



MPA471S / MPA472S / MPA473S 1/4" Pressure-field Microphone Set

Features:

- 1/4-inch pressure-field microphone
- Sensitivity (@250 Hz): 0.5 mV/Pa (-66 dB re 1V/Pa)
- Frequency response: 8 Hz ~ 20 kHz (± 2 dB)
6 Hz ~ 40 kHz (-3 dB / +7 dB)
- Dynamic range: 56 dBA ~ 170 dB (MPA471S)
61 dBA ~ 175 dB (MPA472S)
65 dBA ~ 180 dB (MPA473S)
- Polarization voltage: 0V (prepolarized)
- Pressure equalization: side-vented
- Optional TEDS (IEEE.1451.4)



Applications:

- High sound pressure measurements such as artillery and automatic weapon, aero-engine and rocket engine noise.
- High frequency noise measurements.

Introduction

● About The Microphone Set

The output impedance of the working standard microphone can reach more than $G\Omega$ level, so it cannot be directly connected to the data acquisition equipment. The preamplifier must be used to reduce the output impedance to below $100\ \Omega$. The traditional condenser microphone also needs the preamplifier to provide an external polarization voltage of 200 V to charge the capacitor, or coat the rear plate with electret material that can store charge to replace the polarization voltage (prepolarized).

Anyway, different microphone types need to be matched with corresponding preamplifiers to work. BSWA offers the microphone set that consists of microphone cartridge and preamplifier, is reliable and robust. The microphone set is assembled in a clean-room environment, reducing the potential measurements errors cause by the interface contaminating.

● Compatibility

BSWA MK series external polarization microphone needs to be matched with MV series traditional 200 V preamplifier and MC7xx series conditioner; while MP type prepolarized microphone need to be matched with MA series ICCP preamplifier and MC1xx series conditioner. The connection thread between the microphone and the preamplifier complies with WS2 (1/2") or WS3 (1/4") standard, and the same type of microphone or preamplifier can be connected to each other.

● Preamplifier's Impact

The preamplifier not only reduces the output impedance, but also has a certain impact on the performance of the microphone, as described below:

1. Sensitivity: Preamplifier always lowers the sensitivity of the microphone. The typical attenuation value is about 0.3 dB.
2. Self-generated noise: The output noise of the microphone is thermal noise, and the preamplifier will bring a certain amount of electrical noise. Therefore, the total output noise of the combination of microphone and preamplifier is the sum of thermal noise and electrical noise.
3. Maximum output voltage: The maximum output voltage of the microphone is the product of its maximum sound pressure level and its sensitivity. This value often cannot exactly match the maximum output voltage of the preamplifier. The maximum output voltage of the combined



microphone and preamplifier is determined by the smaller of the respective maximum output voltages of the microphone and preamplifier. Therefore, if the maximum output voltage of the preamplifier is smaller than the maximum output voltage of the microphone, the dynamic range of the microphone will be reduced.

4. Frequency response: The MA series ICCP-powered preamplifier has certain attenuation at low frequency, but it can still meet the general requirements from 20 Hz to 20 kHz.

● MPA471S / MPA472S / MPA473S Microphone Set

MPA471S / MPA472S / MPA473S is a combination of MP47xS microphone and MA411A/B preamplifier, which can be separate into MP47xS and MA411A/B according to user's application.

MP47xS is a 1/4" pressure field microphone, suitable for the pressure-field environments such as in a cavity, near a hard reflective surface, or installed flush with a hard surface. It is prepolarized microphone without external polarization voltage and suitable for ICCP-powered preamplifier.

MA411A/B is a 1/4" ICCP-powered preamplifier, suitable for prepolarized microphones.

Optional TEDS is available for most of BSWA preamplifier to support read microphone information directly by data acquisition equipment, including microphone model, serial number, sensitivity, etc. BSWA TEDS microphone supports the IEEE 1451.4 standard. The v0.9 version is used by default to be compatible with more data acquisition equipment. The v1.0 version can also be selected according to user's requirements.

