

TW & TE SERIES

Wall Mount Temperature Sensors



These wall mounted temperature sensors feature a discreet appearance combined with high accuracy and reliability. Aesthetically pleasing in any interior environment. Flexible mounting options include flush and single-gang for ease of installation.

SPECIFICATIONS

TE Series

Wiring	22 AWG; 2-wire: RTD Thermistor, 4 to 20 mA; 3-wire: voltage output models
Housing	Black or white ABS plastic
Operating Temp	-25 to 105 °C (-13 to 221 °F)

LINITEMP OPTION

Input Power	Class 2; 5 to 30 Vdc
Output	10 mV/°C
Operating Temp	-25 to 105 °C (-13 to 221 °F)
Calibration Offset	1.5 °C (2.7 °F) typ.; 2.5 °C (4.5 °F) max. at 25 °C (77 °F)*
Offset over Temp	1.8 °C (3.24 °F) typical; 3.0°C (5.4 °F) max. over 0 to 70 °C (32 to 158 °F) range; 2.0 °C (3.6 °F) typical, 3.5 °C (6.3 °F) max. over -25 to 105 °C (-13 to 221 °F) range

WARRANTY

Limited Warranty	5 years
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SPECIFICATIONS

TW/TEA Series

INPUT POWER

TW Model	4 to 20mA mode: loop powered Class 2, 12 to 30 Vdc only, 30 mA max.; 0-5/0-10 V mode: Class 2, 12 to 30 Vdc/24 Vac, 50/60 Hz, 15 mA max.
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Wall mount

Low-profile housing

Quick installation

Reduced downtime for deployment

APPLICATIONS

- Controlling HVAC systems for improved comfort & energy savings
- Museums, schools, printing shops, hospitals, data centers, & other locations that require temperature control
- Facilitating compliance with ASHRAE standards for environmental control and indoor air quality

TEA Model	4 to 20 mA mode; loop powered Class 2; 24 Vdc only; 0-10 V, 3-wire, observe polarity; 12-30 Vdc; 0-5 V, 3-wire, observe polarity; 24 Vac, 50/60 Hz, 12-30 Vdc
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RANGES

TW Model	10 to 35 °C (50 to 95 °F)/0 to 50 °C (32 to 122 °F) jumper-selectable
TEA Model	10 to 35 °C (50 to 95 °F)
Analog Output TEA 4 to 20 mA model	2-wire, not polarity sensitive (clipped & capped)
Temp Output TW Model	2-wire, loop powered 4 to 20 mA or 3-wire, 0-5 V/0 - 10 Vdc
Transmitter Type	Solid-state, integrated circuit
Transmitter Accuracy	±0.5 °C (±.9 °F) typical

WARRANTY

Limited Warranty	5 years
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AGENCY APPROVALS



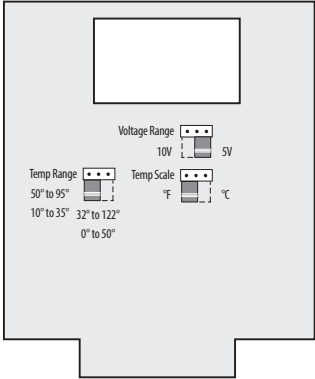
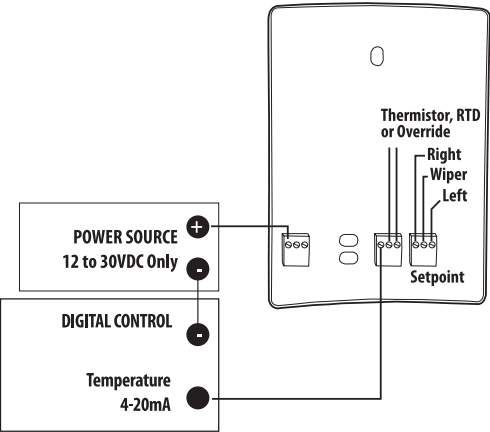
Note: RTD/Thermistors in wall packages are not compensated for internal heating of product.

*Room temperature offset documented on each unit.

