



SOURCE 1

HVAC Service Parts

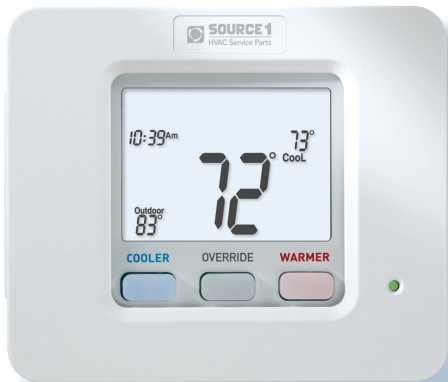
Commercial
model **S1-TBSU304-S**

Non-programmable
with **Humidity Control**

Digital Thermostat



**Optional
accessories
available,
including
Wi-Fi**



Owner's Manual & Installation Instructions



CAUTION

Follow the Installation Instructions before proceeding. Set the thermostat mode to “OFF” prior to changing settings in setup or restoring Factory Defaults.

This Source 1 thermostat has the ability to receive updates to its firmware. Periodically firmware updates are released by the manufacturer to add features and/or performance enhancements. This manual was produced reflecting the most current firmware/feature set at the time of publication, firmware rev. 12. Firmware releases after rev. 12 may not be adequately depicted in this manual. Please refer to the appropriate website or contact your place of purchase to learn about changes to the thermostat after firmware release 12.



Glossary of Terms

Auto-Changeover: A mode in which the thermostat will turn on the heating or cooling based on room temperature demand.

Cool Setpoint: The warmest temperature that the space should rise to before cooling is turned on (without regard to deadband).

Deadband: The number of degrees the thermostat will wait, once a setpoint has been reached, before energizing heating or cooling.

Dehumidify: To reduce the amount of moisture in the air.

Differential: The forced temperature difference between the *heat setpoint* and the *cool setpoint*.

Heat Setpoint: The coolest temperature that the space should drop to before heating is turned on (without regard to deadband).

Humidify: To increase the amount of moisture in the air.

Icon: The word or symbol that appears on the thermostat display.

Mode: The current operating condition of the thermostat (i.e. Off, Heat, Cool, Auto).

Non-Programmable Thermostat: A thermostat that does not have the capability of running *Time Period Programming*.

Programmable Thermostat: A thermostat that has the capability of running *Time Period Programming*.

Reheat: Running the cooling and 2nd stage strip heaters at the same time in order to *dehumidify* the air without significantly cooling down the room temperature.

Temperature Swing: *Same as Deadband.*

Time Period Programming: A program that allows the thermostat to automatically adjust the *heat setpoint* and/or the *cool setpoint* based on the time of the day.

Table of Contents

GET TO KNOW YOUR THERMOSTAT

Get to Know Your Thermostat.....	1
Quick Start	6

INSTALLATION INSTRUCTIONS

Sample Wiring Diagrams.....	13
Test Operation.....	16

USER SETUP

Backlight Operation.....	17
Scrolling Display Options	18
Emergency Heat	18
Wi-Fi Module.....	19
System Runtimes.....	21

INSTALLER SETUP

Program Mode Operation.....	23
Humidification & Dehumidification	25
Dry Contact Operation	27
Remote Sensor Operation.....	28
ADR	29
Locking/Unlocking the Keypad.....	34
Factory Defaults.....	35

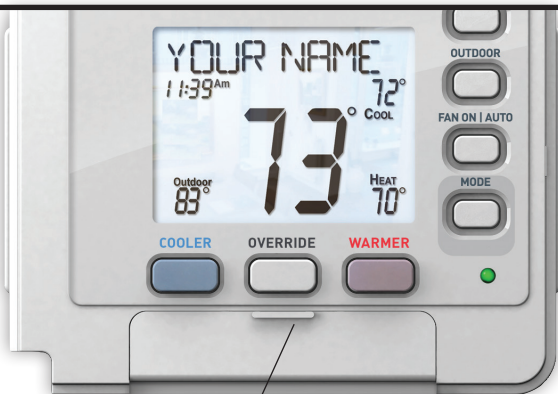
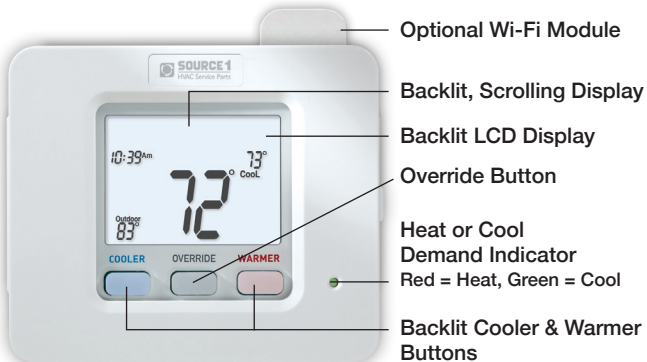
TECHNICIAN SETUP

Sensor Calibration	36
Equipment Testing	36
Advanced Output Testing.....	36
Troubleshooting	37
Advanced Setup Table	38

WARRANTY

TECHNICAL SPECIFICATIONS.....

Get To Know Your Thermostat



Setup Buttons Behind Door

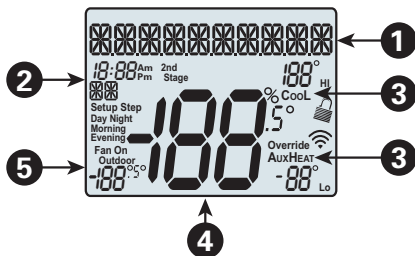
Get To Know Your Thermostat



Setup Buttons

Get To Know Your Thermostat

Display Features



1 The scrolling display will be used to help you easily navigate the setup screens in the thermostat.

2 **Clock**
Indicates the current time.

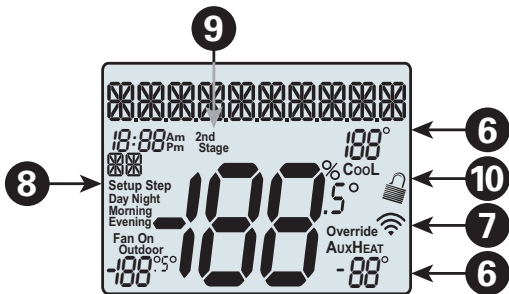
3 **Mode Indicators**
Selects the operational mode of the equipment.
HEAT - Indicates the heating mode.
COOL - Indicates the air conditioning mode.
HEAT & COOL - Indicates the system will automatically change-over between heat and cool modes as the temperature varies.
OFF - Indicates heating and cooling is turned off.

4 **Room Temperature Display**
Indicates the current room temperature and displays the outdoor temperature when selected.

5 **Outdoor icon**
Indicates the temperature displayed is from the optional outdoor sensor.

