



SC2311L

2 Heat/1 Cool
Manual Changeover
Hardwired
Non-Programmable Electronic Thermostat

- Configurable
- 2-Stage Heat/1-Stage Cool Systems
- Heat Pump Systems
- Backlit Display
- Field Temperature Calibration
- Status Indicator Light
- Relay Outputs (minimum voltage drop in thermostat)
- Ideally Suited for:
 - Residential (New Construction/Replacement)
 - Light Commercial

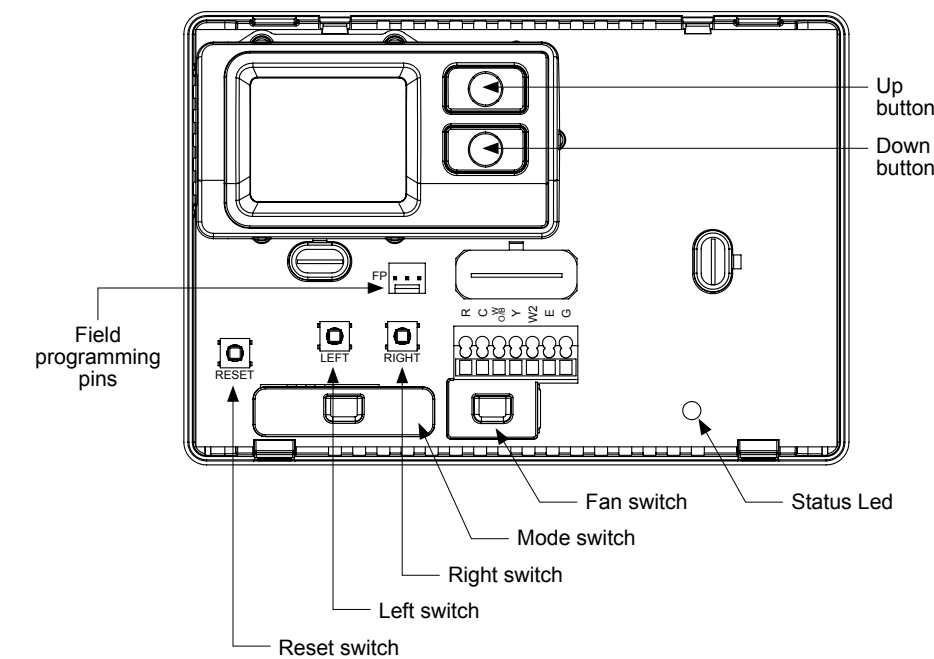


Installation, Operation & Application Guide

For more information on our complete range of American-made products - plus wiring diagrams, troubleshooting tips and more, visit us at www.icmcontrols.com



Parts Diagram



Specifications

- Electrical rating:** • 24 VAC (18-30 VAC)
- 4 amp maximum total load
 - 1 amp maximum per terminal
- Temperature control range:** 45°F to 90°F (7°C to 32°C) **Accuracy:** ± 1°F (± 0.5°C)
- System configurations:** 2-stage heat, 1-stage cool, heat pump, gas, oil, electric
- Timing:** Anti-short Cycle: 4 minutes
- Backlight Operation: 5 seconds after mode change or button press
- Terminations:** R, C, W1/O/B, Y, W2, E, G

Important Safety Information

WARNING! Always turn off power at the main power supply before installing, cleaning, or removing thermostat.

- This thermostat is for 24 VAC applications only; do not use on voltages over 30 VAC
- Do not short across terminals of gas valve or system control to test operation; this will damage your thermostat and void your warranty
- All wiring must conform to local and national electrical and building codes
- Do not use air conditioning when the outdoor temperature is below 50 degrees; this can damage your A/C system and cause personal injuries
- Use this thermostat only as described in this manual

Package Contents/Tools Required

Package includes: SC2311L thermostat on base, thermostat cover, wiring labels, screws and wall anchors, Installation, Operation and Application Guide

Tools required for installation: Drill with 3/16" bit, hammer, screwdriver

To Remove Existing Thermostat

ELECTRICAL SHOCK HAZARD – Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
2. Remove cover of old thermostat. This should expose the wires.
3. Label the existing wires with the enclosed wire labels before removing wires.
4. After labeling wires, remove wires from wire terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install this thermostat.

To Install Thermostat

ELECTRICAL SHOCK HAZARD – Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.

IMPORTANT: Thermostat installation must conform to local and national building and electrical codes and ordinances.

