Honeywell | THE FUTURE IS WHAT WE MAKE IT

TC500A Commercial Thermostat

CONNECTED DEVICE FOR COMMERCIAL BUILDINGS

MOUNTING INSTRUCTIONS

INTRODUCTION

TC500A Commercial Touchscreen Thermostat is designed to be wall-mounted indoors. Mount in a clean, dry location away from windows, air ducts, and other places where environmental factors may affect temperature and humidity readings. If you mount the Thermostat on the interior of an outside wall, thoroughly insulate so outside air behind the sensor does not affect the sensor reading.

To meet the requirements of the Americans with Disabilities Act, mount no higher than 48" from the floor and with a minimum clear floor space of 30" X 48" (760 X 1220 mm).

Supported Documents

- TC500A-N Commercial Thermostat Datasheet (31-00398M)
- TC500A-N Commercial Thermostat User guide (31-00400M)
- TC500A-N Commercial Thermostat Quick start guide (31-00401M)
- TC500A-N Commercial Thermostat Pocket guide (31-00463M)
- TC500A Deco Plate Pocket guide (31-00457M)

When installing this product

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and marked on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check the product operation.
5. Be sure wiring complies with all applicable codes, ordinances and regulations.

WARNING

Electrical Shock Hazard.

Can cause severe injury, death or property damage.

Disconnect the power supply before beginning installation to prevent electrical shock and equipment damage. More than one power supply may have to be disconnected.

MERCURY NOTICE

If this control is replacing a control that contains mercury in a sealed tube, do not place your old control in the trash. Dispose of properly. Contact your local waste management authority for instructions regarding recycling and the proper disposal of an old control. If you have questions, contact Honeywell Customer Care Center.

Location

Do not install the Thermostat unit where it can be affected by:

- drafts or dead spots behind doors and in corners.
- hot or cold air from ducts.
- radiant heat from sun or appliances.
- concealed pipes and chimneys.
- unheated (uncooled) areas such as an outside wall behind the thermostat.

IMPORTANT

To avoid electrical interference, which can cause erratic performances, keep wiring runs as short as possible and do not run thermostat wires adjacent to the line voltage electrical distribution systems. Use shielded cable. The cable shield must be grounded only at the controlled equipment case.

WHEN USED TO SENSE ROOM TEMPERATURE

Install the Thermostat about 4 ft. (1.2m) above the floor in an area with good air circulation at average temperature. (See Fig. 1). Confirm mounting height meets Americans with Disabilities Act requirements.

WHEN NOT USED TO SENSE ROOM TEMPERATURE
When using the remote-mounted temperature (and humidity) sensor(s) to sense ambient conditions, install the Thermostat in an area that is accessible for setting and adjusting the temperature and settings.

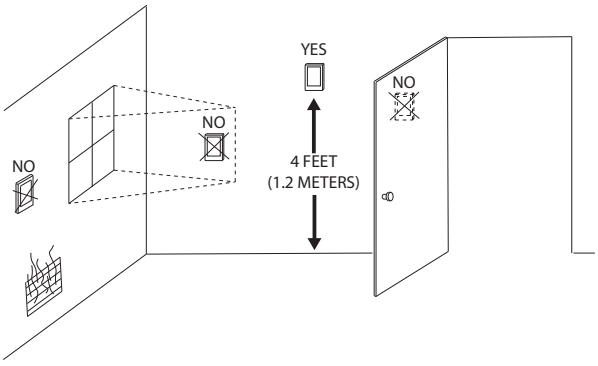


Fig. 1. Typical mounting location of thermostat

WEEE



WEEE (Waste of Electrical and Electronic Equipment)

- 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.

This symbol on our product shows a crossed-out “wheelie-bin” as required by law regarding the Waste of Electrical and Electronic Equipment (WEEE) disposal. This indicates your responsibility to contribute in saving the environment by proper disposal of this Waste i.e. Do not dispose of this product with your other wastes. To know the right disposal mechanism please check the applicable law.

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 thermostat mainboard PCBA, thermostat wall plate board PCBA	Lead	7439-92-1
	Lead oxide	1317-36-8

Power supply guidelines and requirements

The thermostat uses 24VAC power from a UL Listed Class-2 24VAC transformer (not provided in the kit). It also uses a half-wave rectifier to convert the AC power supply to onboard power. This enables multiple devices with half-wave power supplies to be powered from a single, grounded transformer.

