SOURCE 1
HVAC Service Parts

Commercial
model S1-TBSU305-S

Digital Thermostat

Programmable

Wi Fi

Skyport CLOUD SERVICES

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 turns 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.

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).

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

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

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

Override: During programmed unoccupied periods, pressing the Override button will force the thermostat into occupied settings. During programmed occupied periods, pressing the Override button will force the thermostat into unoccpied settings.

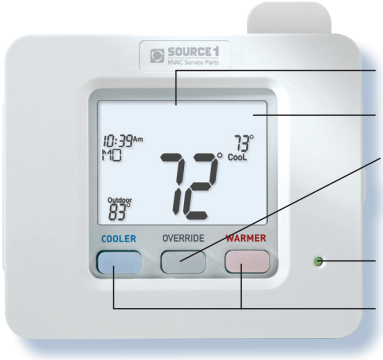
Programmable Thermostat: A thermostat that has the capability of running **Time Period Programming**.

Temperature Swing: *Same as Deadband.*

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

Table of Contents

Get To Know Your Thermostat



Optional WiFi Module

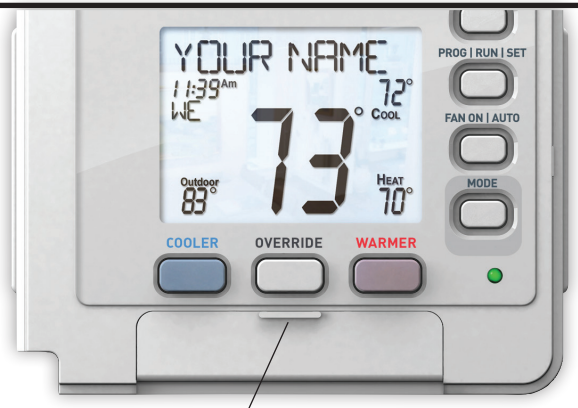
Backlit, Scrolling Display

Backlit LCD Display

Override Button

Heat or Cool
Demand Indicator
Red = Heat, Green = Cool

Backlit Cooler & Warmer
Buttons



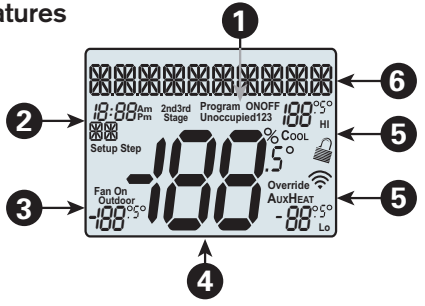
Setup Buttons Behind Door

Get To Know Your Thermostat

Setup Buttons

Get To Know Your Thermostat

Display Features



1. **Program icon**—Indicates that Time Period Programming is running or is enabled to be set.

2. **Clock with Day of the Week**—Indicates the current time and day. This clock is also used to program the time period schedules.

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

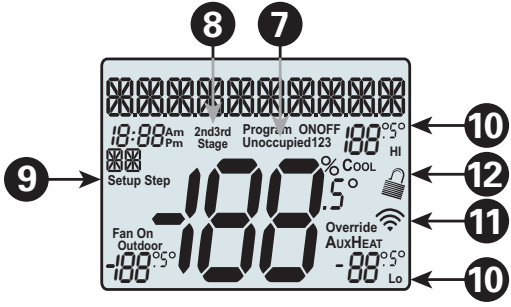
4. **Room Temperature Display**—Indicates the **current** room temperature and displays the outdoor temperature when selected.

5. **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 are turned off.

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

Get To Know Your Thermostat

Display Features



7 **Occupied & Unoccupied icons**—Indicates the program number: Occupied 1, 2, 3 or Unoccupied

8 **2nd and 3rd Stage icons**—Indicates what stage of cooling or heating is currently energized.

9 **Setup Step icon**—Indicates the step number when the thermostat is in the setup mode.

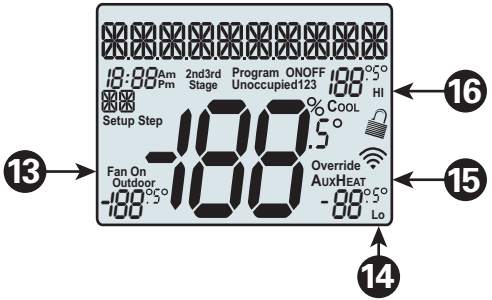
10 **Desired Set Temperature**—Indicates **desired** room temperature(s). Also displays the highest and lowest temperatures for the day.

