

Crestron **CHV-TSTAT & CHV-THSTAT** Thermostats

Operations and Installation Guide



Regulatory Compliance

As of the date of manufacture, the CHV-TSTAT and CHV-THSTAT have been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



Federal Communications Commission (FCC) Compliance Statement

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

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

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

Industry Canada (IC) Compliance Statement

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

The specific patents that cover Crestron products are listed at patents.crestron.com.

Crestron, the Crestron logo, Cresnet, Crestron Home, Crestron Studio, Crestron Toolbox and PAC2 are either trademarks or registered trademarks of Crestron Electronics, Inc. in the United States and/or other countries. Other trademarks, registered trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Crestron disclaims any proprietary interest in the marks and names of others. *Crestron is not responsible for errors in typography or photography.*

This document was written by the Technical Publications department at Crestron.
©2013 Crestron Electronics, Inc.

Contents

Quick Installation Reference	iii
Thermostats: CHV-TSTAT and CHV-THSTAT	1
Introduction	1
Features and Functions	1
Specifications	4
Physical Description	5
Setup	9
Network Wiring	9
Identity Code	9
System Connections	10
Wiring Diagrams	11
Separately Powered Two Wire Heat Systems (Powered by an Independent Transformer)	12
1-Stage Heat Only Systems	12
1-Stage Heat with Fan Control Systems	13
1-Stage Cool Only Systems	13
1-Stage Heat/Cool with Integrated Control Unit Systems	14
1-Stage Heat/Cool with Separate Systems	15
1-Stage Heat Pump Systems	16
2-Stage Heat Pump Systems	17
Slab 1, Slab 2, and Slab 3 (Floor Warming and/or Space Heating) Systems	18
Slab 4A 2-Stage Heat/1-Stage Cool Systems and Slab 5A Floor Warming with 1-Stage Space Heat/Cool Systems	19
Slab 4B 2-Stage Heat/1-Stage Cool System and Slab 5B 1-Stage Heat/Cool with Floor Warming Systems	20
General Humidifier Connections	21
Installation	22
Thermostat Setup	24
Setup Procedure	24
Setup Notes	24
System Types and Definitions	25
Heat/Cool, 1 or 2-Stages, Forced Air or Radiant	27
Heat Pump, 1 or 2-Stages, Aux Heat or Dual Fuel	31
Slab 1 – Floor Warming Only	35
Slab 2 – 1-Stage Space Heat with Slab Maximum	39
Slab 3 – 1-Stage Heat with Slab Minimum/Maximum	43
Slab 4A – 2-Stage Heat/One Stage Cool with Slab Maximum	47
Slab 4B – 2-Stage Heat/1-Stage Cool with Slab Maximum (Heat Pump)	51
Slab 5A – 1-Stage Heat/Cool with Floor Warming	55
Slab 5B – 1-Stage Heat/Cool with Floor Warming (Heat Pump)	59
Thermostat Operation	63
View Button Menus	64
Mode Button Menus	65
Uploading and Upgrading	72
Establishing Communication	72

Programs and Firmware	73
Program Checks	73
Problem Solving	74
Troubleshooting.....	74
Control System Error Log Message Formats	76
Local Error Messages	77
Check Network Wiring.....	77
Reference Documents.....	78
Further Inquiries	78
Future Updates	79
Appendix A: About Heat Pumps	80
Heat Pump Operation	80
Glossary.....	81
Return and Warranty Policies.....	83
Merchandise Returns / Repair Service	83
Crestron Limited Warranty.....	83

Quick Installation Reference

1. Select a suitable location and run the connecting wires from the heating/cooling system and the Cresnet[®] system. Refer to pages 7 and 8 for descriptions of the thermostat connectors.

Refer to page 9 for Network wiring details.

Use the appropriate wiring diagram:

- Separately Powered Two Wire Heat Systems (Powered by an Independent Transformer) (Refer to page 12)
 - 1-Stage Heat Only (Refer to page 12)
 - 1-Stage Heat with Fan Control (Refer to page 13)
 - 1-Stage Cool Only (Refer to page 13)
 - 1-Stage Heat/Cool with Integrated Control Unit (Refer to page 14)
 - 1-Stage Heat/Cool with Separate Systems (Refer to page 15)
 - 1-Stage Heat Pump (Refer to page 16)
 - 2-Stage Heat Pump (Refer to page 17)
 - Slab 1, Slab 2, and Slab 3 (Floor Warming and/or Space Heating) (Refer to page 18)
 - Slab 4A 2-Stage Heat/1-Stage Cool Systems and Slab 5A Floor Warming with 1-Stage Space Heat/Cool (Refer to page 19)
 - Slab 4B 2-Stage Heat/1-Stage Cool System and Slab 5B 1-Stage Heat/Cool with Floor Warming (Refer to page 20)
 - General Humidifier Connections (Refer to page 21)
2. Separate the thermostat from the backplate to expose the connections and mounting holes.
 3. Mount the thermostat backplate (60 inches (~1.6 meters)) above the finished floor) directly to the wall with wall anchors (not provided) and screws (not provided) or to a horizontally mounted 1-gang electrical box (not provided), and connect the wiring. Refer to page 22 for detailed mounting instructions and pages 7 and 8 for detailed connector information. If using a 5-sided box, fill with insulation material to minimize wall air ingress.
 4. Install the thermostat on the backplate (refer to page 22).
 5. Set up the thermostat (refer to page 24).
 - For Heat/Cool Radiant and Forced Air Systems, refer to page 27.
 - For Heat Pump Systems, refer to page 31.
 - For Slab Systems, refer to page 35.
 6. Configure the thermostat (refer to “Thermostat Operation” which starts on page 63).

Thermostats: CHV-TSTAT and CHV-THSTAT

Introduction

The CHV-TSTAT and CHV-THSTAT from Crestron® are versatile heating and cooling thermostats designed for 1- and 2-stage control of forced air, radiant, and heat pump HVAC systems. The CHV-TSTAT provides temperature control, while the CHV-THSTAT provides temperature control with an integrated humidistat. Relative humidity capability can be added to the CHV-TSTAT through an external remote humidity sensor (sold separately).

Although functional as standalone thermostats, the CHV-TSTAT and CHV-THSTAT deliver greatly enhanced functionality as part of a complete Crestron Home® automation system. The thermostats are available in six different models:

Models

DESCRIPTION	MODEL NUMBER	COLOR
Heating/Cooling Thermostat	CHV-TSTATA	Almond
	CHV-TSTATB	Black
	CHV-TSTATW	White
Heating/Cooling and Humidity Thermostat	CHV-THSTATA	Almond
	CHV-THSTATB	Black
	CHV-THSTATW	White

Features and Functions

- User adjustable temperature and/or humidity control of 1- and 2-stage heating and cooling systems
- Supports seven slab system configurations
- 128 x 64 transfective 2.75 inch (70 mm) LCD display
- Fahrenheit or Celsius indication
- Four front panel buttons for setup, configuring and temperature/humidity adjustments
- Back light (with each button press) for night viewing
- Supports up to four remote temperature and/or temperature/humidity sensors
- Operates as a stand-alone device or in a Cresnet system
- Extended functionality as a Cresnet device for lighting control, alarms, etc.

Featuring a large backlit LCD display, the CHV-TSTAT and CHV-THSTAT thermostats are navigable using four simple push buttons which provide easy access to indoor and outdoor temperature and humidity readings, setpoint adjustments, system mode and fan status indicators, and setup menus. Climate control features include separate heating, cooling, and humidity setpoints with optional automatic changeover between heating and cooling modes. Adjustable anticipators prevent overshooting the set temperature, and continuous fan operation can be selected when needed for increased circulation.

Multiple Crestron thermostats may be networked via Cresnet to a PAC2[®], PAC2M, or other 2-Series control system (all sold separately), enabling global temperature and humidity adjustment from any thermostat. Automation functions such as lighting, motorized blinds, or lawn sprinklers can be accessed through two custom remote function pages, and customized text messages can be sent to the LCD display to provide maintenance reminders and other alerts.

Its connection to the control system also enables full control and scheduling of the CHV-TSTAT/CHV-THSTAT from touch screens and computers throughout the home, and supports extensive flexibility for integration with other devices and systems. In the event that communication with the control system is disrupted for any reason, the CHV-TSTAT/CHV-THSTAT remains operable to control the HVAC system.

Optional remote temperature and humidity sensors can be connected to the CHV-TSTAT/CHV-THSTAT for enhanced flexibility and optimized performance. Climate can be regulated according to an average of multiple sensors, or the built-in sensors can be disabled entirely to allow the CHV-TSTAT/CHV-THSTAT to be installed out of view. Outdoor climate can also be monitored, enabling outdoor low-temperature compensation to prevent condensation on windows during cold weather. The CHV-TSTAT/CHV-THSTAT accepts up to four remote temperature sensors, two remote temp/humidity sensors, or a combination of one temp/humidity and two temperature sensors.

Firmware Versions

The new features, and consequent changes to the SIMPL Windows symbol programming, for firmware version 2.0 and later make it incompatible for use with X-generation control processors. In addition, upgrading to release 2.0 and later from a previous release requires a complete re-programming of the thermostat.

Remote Sensors

Firmware version 2.0 and later supports up to four optional remote sensors, two for each input channel: temperature only (CHV-RTS), temperature/humidity (CHV-RTHS), and slab sensor (CHV-RSS) for both thermostats (all sold separately). Information from two sensors that share an input channel is averaged together in the temperature/humidity calculations.

Outdoor conditions, -40° to 170° F (-40° to 77° C), can be imported from the CHV-RSS slab sensor.

For additional information about the sensors, refer to the latest revision of the CHV-RTS & CHV-RTHS Installation Guide (Doc. 8189), and the CHV-RSS Installation Guide (Doc.6229) which are available from the Crestron Web site (www.crestron.com/manuals).

Heating and Cooling Systems

The CHV-TSTAT and CHV-THSTAT can control the following heating and cooling systems:

- 1-stage heat
- 1-stage heat, 1stage cool
- 1-stage heat, 1-stage cool (heat pump with auxiliary heat)
- 2-stage heat
- 2-stage heat, 1-stage cool
- 1-stage heat, 2-stage cool
- 2-stage heat, 2-stage cool
- 2-stage heat, 2-stage cool (heat pump with auxiliary heat)
- Wide range cool option suitable for wine cellars or other chilling processes*
- Slab settings for heating and floor warming systems*

NOTE: 2-stage heating – Unlike traditional furnaces that turn on and run at full capacity with each demand for heating, 2-stage heat operates like two separate furnaces to maintain more consistent comfort in the home. The unit starts out running in its first stage, and operates at a fraction of its heating capacity. This reduced capacity is sufficient to warm the home on mild winter days. But when the temperature outside goes very low, the furnace adjusts to full capacity (second stage) to meet the demand for heat within the home.

2-stage cooling – In warm weather, the first stage of the cooling equipment operates at a fraction of the total cooling capacity. On very hot days, the second stage of the cooling equipment energizes, and the cooling system operates at full capacity.

*Firmware version 2.0 or higher.

Specifications

The following table provides a summary of specifications for the CHV-TSTAT and CHV-THSTAT.

CHV-TSTAT and CHV-THSTAT Specifications

SPECIFICATION	DETAILS
Measurement Range	
Indoor Temperature	0° to 110° F (-18° to 43° C)
Outdoor Temperature	-40° to 170° F (-40° to 77° C) ¹
Humidity	0% to 100% RH ¹
Temperature Tolerance	
Over Full Range	±1° F (±0.5° C)
At Room Temperatures	±1° F (+0.1/0.4° C)
Humidity Tolerance ²	±5%
Setpoint Range	
Auto Setpoint	38° to 99° F (3° to 37° C)
Heat Setpoint	38° to 89° F (3° to 32° C)
Cool Setpoint	59° to 99° F (15° to 37° C); 38° to 99° F (3° to 37° C) with extended cool mode enabled ³
Humidity Setpoint	5% to 90 % RH ¹
Relay Rating	1 amp @ 40 volts dc or 24 volts ac (nominal)
Power Requirements	
24V	2 watts (0.083 amps) @ 24 volts ac, supplied by heating or cooling system
Cresnet Power Usage	<1 watt (<0.05 amps @ 24 volts dc), required for Cresnet communication only
Display	
Type	Transflective LCD, backlit
Size	2.75 in (70 mm)
Resolution	128 x 64
Viewing Angle	±50° horizontal (@ 0° vertical), ±50° vertical (@ 0° horizontal)
Default Net ID	2A
Environmental	
Temperature	41° to 104° F (5° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Enclosure	Plastic
Dimensions	
Height	3.75 in (96 mm)
Width	5.00 in (127 mm)
Depth	1.04 in (27 mm)
Weight	6 oz (165 g)

(Continued on following page)

CHV-TSTAT and CHV-THSTAT Specifications (Continued)

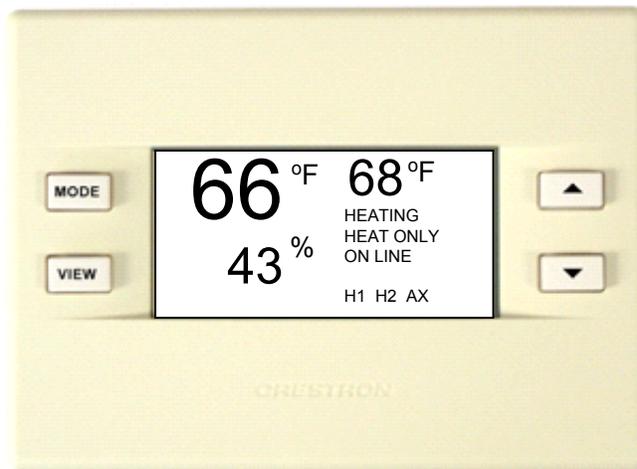
SPECIFICATION	DETAILS
Available Accessories CHV-RSS CHV-RTS CRESNET-HP-NP-[BK,OR,TL] CRESNET-NP-[BK,OR,TL,YL] CRESNET-P-[BK,OR,TL,YL]	Remote Slab Sensor and Outdoor Temperature Sensor Remote Temperature Sensor Cresnet "High-Power" Control Cable, non-plenum Cresnet Control Cable, non-plenum Cresnet Control Cable, plenum

1. Humidity sensing (for the CHV-TSTAT) and outdoor temperature/humidity sensing require additional remote sensors, sold separately.
2. CHV-THSTAT only.
3. CHV-TSTAT only.

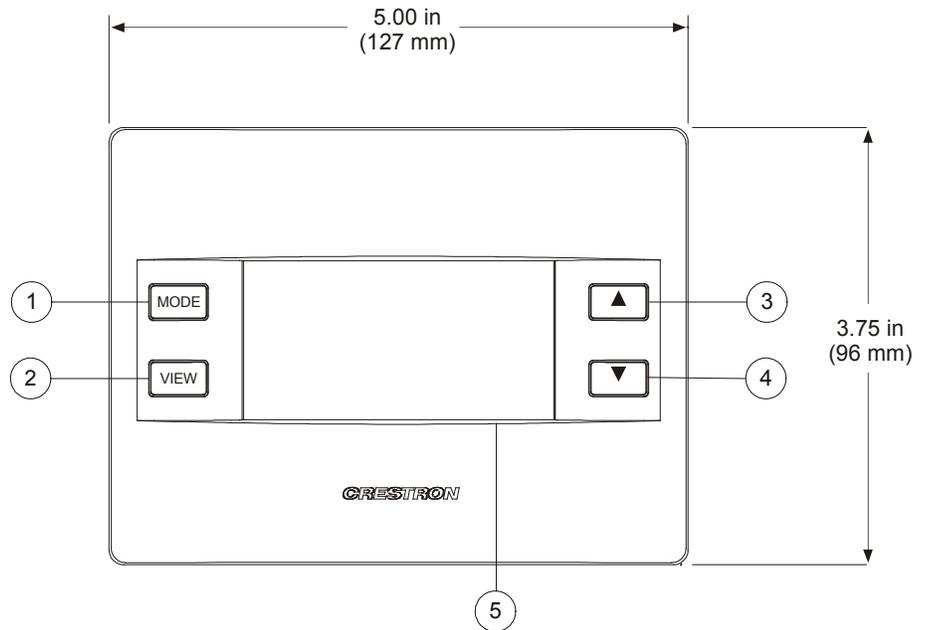
Physical Description

This section provides information on the connections, controls and indicators available on the CHV-TSTAT and CHV-THSTAT.

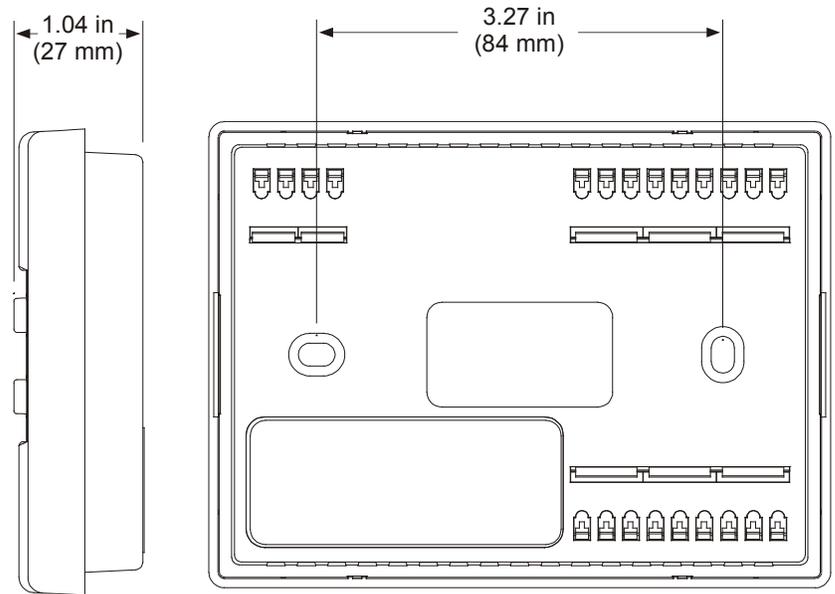
CHV-TSTAT and CHV-THSTAT Physical View



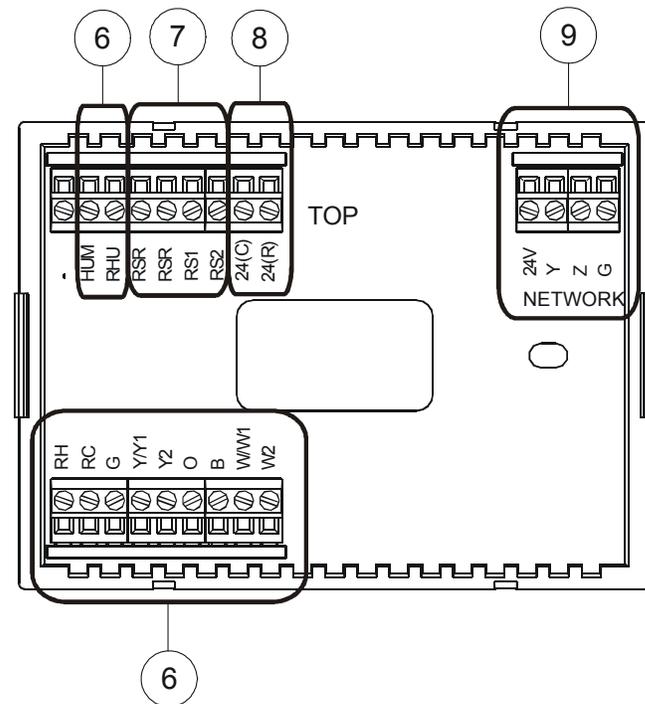
CHV-TSTAT and CHV-THSTAT Overall Dimensions (Front View)



CHV-TSTAT and CHV-THSTAT Overall Dimensions (Side and Rear Views)



CHV-TSTAT and CHV-THSTAT Backplate (Front Cover Removed)



Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	MODE Button	Accesses user controls (system mode, fan mode, humidifier, Crestron system, and global update)
2	VIEW Button	Accesses humidity reading*, outdoor temperature reading*, system messages and remote functions
3	▲	Selects user modes and increments selection in setup modes
4	▼	Selects user modes and decrements selection in setup modes
5	LCD Display	Displays current indoor temperature and relative humidity*, outdoor temperature and relative humidity*, setpoints, activity, function, Cresnet system information, internal relay status, setup menus, and control system messages

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
6	Control Connections (System Dependent)	(2) 9-position terminal blocks HUM: Energized to RHU during humidity call RHU: Reference for humidifier RH: Reference Heat, used for calls to heating system RC: Reference Cool, used for calls to cooling system G: Fan, energized to RC during fan call Y/Y1: Compressor (stage one), energized to RC when compressor (or first stage) is run Y2: Compressor (stage two), energized to RC on 2-stage systems on call for second stage O: Changeover control, energized to RC during cooling modes B: Energized to RC during non-cooling modes W/W1: Heat (1-stage)/heat (stage one) energized to RH during a call for heat in heat/cool systems or aux heat in heat pump systems W2: Heat (stage two), energized to RH during a call for second stage heat in heat/cool systems
7	Remote Sensing Connections (Optional)	RSR: Remote Sensor Returns – Common sensor terminal RS1: Remote Sensor terminal – Connect the sensor from RS1 to RSR RS2: Remote Sensor terminal – Connect the sensor from RS2 to RSR
8	Power Connections (Required)	24 (C): 24 Vac common terminal supplies remote 24 Vac power to thermostat 24 (R): 24 Vac reference terminal—Can be connected to RH or RC by P4 jumper setting, or tied directly to power source (refer to “System Connections” on page 10)
9	Network (Optional)	(1) 4-position terminal block; Cresnet slave port, connect to Cresnet control network 24: Power (24 volts dc) Y: Data Z: Data G: Ground

1. Humidity sensing (for the CHV-TSTAT) and outdoor temperature/humidity sensing require additional remote sensors, sold separately.

