

PRODUCT/TECHNICAL BULLETIN

TCN-890x Electronic Room Thermostats

The TCN-8900 Series is a family of analog electronic controllers designed to control heating and/or cooling valves or dampers. The TCN-8901 has two 0 to 10 VDC proportional outputs, one for heating and one for cooling. The TCN-8906 has two On/Off triac outputs, one for heating and one for cooling, capable of switching 0.5 A at 24 VAC.

The dual-scale setpoint dial enables the room occupant to adjust the thermostat setpoint within the range of 54 to 82°F (12 to 28°C).



Figure 1: TCN-890x Thermostat

Features and Benefits	
<input type="checkbox"/> Small, Compact Package	Provides similar look and feel to the Metastat sensors
<input type="checkbox"/> Local Setpoint	Provides easy wiring and installation
<input type="checkbox"/> Globally Scaled Unit	Includes setpoint scale in both Fahrenheit and Celsius ranges 54 to 82°F (12 to 28°C)
<input type="checkbox"/> Universal Mounting	Includes wallbox and surface mounting plates and all installation hardware

Product Overview

IMPORTANT: The TCN-8900 Series electronic room thermostats are intended to control equipment under normal operating conditions. Where failure or malfunction of the thermostat could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of, or protect against, failure or malfunction of the thermostat must be incorporated into and maintained as part of the control system.

The TCN-890x features a quick-mount design that saves time and simplifies installation. Two bases and screws are provided with each thermostat, so it can be mounted directly to drywall (plastic wall anchors are provided) or a standard U.S. wallbox.

The setpoint knob has scales both in Fahrenheit (54 to 82°F) and Celsius (12 to 28°C).

The TCN-8900 Series features separate Reverse Acting/Direct Acting (RA/DA) outputs for heating and cooling applications. To change the output from heating to cooling, connect an external changeover to the provided inputs on the screw terminals shown in Figure 3.

TCN-8900 Series models include an adjustable Dead Band (DB).

- TCN-8901 has 0 to 10 VDC RA and DA outputs that feature separate Proportional Band (PB) adjustments.
- TCN-8906 has two On/Off RA and DA triac outputs that feature separate differential adjustments.

Use the Unoccupied feature, accessible through the terminal block, to designate a night or unoccupied setting, which can be operated by a timer or other device. This state provides thermal protection by maintaining a fixed offset of 9F° (5C°) from the setpoint temperature.

Optional Dial Stop Screws

Johnson Controls offers an optional Dial Stop Screw Kit for applications where fixing or limiting adjustment to the temperature range is appropriate. For further information, see Table 3.

Dimensions

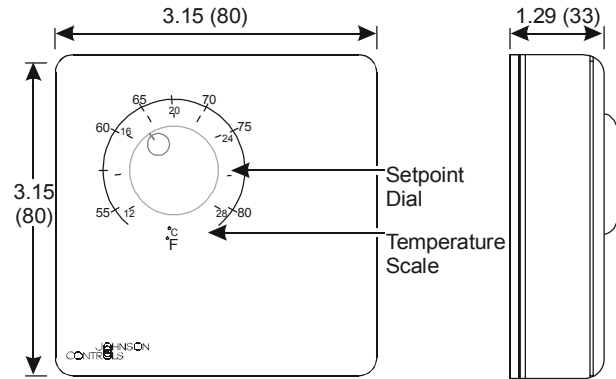


Figure 2: TCN-890x Cover Dimensions, in. (mm)

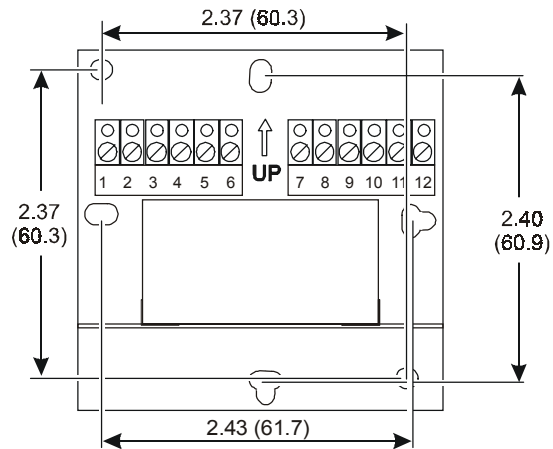
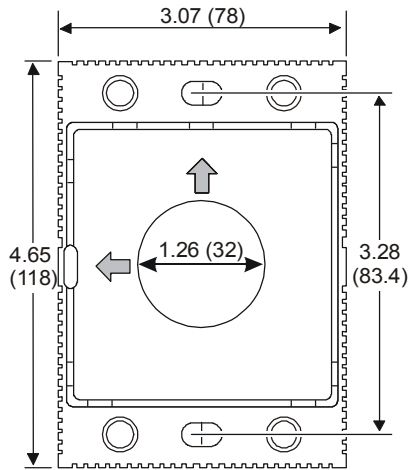


Figure 3: TCN-890x Base Dimensions, in. (mm)



Ordering Information

Contact the nearest Johnson Controls representative to order a TCN-890x Electronic Room Thermostat, and specify the desired product code number from Table 1. Refer to Table 2 for replacement parts and Table 3 for accessories.

