

Crestron **CNRFHT-15A/30A**  
Hand-Held Wireless Transmitters

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Operations Guide



**CRESTRON**

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# Hand-Held Wireless Transmitter: CNRFHT-15A/30A

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## Introduction

The CNRFHT-15A/30A is a compact, lightweight, hand-held wireless RF transmitter. Designed to operate in conjunction with the CNRFGWA 1-way RF gateway/receiver to communicate with a Cresnet control system, it is an ideal user interface to control audio, video, and lighting in a boardroom or conference room.

The hand-held transmitter is available with 15 or 30 button controls, and both configurations are also available in an international version. The –30A configuration permits full use of all 30 available buttons; the –15A configuration permits use of any 15 of the 30 available buttons (refer to “Custom Button Panel Engraving” on page 12 for details). Pressing any button on the customized 15- or 30-button panel initiates an RF signal transmission of the button’s join number to the CNRFGWA.

The hand-held transmitters are continually in a power-saving sleep mode to extend battery life. The unit activates immediately when a button is pressed; it is not necessary to hold down a button.

### *Functional Summary*

- Available in a 15- or 30-button customizable configuration
- Power-saving “sleep” mode; immediate activation upon button press
- Includes custom engraving, colored button caps, plus a choice of button configurations and panel finishes
- 1-Way RF Communication via the CNRFGWA gateway, range up to 300 feet

## Specifications

The table below provides a summary of specifications for the transmitter.

### *Specifications of the CNRFHT-15A/30A Transmitter*

SPECIFICATION	DETAILS
Power Requirements	(1) 9VDC alkaline battery (included)
RF Specifications	1-Way Wireless RF Transmitter, 433.92 MHz (418 MHz CNRFHT-15A/30A/UK), Range up to 300 feet <sup>1</sup>
Control System Update Files <sup>2, 3, 4</sup> 2-Series Control System Update File CEN/CN-TVAV Update File CNMSX-AV/Pro Update File CNRACKX/-DP Update File ST-CP Update File	All Versions
Default RF ID	11
Operating Temperature	50° to 113°F (10° to 45°C)
Humidity	10% to 90% RH (non-condensing)
Dimensions	Height: 6.50 in (16.5 cm) Width: 2.75 in (6.85 cm) Depth: 0.80 in (2.03 cm)
Weight (without battery)	0.25 lb (0.11 kg)

1. Requires Crestron CNRFGWA 1-Way RF Receiver, or ST-CP SmarTouch Control Processor.
2. The latest versions can be obtained from the Downloads | Software Updates section of the Crestron website ([www.crestron.com](http://www.crestron.com)). Refer to NOTE after last footnote.
3. Crestron 2-Series control systems include the AV2, CP2, MP2, PAC2, PRO2, and RACK2.
4. CNX update files are required for either CNMSX-AV/Pro or CNRACKX/-DP. Filenames for CNX update files have a UPZ extension and ST-CP files are in one EXE or zipped UPZ file. To avoid program problems, make certain you are using the update file with the correct suffix letter (e.g., S, V, W, X).

