MB2005

Microbarometer

The MB2005 micro-barometer measures small variations in atmospheric pressure such as those created by aerial explosions at long distances. A barometric aneroid bellows is deformed under atmospheric pressure change. This deformation is measured by an LVDT (Linear Variable Differential Transformer) displacement transducer. The sensor is sensitive and easy to implement. The electronic noise level is 2 mPa rms in the 0.02-4 Hz band.

The filtered signal output bandwidth is from 0.01 to 27Hz. It can be modified very easily. For instance, the bandwidth can be extended to 0.001 to 40Hz on demand.

Correct operation is validated by atmospheric pressure check.

Figure 1

Description :

The LVDT-type displacement transducer, associated with a low noise electronic circuit, measures bellows deformation under atmospheric pressure change. The displacement sensor assembly design eliminates temperature induced drift.

The cylindrical micro-barometer body has a diameter of 15cm and 32cm high with a weight of 7kg.

The lower part makes up the measurement chamber, containing the bellows and the LVDT displacement sensor. The chamber is connected to the ambient atmospheric pressure through four nozzles. Each nozzle can accept a micro-porous pipe to form a filtering system for micro-barometric background noise reduction.

The upper part is watertight and accepts two electronic boards.

Aneroid bellows characteristics:

The Durinval aneroid bellows operates under vaccum in order to reduce its thermal sensitivity.

- Operating range 400 to 1200 hPa
- Mechanical sensitivity 35 nm/Pa

Physical characteristics:

- DIMENSIONS AND WEIGHT
  - Watertight box High 0.32m Diameter 0,15 m
  - Weight 5,7 Kg
- POWER SUPPLY
  - 12V (10V – 16V)
  - Internally isolated
- ENVIRONMENT
  - In use temperature range - 20 to + 60°C (-4 to 140°F)
  - Protection provided for operation in damp and dusty atmosphere IP 68
  - Complies with the EMC standards: EN61326-1/ EN 55022/ EN61000-4-3/ EN61000-4-6/ EN61000-4-2/ EN61000-4-8

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The characteristics of the standard filtered output are summarized in table 1.
They are compared with the Working Group B Specifications (CTBT/PC/II/WGB/1).

(1) ½ Full scale/Noise.

		MB2005 Infrasonic Sensor	Specifications CTBT/PC/II/WGB/1
MB20005 Unfilterd output	Range	200 hPa pp	
	Bandwidth (Hz)	0 – 40	
	Sensitivity	1mV / Pa	
	Electronic noise (at 1 Hz)	0.6 mPa/$\sqrt{Hz}$	$\leq$ 0.63 mPa / $\sqrt{Hz}$
	Electronic noise (0.02-4Hz)	2 mPa rms	
	Dynamic range (1)	134 dB	
	Mode/Type	Single Ended	
MB2005 Filterd output	Range	1000 Pa pp	
	Bandwidth (Hz)	0.01 – 27	0.02-4Hz
	Sensitivity	20 mV / Pa	
	Electronic noise (0.02-4Hz)	2 mPa rms	
	Dynamic range (1)	108 dB	≥108dB
	Mode/Type	Differential	
MB2005 PA output	Range	200 Pa pp (within 500 to 1200hPa)	
	Sensitivity	1 mV / Pa	

Table 1

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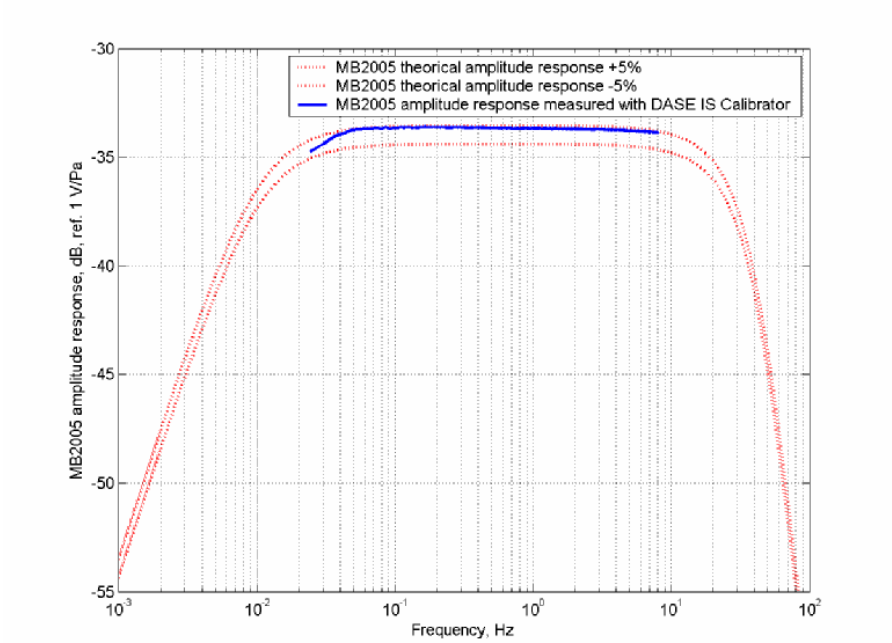

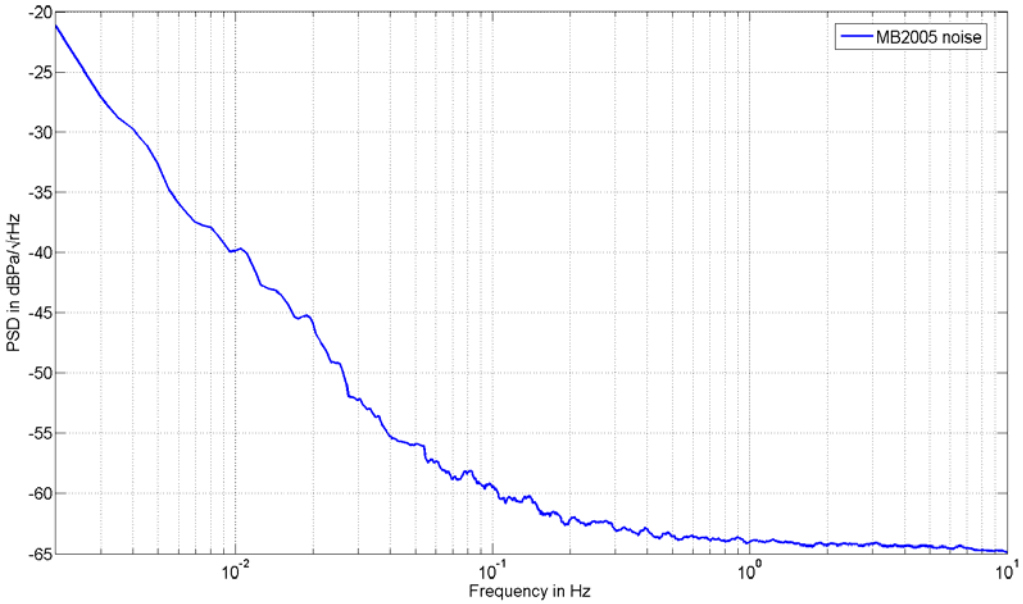

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