

Goodman®

Air Conditioning & Heating

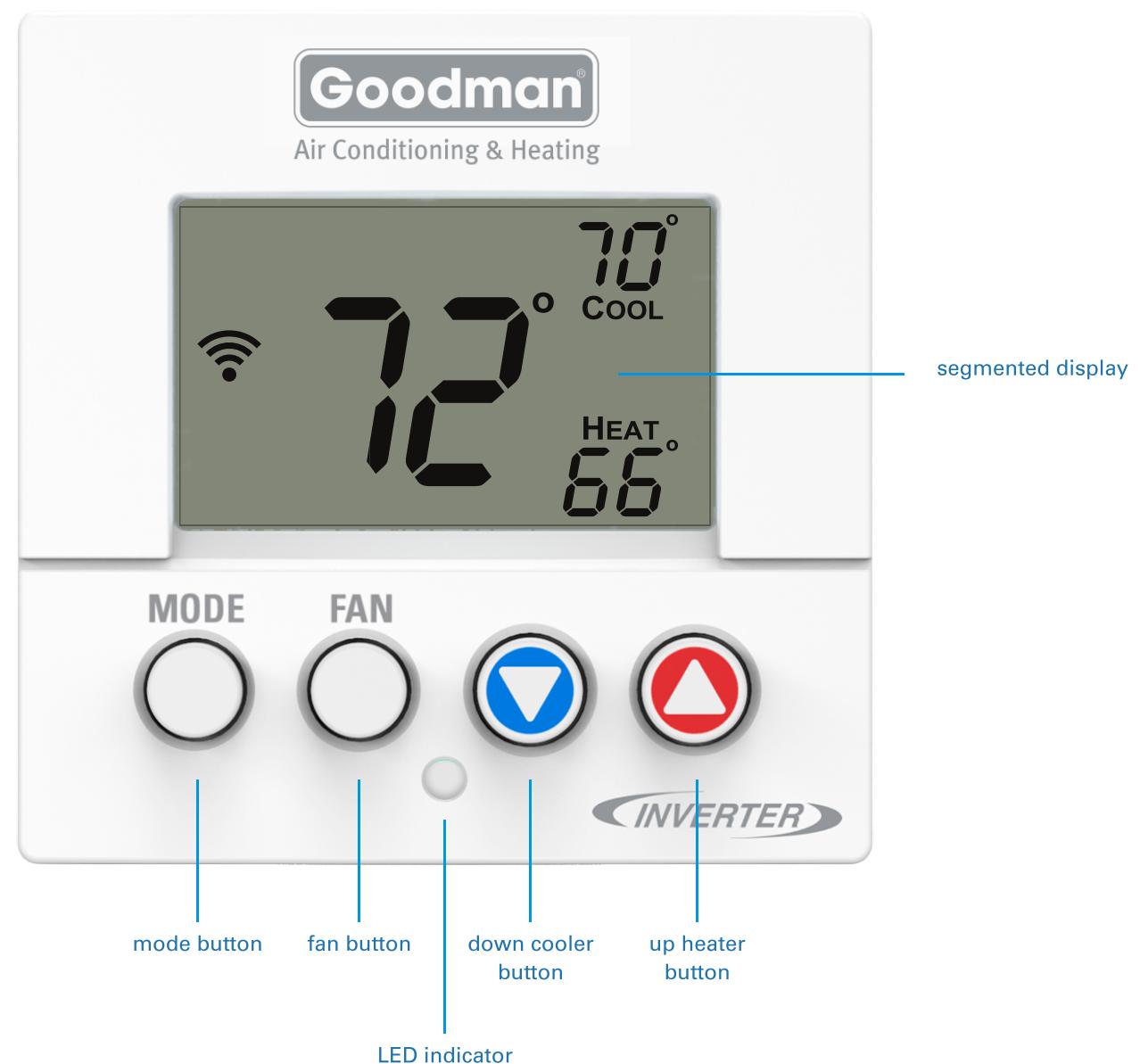


Goodman GTST Connected Thermostat Operational Guide



The Device

Hardware Components



The Device

Limited Segment Display

1. Mode Indicators

Selects the operational mode of the equipment.
HEAT - Indicates the heating mode.
COOL - Indicates the cooling mode.
AUTO - Indicates the system will automatically changeover between heat and cool modes as the temperature varies.
OFF - Indicates heating and cooling are turned off.

2. Clock with Day of the Week

Indicates the current time and day. This clock is also used to program the time period schedules.

3. Room Temperature Display

Indicates current room temperature.

4. Desired Set Temperature

Indicates desired room temperature(s).

5. Morning, Day, Evening & Night icons

Indicates the day part of the time period program.

6. Setup icon

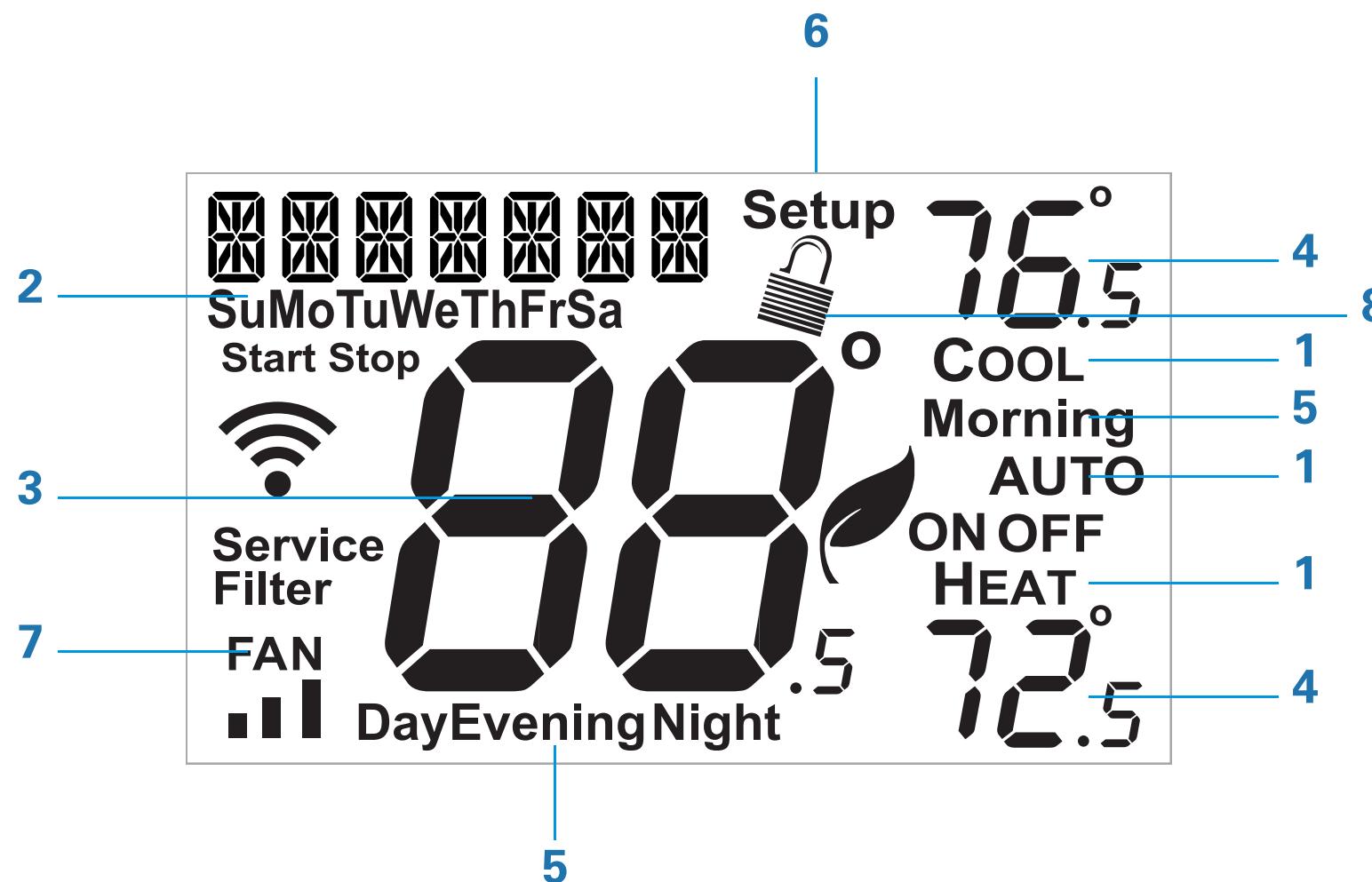
Indicates the thermostat is in the setup mode.

7. Fan icon

When only the Fan icon is displayed, the fan is always on. If the FAN is not on the display, then the FAN is in Auto mode and will run only when necessary to heat or cool.

8. Locked icon

Indicates the thermostat's control buttons have been locked.

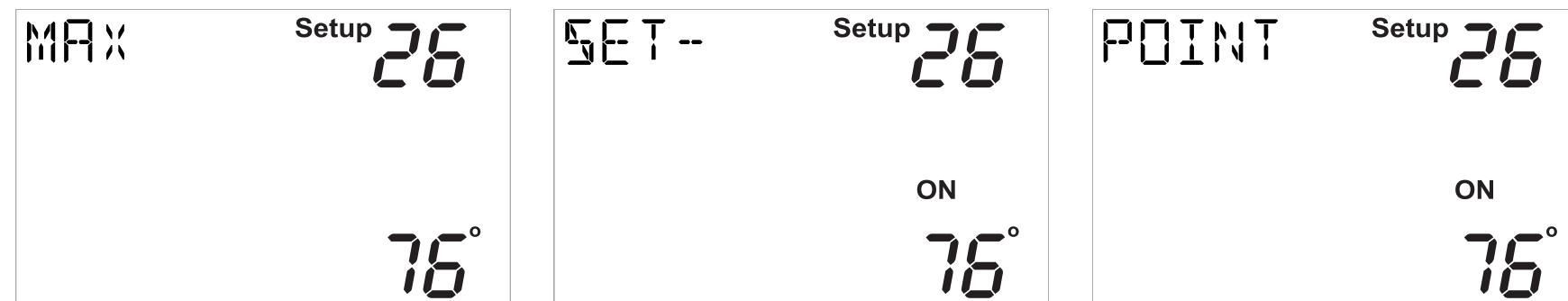


The Device

Message Display Using Seven Characters

The device display includes a seven character fourteen segment display (FSD) in the upper left corner. Messages and menu labels requiring more than seven characters must cycle through the message in chunks.

Each message chunk is displayed for 1 second.
After displaying the last chunk the message starts over from the first chunk unless otherwise stated.



Set point limit part 1

The FSD cycles through the following:

MAX

SET-

POINT

Set point limit part 2

Set point limit part 3

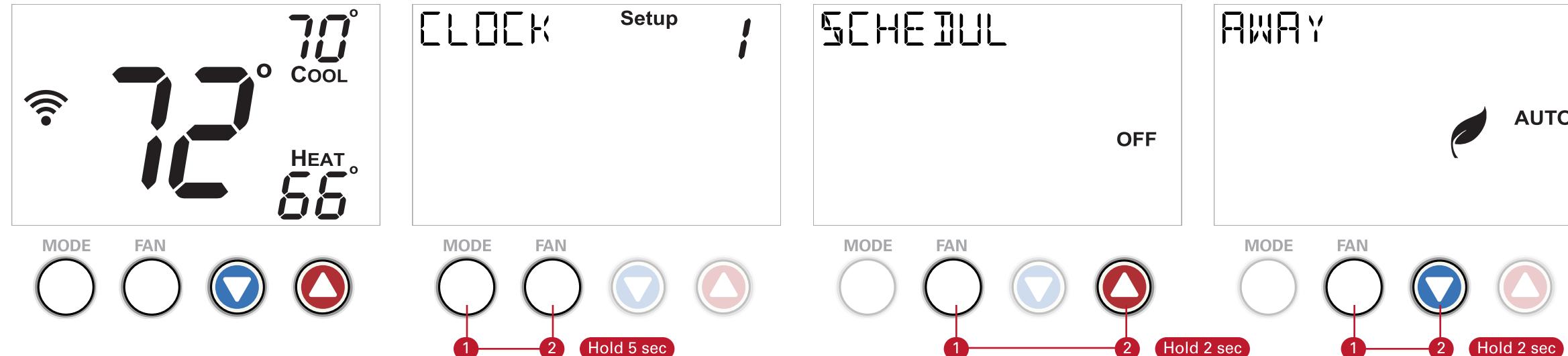
The Device

Entering and exiting alternate modes

Enter configuration and other modes by pressing and holding combinations of buttons.

