

Tel-Tru® Manufacturing Company

World-Class Thermometers

We manufacture thermometers - but we sell service, reliability, product quality and performance.

► QUALITY AND PERFORMANCE FEATURES:

★ CASE AND BEZEL

- 304 stainless steel standard
- 316 stainless steel optional
- All external parts corrosion resistant to most chemicals
- Parts designed for maximum strength to meet requirements of heavy duty industrial applications
- Manufactured with precision tooling on modern OSHA approved stamping equipment
- Statistical Process Control QA methods used to assure component quality and process consistency
- Polished finish identifies Tel-Tru quality
- Cases may be silicone filled for additional dampening of extreme vibration, or to assure consistent performance in low process temperature/high environmental humidity applications

★ LENS

- Extra heavy duty instrument glass standard
- Shatterproof glass, tempered glass, and plastics optional

★ POINTER

- Black painted aluminum
- Balanced and precisely assembled to bimetal coil stem
- Direct transfer of coil movement to temperature displayed on dial

★ DATE STAMPING

- Available for QA tracking of industrial thermometers

★ HERMETIC SEAL

- Case/Bezel assembly is a precision interference fit
- Silicone gasket provides dustproof and leakproof seal
- Welded construction-Unique 360° TIG weld joins case, stem and threaded connection
- Testing conforms with ASME B40.3 procedures

★ THREADED CONNECTION

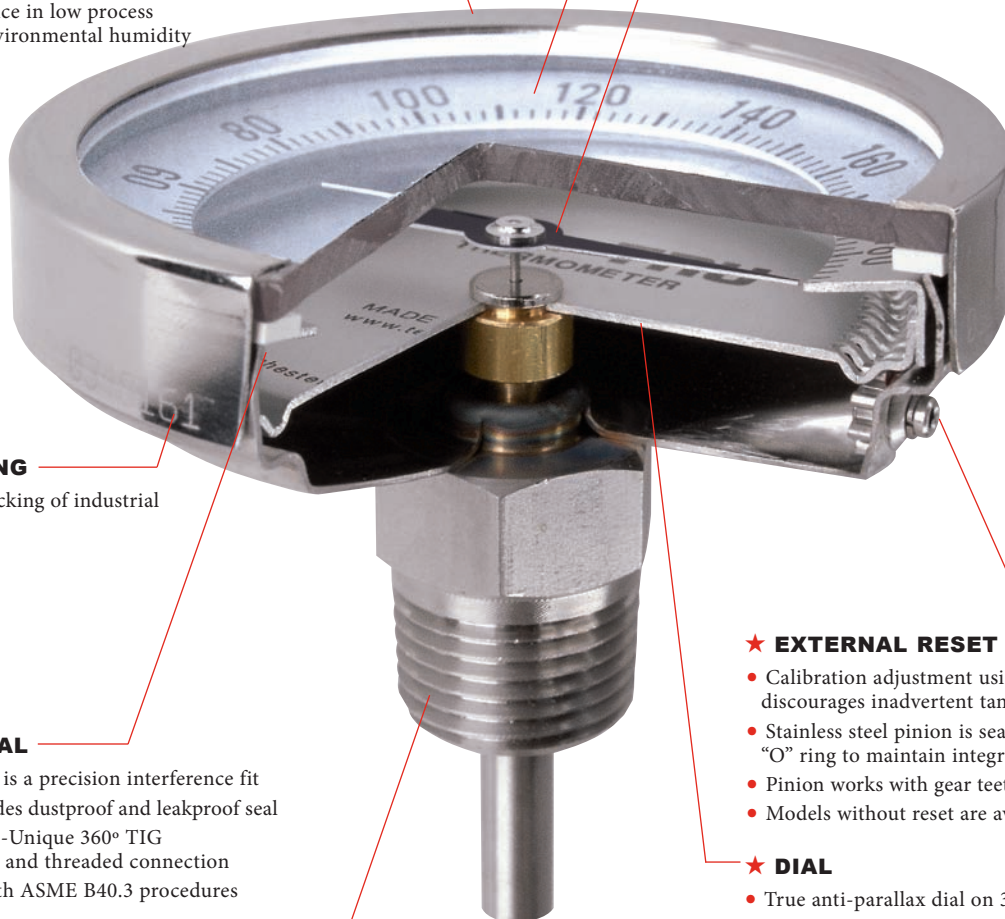
- 304 stainless steel standard
- 316 stainless steel optional
- Precision manufactured on Tel-Tru CNC machines
- Statistical Process Control QA methods used to assure component quality and process consistency

