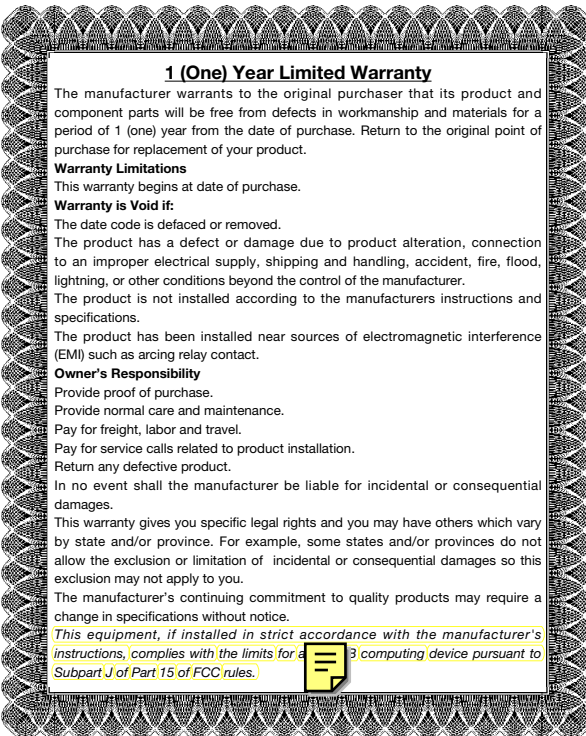# Operating Instructions
Single/Multistage Conventional or Heat Pump with Auxiliary Heat Electronic Digital Communicating Non-Programmable Thermostat

NEW AND IMPROVED FEATURES

Your new electronic digital thermostat has been designed to provide accurate control and display of room temperature. It also will display all relevant system information.

Your new electronic thermostat has been made even better by the introduction of several new and improved features. Building on its reputation for efficient and dependable operation, your thermostat now offers the following enhancement.

Thermostat and Sensor Calibration
Release 3 provides easy calibration of the thermostat and remote sensors. Simply press and hold the FAN button for 10 seconds and adjust with the ▼ or ▲ buttons.

GENERAL INFORMATION

The thermostat normally displays room temperature, mode of operation and whether cooling or heating is currently on. The six buttons on the front of the unit allow complete control of your equipment.

You may select different heating and cooling setpoints for the system to maintain, e.g., 70° in heating and 75° in cooling. Raising or lowering the setpoints in heating or cooling is as simple as pushing a button. In addition, you may choose to display the temperature in °F or °C.

The thermostat also allows you to select continuous fan operation (useful when using an air cleaner) or have the fan come on with the equipment.

BUTTON FUNCTIONS

SYSTEM	Press to select COOL only, HEAT only, AUTO (cool and heat), OFF, or EMERGENCY HEAT (heat pump installations only).
FAN	Press for continuous fan or auto fan
OCCUPANCY	Press to select HOME (Occ1), AWAY (Occ2), SLEEP (Occ3), VACANT (Occ4), or User Defined (USr1-USr4) occupancy modes.
HOLD/RESUME	Press to alternate between HOLD OVERRIDE and RESUME program.

USER CONTROLS

SYSTEM – Select the desired mode of operation by repeatedly pressing the MODE button:

❄ – indicates cooling system only (the word COOL is displayed for 5 seconds)

◊ – indicates heating system only (the word HEAT is displayed for 5 seconds)

◊ ❄ – indicates both the heat and cool systems (the word AUTO is displayed for 5 seconds)

❄ **Blinking** – indicates cool ON

◊ **Flickering** – indicates heat ON

OFF – disables controller so equipment will not operate (fan operation is still possible in this mode)

E Ht - Emergency heat (heat-pump installations only).

COOLING ❄
Select the temperature you want your equipment to maintain while in the cooling mode by pressing and holding the ▼ or ▲ buttons. The control setpoint temperature is displayed for 5 seconds.