11 **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.

12 **icon**—Indicates the keypad has been locked.

Get To Know Your Thermostat

Display Features



13 **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.

14 **Lo icon**—Indicates the lowest recorded outdoor temperature for the day.*

15 **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.

16 **Hi icon**—Indicates the highest recorded outdoor temperature for the day.*

** Hi and Lo Temperatures for the day, reset at midnight.*

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 and Day

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.

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. The fan is forced into auto mode when running the program and the thermostat shows **unoccupied**.

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.

Current Override Hours *(setup step 11)*

This counter keeps track of the number of hours that the thermostat is overriden into Occupied Settings. Press FAN to reset.

Viewing the Temperature Sensors

OUTDOOR TEMP - Press the **OUTDOOR** button to view the current outdoor temperature. The high and low temperatures for the day will also be displayed. The high and low temperatures reset at 12:00 am. 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.

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 **ACCESSRY STATUS** button to view linked wireless and wired sensors and other accessories. Press the Accessory Status button to return to the main screen.

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.
- Use a smart phone or mobile device to 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.

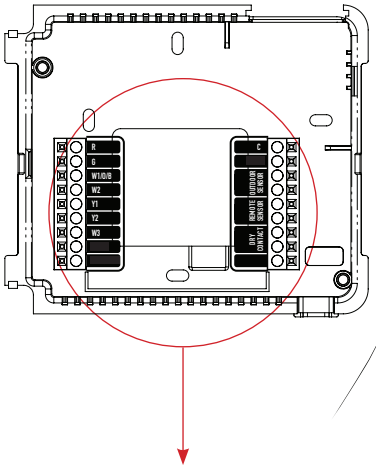
Wire Connections

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.**

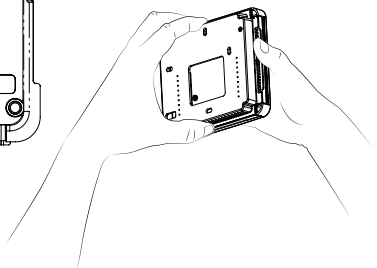
Wire from the old thermostat terminal marked	Function	Install on the new thermostat connector marked
G or F	Fan	G
Y1, Y	Cooling	Y1
W1, W	Heating	W1/0/B
Rh, R, M, Vr, A	Power	R
C	Common	C
O/B	Rev. Valve	W1/O/B*
W2	2nd Stage Heat	W2
Y2	2nd Stage Cooling	Y2
W3	3rd Stage Heat	W3
Ck1	Dry Contact Switch	DRY CONTACT
CKGND	Dry Contact Switch	DRY CONTACT

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

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.

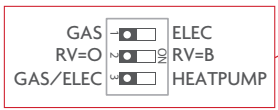


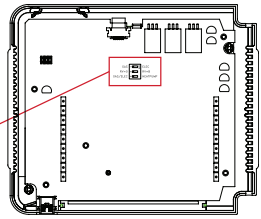
R	24 VAC return	**C**	24 VAC common
G	Fan relay	**OUTDOOR SENSOR**	Outdoor sensor connections
W1/O/B	1st stage heat circuit	**REMOTE SENSOR**	Remote sensor connections
W2	2nd stage heat circuit	**DRY CONTACT**	Dry Contact connections
Y1	1st stage compressor relay		
Y2	2nd stage compressor relay		
W3	3rd stage heat circuit		

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

Check Dip Switches

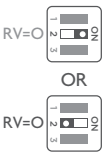
Ensure which switch is correct for your system. Dip switches are located on the back of the thermostat.





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.

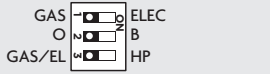
Sample Wiring Diagrams

Conventional Heating and Cooling Systems

3 Wire, Heat Only

Residential & Commercial 1 Stage Heating with **no Fan.**

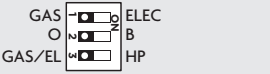
R	**24VAC Power**
C	**24VAC Common**
W1/O/B	**1st Stage Heat**



4 Wire, Cool Only

Residential & Commercial 1 Stage Cooling.

