Made in USA

SC1600L/VL
Manual Changeover Non-Programmable Battery

Non-Programmable Electronic Thermostat

- **Controls Single Stage Heating Systems**
- **Configurable for °F and °C**
- **Millivolt and Hydronic (water or steam) System Compatible**
- **Compatible with Gas and Oil Systems**
- **Backlit Display**
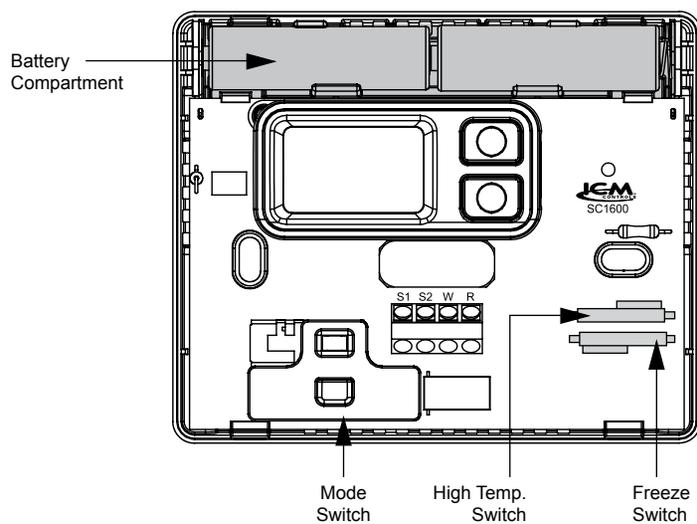- **Mercury-Free, Environmentally Safe**

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**

ICM CONTROLS

Parts Diagrams

Battery Compartment

ICM SC1600

S1 S2 W R

Mode Switch   High Temp. Switch   Freeze Switch

Specifications

Electrical rating:
- Millivolt to 30 VAC/VDC
- DC Power: 3.0 VDC (2 "AA" alkaline batteries included)
- 1 amp maximum per terminal
- 2 amp maximum total load

Temperature control range: 45°F to 90°F (7°C to 32°C)   **Accuracy:** ± 1°F

Back Light: Not available on N and VN models

Differential 1-5: Default set to 1 degree. When the heating turns on too frequently you can increase the temperature differential. A larger differential results in longer run times.

System configurations: 1-stage heat, gas and oil

Terminations: R, W, S1, S2

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
- Use this thermostat only as described in this manual

Package Contents/Tools Required

Package includes: **SC1600** 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.

General Description

The **SC1600** thermostat is a digital, mercury-free, non-programmable, electronic thermostat.

- Compatible with single-stage heating systems
- Compatible as a master thermostat in zoned system applications
- **Freeze Protection Feature:** Protects pipes from freezing! If the room temperature drops to 40°F, the thermostat automatically turns on the heat; the thermostat must be in the Heat position; works even if the batteries are dead
- **System Customization:** Choose three available temperature differential settings

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 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.

Replacing Wiring Labels

Replace the old labels with the enclosed new labels.

Old	New	Type
H, W, 4	W	Heating control
M, 4, RH, RS, R	R	Transformer, hot side
N/A	S1, S2	Optional remote sensor

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 five 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 system by removing the fuse or switching off the appropriate circuit breaker.
2. Move the **Off/Heat** switch into the **Off** position.
3. To remove cover, insert and twist a coin or screwdriver in the slots on the sides of the thermostat.
4. 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).
5. Mark the placement of the mounting holes.
6. Set thermostat base and cover away from working area.
7. Using a 3/16" drill bit, drill holes in the places you have marked for mounting.
8. Use a hammer to tap supplied anchors in mounting holes.
9. Align thermostat base with mounting holes and feed the control wires through wire opening.
10. Use supplied screws to mount thermostat base to wall.
11. 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.*

12. Tighten screws on terminal block. Gently tug wire to be sure of proper connection. Double check that each wire is connected to the proper terminal.
13. Insert two fresh "AA" alkaline batteries into thermostat, oriented in the direction shown on the battery compartment.
14. Replace cover on thermostat by snapping it in place.
15. Turn on power to the system at the main service panel.

Installing and Changing Batteries

If your LCD is blank or displaying **LO BAT**, the batteries are not installed or need to be changed. We suggest you change the batteries at least once a year, or whenever the **LO BAT** warning displays.
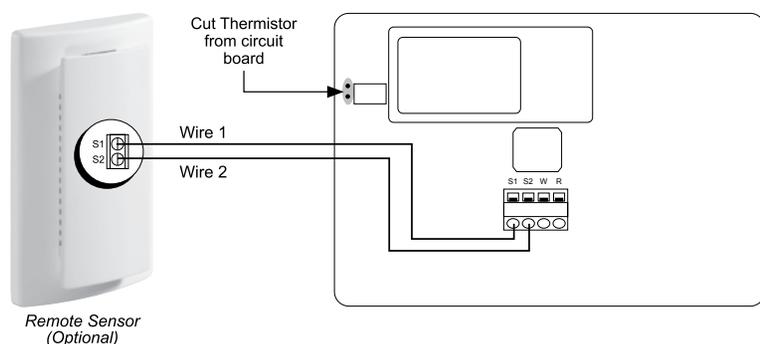
⁂ **Note:** *After installing new batteries, you have to reset the room temperature setting and the differential setting.*

1. Move the **Off/Heat** switch into the **Off** position.

2. Remove the cover, and install the two "AA" alkaline batteries. Proper battery installation is important! Make sure the positive ends of the batteries match the positive terminals in the battery compartment.

