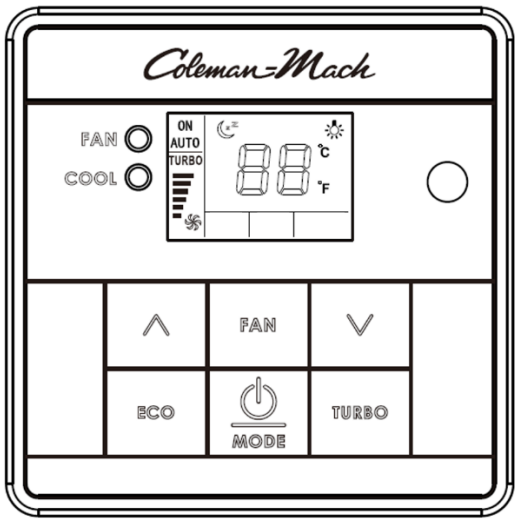
# VS Series Thermostat Application Guide

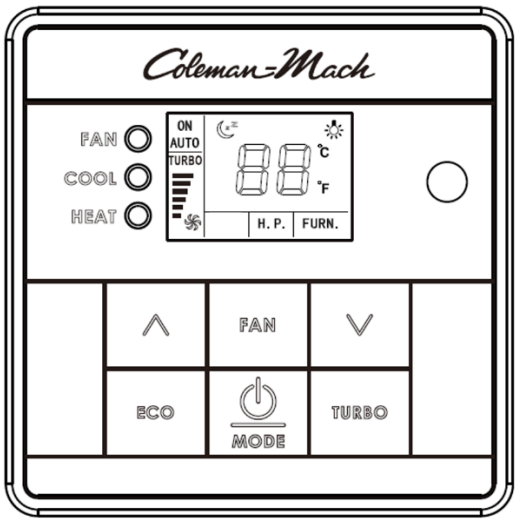
## Thermostat User Guide

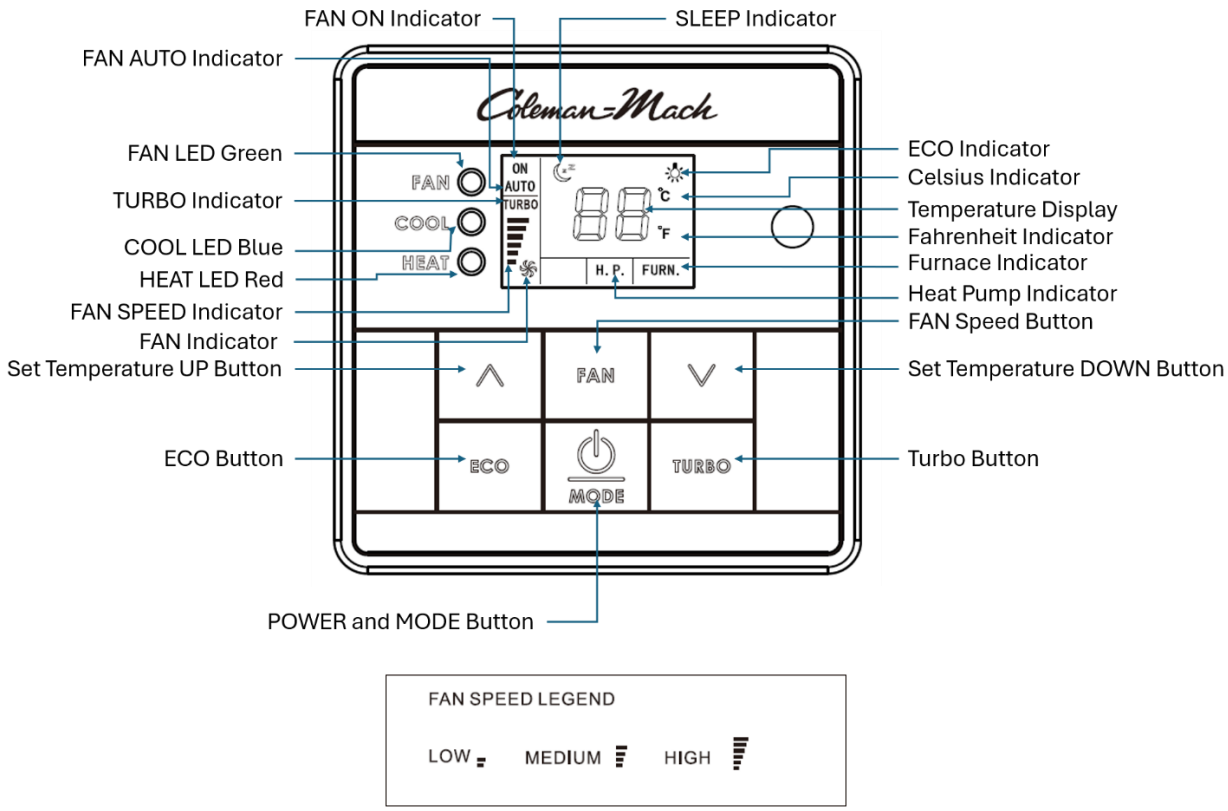
**Model Numbers: 2111-0043 HT/CL, 2111-0045 COOL ONLY, 2111-0059 HT/CL, 2111-0060 COOL ONLY, and 2111A0059 HT/CL**

