T7600 Series
Programmable & Non-Programmable Thermostats For Commercial HVAC Applications

Product overview

The T7600 PI thermostat family is specifically designed for single stage and multi-stage control of heating/cooling equipment such as rooftop and self-contained units. The product features an intuitive, menu-driven, back-lit LCD display which walks users through the programming steps, making the process extremely simple. Accurate temperature control is achieved due to the product's PI time proportional control algorithm, which virtually eliminates temperature offset associated with traditional, differential-based thermostats.

All models contain two digital inputs, which can be set by the user to monitor filter status, activate a remote temporary occupancy switch, and/or used as a general purpose service indicator. In addition, depending on the model, up to three remote sensor inputs are available. All programmable models contain a SPST auxiliary switch, which can be used to control lighting or disable the economizer function. For more advanced applications, an economizer control logic has been integrated onto the thermostat for use with proportional damper economizer actuators.

Fig.1 - T7600 Series

Models

Application	1 Heat / 1 Cool	2 Heat / 2 Cool	2 Heat / 2 Cool with economizer	3 Heat / 2 Cool heat pump
Model (programmable)	T7652A1000	T7652B1000	T7656B1000	T7652H1000
Model (non-programmable)	T7600A1000	T7600B1000	T7605B1000	T7600H1000

Features and benefits (All Models)

Features	Benefits
• PI time proportioning algorithm	⇒ Increased comfort , accuracy, and energy savings
• 2 digital inputs	⇒ Adds functionality
• Removable terminal blocks	⇒ Facilitates wiring
• Hinged PC board design	⇒ Access to mounting holes
• Smart fan	⇒ Saves energy during night mode
• Unique configuration key	⇒ Minimizes parameter tampering
• Lockable keypad	⇒ Tamper proof, no need for thermostat guards
• Freeze protection	⇒ Prevents costly freeze damage
• EEPROM memory	⇒ No loss of program
• 6 hour reserve time for clock	⇒ No need to reprogram day/time after power shortage
• Remote room and outdoor temperature sensor	⇒ Increase flexibility and functionality
• Direct access to modify the temporary setpoints	⇒ Very easy for anybody to set desired temperature

Features and benefits (T7656B Programmable Multi-Stage with Economizer Logic)

Features	Benefits
• 2 Heat/2 Cool	⇒ Support single and two stage equipment
• Intuitive, menu-driven programming (7 day, 2/4 events)	⇒ Can be used for all types of establishments
• Economizer output (0-10 V d.c.)	⇒ Excellent retrofit opportunities
• Auxiliary output	⇒ Can be used for lighting and/or economizer override
• Remote mixed air temperature sensor	⇒ Permits accurate control of economizer output

Features and benefits (T7652H Programmable Heat Pump Thermostat)

Features	Benefits
• 3 Heat/2 Cool	⇒ Support single and two stages heat pump with one auxiliary heat stage
• Intuitive, menu-driven programming (7 day, 2/4 events)	⇒ Can be used for all types of establishments
• Low/High balance point	⇒ Protect and optimize systems performances
• Auxiliary output	⇒ Can be used for lighting and/or any other use

Theory of operation

The T7600 uses a Viconics proprietary adaptive logic algorithm to control the space temperature. This algorithm controls the heating / air conditioning system to minimize overshoot while still providing comfort. It provides exceptional accuracy due to its unique PI time proportioning control algorithm, which virtually eliminates temperature offset associated with traditional, differential-based on/off thermostats.

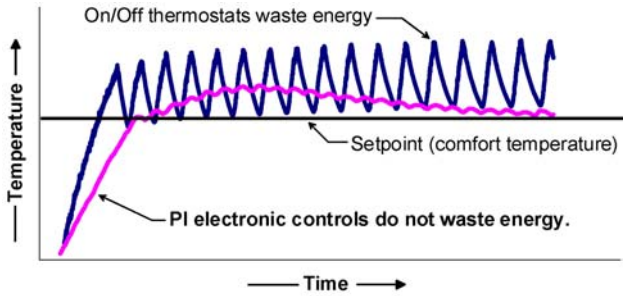


Fig.2 - On/Off mechanical control vs PI electronic control.

Features overview

- 7 day programmable models, 2 or 4 events
- Gas/oil or electric system compatibility for all type of applications
- Remote indoor averaging sensing capability
- Temperature averaging with 2, 3, 4, 9 or 16 sensors
- Remote outdoor sensing capability for added flexibility
  - System mode lock out
  - Heat pump balance point settings
- Lockable keypads for tamper proofing. No need for thermostat guards
- Automatic frost protection to prevents costly freeze damage
- Anti short cycle and minimum on/off run time protection. Reduces wear and maximizes life span of mechanical equipment.
- 2 programmable digital inputs for added flexibility. Each input can be programmed as the following:
  - **None:** No function will be associated with the input
  - **Service:** a backlit flashing **Service** alarm will be displayed on the thermostat LCD screen when the input is energized. It can be tied in to the AC unit control card, which provides an alarm in case of malfunction.
  - **Filter:** a backlit flashing **Filter** alarm will be displayed on the thermostat LCD screen when the input is energized. It can be tied to a differential pressure switch that monitor filters
  - **Rem NSB:** remote NSB timer clock input. Will disable the internal scheduling of the thermostat. The scheduling will now be set as per the digital input. The menu part related to scheduling is disabled and no longer accessible. It provides low cost setback operation via occupancy sensor or from a dry contact
  - **RemOVR:** temporary occupancy contact. Disables all override menu function of the thermostat. . The override function is now controlled by a manual remote momentarily closed contact. When configured in this mode, the input operates in a toggle mode.

    With this function enabled it is now possible to toggle between unoccupied & occupied setpoints for the amount of time set by parameter (TOccTime) temporary occupancy time.
- Programmable smart fan operation saves energy during night mode
- Non volatile EEPROM memory prevents loss of parameters during power shortage
- Built in default profile set-up for easier start up and commissioning
- Configurable SPST output relay on programmable models for lighting, exhaust fan or fresh air control
- 6 hour typical reserve time for clock in case of power loss
- 0 to 10 Vdc economizer output for more retrofit opportunities
  - Built in dry bulb economizer logic using outdoor temperature sensor
  - Input for supply/mixed air temperature sensor

Heat pump model specific features

- Selectable single or dual stage compressor stages
- High balance point:
  Locks out auxiliary heating when outside air temperature is above this value
- Low balance point:
  Locks out heat pump compressor operation when outside air temperature is below this value
- Comfort/economy mode:
  In economy mode, heat pump use is maximized before turning On auxiliary heating
- Compressor/auxiliary interlock:
  Adds flexibility by locking out heat pump operation during auxiliary heating to prevent high pressure trip when the coil is downstream of the auxiliary heat source.

Installation

- Remove security screw on the bottom of thermostat cover.
- Open up by pulling on the bottom side of thermostat. **(Fig. 3)**

A) **Location:**

1- Should not be installed on an outside wall.
2- Must be installed away from any heat source.
3- Should not be installed near an air discharge grill.
4- Should not be affected by direct sun radiation.
5- Nothing must restrain vertical air circulation to the thermostat.

B) **Installation:**

1- Swing open the thermostat PCB to the left by pressing the PCB locking tabs. **(Fig. 4)**
2- Pull out cables 6" out of the wall.
3- Wall surface must be flat and clean.
4- Insert cable in the central hole of the base.
5- Align the base and mark the location of the two mounting holes on the wall. Install proper side of base up.
6- Install anchors in the wall.
7- Insert screws in mounting holes on each side of the base. **(Fig. 4)**
8- Gently swing back the circuit board on the base and push on it until the tabs lock it.
10- Pull out the screw terminal blocks using the pull tabs on each connector. **(Fig. 5)**
11- Strip each wire 1/4 inch.
12- Insert each wire according to wiring diagram.
13- Gently push back into hole excess wring **(Fig. 5)**
14- Install wiring terminals
15- Reinstall the cover (top side first) and gently push back extra wire length into the hole in the wall.
16- Install security screw.

- If replacing an old thermostat, label the wires before removal of the old thermostat.
- Electronic controls are static sensitive devices. Discharge yourself properly before manipulation and installing the thermostat.
- Short circuit or wrong wiring may permanently damage the thermostat or the equipment.
- Anti-short cycling can be set to 0 minutes for equipment that posses their own anti cycling timer. Do not use that value unless the equipment is equipped with such internal timer. Failure to do so can damage the equipment.
- All T7600 series thermostats are to be used only as operating controls. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user to add safety devices and/or alarm system to protect against such catastrophic failures.

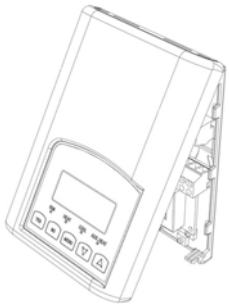


Fig.3

Location of pull tabs

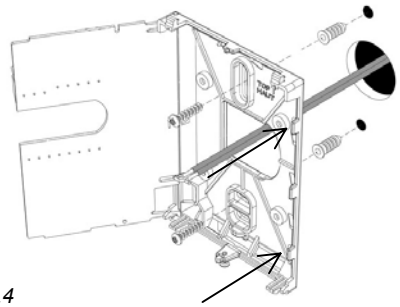


Fig.4

Pull out terminal blocks

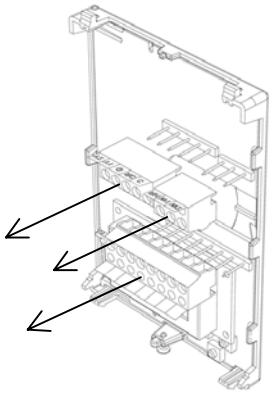


Fig.5

Wiring terminals (model T7656B1000)

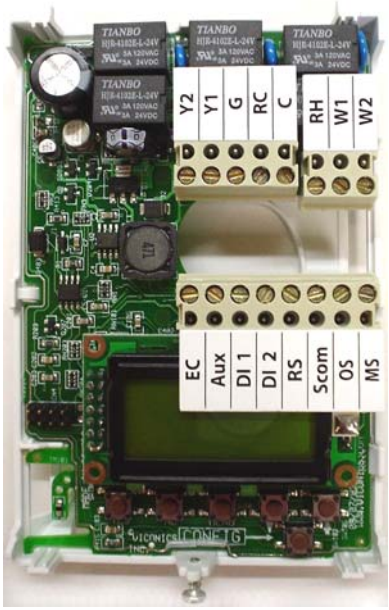


Fig.6

Wiring

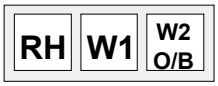
Terminal identification

	Multistage				1H / 1C			Heat Pump	
Part Number	T7656B	T7605B	T7652B	T7600B	T7652A	T7600A	Part Number	T7652H	T7600H
Programmable	Yes	No	Yes	No	Yes	No	Programmable	Yes	No
Top left terminal block							**Top left terminal block**		
Y2	X	X	X	X			Y2	X	X
Y1	X	X	X	X	X	X	Y1	X	X
G	X	X	X	X	X	X	G	X	X
RC	X	X	X	X	X	X	RC	X	X
C	X	X	X	X	X	X	C	X	X
Top right terminal							**Top right terminal block**		
RH	X	X	X	X	X	X	RH	X	X
W1	X	X	X	X	X	X	W1	X	X
W2	X	X	X	X			O/B	X	X
Bottom terminal block							**Bottom terminal block**		
Econo	X	X							
Aux	X		X		X		Aux	X	
DI1	X	X	X	X	X	X	DI1	X	X
DI2	X	X	X	X	X	X	DI2	X	X
RS	X	X	X	X	X	X	RS	X	X
Scom	X	X	X	X	X	X	Scom	X	X
OS	X	X	X	X	X	X	OS	X	X
MS	X	X							

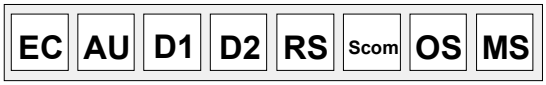
Screw terminal arrangement

5 pole left top connector

3 pole left top connector



8 pole bottom connector



Note:
Specific terminal layout per model shown in wiring diagrams at pages 5, 6, 7 and 8.

