Microflown Technologies

Charting sound fields V1.0 2009-10

Datasheet

Scanning Probe

Close to an object (in the so-called very near field) the particle velocity and the structural vibration coincide. So therefore Microflown sensors can be used for the non contact measurement of the normal component of the structural velocity. The scanning probe is designed in such way that is possible to measure close to a surface. The particle velocity sensor on the scanning probe can delivered in three orientations: 0, 45 and 90 degrees.

Typical applications

- ✓ Non contact vibration measurements
- ✓ Acoustic end of line testing

Specification - Scanning Probe

Sensor configuration:
- 1x Microflown Titan sensor element

Physical characteristics:
Diameter : ½ inch / 12,7mm
Length : 130mm
Weight : 40g

Electrical properties:
Powering : power is supplied by the MFSC-2, 2channel signal conditioner. The input is provided by the 7pins lemo cable

Environment
Max. temperature: 200 Degrees Celcius

Acoustical properties Microflown element
Frequency range : 0.1Hz - 20kHz ± 1dB
Upper sound level : 135dB
Polar pattern : figure of eight
Directivity : directive

Three different available orientations:

Model Microflown sensor

The sensitivity in uncorrected mode:

$$S_u\,[mV/Pa^*] = \frac{S_u\,@250Hz}{\sqrt{1+\frac{f_{c1u}^2}{f^2}}\sqrt{1+\frac{f^2}{f_{c2u}^2}}\sqrt{1+\frac{f^2}{f_{c3u}^2}}\sqrt{1+\frac{f_{c4u}^2}{f^2}}\sqrt{1+\frac{f_{c5u}^2}{f^2}}}$$

The phase in uncorrected mode:

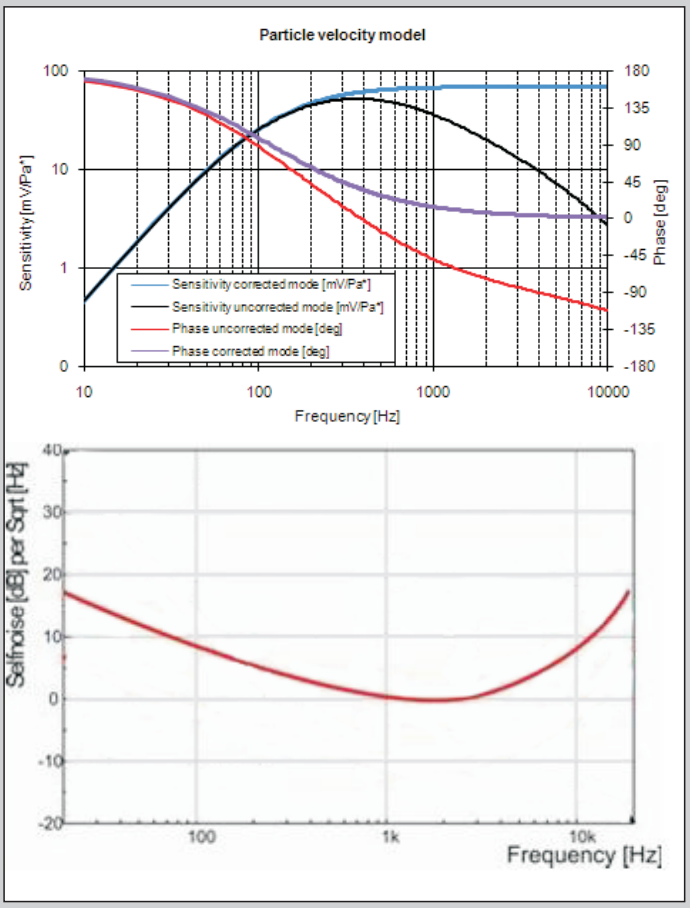
$$\varphi_u\,[\deg] = \arctan\frac{C_{1u}}{f} - \arctan\frac{f}{C_{2u}} - \arctan\frac{f}{C_{3u}} \cdot \arctan\frac{C_{4u}}{f} + \arctan\frac{C_{5u}}{f}$$

The sensitivity in corrected mode:

$$S_u\,[mV/Pa^*] = \frac{S_u\,@250Hz}{\sqrt{1+\frac{f_{c1u}^2}{f^2}}\sqrt{1+\frac{f_{c4u}^2}{f^2}}\sqrt{1+\frac{f_{c5u}^2}{f^2}}}$$

The phase in corrected mode:

$$\varphi_u\,[\deg] = \arctan\frac{C_{1u}}{f} + \arctan\frac{C_{4u}}{f} + \arctan\frac{C_{5u}}{f}$$



Parameters velocity equations		
Sensititivity in high gain:		
Su @250Hz=	*25*	*[mV/Pa*]*
Su @250Hz=	*10*	*[V/(m/s)]*
Sensititivity in low gain:		
Su @250Hz=	*0,25*	*[mV/Pa*]*
Su @250Hz=	*0,1*	*[V/(m/s)]*
Sensitivity cornerfrequencies		
fc1u=	*150*	*[Hz]*
fc2u=	*600*	*[Hz]*
fc3u=	*10000*	*[Hz]*
fc4u=	*77*	*[Hz]*
Phase cornerfrequencies		
C1u=	*180*	*[Hz]*
C2u=	*700*	*[Hz]*
C3u=	*20000*	*[Hz]*
C4u	*77*	*[Hz]*

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