

Crestron DIN-AP2
DIN Rail 2-Series Automation Processor

Operations & Installation Guide



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Regulatory Compliance

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



As of the date of manufacture, the DIN-AP2 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



Federal Communications Commission (FCC) Compliance Statement

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

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

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

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

Industry Canada (IC) Compliance Statement

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

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

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DIN Rail 2-Series Automation Processor: DIN-AP2

Introduction

The DIN-AP2 is a 2-Series control processor designed for small to medium-sized lighting and automation applications. DIN rail mounting enables modular installation alongside Crestron[®] DIN rail lighting and automation control modules and other third-party DIN rail mountable devices.

Features and Functions

- 2-Series control engine
- MMC memory expansion card slot
- Cresnet[®] port - master/slave selectable
- 10/100 Ethernet | SSL encryption
- e-Control[®]2, SNMP, & RoomView[®] support
- Two bidirectional RS-232 COM ports
- Four IR/serial ports
- Eight Versiport I/O ports
- Four low-voltage relay ports
- Configurable using D3 Pro[®] software
- 9M wide DIN rail mounting
- Requires external power supply
- Emerge Alliance[®] Compatible

2-Series Processor

Built upon Crestron's reliable 2-Series control engine, the DIN-AP2 is extensively programmable using Crestron's suite of powerful development software and vast database of drivers and software modules. The DIN-AP2 works seamlessly with Crestron's entire line of lighting dimmers and shade controls, keypads and touch screens, thermostats, wireless gateways, and expansion modules.

DIN Rail Installation

The DIN-AP2 is designed to snap onto a standard DIN rail for installation in a wall mount enclosure or mounted on a wall panel. Wiring connections are made using detachable screw terminals positioned along the top and bottom, clearly accessible from the front for easy installation and servicing. All setup controls and connections are positioned on the center front panel. When installed in an enclosure utilizing 45 mm cutouts, the DIN-AP2's front panel stays accessible while all other connections are concealed.

System Integration

The DIN-AP2 provides for the integration of non-Crestron devices and subsystems through a host of control interfaces. Four isolated relays and eight Versiport I/O ports are built in to accommodate all kinds of sensors, contactors, door strikes, and other low-voltage controls. Two bidirectional RS-232 COM ports and four IR/serial ports allow for the integration of everything from simple shade controllers to advanced security systems. Additional interfaces and controllers can be added easily using Crestron's DIN rail series lighting and automation modules.

Cresnet[®]

Cresnet is the communications backbone for Crestron lighting modules, wall box dimmers, shade controllers, thermostats, keypads, touch screens, and many other devices. This flexible 4-wire bus streamlines the wiring of a complete Crestron system. The DIN-AP2 includes a pair of Cresnet master ports (paralleled) capable of supporting approximately 20 typical devices. Larger systems with more than 20 devices can be handled by adding the DIN-HUB Cresnet Distribution Hub (sold separately). Connectivity for multiple homeruns can be facilitated using one or more DIN-BLOCK Cresnet Distribution Blocks (sold separately). Additionally, at least one DIN-PWS50 Cresnet Power Supply (sold

separately) is required to power the DIN-AP2 and any connected Cresnet devices.

Ethernet and e-Control[®] 2

Built-in 10/100 Ethernet facilitates secure high-speed network connectivity, enabling extensive capabilities for remote system maintenance and control, and providing an interface to other Crestron control systems. Native features include a built-in e-mail client to report system troubles and other functions to the owner or service company via instant e-mail notification. An onboard Web server provides the foundation for Crestron's exclusive e-Control2 Xpanel technology, providing secure IP-based remote control.

RoomView[®] and SNMP—For large facilities utilizing multiple DIN-AP2s and other control systems, Crestron's exclusive RoomView Help Desk software delivers a comprehensive solution for remote monitoring and asset management. Also, built-in SNMP support enables similar capability using third-party network management software, allowing full control and monitoring from the IT Help Desk or Network Operations Center in a format that is familiar to IT personnel.

Memory Expansion

A memory card slot allows for easy expansion of the DIN-AP2's internal memory using an MMC (Multimedia Memory Card) compatible memory card up to 2 GB.

