sensi™
Connect to Comfort

SENSI™ TOUCH SMART THERMOSTAT

Humidity control guide

Models: 1F95U-42WF series, ST75 series, NH-2WIFI series, OH-2WIFI series
Version: April 2023
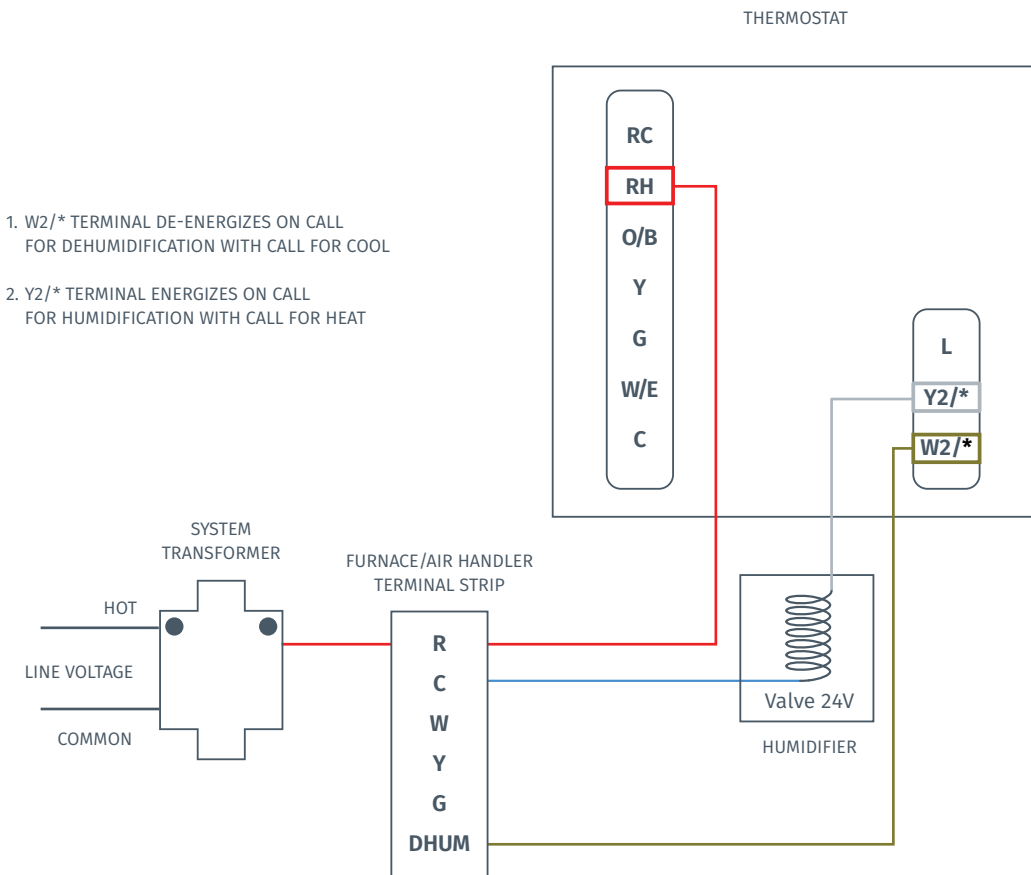
1. CONTRACTOR FIRMWARE UPDATE PROCESS

Connect the thermostat to Wi-Fi, and register to the customer's account. After registration is complete, the thermostat will check for any available firmware updates available. You will see a drop down indicating a firmware update in progress if there is one. Make sure the firmware is updated before installing humidification accessories.

2. INSTALLATION – COMPATIBILITY AND WIRING

SENSI THERMOSTAT	CONVENTIONAL SYSTEM CONNECTION	HEAT PUMP SYSTEM CONNECTION
RC†	Power for cooling, 24V	
RH†	Power for heating, 24V	
C	Common wire, 24V	
Y	1st stage cool	1st stage heat and cool (compressor)
Y2/*	2nd stage cool (or humidifier)	2nd stage heat and cool (or humidifier)
W/E	1st stage heat	1st stage auxiliary/emergency heat (2nd stage heat)
W2/*	2nd stage heat (or dehumidifier)	2nd stage auxiliary/emergency heat (3rd stage heat or dehumidifier)
G	Indoor blower (fan)	
O/B	Heat pump changeover, zone panel or 3-wire hot water zone valve connection (configurable as O, B or 2 in the installer menu).	Heat pump changeover (reversing valve) connection (configure as O or B in the installer menu)
L	No function	"L" terminal connection