⚠ WARNING

Half wave devices and full wave devices must not use the same AC transformer.
You must maintain wiring polarity. Failure to do so can result in equipment damage. If the HVAC equipment has an internal circuit board that is powered by the same transformer that will power the Thermostat, verify that it is NOT full wave.

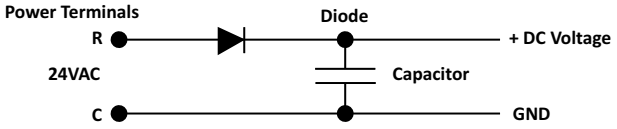


Fig. 2. Power terminals

Power supply wire sizing

Long power supply wiring runs require selecting the wire gauge appropriately. If the wire gauge is inadequate the increased resistance and associated voltage drop may result in insufficient voltage supply to the Thermostat. The recommended wire gauge guidelines are as follows.

Min. Load = 4VA (all DOs OFF, No Sylk sensor).

If 18-20AWG wire is used for R, C, RC terminal,

Max. Load = 4A, 96VA (all DOs ON).

If 22AWG wire is used for R, C, RC terminal

Max. Load = 3A, 72VA (all DOs ON).

If R-Rc power jumper is not removed, then G, W1, W2, W3, Y1, Y2, Y3 are powered from the Thermostat’s transformer. Minimum load includes Thermostat and analog outputs at full load (Max. 10V voltage output with 2Kohms load).

Every relay output is N.O. (Normally Open) contacts with a maximum switch rating of 24VAC @1A (24VA). The allowed maximum load is 96VA, which assumes all 8 relay output loads are powered from the controller transformer. Actual power requirements depend on connected loads.

IMPORTANT

Transformer sizing should never exceed the maximum UL Class 2 rating.

The 24VAC secondary leads are not interchangeable. Once a lead connects to the GND terminal, it is the grounded lead. Observe and maintain polarity for subsequent connections. The GND terminal provides a reference ground for the circuit board and communications wiring. Use 18 AWG cable for best results.

⚠ WARNING

Ensure that all Thermostat power, communications, and I/O cabling are connected to C or COM according to these instructions. Failure to follow these instructions may result in Thermostat operational and communication failures or equipment damage.

Detaching the wallplate from the display

The thermostat is an assembly of a wallplate and a display. It must be disassembled before starting the mounting procedure.

1. At bottom of the thermostat, loosen the Security screw using a screwdriver by turning it counter-clockwise direction.
2. Hold the display unit and pull the paper tail.

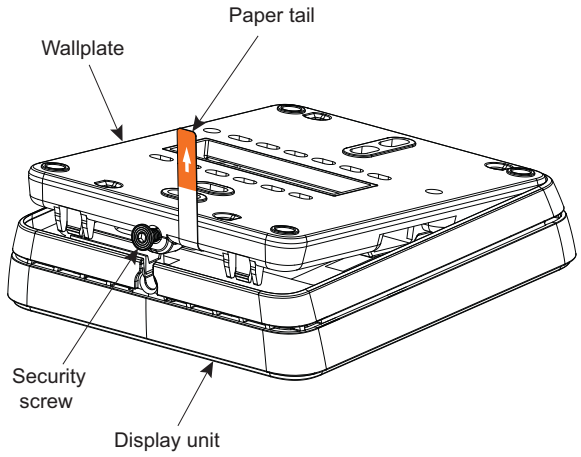


Fig. 3. Detaching the wallplate

Mounting wallplate on the drywall

Mount the wallplate vertically on the wall. It supports 18-22 AWG (0.5-0.75mm2) wires.

NOTE: If you are using a TC500A Deco plate for thermostat mounting, refer to the Deco plate pocket guide (31-00457M) also.

1. Before mounting the wallplate, make sure that the thermostat wires are stripped to the length marked on the wallplate.

