TstatProPlus
COMMISSIONING GUIDE

Transforming HVAC Controls for IoT

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ABOUT XCSPEC

At XCSpec, we merge the realms of building science and health to pioneer Smart Dynamic Ventilation Controls. Our mission is to provide affordable solutions that empower individuals to visualize, monitor, and optimize their indoor air quality, effortlessly - while also saving energy costs.

Introducing our groundbreaking innovation, the AQ Thermostat. Unlike conventional thermostats, ours offers advanced ventilation controls for indoor air management and additional energy savings.

At XCSpec, we're dedicated to elevating the indoor environments to promote well-being and productivity. Join us in our mission to revolutionize indoor air quality control and create healthier living and working spaces for all.

Note: *CO2 Commissioning is NOT used for the TstatPro.*
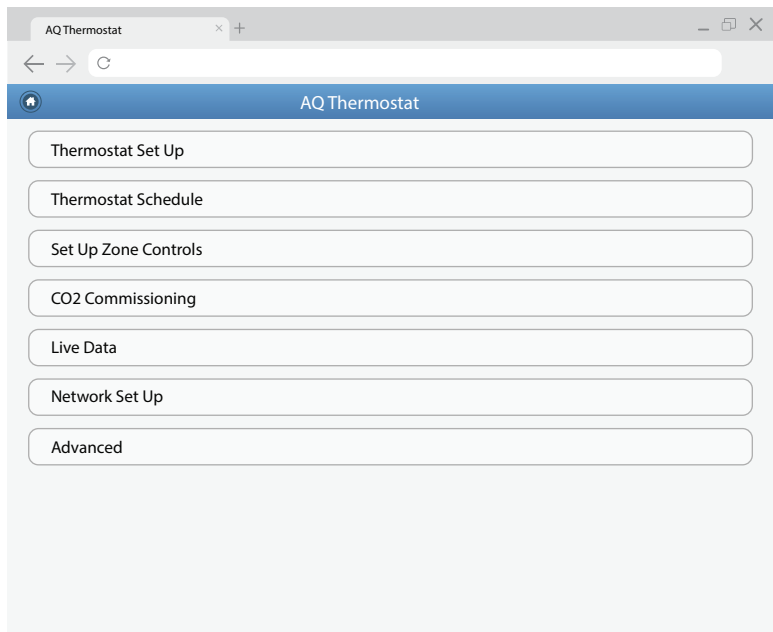
The **TstatProPlus** has an embedded Web Server allowing direct connection with the thermostat from a mobile device or PC over Wi-Fi. Once connected the unit can be set up and commissioned. The Thermostat must be powered and within Wi-Fi communications distance.
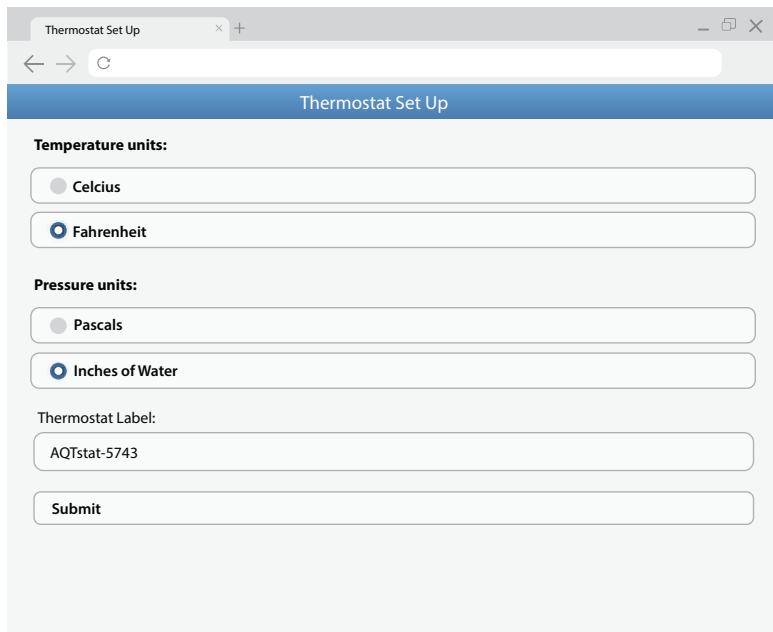
On a mobile phone or PC, pull down the list of available Wi-Fi networks. Select the Wi-Fi network named **TstatPro+XXXX** where the last 4 characters match the label on the box or chassis. Select this network and enter the password found on the back of the chassis. After correctly entering the password, the mobile phone or PC will indicate a successful connection.

Launch a browser and enter 192.168.10.1 into the address line. The Landing Page shown at the left will appear. To return to this from any other page, simply tap the home icon in the upper le ft corner of the web page or use the back button on your browser.

Suggested Browsers: Chrome, Safari, Firefox, Edge

You must use the **SUBMIT** button to load set up information into the thermostat.

Note: CO2 Commissioning is NOT used for the TstatPro.

Thermostat Set Up

Temperature units:

○ Celcius

◉ Fahrenheit

Pressure units:

○ Pascals

◉ Inches of Water

Thermostat Label:

AQTstat-5743

Submit

The Thermostat Set up page configures the TstatProPlus system parameters and allows repurposing the use of either the B or the O relays.

Centigrade or Fahrenheit: This sets the system to display temperature data is C or F. This changes the Temperature displayed on the panel of the thermostat and the Live data page.

Pascals or Inches of Water: This set's the system to display pressure in inches of water or pascals. This allows set up of pressure range based on the selected units. This is primarily used when the unit is used to display local space pressure.

Thermostat Label: The label field is a human read-able label associated with a particular thermostat. This label allows easy recognition of any specific unit when receiving email alerts or logging onto the BEAM web Portal. The label can be up to 54 characters long.

Use the **Submit** button to load this information into the thermostat.

Thermostat Set Up

Thermostat Set Up

System Operation Set Up

- Heat Only
- ◉ Cool Only
- Auto - Switches between driving Heat or Cool Relay
- OFF

Submit System Operation Set Up

System Ventilation Set Up

The ventilation mode selected above will be applied to all periods in the schedule.

- Ventilation ON during OCCUPIED times
- ◉ Ventilation ON during active Heating or Cooling

Note: *The Ventilation feature that responds to CO2 is NOT available on the TstatPro.*

Select Operating Mode: Configure the system for the particular application. Heat Only, Cool Only or Auto. Auto will switch between heat or cool based on zone temperature and set points automatically.

Use the **Submit System Operation Set Up** button to load this information into the thermostat.

Setting the Thermostat Ventilation Mode: This section allows you to set up the ventilation mode the thermostat operates in. This ventilation selection is applied to all days in the schedule.

Ventilation ON: This will run the ventilation fan during all Occupied periods. Many building codes require this.

Ventilation ON during active heating and cooling will run the fan ONLY when there is a call for heating or cooling.