Figure 4: TCN-890x Wallplate Dimensions, in. (mm)

Table 1: Thermostat Units

Product Code Number	Description	Outputs	Sensor
TCN-8901-2161	Electronic Room Thermostat	0 to 10 VDC Analog RA 0 to 10 VDC Analog DA	Built-in
TCN-8906-2161	Electronic Room Thermostat	On/Off RA Triac On/Off DA Triac	Built-in

Note: Setpoint range: 54 to 82°F (12 to 28°C)

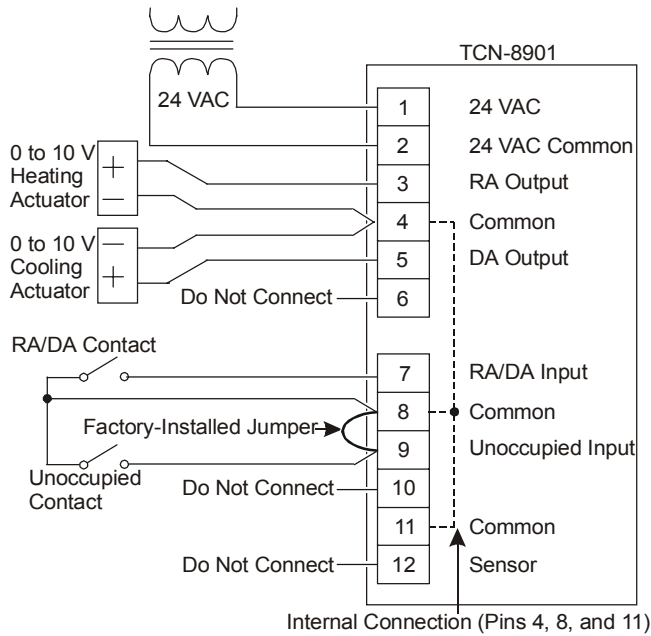
Table 2: Replacement Parts (Order Separately)

Part Number	Description
TE-67E0-600	Replacement End Caps (10 per Package)
TE-67W-600	Wallbox Mounting Replacement Kit

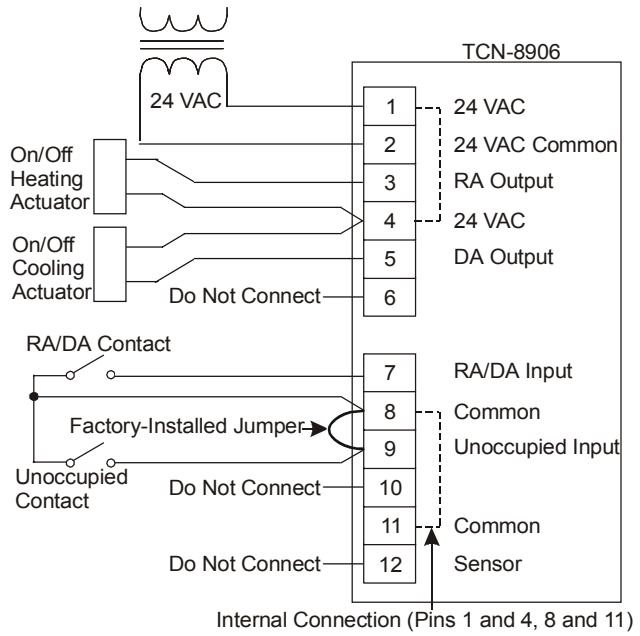
Table 3: Accessories (Order Separately)

Part Number	Description
ACC-INSL-0	Foam Pad Kit for Wallbox Mounting (10 per package)
ACC-INSL-1	Foam Pad Kit for Surface Mounting (10 per package)
T-4000-119	Allen-head Adjustment Tool (30 per package)
TM-9100-8931	Plastic Surface Mounting Kit
TM-9100-8901	Dial Stop Screw Kit (100 Self-tapping Screws per package)

Technical Specifications



Internal Connection (Pins 4, 8, and 11)



Internal Connection (Pins 1 and 4, 8 and 11)