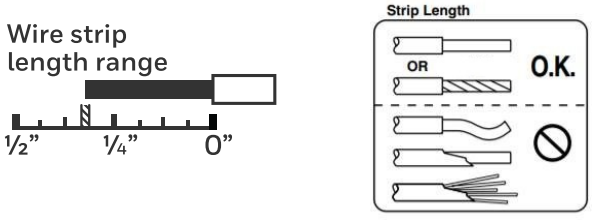


Fig. 4. Wire strip length

2. Position and level the wallplate along the wall and mark the drilling location using a pencil.

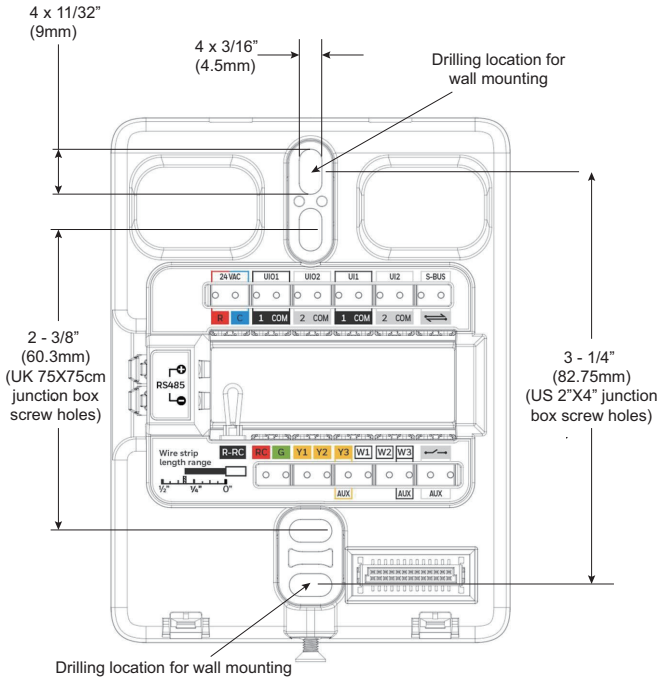


Fig. 5. Wallplate drilling locations

3. Remove the wallplate and drill two pilot holes on the wall, on the marks. For drywall, drill 3/16-in. holes. For firmer material such as plaster, drill 7/32-in. holes.
4. Gently tap anchors (provided in the kit) into the pilot holes until flush with the wall.
5. Pull the wires through the wiring opening of the wall-plate and position the wallplate over the mounting holes.
6. Insert the screws into the holes and tighten (screw torque 0.1Nm).

Mounting the wallplate on the junction box (optional)

The thermostat wallplate can be mounted vertically on a US 2"*4" or UK 75*75mm junction box.

NOTE: If you are using other than US 2"*4" or UK 75*75mm junction boxes, then a TC500A Deco plate can be used for thermostat mounting. Refer to the Deco plate pocket guide (31-00457M).

1. Install the junction box and perform the wiring as per its manufacturer's instruction.
2. Before mounting the wallplate, make sure that the thermostat wires are stripped to the length marked on the wallplate.
3. Pull the wires through the wiring opening of the wall-plate, and position the wallplate along the junction box to align the mounting holes. For junction box screw holes, refer to Fig. 5.
4. Insert the screws into the holes and tighten.

Accessories ordering part numbers

Table 1. Accessories Part Numbers

Decoplate-N	TC500 deco plate for NA junction boxes
Decoplate-W	TC500 deco plate for Global junction boxes

Terminal identification

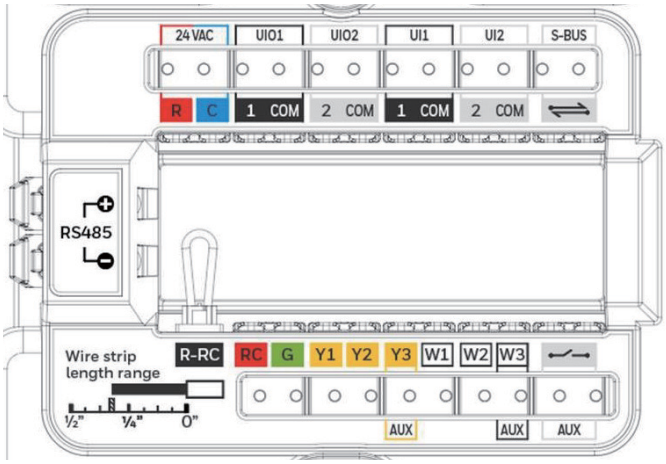


Fig. 6. Thermostat terminal assignments

WARNING

Do NOT wire the thermostat to line voltage.

IMPORTANT

Remove R to RC jumper only for 2 transformer systems

Table 2. Terminal identification

Terminal	Label	Connection
24VAC	R	24VAC power from heating Class 2 transformer
	C	24VAC common (Neutral). For 2 transformer systems, use common wire from the cooling transformer
UIO1	1	Universal input/output
	COM	Common

Table 2. Terminal identification (Continued)

Terminal	Label	Connection
UIO2	2	Universal input/output
	COM	Common
UI1	1	Universal input
	COM	Common
UI2	2	Universal input
	COM	Common
Sylk	⇌	Sylk bus, master, power output
	⇌	Sylk bus, master, power output
RS485	+	BACnet Communications (coming soon)
	–	BACnet Communications (coming soon)
	R-RC	Jumper between R and RC for single transformer system, remove the jumper in two transformer system.
24VAC	RC	24VAC power from cooling Class 2 transformer
	G	Fan
	Y1	Relay output, Compressor contactor (stage1)
	Y2	Relay output, Compressor contactor (stage2)
	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		Relay dry contact, Aux-1
		Relay dry contact, Aux-2

Wiring the wallplate

IMPORTANT

All wiring must comply with local electrical codes and ordinances.

