

Owner's Manual

Part Number 33ZCT58SPT

IMPORTANT: Read entire instructions before programming the sensor.

GENERAL

Carrier's T58 communicating room sensors are wall-mounted, low-voltage sensors which maintain room temperature by communicating with the controller that operates the HVAC (heating, cooling and ventilation) equipment. The T58 sensor provides a custom liquid crystal display (LCD) and 4 push-buttons allowing user interface and feedback capabilities.

During power interruption, the T58 sensor stores configuration parameters in non-volatile memory, allowing coordinated control to resume after power is restored. The T58 sensor utilizes universal graphical icons on the LCD.

OPERATION

Sensor Display — The sensor's LCD is located in the top center of the sensor. See Fig. 1. The T58 sensor can display the following information on the screen:

- Current space temperature (default LCD display)
- Unit mode of attached device
- Heating or cooling set point value — read from attached device
- Outside air temperature — relayed from the connected Carrier Network
- Current Fan mode — read from attached device
- Indication when time schedule override is in effect
- Set of error indications

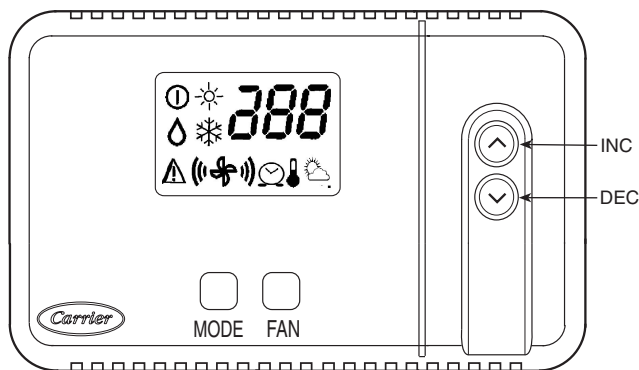


Fig. 1 — T58 Sensor

Sensor Programming Buttons and Operation

— The T58 sensor has programming buttons which are used to change the set points of the equipment, change the fan mode, and override schedules. The programming buttons are located on the sensor cover. The programming buttons are: FAN, MODE, INC and DEC. See Fig. 1.

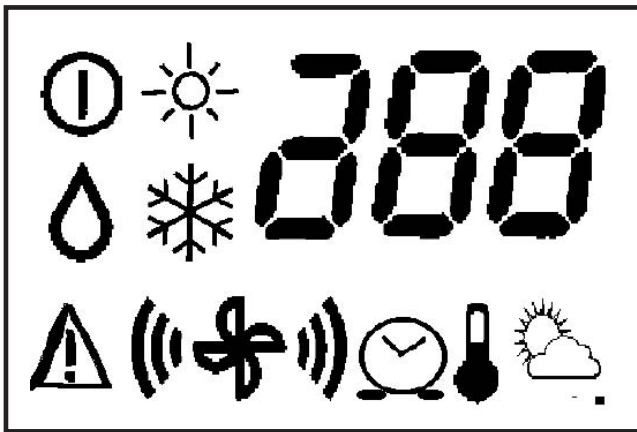
The INC and DEC buttons are used to change the current temperature set point and to scroll through programming options. The INC and DEC buttons are on the outside of the sensor.

READ CURRENT OPERATING MODE — Perform the following to read the current operating mode of the attached device:

1. Press the MODE button. The present operating mode condition will be read in from the attached device. A graphical icon will represent the operating mode. See Fig. 2. A list of possible modes with the accompanying icons for different attached devices is shown in Tables 1-3. The current operating mode icon will be displayed for ten seconds then disappear, denoting the end of the operation.
2. If there is no response from the CCN communications request, then an error code of "E3" will be shown in the numeric portion of the LCD area. Any error indication will terminate after 5 seconds, and return to the default Space Temperature display.

NOTE: This is a read only mode. Current operating mode cannot be changed.

