

Bi-Metal Thermometers



DialTemp™ Features

Excellence in a product never occurs by mere chance. It is the result of constant striving for perfection in the little things as well as the big. That is why OMEGA's Stainless Steel Dial Thermometers are used by industries, laboratories, processors, universities and governments all over the world. Easy-to-read dials, rugged construction, leakproof heliarc welds and guaranteed accuracy assure the discriminating buyer of the finest thermometer which, incidentally, is easily within reach of even the most modest budget. Available in a wide variety of dial sizes, stem lengths, temperature ranges and mounting connections, OMEGA® thermometers offer the user great flexibility in selecting just the right configuration to meet virtually every temperature measuring requirement. These accurate thermometers have been manufactured to the very highest standards of excellence by expert craftsmen using the finest materials available. An OMEGA stainless steel thermometer is a lasting investment value in scientific temperature measurement.

Precision Built for Lifetime Service

Critical assembly points in DialTemp™ thermometers are heliarc welded. No brazing metal is added. Stainless steel stem, plugs and mounting nuts are actually fused together to form a perfect moisture-proof bond. There's no possibility of rust or corrosion setting in! Very highly corrosion-resistant type 304 stainless steel is used for all stems in every DialTemp™ thermometer listed in this handbook. Each thermometer is meticulously manufactured step by step to produce a most efficient precision thermometer. Bi-metal coils are wound to pre-determined standards and are individually trimmed and tested, one by one, until they provide the exact amount of rotation required for an accurate full scale reading. OMEGA provides an instrument far above the average in ruggedness, dependability and accuracy!

Easy-to-Read

Clear, crisp, raised marks and numbers on the dial provide exceptional readability with this "pointer to dial" method of indication. Double anodized aluminum dials with satin matte finish background and black raised marks and numbers assure minimum parallax.

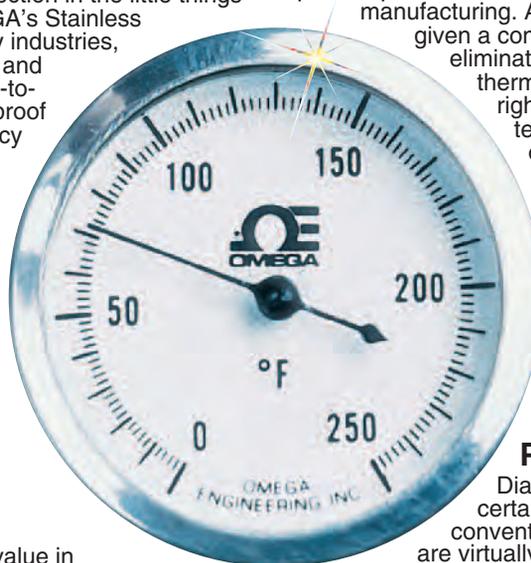
Rugged and Reliable

The all metal construction, (except for the optically clear crystal) of DialTemp thermometers and their heliarc welded fabrication make them virtually unbreakable. The type 304 stainless steel stems offer exceptional protection against highly corrosive materials. The bi-metal principle of temperature measurement eliminates the need for gas, vapor, mercury, alcohol, or capillary tubing. With no gears or linkage to impede movement, the direct drive from helix coil to pointer gives an accurate indication every time. There are no parts to wear out or fail, no possibility of leakage or fluid column separation and no glass tube breakage.

Accurately Calibrated

The most precise calibrating methods are used in the fabrication, calibrating and testing of each sensing helix coil before it goes into an OMEGA thermometer. Each thermometer is then individually calibrated for maximum accuracy. All calibration is performed to instrumentation which has been calibrated to standards traceable to the Institute of Science and Technology [NIST, formally the National Bureau of Standards (NBS)]. Each thermometer must meet an accuracy tolerance within 1% of the range over the full scale. This high degree of perfection is achieved by using bi-metal materials manufactured and fabricated under near-laboratory conditions. Experienced craftsmen and engineers ensure precise production of each unit in every phase of manufacturing. As a final check, each instrument is given a complete heat test before it is packed,

eliminating any chance for error. DialTemp thermometers read right because they are right! They're also protected against temperature over-range. Occasionally, operating temperatures may accidentally exceed the range of the thermometer. This, however, will not harm its accuracy. The precision bi-metal coils, which transform heat into pointer motion, will withstand a 50% over-range on instruments up to and including 500°F. A 10% over-range is permissible on higher temperature ranges. Under-ranging within the 50% limit on all ranges will also not harm its accuracy.