Setup

Network Wiring

When wiring the Cresnet network, consider the following:

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

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

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

For more details, refer to “Check Network Wiring” on page 76.

Identity Code

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

The Net ID of the CHV-TSTAT/CHV-THSTAT has been factory set to **2A**. The Net IDs of multiple CHV-TSTAT/CHV-THSTAT devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via Crestron Toolbox™ (refer to “Establishing Communication” on page 72).

When setting the Net ID, consider the following:

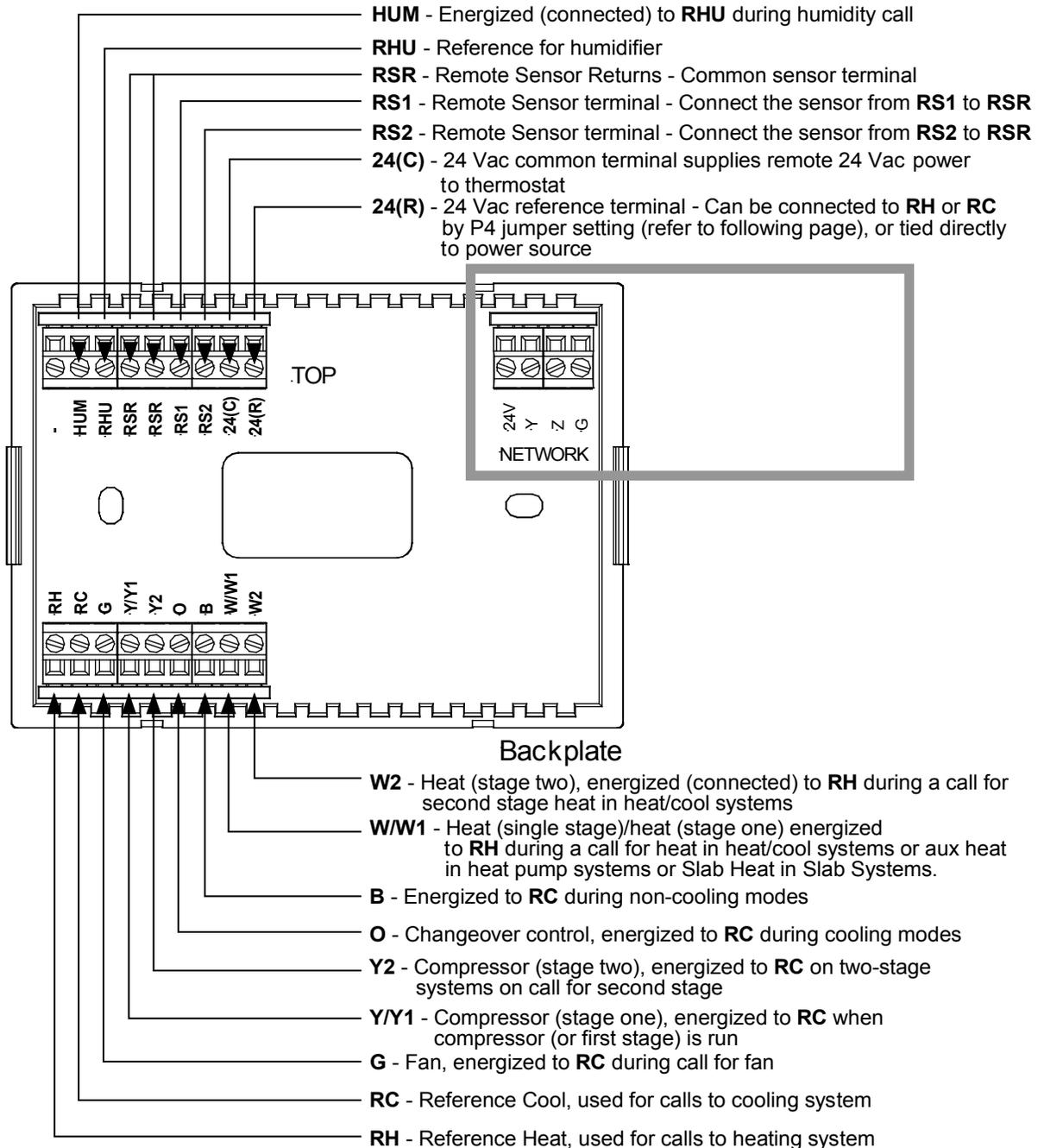
- The Net ID of each unit must match an ID code specified in the Crestron Studio™ or SIMPL Windows program.
- Each network device must have a unique Net ID.

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

System Connections

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

CHV-TSTAT and CHV-THSTAT Backplate – Front View With Cover Removed



Wiring Diagrams

The wiring diagrams that follow show connections for the CHV-TSTAT and CHV-THSTAT. The heating or cooling system can supply power to the thermostat, or a separate transformer can supply it. In many installations, spare conductors are available to supply 24 Vac to the thermostat, using the **C** (24 Vac common) connection on the HVAC equipment.

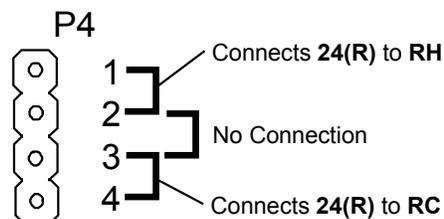
The P4 jumper internally connects either the **RH** (Reference Heat system) or **RC** (Reference Cooling system), relieving the installer from connecting a jumper from the **24(R)** terminal to the **RH** or **RC** terminal.

If power is available from the HVAC system, follow the diagrams for the proper P4 jumper connection.

When power is not available from the HVAC system, a separate transformer, connected between **24(R)** and **24(C)** terminals, can provide power to the thermostat. When powered by a separate transformer, ensure that the P4 jumper is connected across pins 2 and 3 (No Connection) to prevent damage to the thermostat and the HVAC system.

CAUTION: The P4 Jumper Position on the Circuit Board is critical to proper operation. Improper P4 jumper position can cause equipment damage. The P4 jumper connects the **24(R)** terminal to the **RH**, or **RC** connector. Refer to the following illustration.

P4 Jumper Position



NOTE: Ensure that the power circuits are shut off at the source before connecting the thermostat. Provide disconnect means and overload protection as required for the power supply.

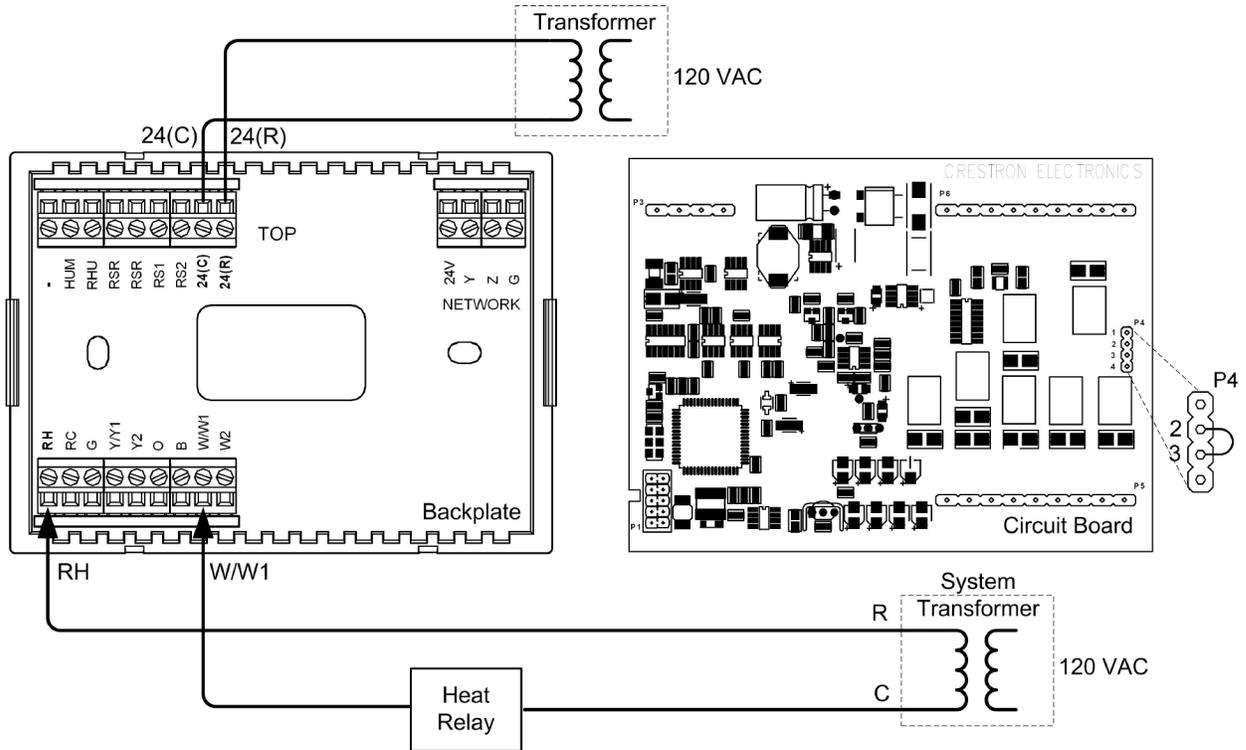
NOTE: Ensure that the transformer has sufficient power for all the thermostats in the system, or use multiple transformers. Refer to the power requirements in “Specifications” on page 4.

The following diagrams are examples of connections for heat, heat/cool and 1-stage and 2-stage heat pump systems, and various slab systems. If the system being connected does not match any of the systems described below, contact Crestron Technical Support for assistance.

NOTE: Use either connector, **O** or **B** as required, for changeover control.

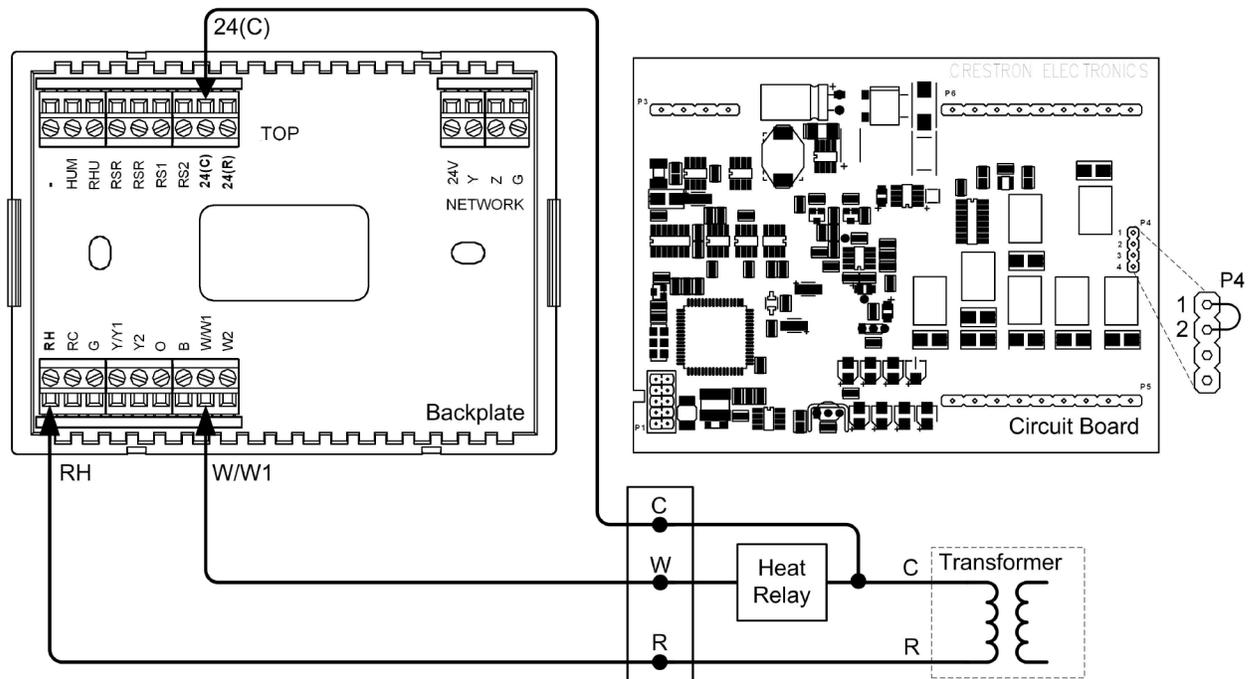
Separately Powered Two Wire Heat Systems (Powered by an Independent Transformer)

Independent Transformer Connection – P4 Jumper Connects Pins 2 and 3



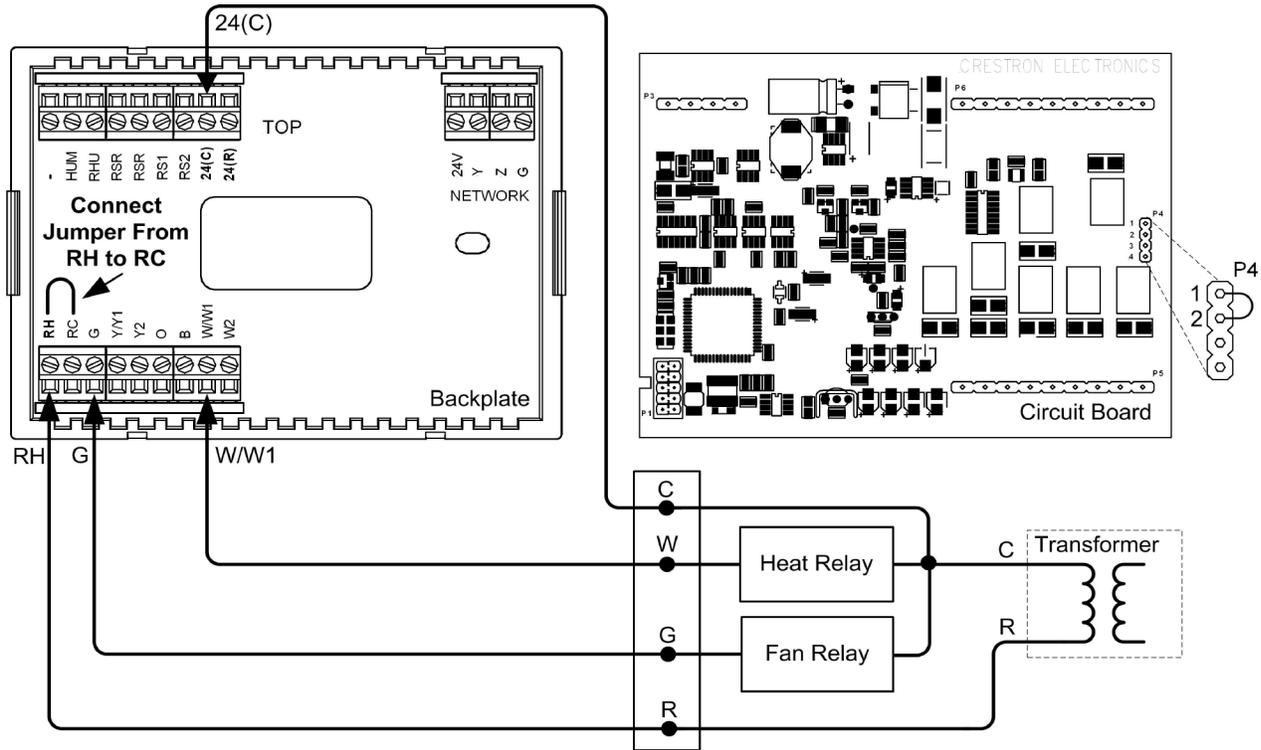
1-Stage Heat Only Systems

1-Stage Heat Only System Powered – P4 Jumper Connects Pins 1 and 2



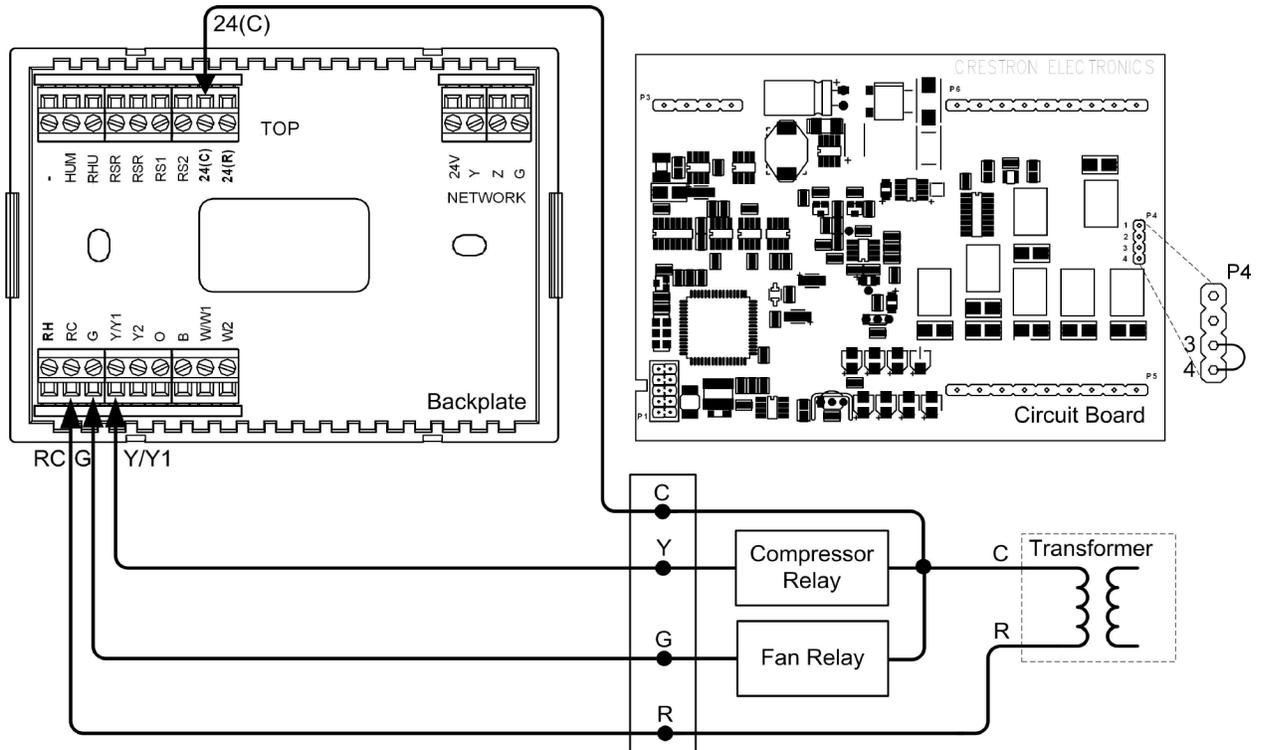
1-Stage Heat with Fan Control Systems

1-Stage Heat with Fan Control – P4 Connects Pins 1 and 2 – Additional Jumper Connects RH to RC