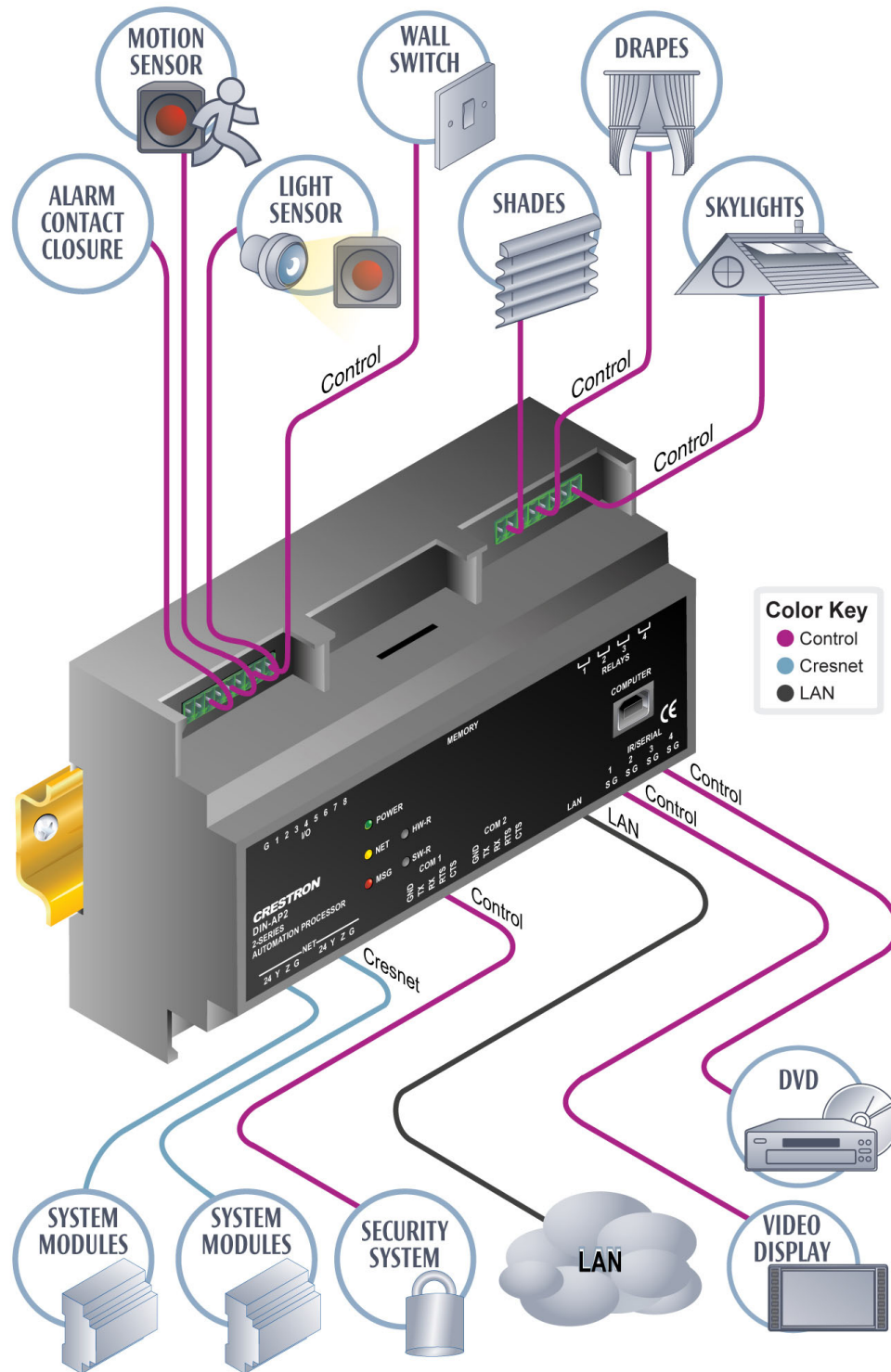
D3 Pro[®] Software

Crestron D3 Pro software eliminates the need for custom programming, providing a complete design, development, and documentation solution for the lighting professional.

Applications

The following diagram shows a DIN-AP2 in a typical application.

DIN-AP2 in a Typical Application



Specifications

Specifications for the DIN-AP2 are listed in the following table.

DIN-AP2 Specifications

SPECIFICATION	DETAILS
Processor CPU	32-bit Freescale ColdFire [®] Microprocessor
Memory SDRAM NVRAM Flash Memory Card	32 MB 256 KB 8 MB Expandable up to 2 GB using MMC compatible card (not included)
Operating System	Real-time, preemptive multi-threaded/multitasking kernel; FAT32 file system with long names; supports SIMPL Windows and SIMPL+ [®]
Ethernet	10/100BASE-T, auto-negotiating, full/half duplex, static IP or DHCP/DNS, SSL, TCP/IP, UDP/IP, CIP, SMTP, SNMP, built-in Web server and e-mail client; supports Crestron e-Control [®] 2 XPanel and RoomView [®] applications
Power Requirements Cresnet Power Usage	8 Watts (0.33 Amps @ 24 Volts DC) (Power supply sold separately)

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DIN-AP2 Specifications (Continued)

SPECIFICATION	DETAILS
Environmental Temperature Humidity Heat Dissipation	0° to 40 °C (32° to 104 °F) 10% to 90% RH (non-condensing) 26 BTU/Hr
Enclosure	Light gray polycarbonate housing with polycarbonate label overlay, UL94 V-0 rated, 35 mm DIN EN 60715 rail mount, DIN 43880 form factor for enclosures with 45 mm front panel cutout, occupies nine DIN module spaces (162 mm)
Dimensions Height Width Depth	94 mm (3.71 in) 159 mm (6.26 in) 58 mm (2.28 in)
Weight	277 g (10 oz)
Available Accessories DIN Rail Series DIN-BLOCK DIN-HUB DIN-PWS50 IRP2	DIN Rail Lighting & Automation Control Modules DIN Rail Cresnet Distribution Block DIN Rail Cresnet Distribution Hub DIN Rail 50 Watt Cresnet Power Supply IR Emitter Probe

