

# Instruction manual for free-field measurement microphone kit

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#### 1. Product introduction

- 1) Type and designation: MPA668-812 Free-field measurement microphone kit
- 2) The model code of the free-field measurement transmission kit is as follows:

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MP A 668-812

Stands for "Specific model of preamplifier"

Stands for "Specific model of microphone"

Stands for "Preamplifier"

Stands for "Microphone"
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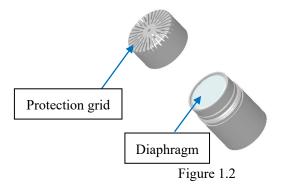
- 3) Explosion-proof marks: Ex ic IIB T4 Gc
- 4) Execution standard: GB/T 3836.1-2021 \ GB/T 3836.4-2021 \ IEC 60079-0:2017 \ IEC 60079-11:2011
- 5) Feature: The free-field measurement microphone kit is an explosion-proof certified special microphone kit, In line with the dangerous area 2 zone and explosive environment IIA, IIB class T1-T4 temperature group use requirements, can ensure the use of safety in dangerous gas environment; It is composed of microphone MP 668 and preamplifier MA 812 (Figure 1.1). The microphone and preamplifier are connected with threads.



Figure 1.1

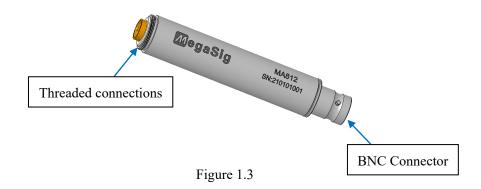


Among them, MP 668 is a 1/2 inch pre-polarized free field measurement microphone (Figure. 1.2), which is used to measure the true sound pressure without distortion before the sound field is inserted. The MP 668 body is made of stainless steel, giving it good toughness and long shelf life.



Please be careful when using: Microphone diaphragm is extremely fragile, do not touch the microphone diaphragm with hands, do not easily remove the guard bar, so as not to cause damage to the microphone.

The MA 812 preamplifier (Figure 1.3) is a preamplifier powered by a constant current source. It has high input impedance, low background noise and wide frequency response range. The output interface adopts BNC joint, and the main part is made of stainless steel to make it have good toughness and long time storage.



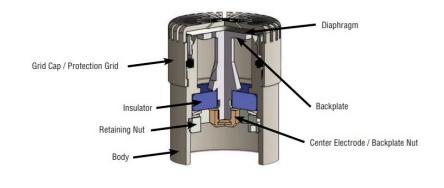


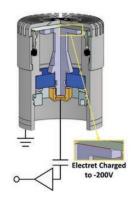
## 2. Specifications

| Field                          | Free-field  |  |  |
|--------------------------------|---|--|--|
| Frequency range (dB)           | 6.3Hz-20kHz±2dB 12.5Hz-10kHz±1dB  |  |  |
| Dynamic range (dB)             | 17dB-146dB(1000Hz THD<3%)  44.5mV(-27dB)±2dB  0V( Prepolarized )  4mA  16.0pF  BNC  -20°C~60°C  10%-90%  85mm |  |  |
| Sensitivity mV/Pa(dBV/Pa)      |   |  |  |
| Polarization voltage           |   |  |  |
| Power supply                   |   |  |  |
| Typical capacitance            |   |  |  |
| Connector                      |   |  |  |
| Temperature range              |   |  |  |
| Humidity range non condensing  |   |  |  |
| Overall length                 |   |  |  |
| Diameters                      | 13.2mm  |  |  |
| Diameters (No Protection grid) | 12.7mm<br>11.7mm-60UNS  |  |  |
| Cooperate with thread          |   |  |  |

# 3. The product principle

## Internal structure drawing of microphone:



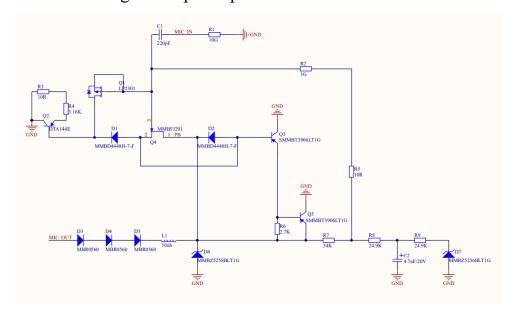


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Using a special process will charge into the microphone electret material on the back plate(Electret materials are used to keep the charge of the injection in place), Thus a capacitor is formed between the back plate and the diaphragmWhen the sound in the environment drives the diaphragm to vibrate, the vibration changes the distance between the diaphragm and the back plate, thus changing the charge of the capacitor. After the signal output from the microphone is amplified by the preamplifier, we can use the data acquisition card to collect the signal of sound change.

Schematic diagram of preamplifier circuit:



#### 4. Method of use

- 1). The microphone uses BNC coaxial cable (i.e. power supply and signal output share one cable), Supply 4mA constant current power supply, working voltage is 24V DC. Can work normally.
  - 2), Intrinsic safety parameter: Ui: 24VDC, Ii: 10mA.



## 5. Precautions for Use

- 1) Do not hot swap
- 2) Operate the microphone carefully and keep the diaphragm away from dust and other objects
- 3) Do not touch microphone diaphragm with your hands
- 4) It is recommended not to remove the microphone protection fence at will

| Version | Document number | Date       | Design         | Verify       | Approve     |
|---------|-----------------|------------|----------------|--------------|-------------|
| V1.1    | MGS-MP668-01    | 2022.08.09 | Tianyang Jiang | Kanghui Zhao | Xushun Chen |

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