

## R300 Series

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### Temperature Sensor



#### DESCRIPTION

The R300 Series is a passive, resistive temperature device (RTD), high temperature probe. This product features a robust, stainless steel closed-tip design that enhances reliability in aggressive environments, while still providing excellent response time.

This one-piece sensor with integral connector was designed for use in heavy duty vehicle engine exhaust gas recirculation (EGR) systems where temperature excursions to 300 °C [572 °F] can occur.

#### FEATURES

- Working temperature range: -40 °C to 275 °C [-40 °F to 527 °F], continuous, excursion to 300 °C [572 °F] for 10 min. max.
- Response time: T63; at 10 m/s gas flow rate at 150 °C [302 °F] ~15 s
- Accuracy: better than  $\pm 3$  °C, -40 °C to 300 °C [-40 °F to 572 °F] typical
- M14 x 1.5 mounting thread
- Enhanced reliability
- Linear output
- Long life

Other potential applications for this harsh duty sensor may include fluid or air temperature sensing within the engine environment or in industrial applications such HVAC or refrigeration compressor equipment where this type of sensor packaging and temperature range is often ideal.

#### POTENTIAL APPLICATIONS

- Exhaust gas temperature sensing systems on heavy duty, truck, agriculture and construction vehicle engines including:
  - In-line fluid temperature sensing
  - Cylinder head temperature sensing
- High temperature industrial or commercial applications including:
  - Bulk refrigeration
  - Domestic heating and controls
  - Hot tub and pool temperature controls
  - Industrial ovens up to 300°C [572 °F]

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FIGURE 1. MOUNTING DIMENSIONS (For reference only: mm/[in])

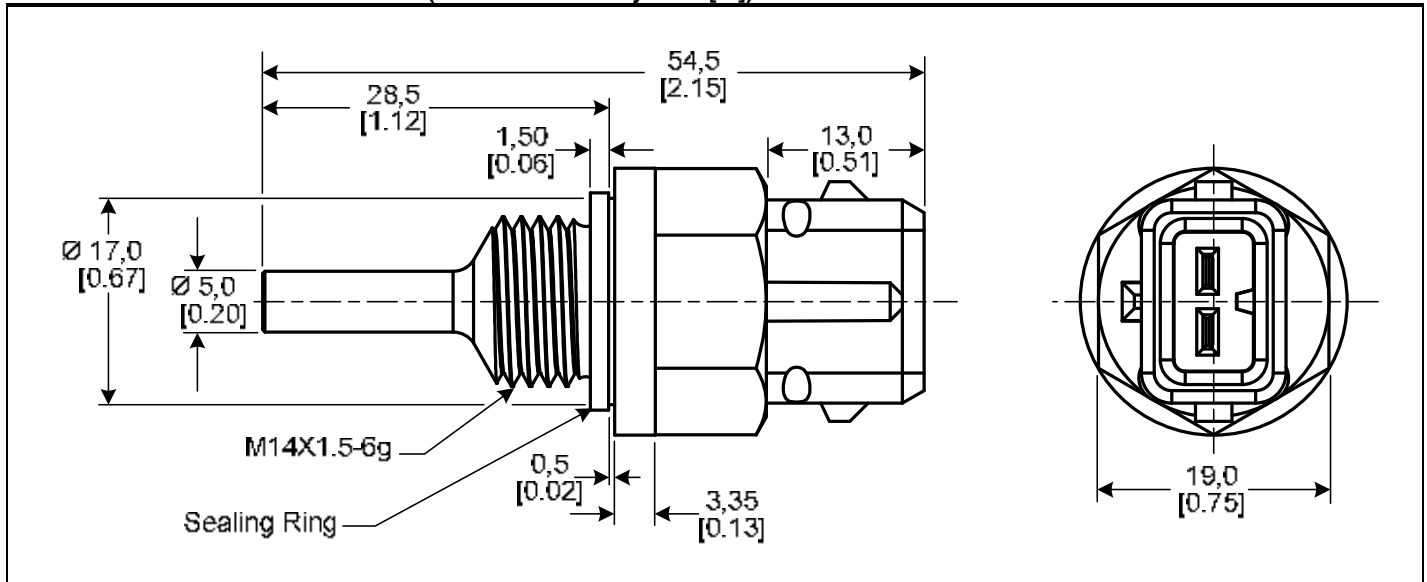
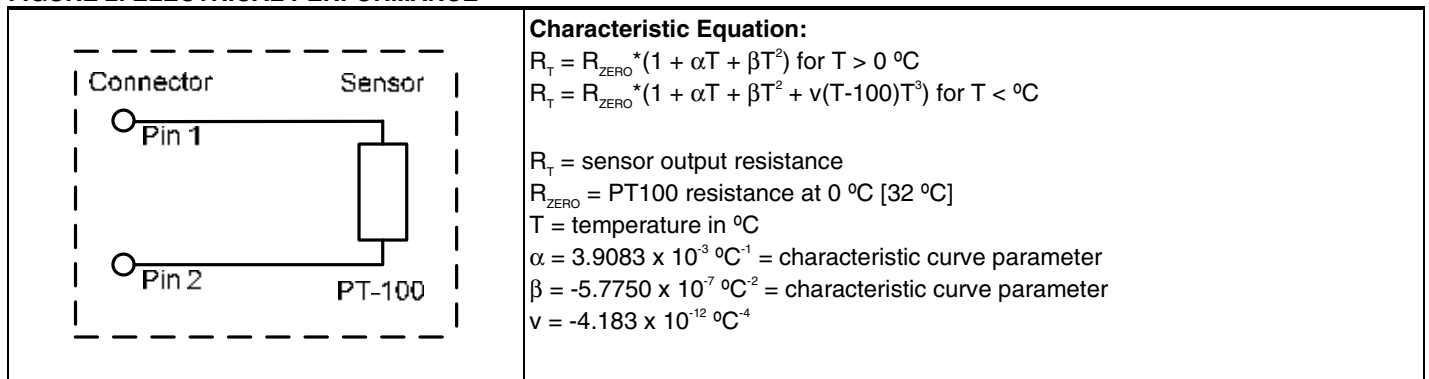


