# Honeywell | THE FUTURE IS WHAT WE MAKE IT TC500A Commercial Thermostat

## CONNECTED DEVICE FOR COMMERCIAL BUILDINGS

#### **CONFIGURATION AND USER GUIDE**





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# Waste Electrical and Electronic Equipment (WEEE)

### WEEE: Waste Electrical and Electronic Equipment Directive



- At the end of the product life, dispose of the packaging and product in an appropriate recycling center.
- Do not dispose of the device with the usual domestic refuse.
- Do not burn the device.

# FCC Part 15 compliant

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

# **Regulation (EC) No 1907/2006**

According to Article 33 of Reach Regulation, be informed that the substances listed below may be contained in these products above the threshold level of 0.1% by weight of the listed article.

Product/Part Code	Substance Name	CAS Number
Only TC500A-W /	Lead	7439-92-1
thermostat mainboard CBA, thermostat wall plate board PCBA	Lead oxide	1317-36-8

## **Important Safety Information and Installation Precautions**

#### Read all instructions

Failure to follow all instructions may result in equipment damage or a hazardous condition. Read all instructions carefully before installing equipment.

When performing any work (installation, mounting, start-up), all manufacturer instructions and in particular the Mounting Instructions (31-00399M-02) are to be observed.

- TC500A Thermostat may be installed and mounted only by authorized and trained personnel.
- It is recommended that devices be kept at room temperature for at least 24 hours before applying power. This is to allow any condensation resulting from low shipping/storage temperatures to evaporate.
- Do not open TC500A Thermostat, as it contains no user-serviceable parts inside!
- Investigated according to United States Standard UL- 60730-1, and UL60730-2-9.
- Investigated according to Canadian National Standard(s) C22.2, No. 205-M1983 (CNL-listed).
- CE declarations according to LVD Directive 2014/35/EU and EMC Directive 2014/30/EU.
- Product standards are EN 60730-1 and EN 60730-2-9.
- TC500A Thermostat is Class B digital apparatus and complies with Canadian ICES-003.

#### Local codes and practices

Always install equipment in accordance with the National Electric Code and in a manner acceptable to the local authority having jurisdiction.



#### **Electrostatic sensitivity**

This product and its components may be susceptible to electrostatic discharge (ESD). Use appropriate ESD grounding techniques while handling the product. When possible, always handle the product by its non-electrical components.

#### High voltage safety test

Experienced electricians, at first contact, always assume that hazardous voltages may exist in any wiring system. A safety check using a known, reliable voltage measurement or detection device should be made immediately before starting work and when work resumes.

#### **Lightning and high-voltage danger**



Most electrical injuries involving low-voltage wiring result from sudden, unexpected high voltages on normally low voltage wiring. Low-voltage wiring can carry hazardous high voltages under unsafe conditions. Never install or connect wiring or equipment during electrical storms. Improperly protected wiring can carry a fatal lightning surge for many miles. All outdoor wiring must be equipped with properly grounded and listed signal circuit protectors, which must be installed in compliance with local, applicable codes. Never install wiring or equipment while standing in water.

#### Wiring and equipment separations



All wiring and controllers must be installed to minimize the possibility of accidental contact with other potentially hazardous and disruptive power and lighting wiring. Never place 24VAC or communications wiring near other bare power wires, lightning rods, antennas, transformers, or steam or hot water pipes. Never place wire in any conduit, box, channel, duct or other enclosure containing power or lighting circuits of any type. Always provide adequate separation of communications wiring and other electrical wiring according to code. Keep wiring and controllers at least six feet from large inductive loads (power distribution panels, lighting ballasts, motors, etc.). Failure to follow these guidelines can introduce electrical interference and cause the system to operate erratically.



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### Safety Information as per EN60730-1

TC500A Thermostat is intended for commercial and residential environments.

TC500A Thermostat is an independently mounted electronic control system with fixed wiring.

TC500A Thermostat is used for the purpose of building HVAC control and is suitable for use only in non-safety controls for installation on or in appliances.

CHAPTER

# 1

# Introduction

This chapter contains brief description of the TC500A thermostat and its hardware specifications.

#### **Related topics**

About TC500A Thermostat

Features

Intended audience and assumed knowledge

Reference documents

Abbreviation and nomenclature

Conventions

**Dimensions** 

Technical specifications

Security requirement

### **About TC500A Thermostat**

The TC500A Thermostat is an advanced, configurable, connected device for commercial buildings. It controls and monitors AHU, Heat Pump equipment, and their configurations. This device communicates over Wi-Fi, Bluetooth, BACnet IP over Wi-Fi, Sylk to easily integrates with the building automation system.

The built-in intelligent control algorithms of the device help to achieve the perfect balance between Energy Efficiency and Comfort. The device is packaged with numerous presets suitable for most commercial building requirements that enable the easy and quick initial setup.

The firmware of the device can be upgraded via the Wi-Fi network. The device has two universal inputs, two universal inputs/outputs and a pair of Sylk terminals to connect with sensors or other accessories. It also has a built-in temperature sensor, humidity sensor, and proximity sensor.

### **Features**

- Easily customizable and intuitive user interface.
- Multiple, configurable, levels of user privilege access for features such as
  Occupancy set points, Date/Time, Schedules, Calendars of special events, remote
  and local Manual Override, remote and local Occupancy Override, Choice of
  language and units, and screen lockouts to prevent unauthorized settings
  changes.
- Advanced commercial control algorithms such as auto changeover, preoccupancy purge, power-up disable time, freeze protection, demand limit controls, and same reliable optimized recovery methods established over decades of use.
- Settings to switch Fahrenheit to Celsius and vice-versa.
- Heat set points are limited automatically between 40°F to 90°F and cool set points are limited automatically between 50°F to 99°F
- Auto display goes into sleep mode when there is no user action.
- A LED indicator to show the operational status of the thermostat when the display goes to sleep mode.
- Real-Time Clock time keeping accuracy with 72 hour retention during power loss.
- Thermostat can be configured via HMI or BACnet IP.
- BACnet settings can be configured via HMI.

## Intended audience and assumed knowledge

This document provides information about installing and commissioning a TC500A Thermostat. It also shows how to operate the user interface.

It is assumed that the user is trained and familiar with HVAC concepts.

**IMPORTANT**: Always install equipment in accordance with the National Electric Code and in a manner acceptable to the local authority having jurisdiction (AHJ). No guidelines, instructions, installation practices, or other information presented in this guide may be interpreted to supersede or modify the local codes and practices of the AHJ.

## **Reference documents**

- TC500A Commercial Thermostat Datasheet (31-00398M-02)
- TC500A Commercial Thermostat Mounting instructions (31-00399M-02)
- TC500A Commercial Thermostat Quick start guide (31-00401M-02)
- TC500A Commercial Thermostat Pocket guide (31-00463M)
- TC500A Deco Plate Pocket guide (31-00457M)
- TC500A BACnet Integration guide (31-00478-01)

## **Abbreviation and nomenclature**

Abbreviation	Definition
AHU	Air Handling Unit
RTU	Roof Top Unit
VAC	Volts AC (Alternating Current)
VDC/ DC	Volts DC (Direct Current)
OTW	Over-The-Wire
ETA	Serial Communication protocol
BMS	Building Management System

## **Conventions**

The TC500A thermostat has a 4 inch, 480x480 pixel LCD screen for easy navigation and setup. You can select various options available on the screen by lightly tapping the option on the screen or scrolling through the list.

The conventions for hand gestures used to navigate through the pages on the TC500A Thermostat display are:

- Tap: Quickly touch and release to select a control or item; equivalent to a mouse-click.
- Swipe: Quickly slide one or more fingers across the screen to reveal controls or to scroll through lists or groups of items; equivalent to scroll.

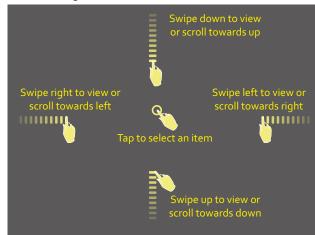
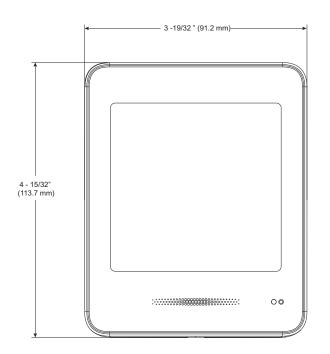


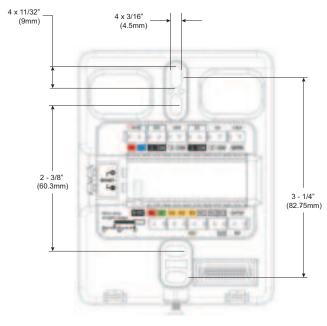
Figure 1 Hand Gestures Convention

- A green tick appears before the valid selection
- If the option selected or the text entered is valid, the option to move to the subsequent screen turns blue. Tapping the option in blue will toggle to next screen.

## **Dimensions**

Figure 2 Dimensions





# **Technical specifications**

### **Power Characteristics**

Table 1 Power Characteristics

Power Supply	Rated voltage: 24VAC 50/60Hz, Working voltage range: 20-30VAC, UL listed class-2 transformer or IEC 61558 listed transformer.
Power Consumption (Display ON)	Max. 8.5VA @ 24VAC (355mA @ 24VAC)
Min. Load	4VA (all DOs OFF)
Max. Load	96VA (all DOs ON)

## **Display**

Table 2 Display

Display Type	24 BPP TFT display with CTP
Resolutions	480x480 pixel
Active Display Area	4" diagonally
Backlight	LCD (Dimmable)

## **Operating Environment**

Table 3 Operating Environment

Ambient Operating Temperature	32 to 122 °F (0 to +50°C)
Ambient Operating Humidity	10 to 90% relative humidity (non-condensing)
Storage Temperature	-40 to 150 °F(-40 to 65.5°C)
Protection Class	IP20

## **Compliances**

Table 4 Compliances

Certificates	CE, FCC, ICES, UL/cUL, RoHs, REACH, California, Title 24, and Prop65.
	EN 60730-1, EN 60730-2-9, EN 301489-1, EN 301489-17, EN 300328, EN 301893, EN 62479, UL60730-1, UL60730-2-9, Title 47 part 15 subpart B, Title 47 part 15 subpart C, RSS 210, ICES-003

## **IO Characteristics**

**Table 5** IO Characteristics

UIO x 2	<ul> <li>Resistive Temperature Sensor Input         <ul> <li>10K NTC type II, C7021 series</li> <li>10K NTC type III, C7023 series</li> <li>20K NTC, TR21 and C7041 series.</li> </ul> </li> <li>Temperature Accuracy         <ul> <li>±0.5°C (±1°F) at 10 – 32°C (50 – 90°F)</li> <li>±1.1°C (±2°F) at -1.1 – 50°C (30 – 122°F)</li> </ul> </li> <li>Voltage Input, SELV         <ul> <li>0-10V, ±5% of full scale</li> </ul> </li> <li>Digital Input         <ul> <li>Dry contact closure</li> <li>Open circuit (≥100Kohms)</li> <li>Closed circuit (≤100ohms)</li> </ul> </li> <li>Voltage Output</li> <li>0-10V, ±3% of full scale @2K ohms</li> </ul>
UI x 2	<ul> <li>Resistive Temperature Sensor Input  — 10K NTC type II, C7021 series  — 10K NTC type III,C7023 series  — 20K NTC, TR21 and C7041 series</li> <li>Temperature Accuracy  — ±0.5°C (±1°F) at 10 – 32°C (50 – 90°F)  — ±1.1°C (±2°F) at -1.1 – 50°C (30 – 122°F)</li> <li>Voltage Input, SELV  — 0-10V, ±5% of full scale</li> <li>Digital Input  — Dry contact closure  — Open circuit (≥ 100Kohms)  — Closed circuit (≤100ohms)</li> </ul>
DO (G, Y1,Y2,Y3,W1,W2,W3)	Relay Output     1 Amps Max. at 24VAC
DO (AUX)	Relay Dry Contact

# **Communication Technologies**

Table 6 Communication Technologies

BACnet IP	Over Wi-Fi
Wi-Fi	802.11 b/g/n Supported security levels WPA, WPA2, WPA/WPA2 mixed, *WPA3 will be supported in future release.
Bluetooth	BLE 4.2 with 1 Mbps Classic Bluetooth with max. 3 Mbps
Sylk <sup>TM</sup>	Honeywell Sylk <sup>TM</sup>

## **Electrical Characteristics**

Table 7 Electrical Characteristics

Rated Impulse Voltage	500 V
Construction of Control	Independently Mounted Control
Operation Method	Type 1 Action
Pollution Degree	2
Purpose of Control	Operating Control

## **Supported Sensors and Functions**

Figure 3 Supported Sensors

Sensors	Options	Part Numbers
Occupancy Sensor	Direct (Normally Open) Reverse (Normally Closed)	Dry contact occupancy sensor
Dirty Filter Sensor	Direct (Normally Open) Reverse (Normally Closed)	DPS200, DPS400, DPS1000 (Dry contact differential pressure switch)
Proof Of Air Flow Sensor	Direct (Normally Open) Reverse (Normally Closed)	DPS200, DPS400, DPS1000 (Dry contact airflow switch)
Shutdown Sensor	Direct (Normally Open) Reverse (Normally Closed)	Dry contact shutdown switch
Mixed Air Temperature Sensor	NTC 20K, Type II NTC 10K, Type II Sylk	C7250 C7021 C7400S
Outdoor Air Temperature Sensor	NTC 20K, Type II NTC 10K, Type II Sylk	C7250A C7021 C7400S
Return Air Temperature Sensor	Sylk	C7400S
Discharge Air Temperature Sensor	NTC 20K, Type II NTC 10K, Type II Sylk	C7041 C7021 C7400S

Sensors	Options	Part Numbers
Space Temperature Sensors	NTC 20K, Type II Sylk	TR21 TR40/TR75 (max 4), TR120 (max 1)
Fan Current Sensor Max Amps	0~<+Inf Amps	Coming soon
CO2 sensor (analog)	0-10 VDC or Sylk Sylk	C7232 TR40-CO2, TR42-CO2
Proof of waterflow	Digital Input	Dry contact waterflow switch

