CHV-TSTAT-FCU-PIR-10-W-T

0-10V Heating/Cooling Fan-Coil Thermostat, White Textured

Product Manual
Crestron Electronics, Inc.

Contents

Overview

The [CHV-TSTAT-FCU-PIR-10-W-T](#)thermostat enables precision 0-10V control of fan coil unit (FCU) HVAC systems, for variable heating, cooling, and fan speed control in hotels, apartments, or other multi-dwelling residences. Built with versatility and energy efficiency in mind, the thermostat has the additional benefit of a built-in passive infrared (PIR) sensor to ensure that energy is never wasted on a vacant room. Whether used as a standalone unit or as part of a complete Crestron® control system, theCHV-TSTAT-FCU-PIR-10-W-Tdelivers superior functionality in a stylish wall mount design.

The backlit LCD display and large, easy-to-read push buttons make this thermostat easy to navigate and use. The screen displays useful information such as the current room temperature, setpoint, mode, and fan setting. Push buttons are provided for raising and lowering the temperature, putting the unit in Heat, Cool, or Auto mode, adjusting the fan speed, and switching between temperature scales. Climate control features include separate heating and cooling setpoints, with an optional automatic changeover between heating and cooling modes. Adjustable anticipators prevent overshooting the set temperature, and continuous fan operation can be selected for increased circulation.

Multiple Crestron thermostats may be networked via Cresnet® wired communications, a simple 4-wire network bus that acts as the communications backbone for Crestron lighting dimmers, keypads, shades, thermostats, and other devices. Integrate the thermostat with a Crestron control system to enable global temperature and humidity adjustments from any thermostat in the system.

Features

Key features include:

- 0-10V FCU thermostat for variable heating, cooling, and fan speed control
- Additional heating relay for traditional heating elements
- Built-in PIR sensor to detect room vacancy for energy efficiency
- Cresnet® wired communications
- Backlit LCD display
- Large, easy-to-use front panel buttons for heating, cooling, fan speed, temperature scale, and temperature adjustments
- Wall-mount installation

Specifications

Product specifications for the CHV-TSTAT-FCU-PIR-10-W-T.

Product Specifications

Measurement Range

Temperature	0° to 110°F (-18° to 43°C)
Temperature Tolerance	**Over Full Range:** ±1°F (±0.5°C) **At Room Temperatures:** ±1°F (+0.1/-0.4°C)

Setpoint Range

Heat	38° to 89°F (3° to 32°C)
Cool	59° to 99°F (15° to 37°C)

Relay Rating

1A @ 40VDC or 24VAC (nominal)

Power Requirements

Cresnet	24VDC
HVAC Unit	24VAC
Power Consumption	Approximately 1.5 W

Communications

Cresnet® Wired	Control system integration or networking; Unit is a fully functional standalone thermostat and does not require a connection to the Cresnet network

Fan Coil Unit Control

Fan Control	Variable speed control via 0-10V signal; 20 mA max sink or source; Fan speed is not full modulating. Provides four adjustable discrete voltage levels for Off, Low, Medium, and High.
Cooling (Modulating Valve)	Variable valve control via 0-10V signal; 20 mA max sink or source
Heating (Modulating Valve)	Variable valve control via 0-10V signal; 20 mA max sink or source
Heating (Relay)	Contact closure to HVAC

Buttons

MODE	Cycles through Heat, Cool, and Auto modes

FAN	Controls fan speed; Cycles through Auto, High, Medium, Low, and Off settings
UP	Raises the room's setpoint by 1ºF or 0.5ºC, depending on the active temperature scale
DOWN	Lowers the room's setpoint by 1ºF or 0.5ºC, depending on the active temperature scale
ºF/ºC	Switches between Fahrenheit and Celsius temperature scales

Motion Sensor

On-board passive infrared sensor;
Enables thermostat to switch between two previously defined setpoints;
When motion is detected, the Occupied setpoint is used;
When the room is vacant, the Unoccupied setpoint is used