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

## Physical Description

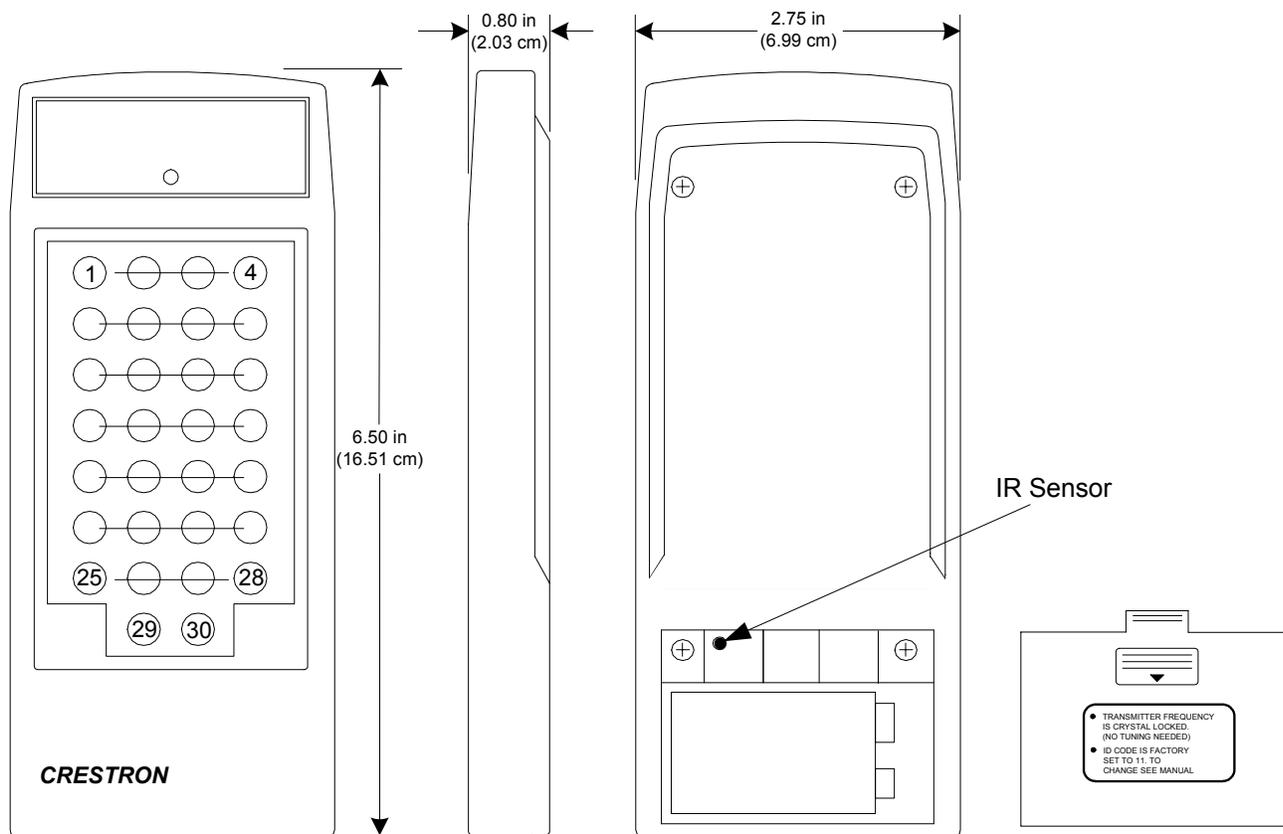
The CNRFHT-15A/30A electronic hardware is housed in a slim, high-impact molded ABS black plastic enclosure. Refer to the figure on the next page. A customized button panel covers a 30-button array on the printed circuit board. All button panels include custom engraving, colored button caps, choice of button configurations, and panel finishes. Small and large button caps are available. A small button cap covers one button. A large button cap covers two buttons, either horizontally or vertically. Refer to “Custom Button Panel Engraving” on page 12 , for more information on designing custom button panels.

**NOTE:** Crestron does not recommend designing large button caps for single functions. Pressing the center of a large button cap can cause the unit to transmit incorrectly which may result in the control system misinterpreting the user's intent. Therefore, design large button caps for dual functions, such as a volume up/volume down rocker-type button.

A red Transmit LED is located above the button panel cover. The battery compartment on the rear of the unit holds one standard 9VDC alkaline battery.

*CNRFHT-30A Transmitter with Customized 30 Button Panel*



*CNRFHT-15A/30A Physical Views*

**Front View**  
(Customized button panel removed to show button array.)

**Rear View**  
(Cover removed to show battery.)

**Battery Cover**

### Controls

Button controls are custom designed. The hand-held transmitters are available with 15 to 30 functional buttons. (Both units have 30 buttons: for the -15A unit you can select up to 15 of the buttons for system functions; for the -30A unit you can use all the buttons for system functions.) In the illustration above, the button join number arrangement is shown for reference. Function definition for each button is determined by application of the unit within the Cresnet system. The customized button controls correspond to signal names that are defined in the SIMPL™ Windows® program.

### Indicators

The only indicator located on the hand-held transmitters is a red LED on the face of the unit, above the button panel cover. The LED indicates RF transmission and illuminates when a button is pressed.

## Industry Compliance

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



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**NOTE:** This device complies with part 15 of the FCC rules. Operation is subject to the following two 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.

**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. The 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.
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## Setup

### Applying Power

Power for the transmitter is provided by a 9VDC alkaline battery (supplied) installed in the rear of the unit.

