

Wiser™ EER56100 Thermostat Installer's Guide

Retain for future use.

Description

The EER56100 is a precision digital thermostat for heating and cooling systems with 24 Vac control wiring. The EER56100 thermostat supports the following systems:

- Single-stage conventional heat/cool
- Two-stage conventional (two-stage heat / two-stage cool)
- Heat pump and geothermal heat pump (two-stage heat / single-stage cool)
- Two-speed heat pump and geothermal two-speed heat pump (three-stage heat / two-stage cool)
- Dual fuel heat pump and geothermal dual fuel heat pump
- Humidifier and dehumidifier control

The EER56100 thermostat can be controlled locally and, as an energy management device, remotely with a ZigBee® radio interface. It offers programmability, stand-alone operation, and communication with utility systems and personal computers.

- Electrical rating: 24 V; 2 A; 50/60 Hz
- Maximum current: 2 A on any circuit, 3 A total

Safety Precautions

This section contains important safety precautions that must be followed before attempting to install, maintain, or troubleshoot electrical equipment. Carefully read and follow the safety precautions below.

DANGER

HAZARD OF ELECTRIC SHOCK

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced by qualified electrical personnel.
- Turn off all electrical power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death or serious injury.

Installation Requirements

1. This equipment must be installed in accordance with all applicable codes and ordinances.
2. CE requirements must be observed for installation in Europe.

Before installing this thermostat:

1. Read this *Installer's Guide* and the *User's Guide*, document number S1B14479.
2. Ensure that this thermostat is suitable for the application.
3. Ensure that the wiring complies with all applicable codes and ordinances.
4. Turn off control transformer power.
5. Use a properly rated voltage sensing device to confirm that power is off.

Location

When replacing an existing thermostat, install the EER56100 thermostat in the same location. If the location does not meet the following criteria, choose a new location:

1. Ensure that the thermostat is mounted 5 ft. above the floor and is at least 2 ft. from an exterior wall.
2. Ensure that the thermostat is located in an area with adequate air circulation.
3. Do not mount the thermostat in the path of direct sunlight or radiant heat generated by appliances.
4. Do not mount the thermostat on an exterior wall, near a fireplace, or in the path of any air ducts.

Removing an Existing Thermostat

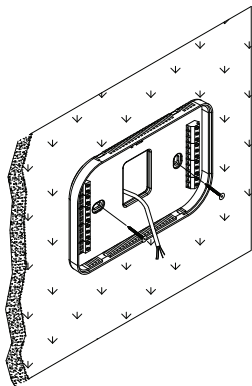
1. Turn off control transformer power.
2. Use a properly rated voltage sensing device to confirm that power is off.
3. Remove the cover of the thermostat.
4. Disconnect the wires going to each terminal on the thermostat. Label each wire with the letter or number at the terminal.
5. Remove the plate or base from the wall.

Mounting

Install the optional EER5700 trim ring if the thermostat you are replacing is larger than the new one. Follow the instructions supplied with the trim ring for mounting the trim ring and thermostat. If you are not installing a trim ring, follow these instructions.

1. Hold the thermostat by the sides, avoiding the keys, and unsnap the base from the face.
2. Holding the base to the wall so that the word "UP" is upright and facing you, mark the two mounting holes on the wall using a pencil.
3. Using a 3/16 in. diameter drill bit, drill a hole at the mounting hole markings.
4. Install the two wall anchors supplied.
5. Slide the system wires through the opening in the base.
6. Mount the base to the wall using the two #6 x 1/2 in. self-tapping screws supplied. See Figure 1.

Figure 1: Mounting the Thermostat



CAUTION

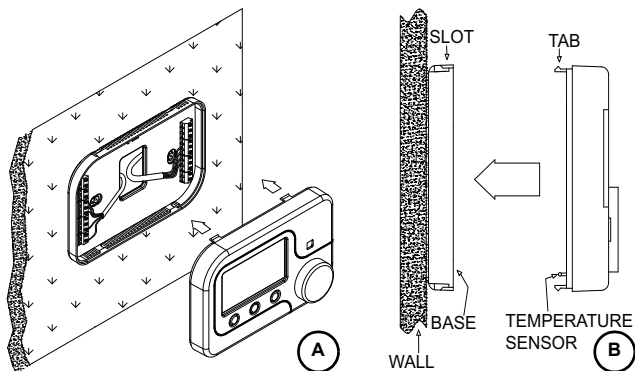
HAZARD OF IMPROPER OR UNINTENDED OPERATION

- Turn off the control transformer power before installing the thermostat.
- Using a properly rated voltage sensing device, confirm that the power is off.
- Do not short a gas valve, fan heat relay or cool relay even momentarily.
- Do not attempt to connect to live circuits. An accidental connection to a component on the thermostat circuit board could damage the thermostat.

Failure to follow these instructions can result in equipment damage.

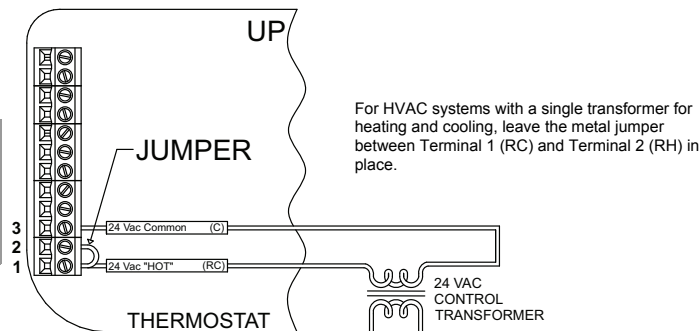
1. Connect the system wires to the terminal strips on the thermostat base per the wiring diagram for the system application. See Figures 3–9. Form the thermostat wiring so that the cable lies flat between the terminal strip and the center of the base. See Figure 2, A.
2. Push all excess wiring into the hole in the wall. Plug the hole with the supplied insulating foam to ensure accurate temperature reading.
3. Visually inspect the temperature sensor. Be sure that it is standing up and that it has not been damaged during installation. See Figure 2, B.
4. Align the tabs of the thermostat face with the slots of the thermostat base. Gently push the thermostat face into the thermostat base locking it into place. See Figure 2, B.