## **Thermostat Variants**

**Table 8** Thermostat Pert Number

TC500A-N	Thermostat with North American Wi-Fi conformance
	Thermostat with outside of North American Wi-Fi conformance

# **Terminal Identification**

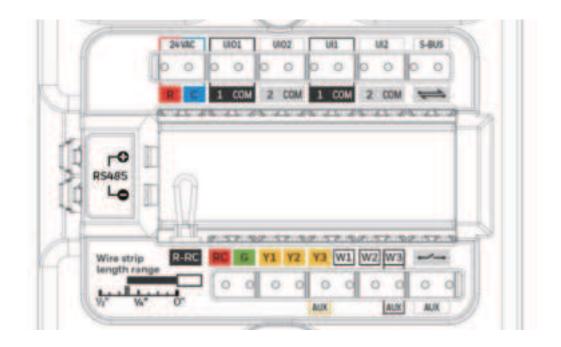


Table 9 Terminal Identification

Terminal	Label	Connection	
	R	24VAC power from heating transformer	
24VAC	С	24VAC common (Neutral). For 2 transformer systems, use common wire from cooling transformer	
1.110.1	1	Universal input/output	
UIO1	COM	Common	
UIO2	2	Universal input/output	
0102	COM	Common	
UI1	1	Universal input	
OII	COM	Common	
UI2	2	Universal input	
012	COM	Common	
Calla (C. DLIC)	Appendix,	Sylk bus, master, power output	
Sylk (S-BUS)	A COMMENT	Sylk bus, master, power output	
DC (4.0.E	+	BACnet Communications (coming soon)	
RS485	_	BACnet Communications (coming soon)	
	R-RC	Jumper between R and RC for single transformer system	

Terminal	Label	Connection	
	RC	24VAC power from cooling transformer	
	G	Fan	
	Y1	Relay output, Compressor contactor (stage1)	
	Y2	Relay output, Compressor contactor (stage2)	
24VAC	Y3	Relay output, Compressor contactor (stage3)/Configurable Output	
	W1	Relay output, Heat (stage1)	
	W2	Relay output, Heat (stage2)	
	W3	Relay output, heat (stage3)/Configurable Output	
Aux	and have	Relay dry contact, Aux-1	
Aux	and have	Relay dry contact, Aux-2	

# **Terminal Assignment**

Table 10 Terminal assignment

Туре	Terminal	Label	Terminal Assignments (Default & Optional Assignments)		
			Default	Inputs	Outputs
Digital	DO1	G	Supply Fan		High Speed Fan
Outputs	DO2	W1	Heat Stage 1		
	DO3	W2	Heat Stage 2		
	DO4	W3 / Aux	Heat Stage 3		Reversing Valve OB, Low Speed Fan, Occupancy, Simple Dehum, and Humidification.
	DO5	Y1	Cool Stage 1		
	D06	Y2	Cool Stage 2		
	D07	Y3 / Aux	Cool Stage 3		Economizer (Enable), Low Speed Fan, Occupancy, Simple Dehum, and Humidification.
	DO8 (Dry Contact, 2 terminals)	Aux			Economizer (Enable), Occupancy, Simple Dehum, Low Speed Fan, and Humidification.

Туре	Terminal	Label	Terminal Assignments (Default & Optional Assignments)		
			Default	Inputs	Outputs
Universal Inputs Universal Inputs/	UI1 (2 terminals)	UI1	NA	Discharge Air Sensor, CO2 Sensor, Proof of Waterflow, Space Temp Sensor. Outdoor Air Dampi Modulating Heat (UIO2)	
	UI2 (2 terminals)	UI2	NA		
	UIO1 (2 terminals)	UIO1	NA		Multi-SpeedFan(UIO1) Outdoor Air Damper
Outputs	UIO2 (2 terminals)	UIO2	NA		
Power	R	R		24v Power	
	С	С		Common	
	RC	RC		24v Power / Cooling	
Sylk Bus	1 2	S-Bus		Sylk connection	

**Note:** \* Marked sensors are supported in future.

## **Security requirement**

#### **System Environmental Considerations**

An Internet firewall is required to isolate the Thermostat. Unprotected Internet connections can expose and damage the thermostat system and facility components to cyber-attacks from third parties. This may cause the thermostat to malfunction and can also be misused for illegal purposes for which the operator may then be held liable.

#### **Deployments and Maintenance Considerations**

- Always keep the local server up to date on the latest security patches via a regular system update. This applies not only to workstations or servers running on Windows, Linux, Mac, or any devices that run as part of information infrastructure or operations workstation.
- Always keep the thermostat firmware with the latest released firmware to have maximum protection by built-in security features.
- Do not use default passwords for any devices (if exists). This includes, but not limited, to all server workstations, storage servers, firewall devices, routers, and mobile devices.
- Do not use weak passwords for server administrators or operators. Different user roles (for example administrator, user, guest, etc.) shall have a different password, and the user should not share common passwords.
- In case of wireless communication, malicious wireless devices can easily scan the wireless channel and inject malicious packets or mass data flow to perform Deny-of-Service attacks. Honeywell has taken steps to prevent the TC500A Commercial Thermostat device from being injected, but the mass data flow will result in the loss of wireless communication bandwidth within the whole system. A regular check of the communication failure rate or response rate of the thermostat is helpful to discover and isolate devices being attacked and stop the physical attacks in the daily operation

#### **Network Communication Notice**

- To keep maximum integration compatibility with third-party devices and Fast-pack communications are un-encrypted as open protocol. Improper security protection may lead to data leakage, spoofing, and/or tampered by malicious devices and denial-of-service attacks.
- To keep maximum integration compatibility with legacy devices, in-room wired devices are less secure from data confidentiality and authentication thus notrecommended for a new design. It is always highly recommended to use deep mesh wireless network communication to gain maximum protection and the latest updates.
- In case of Deny-of-Service attacks, all communication channels will inevitably have a loss of bandwidth due to malicious data flow.
- Connected devices may contain legacy technology, which is less secure under modern cyber-security attacks. Honeywell strongly recommends using a secured deep mesh wireless network communication. In case of legacy technology, the user needs to be aware of the risk of being tampered with or attacked. To reduce

the attack surface, the user is advised to physically secure the wired communication signals or provide necessary shield on wires, or place necessary access control on accessing such communication wires.

CHAPTER

# 2

# **Getting started**

This chapter describes the TC500A Thermostat display, home pages, icons, device registration, and other user interfaces. For mounting the TC500A Thermostat, refer to TC500A Thermostat Mounting instructions (31-00399M).

#### **Related topics**

Thermostat display overview

Presence detection

Home Page: Temperature reading and adjustment

Device configuration page (right side page): Quick access and device management

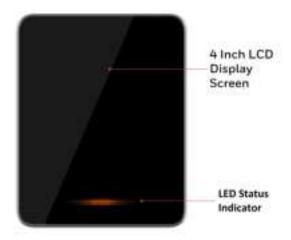
Ambiance page (left side page): Sensor reading

Home screen icon overview

Smart LED indication

# Thermostat display overview

The image below illustrates the typical screen of TC500A Thermostat screens in sleep mode. The 4 inch LCD screen on the thermostat is touch-sensitive and shows the status of the thermostat.



## **Presence detection**

TC500A Thermostat has a built-in proximity sensor. It detects the presence of a user up to 1.5 meters, and "wakes" the screen to prepare for user interaction.

# Home Page: Temperature reading and adjustment



Table 11 Home Page (main screen) overview

Item	Description	
1	Indoor Humidity: Displays the current indoor humidity	
2	<b>Current Mode:</b> Indicates the current Setpoint Status (Occupied, Unoccupied, Standby, Temporary)	
3	Indoor Temperature: Displays the current indoor temperature.	
4	Mode Display: Orange flame for heat mode, blue snowflake for cool mode.	
5	Wi-Fi signal strength	
6	Time	
7	Adjust temperature: Touch the up arrow to increase the desired temperature.	
8	Desired temperature: Displays the desired temperature.	
9	Adjust temperature: Touch the down arrow to decrease the desired temperature.	
10	Temperature Slider: Use a finger to move the slider to set the desired temperature.	
11	Home screen indicator: Use finger to swipe to left or right to display more options.	

# Device configuration page (right side page): Quick access and device management

Swipe left from the home page to view the Device configuration page.

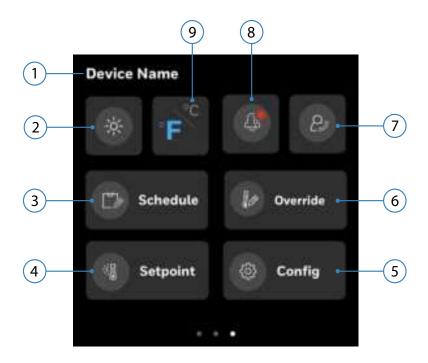


Table 12 Device configuration page overview

Item	Description
1	The name assigned to the thermostat while performing initial set up.
2	Brightness: Tap to increase or decrease the brightness of the display.
3	Schedule: Tap to set the schedules.
4	Setpoint: Tap to configure the set points of various parameters.
5	Config: Tap to configure the thermostat.
6	Override: Tap to override unoccupied or standby modes to allow setpoint adjustments.
7	Contractor information: Tap to view contractor information.
8	Alerts: Tap to view active alarms.
9	Temperature Units: Tap to toggle between Fahrenheit or Celsius.

# Ambiance page (left side page): Sensor reading

Swipe right from the home page to view the Ambiance page.



**Note:** The types of reading displayed varies according to the sensor connected to the thermostat.

Table 13 Typical Ambiance page overview

Item	Description
1	Outdoor temperature
2	Outdoor humidity
3	Indoor CO2 level
4	Indoor humidity

# Home screen icon overview

Table 14 Home screen icon overview

Icon	Description
₽	High severity alert
₽,	Medium severity alert
₽.	Low severity alert
*6	Auto mode
<b>&amp;</b>	Emergency heat mode
8	Heating mode
*	Cooling mode
Ēh	Occupied mode
Ħ	Standby mode
$\blacksquare$	Unoccupied mode
Ēh	Temporary mode
8	Wi-Fi signal strength

# **Smart LED indication**

Table 15 Smart LED indication

Display	Stages	LED, screen status and Description
66		Interact with touchscreen  • Screen ON  • LED Lighting OFF
	Heating	The orange light pulses when in heating and auto heat mode  • Screen OFF  • LED Lighting ON (Light stops pulsing when the indoor temperature reaches the setpoint)
	Cooling	The blue light pulses when in cooling and auto cool mode  • Screen OFF  • LED Lighting ON (Light stops pulsing when the indoor temperature reaches the setpoint)

Table 15 Smart LED indication

Display	Stages	LED, screen status and Description
	Off	<ul><li>Screen OFF</li><li>LED lighting OFF</li></ul>

#### CHAPTER

# 3

# **Initial Configuration**

This chapter contains steps and descriptions to set up the initial configuration of the thermostat and other basic configurations.

#### **Related topics**

Prerequisites

**WARNINGS** 

Boot-up the thermostat

Integrating with Occupant app and Cloud registration

## **Prerequisites**

Before going through initial guided setup sequences, ensure the TC500A is installed and wired up according to the TC500A installation and mounting guide.

#### **WARNINGS**

- To reduce the risk of electrical shock do not open the thermostat. There are no user-serviceable parts inside. Refer servicing to qualified service personnel only.
- Cleaning Use a dry cloth to clean the product. Do not use liquid cleaners or aerosol cleaners
- Water and moisture Do not use the product near water. Do not install the product in a place where water may splash onto it.
- Do not operate the thermostat with a hard, sharp, or pointed object such as a fingernail, pen.
- The screen used for the thermostat is made of glass. Therefore, it can break when the product is dropped or heavy impact is applied. Be careful not to be injured by broken glass pieces in case the screen breaks.

## **Boot-up the thermostat**

The thermostat will be powered up automatically after it mounted on the wallplate. You will navigate through the settings given below subsequently while setting up the thermostat.

Configuring the language

Configuring the thermostat via mobile app

Configuring the thermostat via local interface

Assigning a name to the thermostat

Selecting a temperature unit

Configuring UTC Offset

Setting Date and Time

Setting up the Equipment type

Setting up the conventional equipment

Setting up the Heat pump

Configuring the Setpoints

Setting up the Installer Passcode

Configuring the contractor information

Connecting the thermostat to Wi-Fi

#### To set up the thermostat

1. Boot-up the thermostat.

The Honeywell logo page appears, followed by the "Welcome to TC500A" page.



Figure 4 Welcome screens



The Welcome page followed by the LET'S BEGIN page appears.

Figure 5 Welcome screen



#### 2. Tap LET's BEGIN.

The Language page appears.

#### Configuring the language

3. Select your preferred language and tap **NEXT**.

**Note:** French and Spanish language support is coming soon.

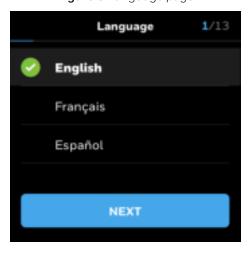


Figure 6 Language page

The Platform Configuration page appears.

The Platform Configuration page allows to configure the thermostat using mobile app or thermostat interface locally.

#### Configuring the thermostat via mobile app

Note:

Configuration via mobile app is supported only for Small and Medium Business Administrator system thermostat. Use the local interface for configuration for Standalone version thermostat. To configure the thermostat (for both version) using the local interface, refer to Configuring the thermostat via local interface.

Platform Configuration 2/13

How would you like to configure?

Mobile App Thermostat

BACK NEXT

Figure 7 Platform Configuration

4. To configure using mobile app, tap **Mobile App**, and tap **NEXT**. A QR code displays on the thermostat screen.



Figure 8 QR Code screen

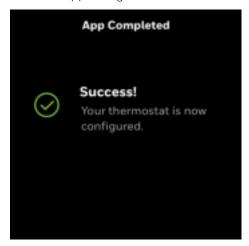
5. Scan the QR code by aligning the QR code on the Honeywell app within the frame on your mobile phone camera screen.

3 01:58

BACK

- 6. The thermostat will be connected to the mobile application.
- 7. Follow the set up guide on mobile application to complete the configuration.
- 8. After setup is completed, the App Completed message appears.

