# Crestron **CHV-TSTATRF** infiNET™ Thermostat

# Operations & Installation Guide

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

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

# Contents

# InfiNET™ Thermostat: CHV-TSTATRF

## Introduction

### Features and Functions

- Wall mount heat/cool thermostat
- For baseboard, forced air and heat pump HVAC systems
- Crestron system integration via infiNET™ wireless network
  - ⇒ 2.4 GHz infiNET mesh network technology
  - ⇒ Range up to 150 feet indoors or 250 feet outdoors (subject to site-specific conditions)
  - ⇒ Range may be increased with the use of additional infiNET devices or C2N_MNETRPT repeaters
  - ⇒ "Wi-Fi" friendly operating frequency to avoid interference
- Easy to read, backlit LCD display
- Available in white, black or almond

## *InfiNET™ Thermostat*

The CHV-TSTATRF is a wireless networked thermostat featuring infiNET wireless technology. The CHV-TSTATRF is designed to be installed easily in place of a conventional type thermostat without requiring additional control network wiring. Although it can be used as a standalone thermostat, the CHV-TSTATRF delivers enhanced functionality as part of a complete Crestron Home® automation system communicating via the infiNET wireless control network.

## *Heat/Cool Thermostat*

The CHV-TSTATRF is designed for heating and cooling control of baseboard, forced air and heat pump HVAC systems. The large backlit LCD display provides a clear view of current temperature, setpoint, system mode, fan status and setup functions. Climate control features include separate heating and cooling setpoints and adjustable anticipators to prevent overshooting the desired temperature. Continuous fan operation can be selected when needed for increased circulation.

## *InfiNET™*

Creston's groundbreaking infiNET wireless technology affords reliable 2-way communications throughout a home or office structure without the need for physical control wiring. Numerous infiNET thermostats and other devices can be linked to a control system via a single RF gateway. Employing a 2.4 GHz mesh network topology, every infiNET device functions as an RF repeater, increasing effective range and reinforcing the complete network by providing multiple redundant signal paths within the mesh network. (The CHV-TSTATRF must be powered by 24 Volt source to enable repeater functionality.)

## *Automation System Integration*

Its wireless connection to the control system allows the functions of the CHV-TSTATRF to be controlled from touchpanels, keypads, wireless remotes and computers to support unlimited flexibility for remote control, scheduling and integration with other devices and systems. However, in the event that communication with the control system is disrupted for any reason, the CHV-TSTATRF will remain operable to control the HVAC system.

## *Easy Installation*

System design, installation and upgrade using infiNET thermostats along with lighting dimmers and other devices could not be easier. Since there is no control wire required, the CHV-TSTATRF can be installed just like any conventional thermostat.

Setting up a complete network of infiNET devices is simple, utilizing dynamic discovery (self-install) to locate and acquire each RF device automatically. Setting the RF ID of each device employs the same convention as Crestron's familiar TSID method and each device is programmable using Crestron SIMPL Windows, SystemBuilder™ or D3 Pro™ software just like any wired Cresnet® device. Even firmware updates are performed over the wireless network.

No further action is required to configure the infiNET network. Each device assigned to a common gateway automatically behaves as a repeater for any other devices within range (approximately 150 feet indoors) and additional repeaters may be added if necessary. At all times, the infiNET gateway monitors each device on the network, ignoring any other 2.4 GHz signals and reconfiguring the entire network automatically in response to new sources of interference and other changes in RF conditions. (The CHV-TSTATRF must be powered by 24 Volt source to enable repeater functionality.)

## Specifications

Specifications for the CHV-TSTATRF are listed in the following table.

***CHV-TSTATRF Specifications***

| SPECIFICATION | DETAILS |
|---|---|
| Wireless | |
| RF Transceiver | Two-way RF, 2.4 GHz ISM Channels 11-26 (2400 to 2483.6 MHz), IEEE 802.15.4 compliant |
| RF Output Power | 10 mW |
| Range (typical) | 150 feet indoor, 250 feet outdoor, subject to site-specific conditions; range is increased by adding additional devices or C2N-MNETRPT repeater; C2N-MNETGW gateway/transceiver required (sold separately) |
| Display | Backlit LCD with two large seven-segment digits, two small seven-segment digits, 14 dedicated symbols; Displays ambient temperature, setpoint, system mode, fan setting, call activity, low battery, RF or control system communication errors, firmware download progress, setup parameter/function and value |
| Measurement Range | |
| Ambient Temperature | -10º to 110ºF (-23º to 43ºC) |
| Display Limits | -9º to 99ºF (-9º to 43ºC) |
| Setpoint Range | |
| Heat only setpoint | 38º to 89ºF (3º to 32ºC) |
| Cool only setpoint | 59º to 99ºF (15º to 37ºC) or 38º to 99ºF (3º to 37ºC) extended cool mode enabled |
| Environmental | |
| Temperature | -10º to 110ºF (-23º to 43ºC) |
| Humidity | 10% to 90% RH (non-condensing) |
| Power Requirements | 0.24 Watts (10 mA @ 24 Volts DC) supplied by heating or cooling system |
| Battery | Two AA batteries required (included) estimated one year normal operation |
| Default MNET ID[1] | 01 |
| Minimum 2-Series Control System Update File[2, 3] | Version 3.137 or later |
| Housing | Injection molded plastic, surface-mountable to the front of a horizontally oriented single-gang electrical box. |
| Dimensions | |
| Height | 4.50 in (11.43 cm) |
| Width | 5.53 in (14.05 cm) |
| Depth | 1.03 in (2.60 cm) |

***(Continued on following page)***

***CHV-TSTATRF Specifications (Continued)***

| SPECIFICATION | DETAILS |
|---|---|
| Weight | 6.7 oz (189.9 g) |
| Available Accessories | |
| C2N-MNETGW | InfiNET Gateway/Transceiver |
| C2N-MNETRPT | InfiNET Repeater |

1. Requires setup with Crestron Toolbox™.
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

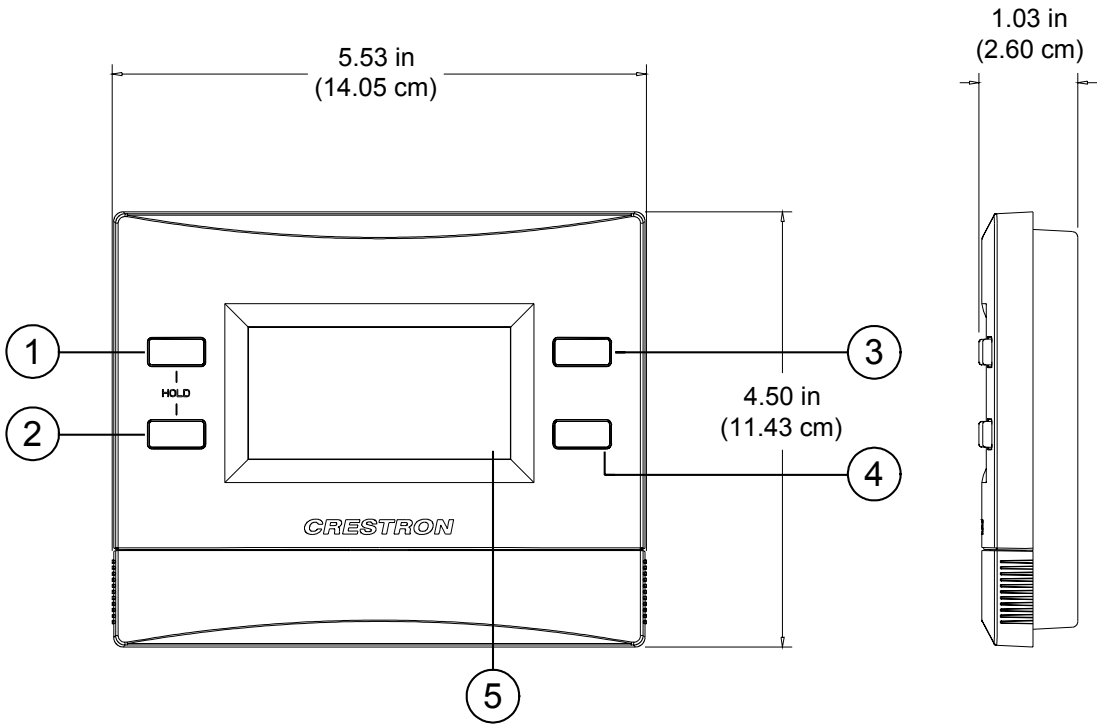
**NOTE:** Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