NOTE: Supports 18-22 AWG (0.5-0.75mm^2). Solid wire is recommended.

Follow equipment manufacturer wiring instructions when available. A letter code is located near each terminal for identification.

⚠ CAUTION

Power must not be connected while wiring.
Wiring a unit that is powered may result in electrical shock and/or equipment damage.

1. Connect wires to the terminals. See Fig. 6 for terminal assignments and Table 1 for terminal descriptions.
2. Insert the solid wire into the terminal hole directly.
3. (optional) To insert stranded wire end into the wiring terminal, push the Release tool into the Tool hole and insert the wires.

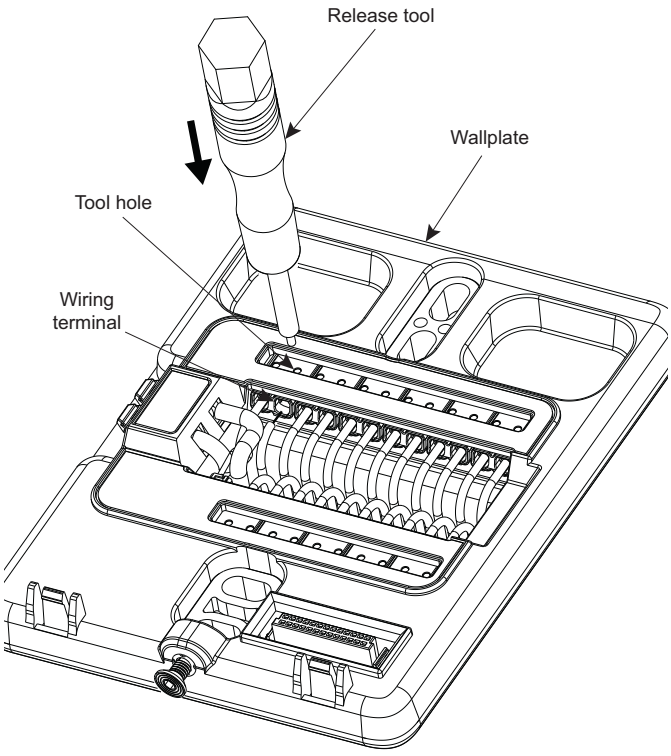


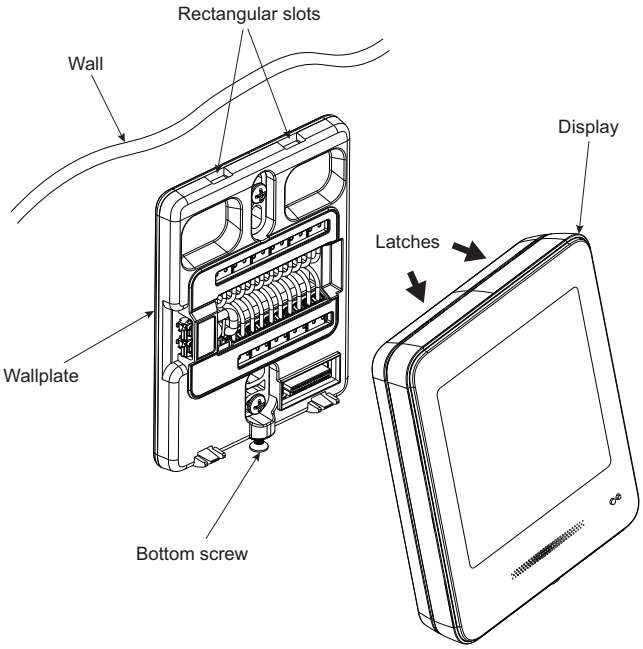
Fig. 7. Wire release

4. Push excess wire back into the hole.