COOL ONLY




HEAT / COOL






## Basic Operation

**Press the Power/Mode Button** to TURN ON Unit/Thermostat

*Thermostat LCD Backlight and Fan/Cool/Heat LED's will stay illuminated for 15 seconds when turning on or selecting modes*

**Press and Hold the Power/Mode Button for 3 Seconds** to TURN OFF Unit/Thermostat

### With Thermostat Turned ON

**Press the Power/Mode Button** to select Mode of Operation

- **Cool Only:** Fan, Cool, Dry
- **Heat / Cool:** Fan, Cool, Heat (Furnace), Dry, Auto
- **Heat Pump with Gas Heat:** Fan, Cool, Heat (Heat Pump), Heat (Furnace), Dry, Auto
- **Heat Pump without Gas Heat:** Fan, Cool, Heat (Heat Pump), Dry, Auto

**Fan Mode:** Green LED ON

*Indicators on Thermostat: FAN, FAN SPEED, FAN ON, TURBO if Turbo selected, and LIGHT Indicator of ECO selected*

- Press the Fan Button to select Low Speed, Medium Speed, High Speed, Press the Turbo for Turbo Speed, Press ECO for ECO Speed

**Cool Mode:** Blue LED ON

*Indicators on Thermostat: FAN, FAN SPEED, FAN ON or AUTO depending on selection, TURBO if Turbo selected, and LIGHT* *Indicator if ECO selected*

- Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)
- Press the FAN Button to select Low, Medium, High, or Auto: OR Press the TURBO Button for Turbo: OR Press the ECO Button for ECO

**Heat Mode Heat Pump:** Red LED ON

*Indicators on Thermostat: H.P., FAN, FAN SPEED, FAN ON or AUTO depending on selection, TURBO if Turbo selected, and LIGHT* *Indicator of ECO selected*

- Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)
- Press the FAN Button to select Low, Medium, or High: OR Press the TURBO Button for Turbo: OR Press the ECO Button for ECO

**Heat Mode Gas Furnace:** Red LED ON

*Indicators on Thermostat: FURN., FAN, FAN SPEED, FAN ON or IF FAN OFF is selected then only FURN. Indicator will be displayed*

- Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)
- Press the FAN Button to select Low, Medium, High to circulate air with the Rooftop Fan while in Gas Heat Mode or set FAN to off

**Dry Mode:** Green and Blue LED's ON

*Note: Fan Speed Button is Disabled*

*Indicators on Thermostat: FAN, FAN SPEED LOW, FAN ON, TEMPERATURE DISPLAY will flash between dh and Actual Room Temperature*

- Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)

**Auto Mode:** Red and Blue LED's ON

*Indicators on Thermostat: FAN, FAN SPEED, FAN ON, OR AUTO*

- Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)

**Sleep Mode:** In Cooling Mode – Blue LED ON or Heating Mode Red LED ON

*Note: Fan runs in Low Speed, this is locked in by the Rooftop Unit, regardless of the changes made to thermostat or thermostat display, to change fan speeds turn off sleep mode.*

*Indicators on Thermostat: Sleep* *, FAN, FAN SPEED, FAN ON or AUTO depending on selection, TURBO if Turbo selected, and LIGHT*  *Indicator if ECO selected, for Heating Modes: H.P. or FURN.*

- Select Cooling or Heat Mode and Press the UP and DOWN Button to set desired temperature (Setting Max 86 / Min 60)