If the display is on, the batteries are installed properly.

Remote Sensor Installation (Optional)

1. Remove cover from remote sensor housing.

2. Select an appropriate location for mounting the remote sensor.

3. Mount remote sensor unit using hardware provided.

4. Install two conductor shielded wires between remote sensor and thermostat. Shielded wire must be used. Do not run remote sensor wire in conduit with other wires.

   • **Wire 1** should run between the S1 terminal on the thermostat and the S1 terminal on the remote sensor

   • **Wire 2** should run between the S2 terminal on the thermostat and the S2 terminal on the remote sensor

   • Connect the shielding of the wire to the S2 terminal on the thermostat

5. Disable the main sensor on the thermostat by cutting it from the circuit board.

Remote Sensor (Optional)

SC1600L/VL Wiring Diagrams

Heating Only

2-Wire, Single Transformer or Millivolt

Zone Valve/Damper Motor System

3-Wire, Zone Valve/Damper Motor System

2-Wire, Zone Valve/Damper Motor System

⁂ **Note:** *Differential temperature may need to be increased for zone/damper systems.*

Setting the Setpoint Temperature

1. Place **Off/Heat** switch in the **Heat** position.

2. Press the **down** or **up** button a single time to see the **current temperature** setting.

3. Press the **down** or **up** button until the **desired temperature** setpoint displays.

4. The new temperature setpoint is automatically saved in memory. After 5 seconds, the display returns to showing the current room temperature.

Configuration

Enter configuration by simultaneously pressing both the **up** and **down** buttons for 1 second while in OFF mode. Use the **up** and **down** buttons to change the setting. Press both the **up** and **down** to advance to the next configuration screen. Exit configuration by sliding the mode switch to Heat mode.

• **F/C** – select to operate in Fahrenheit or Celsius

• **Differential 1-5:** Default set to 1 degree. When the heating turns on too frequently you can increase the temperature differential. A larger differential results in longer run times.

• **Heat time delay**
  – **H0** = No time delay between heat calls
  – **H1** = 4 minute time delay between heat calls

Starting the Thermostat

1. Move the **Off/Heat** switch into the **Heat** position.

A Quick Test

Do not short jumper across terminals on the gas valve or at the system control to test installation.

Action: Set the Off/Heat switch to Heat; press the up button until the set temperature is 5°F above the room temperature.

   Result: The heating system should turn on; there may be a time delay depending on your system.

Action: Press the **down** button until the set temperature is below the room temperature.

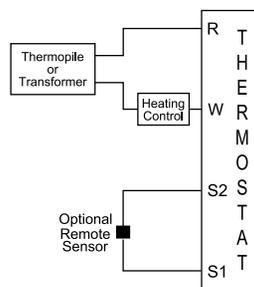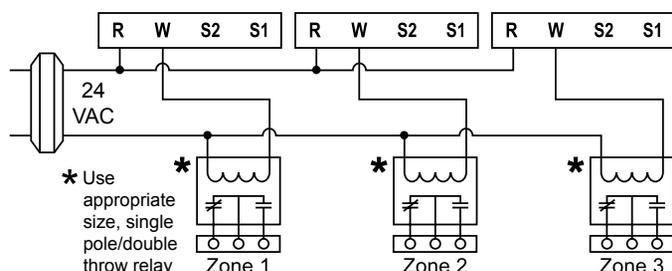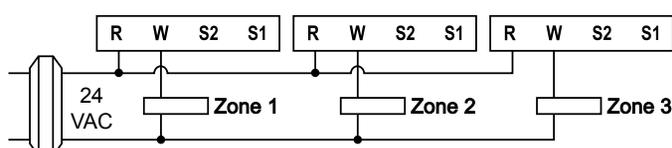   **Result:** The heating system should turn off.

If the above **test was successful**, you have a proper installation.

If the above **test was unsuccessful**, double check that the wires are securely connected and are connected to the proper terminals. Consult the troubleshooting section below.

Troubleshooting

Symptom	Remedy
The system is not turning on	Check batteries; display is blank when batteries are not present or are dead.
LCD is blank, or displaying **LO BAT**	Replace batteries, or make sure the existing ones are properly installed.
Thermostat turns on and off too frequently	Adjust temperature differential (see "Setting the Temperature Differential").

ONE-YEAR LIMITED WARRANTY