DISPLAY SPACE TEMPERATURE — The default display of the T58 sensor shows the sensed temperature from its on-board thermistor, which represents the Space or Room Air Temperature. Any configured "trim" from the attached device will not have an effect on this temperature value. This value is updated every second by the T58 software and is sent out to the attached device every minute or whenever its value changes by .3 F. Temperature values will be stored with a precision of .1 F. The Space Temperature value will also be sent to the attached device during any power on reset operation. If the on-board thermistor fails, then the LCD will display a value of "E1", indicating that the thermistor is no longer working. The T58 sensor will continue to try to read the thermistor every second.



NOTE: Refer to Tables 1-3 for ICON definitions.

Fig. 2 — T58 Sensor Display Icons

FAN COIL CONTROLLER — To read the current fan speed:

To enter fan speed selection, press the FAN button. The present fan position will be read in from the attached device. If the fan is Off, then the “Fan” icon with no curved lines will be displayed. If the fan is On, then the graphic will show one set of curved lines around the fan to represent Low Speed, two lines for Medium Speed, and three lines for High Speed. See Fig. 2.

To change Fan mode when User Control mode is enabled:

1. Press the INC or DEC buttons to cycle through the various Fan modes until reaching the desired fan setting. The modes will be displayed in the following wraparound order — Off, Low, Medium, High, and Auto. Auto mode will be indicated by a blinking “fan” icon with no curved lines. Auto mode can be set by the T58 sensor, but when reading the Fan mode, only the current fan speed or Off will be displayed.
2. Press the FAN button again to terminate the operation and send the new Fan mode value to the attached device. The selected “fan” icon will also disappear from view denoting the end of the operation.

NOTE: Some fans may only be single-speed (Off/On) or two-speed (Low/High). In either of those cases, if the desired fan selection is higher than the top selection, the fan will be driven to its highest setting. As an example, if a one-speed fan is commanded to go to Medium or High Speed, then that command will be interpreted to turn on the fan. If a two-speed fan is commanded to go to Medium or High Speed, then that command will be interpreted to drive the fan to its highest possible speed setting.

AIR TERMINAL CONTROLLER AND ROOFTOP CONTROLLER — To read the current fan speed:

To enter fan speed selection, press the FAN button. The present Fan mode is read in from the attached device. If the fan is OFF, then the “fan” icon without curved lines will be displayed. If the fan is On the fan graphic and the first set of bars will be displayed.

To change Fan mode when User Control mode is enabled:

1. Press the INC or DEC button to cycle between Fan On, Fan Off, or Auto. A blinking “fan” icon indicates Auto mode (Fan only — no curved lines).
2. Press the FAN button again to complete the operation and send the new Fan mode to the attached device. If Auto mode is selected, an auto command for the fan will be sent to the attached device. The selected FAN icon will also disappear from view denoting the end of the operation.

NOTE: If no button is pushed for 10 seconds after initiating FAN mode, the “fan” icon will disappear and no change will be enacted on the fan speed.

NOTE: If there is no attached device then an error code of “E2” will be displayed in the numeric portion of the LCD area.

Read/Modify Current Set Point Value —

The INC and DEC buttons are used to read or modify the configured occupied set points of the attached device. This feature is the same for all controllers.

TO READ CURRENT SET POINT VALUE — Press the INC or DEC button once. This will display the set point that will be adjusted. Pressing INC will make the space warmer and pressing DEC will make it cooler. See Table 4.

TO MODIFY CURRENT SET POINT VALUE (If User Control Mode is Enabled) — Once INC or DEC is pressed the “temperature bulb” icon will appear. This indicates the onset of “Modify Set Point” mode. The Inc or Dec button can be used to adjust the displayed set point. The heat set point will have an allowable range of 40 F to the heat set point Hi Limit configured in installer option 9. The cool set point range goes from the cool set point to the limit configured in installer option (range 10 to 99 F). If the read set point exceeds the configured limit, it will be used as the limit. Wraparound is not enabled for this function. A difference of at least 2 F will be maintained between the occupied heating and cooling set points. If one set point is adjusted to within less than 2 F of the other, the other set point will also be adjusted to maintain the 2 F separation. The appropriate icon for heat (“sunshine” icon) or cool (“snowflake” icon) will blink while adjusting the set point.

