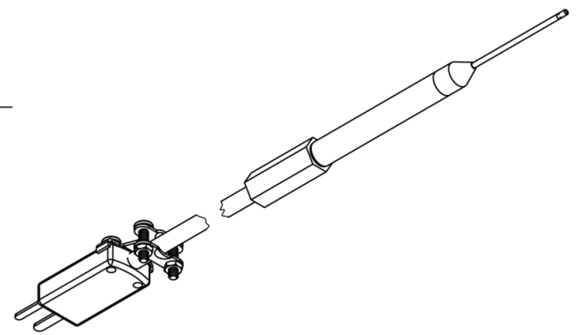


## A TOTAL AIR TEMPERATURE (TAT) PROBE

Special temperature probe for high-precision temperature measurement in wind tunnels.



### ■ ABOUT THE TOTAL AIR TEMPERATURE (TAT) PROBE

Until now, the measurement of the „Total Air Temperature“ (TAT) was known from the avionics sector. The TAT is the temperature measured on the outer skin of an aircraft.

Mathematically speaking, the TAT of a flow is the sum of the Static Air Temperature (SAT) and a kinetic component (air compression and friction) depending on the speed and type of medium. Air compression and friction lead to a relative temperature increase compared to the Static Air Temperature (SAT) at altitude.

The measurement is carried out with specially shaped temperature probes, which stop the flow of air relative to the aircraft inside it. The kinetic energy of the decelerated

and compressed air is internally converted into energy. The compression of the air causes an adiabatic increase in temperature.

These physical conditions also apply to wind tunnels. In wind tunnels, the temperature is usually measured with the well-known thermocouple sensors. However, especially with fast air flows, the air flow itself at the thermocouple leads to an incalculable cooling. The result is a rather inaccurate temperature measurement. The new TAT probe from Althen now also enables high-precision temperature measurement of the TAT within the air flow in wind tunnels.

### ■ KEY FEATURES

The mechanical design is similar to a normal multi-hole probe. In order to change or swirl the air flow itself as little as possible, the front part of the probe can be manufactured to a  $\varnothing = 1.6$  mm.

### ■ APPLICATIONS

- Wind tunnels

### ■ SPECIFICATIONS

|                       |               |
|-----------------------|---------------|
| Design                | rigid, curved |
| Tip- $\varnothing$    | from 1.6 mm   |
| Length                | from 127 mm   |
| Thermocouple          | by request    |
| Electrical connection | by request    |