Crestron **C2IR-8**
2-Series IR/Serial Output Expansion Card
Operations & Installation Guide

CRESTRON

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

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2-Series IR/Serial Output Expansion Card: C2IR-8

Description

Functional Description

The C2IR-8 Infrared & Serial Output Expansion Card provides eight ports for infrared (IR), ASCII, or other serial communication and control. IR output is rated up to 1.2 MHz, at data rates up to 115K. Serial protocols include RS-232. This new generation card provides consistent IR data and generates output from all eight ports simultaneously. The Crestron IRP2 Cresnet Infrared Emitter probe is designed to interface with the C2IR-8 expansion card output connectors.

NOTE: RS-232 levels provide a 0 – 5V range, which may not be compatible with all devices.

Physical Description

The C2IR-8 is a circuit board fastened to an aluminum faceplate. The card is manufactured to easily fit into an unoccupied slot in a Crestron 2-Series Control System.

NOTE: This card is compatible with 2-Series Control Systems only.

The faceplate, shown below, contains two male, 8-pin connectors; each with 4 pairs of output pins labeled S and G (signal and ground). The pin pairs are labeled A through D and E through H. Two supplied 8-position connectors can be wired and attached to the faceplate connectors.

C2IR-8 Faceplate
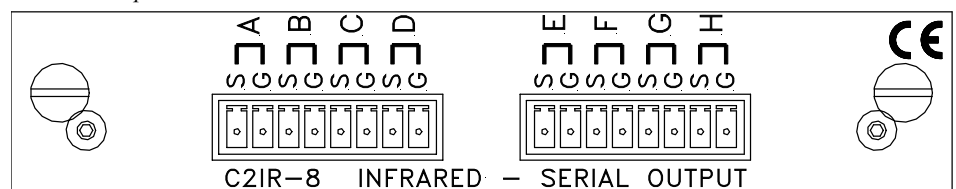
Leading Specifications

The table below provides a summary of leading specifications for the C2IR-8.

Leading Specifications of the C2IR-8

SPECIFICATION	DETAILS
Power Requirements	24 VDC, 0.125 A, 3 Watts
IR Output	Up to 1.2 MHz
RS-232 Data Rate	Up to 115K baud
Output Signal Levels	0 to 5VDC (compatible with most RS-232 input devices)
Crestron Application Builder™	Version 1.1 or later[1]
SIMPL™ Windows®	Version 2.00 or later[2]
2-Series Control System Update File[3]	Version 1.000.CUZ or later[4]
Dimensions	Height: 0.980 in (2.490 cm) Width: 5.000 in (12.700 cm) Depth: 6.77 in (17.19 cm)

1   The card is supported in the Crestron Application Builder Software, both in the Residential and Commercial versions. Contact Crestron Customer Service for licensing details.

2   The latest software versions can be obtained from the What's New page (SIMPL Windows section) or Downloads page (SIMPLWIN Library) of the Crestron website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.

3   Crestron 2-Series control systems include the AV2, AV2 with Card Cage, CP2, CP2E, PAC2, PAC2M, PRO2, and RACK2.

4   Filenames for 2-Series control system update files have a CUZ extension and can be obtained from the What's New page (Control Systems Update Files section) or Downloads page (OPSYS Library) of the Crestron website.

As of the date of manufacture, the unit has been tested and found to comply with specifications for CE marking.

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

Setup

Installation

Items required to install the C2IR-8 are already attached to the unit. The only tools required are a Phillips screwdriver and a grounding strap. Follow the assembly procedure below.

CAUTION: The C2IR-8 contains electrostatic sensitive devices (ESD); observe precautions for handling ESDs to avoid damaging the card.

NOTE: If installing the C2IR-8 into an AV2, it is assumed that CAGE2 has been installed.

1. Disconnect power from the control system.

2. Use the Phillips screwdriver to remove two screws and blank faceplate from the desired slot in the control system.

3. Align the C2IR-8 with the card guides in the open slot and slide the expansion card into position.

4. Firmly press both ends of the C2IR-8 faceplate to seat the expansion card into the control system connector.

5. Tighten the thumbscrews to secure the C2IR-8 to the control system.

6. Reapply power to the control system.

Preparation for Use

Connections are made to the eight serial outputs for IR, one-way RS-232, Control-S, or other serial interface. Each output is labeled S (signal) and G (ground). Refer to the sample hookup diagram below and, aside from reapplying power to the control system last, complete the connections in any order.