Get To Know Your Thermostat

Display Features



6 Desired Set Temperature

Indicates **desired** room temperature(s). Also displays the highest and lowest temperatures for the day.

7 Wi-Fi icons

One dot indicates the thermostat recognizes the wireless module. The **full** icon indicates the thermostat is currently connected to the Local access point, via the optional Wi-Fi Module.

8 Setup Step icon

Indicates the step number when the thermostat is in the setup mode.

9 2nd Stage icon

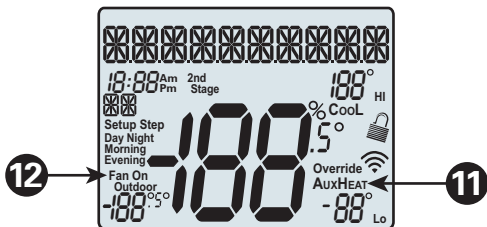
Indicates what stage of cooling or heating is currently energized.

10 icon

Indicates the keypad has been locked.

Get to know your thermostat

Display Features



11 AuxHeat icon

Indicates 2nd stage electric strip heat is being used when the thermostat is programmed for Heat Pump operation. Only the Aux icon will appear during Cool to Dehumidify to indicate Reheat operation.

12 Fan On icon

Indicates constant, continuous fan operation. When **Fan On** is not lit - indicates the fan will only operate when necessary to heat or to cool.

Quick Start

During Setup and Programming

*Press the **WARMER** or **COOLER** buttons to modify the selection. Press the **MODE** button to advance and confirm through the setup steps.*

Setting the Clock

Not available when wi-fi module is present

Press the SET CLOCK button. Adjust the clock using the WARMER or COOLER buttons. Press MODE to advance to the day setting. Adjust the day using the WARMER or COOLER buttons. Press the SET CLOCK button to confirm settings.

NOTE: To adjust the time by hours, press and hold the FAN button while pressing the WARMER or COOLER buttons.



Selecting the Heat or Cool Mode

Select mode by pressing the **MODE button.**



Heating Only - Only the heating operation will be controlled by the thermostat in this mode.

Cooling Only - Only the cooling operation will be controlled by the thermostat in this mode.

Heating or Cooling (Auto-Changeover) - AUTO will automatically select heat or cool based on room temperature demand.

OFF - OFF indicates both heating and air conditioning systems are turned off.

Quick Start

Selecting your desired temperature

AUTO-CHANGEOVER MODE - Pressing the WARMER or COOLER buttons in Auto mode will adjust both the heat and cool setpoints simultaneously. To adjust heat and cool setpoints individually, choose HEAT mode to adjust the heat setpoint and COOL mode to adjust the cool setpoint, then return to AUTO mode.

HEAT OR COOL MODE - Pressing the WARMER or COOLER buttons in Heat or Cool mode will adjust only the heat or cool setpoints individually displayed.

Using the Fan Button

Fan On indicates constant fan operation. Fan On is not allowed when the thermostat is in the OFF mode. Pressing the FAN button toggles this feature. If you don't see "Fan On", the fan is in auto mode and will only turn on during a heat or cool demand.

Using the Override Button

Unoccupied Operation—During programmed, unoccupied

periods, pressing the **OVERRIDE** button will force the thermostat into Occupied 1 setting for 30 minutes. Each press of the **OVERRIDE** button will add another 30 minutes of time for up to 4 hours. If the maximum time has been set, the next press of the **OVERRIDE** button will reset the timer and return the thermostat to the correct time period program for the day

Occupied Operation—During programmed, occupied periods, pressing the **OVERRIDE** button will force the thermostat into an unoccupied period for the rest of the day. During this forced unoccupied period, the **OVERRIDE** button will operate as described above.

To adjust the setpoints for the Unoccupied mode, see page 27.

Current Override Hours (*Setup step 10*) - This counter keeps track of the number of hours that the thermostat is overridden into Occupied settings. Press FAN to reset.

OVERRIDE



NOTE: Override may only be used when the thermostat is set to PROGRAM ON.

Quick Start

Viewing the Temperature Sensors

OUTDOOR TEMP - Press the OUTDOOR button to view the current outdoor temperature. If connected to a Skyport account, pressing outdoor button will show the temperatures for your location if you don't have a wired sensor connected.

Press the OUTDOOR button again to view any connected wired sensor (Remote or Supply).

OUTDOOR



Note: *If no outdoor sensor is connected, and there isn't outdoor temperature via Wi-Fi, then 2 dashes [- -] will appear with the first button press.*

REMOTE/SUPPLY TEMP - Press the **Accessory Status** button to view linked wireless and wired sensors and other accessories. Press the **Accessory Status** button to return to the main screen. Setup step #30 selects the use of the wired temperature sensor.

ACCESSRY
STATUS



Viewing the Indoor Humidity Sensor

IMPORTANT: *Allow at least 2 minutes after the thermostat is powered on for the humidity to read correctly.*

Press the HUMIDITY button then the mode button to display the current humidity measured at the thermostat. The room's relative humidity is displayed in the top left corner. The humidification setpoint appears in the larger, center display and can be adjusted using the WARMER or COOLER buttons. Press the MODE button again to view and adjust the dehumidification setpoints. Press the HUMIDITY or MODE button again to confirm settings and return to normal operation.

Note: *Due to variations in environmental and equipment conditions, it is not always possible to achieve the desired humidification or dehumidification setpoint.*

Installation Instructions

Remove and Replace the old thermostat

To install the thermostat properly, please follow these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.

- Assemble tools: Flat blade screwdriver, wire cutters and wire strippers.
- Make sure your Heater/Air Conditioner is working properly before beginning installation of the thermostat.
- Carefully unpack the thermostat. Save the screws, any brackets, and instructions.
- Turn off the power to the Heating/Air Conditioning system at the main fuse panel. Most residential systems have a separate breaker for disconnecting power to the furnace.
- Remove the cover of the old thermostat. If it does not come off easily, check for screws.
- Loosen the screws holding the thermostat base or subbase to the wall and lift away.
- If you have a smart phone handy, take a photo of the wiring for future reference.
- Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.
- Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

Installation Instructions

Wire Connections

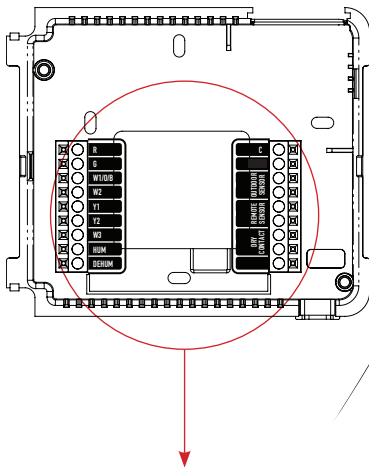
If the terminal designations on your old thermostat do not match those on the new thermostat, **refer to the chart below or the wiring diagrams that follow.**