⚠️ **Note:** Mount the thermostat about four feet above the floor. Do not mount the thermostat on an outside wall, in direct sunlight, behind a door, or in an area affected by a vent or duct.

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
2. To remove cover, insert and twist a coin or screwdriver in the slots on top of the thermostat.
3. Put thermostat base against the wall where you plan to mount it (Be sure wires will feed through the wire opening in the base of the thermostat).
4. Mark the placement of the mounting holes.
5. Set thermostat base and cover away from working area.
6. Using a 3/16" drill bit, drill holes in the places you have marked for mounting.
7. Use a hammer to tap supplied anchors in mounting holes.
8. Align thermostat base with mounting holes and feed the control wires through wire opening.
9. Use supplied screws to mount thermostat base to wall.
10. Insert stripped, labeled wires in matching wire terminals. See "Wiring Diagrams" section of this manual.

CAUTION! Be sure exposed portion of wires does not touch other wires.

11. Gently tug wire to be sure of proper connection. Double check that each wire is connected to the proper terminal.
12. Replace cover on thermostat by snapping it in place.
13. Turn on power to the system at the main service panel.
14. Test thermostat operation as described in "Testing the Thermostat".

Terminal Designator Descriptions

- R – 24 VAC hot
- C – 24 VAC common
- W1/O/B – Configurable
- W1 – 1st stage heat for non-hp systems
- O – cool active reversing valve
- B – heat active reversing valve
- Y – 1st stage cool, 1st stage heat for heat pumps
- W2 – 2nd stage heat for heat pump, non-heat pump, and emergency heat
- E – 1st stage heat for Emergency Heat operation
- G – Fan

SC2311L Output Chart

	1 ST Cool	1 ST Heat	2 ND Heat
Heat/Cool	Y, G	W1, G*	W1, W2, G*
Heat Pump (One Compressor)	Y, G, O	Y, G, B	Y, W2, G, B
Emergency Heat HP	N/A	E, G	E, W2, G

* G not energized when configured as a gas/oil system

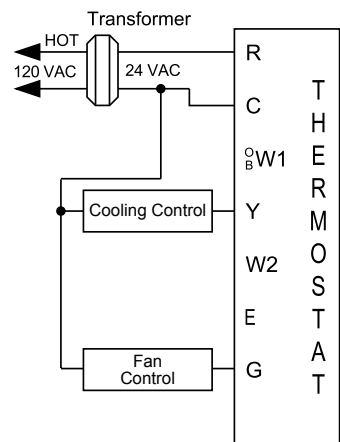
The SC2311L thermostat is configurable for different systems. The configuration directly effects the outputs.

Use the output chart to correctly configure and wire the thermostat to your system.