Display

Displays current room temperature, current setpoint, current Heat or Cool mode, thermostat's call for heating or cooling, and current fan setting

Type	Transflective LCD, backlit
Size	2.75 in. (70 mm)
Resolution	128 x 64 pixels
Viewing Angle	±50º horizontal at 0º vertical; ±50º vertical at 0º horizontal

Connections

HVAC	(3) 6-position terminal blocks with connections that include the following: Power Connections (Required): **24 (C):** 24VAC common terminal supplies remote 24VAC power to thermostat; **24 (R):** 24VAC reference terminal – Can be connected to R by P4 jumper setting, or tied directly to power source
	HVAC Control Connections (System Dependent): FAN 0-10V FAN COMMON HEAT 0-10V HEAT COMMON COOL 0-10V COOL COMMON HEAT RELAY A HEAT RELAY B
Network	(1) 4-position terminal block; Cresnet device port, connects to Cresnet control network

Environmental

Humidity	10% to 95% RH (noncondensing)

Construction

Plastic, surface-mountable to the front of a horizontally-oriented 1-gang electrical box

Dimensions

Height	4.00 in. (102 mm)
Width	5.00 in. (127 mm)
Depth	1.13 in. (29 mm)

Weight

5.80 oz (165 g)

Dimension Drawings
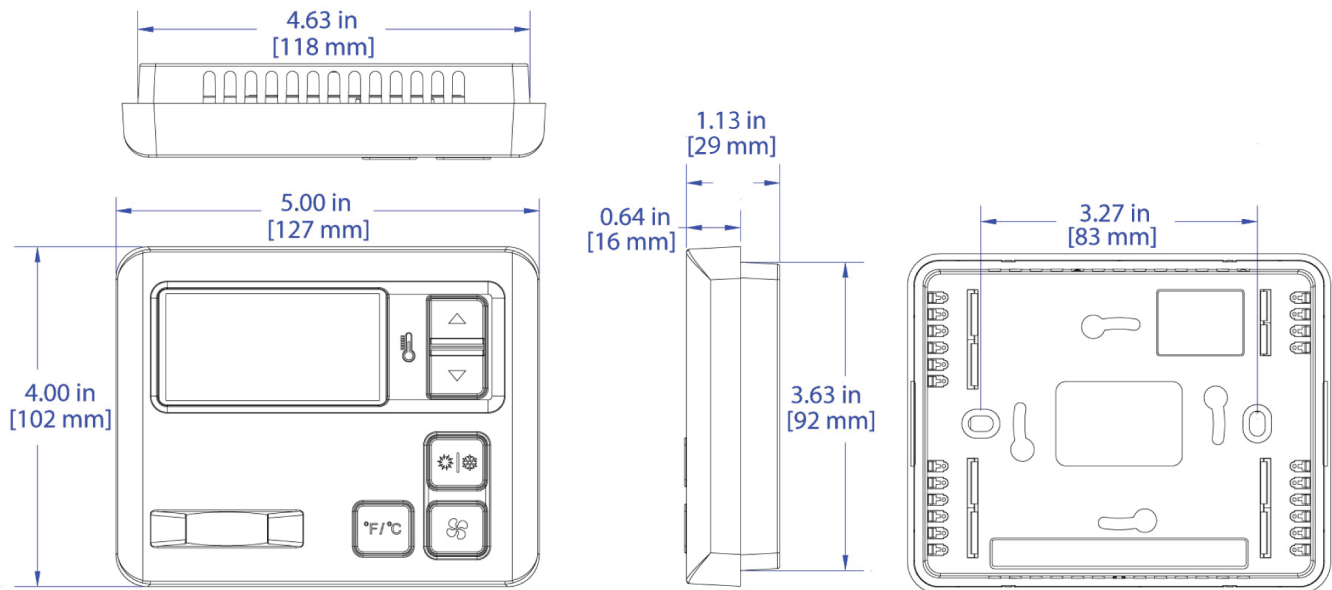
Installation

This section provides the following information:

- In the Box
- Determine the Mounting Location
- Equipment Required
- Mounting
- Connect the Device

In the Box

1	CHV-TSTAT-FCU-PIR-10, 0-10 V Heating/Cooling Fan-Coil Thermostat

	Additional Items
2	Screw, 6-32 x 1 in., Pan Head, Phillips (2007251)
2	Screw, M3 x 16 mm, Flat Head, Phillips (2013788)

Determine the Mounting Location

Install the thermostat away from direct sunlight, drafts, doorways, skylights, and windows. Also, make sure that the thermostat is conveniently located for control access and setup.