Figure 9 Mobile app configuration successful message



#### Configuring the thermostat via local interface

9. On the platform configuration screen tap Thermostat, and tap NEXT.

Figure 10 Platform configuration (Thermostat)



The **Device Name** page appears.

#### Assigning a name to the thermostat

Figure 11 Device Name



#### 10. Tap on the text field

A keyboard will be displayed on the screen to enter the device name.

11. Enter the device name.

Assign a unique name to a thermostat specifying a name to the location where the thermostat is installed. It assists the user to easily identify the device during remote operation of the thermostat.



Figure 12 Saving the device name

12. After entering a valid device name tap **NEXT**.

The Zip Code page appears.

13. Enter the Zip code of your area and tap **NEXT**.

The device name is saved and the Temperature Unit page appears.

#### Selecting a temperature unit

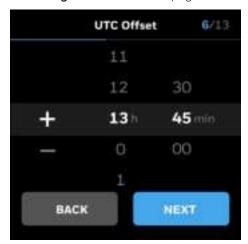
Figure 13 Temperature unit



14. Select a preferred temperature unit and tap **NEXT**. The Date and Time page appears.

#### **Configuring UTC Offset**

Figure 14 UTC Offset page

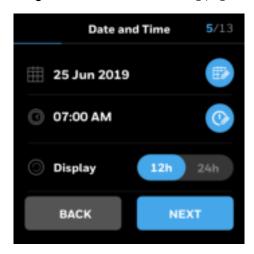


- $15. {\sf Tap}$  plus or minus symbol as per location time zone set from the UTC and scroll the numbers to set the time.
- 16.Tap **NEXT**.

The Equipment Type page appears.

#### **Setting Date and Time**

Figure 15 Date and Time Config page



- 17. Tap the calendar pen icon to set the date.
- 18. Tap the clock icon to set the time.
- 19. Slide the Display toggle button to the right to set the 24h time format if required.
- 20.After setting date and time, tap **NEXT**.

The UTC Offset page appears.

#### Setting up the Equipment type

The TC500A is designed to control Heat Pump or Conventional HVAC. It can control up to 3 heating stages and 3 cooling stages in conventional systems and up to 3 compressor stages and 2 auxiliary heat stages in heat pump systems.

Figure 16 Equipment type - Conventional



#### Setting up the conventional equipment

Note: If you want to configure the Heat pump, then refer to the Setting up the Heat pump section. Skip setting up the conventional equipment section.

21.On the Equipment Type page, tap **Conventional** and tap **NEXT**. The Cooling Stages page appears.

Figure 17 Cooling stages



22. Select a required cooling stage and tap **NEXT**. The Heating Type/Stages page appears.



Figure 18 Heating Type/Stages

- 23. Under **Stages** tab, select a required number of heating stage.
- 24. To use the modulating hear type, tap Modulating.

Figure 19 Modulating heating

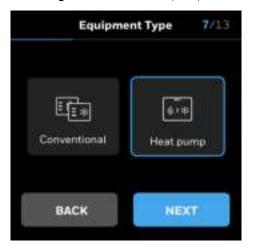


- 25. Toggle the Use stage 1 heat as an enable button to YES.
- 26. Swipe the slider to select the desired percentage of output.
- 27. If no heating is required, tap None.
- 28. After setting up heating stages, tap **NEXT**.

  The Setpoints page appears. Refer to Configuring the Setpoints.

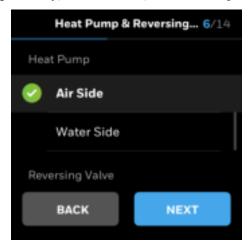
#### Setting up the Heat pump

Figure 20 Select Heat pump



29. On the Equipment Type page, tap **Heat pump** and tap **NEXT**. The **Heat Pump** and **Reversing Valve** page appears.

Figure 21 Type of Heat Pump and Reversing Valve



30. Tap Air Side or Water Side and tap NEXT.

The Compressor Stages page appears.

Figure 22 Select number of compressor stages



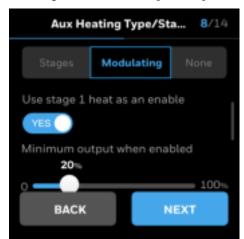
- 31. Select a required compressor stage number.
- 32. Tap **NEXT.**

The Aux Heating Type/Stages page appears.

Figure 23 Aux Heating Type/Stages

- 33. Under **Stages** tab, select a required number of heating stage.
- 34. To use the modulating hear type, tap **Modulating**.

Figure 24 Modulating heating



- 35. Toggle the Use stage 1 heat as an enable button to **YES.**
- 36. Swipe the slider to select the desired percentage of output.
- 37. If no heating is required, tap None.
- 38. After setting up heating stages, tap **NEXT**. The Changeover page appears.

Changeover 8/13

Automatic

Manual

BACK NEXT

Figure 25 Changeover page

39. Select a changeover mode and tap **NEXT**. The Setpoints page appears.

#### Configuring the Setpoints

Setpoints 9/13

Occupied Standby Unoccupied

Heating (40 - 90F)

Cooling(50 - 99F)

BACK NEXT

Figure 26 Define the setpoints

- **Tip**: Long press the **+/-** button to quickly increase or decrease the value.
- 40. Configure the required setpoint limits for Occupied, Standby, and Unoccupied modes. Thermostat performs limit checking on all temperature setpoints, in case setpoint relationships are violated.
- Occupied mode treats the building space as occupied and configured with comfort setpoints.
- Unoccupied mode treats the building space as not occupied and configured with energy savings setpoints.
- Standby mode setpoints are configured in a way that the setpoints can quickly change to the Occupied mode when switched. Standby mode setpoint saves energy higher than occupied mode and lesser than the Unoccupied mode.

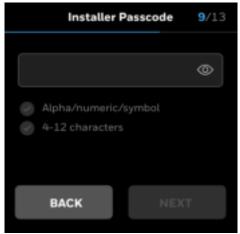
- Temporary mode allows the user to change the temperature setpoints of the Occupied mode after the user switches to the temporary mode from the Occupied mode. This is not possible in Unoccupied mode and Standby mode.
- When a schedule uses the Occupied mode but the Occupancy sensor reads occupied, then the thermostat switches automatically to the Standby mode. In other scenarios, the thermostat follows the schedule status and the occupancy sensor's value has no impact on it.
- Minimum cool setpoint and maximum heat setpoint can be adjusted, default minimum cool setpoint is 50F, maximum heat setpoint is 90F. Heat setpoint range: 40F-90F; Cool setpoint range: 50F-99F.
- While configuring the temperature range make sure that the unoccupied heat <= standby heat <= occupied heat < occupied cool <= standby cool<= unoccupied cool.
- Occupied cool setpoint should be at least a deadband value bigger than occupied heat setpoint.

#### 41. Tap **NEXT.**

The Installer Passcode page appears.

#### Setting up the Installer Passcode





#### 42. Tap on the text field

A keyboard will popup.

#### 43.Enter a passcode.

**Note**: The passcode must contains 4 to 12 characters including a Alpha/numeric/symbol character

**Tip**: Tap the Eye icon to view and confirm the Password.

44. Tap the tick button.

#### 45.Tap **NEXT**.

The Contractor Information page appears.

**Note**: The Installer passcode is to prevent unauthorized changes to thermostat settings. This passcode will be used by the admin user.

#### Configuring the contractor information

Figure 28 Contractor Information



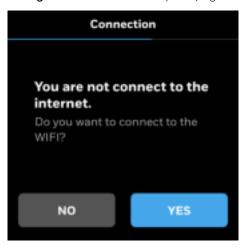
46. Enter the contractor information.

#### 47. Tap **NEXT**.

The connection page appears.

#### Connecting the thermostat to Wi-Fi

Figure 29 Connection request page



#### 48. Tap **YES**.

The Wi-Fi page appears. Select a type of connection.

Local Router: Select this option to directly connect the thermostat to cloud.

Honeywell Gateway: Select this option to connect the thermostat to gateway system.

 ${\sf BACnet\ IP} : {\sf Select\ this\ option\ to\ connect\ the\ thermostat\ to\ BACnet\ device}.$ 

Figure 30 Wi-Fi page



#### 49. Tap Local Router.

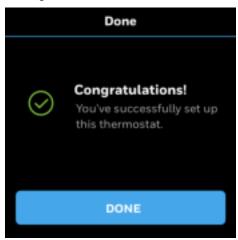
A list of Wi-Fi connections appear.

Figure 31 Local Router - Wi-Fi connections



- 50.Tap a Wi-Fi connection.
- 51.Tap **NEXT**.
- 52.Enter the Wi-Fi connection password.
- 53. Tap the tick button.
- 54.Tap **NEXT**.
  - Wi-Fi connection loading page appears.
  - If the connection is successful, "Your thermostat is now connected" message appears.
- 55. Tap the thermostat screen.
  - The Congratulations message appears.

Figure 32 Successful connection

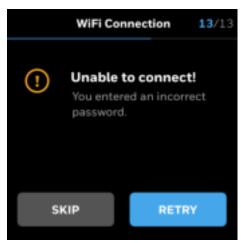


#### 56. Tap **DONE**.

Thermostat Home page appears.

**Note**: If the connection is unsuccessful, user can **RETRY or SKIP** setting Wi-Fi connection.

Figure 33 Unsuccessful Wi-Fi connection



After set up the thermostat device, you can start configuring the schedules, alarms, and terminal assignments. To reconfigure initial setup, refer to Device Configuration & Equipment Settings.

# Integrating with Occupant app and Cloud registration

The thermostat can be remotely monitored and controlled using the Occupant mobile app. This mobile app integration also helps to register the thermostat with the Cloud network and subsequently supports Over-the-air (OTA) firmware upgrade.

#### **Prerequisites**

• Go to the app store and search for "Honeywell Connect Me" to download the app. Install the app on your mobile device, then create an account, and create a site.

#### To integrate with the Occupant app and Cloud registration

- 1. Turn on Bluetooth on the thermostat. Refer to Bluetooth.
- 2. On the Occupant app, after app registration and site creation, you will be prompted to add a thermostat.

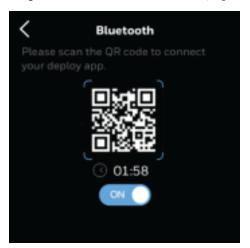
The following page appears.



Figure 34 Occupant app - Adding thermostat

- 3. Tap Add.
- 4. Tap **SCAN TO CONNECT.**
- 5. Scan the QR code that appears on the thermostat Bluetooth page.

Figure 35 Thermostat - Bluetooth page



6. The **Successfully Connected** message appears on the Occupant app if connected successfully.

Subsequently, the thermostat will be registered to the cloud and registration message appears. Then, the Add Device page appears.

Your thermostat has been registered.
One more step to add to site.

Device Name
Thermostat 01

Figure 36 Add Device - Naming thermostat

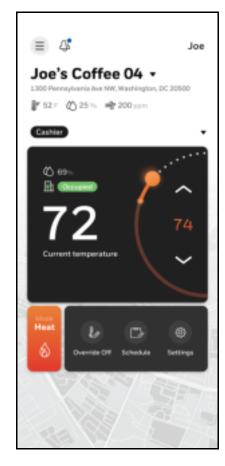
7. You can rename the device name, then tap **ADD**. This will update the thermostat name in the actual thermostat itself.

If the thermostat name is renamed then the Updated thermostat name appears.

After a successful connection, the "Your thermostat is added and ready to use" message appears.

Figure 37 Thermostat is added to the Occupant app





#### 8. Tap DONE.

Registered thermostat home page appears on your mobile.

To remove the registration, refer to Reset to Default.

**CHAPTER** 

# 4

# **Device Configuration & Equipment Settings**

This chapter contains thermostat level configuration and equipment level configuration procedures. Only the Installer has access to these configuration pages.

#### Related topics

**Basic Configuration** 

Connection

User management

Configuring the user roles

Configuring the Home page (Display Management)

Configuring the alarm preference

Viewing the system status

Reset to Default

Advance settings: Configuring the equipment settings

Configuring the Thermostat I/O terminals

Configuring the sensors

Managing the setpoint options

Miscellaneous

Advance settings: Configuring the equipment settings

# **Basic Configuration**

The Basic configuration contains two tabs such as General and Equipment.

General includes Language, Device name, Temperature unit, Date & Time, Screen cleaning, Brightness, and Contractor information. Equipment tab includes Equipment type, Auto Changeover, and Standby Action. You might have configured some of these settings while initial set up. However, you reconfigure these settings whenever required.

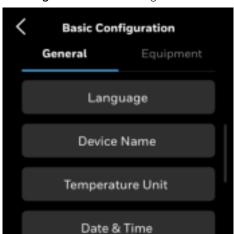


Figure 39 Basic configuration

The following features are covered under the Basic configuration.

To configure language

To rename the device name

To change the temperature unit

To configure Date & Time

To configure Daylight savings

To configure the UTC Offset

To enable screen cleaning mode

To adjust the display brightness

To modify contractor information

To configure Equipment type

To configure the Heat Pump

To configure Auto Changeover

To set up Standby Action

Pre-occupancy purge

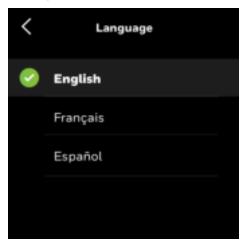
#### General

#### To configure language

- 1. Swipe left from the Home page.
- On the Device configuration page, tap Config > Basic > Language
   The Language page appears.

**Note:** French and Spanish language support is coming soon.





- 3. Select a language.
- 4. Tap the back button to navigate back to the previous page and save the settings.

#### To rename the device name

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Device Name**. The Device name page appears.

Figure 41 Naming the thermostat



- 3. Tap on the text field

  A keyboard will be displayed on the screen to enter the device name.
- 4. Enter the device name.

Assign a unique name to a thermostat specifying a name to the location where the thermostat is installed. It assists the user to easily identify the device during remote operation of the thermostat.

5. Tap the back button to navigate back to the previous page and save the settings.

#### To change the temperature unit

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Temperature Unit**. The Temperature Unit page appears.

