

# tcu.z Programmable Thermostat for Conventional/Heat Pump Systems

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50024659-002

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## Features

- For single-zone rooftop units, split systems, heat pumps, or hot/chilled water systems
- 7-day programming
- Two Occupied and two Not Occupied periods per day
- Keypad multi-level lockout
- Individual heat and cool setpoints available for Occupied and Not Occupied periods
- Convenient overrides allow temporary setpoint changes
- Fans can be configured for conventional heat or electric heat fan operation
- Fans continuously energized during Occupied periods
- Remote sensor capability for temperature (including outdoor air and discharge air) and humidity sensors
- P+I+D control minimizes temperature fluctuations
- Recovery ramping control automatically optimizes equipment start times based on building load.
- Thermostat Interface Module (TIM) connects a tcu.z and PDA for advanced configuration and programming
- Auxiliary subbase contact typically interfaces with an economizer system (for total rooftop control integration) or acts as dehumidification output

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## Features Available via PDA Configuration

- 365-day clock with holiday programming
- Automatic Daylight Saving Time adjustments
- Selectable dehumidification limit control
- Modulating output configuration
- Occupancy input to control standby setpoint
- Additional standby period used in low traffic areas
- Sequential start option
- Discharge air high/low limits
- Selectable recovery ramp
- Ambient lockout (with outdoor sensor)

**Note!** PDA configuration may not be available with all models.

## Settings

### Using Thermostat Keys

The thermostat keys are used to:

- Set current time and day
- Program times and setpoints for heating and cooling
- Override program temperatures
- Display present setting
- Set system and fan operation
- Perform simple configuration

**Note!** See Fig. 1 for keypad information.

### Setting Temperature

Refer to Table 1 for default temperature setpoints. See Programming section for complete instructions on changing default settings.

**Table 1. Default Setpoints**

<b>Control</b>	<b>Occupied</b>	<b>Not Occupied</b>	<b>Standby</b>
Heating	70 F (21 C)	55 F (13 C)	67 F (19 C)
Cooling	75 F (24 C)	85 F (29 C)	78 F (26 C)

## Setting System and Fan

System default setting is Auto. The fan default is set so the fan operates continuously during:

- Occupied periods
- Heating and cooling equipment stages in Not Occupied and recovery periods

**Note!** Use System and Fan keys to change settings.

## System Settings

- Auto: Thermostat automatically changes between heating and cooling based on sensed indoor temperature.
- Cool: Thermostat controls cooling.
- Off: Heating, cooling, and fan are all off.
- Heat: Thermostat controls heating.
- Em Heat: Auxiliary heat serves as first stage. Compressor stages are locked off.

## Fan Settings

- On: Fan operates continuously in occupied and standby periods. Fan cycles with call for heat or cool during not occupied periods.
- Auto: Fan cycles with call for heating or cooling during occupied, standby, and not occupied periods.

**Note!** This is further modified by selecting conventional or electric heat.

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## Programming

The thermostat operates at the Occupied temperature setting unless the thermostat is programmed. The program has four settings:

- Occupied heat
- Occupied cool
- Not Occupied heat
- Not Occupied cool

The thermostat can be set for two Occupied and two Not Occupied times for each day of the week (28 independent time settings). The Temporary Occupied key provides quick setpoint changes for increased comfort during Not Occupied periods. The Temporary Not Occupied key provides energy efficient operation for extended periods of time.

## Important

Programming the thermostat with the keypad requires 24-VAC (turn on system power). The keyboard lockout feature must be disabled.

**Note!** Before starting to program, use Table 2 to organize the program schedule.

## Setting Current Day/Time

Use keypad to set the current day and time.

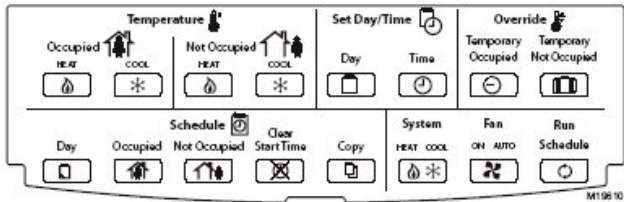
## Important

Once you set the day/time once, you should not need to set it again. As a result, if you use a PDA to set the day based upon the calendar (MM/DD/YYYY), the device will not allow the keypad to change the day.