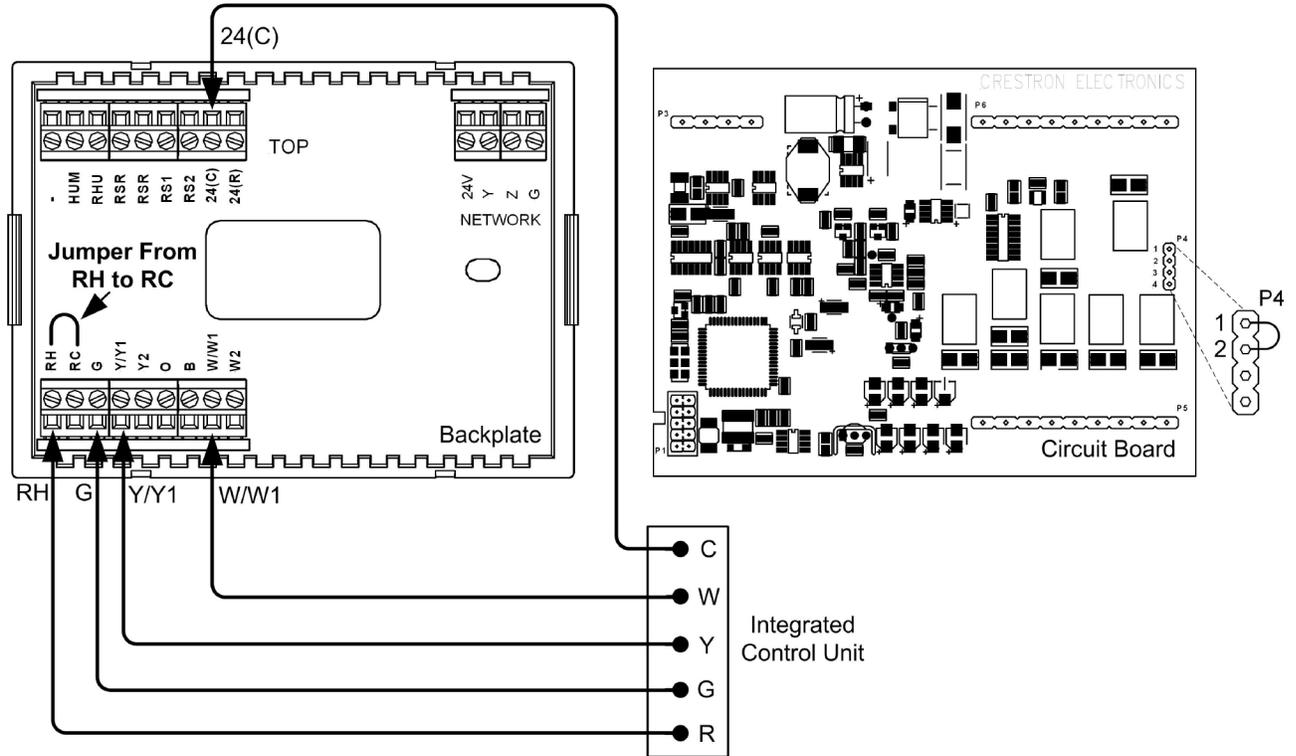
1-Stage Cool Only Systems

1-Stage Cool Only – P4 Jumper Connects Pins 3 and 4



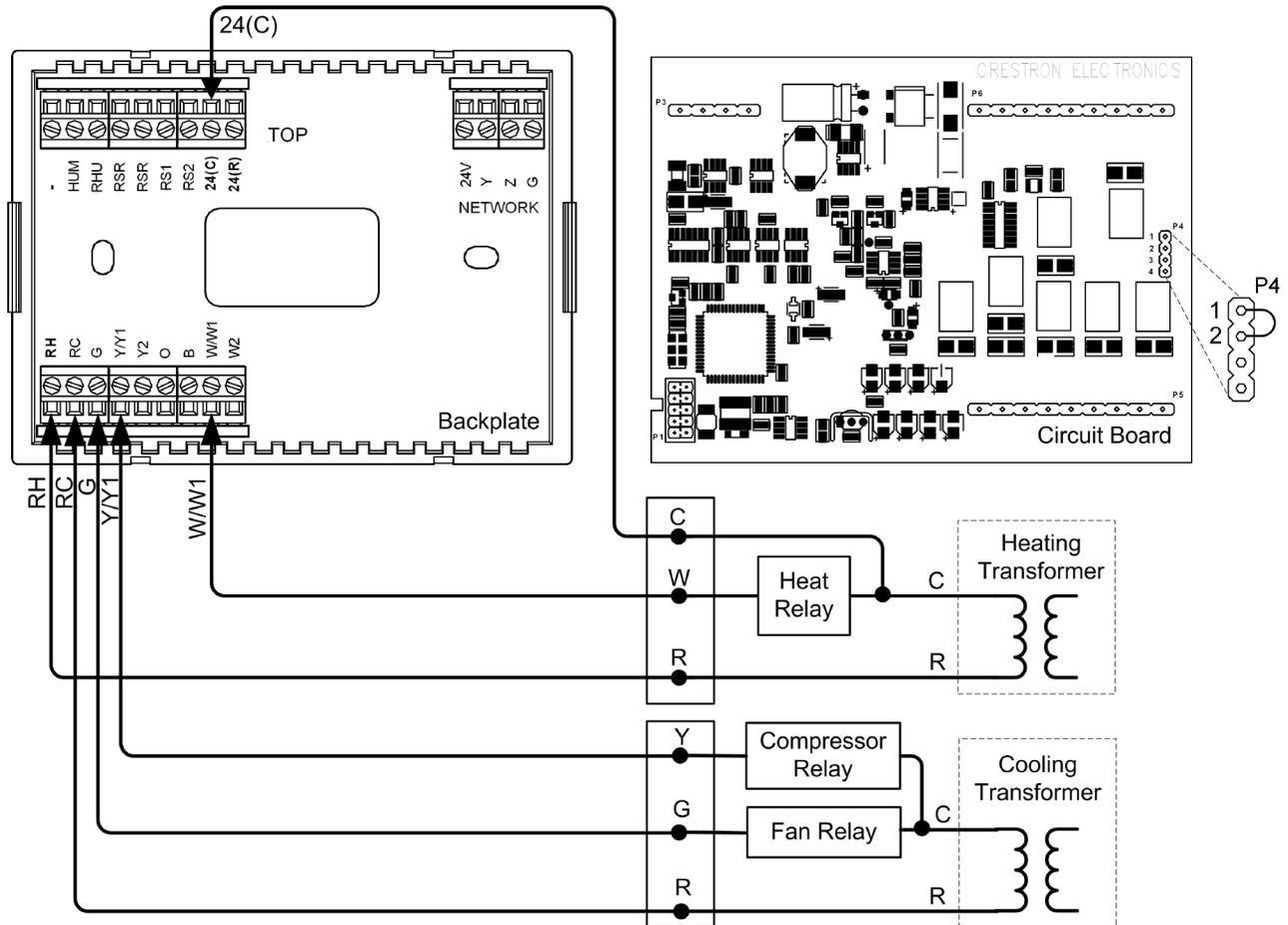
1-Stage Heat/Cool with Integrated Control Unit Systems

1-Stage Heat/Cool with Integrated Control Unit – P4 Jumper Connects Pins 1 and 2 – Additional Jumper RH to RC



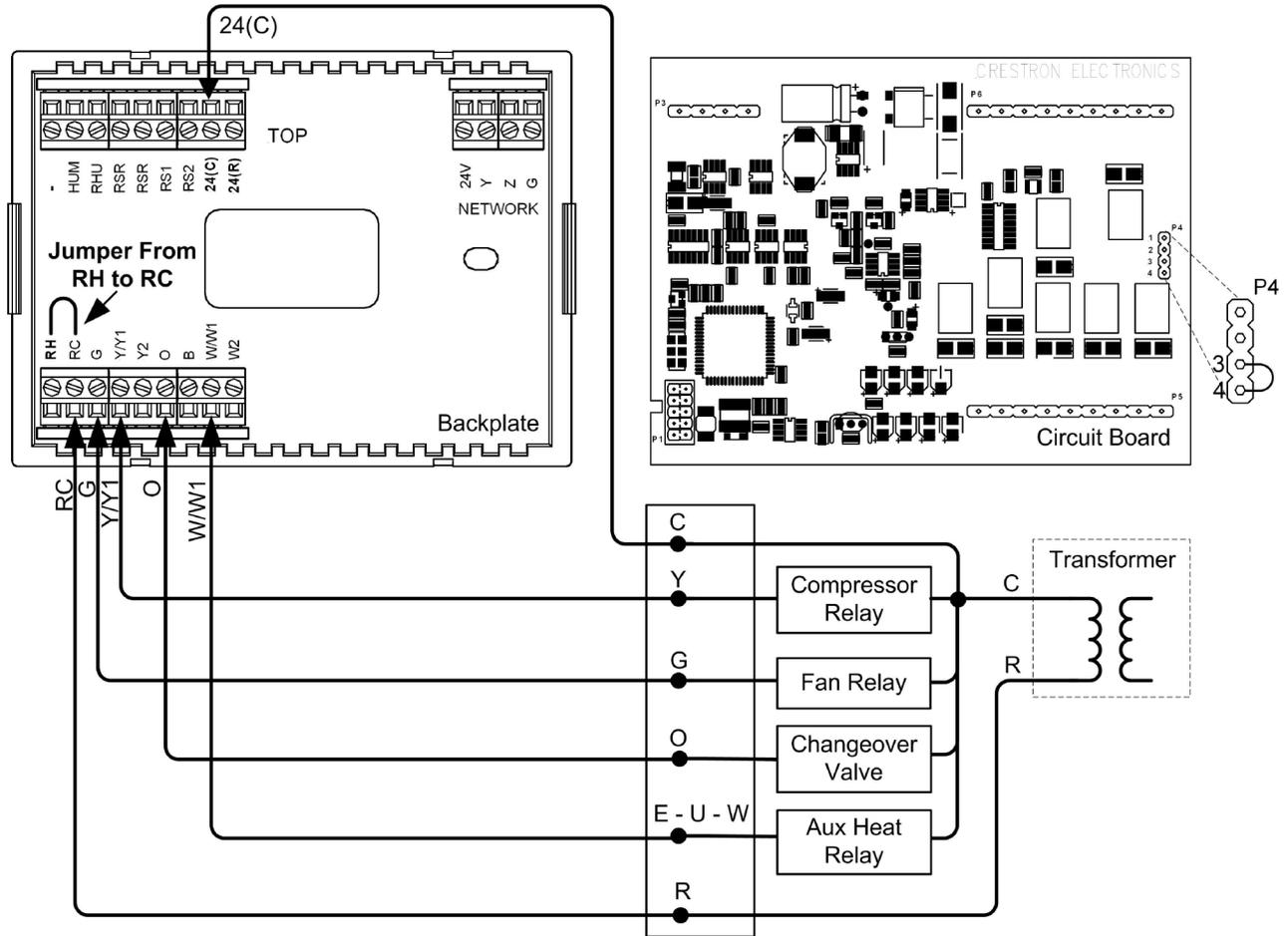
1-Stage Heat/Cool with Separate Systems

1-Stage Heat/Cool with Separate Systems – Heating System Powered – P4 Jumper Connects Pins 1 and 2



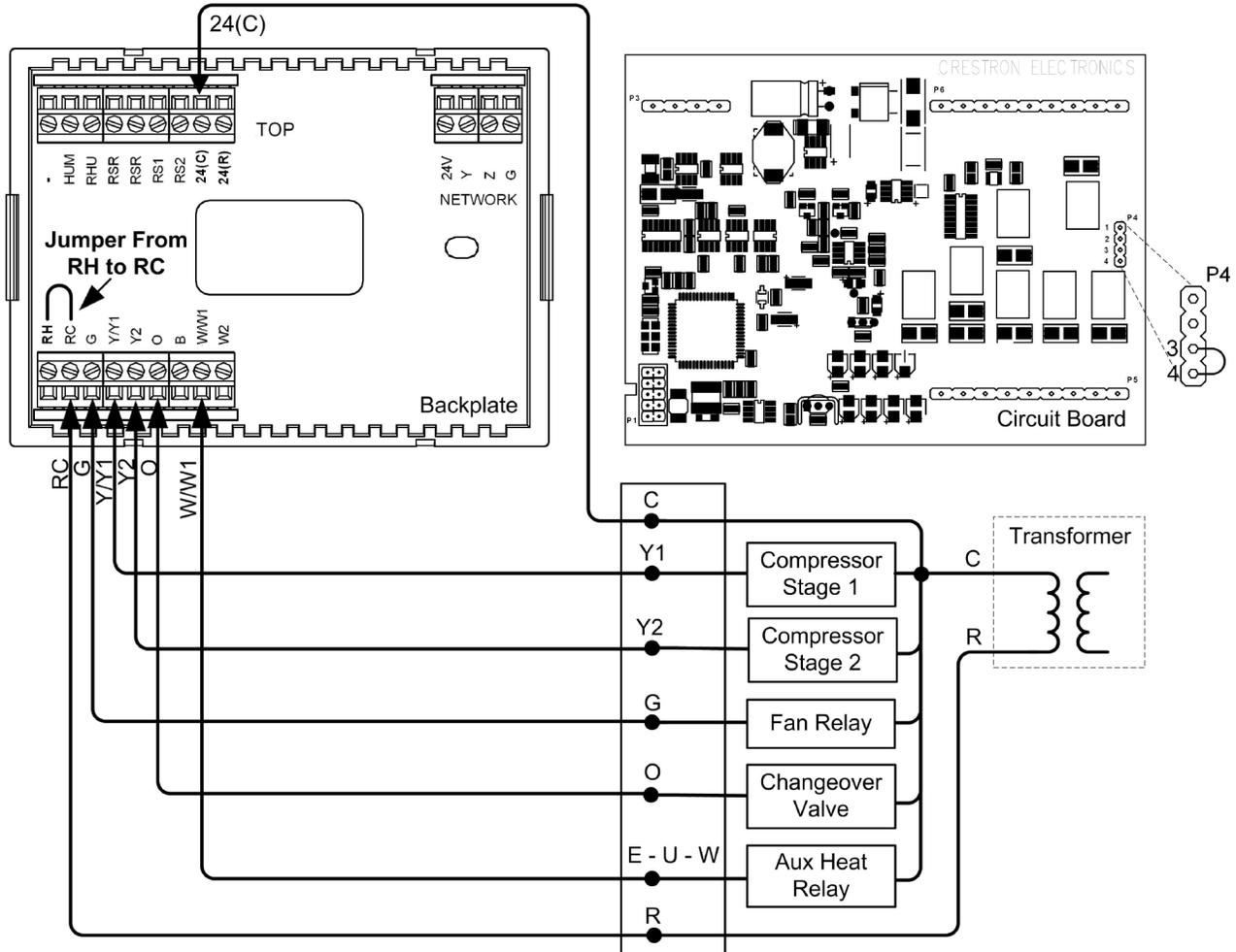
1-Stage Heat Pump Systems

1-Stage Heat Pump – P4 Jumper Connects Pins 3 and 4– Additional Jumper RH to RC



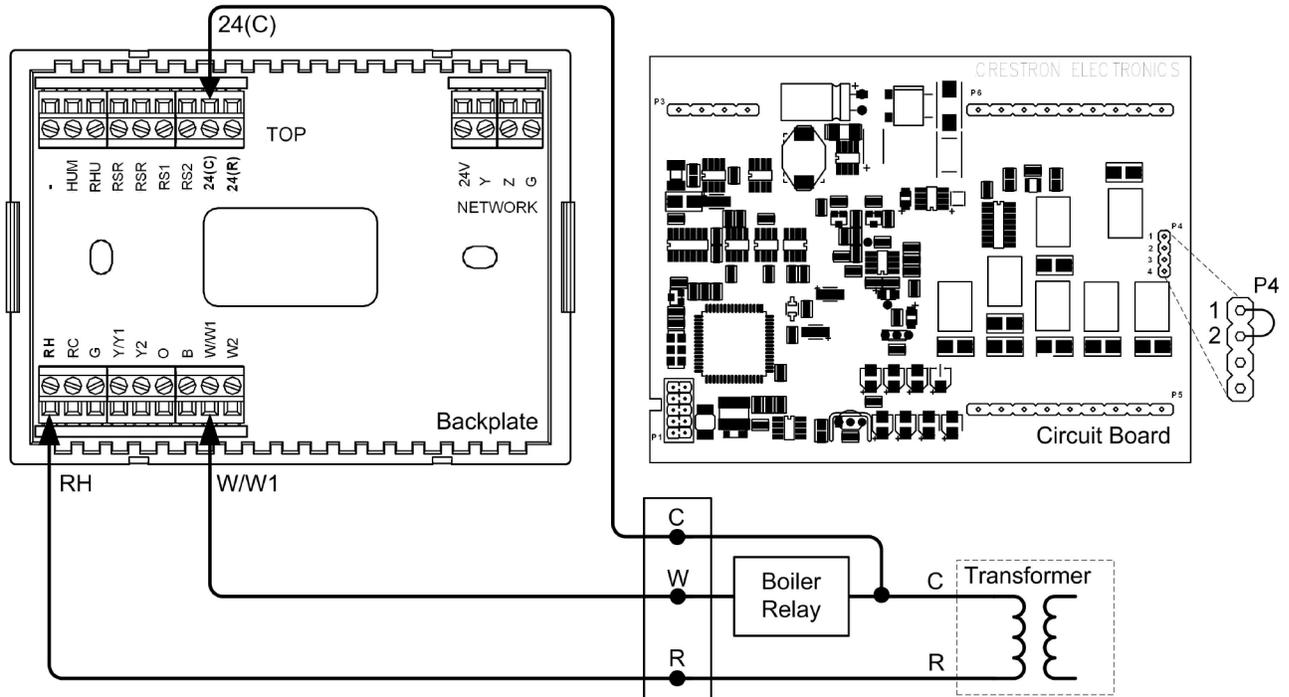
2-Stage Heat Pump Systems

2-Stage Heat Pump System – P4 Jumper Connects Pins 3 and 4 – Additional Jumper RH to RC



Slab 1, Slab 2, and Slab 3 (Floor Warming and/or Space Heating) Systems

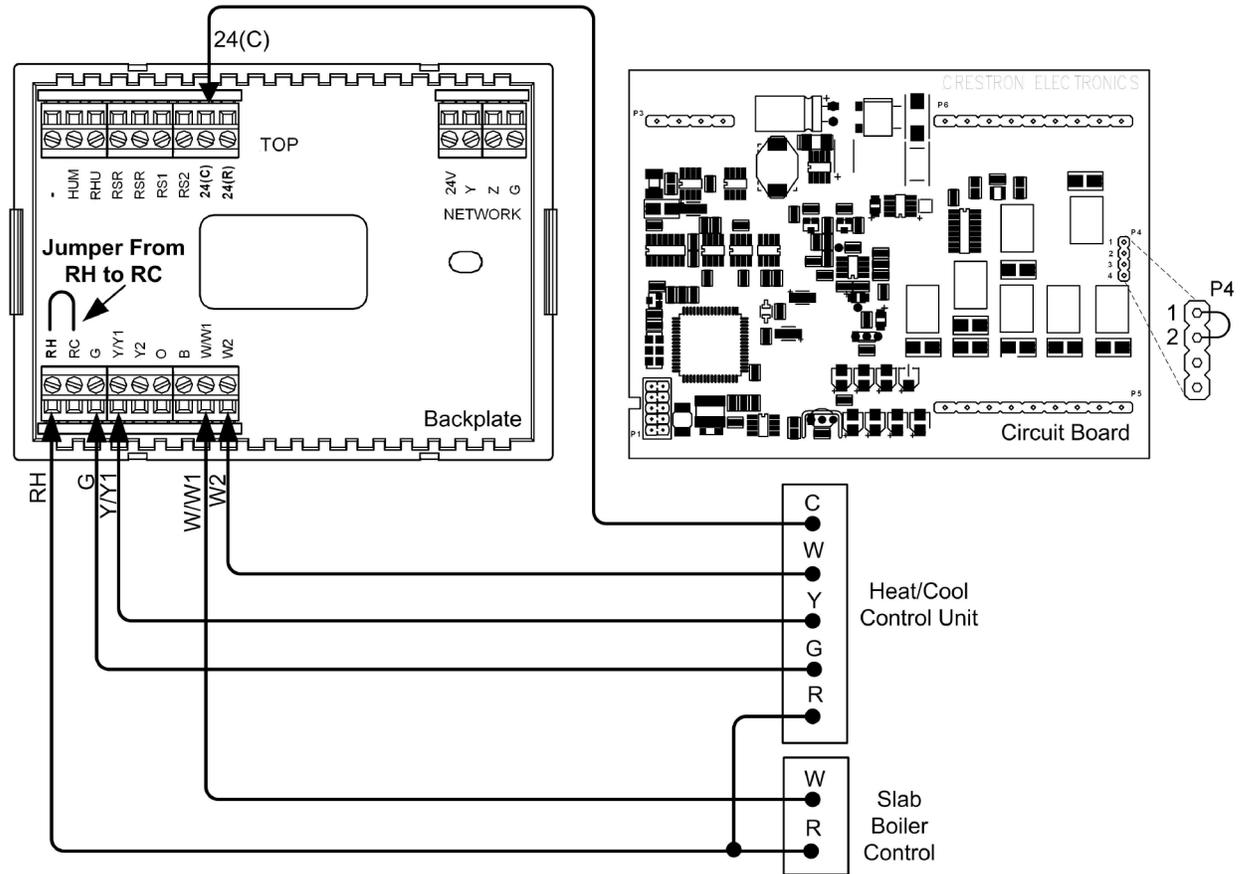
Slab 1, Slab 2, and Slab 3 Systems (Floor Warming and/or Space Heating) – P4 Jumper Connects Pins 1 and 2