Wire from the old thermostat terminal marked	Function	Install on the new thermostat connector marked
G or F	Fan	G
Y1, Y	Cooling	Y1
W1, W	Heating	W1/O/B
Rh, R, M, Vr, A	Power	R
C	Common	C
O/B	Rev. Valve	W1/O/B*
W2	2nd Stage Heat	W2
Y2	2nd Stage Cooling	Y2
H, Hum	Humidity	HUM
D, Dehum	Dehumidity	DEHUM
Ck1	Dry Contact Switch	DRY CONTACT
CKGND	Dry Contact Switch	DRY CONTACT

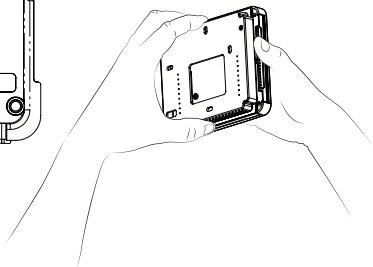
* O/B is used if your system is a Heat Pump.

Installation Instructions

The Thermostat Backplate



To remove the thermostat backplate: Gently separate the display from the base by pulling first from one side, then the other until the two pieces unsnap.



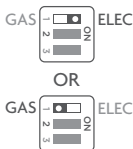
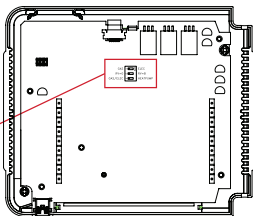
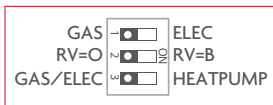
R	24 VAC return	C	24 VAC common
G	Fan relay	OUTDOOR SENSOR	Outdoor sensor connections
W1/O/B	1st stage heat circuit	REMOTE SENSOR	Remote sensor connections
W2	2nd stage heat circuit	DRY CONTACT	Dry Contact connections
Y1	1st stage compressor relay		
Y2	2nd stage compressor relay		
HUM	Humidifier control circuit		
DEHUM	Dehumidifier control circuit		

IMPORTANT: This thermostat requires both **R (24 VAC Return)** and **C (24 VAC Common)** be connected to the backplate terminals.

Installation Instructions

Check Dip Switches

Ensure which switch is correct for your system. Dip switches are located on the back of the thermostat.

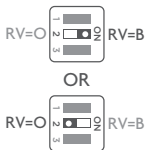


1. When GAS/EL or HP is set for GAS/EL:

This switch (GAS or ELEC) controls how the thermostat will control the Fan (G) terminal in heating mode. When GAS is chosen, the thermostat will not energize the Fan (G) terminal in heating. When ELEC is chosen, the thermostat will energize the fan in heating.

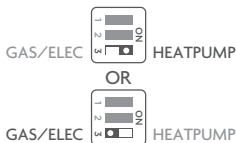
2. When GAS/EL or HP is set for HP:

This switch (GAS or ELEC) defines the Aux Heat type. When GAS is chosen, the auxiliary heat will not be allowed to run during heat pump operation. When ELEC is chosen, up to two stages of auxiliary strip heat will be allowed to run.



For Heat Pump Only

When the GAS/EL or HP dip switch is configured for HP, this dip switch (O or B) must be set to control the appropriate reversing valve. If O is chosen, the W1/O/B terminal will energize in cooling. If B is chosen, the W1/O/B terminal will energize in heating.



This dip switch configures the thermostat to control a conventional gas/electric system or a heat pump. If your system is anything other than a heat pump, leave this switch set for GAS/EL.

Installation Instructions

Sample Wiring Diagrams

Conventional Heating and Cooling Systems

3 Wire, Heat Only

Residential & Commercial 1 Stage Heating with no Fan.

R 24VAC Power
C 24VAC Common
W1/O/B 1st Stage Heat



4 Wire, Cool Only

Residential & Commercial 1 Stage Cooling.

R 24VAC Power
C 24VAC Common
Y1 1st Stage Cool
G Fan



5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial 1 Stage Cooling, with 1 stage Gas Heat.

R 24VAC Power
C 24VAC Common
W1/O/B 1st Stage Heat
Y1 1st Stage Cool
G Fan



5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial 1 Stage Cooling, with 1 stage Electric Heat.

R 24VAC Power
C 24VAC Common
W1/O/B 1st Stage Heat
Y1 1st Stage Cool
G Fan



Installation Instructions

Sample Wiring Diagrams

Heat Pump Systems

5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial Heat Pump with
'O' Reversing Valve

R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
Y1	1st Stage Compressor (Cool or Heat)
G	Fan



6 Wire, 1 Stage Cooling, 2 Stage Heat

Residential & Commercial Heat Pump with
'O' Reversing Valve

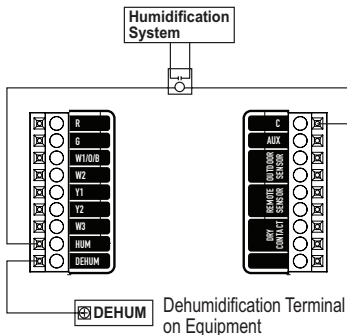
R	24VAC Power
C	24VAC Common
W1/O/B	Reversing Valve
Y1	1st Stage Compressor (Cool or Heat)
W2	Aux Heat
G	Fan



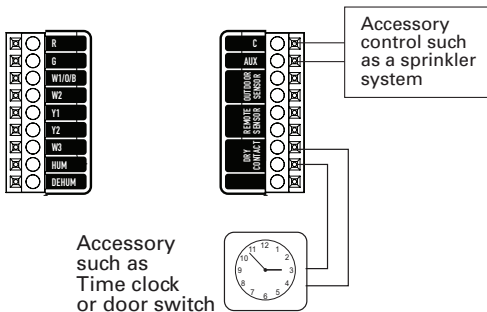
Installation Instructions

Sample Wiring Diagrams

Humidification or Dehumidification



Dry Contact and Aux Output



Installation Instructions: Test Operation

The Source 1 thermostat has a diagnostic feature that enables testing of all outputs. This feature is contained in **Technician Setup**.

*To enter Technician Setup, press and hold the **SETUP** button for 10 seconds until all the icons appear. Follow the next steps to view settings and test equipment.*

1. Press **MODE** to view the version numbers of the thermostat.
2. Press **MODE** again to view the jumper settings and current state of the Dry Contact and Fault terminals.

3. Press **MODE** again and the scrolling display will read "**TURN ON EQUIPMENT?**" Press **WARMER** for Yes or **COOLER** for No.