Figure 2: Assembling the Thermostat



TYPICAL WIRING DIAGRAMS

Figure 3: Test and Configuration Power-up

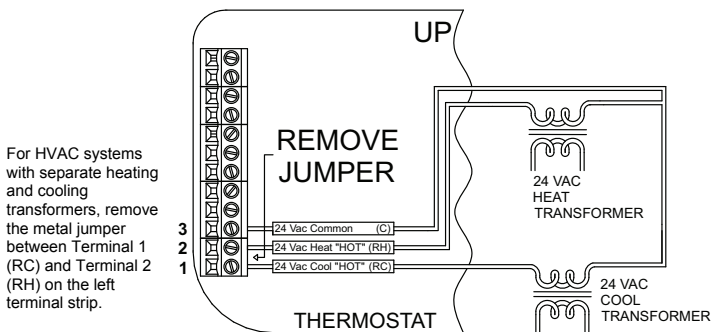


For HVAC systems with a single transformer for heating and cooling, leave the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) in place.

Notes:

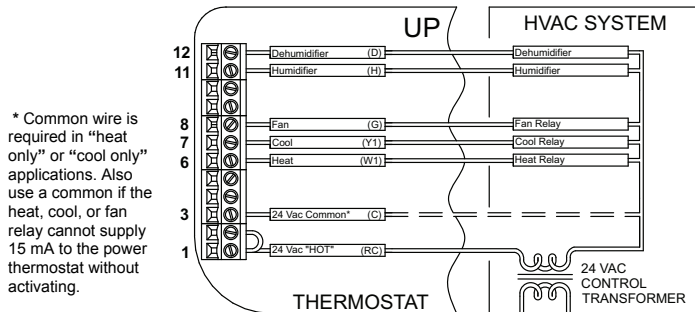
1. For HVAC systems with a single transformer for heating and cooling, leave the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must in place. See Figure 3.
2. The EER56100 thermostat is factory-configured to control a single stage conventional HVAC system.
 - If the HVAC system is a heat pump, dual fuel heat pump, or if the thermostat is connected to a zone control system that requires a sub-base, before operating the thermostat, configure the "System Type" settings under "System Options." See "Setup and Configuration" on page 16.
 - If the HVAC system is a two-stage conventional or two-speed heat pump, before operating the thermostat (making a call for heat or cool), configure the "Cool Stages" and "Heat Stages" settings under "Stage Settings." See "Setup and Configuration" on page 16.
3. When configured as a conventional thermostat, by default this thermostat does not turn the fan on with a call for heat. If the furnace requires the thermostat to turn the fan on with a call for heat, configure the "System Mode" to "Fan On With Heat" under "System Options."
4. A conventional thermostat can be configured for automatic changeover heat/cool, manual changeover heat/cool, heat only, or cool only thermostat. Refer to the "Configuration" steps associated with the wiring diagram for the HVAC system type.
5. If the thermostat or HVAC system does not perform as stated in the "Power Up" steps under the wiring diagram for the HVAC system type, recheck all wiring. See "Troubleshooting" on page 23.
6. For HVAC systems with separate heating and cooling transformers, remove the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip. See Figure 4 on page 5.

Figure 4: Connections for Heat and Cool Transfers—Applies to All Systems



Single-Stage Conventional

Figure 5: Connections for Single-Stage Heat/Cool Thermostat



Configuration

The EER56100 is factory configured as a single-stage conventional heat/cool thermostat. In the factory configuration, the thermostat does not turn the fan on with a call for heat. If the furnace does not turn the fan on with a call for heat, the thermostat must be configured to do so under "System Options."

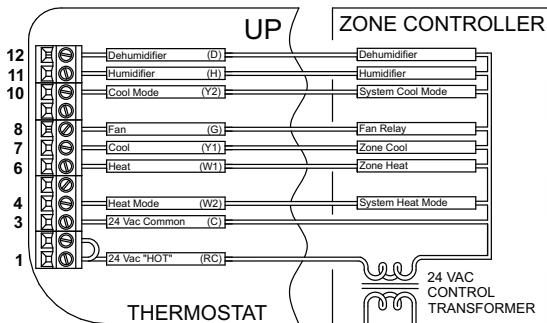
Power Up

1. Double check the wiring. Be sure there are no stray wires or wire strands at the connections.
2. Turn on power to the transformer and system. The display will show the current thermostat settings.
3. Press [TEMP], then press [MORE].
4. Scroll to Fan and press [OK].
5. Set the fan to On. Press [OK] and then press [Back]. The fan should turn on.
6. Navigate back to the Fan screen and set the fan to Auto. Press [OK] and then press [Back]. The fan should turn off.
7. Press [MORE], scroll to Mode, and press [OK]. Set the mode to Heat. Press [OK] and then press [Back].
8. Raise the desired heat setting above the current temperature. Ensure that the heating unit turns on.
9. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. The heating unit should turn off.
10. Navigate back to the Mode screen and set the mode to Cool. Press [OK] and then press [Back]. Lower the desired cool setting below the current temperature. Ensure that the cooling unit turns on.
11. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the cooling unit turns off.
12. Navigate back to the Mode screen and set the mode to Auto. Press [OK] and then press [Back].

The EER56100 thermostat works with most single-stage conventional 4-wire HVAC systems (without a transformer common). However, if the thermostat resets when calling for heat or cool, or if the heat, cool, or fan relay cannot supply 15 mA to power thermostat without the relay activating, the transformer common wire or the Wiser Thermostat Auxiliary Power Supply (Part Number EER57100) is required.