Slab 4A 2-Stage Heat/1-Stage Cool Systems and Slab 5A Floor Warming with 1-Stage Space Heat/Cool Systems

Heat/Cool Style Connections

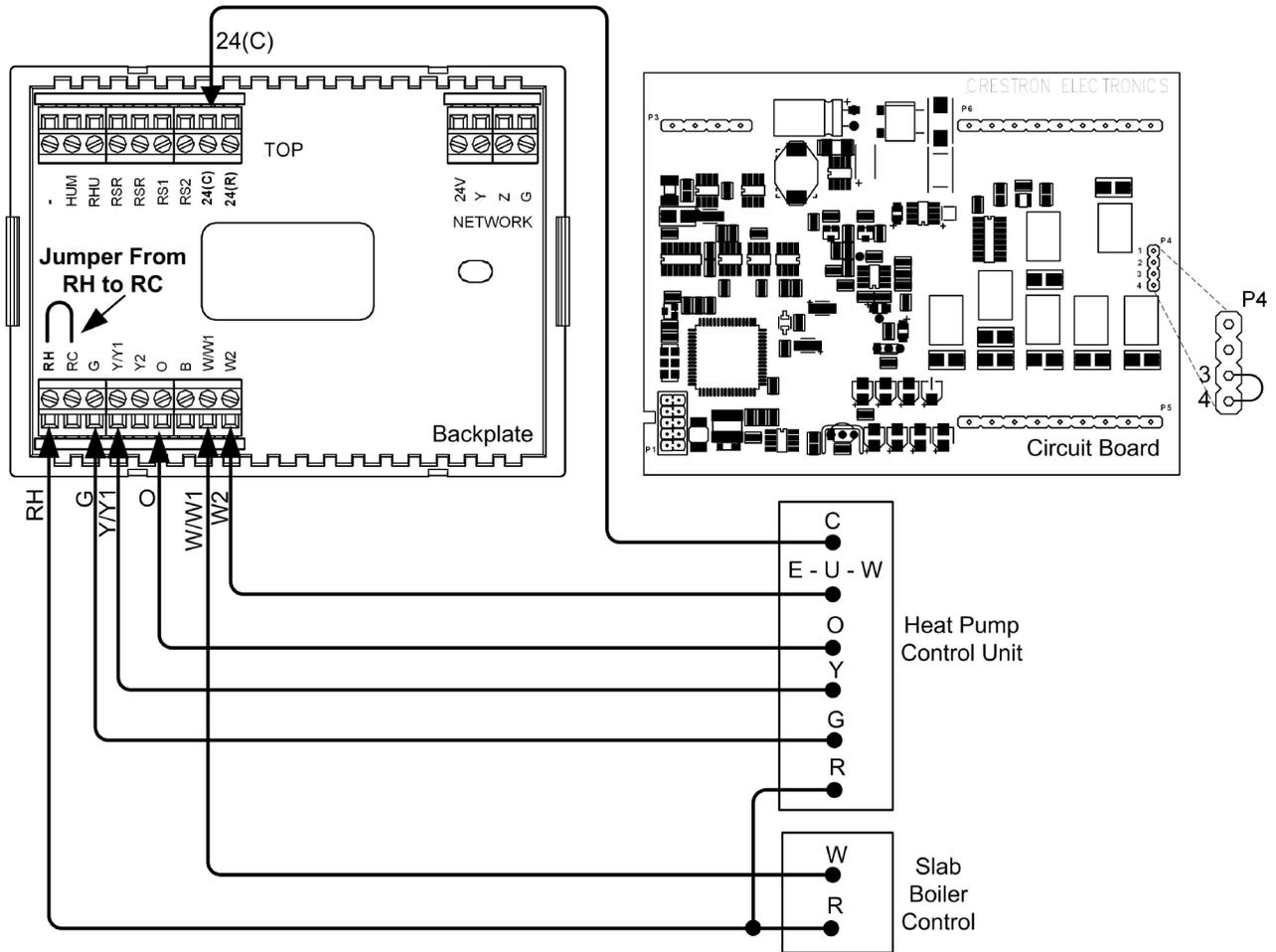
Slab 4A – P4 Jumper Connects Pins 1 and 2 – Jumper Connects RH to RC



Slab 4B 2-Stage Heat/1-Stage Cool System and Slab 5B 1-Stage Heat/Cool with Floor Warming Systems

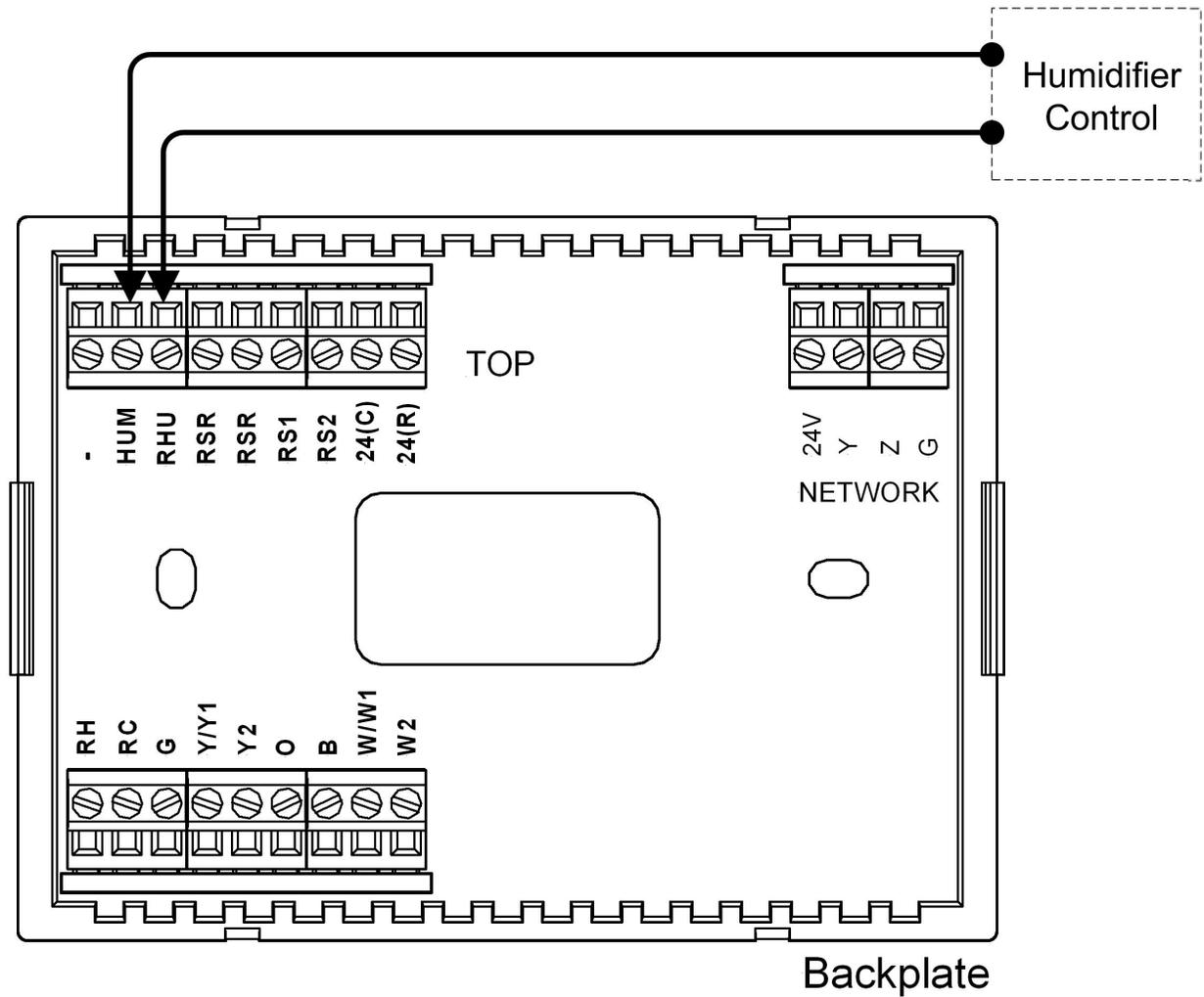
Heat Pump Style Connections

Slab 4B – P4 Jumper Connects Pins 3 and 4 – Additional Jumper Connects RH to RC



General Humidifier Connections

General Humidifier Connections



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. The thermostats may be mounted directly to drywall or to a 1-gang box.

Thermostats and sensors are mounted 60 inches (~1.6 meters) above the finished floor (HVAC industry standard).

The following tools and hardware are required for installation.

- Phillips screwdriver (not supplied)
- Two 6-32 x 1-inch panhead screws (included) for mounting to a 1-gang box
- 1-gang electrical box (not supplied)
- Wall anchors (not supplied) and screws (not supplied) for mounting directly to drywall

Refer to the following illustrations and use the following procedure to install the CHV-TSTAT or the CHV-THSTAT.

NOTE: When installing directly on drywall, use anchoring screws and hardware. Make sure the back of the thermostat is flush with drywall and the unit is level.

NOTE: If replacing an existing thermostat, make note of the wire colors and positions before removing the old thermostat.

1. Separate thermostat front plate from back plate (it may be necessary to exert force when removing the faceplate).
2. Turn off the circuit breaker when connecting power to the thermostat, and connect wiring as required (wiring goes through center hole on back plate).

NOTE: Ensure the correct position of the P4 jumper; refer to pages 11 through 20.

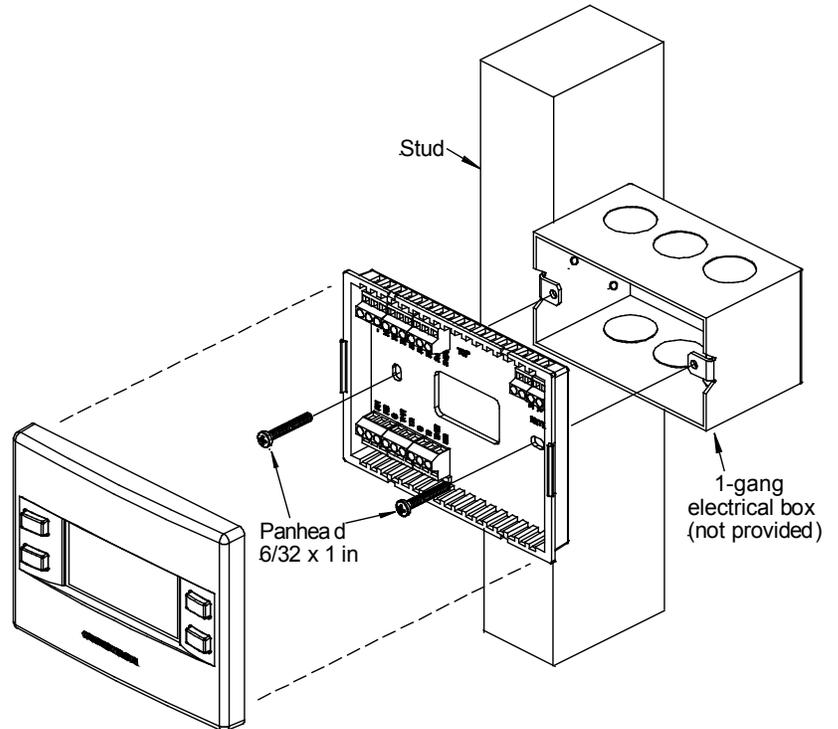
3. Attach back plate to drywall with screws and anchors (anchor hardware not supplied) 60 inches (~1.6 meters) above the finished floor. Thermostat may also be mounted to a 1-gang electrical box, horizontally mounted, using the two included 6-32 x 1 inch panhead screws. If using a 5-sided 1-gang electrical box, fill with insulation material to minimize wall air ingress. Ensure that the thermostat is level and the ventilation holes in the backplate are not blocked.
4. Note orientation of front plate connection leads and reattach the front plate to the back plate (make sure front plate snaps in place and no wires are pinched).

CAUTION: Do not press on the LCD display during installation, as this may cause the screen to crack.

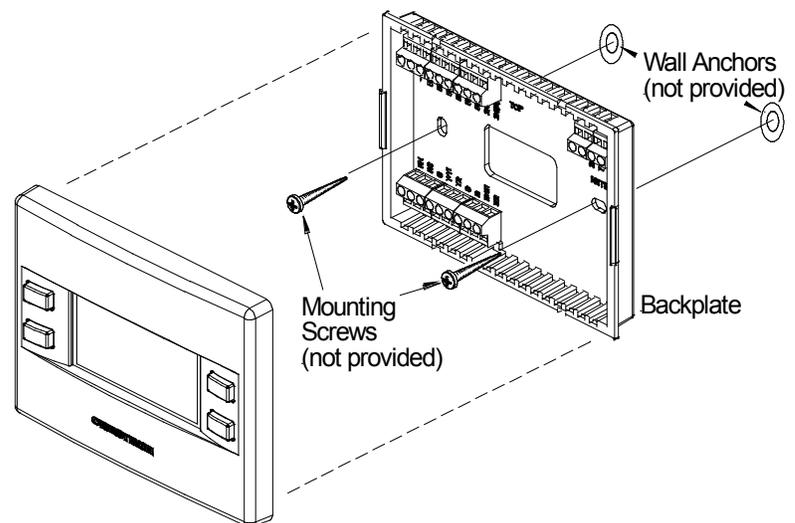
5. Carefully remove the warning label from the LCD display.

Installing the CHV-TSTAT and CHV-THSTAT in a Horizontally Mounted 1-Gang Electrical Box

NOTE: Install insulation (not supplied) in the 1-gang electrical box to prevent inaccurate readings.



Installing the CHV-TSTAT and CHV-THSTAT Directly On the Wall



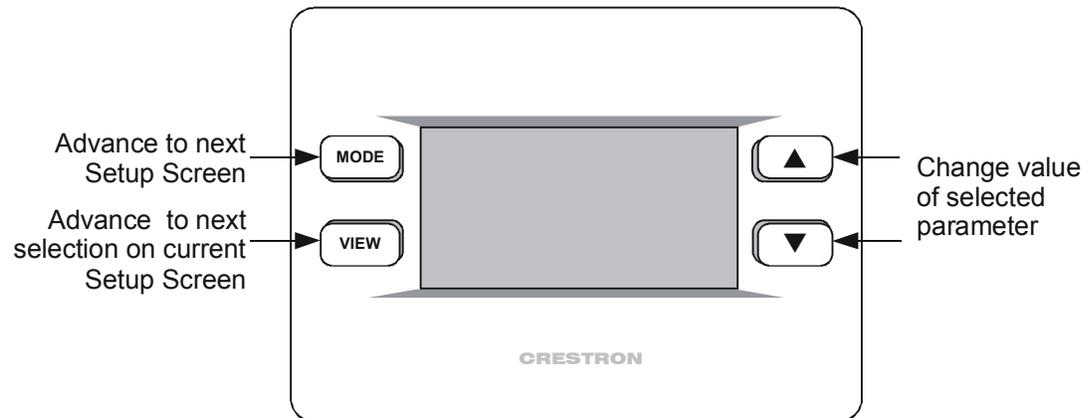
Thermostat Setup

Setup Procedure

After the thermostat is installed, it is necessary to set it up for a particular heating/cooling system. There are nine types of heating and cooling systems. The available choices displayed on the setup screens depend on the type of system selected. Follow these directions to access the setup screens.

1. Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to access the setup menus.
2. Press **VIEW** to select the parameter. A box appears around the selected parameter.
3. Press the arrow keys (**▲▼**) to choose the value of the selected parameter.
4. Use the **MODE** button to advance to the next setup screen.

CHV-TSTAT and CHV-THSTAT Setup



Setup Notes

The following are general setup notes.

NOTE: Refer to “System Connections” on page 10 for remote sensor connections to the thermostat.

NOTE: The *Offset* option permits recalibration of the room temperature sensor. The offset is the number of degrees added to or subtracted from the actual temperature. The range is -6° to $+6^{\circ}$ F. Factory default is 0° F. This adjustment changes the actual regulated temperature, not just the display.

NOTE: The sensors are used for temperature and humidity averaging. Choose *USE* to include each sensor, or *OMIT* to exclude each sensor in the averaging equation. Sensors that have the same designation (for example, outdoor) are averaged together.

NOTE: The thermostat does not leave *Setup* mode unless a valid sensor selection is made.

NOTE: When the *Reverse SMODE Dir* (reverse system mode direction) selection is set to *Yes* on the “SCRN OPTIONS” (screen options) setup screen, the arrow keys (▲ ▼) can be used to select system mode functions in both directions.

NOTE: If an out of range setpoint is entered, it is ignored.

NOTE: The screen options selected during setup are seen when the **View** key is pressed in normal operation.

System Types and Definitions

The first setup choice is the heat system type. There are three main types of heating/cooling systems:

1. Heat/Cool, Radiant Heat or Forced Air Heating/Cooling, 1 or 2 Stages
2. Heat Pump, 1 or 2 Stages, Auxiliary Heat or Dual Fuel
3. Slab System (Slab1 through Slab 5B)

1. Heat/Cool Systems Definitions

Radiant Heat: Radiant heat is a form of hydronic (hot water) heat that circulates hot water through pipes (baseboard radiation systems) or special tubing and installs on the perimeter of the house or underneath floors.

Forced Air: In a ducted heating/cooling system, a large fan (blower) forces heated air from the furnace into the ducts and enters the rooms through a register or grill in the floor or wall.

One or Two Stages: Unlike traditional furnaces that turn on and run at full capacity with each demand for heating, 2-stage furnaces operate like two separate furnaces. The unit begins to run in its first stage, and operates at a fraction of its heating capacity. This reduced capacity is sufficient on mild winter days. On very cold days, the furnace adjusts to full capacity (second stage) to meet the demand for heat.

Refer to “Heat/Cool, 1 or 2 Stages, Forced Air or Radiant” which begins on page 27.

2. Heat Pump Systems Definitions

A heat pump extracts available heat from one area and transfers it to another. Even cold air contains some heat, and heat pumps can extract heat from the outside air on a cold day and transfer it indoors to maintain a comfortable temperature. A heat pump also works in reverse during the summer, extracting heat from indoors and transferring it outdoors.

Dual Fuel: A dual fuel system combines an energy efficient air source heat pump with a new or existing oil, gas or propane furnace. The furnace runs in place of the heat pump in cold weather.

Aux (Auxiliary) Heat: When the a heat pump can no longer efficiently transfer heat from the outside air, the thermostat automatically turns on a secondary heat source, such as electric resistive heat.

Refer to “Heat Pump, 1 or 2 Stages, Aux Heat or Dual Fuel” which begins on page 31.

3. Slab Systems Definitions

Slab heating works from the ground up. The heating components are installed below the floor or are embedded in a concrete slab. Heat radiates from the floor to warm the space above. The CHV-TSTAT and CHV-THSTAT support seven variations of slab heat systems.

SLAB 1: Floor warming only. Operates the slab heat to maintain a particular slab temperature. System mode is enabled/disabled with Floor Warming Heat and OFF inputs. Slab is maintained at the slab setpoint temperature value. Connection to the slab output relay is terminal **W1**. Refer to “Slab 1 – Floor Warming Only” which starts on page 35.

SLAB 2: 1-stage space heat with slab maximum. Maintains a particular air temperature using the slab to heat the space. Does not heat over the slab maximum temperature even if this results in the space being under-heated. Connection to the slab output relay is terminal **W1**. Refer to “Slab 2 – 1-Stage Space Heat with Slab Maximum” which starts on page 39.