Wiring Diagrams

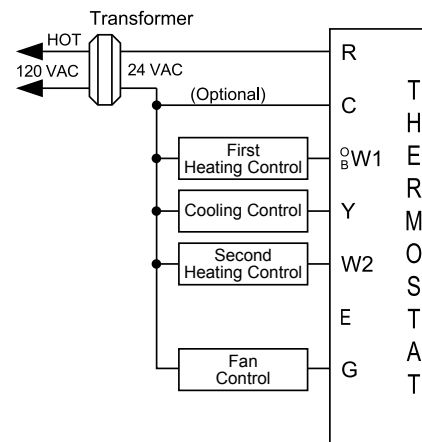
Cooling Only

Single Transformer



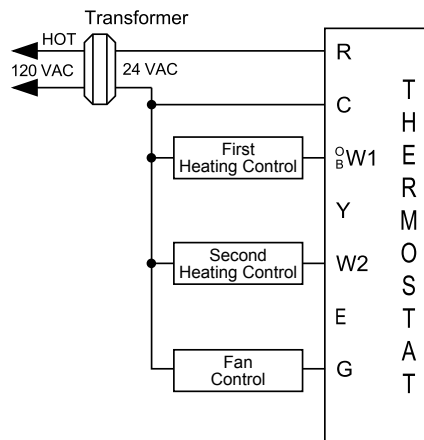
Heating/Cooling

Single Transformer

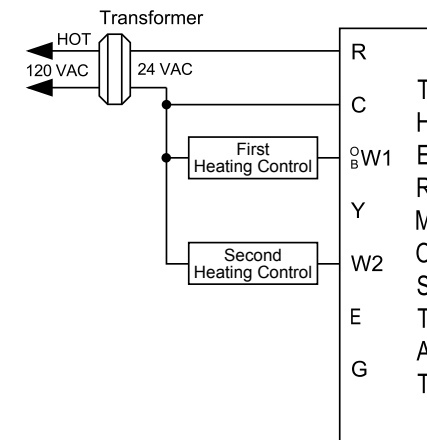


Heating Only

Electric Heat Single Transformer

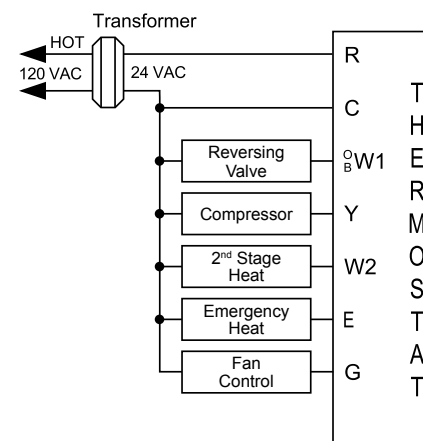


Gas/Oil Heat Single Transformer



Heat Pump Systems

Single Compressor



Configuration Mode Settings

The configuration mode is used to set the SC2311L to match your heating/cooling system. The SC2311L functions with heat pump, air conditioning, gas, oil or electric heat systems.

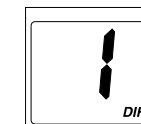
To configure the SC2311L, perform the following steps:

1. Remove the cover of the thermostat by gently pulling on one of the top corners.
 2. Simultaneously hold the LEFT and RIGHT buttons in for 5 seconds while the SC2311L is in OFF mode.
 3. Press the up or down button to change settings within each screen.
 4. Press the RIGHT button to advance to the next screen.
- ⚠️ **Note:** The LEFT button will return you to the previous screen.
5. To exit configuration mode, slide the Mode switch to Heat or Cool.

1. **Temperature Scale (F or C)** – Choose Fahrenheit or Celsius. Press the up or down button to select. Press the RIGHT button to advance to the next screen.



2. **1st Stage Temperature Differential** (1°F to 5°F) (0.5°C to 2.5°C) Set the number of degrees between your "setpoint" temperature and your "turn on" temperature. Press the up or down button to set differential value. Press the RIGHT button to advance to the next screen.



3. **2nd Stage Temperature Differential** (1°F to 5°F) (0.5°C to 2.5°C) Set the number of degrees between when stage 1 turns on and when stage 2 turns on. Press the up or down button to set differential value. Press the RIGHT button to advance to the next screen.



4. **Staged Off Outputs** Select whether the outputs for heating and cooling are staged off independently or are satisfied simultaneously. 1 = outputs staged off independently 0 = outputs off simultaneously Press the up or down button to set. Press the RIGHT button to advance to the next screen.



5. **Heat Source** (o, b, g, E) Change between "o" Heat pump cool active, "b" Heat pump heat active, "g" (Gas) and "E" (Electric). Press the up or down button to set heat source. Press the RIGHT button to advance to the next screen.



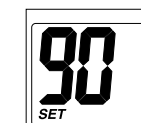
6. **Auxiliary Delay ON** – (0-30 minutes) – Set the delay time in minutes for auxiliary heat to be locked out after a call for second stage. This extra savings feature is used to temporarily lock out auxiliary heat devices, allowing just heat pump to try to satisfy heat call. Press the up or down button to select. Press the RIGHT button to advance to the next screen



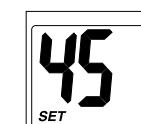
7. **Lockout** (0°F-8°F) (0°C-4°C) – Select the number of degrees set temperature can be changed during keypad lockout Press the up or down button to select. Press the RIGHT button to advance to the next screen.



8. **Maximum Heat Setpoint** (45°F to 90°F) (7°C to 32°C) Adjust to control the maximum Heat set temperature allowed. Press the up or down button to select. Press the RIGHT button to advance to the next screen.



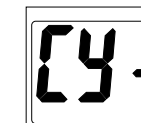
9. **Minimum Cool Setpoint** (45°F to 90°F) (7°C to 32.0°C) Adjust to control the minimum Cool set temperature allowed. Press the up or down button to select. Press the RIGHT button to advance to the next screen.



