

# Temperature Sensors | Temperature Probes

Compact and easy to install.

Operate with enhanced sensitivity, reliability, and stability under diverse conditions of shock, vibration, humidity, and corrosion. Wide variety of custom packages available for air, liquid, and solid temperature sensing. Potential applications include transportation, compressors, HVAC/R, automation control, and aviation.



| Series                              | LTP   | R300   | ES110   |
|-------------------------------------|---|--|---|
| Temp. sensing type                  | immersion/air-gas   | immersion  | air-gas   |
| Thermistor type                     | NTC   | RTD  | NTC   |
| Nominal resistance at 25 °C [77 °F] | 1000 Ohm, 2252 Ohm, 2057 Ohm, 2795 Ohm  | 100 Ohm  | 2000 Ohm  |
| Operating temperature range         | -40 °C to 150 °C [-40 °F to 302 °F]   | -40 °C to 275 °C [-40 °F to 572 °F] continuous, excursion to 300 °C [572 °F] for 10 minutes max. | -40 °C to 150 °C [-40 °F to 302 °F]                       |
| Housing material                    | brass hex, stainless steel probe tip  | stainless steel  | brass   |
| Electrical and mechanical interface | Bosch Kompakt, Delphi Metri-Pack 150 Series, AMP Seal 16, AMP Minitimer, AMP Superseal, Deutsch DT04-2P; M10 to M18, 3/4 UNF, or G 1/4 threads, two hex options | overmolded connector with M14 x 1.50 thread  | overmolded connector with M10 x 1.25 or M12 x 1.50 thread |
| Features                            | low temperature passive probes have durable, closed-tip design  | enhanced response, reliability, and accuracy; stainless steel construction                       | exposed thermistor, rugged design, brass encapsulation    |



| Series                              | ES120   | 500  | 6655  |
|-------------------------------------|---|--|---|
| Temp. sensing type                  | immersion   | air-gas/immersion-liquid level/surface   | air/surface   |
| Thermistor type                     | NTC or KTY  | NTC  | NTC   |
| Nominal resistance at 25 °C [77 °F] | 2000 Ohm  | 200 Ohm to 1,000,000 Ohm (inclusive)   | 10,000 Ohm, 12,000 Ohm  |
| Operating temperature range         | -40 °C to 150 °C [-40 °F to 302 °F]   | -40 °C to 300 °C [-40 °F to 572 °F] (inclusive)  | -20 °C to 110 °C [-4 °F to 230 °F]  |
| Housing material                    | brass   | plastic, aluminum, stainless steel, epoxy filled, tin- or nickel-plated copper, ceramic or kynar-filled tubing | phenolic  |
| Electrical and mechanical interface | overmolded connector with M10 x 1.25, M10 x 1.0, M12 x 1.5, M14 x 1.50 thread, or 1/8 PTF | wide variety of connectors, lead types, materials, and insulation  | quick connect terminal: (90°, 0.25 in), (0°, 0.25 in), (45°, 0.25 in), (90°, 0.1875 in) |
| Features                            | enclosed thermistor, rugged design, brass encapsulation                                   | wide selection of housing, resistance, and termination options   | low, compact profile, tight interchangeability, enhanced accuracy and response time     |

# Temperature Sensors | RTD Sensors

Silicon-based, thin film RTDs (Resistance Temperature Detectors) are laser trimmed for accuracy and interchangeability. Offer stable, fast linear outputs with a wide temperature range. Accurate and interchangeable without recalibration. Available in discrete or packaged versions in plastic and ceramic, miniaturized and surface mount housings.



| Series  | HEL-700  | HEL-775  |
|---|--|--|
| <b>Sensor type</b>                            | 100 Ohm, 1000 Ohm platinum RTD   | 100 Ohm, 1000 Ohm platinum RTD   |
| <b>Temperature coefficient</b>                | 0.00385 Ohm/Ohm/°C<br>0.00375 Ohm/Ohm/°C   | 0.00385 Ohm/Ohm/°C<br>0.00375 Ohm/Ohm/°C   |
| <b>Temperature sensing range</b>              | TFE teflon: -70 °C to 260 °C [-94 °F to 500 °F]<br>fiberglass: -75 °C to 500 °C [-100 °F to 932 °F]        | -55 °C to 150 °C [-67 °F to 302 °F]  |
| <b>Packaging type</b>                         | alumina tube   | ceramic case   |
| <b>Termination</b>                            | 28 AWG or 24 AWG lead wire   | SIP  |
| <b>Base resistance and interchangeability</b> | 100 Ohm: ±0.1 % at 0 °C<br>100 Ohm: ±0.2 % at 0 °C<br>1000 Ohm: ±0.1 % at 0 °C<br>1000 Ohm: ±0.2 % at 0 °C | 100 Ohm: ±0.1 % at 0 °C<br>100 Ohm: ±0.2 % at 0 °C<br>1000 Ohm: ±0.1 % at 0 °C<br>1000 Ohm: ±0.2 % at 0 °C |
| <b>Self-heating</b>                           | <15 mW/°C for 0.85 O.D. typ.   | <6.8 mW/°C typ.; 9.7 mW/°C typ.  |
| <b>Termination material</b>                   | 24 AWG nickel-coated, stranded copper<br>28 AWG nickel-coated, stranded copper                             | phosphor bronze with tin silver plating  |
| <b>Features</b>                               | teflon or fiberglass lead wires, wide temperature range, ceramic case material, multiple sizes             | enhanced stability, thin film platinum, ceramic SIP, solderable leads                                      |



| Series  | HEL-776/777  | 700  |
|---|--|--|
| <b>Sensor type</b>                              | 100 Ohm, 1000 Ohm platinum RTD   | 100 Ohm, 1000 Ohm platinum RTD   |
| <b>Temperature coefficient</b>                  | 0.00385 Ohm/Ohm/°C<br>0.00375 Ohm/Ohm/°C   | 0.00385 Ohm/Ohm/°C<br>0.00375 Ohm/Ohm/°C   |
| <b>Temperature sensing range</b>                | -55 °C to 150 °C [-67 °F to 302 °F]  | -70 °C to 500 °C [-94 °F to 932 °F]<br>leaded: -50 °C to 130 °C [-58 °F to 266 °F]               |
| <b>Packaging type</b>                           | molded plastic   | radial chip or surface mount axial flip chip   |
| <b>Termination</b>                              | SIP  | lead wires or solderpads   |
| <b>Base resistance &amp; interchangeability</b> | 100 Ohm: ±0.1 % at 0 °C<br>100 Ohm: ±0.2 % at 0 °C<br>1000 Ohm: ±0.1 % at 0 °C<br>1000 Ohm: ±0.2 % at 0 °C | 100 Ohm: Class A; 100 Ohm: Class B<br>1000 Ohm: Class A; 1000 Ohm: Class B<br>1000 Ohm: Class 2B |
| <b>Self-heating</b>                             | <15 mW/°C typ.   | 0,4 K/mW, 0,6 K/mW, or 0,8 K/mW at 0 °C [32 °F]  |
| <b>Termination material</b>                     | Cu alloy 194 solder dipped with Sn/Ag  | Pt-clad Ni wire and end termination galvanic Sn-plated with Ni barrier layer                     |
| <b>Features</b>                                 | enhanced stability, thin film platinum, molded plastic SIP package, solderable leads                       | interchangeability, SMD and chip package versions, enhanced stability and time response          |