

High-Speed Temperature and Pressure Sensing System

- high speed temperature sensor for high dynamic measurements
- adaptable to almost any shape of mounting surface
- suitable for heat-flux determination

Typical Applications:

The transducer is tuned for high-speed measurements and is ideally suited for measuring fast transients. The sensor is small enough to be mounted into an exhaust pipe, a turbocharger or even into the cylinder wall to measure the change of the temperature during the combustion process. With an integrated miniature water or air cooled jacket extreme temperature environments become more accessible. By providing the capabilities of dynamic and static pressure measurements, previously unreachable dynamic performance is available.

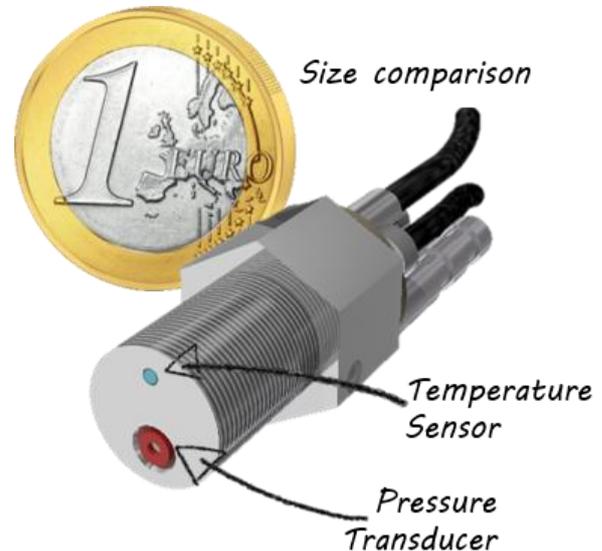
The system topology is customer configurable and reaches from stand alone operation of one dual amplifier "aixHSTPM Control" up to the fully equipped rack mount system with personal computer based transient recorder.

The rack system is expandable with additional amplifiers and sensors best fit our customer needs and leads to a fully flexible implementation of the equipment into existing data acquisition systems.

Background:

Due to a response time within microseconds the sensor allows the measurement of transient surface temperatures so that the heat flux can be obtained from the temperature signal. The recalculation of the time-dependant heat-flux from the heating environment onto the sensor is possible due to the knowledge of certain boundary conditions.

Feel free to ask our experts after more details.



Specifications:

Temperature Sensor:

Material:	Chromel - Constantan, coaxial
Rated temperature range	-50°C up to 900°C
Resolution	0.5 K
Calculated heat flux	20 KW/ m ² to 20 MW/ m ²
Response time (typ.)	10 µs
$\sqrt{p \cdot c \cdot k}$	About 9500 W \sqrt{s} / m^2K
Diameter	Ø 0,92 mm
Size	18 mm length
Sensitivity:	approx. 63 µV/K, (s. IEC-584 T1)
Calibration	calibrated by manufacturer
Connection	customer specific coaxial cable for best signal quality
Signal amplifier	external amplifier mandatory

Pressure Sensor:

Pressure range	7 bar (700 kPa)
Over Pressure	2 Times rated pressure
Burst Pressure	3 Times rated pressure
Pressure Media	Most Conductive Liquids and Gases
Rated Electrical Excitation	10 VDC/AC
Maximum Electrical Excitation	12 VDC/AC
Input Impedance	1000 Ohms (min.)
Output Impedance	1000 Ohms (nom.)
Full Scale Output	100 mV (nom.)
Residual Unbalance	± 5 mV (max.)
Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (typ.), ± 0.5% FSO (max.)
Resolution	Infinitesimal
Natural Frequency (KHz) (Typ.)	60
Water Flow Rate	0.6 l/ Min. (7 bar)
Operating Temperature Range	25°C to 900°C (with cooling)
Pressure Sensing Principle	fully active four arm wheatstone bridge dielectrically isolated

Note: Custom measurement ranges, accuracies and mechanical configurations available. Continuous development and refinement of our products may result in specification changes without notice - all dimensions nominal.