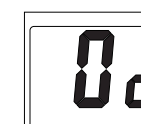
10. **Room temperature offset** (+9°F to -9°F) (+4.5°C to -4.5°C) Adjust to calibrate displayed room temperature to match actual room temperature. ⚠️ **Note:** When not set to 0, ROOM will display. Press the up or down button to select. Press the RIGHT button to advance to the next screen.



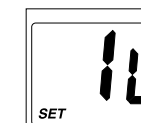
11. **Maximum compressor cycles allowed per hour** (-, 2-6) - = as many as needed, and 2-6 = maximum cycles/hour Press the up or down button to select. Press the RIGHT button to advance to the next screen.



12. **Cooling Fan Delay Off Time** (0, 30, 60, 90 seconds) Select the fan purge time for cooling. Press the up or down button to select. Press the RIGHT button to advance to the next screen.



13. **Status Indicator Light** (Lt 0, 1, 2) 0 = Status indicator never on 1 = Status indicator on with first stage 2 = Status indicator on with second stage Press the up or down button to select. ⚠️ **Note:** Red light indicates heating cycle and green light indicates cooling cycle. Slide the Mode switch to Heat or Cool to exit configuration.



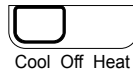
Testing the Thermostat

Once the thermostat is installed, it should be thoroughly tested.

CAUTION!: *Do not energize the air conditioning system when the outdoor temperature is below 50 degrees. It can result in equipment damage or personal injury.*

Cool Test

- Slide **Mode** switch to **Cool** mode.
- Adjust set temperature so it is 5 degrees below room temperature.
- Air conditioning should come on within a few seconds.
- Adjust the set temperature 2 degrees above the room temperature and the A/C should turn off. There may be a fan delay on your system.
**** Note:** *There is a four minute time delay to protect the compressor after it turns off. To temporarily bypass the four minute delay, slide the **Mode** switch to **OFF** for 2 seconds and then back to **Cool**.*



Heat Test

- Slide **Mode** switch to **Heat** mode.
- Adjust the set temperature so it is 5 degrees above the room temperature.
- Heat should come on within a few seconds.
- Adjust the set temperature so it is 2 degrees below the room temperature and the heat should turn off. There may be a fan delay on your system.
**** Note:** *There is a four minute time delay to protect the compressor after it turns off. To temporarily bypass the four minute delay, slide the **Mode** switch to **OFF** for 2 seconds and then back to **Heat**.*



Fan Test

- Slide **Fan** switch to **On** position.
- Indoor fan turns on.
- Slide **Fan** switch to **Auto** position.
- Indoor fan turns off.



Mode of Operation

The **SC2311L** is a two-stage heat, one-stage cool thermostat. It functions with air conditioning, heat pumps, gas, oil or electric heat.

The thermostat activates the first stage heat when the room temperature is below the heat set temperature (by the differential temperature). Second stage heat will be activated if the room temperature continues to drop. The heat outputs are staged off as the room temperature increases. For heat pump systems, the thermostat will not let the compressor come on for four minutes after it turns off. This protects your compressor.

When the room temperature is greater than the cool set temperature (by the differential temperature), the cooling device is activated. The cool output is turned off as the room temperature drops. The thermostat will not let the compressor come on for four minutes after it turns off. This protects your compressor.

The **SC2311L** has the following operating modes: OFF, Heat, Emergency Heat, and Cool. In OFF mode, the thermostat will not turn on heating or cooling devices. In the Heat mode, the thermostat controls the heating system. For heat pump systems, Emergency Heat mode is used to bypass the compressor (only backup heat operates). In the Cool mode, the thermostat controls the cooling system. The indoor fan can be turned on in all operating modes using the Fan switch.

Operating Modes

These are the possible operating modes of the **SC2311L**.

Off Mode

In off mode, the thermostat will not turn on the heating or cooling appliances.

**** Note 2:** *The indoor fan can be activated in every mode by sliding the Auto/On fan to the On position.*

**** Note 2:** *Off mode in used to enter the configuration setup (by pressing **LEFT** and **RIGHT** simultaneously for 5 seconds).*

Cool Mode

In cool mode, the thermostat controls the cooling system.

There is a four minute time delay after the compressor turns off. This protects the compressor.

Heat Mode

In heat mode, the thermostat controls the heating system.

For heat pumps, there is a four minute time delay after the compressor turns off. This protects the compressor.

Emergency Heat Mode (Heat pump systems only)

In emergency heat mode, the heat pump system will be disabled and auxiliary heat will become the primary source of heat.