**Table 2. Occupied and Not Occupied Period Start Times**

<b>Day</b>	<b>Occupied Period 1</b>	<b>Not Occupied Period 1</b>	<b>Occupied Period 2</b>	<b>Not Occupied Period 2</b>
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

**Note!** 12:00 P.M. is Noon, and 12:00 A.M. is Midnight.



**Figure 1.** Thermostat key locations

When using the keypad to change day/time:

1. Press **Set Day** until the current day is displayed.

**Note!** Sun = Sunday, Mon = Monday,  
Tue = Tuesday, Wed = Wednesday,  
Thu = Thursday, Fri = Friday,  
Sat = Saturday

2. Press **Set Time**.
3. Press the up or down arrow until the current time is displayed.

**Note!** Tapping Set Time changes the time in one hour increments.

4. Press **Run Schedule**.

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## Setting Schedule Times

Use the keys in the “Schedule” area of the keypad for this procedure.

### 1. Press **Occupied**.

**Note!** Anytime a start time is not required, press **Clear Start Time**.

2. Press **Day** until desired day is displayed.
3. Press **Occupied** or **Not Occupied** until the proper period is displayed.
4. Press the up or down arrow until the desired start time is displayed.
5. Repeat Steps 3 and 4 for a given day.
6. Repeat Steps 2 through 5 until finished.

## Copying a Day

Use the keys in the “Schedule” area of the keypad for this procedure.

**Note!** The thermostat must be in program mode to use the copy feature. If the thermostat is already in program mode, skip Step 1.

1. Press **Occupied**.
2. Press **Day** to select the day to be copied.
3. Press **Copy**.
4. Press **Copy** again.
5. Press **Day** until the day to receive the copy is displayed.
6. Press **Copy**.

**Note!** “Done” displays for two seconds then the program display reappears.

7. Repeat steps 2 through 6 for all the days desired.
8. Press **Run Schedule**.



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## Clearing Program Start Times

1. Press **Occupied** or **Not Occupied** until the start period to be cleared is displayed.
2. Press **Day** until the desired day is displayed.
3. Press **Clear Start Time**.
4. Repeat Steps 1 through 3 for all the start times to be cleared.
5. Press **Run Schedule**.

## Temperature Setpoints

### *Setpoint Limits*

The setpoint temperature range is 40°F to 90°F (4°C to 32°C) for heating and 45°F to 99°F (7°C to 37°C) for cooling.

**Note!** The ranges mentioned can be limited based upon setpoints and stops:

1. The greater of the Minimum Heat Stop and the Not Occupied Heat setpoints determines the lowest setting to which the occupied heat setpoint can be adjusted: Stop/NotOcc OccHeat (OccCool – 2).
2. The lesser of Maximum Cool Stop and Not Occupied Cool setpoints determines the highest setting to which the occupied cool setpoint can be adjusted: Stop/NotOcc OccCool (OccHeat + 2).
3. The Maximum Occupied Heat Setpoint is limited by Occupied Cool Setpoint – 2.
4. The Minimum Occupied Cool Setpoint is limited by the Occupied Heat Setpoint + 2.

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## ***Programming Temperature Setpoints***

1. Press **Occupied Heat**.
2. Press the up or down arrow until the desired temperature is displayed.
3. Press **Occupied Cool**.
4. Press the up or down arrow until the desired temperature is displayed.
5. Press **Not Occupied Heat**.
6. Press the up or down arrow until the desired temperature is displayed.
7. Press **Not Occupied Cool**.
8. Press the up or down arrow until the desired temperature is displayed.
9. Press **Run Schedule**.

## **Temperature Setpoint Overrides**

### ***Important***

- Setup determines Occupied override duration.
- Default duration is three hours.

**Note!** To cancel Override and immediately return to the program, press **Run Schedule**.

### ***Using Temporary Occupied Override***

The Temporary Occupied Override can be used when the tcu.z is in Not Occupied or Standby mode. It switches to the Occupied mode for a fixed number of hours.

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1. To use the default occupied override, press **Temporary Occupied**.

**Note!** The default temperature setting is the Occupied setpoint.

2. To select a temperature setting other than the default, press the up or down arrow until desired temperature offset displays (range is 0°F to 3°F).

### ***Using Temporary Not Occupied Override***

The Temporary Not Occupied Override fixes the device to operate in Not Occupied mode for a number of days (between 1 and 99) without changing the programming saved in memory.

#### Notes:

- If the number of days is set to zero, no temporary change takes effect.
- If the number of days is set just below zero, the display for days is “---” (an indefinite override).
- To turn off this override, you must press **Run Schedule**.

1. Press **Temporary Not Occupied**.
2. Press the up or down arrow to change the duration of the Not Occupied period (in days).

**Note!** The default temperature setting is the Not Occupied setpoint.

3. Press the “I” key (center button on front of module) to display the default setpoint.

**Note!** The only way to change this setpoint is to change the Not Occupied setpoint.

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## Changing Temperature Setpoint until Next Program Period

1. Press the up or down arrow until the desired temperature is displayed.
2. The temporary temperature appears for approximately ten seconds, then the room temperature is displayed.

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