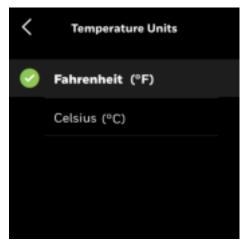


Figure 42 Temperature unit

- 3. Select a temperature unit.
- 4. Tap the back button to navigate back to the previous page and save the settings.

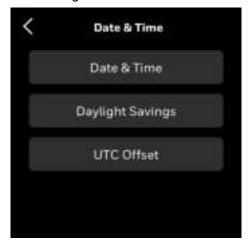
#### To configure Date & Time

The date and time of the thermostat is synced with local time automatically after a successful connection. However, if the thermostat date and time is not synced automatically, then you can manually set it.

You can configure the Date & time, Daylight savings, and UTC Offset.

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Date & Time**. The Date & Time page appears.

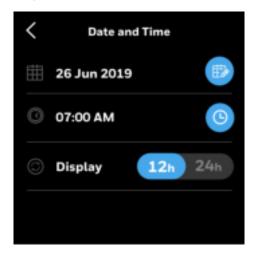
Figure 43 Date & Time



#### 3. Tap Date & Time.

The Date and Time page appears.

Figure 44 Date and Time Config page

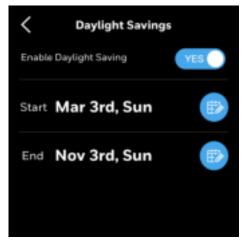


- 4. Tap the calendar pen icon to set the date.
- 5. Tap the clock icon to set the time.
- 6. Slide the toggle button to the right to set the 24h time format if required.
- 7. Tap the back button to navigate back to the previous page.

#### To configure Daylight savings

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Date & Time > Daylight Savings**. The Daylight Savings page appears.

Figure 45 Daylight savings page



The Daylight Saving is on by default.

- 3. Tap the Start calendar pen icon to set the start date for daylight savings.
- 4. Tap the End calendar pen icon to set the end date for daylight savings.
- 5. To disable the daylight light savings, slide the Enable Daylight Saving toggle button to
- 6. Tap the back button to navigate back to the previous page.

#### To configure the UTC Offset

UTC offset is to offset your location time zone from UTC time.

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap Config > Basic > Date & Time > UTC Offset. The UTC Offset page appears.

**UTC Offset** 11

Figure 46 UTC Offset page

12 30 13 45 00 CANCEL CONFIRM

**Table 16** USA Time Zones

USA Time Zone	Standard	Cities	
Atlantic	UTC-04:00	Puerto Rico, U. S. Virgin Islands	
Eastern	UTC-05:00	Connecticut, Delaware, District of Columbia, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, West Virginia; Partially: Florida, Indiana, Kentucky, Michigan, Tenness, Navassa Island, Bajo Nuevo Bank, Serranilla Bank	
Central	UTC-06:00	Alabama, Arkansas, Illinois, Iowa, Louisiana, Minnesota, Mississip pi, Missouri, Oklahoma, Wisconsin; Partially: Florida, Indiana, Kan sas, Kentucky, Michigan, Nebraska, North Dakota, South Dakota, Tennessee, Texas	
Mountain	UTC-07:00	Arizona, Colorado, Montana, New Mexico, Utah, Wyoming; Partially: Idaho, Kansas, Nebraska, North Dakota, Oregon, South Dakota, Texas	
Pacific	UTC-08:00	California, Nevada, Washington (state); Partially: Idaho, Oregon	
Alaska	UTC-09:00	Partially: Alaska	
Hawaii-Aleutian	UTC-10:00	Hawaii, Partially: Alaska	
American Samoa	UTC-11:00	American Samoa, Jarvis Island, Midway Atoll, Palmyra Atoll, Kingman Reef	
	UTC-12:00	Baker Island, Howland Island	
	UTC+12:00	Not defined by 15 U.S.C. §260: Wake Island	
Chamorro	UTC+10:00	Guam, Northern Mariana Islands	

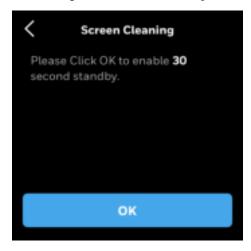
- 1. Tap plus or minus symbol as per location time zone set from the UTC and scroll the numbers to set the time.
- 2. Tap the back button to navigate back to the previous page.

#### To enable screen cleaning mode

Screen cleaning mode lock/disable the touch sensitivity of the display for 30 seconds so you clean the device display while the thermostat is functional.

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic >** scroll down > **Screen Cleaning**. The Screen Cleaning page appears.

Figure 47 Screen Cleaning



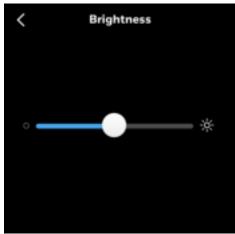
3. Tap **OK** to enable the screen cleaning mode for 30 seconds or tap the back button navigate back to the previous page.

to

#### To adjust the display brightness

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic >** scroll down > **Brightness**. The Brightness page appears.

Figure 48 Brightness



- 3. Move the slider to right or left to adjust the brightness.
- 4. Tap the back button to navigate back to the previous page.

#### To modify contractor information

You might have added the Contractor information while performing initial setup. To modify that information, follow the procedure given below.

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic >** scroll down > **Contractor Information**.

The Contractor Information page appears.

Figure 49 Contractor information



- 3. Modify Name, Phone, and Email address of the contractor.
- 4. Tap the back button to navigate back to the previous screen and save the modified information.

## **Equipment**

This section contains procedures to reconfigure the Equipment type of Conventional and Heat pump settings that you have set up while performing initial set up. Also, it covers Auto changeover and Standby settings.

#### To configure Equipment type

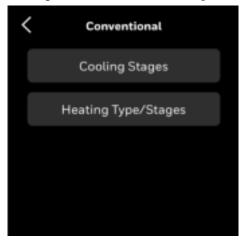
- 1. Swipe left from the Home page.
- On the Device configuration page, tap Config > Basic > Equipment > Equipment type.
   The Equipment Type page appears.

Figure 50 Equipment type



3. Tap **Conventional** and tap **NEXT**. The Conventional page appears.

Figure 51 Conventional settings



- 4. Tap **Cooling Stages**.
  - The Cooling Stages page appears.
- 5. Select a cooling stage number.
- 6. Tap the back button to navigate to the previous page.
- 7. Tap **Heating Type/Stages**.
  The Heating Type/Stages page appears.
- 8. Under **Stages** tab, select a required number of heating stage.
- 9. To use the modulating hear type, tap Modulating.

C Heating Type/Stages
Stages Modulating Fune
Use Stage I heat as an enable

Minimum output when enabled

100%

20%

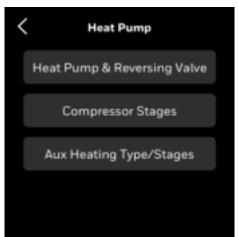
Figure 52 Modulating heating

- 10. Toggle the Use stage 1 heat as an enable button to YES.
- 11. Swipe the slider to select the desired percentage of output.
- 12. If no heating is required, tap None.
- 13. After selected an option, tap the back button to navigate back to the Conventional page.
- 14. Tap the back button to navigate back to the Equipment Type page.

#### To configure the Heat Pump

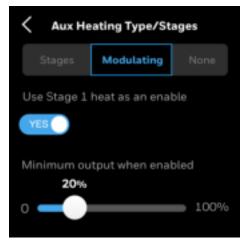
1. On the Equipment Type page, tap **Heat pump** and tap **NEXT**. The Heat Pump page appears.

Figure 53 Heat Pump



- Tap Heat Pump & Reversing Valve.
   The Heat Pump & Reversing Valve page appears.
- 3. Selection a required option.
- 4. Tap the back button to navigate back to the Heat Pump page.
- Tap Compressor Stages.
   Select a required compressor stage number.
- 6. Tap the back button to navigate back to the Heat Pump page.
- 7. Tap Aux Heating Type/Stages.
- 8. Under the **Stages** tab, select a required number of heating stage.
- 9. To use the modulating hear type, tap **Modulating**.

Figure 54 Modulating heating



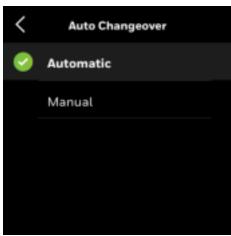
- 10. Toggle the Use stage 1 heat as an enable button to YES.
- 11. Swipe the slider to select the desired percentage of output.

- 12. If no heating is required, tap None.
- 13. Tap the back button to navigate back to the Heat Pump page.

#### To configure Auto Changeover

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Equipment > Auto Changeover**. The Auto Changeover page appears.

Figure 55 Auto Changeover



- 3. Tap a required option.
- 4. Tap the back button to navigate back to the Equipment page.

#### To set up Standby Action

The Standby Action refers to which mode setpoints to be used while the thermostat is in Standby mode. You can select either Occupied mode or Unoccupied mode.

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Basic > Equipment > Standby Action**. The Standby Action page appears.
- 3. Tap Treat as Occupied or Treat as Unoccupied.

#### Pre-occupancy purge

Pre-occupancy purge is required in some regions and allows fresh air to ventilate a building prior to occupancy. It is configured by creating a Standby period prior to the Occupied period, usually one hour prior. Treat the Standby period as Occupied and ensure the fan mode is set to Continuous.

To bring in fresh air, connect the thermostat to a packaged economizer or wire the outside air damper to the UIO1 terminals and configure them for Outdoor Air Damper Control.

## Connection

The thermostat is connected with Wi-Fi while performing the initial configuration. The source of the Wi-Fi can be Local router, Honeywell Gateway, or BACnet IP. Bluetooth is used to connect the thermostat with the Connect Me app.

#### To connect with Wi-Fi

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > Connection**The Connection page appears.

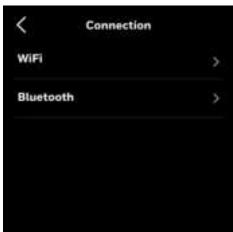


Figure 56 Connection page

#### Wi-Fi - Local Router

- Tap Wi-Fi > Local Router, and tap NEXT.
   A list of the Wi-Fi signals available in the surroundings appears
- Select a secured Wi-Fi signal and tap **NEXT**.The Wi-Fi Password page appears.
- 3. Tap Join.

Wi-Fi connection progress appears, followed by the Successful message appears.

4. Close the Successful message. The Config page appears.

#### Wi-Fi - Honeywell Gateway

If you are using Honeywell Gateway, then you can connect the thermostat to it.

- 1. Tap Wi-Fi > Honeywell Gateway, and tap NEXT
- 2. Tap **Automatic** to connect with the Gateway automatically. It automatically searches the Gateway Wi-Fi station and connect with it.
- 3. Tap **Manual** and tap **NEXT**. It ask you to enter the Gateway Wi-Fi credentials to manually connect with the Gateway.
  - The Manual page appears.
- Enter SSID and select Security, tap NEXT.
   Wi-Fi connection progress appears, followed by the Successful message appears.

5. Close the Successful message. The Config page appears.

#### **BACnet IP**

**Note**: If you are using BACnet IP connection type, then you cannot communicate with the Occupant app.

- 1. Tap Wi-Fi > BACnet IP and tap NEXT.
- 2. Tap BACnet Network Settings to connect through local network or tap Wi-Fi.
- 3. Enter Device ID, Network Number, and UDP Port.
- 4. Tap the back button to save the settings.

**Note**: For BACnet object related information, refer to the 31-00478-01(BACnet Integration Guide - TC500A).

#### Bluetooth

- 1. If you are pairing your mobile with the thermostat, then tap **Bluetooth**. The Bluetooth page appears.
- Turn on the Bluetooth.A QR code image appears.
- 3. Scan the QR code using your mobile.

# **User management**

The TC500A supports four kinds of user identities. Here's an overview of the identity types and permissions available for various roles.

1. **Visitor**: The visitor has access to read-only the components associated with the visitor. The visitor can view room temperature, desired temperature, humidity and mode.

**Note:** when in Simplified view type, if permitted, the visitor will be able to regulate the desired temperature. Basic User, Advanced User, and Installer require a passcode if utilized. Permission values can be customized for Basic and Advanced Users.

- 2. **Basic User**: The Basic User has access to read and write to components associated with basic control such as Setpoint changes, screen brightness, as configured in the User Management set up section. This type of user role is applicable for the user requiring limited control of thermostat such as store clerks, receptionist.
- 3. **Advanced User**: Group Owner has access to read and write all components related to advance control. The advanced user will be able to perform system overrides, schedule changes, or modify the basic configuration. This type of user role is applicable for users requiring more control of the thermostat such as store manager, business owner.
- 4. **Installer:** This is an Admin User who has access to read and write all components in the application. Through this role, the user can control all elements of the thermostat.

 Visitor
 Basic User
 Advanced User
 Installer

 System Modes
 ...
 ...

 Overrides
 ...
 ...

 View Alerts
 ...
 ...

 Temperature Units
 ...
 ...

 Contractor Information
 ...
 ...

 Brightness
 ...
 ...

 Schedule Changes
 ...
 ...

 Basic Configuration
 ...
 ...

 System Status
 ...
 ...

 Advanced Configuration
 ...
 ...

Table 17 User roles and permissions

#### Passcode rules

All the user accounts are passcode protected. When creating the passcode, follow the password rules given below.

- Password length must be between 4 to 12 characters
- It must contain only alphanumeric characters and special characters
- Do not use spaces
- Do not use the same passcode used for other users (across all user types)
- If no password is entered for basic or advanced user, the thermostat will remain at the highest level of access, installer, and will not require a password for access.

# Configuring the user roles

#### To manage the type of users and permission

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Config > User Management**. The User Management page appears.

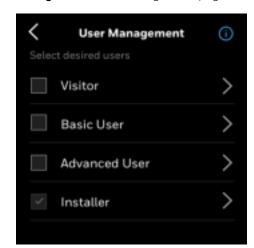


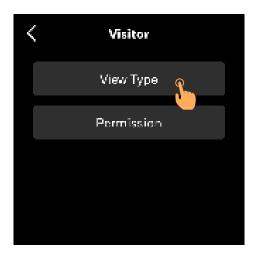
Figure 57 User Management page

### **Visitor**

#### To manage the Visitor user role

- On the User Management page, select Visitor.
   Tap to select View Type and Permission
- 2. Tap View Type.