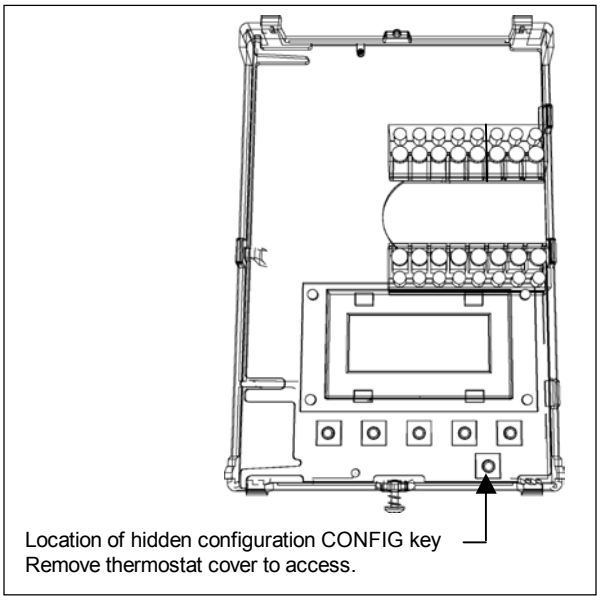


Fig.7 – Location of CONFIG key

Wiring notes:

Note 1: If the same power source is used for the heating stages, install jumper across RC & RH. Maximum current is 2.0 amps.

Note 2: If auxiliary output is used to toggle occupancy of the electronic control card inside the equipment, configure the relay parameter (Aux cont) to the N.O. setting. A second relay can be added for additional functionality of the occupancy output.

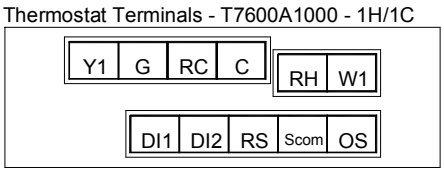
Note 3: Economizer output uses a half bridge rectifier. Reference of the control signal is the common of the power supply of the thermostat. (terminal C)

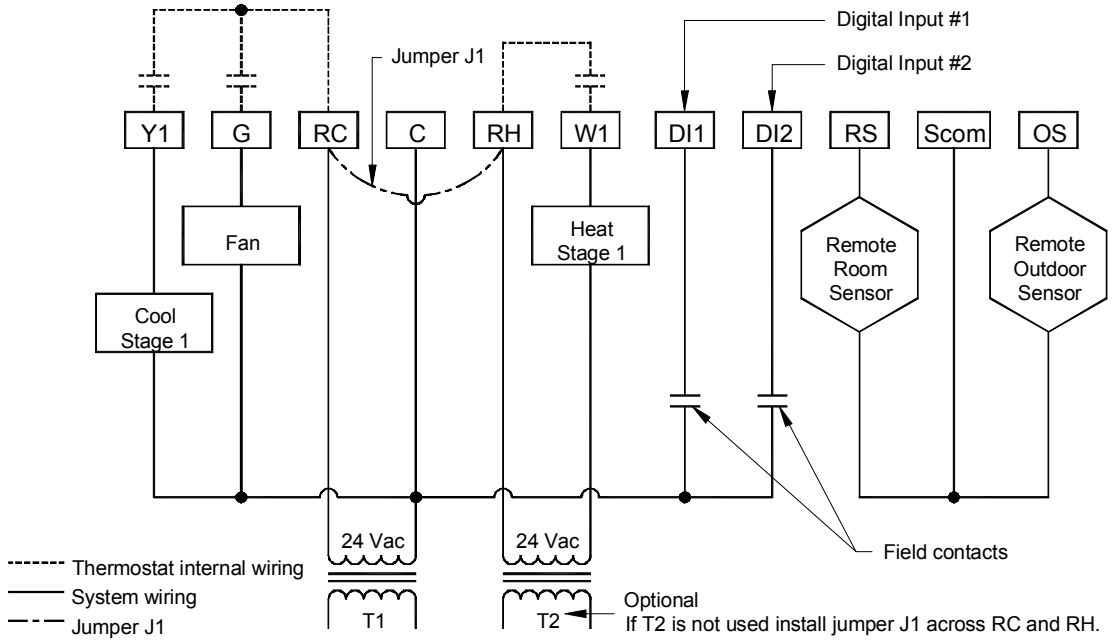
Note 4: Electromechanical contacts are to be used with the digital inputs. Electronic triacs cannot be used as mean of switching for the input. The switched leg to the input for the input to activate is terminal C (common)

Note 5: The transformer of the unit provides power to the thermostat and the additional loads that will be wired to the thermostat.

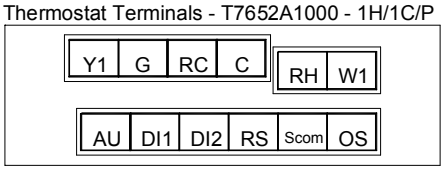
Detailed wiring diagrams per application

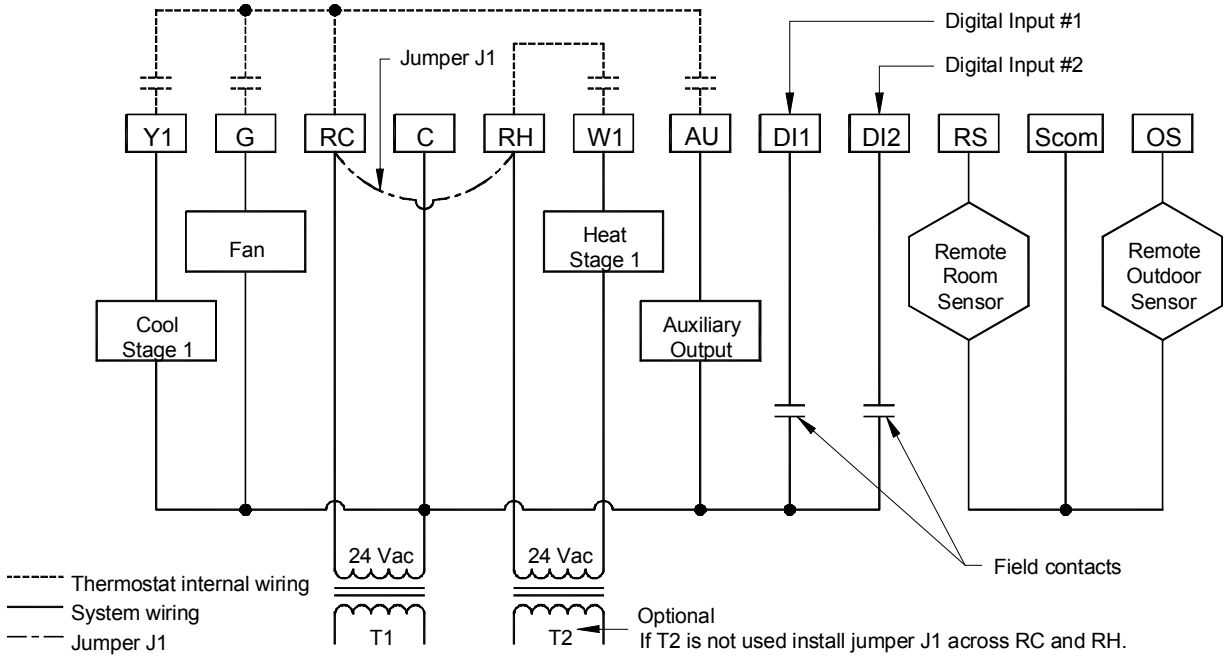
T7600A1000
1 Heat / 1 Cool / Non-programmable





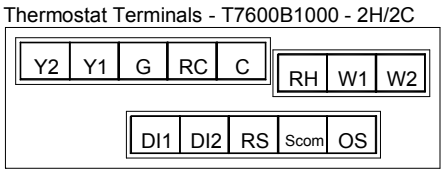
T7652A1000
1 Heat / 1 Cool / Programmable

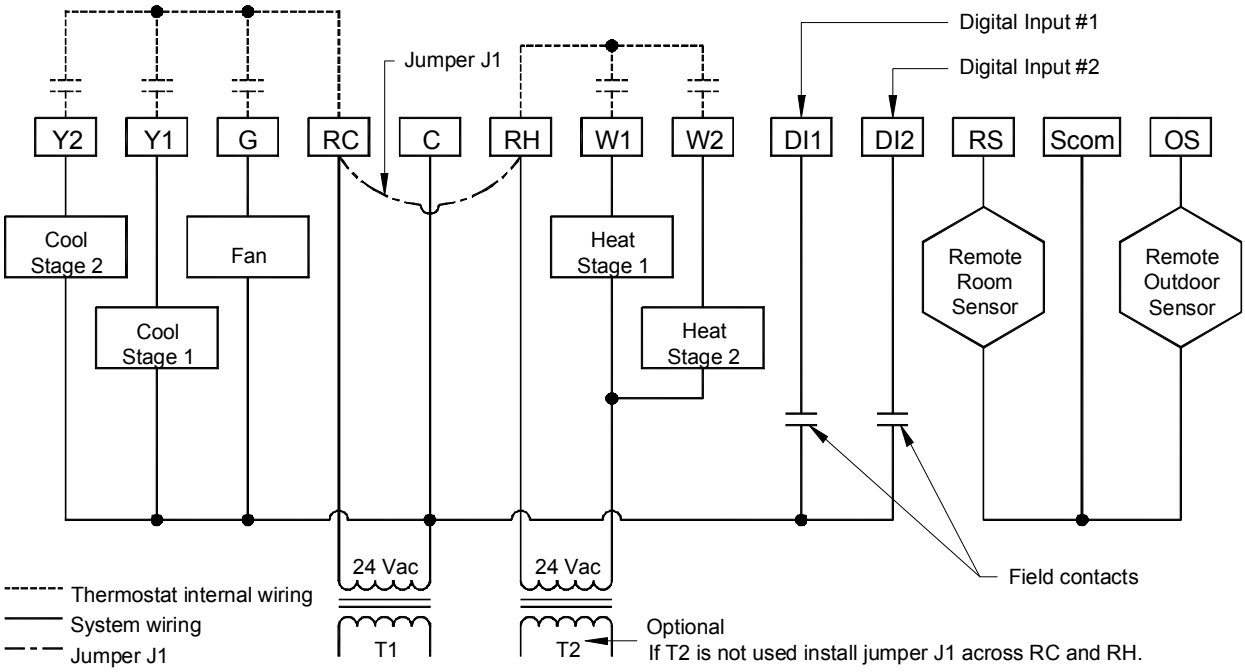




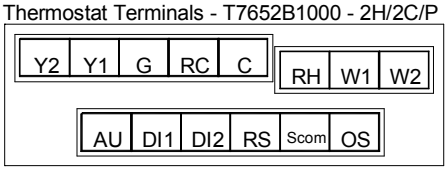
Detailed wiring diagrams per application (continued)

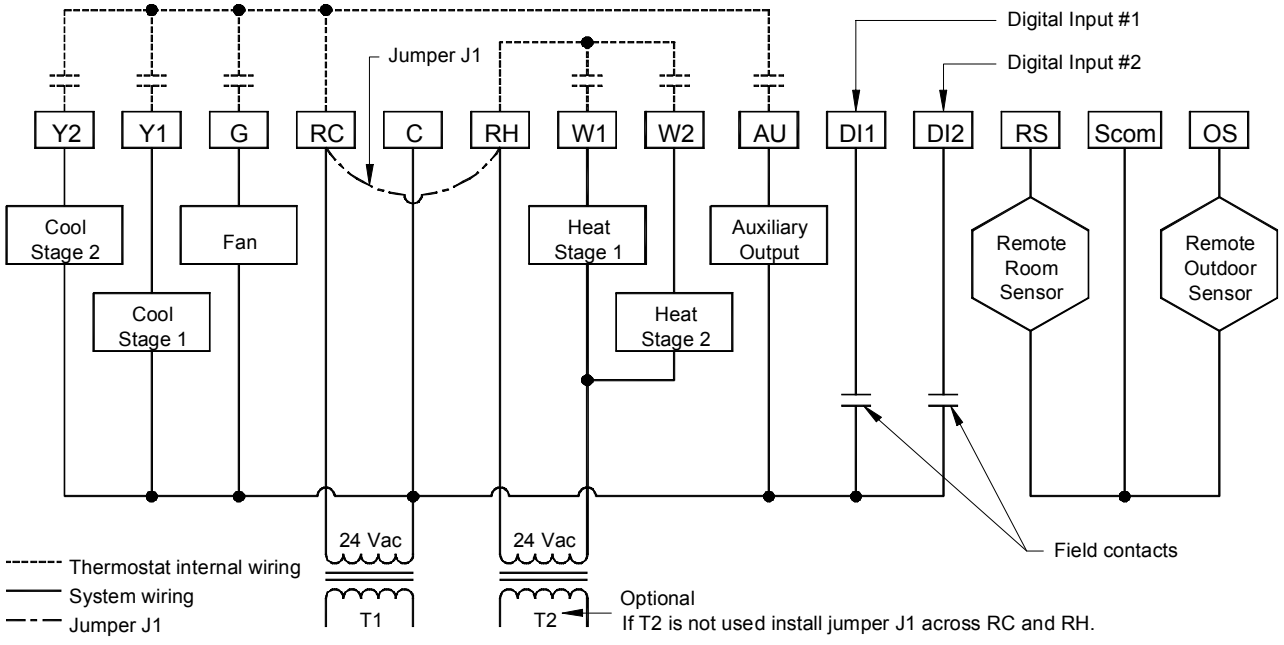
T7600B1000
2 Heat / 2 Cool / Non-programmable





