

Audio Frequency Measuring Amplifier

type 2609

FEATURES:

- Frequency range 20 Hz to 20 kHz
- Voltage measuring range 100 μ V to 30 V RMS FSD
- "Fast" and "Slow" RMS indication to IEC 651 Type 1
- A-weighting network to IEC 651
- Direct Input and Mic. Preamp. Input with 0 V, 28 V or 200 V microphone polarization
- AC and DC output signals
- Interchangeable meter scales

USES:

- General purpose audio frequency amplifier (90 dB gain)
- Microphone amplifier for use with Tape or Level Recorders
- Sound level meter conforming with IEC 651 Type 1 (with suitable microphone arrangement)
- Measuring amplifier in multiple microphone arrays
- Audio frequency amplifier with selectable gain steps
- Compressor loop amplifier for audio frequencies

Introduction

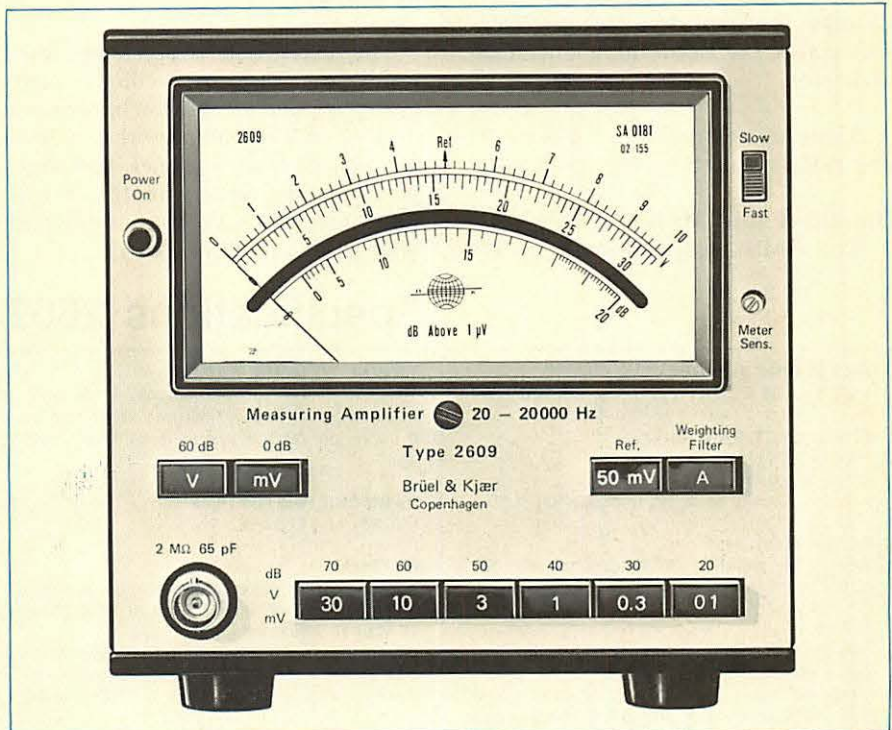
The Measuring Amplifier Type 2609 is intended for use in the audio frequency range where its principal application will be as a microphone amplifier. The meter measures RMS voltage according to IEC 651 and includes an A-weighting network. The Type 2609 features connections for a condenser microphone preamplifier via a 7-pin B & K socket, so that with a suitably positioned condenser microphone, measurements can be made that conform with the IEC 651 standard (Type 1). The Measuring Amplifier also includes provision for the direct connection of accelerometer preamplifiers. It can be used as an input amplifier when recording sound or vibration signals with tape recorders, where gain adjustable in 10 dB steps is a useful capability. The Type 2609 is the ideal amplifier and meter in multi-channel noise monitoring systems, and as an audio frequency compressor amplifier in feedback controlled systems.

Description

The block diagram for the Type 2609 is shown in Fig. 1.