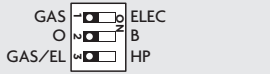
R	**24VAC Power**
C	**24VAC Common**
Y1	**1st Stage Cool**
G	**Fan**



5 Wire, 1 Stage Cooling, 1 Stage Heat

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

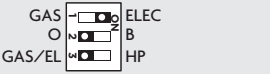
R	**24VAC Power**
C	**24VAC Common**
W1/O/B	**1st Stage Heat**
Y1	**1st Stage Cool**
G	**Fan**



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**



8 Wire, 2 Stage Cooling, 3 Stage Heat

Residential & Commercial 2 Stage Cooling, with 3 stage **Gas Heat.**

R	**24VAC Power**
C	**24VAC Common**
W1/O/B	**1st Stage Heat**
W2	**2nd Stage Heat**
W3	**3rd Stage Heat**
Y1	**1st Stage Cool**
Y2	**2nd Stage Cool**
G	**Fan**

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**

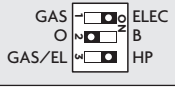
6 Wire, 1 Stage Cooling, 2 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve**

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

7 Wire, 2 Stage Cooling, 3 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve.**

R	**24VAC Power**
C	**24VAC Common**
W1/O/B	**Reversing Valve**
W2	**3rd Stage Heat**
Y1	**1st Stage Compressor (Cool or Heat)**
Y2	**2nd Stage Compressor (Cool or Heat)**
G	**Fan**

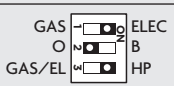
Setup Step 26 is set to 2 (Number of Compressor Stages)



8 Wire, 2 Stage Cooling, 4 Stage Heat
Residential & Commercial **Heat Pump** with **'O' Reversing Valve.**

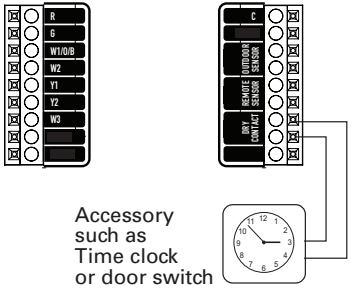
R	**24VAC Power**
C	**24VAC Common**
W1/O/B	**Reversing Valve**
W2	**3rd Stage Heat**
W3	**4th Stage Heat**
Y1	**1st Stage Compressor (Cool or Heat)**
Y2	**2nd Stage Compressor (Cool or Heat)**
G	**Fan**

Setup Step 26 is set to 2 (Number of Compressor Stages)



Sample Wiring Diagrams

Dry Contact



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 terminal.
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:

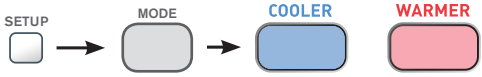
   Press WARMER to turn on and cycle up through the heating stages. Press COOLER to turn the heating stages off. Press MODE to exit.

   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.

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

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 3-8)*

Backlight (setup step 3)

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

On - Backlight is on continuously.

Backlight Level (setup step 4)

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

Night Dimmer (setup step 5) - Selecting **On** allows for automatic dimming of the display at night.

Night Dimmer Brightness (setup step 6) The nighttime backlight can be adjusted between OFF and seven levels of brightness.

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

Night Dimmer Stop Time (setup step 8) - 12:00 am to 12:00 am

Language *(setup step 16)*

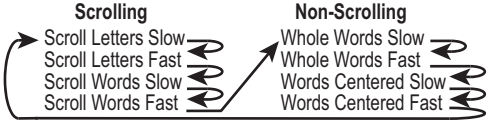
Setup step instructions on the scrolling display can be set for English, Spanish, or French.

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.

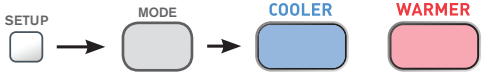
User Setup: Scrolling Screen and Display Options

Scrolling Display Method *(setup step 17)*

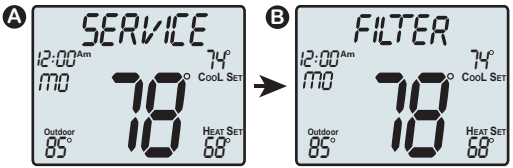
This option allows the user to choose how the scrolling text is displayed. Options are:



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":



Holiday

HOLIDAY

The Holiday feature allows the thermostat to use temporary, energy saving settings without having to change regular programming.

