degreeC™

DEGREE CONTROLS,INC.

Your Partner for Airflow Sensing & Controls

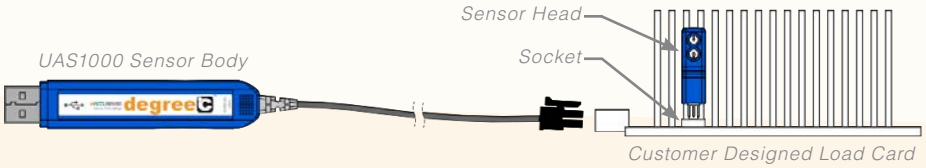
UAS1000 RF

Applications

- Thermal analysis of PCBAs, electronics systems, chassis & enclosures
  - Thermal load boards (TLBs) / thermal load cards
  - Application evaluation PCBAs
  - DC-DC converter cooling, DC/DC bricks
  - Test equipment
- Environmental sweeps of board/ blades
- Detect filter clog status, track filter health
- Watchdog functionality for accidental airflow blockage

Overview

The UAS1000 *Reference* (RF) sensor, is part of Degree Controls' UAS1000 line of precise USB airflow sensors, used with the °C Port3600/ °C Port1200 Multipoint Measuring Instruments. It is designed to be integrated into thermal load cards, test boards and test equipment. The RF reference sensor consists of a UAS1000 sensor body with sensor electronics, and remote, board-mount sensor head, giving users the freedom to embed the sensor head into printed circuit board assemblies and thermal test chips for real time air velocity and temperature measurements, without using valuable space on the test board for sensor electronics.



The compact sensor head is designed to be soldered directly to a PCB, or plugged into a surface mount socket for easy removal, ideal for plug-and-play test strategies having flexible measurement locations. Multiple sockets can be put down for very detailed airflow studies, and airflow experiments are much less susceptible to non-uniformity of setup with the UAS1000 RF. The RF is designed for single or multi-point airflow measurements and has a convenient, USB output to a PC or °C Port1200/ °C Port3600 data acquisition instrument, having 12 or 36 sensor channels respectively.

Traces are run on the load card from sensor locations to PCB mount connectors, mating to UAS1000 sensor bodies which are plugged into a PC or °C Port instrument. Connecting the °C Port to a PC or local network switch, and adding Windows® based AccuTrac™ software, allows air velocity, air temperature, and humidity data to be collected in real time, with automatic compensation for barometric pressure. Optional UTS1000 thermocouples can be added to include case temperatures in airflow studies, and the UHS1000 humidity and temperature sensor can also be added to provide high accuracy humidity input for real time compensation of measured air velocity.

Features

- UAS1000 measures air velocity & airflow temperature simultaneously
- Sensors interface with DegreeC Instrumentation Platform for multi-point sensing and data acquisition
- Validate thermal and airflow models quickly & accurately
- Small footprint sensor head (6mm x 6mm)
- Long length sensor electronics cable for testing PCBAs within a wind tunnel, chassis, or thermal chamber
- Wide operating temperature range
- Excellent accuracy and repeatability
- Fully interchangeable with one another
- RoHS compliant

Sensor Head Options

Should your application require a different sensor head outline, other styles are available from Degree Controls. Please refer to the datasheets.

Order from left to right:
Electronics Focused (EF), Low Profile (LP), Plastic Cap (PC), Wand & Extra Small (XS)

Degree Controls, Inc.

is an ISO-9001 certified, world-class designer and manufacturer of airflow sensing, monitoring, and control solutions. With over 25 years of proven experience, we pride ourselves on delivering solutions which provide the value, differentiation, and service required by our customers, to meet the rapidly changing competitive landscape that they face.

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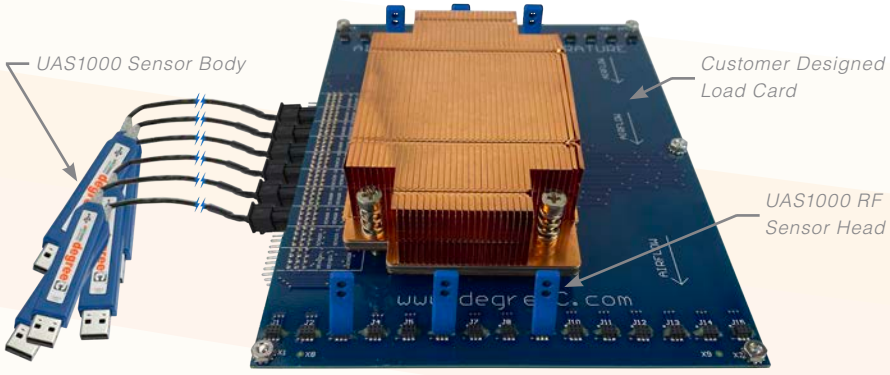
NOVA INSTRUMENTS

Specifications

Sensor Head	
Warm Up Time	< 5 seconds
Supply Voltage	Supplied by USB or °C Port Instrument via included UAS1000 Sensor Body
Input Voltage	Connections to the sensor head should only be made thru the UAS1000 Sensor Body as outlined in the manual. For PCB layout and trace considerations for customer design of load card, *20 VDC max.*
Maximum Current	For PCB layout and trace considerations for customer design of load card, *<100 mA.*
Response Time	400 ms
Operating Temperature	0°C - 90°C (32°F - 194°F)
Storage Temperature	-40°C - 105°C (-40°F - 221°F)
Relative Humidity	5-95%, non-condensing
Housing Material	UL94-V0
Size (L x W x H)	6.6 x 6.4 x 24.1mm (0.26 x 0.25 x 0.95")
Weight	Approximately 1.5g (.05oz)
UAS1000 Sensor Body	
End 1	Molex 430250400 4 Circuit Receptacle
End 2 Size (L x W x H)	USB-A Male 98.5 x 16.0 x 8.1 mm (3.88 x 0.63 x 0.32")
Length	5m (16.4')

Example Customer Designed Load Card with UAS1000 RF Air Velocity Sensors



Notes:

1. *Please see the user manual for additional information about the UAS1000 RF Reference sensor.*
2. *Contact Degree Controls for a 3D STEP file of the UAS1000 RF sensor head.*

Airflow & Temperature Measurement

Air Velocity

Temperature Compensation Range: 0-90°C (32-194°F)
Accuracy (the greater of): ±0.025m/s (5fpm) or ±5% of reading
Repeatability (the greater of): 1% or ±0.01m/s (2fpm)

Temperature

Measurement Range: 0-90°C (32-194°F)
Measurement Accuracy[1]: ±1°C (1.8°F)
Resolution: ±0.1°C

Temperature Compensation Range: The UAS1000 is a thermal airflow sensor; it is sensitive to changes in air density and indicates velocity with reference to a set of standard conditions 25°C (77°F), 760mmHg (101.325kPa), and 0%RH. The UAS1000 has been designed so that when used over the stated temperature compensation range, the sensor indicates very close to actual air velocity and minimal compensation is only required to account for changes in barometric pressure or altitude.

Accuracy: Valid between 15-35°C (60-95°F), increasing by ±0.25% per degree and ±0.005m/s (1fpm) over remaining temperature compensation range.

[1]Above 0.5m/s (100fpm), ±1.5°C (2.7°F) below 0.5m/s (100fpm).

Part Number Format

UASXXXX RF

1250 0.5 – 10.0 m/s (100 – 2000 fpm)
1500 0.15 – 20.0 m/s (30 - 4000 fpm)

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