

Power Amplifier

type 2706

USES:

- To drive the Vibration Exciter Type 4809
- To drive the Mini-Shaker Type 4810 safely to full rating
- General purpose power amplifier, supplying for example 75W into a 3Ω loudspeaker for reverberation measurements

FEATURES:

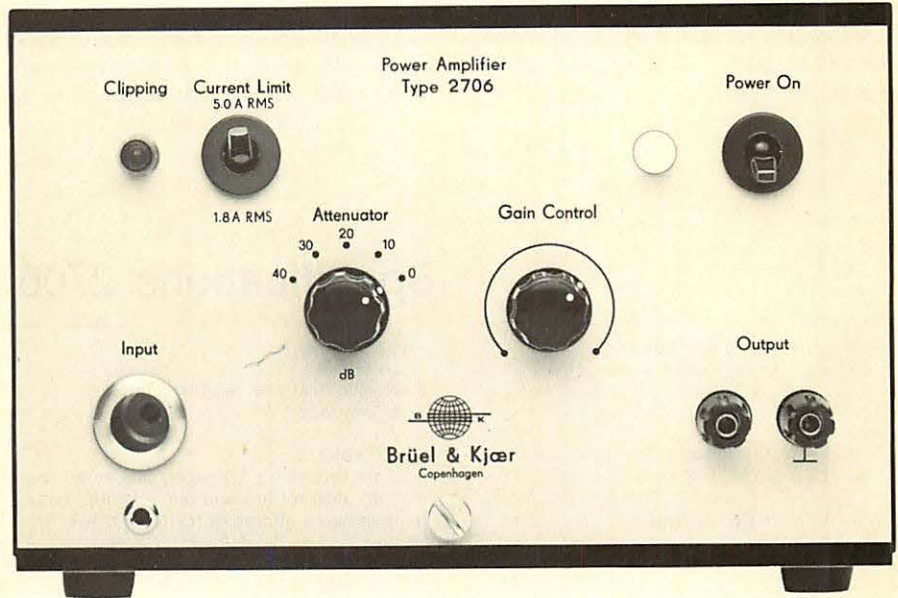
- Direct coupled solid state design

- 75 VA power output capability
- Switchable 5 A or 1,8 A max. current limiting
- 40 dB voltage gain
- Built-in attenuator and continuously variable gain control
- Low distortion over wide frequency range
- Built-in protection against short circuit and excess heat sink temperature
- Front panel indicator light showing clipped output signal

The Power Amplifier Type 2706 has been designed to drive small vibration exciters, particularly the B & K Vibration Exciter Type 4809. It can also be used to drive the Mini-Shaker Type 4810 to full rating. For this application, the maximum output current should be limited to 1,8A.

The Power Amplifier has a specified frequency response from 10Hz to 20kHz ($\pm 0,5$ dB). The power output capability is 75 VA into a 3Ω exciter or resistive load and the maximum voltage gain is 40dB. This enables the Power Amplifier to be used in acoustical measurement set-ups, even when third octave narrow band noise is employed.

The use of a transformerless power output stage and high negative feedback results in very low harmonic distortion. A balanced preamplifier and the use of silicon transistors results in an instrument which can tolerate temperature fluctuations and supply line variations, whilst maintaining good stability.



Description

The block diagram for the various circuit functions is shown in Fig. 1.

The input circuitry includes an attenuator for attenuation of the input signal in 10dB steps from 0 to 40dB. This is followed by a continuously

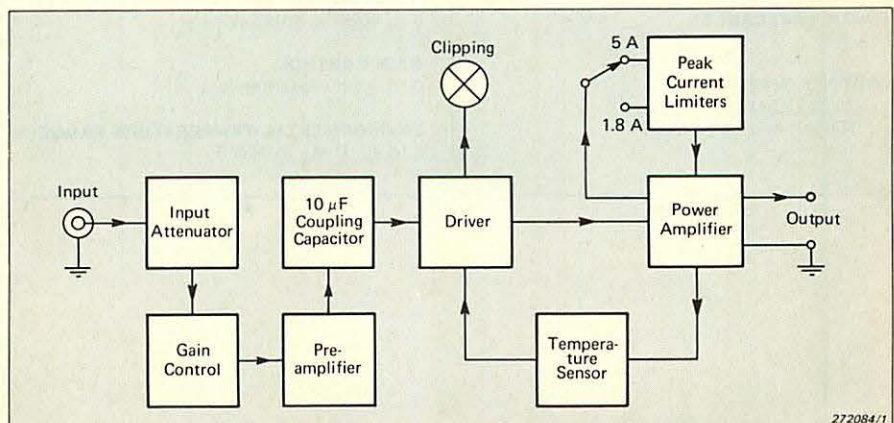


Fig. 1. Block diagram of the Power Amplifier

variable gain control and a preamplifier. The preamplifier is capacitively coupled to the driver stage, which is equipped with a clipping detector. Excessive signal levels at the input will saturate the amplifier and cause clipping of the output waveform. This will trigger the clipping detector, which then lights the yellow **clipping** warning light on the front panel. The instrument remains in operation during clipping.