## Physical Description

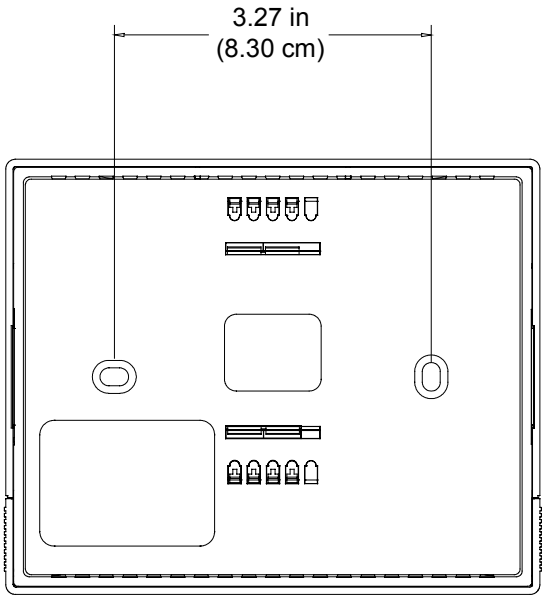
This section provides information on the connections, controls and indicators available on your CHV-TSTATRF.

***CHV-TSTATRF Physical View***

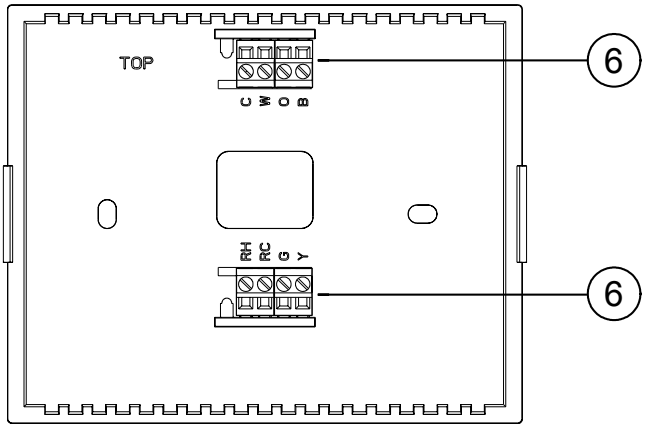
*CHV-TSTATRF Overall Dimensions (Front and Side Views)*




*CHV-TSTATRF Overall Dimensions (Rear View)*



***CHV-TSTATRF (Connection View, front the front with cover removed)***




***Connectors, Controls & Indicators***

| # | CONNECTORS, CONTROLS & INDICATORS | DESCRIPTION |
|---|---|---|
| 1 | MODE BUTTON* | Cycles through available System Modes: OFF, HEAT, AUX HEAT ONLY (for heat pump or dual-fuel systems only) and COOL. |
| 2 | FAN BUTTON[2] | Toggles fan setting between FAN AUTO and FAN ON. |
| 3 | RAISE BUTTON | Raises the setpoint. |
| 4 | LOWER BUTTON | Lowers the setpoint. |
| 5 | LCD DISPLAY | Displays ambient temperature, setpoint, system mode, fan setting, call activity, low battery, RF or control system communication errors, firmware download progress, setup parameter/function and value. |
| 6 | HVAC | (4) Two-position terminal blocks.<br>**C**: 24 VAC common terminal supplies remote power to thermostat<br>**W**: Heat – Energized to RH during a call for heat in heat/cool systems or aux heat in heat pump systems<br>**O**: Changeover control – Energized to RC during cooling modes<br>**B**: Energized to RC during heating modes<br>**RH**: Reverence Heat – Used for calls to heating system<br>**RC**: Reference Cool – Used for calls to cooling system<br>**G**: Fan – Energized to RC during call for fan<br>**Y**: Compressor: - Energized to RC when compressor is run |

* Pressing **MODE** and **FAN** buttons simultaneously enters/exits HOLD mode. Holding the **FAN** button, then pressing the **RAISE** and **LOWER** buttons simultaneously for five seconds enters SETUP mode; pressing mode button advances to next setup parameter/function; pressing **RAISE** or **LOWER** adjusts value of current setup parameter or executes current setup function; pressing **FAN** button exits SETUP mode.

## Industry Compliance

**FCC ID: EROCWD1013**

**Compliance Statement (Part 15.19)**
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.

**Warning (Part 15.21)**
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC Interference Statement**
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 of the following measures:

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

**FCC Statement**
To comply with FCC's RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**Industry Canada Statement**
The term "IC" before the certification/registration number only signifies that the Industry Canada technical specifications were met
IC: 5683A-CWD1013

**Section 7.1.5 of RSS-GEN**
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.

# Setup

## Identity Code

The MNET ID of the CHV-TSTATRF has been factory set to **01**. After an infiNET device is added to an infiNET network, its MNET ID must be changed to a value that can be addressed by the control system program (03 to 20). The MNET IDs of multiple CHV-TSTATRF devices in the same system must be unique. MNET IDs are changed from a personal computer (PC) via the Crestron Toolbox™. They can also be changed using the Setup Parameter ability of the CHV-TSTATRF (refer to "Setup Mode" on page 18). When setting the MNET ID, consider the following:

- The MNET ID of each unit must match an ID code specified in the SIMPL Windows or D3 Pro™/SystemBuilder™ program.
- Each network device must have a unique MNET ID.

For more details, refer to the Crestron Toolbox help file.

## Installation

The location of the thermostat can affect its performance and efficiency. Install the thermostat away from direct sunlight, drafts, doorways, skylights and windows. Also make sure the thermostat is conveniently located for programming and do not mount on an exterior wall.

Thermostats are mounted 60 inches (152.4 cm) above the finished floor (HVAC industry standard).

The following tools/hardware are required for installation.

- Standard single-gang electrical box, mounted horizontally (not supplied)
- Phillips screwdriver (not supplied)
- Two 1-inch pan head Phillips screws (supplied)

After the wiring has been installed and verified, use the following procedure to install the CHV-TSTATRF in a standard, single-gang electrical box (refer to illustration on the following page):

1. Separate thermostat front plate from back plate (you may need to exert force when removing the faceplate).
2. Turn system power **OFF**.
3. Connect cabling to the CHV-TSTATRF's HVAC connectors (refer to illustrations on pages 9 and 10) and the other end to the control system.
4. Make sure unit is correctly oriented and place it in the electrical box.

