

Spartan Peripheral Devices Application Bulletin

TE112H : 2 Stage Electronic Thermostat 24Vac

High Temperature Range for Room and Duct Applications.

High Temperature range room or duct application two stage two position on/off thermostats for controlling 2 Heating or 2 cooling loads in sequence.

1. Product Description

Features

- Power Supply: 24Vac, 50/60Hz, $\pm 20\%$, maximum 3VA
- Output: 24Vac, 5Amp
- Accuracy: $\pm 0.5^{\circ}\text{C}$ / $\pm 1^{\circ}\text{F}$
- Buttons : 3, up and down, backlight
- Sensors: built-in internal or optional external 10K NTC 3 temperature sensor
- LCD: display temperature in $^{\circ}\text{C}$ / $^{\circ}\text{F}$ and set point; heat, cool, hand sign
- Dip switch selection
 1. $^{\circ}\text{C}$ / $^{\circ}\text{F}$ selection
 2. internal/external temperature sensor selection
 3. 1 / 2 / 4 / 6 $^{\circ}\text{C}$ span selection
 4. 1 / 2 / 4 / 6 $^{\circ}\text{C}$ switch differential selection
- Relays: 2 relays
- Set point range: 5~55 $^{\circ}\text{C}$ /40~130 $^{\circ}\text{F}$
- EEPROM for memorizing set point value
- Defrost control

2. Appearance



3. User interface

Rubber Key:

1. up : increase setting temperature
2. down : decrease setting temperature
3. backlight : turns on backlight as long as it is pressed

Dip switches selections:

Pole	OFF (default setting)	ON
1	°C	°F
2	Internal sensor	External Sensor
3	Limited set point range	Normal set point range
4	Span selection	
5		
6	Differential selection	
7		

Stage 1 Span selection (relative to the set point)

Span value	Pole 4	Pole 5
1°C	Off	Off
2°C	Off	On
4°C	On	Off
6°C	On	On

Stage 2 Differential selection

Differential value	Pole 6	Pole 7
1°C	Off	Off
2°C	Off	On
4°C	On	Off
6°C	On	On


Note: Factory default set to Span 4°C Differential 2°C


4. Temperature Control

Adjust set point

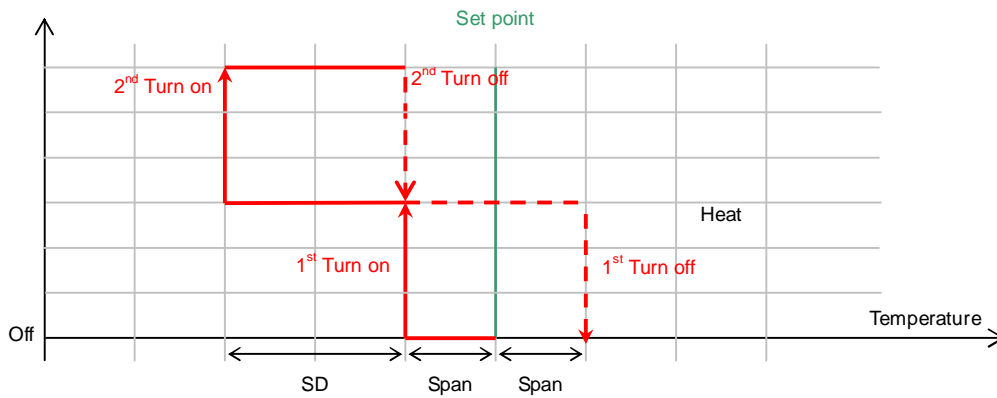
- Press up to increase set point value
- Press down to decrease set point value
- When changing set point, backlight turns on and hand sign is shown on LCD
- Backlight automatically turned off after idling for 10 seconds and LCD will display ambient temperature

Relay on-off control

If 1st stage heater is turned on, heat sign  will be shown on the LCD

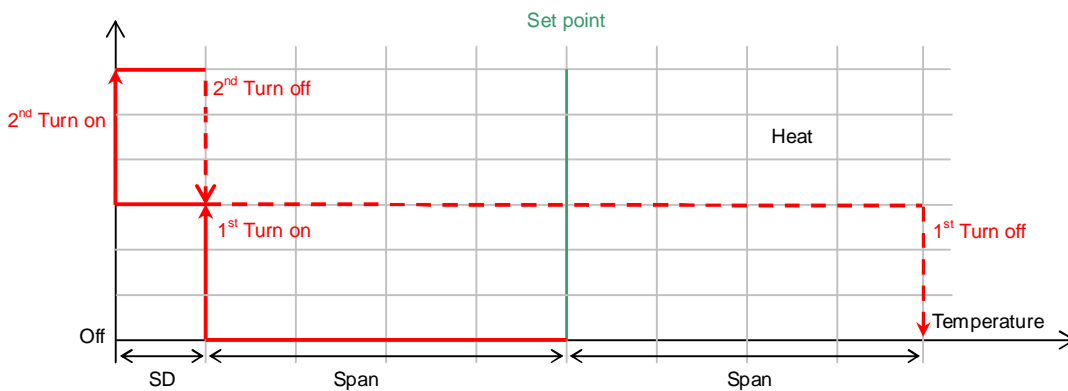
If 2nd stage heater is turned on, heat sign  will be flash on the LCD

Heat Mode:



Example for Heating: (Set point = 25 °C, Span = 1 °C, Switch Differential = 2 °C)

- 1st stage heater turns on when room temp is 24 °C and off at 26 °C.
- 2nd stage heater turns on when room temp is 22 °C and off at 24 °C.



Example for Heating: (Set point = 25 °C, Span = 4 °C, Switch Differential = 1 °C)

- 1st stage heater turns on when room temp is 21 °C and off at 29 °C.
- 2nd stage heater turns on when room temp is 20 °C and off at 21 °C.

Measurable temperature range:

- 0 – 60 °C (0.5 °C resolution)
- 32 – 140 °F (1 °F resolution)

Controllable temperature range:

- 5.0 – 55.0 °C (0.5 °C resolution)
- 40 – 130 °F (1 °F resolution)

Display LO when temperature below 0 °C / 32 °F

Display HI when temperature above 60 °C / 140 °F

Display -- when there is no sensor detected (only when using external sensor)

Default Heat set point: 20C / 70 °F

Default Cool set point: 25C / 80 °F

Temperature updates every 3 seconds

Temperature control span

- ±0.5 °C / ±1 °F

Defrost control (disregarding set point)

- Defrost indicator ❄️ will be displayed on LCD.
- measured temperature <= 5 °C

5. Operation Specification

- Supply Voltage : 24Vac ± 20%
- Frequency : 50/60 Hz
- Operating temperature : 0 ~ 60 °C
- Storage temperature : -10 ~ 65 °C
- Operating humidity range : 5 ~95%RH non-condensing
- External sensor : External 10K NTC type 3 thermistor