TC300B THERMOSTAT

CONNECTED DEVICE FOR COMMERCIAL BUILDINGS

TC300B Thermostat is an advanced, highly configurable device providing building automation connectivity well-suited for indoor commercial building applications. It has flexible I/O options that will satisfy the needs of 1H/1C conventional, 2H/1C heat pump, and most 2-pipe or 4-pipe fan coil applications. Supported functions include dehumidification with reheat using an embedded humidity sensor, auxiliary heat functions, and more rapid transitional 2-pipe system seasonal changeover.

TC300B supports BACnet MS/TP and Modbus communications via RS485 bus as is needed for typical HVAC building control systems. The same bus facilitates future firmware updates and enhanced functionality as they are released to the market. The integral intelligent control algorithms plus scheduling help to achieve the perfect balance between Energy Efficiency and Comfort. It utilizes an attractive, color, capacitive-touch screen interface providing an intuitive configuration process with minimal installer training. This functionality is enhanced through embedded help screens reducing reliance on technical manuals for complex installation.

FEATURES AND HIGHLIGHTS

CONVENIENT FOR USERS

- Color, capacitive-touch screen display for intuitive, fast commissioning and exceptional user experience.
- Embedded system monitoring screen for equipment and I/O status.
- Customizable inactive display modes, Auto dim display, always on, or dark mode.
- An LED ring indicator to show the operational status.
- Real-Time Clock time-keeping accuracy with 72-hour retention during power loss.

EASY FOR CONTRACTORS

- 2H/1C Heat pump, 1H/1C Conventional-Water Source Heat Pump with water valve enable/ lock-out, Fan coil, On/Off Valve, Floating Valve, Modulating Valve, and 6-Way Modulating Valve.
- 1-3 or variable speed fan
- Dehumidification with and without reheat.
- Enhanced 2-pipe fan coil functionality during seasonal or system changeover delivering improved occupant comfort.
- Service mode for manually enabling outputs for quicker diagnostics and equipment testing.
- Auxiliary heating options supporting peripheral or supplemental types
- Auto mode to switch between heating and cooling according to the current space temperature
- Staging control, PID Tuning, DAT Lockout, Modulating control, Compressor time delay
- System Switch and Ventilation options.
- Integration with various external wired sensor types including Discharge air temperature, Drain pan, Occupancy, Proof of airflow, Proof of water flow, Space temperature, Outdoor air temperature, CO2, and Humidity.
- Complies with ASHRAE guideline 36-2021, Section 5.22 sequence of operations for high-performance operation when using floating/ modulating valves and multi-speed/variable speed fan.
- Advanced commercial control algorithms such as auto changeover.

CONNECTED FOR FACILITY MANAGERS

- Thermostat can be configured via its own LCD human-machine interface (HMI) or a BACnet/Modbus client.
- Multiple, configurable user types with customizable privileges to prevent unauthorized usage.
- Customizable daily schedules include options for setting up to 10 recurring holidays (with support for floating holidays) and up to 10 specific special events.
- Up to 4 schedule events per day.

Honeywell

PART NUMBERS

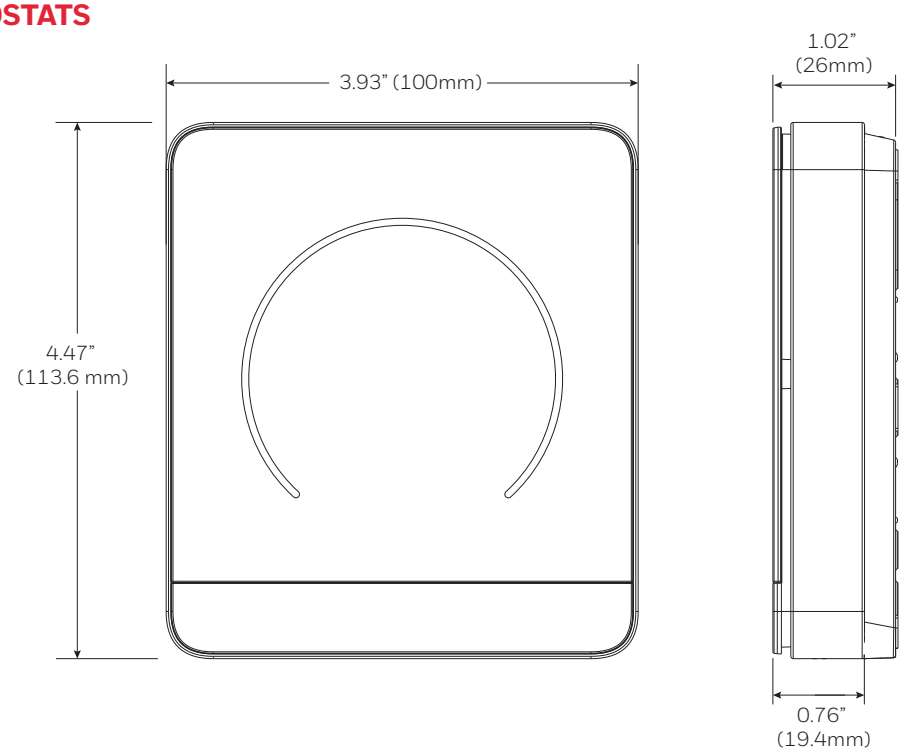
THERMOSTAT PART NUMBER		
PART NUMBER	**COM PROTOCOL**	**POWER**
TC300B-G	RS485 BACnet MS/TP and Modbus	24VAC