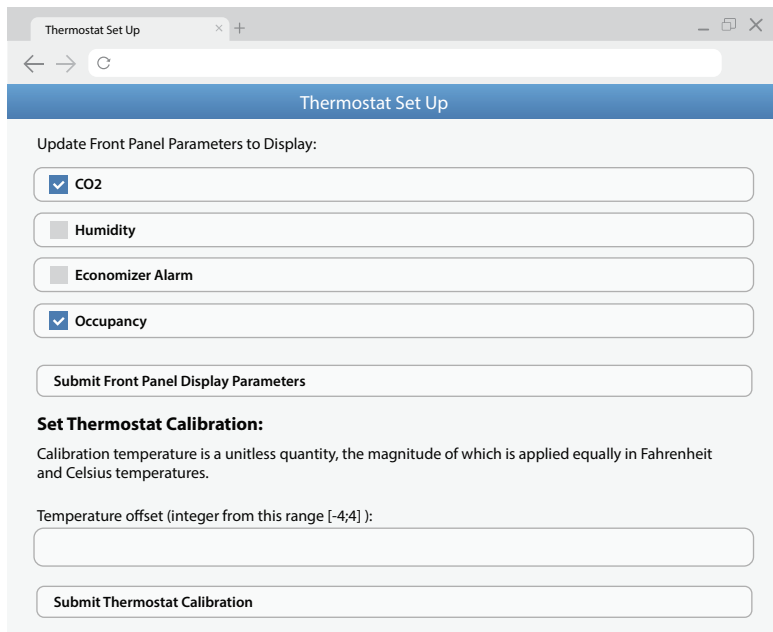Use the **Submit Ventilation Set Up** button to load this information into the thermostat. (not pictured)

Thermostat Set Up

Select O/B Relay for Occupancy:

☑ Occupancy

Select Relay:

⚪ Relay O

⚪ Relay B

🔘 Deselect both

Update all above parameters

Thermostat Relay O/B Selection: The O or B relay can be re-purposed to drive an occupancy out relay to an economizer. This page is used to enabled the function by selecting Occupancy and then select the Relay to be used for occupancy.

When the thermostat is configured as a Heat Pump, care must be taken to make sure you configure the appropriate reversing value for the Heat Pump. Note that if the unit is in Heat Pump mode with O providing the cool reversing value, the B relay can be repurposed for occupancy or CO2 high relay control and vice versa.

O or B Relay Selection: These radials define which relay will be used for the repurposed use. The deselection will remove both relays from the special purpose use.

Use the **Update all above parameters** button to load this information into the thermostat.

Thermostat Set Up

Update Front Panel Parameters to Display:

- ☑ **CO2**
- ☐ **Humidity**
- ☐ **Economizer Alarm**
- ☑ **Occupancy**

Submit Front Panel Display Parameters

Set Thermostat Calibration:

Calibration temperature is a unitless quantity, the magnitude of which is applied equally in Fahrenheit and Celsius temperatures.
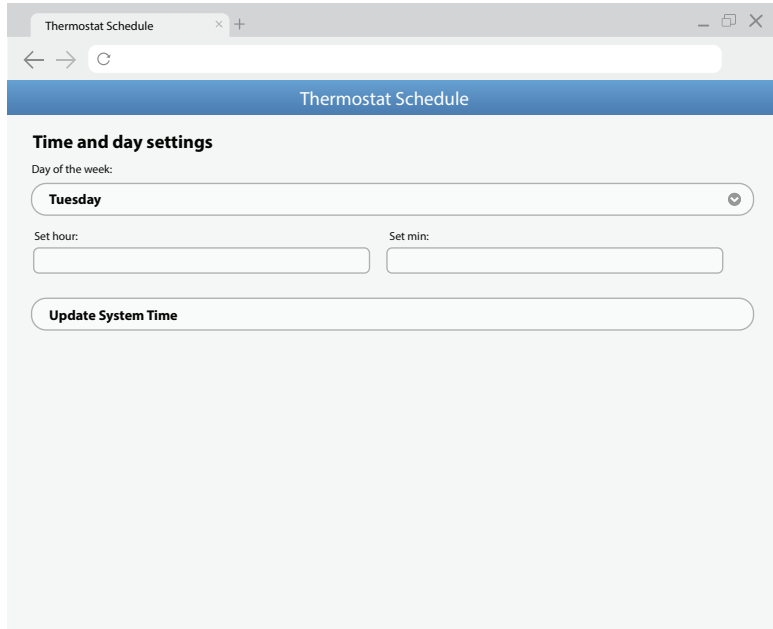
Temperature offset (integer from this range [-4;4]):

Submit Thermostat Calibration

Front Panel Display Options: Check the boxes associated with the data to be displayed on the front panel message area. The Thermostat will banner through the different parameters.

NOTE: The Economizer Alarm will display on the front panel only when the economizer is in an alarmed state.

Thermostat Calibration: This allows you to change the calibration of the room temperature display up or down 4 degrees. Note that the thermostat set points activate based on this displayed temperature.
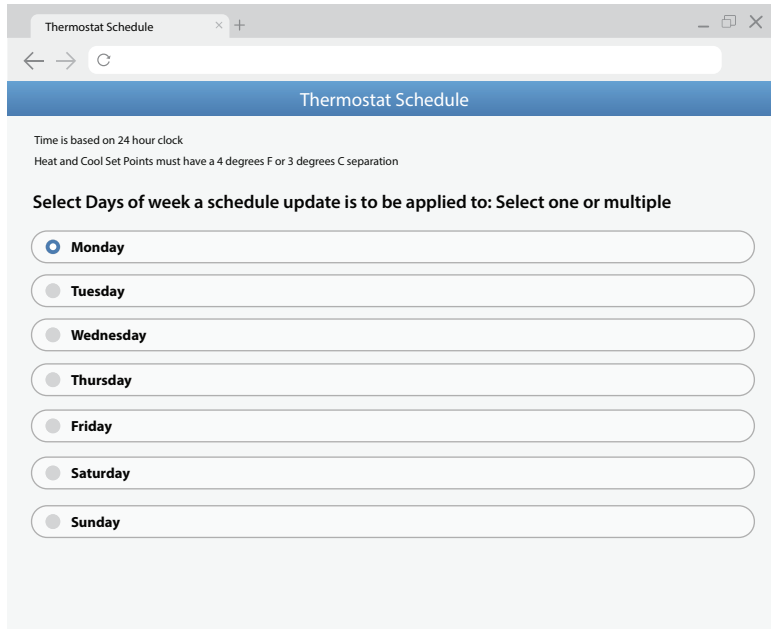
Thermostat Schedule	× +	_ ▢ ×

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Thermostat Schedule

Time and day settings

Day of the week:

| Tuesday | ⌄ |

Set hour: Set min:

Update System Time

Before scheduling you will need to set the clock. Navigate to the TstatProPlus home page and select Thermostat Schedule.

1. Select the current day of the week, followed by the current time of the day. **NOTE:** The time is based on a 24-hour clock.

2. Once completed, press **Update System Time**. **NOTE:** You should see your day/time input on the front of the thermostat.