Follow the mounting requirements below:

- Mount 60 in. (~1.6 m) above the finished floor; this is an HVAC industry standard.
- Do not mount on an exterior wall.

Equipment Required

The following tools and hardware are required for mounting the thermostat.

- 1-gang U.S. electrical box or 1-gang U.K. electrical box (not included)
- Mounting screws (included)
- Phillips screwdriver (not included)

Mounting

Install the thermostat to an electrical box.

1. Turn the HVAC system power off.

2. Separate the thermostat front plate from the rear plate. It may be necessary to exert force when removing the front plate.

3. Feed the HVAC wiring from the electrical box through the hole in the center of the rear plate.

4. Make HVAC connections. For details, refer to Connect the Device on page 16.

> **CAUTION:** To avoid a possible short circuit, ensure excess wire is inside the electrical box and not pinched between the box and the device.

> **NOTE:** To ensure accurate temperature readings, plug the wire hole with insulation to prevent drafts in the back of the unit.

5. Attach the thermostat rear plate to the electrical box using the included screws. For U.S.-style installations, use the 6-32 x 1 in. screws. For U.K.-style installations, use the M3 x 16 mm screws.

6. Attach the front plate.

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

7. Carefully remove the warning label from the LCD display on the front plate.

8. Turn the HVAC system power on.

Installation in U.S. Electrical Box (top) and U.K. Square Electrical Box (bottom)

1-gang U.S. Electrical Box (mounted horizontally)

Rear Plate

Screws (2) 6-32 x 1 in.