From any of the settings screens, pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen. (Note that this should not unlock the display if it has been locked.)

At the end of each setting menu sequence the thermostat will return to the primary screen



Primary display

The primary screen displays the current temperature and setpoint or setpoints.

To Enter Menus

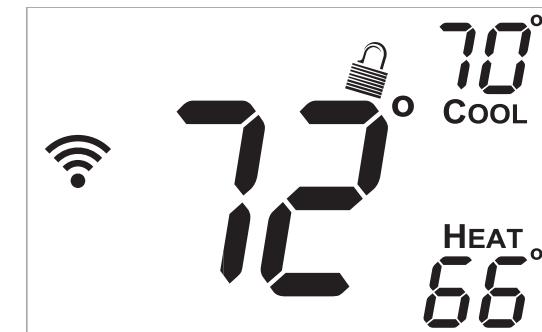
- Setup Steps
- Setting Schedule
- Setting Away
- Lock/Unlock
- Calibration & Reset
- Wireless Setup

Button Press

- MODE & FAN for 5 seconds
- FAN & WARMER (up) for 2 seconds
- FAN & COOLER (down) for 2 seconds
- MODE, WARMER (up) & COOLER (down) for 2 seconds
- MODE & COOLER (down) for 2 seconds, then MODE
- FAN for 5 Seconds

Setup steps

Press and hold mode and fan buttons to for 5 seconds to enter the setup steps menu.

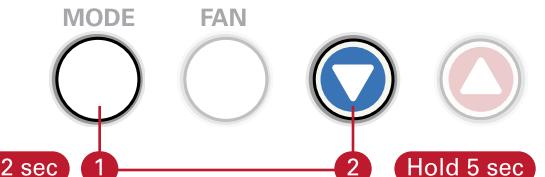
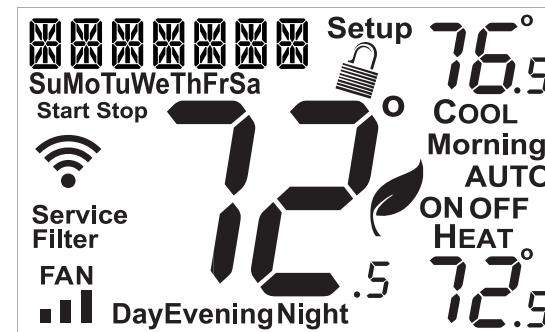


Lock/Unlock the keypad

To disable, or “lock” the keypad, press and hold the mode button. While holding the mode button, press the warmer (up) and cooler (down) buttons together, for two seconds.

Setting the schedule

Press and hold fan and warmer (up) for 2 seconds to configure the schedule.



Calibration & Reset

Press and hold mode and cooler (down) for 5 seconds, then press mode to enter calibration mode.

Wireless

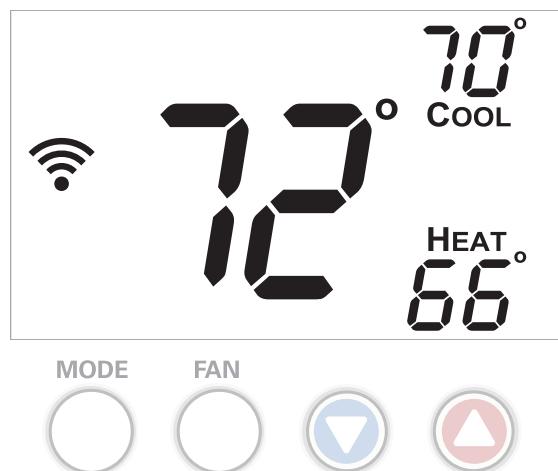


Wireless setup

Press and hold the fan button for 5 seconds to enter the wireless setup menu.

Basic Operation

View current temperature and active setpoints

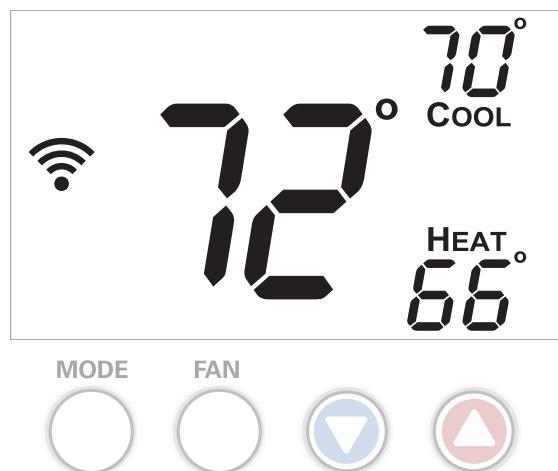


Primary screen

The large number in the center of the display depicts the current temperature. The value in the upper right shows the cool setpoint. The value in the lower right shows the heat setpoint.

Basic Operation

View WiFi status

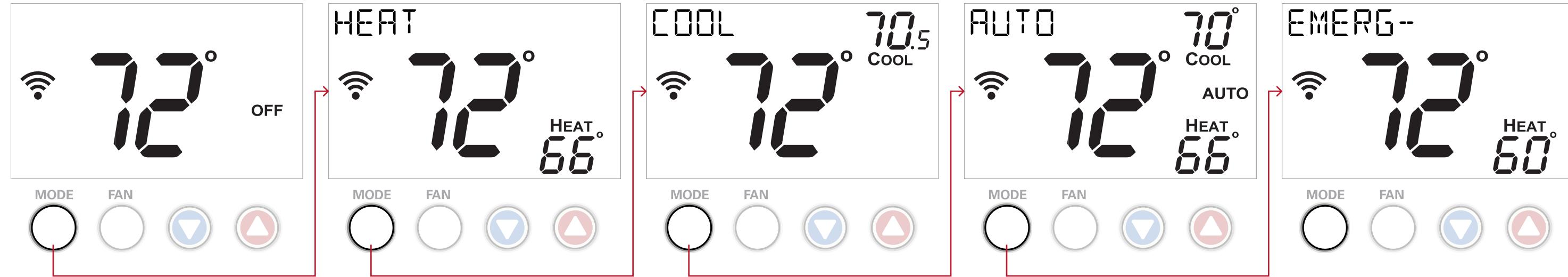


Primary screen

The WiFi signal icon appears when the device is connected to WiFi. The number of concentric arcs signifies the strength of the WiFi connection. More arcs means the connection is stronger.

Basic Operation

Mode Selection



On-screen Display

Pressing the mode button cycles through available modes.

As each mode is selected, its name appears in the FSD in the upper left corner of the display. The text disappears 1 second after the mode is selected.

FSD cycles through the following:

EMERG--
EMCY
HEAT

Basic Operation

Adjust Setpoint

Increasing the temperature

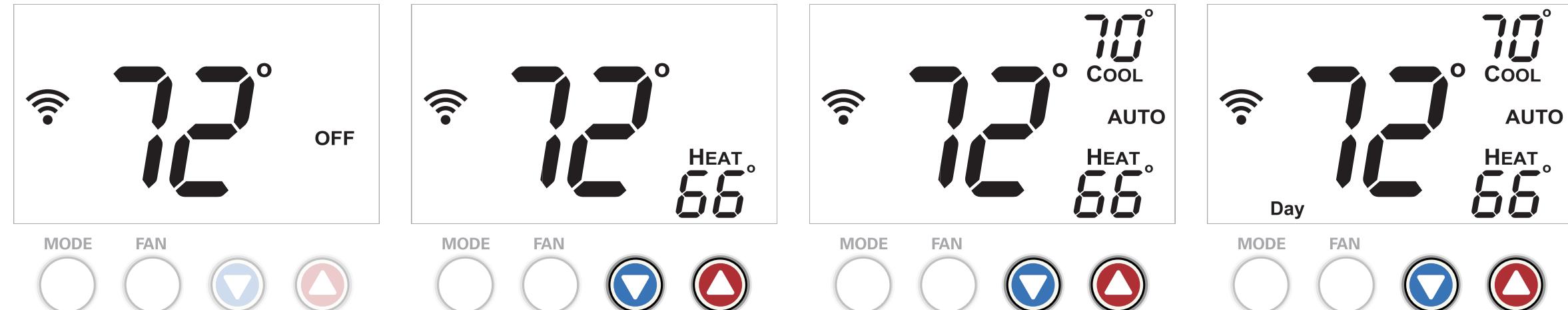
Pressing the warmer (up) arrow button increments the setpoint.

Decreasing the temperature

Pressing the cooler (down) arrow button decrements the setpoint.

Increments and decrements

Button presses increment and decrement the temperature by 1 degree when using Fahrenheit degree units. When using Celsius the temperature increments and decrements by 0.5 degrees.



Off mode

Pressing the warmer (up) and cooler (down) buttons have no effect when the system is off.

Heat or cool mode

When set to heat or cool modes, pressing the warmer (up) button increases the setpoint. Pressing the cooler (down) arrow button decreases the setpoint.

Auto mode

When set to auto mode, pressing the warmer (up) arrow button increases both the heat and cool setpoints. Pressing the cooler (down) arrow button decreases both the heat and cool setpoints.

To adjust heat or cool setpoints individually, switch to heat or cool mode, adjust the setpoint, and then return to auto mode.

When either the cool or heat setpoints hit the top/bottom of the scale the other setpoint will continue to adjust until the setpoint differential is hit.

Schedule mode

When set to schedule mode the arrow buttons increment and decrement the setpoint as usual. Adjustments made this way remain in place until the next schedule event is reached.

For example, say a user has scheduled the system to heat to 68°F during the day period and 72°F in the evening period. If they adjust the temperature to 74°F at 4pm, the system will switch back the scheduled 72°F when at when the evening period begins.

After adjusting the setpoint, the FSD cycles through the following twice:

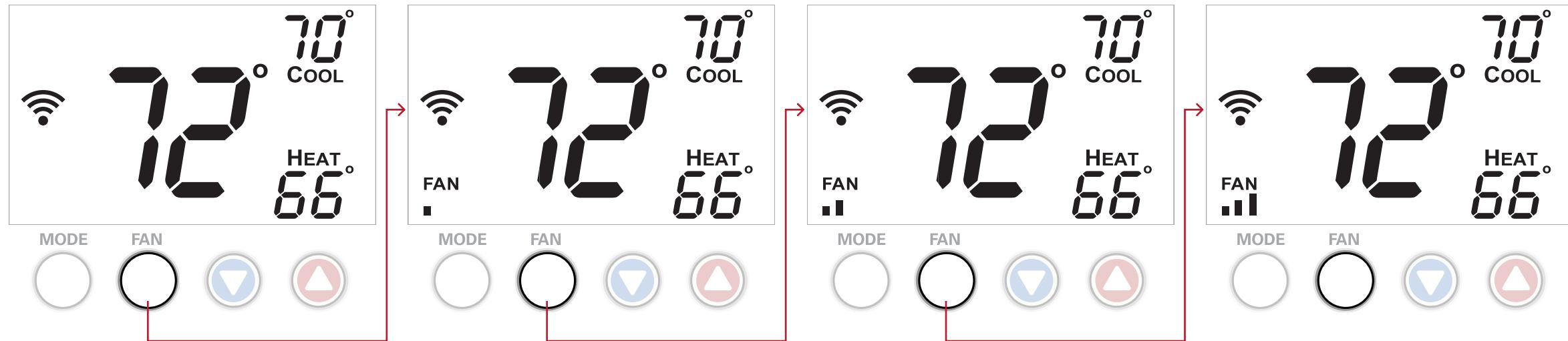
SCHEDULE
WILL
RESUME
AT NEXT
EVENT

Basic Operation

Circulate air

The presence of the FAN segment indicates constant fan operation. You may turn the fan on even if the thermostat is in the OFF mode. Pressing the FAN button toggles this feature on or off.

If the fan is not on the display, then the fan is in auto mode and will run only when necessary to heat or cool.



Fan off

Pressing the fan button turns the fan on—even if the thermostat is in OFF mode.

Fan on - low speed

Pressing the fan button again will cycle through fan speeds.

The bars below the FAN segment indicate fan speed - one bar for low speed.

Fan on - medium speed

Pressing the fan button again will cycle through fan speeds

The bars below the FAN segment indicate fan speed - two bars for medium speed.

Fan on - high speed

Pressing the fan button again will cycle through fan speeds.

The bars below the FAN segment indicate fan speed - three bars for high speed.

Setup Steps

Clock and Day

The first 10 steps are settings the homeowner may want to change. Equipment setup, performed only by the dealer, starts with step 11.

Note:

When the thermostat is connected to WiFi and cloud services, the time and day of the week are controlled by the cloud. There is no local adjustment, the cloud also adjusts the time for Daylight Savings Time as well.