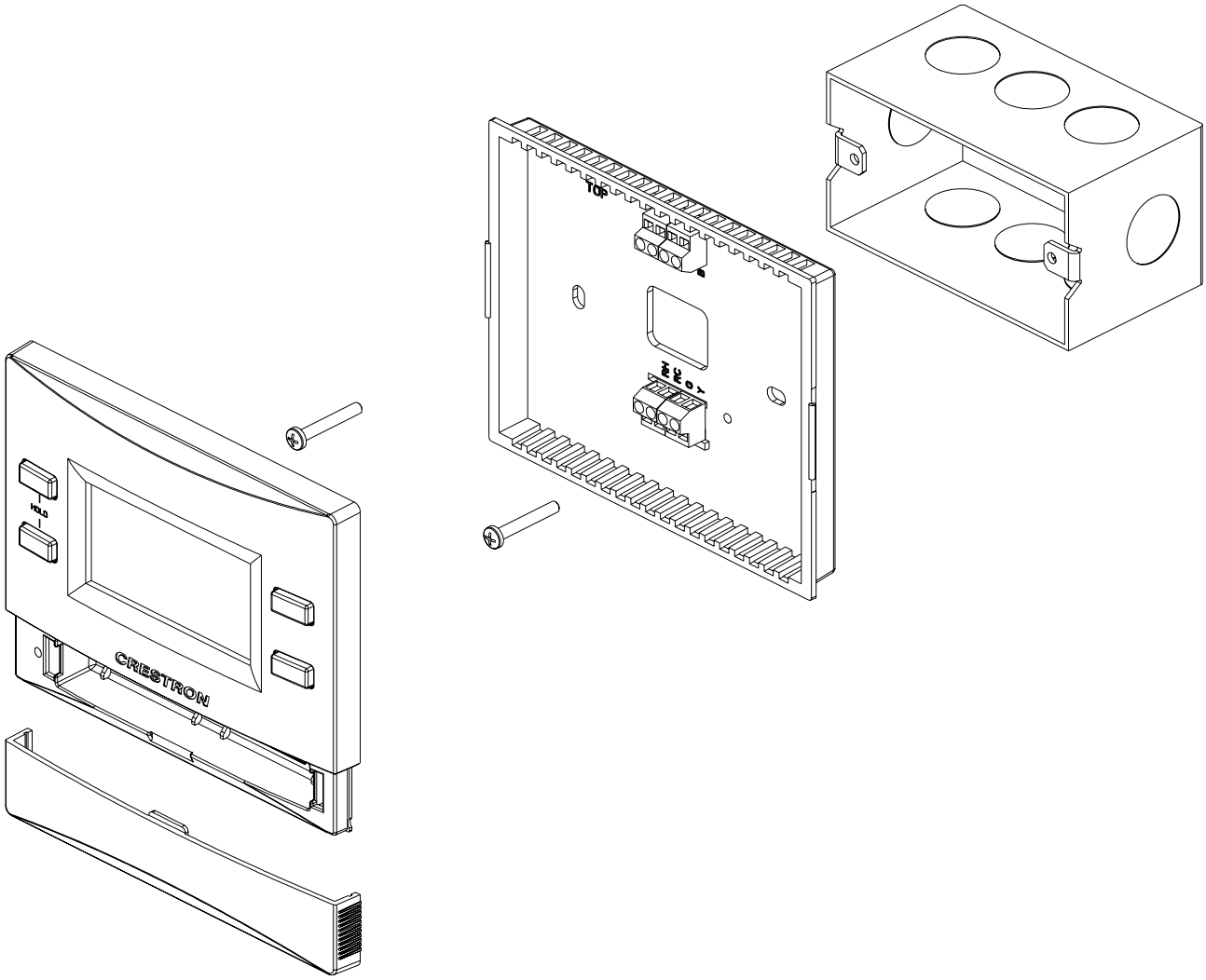
**CAUTION:** Excess wire that is pinched between the CHV-TSTATRF and electrical box could short out. Make sure that all excess wire is completely inside the electrical box and not between the box and the CHV-TSTATRF.

5. Attach the CHV-TSTATRF back plate to the electrical box using the supplied two 1-in. pan head screws.
6. Attach faceplate.

7. Insert batteries (included).
8. Turn system power **ON**.

**NOTE:** Installers should have a strong working knowledge of HVAC systems.

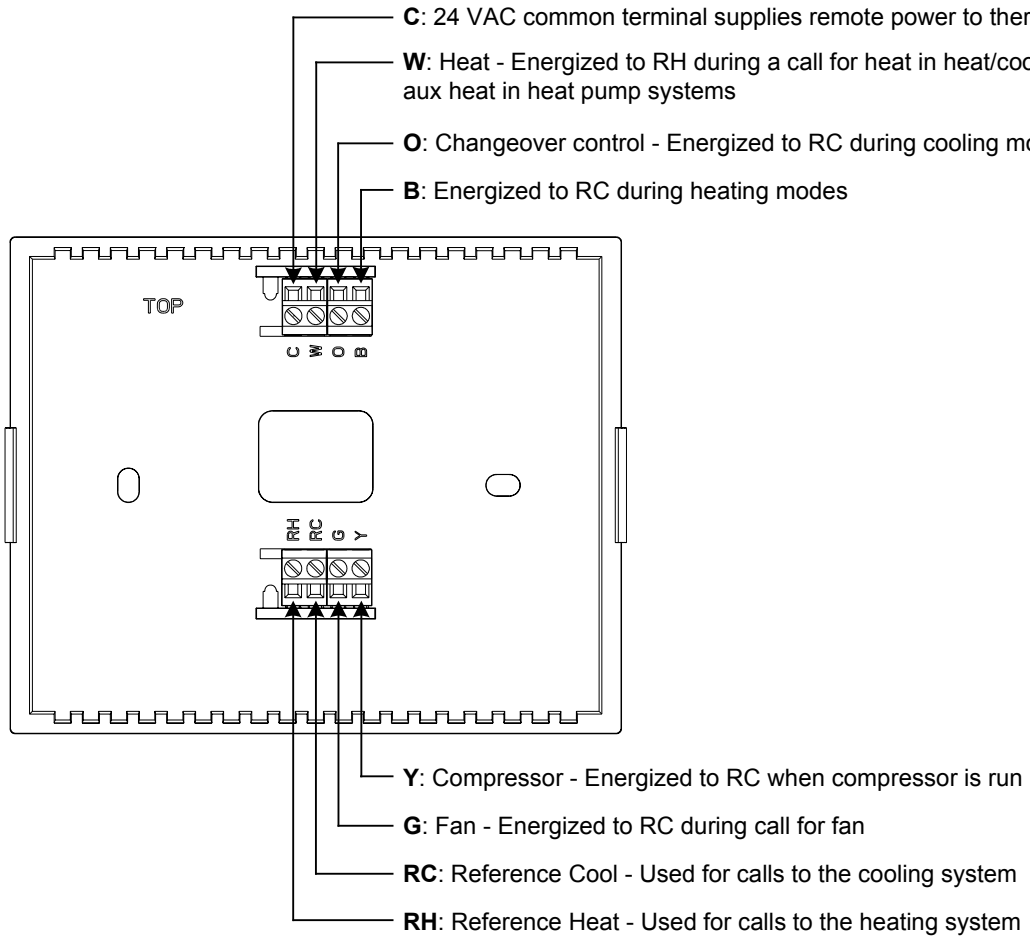
***Installation view***



## Hardware Hookup

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

***Hardware Connections for the CHV-TSTATRF***




## Setup Procedure

### *Acquiring the CHV-TSTATRF on the infiNET Network*

Before an infiNET device can be used on an infiNET network, it must first be acquired by a C2N-MNETGW gateway that is connected to a Cresnet network.