ACCESSORY	
PART NUMBER	**DESCRIPTION**
TRTC-DECOPLATE-1	Decorative wall plate, TR and TC Series

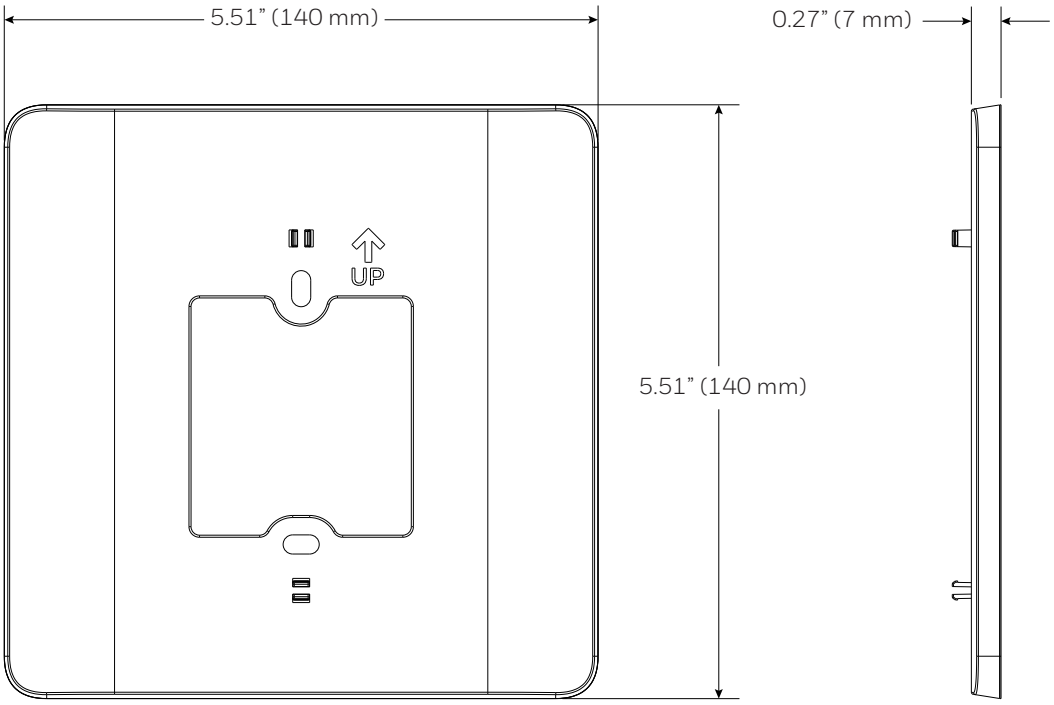
Note: The accessory is available in separate order.