★ EXTERNAL RESET

- Calibration adjustment using an Allen wrench discourages inadvertent tampering
- Stainless steel pinion is sealed with a silicone "O" ring to maintain integrity of hermetic seal
- Pinion works with gear teeth cut and formed in dial
- Models without reset are available

★ DIAL

- True anti-parallax dial on 3", 4" 5" models
- Graduations on dial ring are on the same plane as the pointer tip minimizing reading error
- Concave design of dial ring enhances readability
- White appearing .032" anodized aluminum
- Graduations for each temperature range are calculated to match deflection data of bimetallic material
- Large easy to read black numerals and graduations are printed on precision pad printing equipment in our factory





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★ BIMETAL COIL

- Super sensitive bimetallic helix coil
- Fabricated to tight tolerances
- Heat treated for stress relief
- Silicone coated to minimize pointer vibration and maximize heat transfer and response time
- Angular deflection of each coil is tested for perfect match with dial graduation layouts in precision calibration baths designed and built by Tel-Tru with accuracy to $\pm 1/16^\circ\text{F}$

★ ACCURACY

- Per ASME B40.3 Grade A $\pm 1\%$ full span is guaranteed
- Calibration is to standards traceable to National Institute of Standards and Testing (NIST)
- Tel-Tru methods:
 - ★ Most careful and precise in the industry
 - ★ Produces typical accuracy better than ASME B40.3 Grade AA ($1\% - 1/2\% - 1\%$) full span

★ BIMETAL BUSHING

- Pressed into groove on stem
- Centers coil in stem
- 302 stainless steel stem wire goes through center of bushing connecting bimetal element to pointer, minimizes coil touching tube wall
- Centering bearings are used at regular intervals on long stem thermometers

★ TEMPERATURE RANGES

- 20 Standard Fahrenheit ranges from -100° to 1000°
- 20 Standard Celsius ranges from -75° to 550°
- 13 Standard Dual scale ranges
- Availability of over 120 ranges developed, may vary by dial size

★ OVER TEMPERATURE LIMITS

- Up to 250°F 100%
- 250°F to 550°F 50%
- 550°F to 1000°F 800°F for continuous use, intermittent use over 800°F



★ QUALITY SYSTEM

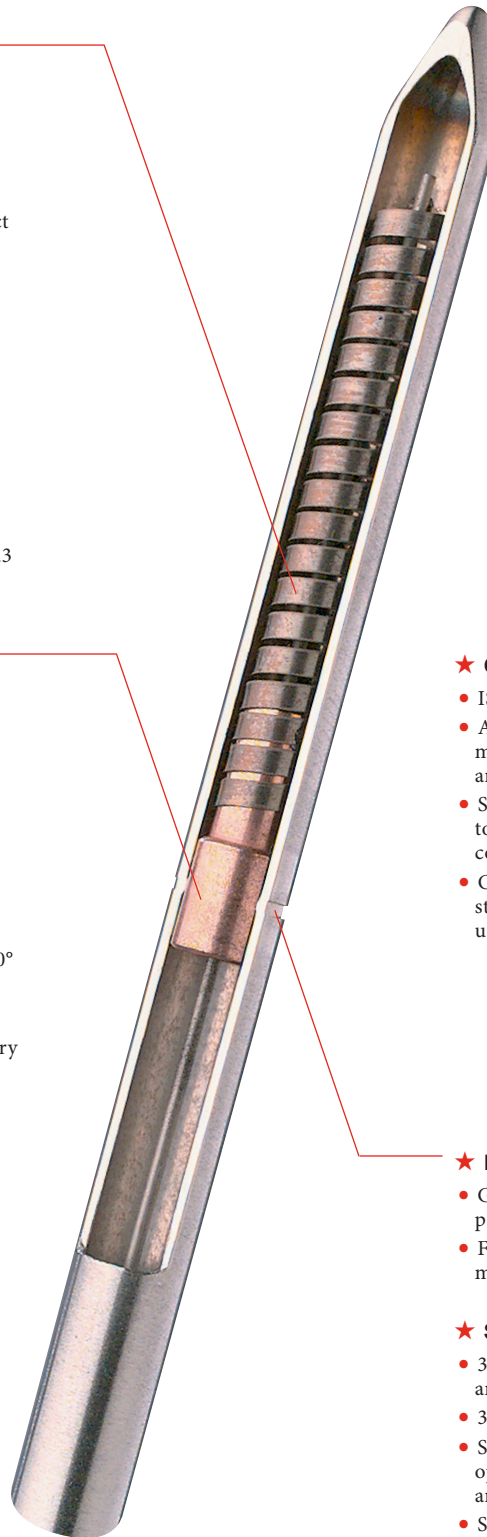
- ISO 9000 comparable
- Assures that all materials, methods and processes meet Tel-Tru's highest standards for form, fit, and function
- Statistical Process Control QA methods used to assure component quality and process consistency
- Calibration lab for NIST traceable verification of all standard thermometers and measuring instruments used in manufacturing process

