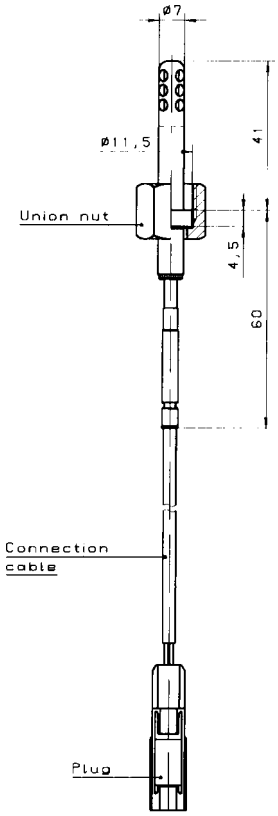
High Temperature Sensor for the Automotive Industrie

Type	**ECO – TS 200s**
Temperature Range	–40 °C to +1000 °C
Protective Tube Material	Mat. No. 2.4816 INCONEL Alloy 600
Fastening	Union nut female or male Material 1.4541, SW 17
Connection Element	Mineral insulated cable, INCONEL Alloy 600 sheathed
Connection Cable	PTFE insulated nickel-plated Cu leads in silicone jacket. Cross-sectional dimension: 2 x 0.5 mm^2 Length: customised (standard 500 mm)
Connection	customised plug
Sensor Element	Platinum sensor in thin film technology
Nominal Resistance Of Sensor Element	200 Ω at 0 °C
Accuracy	Including ageing (500 hr @ 950 °C), not including electronics ◆ from –40 °C to 200 °C: ± 3 °C ◆ from 200 °C to 1000 °C: ± 1.5 %
Characteristic Curve	almost linear from –40 °C to +1000 °C
Disturbances	Very insensitive to external disturbances (gas flow, splash water, …) due to good thermal decoupling of measurement element



Responce Time

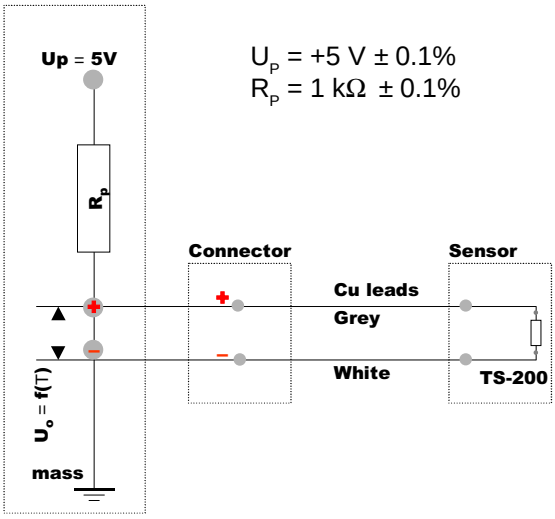
Initial Temperature:	23 °C	23 °C	300 °C	300 °C
Final Temperature:	250 °C	300 °C	600 °C	600 °C
Response Time $t_{0.63}$:	7.5 s	5 s	6.5 s	4.5 s
Gas velocity:	3.5 m/s	11 m/s	10-16 m/s	20-30 m/s

Mechanical Resistance

Hot shaker vibration tests, 12 hr @ 850 °C:
- sinus sweeps between 10 – 1000 Hz, acceleration up to 60 G
- 5 – 3000 Hz random noise test
- 120 G shock test

Circuit design

RTD circuit to MCU



U_P = +5 V ± 0.1%
R_P = 1 kΩ ± 0.1%

High Temperature Sensor for the Automotive Industrie

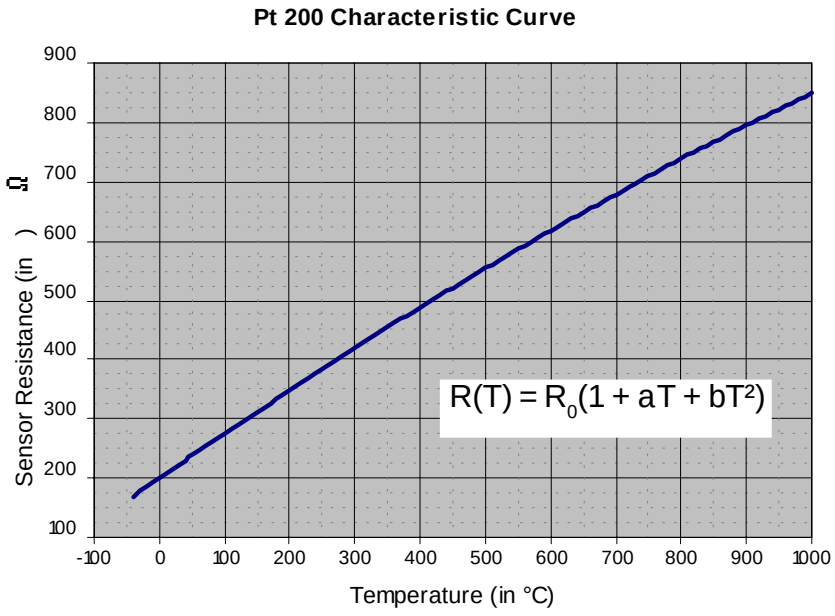
Typical applications

- Control and monitoring of catalysts for GDI engine systems and Diesel vehicles
- Protection of components in catalysts and of temperature-sensitive components
- Integrated into On-Board-Diagnosis Systems: detection of light-off temperatures of catalysts, monitoring of air injection systems serving for shortening of the cold start period in Gasoline engine vehicles
- Monitoring of electrically heated catalysts
- Detection of a temperature window to guarantee maximum efficiency of the catalysts

Six reasons for the use of platinum temperature sensors in thin film technology for the realisation of exhaust gas emission limits according to LEV and ULEV

The high temperature sensor ECO – TS 200s with an integrated Pt 200 in an open housing offers a multitude of advantages compared with conventional thermocouples or thermistors:

- Extremely wide operating temperature range covered by one sensor
- High long-term stability
- Standardised linear characteristic curve
- Short response time
- High Accuracy up to 1000 °C
- Simplicity of the measuring principle



08/1999