SLAB 3: 1-stage space heat with slab maximum and slab minimum. Performs the same operation as *SLAB 2*, and also keeps the slab at least as warm as slab setpoint. This may result in the space being overheated to maintain the slab minimum temperature. Connection to the slab output relay is terminal **W1**. Refer to “Slab 3 – 1-Stage Heat with Slab Minimum/Maximum” which starts on page 43.

SLAB 4A: 2-stage space heat with slab maximum and 1-stage cool. Maintains the air temperature using the slab for heat, up to the slab maximum. Augments the air heating by using a second stage of heat (generally a forced air system). Allows the second stage to operate by itself should the slab reach its maximum temperature and shut off. Cools the space with cooling call. Intended for heat-cool type forced air systems, with relay output connections to terminal **W1** for slab, terminal **W2** for second stage heat, and terminal **Y1** for cooling. Refer to “Slab 4A – 2-Stage Heat/1-Stage Cool with Slab Maximum” which starts on page 47.

SLAB 4B: Same operation as *SLAB 4A*, but intended for a heat pump type second stage. Relay output connections are terminal **W1** for slab heat, with heat pump-type connections on terminals **Y1/O/G** for cooling and heating calls. Aux heat is on terminal **W2**. Refer to “Slab 4B – 2-Stage Heat/1-Stage Cool with Slab Maximum (Heat Pump)” which starts on page 51.

SLAB 5A: 1-stage space heat and cool with floor warming. Combines the operation of a space heating/cooling thermostat with a floor-warming thermostat. Maintains the slab at slab setpoint, and maintains the space at the heat, cool, or auto setpoints. Systems effectively operate independently. Heat/Cool/Auto/Off sets the space control modes, and Floor Warming HEAT/OFF sets the slab mode. Intended for heat-cool style systems, with slab connection on terminal **W1**, space heat on terminal **W2**, and space cool on terminal **Y1**. Refer to “Slab 5A – 1-Stage Heat/Cool with Floor Warming” which starts on page 55.

SLAB 5B: Same as *SLAB 5A*, but for heat pump space systems, with slab heat on terminal **W1**, and space heat/cool on terminals **Y1/O/G**. Aux heat is on terminal **W2**. Refer to “Slab 5B – 1-Stage Heat/Cool with Floor Warming (Heat Pump)” which starts on page 59.

Heat/Cool, 1 or 2 Stages, Forced Air or Radiant

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup.

SETUP: SYSTEM

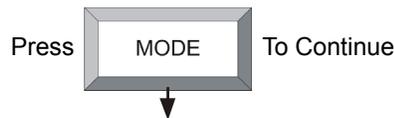
SETUP: SYSTEM	
Heat Sys Type:	H/C
# Heat Stages:	2
# Cool Stages:	2
Radiant / F. Air:	F.Air
SEPARATE HEAT AND COOL	

Heat Sys Type: H/C

Heat Stages: One or two heat stages.

Cool Stages: One or two cool stages.

Radiat /F. Air: Radiant or Forced Air Heat.



SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	5
Cool Anticipator:	2
Intrstg Differential:	2.0 ⁰
ADJUSTS HEAT SHUTOFF DYNAMICS	

Heat Anticipator and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.

High number = less frequent cycles, slower response.

NOTE: A setting of 3 is recommended for most installations.

SETUP: SYSTEM PERF	
ACCUMULATED ERROR THRESHOLD TO TRIGGER 2ND/AUX STAGE	
1=SMALL TIME,5=LARGE TIME	
6=DEFEAT ACCUMULATED STAGING	
Staging Accum Thresh	4

Intrstg Differential: Select 0.5° – 8.0° F.

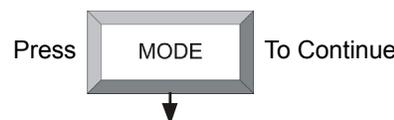
The proportional temperature error to trigger the second stage.

Staging Accum Thresh: Select 1 – 6.

The feature optimizes triggering of the second stage to meet demand in instances where the first stage cannot reach the interstage differential or achieve the desired setpoint.

*Low number = more aggressive trigger for second stage.
High number = less aggressive trigger for second stage (6 disables this feature altogether).*

NOTE: A setting of 3 is recommended for most installations.



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input checked="" type="checkbox"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

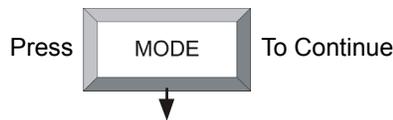
Show Hum Mode Pg and *Show Hum View Pg*: Select *Y* to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input checked="" type="checkbox"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of having to wait for a heating or cooling call to trigger the fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

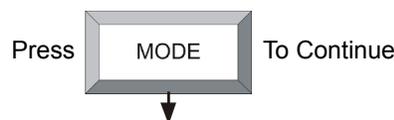
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT [v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.



SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input checked="" type="checkbox"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

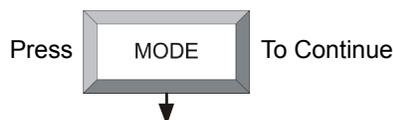
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

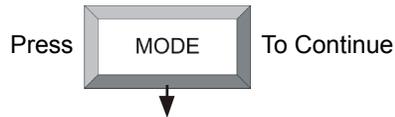
Disp Rem Func Pg1 and *Disp Rem Func Pg2*: Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="checkbox"/> F
Temp Disp Offset:	0 ⁰
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y



Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

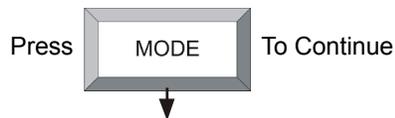
Main Scn Lwr Object:

SB – Slab OD – Outdoor
 HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="checkbox"/> N
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2 ⁰
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Ht Calls:

Options available if # heat stages = 1:

Y: Select if the heating system requires fan control.

N: Disables fan call operation for heat calls.

Options available if # of heat stages = 2:

--: Disables fan call operation for heat calls.

1/2: Fan called for first and second stage.

2: Fan called for second stage only.

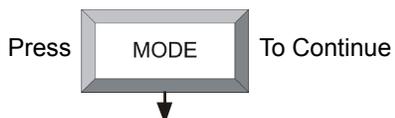
NOTE: Most heating systems run the fan automatically.

Auto DdBand Deg: (2 – 6) The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to Y in “Display Options”).

Disable Auto Mode: Does not display *Auto* on “System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS		
SENSOR	>TEMP	HUM
INTERNAL:	<input type="checkbox"/> USE	<input type="checkbox"/> OMIT
REMOTE 1:	SLAB	
DETECTED: 1 x T		
REMOTE 2:		



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

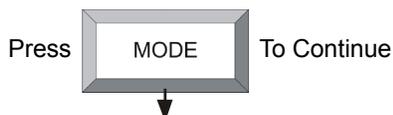
NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

SETUP: H-SENSORS	TRIM	% RH
INTERNAL:	-5	45
REMOTE 1:	0	50
REMOTE 2:	0	30

TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.



SETUP: SENSOR DEBUGGING

SETUP: SENSOR DBG				
IST/AVG F:	75	74	76	76
LOW/HI F:	74	75	75	76
COMM ERR:	1	1	0	0

RUN	RS1		RS2	
100%	45	45	62	62

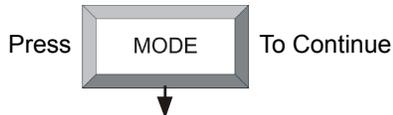
Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ERR: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.



SETUP: SERVICE/TEST

SETUP: SERVICE/TEST	
Heat Call:	OFF
Cool Call:	OFF
Humidifier Call:	OFF
Fan Run Call:	OFF

NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Heat Call: Select *ON* or *OFF*.

Cool Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Run Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

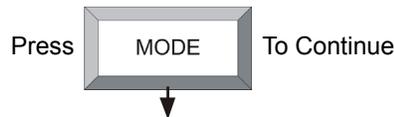
NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Heat Pump, 1 or 2 Stages, Aux Heat or Dual Fuel

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter the setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	HPump
# of Stages:	2
HP/AUX or DF:	HP/Aux
HEATPUMP SYSTEM	



Heat Sys Type: HPump

of Stages: Select 1 or 2 stages.

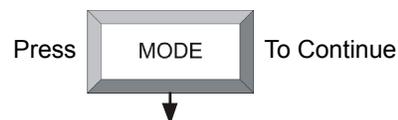
HP/AUX or DF: Dual fuel runs either the heat pump or the aux output, depending on outdoor temperature. The heat pump with aux can stage the heat when required to improve performance.

- **Dual Fuel:** A dual fuel system combines an energy efficient air source heat pump with a new or existing oil, gas or propane furnace. The furnace runs in place of the heat pump in cold weather.
- **Aux (Auxiliary) Heat:** When the a heat pump can no longer efficiently transfer heat from the outside air, the thermostat automatically turns on a secondary heat source, such as electric resistive heat.

SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	5
Cool Anticipator:	2
Intrstg Differential:	2.0 ⁰
ADJUSTS HEAT SHUTOFF DYNAMICS	

SETUP: SYSTEM PERF	
LOCKS OUT HP IN COLD WEATHER	
HP Balance Pt:	0 ⁰
AUX Balance Pt:	90 ⁰
Staging Accum Thresh:	4



Heat Anticipator and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.
High number = less frequent cycles, slower response.

Intrstg Differential: Select 0.5⁰ – 8.0⁰ F.

The proportional temperature error to trigger the second stage.

HP Balance Pt: Select 0⁰ – 90⁰ F or N/A. Minimum outdoor temperature at which the heat pump runs (requires an outdoor temperature source).

AUX Balance Pt: Select 0⁰ – 90⁰ F or N/A. Maximum outdoor temperature at which Aux heat system supplements the heat pump (requires an outdoor temperature sensor).

Staging Accum Thresh: Select 1 – 6.

The feature optimizes triggering of the second stage to meet demand in instances where the first stage cannot reach the interstage differential or achieve the desired setpoint.

Low number = more aggressive trigger for second stage.
High number = less aggressive trigger for second stage (6 disables this feature altogether).

NOTE: A setting of 3 is recommended for most installations.

SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input checked="" type="checkbox"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

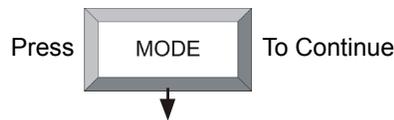
Show Hum Mode Pg and *Show Hum View Pg*: Select *Y* to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input checked="" type="checkbox"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of having to wait for a heating or cooling call to trigger the fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

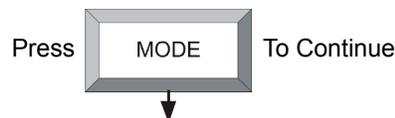
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT [v2.0, #D8000000]	

Network ID: Valid entries are *03* to *FE* in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select *1* – *10* to lighten or darken screen.

This screen displays model number, firmware version and TSID.

**SETUP: SCREEN OPTIONS**

SETUP: SCRNN OPTS	
Disp Global Page:	<input checked="" type="checkbox"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

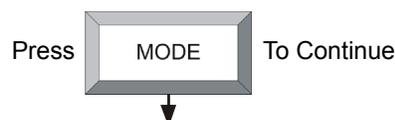
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

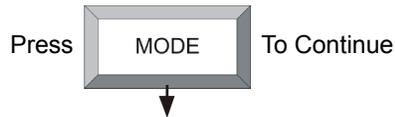
Disp Remote Function Pg1 and *Disp Rem Func Pg2*: Allow remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0 ⁰
Dual Setpoint Auto:	Y
Main Scrn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y



Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

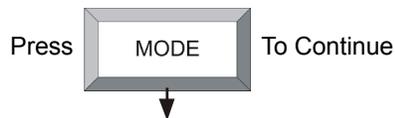
Main Scrn Lwr Obj:

SB – Slab OD – Outdoor
 HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="text" value="N"/>
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2 ⁰
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Ht Calls:

Options available if # heat stages = 1:

Y: Select if the heating system requires fan control.

N: Disables fan call operation for heat calls.

Options available if # of heat stages = 2:

--: Disables fan call operation for heat calls.

1/2: Fan called for first and second stage.

2: Fan called for second stage only.

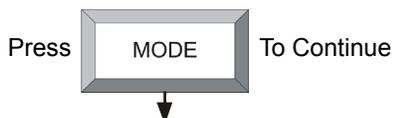
NOTE: Most heating systems run the fan automatically.

Auto DdBand Deg: Select 2 – 6. The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to Y in “Display Options”).

Disable Auto Mode: Does not display *Auto* on “System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS	
SENSOR	>TEMP HUM
INTERNAL:	<input type="text" value="USE"/> OMIT
REMOTE 1:	SLAB
DETECTED: 1 x T	
REMOTE 2:	



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

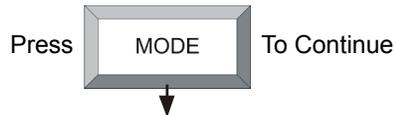
NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

SETUP: H-SENSORS		
	TRIM	% RH
INTERNAL:	-5	45
REMOTE 1:	0	50
REMOTE 2:	0	30

TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.



SETUP: SENSOR DEBUGGING

SETUP: SENSOR DBG				
IST/AVG F:	75	74	76	76
LOW/HI F:	74	75	75	76
COMM ERR:	1	1	0	0

RUN	RS1	RS2
100%	45	62
	45	62
	45	62

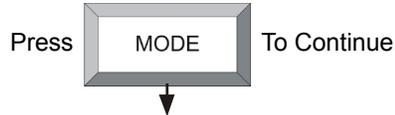
Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.



SETUP: SERVICE/TEST

SETUP: SERVICE/TEST	
Heat Call:	OFF
Cool Call:	OFF
Humidifier Call:	OFF
Fan Run Call:	OFF

NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Heat Call: Select *ON* or *OFF*.

Cool Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Run Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 1 – Floor Warming Only

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter the setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	<input type="text" value="SLAB 1"/>
Slab Reg:	6
FLOOR WARMING ONLY (W1)	

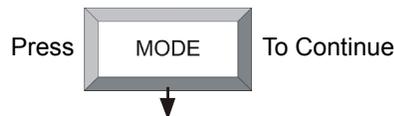
Heat Sys Type: SLAB 1

Slab Regulation: Select 1 – 6.

1 = Narrow temperature regulation

6 = Wide temperature regulation

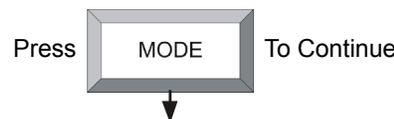
NOTE: Slab mode 1 requires a slab remote sensor (CHV-RSS, sold separately).



SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
NO APPLICABLE SETTINGS	

No applicable settings.



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input checked="" type="checkbox"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

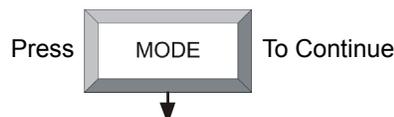
Show Hum Mode Pg and Show Hum View Pg: Select Y to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output:	<input checked="" type="checkbox"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of waiting for a heating or cooling call to trigger fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT	
[v2.0, #D8000000]	

Press  To Continue

↓

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.

SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input type="text" value="Y"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

Press  To Continue

↓

Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

Disp Rem Func Pg1 and *Disp Rem Func Pg2:* Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.

SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y

Press  To Continue

↓

Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

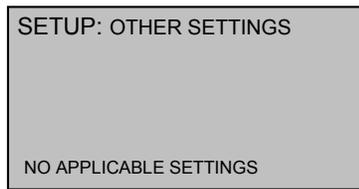
Main Scrn Lwr Obj:

SB – Slab OD – Outdoor

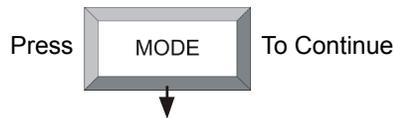
HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

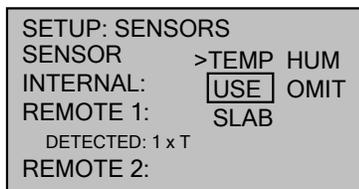
SETUP: OTHER SETTINGS



No applicable settings.

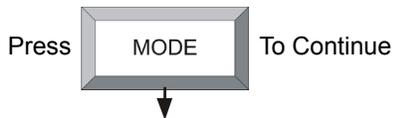


SETUP: SENSORS



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

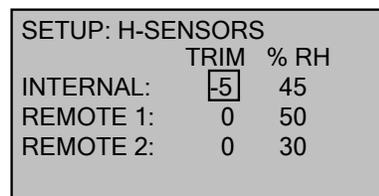


REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

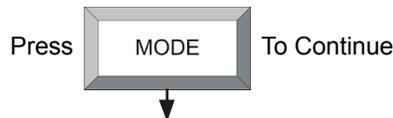
NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

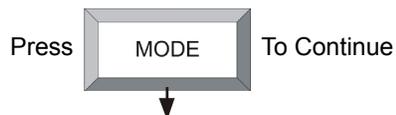
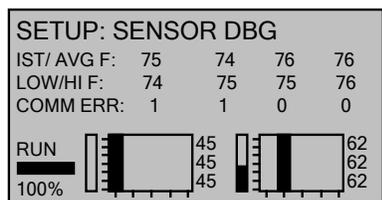


TRIM: Select *-9* – *+9*. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.



NOTE: For best results, calibration should be performed when RH is 40% or higher.

SETUP: SENSOR DEBUGGING



Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.

SETUP: SERVICE/TEST



NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 2 – 1-Stage Space Heat with Slab Maximum

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter the setup mode.

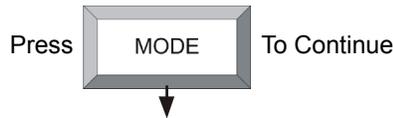
SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	<input type="text" value="SLAB 2"/>
Slab MAX T:	122°
1 STG SPACE HEAT BY SLAB WITH SLAB MAX (W1)	

Heat Sys Type: SLAB 2

Slab MAX T: Select 39° – 122° F (39° – 50° C). Used to prevent the floor from becoming too hot on long heat calls.

NOTE: Slab mode 2 requires an air temperature source and a slab remote sensor (CHV-RSS, sold separately).

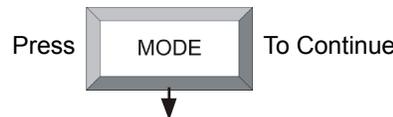


SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	<input type="text" value="5"/>
ADJUSTS HEAT SHUTOFF DYNAMICS	

Heat Anticipator: Select 1 – 6.

*Low number = more frequent cycles, faster response.
High number = less frequent cycles, slower response.*



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input type="text" value="Y"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

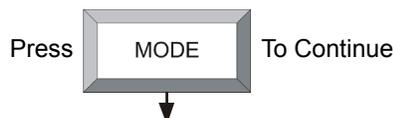
Show Hum Mode Pg and Show Hum View Pg: Select Y to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input type="text" value="Y"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of waiting for a heating or cooling call to trigger fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

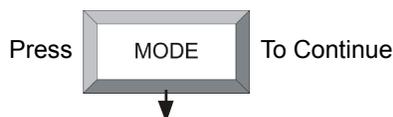
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT	
[v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.



SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input type="text" value="Y"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

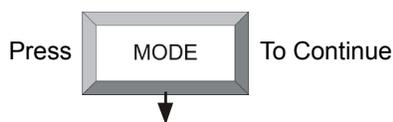
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

Disp Rem Func Pg1 and *Disp Rem Func Pg2:* Allow remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y

Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

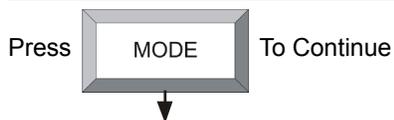
Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

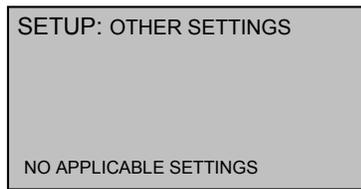
Main Scrn Lwr Obj:

SB – Slab OD – Outdoor
 HM – Humidity NA – None

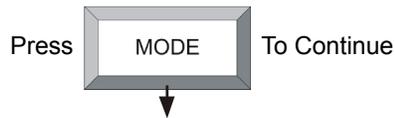
Use 0.5 Deg C Step: Display in 0.5° C steps.



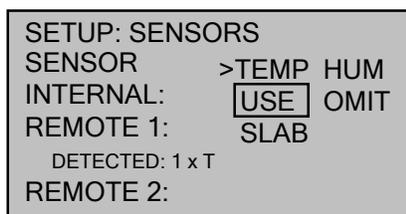
SETUP: OTHER SETTINGS



No applicable settings.