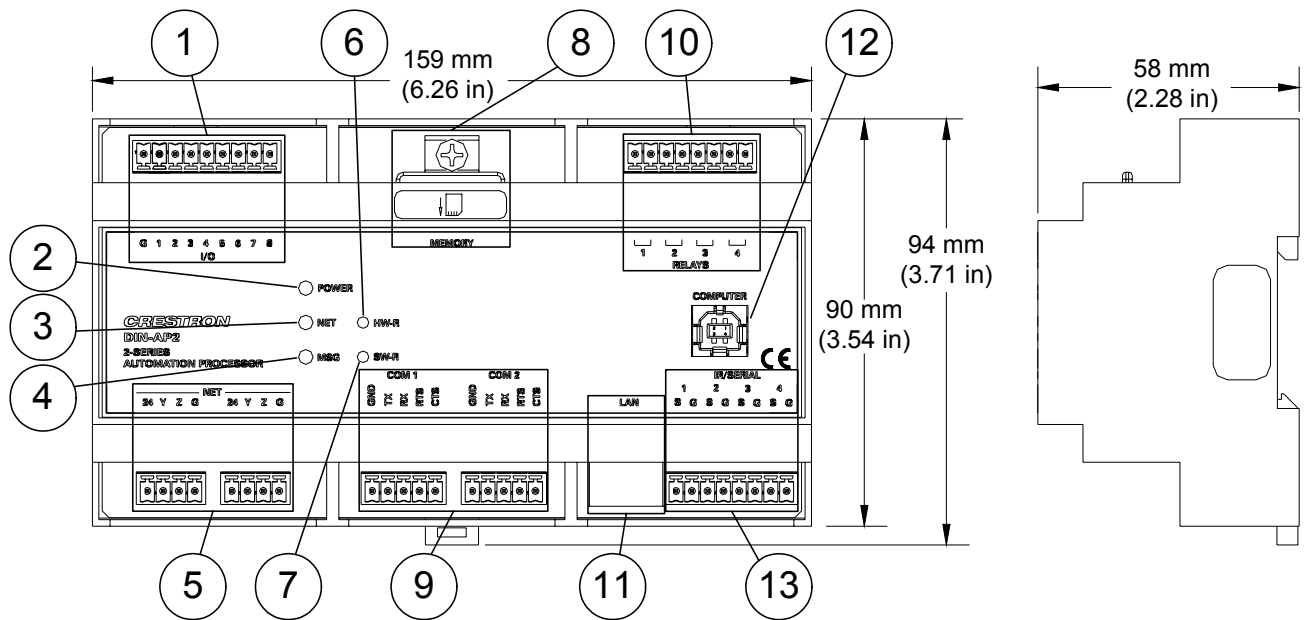
Physical Description

This section provides information on the connections, controls and indicators available on your DIN-AP2.

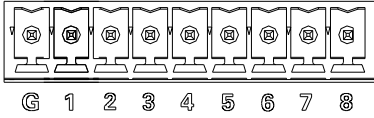
DIN-AP2 Physical View



DIN-AP2 Overall Dimensions

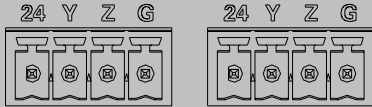


Connectors, Controls & Indicators

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION
1	<p style="text-align: center;">I/O 1 – 8</p>  <p style="text-align: center;">G 1 2 3 4 5 6 7 8</p>	<p>(1) 9-pin 3.5 mm detachable terminal block comprising eight digital input/output or analog input ports (referenced to GND);</p> <p>Digital Input:</p> <p>Rated for 0-24 Volts DC; Input impedance 20k ohms; Logic threshold 1.25 Volts DC</p> <p>Digital Output:</p> <p>250 mA sink from maximum; 24 Volts DC, catch diodes for use with “real world” loads</p> <p>Analog Input:</p> <p>Rated for 0-10 Volts DC, protected to 24 Volts DC maximum; Input impedance 20k ohms; Programmable 5 Volts, 2k ohms pull-up resistor per pin; Max Wire Size: 1.5 mm² (16 AWG)</p>
2	POWER LED	(1) Green LED, indicates power supplied to unit via either NET port
3	NET LED	(1) Yellow LED, indicates Cresnet bus activity

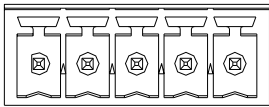
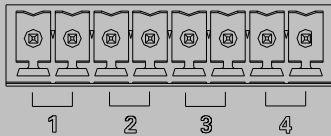
(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS¹, CONTROLS & INDICATORS	DESCRIPTION
4	MSG LED	(1) Red LED, indicates processor has generated an error message. To view the contents of the message log, use Crestron Toolbox™.
5	<p style="text-align: center;">NET²</p> 	<p>(2) 4-pin 3.5 mm detachable terminal blocks, paralleled; Cresnet port and 24 Volt DC power input;</p> <p>Master/Slave selectable;</p> <p style="padding-left: 20px;">24: Power (24 Volts DC)</p> <p style="padding-left: 20px;">Y: Data</p> <p style="padding-left: 20px;">Z: Data</p> <p style="padding-left: 20px;">G: Ground</p> <p>Maximum Wire Size: 1.5 mm² (16 AWG)</p>
6	HW-R	(1) Recessed miniature pushbutton for hardware reset (reboots the processor)
7	SW-R	(1) Recessed miniature pushbutton for software reset (reboots the control system program)
8	MEMORY	<p>(1) MMC compatible card slot; Accepts Multimedia Memory Card (MMC) up to 2 GB;</p> <p>Observe proper orientation of memory card when inserting card into MEMORY slot, as shown on the label adjacent to the MEMORY slot.</p>