Figure 58 Select view type.





3. Tap **Permission** to allow the visitor to override the Setpoints.

**Note:** Visitors will have access to increase or decrease the temperature in Simplified view only.

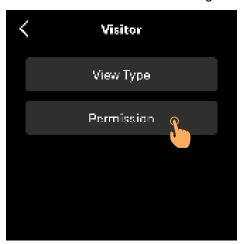
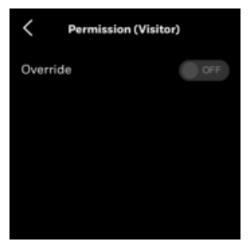


Figure 59 Set Visitor Permission



4. Tap 

to go to the previous page.

Note: After setting these permission or view type and tapping button, it takes 30 seconds for screen to timeout and sleep. It takes another 30 seconds for the user permission to become effective.

## **Simple View Home Screen Controls**

The Simple view home screen enables visitors (if permitted) to change the setpoints in occupied or unoccupied mode.

Users can tap  $\wedge$  or  $\vee$  to increase or decrease the temperature.

In the unoccupied mode, the simple view has an override toggle option on top. User must slide the toggle to override to make changes in setpoint.

Honeywell 8:30 AM

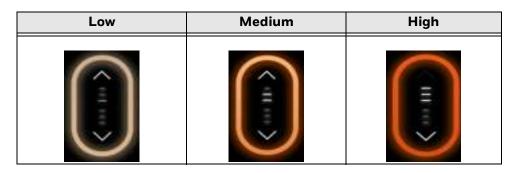
Figure 60 Simple View - Occupied

Figure 61 Simple view - Unoccupied



User can tap or to increase or decrease the temperature. The thermostat screen provides a visual indication of heating or cooling in different colors. The same is also represented using horizontal bars in the display.

 Table 18 Increasing Temperature



**Table 19** Decreasing Temperature

Low	Medium	High
$\odot$		

## **Basic user**

#### To manage the Basic User role

- 1. On the **User Management** page, select **Basic User** and Tap
- 2. Set a Passcode, View Type and, user Permission. Refer to Passcode rules.

Figure 62 Basic user

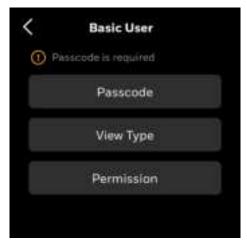
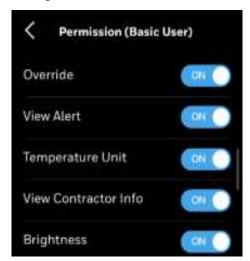


Figure 63 Basic User Permission.



- 3. Toggle the undesired Permissions to "Off" position.
- 4. Select the **View Type.**Scroll up or down to view additional options.

Figure 64 Select View type



- 5. Tap 

  to go to the previous menu.
- 6. If the passcode is not entered a notification banner appears. Tap **Yes** to enter the passcode.

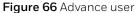
Figure 65 No passcode

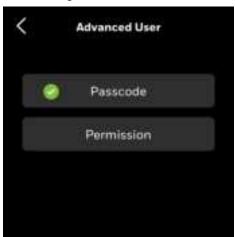


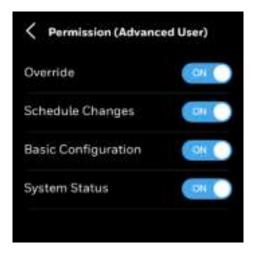
### **Advanced user**

### To manage the Advanced User role

- 1. On the **User Management** page, select **Advanced User** and Tap ...
- 2. Set a Passcode, Permission. Refer to Passcode rules.



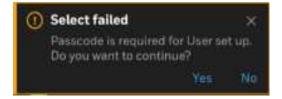




- 3. Toggle the undesired Permissions to "Off" position.
- 4. Tap 

  to go to the previous menu
- 5. If the passcode is not entered a notification banner appears. Tap **Yes** to enter the passcode.

Figure 67 No passcode

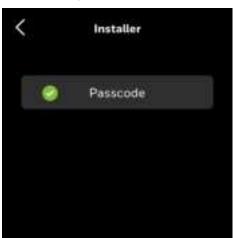


### Installer

### To manage the Installer role

- 1. On the **User Management** page, select **Installer** and Tap
- 2. Set or change a Passcode, Permission. Refer to Passcode rules.

Figure 68 Installer



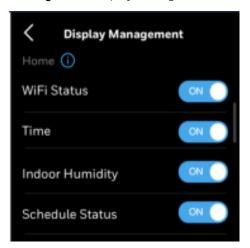
# **Configuring the Home page (Display Management)**

This section explains managing the icons displayed on the Home page and Ambiance page of thermostat. It is applicable at the device level so any changes on the display management will be applied to all user accounts.

#### To manage the display icons

- 1. Swipe left from the Home page.
- 2. Tap **Config > Display Management.**The Display Management page appears.

Figure 69 Display Management



All icons are enabled by default. You can turn it off by sliding the toggle button to the left.

3. Scroll down to see more options.

**Note:** Tap the information icon **(1)** to view the icon names.

# Configuring the alarm preference

You can configure the alert notification of alarms displayed on the home page of the thermostat. You can choose to display the alerts as a notification banner, or a dot notification based on priority. By default, all alerts are configured to display as a dot notification.

#### To set the alert notification preference for alarms

- 1. Swipe left from the Home page.
- Tap Config > Alarm Preference.
   The Alert Preference page appears.
- 3. Tap Alarm.

A list of alarms option appears.

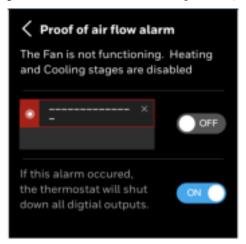
4. Tap an alarm type.

Corresponding Alarm settings page appears.

5. Tap the alarm type that you want to configure.

Corresponding alarm type configuration page appears.

Figure 70 Alarm notification configuration page



6. On the middle row, tap the toggle button to the right to enable the notification settings. The corresponding alarm or reminder type will be displayed as a notification banner on the home page when it is triggered.

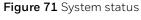
# Viewing the system status

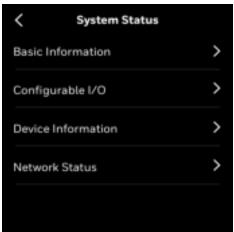
The system status shows device information, live status and readings of the sensors that are operated or connected with the thermostat. These values are view only.

- Basic information
- Configurable I/O
- Device information
- Network status

### To view the system status

- 1. Swipe left from the Home page.
- 2. Tap **Config** > scroll down > **System Status**The System Status page appears.





3. Tap a required option to view the associated status.

Basic Information	It shows current Indoor temperature, Indoor setpoint, Indoor humidity, Indoor CO2 level, current system mode, Fan status, Heat stage status, Cool stage status, Aux heat status, Outdoor temperature, Outdoor humidity, Return air temperature (For future release), Discharge air temperature, Economizer enable status, Effective mode, and Override remaining.			
Configurable I/O	All terminals ON/OFF status.			
Device information	Model name, Bootloader version, Firmware version, Application version, UUID of the thermostat, Serial number of the thermostat, and QR code to connect with the thermostat using the mobile application.			
Network status	Name of the Wi-Fi connected with, Connection status, WI-Fi MAC address, Wi-Fi SSID, and Wi-Fi IP address of the thermostat.			

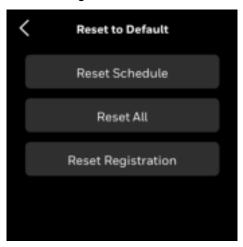
### **Reset to Default**

User can reset the entire thermostat to the factory default or reset only temperature setpoints and schedule to factory default.

### To restore the factory default setting

- 1. Swipe left from the Home page.
- Tap Config > scroll down > Reset to Default.
   The Reset to Default page appears.

Figure 72 Reset All



- 3. Tap **Reset Schedule** to only reset the temperature and schedule setpoint. It retains other configurations. Refer to Resetting a schedule.
- 4. Tap Reset All to fully reset the thermostat. It deletes all the configurations and user data.
- 5. Tap **Reset Registration** to remove the registration from the cloud.

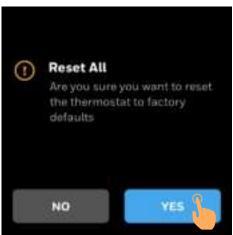
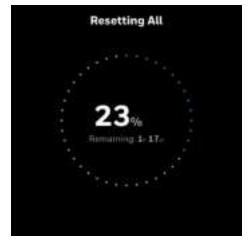


Figure 73 Reset typical pages



6. Upon successful reset, user will be notified by a notification banner.

Figure 74 Reset All



# **Advance settings: Configuring the equipment settings**

The equipment tab provides multiple options to configure the heat pump, cooling, heating, fan, humidity, and system switch.

### To configure the operational limits of equipment

- 1. Swipe left from the Home page.
- 2. Tap Config > scroll down > Advanced > Equipment.

The Equipment page appears. It contains the following equipment control options.

**Tip**: Long press the +/- button to quickly increase or decrease the value.

Operation	Configuration Type	Configuration Select	Range	Description
Heat Pump	Mode	Savings	(Default)	The controller will minimize the use of auxiliary heat to save energy. See Aux Heat Droop for more information.
		Comfort	N/A	The controller uses auxiliary heat as needed in addition to the compressor to keep the space comfortable.
	Lockouts	Compressor Lockouts	0-70F (Default 30)	During heating mode, when the outside air temperature is below the Heat Pump Compressor Lockout setpoint, the compressor stages are disabled and the auxiliary heating is allowed to run.
		Auxiliary Heat Lockouts	30-120F (Default 65)	During heating mode, when the outside air temperature is above the Heat Pump Aux Heat Lockout setpoint, the auxiliary stages will be disabled. However, if the compressors are locked out by outside air temperature or the unit is commanded to emergency heat mode, the auxiliary heat stages are allowed to run.

Operation	Configuration Type	Configuration Select	Range	Description
Heat Pump	Auxiliary Heat	Aux Heat Ramp Factor	0-100 (Default 2)	Ramp is used when the thermostat is recovering from the unoccupied setpoint. To avoid the auxiliary heat stages from being used during this period, the user can specify an auxiliary heat ramp factor. This creates a second recovery ramp setpoint for the auxiliary heat. If the heat compressors cannot maintain its recovery ramp or are locked out when the outside air temperature is low, the auxiliary heat ramp will be used to allow auxiliary heat to recover before the occupied period.
		Aux Heat Droop	0-10F (Default 0)	When the "Savings" mode is selected for heat pump control, then this configuration is shown. Droop is the number of degrees the ambient temperature is allowed to drop while the compressor is running before the auxiliary heat is engaged (provided auxiliary heat is not locked out). This lowers the auxiliary heat setpoint below the compressor setpoint to minimize use of auxiliary heat to save energy.
		Upstage Timer	30-960mins (Default OFF)	This timer starts when the highest stage of the previous heating equipment type turns on. Aux Heat will be used (if needed) when the timer expires.

Operation	Configuration Type	Configuration Select	Range	Description
Cooling	Minimum Times	Cooling Min. Off Time	0-300s (Default 60s)	The thermostat has a built in compressor protection (minimum off timer) that prevents the compressor from restarting too early after a shutdown. This timer is activated after the compressor is shut by the thermostat.
		Cooling Min. On Time	0-300s (Default 120s)	The minimum time the cooling system will be active. Set as recommended by the manufacturer. When a heat pump is configured, the TC500 will follow the cooling (compressor) min on and off times, whereas the AUX heat stages will follow the heating min on and off times.
	Lockouts	OAT (Outside Air Temperature) Cooling Lockout Setpoint	-40F-120F (Default 35F)	When the outside air temperature is below the cooling lockout setpoint, the cooling control will be disabled. When the outside air temperature is above the cooling lockout setpoint plus 2 deg F differential, the cooling control is enabled.
		DAT (Discharge Air Temp) Cooling Low Limit	'-40-60F (Default 45F)	When the discharge air temperature is below the discharge air low limit setpoint, the cooling control will turn off stages of cool until the discharge air temperature rises above it's setpoint plus a 2 deg F differential
	Gains	Throttling Range	0-30F (Default OF -Auto)	Throttling range is used by the thermostat to tune the PID loop for staged cooling. When set to 0 (Auto), the TC500 sets the throttling range based on the number of stages selected. The TC500 also sets integral time based on the TR. 1 stage: TR 3 degrees F 2 stages: TR 4 degrees F 3 stages: TR 6 degrees F
	Cycles Per Hour	Cooling Cycles Per Hour	2-20 CPH (Default 3)	The maximum number of cycles per hour the thermostat cycles the equipment at 50% load. Honeywell recommends 3 CPH for conventional cooling or heat pump.

Operation	Configuration Type	Configuration Select	Range	Description
Heating	Minimum Times	Heating Min. Off Time	0-300s (Default 60s)	The minimum time the between calls for heat.
		Heating Min On, Time	0-300s (Default 120s)	The minimum time duration of a call for heat.
	Lockouts	OAT Heating Lockout Setpoint	40-120F (Default 65F)	OAT Heating lockout set points defined as when outside air is above the lockout, it will not allow heating to be enabled. When the outside air temperature is below the heating lockout setpoint less a 2 deg F differential, the heating control is enabled.
		DAT Heating High Limit	65-140F (Default 140F)	When the discharge air temperature is above the discharge air high limit setpoint, the heating control will turn off stages of heat until the discharge air temperature falls below its setpoint minus a 2 deg F differential. This will help prevent the discharge air temperature from getting too hot and avoid tripping limits.