Sample Hookup Connections for C2IR-8

Earlier versions of the Cresnet Infrared Emitter probe require physical modification to be compatible with the C2IR-8. Crestron does not recommend modifying the probe assembly.
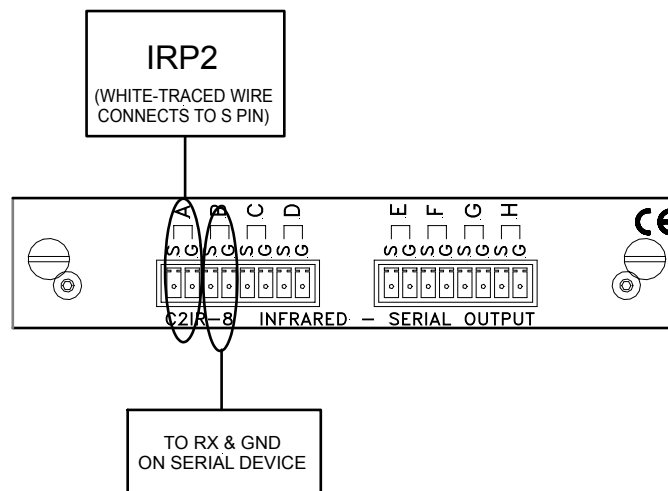
Programming

The C2IR-8 can be programmed using Crestron programming tools Crestron Application Builder™ (App Builder) and SIMPL™ Windows®. These tools are intended for users with different levels of programming knowledge. The flexibility of each tool is proportional to the degree of programming expertise (i.e., the more flexible, the more a programmer needs to know and account for). Of course, one can initiate programming using the easiest method (Crestron AppBuilder) and use advanced techniques that are available from SIMPL Windows to customize the job.

Programming with the Crestron AppBuilder

Easiest method of programming, but does not offer as much flexibility as SIMPL Windows.

The Crestron AppBuilder offers automatic programming for such residential and commercial applications as audio distribution, home theater, video conferencing, and lighting. The interface of this tool guides you through a few basic steps for designating rooms and specifying the control system, touchpanels, devices, and functionality. The Crestron AppBuilder then programs the system, including all touchpanel projects and control system logic.

The Crestron AppBuilder is fully integrated with Crestron's suite of software development tools, including SIMPL Windows, VT Pro-e, Crestron Database, User IR Database, and User Modules Directory. The Crestron AppBuilder accesses these tools behind the scenes, enabling you to easily create robust systems.

Programming with SIMPL Windows

SIMPL (Symbol Intensive Master Programming Language) is an easy-to-use programming language that is completely integrated and compatible with all Crestron system hardware. The objects that are used in SIMPL are called symbols. SIMPL Windows offers drag and drop functionality in a familiar Windows® environment.

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

The next three sections describe a C2IR-8 within SIMPL Windows. The first section provides initial configuration information, the second section identifies the C2IR-8 symbol and defines its inputs and outputs and the final section provides the location of an example program.

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

Configure C2IR-8 Program

To create a program with a C2IR-8, refer to the table after this paragraph for initial configuration information.

Configure C2IR-8 Program

DEVICE LIBRARY	SYMBOL REQUIRED	DROP WHERE	ADDITIONAL SETUP
Control Systems	Desired control system	System Views	Refer to the documentation supplied with the specific control system for additional setup information.
Plug-in Control Card	C2IR-8	System Views, Cresnet Units	CHANGE CARD SLOT (OPTIONAL) - Double-click on C2IR-8 to open the "Device Settings" window. Select the CARD SLOT tab and scroll to the desired slot location. (Alternatively, single-click then right click on C2IR-8 and select Configure to open "Device Settings" window, or simply drag to the desired location.)
User Devices (Crestron or User Database)	Desired serial devices (drivers are arranged by manufacturer or device)	System Tree (Ports A - H of C2IR-8)	Drivers for IR controlled user devices are dropped into port A through port H. The port assignment can be changed by dragging to a different location. (Alternatively, in the System Tree, single-click then right-click on the driver and select Configure to open the "Device Settings" window.)
Serial Drivers (General)	C2IR One-Way Serial Driver	System Tree (Ports A - H of C2IR-8)	COMMUNICATION PARAMETERS - In the System Tree, scroll to the desired port in the C2IR-8 and expand to display the identification of the installed driver (for example, Port E.1: C2IR One-way serial driver). Single-click on the driver, then right-click and select Configure. Select the Serial Settings tab to display the window used to set communication parameters.