Front Plate

1-gang U.K. Electrical Box

Rear Plate

Screws (2) M3 x 16 mm

Front Plate
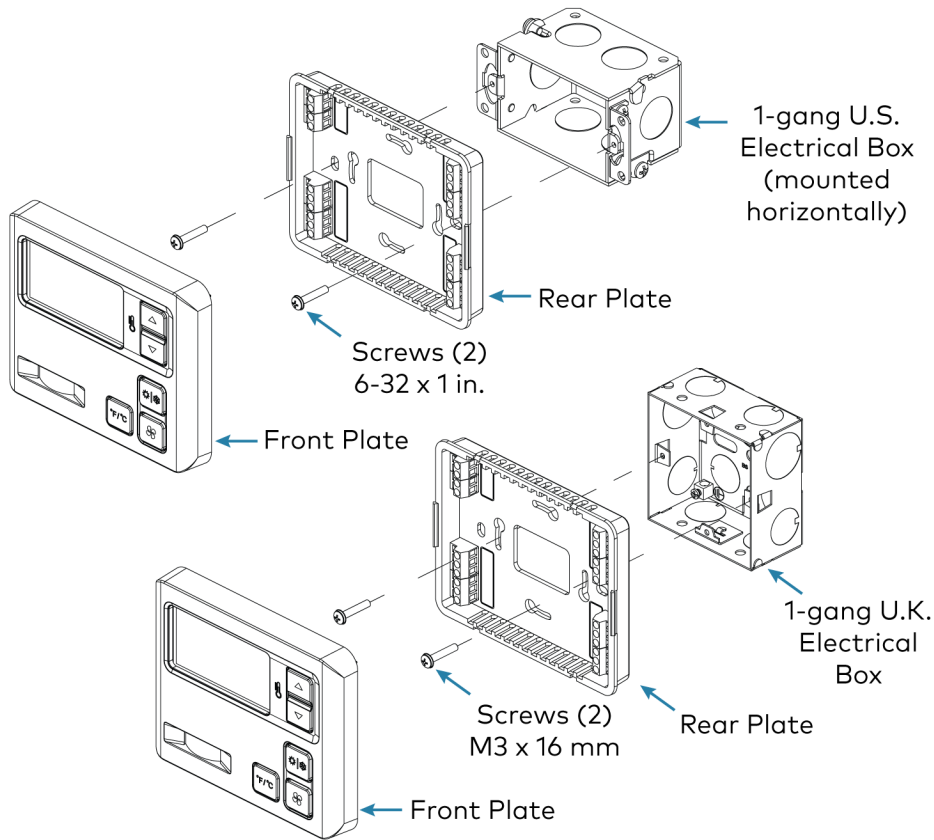
Connect the Device

Make the necessary connections as called out in the illustrations. A miniature flathead screwdriver (not supplied) is required to attach the control wires from the HVAC system.

Apply power after all connections have been made.

If the system being connected does not match the system described below, contact Crestron Technical Support for assistance.

Wiring Diagrams

Cresnet® Wire Connections
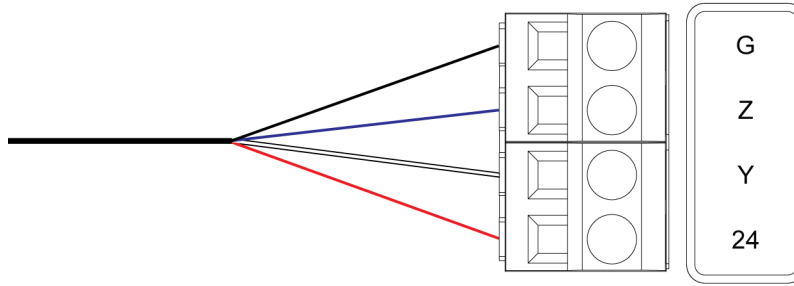
Jumper Connections

P1 ● ▨● ●
P2 ● ▨● ●
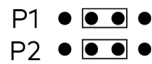
Jumper position to draw power from Cresnet. Any other jumper position draws power from HVAC system.

HVAC Connections
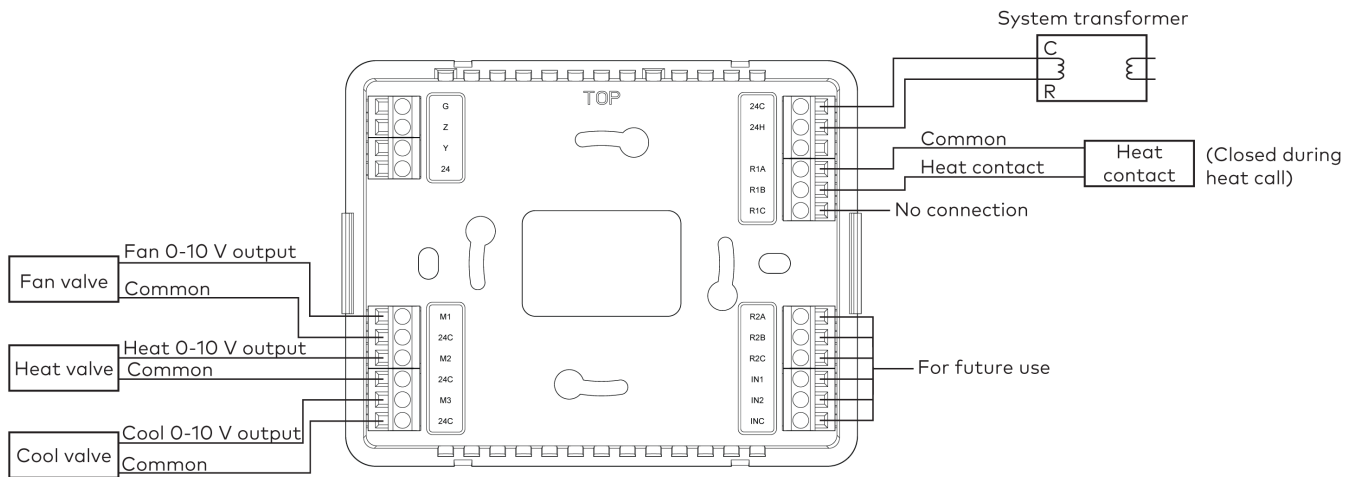
NOTES:

- The thermostat does not provide power. Heat contacts require an in-line power source.