**NOTE:** A dimmer can be acquired by only one gateway.

To acquire a CHV-TSTATRF by a C2N-MNETGW, perform the following:

1. Put the C2N-MNETGW in the *ACQUIRE* mode, from the unit itself or from Toolbox, as described in the latest revision of the C2N-MNETGW guide (Doc. 6317).

**NOTE:** In environments where multiple gateways are installed, only one gateway should be in *ACQUIRE* mode at a time.

2. Place the CHV-TSTATRF in the *SETUP* mode by doing the following:
    a. Press and hold the **FAN** button.
    b. While the **FAN** button is being held, press and hold the **RAISE** and **LOWER** buttons simultaneously.
    c. Hold all three buttons for five seconds, after which the unit will enter *SETUP* mode.
3. Once in *SETUP* mode, the display will indicate the currently selected "Setup Parameter/Function". Press and release the **MODE** button quickly (must be released within one second) to change to the next Parameter/Function in the list. When "Ac" is displayed, the CHV-TSTAT is ready to start an infiNET Acquire.
4. Press either **RAISE** or **LOWER** to execute the Acquire function.
5. When the CHV-TSTATRF has established communications with an infiNET Gateway, the currently displayed mode element (flame, snowflake or "OFF") will blink two times in two seconds. This flashing will occur every eight seconds.

**NOTE:** If the CHV-TSTATRF is unable to establish communications with an infiNET Gateway, the currently displayed mode element (flame, snowflake or "OFF" will blink four times in two seconds. This flashing will occur every eight seconds.

6. Take the C2N-MNETGW out of the *ACQUIRE* mode once all devices have been acquired. Refer to the latest revision of the C2N-MNETGW guide (Doc. 6317).
7. To exit from *SETUP* mode, press the **FAN** button on the CHV-TSTATRF.

**NOTE:** While in SETUP Mode, a period of one minute with no button activity will cause the CHV-TSTATRF to revert to standard operation.

**NOTE:** While the Acquire is in progress, the unit will display a flashing "--". When the Acquire is finished, the unit will display "00".

To communicate with the control system program, an MNET ID value between 03 and 20 must be assigned to the dimmer. Refer to "Identity Code" on page 8.

### *Release Gateway Connection*

In some cases, it might be desirable to release the CHV-TSTATRF from a gateway. If a CHV-TSTATRF is to be released from a gateway, the gateway information must be cleared from the CHV-TSTATRF's memory.

To clear a CHV-TSTATRF's gateway information:

1. Place the CHV-TSTATRF in the *SETUP* mode by doing the following:
    a. Press and hold the **FAN** button.
    b. While the **FAN** button is being held, press and hold the **RAISE** and **LOWER** buttons simultaneously.
    c. Hold all three buttons for five seconds, after which the unit will enter *SETUP* mode.

2. Once in *SETUP* mode, the display will indicate the currently selected "Setup Parameter/Function". Press and release the **MODE** button quickly (must be released within one second) to change to the next Parameter/Function in the list. When "UA" is displayed, the CHV-TSTAT is ready to release the gateway.
3. Press either **RAISE** or **LOWER** to execute the gateway release function.
4. To exit from *SETUP* mode, press the **FAN** button on the CHV-TSTATRF.

**NOTE:** While the release is in progress, the unit will display a flashing "--". When the release is finished, the unit will display "00".

# 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 website. 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 website.

Crestron has developed an assortment of Windows®-based software tools to develop an infiNET system. The following are the minimum recommended software versions for the PC:

***Software***

| TASK | REQUIRED SOFTWARE VERSION |
|---|---|
| Program control system to operate CHV-TSTATRF. | SIMPL Windows version 2.06.20 or later with SIMPL+® Cross Compiler version 1.1 or later and Library update 405 or later; Also requires Crestron Database version 18.2.1 or later. |
| Upload program and firmware. | Crestron Toolbox™ 1.04 or later. |
| Program with simple wizards for systems using a CHV-TSTATRF (optional but recommended). | Crestron D3 Pro™ version 2.2 or later with D3 Pro Templates version 2.2.0 or later or SystemBuilder™ version 3.1 or later with SystemBuilder Templates version 3.1.0 or later and Library update 405 or later; Also requires Crestron Database version 18.2.1 or later. Refer to software release notes or Crestron website for other required Crestron software packages |

## Programming with Crestron D3 Pro or SystemBuilder

Crestron D3 Pro or SystemBuilder is the easiest method of programming but does not offer as much flexibility as SIMPL Windows. For additional details, download D3 Pro or SystemBuilder from the Crestron website and examine the extensive help files.

## Programming with SIMPL Windows

**NOTE:** While SIMPL Windows can be used to program the CHV-TSTATRF, it is recommended to use SystemBuilder 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".

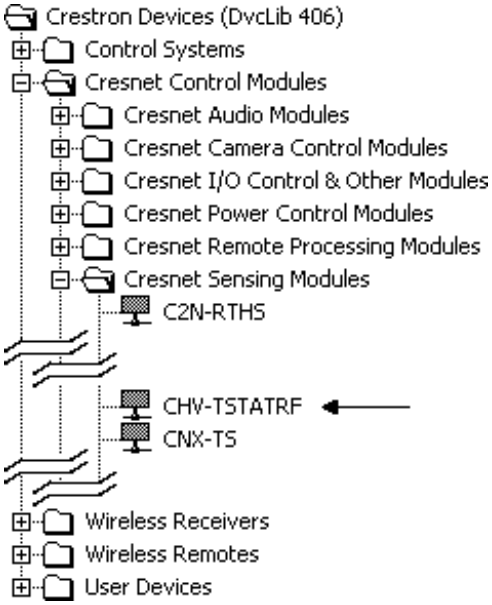
### *Configuration Manager*

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

- To incorporate the CHV-TSTATRF into the system, first drag the C2N-MNETGW (MNET Gateway) from the Wireless Receivers | Wireless Receivers (RF) folder of the *Device Library* and drop it in the *System Views.* Then drag the CHV-TSTATRF from the Cresnet Control Modules | Cresnet Sensing Modules folder of the *Device Library* and drop it on the C2N-MNETGW.

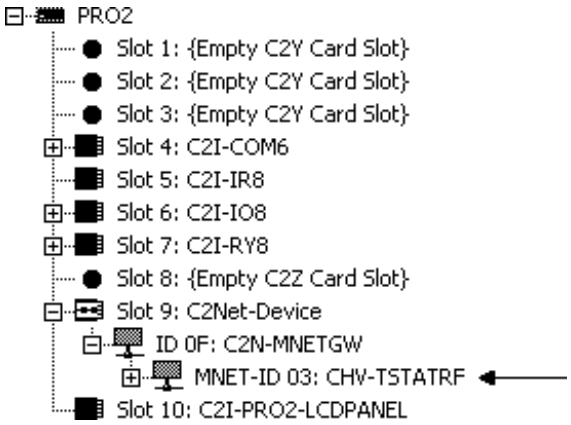
***Locating the C2N-MNETGW in the Device Library***


***Locating the CHV-TSTATRF in the Device Library***



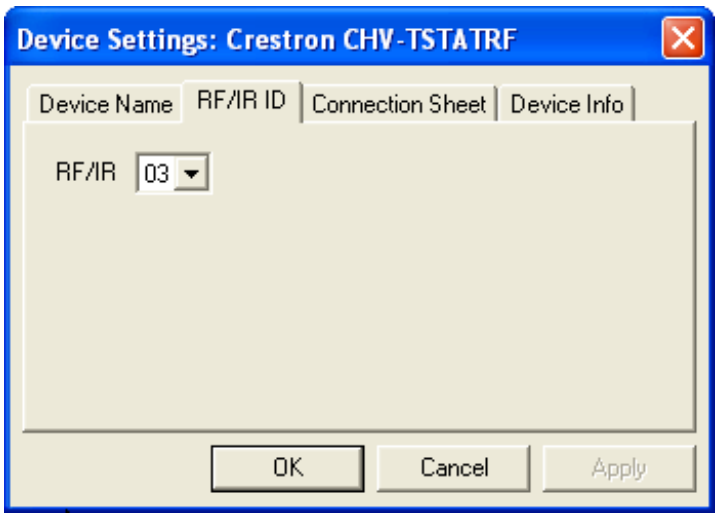

- The system tree of the control system displays the device in the appropriate slot with a default MNET ID as shown in the following illustration.