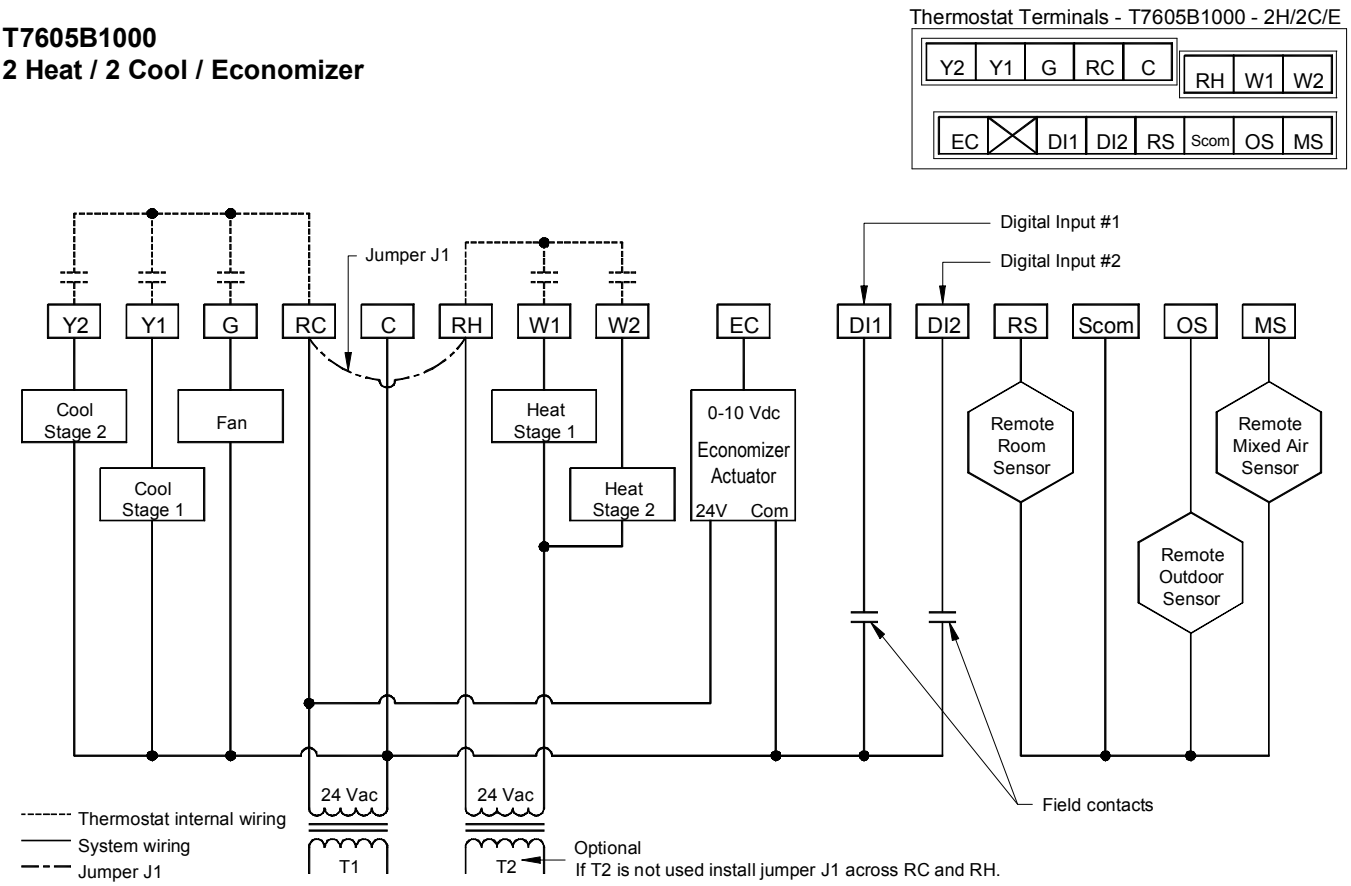
T7652B1000
2 Heat / 2 Cool / Programmable



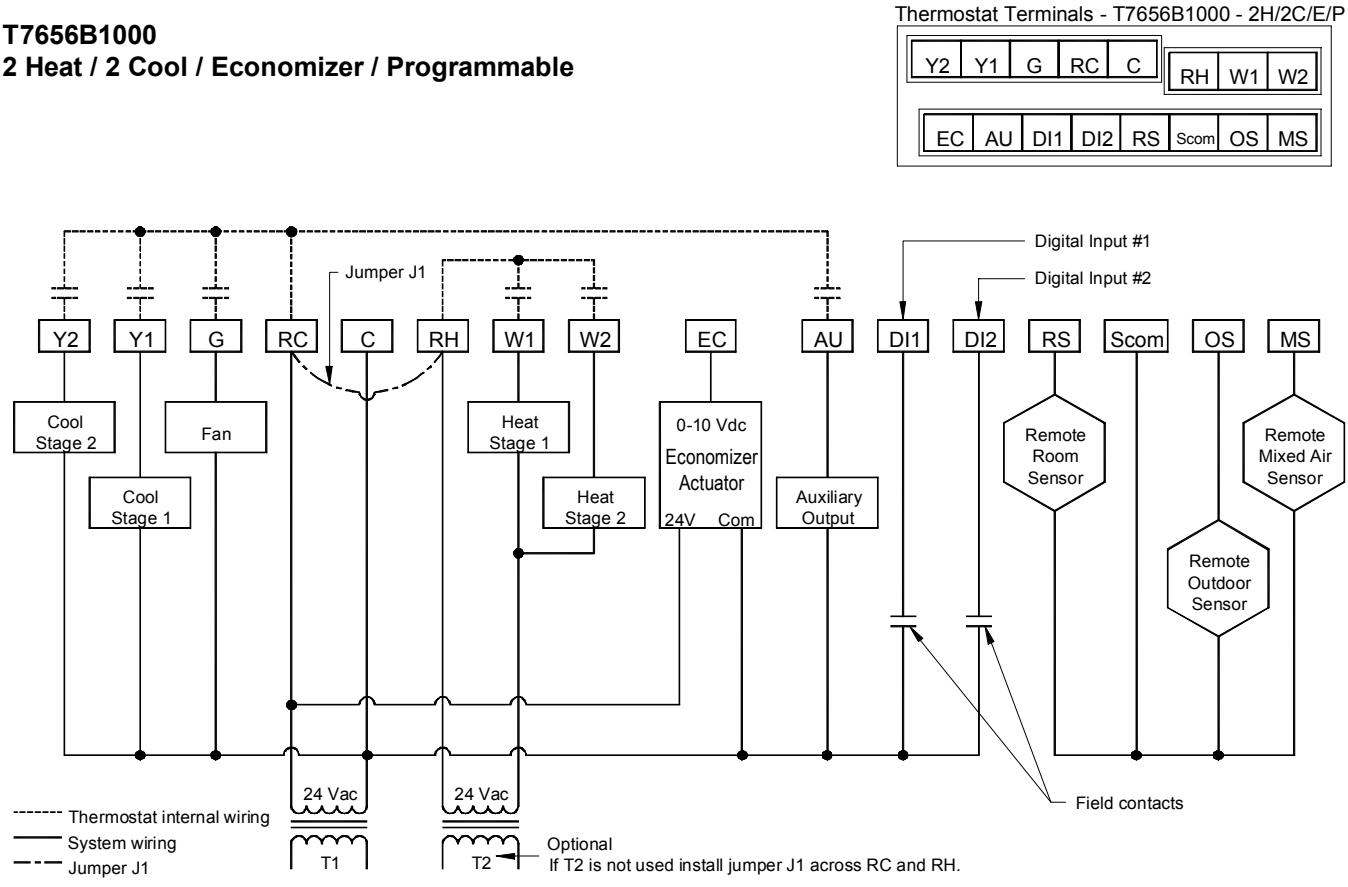


Detailed wiring diagrams per application (continued)

T7605B1000
2 Heat / 2 Cool / Economizer

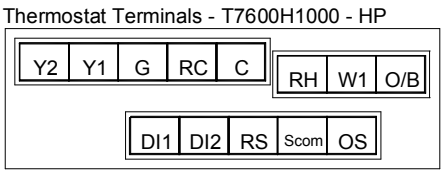


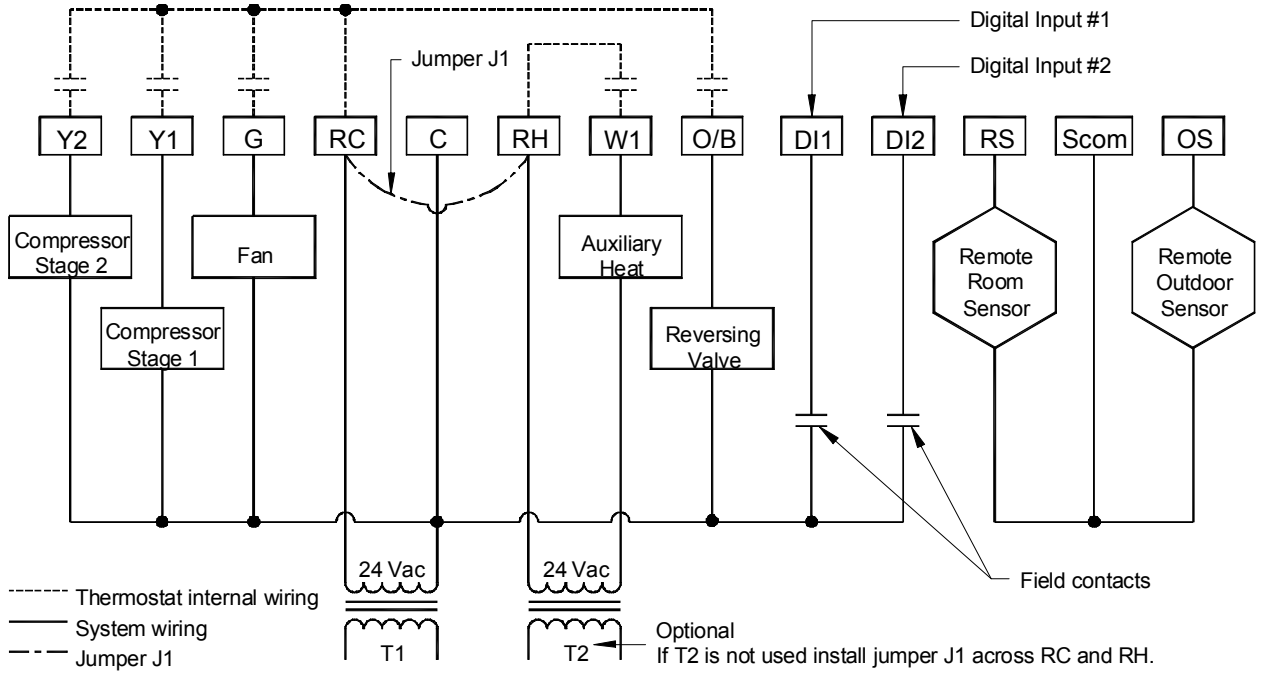
T7656B1000
2 Heat / 2 Cool / Economizer / Programmable



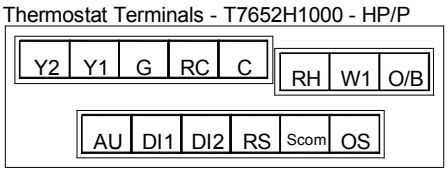
Detailed wiring diagrams per application (continued)