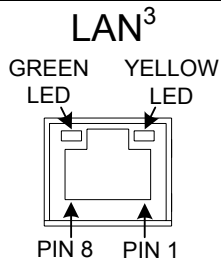
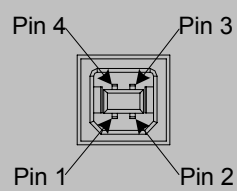
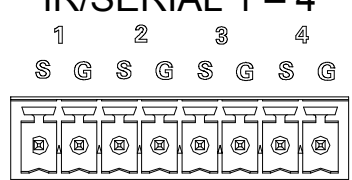
(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS ¹ , CONTROLS & INDICATORS	DESCRIPTION
9	<p style="text-align: center;">COM 1 – 2</p> <p style="text-align: center;">GND TX RX RTS CTS</p> 	<p>(2) 5-pin 3.5 mm detachable terminal blocks; Bidirectional RS-232 ports; Up to 115.2k baud; Hardware and software handshaking support</p> <p>GND: Ground TX: Transmit data RX: Receive data RTS: Request to send CTS: Clear to send</p> <p>Max Wire Size: 1.5 mm² (16 AWG)</p>
10	<p style="text-align: center;">RELAYS 1 – 4</p> 	<p>(1) 8-pin 3.5mm detachable terminal block comprising four normally open, isolated relays; Rated 1 Amp, 30 Volts AC/DC; MOV arc suppression across contacts; Max Wire Size: 1.5 mm² (16 AWG)</p>

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS ¹ , CONTROLS & INDICATORS	DESCRIPTION																				
11	<p>LAN³</p> 	<p>(1) 8-wire RJ-45 with 2 LED indicators; 10/100BASE-T Ethernet port; Green LED indicates link status; Yellow LED indicates Ethernet activity</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TX +</td> <td>5</td> <td>N/C</td> </tr> <tr> <td>2</td> <td>TX -</td> <td>6</td> <td>RC -</td> </tr> <tr> <td>3</td> <td>RC +</td> <td>7</td> <td>N/C</td> </tr> <tr> <td>4</td> <td>N/C</td> <td>8</td> <td>N/C</td> </tr> </tbody> </table>	PIN	SIGNAL	PIN	SIGNAL	1	TX +	5	N/C	2	TX -	6	RC -	3	RC +	7	N/C	4	N/C	8	N/C
PIN	SIGNAL	PIN	SIGNAL																			
1	TX +	5	N/C																			
2	TX -	6	RC -																			
3	RC +	7	N/C																			
4	N/C	8	N/C																			
12	<p>COMPUTER</p> 	<p>(1) USB Type B female, USB 1.1 computer console port (cable included)</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 VDC</td> <td>3</td> <td>Data +</td> </tr> <tr> <td>2</td> <td>Data -</td> <td>4</td> <td>Ground</td> </tr> </tbody> </table>	PIN	SIGNAL	PIN	SIGNAL	1	+5 VDC	3	Data +	2	Data -	4	Ground								
PIN	SIGNAL	PIN	SIGNAL																			
1	+5 VDC	3	Data +																			
2	Data -	4	Ground																			
13	<p>IR/SERIAL 1 – 4</p> 	<p>(1) 8-pin 3.5mm detachable terminal block comprising four IR/Serial output ports; IR output up to 1.2 MHz; 1-way serial TTL/RS-232 (0-5 Volts) up to 115.2k baud; Individual signal generator per port, allowing simultaneous firing of all ports; Max Wire Size: 1.5 mm² (16 AWG)</p>																				

1. Interface connectors for **NET**, **IR/SERIAL**, **COM 1**, **COM 2**, **I/O** and **RELAYS** ports are provided with the unit.
2. The DIN-AP2 can only be powered via the **NET** port. Be sure to use a Crestron approved power supply as another may cause damage.

Setup

Network Wiring

When wiring the Cresnet[®] and Ethernet network, consider the following:

NOTE: DMNet wiring and Cresnet wiring are not compatible.

Use Crestron Certified Wire.

NOTE: Cresnet-HP wire cannot be used.

Use Crestron power supplies for Crestron equipment.

Provide sufficient power to the system.

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

Cresnet

For networks with 20 or more devices, use a DIN rail Cresnet Distribution Hub (DIN-HUB) to maintain signal quality.

For more details, refer to “Check Network Wiring” on page 27.

Ethernet

The DIN-AP2 can also use high-speed Ethernet for communications with other IP-based 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).