Thermostat Schedule

Time is based on 24 hour clock

Heat and Cool Set Points must have a 4 degrees F or 3 degrees C separation

Select Days of week a schedule update is to be applied to: Select one or multiple
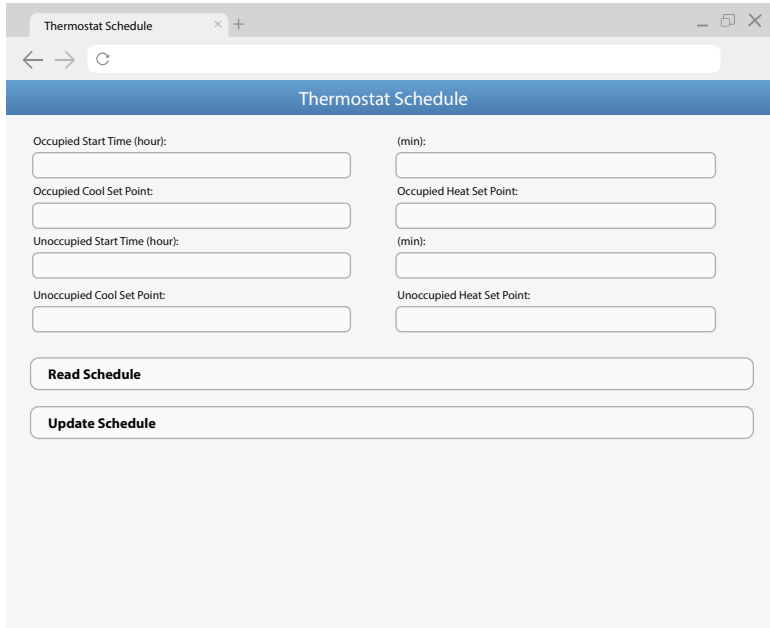
- ● **Monday**
- ○ **Tuesday**
- ○ **Wednesday**
- ○ **Thursday**
- ○ **Friday**
- ○ **Saturday**
- ○ **Sunday**

The thermostat schedule enables quick and easy scheduling. Schedules are based on 2 periods per day / 7 days per week.

Setting a Schedule: You can set up the heat and cool set points for one or more days at a single time.

1. Select the Day(s) of the week the schedule will be applied to. You can select from 1 to all 7 days.

(continue to the next page)

| Thermostat Schedule | × | + |

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Thermostat Schedule

Occupied Start Time (hour):

(min):

Occupied Cool Set Point:

Occupied Heat Set Point:

Unoccupied Start Time (hour):

(min):
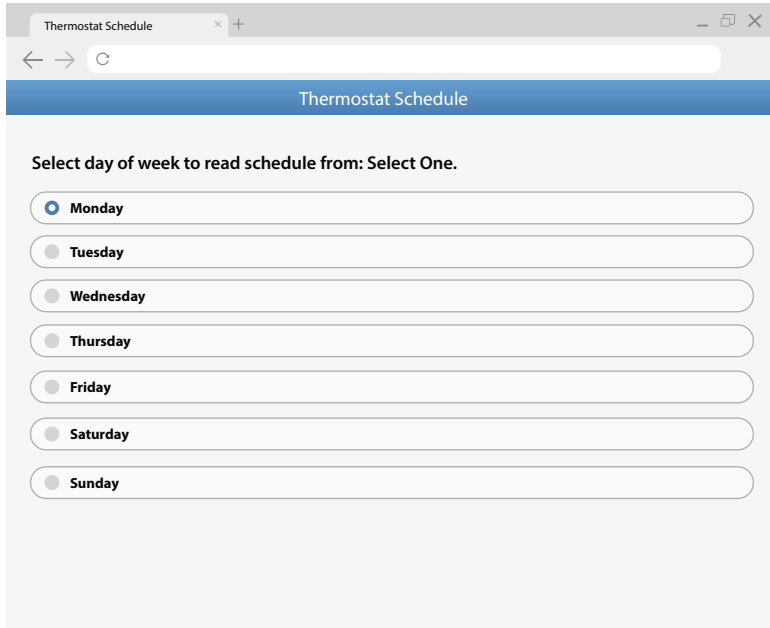
Unoccupied Cool Set Point:

Unoccupied Heat Set Point:

Read Schedule

Update Schedule

2. Enter Occupied period start time in Hours and Minutes field in 15 minute increments.
3. Enter Occupied Period Heat Set Point and Cool Set Point in F.
4. Enter Unoccupied period start time in Hours and Minutes.
5. Enter the Heat and Cool Set points for the unoccupied periods.
6. Make sure you submit the parameters. These parameters will be applied to all selected days.

NOTE: The ventilation selection will also be applied to all selected days.

Thermostat Schedule

Thermostat Schedule

Select day of week to read schedule from: Select One.

- ● Monday
- ○ Tuesday
- ○ Wednesday
- ○ Thursday
- ○ Friday
- ○ Saturday
- ○ Sunday

Reading a Schedule: You can read the heat and cool set points for any specific day.

1. Select the Day of the week you would like to read the schedule from.
2. Hit the "read Schedule" button. *(not pictured)*
3. The occupied times and heat/cool set points will populate. The unoccupied time and heat/cool set points will populate. *(not pictured)*

Set Up Zone Controls

Set Up Zone Controls × +

Set Up Zone Controls

This page sets up the selection of data from 1-4 inside zones and one outside zone used by the thermostat control algorithems. The Thermostat is always ZONE 1 and defualts to contribute all thermostat sensor data to the Temperature, Humidity, DCV out and Pressure controls.

For 1-4 inside zones units are added, select the sensor data to be included for the appropriate control and the weght added to the data input from each zone sensor. The sum o fall weights must = 100%.

Temperature, Humidity and Pressure data input is based on assigned weights.
DCV output is based on highest PPM from any assigned zone.

ZONE 1 - Local Thermostat Data To include

Thermostat weight:

50%

Submit Thermostat Zone 1 Weight

This page sets up the selection of data from 1-4 inside zones and one outside zone used by the thermostat control algorithems. The Thermostat is always ZONE 1 and defaults to contribute all thermostat sensor data to the Temperature, Humidity, DCV out and Pressure controls.

For 1-4 inside zones units are added, select the sensor data to be included for the appropriate control and the weght added to the data input from each zone sensor. The sum o fall weights must = 100%.

Temperature, Humidity and Pressure data input is based on assigned weights. The DCV output is based on highest PPM from any assigned zone.

ZONE 1 - Thermostat
1. Enter the Thermostats Weight: This is the weight value the thermostat contributes to the control output for temperature, CO2 and Pressure.

NOTE: The total weight contribution must be 100% - including the thermostat contribution.

Use the **Submit Thermostat Zone 1 Weight** button to load this information into the thermostat any assigned zone.

