

# Wall Mount Temperature Sensors

## TW & TE Series



TW



TE



## Wall Mount Temperature Sensors DESCRIPTION

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)



<b>Wiring</b>	22 AWG; 2-wire: RTD Thermistor, 4-20mA; 3-wire: Voltage output models
<b>Housing</b>	Black or white ABS plastic
<b>LINTEMP OPTION</b>	
<b>Input Power</b>	5 to 30VDC
<b>Output</b>	10mV/°C
<b>Operating Temp</b>	-25° to 105°C (-13° to 221°F)
<b>Calibration Error</b>	1.5°C (2.7°F) typical; 2.5°C (4.5°F) max. at 25°C (77°F)*
<b>Error over Temp</b>	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

\*Room temperature error documented on each unit.

## SPECIFICATIONS (TW/TEA)

<b>INPUT POWER</b>	
<b>TW Model</b>	4-20mA mode: loop powered 12 to 30VDC only, 30mA max.; 0-5/0-10V mode: 12-30VDC/24VAC, 15mA max.
<b>TEA Model</b>	4-20mA mode; loop powered 24VDC only; 0-10V, 3-wire, observe polarity; 12-30DC; 0-5V, 3-wire, observe polarity; 24VAC, 12-30DC
<b>RANGES</b>	
<b>TW Model</b>	10° to 35°C (50° to 95°F)/0° to 50°C (32° to 122°F) jumper-selectable
<b>TEA Model</b>	10° to 35°C (50° to 95°F)
<b>Analog Output TEA 4-20 mA model</b>	2-wire, not polarity sensitive (clipped and capped)
<b>Temp Output TW Model</b>	2-wire, loop powered 4-20mA or 3-wire, 0-5V/0 10VDC
<b>Transmitter Type</b>	Solid-state, integrated circuit
<b>Accuracy</b>	±0.5°C (±.9°F) typical*

RTD/Thermistors in wall packages are not compensated for internal heating of product.  
\* For RTD and thermistor accuracies and ranges, see the table below.

Class	Pt RTD		Balco RTD		THERMISTOR												
	100 Ohm	1000 Ohm	1000 Ohm	2.2k	3k	10k Type 2	10k Type 3	10k Dale	10k 3A221	10k 'G' US	20k	20k 'D'	100k	10k Type 2	10k Type 3		
<b>Accuracy</b>	±0.3°C 0.00385 curve	±0.3°C 0.00385 curve	±1% @70°C	±0.2°C 0/70°C	±0.2°C 0/70°C	±1.0°C -50/150°C	±0.2°C 0/70°C	±0.2°C -20/70°C	±1.1°C 0/70°C	±0.2°C 0/70°C	Consult	Consult	Consult	±0.1°C 20/70°C	±0.1°C		
<b>Temp. Response*</b>	PTC	PTC	PTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC		

