TM-11x1 Series Room Temperature Module

Installation Instructions

Applications

The TM-11x1 Series of Room Temperature Modules are designed for use with the TC-9102 Direct Digital Control (DDC) terminal unit controller. The setpoint dial enables the room occupant to adjust the working setpoint of the controller. On scaled models, the marked adjustment range is 55 to 85°F; the controller determines the actual setpoint. On Warmer/Cooler models, the adjustment range is marked +/- from the midpoint of the dial; the controller determines the equivalent setpoint temperature.

With the occupancy button, the occupant can switch the controller's operating mode between occupied and standby. In addition, the TM-11x1 Series offers the option of a temporary occupied mode during unoccupied mode.

The TM-11x1 Series Room Temperature Module also features a Light-Emitting Diode (LED) that indicates the current operating mode.

For TC-9102 Fan Coil Unit controllers, a Room Temperature Module with a 3-speed fan override adjustment is available, and models without a temperature sensor are provided for applications where the room temperature sensor is mounted inside the Fan Coil Unit.

IMPORTANT: The TM-11x1 Series Room Temperature Modules are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the TM-11x1 Temperature Module could lead to personal injury or property damage to the controlled equipment or other property, other precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems, or safety or limit controls intended to warn of or protect against failure or malfunction of the TM-11x1 Temperature Module.

Installation

Parts Included

Two #6-32 x 7/8 in. (22 mm) wallbox mounting screws are included with the TM-11x1 Module.

Special Tools Needed

For tightening and loosening the TM-11x1 Series Room Temperature Module security screw, order the optional Allen-head tool (T-4000-119) from the nearest Johnson Controls® representative.
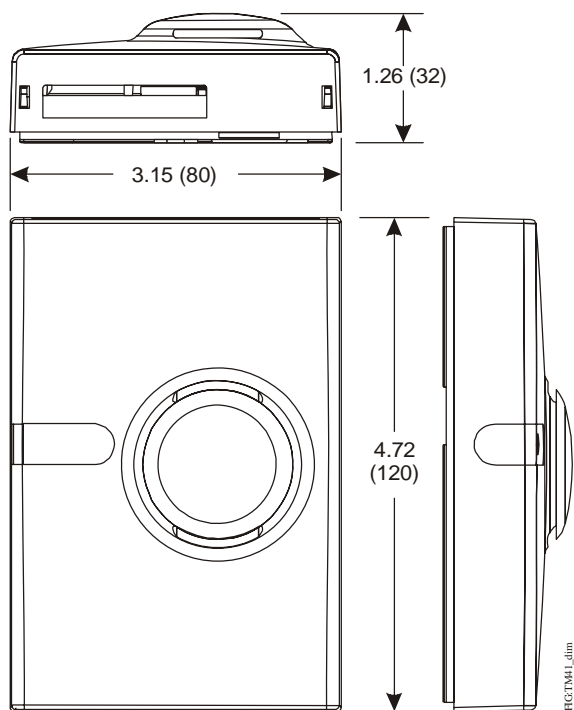
Dimensions

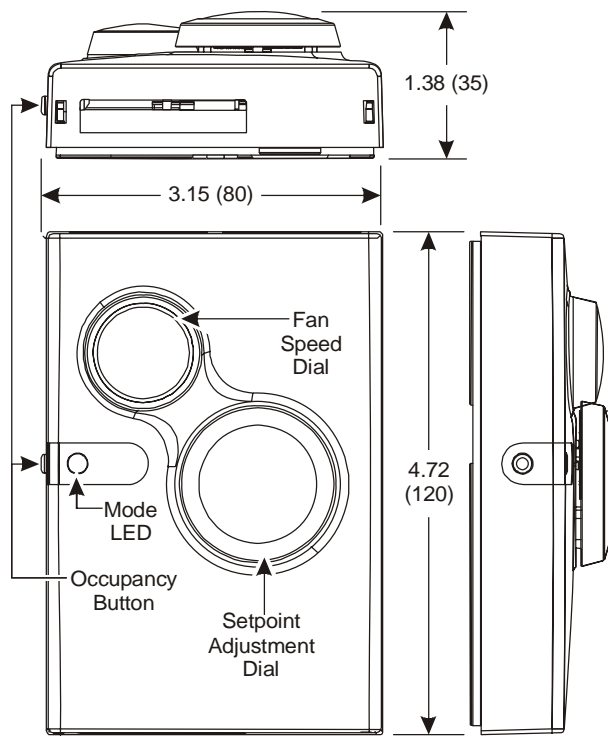### TM-1141 Modules

Figure 1: TM-1141 Dimensions, in. (mm)