Humidification & Dehumidification Wiring Diagrams
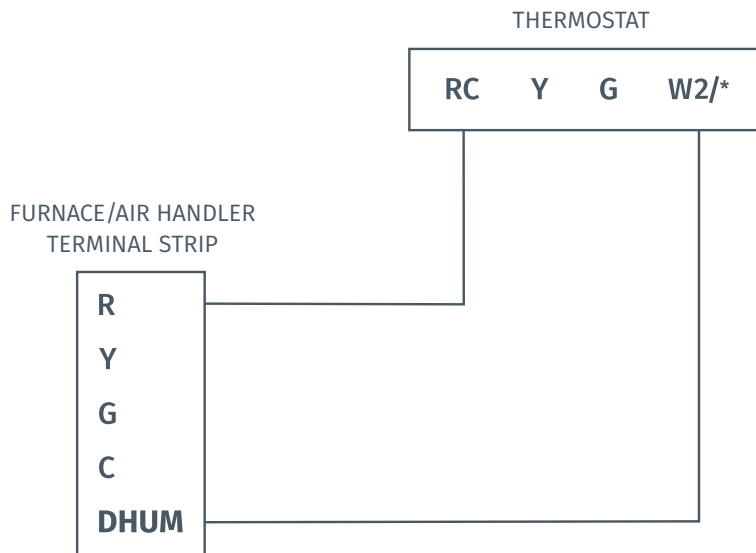
1-WIRE HUMIDIFICATION & DEHUMIDIFICATION

THERMOSTAT

1. W2/* TERMINAL DE-ENERGIZES ON CALL
   FOR DEHUMIDIFICATION WITH CALL FOR COOL

2. Y2/* TERMINAL ENERGIZES ON CALL
   FOR HUMIDIFICATION WITH CALL FOR HEAT

RC
RH
O/B
Y
G
W/E
C

L
Y2/*
W2/*

SYSTEM
TRANSFORMER

FURNACE/AIR HANDLER
TERMINAL STRIP

HOT

LINE VOLTAGE

COMMON

R
C
W
Y
G
DHUM

Valve 24V

HUMIDIFIER

sTech tip:

*1 wire control is typically used to energize one side of a solenoid coil that already has the other
side of a relay or solenoid coil attached to the common on the 24 VAC HVAC transformer.*

Wired Dehumidification

Thermostat terminal W2/* de-energizes on call for dehumidification to lower the fan speed. The DHM/
DHUM terminal is only used on systems with a compatible dehumidification feature that have the
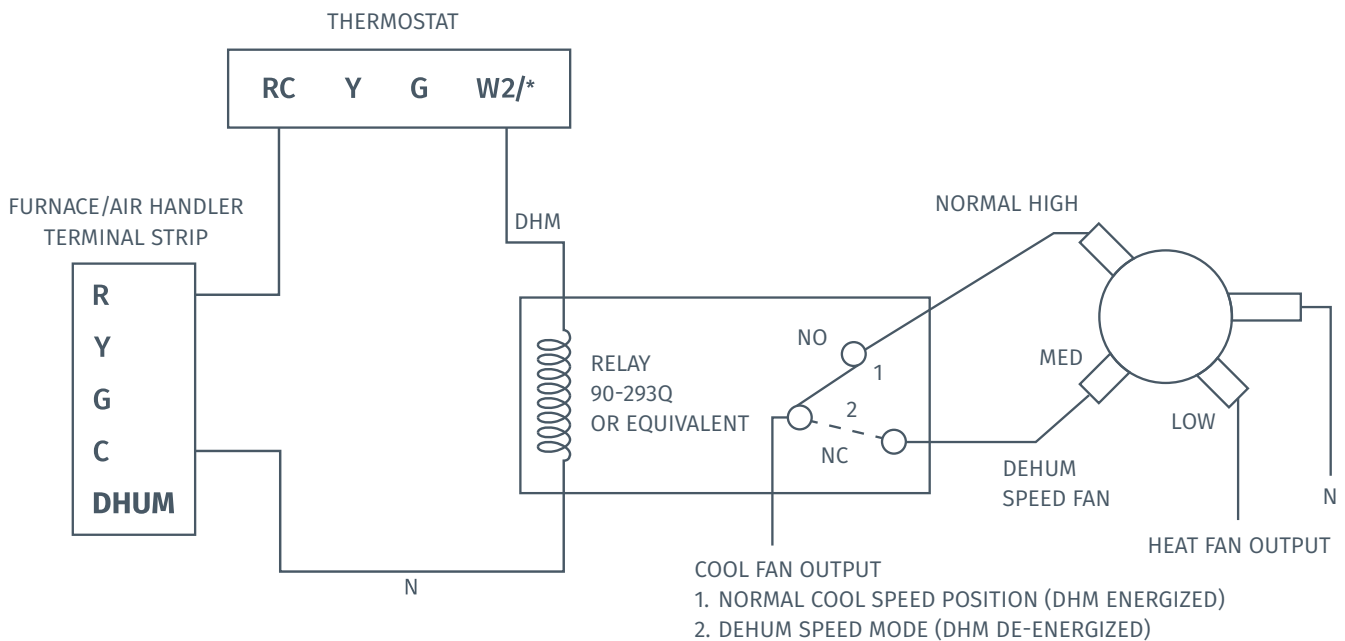required terminal connection on the control module or have a relay installed to lower fan speed.