Single-Stage Conventional for Zone Control Systems

Figure 6: Connections for Single-Stage Thermostat for Zone Control Systems



Configuration

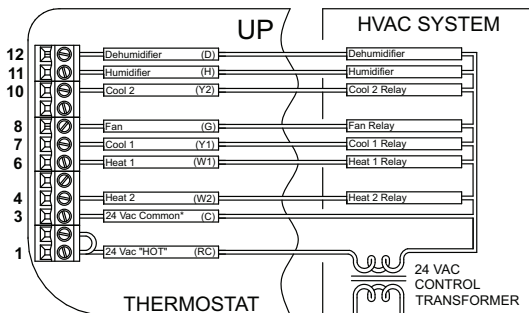
The "System Type" for this thermostat must be set to "Zone Control" under "System Options." The two additional outputs (W2 and Y2) are used with zoned heating and cooling systems. The W2 and Y2 terminals control the one control panel mode of operation (heating or cooling). The zone control panel recognizes calls for heat (W) from the individual zones when the W2 terminal is energized, and calls for cool (Y) when the Y1 terminal is energized. Neither W2 nor Y2 is energized when the mode is set to "OFF." Therefore, the thermostat can act as a Master to set the operating mode of the entire system.

Power Up

1. Double check the wiring. Be sure there are no stray wires or wire strands at the connections.
2. Turn on power to the transformer and system. The display will show the current thermostat settings.
3. Press [TEMP], then press [MORE].
4. Scroll to Fan and press [OK].
5. Set the fan to On. Press [OK] and then press [Back]. The fan should turn on.
6. Navigate back to the Fan screen and set the fan to Auto. Press [OK] and then press [Back]. The fan should turn off.
7. Press [MORE], scroll to Mode, and press [OK]. Set the mode to Heat. Press [OK], then press [Back].
8. Raise the desired heat setting above the current temperature. Ensure that the heating unit turns on.
9. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. The heating unit should turn off.
10. Navigate back to the Mode screen and set the mode to Cool. Press [OK] and then press [Back]. Lower the desired cool setting below the current temperature. Ensure that the cooling unit turns on.
11. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the cooling unit turns off.
12. Navigate back to the Mode screen and set the mode to Auto. Press [OK] and then press [Back].

Two-Stage Conventional (2-Stage Heat / 2-Stage Cool)

Figure 7: Connections for Two-Stage Conventional Thermostat



Configuration

- The "System Type" for this thermostat must be set to "Conventional" under "System Options."
- In the default configuration, this thermostat does not turn the fan on with a call for heat. If the furnace does not turn the fan on with a call for heat, the thermostat must be configured to do so under "System Options."
- The "Cool Stages" and "Heat Stages" settings must be configured under "Stage Settings."

Power Up

1. Double check the wiring. Be sure there are no stray wires or wire strands at the connections.
2. Turn on power to the transformer and system. The display will show the current thermostat settings.
3. Press [TEMP], then press [MORE].
4. Scroll to Fan and press [OK].
5. Set the fan to On. Press [OK] and then press [Back]. The fan should turn on.
6. Navigate back to the Fan screen and set the fan to Auto. Press [OK] and then press [Back]. The fan should turn off.
7. Press [HOLD] and select On to override Energy Efficient Control.
8. Press [MORE], scroll to Mode, and press [OK]. Set the mode to Heat. Press [OK] and then press [Back].
9. Raise the desired heat setting one degree above the current temperature. Ensure that Stage 1 heat turns on. After a few minutes, raise the desired heat setting three degrees above the current temperature. Stage 2 heat should turn on.
10. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. The heating unit should turn off.
11. Navigate back to the Mode screen and set the mode to Cool. Press [OK] and then press [Back]. Lower the desired cool setting 1 degree below the current temperature. Ensure that Stage 1 cool turns on. After a few minutes, lower the desired cool setting 3 degrees below the current temperature. Stage 2 cool should turn on.
12. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the cooling unit turns off.
13. Navigate back to the Mode screen and set the mode to Auto. Press [OK] and then press [Back].
14. Press [HOLD] and select Off to enable Energy Efficient Control.

About Heat Pump Systems

1. Terminal 5 (O) is energized for cooling.
Terminal 6 (B) is energized for heating.
In most applications, the reversing valve is energized for cooling and should be connected to the "O" terminal. If the heat pump requires the reversing valve to be energized for heating, connect the reversing valve to the "B" terminal.
2. With a call for Stage 2 on a two-speed heat pump, both compressor outputs Y1 and Y2 are energized. When 2 stages of cooling and 2 stages of heating are configured for a heat pump, Stage 2 is considered high speed and not auxiliary heat. If auxiliary heat (or emergency heat) is needed, configure 3 stages of heating.
3. To temporarily disable Energy Efficient Control and heat as quickly as possible, press [HOLD] and select "On." The EER56100 thermostat will use the Auxiliary Heat as needed to reach the heat setting.

- Terminal 9 (L) is used to indicate a fault with the heat pump compressor. When a compressor fault is detected, the display will flash red and the "Heat Pump Fault" error message will be displayed.
- The Emergency Heat Relay (E Terminal) and outdoor thermostats (usually accessories to a heat pump), are not used. The EER56100 thermostat automatically controls auxiliary heat efficiently. If the heat pump is equipped with an outdoor thermostat, remove it from the auxiliary heat circuit.

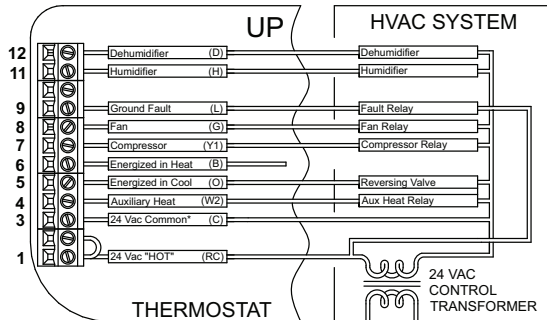
About Dual Fuel Heat Pump Systems

A dual fuel heat pump typically has a gas furnace combined with a heat pump. The gas furnace is used as auxiliary heat unless the outdoor temperature is very low, in which case it is used as the primary heat source.