TM-1151 Modules

Figure 2: TM-1151 Dimensions, in. (mm)

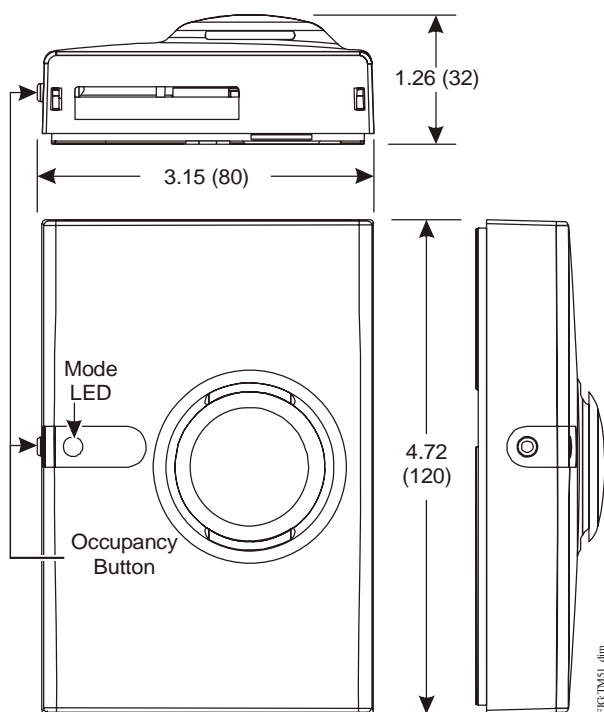### TM-1161 Modules

Figure 3: TM-1161 Dimensions, in. (mm)
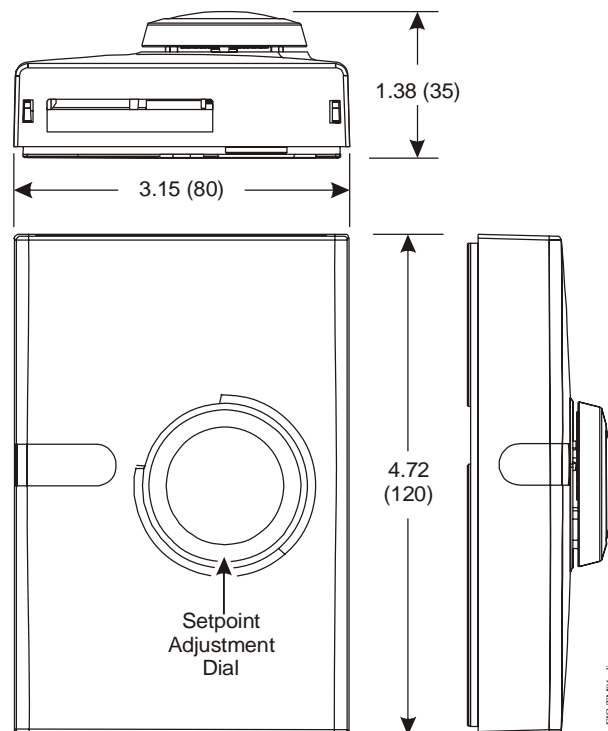
TM-1191 Modules

Figure 4: TM-1191 Dimensions, in. (mm)

Installing the TM-11x1

To install the TM-11x1 Series Room Temperature Module:

1. Use the Allen-head tool to loosen the security screw located at the top center of the housing.

2. Insert a screwdriver blade or coin into the slot on the top of the housing.

3. Press down gently, and pry the housing away from the base. As the two parts separate, remove the blade or coin and continue to pull the housing away from the base until the housing is free.

4. Pull the wires through the base. Locate the green terminal blocks in the upper right of the base and position the module on the wallbox with the terminal numbers right-side up.

5. Mount the base to the wallbox using the two #6-32 mounting screws (included).

6. Wire the controller to the module. See the *Wiring* section for correct wiring.

7. Attach the housing to the base and tighten the security screw with the allen-head tool.

Mounting

Location Considerations

Mount the TM-11x1 Series Room Temperature Module on a wall in the room to be controlled. Locate it where the occupant can easily read and adjust the setpoint dial or fan speed override adjustment dial. Consider these additional guidelines to determine the best mounting location:

- Avoid areas subject to excessive vibration, electrical noise, direct sunlight, or the effects of radiant heat.

- Keep electrical wiring as short as possible to minimize temperature error.