If Yes is chosen, press **WARMER** to turn on heat or **COOLER** to turn on Cooling. The scrolling display will read "**NOTHING ON.**" Next:

Press **WARMER** to turn on and cycle up through the heating stages.
Press **COOLER** to turn the heating stages off. Press **MODE** to exit.

Press **COOLER** to turn on and cycle down through the cooling stages.
Press **WARMER** to turn the cooling stages off. Press **MODE** to exit.

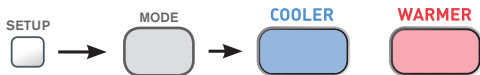
4. Press **MODE** until "**CALIBRATE SENSORS?**" appears on the scrolling display. Press **WARMER** for Yes or **COOLER** for No. Press **MODE** to select which sensor to calibrate. Use **WARMER** or **COOLER** to modify your selection.
5. Press **MODE** until "**CONTROL HUM?**" appears on the scrolling display. Press **WARMER** for On or **COOLER** for Off. Press **MODE** to continue.
6. Press **MODE** until "**CONTROL DEHUM?**" appears on the scrolling display. Press **WARMER** for On or **COOLER** for Off. Press **MODE** to continue.

*To exit Technician Setup at any time, press the **SETUP** button. Technician Setup will automatically exit after 10 minutes if no buttons are pressed.*

User Setup: Backlight Operation

How to Change Settings in the Setup Screens

To enter Advanced Setup, press the SETUP button, then press MODE. Use the WARMER or COOLER buttons to adjust the value of your selection. Press MODE to advance to the next setup step. Press SETUP again to leave the setup screens.



Backlight (Setup Steps 2-7)

Backlight (setup step 2)

Off - Backlight turns on with any button press and turns off after 8 seconds.

On - Backlight is on continuously.

Backlight Level (setup step 3)

The backlight can be adjusted between Off and seven levels of brightness.

Night Dimmer (setup step 4) - Selecting **On** allows for automatic dimming of the display at night.

Night Dimmer Brightness (setup step 5) The nighttime backlight can be adjusted between OFF and seven levels of brightness.

Night Dimmer Start Time (setup step 6) - 12:00 am to 12:00 am

Night Dimmer Stop Time (setup step 7) - 12:00 am to 12:00 am

Language (Setup Step 17)

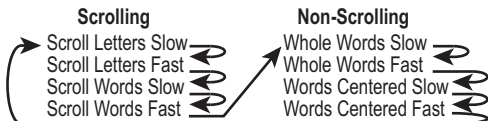
Setup step instructions on the scrolling display can be set for English, Spanish, or French.

Press the SETUP button, then press MODE repeatedly until the Language setup step appears. Use the WARMER or COOLER buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.

User Setup - Scrolling Screen & Display Options

Scrolling Display Method (Setup Step 18)

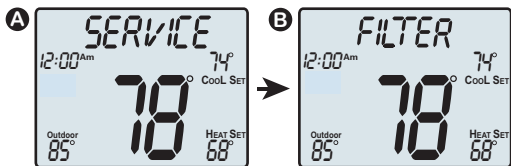
This option allows the user to choose how the scrolling text is displayed. Options are:



Press the **SETUP** button, then press **MODE** repeatedly until the Scrolling Method setup step appears. Use the **WARMER** or **COOLER** buttons to make selection. Press **MODE** to advance to the next step. Press **SETUP** to leave the setup screens.



Example of "Whole Words Centered":



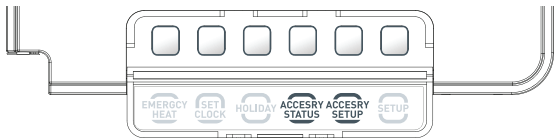
Emergency Heat

The Emergency Heat function is only available if your thermostat is set to control a Heat Pump.

To initiate the Emergency Heat feature, Press the **EMERGENCY** button. During Emergency Heat operation the thermostat will turn on the fan and auxiliary stages of heat when there is a demand for heat. The 1st stage of heating and all stages of cooling will be unavailable. To exit Emergency Heat, press the **EMERGENCY** button.

User Setup - Wireless Modules

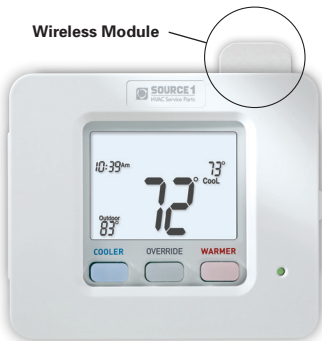
Wireless Module



Wireless Module

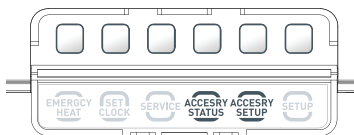
The **ACCESSORY STATUS** button allows the user to view the status of wired and wireless accessories. For many of the wireless devices this status includes: Battery Level, Signal Strength, and LastTime Updated.

If there is an optional wireless module installed, the **ACCESSORY SETUP** button allows the user to link or connect wireless devices to the thermostat, or the thermostat to the network.



User Setup

Wi-Fi Module




Wi-Fi Module



Please follow the instructions included with the Wi-Fi module to connect to an Access Point or view status. The general instructions are below.

Wi-Fi Module

If the  is present on the display then the thermostat is connected to the Wi-Fi Access Point. If just the “dot” of this icon appears, then just the Wi-Fi module is recognized.

Press the **ACCESSORY STATUS** button, until you see the scrolling message starting with, **PRESS THE WARMER**. After that, press **WARMER** to view the Wi-Fi status/settings or press **COOLER** to view connected Wi-Fi sensors.

Press the **MODE** button to step through the connected sensors or the Wi-Fi status screens listed below.

- Wi-Fi status (connecting, connected, etc.)
- Signal strength
- Access point name
- IP address
- MAC address
- Skyport status (connecting, connected with, etc.)
- Local API status (Enabled, Disabled)
- Module version

• At any time press the **ACCESSORY STATUS** button to leave the status screens.

Press the **ACCESSORY SETUP** button to enter Wi-Fi or Skyport setup:

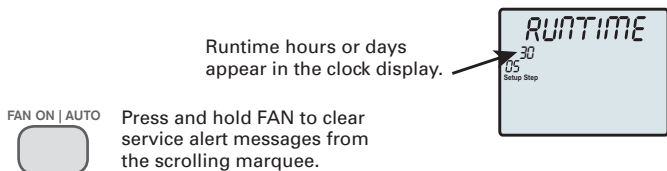
Press the **COOLER** button to configure Wi-Fi settings.

Press the Warmer button to join this thermostat to a Skyport account. If the thermostat is connected to Wi-Fi and the Internet, a Device ID will appear on the scrolling display of the thermostat. You will enter this code to add this thermostat to your Skyport account via a browser or the Skyport mobile app.