- When the desired set point is reached, press the MODE button to cause the new set point value to be saved in the attached device. At the same time, the LCD display will return to the default Space Temperature display, and the “set point” icon will disappear.
- If the attached device is unoccupied, the T58 will also send a command to initiate a Time Schedule Override in the attached device. This will allow the modified (occupied) set point(s) to take effect immediately. The “override” icon (clock) will be displayed while the override is in effect.
- While in Modify Set Point mode, after ten seconds of being idle the LCD will return to the default Space Temperature display and the “set point” icon (thermometer) will disappear. The last displayed set point will be sent to the attached device.

NOTE: If there is not a device attached or if the attached device is not a supported CCN type, an error code of “E2” will be displayed in the numeric portion of the LCD area. See Table 5.

Table 1 — VAV Air Terminal Controller

VAV MODE	T58 ICON
OFF (0)	CIRCLE with enclosed I
HEAT (1)	SUNSHINE
WARM-UP (2)	SUNSHINE
VENT (3)	FAN ALONE
FAN & VENT (4)	FAN with 2 lines
COOL (5)	SNOWFLAKE
DEHUMID (6)	WATER DROPLET
REHEAT (7)	SUNSHINE
PRESSURE (8)	TRIANGLE with enclosed!
EVAC (9)	TRIANGLE with enclosed!
ZEROCAL (10)	CIRCLE with enclosed I BLINK 1 SEC RATE
COMMISS (11)	CIRCLE with enclosed I BLINK 1 SEC RATE
OVERRIDE	CLOCK
T58 ACTION	T58 DISPLAY
DEFAULT DISPLAY	DISPLAY SPACE TEMP with NO ICONS
SET POINT RESET	THERMOMETER ICON, DISPLAY HEAT/COOL SET POINT VALUE, FLASHING SNOWFLAKE OR SUNSHINE
FAN SPEED (READ ONLY)	FAN ALONE = OFF, LO SPEED, FAN ALONE BLINKING = AUTO
TIME SCH OVERRIDE	CLOCK ICON DISPLAYS FOR DURATION OF OVERRIDE PERIOD
DISPLAY OAT	SUN & CLOUDS ICON, DISPLAY LAST RECEIVED OAT

LEGEND

OAT — Outdoor-Air Temperature
VAV — Variable Air Volume

Table 2 — Fan Coil Controller

FAN COIL MODE	T58 ICON
OFF (0)	CIRCLE with enclosed I
OCC COOL (1)	SNOWFLAKE
OCC HEAT (2)	SUNSHINE
FAN ONLY (3)	FAN with 2 LINES
UNOCCOOL (4)	SNOWFLAKE
UNOCHEAT (5)	SUNSHINE
DEHUMID (6)	WATER DROPLET
T58 ACTION	T58 DISPLAY
DEFAULT DISPLAY	DISPLAY SPACE TEMP with NO ICONS
SET POINT RESET	THERMOMETER ICON, DISPLAY HEAT/COOL SET POINT VALUE, FLASHING SNOWFLAKE OR SUNSHINE
FAN SPEED	FAN ALONE = OFF, LO, MED, HI SPEED, FAN ALONE BLINKING = AUTO
TIME SCH OVERRIDE	CLOCK ICON DISPLAYS FOR DURATION OF OVERRIDE PERIOD
DISPLAY OAT	SUN & CLOUDS ICON, DISPLAY LAST RECEIVED OAT