To set the time and day when not connected to the cloud; enter the setup screens by simultaneously pressing the MODE button and FAN button for 2 seconds.

1. Adjust the clock

Use the warmer (up) or cooler (down) buttons to adjust the time.

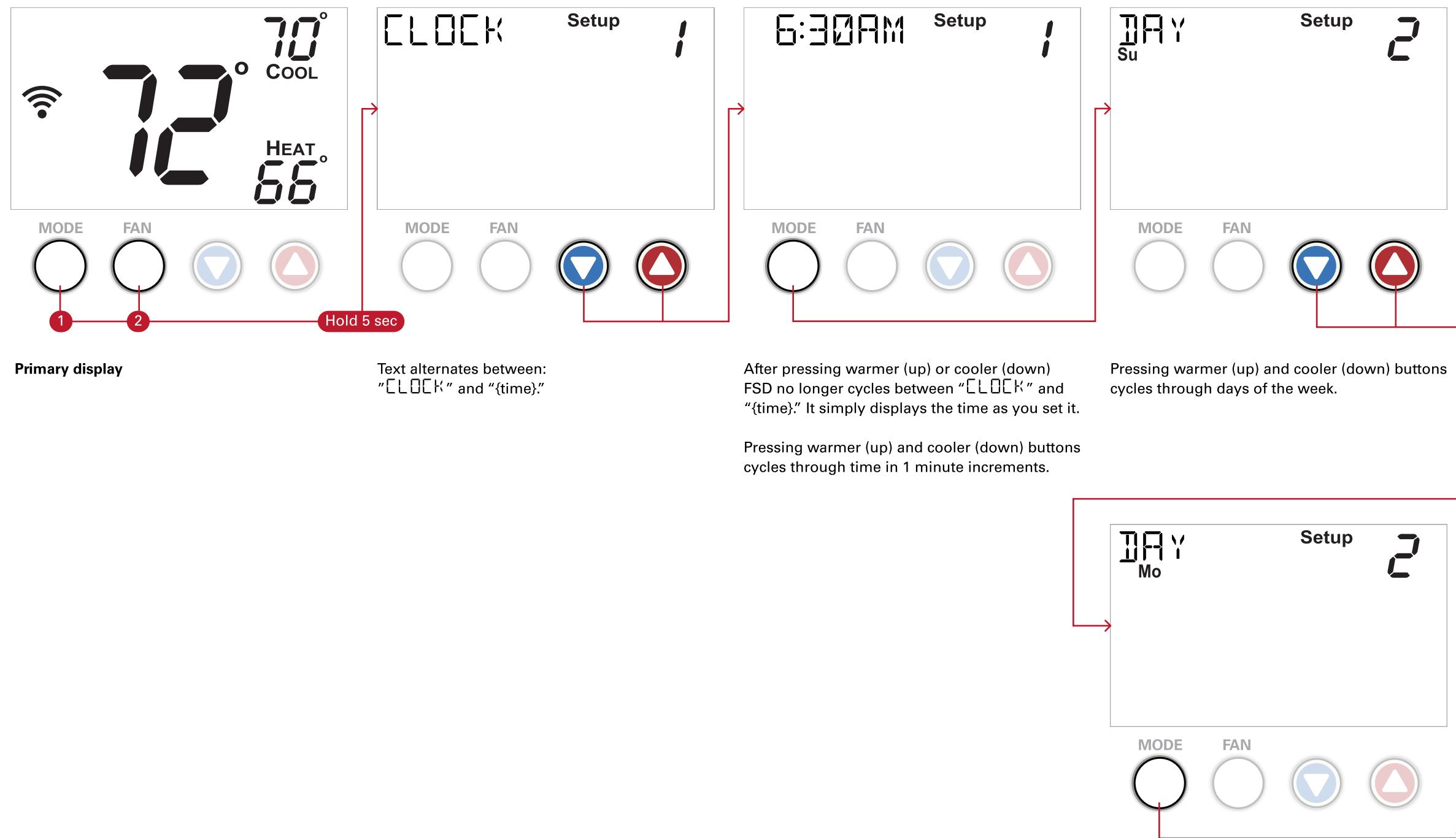
- Press the MODE button to advance to the next step

2. Select the day of the week

Use the warmer (up) or cooler (down) buttons to adjust the current day of the week.

- From any of the settings screens, pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

At the end of each setting menu sequence the thermostat will return to the primary screen.



Setup Steps

Backlight Operation

Pressing the mode button will sequence through setup steps.

3. Backlight

- OFF - Backlight turns on only with a button press and turns off after 8 seconds.
- ON - Backlight is on continuously.

4. Night Mode

Selecting ON allows for turning off the backlight of the display and the light bar during specific times of the day, usually at night.

5. Night Dimmer Start Time

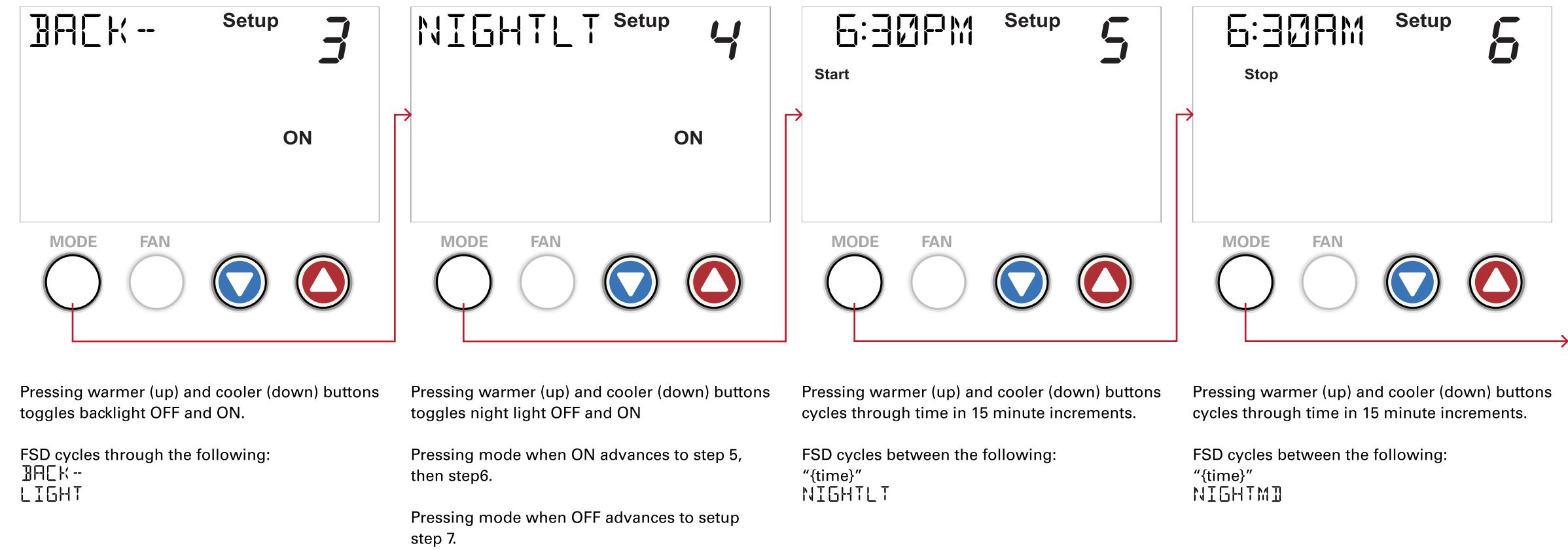
- 12:00 am to 12:00 am

6. Night Dimmer Stop Time

- 12:00 am to 12:00 am

Note:

When night mode is active the backlight and light bar will be turned off, but that when a button is pressed they will turn on for approximately 8 seconds IF they are enabled.



Setup Steps

LED Light / Show Clock

The LED light indicator glows red when the system is heating, blue when the system is cooling, and is otherwise off.

A user may find the colored light distracting, and want to disable it.

7. LED light

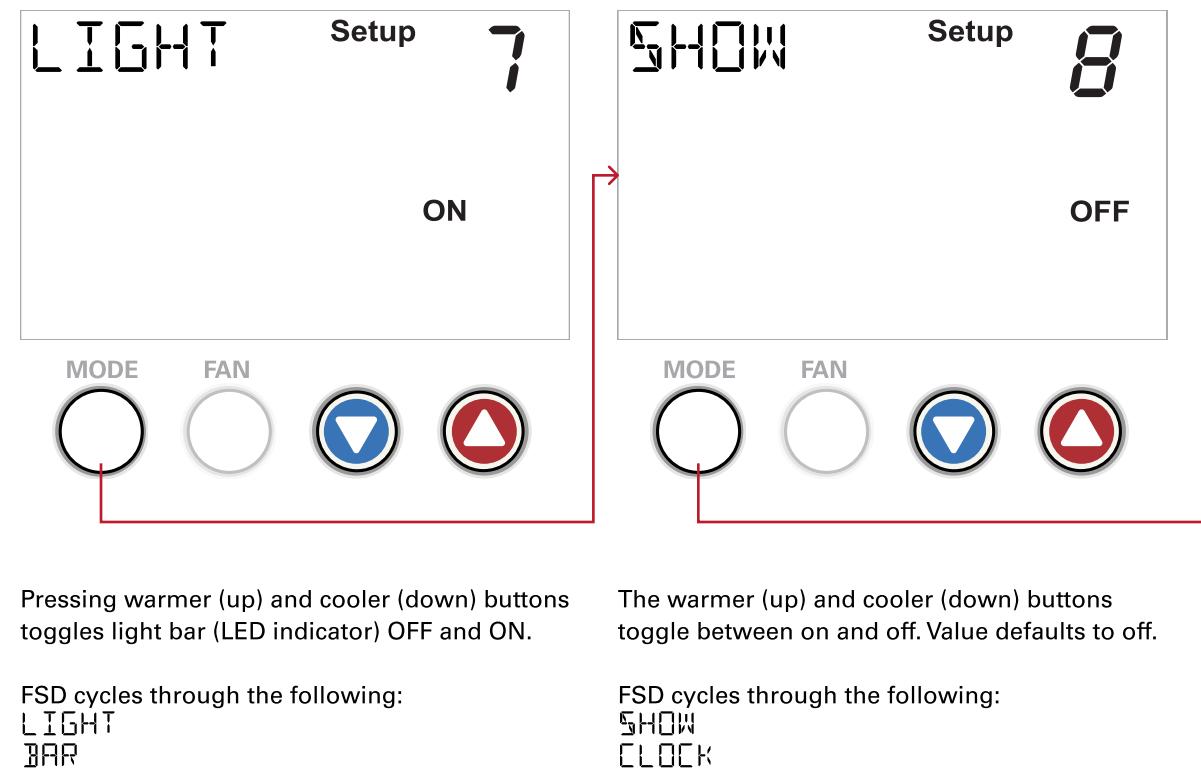
- OFF - Light bar (LED indicator) is always off.
- ON - Light bar (LED indicator) is blue when the system is cooling, red when the system is heating, and is otherwise off.

8. Show clock

This setup step will allow for showing the clock and day of the week on the display on the home screen. Off removes the time and day from the display. On displays them. Value defaults to off.

Note:

When night mode is active the backlight and light bar will be turned off, but that when a button is pressed they will turn on for approximately 8 seconds IF they are enabled.

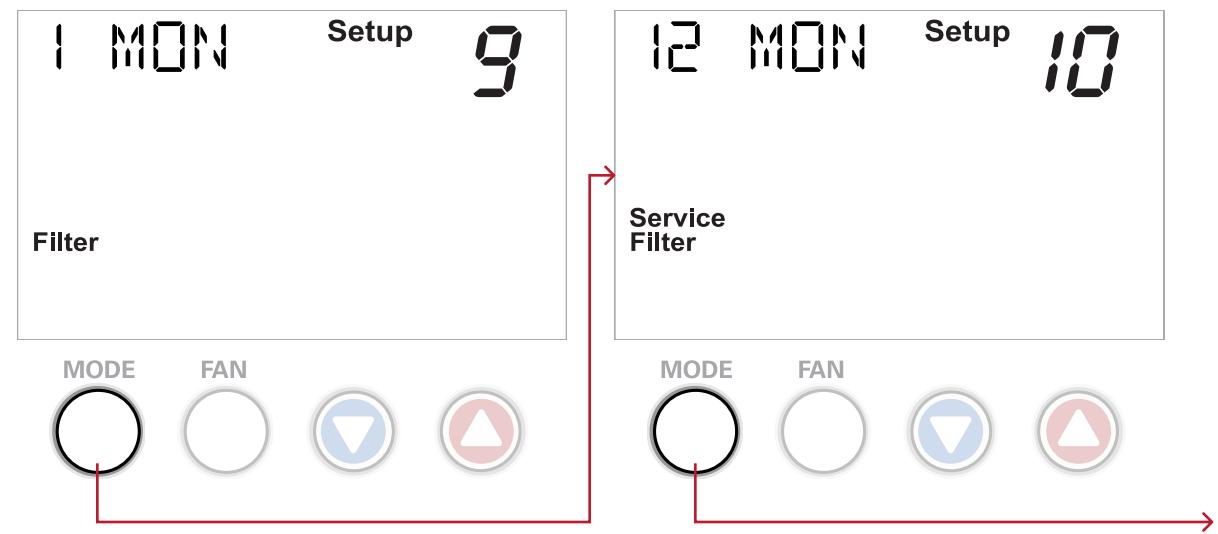


Setup Steps

Service Filter Runtime

9. Current Service Filter Months

This counter displays the total number of months that have elapsed since the counter was reset to help the user track Fan runtime. Press FAN to reset.