Operation	Configuration Type	Configuration Select	Range	Description
Heating	Gains	Throttling Range	Auto(0) Default to 30F	modulating heat it will output 0- 10VDC on the UIO2 hot and common terminals.
				Proportional error is the deviation from set point of the sensed temperature divided by the throttling range.  The set point is the temperature at which the control loop is satisfied. When the sensed temperature is at set point there is no proportional error and the output is 0%.
				The throttling range is the amount of change in the sensed temperature required to drive the output from 0 to 100%. The throttling range must be narrow enough to provide good control without becoming unstable.
				The throttling range is determined by factors including, the control application, the response time of the equipment being controlled, and the control algorithm being used. The narrower (smaller) the throttling range, the more precise the control and the wider (larger) the throttling range, the more stable the control. The objective is setting the throttling range to achieve the optimum balance between precision and stability.
				When the TC500 is configured for staged heat it will use the TR to tune the PID loop for staged heat control. The throttling range controls the cycling of the system and helps to compensate for load changes, equipment sizing and thermostat mounting location.
				When set to 0 (Auto), the TC500 sets the throttling range based on the number of stages selected. The TC500 also sets integral time based on the TR.  1 stage: TR 3 degrees F 2 stages: TR 4 degrees F 3 stages: TR 6 degrees F

Operation	Configuration Type	Configuration Select	Range	Description
Heating	Cycles Per Hour	Heating Cycles Per Hour	2-20 CPH (Default 6)	The maximum number of cycles per hour the thermostat cycles the equipment at 50% load. The default cycle rate for heat (conventional) or Aux heat (Heat pump) is 6 and for cool (conventional) or compressor (Heat pump) is 3. Honeywell recommends these settings: -Gas Heat: 6 CPH -Heat Pump: 3 CPH -Electric: 9 CPH
Fan	Mode	Continuous	Default is Continuous	The fan will run continuously during occupied periods for ventilation, and during unoccupied periods will run the fan only when there is a call for cool or heat (if fan on in heat is configured).
		Auto		In occupied and unoccupied periods, the fan runs with a call for cooling or heat (when fan on in heat is configured)
		Circulate		The fan runs approximately 35% of the time, roughly 20 minutes each hour, minus any time the fan is already running with the heating or cooling system
	Run with heat	On/Off	Default On	When set to On, thermostat will run the fan with a call for heat (and cool). Select off when controlling a heating system that operates the system fan in heat. When fan on heat is configured to Off and thermostat is configured for heat pump operation, a call for compressor heat will always turn on fan output (G).
		Fan extended runtime in heating	0-300s (Default 90s)	Fan run on time after all heating stages are turned off. May be used to run fan after all heating stages have turned off so that the heat exchanger can cool down before the fan turns off.
		Fan extended runtime in cooling	0-300s (Default Os)	Fan run on time after all cooling stages are turned off. May be used to run fan after all cooling stages have turned off so that the cooling (DX) coil can warm up before the fan turns off to prevent condensation from evaporating into the space.

Operation	Configuration Type	Configuration Select	Range	Description
Fan	Fan Speed Type	Single Speed	N/A	Terminal G (DO1) is energized on a call for fan.
		Two Speed	Vent Mode Cool Single Stage Cool Multi Stage, Heat Single Stage Heat Multi Stage All Other Modes	One of these terminals can be configured for low speed fan: W3 (DO4), Y3 (DO7), or DO8. G (D01) for High Speed Fan When in low speed fan, only the configured terminal is active, and when in high speed fan, only the G (D01) is active. When configured for heat pump application and both compressor heat and auxiliary heat stages are on, the unit uses the maximum of the speeds selected for the compressor and auxiliary heat.  See the note in the Variable Speed section for more information on fan speed assignments.
		Variable Speed	Speeds Configuration (Assign speeds to 6 fan speed configurations) Speed Assignment (Assign speeds 1-6 to ventilation and stage modes)	G (D01) is fan start/stop UI01 for 0-10 VDC as analog output to vary the speed of the fan.  When modulating heating control/ Auxiliary modulating heating is used, the fan speed will start with the configured minimum speed and will ramp towards configured maximum. The fan will require a minimum 5% output from modulating control or the modulating output should be greater than Cfg_Heat_ModHtEnSp, which ever setpoint is greater in order to start ramping up.  Note: Use Speed Configuration to set speeds for up to 6 fan speeds. Then use Speed Assign- ment to assign those speeds to each equipment mode. When the thermostat calls for first stage equipment, it will run the fan at the Cool Single Stage speed, or Heat Single Stage speed. When it calls for second stage or higher, it will run the fan at the Multi-Stage speed. The Vent Mode speed will be used when the thermostat is not calling for heating or cooling equipment but is calling for fan, such as when it is in the Occu- pied mode.

Operation	Configuration Type	Configuration Select	Range	Description
Humidity	Dehumidification	Simple - Space relative humidity high limit, Dehumidification off delay	0-100% Rh (Default 65% Rh)	The TC500 dehumidifies to a configured humidity high limit with on/off control using external dehumidification equipment. When relative humidity (Rh) rises above the setpoint, the TRC500 will energize the W3 (D04), Y3 (D07), or D08 terminal (as configured by user in Configurable I/O menu.) When the space Rh falls 5% points below this setpoint, it will deenergize this terminal. Once active, the dehumidification cycle will be on for a minimum amount of time configured with the Dehum On Delay, 20 minutes default, configurable from 0-60 minutes. The supply fan will operate based on configured fan type under following mode:  If Fan is configured as Single Speed, then supply fan will run in default mode  If Fan type is configured as Two Speed, then supply fan will run in lowest fan speed  If Fan type is configured as Variable Speed, then supply fan will run as per configured under Speed Type/Assignments  The C7400S Sylk bus sensor may be used for space humidity (and temperature) sensing.
		Staged Reheat - Space relative humidity high limit, Dehumidificati- on off delay, Enable Minimum on time operation	0-100% Rh (Default 65% Rh Staged Reheat (Default Off) Minimum On Time (Default Off) Minimum On Time 240- 1200s (Default 600s) Minimum On Delay 0-60 min (Default 20 min)	When the TC500 is configured for at least one stage of cooling and heating, staged reheat can be used. When in cooling mode, and the space Rh rises above the setpoint, the first stage of cooling & heating will turn on. When the space cooling control is calling for more than 1 stage of cooling, staged reheat operation will be disabled.  The heating section must be located downstream of the cooling coil to provide reheat.

Operation	Configuration Type	Configuration Select	Range	Description
Humidity	Humidification	Space relative humidity high limit	0-100% Rh (Default 35% Rh)	The TC500 humidifies to a configured humidify low limit with on/off control using external humidification equipment. When the space relative humidity (Rh) is less than the Rh low limit setpoint the TC500 will engage the W3 (D04), Y3 (D07), or D08 terminal (as configured by user in Configurable I/O menu.) When the space humidity rises above the low limit setpoint plus 5% RH differential this terminal will be disengaged. As soon as the humidify function goes inactive the supply fan will go OFF after with a delay of 2 minutes. The supply fan will operate based on configured fan type under following mode: -If Fan s configured as Single Speed, then supply fan will run in default mode -If Fan type is configured as Two Speed, then supply fan will run in lowest fan speed -If Fan type is configured as Variable Speed, then supply fan will run as per configured under Speed Type/Assignments The C7400S Sylk bus sensor may be used for space humidity (and temperature) sensing.
		Humidification on delay	0-60 min (Default 20 min)	Once active, the humidity action will be ON for minimum of this amount of time.
System Switch	System Switch	Choice of system switch to correspond to HVAC equipment	Heat, Cool, Auto, EMER Heat, Off	Select a system switch that corresponds with the HVAC equipment.  Networked commands to control the system switch mode take precedence over the setting on the
			Heat, Cool, Auto, Off	
			Heat, Cool, Off	TC500. The system switch setting is saved
			Heat, Off	during power outages.
			Cool, Off	

# **Configuring the Thermostat I/O terminals**

After connecting the thermostat to equipment, you must configure certain terminals in the thermostat so it can identify the correct purpose and apply the appropriate control schemes. The Configurable I/O tab provides options configure thermostat to the equipment and sensors wired to it.

### To view and configure the I/O

- 1. Swipe left from the Home page.
- Tap Config > scroll down > Advanced > Configurable I/O.
   The Configurable I/O page appears. Scroll down to see more I/Os.



Figure 75 Terminals page

Some terminals such as DO2, DO3, DO5, and DO6 show the equipment configured in the corresponding terminals and are not configurable by the user.

- For other terminals, tap the particular terminal.
   Associated equipment terminals appears. Scroll down to see more equipment.
- Tap an equipment terminal.
   The selected terminal is connected with the thermostat.
- 5. Tap the back button You can see the selected equipment terminal is assigned on the Configurable I/O page.

### **Configuring the sensors**

Thermostat supports Sylk sensors, Control sensors (temperature and humidity only), and four additional sensors. In order to ensure proper operation and control, configure for Sylk sensors only if they actually will be wired to the TC500.

Local Sensor: Internal TC500 temperature sensor.

**Remote Sensor**: Space temperature sensor connected to UI/UIO terminal, TR40 wall module configured at address 2, or TR120 wall module configured at address 6.

**Multi Sensor**: Local Sensor and Sylk wall module at address 2, 3, 4, 5, 6 used together to calculate space temperature.

If the thermostat is located in the occupied space and system is using a remote temperature sensor, it is recommended to use the "smart" or "average" sensor options. In the event of remote sensor failure the temperature will be controlled using the onboard sensor in the thermostat. When using averaging the thermostat's onboard sensor should be set at minimum level 1 weighted setting.

#### To configure the sensors

- 1. Swipe left from the Home page.
- 2. Tap **Config** > scroll down > **Advanced** > **Sensors**. The **Sensors** page appears.

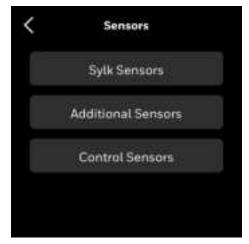
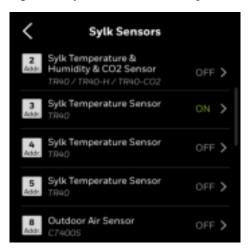


Figure 76 Sensors

#### 3. Tap Sylk Sensors.

A list of Sylk Sensors appears with the respective bus address corresponding to the address number listed in the thermostat listing.

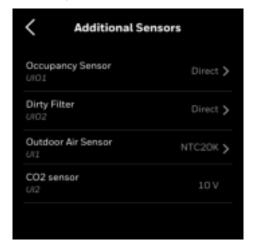
Figure 77 Sylk sensors after configuration



- 4. Tap a Sylk sensor to configure its parameters.
- 5. Navigate back to the Sensors page and tap **Additional Sensors**.

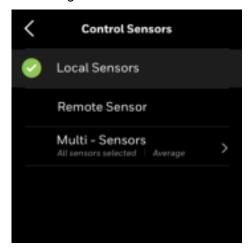
  The Additional Sensors page appears that lists 4 sensors, only if already configured in UIO1, UIO2, UI1, and UI2 terminals of the thermostat. Otherwise, the "No Additional Sensors Here" message appears.

Figure 78 Additional Sensors



6. Navigate back to the Sensors page and tap Control Sensors.
The Control Sensors page appears. By default, it shows Local Sensors. If Remote sensors are also configured then Multi-Sensors and Remote Sensors also appear.

Figure 79 Control Sensors

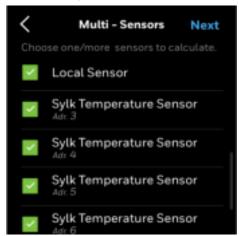


The Multi-Sensors tab allows you to configure certain parameters of multiple sensors at a time.

### 7. Tap Multi-Sensors.

The Multi-Sensors page appears. It lists all the control sensors that are configured with the thermostat. Scroll down to see more sensors.

Figure 80 Multi-Sensors

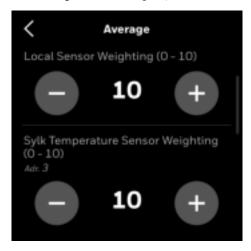


- 8. Select the required sensors for calculation.
- 9. Tap Next.

The Calculate Sensors page appears. It lists,

**Average** - The weighted average of the sensors is used for control. Tap the right arrow to set the relative weight of each sensor.

Figure 81 Average options



Values show the relative weighting for each sensor in temperature averaging. The built in logic calculates weighted average as the assigned sensor weighting times the measured temperature for each sensor and divides by the total weighting. When a sensor is not connected, the effective weight for that sensor is 0, and therefore excluded from the calculation. When a sensor is connected, the effective weight can be adjusted from 0-10, with the default being 10.

Scroll down to view Adr. 4 and Adr 5. Tap the back button to navigate back to the Calculated Sensors page.

**Minimum** - The minimum sensed temperature is used for control and displayed as the indoor temperature.

**Maximum** - The maximum sensed temperature is used for control and display.

**Smart** - When the TC500 is in the heating mode, the minimum sensed temperature is used. When in the cooling mode, the maximum sensed temperature is used. When in neither in heating or cooling mode, the average space temperature is used.

- 10. Tap one of the above-given parameters.
  - The corresponding parameter page appears with the list of selected sensors. Scroll down to see more sensors.
- 11. Adjust the values by tapping plus or minus signs.

# Managing the setpoint options

This option allows users to set the maximum or minimum temperature setpoints.

### To manage the setpoints of the equipment

- 1. Swipe left from the Home page.
- 2. Tap **Config** > scroll down > **Advanced** > **Setpoint Options**.

  The Setpoint Options page appears. It provides the following heating or cooling options.

Operation	Configuration Type	Range	Description
Stone	Cooling Min. Setpoint	50-99F (Default 50F)	The minimum cool setpoint that can be set by the user
Stops	Heating Max. Setpoint	40-90F (Default 90F)	The maximum heat setpoint can be set by the user
	Thermostat Deadband	0-30F(Default: 30F)	The thermostat Deadband ensures that the heat setpoint and the cool setpoint maintain a temperature span this number of degrees when the thermostat is in auto mode.
Limits	Temporary Setpoint Limit	-5 - 5F (Default 0F)	The temporary setpoint adjustment allows an occupant to change the space temperature setpoint during occupied periods. This includes scheduled occupancy or override of the scheduled occupancy (bypass override). During unoccupied and standby periods, the effective setpoint offset is set to 0 $\Delta^{\rm o} {\sf F}$ . If an occupant wants to change the temporary setpoint, the occupant must first override the schedule to occupied and then the thermostat will allow the occupant to change the temporary setpoint
	Max. Setpoint Ramp	0 -20°F/hr (Default 6°F/hr	When an outside air temperature is available, the effective cool ramp rate is
	Min. Setpoint Ramp	0 -20°F/hr (Default 2°F/hr]	changed as the outdoor air temperature changes. When the outdoor air temperature is at the minimum cool ramp rate
	OAT at max. Cool setpoint Ramp	-40-120F (Default 70F)	temperature (e.g. 90°F) and above, the effect cool ramp rate is at the minimum cool
Cooling Recovery	OAT at min. Cool setpoint Ramp	-40-120F (Default 90F)	ramp (e.g. $2 \Delta^{\circ}$ F/hr). When the outdoor air temperature falls, the cool ramp rate is lowered until the maximum cool ramp temperature (e.g. 70) is reached or above, the effective cool ramp is at the maximum cool ramp rate (e.g. $6 \Delta^{\circ}$ F/hr). The cooling recovery algorithm is well established over decades of use and is the same as used on the T7350 and similar Honeywell commercial thermostat models.