HEATING ◊
Select the temperature you want your equipment to maintain while in the heating mode by pressing and holding the ▼ or ▲ buttons. The control setpoint temperature is displayed for 5 seconds.

FAN ❖≋
The fan will come on automatically when the system is operating, but there is no indication of this on the display. To select continuous fan operation, press the FAN button and the display will show ❖≋. This is recommended for electronic air cleaners and continuous ventilation requirements.

OFF
To turn off the heating or cooling system, press the MODE button until the word OFF appears on the LCD. It will remain displayed until the mode is changed. The OFF mode prevents the system from being energized.

Avoid using the OFF mode during extremely cold weather to prevent damage to the equipment from freezing.

AUTO CHANGEOVER
You may set the thermostat to automatically switch from heating to cooling mode by pressing the MODE button until the word AUTO and both the heating ◊ and cooling ❄ icons appear on the LCD. The thermostat will energize the heating or cooling system based on the temperatures established for both modes.

USER CONTROLS (CONT'D)

TEMPORARY TEMPERATURE OVERRIDE
Press the ▼ or ▲ to temporarily raise or lower the setpoint until the next scheduled setpoint change.

HOLD TEMPERATURE OVERRIDE
Press the HOLD/RESUME button to change a Temporary Override to a Hold Override. This will prevent scheduled setpoint changes. Press HOLD/RESUME button again to resume scheduled setpoint changes.

CELSIUS / FAHRENHEIT
Simultaneously press ▼ and ▲ to switch between Celsius (C) and Fahrenheit (F) temperature display.

REMOTE SENSOR (OPTION)
RS1 – RS2 – RS+V
The thermostat is designed to accept the electronic remote sensor, which will allow you to locate your thermostat in an area away from view. Indoor and outdoor sensors are available separately.

TEMPERATURE ACCURACY

Full temperature accuracy will be realized only after the thermostat has been installed and powered for at least one (1) hour.

ADD-ON HEAT PUMPS

Your DSL thermostat is equipped to enhance the performance of an add-on heat pump. Your thermostat, in most applications, will perform the function of a fossil fuel kit.

To select add-on, place switches #3 and #5 to the ON position. The thermostat will turn the compressor off with a call for auxiliary heat. When switch #5 is set to normal (OFF), the thermostat will allow the compressor and the auxiliary heat to be on at the same time.

POWER FAILURES

Your thermostat employs the latest in solid state electronic technology.

One of the unique features of your thermostat is that no battery is required to maintain your selected setpoints in the event of a power loss as the memory is unaffected by power failures of any duration.

When power is restored, the thermostat will continue operating as if the power had never been off.

NOTES:

It is recommended that installation be performed by a qualified installer.
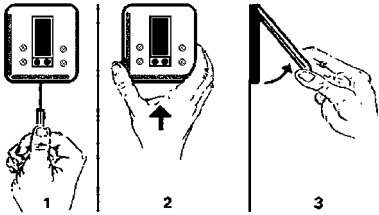
Location

To ensure proper operation, the thermostat should be mounted on an inside wall in a frequently occupied area of the building. In addition, its position must be at least 18" (46cm) from any outside wall, and approximately 5' (1.5m) above the floor in a location with freely circulating air of an average temperature. You should avoid the following locations:
- behind doors or in corners where freely circulating air is unavailable;
- where direct sunlight or radiant heat from appliances might affect control operation;
- on an outside wall;
- adjacent to, or in line with, conditioned air discharge grilles, stairwells, or outside doors;
- where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition space, or by an area behind the thermostat which is not climate controlled;
- where its operation will be affected by the supply air of an adjacent climate control HVAC device;
- near sources of electrical interference such as arcing relay contacts.