Holiday setup/programming at the local thermostat is limited to the number of days employing Holiday settings. When the optional Wi-Fi module is detected in the thermostat, local Holiday programming at the thermostat of the Holiday setup is not allowed. In this case Holiday setup and programming is accomplished with the Skyport Web App. Skyport gives the user extensive control over Holiday settings.

Press the HOLIDAY button to enter Holiday programming (no Wi-Fi Module detected).

If there is not a Holiday period active:

Use the WARMER and COOLER buttons to choose the number of days desired to run the Holiday feature. To confirm your setting press the HOLIDAY button again.

When the thermostat is programmed for Holiday operation, and the thermostat is in the Program On mode (running an Occupied/Unoccupied time period schedule), Holiday settings will take effect at 12:00AM of the next day. The thermostat will use the unoccupied mode and setpoints (see page 25) during the holidays.

If the Holiday button is pressed during an active Holiday period:

The active Holiday period may be cancelled by pressing the Mode button.

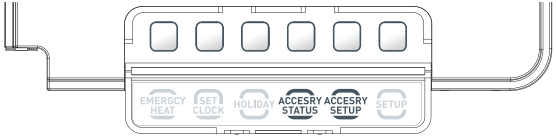
Emergency Heat

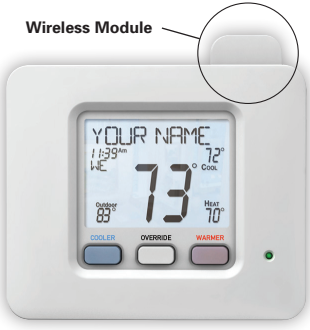
EMERGCY HEAT

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 HEAT** 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 HEAT** button.

Wireless Module

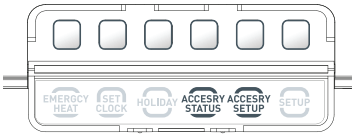


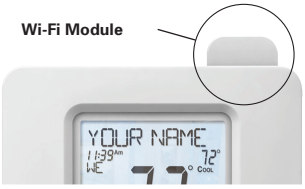


The **ACCESSORY STATUS** button allows the user to view the status of wired and wireless accessories. For many of the wireless devices this status includes: Battery Level, Signal Strength, and Last Time Updated.

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.

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.

a. Wi-Fi status (connecting, connected, etc.)
b. Signal strength
c. Access point name
d. IP address
e. MAC address
f. Skyport status (connecting, connected with, etc.)
g. Local API status (Enabled, Disabled)
h. 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 #44 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.

Runtime hours or days appear in the clock display.

Press and hold FAN to clear service alert messages from the scrolling marquee.

Service Filter Runtime

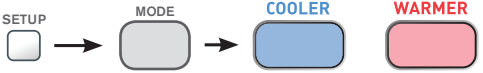
Current Service Filter Runtime Hours (Setup Step 9) - This counter keeps track of the number of hours of fan runtime in the Heating mode, Cooling mode, and in stand alone Fan operation. Press FAN to reset.

Current Service Filter Calendar Days (Setup Step 10) - 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

Current UV Lamp 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 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.

Selecting Your Time Period Schedule *(setup step 1)*

This thermostat may be configured to be programmable or non programmable.

7 Day Program - Allows all seven days to be programmed independently.

Non Program - No advanced time period programming available.

1 Day Program - Allows one 24 hour day to be programmed. This same schedule will be repeated every day the program is set to run.

5/1/1 Day Program - Allows weekdays, Saturday, and Sunday to be programmed independently.

Selecting Your Available Modes *(setup step 2)*

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 mode 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.

Programming a Daily Time Period Schedule*

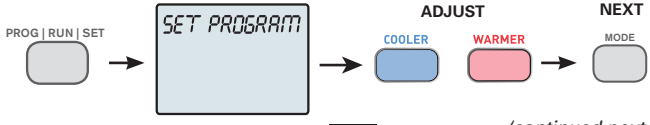
**not available when Wi-Fi module is present*

To enable (RUN) or turn ON the Time Period Schedule press the Program button momentarily.

To turn Off the Time Period Schedule stored program press this button again.

To alter the Time Period Schedule settings; press & hold this button for 5 seconds until the "Set Program" prompt appears. Modify the settings with the Warmer and Cooler buttons. Use the Mode button to advance through the steps. Press the Program button again to leave the setup screens.