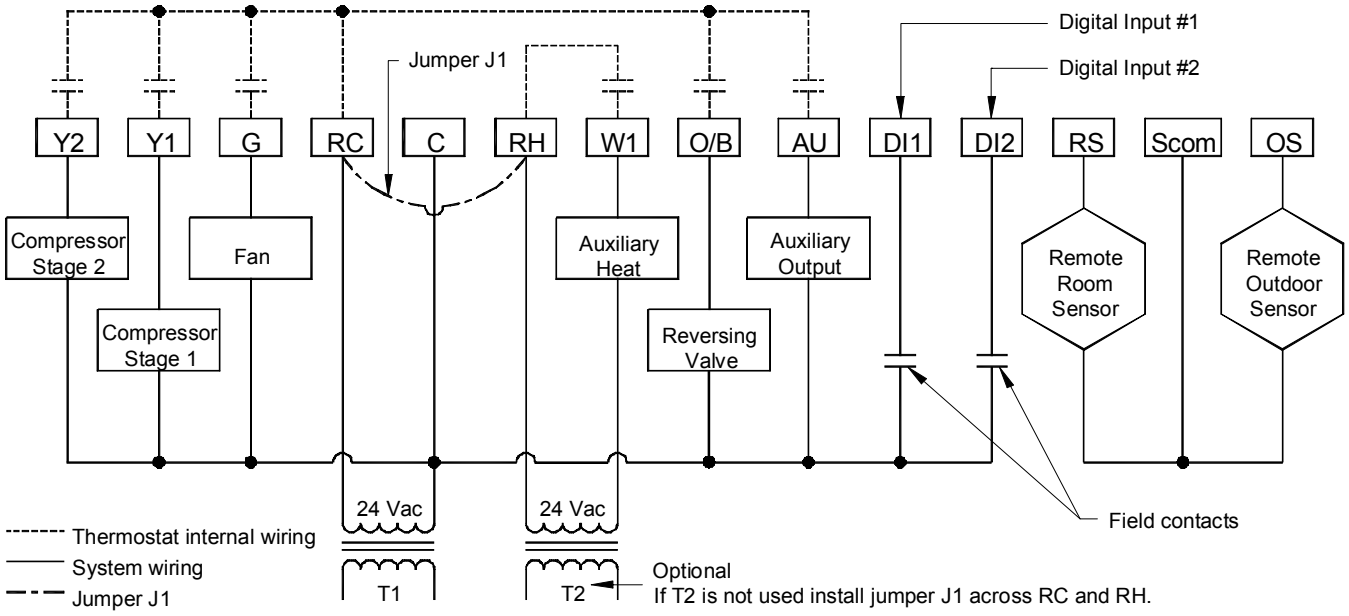
T7600H1000
Heat pump / Non-programmable





T7652H1000
Heat pump / Programmable





Remote sensor accessories

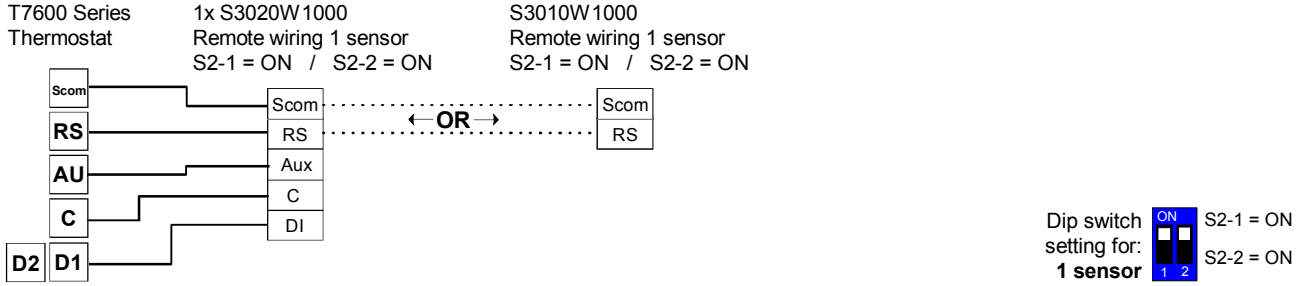
Model no.	Description
S3010W1000	Wall mounted temperature sensor
S3020W1000	Wall mounted temperature sensor with override button and occupancy status LED
S2020E1000	Outdoor temperature sensor
S2060A1000	Averaging temperature sensor
S2000D1000	Duct mounted temperature sensor

Remote mount temperature sensors use 10K NTC thermistors.

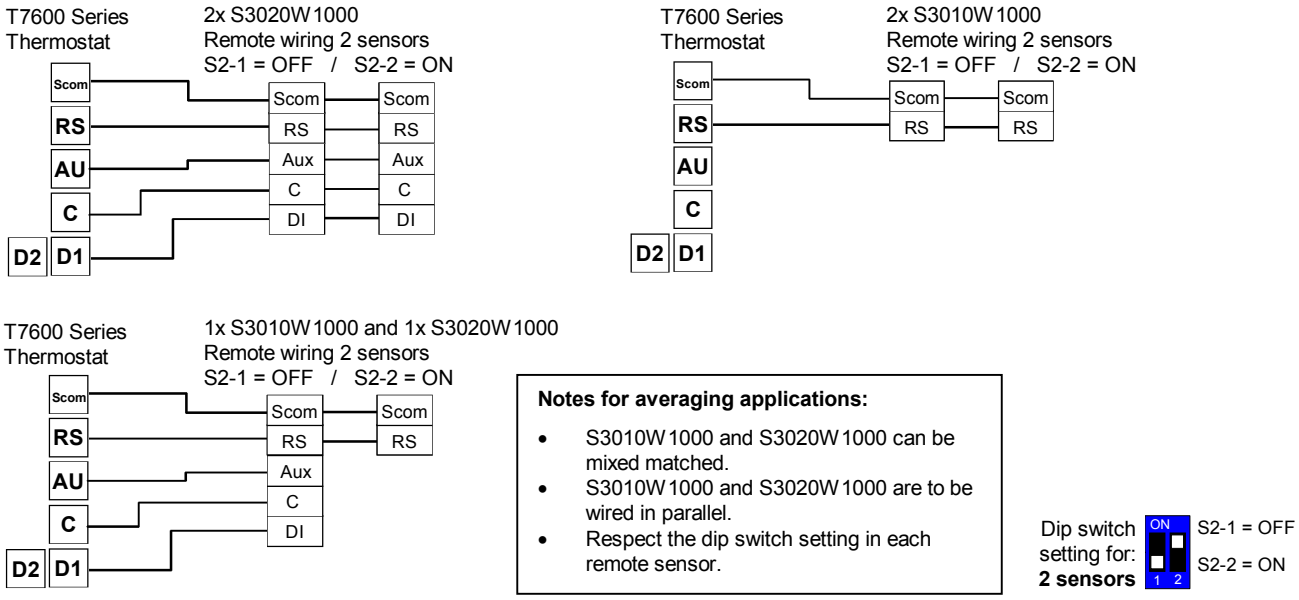
- This sensor can be used for:
- 3 thermistors with 2 dip switches are provided with each sensor for various averaging combinations
- Optional occupancy led
- Optional override key

Fig.8 – S3020W1000 wall mounted sensor

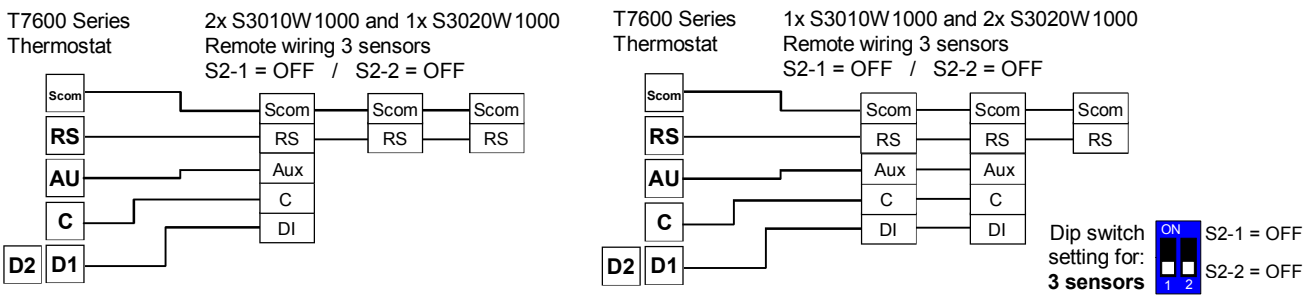
Wiring example of single remote room sensor:



Wiring examples of 2 remote room sensors for averaging applications:



Wiring examples of 3 remote room sensors for averaging applications:



Temperature vs resistance chart for 10 Kohm NTC thermistor

ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm	ºC	ºF	Kohm
-40	-40	275.1600	-20	-4	87.1310	0	32	31.1410	20	68	12.3980	40	104	5.4264
-39	-38	258.9900	-19	-2	82.5330	1	34	29.6670	21	70	11.8710	41	106	5.2186
-38	-36	243.8600	-18	0	78.2010	2	36	28.2700	22	72	11.3690	42	108	5.0198
-37	-35	229.6800	-17	1	74.1190	3	37	26.9460	23	73	10.8900	43	109	4.8295
-36	-33	216.4000	-16	3	70.2710	4	39	25.6910	24	75	10.4340	44	111	4.6474
-35	-31	203.9500	-15	5	66.6420	5	41	24.5000	25	77	10.0000	45	113	4.4731
-34	-29	192.2800	-14	7	63.2200	6	43	23.3710	26	79	9.5858	46	115	4.3061
-33	-27	181.3400	-13	9	59.9910	7	45	22.3000	27	81	9.1909	47	117	4.1462
-32	-26	171.0700	-12	10	56.9430	8	46	21.2840	28	82	8.8143	48	118	3.9931
-31	-24	161.4400	-11	12	54.0660	9	48	20.3190	29	84	8.4549	49	120	3.8463
-30	-22	152.4000	-10	14	51.3490	10	50	19.4020	30	86	8.1121	50	122	3.7057
-29	-20	143.9100	-9	16	48.7820	11	52	18.5320	31	88	7.7848	51	124	3.5708
-28	-18	135.9300	-8	18	46.3570	12	54	17.7050	32	90	7.4724	52	126	3.4416
-27	-17	128.4400	-7	19	44.0650	13	55	16.9190	33	91	7.1741	53	127	3.3176
-26	-15	121.4000	-6	21	41.8990	14	57	16.1720	34	93	6.8892	54	129	3.1988
-25	-13	114.7900	-5	23	39.8490	15	59	15.4620	35	95	6.6170	55	131	3.0847
-24	-11	108.5600	-4	25	37.9110	16	61	14.7870	36	97	6.3570	56	133	2.9753
-23	-9	102.7100	-3	27	36.0770	17	63	14.1450	37	99	6.1084	57	135	2.8703
-22	-8	97.1980	-2	28	34.3410	18	64	13.5330	38	100	5.8708	58	136	2.7695
-21	-6	92.0130	-1	30	32.6970	19	66	12.9520	39	102	5.6437	59	138	2.6727

S3010W1000 remote wall mounted temperature sensor, dip switch location

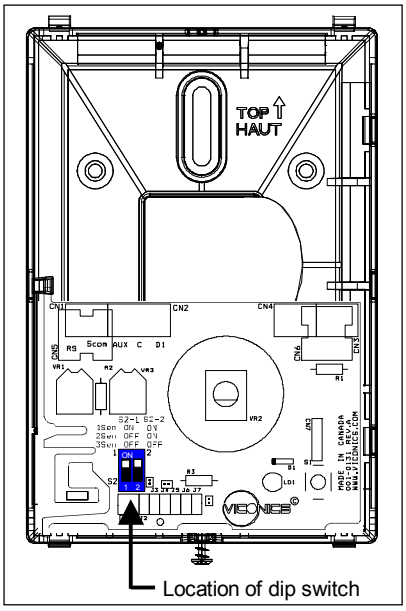


Fig.9 – Sensor dip switch location

S2000D1000, remote duct mounted temperature sensor c/w junction box.

This sensor can be used for:

- Remote return air temperature sensing with the sensor mounted on the return air duct.
- Outside air temperature sensing with the sensor installed in the fresh air plenum.
- Supply air temperature sensor

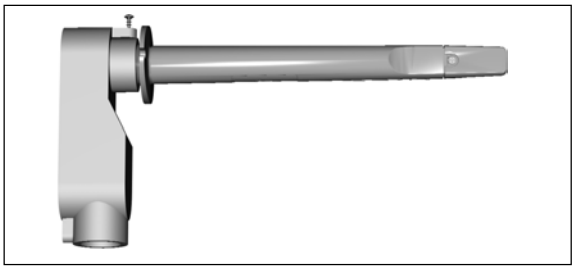


Fig.10 – Remote duct mounted temperature sensor

S2060A1000, remote averaging duct mounted temperature sensor c/w junction box.