- Fan valve: The fan speed is not full modulating. It provides four adjustable discrete voltage levels for Off, Low, Medium, and High.

Configuration

Before using the thermostat, ensure it is using the latest firmware. Check for the latest firmware at www.crestron.com/firmware. Load the firmware onto the thermostat using Crestron Toolbox™ software.

This section provides the following information:

- Setup Mode
- Configure the Thermostat

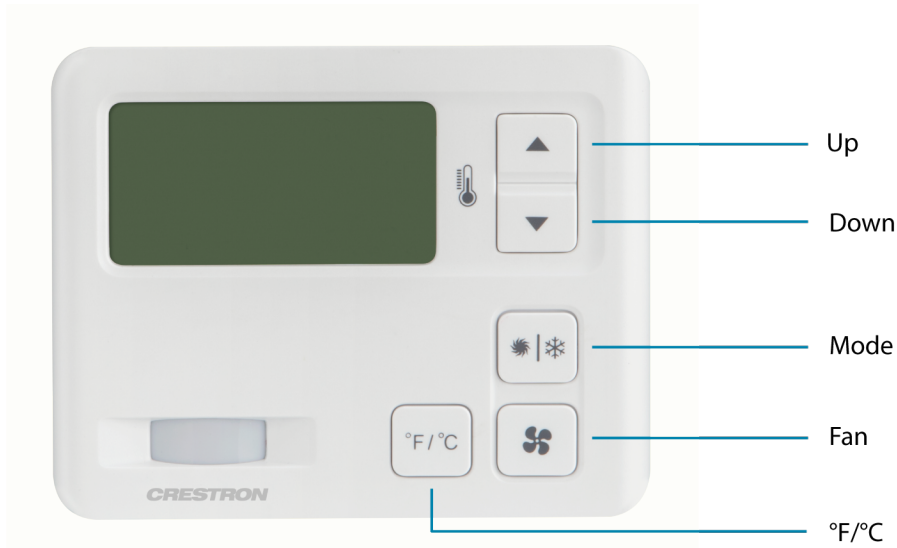# Setup Mode

This section explains how to enter, exit, and navigate Setup mode on the thermostat.

Enter Setup Mode

CHV-TSTAT-FCU-PIR-10-W-T Front Panel Buttons

To enter Setup mode, press and hold the **Down** button. While holding the **Down** button, simultaneously press and hold the **Mode** and **Fan** buttons until the **SETUP: SYSTEM** screen is displayed.

SETUP: SYSTEM
Heat Type: 0-10V   Relay
PIR: OFF
Local Auto: DISABLED

Exit Setup Mode

To exit Setup mode, press and hold the **Down** button. While holding the **Down** button, simultaneously press and hold the **Mode** and **Fan** buttons until the home screen is displayed.

Navigate Setup Mode

When the device is in Setup mode, press the **Mode** button to advance to the next screen, press the **Fan** button to scroll vertically through the setup options on the screen, and press the **Up** and **Down** buttons to change the value for the selected item.

Configure the Thermostat

SETUP: SYSTEM Screen

```
SETUP: SYSTEM
Heat Type:     0-10V     Relay

PIR:           OFF

Local Auto:    DISABLED
```

Use the **Heat Type** option to select the type of HVAC system that the thermostat is controlling.

Use the **PIR** option to enable or disable the built-in passive infrared sensor.

> **NOTE:** While **PIR** is disabled, the thermostat will not report room vacancy status to the control system.

Use the **Local Auto** option to enable or disable end user access to Auto Mode from the home screen.

