

Spartan Peripheral Devices

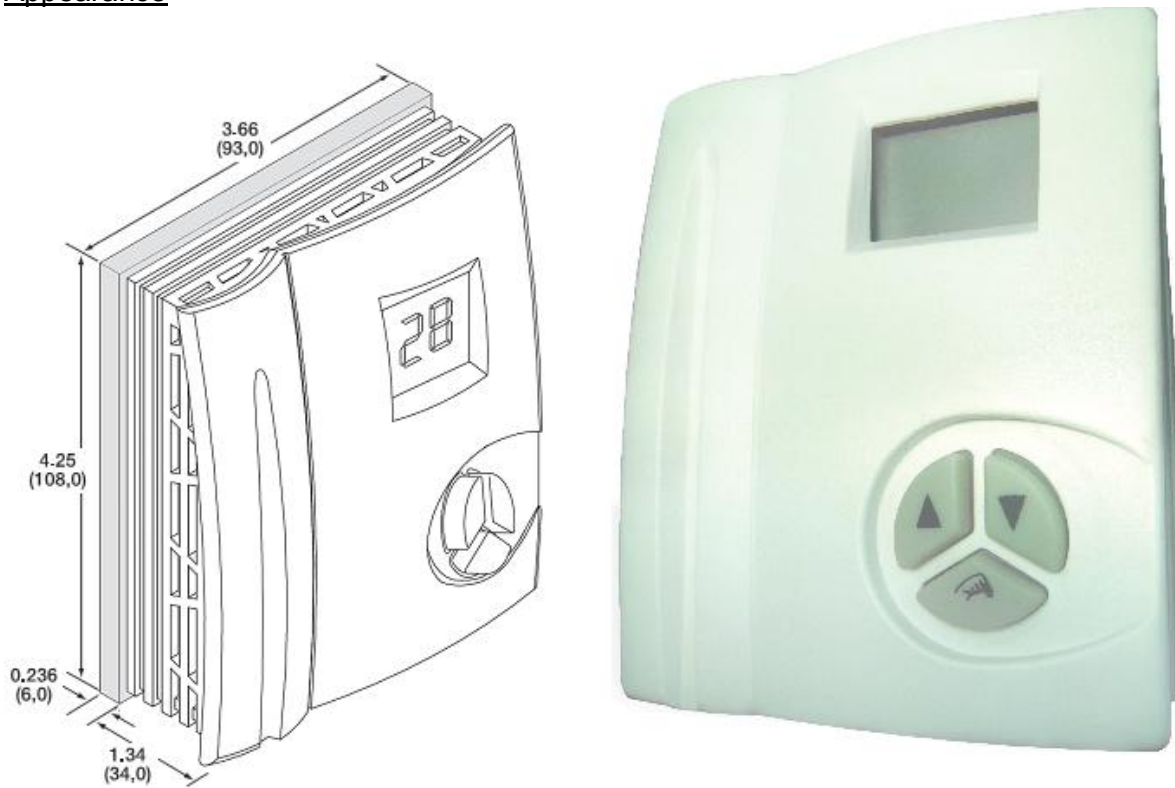
TE110 thermostat Application and Setup

Revision 1.0


Feature List

- Power:
 - 24 Vac \pm 20%, 50Hz / 60Hz
- Measurable temperature range:
 - 0.0 - 40.0°C (0.5 °C resolution) / 32 - 99°F (1°F resolution)
- Controllable temperature range:
 - 10.0 - 32.0°C (0.5°C resolution) / 50 - 90°F (1°F resolution)
- Temperature span:
 - \pm 0.5°C / 1°F
- LCD display:
 - Ambient temperature
 - Set point
 - Heat and Cool Mode icon
 - Backlight works only with increase and decrease button
- 3 Button keys
- Suitable for Heating or Cooling operation
- Internal or External sensor selection
- EEPROM memory
- Economy override mode works with the hand button
- Delay time for relay selectable short no delays, long 4 minutes
- Limited temperature range
- One Heat or One Cool system