***C2Net Device, Slot 9***




- Additional CHV-TSTATRF devices are assigned different MNET ID numbers as they are added.
- If necessary, double click a device to open the "Device Settings" window and change the MNET ID, as shown in the following figure.

***"CHV-TSTATRF Device Settings" Window***




- The ID code specified in the SIMPL Windows program must match the MNET ID of each unit.

*Programming Manager*

Programming 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**).

## Example Program

An example program for the CHV-TSTATRF is available from the Crestron website (http://www.crestron.com/exampleprograms).

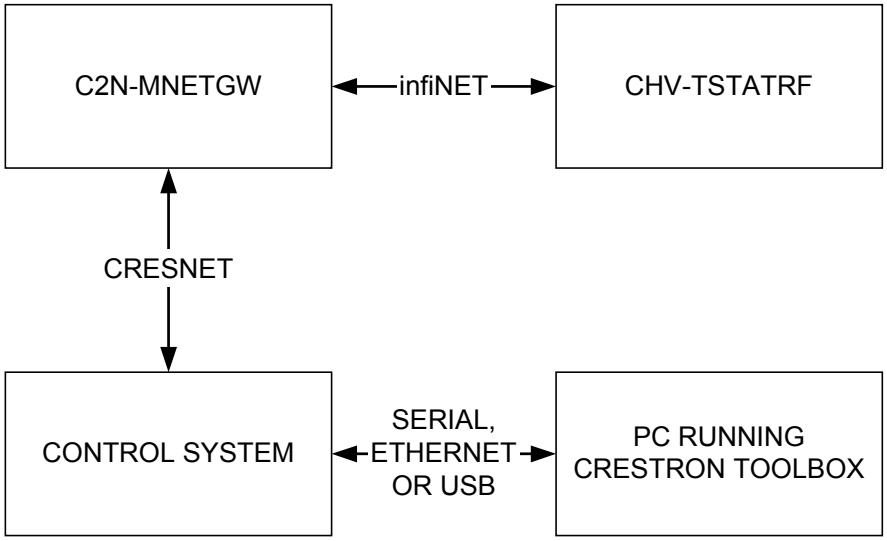
# Uploading and Upgrading

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.

## Establishing Communication

Use Crestron Toolbox for communicating with the CHV-TSTATRF; refer to the Crestron Toolbox help file for details. There is a single method of communication: indirect serial communication.

***Indirect Serial Communication***




- CHV-TSTATRF connects to the C2N-MNETGW (Gateway), which connects to the control system via Cresnet®.
- Establish communications between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256), which is available from the Crestron website (http://www.crestron.com/manuals).

## Programs and Firmware

- Display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the CHV-TSTATRF to display actions that can be performed on the CHV-TSTATRF:
  - ⇒ Upgrade firmware
  - ⇒ Change MNET ID
- Upload the SIMPL Windows file to the control system using SIMPL Windows or Crestron Toolbox.

- Upgrade CHV-TSTATRF firmware via Crestron Toolbox.

  ⇒ Establish serial communications with the CHV-TSTATRF and display the "System Info" window.

  ⇒ Select **Functions | Firmware…** to upgrade the CHV-TSTATRF firmware.

For details on uploading and upgrading, refer to the SIMPL Windows help file or the Crestron Toolbox help file.

# Operation

## Setup Mode

After the CHV-TSTATRF is installed, it is necessary to set it up for a particular heating/cooling system. The choices available on the Setup screens depend on the type of system selected.

Place the CHV-TSTATRF in the *SETUP* mode by doing the following:

1. Press and hold the **FAN** button.
2. While the **FAN** button is being held, press and hold the **RAISE** and **LOWER** buttons simultaneously.
3. Hold all three buttons for five seconds, after which the unit will enter *SETUP* mode.

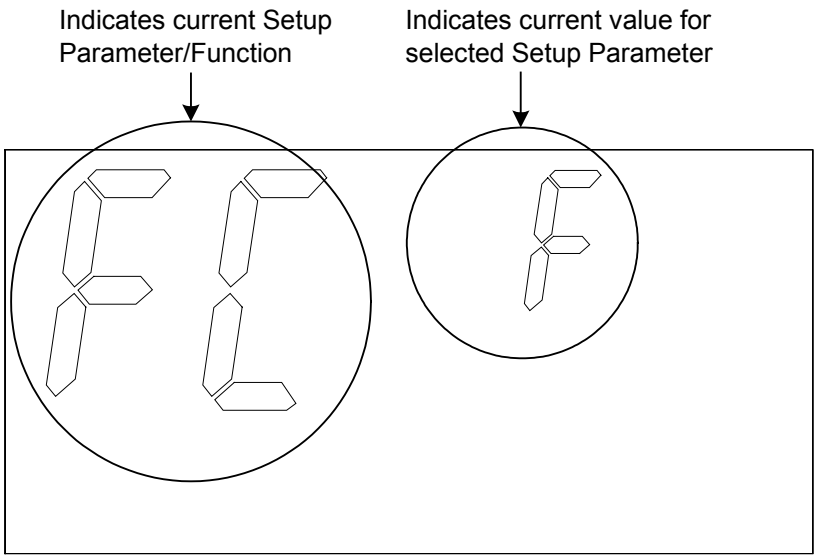
Once in *SETUP* mode, the display will indicate the currently selected "Setup Parameter/Function". Press and release the **MODE** button quickly (must be released within one second) to change to the next Parameter/Function in the list.

When setting Parameters (such as when choosing between Fahrenheit or Celsius display), pressing the **RAISE** or **LOWER** button will increment or decrement the value. Value change occurs when button is released.

When a Function is selected (such as when starting an infiNET Acquire), pressing either **RAISE** or **LOWER** will execute the function.

To exit from *SETUP* mode, press the **FAN** button on the CHV-TSTATRF.

***CHV-TSTATRF LCD Display (SETUP Mode)***




**NOTE:** When the CHV-TSTATRF is in *Setup* mode the large seven-segment displays will show the current Setup Parameter/Function. The small seven-segment displays will show the current value for the selected Setup Parameter, if applicable, or it will display "--" when a Function is selected. All other display elements will be hidden (refer to "LDC Display Operation" on page 22).

**NOTE:** While in *SETUP* Mode, a period of one minute with no button activity will cause the CHV-TSTATRF to revert to standard operation.

The following table shows the available Setup Parameter/Functions.