Program Button



(continued next page)

Programming a Daily Schedule *(continued)*

Once the Set Program prompt appears the Mode button will step you through the settings as follows:

Set the Unoccupied Mode – Press the Warmer or Cooler buttons to choose the mode for the Unoccupied period. The thermostat is in Unoccupied when the Time Period Schedule is running and there is not an active Occupied period. The choices are: Off, Heat only, Cool only and AUTO changeover.

Adjust the Unoccupied Cool Setpoint – Press the Warmer or Cooler buttons to adjust the Cooling setpoint for times when the thermostat is in Unoccupied.

Adjust the Unoccupied Heat Setpoint – Press the Warmer or Cooler buttons to adjust the Heating setpoint for times when the thermostat is in Unoccupied.

Select the number of Occupied time periods – Press the Warmer or Cooler buttons to choose the maximum number (up to 3 maximum) of Occupied time periods in a day.

Select the Mode for the Occupied period – Press the Warmer or Cooler buttons to choose the mode for the occupied period. The choices are: Off, Heat only, Cool only, and AUTO changeover.

Adjust the Occupied Cool Setpoint – Press the Warmer or Cooler buttons to adjust the Cooling setpoint for comfort.

Adjust the Occupied Heat Setpoint – Press the Warmer or Cooler buttons to adjust the Heating setpoint for comfort.

The following steps determine when the Occupied period(s) will be active.

Enable Occupied 1 – Press the Warmer or Cooler buttons to enable (On) or to disable (Off) Occupied 1 on Monday.

Adjust the Start Time for Occupied 1 – Press the Warmer or Cooler buttons to adjust the start time for Occupied 1 on Monday.

Adjust the Stop Time for Occupied 1 – Press the Warmer or Cooler buttons to adjust the stop time for Occupied 1 on Monday.

Upon pressing **MODE** after the above step, you will be prompted to Save and Exit or Copy this Occupied schedule to another day.

To save and exit – Press the Program button.

To Copy Monday's settings/schedule to Tuesday – Press Up and then Mode. *Press Mode again to copy the Monday Settings/schedule to subsequent days.*

To Program Another Day – Press Down and then press the Mode button to select the day to program. Repeat the above steps for each day you would like to program.

Setpoint Limits *(setup step 18)* 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 19 and 20. 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 19 and 20.

Maximum Heat Setpoint (setup step 19) - (35˚ - 99˚).

Minimum Cool Setpoint (setup step 20) - (35˚ - 99˚).

Force Program Mode (2) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 19 and 20 and the thermostat is locked into the current mode and time period program setting and the FAN button is locked out.

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

Cycles Per Hour *(setup step 21)* 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 22)* 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 23)*

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 2 is not set for **AUTO-CHANGEOVER**, this step will not appear.

Number of Heat Stages *(setup step 24)* This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

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

Number of Compressor Stages *(setup step 26)* 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 27)* This feature is for heat pump application only. This feature allows for proper Aux Heat Staging. (0-2 stages)

Deadband Settings *(setup steps 28 - 37)*

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 28)* **-** 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.

2nd Stage Deadband *(setup step 29)* **-** Specifies the additional minimum temperature difference after the first stage turns on before the second stage is activated. (0˚ - 10˚)

3rd Stage Deadband *(setup step 30)* **-** Specifies the additional minimum temperature difference after the second stage turns on before the third stage is activated. (0˚ - 10˚)

4th Stage Deadband *(setup step 31)* ***- (Two Stage heat pump only)*** - Specifies the additional minimum temperature difference after the third stage turns on before the final stage of strip heat is activated. (0˚ - 10˚)

Minutes Between 1st and 2nd Stage *(setup step 32)* **-** Specifies the *minimum* time (in minutes) after the first stage turns on before the second stage can turn on. (0 - 60)

Minutes Between 2nd and 3rd Stage *(setup step 33)* **-** Specifies the *minimum* time (in minutes) after the second stage turns on before the third stage can turn on. (0 - 60)

Minutes Between 3rd and 4th Stage *(setup step 34)* **-** Specifies the *minimum* time (in minutes) after the third stage turns on before the final stage can turn on. (0 - 60)

Second Stage Turnoff Point *(setup step 35)* **-** Specifies whether second stage will turn off at first stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Third Stage Turnoff Point *(Setup Step 36)* **-** Specifies whether third stage will turn off at second stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Fourth Stage Turnoff Point *(Setup Step 37)* **-** Specifies whether fourth stage will turn off at third stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

Minutes of Fan Purge *(setup step 38)*

When this feature is activated, the fan will turn on during an unoccupied period at a preset amount of time prior to Occupied 1. This preoccupancy fan purge timer may be set from zero to three hours, in 15 minute increments. Zero means this feature is turned off.