Set Up Zone Controls	× +	_ □ ×

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Set Up Zone Controls

REMOTE ZONE 2 Data To Include:

MAC:

Weight:

Submit Zone 2 Mac ID and Weight

REMOTE ZONE 3 Data To Include:

MAC:

Weight:

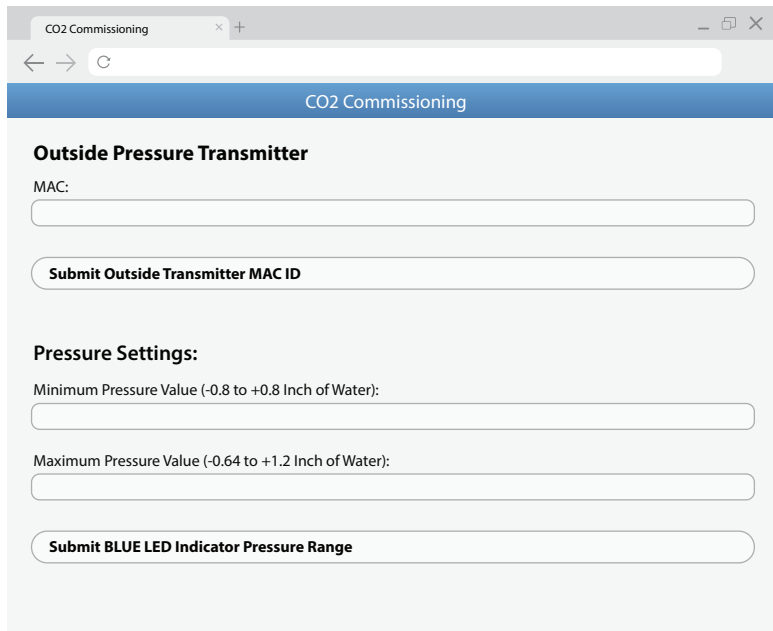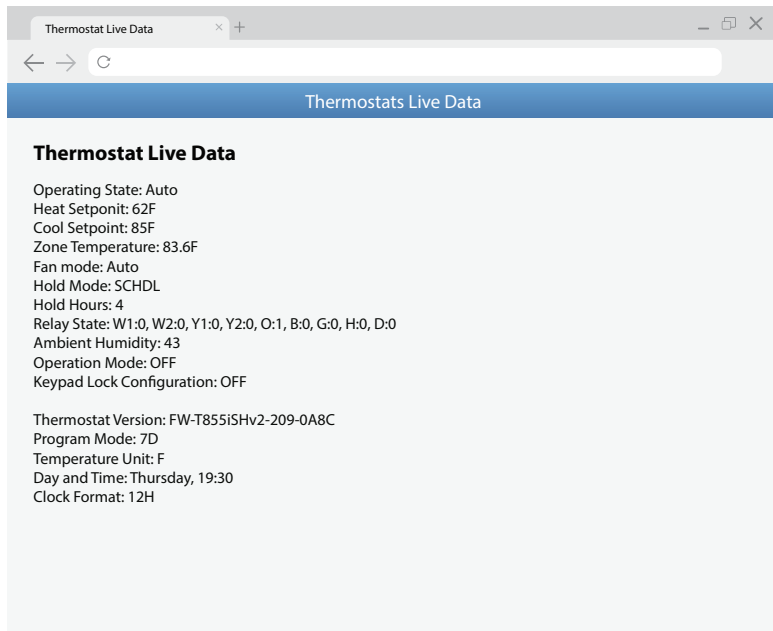Submit Zone 3 Mac ID and Weight

Additional Devices Zone 2-4.

1. MAC ID: This field should be entered exactly as read from the label on the Zone device, including hyphens.
2. Weight: The weight value this zone should contribute to the control output and is applied evenly to CO_2/Temp/Pressure. Use the Submit Thermostat Zone Weight button to load this information into the thermostat.

Adding an Outside Air Transmitter to determine space Pressure.

1. Outside Air Pressure Transmitter: This unit provides the outside air pressure reference used by the thermostat to derive differential pressure. This derived pressure drives the blue LED on the AQ Thermostat indicator panel.

2. Enter the MAC address and use the **Submit Outside Transmitter MAC ID** button to load this information into the thermostat.

3. Pressure Range: This range determines if the blue LED status. If the pressure is within range defined here it is solid on. If it is outside this range, the BLUE LED will blink. The default is set up for 0.01 - 0.05 inches of water - which is an HVAC standard for slightly positively pressurized. When outside of this range, the BLUE LED will blink.

4. Use the **Submit BLUE LED Indicator Pressure Range** button to load this information into the thermostat.

Thermostat Live Data   × +

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Thermostats Live Data

Thermostat Live Data

Operating State: Auto
Heat Setponit: 62F
Cool Setpoint: 85F
Zone Temperature: 83.6F
Fan mode: Auto
Hold Mode: SCHDL
Hold Hours: 4
Relay State: W1:0, W2:0, Y1:0, Y2:0, O:1, B:0, G:0, H:0, D:0
Ambient Humidity: 43
Operation Mode: OFF
Keypad Lock Configuration: OFF

Thermostat Version: FW-T855iSHv2-209-0A8C
Program Mode: 7D
Temperature Unit: F
Day and Time: Thursday, 19:30
Clock Format: 12H

This Page displays real time data from the Thermostat.
Use this page to assure zone devices are attached and reporting.

Operating State: Indicates heating or cooling is active
Heat/Cool Setpoints: Active set points
Zone Temperature: Local Temperature reading
Fan Mode: ON indicates G relay is energized
Hold Mode: Displays SCHDL if a schedule is running or TEMP or PERM if in a hold mode.
Hold Hours: displays the number of hours temporary hold is in place.
Relay State: State of all the relays with a 0 (not energized) or a 1 (energized) next to them.
Ambient Humidity: Local Humidity reading
Operation Mode: Indicates the mode the thermostat is operating in - OFF, Cool, Heat
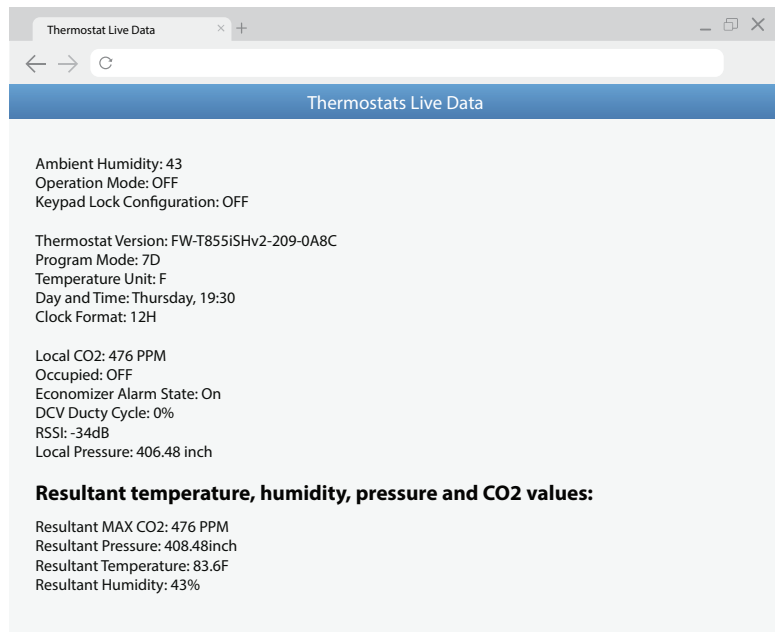**Keypad Lock Configuration:** Indicates if Keypad locked out