TABLE 1. GENERAL SPECIFICATIONS

| Characteristic                          | Parameter  | Note  |
|---|--|---|
| Insertion depth                         | 28,5 mm [1.12 in]  | custom devices available upon request                     |
| Sealing surface dimensions              | 7.0 mm [0.28 in] dia.; 0,5 mm [0.02 in] thickness            | —   |
| Mating cable harness connector          | AMP JPT/Bosch Jetronics                                      | custom connectors available upon request                  |
| Mounting                                | M14x1.5 male thread, fixing nuts integrated with sensor body | —   |
| Nominal resistance                      | 100 Ohm/0 °C [32 °F]   | —   |
| Operating temperature range             | -40 °C to 275 °C [-40 °F to 527 °F]                          | continuous, excursion to 300 °C [572 °F] for 10 min. max. |
| Accuracy                                | better than ±3.0 °C  | —   |
| Response time                           | T63; at 10 m/s gas flow rate at 150 °C [302 °F] ~15 s        | —   |
| Reliability                             | Less than or equal to 1.5% failures per one million miles    | —   |
| Measurement range continuous probe tip  | -40 °C to 275 °C [-40 °F to 527 °F]                          | —   |
| Measurement range continuous probe body | -40 °C to 250 °C [-40 °F to 482 °F]                          | —   |
| Storage temperature range               | -40 °C to 150 °C [-40 °F to 302 °F]                          | —   |
| Insulation breakdown                    | >10 MOhm   | 100 Vdc for 3 s at room temperature                       |
| Torque limits                           | 16 N m [11.8 ft lb] +20%                                     | at room temperature                                       |
| Housing material                        | stainless steel  | —   |
| Sealing                                 | IP59K  | —   |
| Approvals                               | EN 6071:1996, IEC 751:1983                                   | —   |