ENTER Emergency heat mode by pressing the up button for ten seconds while in heat mode. "EH" will then display on the screen.

EXIT Emergency heat mode by pressing the up button for ten seconds. "EH" will not display on the screen when you exit emergency heat mode.

The **SC2311L** also exits emergency heat mode when the mode switch is moved to Cool.

Lockout Feature

The **SC2311L** has a button lockout feature so the temperature adjustment is prohibited or limited. Select the appropriate lockout from Configuration Mode Settings (Step 7) of this guide.



To activate the LOC feature:

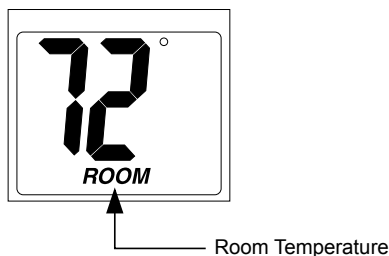
- Simultaneously press the **LEFT**, **RIGHT** and **UP** buttons for 10 seconds.
- LOC will display and the lockout function will be enabled.

To deactivate the LOC feature, repeat steps 1 and 2 above.

Starting the Thermostat

CAUTION!: *Do not use air conditioning when the outdoor temperature is below 50 degrees. This can damage your air conditioning system and cause personal injuries.*

- Move the **Fan Auto/On** switch to the **Auto** position.
- Move the **Cool/Off/Heat** switch to **Cool** or **Heat**, depending on the season.

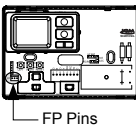


SimpleSet™ Field Programming

This feature is used for transferring the configuration settings from the master to the target thermostat. All thermostats for a job can be mounted and powered up. Configure one thermostat. This will be the master. The master will be used to copy the configuration to the rest of the thermostats.

Preparing the master to Send:

- The master must be powered by 24 VAC.
- Verify the master thermostat is in **OFF** mode. Slide system switch to center position.
- Remove cover of the master thermostat by gently pulling near one of the corners at the top of the thermostat.
- Press the **up** and **down** buttons and **LEFT** switch simultaneously for 5 seconds.
- The **OUT** screen displays indicating the master thermostat is ready to transfer data.
**** Note:** *Press the **up** and **down** buttons and **LEFT** switch simultaneously for 5 seconds to exit from data transfer mode and to return the master to the **OFF** mode.*
- Connect the master to the target using the 3 wire connector. Attach one end to the Master's FP pins and the other end to the Target's FP pins.
**** Note:** *Target thermostat must be powered by 24 VAC for field programming to occur.*



When the connection has been made correctly, the master thermostat will power up and the target will count from 6 down to 1. It will then display **LOC** confirming the data has been saved in memory.

When all target thermostats have been completed, reinstall the master thermostat.

Press the **up** and **down** buttons and the **LEFT** switch simultaneously for 5 seconds to exit from the data transfer mode and to return the master thermostat to the **OFF** mode.

Troubleshooting

Symptom	Remedy
No display	Check for 24 VAC at thermostat; display is blank when 24 VAC is not present
System fan does not come on properly	Verify wiring is correct, check heat source configuration settings (see Configuration Mode Setting 5)
All thermostat buttons are inoperative	Verify 24 VAC is present; unit locks out when 24 VAC is not present
No response with first button press	First button press activates backlight only
Thermostat turns on and off too frequently	Adjust temperature differential (see Configuration Mode Setting 2)
Fan runs continuously	Slide FAN switch to auto to turn fan off
Room temperature is not correct	Calibrate thermostat (see Configuration Mode Setting 10)
LOC displays when any button is pressed	Thermostat has the button lockout function activated (see Lockout Feature, and Configuration Mode Setting 7)
Heat or Cool not coming on	Verify wiring is correct, verify configuration settings are correct
Problem not listed above	Press Reset button once*

* **Reset Button Function:** Configuration settings are unchanged and display is refreshed.

ONE-YEAR LIMITED WARRANTY

The Seller warrants its products against defects in material or workmanship for a period of one (1) year from the date of manufacture. The liability of the Seller is limited, at its option, to repair, replace or issue a non-case credit for the purchase prices of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller's instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined by Seller to be non-defective are subject to a \$30.00 per hour inspection fee. This warranty constitutes the Seller's sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.



Patent No. - Design: 424,953

Patent No. - Thermal Intrusion Barrier: 6,597,275

Patent Pending - SimpleSet™ Target Programming Technology

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