Removing the Thermostat from the Subbase

1. Insert a flat blade screwdriver or coin 1/8" into the slot located in the bottom center of the thermostat case and twist 1/4 turn. When you feel or hear a click, grasp the case from the bottom two corners and separate from the subbase.
2. Swing the thermostat out from the bottom.
3. Lift the thermostat up and off the subbase.
4. Place the rectangular opening in the subbase over the equipment control wires protruding from the wall and, using the subbase as a template, mark the location of the two mounting holes (exact vertical mounting is necessary only for appearance).
5. Use the supplied anchors and screws for mounting on drywall or plaster; drill two 3/16" (5mm) diameter holes at the marked locations; use a hammer to tap the nylon anchors in flush to the wall surface and fasten subbase using the supplied screws. (Do not overtighten!)
6. Connect the wires from your system to the thermostat terminals. Carefully dress the wires so that any excess is pushed back into the wall cavity or junction box. Ensure that the wires are flush to the plastic subbase. The access hole should be sealed or stuffed to prevent drafts from affecting the thermostat.

Replacing the Thermostat on Subbase

1. Position the thermostat on the hinged tabs at the top of the subbase.
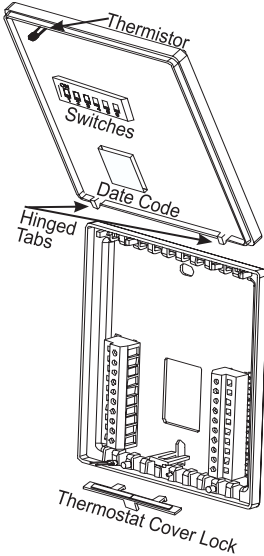2. Gently swing the thermostat down and press on the bottom center until it snaps into place.

Thermostat Cover Lock

Insert the plastic lock piece into the bottom of the mounted base. The ends of the lock piece fit snugly under the lock pins extending from the bottom of the mounted base. The tab in the middle of the lock piece extends down from the base.
To release the locking mechanism, press the lock piece up and into the base while gently prying open.

Thermistor Mounting Instructions

When placing the front cover on the thermostat ensure the thermistor is not bent or misaligned.
Ensure that the thermistor does not touch the thermostat case. The thermistor should be placed horizontal to the wall. Ensure the thermistor is not pushed upward into the case.
The thermistor should be aligned so it is visible between the ribs on the bottom of the subbase.

Icon	Description	Icon	Description
	Outdoor Temperature Icon		Cool Icon Flickers when the cooling is on
	Daylight Saving Time Icon +1H		Keypad Locked Icon
	Wrench or Fault Icon		Filter Icon / Fan Icon
( )	Heat Icon, Two Flickering lines when heat is on	Mo Tu We Th Fr Sa Su	Days Of The Week
HEAt	5 second display when heat mode is selected and when the heating set point is changed	-18.8	Displays indoor or outdoor temperature.
COOL	5 second display when cool mode is selected and when the cooling setpoint is changed		Displayed when setpoints are showing
Auto	5 second display when the auto mode is selected		Indicates communication
OFF	Displayed when in the off mode		
E HE	Displayed when in the emergency heat mode Normally displays the current time		

OCCUPANCY MODES

HOME (Occ1)	AWAY (Occ2)	SLEEP (Occ3)	VACANT (Occ4)	USER DEFINED (USr1-USr4)

WIRING DIAGRAM   13

Note: If the 24V(c) is not available from the equipment the jumper may be removed and a separate 24V transformer must be used to power the thermostat.

This thermostat may be used with 24 Volt DC. The negative side of the DC supply must be wired to the 24V (c) terminal.