FSD shows the number of days since the counter was reset.

Press FAN to reset.

FSD shows the number of days the system will wait before showing a filter service reminder. See page <?> for more information.

Press the warmer (up) and cooler (down) buttons to increment and decrement the value: off, 1, 2, 3, 4, 6, 12 months.

Setup Steps

Fahrenheit or Celsius

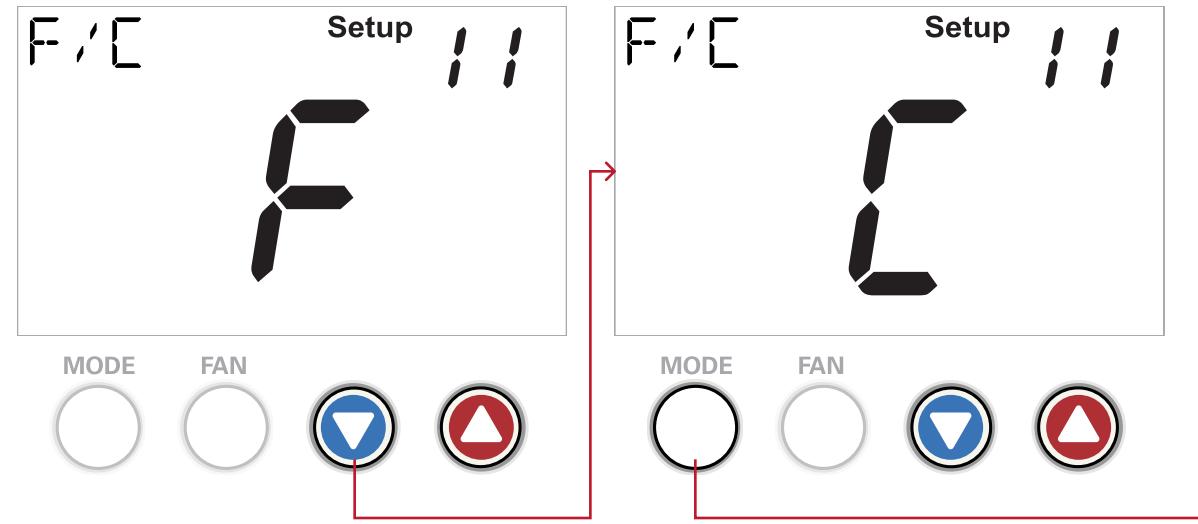
11. Fahrenheit or Celsius

This feature allows the thermostat to display temperature in Fahrenheit or Celsius.

Temperature adjustment increments

When displaying in Fahrenheit all temperature adjustments occur in 1 degree increments.

When displaying in Celsius all temperature adjustments occur in 0.5 degree increments.



The warmer (up) and cooler (down) buttons toggle between F for Fahrenheit and C for Celsius.

FSD cycles through the following:
F / C

Setup Steps

Heater Kit

12.. Heater Kit

For EEV air handlers that have a heater kit, the heater kit size is selected in the thermostat UI and the selection of heater kit sizes depends on the exact model number.

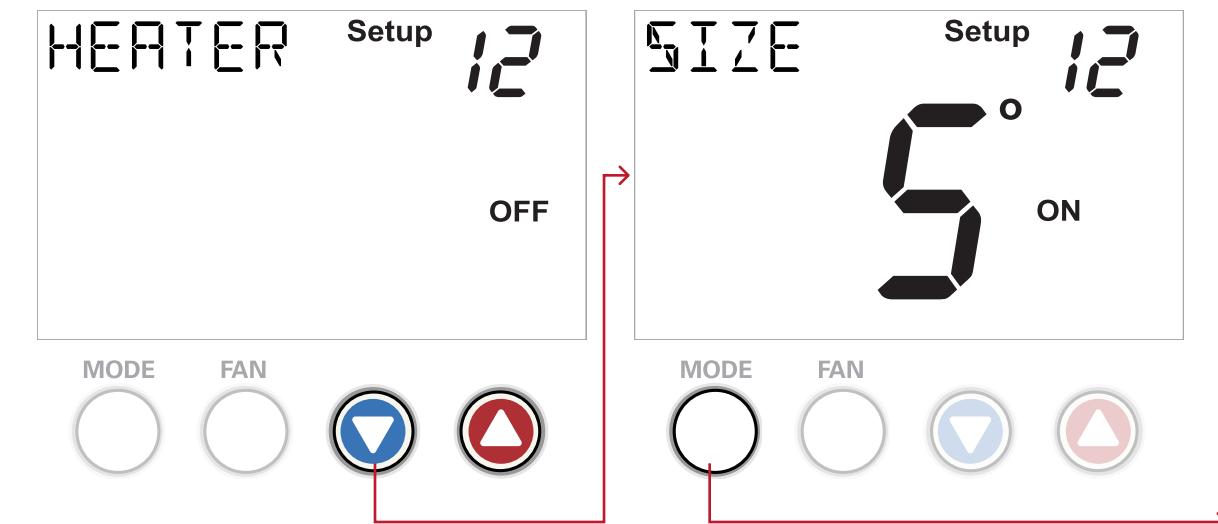
For non-EEV air handlers the UI provides a selection to turn the heater kit ON, in which case the heater kit size is a display only variable provided by the air handler PCB. Details of implementing the heater kit selection menus are below.



With EEV air handlers pressing the cooler (down) and warmer (up) buttons selects the kit size value.

FSD cycles through the following:

HEATER
KIT
SIZE



With non-EEV air handlers pressing warmer (up) and cooler (down) buttons toggles heater kit OFF and ON.

FSD cycles through the following:

HEATER
KIT

With non-EEV air handlers the heater kit size is a display only variable provided by the air handler PCB.

FSD cycles through the following:

HEATER
KIT
SIZE

Setup Steps

Lockout

13. Heat Pump Lockout

For a heat pump with a heater kit installed, heat pump lockout step is displayed.

14. Aux Heat Lockout

For a heat pump with a heater kit installed, aux heat lockout is displayed in the next step.

15. Balance Point

For a heat pump with a gas furnace installed, balance point is displayed instead of steps 13 and 14 for lockouts.

16. Lockout

With a heat pump and gas furnace installed, in the next step an option is displayed for locking out the furnace completely when the outdoor temperature is above the balance point.



If a heat pump with a heater kit is installed, heat pump lockout step is displayed. Pressing the cooler (down) and warmer (up) buttons selects the heat pump lockout temperature.

FSD cycles through the following:

HEAT
PUMP
LOCKOUT
TEMP

With a heat pump and an electric heater kit installed, in the next step pressing the cooler (down) and warmer (up) buttons selects the aux heat lockout temperature.

FSD cycles through the following:

AUX
HEAT
LOCKOUT
TEMP

With a heat pump and a gas furnace installed, balance point is displayed instead of the lockouts for a heat pump and gas furnace. Pressing the cooler (down) and warmer (up) buttons selects the balance point temperature.

FSD cycles through the following:

BALANCE
POINT

With a heat pump and gas furnace installed, in the next step an option is displayed for locking out the furnace completely when the outdoor temperature is above the balance point. The default is **ON** and can be cycled to **OFF** using the warmer/cooler buttons.

FSD cycles through the following:

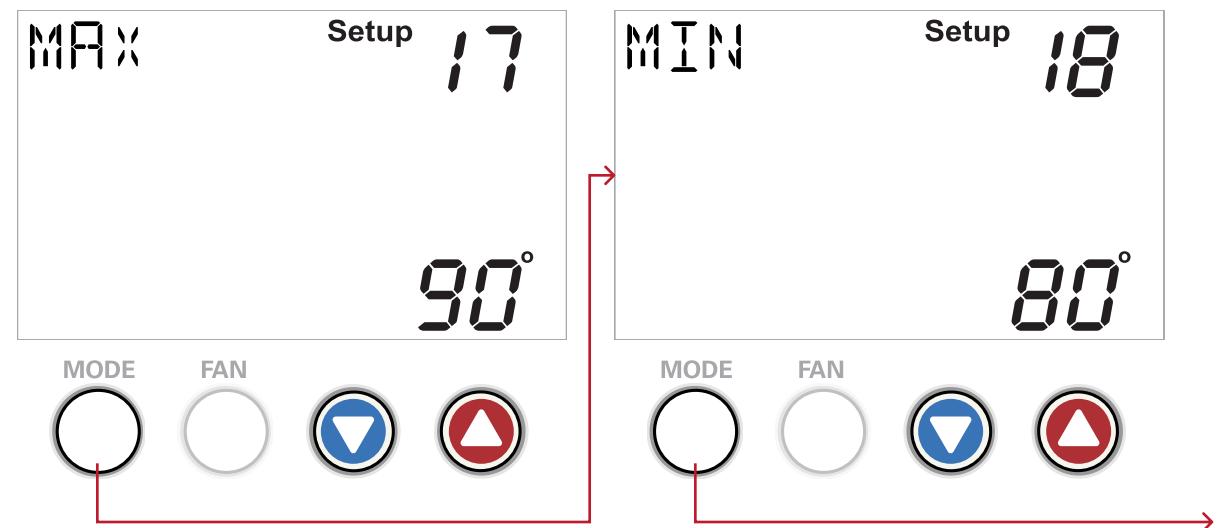
LOCKOUT
FURNACE
ABOVE
BALANCE
POINT

Setup Steps

Setpoint Limits

17. Maximum Heat Setpoint
Setup step 12

18. Minimum Cool Setpoint
Setup step 13



Warmer (up) and cooler (down) buttons increment and decrement the maximum setpoint.

Maximum setpoint defaults to 90°F

FSD cycles through the following:

MAX

SET-

POINT

Warmer (up) and cooler (down) buttons increment and decrement the minimum setpoint.

Minimum setpoint defaults to 50°F

FSD cycles through the following:

MIN

SET-

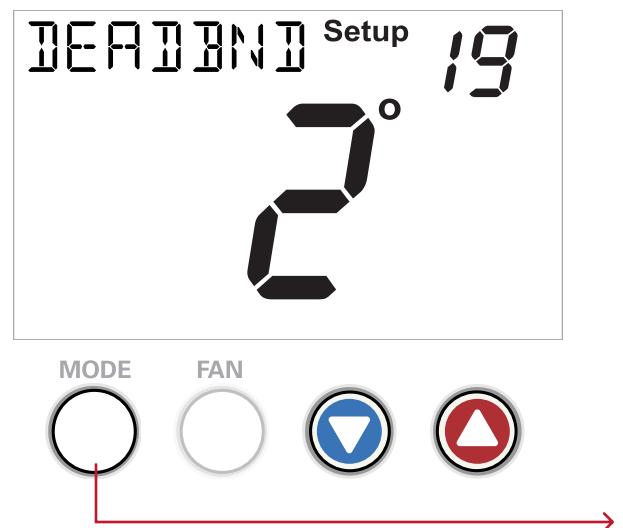
POINT

Setup Steps

Minimum Heat/Cool Setpoint Difference (Deadband)

19. Deadband

This feature allows the user to set the minimum gap between Heat and Cool setpoints in Auto mode.



The warmer (up) and cooler (down) buttons increment and decrement the deadband value between 2°F and 9°F in 1°F steps, or 1°C and 5°C in 0.5°C steps.