Plus Advantages

DialTemp metal thermometers have certain obvious advantages over conventional glass units. For example, they are virtually unbreakable. The dial and pointer principle is far easier to read at a glance. Long stem models can be immersed in deep vats or tanks where there is a variation between top and bottom temperatures. Stainless steel is easy to clean. In addition, the DialTemp thermometer can be plunged directly into molten lead or babbitt. Temperature readings are stabilized within 40 seconds or less. All in all, regardless of the application, these rugged units reveal temperatures more easily, more quickly and with greater dependability.

Applications and Usage. (partial list)

Air Conditioning, Asphalt, Boilers, Baking, Burners, Cabinets, Chemicals, Cookers, Coolers, Coffee Urns, Canning, Concrete, Dairies, Ducts, Dyeing Equipment, Developers, Dehydrators, Engines, Extruders, Enclosures, Grain Elevators, Furnaces, Fire Boxes, Food Processors, Greenhouses, Glue Machines, Heaters, Heat Exchangers, Incinerators, Instrument Panels, Impregnating Tanks, Incubators, Laboratories, Lumber Mills, Manifold, Marine, Metallurgy, Milling, Mineralogy, Platens, Processing, Plastics, Plating, Petroleum, Petrochemical, Pharmaceuticals, Photography, Plumbing, Pickling, Piping, Pulp, Pasteurizing, Quenching, Refrigeration, Refineries, Solder, Stacks, Ships, Steam, Generators, Sewage Works, Silos, Soil, Testing, Tanks, Tempering, Tire Vulcanizing, Textiles, Throwing, Utilities, Vaporizers, Ventilation, Water Works, and many others.

Specifications

Materials:

Stems: All models, Type 304 stainless steel (highly resistant to corrosion); standard lengths—2½", 4", 6", 9", 12", 15", 18", 24", 30", 36", optional: Intermediate, or to 80" on the angle form (back connected) only; please note that a 4" stem is the shortest length for ranges 0 to 100°F, 25 to 125°F and 0 to 50°C; the 9" length is the most popular, and stocked for immediate delivery

Heads and Bezels:

All models, polished Type 302 stainless steel

Mounting Bushings and Nuts:

All models, Type 303 stainless steel

Crystals: Optically clear strong glass

Optional: Unbreakable clear plastic, all models (not recommended for ranges over 300°F)

Dials: Anodized aluminum; raised black marks and numbers with satin matte finish background; easy to read; minimum parallax

Angle Form (Back Connected): Models Q, G, H, A, R, B, S, QP, GL, HL, T, G/EMB and H/EMB

Straight Form (Bottom Connected): Models X, XR, V and VR; an outstanding feature of the DialTemp™ straight form thermometer is the adjustable mounting nut which makes it possible to turn the head a full 360° on the stem axis and then lock it in the exact position desired for maximum visibility; available with or without external reset

Accuracy: All Models are accurate to within plus or minus 1% of the full scale; readings are stabilized within 40 seconds

Pointed Stems: Optional on all models; excellent for probing asphalt, compost, soil, frozen foods or other semi-solid materials

Mounting Connections: Standard on QP, GL and HL is a reset bushing; standard on models Q, G, H, and T is a plain bushing; standard on the models A, R, B, S, XR, and VR is the ½ NPT mounting thread; standard on the models G/EMB and H/EMB are stainless steel "ears" at 3 and 9 o'clock with 0.144" diameter screw hole; optional threads are available; see page E-15; allow extra time for any optional mounting connections; consult factory for price and delivery

Maximum Temperature and Pressure Ratings:

Use of a thermowell is recommended for all pressure applications; the maximum ambient temperature for the entire assembly is 300°F; the ambient temperature with a plastic lens is 200°F, this does not apply to the E-20 pocket thermometers – they are not rated for pressure

Immersion: For correct temperature measurement, the stems of all models in all ranges must be immersed 2" in water and 4" in gas except for the 0 to 100°F, 25 to 125°F and 0 to 50°C ranges which require 3½" in liquid and 5" in gas