This sensor can be used for:

- Remote averaging return air temperature sensing with the sensor mounted on the return air duct.
- Outside air temperature averaging sensing with the sensor installed in the fresh air plenum.
- Mixed air temperature averaging sensor for economizer models with the sensor in the mixing plenum.

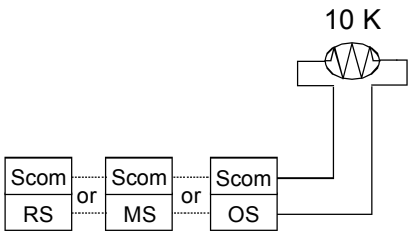
S2020E1000, outdoor air temperature sensor

This sensor can be used for:

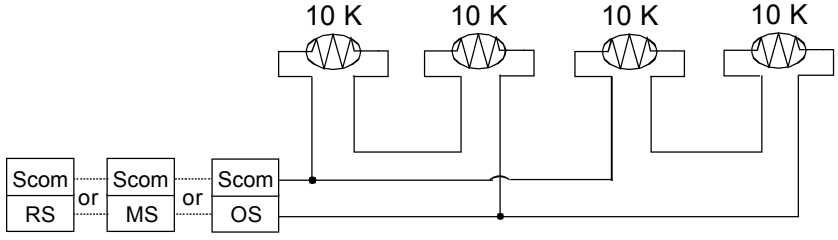
- Outside air temperature sensing with the sensor installed directly exposed to the elements.
- Sensor uses a water resistant NEMA 4 ABS enclosure for outdoor applications

WIRING S2000D1000, S2060A1000 and S2020E1000

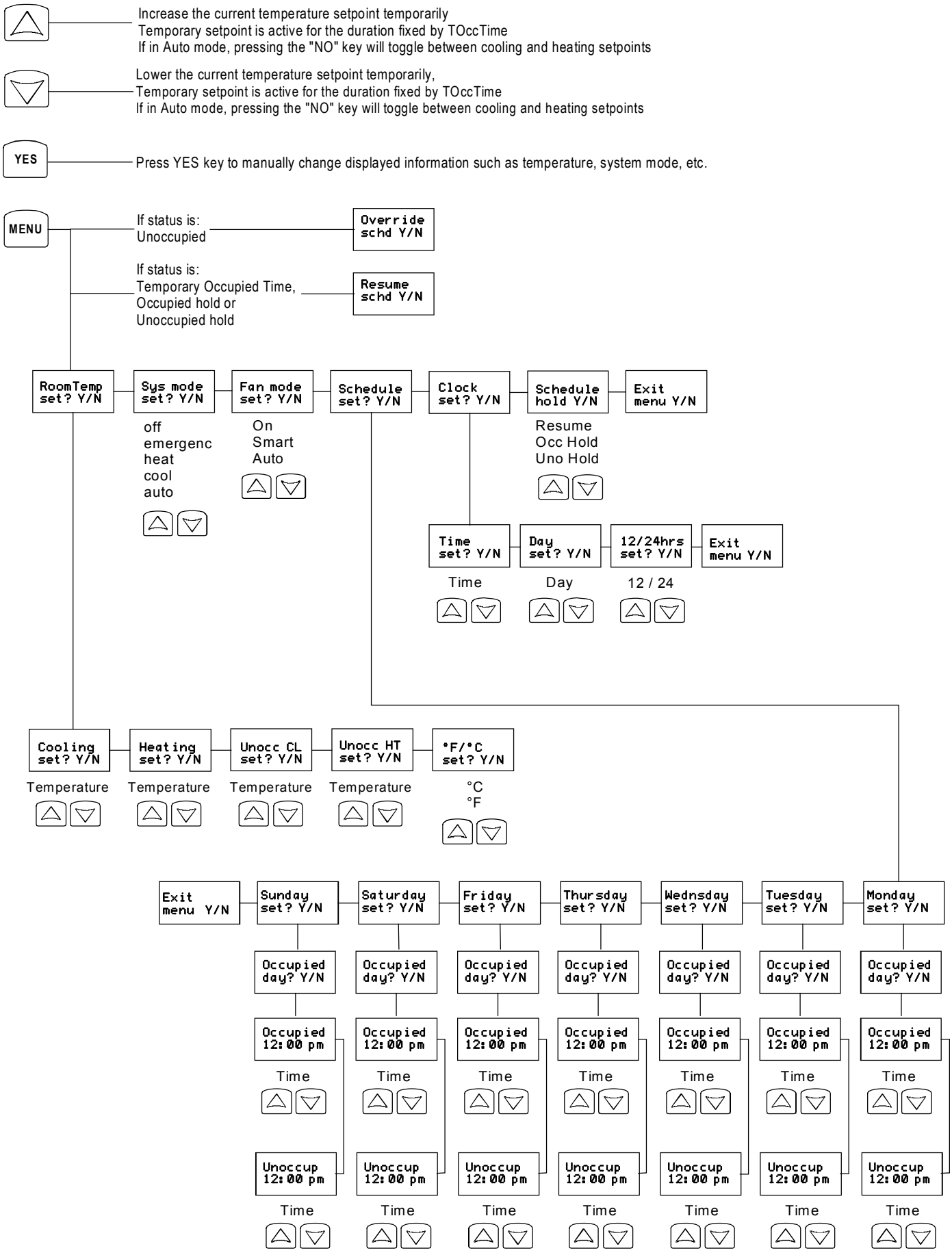
Remote wiring 1 sensor



Remote wiring 4 sensors



User menu flow chart:



Programming and status display instructions

1. Status display

The thermostat features a two-line, eight-character display. There is a low level back-light level that is always active and can only be seen at night. When left unattended, the thermostat has an auto scrolling display that shows the actual status of the system. Each item is scrolled one by one with the back lighting off. Pressing any key will cause the back light to come on.

Sequence of auto-scroll status display:

Room temperature	Clock status	System mode	Schedule status	Outdoor temperature	Alarms
RoomTemp x.x °C or °F	Monday 12.00 AM	Sys mode auto	Occupied	Outdoor x.x °C or°F	Service
		Sys mode off	Occupied hold		Frost ON
		Sys mode heat	Unoccup		SetClock
		Sys mode cool	Unoccup hold		Filter
		Sys mode emergenc	Override		

Manual scroll of each menu item is achieved by pressing the YES (scroll) key repetitively. The last item viewed will be shown on the display for 30 seconds before returning to automatic scrolling. Temperature is automatically updated when scrolling is held.

Outdoor air temperature display is only enabled when outdoor air temperature sensor is connected.

- A maximum range status display of 50 °C (122 °F) indicates a shorted sensor. Associated functions, such as mode lockouts and economizer function are automatically disabled.
- A minimum range status -40 °C (-40 °F) is not displayed and indicates a opened sensor or a sensor not connected. Associated functions, such as mode lockouts and economizer function are automatically disabled.

If alarms are detected, they will automatically be displayed at the end of the status display scroll. During an alarm message display, the back lit screen will light up at the same time as the message and shut off during the rest of the status display. Two alarms maximum can appear at any given time. The priority for the alarms is as follows:

Frost ON	Indicates that the heating is energized by the low limit frost protection setpoint 5.6 °C (42 °F)
SetClock	Indicates that the clock needs to be reset. There has been a power failure which has lasted longer than 6 hours
Service	Indicates that there is a service alarm as per one of the programmable digital input (DI1 or DI2)
Filter	Indicates that the filters are dirty as per one of the programmable digital input (DI1 or DI2)

Three status LEDs on the thermostat cover are used to indicate the status of the fan, a call for heat, or a call for cooling.

Multistage and single stage models

- When the fan is on, the FAN LED will illuminate.
- When heating is on, the HEAT LED will illuminate.
- When cooling is on, the COOL LED will illuminate.

Heat pump models

- When the fan is on, the FAN LED will illuminate.
- When auxiliary heat is on, the AUX HEAT LED will illuminate.
- When compressor is on, the HEAT-PUMP LED will illuminate.

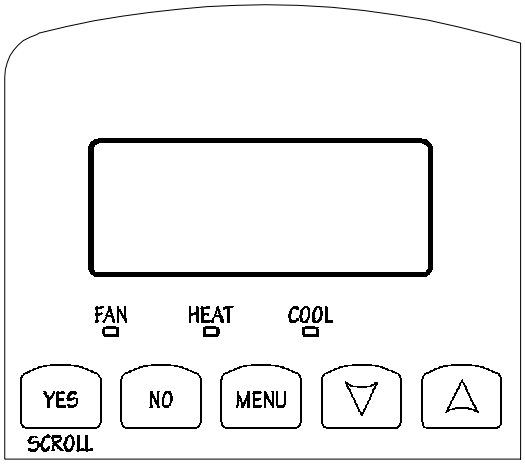


Fig.11 - Multistage and single stage models

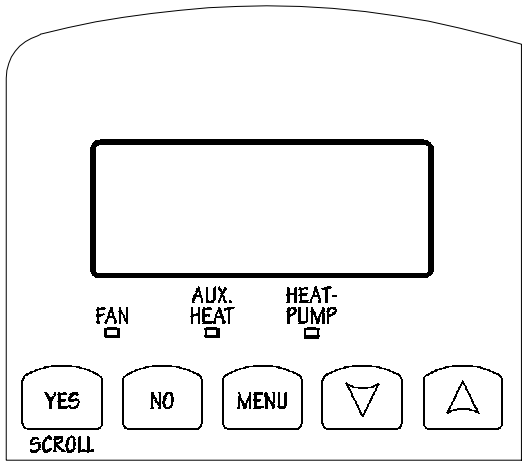


Fig.12 – Heat pump models

2. User programming instructions menu

The T7600 series of thermostat feature an intuitive, menu-driven, back-lit LCD display which walks users through the programming steps, making the programming process extremely simple. This menu is typically accessed by the user to set the parameters such as temperature and time events, system mode, fan mode, etc.

It is possible to bring up the user menu at any time by depressing the MENU key. The status display automatically resumes after exiting the user-programming menu.

If the user pauses at any given time during programming, **Auto Help** text is displayed to help and guide the user through the usage and programming of the thermostat.

Ex.:	Press yes key to change cooling temperature setpoint Use the up or down arrow to adjust cooling setpoint

Each of the sections in the menu are accessed and programmed using 5 keys on the thermostat cover.
The priority for the alarms is as follows:

	The YES key is used to confirm a selection, to move onto the next menu item and to manually scroll through the displayed informations
	The NO key is used when you do not desire a parameter change, and to advance to the next menu item. Can also be used to toggle between heating and cooling setpoints.
	The MENU key is used to access the Main User Menu or exit the menu
	The down arrow key is used to decrease temperature setpoint and to adjust the desired values when programming and configuring the thermostat.
	The up arrow key is used to increase temperature setpoint and to adjust the desired values when programming and configuring the thermostat.

When left unattended for 45 seconds, the display will resume automatic status display scrolling.
To turn on the back light, press any key on the front panel. The back lit display will turn off when the thermostat is left unattended for 45 seconds

Sequence of user menu:

Override Resume	Temperature setpoints	System mode setting	Fan mode setting	Schedules setting	Clock setting	Schedule hold
Page 14 Section A/B	Page 14 Section C	Page 14 Section D	Page 15 Section E	Page 15-16 Section F-G	Page 17 Section H	Page 17 Section J
Override schd Y/N Appears only in unoccupied mode	RoomTemp set Y/N	Sys mode set Y/N	Fan mode set Y/N	Schedule set Y/N	Clock set Y/N	Schedule hold Y/N
Resume schd Y/N Appears only in override mode or schedule hold						

There is a default profile set in the thermostat from the factory.
This enables the thermostat to operate as a non-programmable unit in day mode operation at start up.

Programmed default temperature setpoints:
Occupied cooling setpoint = 24 °C (75 °F)
Occupied heating setpoint = 22 °C (72 °F)
Unoccupied cooling setpoint = 28 °C (82 °F)
Unoccupied heating setpoint = 18 °C (65 °F)
Fahrenheit scale

Programmed default modes:
System mode = Auto
Fan mode = Auto
Programmed default schedules:
Monday through Sunday
Occupied time is: 12 00 AM
Unoccupied time is: 11:59 PM

There will be a 1 minute unoccupied period every night at 11:59 PM with this default configuration.

A) Override an unoccupied period

Override schd Y/N

This menu will appear only when the thermostat is in unoccupied mode. The unoccupied mode is enabled either by the internal timer scheduling or by a remote NSB contact via DI1 or DI2.
If DI1 or DI2 is configured to operate as a remote temporary override contact, this menu will be disabled.

Answering yes to this prompt will cause the thermostat to go into occupied mode for an amount of time equal to the parameter “TOccTime” (1 to 12 hours).