Note: To connect to Skyport Cloud Services, Setup Step #50 must be set to on.

User Setup - System Runtimes

These setup steps allow the user to monitor equipment runtimes and program service alerts. Service alerts are displayed in the scrolling marquee.



Service Filter Runtime (setup steps 8-9, 13-14)

Current Service Filter Runtime Hours (Setup Step 8) - This counter keeps track of the number of hours of fan runtime in the Heating mode, Cooling mode, and in stand alone Fan operation. Press FAN to reset.

Current Service Filter Calendar Days (Setup Step 9) - This counter displays the total number of calendar days that have elapsed since the counter was reset to help the user track Fan runtime. Press FAN to reset.

Set Service Filter Runtime Hours (Setup Step 13) - This timer allows the user to specify the number of hours the fan will run before the "Replace Filter" alert will be displayed. Press COOLER continuously until **0** is displayed to disable this alert.

Set Service Filter Calendar Days (Setup Step 14) - This timer allows the user to specify the number of calendar days that will elapse before the "Replace Filter" alert will be displayed. Press COOLER continuously until **0** is displayed to disable this feature.

Press the **SETUP** button, then press **MODE** repeatedly until the desired setup step appears. Use the **WARMER** or **COOLER** buttons to make selection. Press **MODE** to advance to the next step. Press **SETUP** to leave the setup screens.



User Setup - System Runtimes

*To view, set, or reset System Runtimes, press the **SETUP** button, then press **MODE**. Press **MODE** to advance to the desired setup step. Use the **WARMER** or **COOLER** buttons to adjust the value of your selection. Press **SETUP** again to leave the setup screens.*

UV Lamp Runtime (setup steps 11,15)

Current UV Lamp Calendar Days (setup step 11) - This counter displays the total number of calendar days that have elapsed since last reset to help the user track UV lamp runtime. Press **FAN** to reset.

Set UV Lamp Calendar Days (setup step 15) - This timer allows the user to specify the number of calendar days the UV Lamp will operate before the "Replace UV Lamp" alert will be displayed. Press **COOLER** continuously until **0** appears to disable this alert.

Humidifier Runtime (setup steps 12,16)

Current Humidifier Calendar Days (setup step 12) - This counter displays the total number of calendar days that have elapsed since last reset to help the user track the Humidifier run-time. Press **FAN** to reset.

Set Humidifier Calendar Days (setup step 16) - This timer allows the user to specify the number of calendar days the Humidifier will run before the "Service Humidifier" alert will be displayed. Press **COOLER** continuously until **0** appears to disable this alert.

User Setup - Available Modes

Selecting Your Available Modes *(setup step 1)*

Auto-Changeover - Allows the thermostat to turn on heating or cooling based on room temperature demand. Also allows the manual selection of HEAT only or COOL only and OFF.

Heat and Cool - Allows the thermostat to turn on heating or cooling depending on which one has been manually selected. Auto-Changeover is not available when this is selected.

Heat Only - Allows the thermostat to only turn on HEAT or OFF modes.

Cool Only - Allows the thermostat to only turn on COOL or OFF modes.

Installer Setup

Setpoint Limits (*setup step 19*) When this feature is at any setting other than no setpoint limits, the heat and cool setpoints can be restricted to preset levels, set in steps 20 and 21.

This feature allows the user to set 3 different levels of security: (0 - 3).

No Setpoint Limits (0) - When this level is selected, no restrictions are activated.

Use Setpoint Limits (1) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 20 and 21.

Maximum Heat Setpoint (setup step 20) - (35° - 99°).

Minimum Cool Setpoint (setup step 21) - (35° - 99°).

Force Current Mode (2) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 20 and 21 and the thermostat is locked into the current mode and the FAN button is locked out.

Setpoints Frozen (3) - When this level is selected, the heat and cool setpoints, the current mode and the FAN button are locked.

Cycles Per Hour (*setup step 22*) The Cycles Per Hour setting may limit the number of times per hour your HVAC unit may energize. For example, at a setting of 6 cycles per hour the HVAC unit will only be allowed to energize once every 10 minutes. The Cycles Per Hour limit may be overridden and reset by pressing the WARMER or COOLER buttons on the thermostat. Settings are No Limit, 2, 3, 4, 5, or 6.

Compressor Minimum Off Minutes (*setup step 23*) This feature allows the user to set a minimum off time for the compressor. Settings are 5 mins., 3 mins., or 0 mins.

Minimum Heat/Cool Setpoint Difference (*setup step 24*)

This feature allows the user to set the minimum gap between Heat and Cool setpoints in **AUTO** mode. Select from 0 to 6. If setup step 1 is not set for **AUTO-CHANGEVER**, this step will not appear.

Number of Heat Stages (*setup step 25*) This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

Number of Cool Stages (*setup step 26*) This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

Number of Compressor Stages (*setup step 27*) **This feature is for heat pump application only.** This feature allows the thermostat to control 1 or 2 compressor stages when configured for heat pump.

Number of Aux Stages (*setup step 28*) **This feature is for heat pump application only.** This feature allows for proper Aux Heat Staging. (0-2 stages)

Installer Setup

Deadband Settings

The Deadband is the number of degrees or minutes that the thermostat waits before it initiates the stages of heating or cooling.

1st Stage Deadband (*setup step 29*) - Specifies the minimum temperature difference between the room temperature and the desired setpoint before the first stage of heating or cooling is allowed to turn on. (1 - 6 degrees) For example, if the heat setpoint is 68° and the 1st Stage deadband is set to 2 degrees, the room temperature will need to reach **66°** before the heat turns on.

Fan Off Delay in Seconds (*setup step 40*)

This feature allows the user to increase the cooling or electric strip heating efficiency of the system. The thermostat may be programmed to continue running the fan after a call for cooling or electric strip heating has been satisfied. This delay can be set for 0, 30, 60, 90, or 120 seconds. If set to 0, the fan will not run after a call for cooling or electric strip heating has been satisfied.

Humidity and Dehumidity (*setup steps 33-39, 47-49*)

Humidity Only With Heat (*Setup Step 33*) - When this step is set to ON, Humidity will not run without a demand for Heat.

Fan With Humidity Demand (*Setup Step 34*) - Specifies if the fan should be turned on with a demand for Humidity.

Fan with Dehumidify Demand (*Setup Step 35*) - Specifies if the fan should be turned on with a demand for Dehumidify.

Cool To Dehumidify (*Setup Step 36*) - Specifies if the cooling equipment is allowed to turn on exclusively to lower room humidity. (If set to OFF the following two steps will not appear.)