- When used with dual fuel heat pumps, the EER56100 thermostat requires a method for obtaining the outdoor temperature. A Wiser Thermostat External Temperature sensor (EER57200) can be physically connected to the "Remote Temp. Sensor" terminals on the thermostat, or the EER56100 thermostat can obtain the outdoor temperature from a remote system.
If the EER56100 thermostat cannot obtain the outdoor temperature, the heat pump compressor will not operate and the thermostat will only call for the auxiliary heat until the problem is resolved. When this occurs, the display will flash red and the *"Problem With Outdoor Temperature Sensor. Some Heat Stages May Be Disabled"* error message will be displayed. After the error has been acknowledged, "Outdoor Sensor Fault" will be displayed in the Message Bar until the problem is resolved.
- Balance Setpoint Limits:
 - If the outdoor temperature is above the "Upper Balance Setpoint" (45 °F by default), the heat pump is used exclusively.
 - If the outdoor temperature falls below the "Upper Balance Setpoint" but is above the "Lower Balance Setpoint" (35 °F by default), and if the heat pump is unable to heat at a rate of 5 degrees per hour or better, the heat pump will turn off and auxiliary heat will be used until the call for heat has been satisfied.
 - If the outdoor temperature falls below the "Lower Balance Setpoint", the heat pump will turn off and the auxiliary heat will be used until the call for heat has been satisfied.
 - The Balance Setpoint Limits can be adjusted according to the manufacturer's specifications.
- When the EER56100 thermostat makes a call for auxiliary heat, the heat pump compressor is turned off and the auxiliary heat is used exclusively.

Heat Pump (2-Stage Heat / 1-Stage Cool)

Figure 8: Connections for Heat Pump Thermostat



Configuration

- The “System Type” for this thermostat must be set to “Heat Pump” under “System Options.”
- The “System Type” for this thermostat must be set to “Dual Fuel Heat Pump” for a dual fuel system (Terminal “W2” is connected to the “W” or “W1” on the furnace).

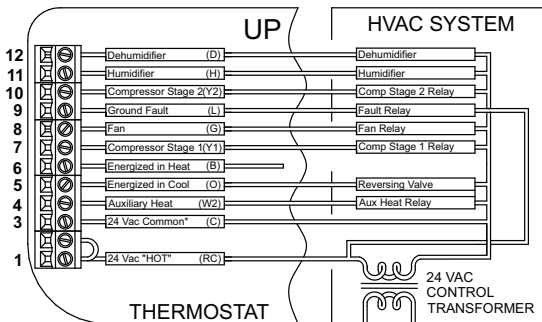
Power Up

1. Double check the wiring. Be sure there are no stray wires or wire strands at the connections.
2. Turn on power to the transformer and system. The display will show the current thermostat settings.
3. Press [TEMP], then press [MORE].
4. Scroll to Fan and press [OK].
5. Set the fan to On. Press [OK] and then press [Back]. The fan should turn on.
6. Navigate back to the Fan screen and set the fan to Auto. Press [OK] and then press [Back]. The fan should turn off.
7. Press [HOLD] and select On to override Energy Efficient Control.
8. Press [MORE], scroll to Mode, and press [OK]. Set the mode to Heat. Press [OK] and then press [Back].
9. Raise the desired heat setting 1 degree above the current temperature. Ensure that the heat pump turns on in heating mode. After a few minutes, raise the desired heat setting 3 degrees above the current temperature. Auxiliary heat should turn on. After a few minutes, set the mode to “EM Heat”. The heat pump should stop, but the auxiliary heat should remain on.
10. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that both the heat pump and auxiliary heat turn off.

11. Navigate back to the Mode screen and set the mode to Cool. Press [OK] and then press [Back]. Lower the desired cool setting below the current temperature. Ensure that the heat pump turns on in cooling mode.
12. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the cooling unit turns off.
13. Navigate back to the Mode screen and set the mode to Auto. Press [OK] and then press [Back].
14. Press [HOLD] and select Off to enable Energy Efficient Control.

Two Speed Heat Pump (3-Stage Heat / 2-Stage Cool)

Figure 9: Connections for Two-Speed Heat Pump Thermostat



Configuration

- The "System Type" for this thermostat must be set to "Heat Pump" under "System Options."
- The "Cool Stages" and "Heat Stages" settings must be configured under "Stage Settings."

Power Up

1. Double check the wiring. Be sure there are no stray wires or wire strands at the connections.
2. Turn on power to the transformer and system. The display will show the current thermostat settings.
3. Press [TEMP], then press [MORE].
4. Scroll to Fan and press [OK].
5. Set the fan to On. Press [OK] and then press [Back]. The fan should turn on.
6. Navigate back to the Fan screen and set the fan to Auto. Press [OK] and then press [Back]. The fan should turn off.
7. Press [MORE], scroll to Mode, and press [OK]. Set the mode to Heat. Press [OK], then press [Back].
8. Raise the desired heat setting 2 degrees above the current temperature. Ensure that the heat pump turns on in heating mode. Press [HOLD] and select "On" to override Energy Efficient Control. Stage 2 heat should turn on.

9. Raise the desired heat setting 3 degrees above the current temperature. Auxiliary heat should turn on.
10. After a few minutes, navigate back to the Mode screen and set the mode to "EM heat." Press [OK] and then press [Back]. Both stages of the heat pump should turn off, but the auxiliary heat should remain on.
11. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the auxiliary heat turns off.
12. Press [HOLD] and select Off to enable Energy Efficient Control.
13. Navigate back to the Mode screen and set the mode to Cool. Press [OK] and then press [Back]. Lower the desired cool setting 2 degrees below the current temperature. Ensure that the heat pump turns on in cooling mode.
14. Press [HOLD] and select "On". Stage 2 cool should turn on.
15. Navigate back to the Mode screen and set the mode to Off. Press [OK] and then press [Back]. Ensure that the cooling unit turns off.
16. Navigate back to the Mode screen and set the mode to Auto. Press [OK] and then press [BACK].
17. Press [HOLD] and select Off to enable Energy Efficient Control.