LEGEND

OAT — Outdoor-Air Temperature

Table 3 — Retrofit Rooftop/Economizer Controller

ROOFTOP MODE	T58 ICON
OFF (0)	CIRCLE with enclosed I
OCC COOL (1)	SNOWFLAKE
OCC HEAT (2)	SUNSHINE
FAN ONLY (3)	FAN with 2 LINES
UNOCCOOL (4)	SNOWFLAKE
UNOCHEAT (5)	SUNSHINE
VENT (6)	FAN ALONE
DEHUMID (7)	WATER DROPLET
DEMAND LIMIT (8)	CIRCLE with enclosed I BLINK 1 SEC RATE
PRESSURE (9)	TRIANGLE with enclosed!
EVAC (10)	TRIANGLE with enclosed!
PURGE (11)	TRIANGLE with enclosed!
FIRE SHUTDOWN (12)	TRIANGLE with enclosed!
T58 ACTION	T58 DISPLAY
DEFAULT DISPLAY	DISPLAY SPACE TEMP WITH NO ICONS
SET POINT RESET	THERMOMETER ICON, DISPLAY HEAT/COOL SET POINT VALUE, FLASHING SNOWFLAKE OR SUNSHINE
FAN SPEED (READ ONLY)	FAN ALONE = OFF, LO SPEED, FAN ALONE BLINKING = AUTO
TIME SCH OVERRIDE	CLOCK ICON DISPLAYS FOR DURATION OF OVERRIDE PERIOD
DISPLAY OAT	SUN & CLOUDS ICON, DISPLAY LAST RECEIVED OAT

LEGEND

OAT — Outdoor-Air Temperature

Initiate Time Schedule Override — Time Schedule Override is initiated by pressing and holding the MODE button. This action will cause a CCN message to be sent which will initiate the Time Schedule Override function in the attached device.

- If the current occupancy state of the attached device is Unoccupied, then the state will become Occupied for the duration consistent with the configured “Time Schedule Override” value in the attached device. After the override is initiated, the T58 sensor will display a blinking “clock” icon for 60 seconds. The T58 sensor will then display a non-blinking “clock” icon indicating time schedule override is in effect for the attached device.
- If the current occupancy state of the attached device is Occupied, then this command will act to extend the Occupied state for the duration as configured in the attached device. After the override is initiated, the T58 sensor will display a blinking “clock” icon for 60 seconds. The T58 sensor will then display a non-blinking “clock” icon indicating time schedule override is in effect for the attached device.

NOTE: If there is no device attached, an error code of “E2” will be displayed. See Table 5.

Display Outdoor-Air Temperature (OAT) — The OAT value is obtained from the broadcaster device on the CCN. The T58 sensor receives the OAT from the broadcaster device on a periodic basis and the data is stored for easy retrieval.

- The value can be displayed on the LCD by pressing the INC and DEC buttons at the same time. The display and accompanying icon will remain lit for 10 seconds, and then the LCD display will return to the default Space Temperature value.
- When a request for OAT is sent, the last OAT value will be displayed in the LCD.
- If there is not an OAT value available, then a display of “--” will be displayed.
- The “sun and clouds” icon will be lit to indicate that the temperature value displayed represents Outside Air Temperature. This display and icon will remain lit for 10 seconds and then the icon will disappear and the LCD will return to the default temperature value.

Error Codes — The T58 sensor will provide error information in the LCD window, whenever an error condition occurs during normal operation. The Error Code data will remain displayed for 5 seconds, and then the display will return to the default Space Temperature value, if available. See Table 5 for error descriptions.

Table 4 — Modifying Set Point Values

SPACE TEMPERATURE	PRESSING INC	PRESSING DEC
> OCC Cooling Set Point	OCC Cooling Set Point	OCC Cooling Set Point
< OCC Heating Set Point	OCC Heating Set Point	OCC Heating Set Point
Between or = to OCC Set Points	OCC Heating Set Point	OCC Cooling Set Point

LEGEND

OCC — Occupied

Table 5 — Troubleshooting

DIAGNOSTIC CODE	PROBLEM	SOLUTION
E1	Malfunctioning on-board thermistor	Occurs when air temperature is below 0° F (–17 C) or above 146 F (63 C) for 15 seconds or more. This error will clear once the thermistor is in range. The valid temperature is displayed and error indicator will disappear.
E2	T58 is not attached to valid device	Occurs when a CCN communication is requested and the configured destination address is “0” or the destination device type is 0. No data will go out to the CCN until the Installer Options have been correctly configured to a valid device on the network.
E3	CCN Communication Failure	Occurs whenever the T58 sensor initiates a CCN communication and there is not a successful completion of communication. The user needs to determine the problem and rectify the situation.
E4	Command rejection	Occurs whenever the attached device rejects a command from the T58 sensor. The user needs to determine the problem and rectify the situation.

LEGEND

CCN — Carrier Comfort Network