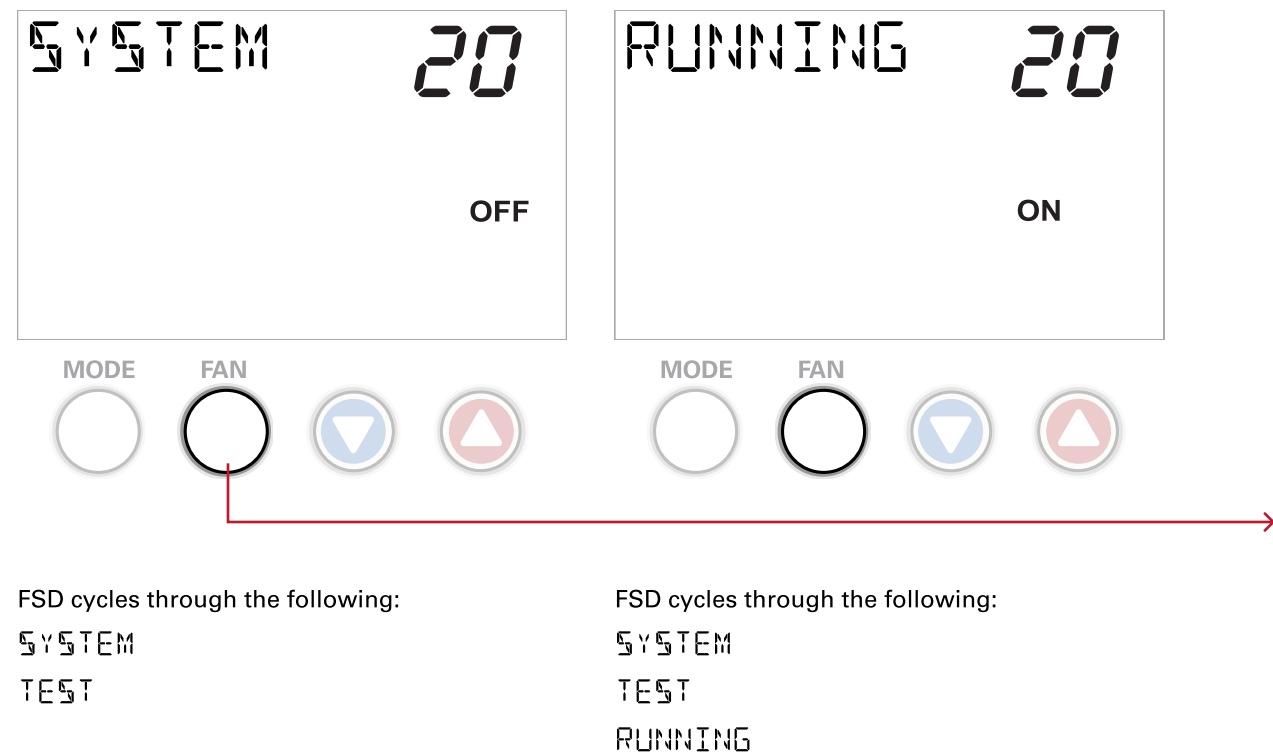
Setup Steps

System Test

20. System Test

If the equipment is capable, holding down the fan button for 2 seconds will start the system test.

There is no feedback that the test has completed successfully, but if the test has not been completed an error code "11" will be generated.



Schedule

Setting the schedule 1

Setting the daily schedule

Set a schedule of events at which the thermostat will automatically engage with your desired settings. A schedule may be set for each day of the week. Schedule recurs every week. You may schedule up to four events per day—morning, day, evening, and night.

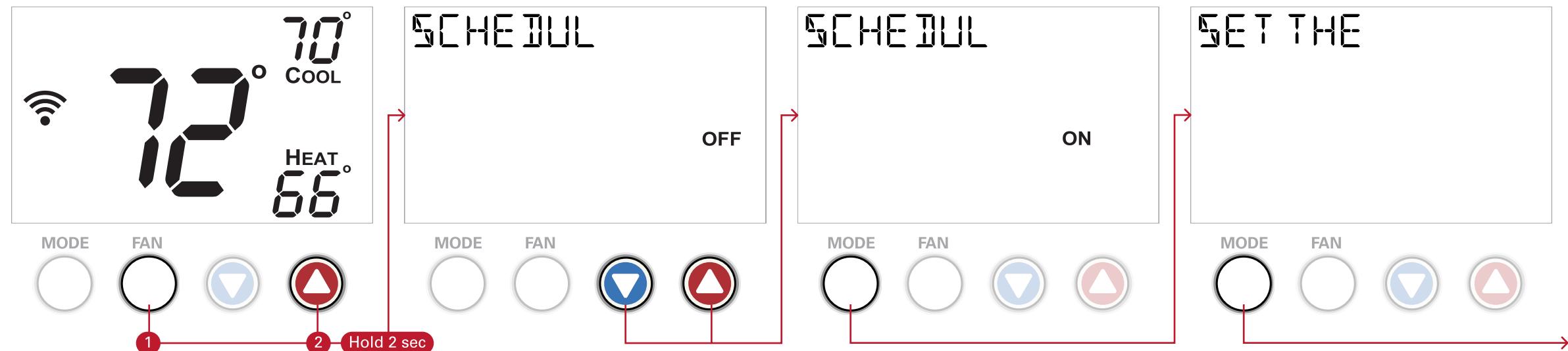
Press and hold fan and warmer (up) buttons to enter schedule mode.

While scheduling, pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

At the end of each setting menu sequence the thermostat will return to the primary screen. The system will return to the primary screen automatically after 2 minutes of inactivity.

Note:

HSP needs to be suppressed for cool-only systems and the CSP for heat-only systems. Display of the deadband setting also should be suppressed.



Home screen

From the home screen, press and hold fan and warmer (up) for 2 seconds to configure the schedule

Schedule instructions

FSD cycles through the following:

SCHEDULE
USE THE
WARMER/
COOLER
BUTTONS
TO
ENABLE
SCHEDULE
USE THE
MODE
BUTTON
FOR
SETUP

Schedule instructions

Warmer (up) and cooler (down) buttons toggle schedule on and off.

Mode button advances to the next step.

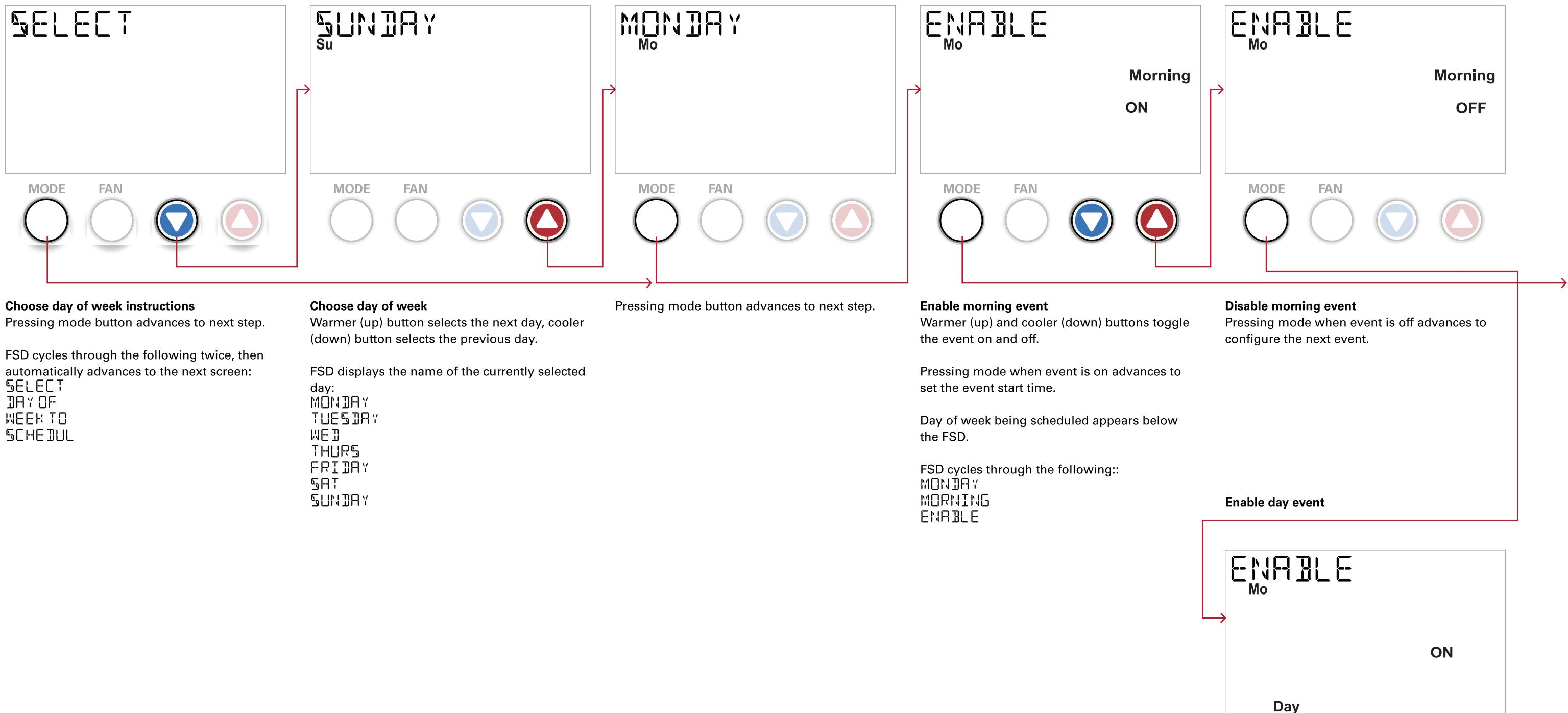
Schedule instructions

FSD cycles through the following:

SET THE
SCHEDULE
USE THE
WARMER/
COOLER
BUTTONS
TO
CYCLE
THROUGH
THE
OPTIONS
USE THE
MODE
BUTTON
TO
ADVANCE
AND
CONFIRM
THROUGH
THE
SETUP
OPTIONS