★ IMMERSION:

- Groove around stem shows minimum immersion point on each thermometer
- For most accurate reading sensitive portion of stem must be completely immersed

★ STEM

- 304 Stainless steel tubing is welded/drawn and fabricated to exacting tolerances
- 316 stainless steel optional
- Standard stem diameter is $.250"$ (6.35mm) – options include $.375"$ (9.52mm), $.236"$ (6mm) and $.315"$ (8mm)
- Stem lengths available from $2\frac{1}{2}"$ to $120"$
- Tip is welded and finished for hermetic seal and unique look



How to Order

➤ HOW TO ORDER:

EXAMPLE

MODEL CODE	STEM LENGTH	RANGE
3410	04	59

- 1) Model Code _____
- 2) Connection Size and Thread Type _____
- 3) Stem Length _____
- 4) Temperature Range _____
- 5) *State Options and Accessories When Required – See Standard Features and Options Table*

➤ MODEL CODES, CONNECTIONS SIZE AND THREAD TYPE

Dial Size	.250" Diameter Stems– Industrial Model	NPT	Lens	Con. Loc.	CODE
2" (51mm)	LN250	1/4"	Glass	Back	3110
	LN250R	1/4"	Glass	Back	3210
3" (80mm)	GT300	1/2"	Glass	Back	3310
	GT300R	1/2"	Glass	Back	3410
	MX325R	1/2"	Glass	Back	3610
	MM325R	1/2"	Glass	Back	5010
	BC350R	1/2"	Glass	Bottom	3910
	AA375R	1/2"	Glass	Adjustable	4110
4" (100mm)	GT400	1/2"	Glass	Back	4510
	GT400R	1/2"	Glass	Back	4810
	BC450R	1/2"	Glass	Bottom	4610
	AA475R	1/2"	Glass	Adjustable	4710
5" (128mm)	GT500	1/2"	Glass	Back	3710
	GT500R	1/2"	Glass	Back	3810
	MX525R	1/2"	Glass	Back	5310
	MM525R	1/2"	Glass	Back	5410
	BC550R	1/2"	Glass	Bottom	4010
	AA575R	1/2"	Glass	Adjustable	4210

Dial Size	.150" Diameter Stems– Industrial Model	NPT	Lens	Con. Loc.	CODE
1 3/4" (44mm)	GT200	1/8"	Glass	Back	1910
	GT200	1/4"	Glass	Back	2010
2" (51mm)	GT225	1/8"	Glass	Back	4910
	GT225	1/4"	Glass	Back	491A

Dial Size	.150" Diameter Stems– Pocket/Laboratory Model	NPT	Lens	Con. Loc.	CODE
1" (25mm)	PT50R	N/A	Plycrb.	Back	1210
	PT50	N/A	Plycrb.	Back	1110
	AD10R	N/A	Plycrb.	Back	1219
1 3/8" (36mm)	AD44R	N/A	Plycrb.	Back	4419
1 3/4" (44mm)	MT39	N/A	Glass	Back	1310
	MT39R	N/A	Glass	Back	1410
	GT100R	N/A	Glass	Back	1610
2" (51mm)	LT225R	N/A	Glass	Back	2310
	LT225	N/A	Glass	Back	2210
3" (80mm)	LT330R	N/A	Plycrb.	Back	2819