Accessory Connections for Use with Remote Systems

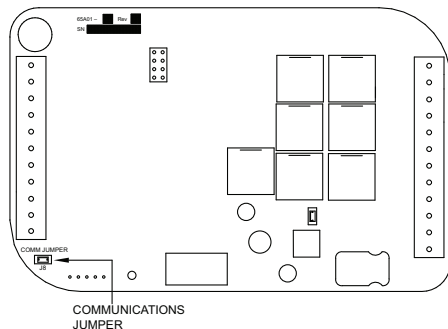
This thermostat has been preprogrammed with energy saving program schedules. When used with a remote system, Schneider Electric recommends that the Program Mode be configured as "None" or "Occupancy." This will disable the internal program schedules.

Setting The Communications Jumper

This thermostat comes from the factory with the communications jumper (J8), labeled "COMM JUMPER" on the thermostat printed circuit board, installed. See Figure 10.

- When connecting to a Home Automation, Inc. (HAI) Home Control system or remote switch, this jumper must be installed.
- When connecting to a PC or other device with a serial port, this jumper must be removed.

Figure 10: Communications Jumper

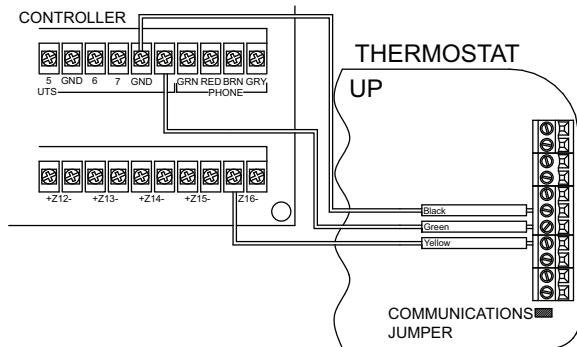


Use with HAI Home Control Systems

The thermostat can be connected to a Home Automation, Inc. (HAI) Home Control system. The HAI controller can send commands to the thermostat to change mode, cool setting, heat setting, status of fan and hold, and other items.

Run a three or four-conductor wire from the HAI system to the thermostat location. All thermostats on an HAI Home Control system are connected to Ground, Zone +16, and Output 8. See Figure 11.

Figure 11: Connections to HAI Home Control Systems



Notes:

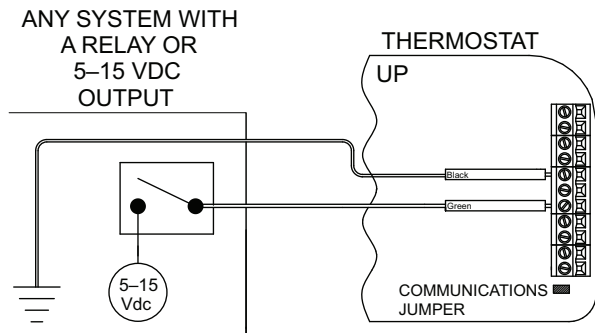
1. Connect additional thermostats in parallel. They may be connected in home-run or daisy chain configuration.
2. When connecting to an HAI Home Control system, the communications jumper (J8), labeled "COMM JUMPER" on the thermostat printed circuit board, must be in place.
3. Connect all thermostats on an HAI controller to the GRN (Green), BLK (Black), and YEL (Yellow) terminals under the section marked "TSTAT."
4. Contact HAI for more information.

Remote Setback Switch

The thermostat can be connected to a remote switch to toggle the heat and cool temperature settings between preset setpoints. A signal can be sent from the remote switch location to change the thermostat temperature settings from the Occupancy Day temperature settings to the Occupancy Night temperature or Away settings. To use this mode, the "Program Options" setting must be set to "Occupancy." See "Program Options" on page 18.

Run a two-conductor wire from the remote switch to the thermostat location. Make the connections to the Black and Green terminals under the section marked "Comm" on the right terminal strip. See Figure 12.

Figure 12: Connections to a Remote Setback Switch



Notes:

1. When connecting to a remote setback switch, the communications jumper (J8), labeled "COMM JUMPER" on the thermostat printed circuit board, must be in place.
2. When 0 Vdc is applied, the desired temperature settings will change to the preset Occupancy Day temperature settings.
3. When 5-15 Vdc is applied, the desired temperature settings will change to the preset Occupancy Night temperature or Away settings.

Other Systems

For connections to personal computers, utility management systems, and other automation systems, refer to connection diagrams provided with personal computer software package or other system.

Remote Temperature Sensor

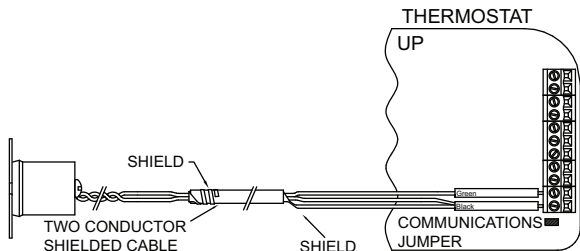
A Wiser Thermostat External Temperature Sensor (EER57200) can be installed to monitor the temperature from a remote location or can be combined with the onboard temperature sensor for the average temperature of two locations.

Run a twisted pair, shielded cable from the EER56100 thermostat to the remote temperature sensor location.

- For distances up to 100 ft., typical twisted pair, PVC-insulated, shielded cable may be used.
- For distances from 100–150 ft., twisted pair with polypropylene insulated conductors, shielded must be used.
- For distances from 150–250 ft., twisted pair with foam-polyethylene insulated conductors, shielded must be used.
- Wire runs must not exceed 250 ft.