### RF ID

Every CNRFHT-15A/30A transmitter communicating with a Cresnet control system via an ST-CP or CNRFGWA requires a unique RF ID to secure RF communications. The unit default RF ID is 11. The RF ID of the unit and the RF ID specified for it in the SIMPL Windows program must match. There are 255 possible two-digit hexadecimal alphanumeric codes ranging from 01 to FF.

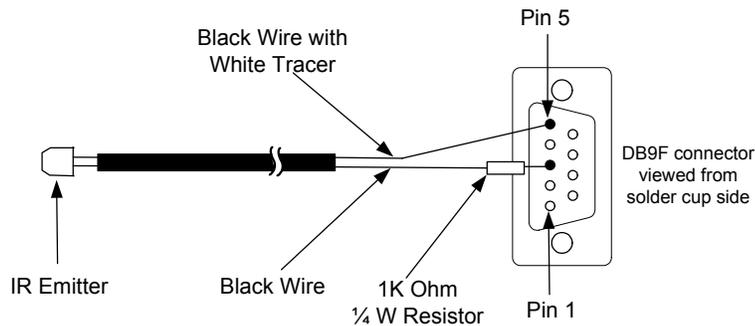
There are two possible methods to change the RF ID: one using Viewport and a programming cable; the other using the panel buttons themselves to enter the binary equivalent of the RF ID code.

### Viewport Method

To set an RF ID code through Viewport, the following items are required:

- PC running any version of Crestron's Viewport utility.
- CNIDC - Identity Code Cable or equivalent. (The following drawing shows the wiring for an equivalent IR programming cable.)

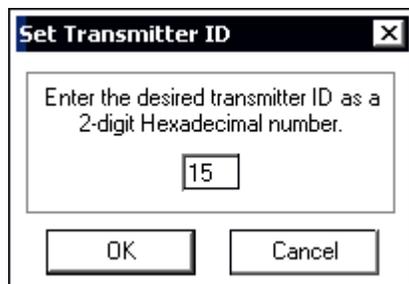
#### IR Programming Cable Wiring



Use the following procedures to enter an RF ID into the transmitter.

1. Remove the transmitter's battery cover.
2. Secure the IR Emitter of the IR programming cable to the IR sensor in the battery compartment. (Refer to the CNRFHT-15A/30A Physical Views drawing on page 4.)
3. Connect the IR programming cable's DB9F connector to the appropriate COM port on the PC (typically COM-1).
4. Verify that Viewport communication is set for RS232, and from the Viewport menu, select **Function | Set Transmitter ID** to open the "Set transmitter ID" window.

#### "Set Transmitter ID" Window



5. Enter the desired RF ID number and press **OK**. Viewport displays the message:
 

"Position IR probe over sensor on transmitter. Do not remove IR probe until transmitter LED stops blinking. Click OK to begin programming the transmitter."
6. Click **OK** to begin programming. When the transmitter LED stops blinking, remove the IR probe.

### **Binary Code Method**

Changing the transmitter RF ID using binary code is a simple process. All that is needed is the unit itself, knowledge of representing an alphanumeric hex digit as a four-digit binary number, and the method for entering the representative binary code into the transmitter. The table following these procedures provides the binary code for each single alphanumeric digit.

To enter binary code into the transmitter, do the following:

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**NOTE:** Hold the transmitter carefully to prevent accidental button presses while disconnecting and reconnecting the battery.

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1. Disconnect the battery.
2. Press and hold (for about 5 seconds) any single-function button while reconnecting the battery, (this places the unit into programming mode), then release the button. This first button is seen as a binary 0.
3. Press and release any other single-function button. This second button is seen as a binary 1.
4. Before doing anything else, use these two buttons to enter the full eight-digit binary code representing the 2-digit hexadecimal number.

For example, an RF ID of 40 consists of a hexadecimal “4”, represented as 0100 in binary code, and a hexadecimal “0”, represented as 0000 in binary code. To change the RF ID to 40, you need to enter the eight-digit binary code 01000000. Use the first button to enter the 0s, and the second button to enter the 1.

**RF ID Code Conversion Table**

<b>HEX (ALPHANUMERIC DIGIT)</b>	<b>BINARY CODE</b>
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

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**NOTE:** Do not set the RF ID to “00” or “FF”; these are not supported in SIMPL Windows.