***SETUP Mode Parameters/Functions***

| PARAMETER/ FUNCTION | MNEMONIC | VALID VALUES | DEFAULT VALUE |
|---|---|---|---|
| Temperature Scale | FC | F or C | F |
| Half-degree Setpoint[1] | Hd | Enabled (Y) or Disabled (no) (valid for Celsius only) | Y (for Celsius only) |
| Backlight Timeout | bL | 1 – 4 seconds or disabled (--) | -- |
| Heat/Cool Type | HC | Heat/Cool (HC), Heatpump (HP), Dual-Fuel Heatpump (dF) | HC |
| Temperature Offset[2] | to | -9 to +9 (for Fahrenheit) or -5 to +5 (for Celsius) | 0 |
| Wide-range Cool Mode (Extended Cool) | EC | Enabled (Y) or Disabled (no) | no |
| Heat Anticipator[3] | HA | 1 - 6 | 3 |
| Cool Anticipator[3] | CA | 1 - 6 | 3 |
| Heatpump Balance Point (Heatpump and Dual-Fuel Heatpump systems only) | Hb | 16 to 90 (for Fahrenheit) or -9 to 32 (for Celsius) or Disabled (--) | -- |
| Aux-Heat Balance Point (Heatpump type systems only) | Ab | 16 to 90 (for Fahrenheit) or -9 to 32 (for Celsius) or Disabled (--) | -- |
| Interstage Differential (Heatpump systems only) | dF | 05 to 80 (tenths of a degree Fahrenheit, adjustable in 5 tenths degree increments or 05 to 45 (tenths of a degree Celsius, adjustable in 5 tenths degree increments | 20 (F) or 1 (C) |
| Run Fan During Heat Calls | HF | Enabled (Y) or Disabled (no) | no |
| Changeover Outputs[4] | co | Enabled (Y) or Disabled (no) | no |
| Power Source[5] | Po | 24V always available (24) or “steal power” (SP) | 24 |
| Check Firmware Version[6] | rE | Firmware version is in xxx.yy.zzzz format. “—“ can also be displayed | -- |
| infiNET ID (MNET ID)[7] | id | 01, 03 - FE | 01 |
| infiNET RF Channel | Ch | 11-26 for fixed-channel operation, “Au” for auto or “0” for disabled (battery save mode) | 26 |
| infiNET Sleep Time | SL | Short (S) or Long (L) | L |
| Start infiNET Acquire | Ac | Not started (--) In progress (flashing --) Finished, found GW (00) Finished, could not find GW (E#, where # represents an error code) | N/A |

***(Continued on following page)***

***SETUP Mode Parameters/Functions (Continued)***

| PARAMETER/ FUNCTION | MNEMONIC | VALID VALUES | DEFAULT VALUE |
|---|---|---|---|
| Unacquire Gateway | UA | Not started (--)<br>In progress (flashing --)<br>Finished, success (00)<br>Finished, failed (E#, where # represents an error code) | N/A |
| Check Battery Life | bA | Not started (--)<br>Estimated battery life remaining (0 – 99) | N/A |
| Restore Factory Defaults[8] | Fd | Not started (--)<br>In progress (flashing --)<br>Finished (00)<br>Button not held long enough (Er) | N/A |
| Perform Heat Call Test (Toggle) | H | Not started/Heat call off (--)<br>Heat call on (on) (also, "H" icon will turn on) | N/A |
| Perform Cool Call Test (Toggle) | C | Not started/Cool call off (--)<br>Cool call on (on) (also, "C" icon will turn on) | N/A |
| Perform Aux Heat Call Test (Toggle) | A | Not started/Aux call off (--)<br>Aux call on (on) (also, "A" icon will turn on) | N/A |
| Perform Fan Call Test (Toggle) | F | Not started/Fan call off (--)<br>Fan call on (on) (also, "F" icon will turn on) | N/A |
| Perform Self Test | St | Not started (--)<br>In progress (flashing --)<br>Finished, self test ok (00)<br>Finished, self test failed (E#, where # represents an error code) | N/A |

1. This setting will always be disabled when scale is set to "F".
2. The Offset option permits recalibration of the room temperature sensor. There are reasons why users may want to adjust the temperature. The selection number is the number of degrees added to or subtracted from the actual temperature. The range is –9 to +9 degrees (for Fahrenheit) and –5 to +5 degrees (for Celsius). Factory default is 0 degrees offset. This adjustment changes the actual regulated temperature, not just the display.
3. A lower anticipator setting results in more frequent cycles and faster response (tighter regulation). A higher setting results in less frequent cycling and slower response (looser regulation).
4. This parameter will always be set to Enabled (Y) for Heatpump or Dual-Fuel Heatpump systems.
5. For systems where no power is available (batteries only), value can be set to "24".
6. When firmware version is not yet shown, display will be "--". Each press of the **RAISE**/**LOWER** button will cycle to the next portion of the version number. Three digit values will be indicated by scrolling the number.
7. SIMPL Windows restricts infiNET devices to an ID range of 03-20.
8. To prevent accidentally performing this action, you must press and hold either the **RAISE** or **LOWER** button for three seconds for this function to execute.

## System Modes

The **MODE** button on the CHV-TSTATRF will cycle the unit through all available System modes in the following order: *Off*, *Heat*, *Aux Heat Only* (for heatpump and dual-fuel systems), *Cool*.

The System mode will change upon release of the **MODE** button and the selected mode will become operational three seconds after the mode has been entered.

**NOTE:** System mode will change on release of the **MODE** button only if no other button had been pressed at the same time. If another button is pressed while the **MODE** button is held down, the System mode will not change.

**NOTE:** *Aux Heat Only* mode can only be accessed when Heat/Cool Type has been set to "Heatpump" or "Dual-Fuel Heatpump".

When the System mode is set to *Heat*, the unit will make a "Heat Call" whenever the current setpoint is above the ambient temperature.

When the System mode is set to *Cool*, the unit will make a "Cool Call" whenever the current setpoint is below the ambient temperature.

The unit will make a "Fan Call" whenever the Fan setting is ON. A "Fan Call" can also occur when any of the following is true:

- The system is making a "Heat Call" and the Fan setting is AUTO, if the System Type is set to "HeatPump" or "Dual-Fuel Heatpump"
- The system is making a "Heat Call" and the Fan setting is AUTO, if the "Run Fan During Heat Calls" setting is enabled
- The system is making an "Aux Heat Call" and the Fan setting is AUTO, if the "Run Fan During Heat Calls" setting is enabled
- The system is making a "Cool Call" and the Fan setting is AUTO

The **FAN** button toggles the Fan setting between Fan AUTO and Fan ON.

**NOTE:** Fan setting will change on release of the **FAN** button only if no other button had been pressed at the same time. If another button is pressed while the **FAN** button is held down, the Fan setting will not change.

## Hold Mode

Pressing the **HOLD** and **FAN** buttons simultaneously will cause the unit to enter *Hold* mode if *Hold* mode is not yet active and the System mode is *Heat*, *Aux Heat Only* or *Cool*.

Pressing the **HOLD** and **FAN** buttons simultaneously when *Hold* mode is active will cause the unit to exit from *Hold* mode and recall either the "ScheduledHeatSetpoint" or "ScheduledCoolSetpoint" as appropriate to the System mode.

Pressing the **HOLD** and **FAN** buttons simultaneously when the System mode is *Off* will have no effect.

When *Hold* mode is active, the unit will continue to adjust the current setpoint when the **RAISE** or **LOWER** buttons are pressed. The unit will also continue to adjust the current setpoint when the Setpoint signal from the control system changes.

When the System mode changes to *Heat* or *Aux Heat Only*, the current setpoint will be set to the ScheduledHeatSetpoint.

When the System mode changes to *Cool*, the current setpoint will be set to the ScheduledCoolSetpoint.