TERMINAL DESIGNATIONS   14

CONVENTIONAL
Y2 . . . . .Compressor is energized for 2nd stage cooling
W1 . . . . . .Energizes for 1st stage heating
Y1 . . . . . . .Compressor energized for 1st stage cooling
W2 . . . . . .Energizes for 1st stage heating

HEAT PUMP
Y2 . . . . . . .Compressor is energized for 2nd stage heating or cooling if multistage is selected
W1 . . . . . . .Auxiliary heat is energized as back-up or emergency heat
Y1 . . . . . . .Compressor energized with a call for heating or cooling
O . . . . . . .Energizes the reversing valve continuously in cool mode
B . . . . . . .Energizes the reversing valve continuously in heat mode

CONVENTIONAL OR HEAT PUMP
G . . . . . . .Fan operates with a call for heating or cooling or by pressing the FAN button.
R . . . . .Power from equipment
24V . . . . . .24 VAC hot and common to power the thermostat
24(c)
RS2 . . . . .Use to connect up to 6 (SL-IDS) indoor and/or 1
RS1   (SL-ODT) outdoor remote sensor/s.
RS+V   When connected the thermostat will automatically use the SL-IDS temperature sensor and not its own. Refer to the instructions included with the sensor.
FAULT . . .Equipment Fault input. Connect through dry relay contact to GP+V to signal equipment fault. Causes wrench icon to be displayed on LCD and locks out all heat-pump stages (heat-pump operation selected via DIP switch) when there is a call for heat.
GPI1 . . . . .General purpose inputs. Connect through dry contact relay
GPI2   to GP+V
GP+V
X1 . . . . . . .Communication line
X2 . . . . . . .X1 return, connected to 24V(c)

DIP SWITCH OPTIONS AND FUNCTIONS   15

Positioning the DIP switches in either the ON or OFF position enables you to choose between two different options. The DIP switches are located on the interior of your thermostat and may be accessed by following the procedure for removing the thermostat from the subbase. The following list describes your DIP switch options.

DIP Switch	DIP Switch OFF	DIP Switch ON
1	Not used (OFF position)	Not used
2	Not used (OFF position)	Not used
3	Conventional	Heat Pump
4	4 minute minimum ON/OFF	2 minute minimum ON/OFF
5	Normal	Plenum Fan (conventional) Add-on (heat pump)
6	Single stage	Multi-stage
7	Not used (OFF position)	Not used
8	Not used (OFF position)	Not used

1. Not Used This switch must remain in the OFF position.
2. Not Used This switch must remain in the OFF position.
3. Conventional or Heat Pump Set to OFF position for conventional systems, or ON for heat pump systems.
4. 2 Minute or 4 Minute On/Off Times This option allows you to run the equipment for either a 2 or 4 minute off and on time.
5. Plenum Fan (Conventional) In the OFF position, the fan comes on immediately with a call for heat. In the ON position, the fan is controlled by the equipment (plenum switch control).
5. Add-On Heat Pump (Heat Pump) In the OFF (normal) position, the thermostat will allow the compressor and the auxiliary heat to be on at the same time. In the ON (add-on) position, the compressor is turned off with a call for auxiliary heat.
6. Single or Multi-stage Set to OFF for systems with no more than one stage of cooling AND no more than one stage of heating (excluding the auxiliary heat stage in heat pump applications), or ON for systems with two stages of cooling OR two stages of heating (excluding the auxiliary heat stage in heat pump applications).
7. Not Used This switch must remain in the OFF position.
8. Not Used This switch must remain in the OFF position.

SPECIFICATIONS   16

Rated Voltage . . . . .20-30 VAC, 24 nominal

Rated A.C.   0.050 Amps to 0.75 Amps continuous
Current . . . . .per output with surges to 3 Amps Max.

Rated D.C.   0 Amps to 0.75 Amps continuous
Current . . . . .per output with surges to 3 Amps Max.

Default Control . . . . . . .Heating: 40° to 88°F in 1° Steps
Range   6° to 30°C in 1° Steps
   Cooling: 60° to 95°F in 1° Steps
   16° to 33°C in 1° Steps

Maximum . . . . .Heating & Cooling: 40° to 95°F in 1° Steps
Programmable   6° to 33°C in 1° Steps
Control Range

Thermostat . . . . .28° to 124°F or 0° to 48°C
Measurement Range

Minimum . . . .(between heating and cooling)
Deadband   2°F or 1°C

NOTE: This thermostat contains electronic circuitry replacing the conventional mechanical anticipator.