Installer Setup

Max Occ Dehum Overcool (*Setup Step 37*) - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand. (0° - 5°)

Max Unocc Dehum Overcool (*Setup Step 38*) - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand. (0° - 20°)

Reheat Operation With Cool To Dehumidify (*Setup Step 39*) - Specifies if electric strip heat is allowed to turn on during a Cool to Dehumidify demand to help maintain desired room temperature. This step is not available if Electric Heat is not present.

Humidity Polarity (*setup step 47*)

Open (Normally Open) means no voltage is sent to the HUM output when there is no demand for humidity.

Closed (Normally Closed) means voltage is sent to the HUM output when there is no demand for humidity.

Dehumidify Polarity (*setup step 48*)

Open (Normally Open) means no voltage is sent to the DEHUM output when there is no demand to dehumidify.

Closed (Normally Closed) means voltage is sent to the DEHUM output when there is no demand to dehumidify.

Dehumidify Only with Cooling (*setup step 49*)

When set to ON, Dehumidify will only turn on with a 1st stage cooling demand. When set to OFF, Dehumidify will turn on at any time that the room humidity exceeds the dehumidification setpoint.

Installer Setup - Information

Dry Contact Operation (setup step 42 - 43)

Dry Contact Polarity (setup step 42)

Open (Normally Open) - The dry contact is open until the connected device closes the circuit.



'Idle'



'Active'

Closed (Normally Closed) - The dry contact is closed until the connected device opens the circuit.



'Idle'



'Active'

Dry Contact Use (setup step 43)

CONDENSATE PAN - If CONDENSATE is selected when the dry contact is active, the thermostat will lockout the compressor terminal(s) and "CONDENSATE PAN OVERFLOW" will appear on the display.

UNOCCUPIED - If UNOCCUPIED is selected, the thermostat will use unoccupied mode/ setpoints when the dry contact is active. In that state, the OVERRIDE button is available to return to the prior mode/setpoints for a limited amount of time. This setting is commonly used to emulate the function of a twist timer.

FDD - If FDD is selected when the dry contact is active, "EQUIPMENT FAULT" will appear on the display.

UNOCCUPIED MODE, UNOCCUPIED COOL SETPOINT, UNOCCUPIED HEAT SETPOINT (setup steps 44-46) - When prior step set for UNOCCUPIED, these three steps appear. Specify the desired mode and setpoints to be used when the dry contact is active.

Wired Sensor Type (setup step 30) - Specifies the use of the connected, wired sensor. The choices are: Remote, Supply, Outdoor. Only the remote option allows control of the sensor.

Installer Setup

Control To Temp Source *(setup step 31)*

This feature allows the use to specify which temperature sensor source(s) to be used to measure room temperature for control

Thermostat: Uses the internal thermostat sensor only.

Wired Remote: Uses external temperature sensor wired to the REMOTE SENSOR contacts.

Wireless Remote: Uses one wireless remote temperature sensor. Choose which linked sensor to use in the subsequent step.

Average of Wireless Remotes: Averages the temperatures of all linked wireless remote sensors.

Average Thermostat and Wired Remote: Averages the temperatures of the wired remote sensor and the thermostat.

Average All Sensors: Averages the temperatures of the wired remote, any linked wireless remotes and the thermostat.

Wireless Remote To Use *(setup step 32)*

Specifies the use of the connected, wired sensor. The choices are: Remote or Supply. The remote option allows control to the sensor, the supply does not.

Fahrenheit or Celsius *(setup step 41)*

This feature allows the thermostat to display temperature in Fahrenheit or Celsius.

Press Fan To Clear All Messages *(setup step 60)*

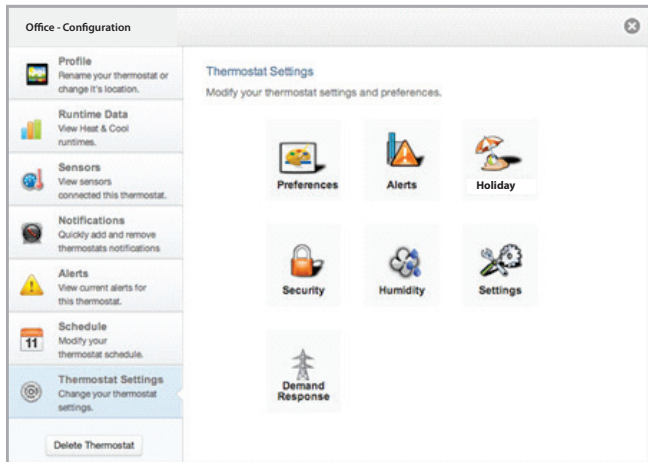
This feature allows the user to clear all current error messages from the display.

Overview

Source 1 thermostats support the handling of specific signals from the utility provider. The utility generated signals carry pricing information, and setback actions, that alter the comfort settings of the thermostat in order to reduce energy usage on demand. This is known as Automated Demand Response (ADR). You must register to participate in a utility sponsored program, if offered by your local utility, to take advantage of this feature.

Skyport Cloud Services

From the web application the user will select Thermostat Settings from the left column. Then the Demand Response button is selected.



Installer Setup - Automated Demand Response


The Demand Response configuration page, shown below, is where the thermostat is configured to respond to the energy provider's signals. It also sets operational parameters for the thermostat.

The left column of the ADR configuration page allows or prevents access by the utility. Here communication with the utility and your thermostat may be turned On or Off.


Installer Setup - Automated Demand Response

Selecting the Overview tab of the ADR page will cause a summary of ADR events to be displayed.


Office - Configuration




Profile
Rename your thermostat or change its location.




Runtime Data
View Heat & Cool runtimes.




Sensors
View sensors connected to this thermostat.




Notifications
Quickly add and remove thermostats notifications



Alerts
View current alerts for this thermostat.



Schedule
Modify your thermostat schedule.



Thermostat Settings
Change your thermostat settings.

Delete Thermostat

Automated Demand Response

Configuration

Overview

Event Type	Status	Start Time	Stop Time
Standard	Success	7/11/2018, 5:30:00 PM	7/11/2018, 7:30:00 PM
Standard	Success	9/1/2017, 2:00:00 PM	9/1/2017, 6:00:00 PM
Standard	Success	8/31/2017, 2:00:00 PM	8/31/2017, 6:00:00 PM
Standard	Success	8/30/2017, 2:00:00 PM	8/30/2017, 6:00:00 PM
Standard	Success	8/29/2017, 2:00:00 PM	8/29/2017, 6:00:00 PM
Standard	Success	8/28/2017, 2:00:00 PM	8/28/2017, 6:00:00 PM
Standard	Success	9/14/2018, 2:00:00 PM	9/14/2018, 6:00:00 PM

Cancel

Save ✓

Installer Setup - Automated Demand Response

Skyport *(setup step 50)*

Set to ON to allow access to Skyport services or to OFF to not allow to Skyport services. (WiFi accessory is required).