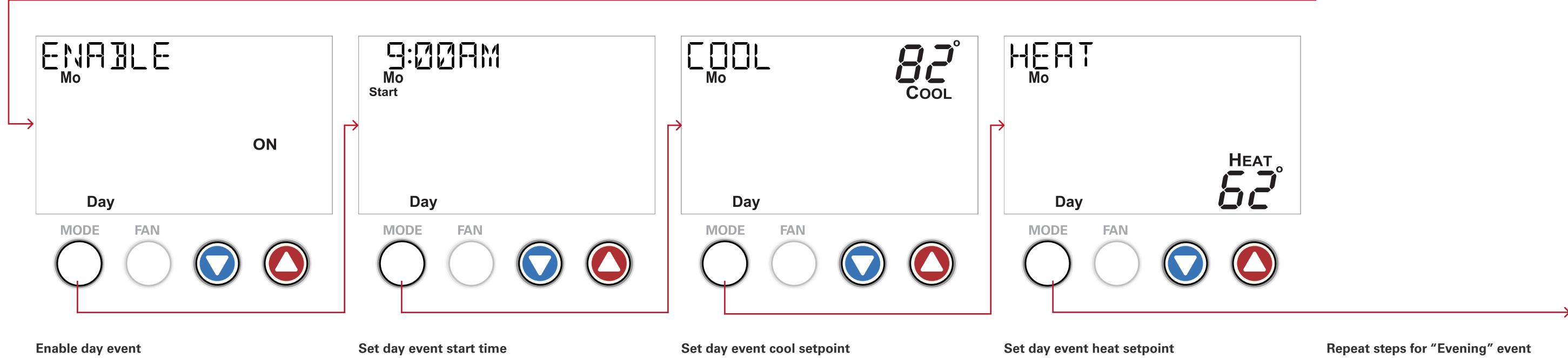
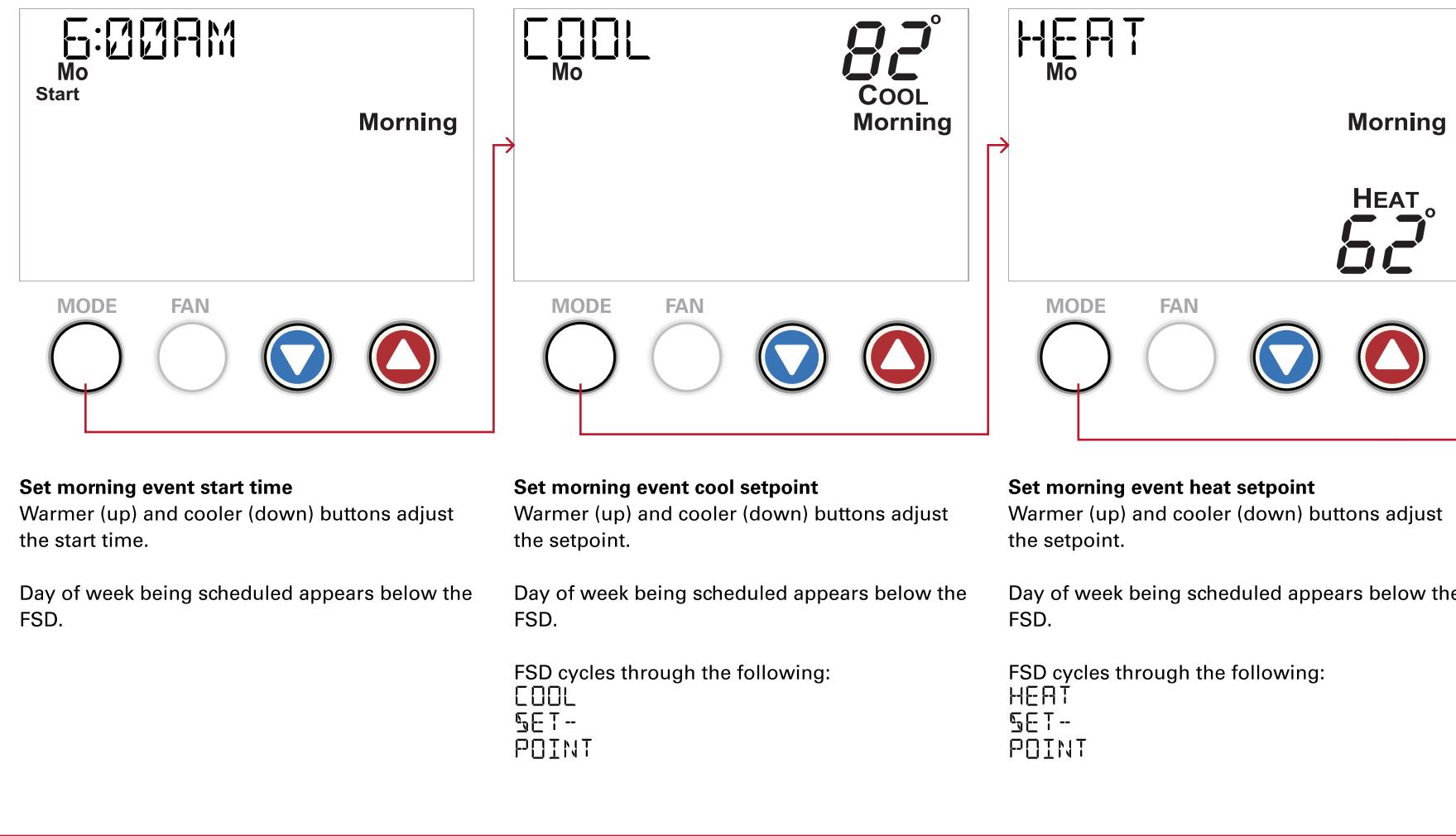
Schedule

Setting the schedule 2



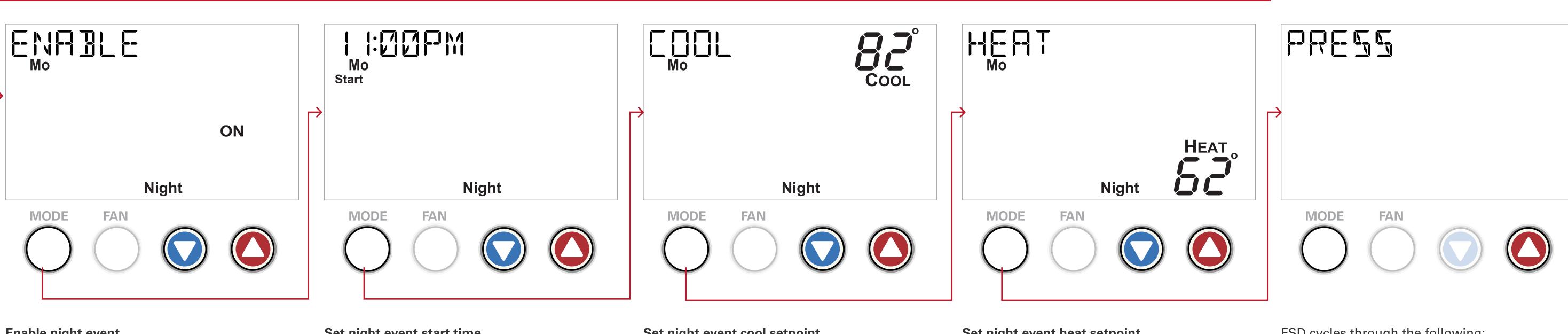
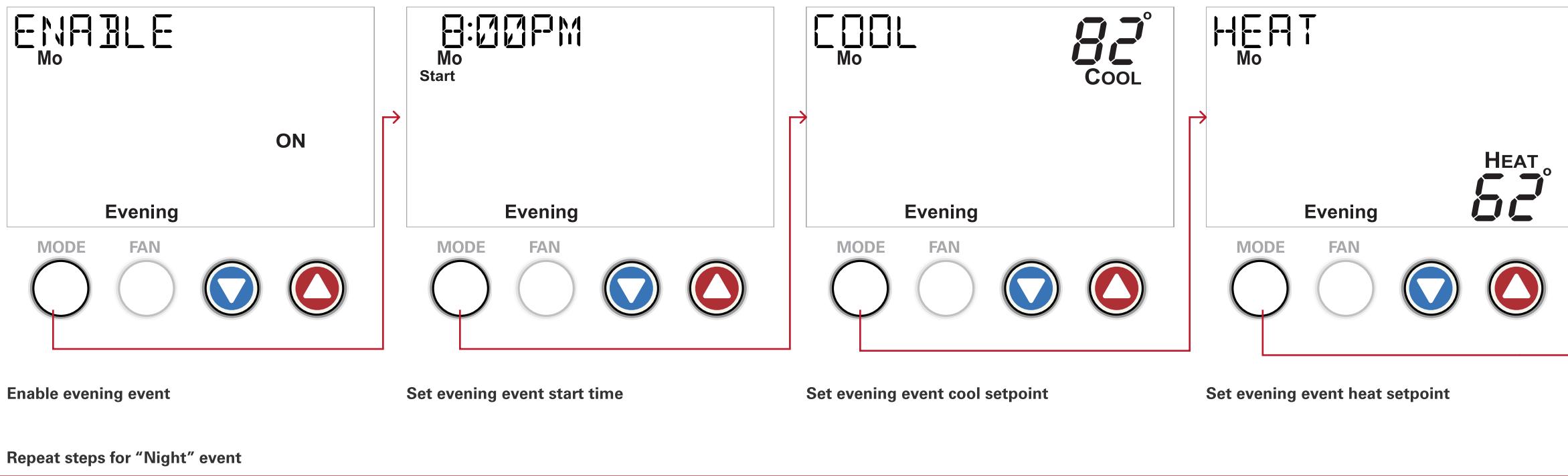
Schedule

Setting the schedule 3



Schedule

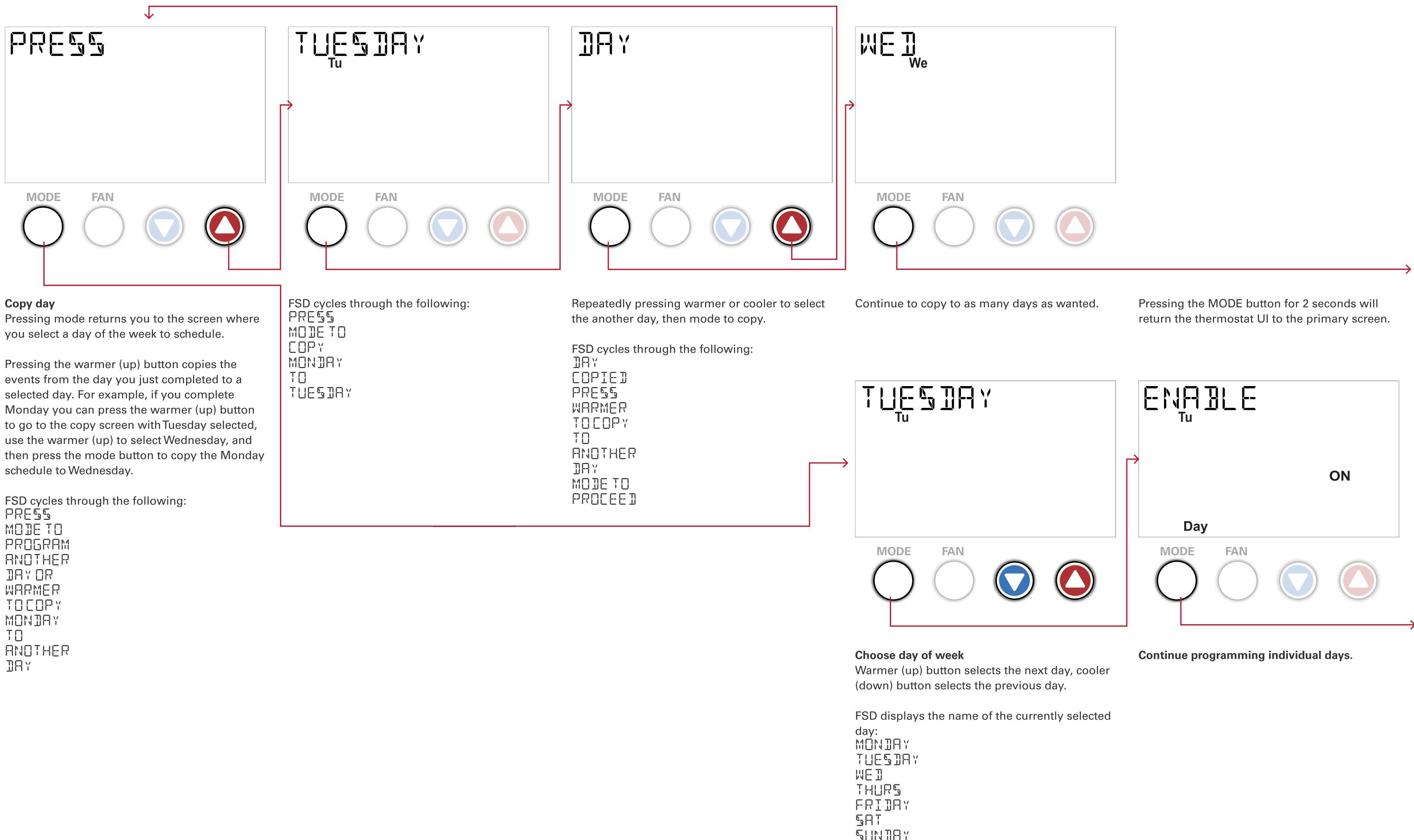
Setting the schedule 4



FSD cycles through the following:
 PRESS
 MODE TO
 PROGRAM
 ANOTHER
 DRY OR
 WARMER
 TO COPY
 MONDAY
 TO
 ANOTHER
 DRY

Schedule

Setting the schedule 5



Other Modes of Operation

Setting Away Setpoints

Setting away setpoints

Away can be toggled on and off and away setpoints can be set.

Press and hold fan and cooler (down) buttons to enter away mode.