Operation	Configuration Type	Range	Description
	Max. Setpoint Ramp	(0-36°F/hr)	When an outside air temperature is
	Min. Setpoint Ramp	(0-36°F/hr)	available, the effective heat ramp rate is changed as the outdoor air temperature
	OAT at max. Heat setpoint Ramp	-40-120F (Default 60F)	changes. When the outdoor air temperature is at the minimum heat ramp rate
Heating Recovery	OAT at min. heat setpoint Ramp	-40-120F (Default OF)	temperature (e.g. 0°F) and below, the effect heat ramp rate is at the minimum heat ramp (e.g. 2 $\Delta$ °F/hr). When the outdoor air temperature is at the maximum heat ramp temperature (e.g. 60°F) and above, the effective heat ramp is at the maximum heat ramp rate (e.g. 8 $\Delta$ °F/hr). The heating recovery algorithm is well established over decades of use and is the same as used on the T7350 and similar Honeywell commercial thermostat models.

### **Miscellaneous**

This section contains miscellaneous feature that manages the thermostat functionalities.

### To manage the thermostat's miscellaneous functions

- 1. Swipe left from the Home page.
- 2. Tap **Config** > scroll down > **Advance** > scroll down > **Miscellaneous**. The Miscellaneous page appears.

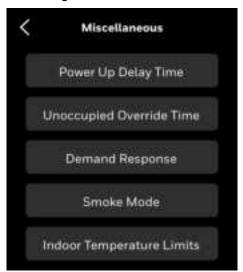


Figure 82 Miscellaneous

Operation	Configuration Type	Range	Description
Power Up Delay Time	Controller delay after power up	0 – 300 s (Default 10s)	Following power-up for this amount of time, the fan, heating, and cooling outputs are disabled. This is to prevent multiple controllers from starting major electrical loads simultaneously when power is restored to a building.
Unoccupied Override Time	Duration	1-1080 mins (Default 180 mins)	Number of minutes the TC500 will switch from unoccupied to occupied in override
Demand Response	Setpoint Shift	+/- 0 – 10°F (Default 3F)	The number of degrees that the controller can shift the setpoint to shed load upon request from the utility using a network command. Demand response is triggered via a BACnet connection.

Operation	Configuration Type	Range	Description	
Smoke Mode (Smoke Mode is triggered by a BACnet command)	No action	No action is taken (Default)		
	Shutdown	Turn all outputs OFF (fan, heating and cooling stages and humidification are off)	Shutdown can be initiated by digital input on UI1, UI2, UIO1 or UIO2 or as part of the BACnet Smoke Mode network command.	
	Pressurize	Fan is turned on	If an outdoor air damper is set under Configurable I/O and wired to the thermostat, the damper will be driven open in the Pressurize and Depressurize modes.	
	Depressurize	Fan is turned on		

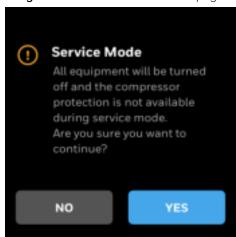
# **Enabling the Service mode**

Service mode disables all control algorithms to perform service of the equipment. Compressor protection is not available during the service mode.

#### To enter service mode

- 1. Swipe left from the Home page.
- 2. Tap **Config** > scroll down > **Advanced** > scroll down > **Service Mode**. The service mode caution message appears.

Figure 83 Service mode caution page



3. Read the message, and tap **Yes** to continue. The Service Mode page appears.

Service Mode Exit 1m 28s Run Time Fan Fan High Fan Low Fan Speed - bar M Heat Stage 1 Heat Stage 2 Heat Stage 3 Cooling Stage - Cooling Stage 2 - Cooling Stage 3 Modulating Heat - bar Reversing Valve B Humidification ■ Dehumidification Econ Min Damper Occupancy Status

Figure 84 Service Mode page

- 4. Tap each item to see the current values and status.
- 5. Tap the back arrow button to exit the service mode and resume the equipment operation and control algorithms.

# CHAPTER **Alarms**

This chapter explains alarms and its configuration procedures.

### Related topics

Alarms

Alarm notification signs

Alert notification

Unacknowledged alarms

List of alarms and their severity

Managing the alarms

### **Alarms**

In the TC500A thermostat, alarms are configured for predefined set values. When the values are breached, the alarms are triggered and displayed on the home page as banner notification, dot notification, and on the Alert button. You can view the triggered alarms and acknowledge them.

# **Alarm notification signs**

The alarm menu notification icon has three color codes to indicate the severity of the alarm. The following table describes the available signs with color codes of the alarm pages.

Icons	Description	
T.	High	
₽.	Medium	
₽ <u>.</u>	Low	

### **Alert notification**

The alerts of alarms can be configured as banner notification or dot notification as per the Alert configuration. The banner notification is pop-up on the home page whereas the dot notification appears beside the Wi-Fi icon. For alert configuration, refer to Configuring the alarm preference.



Figure 85 Alarm banner notification

You can tap the banner notification to view the alarm and acknowledge it. If multiple alarms are triggered then the latest one (high) will be displayed on the home page. After tapping the banner, it takes you to the **Alarm** page.

- High Red color banner
- Medium Orange color banner
- Low Yellow color banner

# **Unacknowledged alarms**

In addition to the banner notification, all other alarms (for which the notification is not configured) can be viewed and acknowledged under the Alert page. The Alert tab displays the alarms that have not been acknowledged by the user. If there are unacknowledged alarms, the Alert button will have a visual notification as per the severity of the alarm.

### To view the unacknowledged alarms

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap the bell (Alert) icon. The Alert page appears.

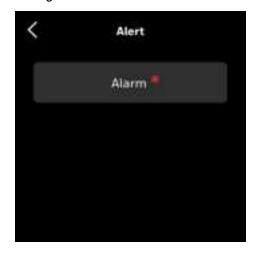


Figure 86 Home page - Alert Tab

### 3. Tap **Alarm**.

A list of unacknowledged alarms appears.

Figure 87 Alert Preference - Alarm



**Note:** Under the ALARM tab, tap the Red, orange, or yellow-colored Alarms. The relevant data points list appears to acknowledge the alarms.

**Red** icon: Displays only the data points with High severity alarm.

**Orange** icon: Display only the data points with Medium severity alarm.

Yellow icon: Display only the data points with Low severity alarm.

4. Tap an Alarm name.

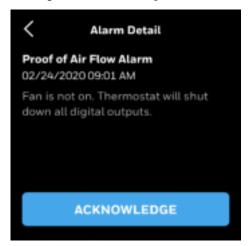
The corresponding alarm property page appears. The alarm property page describes the nature of event state transition.



Figure 88 Alarm Page - Select the alarm

5. Tap **ACKNOWLEDE** to view additional information and acknowledge the alarm.

Figure 89 Acknowledge alarms



#### Notes

- Except for Alarms "Unknown Time" and "Wi-Fi Network Not Configured" all alarms can be acknowledged by tapping ACKNOWLEDGE.
- For "Unknown Time", the set Date and Time page appears. Click SAVE to acknowledge alarms.
- For "Wi-Fi Network Not Configured", Configuration Settings appear. Select the Wi-Fi network to acknowledge the alarms.

# List of alarms and their severity

The list of alarms in the Commercial Connected thermostat is as follows

Table 20 List of alarms

Alarms	Severity	
Proof of Air Flow Alarm (fan state)	High	
Space Freeze Protection Alarm	High	
Proof of water flow Alarm	High	
CO2 sensor failure	High	
Outdoor air sensor failure	High	
Mixed air sensor failure	High	
Discharge Air Temperature sensor failure	High	
Space Temperature Sensor Failure	High	
Space Humidity Sensor Failure	High	
Sylk Device Communication Failure	High	
Space Humidity Sensor Failure	Medium	
Sylk Device Communication Failure	Medium	
Internal Proximity Sensor Failure	Medium	
WiFi Network Not Configured	Medium	
Unknown Time ?no time?	Medium	
Discharge Air Temperature out of range alarm	Medium	
Space Temperature out of range alarm	Medium	
Mixed Air Temperature out of range alarm	Medium	
Outdoor air Temperature out of range alarm	Medium	
CO2 out of range alarm	Medium	
WiFi Connection Lost	Low	

# **Managing the alarms**

**Table 21** Managing Alarms

Alarm	Trigger Scenario	Action	Level
Proof of Air Flow Alarm (fan state)	1.An input (such as a current switch or differential pressure switch) shall be available to monitor proof of air flow in the Rooftop Unit. When configured, the control will monitor this digital input once per second.  2.If the fan should be on, then it is not on, should generate an alarm and disable stages.  For example, if the stage should be on, then digital input indicates no air flow for 10 consecutive seconds.	depend on the alarm configuration:  1.Display indicator: It will generate an alarm and alarm indicator is displayed.  2.Interlock stage: the control shuts down all digital outputs and will continue to try to restart the fan.	High
Space Freeze Protection Alarm	The frost alarm shall occur if space temperature drops below 42.8°F (6°C) even when the controller is in manual mode, night purge mode, or pressurize/depressurize.  No frost alarm shall occur if the controller is disabled, in test mode, or in some higher priority mode as defined by the application.	The alarm shall be sent within 2 minutes of the temperature sensor going below the frost setpoint. The heating and fan output will be enabled until the room temperature reaches 46 °F (8°C) or the thermostat is turned on.	High
Proof of water flow Alarm	1.Heat pump proof of water is for water source heat pumps only and needs extra configuration (water flow detector).  2.If the stage should be on, then the input indicates loss of water flow in a Heat pump application.  3.There are 2 options by which user can send the proof of water flow. If we receive no proof from neither of those then we will generate an alarm after 10 seconds.  1. Physical Input - UI/UIO terminal input 2. Network Input - WSHP Enable & WSHP value points	depend on the alarm configuration:  1. Just displays indicator: It will generate an alarm and alarm indicator is displayed.  2. Interlock stage: The controller shall disable the heat pump compressor and report an alarm.	High
Sylk Device Communication Failure	if any one of the Sylk sensor fails, the alarm will be triggered.	1.If the sensor is used to control loop and network temp/humidity space sensors are available, the thermostat will generate an alarm. 2.The application shall disable all control functions associated with the failed sensor; i.e. it will react as if the sensor was not configured.	Sensor issue High (Action 2)/ Medium (Action 1)

Alarm	Trigger Scenario	Action	Level
CO2 sensor failure alarm	1.Open/short limit is detected on CO2 sensor(UI1/UI2/UIO1/UIO2) 2. CO2 outside of range(CO2 < Oppm or DA sensor > 2000ppm)	HighThe application shall disable all control functions associated with the failed sensor; i.e. it will react as if the sensor was not configured.  MediumCO2 out of range: Will not disable control function, Check equipment for proper operation.	Wiring issue High (failure)/ Medium (out of range)
Outdoor air sensor failure alarm	1.Open/Short limit is detected on outdoor air sensor(UI1/UI2/UI01/ UI02) 2.OAT outside of range (OA sensor < - 40F or OA sensor > 150F)	The application shall disable all control functions associated with the failed sensor; i.e. it will react as if the sensor was not configured. OAT out of range: Will not disable control function, Check equipment for proper operation.	Wiring issue High (failure)/ Medium (out of range)
Mixed air sensor failure alarm	1.Open/Short limit is detected on mixed air sensor(UI1/UI2/UI01/UI02) 2.MAT outside of range: (MA sensor < 40°F or MA sensor > 120°F)	The application shall disable all control functions associated with the failed sensor; i.e. it will react as if the sensor was not configured.  -MAT out of range: Will not disable control function, Check equipment for proper operation.	Wiring issue High (failure)/ Medium (out of range)
Discharge air sensor failure alarm	35°F <sa (da="" 35°f="" <="" act="" air="" as="" da="" dat="" detected="" discharge="" fault:="" is="" limit="" matter="" of="" on="" open="" or="" outside="" range:="" sensor="" sensor(ui1="" sensor<125°f.(no="" short="" space="" temperature)="" ui01="" ui02)="" ui2="" which=""> 165°F)</sa>	DAT sensor fault: The application shall disable all control functions associated with the failed sensor; i.e. it will react as if the sensor was not configured.  DAT out of range: Will not disable control function, Check equipment for proper operation.	Sensor issue High (failure)/ Medium (out of range)
Space Temperature Sensor Failure	1. Local Space temp as the main control and sensor fault is detected (High) depend on network value 2. Remote Space temp as the main control. sensor fault is detected (High) depend on network value 3. Multi space temp as the main control. All/Some of the temp sources have sensor fault detected (High/Medium) also depend on network value	1.If the sensor is used to control loop and network temp/humidity space sensors are available, the thermostat will generate an alarm 2.If the sensor is used to control loop and network temp/humidity space sensors are unavailable, the application shall shut down all output control of Heating and Cooling equipment. The fan shall remain under normal control.	Sensor issue High (Action 2)/ Medium (Action 1)
Space Humidity Sensor Failure	1. Local Space Humidity as the main control and sensor fault is detected (High) 2. Remote Space Humidity sensor as the main control fault is detected (High) 3. Multi space Humidity sensor as the main control, All/Some of the temp source have sensor fault detected (High/Medium)	1.If the sensor is used to control loop and network humidity space sensors are available the thermostat will generate an alarm 2.If network temp/humidity space sensors are unavailable the application shall disable all control functions (E.g Humidity control for humidification or dehumidification) associated with the failed sensor.	Sensor issue High (Action 2)/ Medium (Action 1)

Alarm	Trigger Scenario	Action	Level
Space Temperature out of range alarm	Space temperature outside of range (SA sensor < 35°F or SA sensor >125°F).(No matter which sensor act as space temperature)	1.If the sensor is used to control loop and network temp are available thermostat will just generate an alarm. 2.If the sensor is used to control loop and network temp are unavailable, the application shall shut down all output control of Heating and Cooling equipment. The fan shall remain under normal control.	Sensor issue Medium
Internal Proximity Sensor Failure	Onboard proximity sensor fault is detected	The thermostat is the same as that no proximity sensor is configured.	Sensor issue Medium
Unknown Time	Thermostat has been powered off for a long time thus RTC time is lost when the INTERNET is not connected.	Prompt user to set date/time	Medium
WiFi Network Not Configured	If user selects WiFi as the means of communication, then the thermostat isn't configured to join WiFi network	WiFi alarm is displayed on home screen.	Connection issue Medium
WiFi Connection Lost	If user selects WiFi as the means of communication and Thermostat lost WiFi connection with Gateway	WiFi alarm is displayed on home screen.	Connection issue Low

#### **CHAPTER**

# 6

# **Scheduling**

### **About Schedule**

TC500A enables you to plan operations based on the time of day and holidays.