Fan Off Delay in Seconds *(setup step 39)*

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.

Comfort Recovery *(setup step 41)*

With Comfort Recovery on, the thermostat will attempt to reach the Occupied 1 setpoint temperature at the exact time programmed into the thermostat. Comfort Recovery, only works when the thermostat enters the Occupied mode from the Unoccupied mode. For example, if the Occupied program is set for 6am at 72°F heating and 75°F cooling, the thermostat will turn the system on before 6am in an effort to bring the temperature to its correct setting at exactly 6am. The thermostat learns from experience, so please allow 4-8 days after a program change or after initial installation to give Comfort Recovery time to adjust. If used with a heat pump, electric strip heat will be disabled while Comfort Recovery is active.

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.

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

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.

OCCUPIED - If OCCUPIED is selected, when the dry contact is active, the thermostat will be forced into the programmed occupied mode / setpoints and the 'occupied' icon will blink. This setting is useful for allowing a twist timer to force occupied settings.

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

HOLIDAY - If HOLIDAY is selected, when the dry contact is active, the thermostat will be forced into the programmed unoccupied mode / setpoints and the 'unoccupied' icon will blink.

Skyport *(setup step 44)*

Set to ON to allow access to Skyport services or to OFF to not allow access to Skyport services.

Local API *(setup step 45)*

Set to ON to allow 3rd party software to interface with your thermostat such as home automation software.

Fahrenheit or Celsius *(setup step 40)*

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

Press Fan To Clear All Messages *(setup step 54)*

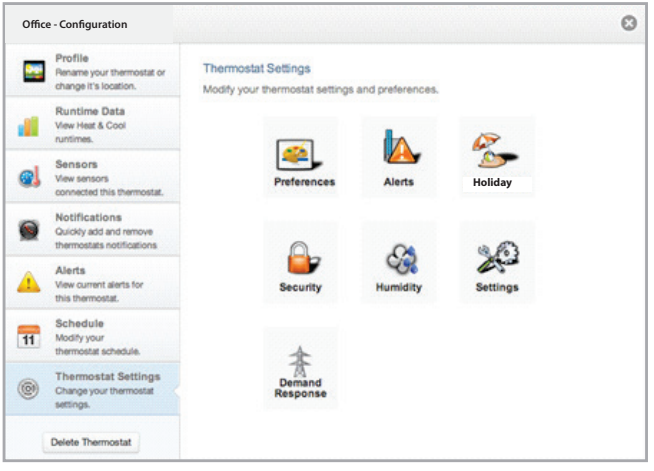
This feature allows the user to clear all current error messages from the display.

Overview

Source 1 thermostats support the handling of specific signals from the utility provider. The utility generated signals carry pricing information and/or 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 or ADR for short. 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

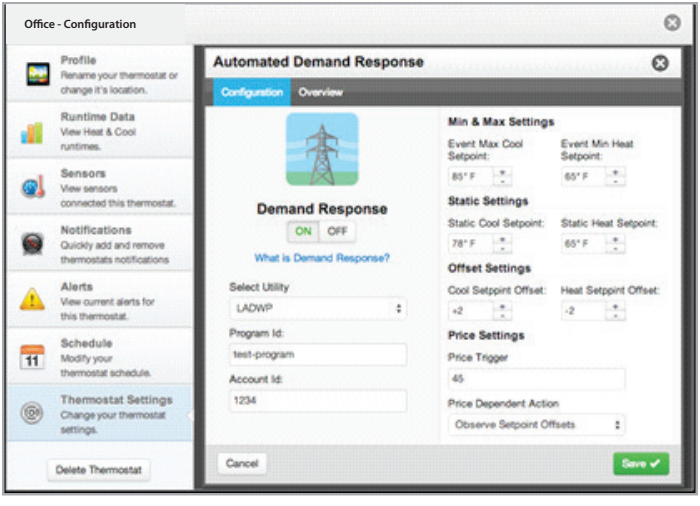
From the web application the user will select Thermostat Settings from the left column. Then the Demand Response button is selected.