DIMENSIONS

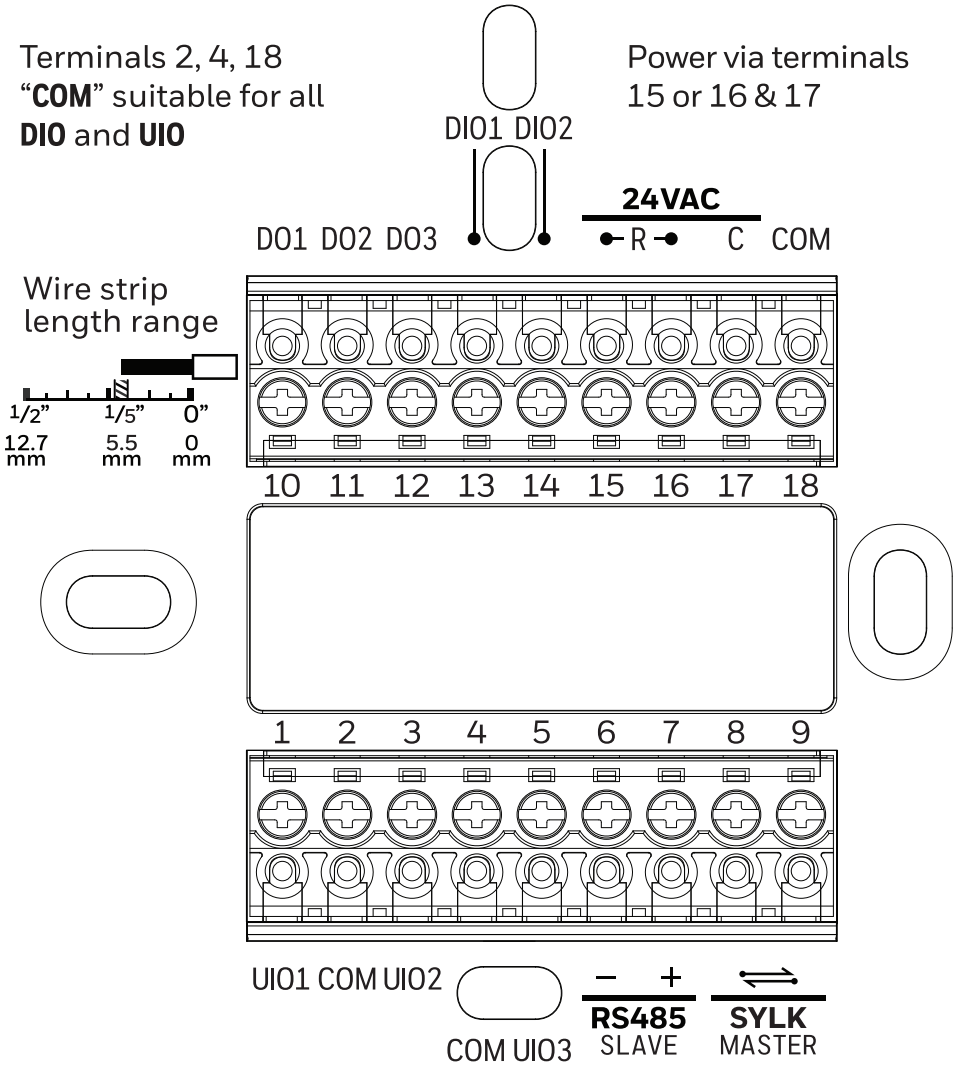
TC300B THERMOSTATS



TRTC-DECOPLATE-1



HARDWARE OVERVIEW



TERMINAL IDENTIFICATION

TERMINAL NAME	TERMINAL NUMBER	TERMINAL LABEL	DESCRIPTION
UIO1	1	UIO1	Universal input/output
COM	2	COM	Common
UIO2	3	UIO2	Universal input/output
COM	4	COM	Common
UIO3	5	UIO3	Universal input/output
RS485 SLAVE	6	-	BACnet/Modbus Communications
RS485 SLAVE	7	+	BACnet/Modbus Communications
SYLK MASTER	8	⇄	Sylk bus
SYLK MASTER	9	⇄	Sylk bus
DO1	10	DO1	Configurable relay output
DO2	11	DO2	Configurable relay output
DO3	12	DO3	Configurable relay output
DIO1	13	DIO1	Configurable relay output, configurable analog/ relay input
DIO2	14	DIO2	Configurable relay output, configurable analog/ relay input
24 VAC POWER	15/16	R	24 VAC power from Class2 transformer
24 VAC POWER	17	C	24 VAC common (Neutral) from Class2 transformer
COM	18	COM	Common

WIRING			
TERMINAL	**WIRE GAUGE**	**NORMAL LOAD**	**WIRE TYPE**
R, C	14-18 AWG	0-4 A, 0-96 VA	Copper
	20-22 AWG	0-3 A, 0-72 VA	
	24-26 AWG	0-2 A, 0-48 VA	