Temperature Ranges:

Fahrenheit: 0 to 100°F, 25 to 125°F, -40 to 160°F, 0 to 200°F, 0 to 250°F, -50 to 300°F, 50 to 300°F, 50 to 400°F, 50 to 500°F, 250 to 600°F, 150 to 750°F, 200 to 1000°F

Celsius: 0 to 50°C, -40 to 70°C, 0 to 100°C, -10 to 110°C, 0 to 150°C, 0 to 200°C, 0 to 300°C, 100 to 500°C

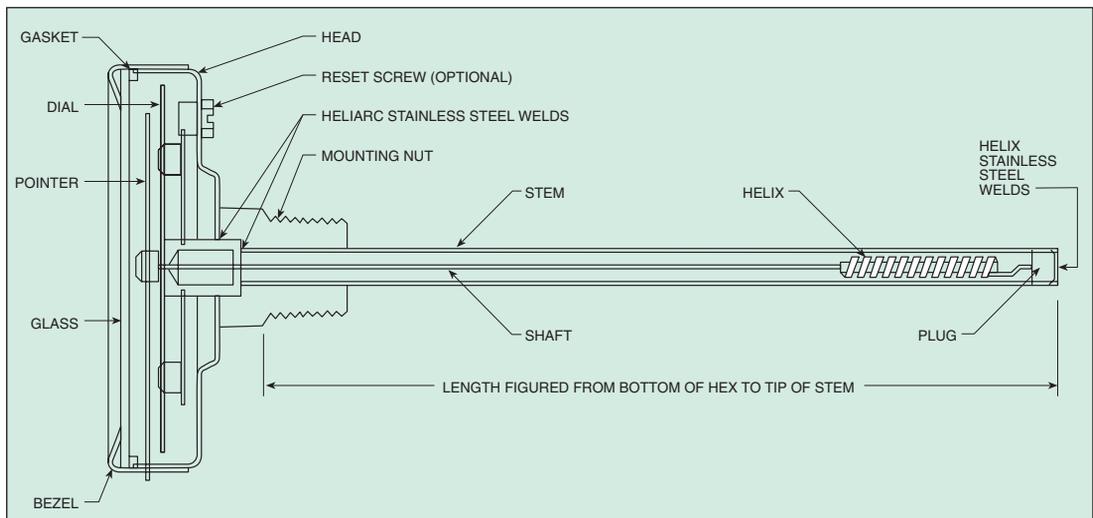
Other ranges are available by special order with minimum quantity requirement; please note: for ranges 0 to 100°F, 25 to 125°F and 0 to 50°C, the shortest stem length is 4 inches; select most common ranges for "off-the-shelf" delivery

O.E.M. Applications: If you are an original equipment manufacturer and plan to incorporate the DialTemp thermometer into your finished product for resale, special ranges or special dials can be made to suit your particular requirements; such specials can bear your own company name and/or trade mark on the dial, but a minimum quantity order must be placed; for full information, please write, giving desired range, dial size, stem length, mounting connection, and your special requirements; we will be happy to quote; any DialTemp thermometer will complement your equipment, because its quality, appearance and performance is unsurpassed

External Reset: Models A and B are equipped with an external reset screw; a hex key to fit it is furnished with each unit; this allows resetting the pointer without removing the bezel or disassembling the unit

Immersion: For correct temperature measurement, the stem of all models in all ranges must be immersed at least 2" in liquids, and 4" in gas except for 0 to 100°F, 24° to 125°F, and 0 to 50°C, which require at least 3½" in liquid and 5" in gas; the most common immersion length offered is 9"; these are stocked for "off-the-shelf" delivery in popular ranges; prices are given for popular-stock ranges; for other stem lengths, consult Sales department for price and delivery

Dual scaled models available. Measurements shown in both °C and °F. Contact the Sales department to order.





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• Temperature

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• Flow and Level

Air Velocity Indicators, Doppler Flowmeters, Level Measurement, Magnetic Flowmeters, Mass Flowmeters, Pitot Tubes, Pumps, Rotameters, Turbine and Paddle Wheel Flowmeters, Ultrasonic Flowmeters, Valves, Variable Area Flowmeters, Vortex Shedding Flowmeters

• pH and Conductivity

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• Data Acquisition

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• Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters