MB3aPP

ANALOG INFRASOUND SENSOR
2 PRESSURE OUTPUTS VERSION

The MB3a sensor was developed by the CEA (Commissariat à l'Energie Atomique), following the MB2000 and MB2005 series. This microbarometer has been designed especially to meet the requirements of infrasound stations of the IMS network (International Monitoring System) and is installed as part of the CTBT (Comprehensive nuclear Test Ban Treaty). The transducer is an aneroid capsule coupled with a magnet & coil transducer.

Under licence of cea

RECORDING OF LOW-FREQUENCY ACOUSTIC SIGNALS FROM 0.01 TO 28HZ

The MB3aPP analog infrasound sensor allows the recording of very low-frequency acoustic signals over a broad frequency band, with an excellent resolution and a large dynamic range.

2 PRESSURE OUTPUTS FOR A WIDER DYNAMIC RANGE

Seismo Wave has developped a new version of the MB3aPP analog infrasound sensor in order to records high amplitude atmospheric events. The two pressure outputs are respectively set at 2mV/Pa and 20mV/Pa. At 2mV/Pa, the dynamic range of the pressure output reaches +/- 10 550 Pa.

REMOTE CALIBRATION

Thanks to a secondary coil wrapped around the principal, the MB3aPP allows remote calibration of your sensor using MLS, pulse or sine waves.

LOW LEVEL OF INSTRUMENTAL NOISE

The MB3aPP is remarkable for an extremely low level of instrumental noise, allowing the sensor to resolve more than 18 dB the Low Noise Model at 1 Hz.