**Selecting Fahrenheit or Celsius Temperature Display**

- **Press and Hold the UP and DOWN Buttons for 3 Seconds** to switch from F (Fahrenheit) and C (Celsius)

## Modes of Operation

- **Fan Only Modes** **Low and ECO Fan Speeds are the same*.
  - **Low Fan:** Fan Runs Continuously at Low Fan Speed
  - **Medium Fan:** Fan Runs Continuously at Medium Fan Speed
  - **High Fan:** Fan Runs Continuously at High Fan Speed
  - **Turbo Fan:** Fan Runs Continuously at Turbo Fan Speed
  - **ECO Fan:** Fan Runs Continuously at ECO Fan Speed

- **Cooling Modes** **Low and ECO Fan Speeds are the same*
  - **Cool / Low Fan:** Compressor runs in Low Mode / Fan Runs Continuously at Low Fan Speed
  - **Cool / Medium Fan:** Compressor runs in Medium Mode / Fan Runs Continuously at Medium Fan Speed
  - **Cool / High Fan:** Compressor runs in High Mode / Fan Runs Continuously at High Fan Speed
  - **Cool / Auto Fan:** Compressor and Fan will adjust Speeds from Turbo through ECO based on the amount of cooling required as determined by the Thermostat, when Thermostat Set Temperature is met the Compressor and Fan will shut off
  - **Cool / Turbo Fan:** Compressor runs in Turbo Mode / Fan Runs Continuously at Turbo Fan Speed
  - **Cool / ECO Fan:** Compressor runs in ECO Mode / Fan Runs Continuously at ECO Fan Speed

**Please note that this Variable Speed Technology, in all of the above cooling modes, will reduce the compressor speed as the room temperature cools and approaches the set temperature to reduce the compressor cycling.*

- **Heating Modes**

  **Gas Furnace****Note: Only Applicable if Rooftop Unit Air Conditioner or Heat Pump Thermostat is connected to an External Furnace*
  - **Heat / Low Fan:** Gas Furnace operates / Rooftop Unit Fan Runs Continuously at Low Fan Speed
  - **Heat / Medium Fan:** Gas Furnace operates / Rooftop Unit Fan Runs Continuously at Medium Fan Speed
  - **Heat / High Fan:** Gas Furnace operates / Rooftop Unit Fan Runs Continuously at High Fan Speed

- **Heating Modes** **Low and ECO Fan Speeds are the same*
  **Heat Pump** **Note: Only Applicable if Rooftop Unit is Heat Pump Model*
    - **Heat / Low Fan**: Compressor runs in Low Mode / Fan Runs Continuously at Low Fan Speed
    - **Heat / Medium Fan**: Compressor runs in Medium Mode / Fan Runs Continuously at Medium Fan Speed
    - **Heat / High Fan**: Compressor runs in High Mode / Fan Runs Continuously at High Fan Speed
    - **Heat / Auto Fan:** Compressor and Fan will adjust Speeds from Turbo through ECO based on the amount of cooling required as determined by the Thermostat, when Thermostat Set Temperature is met the Compressor and Fan will shut off
    - **Heat / Turbo Fan**: Compressor runs in Turbo Mode / Fan Runs Continuously at Turbo Fan Speed
    - **Heat / ECO Fan**: Compressor runs in ECO Mode / Fan Runs Continuously at ECO Fan Speed

**Please note that this Variable Speed Technology, in all of the above heating modes, will reduce the compressor speed as the room temperature warms and approaches the set temperature to reduce the compressor cycling.*

**Please note that if the Rooftop Unit Outdoor Ambient Temperature measures 25 F, the Heat Pump will shut off and if Gas Furnace is connected the Thermostat will turn on the Gas Furnace and the H.P. indicator will flash 1 sec. ON 1sec. OFF. Heat Pump will be allowed to run again or try to run again when the Rooftop Unit Outdoor Ambient Temperature measures 35 F or if 115 VAC Power is removed and reapplied or if the Thermostat is turned OFF and back ON.*

**Please note that if the Heat Pump has been running for 15 minutes and the room temperature is 5 degrees below set temperature the gas furnace will be turned on, the furnace will shut off when room temperature reaches set point, this is counted as a strike, if the furnace turns on 3 time to accumulate 3 strikes the Heat Pump will be locked out for 2 hours and the furnace becomes primary heat source. Strike counter is reset if the thermostat mode is switched or the Heat Pump reaches 1 degree above room temperature.*

- **Auto Operation**
    - When the outdoor ambient temperature is above (> than 68°F), the unit runs in Cool Mode. The algorithm is same as the Cool Mode.
    - When the outdoor ambient temperature is below (< than 59°F), the unit runs in Heat Mode.
    - When the outdoor ambient temperature is in the range of 59°F to 68°F, the unit runs in FAN Mode.