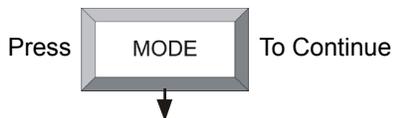
SETUP: SENSORS



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

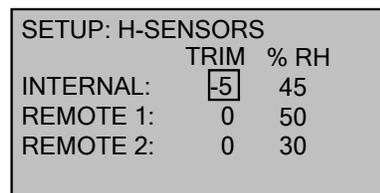
REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).



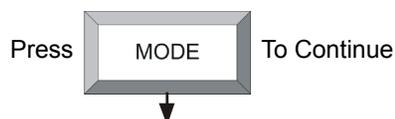
NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

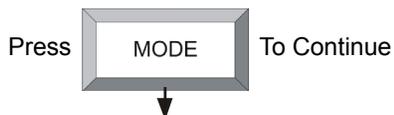
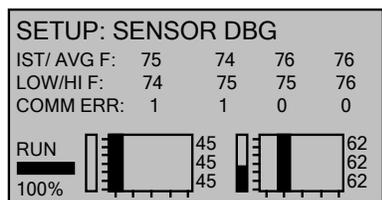


TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.



NOTE: For best results, calibration should be performed when RH is 40% or higher.

SETUP: SENSOR DEBUGGING



Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.

SETUP: SERVICE/TEST



NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 3 – 1-Stage Heat with Slab Minimum/Maximum

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	<input type="text" value="SLAB 3"/>
Slab MAX T:	122°
Slab Reg:	6
1 STG SPACE HEAT BY SLAB WITH SLAB MIN/MAX (W1)	

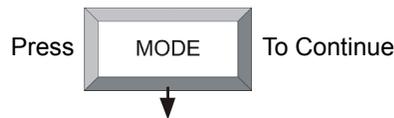
Heat Sys Type: SLAB 3

Slab MAX T: Select 39° – 122° F (39° – 50° C). Used to prevent the floor from becoming too hot on long heat calls.

Slab Reg: Select 1 – 6.

1 = Narrow temperature regulation

6 = Wide temperature regulation



NOTE: Slab mode 3 requires an air temperature source and a slab remote sensor (CHV-RSS, sold separately).

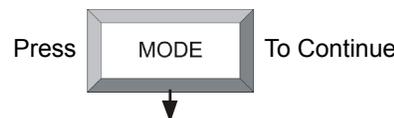
SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	<input type="text" value="5"/>
ADJUSTS HEAT SHUTOFF DYNAMICS	

Heat Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.

High number = less frequent cycles, slower response.



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input type="text" value="Y"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

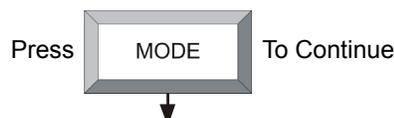
Show Hum Mode Pg and Show Hum View Pg: Select Y to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input type="text" value="Y"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of waiting for a heating or cooling call to trigger the fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT	
[v2.0, #D8000000]	

Press  To Continue

↓

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.

SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input type="text" value="Y"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

Press  To Continue

↓

Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

Disp Rem Func Pg1 and *Disp Rem Func Pg2:* Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.

SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scrn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y

Press  To Continue

↓

Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

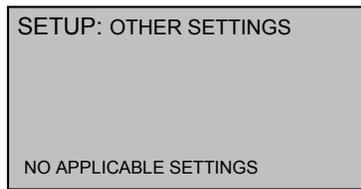
Main Scrn Lwr Obj:

SB – Slab OD – Outdoor

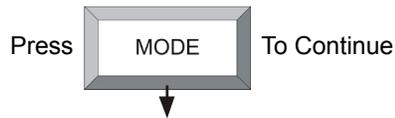
HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

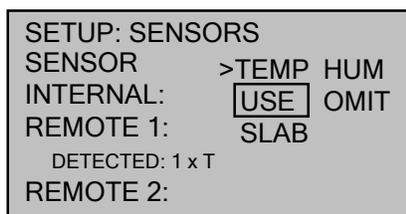
SETUP: OTHER SETTINGS



No applicable settings.



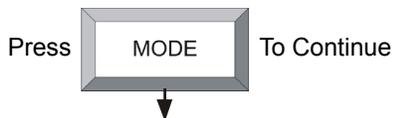
SETUP: SENSORS



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

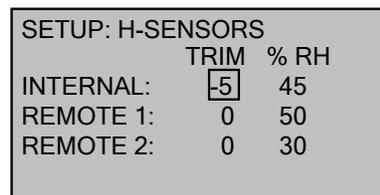
REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).



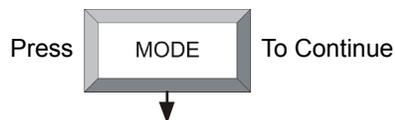
NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

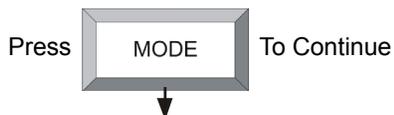
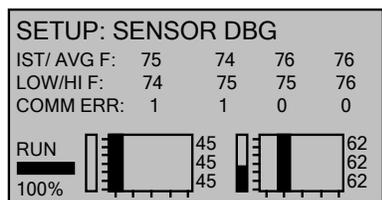


TRIM (-9 – +9) Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.



NOTE: For best results, calibration should be performed when RH is 40% or higher.

SETUP: SENSOR DEBUGGING



Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.

SETUP: SERVICE/TEST



NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 4A – 2-Stage Heat/1-Stage Cool with Slab Maximum

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup mode.

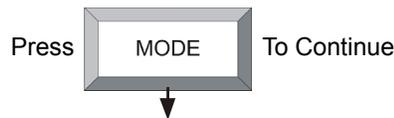
SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	<input type="text" value="SLAB 4A"/>
Slab MAX T:	122°
2 STG SPACE HEAT - 1 STG COOL WITH SLAB MAX (H/C) SLAB = (W1), HT = W2, CL = Y1	

Heat System Type: SLAB 4A

Slab MAX T: Select 39° – 122° F (39° – 50° C). Used to prevent the floor from becoming too hot on long heat calls.

NOTE: Slab mode 4A requires an air temperature source and a slab remote sensor (CHV-RSS, sold separately).



SETUP: SYSTEM PERFORMANCE

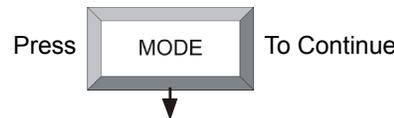
SETUP: SYSTEM PERF	
Heat Anticipator:	<input type="text" value="5"/>
Cool Anticipator:	2
Intrstg Differential:	2.0°
ADJUSTS HEAT SHUTOFF DYNAMICS	

Heat and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response. High number = less frequent cycles, slower response.

Interstage Differential: Select 0.5° – 8.0° F.

The proportional temperature error to trigger the second stage.



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input type="text" value="Y"/>
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

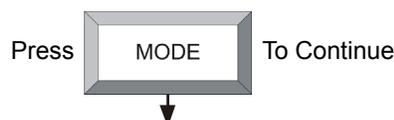
Show Hum Mode Pg and Show Hum View Pg: Select Y to show humidity page in normal operation.

Cold Weather Compensation: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS CHV-RTS, or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input type="text" value="Y"/>
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of waiting for a heating or cooling call to trigger fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

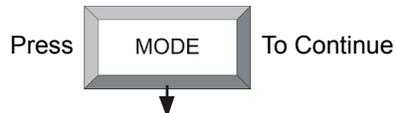
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT	
[v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.

**SETUP: SCREEN OPTIONS**

SETUP: SCRN OPTIONS	
Disp Global Page:	<input type="text" value="Y"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

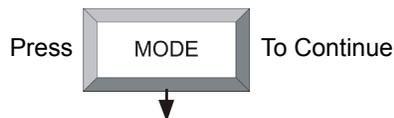
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

Disp Rem Func Pg1 and *Disp Rem Func Pg2:* Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.

**SETUP: DISPLAY OPTIONS**

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y

Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

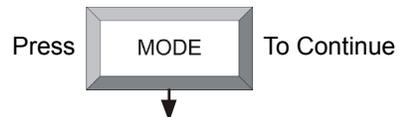
Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

Main Screen Lower Object:

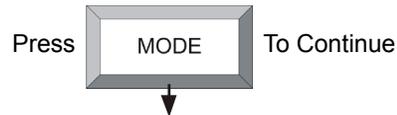
SB – Slab OD – Outdoor
HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.



SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="checkbox"/> N
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2°
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Ht Calls: If the heating system requires fan control, select *Y*.

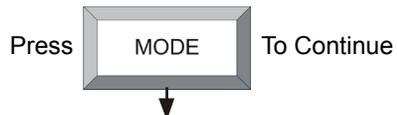
NOTE: Most heating systems run the fan automatically.

Auto Mode Dead Band: Select 2 – 6. The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to *Yes* in “Display Options”).

Disable Auto Mode: Does not display *Auto* on “System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS	
SENSOR	>TEMP HUM
INTERNAL:	<input type="checkbox"/> USE <input type="checkbox"/> OMIT
REMOTE 1:	SLAB
DETECTED: 1 x T	
REMOTE 2:	



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

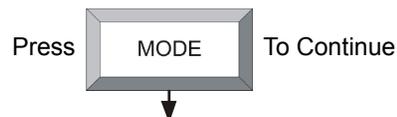
REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

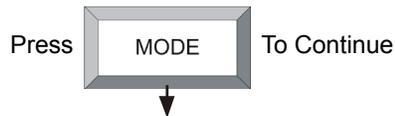
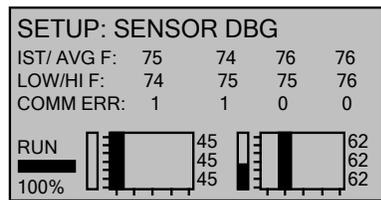
SETUP: H-SENSORS		
	TRIM	% RH
INTERNAL:	<input type="text" value="-5"/>	45
REMOTE 1:	0	50
REMOTE 2:	0	30



TRIM (-9 – +9) Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.

SETUP: SENSOR DEBUGGING



Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

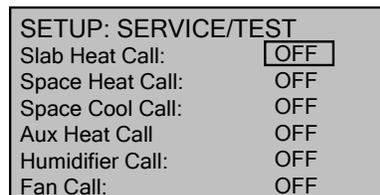
IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.

SETUP: SERVICE/TEST



NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Space Heat Call: Select *ON* or *OFF*.

Space Cool Call: Select *ON* or *OFF*.

Aux Heat Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

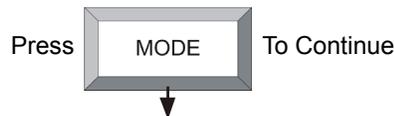
NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 4B – 2-Stage Heat/1-Stage Cool with Slab Maximum (Heat Pump)

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	SLAB 4B
Slab MAX T:	122°
HP/AUX or DF:	HP/Aux
2 STG SPACE HEAT - 1 STG COOL WITH SLAB MAX (HP) SLAB = W1, HT/CL = Y1/O/G	



Heat Sys Type: SLAB 4B

Slab MAX T: Select 39° – 122° F (39° – 50° C). Used to prevent the floor from becoming too hot on long heat calls.

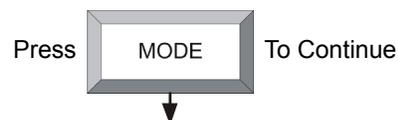
HP/Aux or DF: Dual fuel runs either the heat pump or the aux output, depending on outdoor temperature. The heat pump with aux can stage the heat when required to improve performance.

- **Dual Fuel:** A dual fuel system combines an energy efficient air source heat pump with a new or existing oil, gas or propane furnace. The furnace runs in place of the heat pump in cold weather.
- **Aux (Auxiliary) Heat:** When the heat pump can no longer efficiently transfer heat from the outside air, the thermostat automatically turns on a secondary heat source, such as electric resistive heat.

NOTE: Slab mode 4B requires an air temperature source and a slab remote sensor (CHV-RSS).

SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	5
Cool Anticipator:	6
Intrstg Differential:	0.5°
HP Balance Pt:	Off
AUX Balance Pt:	1°



Heat Anticipator and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.
High number = less frequent cycles, slower response.

Intrstg Differential: Select 0.5° – 8.0° F.

The proportional temperature error to trigger the second stage.

HP Balance Pt: Select 0° – 90° F or N/A. Minimum outdoor temperature at which the heat pump runs (requires an outdoor temperature sensor).

AUX Balance Pt: Select 0° – 90° F or N/A. Maximum outdoor temperature at which Aux heat system supplements the heat pump (requires an outdoor temperature sensor).

SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input checked="" type="checkbox"/> Y
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

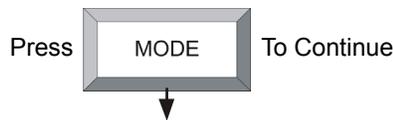
Show Hum Mode Pg and *Show Hum View Pg*: Select *Y* to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input checked="" type="checkbox"/> Y
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of having to wait for a heating or cooling call to trigger the fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

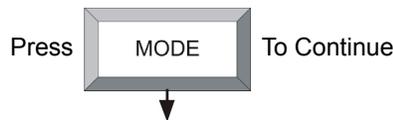
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT [v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: (1 – 10) Lighter to darker screen.

This screen displays model number, firmware version and TSID.



SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input checked="" type="checkbox"/> Y
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

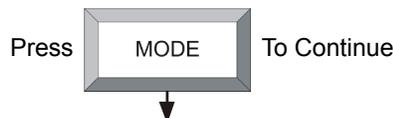
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

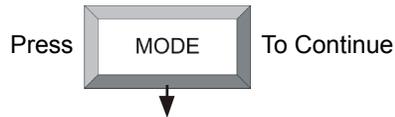
Disp Rem Func Pg1 and *Disp Rem Func Pg2*: Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="checkbox"/> F
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y



Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

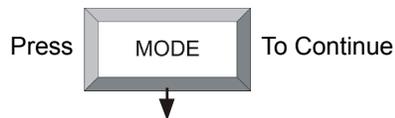
Main Screen Lower Object:

SB – Slab OD – Outdoor
HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="checkbox"/> N
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2°
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Heat Calls: If the heating system requires fan control, select Y.

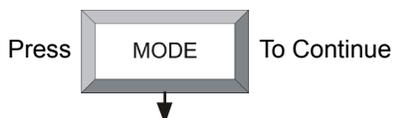
NOTE: Most heating systems run the fan automatically.

Auto DdBand Deg: Select 2 – 6. The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to Y in “Display Options”).

Disable Auto Mode: Does not display *Auto* on “System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS	
SENSOR	>TEMP HUM
INTERNAL:	<input type="checkbox"/> USE <input type="checkbox"/> OMIT
REMOTE 1:	SLAB
DETECTED: 1 x T	
REMOTE 2:	



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

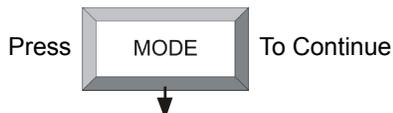
NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

SETUP: H-SENSORS		
	TRIM	% RH
INTERNAL:	<input type="text" value="-5"/>	45
REMOTE 1:	0	50
REMOTE 2:	0	30

TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.



SETUP: SENSOR DEBUGGING

SETUP: SENSOR DBG				
IST/AVG F:	75	74	76	76
LOW/HI F:	74	75	75	76
COMM ERR:	1	1	0	0

RUN	RS1	RS2
		
	45 45 45	62 62 62

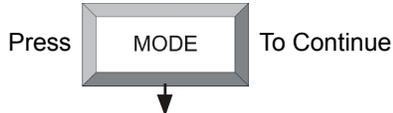
Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.



SETUP: SERVICE/TEST

SETUP: SERVICE/TEST	
Slab Heat Call:	<input type="text" value="OFF"/>
Space Heat Call:	OFF
Space Cool Call:	OFF
Aux Heat Call:	OFF
Humidifier Call:	OFF
Fan Call:	OFF

NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Space Heat Call: Select *ON* or *OFF*.

Space Cool Call: Select *ON* or *OFF*.

Aux Heat Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 5A – 1-Stage Heat/Cool with Floor Warming

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	<input type="text" value="SLAB 5A"/>
Slab Reg:	<input type="text" value="2"/>
1 STG SPACE HEAT-COOL WITH FLOOR WARMING SLAB (W1) HT=W2 CL=Y1/G	

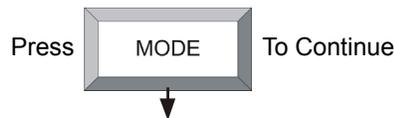
Heat System Type: SLAB 5A

Slab Regulation: Select 1 – 6.

1 = Narrow temperature regulation

6 = Wide temperature regulation

NOTE: Slab mode 5A requires an air temperature source and a slab remote sensor (CHV-RSS, sold separately).



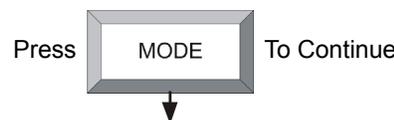
SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	<input type="text" value="5"/>
Cool Anticipator:	<input type="text" value="2"/>
ADJUSTS HEAT SHUTOFF DYNAMICS	

Heat Anticipator and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.

High number = less frequent cycles, slower response.



SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input type="text" value="Y"/>
Show Hum View Pg:	<input type="text" value="Y"/>
Cold Weather Comp:	<input type="text" value="N"/>
SYSTEM ENABLE/DISABLE PAGE	

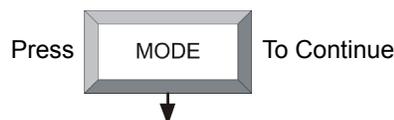
Show Hum Mode Pg and Show Hum View Pg: Select Y to show humidity page in normal operation.

Cold Weather Comp: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input type="text" value="Y"/>
Call FAN in HUM:	<input type="text" value="N"/>

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of waiting for a heating or cooling call to trigger fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

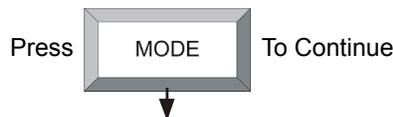
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT	
[v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.



SETUP: SCREEN OPTIONS

SETUP: SCRN OPTIONS	
Disp Global Page:	<input type="text" value="Y"/>
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

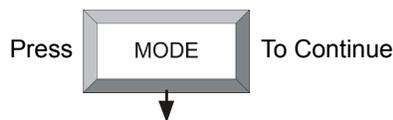
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

Disp Rem Func Pg1 and *Disp Rem Func Pg2:* Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="text" value="F"/>
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y

Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

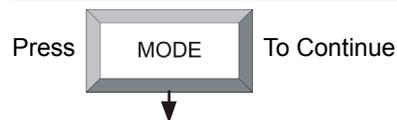
Temp Disp Offset: Select -6° – +6° F. Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

Main Scrn Lwr Obj:

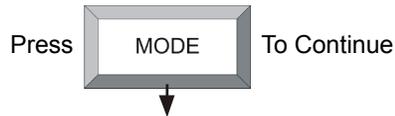
SB – Slab OD – Outdoor
 HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.



SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="checkbox"/> N
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2 ⁰
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Ht Calls: If the heating system requires fan control, select *Y*.

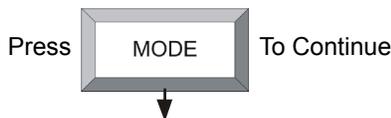
NOTE: Most heating systems run the fan automatically.

Auto DdBand Deg: Select 2 – 6. The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to *Y* in “Display Options”).

Disable Auto Mode: Does not display *Auto* on” System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS	
SENSOR	>TEMP HUM
INTERNAL:	<input type="checkbox"/> USE <input type="checkbox"/> OMIT
REMOTE 1:	<input type="checkbox"/> SLAB
DETECTED: 1 x T	
REMOTE 2:	



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

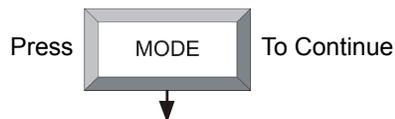
REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

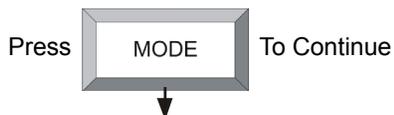
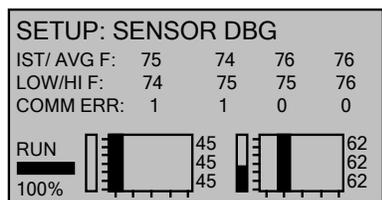
SETUP: H-SENSORS		
	TRIM	% RH
INTERNAL:	<input type="checkbox"/> -5	45
REMOTE 1:	0	50
REMOTE 2:	0	30



TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.

