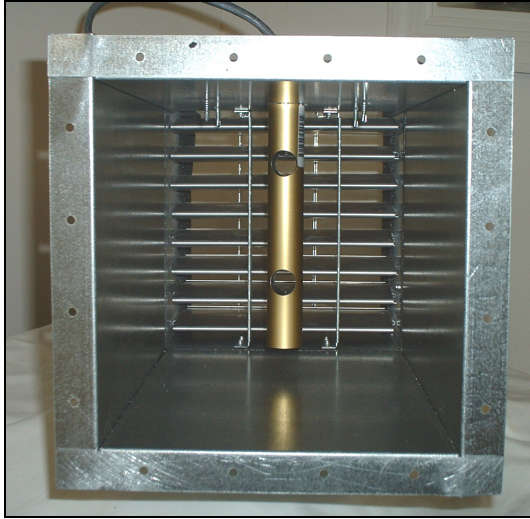


PNEUMATIC DAMPER WITH INTEGRAL MASS FLOW SENSING

BULLETIN 868



Unit shown from inlet side

PRINCIPLES OF DESIGN

The mass flow station accurately measures the flow of air by measuring the transfer of heat to the moving air stream. This time proven principle is commonly used in industrial process and other critical applications. One sensor is heated to a constant temperature above a second reference sensor which senses the temperature of the air stream.

The energy required to maintain this constant temperature difference is conditioned by the circuit board to output an analog signal proportional to the air stream velocity.

BENEFITS

- Time proven Components
- Probes are minimally invasive in the air stream
- Very wide velocity range
- Polarity protected

APPLICATIONS

- VAV supply and return systems
- Process Control

Typical Systems

- Clean spaces
- Laboratory Pressurization System
- Pharmaceutical and electronic manufacturing
- Isolation and air lock spaces

ADVANTAGES OF MASS FLOW MEASUREMENT

The analog output signal is linear to velocity from very low flow rates (50 ft/min through 4000 ft/min) permitting flexibility of use if the system requires operation beyond the initial design requirements.

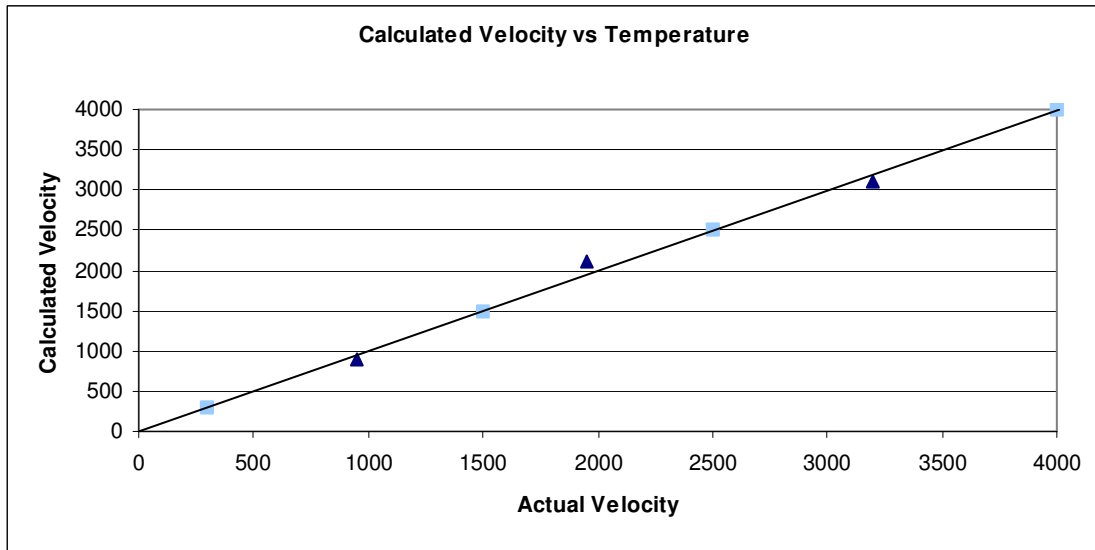
Accuracy is excellent (+/- 5% of reading) within the temperature envelopes of 40F (4 C) and 120F (49C) The circuits include a temperature compensation algorithm essentially resulting in an output independent of any air stream temperature shifts. Transmitter circuitry is microprocessor based with flash memory and a 12-bit A/D and D/A converter.

Flow measurement is independent of turbulence or acoustically generated signals created by such duct obstructions such turning vanes, dampers and elbows.

The sensor is a ceramic device with very smooth surfaces permitting operation in dusty atmospheres.

The very low heat emitted by a sensor to the primary air stream (about 2 BTU) will increase the air stream temperature by about 0.026F (0.014C) allowing consideration for measuring in hazardous atmospheres.

PERFORMANCE CHART



SPECIFICATIONS

Performance

Velocity Range: 0 – 4000 FPM
0 – 20.32 m/s

Accuracy Range:

0-1000 FPM: +/- 2.5% reading + 0.5% FS

1000-4000 FPM: +/- 2% reading + 0.5% FS

Hysteresis: +/- 0.02%

Environmental

Operating: 40F – 120F

4C – 49C

Storage: -20F – 140F

-29C – 60C

Humidity: To 95% non-condensing

Power

Input: 24Vac

Fused and Polarity Protected

Output: 4 – 20mA

2 – 10Vdc

Maximum Load Resistance

Voltage: 10k ohms

Current: 500 ohms

Current Consumption

< 200mA at 24Vac

Miscellaneous

Junction box

Size 4”x4”x4”

100x100x100 mm

Available types

NEMA 1

waddell
ENGINEERING COMPANY

Phone: (856)-461-7500



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