5. Check for the loose or frayed wire that may cause a short.

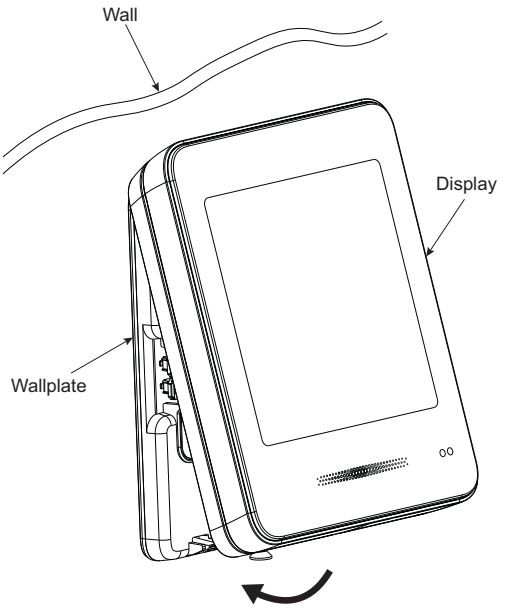
Mounting the display unit

After all wiring is completed, install the display onto the wallplate.

1. Hold the display in a tilted position so the latches fit onto the rectangular slots of the wall plate as shown in the below image.

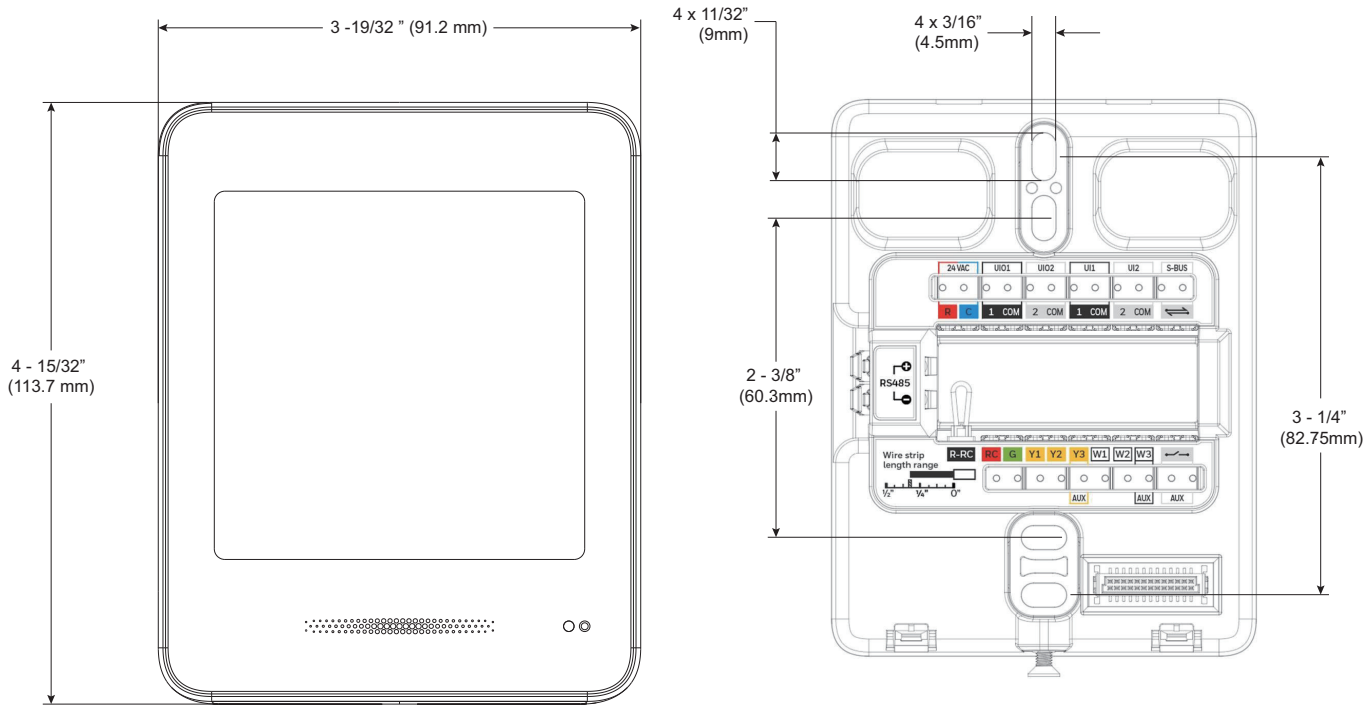


2. Insert the latches onto the wallplate rectangular slots and rotate the display and push it onto wallplate.



3. Gently tighten the Security screw using a screwdriver by turning it in the clockwise direction (screw torque 0.1Nm).

DIMENSIONS



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Honeywell
715 Peachtree Street NE
Atlanta, GA 30308
customer.honeywell.com
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