Thermostat Version: This is the software version of the chassis code
Program Mode: displays the current schedule mode 5-1-1 programming or 7 day programming
Temperature Unit: Displays In F-Fahrenheit or C-Celsius
Day and Time: Day and Time set up and displayed on panel
Clock Format: Whether set up for a a 12 or 24 hour clock format

Thermostat Live Data   × +

Thermostats Live Data

Ambient Humidity: 43
Operation Mode: OFF
Keypad Lock Configuration: OFF

Thermostat Version: FW-T855iSHv2-209-0A8C
Program Mode: 7D
Temperature Unit: F
Day and Time: Thursday, 19:30
Clock Format: 12H

Local CO2: 476 PPM
Occupied: OFF
Economizer Alarm State: On
DCV Ducty Cycle: 0%
RSSI: -34dB
Local Pressure: 406.48 inch

Resultant temperature, humidity, pressure and CO2 values:

Resultant MAX CO2: 476 PPM
Resultant Pressure: 408.48inch
Resultant Temperature: 83.6F
Resultant Humidity: 43%

Local CO2: CO2 ppm
Economizer Alarm: ON if Active
DCV Duty Cycle: is the % Open of the S1 output.
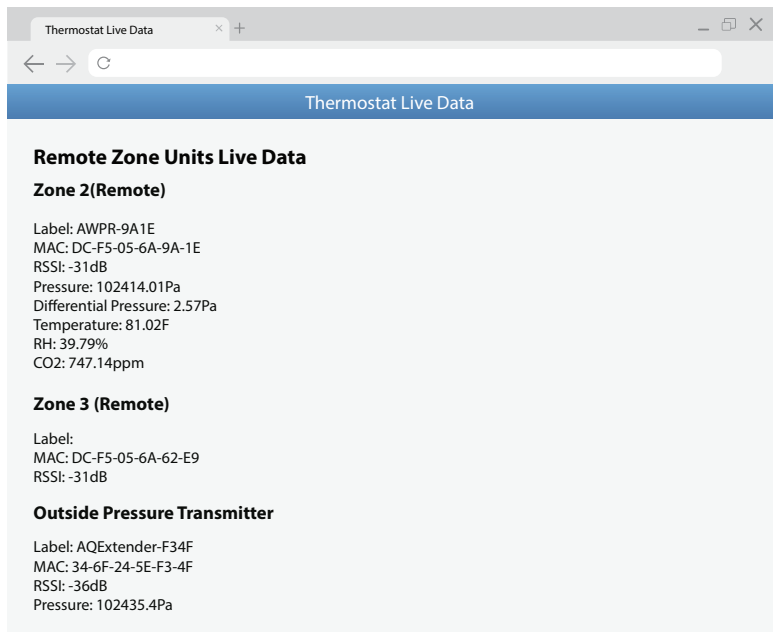**RSSI:** Signal strength to access point
Local Pressure: Local pressure reading
Occupied: This is the state of the thermostat based on the schedule
Economizer Alarm: This is the state of the alarm from the economizer received over the S2 input.

The resultant values indicator the final temperature, humidity, pressure and CO2 when additional zones are included in the calculations.

Remote Zone Units Live Data

Zone 2(Remote)

Label: AWPR-9A1E
MAC: DC-F5-05-6A-9A-1E
RSSI: -31dB
Pressure: 102414.01Pa
Differential Pressure: 2.57Pa
Temperature: 81.02F
RH: 39.79%
CO2: 747.14ppm

Zone 3 (Remote)

Label:
MAC: DC-F5-05-6A-62-E9
RSSI: -31dB

Outside Pressure Transmitter

Label: AQExtender-F34F
MAC: 34-6F-24-5E-F3-4F
RSSI: -36dB
Pressure: 102435.4Pa

Remote Zone Units Live Data

Label field: Is a human-readable label being received from the remote devices assigned at installation time.
MAC: Is MAC Identifier of that Zone unit.
RSSI: Is the relative wi-Fi signal strength between the Thermostat and that zone device.
Pressure: Is the pressure reading from the zone devices, this will only display if pressure is being sent by the zone device.
Differential Pressure: Is the space pressure being measure by the Zone device relative to outside air. This will only display if the Zone device is set up to calculate local Pressure.
Temperature: Is the temperature in F, at the zone device being sent to the thermostat.
RH: Is the relative humidity, from 0-100%, at the zone device being sent to the thermostat.
CO2: Is the in ppm measured at the zone device being sent to the thermostat.

Network Set Up
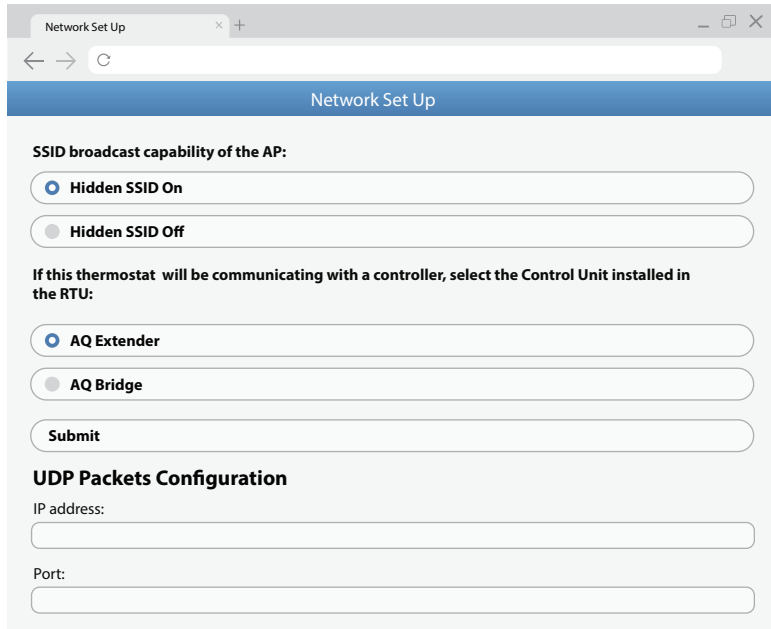
Network Information

MAC Address:	34-6F-24-5F-6E-85	
AP SSID:	PV-IOT1	●
Connection Status:	Network Configured	DCHP
IP:	192.168.0.105	
RSSI:	-32	

Network Provisioning

    Reset to Provisioning

CLOUD INFORMATION

Cloud communication: -

Previous connection to the server date and Zulu time: 08/02/2024 22:30:59

Set Thermostat Cloud Check in Frequency (30s-10800s supported):

The TstatProPlus is compatible with IEEE 80211 b/g/n Wi-Fi access points (AP). To connect the Thermostat to the Internet for Cloud services or email alerts, the WiFi AP must have Internet access.

The Network Set Up Page connects or "provisions" the device onto Wi-Fi. When not provisioned a RED dot and connection status of "unconfigured" is shown. Use the "SCAN" button to get a list of available Wi-Fi networks. Select the desired network. Enter the Network password and Submit. The dot turns GREEN when you have successfully connected. The Network information available is shown above. Note - RSSI (Wi-Fi signal strength) should not be less than -80 db for a reliable connection. If the desired network is not displayed, SCAN again until it appears.

If it does NOT appear after several scans, you may not be in Wi-Fi radio range of the desired network. Use "Reset To Provisioning" to reset and try again if the provisioning process does not go as expected.

The **Cloud Engagement Transmission** (ET) period defines how often the device will check into the cloud to send and receive information. This is defined in seconds.

Network Set Up

SSID broadcast capability of the AP:

- ● Hidden SSID On
- ○ Hidden SSID Off

If this thermostat will be communicating with a controller, select the Control Unit installed in the RTU:

- ● AQ Extender
- ○ AQ Bridge
- Submit

UDP Packets Configuration

IP address:

Port:

NOTE: To receive FREE email alerts or use the XCSpec BEAM portal for thermostat site management, the device must be connected to an Internet Enabled Wi-FI network.

Hidden SSID. For security concerns, this can be used to turn off the Wi-Fi beacon of the Thermostat.
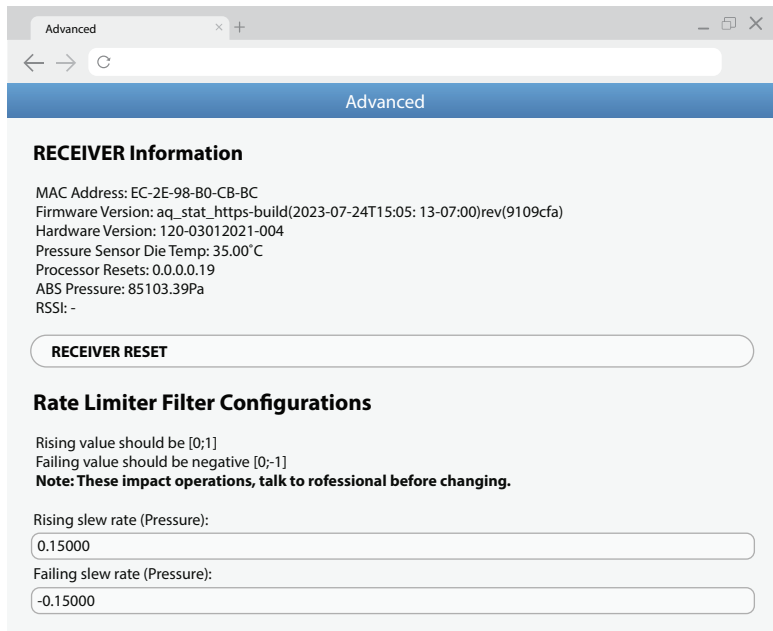
If your thermostat will be communicating with an XCSpec controller in the RTU, select the device installed in the RTU and the thermostat will use appropriate communications.
The AQ Bridge communicates over the thermostat power lines.
The AQ Extender communicates over wi-fi with the Thermostat - assure that signal is available from the thermostat to the RTU.

UDP Packet configuration.
For more advanced users, the UDP broadcast can be sent to a particular IP and Port address.
Contact **support@xcspec.com** for further guidance on setting this network configuration.

Use the **Submit** button to load this information into the thermostat. *(not pictured)*
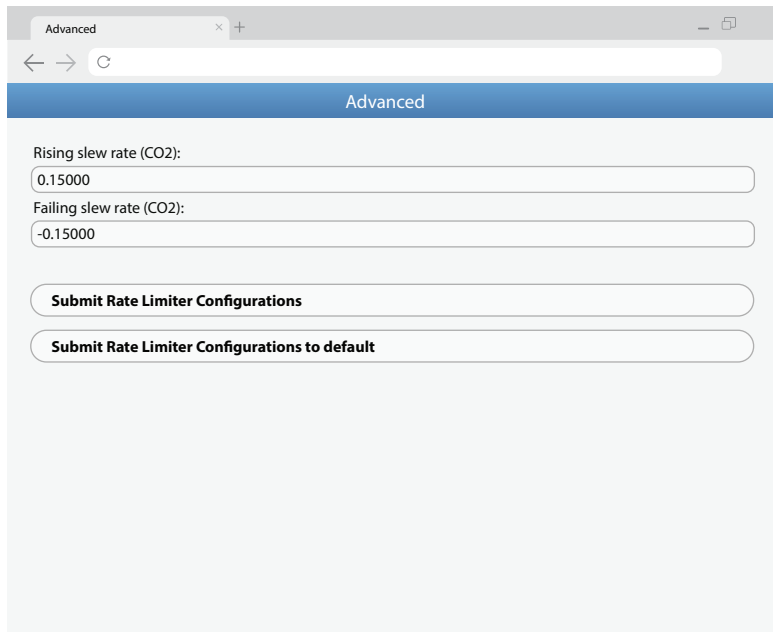
The Advanced page is intended for use by XCSpec support and users familiar with the system.

Receiver Information: Information on this page, i.e. the device firmware and other displayed information, may be requested by XCSpec support.

Receiver Reset: The Receiver Reset can be used to generate a reset to the unit. User settings will be preserved.

Rate of Change (ROC) Limit Filters: The rate limiter adjust the response of output control of the CO_2 response. The default parameters have been selected to assure that "hunting" does not occur so we control the amount of change in the 0-10V for any one cycle. Setting the Limit filter to "1" will cause the 0-10 V output to following the PPM range - without adding steps between each adjustment. Users familiar with ROC controls can use the Slew Rising and Falling Rates to change the control parameters. Before changing the Default parameters, please reach out to support@xcspec.com. We can send information about the impact changes will have on the control output. The Reset to default sets these values back to the factory condition.

Advanced	×	+		_ □

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Advanced

Rising slew rate (CO2):

```
0.15000
```

Failing slew rate (CO2):

```
-0.15000
```

Submit Rate Limiter Configurations

Submit Rate Limiter Configurations to default

Notes ON Economizer Set Up

The TstatProPlus is specifically designed to operate directly with economizers.

Occupancy Out Relay: The O/B relay can be repurposed to drive a true Occupancy out based on the thermostat schedule. To configure, use the Thermostat Set Up Page to Select the Occupancy Use Algorithm. Select the Relay O/B. The economizer Occupancy input should then be wired to the selected relay.

Input Air Damper Controler (S1): Depending on the mode selected, the S1 output will drive the CO_2 input to an economizer, the CO_2 input to an ERV or a zone control two stage motorized damper.

Alarm In (S2): The Alarm output from an economizer can be configured onto the S2 pin of the thermostat. When energized, an Economizer Alarm state will be Displayed on panel.