Tech tip:
*Wired dehumidification cannot be configured with two stage heating systems. If you're unable to configure the thermostat
for wired dehumidification, use the installer menu to make sure the HVAC Equipment for Indoor is set for single stage.*

THERMOSTAT

| RC | Y | G | W2/* |

FURNACE/AIR HANDLER
TERMINAL STRIP

R
Y
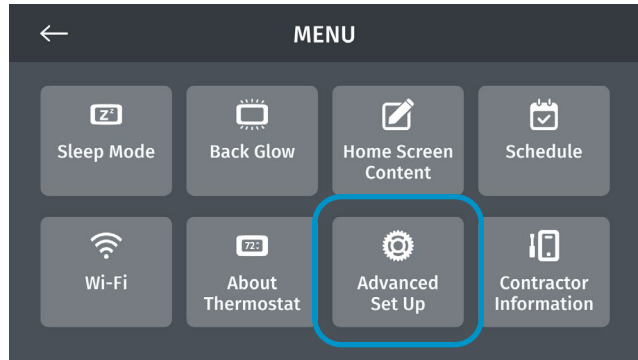G
C
DHUM

RELAY INSTALLED

A relay can be installed as shown below to switch fan speed to the next lower speed on a call for dehumidification from the thermostat. The reduction in air flow allows the coil to remove more humidity from the air. The relay should be rated for the blower motor load. Since this configuration reduces the air flow in cooling, the anti-freeze-up control or equivalent is recommended to prevent the air conditioning coil from freezing due to low air flow, dirty filters, low refrigerant pressure, etc.
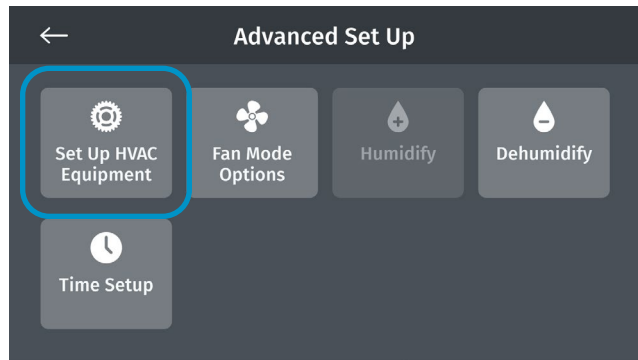
THERMOSTAT

RC   Y   G   W2/*

FURNACE/AIR HANDLER
TERMINAL STRIP

R
Y
G
C
DHUM

DHM

NORMAL HIGH

RELAY
90-293Q
OR EQUIVALENT

NO
1
2
NC

MED

LOW

DEHUM
SPEED FAN

HEAT FAN OUTPUT

N

N

COOL FAN OUTPUT
1. NORMAL COOL SPEED POSITION (DHM ENERGIZED)
2. DEHUM SPEED MODE (DHM DE-ENERGIZED)