**The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

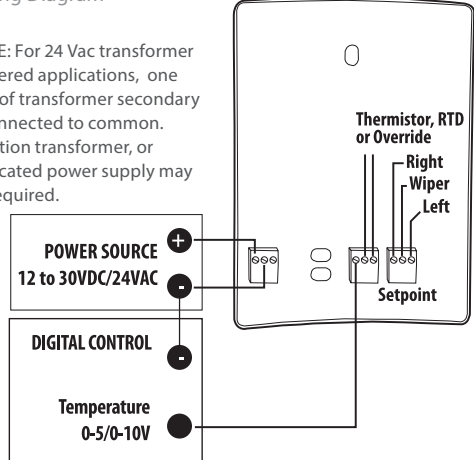


TW (4 TO 20 MA)
Wiring Diagram

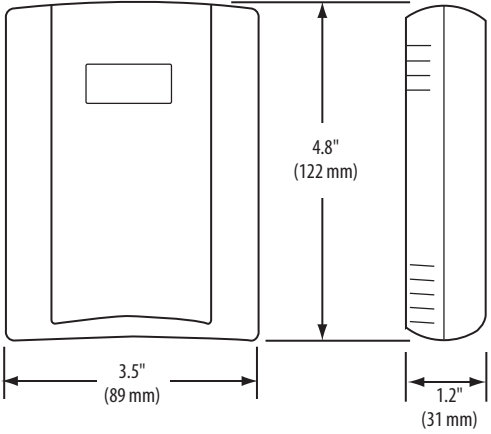


TW (0-5/0-10 V)
Wiring Diagram

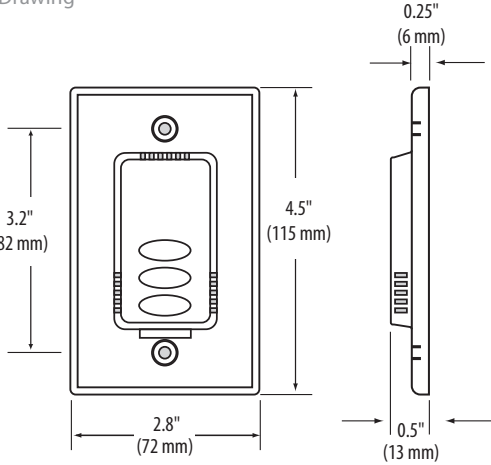
NOTE: For 24 Vac transformer powered applications, one side of transformer secondary is connected to common. Isolation transformer, or dedicated power supply may be required.



TW
Dimensional Drawing



TE/TEA
Dimensional Drawing



ORDERING INFORMATION

<p>TW</p> <p>Local Display: <input type="checkbox"/> L = LCD, <input type="checkbox"/> X = No</p> <p>Sensor Type: <input type="checkbox"/> A = Transmitter selectable outputs</p> <p>Setpoint/Override: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 2 = 1k Setpoint, <input type="checkbox"/> 3 = 10k Setpoint, <input type="checkbox"/> 4 = 1k Setpoint w/override, <input type="checkbox"/> 5 = 10k Setpoint w/override</p> <p>Cal Certificate: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 1 = 1 point Cal validation, <input type="checkbox"/> 2 = 2 point Cal validation</p> <p>Housing Color: <input type="checkbox"/> None = Cloud White, <input type="checkbox"/> B = Black</p> <p>Example: TW <input type="checkbox"/> X <input type="checkbox"/> A <input type="checkbox"/> 0 <input type="checkbox"/> 2</p>	<p>TEA</p> <p>Output: <input type="checkbox"/> M = 4 to 20 mA, <input type="checkbox"/> V = 0-10 Vdc, <input type="checkbox"/> J = 0-5 Vdc</p> <p>US or EU: <input type="checkbox"/> S = Standard</p> <p>Housing Color: <input type="checkbox"/> None = Cloud White, <input type="checkbox"/> B = Black</p> <p>Example: TEA <input type="checkbox"/> J <input type="checkbox"/> S</p>
<p>TW</p> <p>Local Display: <input type="checkbox"/> L = LCD, <input type="checkbox"/> X = No</p> <p>Sensor Type: <input type="checkbox"/> B = 100R platinum, RTD, <input type="checkbox"/> C = 1k platinum, RTD, <input type="checkbox"/> D = 10k T2, Thermistor, <input type="checkbox"/> E = 2.2k, Thermistor, <input type="checkbox"/> F = 3k, Thermistor, <input type="checkbox"/> G = 10k CPC, Thermistor, <input type="checkbox"/> H = 10k T3, Thermistor, <input type="checkbox"/> I = 1k Balco (Nickel-iron) RTD, <input type="checkbox"/> J = 10k Dale, Thermistor, <input type="checkbox"/> K = 10k w/11k shunt, Thermistor, <input type="checkbox"/> M = 20k NTC, Thermistor, <input type="checkbox"/> N = 1800 ohm, Thermistor, <input type="checkbox"/> P = 10mV/°C, Linitemp, <input type="checkbox"/> R = 10k US, Thermistor, <input type="checkbox"/> S = 10k 3A221, Thermistor, <input type="checkbox"/> T = 100k, Thermistor, <input type="checkbox"/> U = 20k "D", Thermistor, <input type="checkbox"/> W = 10k T2 high accuracy, Thermistor, <input type="checkbox"/> Y = 10k T3 high accuracy, Thermistor</p> <p>Setpoint/Override: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 1 = Override*, <input type="checkbox"/> 2 = 1k Setpoint, <input type="checkbox"/> 3 = 10k Setpoint, <input type="checkbox"/> 4 = 1k Setpoint w/override*, <input type="checkbox"/> 5 = 10k Setpoint w/override*</p> <p>Cal Certificate: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 1 = 1 point Cal validation, <input type="checkbox"/> 2 = 2 point Cal validation</p> <p>Housing Color: <input type="checkbox"/> None = Cloud White, <input type="checkbox"/> B = Black</p> <p>Example: TW <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> 0 <input type="checkbox"/> 1</p> <p>*Pushbutton override short circuits RTD/thermistor output. ** Not available with W and Y high-accuracy thermistors.</p>	<p>TE</p> <p>Sensor Type: <input type="checkbox"/> B = 100R platinum, RTD, <input type="checkbox"/> C = 1k platinum, RTD, <input type="checkbox"/> D = 10k T2, Thermistor, <input type="checkbox"/> E = 2.2k, Thermistor, <input type="checkbox"/> F = 3k, Thermistor, <input type="checkbox"/> G = 10k CPC, Thermistor, <input type="checkbox"/> H = 10k T3, Thermistor, <input type="checkbox"/> I = 1k Balco (Nickel-iron) RTD, <input type="checkbox"/> J = 10k Dale, Thermistor, <input type="checkbox"/> K = 10k w/11k shunt, Thermistor, <input type="checkbox"/> M = 20k NTC, Thermistor, <input type="checkbox"/> N = 1800 ohm, Thermistor, <input type="checkbox"/> P = 10mV/°C, Linitemp, <input type="checkbox"/> R = 10k US, Thermistor, <input type="checkbox"/> S = 10k 3A221, Thermistor, <input type="checkbox"/> T = 100k, Thermistor, <input type="checkbox"/> U = 20k "D", Thermistor, <input type="checkbox"/> W = 10k T2 high accuracy, Thermistor, <input type="checkbox"/> Y = 10k T3 high accuracy, Thermistor</p> <p>Setpoint/Override: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 1 = Override*, <input type="checkbox"/> 2 = 1k Setpoint cal validation**, <input type="checkbox"/> 3 = 10k Setpoint, <input type="checkbox"/> 4 = 1k Setpoint with override*, <input type="checkbox"/> 5 = 10k Setpoint with override*</p> <p>Cal Certificate: <input type="checkbox"/> 0 = None, <input type="checkbox"/> 1 = 1-point cal validation**, <input type="checkbox"/> 2 = 2-point cal validation**</p> <p>Housing Color: <input type="checkbox"/> None = Cloud white, <input type="checkbox"/> B = Black</p> <p>Example: TE <input type="checkbox"/> D <input type="checkbox"/> 5 <input type="checkbox"/> 2</p> <p>*Pushbutton override short circuits RTD/thermistor output ** Not available with W and Y high-accuracy thermistors.</p>