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

### STANDARD RTD AND THERMISTOR VALUES (Ohms Ω)

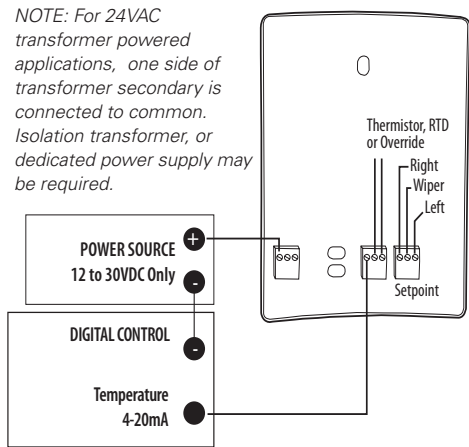
°C	°F	100 Ohm	1000 Ohm	1000 Ohm	2.2k	3k	10k Type 2	10k Type 3	10k Dale	10k 3A221	10k 'G' US	20k NTC	20k 'D'	100k	10k Type 2	10k Type 3
-50	-58	80.306	803.06	740.46	154,464	205,800	692,700	454,910	672,300	-	441,200	1,267,600	-	-	692,700	454,910
-40	-40	84.271	842.71	773.99	77,081	102,690	344,700	245,089	337,200	333,562	239,700	643,800	803,200	3,366,000	344,700	245,089
-30	-22	88.222	882.22	806.02	40,330	53,730	180,100	137,307	177,200	176,081	135,300	342,000	412,800	1,770,000	180,100	137,307
-20	-4	92.160	921.60	841.00	22,032	29,346	98,320	79,729	97,130	96,807	78,910	189,080	220,600	971,200	98,320	79,729
-10	14	96.086	960.86	877.46	12,519	16,674	55,790	47,843	55,340	55,252	47,540	108,380	122,400	553,400	55,790	47,843
0	32	100.000	1,000.00	913.66	7,373	9,822	32,770	29,588	32,660	32,639	29,490	64,160	70,200	326,600	32,770	29,588
10	32	103.903	1,039.03	952.25	4,487	5,976	19,930	18,813	19,900	19,901	18,780	39,440	41,600	199,000	19,930	18,813
20	68	107.794	1,077.94	991.82	2,814	3,750	12,500	12,272	12,490	12,493	12,260	24,920	25,340	124,900	12,500	12,272
25	77	109.735	1,097.35	1,013.50	2,252	3,000	10,000	10,000	10,000	10,000	10,000	20,000	20,000	100,000	10,000	10,000
30	86	111.673	1,116.73	1,035.18	1,814	2,417	8,055	8,195	8,056	8,055	8,194	16,144	15,884	80,580	8,055	8,195
40	104	115.541	1,155.41	1,077.68	1,199	1,598	5,323	5,593	5,326	5,324	5,592	10,696	10,210	53,260	5,323	5,593
50	122	119.397	1,193.97	1,120.52	811.5	1,081	3,599	3,894	3,602	3,600	3,893	7,234	6,718	36,020	3,599	3,894
60	140	123.242	1,232.42	1,166.13	561.0	747	2,486	2,763	2,489	2,486	2,760	4,992	4,518	24,880	2,486	2,763
70	158	127.075	1,270.75	1,210.75	395.5	527	1,753	1,994	1,753	1,751	1,990	3,512	3,100	17,510	1,753	1,994
80	176	130.897	1,308.97	1,254.55	284.0	378	1,258	1,462	1,258	1,255	1,458	2,516	2,168	12,560	1,258	1,462
90	194	134.707	1,347.07	1,301.17	207.4	-	919	1,088	917	915	1,084	1,833	1,542	9,164	919	1,088
100	212	138.506	1,385.06	1,348.38	153.8	-	682	821	679	678	816.8	1,134	6,792	682	821	
110	230	142.293	1,422.93	1,397.13	115.8	-	513	628	511	509	623.6	1,016	816	5,108	513	628
120	248	146.068	1,460.68	1,447.44	88.3	-	392	486	389	388	481.8	770	606	3,894	392	486
130	266	149.832	1,498.32	1,496.28	68.3	-	303	380	301	299	376.4	591	456	3,006	303	380
<b>Sensor Codes</b>		<b>B</b>	<b>C</b>	<b>I</b>	<b>E</b>	<b>F</b>	<b>D</b>	<b>H</b>	<b>J</b>	<b>S</b>	<b>R</b>	<b>M</b>	<b>U</b>	<b>T</b>	<b>W</b>	<b>Y</b>

