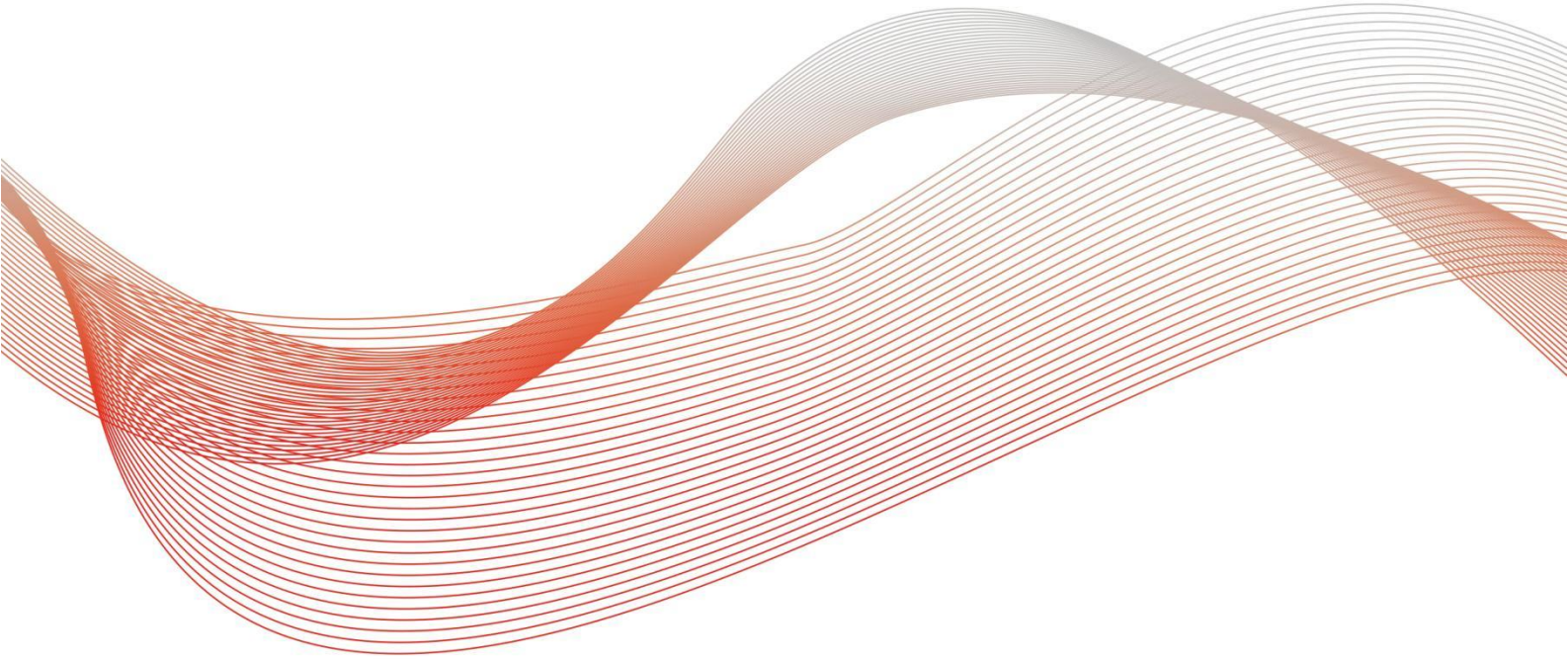
杭州爱华仪器有限公司
HANGZHOU AIHUA INSTRUMENTS CO.,LTD.

AWA14600E Preamplifier Instruction Manual

Hangzhou Aihua Instruments Co., Ltd.

2026



Content

1. Overview

The Model AWA14600E preamplifier features high input impedance, low output impedance, low noise, and a wide dynamic range. It supports both 1/2-inch prepolarized microphones and 1/2-inch 200 V polarized microphones. It can be connected directly to general-purpose measuring instruments and is suitable for noise measurements using multi-channel noise analyzers and handheld instruments.

2.Key Technical Specifications

1) Dimensions: Φ12.7 mm (1/2 inch)

2) Frequency response (ref. 1 kHz): 20 Hz – 20 kHz ±0.2 dB;

10 Hz – 200 kHz ±0.5 dB

3) Gain:

4) Input impedance: ≥10 GΩ // 0.5 pF

5) Total Harmonic Distortion (THD): ≤0.1%

6) Maximum output voltage: ≥10 Vrms

7) Output impedance: ≤50 Ω

8) Noise floor: A-weighted: ≤3 μV

Z-weighted (20 Hz – 20 kHz): ≤5 μV

9) Power supply: ±14 V to ±75 V or 28 V to 150 V

10) Polarization voltage: Supports 28 V, 60 V, and 200 V polarization voltages

11) Output slew rate: 3.1 V/μs

12) Output connection: LEMO plug

13) Microphone thread: M11.7 mm × 0.423 mm (60 UNS)

14) Operating temperature range: -20° C to +60° C

3. Intelligent Microphone

The preamplifier has a built-in TEDS smart sensor chip. The sensor supports the IEEE 1451.4 TEDS standard. Through TEDS, the data acquisition device can read the sensor model, serial number and other information. More importantly, it can directly read the sensitivity, power supply mode and other information, eliminating the need for cumbersome sensitivity settings, power supply configuration and other links.