SETUP: SYSTEM PERF Screen

```
SETUP: SYSTEM PERF
Heat Anticipator:  [0]
Fan Cool Down Time: 60
```

Use the **Heat Anticipator** setting to control the steady-state regulation band size. A lower setting results in more frequent cycles and faster response; a higher setting results in less frequent cycles and a slower response.

> **NOTE:** When the 0-10V **Heat Type** is selected on the **SETUP: SYSTEM** screen, the **Heat Anticipator** cannot be set.

Use the **Fan Cool Down Time** setting to control how long the fan will run after a heating call is finished.

SETUP: DEVICE OPTS Screen

```
SETUP: DEVICE OPTS
Network ID:        97
LCD Contrast:      5

chv-tstat-fcu-pir-10
[v1.000.0913, #00D19753]
```
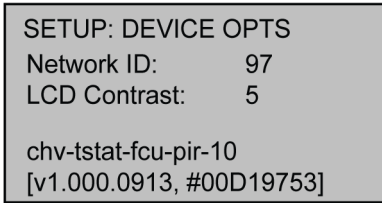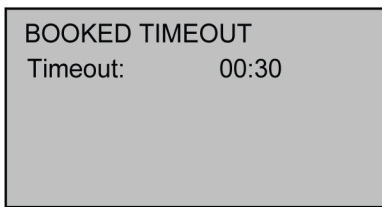
The **Network ID** must match the NET ID specified in the system program.

Use the **LCD Contrast** setting to change the contrast of the LCD screen.

The device name, current firmware version, and identification number are listed at the bottom of the screen.

BOOKED TIMEOUT Screen

```
BOOKED TIMEOUT
Timeout:          00:30
```

The **BOOKED TIMEOUT** setting determines how long the room must be empty before entering the vacant state. Room emptiness is recorded when the PIR sensor does not detect motion. The vacancy state is defined in the control system program.

Use **BOOKED TIMEOUT** in a room that is occupied regularly, such as in a booked hotel room. Set **BOOKED TIMEOUT** for a longer period of time than **UNBOOKED TIMEOUT** to ensure that the room does not enter the vacancy state while regularly occupied.

UNBOOKED TIMEOUT Screen

```
UNBOOKED TIMEOUT
Timeout:          00:30
```
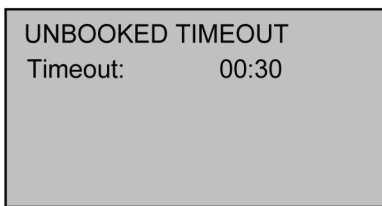
The **UNBOOKED TIMEOUT** setting determines how long the room must be empty before entering the vacant state. Room emptiness is recorded when the PIR sensor does not detect motion. The vacancy state is defined in the control system program.

Use **UNBOOKED TIMEOUT** in a room that is not occupied regularly, such as in a vacant hotel room. Set **UNBOOKED TIMEOUT** for a shorter period of time than **BOOKED TIMEOUT** so the room can enter the vacancy state quicker, which ensures that excess heating or cooling energy is not expended in a vacant room.

SETUP: MIN/MAX Screen

```
SETUP: MIN/MAX
          HEAT     COOL    AUTO
Min:       45        45      45
Max:       89        89      45
```

Set the minimum (**Min**) and maximum (**Max**) temperature setpoints for the **HEAT**, **COOL**, and **AUTO** modes.

SETUP: SERVICE/TEST Screen

```
SETUP: SERVICE/TEST
Heat Call:        0.0V
Cool Call:        0.0V
FAN Call:         0.0V
PIR:
```

The **SETUP: SERVICE/TEST** screen allows device testing while bypassing all system delays. The **Heat**, **Cool**, and **Fan** calls are settable in 0.1V increments. When the device operates as a relay, **Heat Call** is relegated to **ON** or **OFF**.

PIR displays **DETECTED** when motion is detected by the PIR sensor.

SETUP: DISP OPTIONS Screen

```
SETUP: DISP OPTIONS
Temp Disp Offset:        0

Display Temp:            Y
```

The **SETUP: DISP OPTIONS** screen allows both displayed and regulated temperature adjustment.