This scheduling structure allows you to control day-to-day operations with the standard schedule. The holiday schedule controls days or times when a facility is typically unoccupied. The event schedule controls periods outside normal occupied times. The holiday schedule overrides the standard schedule and the event schedule overrides the holiday and standard schedules within a schedule set.

Schedules use the setpoint configuration of Occupied, Unoccupied, or Standby modes.

Occupied mode treats the building space as occupied and configured with comfort setpoints.

Unoccupied mode treats the building space as not occupied and configured with energy savings setpoints.

Standby mode setpoints are configured in a way that the setpoints can quickly change to the Occupied mode when switched. Standby mode setpoint saves energy higher than occupied mode and lesser than the Unoccupied mode.

Temporary mode allows the user to change the temperature setpoints of the Occupied mode after the user switches to the temporary mode from the Occupied mode. This is not possible in Unoccupied mode and Standby mode.

When a schedule uses the Occupied mode but the Occupancy sensor reads occupied, then the thermostat switches automatically to the Standby mode. In other scenarios, the thermostat follows the schedule status and the occupancy sensor's value has no impact on it.

### How schedules works

When you set up schedules, it is important to understand the relationship of the schedules in the schedule set and how to use each one.

- **Standard schedule:** Use the weekly schedule to program occupied and standby periods for each of the week.
- **Holiday schedule:** Use holiday schedules to set holidays that "float" or occur on a specific date each year. Up to 20 holidays can be created.

• Special event: Use Special event to schedule one-time events.

**Note:** Holiday schedules automatically write a 12:00 AM OFF time, which is in effect unless it is overridden by an event schedule.

### Related topics

Setting up a weekly schedule

Resetting a schedule

Setting up a holiday schedule

Special event

# Setting up a weekly schedule

### To add a new time value to a weekly schedule

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap **Schedule**.

  The schedule main page appears which lists all types of schedules available in the thermostat.

Figure 90 Select Schedule



3. Tap **Weekly** to add a new schedule.

The corresponding regular schedule page appears.

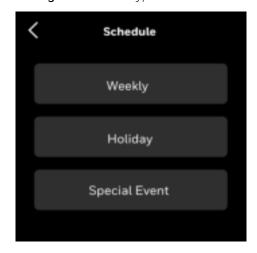
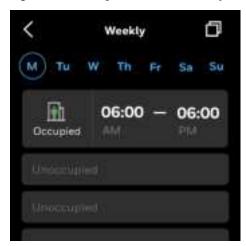


Figure 91 List of types Schedules

4. Select a day where you want to add a new schedule.

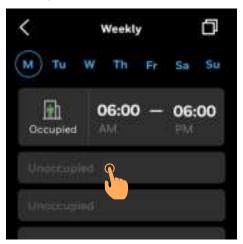
The corresponding day page appears which contains existing schedules.

Figure 92 Existing Time values of a day



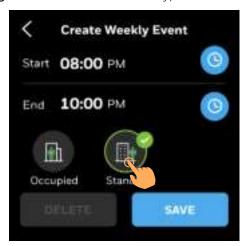
5. To add a new schedule tap on the **Unoccupied** button. The **Create Event** page appears.

Figure 93 Adding a schedule



6. Select **Start** and **End** time of the schedule by tapping the clock icon. Select the mode (**Occupied or Standby**) from the selections below it.

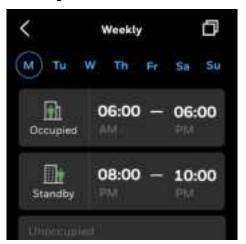
Figure 94 Add Time and select type of schedule



### 7. Tap Save.

The corresponding day page with all schedules appears.

Figure 95 Save Schedule



8. Tap the back arrow button to exit scheduling.

**Note:** Unscheduled times default to Unoccupied mode.

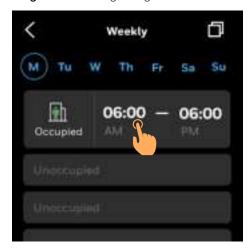
### **Editing or deleting weekly schedules**

The existing weekly schedules can be edited from the Weekly schedule page.

### To change or delete an existing weekly schedule

1. On the Weekly schedule page, tap the schedule to be modified. The **Edit Event** page will appear.

Figure 96 Editing a Regular Schedule



2. Select the new **Start** and **End** time and mode. Tap **Save** to save changes or Tap **DELETE** to delete the schedule.

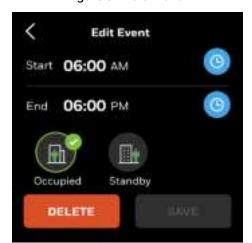


Figure 97 Edit Event

### Copying an existing weekly schedule

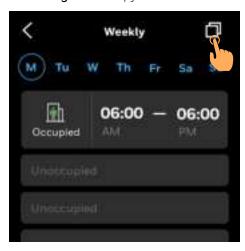
The TC500A enables the user to copy an existing regular schedule.

### To copy a schedule from one day to another

1. Navigate to the Weekly schedule page from where the schedule is to be copied. Select day to copy.

Tap to copy schedules. Copy screen will appear.

Figure 98 Copy Schedule



2. Tap on the days of the week for which schedule is to be copied.

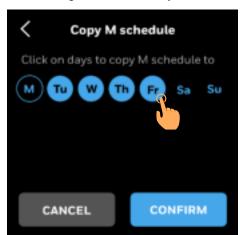
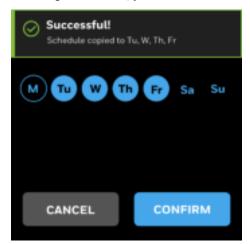


Figure 99 Select Days

3. Tap CONFIRM.

A banner indicating successful copying will pop up.

Figure 100 Copy successful



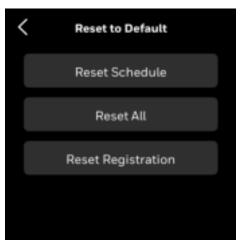
### Resetting a schedule

Resetting schedule will reset the weekly schedule and setpoints of occupied, unoccupied, and standby to factory default.

#### To reset all the schedule

- 1. On the Home page, tap the **Config** > scroll down > **Reset to Default.**The Reset to Default page appears.
- 2. Tap **Reset Schedule**. User will be prompted to confirm the action before reset.





3. Tap **YES** to reset schedule. The progress screen appears.

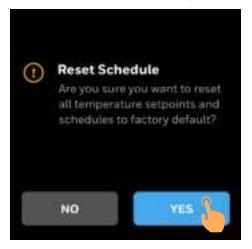
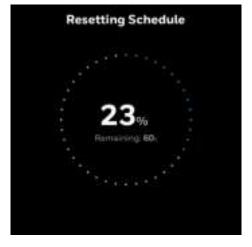


Figure 102 Reset Schedule



4. Upon a successful reset, the user will be notified by a notification banner.

Figure 103 Reset Confirmation



### Setting up a holiday schedule

Holidays are defined as reoccurring events that are different from the weekly schedule, can be Occupied or Standby, or by default Unoccupied. So the Unoccupied/Standby mode setpoints will be executed on the holidays. There are two holiday types are available to choose. There are **Floating date** and **Specific date**. Only one day can be selected for the floating holiday type whereas multiple days can be selected for Specific date type.

### To schedule a holiday

- 1. Swipe left from the Home page.
- 2. On the Device configuration page, tap the **Schedule** icon. The schedule page appears.

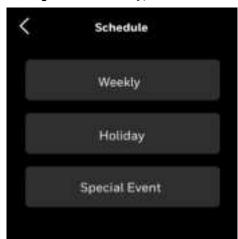
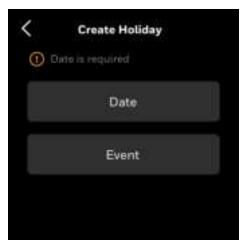


Figure 104 List of types Schedules

- 3. Tap **Holiday** to add a new holiday schedule.
  - The Holiday page appears.
- 4. Tap to add a Holiday.
  The Create Holiday page appears.

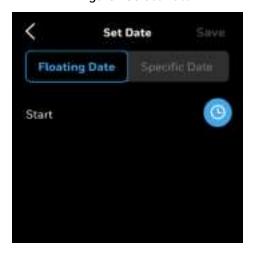




#### 5. Tap Date.

The Set Date page appears.

Figure 106 Set Date



6. Tap **Floating Date** to schedule a floating date as a holiday (Organization related holidays) or tap **Specific Date** to schedule festival holidays, government holidays, or public holidays.

If Floating date is selected, then you can choose only one day to create an event.

- 7. Tap the clock icon.
- 8. Select a date.
- 9. Tap **CONFIRM**.

The Set Date page appears. If you are configuring a Specific Date holiday type, then you can add multiple days by tapping the **How is the holiday** with first date is fixed date.

#### 10.Tap Save.

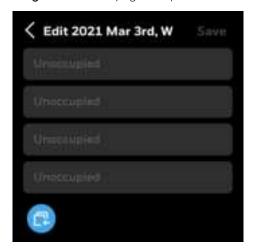
The Create Holiday page appears.

11. Tap **Event** to configure the actions to be executed on the configured holiday (s).

#### 12. Tap Set Event.

Event list page for the set date appears. You can add a maximum of four events.

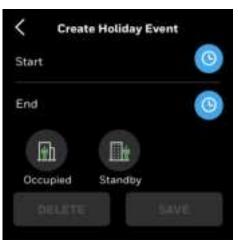
Figure 107 Date page for special events



### 13. Tap an Unoccupied cell.

The Create Holiday Event page appears.

Figure 108 Create holiday vent page



- 14. Tap the Start clock icon to set the event start time.
- 15.Set the start time and then tap **CONFIRM**.
- 16. Tap the End clock icon.
- 17. Set the event end time and then tap **CONFIRM**.
- 18. Tap **Occupied** or **Standby** based on your requirement.
- 19.Tap **SAVE**.

The created event appears on the Holiday page.

- 20. Tap **Save**.
- 21.Tap Done.

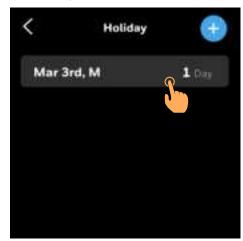
The holiday creation successful message appears.

### **Deleting a holiday schedule**

### To delete a holiday

1. On the Holiday page, swipe right to delete Holiday. Trash bin appears on right.





2. Tap to delete the Holiday.

Figure 110 Delete Holiday



3. User will be prompted to confirm to delete the holiday. Tap **DELETE** 

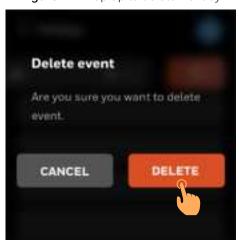


Figure 111 Pop up to delete Holiday

4. The holiday will be deleted.

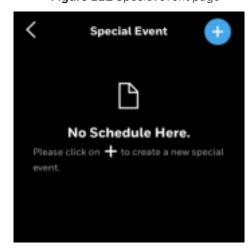
# **Special event**

Special events are one time events that are different from the weekly schedule.

#### To create a special event

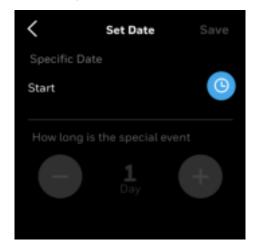
- 1. Right swipe the home page.
- 2. On the Device configuration page, tap **Schedule** and then tap **Special Event**. The Special Event page appears.

Figure 112 Special event page



- On the top right, tap the add button.
   The Create Special Event page appears. Date is mandatory to create a special event.
- Tap **Date**.
   The Set Date page appears.

Figure 113 Set date page



- 5. Tap the clock icon.
- 6. Select a year, scroll and select a date, day, and month. You can set a special event within 3 years from today.

#### 7. Tap **CONFIRM.**

The Set Date appears.

- 8. If the special event reoccurs on multiple days, then increase the holiday count.
- 9. Tap Save.
- 10.Tap **Done**.

The Create Special Event page appears.

#### 11. Tap Set Event.

Event list page for the set date appears. You can add a maximum of four special events for the particular date.

Figure 114 Date page for special events



### 12. Tap an Unoccupied cell.

The Create Event page appears.

Figure 115 Create Event page



- 13. Tap the clock icon for Start.
- 14. Set the special event start time and then tap **CONFIRM**.
- 15. Tap the clock for End.
- 16. Set the special event end time and then tap **CONFIRM**.

- 17. Tap **Occupied** or **Standby** based on your requirement.
- 18.Tap **SAVE**.

The created special event appears under the special event date page.

- 19. Tap **Save**.
- 20.Tap **Done**.

You have created a special event.

### To delete a special event

- On the special event page, tap a special event.
   A confirmation message appears.
- 2. Tap **DELETE.**

The special event is deleted.