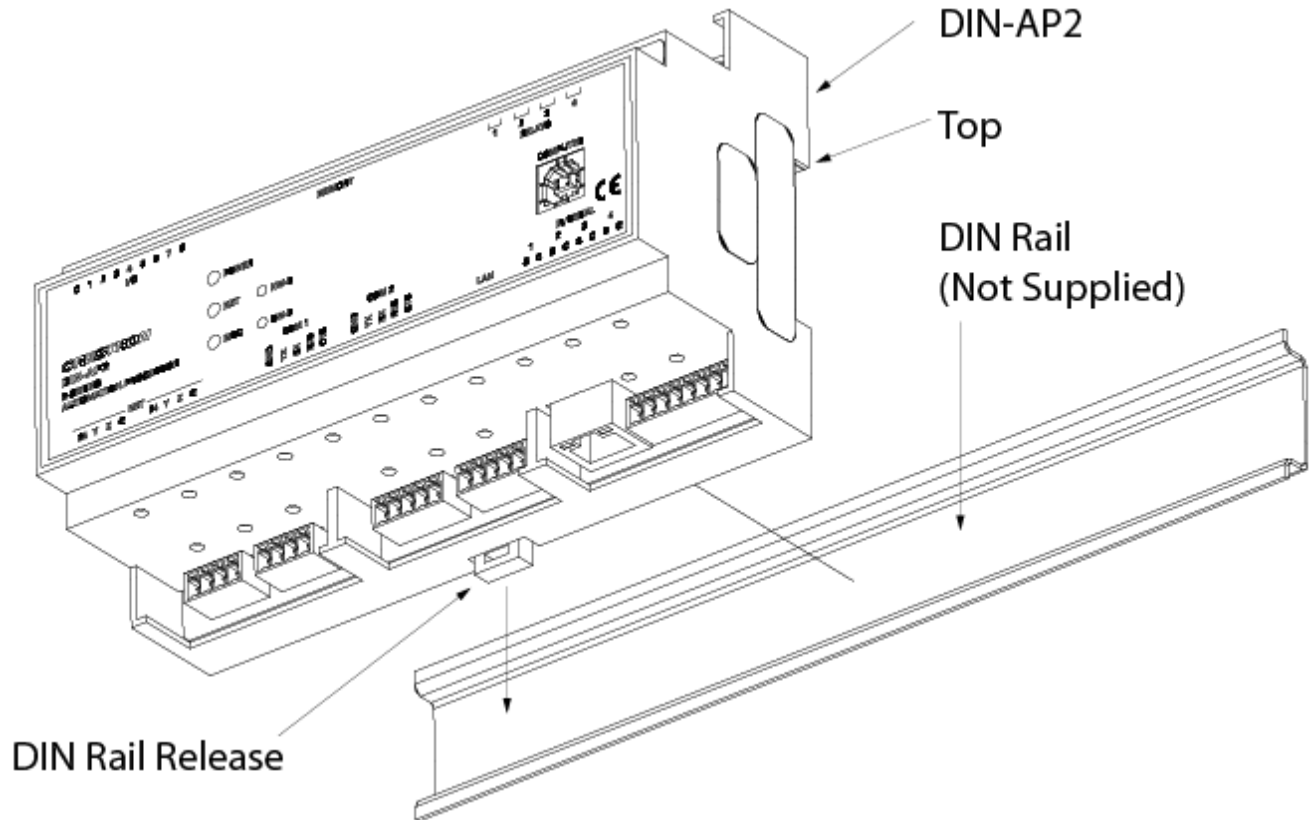
Installation

The DIN-AP2 must be installed by a licensed electrician, in accordance with all national and local codes.

CAUTION: This equipment is for indoor use only. Mount in a well ventilated area. The ambient temperature must be 0° to 40° C (32° to 104° F). The relative humidity must be 10% – 90% (non-condensing).

The DIN-AP2 is designed for installation on a DIN rail. Refer to the following diagram when installing.

Installing the DIN-AP2



1. Place the top of the DIN-AP2's rail mount over the top of the DIN rail.
2. Tilt the bottom of the DIN-AP2 toward the DIN rail until it snaps into place.

NOTE: When mounting DIN rail products, it may be necessary to use a flat-head screw driver to pull the DIN rail release tab while snapping the device onto the DIN rail.

To remove the DIN-AP2 from the DIN rail, use a small, flat object (i.e. a flat-head screwdriver) to pull the DIN rail release and tilt the bottom of the DIN-AP2 away from the DIN rail.

NOTE: Certain third party DIN cabinets provide space for an informational label between each DIN rail row. Crestron's Engraver software (version 4.0 or later) can generate appropriate labels for all Crestron DIN rail products.

Hardware Hookup

Connect the Device

Make the necessary connections as called out in the illustration on the following page. Refer to “Network Wiring” on page 12 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

WARNING: Prior to connecting the device, turn off power at the circuit breaker. Failure to do so may result in serious personal injury or damage to the device. Restore power after all connections have been made.