3. CONFIGURATION − SETTING HUMIDIFICATION/DEHUMIDIFICATION CONTROL CAPABILITY ON/OFF

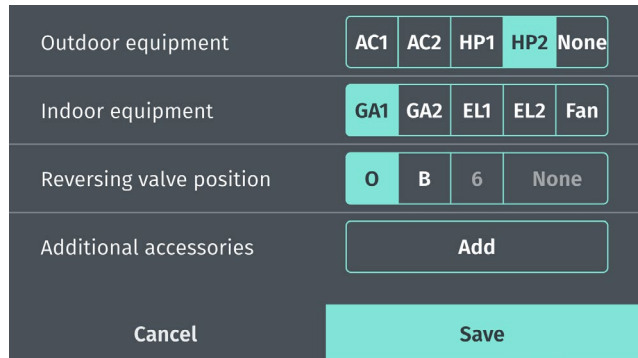| CONFIGURATION MENU ITEMS REFERENCE		
Menu item	Default	Options
Sleep Mode	Off	Turn sleep display mode on/off
Backglow	Off	Off / On
Home Screen Content	On	Indoor Humidity
	On	Time of Day
	°F	°F / °C
Schedule	-	5 / 2 Day Schedule
Wi-Fi	-	Connect to Wi-Fi
About Thermostat	-	Model Number/Reset
Advanced Setup		HVAC Equipment	Fan Mode Options
Set Up HVAC Equipment	AC2	Outdoor Setup AC1/AC2/HP1/HP2/None
	EL2	Indoor Setup GA1/GA2/EL1/EL2/Fan
	O	Reversing Valve Position O/B/6/None
	None	Additional Accessories None/Add
	No	Humidifier (wired to thermostat) Yes/No
	No	Dehumidifier (wired to thermostat) Yes/No
Fan Mode Options	Off	Circulating Fan Off/On 10% - 100% (5% increments)
Humidify	Off 40%	Humidification Off/On 5%- 50% (5% increments)
Dehumidify	Off 50%	Dehumidification Off/On 40% - 95% (5% increments)

1 Press **Advanced Set Up**

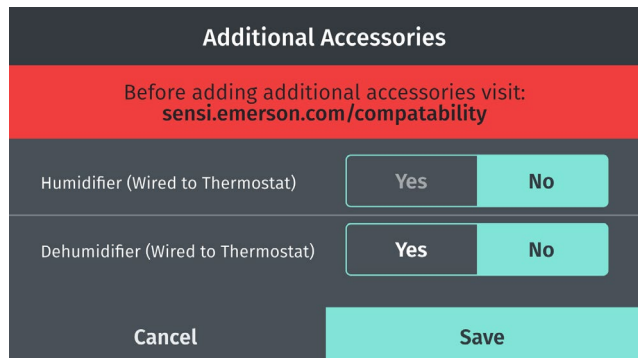**2** Press **Set Up HVAC Equipment**

3 Make selection depending on installed equipment

4 Press **Add** Additional Accessories, and press **Yes** for either wired humidifier or wired dehumidifier. Then press **Save**.

Note:
*If you're unable to toggle **Yes** then you are utilizing second stage heating/cooling. Go back to the main HVAC Equipment menu and configure for single stage heating/cooling.*

3. USING THE FEATURE – TURNING HUMIDIFICATION CONTROL ON/OFF AND SETTING THE HUMIDITY SETPOINT

Adjust the humidification/dehumidification feature from either the thermostat or the Sensi app.

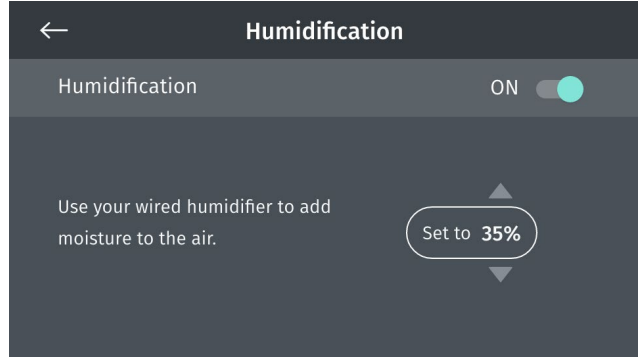In the Advanced Set Up menu, the Humidify and Dehumidify feature controls are available.
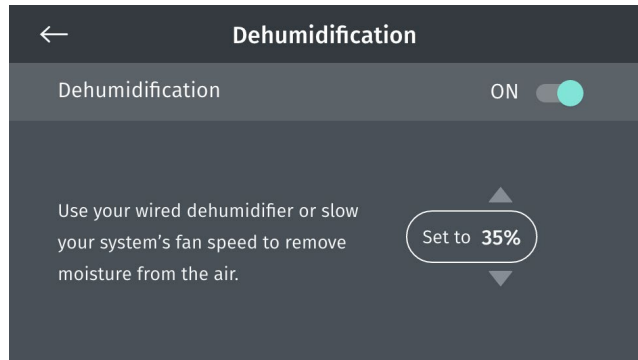
Humidification

Press **Humidifiy**.