Appearance



User Interface

Rubber key	Normal mode	Economy mode	Economy override mode
Up ▲	Increase set point	Economy override	Increase set point
Down ▼	Decrease set point	Economy override	Decrease set point
Hand 		Economy override	Exit override mode

Note: The back light will go on only with Up and Down buttons
Hand button will only work with economy override mode

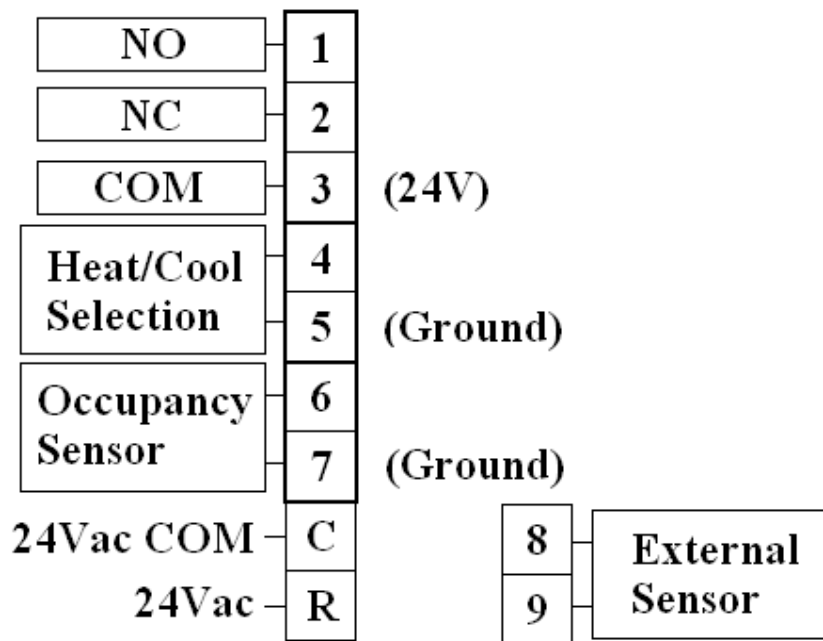
Jumper Selections

	ON	OFF
J1	°F	°C
J2	External Sensor	Internal Sensor
J3	Normal temperature range	Limited temperature range
J4	Long Delay 4 minutes	No Delay

*Please reset power after changing the jumper selection

Input and Output Terminal:

Terminals	Description	Terminal
Power Supply	24 Vac	R
	24 Vac common	C
Input / Output	24 Vac on demand	1
	24 Vac on demand	2
	Common for NC / NO	3
	Heat / Cool selection(Open: Heat, Close: Cool)	4
	Ground for Heat / Cool selection	5
	Occupancy sensor(When open: Normal mode, When closed: Economy mode)	6
	Ground for Occupancy sensor	7
	External Sensor 10K (type 3)	8
	External Sensor 10K (type 3)	9



Operation

Normal mode and Economy mode

When occupancy sensor is open this represents occupied, thermostat will run in normal mode.

When occupancy sensor is closed this represents unoccupied, thermostat will run in economy mode.

When thermostat is running in economy mode, LCD will display 

The set point will increase or decrease by 4°C or 8°F pending on heat or cool mode.

User can not adjust the set point in economy mode

Adjusting the Set point (Jumper 3)

Press ▲ or ▼ button to adjust the set point. The default set point is 20.0°C / 68°F. Set point will flash when key is released and resume displaying ambient temperature after 10 seconds without a key input.

Normal Controllable range:

Temperature unit	Economy (Unoccupied) and Heat	Normal (Occupied)	Economy (Unoccupied) and Cool
°F (1°F resolution)	42 - 82°F	50 - 90°F	58 - 98°F
°C (0.5°C resolution)	6.0 - 28.0 °C	10.0 - 32.0 °C	14.0 - 36.0 °C

Limited temperature range (default setting)

Temperature unit	Economy (Unoccupied) and Heat	Normal (Occupied)	Economy (Unoccupied) and Cool
°F (1°F resolution)	56 - 68°F	64 - 76°F	72 - 84°F
°C (0.5°C resolution)	14.0 - 20.0°C	18.0 - 24.0°C	22.0 - 28.0°C





EEPROM memory

Set point will be saved in the EEPROM. The set point will be loaded back when the thermostat is reset.