Notes on AQ Bridge or AQ Extender Set Up

The TstatProPlus is part of the AQ Family of products specifically designed to provide easy to install solutions for advanced ventilation and air quality solutions.

To communicate to the AQ Bridge or AQ Extender installed in a RTU, there are two different options they can be used.T

The AQ Bridge communicates with the thermostat directly over the existing thermostat power wires, R and C.

All Zone, DCV and Powered Exhaust information is communicated directly to the AQ Bridge.

The AQ Bridge will also communicate outside air conditions - pressure, PM2.5, PPM - back down to the thermostat.

Since this is a wired communications, there is no requirement for a radio link between inside the building and the roof top.

The AQ Extender communicates with the thermostat over a Wi-Fi link. The installer must assure that there is signal from the thermostat to the AQ Extender directly OR that they are both on the same WiFi network. All Zone, DCV and Powered Exhaust information is communicated directly to the AQ Extender.

The AQ Extender will also communicate outside air conditions - pressure, PM2.5, PPM - back down to the thermostat.

The AQ thermostat is shipped with the following configuration:

Schedule: 2 Periods Per Day. 7 days per week
Mon-Fri Occupied Time 8:00 - 5:00 pm
Mon-Fri Occupied Set Points: Heat: 68 Cool 72
Mon-Fri Unoccupied Set Ponts: Heat: 55 Cool 79
Sat & Sun Occupied Times: None
Sat & Sun Set Points: Heat: 55 Cool 79
Temperature display units - Fahrenheit
Pressure Units - Inches of Water
Pressure Range for Blue LED: 0.01- 0.05 inches of water
Network: Unprovisioned
Engaged Transaction time to Cloud: 60 seconds
No Labels are Assigned
No Zone Devices are Whitelisted
DCV PPM Range 0-2000 PPM
Display: Red when PPM >2000 Green ppm < 600
DCV: Not enabled
DCV Rate Limited: Enabled
CO2 Averaging Filter: Not Enabled
Front Panel to Display: Occupancy and CO2
Rate Of Change Slew for CO2 0-10V Output: 0.15

> ⚠ **Caution:**
> **Electrical Hazard**
>
> Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

> ⚠ **Warning:**
>
> All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

Wiring

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the green wire may not be connected to the G terminal.

2. Loosen the terminal block screws. Insert wires then retighten the terminal block screws.

3. Place nonflammable insulation into the wall opening to prevent drafts.

> 💡 **Installation Tip**
>
> Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues.
>
> **Max Torque = 6in-lbs.**

Wiring Tips

C Terminal

This thermostat requires a 24V common wire to the C terminal.

Wire Specifications

Use shielded or non-shielded 18-22 gauge thermostat wire.

Note:

In many heat pump systems with no emergency heat relay, a jumper can be installed between E and W2 to turn thermostat into a single stage control for Emergency Heat Operation.

Note:

Outdoor temperature sensor, Indoor temperature sensors, and Slab sensor wiring diagrams are located in R250S and R251S manuals.

Terminal Designations

This thermostat shipped from the factory to operate a conventional heating and cooling system. This thermostat may also be configured for a heat pump system.

| Terminal	2 Heat 2 Cool Conventional System	2 Heat 1 Cool Heat Pump System	4 Heat 2 Cool Heat Pump System	5 Heat 3 Cool Heat Pump System
RC	Transformer power (cooling)	Transformer power (cooling)	Transformer power (cooling)	Transformer power (cooling)
RH	Transformer power (heating)	Transformer power (heating)	Transformer power (heating)	Transformer power (heating)
C	Transformer common	Transformer common	Transformer common	Transformer common
B	Reversing valve /configurable terminal	Reversing valve /configurable terminal	Reversing valve /configurable terminal	Reversing valve /configurable terminal
O	Reversing valve /configurable terminal	Reversing valve /configurable terminal	Reversing valve /configurable terminal	Reversing valve /configurable terminal

Terminal Designations

This thermostat shipped from the factory to operate a conventional heating and cooling system. This thermostat may also be configured for a heat pump system.

Terminal	2 Heat 2 Cool Conventional System	2 Heat 1 Cool Heat Pump System	4 Heat 2 Cool Heat Pump System	5 Heat 3 Cool Heat Pump System
G	Fan relay	Fan relay	Fan relay	Fan relay
W/E	First stage of heat	Emergency Heat	First stage of auxiliary heat	First stage of auxiliary heat (4th stage of heat)
Y	First stage of cool	First stage of heat & cool	First stage of heat & cool	First stage of heat & cool
Y2	Second stage of cool	N/A	Second stage of heat & cool	Second stage of heat & cool
W2	Second stage of heat	Auxiliary heat	Second stage of auxiliary heat	Second stage of auxiliary heat (5th stage of heat)
S1/S2	Remote Sensor	Remote Sensor	Remote Sensor	Remote Sensor
H	Humidify	Humidify	Humidify	Humidify
D	Dehumidify	Dehumidify	Dehumidify	Dehumidify

1 Power supply

2 Factory-installed jumper.
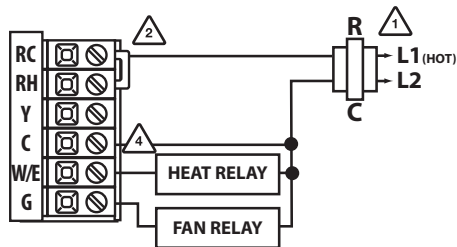Remove only when installing on 2-transformer systems

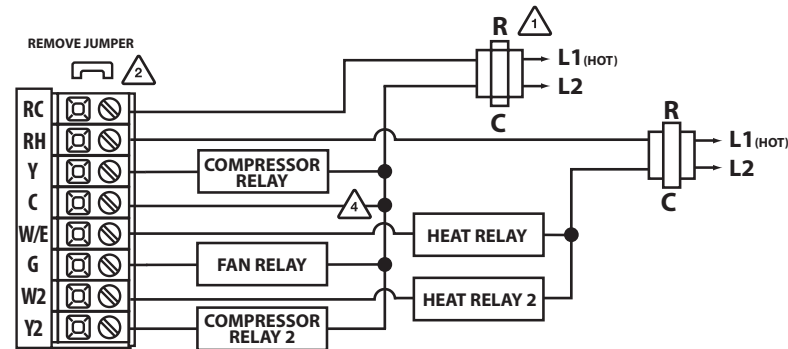### Typical 2H/2C System: 1 Transformer
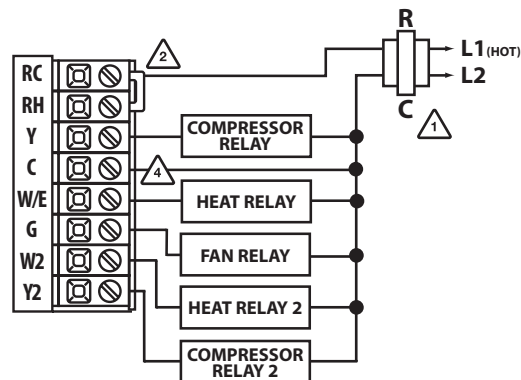
Typical Cool-Only System With Fan
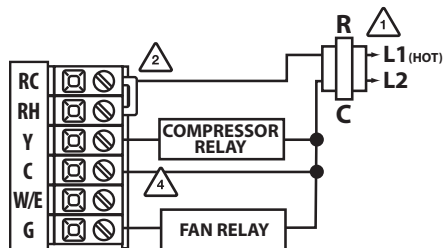
Typical Heat Only System With Fan

③ Use either O or B terminals for changeover valve

④ A 24 VAC common connection is required with this thermostat.