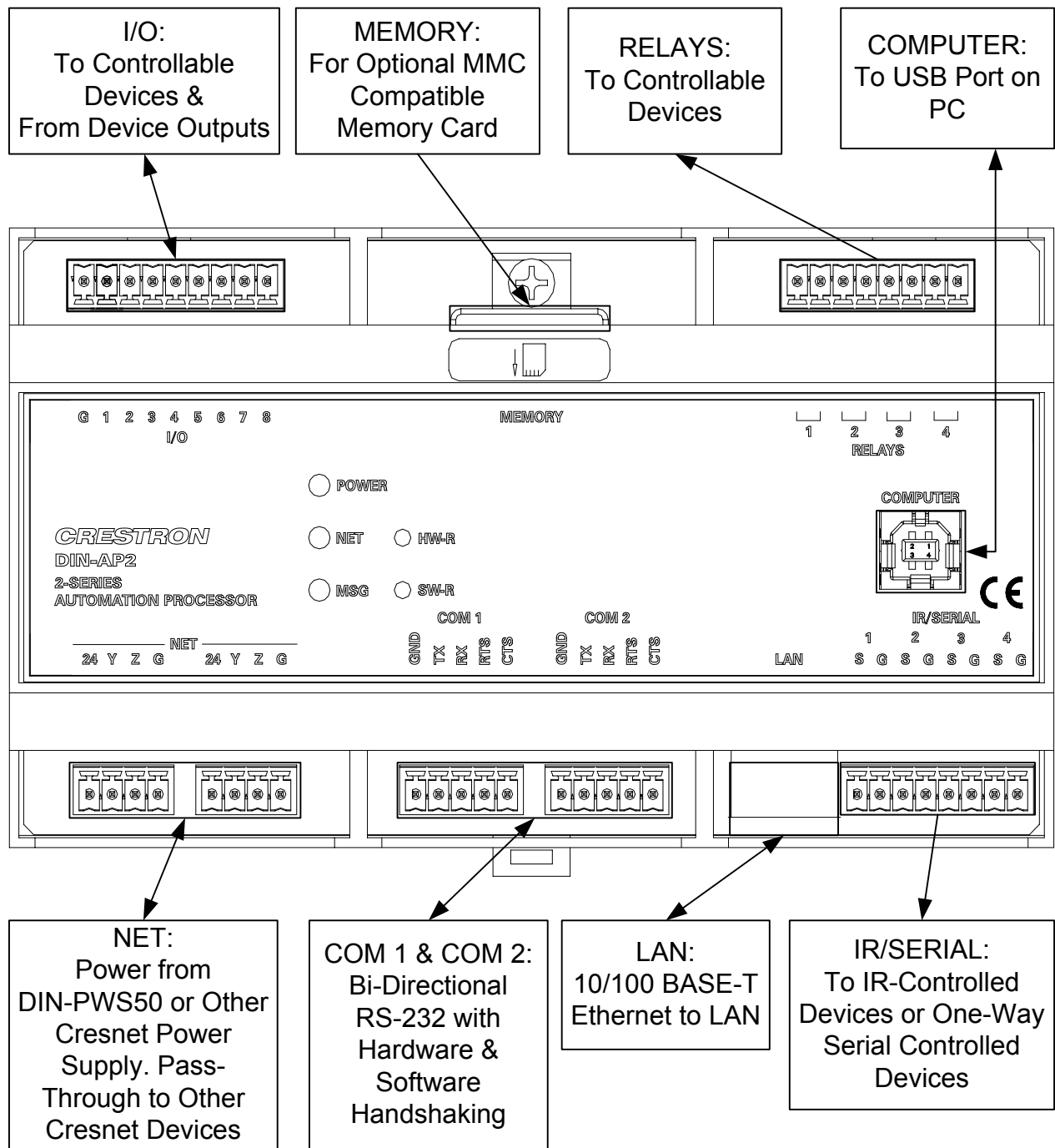
CAUTION: Connecting this device to the wrong type of load, or short-circuiting the load can cause severe product damage. Each load should be tested to identify a short circuit condition prior to wiring the load to the module.

NOTE: Install in accordance with all local and national electric codes.

NOTE: Use copper wire only.

When making connections to the DIN-AP2, use Crestron power supplies for Crestron equipment.

Hardware Connections for the DIN-AP2



NOTE: Ensure the unit is properly grounded.

Power can be supplied from a DIN-PWS50 DIN Rail Power Supply or other Cresnet power supply. For more information, refer to the latest version of the DIN-PWS50 Operations & Installation Guide (Doc. 6667), which is available for download from the Crestron Web site.

NOTE: The DIN-AP2 can only be powered by the 4-position terminal block connector labeled **NET**.

Versiport Connections

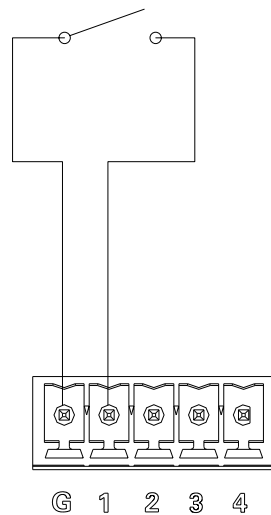
Depending on the application, the DIN-AP2's Versiports can be wired multiple ways. Refer to the following diagrams when wiring a Versiport.

WARNING: Incorrect wiring may damage the DIN-AP2 or the connected device.

NOTE: The settings for input/output and the pull-up resistor are specified in the control system program. For more information, refer to the SIMPL Windows help file.

Versiport Wiring Diagrams - Digital Input Function

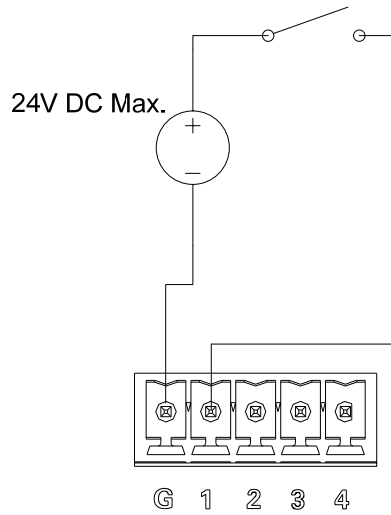
Detecting a contact closure from a switch or relay



I/O Setup:
Digital Input

Pull-up Resistor:
Enabled

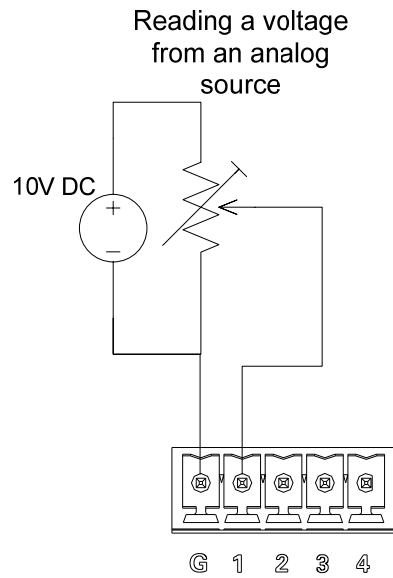
Detecting a voltage from a switch or relay