➤ STEM LENGTHS

Stem Lengths	Code
-2 1/2" (63mm)	02
4" (100mm)	04
* 5" (128mm)	05
6" (152mm)	06
* 8" (203mm)	08
9" (229mm)	09
12" (305mm)	12
15" (381mm)	15
18" (457mm)	18
24" (610mm)	24

* Laboratory and test thermometers .150" only

➤ STANDARD TEMPERATURE RANGES

Fahrenheit	Code
-100/100	51
-50/120	52
-40/160	53
0/140	54
0/180	55
0/200	50
0/220	56
0/250	67
0/300	57
0/500	58
20/240	59
25/125	60
50/250	61
50/300	62
50/400	63
50/500	64
50/550	68
100/800	44
150/750	65
200/1000	66

Celsius	Code
-75/175	87
-70/70	EA
-50/100	71
-50/25	72
-50/50	73
-40/70	84
-20/120	86
-10/110	74
0/50	75
0/60	95
0/80	EI
0/100	76
0/150	77
0/200	78
0/250	79
0/300	80
0/400	81
0/450	90
100/400	82
100/550	83

DUAL RANGES

Fahrenheit	Celsius	Code
-100/100	-75/40	01
-40/160	-40/70	02
0/140	-18/60	13
0/180	-18/82	03
0/220	-10/100	04
0/250	-20/120	14
20/240	-10/110	05
25/125	0/50	06
50/300	10/150	07
50/400	0/200	08
50/500	0/250	09
150/750	50/400	10
200/1000	100/550	11

Availability of temperature ranges varies by model. Dial size must be 1-3/8" or larger.

3", 4" and 5" Bottom Connected Industrial Thermometers

A sturdy straight form design commonly used for industrial applications and OEM equipment.



► MODEL CODES:

BC-350R	3" diameter head with calibration feature
BC-450R	4" diameter head with calibration feature
BC-550R	5" diameter head with calibration feature

► SPECIFICATIONS:

Stem Lengths:	2½", 4", 6", 9", 12", 15", 18" and 24" (available up to 120").
Stem Diameter:	.250" standard up to 42" stem. .375" standard over 42" stem.
Connection:	½" NPT.
External Reset:	Easy to calibrate by inserting Allen wrench into reset opening.
Construction:	304 stainless steel external parts. Welded construction. Corrosion resistant to most chemicals.
Hermetic seal:	Per ASME B40.3 dustproof and leakproof.
Dial:	True Anti-Parallax dial, easy-to-read from any angle, minimizes reading errors. Anodized aluminum with large black numbers and graduations.
Lens:	Glass.
Bimetal Coil:	Helix coil is silicone coated on ranges below 500°F for vibration dampening and to maximize heat transfer and response time.
Accuracy:	±1% full span per ASME B40.3 Grade A.
Over Temperature Limits:	Up to 250°F 100%; 250°F to 550°F, 50%; 550°F to 1000°F, continuous use up to 800°F, intermittent use over 800°F.





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STANDARD RANGES:

Fahrenheit	°/Div.	Celsius	°/Div.	Dual Fahrenheit	Celsius
-100/100	2°	-75/175	5°	-100/100	-75/40
-50/120	2°	-70/70	1°	-40/160	-40/70
-40/160	2°	-50/100	1°	0/140	-18/60
0/140	1°	-50/25	1°	0/180	-18/82
0/180	2°	-50/50	1°	0/220	-10/100
0/200	2°	-40/70	1°	0/250	-20/120
0/220	2°	-20/120	1°	20/240	-10/110
0/250	2°	-10/110	1°	25/125	-5/50
0/300	5°	0/50	1/2°	50/300	10/150
0/500	10°	0/60	1°	50/400	0/200
20/240	2°	0/80	1/2°	50/500	10/260
25/125	1°	0/100	1°	150/750	50/400
50/250	2°	0/150	1°	* 200/1000	* 100/550
50/300	2°	0/200	2°		
50/400	5°	0/250	2°		
50/500	5°	0/300	5°		
50/550	5°	0/400	5°		
100/800	10°	0/450	5°		
150/750	10°	100/400	5°		
* 200/1000	10°	* 100/550	5°		