To compute Lintemp Temperature  
mV reading/10 - 273.15 = Temperature in °C

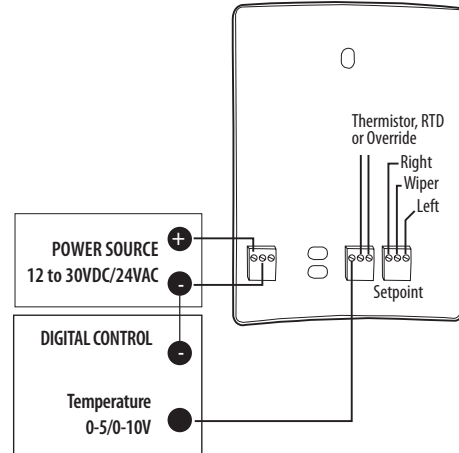
WIRING DIAGRAMS

TW Series - 4-20mA

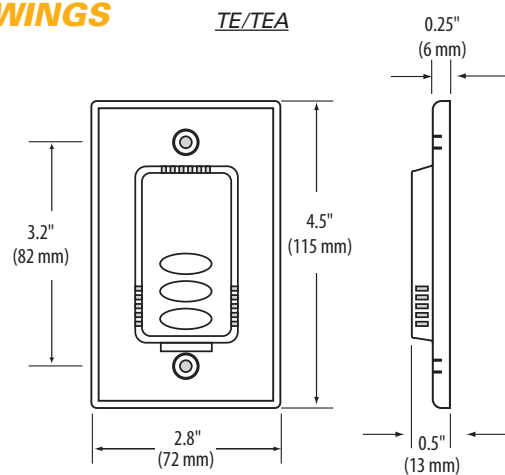
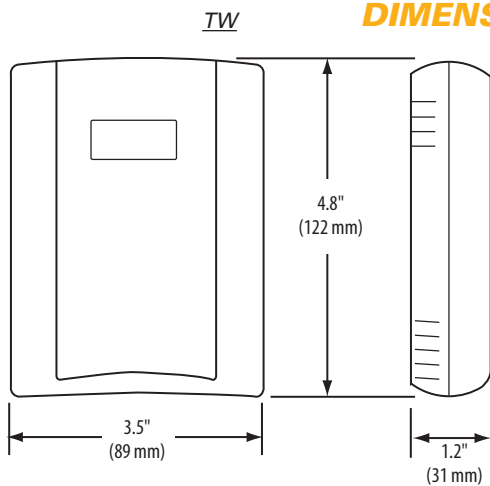
NOTE: For 24VAC transformer powered applications, one side of transformer secondary is connected to common. Isolation transformer, or dedicated power supply may be required.



TW Series - 0-5/0-10V



DIMENSIONAL DRAWINGS



ORDERING INFORMATION



<b>Local Display</b>	<b>Sensor Type</b>	<b>Setpoint/Override</b>	<b>Cal Certificate</b>	<b>Housing Color</b>
TW <input type="checkbox"/>	<b>A</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L = LCD X = No	= Transmitter selectable outputs	0 = None 2 = 1k Setpoint 3 = 10k Setpoint 4 = 1k Setpoint w/ override 5 = 10k Setpoint w/ override	0 = None 1 = 1 point Cal validation 2 = 2 point Cal validation	None = Cloud White B = Black

**Example:**  
TW  X  A  0  2

<b>Local Display</b>	<b>Sensor Type</b>	<b>Setpoint/Override</b>	<b>Cal Certificate</b>	<b>Housing Color</b>
TW <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L = LCD X = No	B = 100R platinum, RTD C = 1k platinum, RTD D = 10k T2, Thermistor E = 2.2k, Thermistor F = 3k, Thermistor G = 10k CPC, Thermistor H = 10k T3, Thermistor I = 1k Balco (Nickel-iron) RTD J = 10k Dale, Thermistor K = 10k w/11k shunt, Thermistor M = 20k NTC, Thermistor N = 1800 ohm, Thermistor P = 10mV/°C, Linitemp R = 10k US, Thermistor S = 10k 3A221, Thermistor T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor Z = 10k E1, Thermistor CC = 15k, Thermistor	0 = None 1 = Override* 2 = 1k Setpoint 3 = 10k Setpoint 4 = 1k Setpoint w/ override* 5 = 10k Setpoint w/ override*	0 = None 1 = 1 point Cal validation 2 = 2 point Cal validation	None = Cloud White B = Black

**\*NOTE: Pushbutton override short circuits RTD/thermistor output**

**Example:**  
TW  L  C  0  1

<b>Output</b>	<b>US or EU</b>	<b>Housing Color</b>
TEA <input type="checkbox"/>	<b>S</b>	<input type="checkbox"/>
M = 4-20mA V = 0-10VDC J = 0-5VDC	= Standard	None = Cloud White B = Black

**Example:**  
TEA  J  S

<b>Sensor Type</b>	<b>Setpoint/Override</b>	<b>Cal Certificate</b>	<b>Housing Color</b>
TE <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B = 100R platinum, RTD C = 1k platinum, RTD D = 10k T2, Thermistor E = 2.2k, Thermistor F = 3k, Thermistor G = 10k CPC, Thermistor H = 10k T3, Thermistor I = 1k Balco (Nickel-iron) RTD J = 10k Dale, Thermistor K = 10k w/11k shunt, Thermistor M = 20k NTC, Thermistor N = 1800 ohm, Thermistor P = 10mV/°C, Linitemp R = 10k US, Thermistor S = 10k 3A221, Thermistor T = 100k, Thermistor U = 20k "D", Thermistor W = 10k T2 high accuracy, Thermistor Y = 10k T3 high accuracy, Thermistor Z = 10k E1, Thermistor CC = 15k, Thermistor	0 = None 1 = Override* 2 = 1k Setpoint 3 = 10k Setpoint 4 = 1k Setpoint w/ override* 5 = 10k Setpoint w/ override*	0 = None 1 = 1 point Cal validation	None = Cloud White B = Black

**Example:**  
TE  D  5  2

ACCESSORIES

Replacement covers for wall units (AA51, AA51B, AA52, AA52B)  
Replacement cloud white wall housing (AA55)