SIMPL is Crestron's object-oriented programming language designated for easy implementation of the control system requirements. The objects that are used in SIMPL are called symbols.

C2IR-8 Symbol

Due to the functionality of the C2IR-8, the symbol is defined by one or more IR or serial drivers assigned to the card's ports. The diagrams in this section show the symbols associated with the ports of the C2IR-8 in SIMPL Windows.

IR Driver

The symbols associated with an IR driver vary depending on the IR devices in the system. As a sample, the illustration after this paragraph is for a system that contains a Sony DVD player (model DVD-S7000). Typical of all IR devices, it has a number of inputs to control its many functions. These inputs are driven by a user interface (i.e., touchpanel or compatible third-party transmitter).

Detail View of an IR Device Symbol in SIMPL Windows' Programming Manager
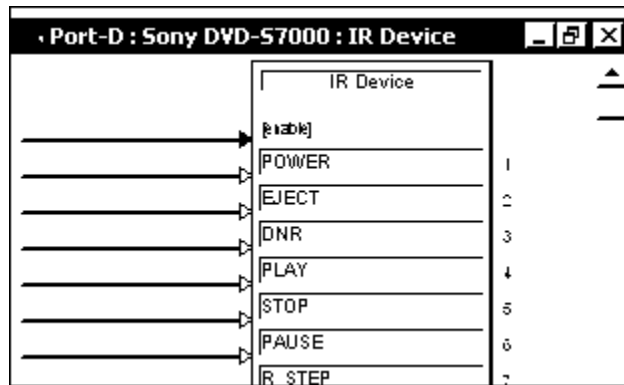
Serial Port

The symbol shown after this paragraph is only used when the card is used to communicate with a serial device. The port supports baud rates up to 115K. The tables that follow the symbol diagram list the inputs/outputs and their functional description. Input and outputs surrounded by brackets ([…]) are optional.

Detail View of the Built-in RS-232 Symbol in SIMPL Windows' Programming Manager
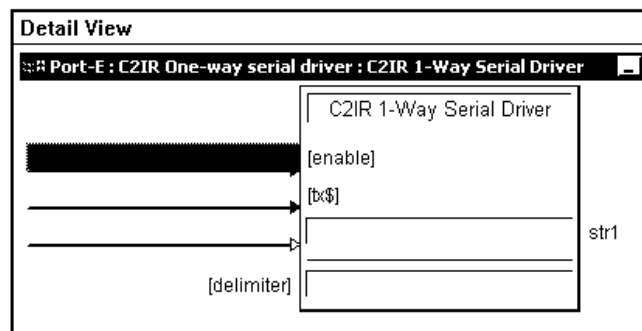
Built-in Serial Port Input Descriptions

INPUTS	FUNCTION(S)
[enable]	If a signal is present on this input, it must be high to permit activity of the symbol. If the signal is low, the symbol is disabled.
[tx$]	Variable serial string input. Any data that appears on this input will be transmitted.
str1	Fixed serial data input. When the corresponding digital input goes high, the data is transmitted.

NOTE: When present, the delimiter is appended to every string of text in the port definition.

Example Program

An example program can be obtained from the Downloads page (EXAMPLES Library) of the Crestron website (www.crestron.com). Search for C2IR-8.SMW.

Problem Solving

Troubleshooting

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

C2IR-8 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
C2IR-8 does not function.	2-Series Control System is not receiving power.	Verify power to 2-Series Control System.
	Circuit card is not properly seated in slot.	Verify C2IR-8 is properly inserted into 2-Series Control System slot per procedures in this Operations Guide.
	Programming error.	Check SIMPL Windows program.
A particular IR device does not function.	IRP2 wiring was extended and polarity was reversed.	Verify proper polarity on IRP2 wiring.
	Incorrect or missing driver for IR device.	First, install appropriate driver using SIMPL Windows.
		Second, verify functionality of driver using DEAL for Windows and CNXLIR, Crestron's Infrared/Serial Learner.
	Programming error.	Check SIMPL Windows program.

Further Inquiries

If, after reviewing this Operations Guide for the C2IR-8, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876] or 1-201-767-3400.

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

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

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

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

For local support from exclusive Crestron factory-trained personnel in New Zealand call Amber Technologies at +649-410-8382.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the C2IR-8, additional information and programming examples 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.

The Downloads page of the Crestron website (www.crestron.com) directs the reader to the location and description of each update. Check the site periodically for update availability and its subjective value.

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 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, Cresskill, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.

3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any 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 supercedes all previous warranties.

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