Note: Other terminals except R and C can be wired by 14-26 AWG, Cu (type)

TERMINAL ASSIGNMENT

TERMINAL ASSIGNMENT					
TYPE	**TERMINAL**	**LABEL**	**DEFAULT**	**INPUTS**	**OUTPUTS**
Digital Output	DO1	DO1	On/Off Heat	NA	Heating On/Off, Heating Floating Open, Cooling Floating Open, Valve On/Off, Valve Floating Open, FCU Changeover Valve, Fan Command, High Speed Fan, Medium Speed Fan, Low Speed Fan, Auxiliary Heat, Conventional Heat Stage 1, Valve Stage 1, Heat Pump. Heat/Cool **Note**: FCU changeover valve used to switch between heating and cooling modes
	DO2	DO2	On/Off Cool	NA	Heating Floating Close, Cooling Floating Close, Cooling On/Off, Valve Floating Close, FCU Changeover Valve, Fan Command, High Speed Fan, Medium Speed Fan, Low Speed Fan, Auxiliary Heat, Conventional. Cool Stage 1, Reversing Valve
	DO3	DO3	NA	NA	Cooling Floating Heat Pump. Reversing Valve, FCU Changeover Valve, Fan Command, High Speed Fan, Medium Speed Fan, Low Speed Fan, Auxiliary Heat, Heat Stage 1, Cool Stage 1, Water Source Heat Pump Water Valve
	DIO1	DIO1	NA	Discharge Air Sensor, Drain Pan Sensor, Occupancy Sensor, Proof of Air/Water Flow, Pipe Sensor, Space Temp Sensor, Changeover Switch	Cooling Floating Close, FCU Changeover Valve, Fan Command, High Speed Fan, Medium Speed Fan, Low Speed Fan, Auxiliary Heat
	DIO2	DIO2	NA	Discharge Air Sensor, Drain Pan Sensor, Occupancy Sensor, Proof of Air/Water flow, Pipe Sensor, Space Temp Sensor, Changeover Switch	FCU Changeover Valve, Fan Command, High Speed Fan, Medium Speed Fan, Low Speed Fan, Auxiliary Heat
Universal Input/ Output	UIO1	UIO1	NA	Discharge Air Sensor, Drain Pan Sensor, Occupancy Sensor, Proof of Air/Water flow, Pipe Sensor, Space Temp Sensor, Changeover Switch	6-Way Valve, Modulating Cool, Modulating Heat, Modulating Valve, Variable Speed Fan
	UIO2	UIO2	NA		
	UIO3	UIO3	NA		

TECHNICAL SPECIFICATIONS

ELECTRICAL CHARACTERISTICS	
PARAMETER	**SPECIFICATIONS**
Power Supply	Rated voltage: 24 VAC 50/60 Hz, Working voltage range: 20-30 VAC, UL listed class-2 transformer or IEC 61558 listed transformer.
Power Consumption (Display ON)	Max. 8.5 VA@24 VAC (355 mA@24 VAC)
Min. Load	4 VA (all DOs OFF, No Sylk sensor)
Max. Load	96 VA (all DOs ON)
Rated Impulse Voltage	500 V
Pollution Degree	2
Relay Type	Type 1, Form B

DISPLAY

PARAMETER	SPECIFICATIONS
Display Type	16 BPP TFT display with CTP
Resolutions	320 X 240 pixel
Active Display Area	2.4” diagonally
Backlight	LCD (Dimmable)
LED Color Ring	Blue (cooling), Orange (heating)

IO CHARACTERISTICS

PARAMETER	SPECIFICATIONS
UIO x 3	• Resistive Temperature Sensor Input - NTC10K Type II, C7021 series - NTC10K Type III, C7023 series - NTC20K, TR21, and C7041 series • Digital Input - Dry contact closure - Open circuit (≥ 100 Kohms) - Closed circuit (≤100 ohms) • Voltage Output - 0-10 V, ±3 % of full scale @2 Kohms
DIO x 2	• Resistive Temperature Sensor Input - NTC10K Type II, C7021 series - NTC10K Type III, C7023 series - NTC20K, TR21, and C7041 series • Digital Input - Dry contact closure - Open circuit (≥ 100 Kohms) - Closed circuit (≤ 100 ohms)
DO x 3 DIO x 2	• Relay Output • Rated Average Current - 1 A Resistive at 24 VAC • Rated Pulse Current - 3.5 A Resistive at 24 VAC