SETUP: SENSOR DEBUGGING



Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

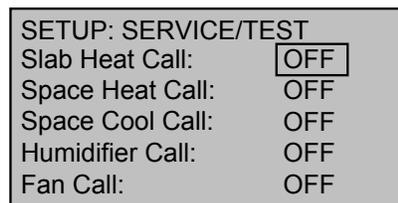
IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.

SETUP: SERVICE/TEST



NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Space Heat Call: Select *ON* or *OFF*.

Space Cool Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

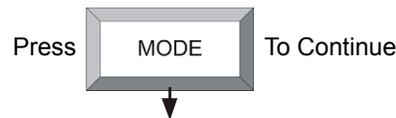
NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Slab 5B – 1-Stage Heat/Cool with Floor Warming (Heat Pump)

Press and hold the **MODE** and **VIEW** buttons simultaneously for 5 seconds to enter setup mode.

SETUP: SYSTEM

SETUP: SYSTEM	
Heat Sys Type:	SLAB 5B
Slab Reg:	6
HP/AUX or DF:	HP/Aux
1 STG SPACE HEAT - COOL W/ FLOOR WARMING (HEATPUMP) SLAB=W1 HT/CL=Y1/O/G	



Heat System Type: SLAB 5B

Slab Reg: Select 1 – 6.

1 = Narrow temperature regulation

6 = Wide temperature regulation

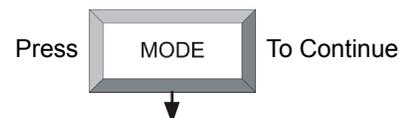
HP/Aux or DF: Dual fuel runs either the heat pump or the aux output, depending on outdoor temperature. The heat pump with aux can stage the heat when required to improve performance.

- **Dual Fuel:** A dual fuel system combines an energy efficient air source heat pump with a new or existing oil, gas or propane furnace. The furnace runs in place of the heat pump in cold weather.
- **Aux (Auxiliary) Heat:** When the heat pump can no longer efficiently transfer heat from the outside air, the thermostat automatically turns on a secondary heat source, such as electric resistive heat.

NOTE: Slab mode 5B requires an air temperature source and a slab remote sensor (CHV-RSS).

SETUP: SYSTEM PERFORMANCE

SETUP: SYSTEM PERF	
Heat Anticipator:	5
Cool Anticipator:	6
Intrstg Differential:	0.5°
HP Balance Pt:	Off
AUX Balance Pt:	1°



Heat Anticipator and Cool Anticipator: Select 1 – 6.

Low number = more frequent cycles, faster response.

High number = less frequent cycles, slower response.

Intrstg Differential: Select 0.5° – 8.0° F.

The proportional temperature error to trigger the second stage.

HP Balance Pt: Select 0° – 90° F or N/A. Minimum outdoor temperature at which the heat pump runs (requires an outdoor temperature sensor).

AUX Balance Pt: Select 0° – 90° F or N/A. Maximum outdoor temperature at which Aux heat system supplements the heat pump (requires an outdoor temperature sensor).

SETUP: HUMIDITY OPTIONS

SETUP: HUM OPTS	
Show Hum Mode Pg:	<input checked="" type="checkbox"/> Y
Show Hum View Pg:	Y
Cold Weather Comp:	N
SYSTEM ENABLE/DISABLE PAGE	

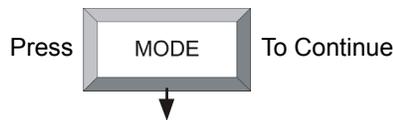
Show Hum Mode Pg and *Show Hum View Pg*: Select *Y* to show humidity page in normal operation.

Cold Weather Compensation: Modifies the humidifier output to prevent condensation on the windows. Requires an outdoor temperature source (CHV-THSAT or CHV-TSTAT with CHV-RTHS, CHV-RTS or CHV-RSS, sensors sold separately).

SETUP: HUM OPTS	
INVERTED HUM RELAY LOGIC HUM ABOVE SP = ENERGIZED	
Invert Hum Output	<input checked="" type="checkbox"/> Y
Call FAN in HUM:	N

Invert Hum Output: Reverses the logic controlling the switching of the HUM relay (NO/NC). May be useful when using to control a dehumidifier.

NOTE: Most dehumidifier applications require the default setting.



Call FAN in HUM: Makes a fan call during humidity calls instead of having to wait for a heating or cooling call to trigger the fan.

NOTE: Most dehumidifier applications automatically trigger fan operation.

NOTE: This setting is only useful for humidity calls with normal (non-inverted) logic.

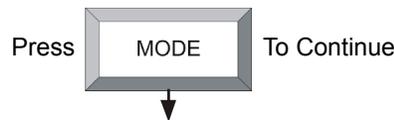
SETUP: DEVICE OPTIONS

SETUP: DEVICE OPTS	
Network ID:	<input type="text" value="2A"/>
LCD Contrast	5
CHV-THSTAT [v2.0, #D8000000]	

Network ID: Valid entries are 03 to FE in hex to match the network ID set for the thermostat in Crestron Studio or SIMPL Windows.

LCD Contrast: Select 1 – 10 to lighten or darken screen.

This screen displays model number, firmware version and TSID.



SETUP: SCREEN OPTIONS

SETUP: SCRNR OPTIONS	
Disp Global Page:	<input checked="" type="checkbox"/> Y
Disp Outdoor Page:	Y
Disp Rem Func Pg1:	Y
Disp Rem Func Pg2:	Y
Reverse SMODE Dir	N

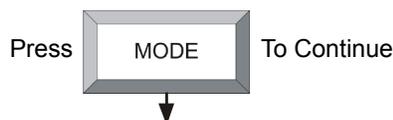
Select options to be displayed when the **VIEW** button is pressed in normal operation:

Disp Global Page: Temperature and humidity selection for entire house (if part of a Cresnet system).

Disp Outdoor Page: Temperature and humidity selection for the outside sensor.

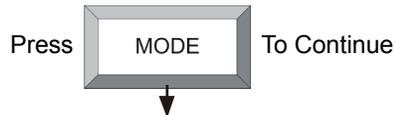
Disp Rem Func Pg1 and *Disp Rem Func Pg2*: Allows remote control of other functions (e.g., lights, alarms, etc.)

Reverse SMODE Dir: Allows arrow keys to select mode functions in both directions.



SETUP: DISPLAY OPTIONS

SETUP: DISP OPTIONS	
Temperature Units:	<input type="checkbox"/> F
Temp Disp Offset:	0°
Dual Setpoint Auto:	Y
Main Scn Lwr Obj:	HM
Use 0.5 Deg C Step:	Y



Temperature Units: Display temperature units in (F) Fahrenheit or (C) Celsius.

Temp Disp Offset: (-6° – +6° F) Allows the user to adjust the displayed and regulated temperature.

Dual Setpoint Auto: Enables 2-point auto mode.

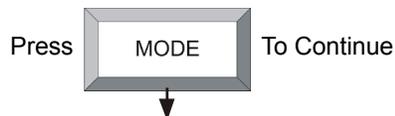
Main Screen Lower Object:

SB – Slab OD – Outdoor
HM – Humidity NA – None

Use 0.5 Deg C Step: Display in 0.5° C steps.

SETUP: OTHER SETTINGS

SETUP: OTHER SETTINGS	
Wide Range Cool:	<input type="checkbox"/> N
Run Fan in Ht Calls:	N
Auto DdBand Deg:	2°
Disable Auto Mode:	N
EXTENDED COOL SETPOINT RANGE 38-99F (3-37C)	



Wide Range Cool: Extends cool setpoint to full auto range of 38° – 99° F (3° – 37° C).

Run Fan in Heat Calls: If the heating system requires fan control, select Y.

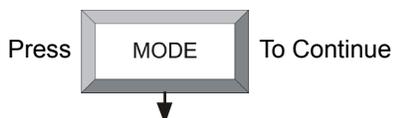
NOTE: Most heating systems run the fan automatically.

Auto DdBand Deg: Select 2 – 6. The minimum differential between heating and cooling setpoints (*Dual Setpoint Auto* set to Y in “Display Options”).

Disable Auto Mode: Does not display *Auto* on “System Mode” screen and does not permit entering *Auto* mode even from Cresnet commands.

SETUP: SENSORS

SETUP: SENSORS	
SENSOR	>TEMP HUM
INTERNAL:	<input type="checkbox"/> USE <input type="checkbox"/> OMIT
REMOTE 1:	SLAB
DETECTED: 1 x T	
REMOTE 2:	



INTERNAL: Choose *USE* or *OMIT*. Choose *USE* to permit temperature averaging.

NOTE: Sensor temperature and humidity can be output to network even if *OMIT* is chosen.

REMOTE 1 and 2: Choose *USE*, *OMIT*, *OD* (outdoors), or *SLAB* (remote sensors only).

NOTE: *REMOTE 1* and *REMOTE 2* options do not appear on this screen if these sensors are not connected.

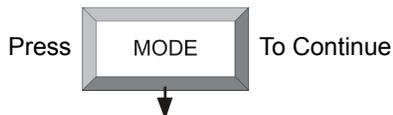
NOTE: Thermostat auto-detects connected remote sensors.

SETUP: HUMIDITY SENSORS

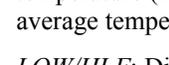
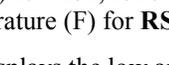
SETUP: H-SENSORS		
	TRIM	% RH
INTERNAL:	<input type="text" value="-5"/>	45
REMOTE 1:	0	50
REMOTE 2:	0	30

TRIM: Select -9 – +9. Allows the user to calibrate the *INTERNAL*, *REMOTE 1* and *REMOTE 2* humidity sensors to match % RH values obtained by other equipment. The values here are based on a logarithmic index and are not to be interpreted as units of measurement.

NOTE: For best results, calibration should be performed when RH is 40% or higher.



SETUP: SENSOR DEBUGGING

SETUP: SENSOR DBG				
IST/AVG F:	75	74	76	76
LOW/HI F:	74	75	75	76
COMM ERR:	1	1	0	0
RUN				
100%	45	45	62	62

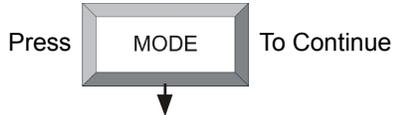
Press **VIEW** to run or stop sensor debugging. A completion progress bar indicates debugging status.

IST / AVG F: Displays the instantaneous and average temperature (F) for **RS1**, followed by the instantaneous and average temperature (F) for **RS2**.

LOW/HI F: Displays the low and high temperature (F) for **RS1** followed by the low and high temperature (F) for **RS2**.

COMM ER: Displays the number of communication errors present for **RS1**, followed by the number of communication errors present for **RS2**. Values should be close to 0. If values are higher than 20, check wiring.

Each histogram should display only a single column. Histogram values should not have much spread.



SETUP: SERVICE/TEST

SETUP: SERVICE/TEST	
Slab Heat Call:	<input type="text" value="OFF"/>
Space Heat Call:	OFF
Space Cool Call:	OFF
Aux Heat Call	OFF
Humidifier Call:	OFF
Fan Call:	OFF

NOTE: This screen bypasses all system delays and is used by the installer to manually operate the HVAC system. Only one system can be run at a time.

Slab Heat Call: Select *ON* or *OFF*.

Space Heat Call: Select *ON* or *OFF*.

Space Cool Call: Select *ON* or *OFF*.

Humidifier Call: Select *ON* or *OFF*.

Fan Call: Select *ON* or *OFF*.

Press **MODE** to return to the first screen. Press and hold **MODE** and **VIEW** simultaneously for 5 seconds to exit Setup.

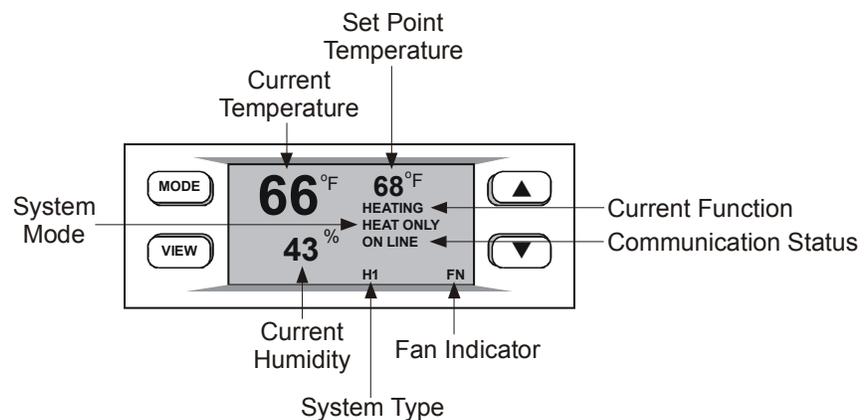
NOTE: Exit is not possible if the sensor setup does not meet system requirements.

Thermostat Operation

The main screen displays the current temperature, system mode, fan mode, relative humidity and setpoint temperatures. This screen also indicates the system type currently running:

H1 – Heat System or Stage 1 Heat System
 H2 – Stage 2 Heat System
 AX – Auxiliary Heating System
 C1 – Cooling System or Stage 1 Cooling System
 C2 – Stage 2 Cooling System
 SB – Slab heat system
 HM – Humidifier

Main Screen



Press the up ▲ arrow button to increase the setpoint temperature. Press the down ▼ arrow button to decrease the setpoint temperature.

NOTE: The first press of the up ▲ and down ▼ arrow buttons triggers backlight.

NOTE: If *Y* was selected in “DISP OPTIONS” (display options) screen for *Dual Setpoint Auto*, pressing **MODE** toggles between the heat and cool setpoints while they are flashing. Pressing **MODE** does not change the screen until the setpoint has stopped flashing.

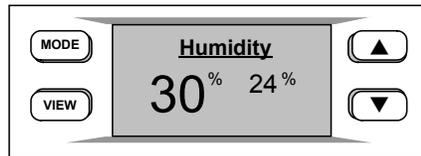
NOTE: System indicators flash to indicate short cycle timer protection (timer guards) engaged.

View Button Menus

Pressing the **VIEW** button allows the user to access the following screens:

NOTE: If enabled, the **VIEW** button also allows access to the remote button function screens. When part of a Cresnet system, the up ▲ and down ▼ arrow buttons can be used to enable other functions (i.e., lighting control, alarm system, etc).

“Humidity” Screen



Press the **VIEW** button to display the “Humidity” screen. The setpoint adjustment range is 5 – 90%.

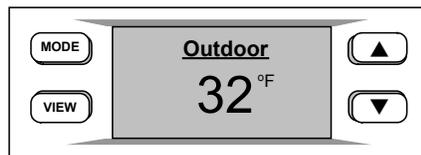
Use the up ▲ and down ▼ arrow buttons to adjust the humidity setpoint level.

NOTE: This page only appears if enabled in the “HUM OPTS” setup screen.

NOTE: CHV-TSTAT requires additional remote humidity sensor (CHV-RTHS, sold separately).

NOTE: If a CHV-RTHS temperature/humidity sensor is installed, a CHV-TSTAT can import and display the humidity.

“Outdoor” Screen



Press the **VIEW** button again to display the “Outdoor” screen. This allows the user to view the outdoor temperature (if an outdoor sensor has been installed) and outdoor humidity (if available). Outdoor temperature/humidity can come from an outdoor sensor wired directly to the thermostat or through the Cresnet system from another source. This page is only displayed if enabled in the “SCRN OPTIONS” setup screen.

NOTE: This is only a display and not for system activation. This display can be shown on either the CHV-TSTAT or the CHV-THSTAT.

“Messages” Screen



Press the **VIEW** button again to display the “Messages” screen. This screen allows the user to view any text messages sent from the control system (only when part of a Cresnet system). Text messages are limited to four lines, approximately 20 characters per line (including spaces). Allow for word wrap by staying within the 20 characters/spaces per line maximum. The thermostat auto-hyphenates when nearing the end of a line. Carriage returns can be used to force a line change.

NOTE: This page is only seen when a message has been sent to the thermostat.

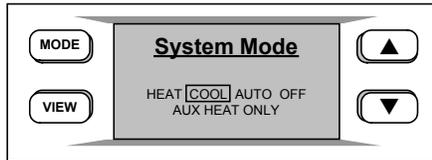
Press the **MODE** button to clear (CLR) the message(s). This acknowledges to the control system that the message has been read.

Mode Button Menus

Heat/Cool, Heat Pump and Slab 4 Systems

Pressing the **MODE** button allows the user to access the following screens when the thermostat is configured for Heat/Cool, Heat Pump and Slab 4 Systems.

“System Mode” Screen



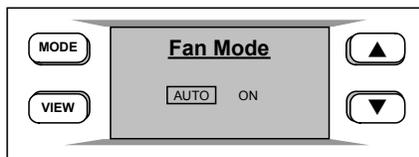
The “System Mode” screen appears when the **MODE** button is initially pressed.

Use the up ▲ and down ▼ arrow buttons to select *HEAT*, *COOL*, *AUTO*, *OFF* or *AUX HEAT ONLY*.

NOTE: The *AUTO* selection allows the system to switch between heat and cool automatically as needed to maintain the temperature.

NOTE: The *AUX HEAT ONLY* is for the backup heating system on heat pump based systems only. It allows the backup system to operate without operating the heat pump.

“Fan Mode” Screen

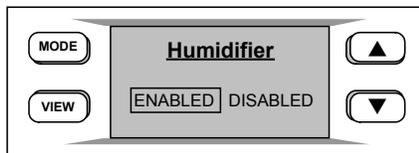


Pressing the **MODE** button again displays the “Fan Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *AUTO* or *ON*.

NOTE: In *AUTO*, the fan runs only when the system calls for heat or cool. In *ON*, the fan runs continuously.

“Humidifier” Screen

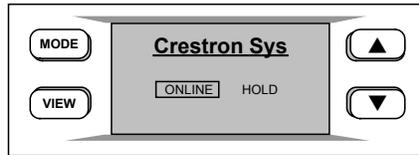


Pressing the **MODE** button again displays the “Humidifier” screen.

NOTE: This page only appears if enabled in the “HUM OPTS” setup screen.

NOTE: CHV-TSTAT requires additional remote humidity sensor (CHV-RTHS, sold separately).

Use the up ▲ and down ▼ arrow buttons to select *ENABLED* or *DISABLED*.

“Crestron System” Screen

Pressing the **MODE** button again displays the “Crestron Sys” (Crestron system) screen.

Use the up ▲ and down ▼ arrow buttons to select *ONLINE* or *HOLD*.

- *ONLINE*: Data flows both ways, to and from the thermostat, enabling adjustment from a remote location.
- *HOLD*: Data flows one way, from the thermostat, blocking system commands to change the temperature and humidity when the current settings should not be reset. Restores to the last command sent when online is re-engaged.

“Global Update” Screen

Pressing the **MODE** button again displays the “Global Update” screen.

This feature allows a single thermostat location to update the current temperature settings to all other thermostats on the system, provided that this function has been defined in the Crestron program.

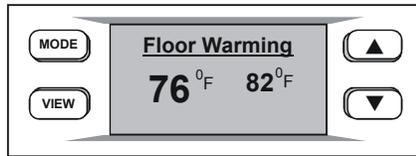
Press the down ▼ button to send the update.

Pressing the **MODE** button again displays the main screen.

Slab 5 Systems

Pressing the **MODE** button allows the user to access the following screens when the thermostat is configured for Slab 5 Systems.

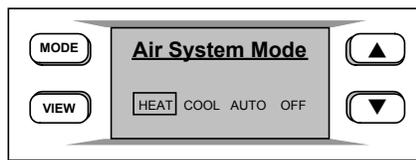
“Floor Warming” Screen



The “Floor Warming” screen appears when the **MODE** button is initially pressed.

This screen displays current floor warming temperature and setpoint.

“Air System Mode” Screen

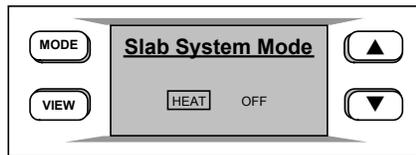


Pressing the **MODE** button again displays the “Air System Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *HEAT*, *COOL*, *AUTO*, *OFF*.

NOTE: The *AUTO* selection allows the system to switch between *HEAT* and *COOL* automatically as needed to maintain the temperature.