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## Programming

*Have a comment about Crestron software?*

*Direct software related suggestions and/or complaints to Crestron via email ([software@crestron.com](mailto:software@crestron.com)). Do not forward any queries to this address. Instead refer to "Further Inquiries" on page 14 for assistance.*

*The easiest method of programming, but does not offer as much flexibility as SIMPL Windows.*

The transmitter provides a wireless RF user interface to a Crestron control system.

You can create a program that allows you to set up the CNRFHT-15A/30A to operate a Crestron control system device using all versions of the Crestron programming tools Crestron Application Builder™ (AppBuilder) and SIMPL Windows. (Crestron recommends using current versions of its programming tools to take advantage of their latest features.) 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 program using the easiest method (Crestron AppBuilder) or use advanced techniques that are available from SIMPL Windows to customize the job.

### Programming with the Crestron AppBuilder

The Crestron AppBuilder offers automatic programming for such residential and commercial applications as audio distribution, home theater, video conferencing, and lighting. The Crestron AppBuilder 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 CNRFHT-15A/30A transmitter is one of the user interfaces that you may choose within AppBuilder.

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®

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

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

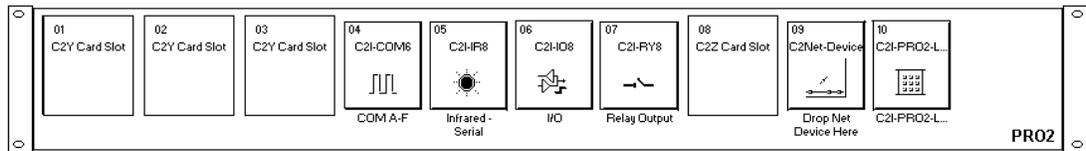
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SIMPL Windows is Crestron's software for programming Crestron control systems. It provides a well-designed graphical environment with a number of workspaces (i.e., windows) in which a programmer can select, configure, program, test, and monitor a Crestron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

This section describes a sample SIMPL Windows program that includes a transmitter

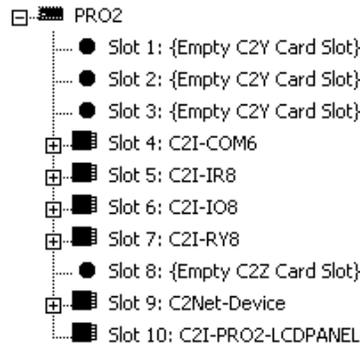
Configuration Manager is where programmers "build" a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated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

*PRO2 System View*



The *System Views* lower pane displays the PRO2 system tree. This tree can be expanded to display and configure the communications ports.

*Expanded PRO2 System Tree*



**C2Net-Device Slot in Configuration Manager**

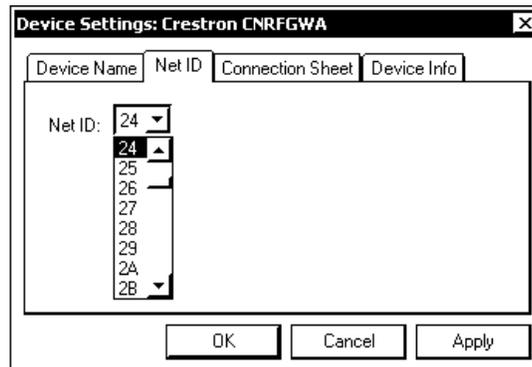
A gateway device is required to incorporate a wireless RF transmitter into a Cresnet system. Once a gateway is configured in a C2Net-Device Slot, the slot allows Cresnet communication between the transmitter and the control system.

In Configuration Manager, drag the CNRFGWA gateway from the Wireless Receivers (RF) folder of the *Device Library*. The *System Views* upper pane displays the CNRFGWA device icon below the PRO2 graphic. The PRO2 system tree displays the CNRFGWA gateway in Slot 9, with a default NET ID of 24.

**NOTE:** An ST-CP control processor is automatically configured with a CNRFGWA in its STCP-Net Device Slot 3, with a fixed NET ID of 2, when the ST-CP is dragged into the upper pane of *System Views*. This NET ID cannot be changed.