TEDS of Hangzhou Aihua Instrument Co., Ltd. follows the IEEE1451.4 v1.0 version format, which is the latest version. If you need other versions of TEDS equipment, please specify when ordering. Reading and writing TEDS smart devices requires corresponding hardware circuits and software analysis support. The following is the support of common data acquisition instruments for Hangzhou Aihua preamplifiers containing TEDS information. When using TEDS, you need to make a selection based on the support of the data acquisition instrument, as shown in the table below.

Table 3-1 TEDS Support Status of Instruments and Equipment

Model	Main Feature	B&K Pulse	AWA6290L	AWA6228+
AWA14604E	1/2″ Constant Current Source Type	Support	Support	Not Support
AWA14614E	1/4″ Constant-current source type	Support	Support	Not Support
AWA14600E	1/2″ LEMO connector	Support	Support	Not Support
AWA14601E	1/2″ X9 connector	Not Support	Support	Support
AWA14611E	1/4″ LEMO connector	Support	Support	Not Support

4. Impact of Extension Cables on Signal Transmission

Large-signal frequency response is shown in Figure 4-1.

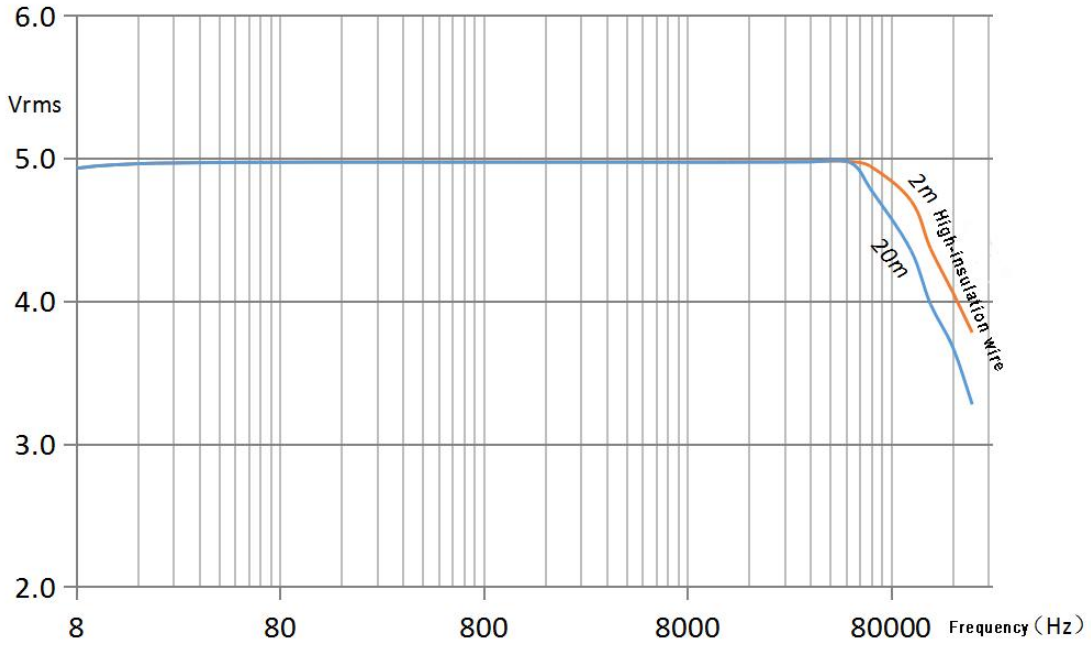


Figure 4-1 Large-signal frequency response

Small-signal frequency response is shown in Figure 4-2.