Make the connections to the Green and Black terminals under the section marked “Remote Temp Sensor” on the right terminal strip. See Figure 13.

Figure 13: Connections to a Remote Temperature Sensor



Notes:

1. When connecting a remote temperature sensor, tie together the shield and one of the wires from the remote temperature sensor and connect them to the Black terminal. See Figure 13.
2. At the location of the temperature sensor, wrap the shield around the jacket of the cable and tape.
3. Configure the temperature sensor according to the application. See “Temperature Sensors” under Installation Settings.

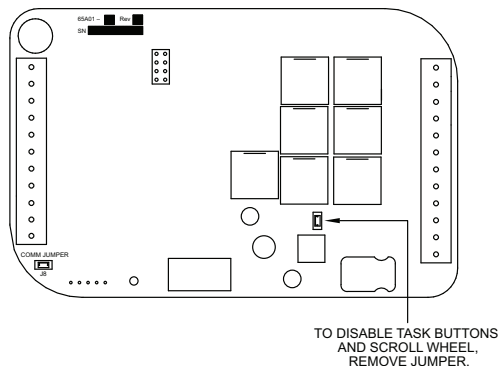
Disable Local Control

The Task Buttons and Scroll Wheel on the thermostat can be disabled to prevent anyone from controlling the thermostat locally.

To disable the Task Buttons and Scroll Wheel:

1. Remove the thermostat face from the thermostat base.
2. Remove the local control jumper. See Figure 14.
3. Align the tabs of the thermostat face with the slots of the thermostat base. Gently push the thermostat face into the thermostat base, locking it into place.

Figure 14: Local Control Jumper



Setup and Configuration

The time and date are automatically set from the ZigBee® network or can be set manually if there is no network connection. See the *User's Guide*, document S1B14479.

Installation Settings

This section describes the items that the installer must setup as part of the thermostat installation. The Installation Settings menu is used to configure the operating parameters of the thermostat.

To access Installation Settings:

1. From the Home screen, press and hold the Scroll Wheel for 3 seconds.
2. Highlight "Setup" and press [OK] or the Scroll Wheel.
3. Press and hold the left two buttons and the Scroll Wheel simultaneously.
4. Highlight "Installation Settings" and press [Select] or the Scroll Wheel.
5. Read the warning and press [Continue] to proceed.

6. To exit the Installation Settings menu, press [Back] several times to return to the Home Screen.
NOTE: The thermostat will automatically default to the Home screen after 3 minutes of no key activity.

Thermostat Address (with HAI Home Control Systems. See Page 13.)

If remote communications will be used and more than one thermostat will be installed, each thermostat must be set to a unique address. The default address setting is 1. An address from 1–127 may be selected.

Communications Mode (with HAI Home Control Systems. See Page 13.)

The thermostat can communicate with remote systems in different modes. The following modes are available:

Communications	*Serial: RS-232 mode for use with personal computers and automation systems.				
	Day/Night: The thermostat remotely communicates with a remote setback switch.				
System Baud	*100	300	1200	2400	9600
Expansion Baud	100	300	*1200	2400	9600

An asterisk (*) next to a setup item indicates the default (factory) setting.

System Options

Before operating the thermostat, the “System Type” and “System Mode” must be configured. The thermostat can be configured with the following system options.

System Type	*Conventional				Dual Fuel Heat Pump ¹				Heat Pump			
	Zone Control				Geothermal Dual Fuel Heat Pump ¹				Geothermal Heat Pump			
System Mode	*Auto Changeover				Auto Changeover				Auto Changeover			
	Manual Changeover				Manual Changeover				Manual Changeover			
	Heat Only				—				—			
	Cool Only				—				—			
Fan On with Heat Stage	*None	1	2	3	*1, 2, and 3	1	2	3	*1, 2, and 3	1	2	3
	1 and 2	1 and 3	2 and 3	1, 2, and 3		1 and 2	1 and 3	2 and 3		1 and 2	1 and 3	2 and 3

An asterisk (*) next to a setup item indicates the default (factory) setting.

¹ When configured, an additional Installer Setup menu item (Balance Setpoints) is added to the list.

Program Options

This thermostat has been preprogrammed with energy saving program schedules. When used with a remote system, Schneider Electric recommends that the Program Mode be configured as “None” or “Occupancy.” This will disable the internal program schedules. The program options setting determines the method for scheduling temperature change commands.

Program Mode	*Schedule: Program setpoints are based on time of day and day of week.
	None: The internal program schedule is disabled. Use this when connected to a remote system for temperature change commands.
	Occupancy: Program setpoints are based on the occupancy status of a remote system. Status options are Day, Night, Away, and Vacation. This mode is also used with a remote setback switch. NOTE: A remote system or switch is required.

An asterisk (*) next to a setup item indicates the default (factory) setting.

Calibration Offset

Calibration Offset is used to raise or lower the current temperature reading from the onboard temperature sensor by 0.5 °F or 0.25 °C. The default setting is 0.00. The minimum calibration offset is -14.5 °F and the maximum calibration offset is + 14.5 °F.

Cool/Heat Limits

Setpoints are used to limit the desired temperature settings in cool and heat mode. The desired cool setting can never be set below the “Cool Setpoint Min.” setting, and the desired heat setting can never be set above the “Heat Setpoint Max.” setting. The default setting for cool is 51 °F; cool setpoint minimum is 48 °F, and cool setpoint maximum is 91 °F. The default setting for heat is 91 °F; heat setpoint minimum is 45 °F, and heat setpoint maximum is 88 °F.

Cool/Heat Min On/Off

Cool/Heat Min On/Off are used to limit the on and off times of the cooling and heating system (in minutes).

