degreeC™

DEGREE CONTROLS,INC.

Your Partner for Airflow Sensing & Controls

°C Grate

Volumetric Airflow Measurement Tool

Features

- Wheeled design, battery powered, for portability
- Zero impedance design
- 16 air velocity sensors for best resolution
- Turbulence monitoring
- Windows OS® compatible software
- Automatic reporting and datalogging
- Fast, efficient, error proof

Overview

The °C Grate airflow measurement tool is specifically designed for testing flowrates through floor tiles in data centers, office spaces, and laboratory environments. With a zero impedance measurement architecture, the °C Grate does not impart any backpressure to a floor tile under test.

In a network of raised floor tiles, restricting the flow of any one tile, like a balometer or capture hood will do, forces the airflow through neighboring tiles, thus creating erroneous measurements. The °C Grate has been designed to overcome this issue to provide accuracy and efficiency to critical airflow environments.

The °C Grate also provides a gradient map of the air velocity and air temperature map across the floor tile area, in order to reveal if the flow is biased in certain areas of the floor tile. Understanding the detailed flow gradient is critical to understanding how cooled air is being delivered to air intakes of critical equipment.

Benefits

- With capture hoods and balometers, the reading error is a function of underfloor air pressure. The impact of adding a flow restricting capture hood is not linear with underfloor air pressure, so the user cannot know how to correct the reading. The °C Grate measurement system is a zero flow impedance tool that eliminates this issue.
- A capture hood or Balometer relies on a single pressure sensor to calculate air flow indirectly. The °C Grate measurement tool uses 16 points of velocity to calculate flow directly.
- The °C Grate creates a real-time gradient mapping of the floor tile for both air velocity, and air temperature. Only the °C Grate allows the user to see where the air stream is directed.
- The °C Grate is useful in validating CFD models of the critical facility, and can verify both the volumetric flow, and the flow temperature simultaneously.
- The °C Grate is useful in evaluating the disruption of flow uniformity from underfloor obstructions such as conduit and cabling.
- The °C Grate is useful in evaluating if cool air delivered to a rack is adequate in air volume and air temperature, and can diagnose complex airflow issues in real time.

Degree Controls, Inc.

is an ISO-9001 certified world-class Designer and Turn-Key Manufacturer of control solutions for progressive technology industries. With over 15 years of proven experience, we pride ourselves in delivering solutions to our customers that provide the differentiation they need for their rapidly changing competitive landscape.

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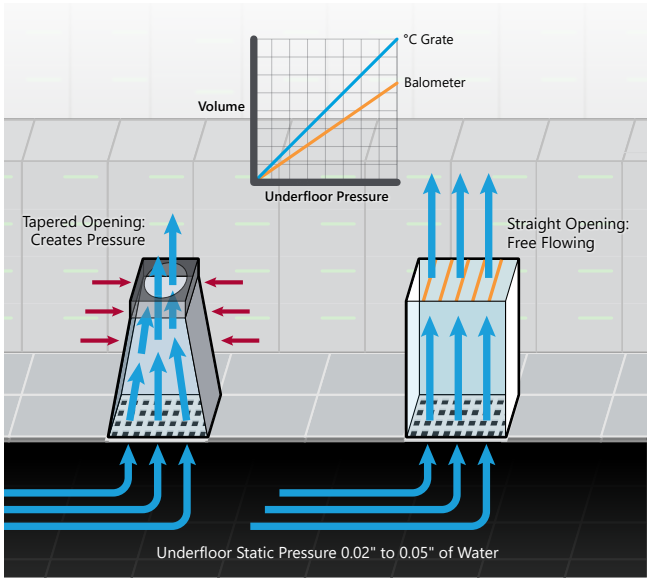
NOVA INSTRUMENTS

Advantages



DegreeC partnered with Georgia Institute of Technology, for Instrumentation Validation: *Anemometric Tool For Air Flow Rate Measurement through Perforated Tiles in a Raised Floor Datacenter, 2015.*

The balometer's accuracy is affected by the back pressure it imparts into the floor tile system. The percentage error is a function of the underfloor pressure profile.

A floor tile system is unlike a ducted HVAC system, where an added flow restriction to one tile simply pushes air through neighboring tiles, making capture hood testing invalid.

Hardware Specifications

Velocity Accuracy	5% of reading or ±0.05 m/s (whichever is greater) *within compensation range
Repeatability	±1% of reading (under identical conditions)
Temperature Accuracy	±2°C (3.8°F)
Velocity Range	0.3 – 5.0 m/s (50 – 1000 fpm)
Velocity Resolution	0.1 m/s (1 fpm)
Volumetric Range	80 – 4200 m^3/h (50 – 2500 cfm)
Volumetric Resolution	1 m^3/h (1 cfm)
Operating Temperature Range	0°C to 60°C (32°F to 140°F)
Storage Temperature	-40°C to 105°C (-40°F - 220°F)
Relative Humidity (non-condensing)	5 – 95%
Calibration Range	15°C – 35°C
Response Time	2 seconds
Battery Life	8 hours
°C Grate Weight	17 Kg (39 pounds)

Compensation Range

Temperature Compensation Range: The F400 is a thermal airflow sensor; it is sensitive to changes in air density and indicates velocity with reference to a set of standard conditions (21°C (70°F), 760mmHg (101.325kPa), and 0%RH). The F400 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. Changes in relative humidity have a minimal impact and can usually be ignored.

Software Specifications

Supported Operating Systems	Windows OS® 7, 8, and 10
Logging Format	.csv
Real Time Data	Velocity, Temperature, Flowrate
Available Statistics	Averaging per Sensor Point, Average of Experiment
Polling Time	Adjustable, 2s +

RoHS