* to open a new screen that displays the current and peak CPU loads, both numerically and by bar graph.
- Select *Tasks* to open a new screen that displays the current and peak number of tasks performed by the PRO3.
- Select *CIP* to open a new screen that displays the current and peak transmit and receive CIP network traffic.
- Select *TCP* to open a new screen that displays the current and peak transmit and receive TCP network traffic.
- Select *Cresnet* to open a new screen that displays the current and peak transmit and receive Cresnet network traffic.
- Select *Show Cresnet Devices* to open a new screen that displays the Cresnet devices connected to the network.
- Select *Show Hardware Configuration* to open a new screen that displays a list of cards. Use the "up" and "down" buttons to scroll through the information.
- Select *Show Message Log* to open a new screen that displays events that have been stored by the PRO3.
- Select *Show Last Reboot Message* to open a new screen that displays the final message stored before the device was reset.

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.

AV3 & PRO3 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not communicating with the network.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
	Device is not receiving power from a Crestron power source.	Use the provided 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.
PWR LED does not illuminate.	Device is not receiving power.	Verify power supply connection.
NET LED does not illuminate.	Device not wired correctly.	Verify Cresnet wiring.
MSG LED illuminates.	Hardware or software failure, hardware incompatibility with software definitions or programming error.	Verify that hardware configuration matches software configuration (i.e. card is in proper slot as defined by program). If using PRO3, depress **MSG** button on front panel for specific error. Use Crestron Toolbox to display the error log. Refer to “Error Message Definitions” in the latest version of the Crestron 3-Series Control Systems Reference Guide (Doc. 7150) for more details.
Compilation error RLCMCVT166 & RLCMCVT177.	Poor analog versus serial signal definition in the Crestron Studio or SIMPL Windows program.	Confirm properly defined signal definition in the program.

(Continued on following page)

AV3 & PRO3 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
System locks up.	Various.	Hold down **SW-R** button on control system front panel to bypass program and communicate directly with processor. Refer to "Troubleshooting Communications" in the latest version of the Crestron 3-Series Control Systems Reference Guide (Doc. 7150) for more details.
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.
Loss of functionality due to electrostatic discharge.	Improper grounding.	Check that all ground connections have been made properly.

Check Network Wiring

Use the Right Wire

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

Calculate Power

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

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Use the Crestron Power Calculator to help calculate how much power is needed for the system (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 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 **24** and **G** pair and the other twisted pair is the **Y** and **Z** pair.

Strip and Tin Wire

When daisy chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires 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
3-Series Control Systems Reference Guide
Crestron e-Control Reference Guide

Further Inquiries

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

To post a question about Crestron products, log onto the Online Help section of the Crestron Web site (www.crestron.com/onlinehelp). First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the AV3 and PRO3, 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.

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 Guide – DOC. 7330C
(2033000)
04.13
Specifications subject to
change without notice.