Inputs

The direct input via a BNC socket on the front panel is in parallel with another socket (PREAMP. INPUT) on the rear panel that accepts the 7-pin plugs used with B & K micro-



phone preamplifiers. The rear panel socket supplies the stabilized voltages required by the preamplifier and the DC polarization voltage for B & K condenser microphones. Polarization voltages of 0 V (for use with prepolarized condenser microphone types), 28 V or 200 V may be selected.

Amplifiers and Attenuators

The cascading of attenuator and amplifier stages ensures good linearity in amplification with a minimum of noise and distortion. Overall amplifi-

cation is 90 dB, calibrated in 10 dB steps, while a further -4 dB to +6 dB continuous adjustment is available from the METER SENSITIVITY potentiometer to allow the meter scale to be calibrated for various microphone sensitivities. The Type 2609 has a voltage measuring range from 100 μ V to 30 V full scale deflection.

Filter

An A-weighting network may be selected by push button. The network does not appear in the block diagram

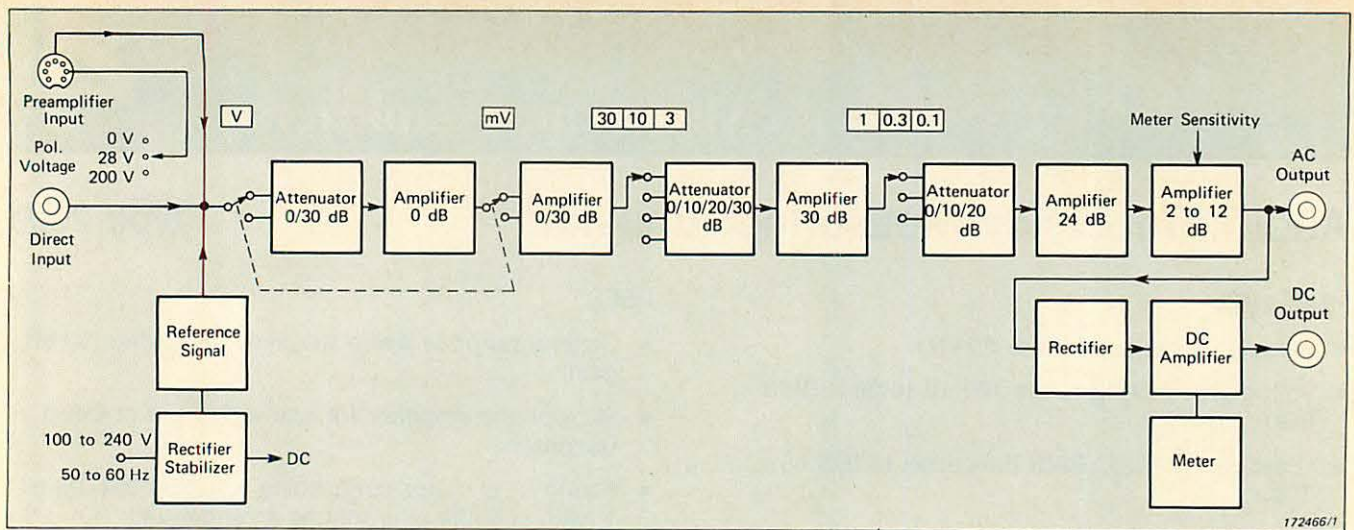


Fig. 1. Block diagram of Type 2609

shown in Fig. 1 as its various components have been divided among the different amplifier stages. This arrangement prevents signal components outside the passband (which will not be seen by the meter) from overloading the circuitry, and therefore eliminates the need for an overload indicator.

There are no provisions for connecting external filters to the Type 2609.

Rectifier and Meter

The RMS rectifier circuit of the

2609, built in accordance with IEC 651 Type 1, is capable of measuring the true RMS value of most signals met in normal audio frequency work. "Fast" and "Slow" meter averaging times are in accordance with IEC 651.