In the Humidification menu, toggle the feature **on** or **off**.

With Humidification on, adjust the set percentage to maintain using the **up/down arrows**.

Press the **back arrow** button after you're done.

Wired Dehumidification

Press **Dehumidifiy**.

In the Dehumidification menu, toggle the feature **on** or **off**.

With Dehumidification on, adjust the set percentage to maintain using the **up/down arrows**.

Press the **back arrow** button after you're done.

Note:
If you have selected wired dehumidification in the "HVAC Equipment" settings, then the overcooling option will not be there, only the wired dehumidify option.

Dehumidification - Overcooling

If you don't have an accessory installed for wired dehumidification, you can still use your cooling system to dehumidify your space.
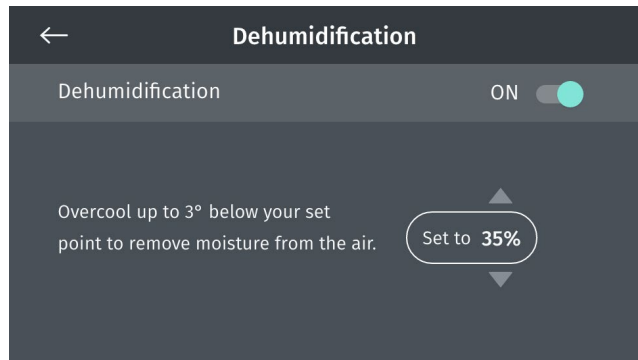
Press **Dehumidify**.

In the Dehumidification menu, toggle the feature **on** or **off**.

With Dehumidification on, adjust the set percentage to maintain using the **up/down arrows**.

Press the **back arrow** button after you're done.

Note:
This allows your cooling system to run longer, up to 3 degrees past your set temperature, to remove moisture.

Adjusting the humidity control from the Sensi app
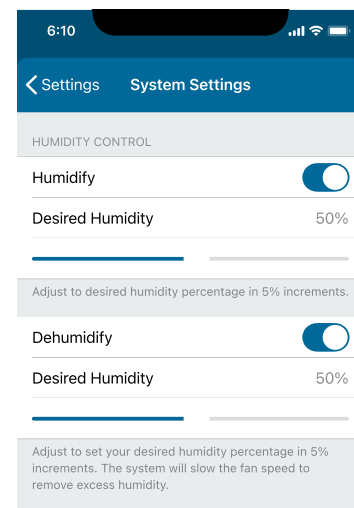
Open the Sensi app.

Tap your **thermostat name**.

Tap the **settings gear**.

Tap S**ystem settings**.

Scroll to the humidity control section and adjust the percentage as needed or toggle the feature **on/off**.

Frequently asked questions

FAQ	ANSWER
When can I get the firmware OTA update for humidity control?	OTA updates are pushed via Wi-Fi after being registered to the customer's account on the Sensi app.
Which versions of Sensi thermostats are compatible with humidity control?	Sensi Touch (1F95U) and Sensi (1F87U) smart thermostats are all backward compatible. 1F86U and UP500W models are currently not compatible.
What terminals should I use to enable humidity control?	Use Y2/* for humidification and W2/* for dehumidification.
What types of humidifiers and dehumidifiers are supported?	**Humidifiers:** Any 24VAC humidifier. Currently, Sensi does not support independent (call for heat) humidification. **Dehumidifiers:** HVAC systems with dehumidify mode (slowing of the system's fan speed) or 24VAC dehumidifiers. Currently Sensi does not support independent (call for cool) dehumidification.
What is an appropriate humidity setpoint?	Depending on the outdoor temperature, the ideal indoor humidity level is between 30-50% RH. In cold weather, if condensation appears on your windows, lower the humidity setpoint.
What is overcooling to dehumidify?	On air conditioning systems without a dehumidifier, the dehumidification feature allows Sensi to overcool to a maximum of 3° below the AC setpoint to help control the humidity. Overcooling is an option to dehumidify without having to wire additional accessories.
Why is my system unable to reach my humidity setpoint?	During extremely cold and dry or hot and humid climates, your humidifier or dehumidifier may not be able to increase or decrease humidity enough to reach your setpoint depending on the size of your equipment.