B) Resume regular scheduling

Resume schd Y/N

This menu does not appear in regular operation. It will appear only when the thermostat is in:

- Unoccupied override mode
- Permanent occupied
- Permanent unoccupied

Answering “Yes” to this question will cause the thermostat to resume the regular programmed setpoints & scheduling. More than one derogation to regular programming can be active and cancelled at the same time.
Ex.: the thermostat can be in Permanent occupied mode while having a temporary occupied cooling setpoint activated. The resume key will cancel both derogation’s at the same time.

C) Temperature setpoints

RoomTemp set Y/N

This menu permits the adjustment of all temperature setpoints (occupied and unoccupied) as well as the desired temperature units (°F or °C)

Cooling setpoint Occupied mode		Heating setpoint Occupied mode		Cooling setpoint Unoccupied mode		Heating setpoint Unoccupied mode		°F or °C display setting	
Cool set? Y/N	No next → Yes down ↓	Heat set? Y/N	No next → Yes down ↓	Unocc CL set? Y/N	No next → Yes down ↓	Unocc HT set? Y/N	No next → Yes down ↓	°F or °C set? Y/N	No next → Yes down ↓
Use ▲▼ keys to set value, Yes key to confirm									
Cool 70.0 °F	Use ▲▼ To set value	Heat 68.00 °F	Use ▲▼ To set value	Unocc CL 80.0 °F	Use ▲▼ To set value	Unocc HT 60.0 °F	Use ▲▼ To set value	Units °F	Use ▲▼ To set value

D) System mode setting

Sys mode set Y/N

This menu is accessed to set system mode operation
Use ▲▼ to set value, Yes key to confirm

Sys mode auto	**Automatic mode** Automatic changeover mode between heating and cooling operation
Sys mode cooling	**Cooling mode** Cooling operation mode only
Sys mode heating	**Heating mode** Heating operation mode only
Sys mode emergency	**Emergency heat mode** (heat pump models only) Forced auxiliary heat operation mode only
Sys mode off	**Off mode** Normal cooling or heating operation disabled If enabled in installer parameters, only the automatic heating frost protection at 42 °F (5.6 °C) is enabled

E) Fan mode setting

Fan mode set Y/N

This section of the menu is permits the setting of the fan mode operation.
Use ▲▼ to set value, Yes key to confirm

Fan mode On	**On** fan mode Fan is on continuously, even when system mode is OFF.
Fan mode Auto	**Automatic** fan mode Fan cycles on a call for heating or cooling for both occupied & unoccupied periods.
Fan mode Smart	**Smart fan** mode During occupied periods, fan is on continuously. In unoccupied mode, fan cycles on a call for heating or cooling.

F) Schedule set (2 events)

Scheduling can have 2 or 4 events per day. This is set in the configuration menu as per parameter (2/4event)

Schedule set Y/N

This section of the menu permits the user to set the whether 2 or 4 events is needed. Each day can be tailored to specific schedules if needed.

- 2 events can be programmed per day.
- Occupied & unoccupied periods can be set for each day.

Monday timer Schedule set		**Tuesday timer Schedule set**		**Wednesday timer Schedule set**		Other days are identical
Monday set? Y/N	No next → Yes down ↓	Tuesday set? Y/N	No next → Yes down ↓	Wednesd set? Y/N	No next → Yes down ↓	Selects the day to be programmed or modified
Yes key to access day scheduling, No key to jump to next day						
Occupied Day? Y/N	No next → Yes down ↓	Occupied Day? Y/N	No next → Yes down ↓	Occupied Day? Y/N	No next → Yes down ↓	Yes = Daily schedules will be accessed No = Unoccupied mode all day
Yes key to access day scheduling, No key to jump to next day						
		Copy Y/N Previous	Yes next → No down ↓	Copy Y/N Previous	Yes next → No down ↓	Yes = Will copy previous day schedule No = Daily schedules will be accessed
Yes key to copy previous day, No key to set new time value for each day						
Occupied 00:00 AM	Use ▲▼ To set value	Occupied 00:00 AM	Use ▲▼ To set value	Occupied 00:00 AM	Use ▲▼ To set value	Sets Event # 1 Occupied time Will activate occupied setpoints
Use ▲▼ to set value, Yes key to confirm						
Unoccup 00:00 AM	Use ▲▼ To set value	Unoccup 00:00 AM	Use ▲▼ To set value	Unoccup 00:00 AM	Use ▲▼ To set value	Sets Event # 2 Unoccupied time Will activate unoccupied setpoints
Use ▲▼ to set value, Yes key to confirm						

Typical examples of a 2 event office schedule

Note: 12:00 PM = Noon
12:00 AM = Midnight

Ex. #1 Office building closed all weekend

Event	**Period #1 - Event #1**		**Period #1 - Event #2**		
	Occupied		**Unoccupied**		
Setpoint	**Cool** 72 °F	**Heat** 70 °F	**Cool** 80 °F	**Heat** 62 °F	**Daily Occupancy**
Monday	7.00 AM		6.00 PM		Day time only
Tuesday	7.00 AM		6.00 PM		Day time only
Wednesday	7.00 AM		6.00 PM		Day time only
Thursday	7.00 AM		6.00 PM		Day time only
Friday	7.00 AM		6.00 PM		Day time only
Saturday	12.00 PM *		12.00 PM *		Unoccupied
Sunday	12.00 PM *		12.00 PM *		Unoccupied

*Programming consecutive events to the same time will cause the thermostat to choose the last event as the time at which it will set its schedule. In the above example, the thermostat will control to the unoccupied set point until 7:00 AM Monday.

Ex. #2 Commercial building which is occupied all weekend

Event	**Period #1 - Event #1**		**Period #1 - Event #2**		
	Occupied		**Unoccupied**		
Setpoint	**Cool** 72 °F	**Heat** 70 °F	**Cool** 80 °F	**Heat** 62 °F	**Daily Occupancy**
Monday	8.00 AM		5.00 PM		Day time only
Tuesday	8.00 AM		5.00 PM		Day time only
Wednesday	8.00 AM		5.00 PM		Day time only
Thursday	8.00 AM		5.00 PM		Day time only
Friday	8.00 AM		5.00 PM		Day time only
Saturday	12.00 AM **		11.59 PM **		Occupied
Sunday	12.00 AM **		11.59 PM **		Occupied

** To program a day as occupied for 24 hours, set that day Occupied time to 12:00 AM and Unoccupied time to 11:59 PM There will be a 1 minute unoccupied period every night at 11:59 PM with this schedule configuration.

G) Schedule set (4 events)

Schedule set Y/N

This section of the menu permits the user to set the whether 2 or 4 events is needed. Each day can be tailored to specific schedules if needed.

- 4 events can be programmed per day.
- Occupied & Unoccupied periods can be set for each day.
- Programming the 3 rd. & 4 th. events to the same time will cancel the last period.

Monday timer Schedule set		Tuesday timer Schedule set		Wednesday timer Schedule set		Other days are identical
Monday set? Y/N	No next → Yes down ↓	Tuesday set? Y/N	No next → Yes down ↓	Wednesd set? Y/N	No next → Yes down ↓	Selects the day to be programmed or modified
Yes key to access day scheduling, No key to jump to next day						
Occupied Day? Y/N	No next → Yes down ↓	Occupied Day? Y/N	No next → Yes down ↓	Occupied Day? Y/N	No next → Yes down ↓	Yes = Daily schedules will be accessed No = Unoccupied mode all day
Yes key to access day scheduling, No key to jump to next day						
		Copy Y/N Previous	Yes next → No down ↓	Copy Y/N Previous	Yes next → No down ↓	Yes = Will copy previous day schedule No = Daily schedules will be accessed
Yes key to copy previous day, No key to set new time value for each day						
Occupied 00:00 AM	Use ▲▼ To set value	Occupied 00:00 AM	Use ▲▼ To set value	Occupied 00:00 AM	Use ▲▼ To set value	Sets Event # 1 Occupied time Will activate occupied setpoints
Use ▲▼ to set value, Yes key to confirm						
Unoccup 00:00 AM	Use ▲▼ To set value	Unoccup 00:00 AM	Use ▲▼ To set value	Unoccup 00:00 AM	Use ▲▼ To set value	Sets Event # 2 Unoccupied time Will activate unoccupied setpoints
Use ▲▼ to set value, Yes key to confirm						
Occupie2 00:00 AM	Use ▲▼ To set value	Occupie2 00:00 AM	Use ▲▼ To set value	Occupie2 00:00 AM	Use ▲▼ To set value	Sets Event # 3 Occupied time Will activate occupied setpoints
Use ▲▼ to set value, Yes key to confirm						
Unoccup2 00:00 AM	Use ▲▼ To set value	Unoccup2 00:00 AM	Use ▲▼ To set value	Unoccup2 00:00 AM	Use ▲▼ To set value	Sets Event # 4 Unoccupied time Will activate unoccupied setpoints
Use ▲▼ to set value, Yes key to confirm						

Ex. #1 Four event retail establishment schedule

Event	Period 1 - Event 1		Period 1 - Event 2		Period 2 - Event 3		Period 2 - Event 4		
Setpoint	**Occupied**		**Unoccupied**		**Occupied**		**Unoccupied**		
	Cool	**Heat**	**Cool**	**Heat**	**Cool**	**Heat**	**Cool**	**Heat**	**Daily**
	72 °F	70 °F	80 °F	62 °F	72 °F	70 °F	80 °F	62 °F	**Occupancy**
Monday	7.00 AM		5.00 PM		12.00 PM *		12.00 PM *		Day time only
Tuesday	7.00 AM		5.00 PM		12.00 PM *		12.00 PM *		Day time only
Wednesday	7.00 AM		5.00 PM		12.00 PM *		12.00 PM *		Day time only
Thursday	7.00 AM		5.00 PM		7.00 PM		10.30 PM		Day/evening time only
Friday	7.00 AM		5.00 PM		7.00 PM		10.30 PM		Day/evening time only
Saturday	12.00 PM *		12.00 PM *		12.00 PM *		12.00 PM *		Unoccupied
Sunday	12.00 PM *		12.00 PM *		12.00 PM *		12.00 PM *		Unoccupied

* Programming events to the same time will cancel the last period and leave the thermostat in unoccupied mode

Ex. #2 Residential

Event	Period 1 - Event 1		Period 1 - Event 2		Period 2 - Event 3		Period 2 - Event 4		
Setpoint	**Occupied**		**Unoccupied**		**Occupied**		**Unoccupied**		
	Cool	**Heat**	**Cool**	**Heat**	**Cool**	**Heat**	**Cool**	**Heat**	**Daily**
	72 °F	70 °F	80 °F	62 °F	72 °F	70 °F	80 °F	62 °F	**Occupancy**
Monday	6:00 AM		8:00 AM		4:00 PM		10:00 PM		Day/evening time only
Tuesday	6:00 AM		8:00 AM		4:00 PM		10:00 PM		Day/evening time only
Wednesday	6:00 AM		8:00 AM		4:00 PM		10:00 PM		Day/evening time only
Thursday	6:00 AM		8:00 AM		4:00 PM		10:00 PM		Day/evening time only
Friday	6:00 AM		8:00 AM		4:00 PM		11:30 PM		Day/evening time only
Saturday	8:00 AM *		8:00 AM *		8:00 AM *		11:59 PM *		Day time only
Sunday	12:00 AM *		12:00 AM *		12:00 AM *		11:59 PM *		Occupied all day

*Programming consecutive events to the same time will cause the thermostat to choose the last event as the time at which it will set its schedule. In the above example for Saturday, the thermostat will control to the occupied set point from 8:00 AM until 11:59 PM. Since it is desired to be in occupied mode throughout the night, then it is necessary to program the first event on Sunday at 12:00 AM. The thermostat will force a one minute unoccupied period for a one minute period (between 11:59 PM and 12:00 AM on Saturday)

H) Clock/Day Settings

Clock set Y/N

This section of the menu permits the user to set the time and day.