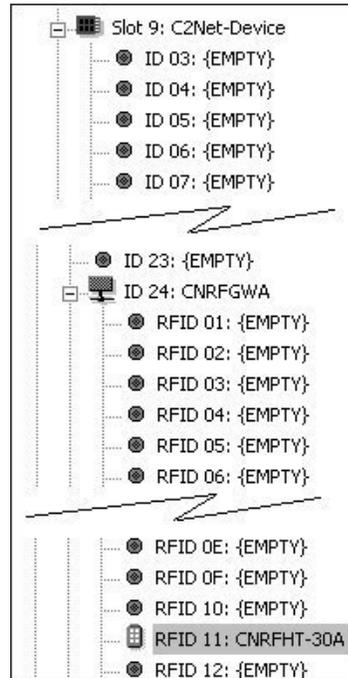
Double-click the CNRFGWA icon in the upper pane to open the “Device Settings” window. This window displays CNRFGWA device information. Select the Net ID tab to change the gateway Net ID, as shown in the following figure.

*“Device Settings” Window for the CNRFGWA*



Drag the CNRFHT-15A or -30A from the Wireless Remotes | Wireless Remotes (RF) folder of the *Device Library* and drop it on the CNRFGWA symbol in *System Views*. The CNRFGWA displays the transmitter at the transmitter's default RF ID location, "11," as shown in the following illustration.

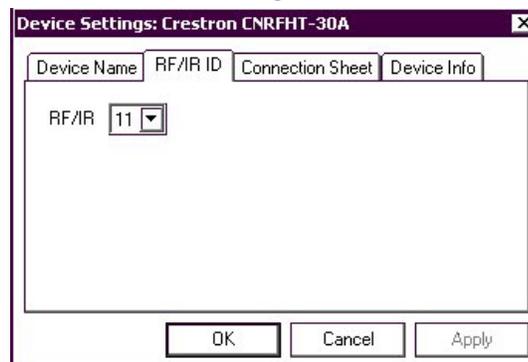
**C2Net Device, Slot 9**



Expand the system tree in the lower pane and double-click the CNRFHT-30A icon to open the "Device Settings" window for the transmitter. Select the RF/IR ID tab to change the transmitter RF ID, as shown in the following figure.

**NOTE:** The hardware settings, which were described in "RF ID" on page 5, and the software settings of the RF ID must match.

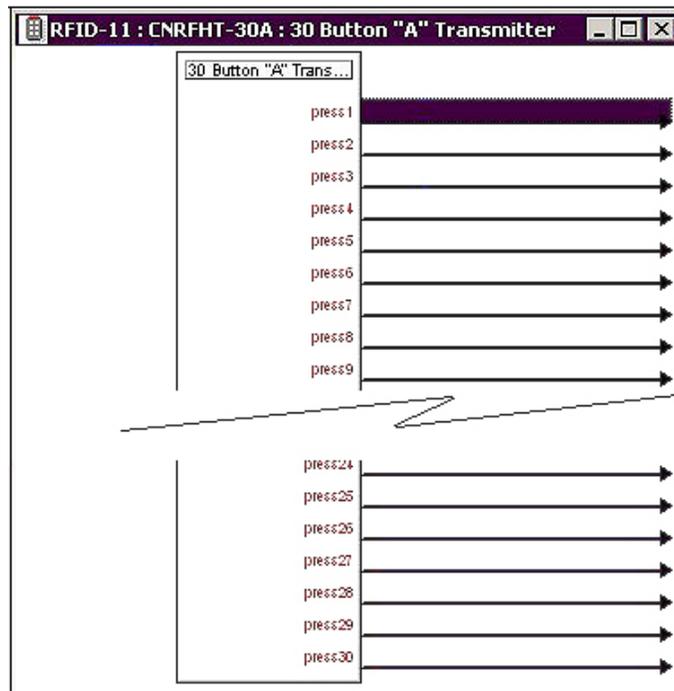
**Transmitter "Device Settings" Window**



**CNRFHT-15A/30A Symbol in Programming Manager**

Programming Manager is where programmers “program” a Creston control system by assigning signals to symbols. The following diagram shows the CNRFHT-15A/30A symbol in the SIMPL Windows’ Programming Manager.

*Detail View of the CNRFHT-15A/30A in SIMPL Windows’ Programming Manager*




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**NOTE:** When programming a 15A unit, be sure to use the appropriate buttons/joins that correspond to the button panel design.

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The following table gives functional descriptions for the transmitter outputs.