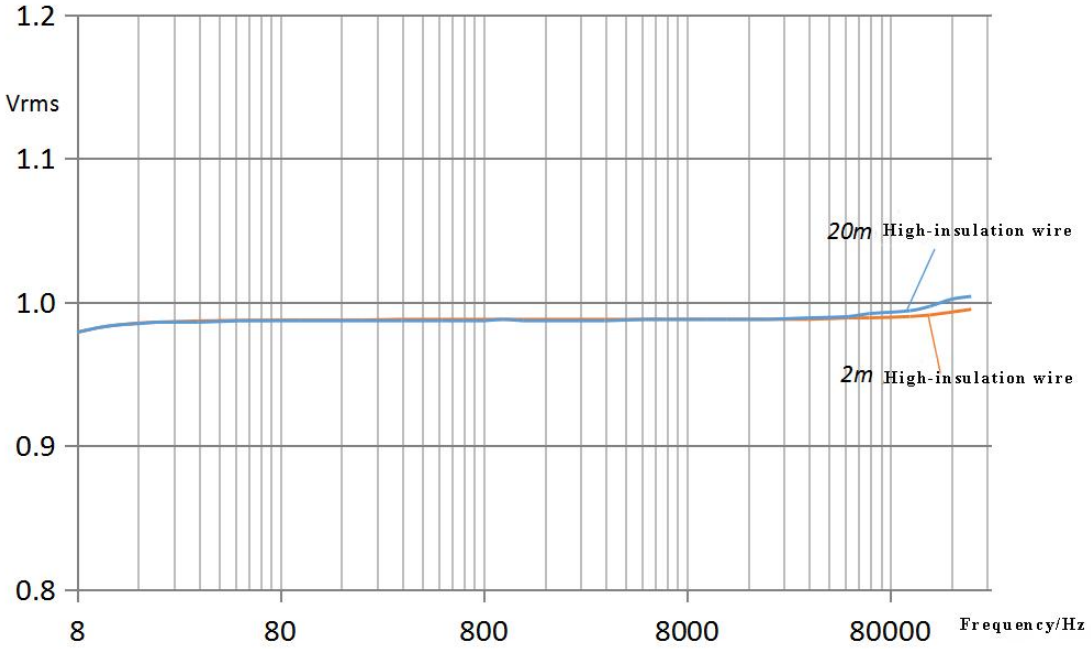


Figure 4-2 Small-signal frequency response

5. Instructions for Use

5.1 Circuit connection: see Figure 5-1 below.

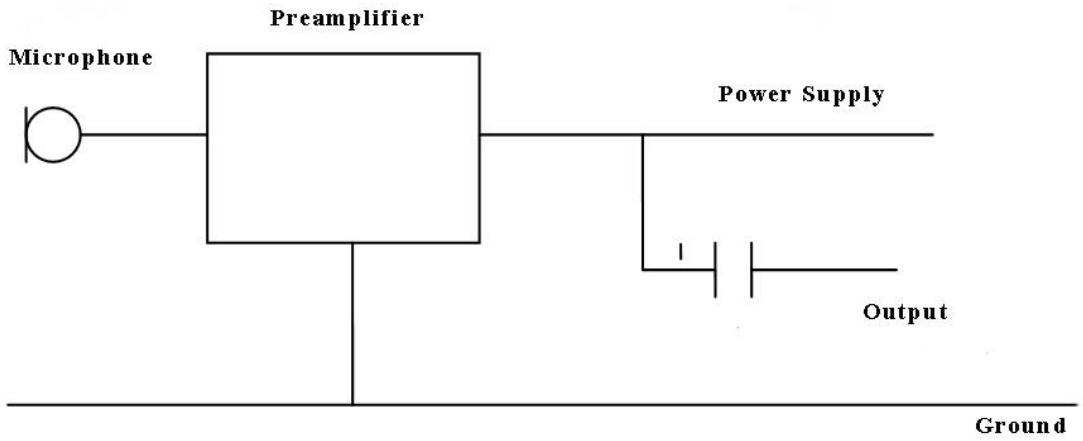


Figure 5-1 Schematic diagram of circuit connections

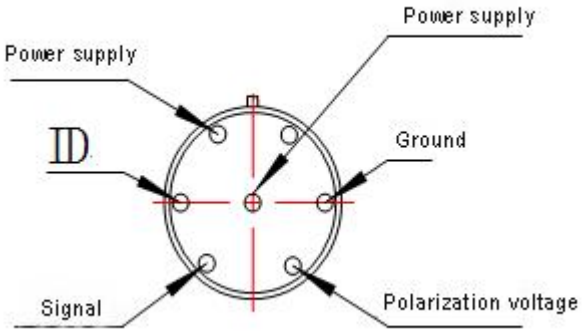
Screw the microphone onto the threaded end of the preamplifier, and connect the other end of the preamplifier via a LEMO cable to the instrument's LEMO input port. An excessively low power supply voltage reduces the maximum undistorted output voltage; if the voltage falls below 28 V, the device may fail to operate correctly or sustain damage. Once connected, the acoustic signal received by the microphone is converted into an electrical signal, which undergoes impedance transformation by the preamplifier before being sent to the instrument's input.

If a microphone with a sensitivity of 50 mV/Pa (such as the AWA14423 measurement condenser microphone) is selected and calibrated using an AWA6221B sound level calibrator—which generates a sound pressure level of 94 dB (1 Pa)—the output voltage from the preamplifier will be approximately

50 mV. However, since individual microphone sensitivities vary and the preamplifier introduces some attenuation, the output may not be exactly 50 mV; in such cases, the actual calibration value takes precedence.

5.2 Pin Definitions and Microphone Selection

5.2.1 Pin Definitions:



5.2.2 Microphone selection is as shown in the table below.

Model	14403	14404	14423	14425
Frequency response	Free field	Sound pressure	Free field	Free field
Nominal sensitivity (mV/Pa)	12.5	12.5	50	40
Dynamic range (dB)	30～160	30～160	15～140	15～140
Frequency range (Hz)	20～40,000	20~12,000	10~20000	10～16000
Polarization voltage (V)	200		0	

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