Use the **Temp Disp Offset** setting to alter the home screen's temperature output by the number of degrees selected.

Set **Display Temp** to **Y** to display the ambient and setpoint temperatures on the device's home screen. Set **Display Temp** to **N** to display only the setpoint temperature on the device's home screen.
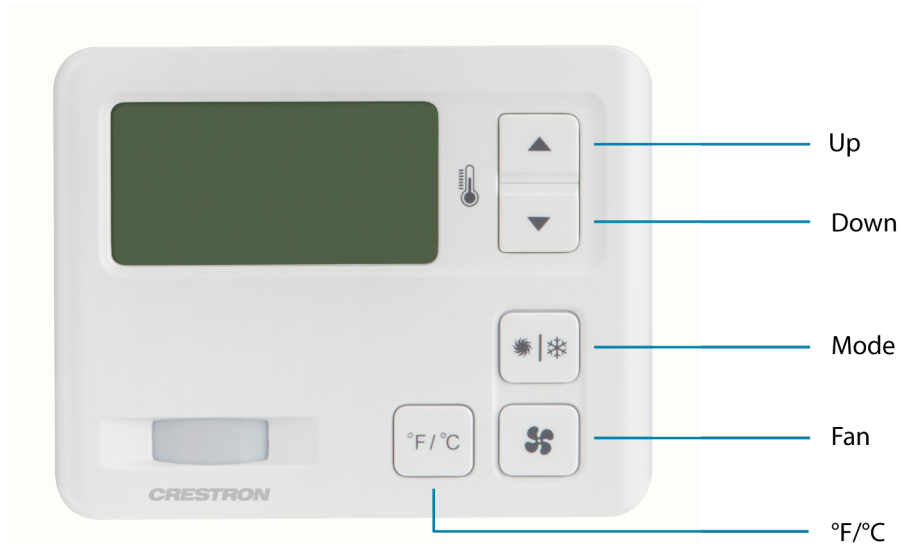
SETUP: FAN VOLTAGE Screen

```
SETUP: FAN VOLTAGE
High:         7.3V
Medium:       5.1V
Low:          2.9V
```

Use the **SETUP: FAN VOLTAGE** screen to select the voltages corresponding to the high, medium, and low fan speeds.

Operation

To operate the CHV-TSTAT-FCU-PIR-10-W-T from the main user-facing UI, use the front panel buttons.

CHV-TSTAT-FCU-PIR-10-W-T Front Panel Buttons

- Press the **Up** or **Down** buttons to raise or lower (respectively) the heat, cool, and auto setpoints.
- Press the **Mode** button to cycle through Heat, Cool, or Auto mode.
    - **Heat:** Controls only the heating system.
    - **Cool:** Controls only the cooling system.
    - **Auto (if enabled):** Allows the thermostat to automatically switch between the heating and cooling systems.
- Press the **Fan** button to cycle through the Auto, High, Medium, Low, and Off fan speed settings.
- Press the **°F/°C** button to switch between Fahrenheit or Celsius temperature scales.
    - While in Fahrenheit, the **Up** and **Down** buttons will adjust the system setpoint by 1°F per press.
    - While in Celsius, the **Up** and **Down** buttons will adjust the system setpoint by 0.5°C per press.

Resources

The following resources are provided for the CHV-TSTAT-FCU-PIR-10-W-T.

> **NOTE:** You may need to provide your Crestron.com web account credentials when prompted to access some of the following resources.

Crestron Support and Training

- Crestron True Blue Support
- Crestron Resource Library
- Crestron Online Help (OLH)
- Crestron Training Institute (CTI) Portal

Programmer and Developer Resources

- help.crestron.com: Provides help files for Crestron programming tools such as SIMPL, SIMPL#, and Crestron Toolbox™ software
- developer.crestron.com: Provides developer documentation for Crestron APIs, SDKs, and other development tools

Product Certificates

To search for product certificates, refer to support.crestron.com/app/certificates.

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change without notice.