## Setpoints

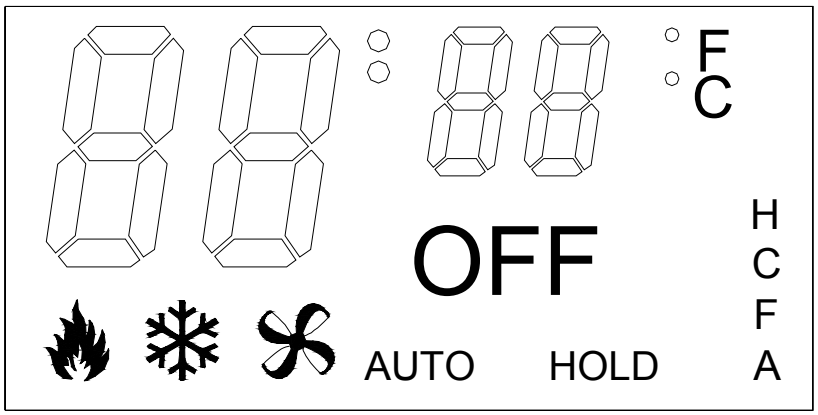
The **RAISE** and **LOWER** buttons will change the current setpoint by one degree (F or C) (if "Half Degree Setpoints" is set to false) or by one half degree (C) (when "Half Degree Setpoints" is set to true).

If the **RAISE** or **LOWER** buttons is held down for two seconds, the unit will enter an Auto-repeat mode and the setpoint will adjust rapidly until the button is released or until the upper (or lower) limit is reached. The Auto-repeat rate for setpoint

adjustment is 4 degrees per second (or 4 half degrees per second if "Half Degree Setpoints" is set to true and the Temperature Scale is set to Celsius).

## LDC Display Operation

***CHV-TSTATRF LCD Display***




The LCD display on the CHV-TSTATRF will display the current ambient temperature in degrees F or C (if the display is set to Fahrenheit or Celsius respectively), except when the display is being used for other purposes such as Setup.

The temperature display range is limited to -9º to 99ºF (-9º to 43ºC). If the ambient temperature is above 99º, the display will indicate 99º. If the ambient temperature is below -9º, the display will indicate -9º.

The display will show the current setpoint (in F or C) in whole degrees, except when the System mode is *Off* or when the display is being used for other purposes such as Setup.

While the setpoint is being adjusted, if it is set to a half-degree increment, the integer portion of the number will be displayed and will alternate with "_5" every quarter second for a period of four seconds after the last adjustment. After four seconds, only the integer portion of the number will be displayed.

The display will show the "flame" icon when the System mode is *Heat*.

When you select *Aux Heat Only* mode (by pressing and releasing the **MODE** button when System mode is *Heat*) the display will show "AU" in place of the ambient temperature for as long as the button is held down or for two seconds (whichever is greater). The display will flash the "flame" icon at a rate of on for two seconds and off for a half second when the System mode is *Aux Heat Only*.

The "snowflake" icon is displayed when the System mode is *Cool*.

The "fan" icon is displayed at all times.

The "AUTO" element is displayed whenever the Fan setting is set to AUTO.

The "OFF" element is displayed when the System mode is *Off*.

The "H" element is displayed whenever a Heat Call is being made.

The "A" element is displayed whenever an Aux Heat Call is being made.

The "C" element is displayed whenever a Cool Call is being made.

The "F" element is displayed whenever a Fan Call is being made.

The “HOLD” element is displayed whenever the HOLD setting is active.

When the CHV-TSTATRF detects a low battery condition (approximately one month of battery life remaining), the display will alternate “Lo” in place of the ambient temperature once per second.

# 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.

*CHV-TSTATRF* ***Troubleshooting***

| TROUBLE | POSSIBLE CAUSE(S) | CORRECTIVE ACTION |
|---|---|---|
| No display | No power from system | Check for +24V on **C** connector<br>Check circuit breaker powering furnace or boiler<br>Check thermostat wiring<br>Check batteries (if running on battery power) |
| | Incorrect mounting to back plate | Check thermostat mounting |
| Device does not function. | Device is not communicating with the C2N-MNETGW. | Open Crestron Toolbox and select the Network Device Tree. Expand the tree until the gateway to be managed is selected.<br>Right-click the NET ID of the selected gateway to open the sub-menu and select **Functions \| MNET Gateway**… If device is not listed, acquire the device to the infiNET network (refer to "Acquiring the CHV-TSTATRF on the infiNET Network" on page 10). |
| | MNET ID of device (or the gateway ID) is not set to match the MNET ID of the SIMPL Windows program. | Use the Network Device Tree infiNET network in Crestron Toolbox to poll the infiNET network. Verify that the MNET ID for the infiNET device is set to match the MNET ID specified in the SIMPL Windows program. |
| Heating/Cooling system not operating | No power to thermostat | Check circuit breaker<br>Check for +24V on **C** connector<br>Check circuit breaker powering furnace or boiler<br>Recheck wiring connections |

***(Continued on following page)***

*CHV-TSTATRF* ***Troubleshooting (Continued)***

| TROUBLE | POSSIBLE CAUSE(S) | CORRECTIVE ACTION |
|---|---|---|
| Cannot change temperature setting | The upper or lower temperature limits were reached | Heat Setpoint range is 38º to 89ºF (3º to 32ºC) Cool Setpoint range is 59º to 99ºF (15º to 37ºC) or 38º to 99ºF (3º to 37ºC) extended cool mode enabled |
| System cycles too quickly | Anticipator setting too low | Reprogram anticipator setting (refer to "Setup Mode" which begins on page 18) |
| High temperature variance | Anticipator setting too high | |
| Wrong temperature displayed | Wrong units | Select F or C as necessary |
| | Temperature Offset | Reset Temperature Offset (refer to "Setup Mode" which begins on page 18) |
| | Bad location | Ensure the thermostat is located away from direct sunlight, drafts, doorways, skylights and windows. |

## Bootloader

The Bootloader is a low-level version of the CHV-TSTATRF's firmware that will become active in the event an upload of the standard firmware fails. This mode lets you perform some basic functions with the goal of getting the CHV-TSTATRF back to normal operation.

If the CHV-TSTATRF goes into Bootloader mode, the large seven-segment display will show "bL", except when in *SETUP* mode (where "bL" identifies the Backlight Timeout parameter). All other LDC segments will be off. All button presses will be ignored, except for the sequence which enters SETUP mode (refer to "Setup Mode" on page 18).

From the bootloader, *SETUP* mode will support only the following functions:

- Check Firmware Version (rE)
- infiNET ID (id)
- infiNET RF Channel (Ch)
- Start infiNET Acquire (Ac)
- Unacquire Gateway (UA
- Power Source (Po)

New firmware can be uploaded from the Crestron Toolbox.

## Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (http://www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

***List of Related Reference Documents***

| DOCUMENT TITLE |
|---|
| 2-Series Control Systems Reference Guide |
| C2N-MNETGW infiNET Gateway/Transceiver |

## 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 the Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876]. For assistance in your local time zone, refer to the Crestron website (http://www.crestron.com/) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website 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 CHV-TSTATRF, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

# Software License Agreement

This License Agreement ("Agreement") is a legal contract between you (either an individual or a single business entity) and Crestron Electronics, Inc. ("Crestron") for software referenced in this guide, which includes computer software and as applicable, associated media, printed materials and "online" or electronic documentation (the "Software").

BY INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE, YOU REPRESENT THAT YOU ARE AN AUTHORIZED DEALER OF CRESTRON PRODUCTS OR A CRESTRON AUTHORIZED INDEPENDENT PROGRAMMER AND YOU AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, DO NOT INSTALL OR USE THE SOFTWARE.