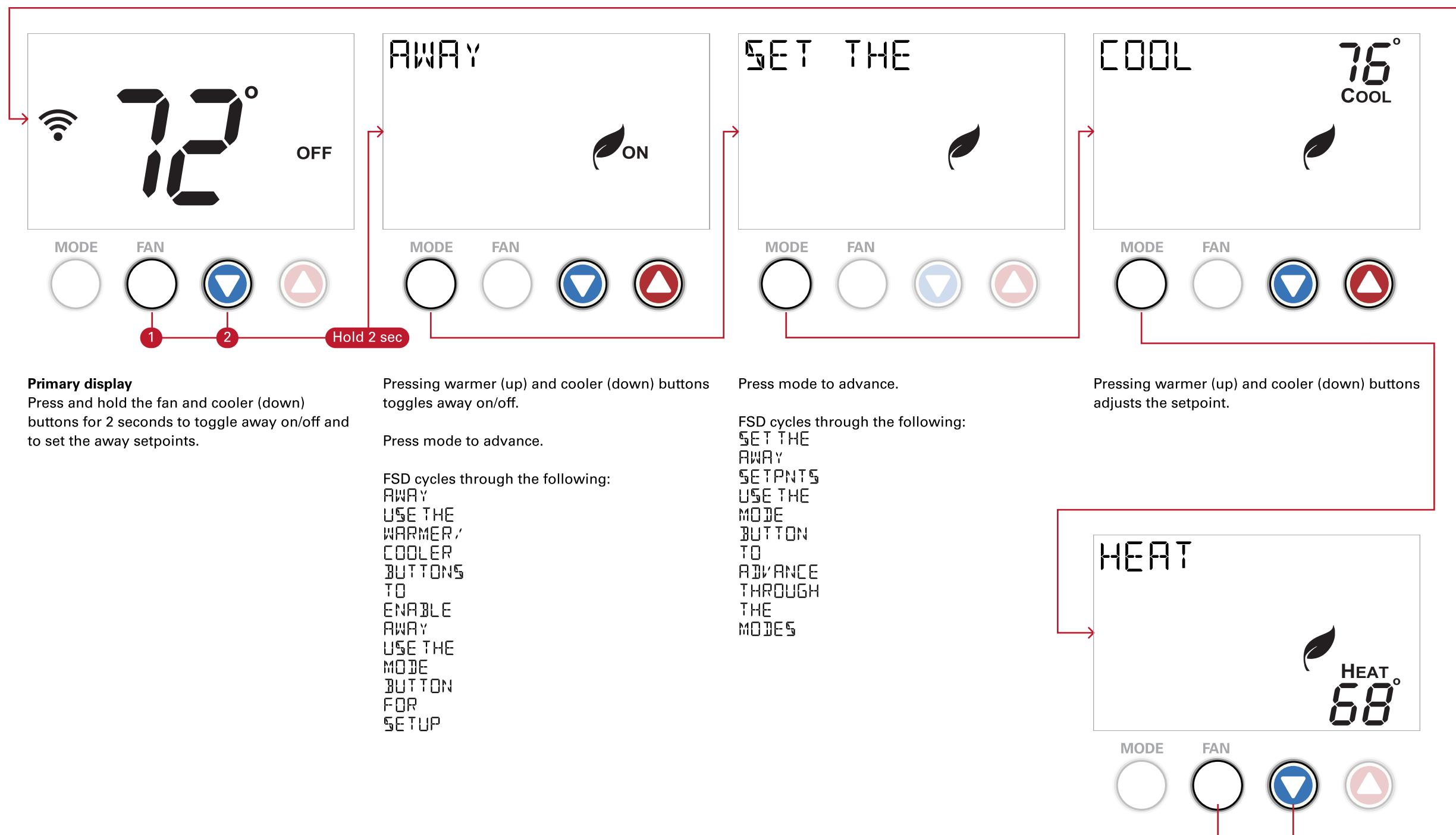
Pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

At the end of each setting menu sequence the thermostat will return to the primary screen. The system will return to the primary screen automatically after 2 minutes of inactivity.

Note:

HSP needs to be suppressed for cool-only systems and the CSP for heat-only systems.

Display of the deadband setting also should be suppressed.



Pressing warmer (up) and cooler (down) buttons adjusts the setpoint.

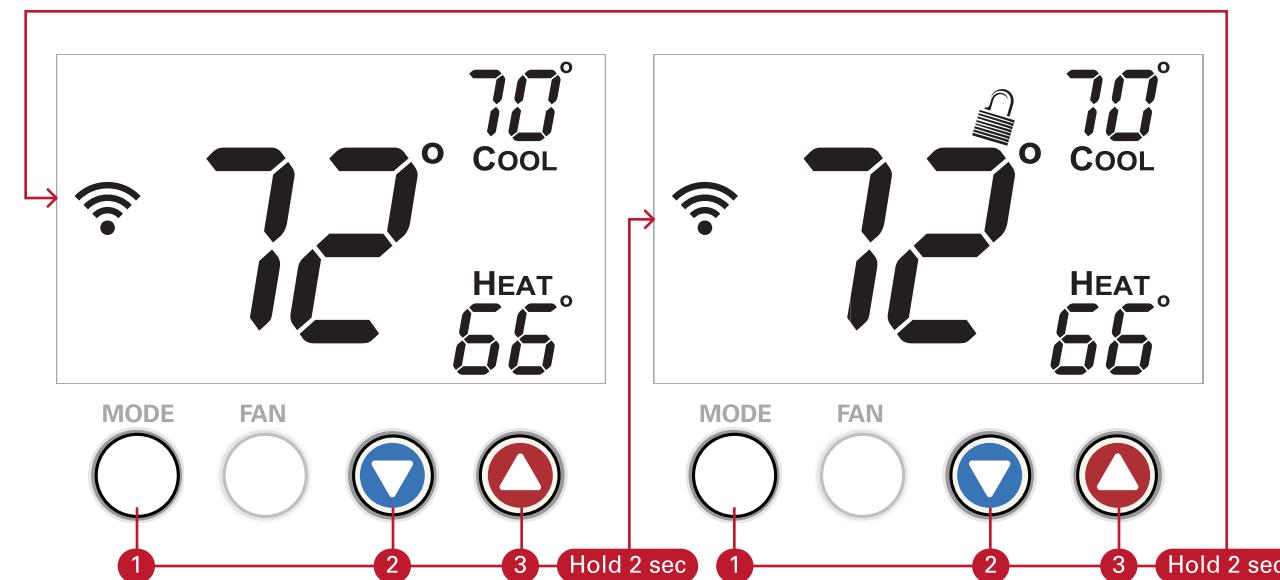
Press and hold the fan and cooler (down) buttons to return to the primary display.

Other Modes of Operation

Locking / Unlocking the Keypad

Locking/Unlocking the Keypad

To prevent unauthorized use of the thermostat, the front panel buttons may be disabled.



To disable, or "lock" the keypad, press and hold the mode button. While holding the mode button, press the warmer (up) and cooler (down) buttons together, for two seconds. The lock icon will appear on the display, then release the buttons.

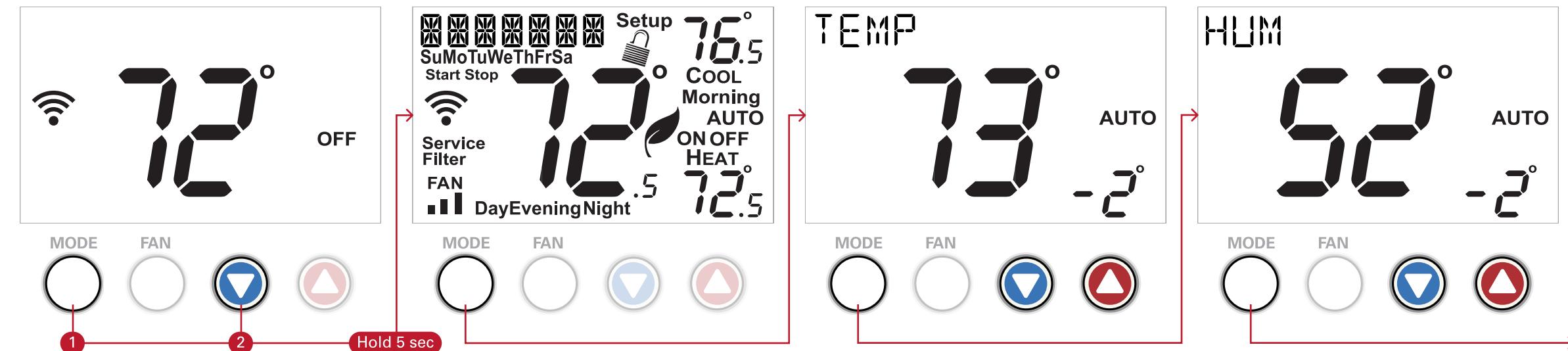
To unlock the keypad, press and hold the mode button. While holding the mode button, press the warmer (up) and cooler (down) buttons together, for two seconds. The lock icon will disappear from the display, then release the buttons.

Other Modes of Operation

Calibration

Calibration

Under normal circumstances it will not be necessary to adjust the calibration of the temperature sensor. If calibration is required, please contact a trained HVAC technician to correctly perform the following procedure.



Place the thermostat in the OFF mode.

Press and hold MODE and COOLER (down) buttons for 5 seconds, then press MODE to enter calibration mode.

At any time pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

At the end of each setting menu sequence the thermostat will return to the primary screen.

All icons will appear on the display.

Press the MODE button to advance through screens.

The thermostat temperature will be displayed and may be calibrated using the WARMER (up) and COOLER (down) buttons. Value may be adjusted between 9° and -9°

The calibrated offset from the "raw" temperature reading is displayed in the lower right corner.

FSD cycles through the following:
CALI-
BRATE
HUM

The thermostat humidity will be displayed and may be calibrated using the WARMER (up) and COOLER (down) buttons.

The calibrated offset from the "raw" humidity reading is displayed in the lower right corner.

FSD cycles through the following:
CALI-
BRATE
HUM

Other Modes of Operation

Update, Reset, and Restart

Firmware Update

Selecting this option causes the thermostat to look for updated software on the OTA server. (This feature is managed by VenOS as specified by Venstar.) This option should only be available if the thermostat is connected to WiFi.

Reset

Reset has three options:

- WiFi reset
- account reset
- factory reset

The reset to factory default must restore all datemap variable with a "TRUE" marked in the "persist" column of the datemap back to their default values. (The reset to factory defaults is managed by VenOS as specified by Venstar.)

Restart

Selecting this will do a soft reboot of the thermostat. (This feature is managed by VenOS as specified by Venstar.)

At any time pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

At the end of each setting menu sequence the thermostat will return to the primary screen.



If connected to WiFi, press and hold fan button for 2 seconds to update firmware. (Thermostat will download latest firmware and reboot.)

FSD cycles through the following:

VERSION
201
PRESS
AND
HOLD
FAN
BUTTON
TO
UPDATE
FIRMWARE

When the fan button is pushed and held FSD displays:
SEEKING
FOR NEW
FIRMWARE

If an update is found "UPDTING" scrolls across the FSD while the firmware is being downloaded, then "BOOTING" when the thermostat restarts, and the thermostat loads the main screen when finished booting.

If no firmware update is found, the thermostat stays on the software update screen and scrolls the words "NO UPDATE" across the FSD until another button is pressed.

Warmer (up) and Cooler (down) buttons will toggle through options, cycling through:

WIFI
RESET
PRESS
AND
HOLD
FAN
BUTTON
ACCOUNT
RESET
PRESS
AND
HOLD
FAN
BUTTON

FACTORY
RESET
PRESS
AND
HOLD
FAN
BUTTON

With each selection press and hold FAN button for 2 seconds to reset.

After a WiFi reset or account reset the thermostat returns to the all icons screen, but after a factory reset the thermostat returns to the main screen.

Press and hold fan button for 2 seconds to restart thermostat.

FSD cycles through the following:

RESTART
PRESS
AND
HOLD
FAN
BUTTON

After a restart the thermostat returns to the main screen.

Other Modes of Operation

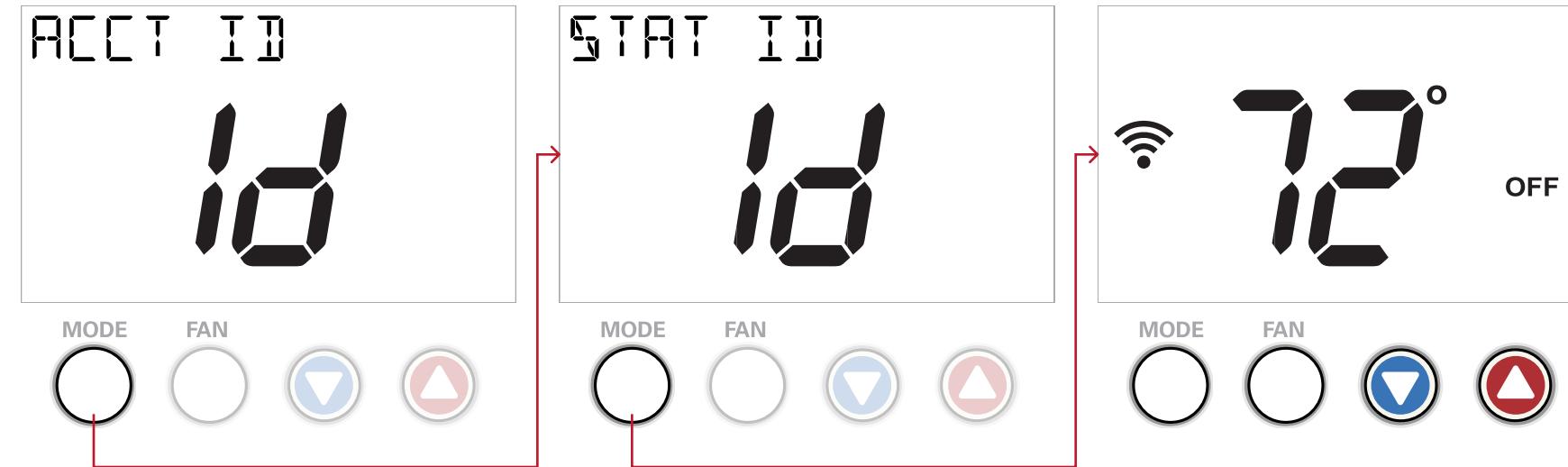
Account ID and Thermostat ID

Account ID

The email address of the account owner is displayed.