The meter scale is accessible from inside the case to facilitate scale changing. Meter scales can be changed to allow direct reading with one-inch and half-inch microphones, and these scales are delivered with the instrument together with an uncalibrated scale graduated from 0 to 100.

Output

Two output terminals are provided for connection to recording instruments such as the Level Recorders Types 2307 and 2317, the X-Y Recorder Type 2308, Two Channel Level Recorder Type 2309, and Tape Recorders Types 7005 and 7006. The DC Output terminal gives up to 3,16 V with an output impedance of approximately 10 Ω , while the AC Output gives 3,16 V RMS for full scale meter deflection with an output impedance of approximately 100 Ω . Maximum output voltage is 10 V peak.

Specifications 2609

<p>MEASURING RANGE: 100 μV to 30 V RMS (Full-scale deflection)</p>	<p>SIGNAL TO NOISE RATIO: 70 dB min., 1 V to 30 V ranges; 50 dB min., 3 mV to 0,3 V ranges; falling to 25 dB min. in 0,1 V range; relative to maximum output voltage</p>	<p>HUMIDITY: 0 to 90% relative humidity (RH), non condensing at 30°C</p>
<p>FREQUENCY RANGE: 100 Hz to 10 kHz \pm 0,3 dB 20 Hz to 20 kHz \pm 0,5 dB (-3 dB typically at 10 Hz and 80 kHz)</p>	<p>HARMONIC DISTORTION: < 0,1% at 1 kHz</p>	<p>DIMENSIONS: (KK 0024 cabinet) Height: 133 mm (5,2 in) Width: 140 mm (5,5 in) Depth: 200 mm (7,9 in)</p>
<p>FILTER MODE: Built-in "A" weighting in accordance with IEC 651, Type 1</p>	<p>OUTPUT: AC Output: via standard B & K coaxial socket on rear panel. 3,16 V RMS at FSD (max. 10 V peak into 1 kΩ 5 nF) DC Output: via 4 mm Wonder plug socket on rear panel. 3,16 V DC at FSD (max. load 1 kΩ) Dynamic Range: FSD -30 dB to FSD +10 dB</p>	<p>WEIGHT: 3,0 kg (6,6 lb)</p>
<p>INPUT: "Direct": via BNC socket on front panel Input Impedance: 2 MΩ 65 pF "Preamp.": via 7-pin socket on rear panel. Also supplies power for B & K microphone preamplifiers and microphone polarization voltage (0 V, 28 V or 200 V polarization may be selected)</p>	<p>INTERNAL REFERENCE VOLTAGE: 50 mV RMS mains frequency square wave</p>	<p>ACCESSORIES INCLUDED: 1 Meter scale for microphones with 50 mV/Pa sensitivity..... SA 0180 1 Meter scale for microphones with 12,5 mV/Pa sensitivity..... SA 0179 1 Meter scale for voltage and dB (mounted on delivery)..... SA 0181 1 Meter scale graduated from 0 to 100..... SA 0182 1 Power cable..... AN 0010 1 BNC plug..... JP 0035 1 B & K coaxial plug..... JP 0101 2 200 mA slow blow fuses..... VF 0012 1 100 mA slow blow fuse..... VF 0026 2 Scale lamps, 7 V/250 mA..... VS 1273 1 Preamp. Input Adaptor..... DB 2609</p>
<p>AMPLIFICATION: -20 dB to +90 dB, selectable in 10 dB steps and -4 dB to +6 dB continuous adjustment (sensitivity adjustment)</p>	<p>POWER REQUIREMENTS: Supply Voltage: 100; 115; 127; 220 and 240 V (50 to 60 Hz) \pm 10% AC Power Consumption: 15 VA, nominal Complies with IEC 348 Safety Class I</p>	
<p>INPUT NOISE: (with 90 dB amplification) Linear: < 20 μV A-weighting: < 15 μV</p>	<p>TEMPERATURE RANGE: Operation: +5°C to +40°C (+41°F to +104°F) Storage: -25°C to +70°C (-13°F to +158°F)</p>	