- Install modules in areas where the temperature is representative of the general room conditions.

Wiring

To wire a TC-9102 Controller to the TM-11x1 Series Room Temperature Module, see the appropriate wiring diagram (Figure 5 to Figure 9).

Note: Use 22 AWG (0.65 mm diameter) wire minimum. Do not exceed 164 ft (50 m) between the controller and the temperature module.

Table 1: Nominal Values for Sensors

Temperature		Resistance
°F	°C	ohm
20	-7	10,595.0
30	-1	7,739.2
40	4	6,010.0
50	10	4,482.3
60	16	3,378.3
70	21	2,689.6
80	27	2,063.9
90	32	1,666.9
100	38	1,300.2
110	43	1,063.9
120	49	842.47
130	54	697.65

TM-1141-0000

Controller — Room Temperature Module

20 — 20 — NTC Sensor

21 — 21 — Common

FIG:TM41_WIR

Figure 5: Wiring to an NTC Room Sensor

TM-1151-0000

Controller — Room Temperature Module

14 — 14 — Occupancy Button

15 — 15 — Mode LED
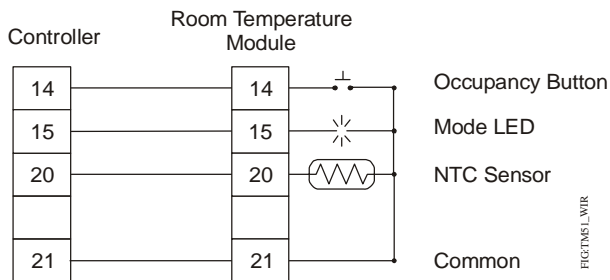
20 — 20 — NTC Sensor

21 — 21 — Common

FIG:TM51_WIR

Figure 6: Wiring to a Room Temperature Module Featuring an NTC Sensor with Occupancy Override

TM-1161-0000 and TM-1161-0005

Controller — Room Temperature Module

14 — 14 — Occupancy Button

15 — 15 — Mode LED

20 — 20 — NTC Sensor

23 — 23 — Temperature Setpoint

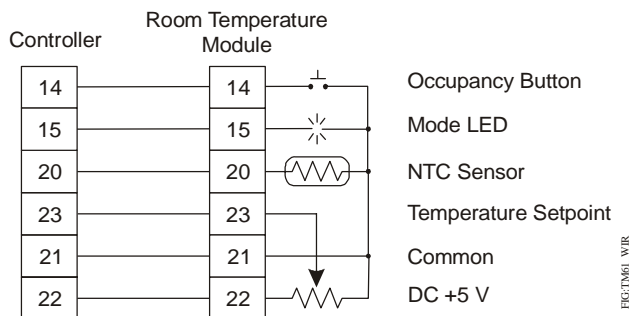21 — 21 — Common

22 — 22 — DC +5 V

FIG:TM61_WIR

Figure 7: Wiring to a Room Temperature Module Featuring an NTC Sensor with Temperature Setpoint Adjustment, and Occupancy Override

TM-1161-0002 and TM-1161-0007

Controller — Room Temperature Module

51 — 51 — Three-Speed Fan Override

14 — 14 — Occupancy Button

15 — 15 — Mode LED

20 — 20 — NTC Sensor

23 — 23 — Temperature Setpoint

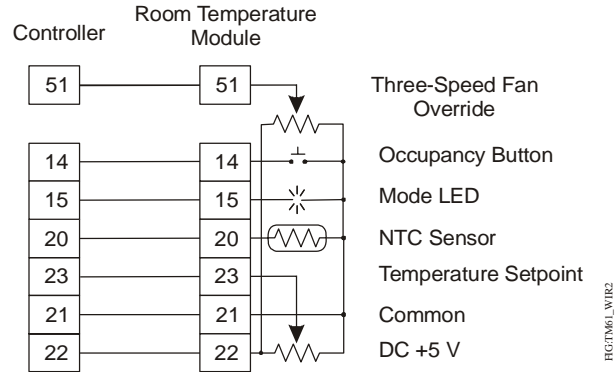21 — 21 — Common

22 — 22 — DC +5 V

FIG:TM61_WIR2

Figure 8: Wiring to a Room Temperature Module Featuring an NTC Sensor with Temperature Setpoint Adjustment, Occupancy Override, and Three-Speed Fan Override