(Additional Ranges Available – Consult factory)

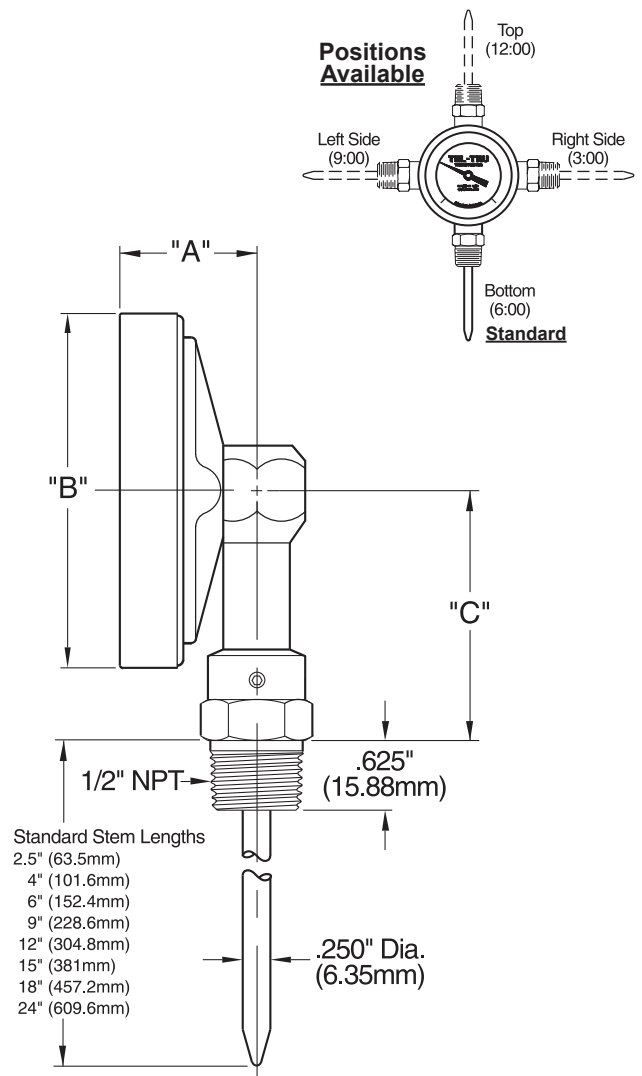
* Thermometers with temperature ranges 200/1000°F and 100/550°C are NOT RECOMMENDED FOR CONTINUOUS USE ABOVE 800°F/425°C (FOR INTERMITTENT USE ONLY).

OPTIONS:

- Stem Position available in TOP (12:00), RIGHT (3:00), or LEFT (9:00) side connections (specify position of stem when ordering).
- Union connection or other connection types and sizes.
- Silicone filled.
- Other lenses are acrylic, polycarbonate, shatterproof glass or tempered glass.
- Other stem diameters .236" (6mm), .315" (8mm), .375" (9.5mm).
- 316SS wetted parts.
- Other configuration combinations available upon request.

Estimated Shipping Weights		
MODEL	DRY	SILICONE FILLED
BC-350R	.14 oz.	.1 lb. 1 oz.
BC-450R	.1 lb. 3 oz.	.1 lb. 9 oz.
BC-550R	.1 lb. 10 oz.	.2 lb. 4 oz.

BC-350R, BC-450R AND BC-550R



MODEL	"A"	"B"	"C"
BC-350R	1.187" (30.15mm)	3.187" (80.95mm)	2.300" (58.42mm)
BC-450R	1.187" (30.15mm)	4.115" (104.50mm)	3.000" (76.20mm)
BC-550R	1.625" (41.28mm)	5.040" (128.02mm)	3.000" (76.20mm)

FOR HOW TO ORDER, SEE PAGE 6

IMPORTANT NOTES:

- 1) Thermowells are recommended for pressure, corrosive fluid or high velocity applications.
- 2) ASME B40.3— Bimetal thermometers manufactured by Tel-Tru and offered in this brochure are designed to meet or exceed this Standard issued by the American Society of Mechanical Engineers.