I/O Setup:
Digital Input

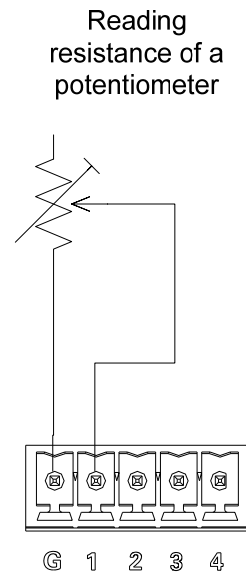
Pull-up Resistor:
Disabled

Versiport Wiring Diagrams - Analog Input Function



I/O Setup:
Analog Input

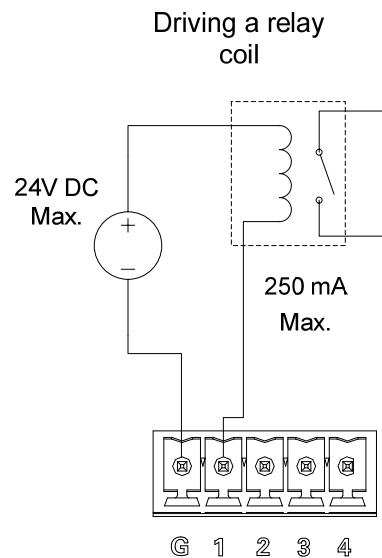
Pull-up Resistor:
Disabled



I/O Setup:
Analog Input

Pull-up Resistor:
Enabled

Versiport Wiring Diagrams - Digital Output Function



I/O Setup:
Digital Output

Pull-up Resistor:
Disabled

Programming Software

Have a question or comment about Crestron software?

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

Earliest Version Software Requirements for the PC

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

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

Crestron provides an assortment of Windows[®]-based software tools to develop a customized system. Use D3 Pro or SIMPL Windows to create a program to control the DIN-AP2. Customers whose focus is on lighting systems may prefer to use the D3 Pro software since it is designed especially for creating lighting and environmental system control applications. Customers already familiar with SIMPL Windows who are including a lighting system as part of an overall control system project may prefer to continue using SIMPL Windows.

Programming with D3 Pro

Crestron's D3 Pro lighting software provides all the tools necessary to create a complete Crestron lighting system for residential applications. The lighting system includes the control system logic program, touch screen projects and keypad programming, documentation and real-time lighting adjustment capabilities.

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

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

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the DIN-AP2, it is recommended to use D3 Pro for configuring a system.

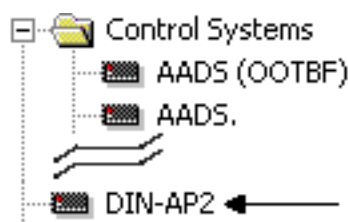
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers": Configuration and Program.

Configuration Manager

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

To incorporate the DIN-AP2 into the system, drag the DIN-AP2 from the Control Systems folder of the *Device Library* and drop it in the *System Views*.

Locating the DIN-AP2 in the Device Library



Program Manager

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

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

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.

While the next section provides an overview for communication, refer to “Establishing Communications with the Control System” in the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) 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 DIN-AP2; refer to the Crestron Toolbox help file for details. There are two methods of communication.

USB

NOTE: Required for initial setup of Ethernet parameters.

USB Communication

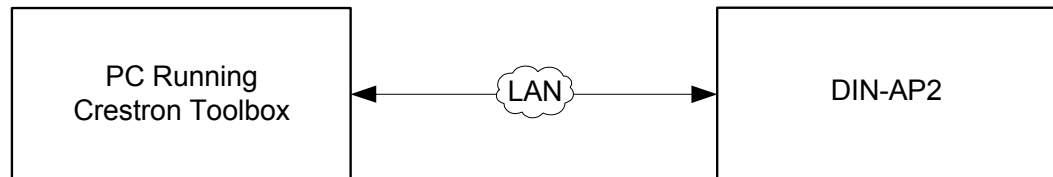


The **COMPUTER** port on the DIN-AP2 connects to the USB port on the PC via the included Type A to Type B USB cable:

1. Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the DIN-AP2 by entering “DIN-AP2” in the *Model* textbox, the unit’s serial number in the *Serial* textbox or the unit’s hostname in the *Hostname* textbox. The hostname can be found in the “System Info” window in the section

marked *Ethernet* however, communications must be established in order to see this information in the “System Info” window.

2. Display the DIN-AP2’s “System Info” window (click the **i** icon); communications are confirmed when the device information is displayed.

TCP/IP***Ethernet Communication***

The DIN-AP2 connects to PC via Ethernet:

1. Establish USB communication between DIN-AP2 and PC.
2. Display the DIN-AP2’s “System Info” window (click the **i** icon); communications are confirmed when the device information is displayed.
3. Enter the IP address, IP mask, and default router of the DIN-AP2 via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.
4. Confirm Ethernet connections between DIN-AP2 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two LAN ports directly without using a hub or router.
5. Use the Address Book in Crestron Toolbox to create an entry for the DIN-AP2 with the DIN-AP2’s TCP/IP communication parameters.
6. Display the “System Info” window (click the **i** icon) and select the DIN-AP2 entry.
7. Use Crestron Toolbox to create the DIN-AP2 IP table.
 - a. Select **Functions | IP Table Setup**.
 - b. Add, modify or delete entries in the IP table. The DIN-AP2 can have up to 252 IP table entries.
 - c. A defined IP table can be saved to a file or sent to the device.

8. When using the DIN-AP2 as a “slave”, edit the “master” control system’s IP table to include an entry for the DIN-AP2. The entry should list the DIN-AP2’s IP ID (specified on the DIN-AP2’s IP table) and its IP address.