OPERATING ENVIRONMENT

PARAMETER	SPECIFICATIONS
Ambient Operating Temperature	Range: 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

ONBOARD SENSOR

PARAMETER	SPECIFICATIONS
Temperature	Range: 32 to 122 °F (0 to 50 °C) Resolution: 1 °F (0.5° C) Control Accuracy: ±1.5° F (0.8° C) at Room Temperature
Humidity	Range: 20~90 % RH Resolution: 1 % RH Accuracy: ±5 % RH at Room Temperature

COMPLIANCES

PARAMETER	SPECIFICATIONS
Certificates	CE, FCC, ICES, UL/cUL, RoHS, REACH, Prop65
Standards	EN 60730-1, EN 60730-2-9, UL60730-1, UL60730-2-9, Title 47 part 15 subpart B, ICES-003

COMMUNICATION TECHNOLOGIES	
PARAMETER	**SPECIFICATIONS**
Sylk™	Honeywell SylkTM, 2-wire Bus
BACnet MS/TP	RS485 (9.6, 19.2, 38.4, 76.8, 115.2 Kbps)
Modbus RTU	RS485 (1.2 to 115.2 Kbps)

SUPPORTED SENSORS AND FUNCTIONS		
SENSORS	**OPTIONS**	**PART NUMBERS**
Occupancy Sensor	Direct (Normally Open) Reverse (Normally Closed)	Dry contact occupancy sensor
Proof Of Air Flow Sensor	Direct (Normally Open) Reverse (Normally Closed)	DPS200 DPS400 DPS1000 MCS, CS, CSP current switches (Dry contact switches)
Discharge Air Temperature Sensor	NTC 20K NTC 10K Type II NTC 10K Type III Sylk	C7250A C7041 C7021 C7023 C7400S
Space Temperature Sensors	NTC 20K NTC 10K Type II NTC 10K Type III Sylk	TR21 C7041, C7772A, C7021, C7772F, C7023, C7772G, TR40, TR40-H, TR40-CO2, TR40-H-CO2, TR50-3N, TR50-3D
Pipe Sensor	NTC 20K NTC 10K Type II NTC 10K Type III	C7250A C7041 C7021 C7023
Changeover Switch	Closed with heat Closed with cool	Digital input
Drain Pan / Leak Detector	Direct (Normally Open) Reverse (Normally Closed)	Dry contact float switch or water sensor
Proof of Water Flow Sensor	Direct (Normally Open) Reverse (Normally Closed)	Dry contact pressure switch

GENERAL SAFETY INFORMATION

- When performing any work (installation, mounting, start-up), all manufacturer instructions and in particular the Mounting and Installation Instructions guide (31-00642) and the user guide (31-00644) are to be observed.
- The thermostats may be installed and mounted only by authorized and trained personnel.
- Rules regarding electrostatic discharge should be followed.
- If the thermostats are modified in any way, except by the manufacturer, all warranties concerning operation and safety are invalidated.
- Make sure that the local standards and regulations are always observed.
- Use only accessory equipment that comes from or has been approved by Honeywell.
- It is recommended that out-of-the-box 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.
- Investigated according to United States Standard UL60730-1, UL60730-2-9, EN 60730-1 and EN 60730-2-9.
- Investigated according to Canadian National Standard(s) C22.2, No. 205-M1983 (CNL-listed).
- Do not open the thermostats, as they contain no user-serviceable parts inside!
- For TC300B-G, CE declarations according to EMC Directive 2014/30/EU.
- The thermostats are Class B digital apparatus and comply with Canadian ICES-003.
- 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.
- Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- Prudence: Les changements ou modifications apportés à cet appareil non expressément approuvés par la partie responsable de la conformité pourraient annuler le droit de l'utilisateur à utiliser l'équipement.
- This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:
  - This device may not cause interference.
  - This device must accept any interference, including interference that may cause undesired operation of the device.
- L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
  - L'appareil ne doit pas produire de brouillage;
  - L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- Limited by local law regulations, version for North America does not have region selection option.

SAFETY INFORMATION

The thermostats are intended for residential and commercial environments.

The thermostats are independently mounted electronic control systems with fixed wiring.

The thermostats are used for the purpose of building HVAC control and are suitable for use only in non-safety controls for installation on or in appliances.

Note: All images used in this document are for illustrative purposes only and may not match the actual product.

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