Thermostat ID

The thermostat's DKN number is displayed.



The account owner's email address is displayed in FSD cycle with leading text of "ACCT ID" followed by the email address displayed 7 characters at a time.

If there is no linked account, the text "ACCT ID" should be followed by "NONE".

FSD cycles through the following:

ACCT ID
IANCOLE
240GMAI
LCOM

Thermostat DKN number (unique ID) is displayed in FSD cycle.

FSD cycles through the following:

STAT ID
DKN- 100
026647

At any time pressing and holding the Mode and Cooler (down) buttons for 5 seconds will exit calibration and reset, returning to the main screen.

Alternatively, press MODE to return to the main screen" which is where it should go at the end of the sequence

Other Modes of Operation

Wireless Setup: Connecting to WiFi and Daikin One Cloud

Connecting to WiFi

The Goodman homeowner app is needed to configure the WiFi settings of this thermostat.

The Goodman Installer app can configure WiFi settings and send a profile to the thermostat.

From the primary display, holding the FAN button for 5 seconds will enter wireless setup mode.

AP Mode

Press the COOLER button to go into AP Mode.

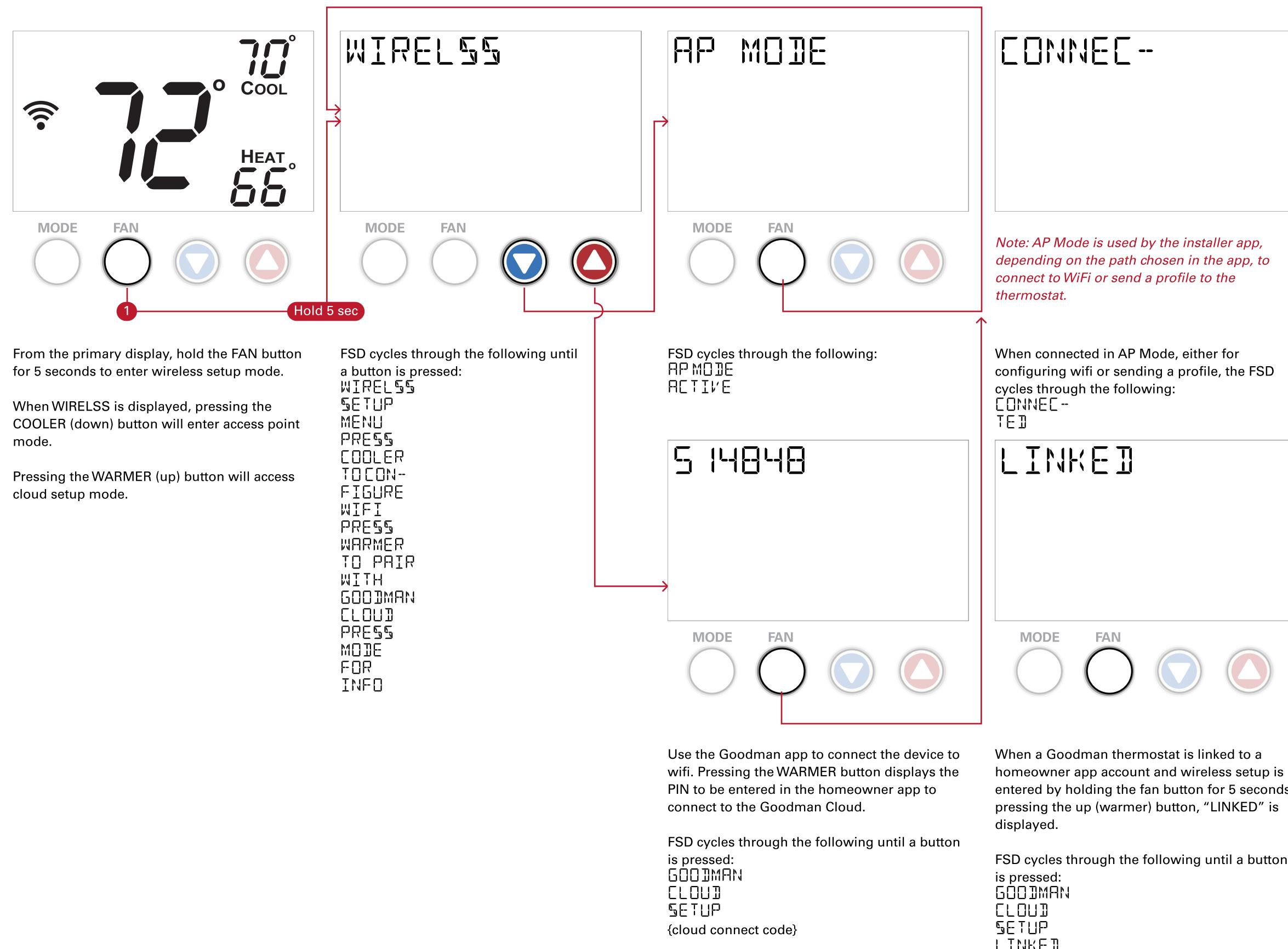
Depending on the path chosen in the installer app, the app will display available networks to connect to WiFi, or search for connected equipment to send an appropriate profile to the thermostat.

Cloud Account

Press the WARMER button to go to display the PIN needed to link the thermostat to the homeowner app through the cloud.

At any time pressing the MODE button for 2 seconds will return the thermostat UI to the primary screen.

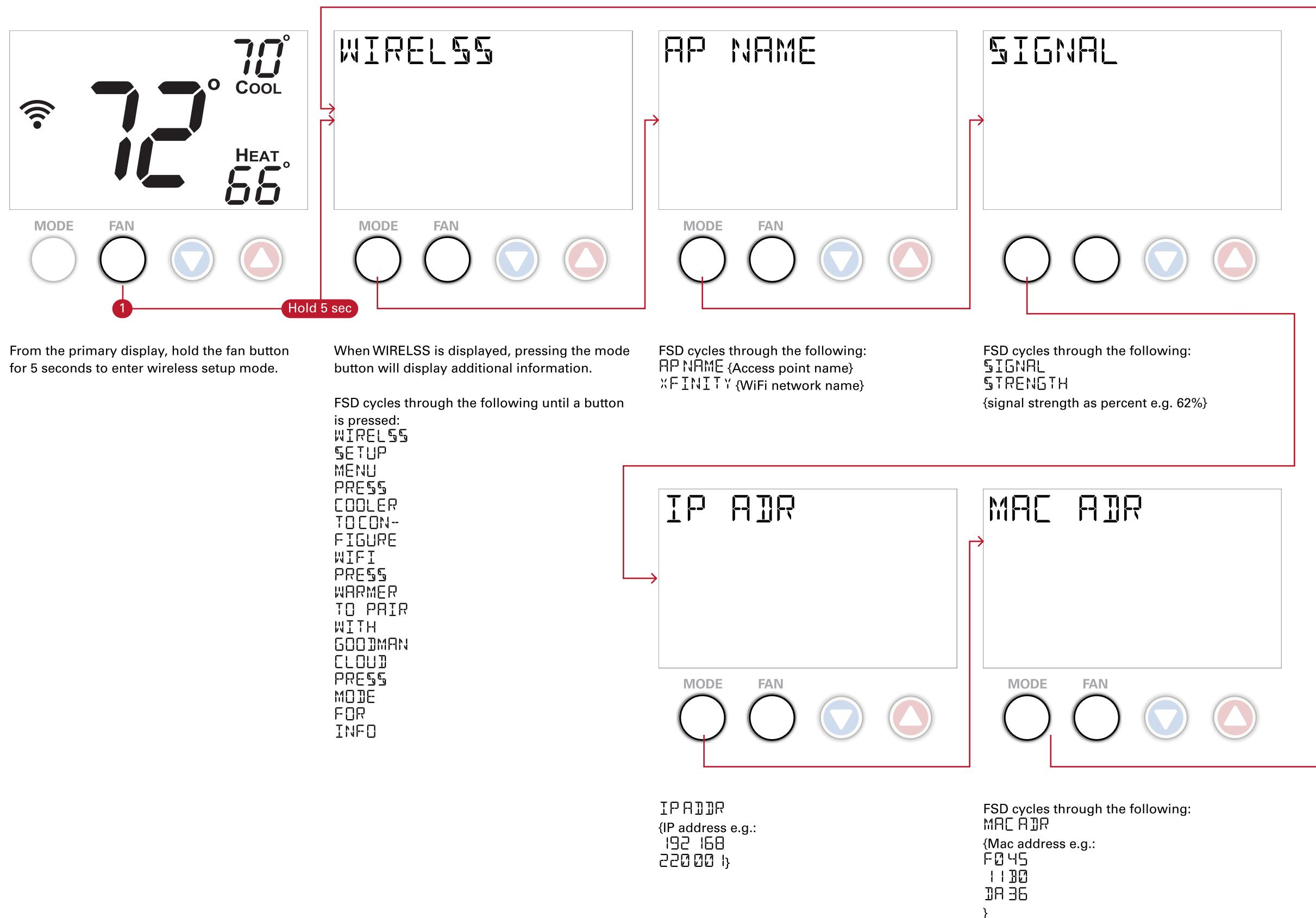
At the end of each setting menu sequence the thermostat will return to the primary screen.



Other Modes of Operation

Wireless Setup: Network Information

Pressing Fan button from any screen returns to the main thermostat screen.



Messages and Alerts

Status Messages

Status messages and alerts appear when the device showing the primary display.

User interaction (navigating to setup steps for example) always take precedence over displaying status messages.

The system may be in a state in which more than one status message should be displayed. In this case display the message highest in priority in the table to the right. When the highest priority issue is dealt with, and the message is no longer relevant, then the next highest priority message will appear.

If the user has enabled display of the current time, it will appear when there are no other status messages.

The UI needs to indicate when the thermostat is overcooling for dehumidification. Overcooling is indicated by the **equipmentStatus == 2**, and when this is the case the FSD should display "DEHUM". If the clock is enabled, the display should alternate between the clock and "DEHUM".

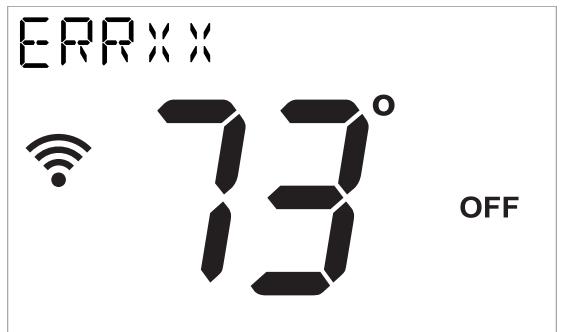
| Types of status message in priority order | Description |
|---|--|
| 0. Navigation and feedback | User navigation or interaction that effects the FSD takes precedent over status messages. |
| 1. Alerts 1.1 Critical alerts 1.2 Software updating | Each critical alert has an error code. Dealer must intervene to clear it. See page <?>. Displayed when system is installing an over-the-air software update. See page <?>. |
| 2. Reminders 2.1 Service reminders | See page <?>. |
| 3. Clock and Dehum 3.1 Current time 3.2 Dehum | Disabled by default. May be enabled in Setup steps. See page <?>. The "DEHUM" status message and the clock are the lowest priority information to be displayed on the 7-character FSD section of the screen. |

Messages and Alerts

Critical Alerts

Status message priority 1.1

A critical alerts should be displayed as a message until resolved by the dealer and dismissed by putting the unit in "OFF" mode and then back into an operation mode.



While a critical error is active the FSD cycle through the following 4 lines of display text:.

AC / HP
ERRXX
CONTACT
DEALER

Messages and Alerts

Over-the-air software update

Status message priority 1.2

The smart thermostat checks for software updates immediately after being connected to the internet for the first time, and periodically as it remains connected.



When applying a software update the FSD display reads:

UPDATING

Messages and Alerts

Service reminders

Service reminders 2.1

When the main filter is due for replacement, the "Service Filter" segment appears on the primary display.

When any other service reminder is due to appear, the "Service" segment appears on the primary display.

Service reminders can be set as: off, 1, 2, 3, 4, 6, 12 months.