Cool Minimum On	The number of minutes the thermostat forces the cooling system to remain on before turning off. Raising this number will increase the total time the cooling system is on, but may allow the temperature to drift farther from setpoint. When combined with Cool Minimum Off, cycles per hours can be obtained by using the following calculation: $60 / (\text{Cool Minimum On} + \text{Cool Minimum Off})$. The default time is 6 minutes.
Cool Minimum Off	The number of minutes the thermostat forces the cooling system to remain off before starting again. Raising this number will increase the total time that the cooling system is off, but may allow the temperature to drift farther from the setpoint. When combined with Cool Minimum On, cycles per hours can be obtained by using the following calculation: $60 / (\text{Cool Minimum On} + \text{Cool Minimum Off})$. The default time is 6 minutes.
Heat Minimum On	The number of minutes the thermostat forces the heat to remain on before turning off. Raising this number will increase the total time the heating system is on (saving energy), but may allow the temperature to drift farther from the setpoint (decreasing comfort). When combined with Heat Minimum Off, cycles per hours can be obtained by using the following calculation: $60 / (\text{Heat Minimum On} + \text{Heat Minimum off})$. The default time is 6 minutes.
Heat Minimum Off	The number of minutes the thermostat forces the heat to remain off before starting again. Raising this number will increase the total time that the heating system is off (saving energy), but may allow the temperature to drift farther from the setpoint (decreasing comfort). When combined with Heat Minimum On, cycles per hours can be obtained by using the following calculation: $60 / (\text{Heat Minimum On} + \text{Heat Minimum off})$. The default time is 6 minutes.

Stage Settings

NOTE: Before operating the thermostat, the “Cool Stages” and “Heat Stages” must be configured.

Cool Stages	The number of cool stages the HVAC system can support. The default setting is 1.
Heat Stages	The number of heat stages the HVAC system can support. Auxiliary heat is included in this number for heat pumps. The default setting is 1.

EEC Control

EEC Settings are used to configure Energy Efficient Control (EEC), 2nd Stage Differential, and Auxiliary Heat Differential. Not all of these features apply to all thermostat configurations. Only the features that apply to the current configuration (based on the System Type and Stage Settings) of the thermostat are available when this menu is selected. This thermostat is equipped with EEC that continually monitors the performance of the HVAC system and uses Stage 2 (heat or cool) and Stage 3 (auxiliary heat) only when necessary. If the thermostat determines that Stage 1 is able to heat or cool at a rate of 5° per hour or better, Stage 2 will not be used. If Stage 1 is unable to heat or cool at this rate, the thermostat will use Stage 2 as needed. Under these conditions, Stage 1 will run continuously and Stage 2 will cycle on and off as needed. In extremely cold conditions, the auxiliary heating will be used when Stage 1 and/or Stage 2 is not heating at a sufficient rate.

EEC: configures Energy Efficient Control. EEC continually monitors the performance of the HVAC system and uses a PID algorithm and auto balance routine to achieve comfort while saving energy. A setting of 0 will disable EEC. When EEC is disabled, the EER56100 thermostat will attempt to maintain the temperature within 0.5 °F of the setpoint. A lower setting of 2–3 can be used for slow reacting sources (e.g., radiant heat) and higher setting of 7–8 for fast reacting sources (e.g., forced air). The default setting is 5.

2nd Stage Differential: determines how far from the setpoint the temperature must be before the second stage turns on.

Auxiliary Heat Differential: determines how far from the setpoint the temperature must be before the auxiliary heat turns on. This is only available for heat pump systems.

Start Delay (Minutes): sets the minimum amount of time the heating system must run before the Auxiliary Heat Stage is used. To use start delay, EEC must be enabled and Hold must be off.

	Conventional (1 Cool / 1 Heat) Zone Control (1 Cool / 1 Heat)			Conventional (2 Cool / 2 Heat)		
	Heat EEC	*5	0–10	Heat EEC	*5	0–10
Cool EEC	*5	0–10	EEC	*5	0–10	
—			2nd Stage Differential	*2	1–10	
			Start Delay (Minutes)	*10	0–4 hr:15 min	
EEC Settings	Heat Pump and Dual Fuel Heat Pump (1 Cool / 2 Heat)			Geothermal Heat Pump and Geothermal Dual Fuel Heat Pump (1 Cool / 2 Heat)		
	Heat EEC	*5	0–10	Heat EEC	*5	0–10
	Cool EEC	*5	0–10	Cool EEC	*5	0–10
	Aux Heat Differential	*2	1–10	Aux Heat Differential	*2	1–10
	Start Delay (Minutes)	*5	0–4 hr:15 min	Start Delay (Minutes)	*45	0–4 hr:15 min
	Heat Pump and Dual Fuel Heat Pump (2 Cool / 3 Heat)			Geothermal Heat Pump and Geothermal Dual Fuel Heat Pump (2 Cool / 3 Heat)		
	Heat EEC	*5	0–10	Heat EEC	*5	0–10
	Cool EEC	*5	0–10	Cool EEC	*5	0–10
	2nd Stage Differential	*1	1–10	2nd Stage Differential	*1	1–10
	Start Delay (Minutes)	*5	0–4 hr:15 min	Start Delay (Minutes)	*45	0–4 hr:15 min
Aux Heat Differential	*2	1–10	Aux Heat Differential	*2	1–10	
Start Delay (Minutes)	*10	0–4 hr:5 min	Start Delay (Minutes)	*3 hr	0–4 hr:15 min	

An asterisk (*) next to a setup item indicates the default (factory) setting.

Anticipator Control

The Anticipator Control settings are used to anticipate the need to turn the system on or off before the temperature is actually at the setting.

People perceive temperature as a combination of heat in the air and heat radiated from the walls and surroundings. The thermostat also measures a combination of air and wall temperature. When heating, the air temperature rises faster than the wall temperature. The thermostat turns the heat off briefly to prevent overheating the air while the wall temperature catches up.

When cooling, the thermostat periodically runs the cooling system to circulate the air and remove humidity when the temperature is close to, but not above the desired cool setting.

Because of the PID algorithm and auto balance routine which monitors the performance of the HVAC system, the anticipator settings are automatic by default. However, the anticipator settings may be adjusted if desired.