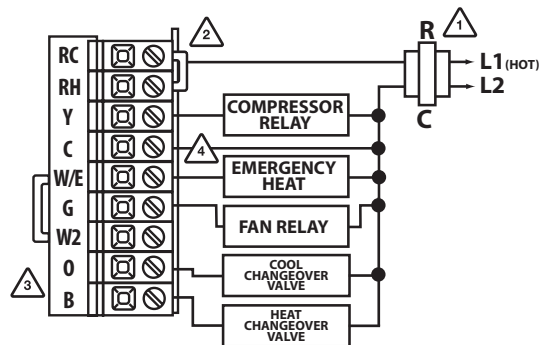⑤ If DEHUM relay requires a normally-energized input, set Dehumidify relay to NC in Technician Setup.
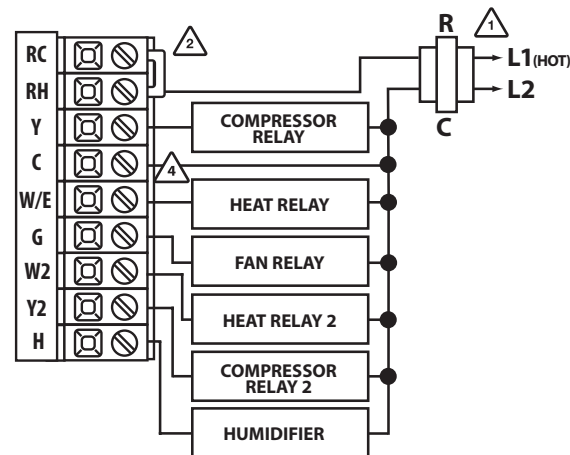
Typical 2H/2C System: 2 Transformer

Note:

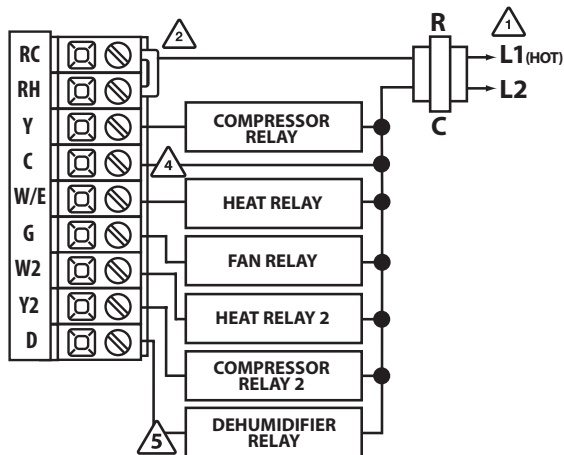In many systems with no emergency heat relay a jumper can be installed between E and W2.

1 Power supply

2 Factory - installed jumper. Remove only when installing on 2 transformer systems.

3 Use either O or B terminals for changeover valve.

Typical 2H/1C Heat Pump System

RC	
RH	
Y	COMPRESSOR RELAY
C	
W/E	EMERGENCY HEAT
G	FAN RELAY
W2	
O	COOL CHANGEOVER VALVE
B	HEAT CHANGEOVER VALVE

R

L1(HOT)
L2
C

Typical 2H/2C System With 24 VAC Humidifier

| RC	
RH	
Y	COMPRESSOR RELAY
C	
W/E	HEAT RELAY
G	FAN RELAY
W2	
Y2	HEAT RELAY 2
H	COMPRESSOR RELAY 2
	HUMIDIFIER

R

L1(HOT)
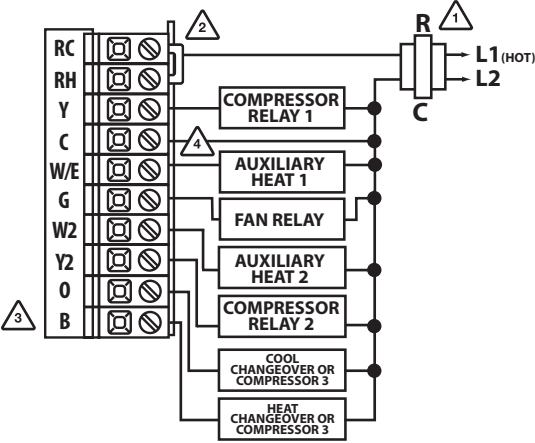L2
C

Typical 2H/2C System with Dehumidify Terminal

A 24 VAC common connection is required with this thermostat.

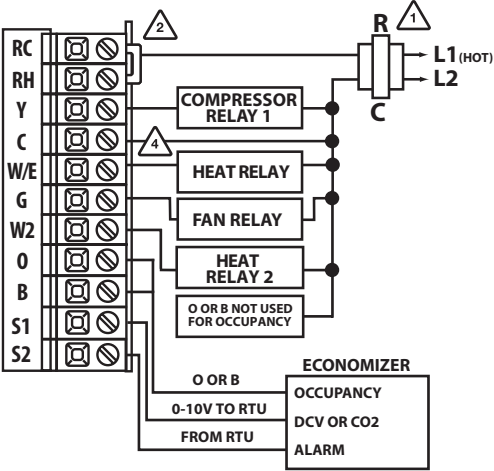If DEHUM relay requires a normally-energized input, set Dehumidify relay to NC in Technician Setup.

Typical 2H/2C System with Dry Contact Humidifier
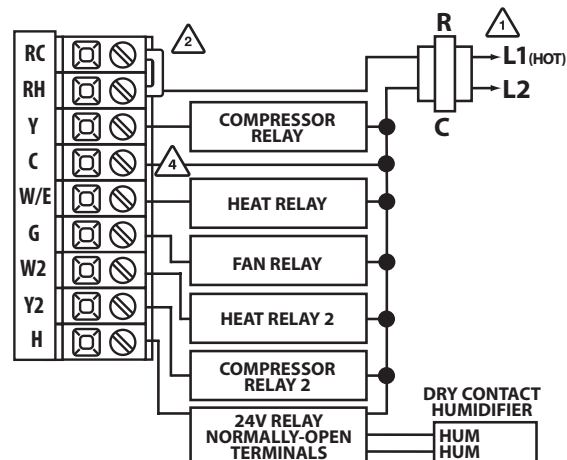
Typical 5H/3C Heat Pump System

Wiring To Economizer For Occupancy

Wiring To Economizer For Occupancy