VOLCANOLOGY

METEOROLOGY

CIVIL SECURITY

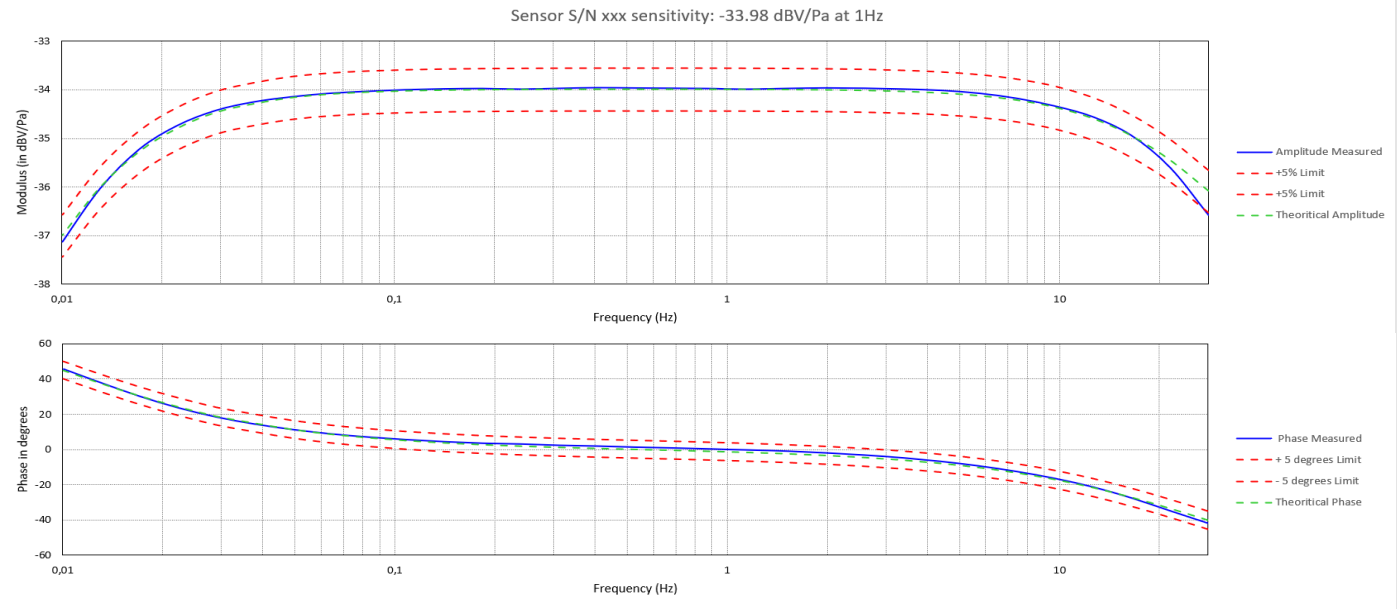
MILITARY SECURITY

SEISMO WAVE

KEY FEATURES

TRANSDUCER BLOCK	
Bandwitdth (f -3 db)	Pressure output: 0,01 - 28 Hz
BLDR (Band Limited Dynamic Range) [0,02 ; 4 Hz]	117 dB @ f< 1,6 Hz 109 dB @ f= 4 Hz
Self-noise	0,13 mPa/√Hz @ 1 Hz < 10 dB under LNM (Low Noise Model)
Resolution [0,02 ; 4 Hz]	1,75 mPaRMS
MB3a Nominal sensitivity (adjustable gain)	• Pressure output: 20 mV/Pa • Pressure output: 2 mV/Pa • Calibration output: 6 Pa/V
Auxiliary outputs	
Temperature sensor	• [-40 ; +110]°C, 10 mV/°C, ±0,2°C
Atmospheric pressure	• [150 ; 1150] hPa, 1 mV/Pa
Sensor	• Offset stability: 0,25% full scale / uncertainty: 1,5% full scale
ANALOG HOOD	
Output range	24 V pp
Output type	Differential (symmetric)
Output impedance	2 × 50 Ω
Dynamic range	Output P1: +/- 12000 Pa Output P2: +/- 105000 Pa
Power requirements	12 V DC (7-20 V) - 380 mW
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-20°C to +50°C
Storage temperature	-30°C to +70°C
Seismic sensitivity	< 30 Pa/m.s-2
Sealing	CEI 60529-IP67 (with sealed acoustic inlets)
Shock / Drop	NF EN 60721-3-1, 2M1 (free fall, impact, shock)
Transport	NF EN 60721-3-2, 2M3 (vibration)
EMC	NF EN 55024 classes A & B (immunity) NF EN 55022 class B (emission)
PHYSICAL CHARACTERISTICS	
Weight	3 Kg
Diameter	110 mm
Height	140 mm

SENSOR SENSITIVITY RESPONSE



SENSOR SELF-NOISE

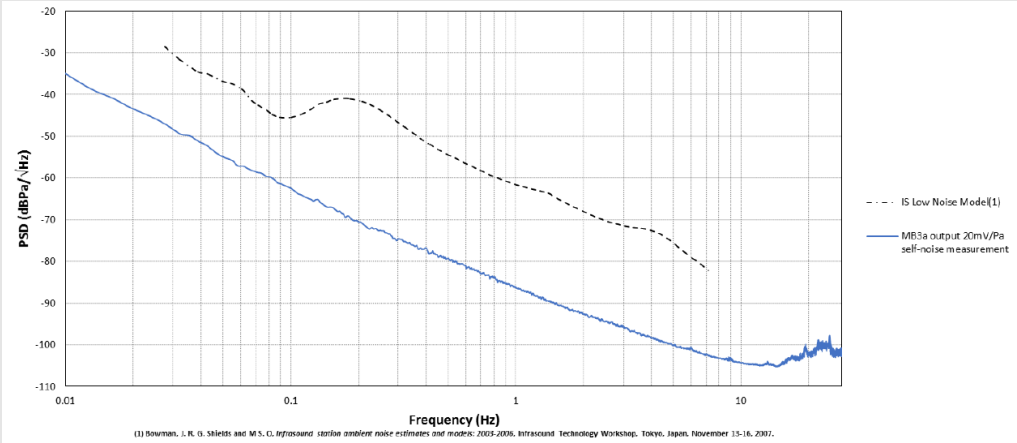


Fig. 1: Power Spectral Density of 20mV/Pa output of MB3 instrumental noise (blue) compared to the Bowman Low Noise Model.

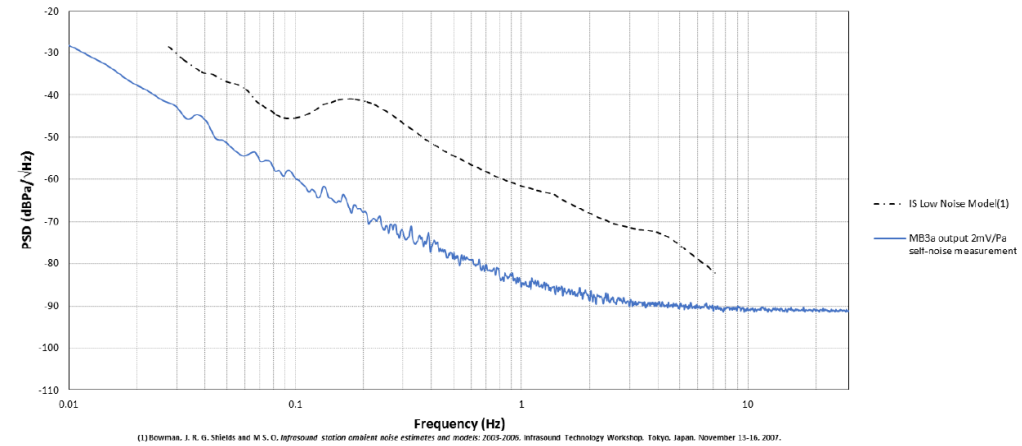


Fig. 2: Power Spectral Density of 2mV/Pa output of MB3 instrumental noise (blue) compared to the Bowman Low Noise Model.

In the interests of continual improvement with respect to design, reliability, function or otherwise, all product specifications and data are subject to change without prior notice.