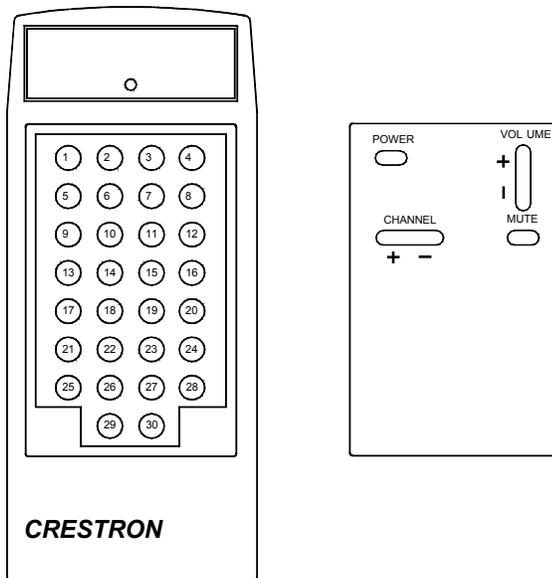
*Symbol Output Signal Descriptions*

OUTPUT	DESCRIPTION
press 1 through press 30*	Notifies control system of button press (1 – 30). High/1 = Button being pressed Low/0 = Button not being pressed

\*Symbols for CNRFHT-15A and -30A are the same. For the CNRFHT-15A, you can assign signals to any 15 of the 30 possible outputs.

## Custom Button Panel Engraving

The following figure shows the transmitter button layout, the corresponding fixed numbering for the buttons, and an example custom engraved button panel.



By comparing the example button panel (shown with the button join numbers) to the button layout, it is seen that button 1 is used for POWER, buttons 4 and 8 are used for VOLUME, buttons 9 and 10 (are used for CHANNEL, and button 12 is used for MUTE.

Use the Engraving Software package, Version 1.1.1.6 or later, available from the Downloads | Software Updates section of the Crestron website ([www.crestron.com](http://www.crestron.com)) to design a unique button panel.

The Help file included with the software package provides detailed step-by-step instructions for selecting the buttons and their color, entering the legends, and selecting the color of the button panel, and allows you to print the design just as it appears on the screen (except for the panel color, which for clarity is always printed white).

Once the design is complete, the software package provides an easy link to submit the design to Crestron for processing and engraving. Omission of unused buttons is standard.

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**NOTE:** Recall that for the CNRFHT-15A transmitter, you may select up to 15 of the 30 buttons; for the CNRFHT-30A, you may select all 30 buttons.

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## Problem Solving

### Troubleshooting

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

#### *CNRFHT-15A/30A Troubleshooting*

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
LED on unit does not illuminate.	No battery in unit or battery is dead.	Install new battery.
Intermittent response during transmission.	Battery is low or connection is faulty.	Verify battery connection. If necessary, install new battery.
	CNRFHWA is in vicinity of metal.	Verify that large amount of metal is not blocking transmission.
No response from Cresnet system.	Refer to causes when LED does not illuminate and intermittent response during transmission occurs.	Refer to corrective action when LED does not illuminate and intermittent response during transmission occurs.
	NET ID of receiver is incorrectly set.	Verify that the NET ID for the receiver and the NET ID set in the SIMPL Windows program match.
	RF ID is incorrectly set.	Verify that the RF ID for the receiver and the RF ID set in the SIMPL Windows program match.
	Program does not match hardware.	Verify correct program is loaded in system.
	Receiver is unplugged (no power).	Verify power to the receiver.
	Wrong transmitter in use.	If multiple transmitters are accessible, verify proper unit is used.
Unit no longer works following battery change.	Accidental change of RF ID during battery change.	Use "Viewport Method" on page 6 or "Binary Method" on page 7 for setting RF ID to match program.

## Further Inquiries

If after reviewing this Operations Guide you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team 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 and New Zealand, call Crestron Pacific at +613-9480-2999.

## Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the CNRFHT-15A and -30A, 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.

Check the Crestron website ([www.crestron.com](http://www.crestron.com)) periodically for manual update availability and its subjective value. Updates are available from the Downloads | Product Manuals section and are identified as an "Addendum" in the Download column.

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## 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.

#### Trademark Information

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**Operations Guide – DOC. 8092A**  
**08.02**

Specifications subject to  
change without notice.