

AEROSPACE, DEFENSE, AUTOMOTIVE AND MOTORSPORT TESTING

# Omnidirectional Probes

Flow direction and velocity measurement where the angle is unknown or the flow reverses.

## KEY SPECIFICATIONS

|                      |                                                                                                                                                   |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of holes      | 14                                                                                                                                                |
| Flow angle range     | Up to $\pm 155^\circ$                                                                                                                             |
| Angular accuracy     | Better than $\pm 1^\circ$                                                                                                                         |
| Velocity range       | 3 m/s to Mach 0.95                                                                                                                                |
| Velocity accuracy    | Better than $\pm 1$ m/s                                                                                                                           |
| Maximum temperature  | 600°C                                                                                                                                             |
| Geometry             | Straight or L-shaped                                                                                                                              |
| Maximum length       | Up to 200 mm in one part; longer in multi-part designs                                                                                            |
| Minimum tip diameter | Greater than 7.5 mm, spherical tip                                                                                                                |
| Materials            | Stainless steel, Inconel or titanium                                                                                                              |
| Connections          | Standard 1 mm pressure tubes                                                                                                                      |
| Measurement error    | Depends on the pressure scanner. A scanner ranged to the expected dynamic pressure, with accuracy of 0.1% of full scale or better, is recommended |
| Calibration          | Required for every probe and performed by the manufacturer, with pitch and yaw varied through thousands of positions in steady flow               |

## NOTES

A 14-hole probe with a spherical tip resolves flow angles up to  $\pm 155^\circ$  with angular accuracy better than  $\pm 1^\circ$ . Built by additive manufacturing as one robust part.

Each probe is individually calibrated by the manufacturer. Measurement error depends on the pressure scanner; a scanner accurate to 0.1% of full scale or better, ranged to the expected dynamic pressure, is recommended.

## TYPICAL APPLICATIONS

**Unknown flow direction.** Tests where the angle of attack cannot be set or predicted in advance.

**Reverse flow.** Regions where the flow can reverse, beyond the range of a standard multi-hole probe.

**Wide-angle surveys.** Flow-field surveys that must cover a wide range of pitch and yaw angles.

## INTEGRATED SENSING AND SUPPORT FROM K-TEC SYSTEMS

K-Tec Systems manufactures custom thermocouples, RTDs, wire harnesses and test stands in Ferndale, Michigan. Thermocouples and RTDs can be incorporated into compatible probe designs for simultaneous flow and temperature measurement. Contact us for a quotation or an application review.

## K-Tec Systems

2615 Wolcott St, Ferndale, MI 48220 | 248-414-4100 | [k-tecsystems.com](http://k-tecsystems.com)  
CAGE Code 4W0S0 | WBENC and WOSB certified woman-owned small business | CMMC Level 2

Specifications are manufacturer values and may change. Confirm configuration, material and lead time at quotation.