THERMISTOR TABLE

Class	Pt RTD		Balco RTD	THERMISTOR				
	100 Ohm	1000 Ohm	1000 Ohm	10k Type 2	10k Type 3	10k Dale	10k "G" US	20k
Accuracy	±0.3°C	±0.3°C	±1% @70°C	±1.0°C	±0.2°C	±0.2°C	±0.2°C	Consult
	0.00385 curve	0.00385 curve		-50/150°C	0/70°C	-20/70°C	0/70°C	Factory
Temp. Response*	PTC	PTC	PTC	NTC	NTC	NTC	NTC	NTC

*PTC: Positive Temperature Coefficient *NTC: Negative Temperature Coefficient

STANDARD RTD AND THERMISTOR VALUES (Ohms Ω)

°C	°F	100 Ohm	1000 Ohm	1000 Ohm	10k Type 2	10k Type 3	10k Dale	10k "G" US	20k NTC
-50	-58	80.306	803.06	740.46	692,700	454,910	672,300	441,200	1,267,600
-40	-40	84.271	842.71	773.99	344,700	245,089	337,200	239,700	643,800
-30	-22	88.222	882.22	806.02	180,100	137,307	177,200	135,300	342,000
-20	-4	92.160	921.60	841.00	98,320	79,729	97,130	78,910	189,080
-10	14	96.086	960.86	877.46	55,790	47,843	55,340	47,540	108,380
0	32	100.000	1,000.00	913.66	32,770	29,588	32,660	29,490	64,160
10	50	103.903	1,039.03	952.25	19,930	18,813	19,900	18,780	39,440
20	68	107.794	1,077.94	991.82	12,500	12,272	12,490	12,260	24,920
25	77	109.735	1,097.35	1,013.50	10,000	10,000	10,000	10,000	20,000
30	86	111.673	1,116.73	1,035.18	8,055	8,195	8,056	8,194	16,144
40	104	115.541	1,155.41	1,077.68	5,323	5,593	5,326	5,592	10,696
50	122	119.397	1,193.97	1,120.52	3,599	3,894	3,602	3,893	7,234
60	140	123.242	1,232.42	1,166.13	2,486	2,763	2,489	2,760	4,992
70	158	127.075	1,270.75	1,210.75	1,753	1,994	1,753	1,990	3,512
80	176	130.897	1,308.97	1,254.55	1,258	1,462	1,258	1,458	2,516
90	194	134.707	1,347.07	1,301.17	919	1,088	917	1,084	1,833
100	212	138.506	1,385.06	1,348.38	682	821	679	816.8	1,356
110	230	142.293	1,422.93	1,397.13	513	628	511	623.6	1,016
120	248	146.068	1,460.68	1,447.44	392	486	389	481.8	770
130	266	149.832	1,498.32	1,496.28	303	380	301	376.4	591
Sensor Codes		B	C	I	D	H	J	R	M

To compute Linitemp Temperature
 $\text{mV reading}/10 - 273.15 = \text{Temperature in } ^\circ\text{C}$