Specifications

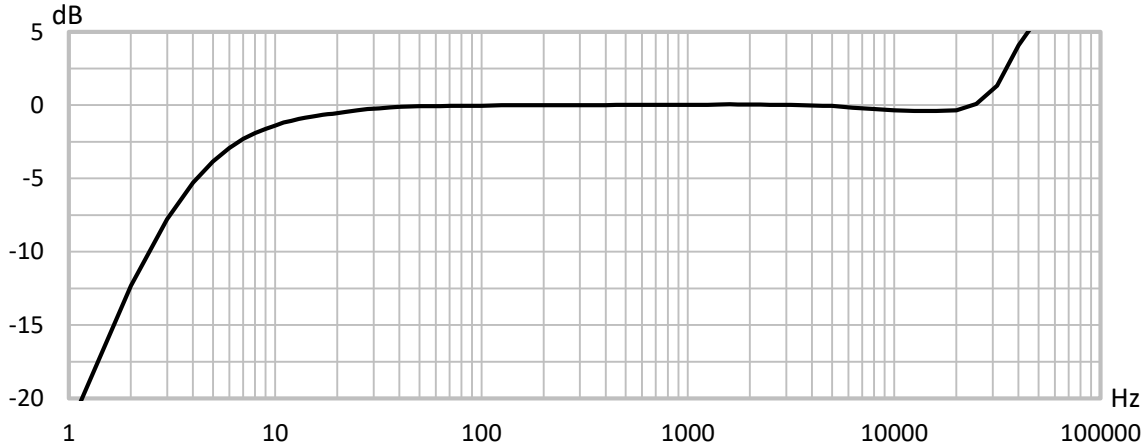
Diameter	1/4"
Standard (IEC 61672)	Class 1
Microphone	MP471S / MP472S / MP473S
Sound Field	Pressure-field
Preamplifier	MA411A/B
Open-circuit Sensitivity (mV/Pa) (± 2 dB) ¹	0.5 (-66 dB re 1V/Pa)
Frequency Response (Hz) (± 2 dB)	8 ~ 20k (± 2 dB), 6 ~ 40k (-3 dB / +7 dB)
Dynamic Range (dBA ~ dB) ²	56 ~ 170 (MPA471S)
	61 ~ 175 (MPA472S)
	65 ~ 180 (MPA473S)
Maximum Output Voltage (Vp)	± 7
Self-generated Noise (dBA)	56 (MP471S), 61 (MP472S), 65 (MP473S)
Output Impedance (Ω)	< 30
Pressure Equalization Vent	Side vented
Power Supply	ICCP (2mA ~ 20mA, 4mA Typ.)
Operating Temperature Range ($^{\circ}\text{C}$)	-30 ~ 80
Operating Humidity Range (%RH)	0 ~ 98
Temperature Coefficient (250 Hz) (dB/ $^{\circ}\text{C}$)	-0.02
Pressure Coefficient (250 Hz) (dB/kPa)	-0.007
Influence of Humidity (dB)	<0.1
Dimensions (mm)	$\varnothing 7 \times 63.3$ (with MA411A), $\varnothing 7 \times 58.3$ (with MA411B)
Output Connector	SMB / 10-32 UNF
Weight (g)	7.7
TEDS	Optional, IEEE 1451.4 compliant (default v0.9, optional v1.0)

Note 1: the open-circuit sensitivity limit is applicable to most MPA47xS microphones, but the sensitivity of high sound pressure MPA473S may be lower than this limit.

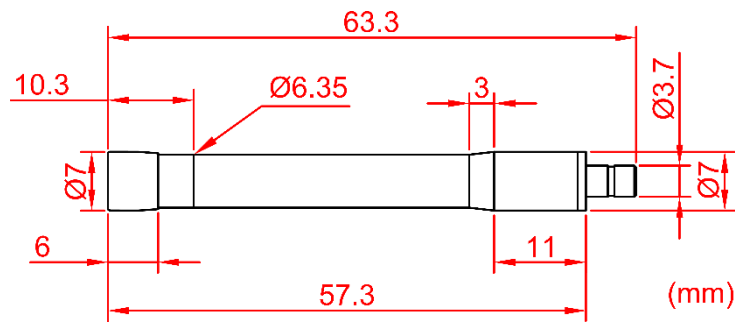


Note 2: only valid in the specified frequency range. The dynamic range and the maximum sound pressure level will decrease around the resonance frequency of microphone.

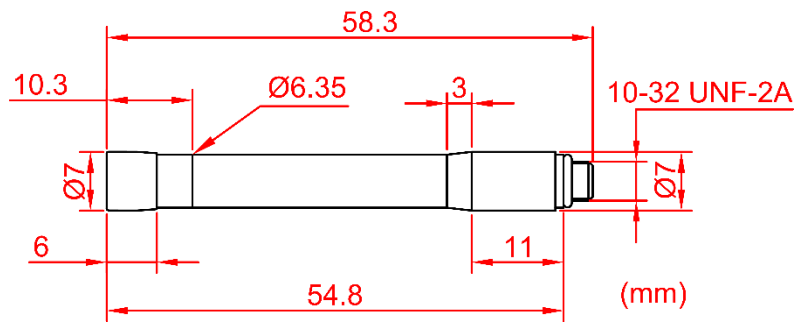
Typical Pressure Frequency Response



Dimensions



MPA47xS with MA411A



MPA47xS with MA411B