Figure 5: Wiring the TCN-8901, 0 to 10 V

Figure 6: Wiring the TCN-8906, On/Off

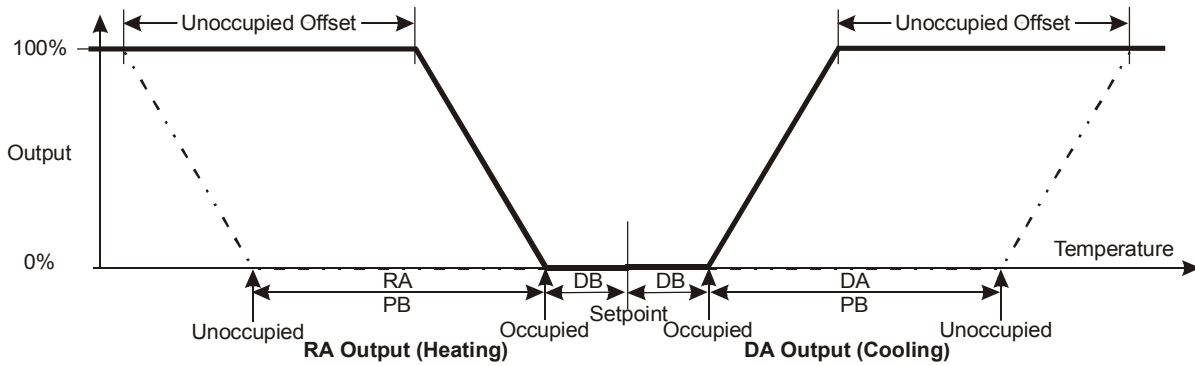


Figure 7: TCN-8901 0 to 10 VDC Control Sequence

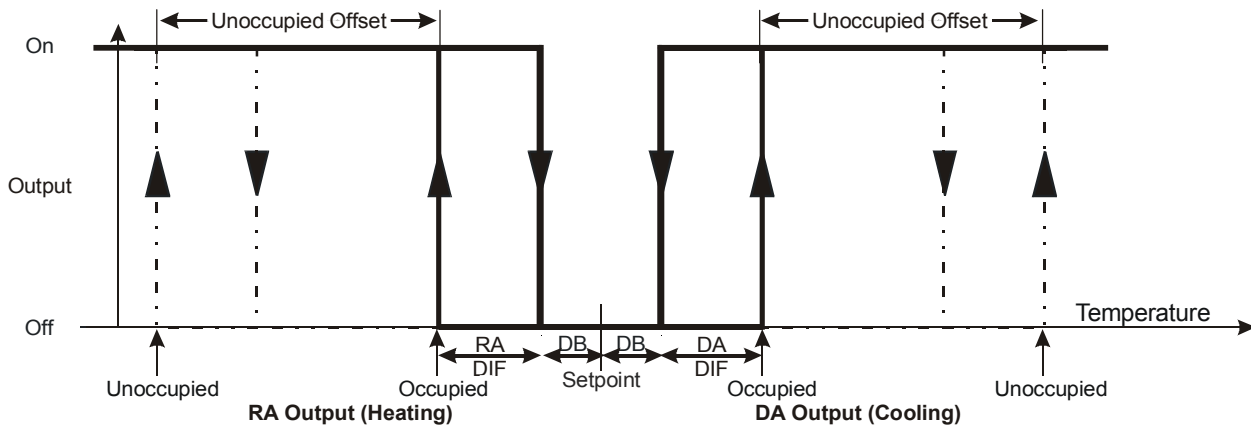


Figure 8: TCN-8906 On/Off Control Sequence

Technical Data

Product	TCN-890x Electronic Room Thermostat	
Power Requirements	24 VAC \pm 15% at 50/60 Hz, Class 2	
Power Consumption	1.5 VA with No Load	
Inputs	Unoccupied Input:	(Remove Factory-installed Jumper on Screw Terminal Block); Fixed 9F° (5C°) Nominal Offset
	RA/DA:	Remote Contact
Adjustments	Set Point:	54 to 82°F (12 to 28°C)
	Dead Band:	0 to 4F° (0 to 2C°)
	Differential:	(Model TCN-8906 Only) 0.4 to 4F° (0.2 to 2C°); Independent Adjustments for RA and DA Outputs
	Proportional Band:	(Model TCN-8901 Only) 2 to 7F° (1 to 4C°); Independent Adjustments for RA and DA Outputs
Output	TCN-8901:	Analog, 0 to 10 VDC, 10 mA Maximum; Output Normal State is Off
	TCN-8906:	On/Off, Triac 24 VAC, 0.5 A Maximum; Output Normal State is Off
Field Connections	Screw Terminals for 24 to 14 AWG Wire	
Mounting	Standard Bases for Surface or U.S. Wallbox Mounting, Including Hardware	
Housing	White Plastic Cover with Dark Gray Plastic Mounting Base	
Protection	NEMA 1, IP30 (IEC 60529)	
Ambient Operating Conditions	32 to 122°F (0 to 50°C) 10 to 95% RH (Noncondensing)	
Ambient Storage Conditions	-4 to 158°F; (-20 to 70°C) 10 to 90% RH (Noncondensing)	
Dimensions (H x W x D)	3.15 x 3.15 x 1.30 in. (80 x 80 x 33 mm)	
Shipping Weight	0.50 lb (0.23 kg)	
Agency Listings	CE Compliance: EMC (89/336 EEC) According to the Standard EN 50081-1 and EN 50082-1; FCC and DOC Compliant	

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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