Visit Source1thermostats.com for more information.

Local API *(setup step 51)*

Set to ON to allow third-party software to interface with your thermostat. Typically used with home automation set-ups. (WiFi accessory is required).

ADR *(setup step 52)*

Controls whether you want the thermostat to possibly respond to signals from the utility provider. Select ON to allow this and to have steps 53-59 appear.

ADR Action *(setup step 53)*

Allows the user to determine what action is taken when the ADR event is received.

Observe Setpoint Offsets – will offset the heat and cool setpoints by the amounts specified in setup steps 58 and 59

Observe Static Setpoints – will set the heat and cool setpoints to the values specified in setup steps 56 and 57

Event Max Cool Setpoint *(setup step 54)*

Event Min Heat Setpoint *(setup step 55)*

Specifies the range of allowable setpoint adjustments to be enforced when any ADR signal has been received from the utility. Since you might be paying more for energy while an event is active, you can impose tighter limits on setpoint ranges that are only enforced during the event.

Installer Setup - Automated Demand Response

Static Cool Setpoint *(setup step 56)*

Static Heat Setpoint *(setup step 57)*

Specifies the setpoints that will come into use during an event when the ADR ACTION is set to OBSERVE STATIC SETPOINTS

Cool Setpoint Offset *(setup step 58)*

Heat Setpoint Offset *(setup step 59)*


Specifies how much the current setpoints in effect prior to an event will be altered during an event when the ADR ACTION is set to OBSERVE SETPOINT OFFSETS. The heat setpoint can be automatically lowered by -1 to -15 degrees while the cool setpoint can be automatically raised by 1 to 15 degrees

DISPLAY INDICATIONS WHEN AN ADR EVENT IS HAPPENING

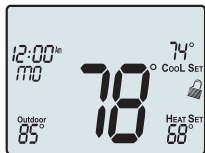
After setting your desired values for use during an ADR event, the scrolling display will give a little information when an event is pending or active. For instance, when an ADR event has been sent to your thermostat, you might see ADR STARTS 8/14 at 2:00pm to notify you of a pending event. Once active, you might see ADR STOPS 8/14 at 6:00pm. When an event is active, you can press any of COOLER, WARMER or MODE buttons, followed by the WARMER to opt out of the event.

Installer Setup

Locking/Unlocking the Keypad

To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together. The  icon will appear on the display, then release the buttons.

Press all three buttons in the order outlined above for keypad lockout




COOLER

MODE

WARMER



To **unlock** the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together.

The  icon will disappear from the display, then release the buttons.

Installer Setup - Factory Default Settings

Resetting the Thermostat to the Factory Default Settings

(for default values see page 38-39)

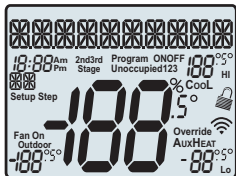
If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

WARNING: This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset may be permanently lost.

- 1 Press and hold SETUP for 10 seconds. All icons will appear on the display.

Keep pressing the **SETUP** button until you see this screen.

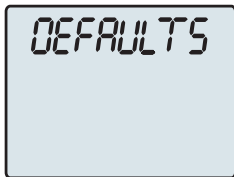
SETUP



- 2 After all the icons appear, release SETUP. Press and hold FAN for 5 seconds. DEFAULTS will appear on the display.

Keep pressing the **FAN** button until you see this screen.

FAN ON | AUTO



- 3 After DEFAULTS appears, release FAN. Press SETUP to return to normal operation.

SETUP



Technician Setup

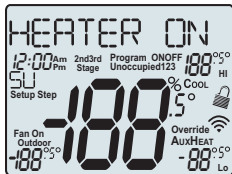
To enter Technician Setup, press and hold the *SETUP* button for 10 seconds. After all the icons appear, press *MODE*. The version number of the thermostat will appear in the scrolling text. Press *MODE* to advance to the next step. Use the *WARMER* or *COOLER* buttons to adjust the value of your selection. To leave Technician Setup, press *SETUP*.

Hold for 5 seconds

All icons appear

Press *MODE* to advance through the setup steps

SETUP



MODE



Press *WARMER* or *COOLER* to adjust the selection

COOLER



MODE



WARMER



Technician Setup is for diagnostic and testing purposes and is intended for use by a qualified technician. See page 16 for more detailed instructions.

Technician Setup contains the following options:

- View the version number of the thermostat.
- View the Dip Switch equipment type settings.
- View the state of the Dry Contact.
- Turn on equipment outputs for testing.
- Calibrate thermostat, remote and humidity sensors.
- Control HUM output (On or Off)
- Control DEHUM output (On or Off)

Troubleshooting

- **SYMPTOM:** The air conditioning does not attempt to turn on.
CAUSE: The compressor timer lockout may prevent the air conditioner from turning on for a period of time.
REMEDY: Consult the Owner's Manual in the Installer Setup section to defeat the Cycles Per Hour (*page 24*).
- **SYMPTOM:** The display is blank.
CAUSE: Lack of proper power.
REMEDY: Make sure the power is on to the furnace and that you have 24vac between **R & C**.
- **SYMPTOM:** The air conditioning does not attempt to turn on.
CAUSE: The cooling setpoint is set too high.
REMEDY: Lower the cooling setpoint or lower the cooling set-point limit. *See Setpoint Limits (page 24).*
- **SYMPTOM:** The heating does not attempt to turn on.
CAUSE: The heating setpoint is set too low.
REMEDY: Raise the heating setpoint or raise the heating set-point limit. *See Setpoint Limits (page 24).*
- **SYMPTOM:** When controlling a residential heat pump, and asking for cooling, the heat comes on.
CAUSE: The thermostat reversing valve jumper is set for **"B"**.
REMEDY: Set the reversing valve jumper for **"O"**.
- **SYMPTOM:** When calling for cooling, both the heat and cool come on.
CAUSE: The thermostat equipment jumper is configured for **"HP"** and the HVAC unit is a Gas/Electric.
REMEDY: Set the equipment jumper for **"Gas"**.