Programs and Firmware

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

SIMPL Windows

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

Firmware

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

Upgrade DIN-AP2 firmware via Crestron Toolbox.

1. Establish communication with the DIN-AP2 and display the “System Info” window.
2. Select **Functions | Firmware...** to upgrade the DIN-AP2 firmware.


Program Checks

Actions that can be performed on the DIN-AP2 vary depending on whether it is connected via Cresnet or Ethernet.

Cresnet Connections

For Cresnet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree View**) to show all network devices connected to the control system. Right-click on the DIN-AP2 to display actions that can be performed on the DIN-AP2.

Ethernet Connections

For Ethernet connections, display the “System Info window (click the  icon) and select the **Functions** menu to display actions that can be performed on the DIN-AP2.

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.

DIN-AP2 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Unexpected response from control system.	Network devices are not communicating with the control system.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
PWR LED does not illuminate.	Control system is not receiving power.	Ensure that the Cresnet cable that supplies power is securely plugged into the NET connector.
		Verify that the power supply is able to provide sufficient power to the DIN-AP2 and all other connected Cresnet devices.

(Continued on following page)

DIN-AP2 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
MSG LED illuminates.	Hardware or software failure, hardware incompatibility with software definitions or programming error.	Verify that hardware configuration matches software configuration. Use Crestron Toolbox to display the error log. Refer to “Error Message Definitions” in the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for more details.
System locks up.	Various.	Press and release the HW-R button, then press and hold SW-R button to bypass program and communicate directly with the processor. (Refer to “Troubleshooting Communications” in the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for more details.

(Continued on following page)

DIN-AP2 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
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.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.

System Monitor

The System Monitor allows you to reload firmware into the DIN-AP2 in the event that you cannot load the firmware in the normal mode.


If the system does not function, perform the following procedure:

1. Disconnect all Crestron USB devices from the PC.
2. On the DIN-AP2, press and release the **HW-R** button. The **MSG** LED will start blinking rapidly four times per second.
3. During the rapid blink of the **MSG** LED, press and release the **SW-R** button. This will put the DIN-AP2 into *Wait* mode for the next five seconds. During this mode the **MSG** LED will blink slowly, once per second.
4. During *Wait* mode, press and release the **SW-R** button again. The DIN-AP2 will now enter the *Wait Acknowledge* mode for the next five seconds. During this mode the **MSG** LED will blink rapidly four times per second.
5. During *Wait Acknowledge* mode, press and release the **SW-R** button a third time. The DIN-AP2 will enter *Monitor* mode. Once the DIN-AP2 is in *Monitor* mode, the **MSG** LED will flash to indicate *Monitor* mode. The display will also indicate the *Monitor* mode.

6. Once the DIN-AP2 is in *Monitor* mode, connect to the PC using a USB cable.

NOTE: If at any point in the above sequence, one of the timer periods expires without the **SW-R** button being pressed, the unit will boot normally, first running the firmware, then loading the application.

NOTE: If your PC does not have the USB driver installed, after connecting the DIN-AP2 to the PC using the USB cable, you will see a dialog box on your PC screen asking you to install the USB driver. For instructions on how to install the USB driver, refer to the Crestron Toolbox help file.

7. Open Toolbox and start the Text Console (click the  icon). Then, click on the Address Book icon in the lower left corner of the window to open the “Address Book” window.
8. In the “Address Book” window, click the **Add Entry** button and give the new entry a name (e.g. “System Monitor”).
9. Click the arrow next to the *Device Type* drop down list. A “Warning” window will open to inform you that this is an advanced feature. Click **OK**, then select “2-Series Control System Monitor” from the drop down list. Make sure to choose **USB** as the *Connection Type*, then click **OK**. The following text will appear in the bottom right corner of the “Text Console” window:
`usb;device 2SeriesCtrlSystemMonitor`

The following text will appear in Toolbox:


```
MONITOR>
```

10. At the Toolbox prompt, type **erase** and press **Enter**. The following text will appear in Toolbox:

```
Erasing
```

```
->25%->50%->75%->100%
```

```
Done
```

11. Click the  icon and select **Firmware...** to open the “Firmware” window, then click **Browse**.

12. Find and select the correct firmware file (.CUZ or .zip) and click **Open**.
13. In the “Firmware” window, click **Send**. You will see a “Confirmation” window asking if you’ve selected the right file. Click **OK** and you will see the “File Transfer” window.
14. When file transfer is completed, you will see a window asking you to re-connect. Click **OK**, then close the “Firmware” window and re-connect using the normal Address Book entry.

Network Analysis

If Cresnet analysis is required, contact Crestron’s True Blue Support.

Battery Replacement

A Lithium battery is used to power the system clock within the DIN-AP2. Under normal conditions, it will last for approximately 10 years. In the event that the clock fails, only an authorized technician should replace it. Refer to caution statement below.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Check Network Wiring

Use the Right Wire

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

Calculate Power

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

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

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

Cable Length Equation

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

Where: L = Length of run (or chain) in feet
 R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM²))
 or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM²))
 P = Cresnet power usage of entire run (or chain)

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

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

Strip and Tin Wire

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

Add Hubs

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

Reference Documents

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

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
Crestron e-Control Reference Guide
DIN-PWS50 DIN Rail Power Supply

Further Inquiries

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

You can also log onto the online help section of the Crestron Web site (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the DIN-AP2, 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.

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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.

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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.

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**Operations & Installation Guide – DOC. 6662C
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10.11

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