The power stage employs an output current limiter, which limits the instantaneous positive and negative peaks of the output current. The power output stage is protected by a temperature sensing device. Abnormal load conditions, high ambient temperatures or an output short-circuit could result in output transistor temperatures well in excess of design limits. To prevent any subsequent damage, the temperature protective circuitry blocks the amplifier input signal. When the heatsink temperature reverts to the normal level the Power Amplifier will automatically regain operation.

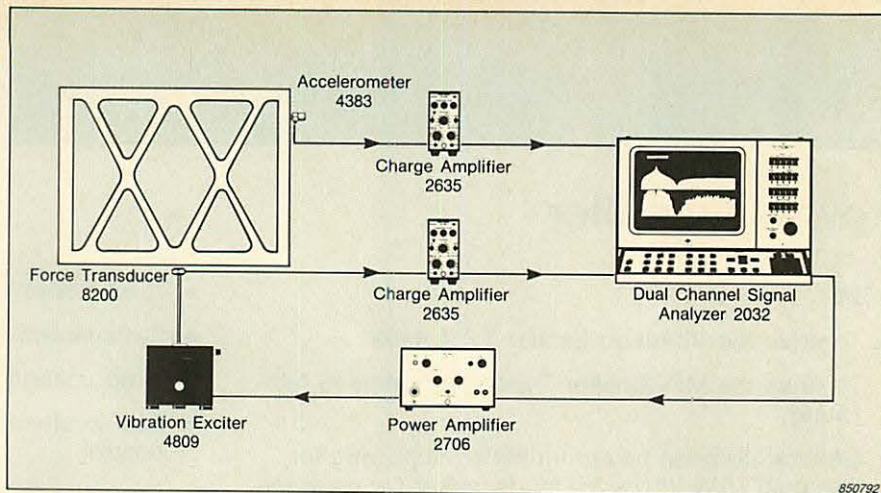


Fig. 2. Typical frequency response test set-up

Example Of Set-Up

A typical frequency response test set-up for vibration testing is shown in Fig. 2.

A swept sinusoidal frequency is taken directly from the Signal Analyzer Type 2032 and is fed to the Power

Amplifier which drives the Vibration Exciter Type 4809. The Signal Analyzer measures the Input Forcing Signal and the Structural Response Signal and uses them to produce a representation of Frequency Response Function of the structure under test.

Specifications 2706

POWER OUTPUT CAPABILITY:

75 VA into 3Ω exciter or resistive load

CURRENT LIMITING:

Switchable,

Max. 5 A for Vibration Exciter Type 4809

Max. 1,8 A for Mini-Shaker Type 4810

FREQUENCY RESPONSE:

10 Hz to 20 kHz ($\pm 0,5$ dB)

2 Hz to 50 kHz (± 3 dB)

HARMONIC DISTORTION:

<0,2% (20 Hz to 10 kHz)

<0,5% (20 Hz to 20 kHz)

at full output capacity

INPUT IMPEDANCE:

15kΩ

OUTPUT IMPEDANCE:

<0,04Ω (10 Hz to 5 kHz)

<0,08Ω (5 kHz to 20 kHz)

PROTECTION:

Short circuit

Excessive heat sink temperature

Input overload

DC STABILITY:

<25 mV drift for $\pm 5\%$ supply line variation

<25 mV drift for ambient temperature variations between 10 and 40°C (50 and 104°F)

HUM AND NOISE:

<5 mV RMS

MAX. VOLTAGE GAIN AT 1 KHZ:

40 dB (± 1 dB)

ATTENUATOR:

0 to 40 dB in 10 dB steps

GAIN CONTROL:

0 to $-\infty$ dB logarithmic

ENVIRONMENTAL TEMPERATURE RANGE:

5 to 40°C (41 to 104°F)

HUMIDITY:

0 to 90% RH (non-condensing) at 30°C

POWER REQUIREMENTS:

110, 115, 127, 220 and 240 V AC ($\pm 5\%$, 50 to 60 Hz)

Approximately 140 VA

Complies with safety class 1 of IEC 348

DIMENSIONS:

Height: 133 mm (5,2 in)

Width: 210 mm (8,3 in)

Depth: 240 mm (9,5 in)

(KK 0042 Cabinet, 6/12 of 19 in rack module)

WEIGHT:

6 KG (13,2 LB)

ACCESSORIES INCLUDED:

1 B & K standard mains cable AN0010

1 B & K standard coaxial plug JP 1010

Various fuses