Time setting		Day setting		Time format setting	
Time set? Y/N	No next → Yes down ↓	Day set? Y/N	No next → Yes down ↓	12/24hrs set? Y/N	No = exit Yes down ↓
Time 0:00	Use ▲▼ To set value	Day Monday	Use ▲▼ To set value	12/24hrs 12 hrs	Use ▲▼ To set value

J) Schedule hold

Schedule hold Y/N

- This section of the menu permits the user to set a permanent schedule hold, which bypasses the internal thermostat scheduling.
- The permanent schedule hold function is typically used for non-scheduled events that extend for various periods of time.
- Enabling a permanent occupied or permanent unoccupied schedule hold will cancel any active override.
- The use of temporary setpoints during permanent hold is permitted. The duration of the temporary setpoint is as set per the OVERRIDE parameter. Ex. 3 hours

Use ▲▼ to set value, Yes key to confirm

Schedule resume	**Resume regular scheduling** cancels the permanent hold and re-enables the regular programming as set per internal scheduling or as per remote NSB via one of the DI's configured as remote NSB. This action can also by accomplished by using the Resume menu. Any temporary setpoint that are active will be left active for the duration of the period as set per the TOccTime parameter.
Schedule occ hold	**Hold permanent occupied** forces the thermostat into a permanent occupied mode using the occupied setpoints. All timed scheduling functions are by-passed. The PERMANENT OCCUPIED status will appear in the automatic status scroll. The permanent occupied override can be cancelled using the Resume menu. If the menu key is pressed, the Resume schedule menu will appear. Answering Yes to this question will re-enable the regular programmed scheduling as dictated by the current time.
Schedule uno hold	**Hold permanent unoccupied** forces the thermostat into a permanent unoccupied mode using the unoccupied setpoints. All timed scheduling functions are by-passed. The PERMANENT UNOCCUPIED status will appear in the automatic status scroll. The permanent unoccupied override can be cancelled using the Resume menu. If the menu key is pressed, the Resume schedule menu will appear. Answering Yes to this question will re-enable the regular programmed scheduling as dictated by the current time.

3. Installer configuration parameter menu is accessed with the hidden configuration key. Refer to page 4 Fig.7 to see location of CONFIG. key. This menu permits the installer to set the proper parameters for optimum system operation. Not all parameters are used on every model.

There is no help text associated with the installer configuration parameter menu; as is the case with the normal programming menu.

<table>
<tr><th>Configuration parameters</th><th colspan="6">Significance
Default value</th><th>Adjustments</th></tr>
<tr><td>DI 1</td><td colspan="6">Digital input no.1 configuration
Open contact input = function not energized
Closed contact input = function energized
Default value = None</td><td>None, No function will be associated with the input
Rem NSB, remote NSB timer clock input. Will disable the internal scheduling of the thermostat. The scheduling will now be set as per the digital input. The time is still displayed as information, but the menu part related to scheduling is disabled and no longer accessible.
Open contact = occupied setpoints
Closed contacts = unoccupied setpoints
RemOVR Temporary override remote contact. Disables all override menu function of the thermostat. The override function is now controlled by a manual remote momentarily closed contact. When configured in this mode, the input operates in a toggle mode. With this function enabled it is now possible to toggle between unoccupied & occupied setpoints for the amount of time set by parameter (TOccTime) temporary occupancy time. When Override is enabled, an Override status message will be displayed
Filter, a back-lit flashing Filter alarm will be displayed on the thermostat LCD screen when the input is energized
Service, a back-lit flashing Service alarm will be displayed on the thermostat LCD screen when the input is energized</td></tr>
<tr><td>DI 2</td><td colspan="6">Digital input no. 2 configuration
Default value = None</td><td>Same as above. It is possible to configure both inputs to have the same function.</td></tr>
<tr><td>lockout</td><td colspan="6">Keypad lockout levels
Default value = 0 No lock</td><td>0 = No lock
1 = Low level
2 = High level</td></tr>
<tr><td>Level</td><td>Resume to scheduling</td><td>Temperature setpoints</td><td>System mode setting</td><td>Fan mode setting</td><td>Schedules setting</td><td>Clock setting</td><td>Permanent hold</td></tr>
<tr><td></td><td>Resume sched Y/N</td><td>RoomTemp set Y/N</td><td>Sys mode set Y/N</td><td>Fan mode set Y/N</td><td>Schedule set Y/N</td><td>Clock set Y/N</td><td>Schedule hold Y/N</td></tr>
<tr><td>0</td><td>Yes access</td><td>Yes access</td><td>Yes access</td><td>Yes access</td><td>Yes access</td><td>Yes access</td><td>Yes access</td></tr>
<tr><td>1</td><td>Yes access</td><td>No access</td><td>Yes access</td><td>Yes access</td><td>No access</td><td>Yes access</td><td>Yes access</td></tr>
<tr><td>2</td><td>No access</td><td>No access</td><td>No access</td><td>No access</td><td>No access</td><td>Yes access</td><td>No access</td></tr>
<tr><td>pwr del</td><td colspan="6">Power-up delay
Default value = 10 seconds</td><td>On initial power up of the thermostat (each time 24 Vac power supply is removed & re-applied) there is a delay before any operation is authorized (fan, cooling or heating). This can be used to sequence start up multiple units / thermostat in one location.
10 to 120 seconds</td></tr>
</table>

Frost pr	Frost protection enabled Default value = **Off** On **heat pump** models the system mode will be forced to EMERGENCY mode if frost protection is activated	**Off:** no frost protection **On:** frost protection enabled in all system mode 42 °F (5.6 °C) Frost protection is enabled even in system **Off** mode **Off or On**
heat max	Maximum heating setpoint limit Default value = **90 °F (32 °C)**	Maximum occupied & unoccupied heating setpoint adjustment. Heating setpoint range is: **40 to 90 °F (4.5 to 32.0 °C)**
cool min	Minimum cooling setpoint limit Default value = **54 °F (12 °C)**	Minimum occupied & unoccupied cooling setpoint adjustment. Cooling setpoint range is: **54 to 100 °F (12.0 to 37.5 °C)**
anticycle	Minimum on/off operation time for stages Default value = **2 minutes** Anti-short cycling can be set to 0 minutes for equipment that posses their own anti cycling timer. Do not use that value unless the equipment is equipped with such internal timer. Failure to do so can damage the equipment.	Minimum On/Off operation time of cooling & heating stages. ***IMPORTANT,*** *anti-short cycling can be set to 0 minutes for equipment that posses their own anti cycling timer. Do <u>not</u> use this value unless the equipment have such internal timer. Failure to do so can damage the equipment.* **0, 1, 2, 3, 4 & 5 minutes**
Heat cph	Heating stages cycles per hour Default value = **4 C.P.H.** **For multi stage models, heat cph applies to W1 & W2** **For heat pump models, heat cph applies to W1 only (Emergency heat)**	Will set the maximum number of heating stage cycles per hour under normal control operation. It represents the maximum number of cycles that the equipment will turn ON and OFF in one hour. Note that a higher C.P.H will represent a higher accuracy of control at the expense of wearing mechanical components faster. **3, 4, 5, 6,7 & 8 C.P.H.**
cool cph	Cooling stages cycles per hour Default value = **4 C.P.H.** **For multi stage models, cool cph applies to Y1 & Y2** **For heat pump models, cool cph applies to Y1 & Y2 in cooling and heating independently of the reversing valve position**	Will set the maximum number of cooling stage cycles per hour under normal control operation. It represents the maximum number of cycles that the equipment will turned on and off in one hour. Note that a higher C.P.H will represent a higher accuracy of control at the expense of wearing mechanical components faster. **3 or 4 C.P.H.**
deadband	Minimum deadband Default value = **2.0 °F (1.1 °C)**	Minimum deadband value between the heating and cooling setpoints. If modified, it will be applied only when any of the setpoints are modified. **2, 3 or 4 °F (1.0 to 2.0 °C)**
fan cont	Fan control Default value = **On** **For multi stage models, fan control applies to W1 & W2** **For heat pump models, fan control applies to W1 only (Emergency heat)**	Fan control in heating mode. When selecting **On**; the thermostat in all cases will always control the fan (terminal G). Valid for On or Auto fan mode When selecting **Off**; the fan (terminal G), when heating stages (terminals W1 & W2) are solicited, will not be energized. The fan in this case will be controlled by the equipment fan limit control. Valid only for Auto fan mode. On fan mode will leave the fan always on. **On or Off**

fan del	Fan delay Default value = **Off**	Fan delay extends fan operation by 60 seconds after the call for heating or cooling ends. Valid only for Auto fan mode. “On” fan mode will leave the fan always on. **Off or On**
TOccTime	Temporary occupancy time Default value = **3 hours**	This parameter set the duration of the temporary setpoints and the override when the thermostat is in unoccupied mode. This function is enabled with either the arrows (direct access to temporary setpoints), by the menu or by DI1 or DI2 configured as remote override input. **0,1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 12 hours**
cal RS	Room air temperature sensor calibration Default value = **0.0 °F or °C**	Offset that can be added/subtracted to actual displayed room temperature **± 5.0 °F (± 2.5 °C)**
cal OS	Outside air temperature sensor calibration Default value = **0.0 °F or °C**	Offset that can be added/subtracted to actual displayed outside air temperature **± 5.0 °F (± 2.5 °C)**
H stage	Number of heating stages. Applicable to 2 stage models only Default value = **2 stages** **For heat pump models, H stage is limited to 1 stage only (W1 – Aux. Heat)**	Will revert the operation of 2 stages thermostat to single stage operation only when the second heating step is not needed. **1 or 2 stages**
C stage **Or** HP stage	Number of cooling stages 2 stages model only Default value = **2 stages** **For heat pump models, HP stage selects the number of compressor stages**	Will revert the operation of 2 stage thermostat to single stage operation only when the second cooling step is not needed. **1 or 2 stages**
H lock	Outside air temperature heating lockout Default value = **120 °F (49 °C)**	Disables heating stage operation based on outdoor air temperature. Function will only be enabled if OS (outside air temperature sensor) is connected. **From -15 °F up to 120 °F (-26 °C up to 49 °C)**
C lock	Outside air temperature mechanical cooling lockout. Default value = **-40 °F (-40 °C)**	Disables cooling stage operation based on outdoor air temperature. On economizer model, free cooling will not be disabled by this function. Function will only be enabled if OS (outside air temperature sensor) is connected. **From -40 °F up to 95 °F (-40 °C up to 35 °C)**
2/4event	Number of events configuration Default value = **2 event**	**2 events**, will set up programming for the following Event 1 is for Occupied setpoints Event 2 is for Unoccupied setpoints **4 events**, will set up programming for the following Event 1 is for Occupied setpoints Event 2 is for Unoccupied setpoints Event 3 is for Occupied setpoints Event 4 is for Unoccupied setpoints

<table>
<tr><td>aux cont</td><td>Auxiliary contact configuration
Default value = N.O. normally open</td><td>This contact can be used to energize peripheral devices such as: lighting equipment, exhaust fans, economizers, etc.
This contact will operate in parallel with the internal occupied/unoccupied schedule of the thermostat or the remote NSB contact if DI1 or DI2 is used.
When the system is in OFF mode, the contact will remain in its unoccupied status independently of the occupied / unoccupied schedule.
<table>
<tr><th>Configured</th><th>Contact occupied status</th><th>Contact unoccupied status</th></tr>
<tr><td>N.O.</td><td>Closed</td><td>Opened</td></tr>
<tr><td>N.C.</td><td>opened</td><td>Closed</td></tr>
</table></td></tr>
<tr><td>Prog rec</td><td>Progressive recovery enabled
Default value = Off
Progressive recovery is automatically disabled if DI 1 and / or DI 2 are configured remote NSB</td><td>Off, = no progressive recovery
The programmed occupied schedule time is the time at which the system will restart.
On, = progressive recovery active.
The programmed occupied schedule time is the time at which the desired occupied temperature will be attained. The thermostat will automatically optimize the equipment start time.
In any case, the latest a system will restart is 10 minutes prior to the occupied period time.</td></tr>
</table>

Heat Pump models only		
high bp	High balance point Default value = **90 °F (32.0 °C)** Function will only be enabled if OS (outside air temperature sensor) is connected.	In *Heating or Auto mode*, it is the outside air temperature value at which the auxiliary heat will be cut off. Above that value, only the heat pump will be used to maintain the heating setpoint **34 to 90 °F (1.0 to 32.0 °C)**
low bp	Low balance point Default value = **-12 °F (-24 °C)** Function will only be enabled if OS (outside air temperature sensor) is connected.	In *Heating, Cooling or Auto mode*, it is the outside air temperature value at which the heat pump operation will be cut off. Below that value, only the auxiliary heat will be used to maintain the heating setpoint **-40 to 30 °F (-40 to -1.0 °C)**

Note:
When the outside air sensor is not connected or is shorted, the thermostat bypasses:

- The heating lockout
- The cooling lockout
- The low balance point
- The high balance point

Emergency mode bypasses heating lockout and permits auxiliary heating whenever a heating demand occurs.