Heat Anticipator: adjusts the tendency of the thermostat to turn the heating unit off before the desired heat setting is reached. This is done to avoid overheating the air while the walls and furniture catch up. A setting of 0–4 is intended for fast reacting heating systems, such as forced air. A setting of 6–10 is intended for slow reacting heating systems, such as radiant heat. A setting of 5 is used for automatic anticipation.

A lower setting decreases the tendency to turn off the heating system before the desired heat setting is reached. If the heating system response time is slower, as are most radiant heating systems, a higher number will help maintain an even space temperature.

Cool Anticipator: adjusts the tendency of the HVAC to run the cooling system to refresh and dehumidify the air before the temperature rises to the desired cool settings. A setting of 0–4 is intended for more humid climates and increases the tendency for the cooling system to turn on to refresh and dehumidify the air. A setting of 6–10 is intended for dry climates and decreases the tendency to run the cooling system below the cooling setting. A setting of 5 is used for automatic anticipation.

2nd/3rd Stage Extended On: When enabled and if any 2nd or 3rd stage turns on, it will remain on until the heat/cool is satisfied, regardless of the settings for any stage differentials. The default setting is off.

Cool Anticipator	*5
Heat Anticipator	*5
2nd/3rd Stage Extended On	*Off

An asterisk (*) next to a setup item indicates the default (factory) setting.

Temperature Sensors

The Temperature Sensor settings are used to configure the internal temperature sensor and optional remote temperature sensors that are connected to the thermostat. Any temperature sensors that are set as the same type (for example, indoor or outdoor) will display the average temperature reading among the sensors.

Internal Sensor: Enables or disables the onboard temperature sensor for indoor use only. *Enabled.

External Sensor 1: Enables the external temperature sensor for indoor or outdoor use. All indoor and outdoor temperatures are averaged between all sensors of the same type. *Disabled.

External Sensor 2: Enables the expansion module temperature sensor for indoor or outdoor use. All indoor and outdoor temperatures are averaged between all sensors of the same type. *Disabled.

External Sensor 3: Enables the expansion module temperature sensor for indoor or outdoor use. All indoor and outdoor temperatures are averaged between all sensors of the same type. *Disabled.

Humidity Options

The Humidity Options are used to configure the dehumidifier and/or humidifier output on the thermostat.

Not Used: Dehumidifier/Humidifier output is disabled.

Fan Speed Control: This option uses the dehumidifier output to control the fan speed on an HVAC system with a variable speed fan. When energized, the fan speed is reduced to augment the dehumidification process.

Dehumidifier: This option uses the dehumidifier output to control a stand-alone dehumidifier.

Humidifier: This option uses the humidifier output to control a stand-alone humidifier.

EM Heat: EM Heat is displayed if the respective output is configured as an Emergency Heat Output as described under Emergency Heat Options. If configured as an Emergency Heat Output, the output cannot be modified under Humidity Options; it must first be reconfigured under Emergency Heat Options.

Dehumidifier Output	Humidifier Output
*Not Used	*Not Used
Dehumidifier	Humidifier
Fan Speed Control	EM Heat

An asterisk (*) next to a setup item indicates the default (factory) setting.

Emergency Heat Options

The Emergency Heat Options are used to reconfigure the H (Humidifier) or D (Dehumidifier) outputs on the EER56100 thermostat to activate Emergency Heat mode. The default address setting is "None."

None: The H (Humidifier) and D (Dehumidifier) output will operate as described under Humidity Options on page 22.

D Terminal: This option configures D (Dehumidifier) output on the EER56100 thermostat to activate when the thermostat is in Emergency Heat mode.

H Terminal: This option configures H (Humidifier) output on the EER56100 thermostat to activate when the thermostat is in Emergency Heat mode.

Factory Default

This option restores all system settings and programming to factory configuration. Read the warning and then press [Yes] to proceed or [Cancel] to return to Installation Settings.

Troubleshooting

DANGER

HAZARD OF ELECTRIC SHOCK

Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.

Failure to follow these instructions will result in death or serious injury.

SYMPTOM	ACTION TO TAKE
Thermostat Inoperative	1. Check power to the thermostat.
	2. Check wiring.
Heat or Cool Inoperative	1. Check for break in W or Y wire.
	2. Allow minimum off time to pass.
	3. Check system options for correct settings.
	4. If arrow is blinking, wait until startup delay expires.
	5. Mode is Off (Select Heat, Cool, or Auto).
	6. Remote system is overriding thermostat.

Continued on next page

SYMPTOM	ACTION TO TAKE
Control By Remote System Not Working	1. Check wires and connections to the section marked "Comm."
	2. Check thermostat address setting.
	3. Check communications mode setting.
	4. Check setup of the remote system.
	NOTE: Ensure that all setup items for the thermostat and the remote system are set to the proper configurations for communication.
Temperature Reading Incorrect	1. Allow 30 minutes for thermostat to adjust.
	2. Adjust calibration offset.
	3. Change setup option to display °F or °C.
	NOTE: After installation, allow the thermostat up to 30 minutes for an accurate temperature reading.
Display Problem	1. Cycle power to the thermostat (R).
Auxiliary Heat On Too Often	1. Heat Pump is not able to meet load due to cold weather.
	2. Thermostat is in EM Heat mode. Set thermostat to Heat or Auto mode.
	NOTE: In EM Heat mode, only the auxiliary heat is turned on.
Heat Pump Heats In Cool Mode & Cools In Heat Mode	1. Reversing valve is connected to wrong terminal. Move the wire from B to O or from O to B.
	NOTE: The wires connecting the reversing valve may be reversed. See Note 1 on page 9.

Product Support

The Schneider Electric Customer Care Center (CCC) is your single point of contact for information about the Wiser EER56100 thermostat. Qualified personnel are available to answer your customer service and technical support questions. Call toll free 1-888-778-2733.

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Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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