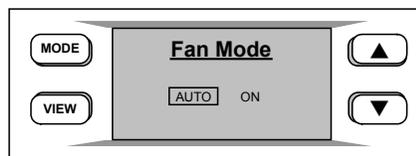
“Slab System Mode” Screen



Pressing the **MODE** button again displays the “Slab System Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *HEAT* or *OFF*.

“Fan Mode” Screen

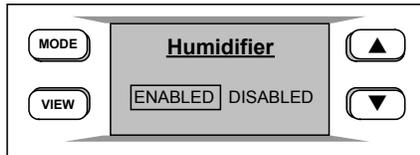


Pressing the **MODE** button again displays the “Fan Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *AUTO* or *ON*.

NOTE: In *AUTO*, the fan runs only when the system calls for heat or cool. In *ON*, the fan runs continuously.

“Humidifier” Screen



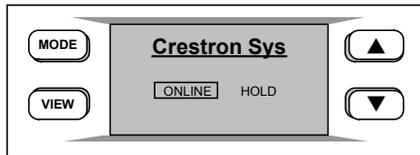
Pressing the **MODE** button again displays the “Humidifier” screen.

NOTE: This page only appears if enabled in the “HUM OPTS” setup screen.

NOTE: CHV-TSTAT requires additional remote humidity sensor (CHV-RTHS, sold separately).

Use the up ▲ and down ▼ arrow buttons to select *ENABLED* or *DISABLED*.

“Crestron Sys” Screen



Pressing the **MODE** button again displays the “Crestron Sys” (Crestron system) screen.

Use the up ▲ and down ▼ arrow buttons to select *ONLINE* or *HOLD*.

- *ONLINE*: Data flows both ways, to and from the thermostat, enabling adjustment from a remote location.
- *HOLD*: Data flows one way, from the thermostat, blocking system commands to change the temperature and humidity when the current settings should not be reset. Restores to the last command sent when online is re-engaged.

“Global Update” Screen



Pressing the **MODE** button again displays the “Global Update” screen.

Allows a single thermostat location to update the current temperature settings to all other thermostats on the system, provided that this function has been defined in the Crestron program.

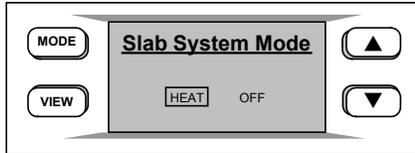
Press the down ▼ button to send the update.

Pressing the **MODE** button again displays the main screen.

Slab 1 and Slab 2 Systems

Pressing the **MODE** button allows the user to access the following screens when the thermostat is configured for Slab 1 and Slab 2 systems.

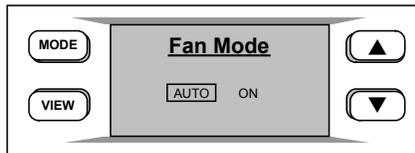
“Slab System Mode” Screen



The “Slab System Mode” screen appears when the **MODE** button is initially pressed.

Use the up ▲ and down ▼ arrow buttons to select *HEAT* or *OFF*.

“Fan Mode” Screen

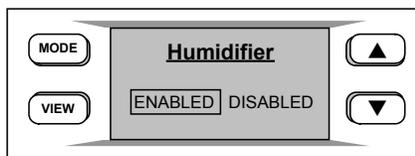


Pressing the **MODE** button again displays the “Fan Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *AUTO* or *ON*.

NOTE: In *AUTO*, the fan runs only when the system calls for heat or cool. In *ON*, the fan runs continuously.

“Humidifier” Screen



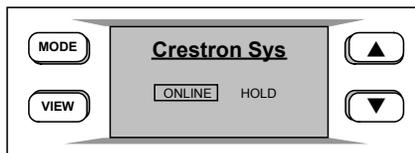
Pressing the **MODE** button again displays the “Humidifier” screen.

NOTE: This page only appears if enabled in the “HUM OPTS” setup screen.

NOTE: CHV-TSTAT requires additional remote humidity sensor (CHV-RTHS, sold separately).

Use the up ▲ and down ▼ arrow buttons to select *ENABLED* or *DISABLED*.

“Crestron System” Screen



Pressing the **MODE** button again displays the “Crestron Sys” (Crestron system) screen.

Use the up ▲ and down ▼ arrow buttons to select *ONLINE* or *HOLD*.

- *ONLINE*: Data flows both ways, to and from the thermostat, enabling adjustment from a remote location.
- *HOLD*: Data flows one way, from the thermostat, blocking system commands to change the temperature and humidity when the current settings should not be reset. Restores to the last command sent when online is re-engaged.

“Global Update” Screen



Pressing the **MODE** button again displays the “Global Update” screen.

This feature allows a single thermostat location to update the current temperature settings to all other thermostats on the system, provided that this function has been defined in the Crestron program.

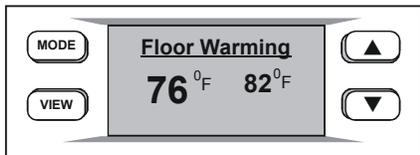
Press the down ▼ button to send the update.

Pressing the **MODE** button again displays the main screen.

Slab 4 Systems

Pressing the **MODE** button allows the user to access the following screens when the thermostat is configured for Slab 4 systems.

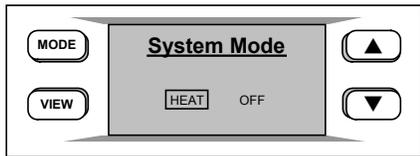
Floor Warming Screen



The “Floor Warming” screen appears when the **MODE** button is initially pressed.

This screen displays current floor warming temperature and setpoint.

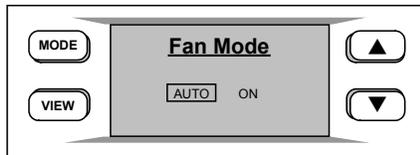
System Mode Screen



Pressing the **MODE** button again displays the “System Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *HEAT* or *OFF*.

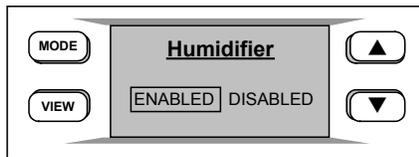
Fan Mode Screen



Pressing the **MODE** button again displays the “Fan Mode” screen.

Use the up ▲ and down ▼ arrow buttons to select *AUTO* or *ON*.

NOTE: In *AUTO*, the fan runs only when the system calls for heat or cool. In *ON*, the fan runs continuously.

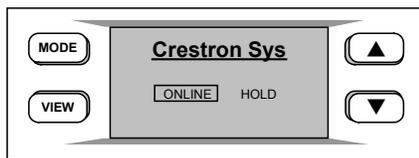
“Humidifier” Screen

Pressing the **MODE** button again displays the “Humidifier” screen.

NOTE: This page only appears if enabled in the “HUM OPTS” setup screen.

NOTE: CHV-TSTAT requires additional remote humidity sensor (CHV-RTHS, sold separately).

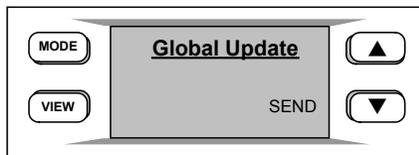
Use the up ▲ and down ▼ arrow buttons to select *ENABLED* or *DISABLED*.

“Crestron System” Screen

Pressing the **MODE** button again displays the “Crestron Sys” (Crestron System) screen.

Use the up ▲ and down ▼ arrow buttons to select *ONLINE* or *HOLD*.

- *ONLINE*: Data flows both ways, to and from the thermostat, enabling adjustment from a remote location.
- *HOLD*: Data flows one way, from the thermostat, blocking system commands to change the temperature and humidity when the current settings should not be reset. Restores to the last command sent when online is re-engaged.

“Global Update” Screen

Pressing the **MODE** button again displays the “Global Update” screen.

Allows a single thermostat location to update the current temperature settings to all other thermostats on the system, provided that this function has been defined in the Crestron program.

Press the down ▼ button to send the update.

Pressing the **MODE** button again displays the main screen.

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

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

Establishing Communication

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

Indirect Communication



CHV-TSTAT/CHV-THSTAT connects to control system via Cresnet:

1. Establish communication between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).
2. Use the Address Book in Crestron Toolbox to create an entry for the CHV-TSTAT/CHV-THSTAT using the expected communication protocol (indirect). Select the Cresnet ID of the CHV-TSTAT/CHV-THSTAT and the address book entry of the control system that is connected to the CHV-TSTAT/CHV-THSTAT.
3. Display the CHV-TSTAT/CHV-THSTAT's "System Info" window (click the **i** icon); communications are confirmed when the device information is displayed.

Programs and Firmware

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

Crestron Studio / SIMPL Windows

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

Firmware

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

Upgrade CHV-TSTAT/CHV-THSTAT firmware via Crestron Toolbox.

1. Establish communication with the CHV-TSTAT/CHV-THSTAT and display the “System Info” window.
2. Select **Functions | Firmware...** to upgrade the CHV-TSTAT/CHV-THSTAT firmware.

NOTE: Firmware version 2.40 is not compatible with SIMPL Windows programs that have used firmware version 1.1 and earlier.

Program Checks

Using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree View**) to show all network devices connected to the control system. Right-click on the CHV-TSTAT/CHV-THSTAT to display actions that can be performed on the CHV-TSTAT/CHV-THSTAT.

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.

CHV-TSTAT/CHV-THSTAT Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
No display	No power from system	Check for +24 V on pins 24(C) and 24(R) Check circuit breaker powering furnace or boiler Check P4 jumper on thermostat board Check thermostat wiring
	Incorrect mounting to backplate	Check thermostat mounting
Heating/Cooling system not operating	No power to thermostat	Check circuit breaker Check 24 V connection at thermostat and at furnace/air conditioner Check circuit breaker powering furnace or boiler Recheck wiring connections
	Flashing system indicator - Short cycle timer not satisfied	Timer Guards are a safety feature that prevents rapid switching between different cycles; <i>H1, H2, C1, C2, SB, HM, and AX</i> flash when the three-minute timer guards have not been satisfied Wait five minutes and/or consult HVAC contractor
Cannot change temperature setting	The upper or lower temperature limits were reached	Setpoint heat range is 38 – 90° F (3-38° C) Setpoint cool range is 59-100° F (15 – 38° C)
System cycles too quickly	Anticipator/Regulation setting too low	Reprogram anticipator/regulator setting
High temperature variance	Anticipator/Regulation setting too high	Refer to “Thermostat Setup”, on page 24

(Continued on following page)

CHV-TSTAT/CHV-THSTAT Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Wide temperature variance in single-setpoint auto mode	Auto deadband setting too high	Adjust auto deadband setting in setup
Heating/Cooling not operating in single-setpoint auto mode	20-minute system toggling lockout	Adjust auto deadband and anticipator settings for smoother operation
Displays Error Message and equipment not operating	Temperature sensors are disabled or have failed	Refer to "Local Error Messages" on page 77.
	Bad communications	Check wiring – Use low capacitance twisted-pair wiring
Main Screen Lower Object field displays ERR when hardware configuration appears functional	Setting indicated in the "Main Scn Lwr Obj" does not have a local or network source for the data	Set field to N/A
		Correct sensor configuration
		Update SIMPL program to feed the required data
Wrong temperature displayed	Wrong units	Select <i>F</i> or <i>C</i> as necessary
	Incorrect sensor setup	Check sensor setup
	Temperature Offset	Reset Temperature Offset
	Bad location	Ensure that thermostat is located out of direct sunlight, drafts, doorways, skylights, and windows
Displays "NetDown"	No Crestron program or the program does not have a device at this net address included in this system	Check ID in program Fix program, if one is needed
Cannot leave setup	n/a not valid	Ensure sensor setup meets system requirements. Refer to Sensor Setup screen
Cannot enter Auto mode	Auto mode disabled in setup	Select <i>N</i> for the Disable Auto Mode item on the "Other Settings" setup page
Cresnet Balance Point values out of range	Values of -1°, 91° F represent "Off" settings	Verify intended balance point settings
Temperature offset value not affecting Cresnet outputs	Offset is only added to "RegulationTemp"	Add offset in SIMPL program
Cannot change screens or setpoints	Local operation locked out	Remove lockout from network

Control System Error Log Message Formats

When a remote sensor that has been designated as *USE*, *SLAB*, or *OD* in the Setup Sensors screen (refer to “Thermostat Setup”, which begins on page 24) generates an error, a message is sent to the error log. Retrieve this message using the System Info tool in Crestron Toolbox:

1. Using Crestron Toolbox, select **Tools|System Info**.
2. Select the control system from the address bar and examine the Error Log.

Error Message Format

```
Sensor <channel> type <designator> <CHA errors>, <CHB
errors> Errors @ <cycle count>
```

Where:

channel is the sensor channel string

designator is the sensor setup designation

CHA errors/CHB errors are the number of errors on each sub-channel

cycle count is the number of read cycles that have occurred.

NOTE: Both sub-channels have their error count reported, regardless of the sensors connected.

This message is sent upon the first error detected on the channel, as well as every 100 errors detected thereafter. When only one sensor is connected to a remote interface, its values assume the <CHA> position. The values for the <CHB> position are not used. When two sensors are connected to a remote interface, the <CHA> position indicates the errors for the first sensor, and the <CHB> position indicates the errors for the second sensor.

The following is an example output, as seen in Crestron Toolbox, when a single outdoor sensor connected to RS1 accumulates 101 read failures:

```
Error: Message from device Slot-09.ID-2A: Sensor R1T
type OD: 101,3922 Errors @ 3922 (0056:0000:0056)
```

The following is an example output, as seen in Crestron Toolbox, when two air space sensors are connected to RS1 and the first sensor encountered a read failure:

```
Error: Message from device Slot-09.ID-2A: Sensor R1T
type USE: 1,0 Errors
@ 5943 (0056:0000:0056)
```

Local Error Messages

When a critical sensor fails and prevents the safe or intended operation of the HVAC equipment, an error message flashes on the main screen.

This error message appears as a text message under the line that normally reads **ON LINE** and **VIEW MSG**. The thermostat messages are shown as follows in descending priority.

ERROR	DESCRIPTION
ERR! NO AT SRC	Indicates that no air temperature source is present, because all available sensors designated USE have generated errors during the current read cycle. HVAC operation is suspended and relays are cleared, except on SLAB1 type. SLAB1 type cannot generate this error because it does not have an air temperature USE type.
ERR! NO SB SRC	Indicates that no slab temperature source is present, because all available sensors designated SLAB have generated errors during the current read cycle. HVAC operation is suspended on all slab modes (1, 2, 3, 4A, 4B, 5A, 5B).
ERR! NO HM SRC	Indicates that no humidity sources are present, because all available sensors designated USE have generated errors during the current read cycle. Humidifier operation is suspended and HUM relay is cleared.
ERR! NO OD SRC	Indicates that no outdoor source is present and the setup says at least one remote is supposed to be providing OD data (designated OD). This error does not disable HVAC operation because it is not absolutely essential. All heatpump modes that use outdoor temperature for balance point operation eventually stage or switch to auxiliary heat and thus prevent the space from freezing.

NOTE: All of these conditions are self-healing if the sensor begins sending valid data.

Check Network Wiring

Use the Right Wire

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

Calculate Power

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

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

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy chained on the run, the Cresnet power usage of each network unit to be daisy

chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

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

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

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

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

Strip and Tin Wire

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

Add Hubs

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

Reference Documents

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

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
CHV-RTS & CHV-RTHS
CHV-RSS

Further Inquiries

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

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

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the CHV-TSTAT/CHV-THSTAT, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

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

Appendix A: About Heat Pumps

A heat pump extracts available heat from one area and transfers it to another. Even cold air contains some heat, and heat pumps can extract heat from the outside air on a cold day and transfer it indoors to maintain a comfortable temperature. A heat pump also works in reverse during the summer, extracting heat from indoors and transferring it outdoors.

In the heating mode, the efficiency of a heat pump decreases as the outdoor air temperature decreases.

Heat Pump Operation

Heat flows naturally from a warm area to a cooler area, and the heat pump takes advantage of this principle. The heat pump essentially consists of a compressor, an inside coil and fan, and an outside coil and fan. A refrigerant flows inside the coils, under pressure applied by the compressor.

The refrigerant boils at a very low temperature (as low as -15° F) and becomes a vapor, just as water becomes a vapor (steam) when boiled. This vapor is sucked into the compressor where it becomes a high pressure, high temperature vapor.

When heating, the refrigerant is then forced through a coil within part of the heat pump located indoors. A fan blows cool air over the coil, the vapor cools, turns back to a liquid, releasing heat that is blown through a duct system to heat the house.

The cycle begins again as the cooled liquid refrigerant is pumped back outside after releasing its heat. On the way, it passes through an expansion valve, lowering the refrigerant's pressure and temperature again so it can boil more easily in the outdoor coil.

In its cooling mode the heat pump system works in reverse, extracting available heat from indoors and transferring it outside.

Heat pumps are most economical when they can be used year-round for both winter heating and summer cooling.

The efficiency of a heat pump varies significantly with the outdoor temperature. While a heat pump may be twice as efficient as a conventional heating system at 50° F, when the outdoor temperature drops to less than 30° F, the heat pump must be supplemented with an auxiliary heating system such as electric resistance. At temperatures of 15° F or less the heat pump may shut off and the backup heating system takes over. This is the heat pump balance point. In a dual-fuel system, the heat pump is supplemented with a standard furnace, which takes over when it becomes more efficient than the heat pump at very low temperatures.

Glossary

Anticipators

Used to anticipate the drop or rise in temperature and energize the appropriate system before reaching the setpoint.

Auto Dead Band Degree (Auto DdBand Deg)

Sets the minimum separation in auto mode between the heat and cool setpoints, or the changeover band in 1-point auto mode.

Balance Point

The lowest outdoor temperature at which the refrigeration cycle of a heat pump supplies the heating requirements without the aid of a supplementary heat source.

Blower (Fan)

An air handling device for moving air in a distribution system.

Btu - British Thermal Unit

In scientific terms, it represents the amount of energy required to raise one pound of water one degree Fahrenheit. One Btu is the equivalent of the heat given off by a single wooden kitchen match.

Call

A call is when the thermostat requests the heating or cooling system to turn on.

Damper

Found in ductwork, this movable plate opens and closes to control airflow. Dampers are used effectively in zoning to regulate airflow to certain rooms.

Dead Band

The minimal differential between heating and cooling.

Dual Fuel

A heat pump used in conjunction with an existing furnace.

Dual Setpoint Auto

Enables the 2-point to mode.

Emergency Heat (Supplementary Electric Heat)

The auxiliary (AUX) or emergency heat provided at temperatures below a heat pump's balance point. It is usually electrical resistance heat.

Forced Air

A type of heating system that uses a blower motor to move air through the furnace and into the ductwork.

Furnace

Equipment used to convert heating energy, such as fuel, oil, gas or electricity, to usable heat. It usually contains a heat exchanger, a blower and the controls to operate the system.

Heat Exchanger

A device for the transfer of heat energy from the source to the conveying medium of air or water. Most common combinations are: Refrigerant to air or Refrigerant to water (DX), Water to air (hydronic), Steam to air, Steam to water.

Heat Pump

A unit that both cools and heats. A heat pump system can be either a split system or a packaged system. A heat pump can be used in conjunction with a gas/oil/LP furnace (using the furnace instead of electric resistance heat when temperatures fall below about 35° F).

Humidity

The total amount of moisture in air. Relative humidity (RH) is the amount of moisture in air, relative to its total capability based upon its temperature (dewpoint). Moisture condenses on surfaces that are below this dewpoint.

HVAC

Heating, ventilation and air conditioning.

Interstage Differential

The proportional temperature error (0.5 to 3.0°) to trigger the second stage (2-stage only).

Main Screen Lower Object (Main Screen Lwr Obj)

Selects the data item displayed at the bottom of the main screen. Choice of: none, slab temperature, outdoor temperature, or indoor humidity.

Run Fan in Heat Calls (Run Fan in Ht Calls)

A device setting that activates the fan output with **W1/W2** heat calls. Does not enable operation on slab systems on the slab (**W1**) call.

Setpoint

The thermostat temperature or humidity adjustment setting.

Time Delay (Timer Guards)

Refers to a safety device or circuit that does not allow restart for three minutes.

2-Stage Heating

The heating unit starts out running in its first stage, and operates at a fraction of its capacity. When the temperature outside goes very low, the system adjusts to full capacity (second stage) to meet the demand.

Wide Range Cool

Extends the cool setpoint range to the full auto range of 38° to 99° F.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

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

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

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

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

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

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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. 8163E
(2002184)

02.13

Specifications subject to
change without notice.