comf/eco	Comfort or economy mode Default value = **Comfort**	Sets the operation and interaction mode of the heat pump with the auxiliary heat. **Comfort mode**. In *Heating mode.* If the heat pump is not able to satisfy the heating setpoint, the auxiliary heat will be energized to satisfy the same heating setpoint. **Economy mode**. In *Heating mode.* If the heat pump is not able to satisfy the heating setpoint, the auxiliary heat will be energized to satisfy only when the temperature has dropped 2.0 °F (1.1 °C) below the heating setpoint. Selecting economy mode will add a deadband between the heatpump & auxiliary heat in heating mode. The actual temperature maintained will be lower than the true heating setpoint to maximize the heat pump operation. When the outdoor air temperature drops below the *low balance point,* the deadband will be eliminated and the auxiliary heat will maintain the true heating setpoint alone. **Economy mode**. In *Emergency mode.* If *Emergency heat mode* is selected, the setpoint maintained, will be the heating setpoint.
re valve	Reversing valve operation O/B Default value = **O**	Heat pump reversing valve operation **O** will energize the valve in cooling operation. **B** will energize the valve in heating operation **O or B**
comp/aux	Compressor/auxiliary interlock Default value = **Off**	Sets the operation and interaction mode of the heat pump with the auxiliary heat. **Interlock Off**. In *Heating mode.* If the heat pump is not able to satisfy the heating setpoint, the auxiliary heat will be energized at the same time as the heat pump stage. Typically applies when the air handler heat pump coil is installed before the auxiliary heat. (all electric systems) **Interlock On**. In *Heating mode.* If the heat pump is not able to satisfy the heating setpoint, the auxiliary heat will be energized and the heat pump will be cut off. Typically applies when the air handler heat pump coil is installed after the auxiliary heat. (add on systems) There is a 2 minute delay to restart the heat pump, when the auxiliary heat is shut down **Off or On**

<table>
<tr><th colspan="3">Economizer Model only</th></tr>
<tr><td>chngstpt</td><td>Changeover setpoint

Default value = 55 °F (13.0 °C)</td><td>In Cooling mode.
The outside air temperature value at which the cooling will be switched over from mechanical (compressor) to free cooling (economizer)
14 to 70 °F (-10.0 to 21.0 °C)</td></tr>
<tr><td>min pos</td><td>Minimum position

Default value = 0%

<table>
<tr><th>Outside air percentage</th><th>0%</th><th>5%</th><th>10%</th><th>15%</th><th>20%</th><th>25%</th><th>30%</th></tr>
<tr><td>Setting for 0-10 Vdc Autuator</td><td>0%</td><td>5%</td><td>10%</td><td>15%</td><td>20%</td><td>25%</td><td>30%</td></tr>
<tr><td>Setting for 2-10 Vdc Autuator</td><td>0 to 20%</td><td>24%</td><td>28%</td><td>32%</td><td>36%</td><td>40%</td><td>44%</td></tr>
</table></td><td>Outside air damper minimum position.
Will be active only when fan is on (G terminal) and the internal or remote scheduling is in occupied mode.
When internal or remote scheduling is in unoccupied mode and/or fan is off, minimum position will be set to 0%
0 to 100 % = 0 to 10 Vdc output range</td></tr>
<tr><td>C mech</td><td>Mechanical cooling allowed

Default value = Off</td><td>In Cooling mode.
Allows the operation of the mechanical cooling if the free cooling (economizer) cannot maintain the cooling setpoint.

Off Typically applies when the MS (mixed air temperature sensor) is installed after the mechanical cooling refrigeration coils. In this case, mechanical cooling will never operate at the same time as free cooling.

On Typically applies when the MS (mixed air temperature sensor) is installed before the mechanical cooling refrigeration coils in the mixing plenum. In this case, mechanical cooling is allowed when the free cooling (economizer operation) cannot maintain the cooling setpoint.

Off or On</td></tr>
<tr><td>mix stpt</td><td>Mixed air setpoint

Default value = 55 °F (13.0 °C)</td><td>Free cooling mixed air setpoint when economizer mode is enabled.

50 to 90 °F (10.0 to 32.0 °C)</td></tr>
<tr><td>MS dis</td><td>Display mixed air temperature

Economizer model only, only if sensor is installed</td><td>Used as diagnostic / service help to troubleshoot and diagnose economizer operation.</td></tr>
</table>

Troubleshooting guide

All models

Symptom	Possible Cause	Corrective Action
No display on the thermostat	Absent or incorrect supply voltage	1. Check power supply voltage between C & RC to be from 19-30 Vac 2. Check for tripped fuse or circuit breaker
	Overloaded power transformer	Verify that the transformer used is powerful enough (enough VA's) to supply all controlled devices including the thermostat
Keyboard menu does not access all functions	Keyboard locked	Change configuration parameter LOCKOUT to value "0" to access all levels of the menu
Temperature setpoints revert to original value after a certain time period	Temporary setpoint active for a period of time set by parameter TOccTime	To do a permanent change to the setpoints you must enter the menu "RoomTemp Set" and modify the setpoints at desired temperature
Thermostat will not call for heating	Wrong mode selected	Select heating mode
	Thermostat in Unoccupied mode	Select Occupied Hold in Schedule hold or Override to force the thermostat Occupied heating setpoint
	Anticycle delay active	Wait, the anticycling period will end and the equipment will start
	Heating setpoint is satisfied	Raise the Heating setpoint
	Heating lockout attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter H Lock to value 120 °F (49 °C) to by-pass lockout
	Wiring error	1. Start the Fan by forcing the Fan ON mode 2. Put a jumper across terminals RH & W1. The heating should come ON. If it does not, verify wiring and check if a jumper is required between RC & RH
Thermostat will not call for cooling	Wrong mode selected	Select cooling mode
	Thermostat in Unoccupied mode	Select Occupied Hold in Schedule hold or Override to force the thermostat Occupied cooling setpoint
	Anticycle delay active	Wait, the anticycling period will end and the equipment will start
	Cooling setpoint is satisfied	Lower the cooling setpoint
	Cooling lockout attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter C Lock to value -40 °F (-40 °C) to by-pass lockout
	Wiring error	1. Start the Fan by forcing the Fan ON mode 2. Put a jumper across terminals RC & Y1. The cooling should come ON. If it does not, verify wiring
The thermostat will not turn on the fan	Wrong mode selected	1. Start the Fan by forcing the Fan ON mode 2. Put a jumper across terminals RC & G. The fan should come ON. If it does not, verify wiring
	Wiring error	
Digital display shows missing digits or erratic segments	Defective display	Replace thermostat

Troubleshooting guide

Heatpump models

Auxiliary heat does not operate	Wrong mode selected	Select emergency heat mode
	Thermostat in Unoccupied mode	Select Occupied Hold in Schedule hold or Override to force the thermostat Occupied heating setpoint
	Anticycle delay active	Wait, the anticycling period will end and the equipment will start
	Heating setpoint is satisfied	Raise the Heating setpoint
	High Balance point attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter High BP to value 90 °F (32 °C) to by-pass lockout
	Heating lockout attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter H Lock to value 120 °F (49 °C) to by-pass lockout
	Wiring error	1. Start the Fan by forcing the Fan ON mode 2. Put a jumper across terminals RH & W1. The heating should come ON. If it does not, verify wiring and check if a jumper is required between RC & RH
Heat pump does not operate in heating mode	Wrong mode selected	Select heating mode
	Thermostat in Unoccupied mode	Select Occupied Hold in Schedule hold or Override to force the thermostat Occupied heating setpoint
	Anticycle delay active	Wait, the anticycling period will end and the equipment will start
	Heating setpoint is satisfied	Raise the Heating setpoint
	Low Balance point attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter Low BP to value -12 °F (-24 °C) to by-pass lockout
	Heating lockout attained	1. Mode is locked out based on outside air temperature 2. Change configuration parameter H Lock to value 120 °F (49 °C) to by-pass lockout
	Wiring error	1. Start the Fan by forcing the Fan ON mode 2. Put a jumper across terminals RH & W1. The heating should come ON. If it does not, verify wiring and check if a jumper is required between RC & RH
	Wrong reversing valve configuration	1. Wrong selection of parameter Re Valve 2. Select O will energize the valve in cooling operation. Valve is normally heat. 3. Select B will energize the valve in heating operation. Valve is normally cool.

Specifications

Thermostat power requirements:	19-30 Vac 50 or 60 Hz; 2 VA (RC & C) Class 2 RC to RH jumper 2.0 Amps 48 VA maximum
Operating conditions:	0 °C to 50 °C (32 °F to 122 °F) 0% to 95% R.H. non-condensing
Storage conditions:	-30 °C to 50 °C (-22 °F to 122 °F) 0% to 95% R.H. non-condensing
Sensor:	Local 10 K NTC thermistor
Resolution:	± 0.1 °C (± 0.2 °F)
Control accuracy:	± 0.5 ° C (± 0.9 °F) @ 21 °C (70 °F) typical calibrated
Occupied and unoccupied setpoint range cooling:	12.0 to 37.5 °C (54 to 100 °F)
Occupied and unoccupied setpoint range heating:	4.5 °C to 32 °C (40 °F to 90 °F)
Room and outdoor air temperature range	-40 °C to 50 °C (-40 °F to 122 °F)
Proportional band for room temperature control:	Both outputs: 1.1°C (2.0°F)
Digital inputs:	Relay dry contact only across C terminal to DI1 or DI2
Contact output rating:	Each relay output: (Y1, Y2, G, W1, W2 & AU) 30 Vac, 1 Amp. maximum 30 Vac, 3 Amp. in-rush
Economizer analog output rating:	0 to 10 Vdc into 2KΩ resistance min.
Economizer analog output accuracy:	± 3% typical
Wire gauge	18 gauge maximum, 22 gauge recommended
Dimensions:	4.94” x 3.38” x 1.13”
Approximate shipping weight:	0.75 lb (0.34 kg)
Agency Approvals:	
CE (Pending)	EN50081-1:1992 EMC Emission (Pending) EN50082-2:1992 EMC Immunity (Pending)
FCC Class A	Class A computing device, Subpart J of Part 15
cULus	UL873 File E234137 with CCN's XAPX (US) and XAPX7 (Canada).

Drawing & dimensions

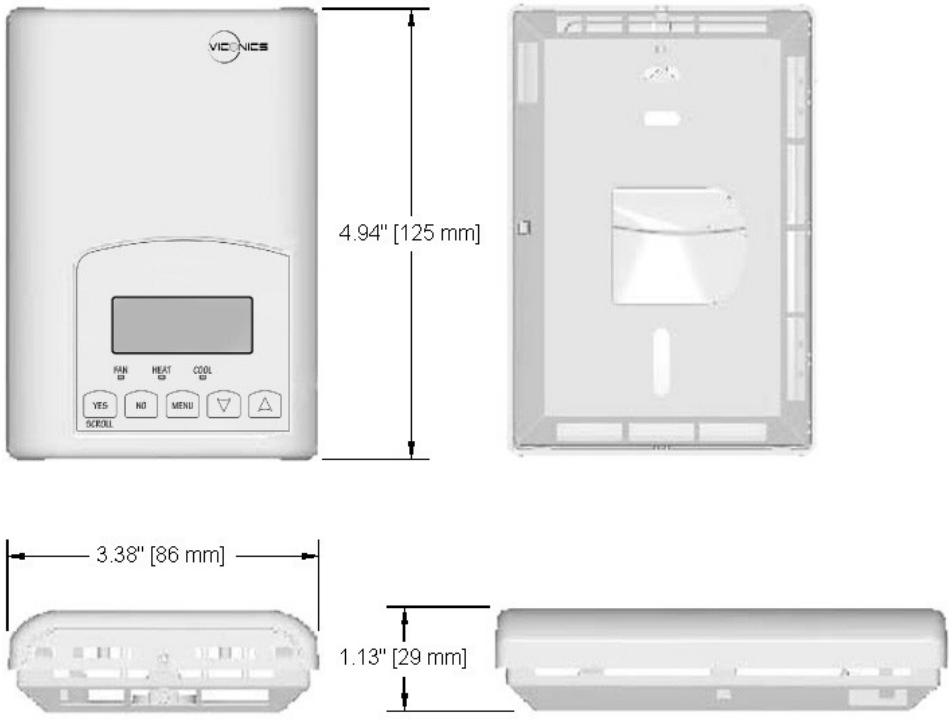


Fig.13 – Thermostat dimensions

Important notice

All T7600 series controls are for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verifications prior to shipment to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user / installer / electrical system designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc…) and/or alarm system to protect the entire system against such catastrophic failures. Tampering of the devices or miss application of the device will void warranty.