TM-1191-0000 and TM-1191-0005

Controller — Room Temperature Module

20 — 20 — NTC Sensor

23 — 23 — Temperature Setpoint

21 — 21 — Common

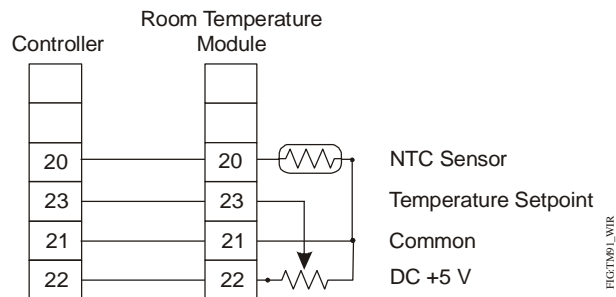22 — 22 — DC +5 V

FIG:TM91_WIR

Figure 9: Wiring to a Room Temperature Module Featuring an NTC Sensor with Temperature Setpoint Adjustment without Occupancy Override

The following messages apply to wiring this product.

> ⚠️ **CAUTION: Risk of Electric Shock.**
> Disconnect power supply before making electrical connections to avoid electric shock.

> ⚠️ **CAUTION: Risk of Property Damage.**
> Do not run low voltage cable in the same conduit or wiring troughs with high voltage wires. Running low and high voltage wires in the same conduit or wiring troughs may damage the equipment or cause system malfunction.

> ⚠️ **CAUTION: Risk of Property Damage.**
> Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

> **IMPORTANT:** Use copper conductors only. Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the Command Module electrical ratings.

Setup and Adjustments

Make temperature or fan speed adjustments to the appropriate modules using the rotating dial, shown in Figure 3 and Figure 4.

Repair Information

Do not field repair the TM-11x1 Series Room Temperature Module. As with any electrical device, keep the air vents clean and free from dust and obstruction. To order replacement parts, contact the nearest Johnson Controls representative.

Technical Specifications

TM-11x1 Series Room Temperature Module (Part 1 of 2)

Models	TM-1141-0000	Temperature Output Only
	TM-1151-0000	Temperature Output with Occupancy Override
	TM-1161-000x	Temperature Output with Setpoint Adjustment and Occupancy Override and Optional Fan Speed Adjustment
	TM-1191-000x	Temperature Output with Setpoint Adjustment
Power Requirements	Powered from TC-9102 Controller.	
Power Consumption	N/A: Refer to individual component specification.	
Inputs	None	
Adjustments	Temperature Setpoint, Fan Speed (Optional by Model)	
Mode Indicator	Green LED (5 V, 4 mA)	
Occupancy Button	Momentary Contact (Switches 5 V at 1 mA)	
Output	**Temperature Sensing Element**	Resistance Temperature Device (RTD) Thermistor Negative Temperature Coefficient (NTC) 2,252 ohm at 77°F (25°C)
	Fan Speed	10k ohm Potentiometer, with Mechanically-Guided Positions at 0, 25, 50, 75, and 100% for Auto, Off, I (Low Speed), II (Medium Speed), and III (High Speed)

Setpoint Range	TM-1141-0000 TM-1151-0000	No setpoint range
	TM-1161-0000 TM-1191-0000	10k ohm potentiometer marked for 55 to 85°F
	TM-11x1-0002	10k ohm potentiometer marked for 55 to 85°F Fan Speed Adjustment: Auto, Off, I, II, and III
	TM-11x1-0005	10k ohm potentiometer marked for +/- (5F°)
	TM-11x1-0007	10k ohm potentiometer marked for +/- (5F°) Fan Speed Adjustment: Auto, Off, I, II, and III
Accuracy	±0.9°F (±0.5°C)	
Field Connection	18 to 22 AWG (1.00 to 0.65 mm diameter) recommended	
Mounting	Wallbox Mount	
Housing Material	ABS + PC, Self-Extinguishing HB UL94	
Protection	IP30 (EN 60529)	
Ambient Operating Conditions	Temperature	32 to 122°F (0 to 50°C)
	Humidity	10 to 90% RH (Noncondensing)
Ambient Storage Conditions	Temperature	-40 to 158°F (-40 to 70°C)
	Humidity	5 to 95% RH (Noncondensing)
Dimensions (H x W x D)	TM-1141 TM-1151	4.72 x 3.15 x 1.26 in. (120 x 80 x 32 mm)
	TM-1161 TM-1191	4.72 x 3.15 x 1.38 in. (120 x 80 x 35 mm)
Shipping Weight	0.44 lb (0.2 kg)	
Compliance	Europe	CE Mark: EMC Directive 2004/108/EC, EN-61000-6-2

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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