Advanced Setup Table

Df = Factory Default Setting

Step#	Description	Pg#	Range	Df
1	Available Modes	23	Heat/Cool/Auto/Off, Heat/Cool/Off, Heat/Off, Cool/Off	Heat/ Cool/ Auto/Off
2	Backlight	17	On, Off	Off
3	Backlight Level	17	Off thru 7 levels of brightness	Level 5
4	Night Dimmer	17	On/Off	Off
5	Night Dimmer Brightness	17	Off thru 7 levels of brightness	2 (20%)
6	Night Dimmer Start Time	17	12A-12A	8:00P
7	Night Dimmer Stop Time	17	12A-12A	6:00A
8	Current Service Filter Runtime Hours	21	0-1999 Hours	0
9	Current Service Filter Calendar Days	21	0-720 Days	0
10	Current Override Hours	7	0-1999 Hours	0
11	Current UV Lamp Calendar Days	22	0-720 Days	0
12	Current Humidifier Calendar Days	22	0-720 Days	0
13	Set Service Filter Runtime Hours	21	0-1950 hours	0
14	Set Service Filter Calendar Days	21	0-720 Days	0
15	Set UV Lamp Calendar Days	22	0-720 Days	0
16	Set Humidifier Calendar Days	22	0-720 Days	0
17	Language	17	English, Espanol, Francais	English
18	Scrolling Method	18	"L-R Slow, L-R Fast, Word L-R Slow, Word L-R Fast, Whole Word L Slow, Whole Word R Slow, Whole Word Ctr. Fast, Whole Word Ctr. Slow"	"Whole Words Center Fast"
19	Setpoint Limits	24	0 - 3	0
20	Max Heat Setpoint	24	35 - 99 Degrees	74
21	Min Cool Setpoint	24	35 - 99 Degrees	70
22	Cycles Per Hour	24	No Limit, 2, 3, 4, 5, 6	6
23	Compressor Minimum Off Minutes	24	0, 3, 5 Minutes	5
24	Min. Heat/Cool Setpoint Difference	24	0 - 6 Degrees	2
25	Number of Heat Stages	24	0 - 2	2
26	Number of Cool Stages	24	0 - 2	1
27	Number Of Compressor Stages	24	1, 2	1
28	Number of Aux Stages	24	0, 1, 2	0
29	1st Stage Deadband	25	1 - 6 Degrees	2
30	Wired Sensor Type	27	Remote, Supply & Outdoor	Remote

cont. next page

Advanced Setup Table

Df = Factory Default Setting

Step#	Description	Pg#	Range	Df
31	Control to Temp Source	28	Thermostat, Wired Remote*, Wireless Remote, Average of Wireless Remotes, Average Thermostat and Wired Remote*, Average All Sensors. *Option only if prior step = "Remote"	Thermostat
32	Wireless Remote to Use	28	list of wifi sensors currently linked to thermostat. *This step only appears if prior step = "Wireless Remote"	first linked sensor in list
33	Humidity Only With Heat	25	On, Off	Off
34	Fan With Humidity Demand	25	Fan On, Fan Off	Fan Off
35	Fan With Dehumidify Demand	25	Fan On, Fan Off	Fan Off
36	Cool To Dehumidify	25	On, Off	Off
37	Maximum Occ Dehum Overcool	26	0 - 5 Degrees	2
38	Maximum Unocc Dehum Overcool	26	0 - 20 Degrees	2
39	Reheat Operation W/Cool To Dehum.	26	On, Off	Off
40	Fan Off Delay	25	0 - 120 Seconds	0
41	F/C	28	Fahrenheit (F), Celsius (C)	F
42	Dry Contact Polarity	27	Open, Closed	Open
43	Dry Contact Use	27	Condensate Pan, Unoccupied, FDD	
44	Unoccupied Mode	27	Heat, Cool, Auto, Off	Off
45	Unoccupied Cool Setpoint	27	35 - 99 Degrees	85
46	Unoccupied Heat Setpoint	27	35 - 99 Degrees	55
47	Humidity Polarity	26	Open, Closed	Open
48	Dehumidify Polarity	26	Open, Closed	Open
49	Dehumidify only with Cooling	26	On, Off	On
50	Skyport	32	On, Off	On
51	Local API	32	On, Off	Off
52	ADR	32	On, Off	Off
53	ADR Action	32	Observe Setpoint Offset, Observe Static Setpoints	Observe Setpoint Offsets
54	Event Max Cool Setpoint	32	35 - 99	85
55	Event Min Heat Setpoint	32	35 - 99	65
56	Static Cool Setpoint	33	35 - 99	78
57	Static Heat Setpoint	33	35 - 99	68
58	Cool Setpoint Offset	33	1 to 15	4
59	Heat Setpoint Offset	33	-1 to -15	-4
60	Press Fan To Clear All Messages	28		

Warranty

One-Year Warranty - This Product is warranted to be free from defects in material and workmanship. If it appears within one year from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option to replace any defective part, will be provided without charge for the part itself provided the defective part is returned to the distributor through a qualified servicing dealer.

THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.

LIMITATIONS OF WARRANTIES – ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.

ALL WORK UNDER THE TERMS OF THIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME AS THEIR WARRANTY PERIOD ONLY THE REMAINING TIME PERIOD OF THIS WARRANTY.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:

1. Normal maintenance as outlined in the installation and servicing instructions or owner's manual, including filter cleaning and/or replacement and lubrication.
2. Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of the Manufacturer.
5. Parts not supplied or designated by the Manufacturer, or damages resulting from their use.
6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
7. Electricity or fuel costs or increases in electricity or fuel costs for any reason whatsoever including additional or unusual use of supplemental electric heat.
8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Technical Specifications

S1-TBSU304-S Thermostat Controllers

Power Requirements		20 - 30 VAC 50/60 Hz, 3.0 VA @ 24V nominal.
Output Rating		W1, W2, W3 = 0.2A max, 0.01A min, 3A inrush, 20 - 30 VAC Y1, Y2, G = 0.4A max, 0.01A min, 3A inrush, 20 - 30 VAC HUM, DEHUM, AUX = 0.1A max, 0.01A min, 3A inrush, 20 - 30 VAC
Local Temperature Sensor Type		Thermistor, NTC 10K @ 25°C
Remote Temperature Sensor Type		Thermistor, NTC 10K @ 25°C
Wire Size		16 AWG (100 ft max) to 24 AWG (36 ft max)
Temperature Adjustment Range		35° to 99° deg F (2° to 36° deg C)
Accuracy		35° to 65° deg F +/- 3° degF, greater than 65° to less than 80 degF +/- 2 degF, 80° to 99° deg F +/- 3° degF, greater than 99° to 104° deg F +/- 5° deg F
Humidity		+/- 10% RH from 30-70% RH, 50°- 90° F
Deadband		Adjustable 1° to 6° deg first stage, 0° - 10° deg 2nd & 3rd stages
Ambient Conditions	Operating	35° to 104° deg F (2° to 40° deg C), 5 - 95% RH non-condensing, 86° deg F max dew point
	Storage	-22° to 122° deg F (-30° to 50° deg C), 5-95% RH non-condensing, 86° deg F max dew point
Compliance		UL/cUL listed, file E107041, NEC Class 2
Dimensions		4.4" H x 5.2" W x 1.0"D
Shipping Weight		0.34 kg

Patent Pending

P/N 88-1345

05/19



SOURCE 1
HVAC Service Parts