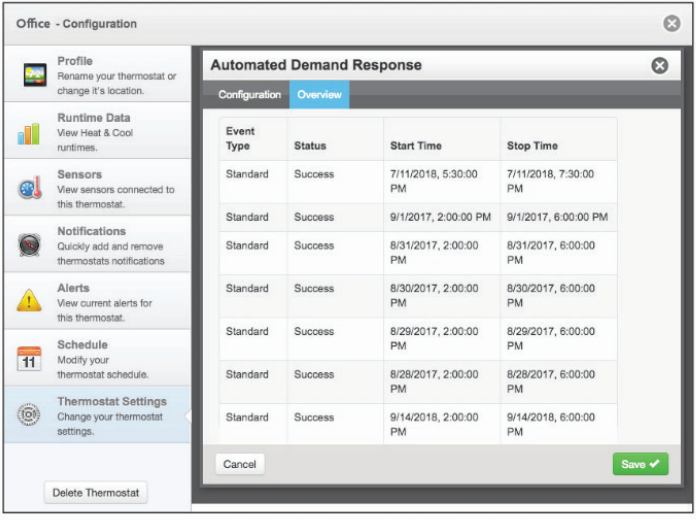
Installer Setup - Automated Demand Response

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.



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



ADR *(setup step 46)*

Controls whether you want the thermostat to possibly respond to signals from the utility provider. Select ON to allow this and to have steps 47-53 appear.

ADR Action *(setup step 47)*

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

Observe Setpoint Offsets – will offset the heat and cool setpoints by the amounts specified in setup steps 52 and 53

Observe Static Setpoints – will set the heat and cool setpoints to the values specified in setup steps 50 and 51

Event Max Cool Setpoint *(setup step 48)*

Event Min Heat Setpoint *(setup step 49)*

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.

Static Cool Setpoint *(setup step 50)*

Static Heat Setpoint *(setup step 51)*

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 52)*

Heat Setpoint Offset *(setup step 53)*

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 -10 degrees while the cool setpoint can be automatically raised by 1 to 10 degrees

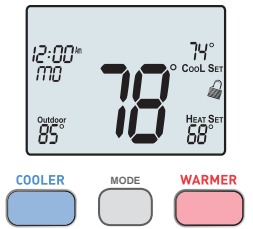
DISPLAY INDICATIONS WHEN AN ADR EVENT IS HAPPENING

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 at 4:15 to notify you of a pending event. Once active, you might see ADR STOPS at 5:30. 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.

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



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.

Resetting the Thermostat to the Factory Default Settings

(for default values see page 38-39)

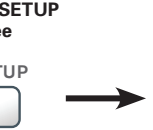
If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

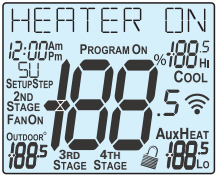
WARNING: This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset may be permanently lost.

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

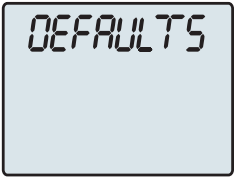




2. After all the icons appear, release SETUP. Press and hold FAN for 5 seconds. DEFAULTS will appear on the display.

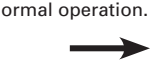
Keep pressing the FAN button until you see this screen.

FAN ON | AUTO



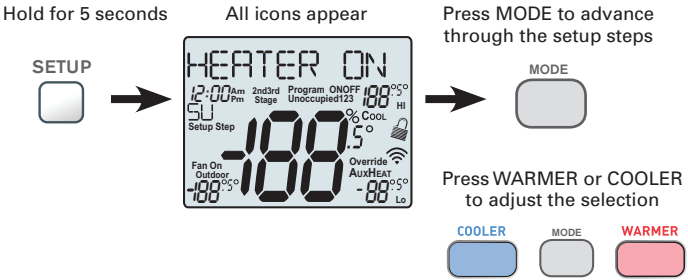
3. After DEFAULTS appears, release FAN. Press SETUP to return to normal operation.

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.



Technician Setup is for diagnostic and testing purposes and is intended for use by a qualified technician.

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 and remote sensors.

