

## TB & TRA SERIES

High Accuracy Specialty Sensors



### Secondary measurement

Secondary measurement of water temperature...ideal for retrofit applications (TB)

### Long sensor life

Durable copper sensing probe (TRA)

### Easy installation

Pipe clamps allow for easy installation on pipes up to 12" in diameter (TB)

### Multiple cable lengths

Multiple cable lengths for application flexibility (TRA)

The TB strap-on sensor uses a clamp to secure the unit to a pipe and a copper sensing plate for fast temperature response. The TB is perfect for secondary measurement of water temperature typical in retrofit applications. It includes a steel mounting box for wire termination and easy conduit connection.

The TRA Series copper remote probe is designed for high accuracy in remote temperature sensing applications. The TRA can be used in numerous refrigeration applications or can be mounted on pipes for chilled or heated water temperature sensing. It is easily installed and includes a durable copper sensing probe with a two-wire cable. Multiple cable lengths are available for added flexibility.

### SPECIFICATIONS

TB & TRA Series

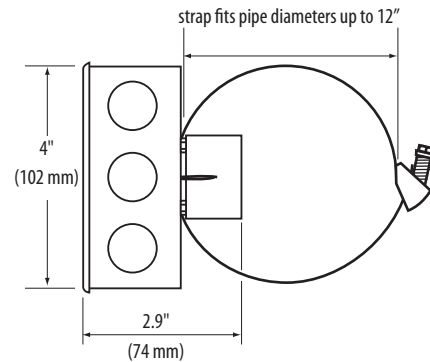
Wiring	22 AWG; 2-wire: RTD/Thermistor
Operating Temperature	-25 to 105 °C (-13 to 221 °F)*
TB	Probe: -25 to 105 °C (-13 to 221 °F),
TRA	Wiring: -20 to 80 °C (-4 to 176 °F)

### WARRANTY

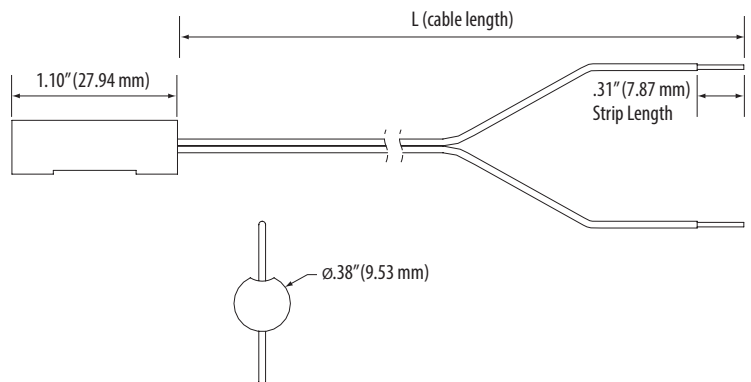
Limited Warranty	5 years
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\*Room temperature offset documented on each unit.

TB Dimensional Drawing



TRA Dimensional Drawing



Note: The TRA Series is optimized for strapping to pipe.




**ORDERING INFORMATION**

Strap-on Bracket


Remote Probe

**Diameter**

TB 


A = 2" to 5"  
(5.1 to 12.7 cm) max.  
E = 2" to 12"  
(5.1 to 30.5 cm) max.

**Sensor Type**




B = 100R platinum, RTD  
C = 1k platinum, RTD  
D = 10k T2, Thermistor  
E = 2.2k, Thermistor  
F = 3k, 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  
T = 100k, Thermistor  
W = 10k T2 high accuracy, Thermistor  
Y = 10k T3 high accuracy, Thermistor

**Calibration Certificate**




0 = None  
2 = 3-point NIST calibration

**Sensor Type**

TRA 


B = 100R platinum, RTD  
C = 1k platinum, RTD  
D = 10k T2, Thermistor  
E = 2.2k, Thermistor  
F = 3k, 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  
T = 100k, Thermistor  
W = 10k T2 high accuracy, Thermistor  
Y = 10k T3 high accuracy, Thermistor

**Calibration Certificate**



0 = None  
2 = 3-point NIST calibration

**Cable Length**



None = 3 ft (0.9 m)  
A = 6 ft (1.8 m)\*\*  
B = 10 ft (3.1 m)\*  
C = 20 ft (6.1 m)\*\*  
D = 25 ft (7.6 m)\*\*  
E = 50 ft (15 m)\*\*  
F = 100 ft (30 m)\*\*

Examples:

TB 

A	C	2
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TRA 

F	2
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\*Not available for sensor types B, C & P.  
\*\*Not available for sensor types B, C, E, F, N & P.  
\*\*\*Not available for sensor types B & P.

**STANDARD RTD AND THERMISTOR VALUES**

Class	Pt RTD		Balco RTD	THERMISTOR									
	100 Ohm	1000 Ohm	1000 Ohm	2.2k	3k	10k Type 2	10k Type 3	10k Dale	20k	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	Consult Factory	Consult Factory	±0.1°C 20/70°C ±0.2°C 0/20°C	±0.1°C 0/70°C	
<b>Temp. Response*</b>	PTC	PTC	PTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	NTC	
High Accuracy													

\*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	20k NTC	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	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	643,800	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	342,000	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	189,080	971,200	98,320	79,729
-10	14	96.086	960.86	877.46	12,519	16,674	55,790	47,843	55,340	108,380	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	64,160	326,600	32,770	29,588
10	50	103.903	1,039.03	952.25	4,487	5,976	19,930	18,813	19,900	39,440	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	24,920	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	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	16,144	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	10,696	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	7,234	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	4,992	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	3,512	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	2,516	12,560	1,258	1,462
90	194	134.707	1,347.07	1,301.17	207.4	-	919	1,088	917	1,833	9,164	919	1,088
100	212	138.506	1,385.06	1,348.38	153.8	-	682	821	679	1,356	6,792	682	821
110	230	142.293	1,422.93	1,397.13	115.8	-	513	628	511	1,016	5,108	513	628
120	248	146.068	1,460.68	1,447.44	88.3	-	392	486	389	770	3,894	392	486
130	266	149.832	1,498.32	1,496.28	68.3	-	303	380	301	591	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>M</b>	<b>T</b>	<b>W</b>	<b>Y</b>

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