IF YOU HAVE PAID A FEE FOR THIS LICENSE AND DO NOT ACCEPT THE TERMS OF THIS AGREEMENT, CRESTRON WILL REFUND THE FEE TO YOU PROVIDED YOU (1) CLICK THE DO NOT ACCEPT BUTTON, (2) DO NOT INSTALL THE SOFTWARE AND (3) RETURN ALL SOFTWARE, MEDIA AND OTHER DOCUMENTATION AND MATERIALS PROVIDED WITH THE SOFTWARE TO CRESTRON AT: CRESTRON ELECTRONICS, INC., 15 VOLVO DRIVE, ROCKLEIGH, NEW JERSEY 07647, WITHIN 30 DAYS OF PAYMENT.

LICENSE TERMS

Crestron hereby grants You and You accept a nonexclusive, nontransferable license to use the Software (a) in machine readable object code together with the related explanatory written materials provided by Creston (b) on a central processing unit ("CPU") owned or leased or otherwise controlled exclusively by You and (c) only as authorized in this Agreement and the related explanatory files and written materials provided by Crestron.

If this software requires payment for a license, you may make one backup copy of the Software, provided Your backup copy is not installed or used on any CPU. You may not transfer the rights of this Agreement to a backup copy unless the installed copy of the Software is destroyed or otherwise inoperable and You transfer all rights in the Software.

You may not transfer the license granted pursuant to this Agreement or assign this Agreement without the express written consent of Crestron.

If this software requires payment for a license, the total number of CPU's on which all versions of the Software are installed may not exceed one per license fee (1) and no concurrent, server or network use of the Software (including any permitted back-up copies) is permitted, including but not limited to using the Software (a) either directly or through commands, data or instructions from or to another computer (b) for local, campus or wide area network, internet or web hosting services or (c) pursuant to any rental, sharing or "service bureau" arrangement.

The Software is designed as a software development and customization tool. As such, Crestron cannot and does not guarantee any results of use of the Software or that the Software will operate error free and You acknowledge that any development that You perform using the Software or Host Application is done entirely at Your own risk.

The Software is licensed and not sold. Crestron retains ownership of the Software and all copies of the Software and reserves all rights not expressly granted in writing.

OTHER LIMITATIONS

You must be an Authorized Dealer of Crestron products or a Crestron Authorized Independent Programmer to install or use the Software. If Your status as a Crestron Authorized Dealer or Crestron Authorized Independent Programmer is terminated, Your license is also terminated.

You may not rent, lease, lend, sublicense, distribute or otherwise transfer or assign any interest in or to the Software.

You may not reverse engineer, decompile or disassemble the Software.

You agree that the Software will not be shipped, transferred or exported into any country or used in any manner prohibited by the United States Export Administration Act or any other export laws, restrictions or regulations ("Export Laws"). By downloading or installing the Software You (a) are certifying that You are not a national of Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria or any country to which the United States embargoes goods (b) are certifying that You are not otherwise prohibited from receiving the Software and (c) You agree to comply with the Export Laws.

If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms. This Agreement may only be modified by a writing signed by an authorized officer of Crestron. Updates may be licensed to You by Crestron with additional or different terms. This is the entire agreement between Crestron and You relating to the Software and it supersedes any prior representations, discussions, undertakings, communications or advertising relating to the Software. The failure of either party to enforce any right or take any action in the event of a breach hereunder shall constitute a waiver unless expressly acknowledged and set forth in writing by the party alleged to have provided such waiver.

If You are a business or organization, You agree that upon request from Crestron or its authorized agent, You will within thirty (30) days fully document and certify that use of any and all Software at the time of the request is in conformity with Your valid licenses from Crestron of its authorized agent.

Without prejudice to any other rights, Crestron may terminate this Agreement immediately upon notice if you fail to comply with the terms and conditions of this Agreement. In such event, you must destroy all copies of the Software and all of its component parts.

## PROPRIETARY RIGHTS

Copyright. All title and copyrights in and to the Software (including, without limitation, any images, photographs, animations, video, audio, music, text and "applets" incorporated into the Software), the accompanying media and printed materials and any copies of the Software are owned by Crestron or its suppliers. The Software is protected by copyright laws and international treaty provisions. Therefore, you must treat the Software like any other copyrighted material, subject to the provisions of this Agreement.

Submissions. Should you decide to transmit to Crestron's website by any means or by any media any materials or other information (including, without limitation, ideas, concepts or techniques for new or improved services and products), whether as information, feedback, data, questions, comments, suggestions or the like, you agree such submissions are unrestricted and shall be deemed non-confidential and you automatically grant Crestron and its assigns a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license, with the right to sublicense, to use, copy, transmit, distribute, create derivative works of, display and perform the same.

Trademarks. CRESTRON and the Swirl Logo are registered trademarks of Crestron Electronics, Inc. You shall not remove or conceal any trademark or proprietary notice of Crestron from the Software including any back-up copy.

## GOVERNING LAW

This Agreement shall be governed by the laws of the State of New Jersey, without regard to conflicts of laws principles. Any disputes between the parties to the Agreement shall be brought in the state courts in Bergen County, New Jersey or the federal courts located in the District of New Jersey. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement.

## CRESTRON LIMITED WARRANTY

CRESTRON warrants that: (a) the Software will perform substantially in accordance with the published specifications for a period of ninety (90) days from the date of receipt and (b) that any hardware accompanying the Software will be subject to its own limited warranty as stated in its accompanying written material. Crestron shall, at its option, repair or replace or refund the license fee for any Software found defective by Crestron if notified by you within the warranty period. The foregoing remedy shall be your exclusive remedy for any claim or loss arising from the Software.

CRESTRON shall not be liable to honor warranty terms if the product has been used in any application other than that for which it was intended or if it as 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 or license code altered, defaced, improperly obtained or removed.

Notwithstanding any agreement to maintain or correct errors or defects, Crestron shall have no obligation to service or correct any error or defect that is not reproducible by Crestron or is deemed in Crestron's reasonable discretion to have resulted from (1) accident; unusual stress; neglect; misuse; failure of electric power, operation of the Software with other media not meeting or not maintained in accordance with the manufacturer's specifications or causes other than ordinary use; (2) improper installation by anyone other than Crestron or its authorized agents of the Software that deviates from any operating procedures established by Crestron in the material and files provided to You by Crestron or its authorized agent; (3) use of the Software on unauthorized hardware or (4) modification of, alteration of or additions to the Software undertaken by persons other than Crestron or Crestron's authorized agents.

ANY LIABILITY OF CRESTRON FOR A DEFECTIVE COPY OF THE SOFTWARE WILL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF YOUR COPY OF THE SOFTWARE WITH ANOTHER COPY OR REFUND OF THE INITIAL LICENSE FEE CRESTRON RECEIVED FROM YOU FOR THE DEFECTIVE COPY OF THE PRODUCT. THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE REMEDY TO YOU. IN NO EVENT SHALL CRESTRON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND (PROPERTY OR ECONOMIC DAMAGES INCLUSIVE), EVEN IF A CRESTRON REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR OF ANY CLAIM BY ANY THIRD PARTY. CRESTRON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO TITLE OR INFRINGEMENT OF THIRD-PARTY RIGHTS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTIES, NOR AUTHORIZES ANY OTHER PARTY TO OFFER ANY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY FOR THIS PRODUCT. THIS WARRANTY STATEMENT SUPERSEDES ALL PREVIOUS WARRANTIES.

# 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; 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 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.

This page is intentionally left blank.

This page is intentionally left blank.

**Crestron Electronics, Inc.**
15 Volvo Drive  Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

**Operations & Installation Guide – DOC. 6490**
**(2015101)**
**09.06**
Specifications subject to
change without notice.