Advanced Setup Table

Default = Factory Default Setting

Step#	Description	Pg#	Range	Default
1	Prog Mode	24	Non, 1 Day, 5/1/1 Day, 7 Day	7
2	Available Modes	24	Heat/Cool/Auto/Off, Heat/Cool/Off, Heat/Off, Cool/Off	Heat/Cool/ Auto/Off
3	Backlight	17	On, Off	Off
4	Backlight Level	17	Off thru 7 levels of brightness	Level 5
5	Night Dimmer	17	On/Off	Off
6	Night Dimmer Brightness	17	Off thru 7 levels of brightness	2 (20%)
7	Night Dimmer Start Time	17	12A-12A	8:00P
8	Night Dimmer Stop Time	17	12A-12A	6:00A
9	Current Service Filter Runtime Hours	22	0-1999 Hours	0
10	Current Service Filter Calendar Days	22	0-720 Days	0
11	Current Override Hours	7	0-1999 Hours	0
12	Current UV Lamp Calendar Days	23	0-720 Days	0
13	Set Service Filter Runtime Hours	22	0-1950 hours	0
14	Set Service Filter Calendar Days	22	0-720 Days	0
15	Set UV Lamp Calendar Days	23	0-720 Days	0
16	Language	17	English, Espanol, Francais	English
17	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"
18	Setpoint Limits	26	0 - 3	0
19	Max Heat Setpoint	26	35 - 99 Degrees	74
20	Min Cool Setpoint	26	35 - 99 Degrees	70
21	Cycles Per Hour	26	No Limit, 2, 3, 4, 5, 6	6
22	Compressor Minimum Off Minutes	26	0, 3, 5 Minutes	5
23	Min. Heat/Cool Setpoint Difference	26	0 - 6 Degrees	2
24	Number of Heat Stages	26	0 - 3	2
25	Number of Cool Stages	26	0 - 2	1
26	Number Of Compressor Stages	26	1, 2	1
27	Number of Aux Stages	26	0, 1, 2	0
28	1st Stage Deadband	27	1 - 6 Degrees	2
29	2nd Stage Deadband	27	0 - 10 Degrees	2
30	3rd Stage Deadband	27	0 - 10 Degrees	2
31	4th Stage Deadband	27	0 - 10 Degrees	2
32	Minutes Between 1st and 2nd Stage	27	0 - 60 Minutes	2
33	Minutes Between 2nd and 3rd Stage	27	0 - 60 Minutes	2
34	Minutes Between 3rd and 4th Stage	27	0 - 60 Minutes	2

cont. next page

Advanced Setup Table

Default = Factory Default Setting

Step#	Description	Pg#	Range	Default
35	2nd StageTurnoff Point	27	Deadband, Setpoint	Deadband
36	3rd StageTurnoff Point	27	Deadband, Setpoint	Deadband
37	4th Stage Turnoff Point	27	Deadband, Setpoint	Deadband
38	Minutes fo Fan Purge	28	0 - 3:00, 15 min. increments - 0 = off	0
39	Fan Off Delay	28	0 - 120 Seconds	0
40	F/C	29	Fahrenheit (F), Celsius (C)	F
41	Comfort Recovery	28	On, Off	Off
42	Dry Contact Polarity	29	Open, Closed	Open
43	Dry Contact Use	29	Condensate Pan, Occupied, FDD, Holiday	
44	Skyport	29	On, Off	On
45	Local API	29	On, Off	Off
46	ADR	33	On, Off	Off
47	ADR Action	33	Observe Setpoint Offset, Observe Static Setpoints	None
48	Event Max Cool Setpoint	33	65 - 85	85
49	Event Min Heat Setpoint	33	65 - 85	65
50	Static Cool Setpoint	33	65 - 85	78
51	Static Heat Setpoint	33	65 - 85	68
52	Cool Setpoint Offset	34	1 to 10	2
53	Heat Setpoint Offset	34	-1 to -10	-2
54	Press Fan To Clear All Messages	29		

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 26)*.
- **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 26).*
- **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 26).*
- **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".**
- **SYMPTOM:** When the Program button is pressed, the display reads "DISABLED".
  CAUSE: Program mode is set to **"NON PROGRAM".**
  REMEDY: Set Program Mode (Setup 1) to **1, 5/1/1,** or **7 Day.**
  See Selecting Your Program Mode (page 24).

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-TBSU305-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 88-1259 rev. 2 06/19

SOURCE 1
HVAC Service Parts