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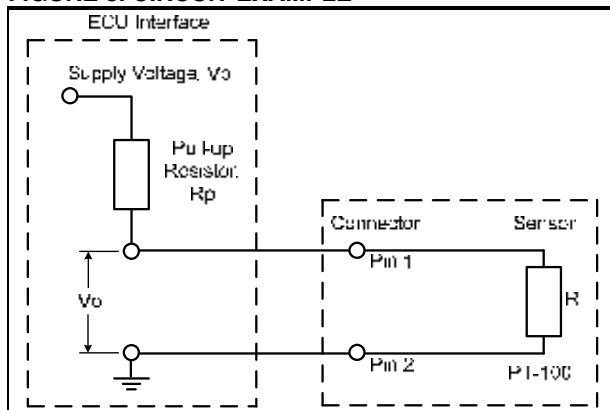
**FIGURE 2. ELECTRICAL PERFORMANCE**



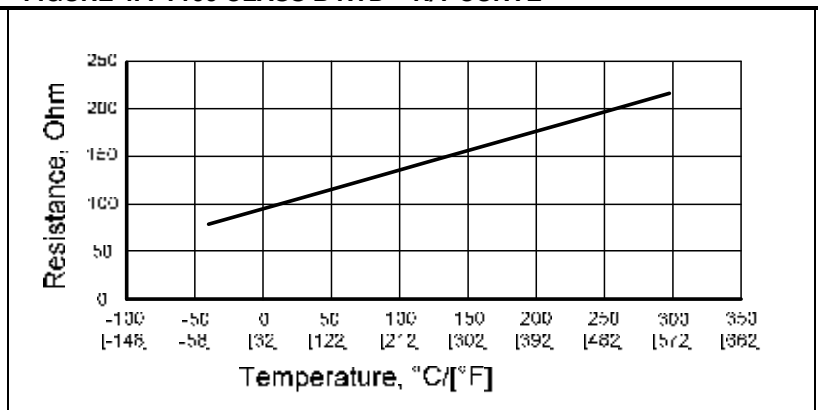
**TABLE 2. RESISTANCE/TEMPERATURE DATA**

| T<br>(Temperature)<br>°C [°F] | Ro<br>(PT100 Resistance)<br>Ohm | T<br>(Temperature)<br>°C [°F] | Ro<br>(PT100 Resistance)<br>Ohm | T<br>(Temperature)<br>°C [°F] | Ro<br>(PT100 Resistance)<br>Ohm |
|-------------------------------|---------------------------------|-------------------------------|---------------------------------|-------------------------------|---------------------------------|
| -40 [-40]                     | 84.72                           | 80 [176]                      | 130.90                          | 200 [392]                     | 175.86                          |
| -20 [-4]                      | 92.16                           | 100 [212]                     | 138.51                          | 220 [428]                     | 183.19                          |
| 0 [32]                        | 100                             | 120 [248]                     | 146.07                          | 240 [464]                     | 190.47                          |
| 20 [68]                       | 107.79                          | 140 [284]                     | 153.58                          | 260 [500]                     | 197.71                          |
| 40 [104]                      | 115.54                          | 160 [320]                     | 161.05                          | 280 [536]                     | 204.9                           |
| 60 [140]                      | 123.24                          | 180 [356]                     | 168.48                          | 300 [572]                     | 212.05                          |

**FIGURE 3. CIRCUIT EXAMPLE**



**FIGURE 4. PT100 CLASS B RTD – R/T CURVE**



**ORDER GUIDE**

| Catalog Listing | Description   |
|-----------------|---|
| R300-F35-M14-C  | R300 Series exhaust gas recirculation RTD sensor with stainless steel probe tip, M14 mechanical interface thread and integral connector |

**⚠ WARNING**

**PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

**⚠ WARNING**

**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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