**Please note that this Variable Speed Technology, in all of the above heating modes, will reduce the compressor speed as the room temperature warms and approaches the set temperature to reduce the compressor cycling.*

- **Sleep Mode**
    - Fan Speed will reduce to Low Speed
    - **Cooling Mode:** The Set Temperature will increase by 2°F after 1 hour, and will increase by another 2°F after 2 hours and then remain stable until removed from Sleep Mode
    - **Heating Mode:** The Set Temperature will decrease by 2°F after 1 hour, and will decrease by another 2°F after 2 hours and then remain stable until removed from Sleep Mode

**Please note that this Variable Speed Technology, in all of the above heating modes, will reduce the compressor speed as the room temperature warms and approaches the set temperature to reduce the compressor cycling.*

- **Dry Mode: Dehumidification**
    - Fan Speed Button is Disabled

**Purpose of the Dry Mode**: Reduce the indoor humidity without significantly lowering the temperature.

**The best time to use Dry Mode:**

During humid weather, such as during rainy days, the spring and fall transition, or in coastal areas, when the air feels damp and sticky, but the temperature isn't high enough to activate the cooling mode of the thermostat.

**How to Activate the Dry Mode:**

Switch to Dry Mode by pressing the Mode button till BOTH FAN (Green) and COOL (Blue) LED's remain ON indicating that the Dry Mode is activated. After 15 seconds of inactivity, the two LED's will turn off and the room temp reading will alternate between room temp and the text "dh" indicating the Dry Mode is activated. The Dry Mode will be active and running till the user changes the mode or turns off the thermostat.

**Description of the Dry Mode:**

When in Dry Mode the thermostat switches from a temperature-based mode to a timing-based mode. In this mode, only the **Compressor and Fan Low** signals will be controlled. When dry mode is selected, the thermostat will compare the current temperature and the set point temperature to determine the length of time to run or pause the compressor and fan. This check happens anytime the dry mode changes state (on-off or off-on) or when the user changes the set point temperature. The table below shows the timing options.

**Error Codes**

**Code Fault Description Cause**

**E1 Room Temperature Sensor Fault**
- The room temperature sensor of the thermostat is damaged or its pins are short-circuited.
  - Replace thermostat

**E2 Indoor Coil Temperature Sensor Fault**
- The indoor coil temperature sensor is damaged or has poor connection.

**E3 External Environment Temperature Sensor Fault**
- The external environment temperature sensor is damaged or has poor connection.

**E4 Outdoor Coil Temperature Sensor Fault**
- The outdoor coil temperature sensor is damaged or has poor connection.

**E5 Compressor Discharge Temperature Sensor Fault**
- The compressor discharging temperature sensor is damaged or has poor connection.

**E6 Input Voltage Fluctuation Is Over 10%**
- Input AC Voltage continues to fluctuate over 10% for 20 seconds during the compressor start sequence. E6 will disappear after showing for 20 seconds and compressor will start after 3 minutes.

**E7 Compressor Discharge Temperature Exceeded 110°C (230°F)**
- The outdoor coil is blocked or refrigerant leak. The recovering temperature is 80°C(176°F)

**E8 Indoor coil temperature is below -12°C(10.4°F)**
- Indoor coil is blocked. The recovering temperature is 7 °C (4 4. 6 °F)

**E9 Communication Fault Between Thermostat and Main Control Board**
- The interface circuit of the thermostat or the drive control board is damaged; or the wiring sequence is wrong; or the thermostat communication wiring has poor connection.

**dE Compressor Drive Fault**
- Check the wire connections to the Compressor Drive PCB and the Compressor. If there are no issues found then the Drive PCB has failed.

**Manual Access of the Error Code on Wall Thermostat**
Press and Hold Turbo button for 5 seconds – The thermostat will display the last error code recorded. If there is no error code, the display will post 00.

## Thermostat Dip Switch Selection <u>2111A0059 ONLY</u>

Switch 1
- On Heat Pump
- Off AC

Switch 2
- On With Furnace
- Off Without Furnace

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