Backlight:


Backlight will be provided after pressing ▲ or ▼. This will turn off in 10 seconds once the key has been released.

Economy override:

- Holding  key for 2 seconds to enable economy override, LCD display  and flash
- This function only operates in economy mode; it will go to normal mode for 2 hours. After 2 hours, it will go back to economy mode and the  will stop flashing.
- If normal mode is enabled (occupancy open) during the 2 hour count down, this function will be cancelled and run to normal mode immediately,  will off.

During the 2 hour count down, user can hold ▲ or ▼ to change the set point

If user changes set point in the economy override, the night mode set point will be updated accordingly (economy override mode \pm 4°C / 8°F).

User can hold  key to cancel the economy override.

Heat / Cool Selection

Heat mode is selected when Terminal 4 and 5 is disconnected. 🌡️ will be displayed on LCD (default setting).

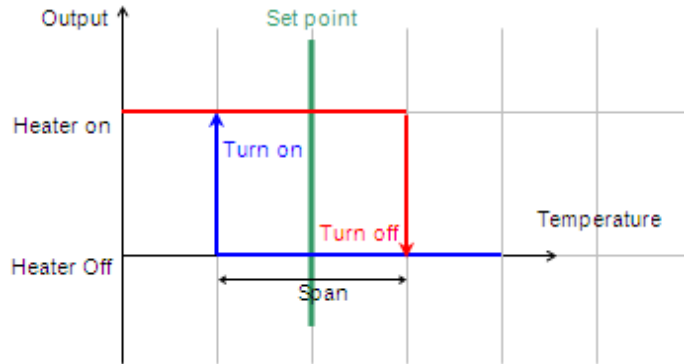
Cool mode is selected when Terminal 4 and 5 is connected. ❄️ will be displayed on LCD.

🌡️ will flash when there is a demand for heat. ❄️ will flash when there is a demand for cooling.

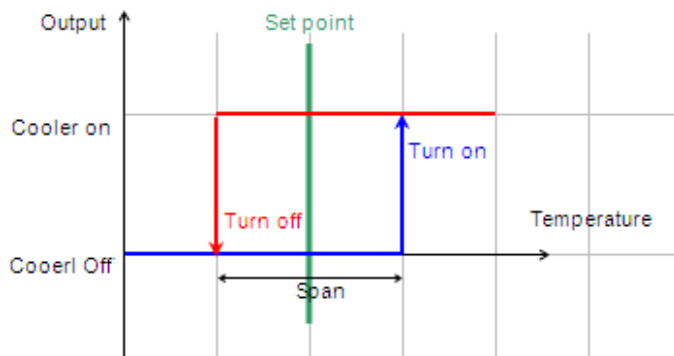
There is 0 minute delay when the mode is changed.

Relay Control (Jumper 4)

For Heat mode:



For Cool mode:



In a heating mode terminal 1 will output 24 Vac on demand for heat

In a cooling mode terminal 1 will output 24 Vac on demand for cooling

On-Off Control

On-Off delay: 0 seconds

Minimum off delay:

Mode selected	Delay mode selected	Minimum OFF delay
Heat	No delay	0 seconds
	Long delay	4 minutes
Cool	No delay	0 minutes

	Long delay	4 minutes
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Temperature Control

Measurable temperature range:

0.0 - 40.0°C (0.5°C resolution) / 32 - 99°F (1°F resolution)

“HI” will be displayed if measured temperature is higher than 40.0°C / 99°F

“LO” will be displayed if measured temperature is lower than 0.0°C / 32°F



will be displayed if measured temperature is equal to or lower than 5°C / 41°F

Feature List

- Relay Output Voltage: 24 VAC 50/60 Hz
- Sensing Element: 103AT
- Temperature Accuracy: +/- 1 °F / 0.5 °C
- Terminals: 2 sq. mm Cable
- Ambient Temperature: 32 – 122 °F / 0 – 50 °C
- Storage Temperature: 23 – 140 °F / -5 – 60 °C
- Ambient Humidity: 5-95%RH non-condensing