

TE226 On/Off Heating/ Cooling Programmable Digital Temperature Controller with P+I Control for ECM Variable Airflow Fan

Description

The TE226 microprocessor based controller for a Fan Coil Unit is specifically designed to control two On/Off valves in sequence for heating/cooling, and a variable airflow ECM fan. They are fully configurable, standalone 7-Day programmable digital thermostats with optional energy saving input interface.

The thermostat measures the temperature of a room with an integral sensor or with optional 10K external sensor, and then output On/Off signal to control heating and cooling valves, and output 0-10Vdc signal to modulate fan speeds in a fan coil unit system to maintain the room space at a desired set point temperature. The ECM variable airflow fan speed will vary depending on heating or cooling load, and in Run Mode will run continuously when set point is reached delivering minimum CFM as preset by the contractor.

The thermostat features battery-backed real time clock providing separate programming 4 schedules and 4 timers for each day or periods of days of a week. The TE226 controller has a large backlit LCD screen showing room temperature or set point, time, day, and related status. The thermostat also has optional digital inputs for detection devices such as room occupied/unoccupied detector to enhance energy savings.

Features

- Backlit display for clear readability
- Pre-set 7 day program with 4 daily schedules
- On/Off control of heating/cooling output without the possibility of overlap
- Early fine tune function to ensure programmed temperature is reached by scheduled time
- 12- or 24- hour format with battery backed day and time
- Full proportional control for electronically commutated (ECM) fan
- The Fan speed in AUTO mode:
The fan mode can be selected in AUTO in which the fan will deliver variable CFM controlled by the room temperature. It will stop when the set point is reached
- The Fan speed in RUN mode:
The fan CFM is controlled by the room temperature and it will continuously deliver the minimum CFM when the set point is reached
- CFM minimum and maximums can be set on the room thermostat in 'Engineer Mode'
- The ON/OFF button will turn the fan coil unit off and the valves will go to their default position
- Room temperature or setpoint temperature selectable for display
- Full configurable parameters such as switching differential, cycle time, etc are set in 'Engineer Mode'
- Proportional plus integral (PI) algorithm applied for accurate temperature control
- Optional Remote sensor (RS) input interface for connecting to remote temperature sensor
- Optional Energy Saving input (ESI) interface for connecting to hotel card key, occupied/unoccupied sensor, lighting interlock signal or window/door open detection to save energy
- Adjustable unoccupied setpoints for heating and cooling mode control
- Non-volatile memory (EEPROM) retains user settings during power loss
- Adjustable HI/LOW limit set point range
- Agency approval: CE directive 2004/108/EC
Low voltage Class 2 as per UL/CSA standards
- Warranty 2 years



Specifications

- **Supply Voltage:** 24Vac/Vdc (+/-10%), 50/60 Hz
- **Display Range:** 30 to 120.0 °C (-22.0 to 248.0 °F) with suitable sensor
- **Display Temperature Unit Resolution:** 0.1 °C/°F
- **Indication Accuracy:** +/-1.0 °C (1.8 °F) at 25 °C and output off
- **Set-point Range:** 0~50 °C / 32~122 °F (default-10~30 °C /50~86 °F, adjustable), 0.5 °C/°F per setting step
- **Set-point Adjust:** By up and down arrows buttons
- **Fan Button:** To toggle between fan modes Auto/Run
- **Remote Sensor (RS) Input Interface:** For connecting to external NTC Thermistor 10K ohm
- **Energy Savings Input (ESI) Interface:** For saving energy by entering into unoccupied mode when ESI is triggered by Normally open (N.O.) or normally closed (N.C.) dry contact
- **Valve Control:** On/Off output selectable for N.O. or N.C. valves
- **Digital Output Signal:** DO1, Terminal 3 for cooling valve
DO2, Terminal 5 for heating valve
- **Fan Control:** 0-10V modulating output
- **Analog Output Signal:** AO2, Terminal 12 for variable speed ECM fan
- **Dimensions:** 94 × 118 × 34 mm (W × H × D)
- **Mounting:** Mounts directly onto wall, panel, standard 65×65 mm junction box (hole pitch 60 mm) or standard 2×4 inch vertical junction box (hole pitch 83.5 mm)
- **Operating Ambient Temperature:**
0 - 50°C, 5~95% RH (non-condensing)

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Energy Saving Occupied Unoccupied Schedule :

Temperature set point can be programmed for maximum 4 periods for a whole week, 5-2, 5-1-1, or each day.

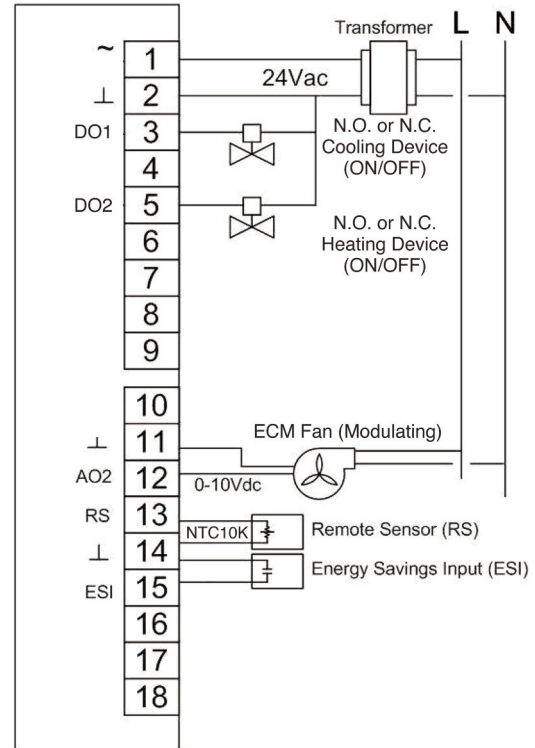
Schedule	Period	Set point
1	Wake	Morning temperature
2	Leave	Daytime temperature
3	Return	Evening temperature
4	Sleep	Night temperature

Default Set Point Schedules - can be easily switched between °F or °C scales.

COOL	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sch. 1 	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C	6:00 26.0°C
Sch. 2 	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C	8:00 29.5°C
Sch. 3 	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C	18:00 26.0°C
Sch. 4 	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C	22:00 26.0°C

HEAT	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sch. 1 	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C	6:00 21.0°C
Sch. 2 	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C	8:00 16.0°C
Sch. 3 	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C	18:00 21.0°C
Sch. 4 	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C	22:00 16.0°C

Wiring Diagram



DO1 Cooling Output on demand for cooling	Parameter E20 Set To:	DO2 Heating Output on demand for heating	Parameter E21 Set To:
0 Vac	0	0 Vac	0
24 Vac	1	24 Vac	1

Energy Saving Input (ESI)

When using optional Energy Saving Input (ESI) interface unoccupied Set Points: Cooling: 28.0°C/ Heating: 15.0°C are adjustable by engineering mode function

Control Performance

TE226 Room Thermostat outputs are as follows:

DO1 – 24Vac On/Off output controlling N.C. or N.O. cooling valve as set in E20.

DO2 – 24Vac On/Off output controlling N.C. or N.O. heating valve as set in E21.

In sequence on-demand with adjustable temperature dead band and time differential to accommodate fast gear type actuators or slow 3 minute thermoelectric (wax) actuators to prevent overlapping heating/cooling.

AO2 – 0-10Vdc proportional plus integral (P+I) adaptive control output controlling ECM variable speed fan on-demand in sequence with heating or cooling flow.

Thermostat Control Outputs

