BRÜEL & KJÆR® Power Amplifiers

Power Amplifier Type 2718

Power Amplifier Type 2718 has been designed to drive small vibration exciters, particularly Vibration Exciter Type 4809, which has a force rating of 45 N (10 lbf) sine peak, and Mini-shaker Type 4810, which has a force rating of 10 N (2.25 lbf) sine peak.

Type 2718 provides a flat frequency response and low harmonic distortion over a wide frequency range and has extensive control and monitoring capabilities.

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Uses

- Drives Vibration Exciter Type 4809
- Drives Mini-shaker Type 4810 safely to full rating
- General purpose power amplifier for small vibration exciters requiring up to 75 VA in 3 Ω

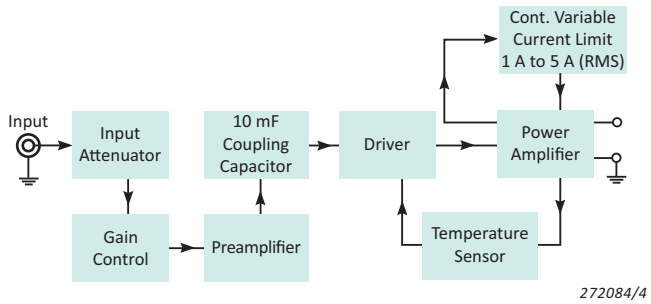
Features

- 75 VA power output capacity in 3 Ω
- Continuously variable current limit from 1 A to 5 A (RMS)
- 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 excessive heat sink temperature
- LEDs on front panel showing distortion (clipped output signal), temperature overload, current overload, output signal phase (0° or 180°) and power status
- Liquid crystal display (LCD) showing output current and voltage
- Monitor output connectors (voltage and current) on back panel

Description

Power Amplifier Type 2718 has a flat frequency response from 10 Hz to 20 kHz (±0.5 dB). The power output capacity is 75 VA into a 3 Ω exciter or resistive load, and the maximum voltage gain is 40 dB. This enables the power amplifier to be used in acoustical measurement setups, 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 rugged solid-state design results in a stable instrument which can tolerate temperature fluctuations and supply line variations.

Fig. 1 *Simplified block diagram of Power Amplifier Type 2718*



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Monitoring

The front panel has extensive monitoring capabilities including an LCD that shows output current and output voltage and LEDs that light up when the instrument is in the following states: distortion, temperature overload, current overload, stand-by status and power on. The output current and voltage can also be monitored using two BNC connectors on the back panel.

Clipping Detection

The input circuitry of Type 2718 includes a continuously variable attenuator for attenuation of the input signal. This is followed by a gain control, in 10 dB steps from 0 to 40 dB, 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 distortion warning LED on the front panel. The instrument remains in operation during clipping.

Temperature Protection

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 heat-sink temperature reverts to the normal level, the power amplifier will automatically regain operation.

Phase Shift

The output signal can be phase inverted (0° or 180°) by use of the phase inversion switch at the front panel. Two LEDs – one for each of the two possible positions – indicates the chosen output phase.

COMPLIANCE WITH STANDARDS

The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives

RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME

China RoHS mark indicates compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China

WEEE mark indicates compliance with the EU WEEE Directive

Safety, EMC Emission and Immunity: According to relevant standards:
- EN/IEC 61010 –1, UL 61010–1
- EN/IEC 61000–6–2
- EN/IEC 61000–6–4
- CISPR32 Class A limit
- FCC Rules Part 15

Temperature: According to IEC 60068–2–1 and IEC 60068–2–2
- Operating temperature: +5 to +40 °C (41 to 104 °F)
- Storage temperature: –25 to +70 °C (–13 to 158 °F)

Humidity: According to IEC 60068–2–78, Damp Heat: 93% RH (non-condensing at 40 °C (104 °F))
Mechanical: Non-operating according to IEC 60068–2–6, IEC 60068–2–27, IEC 60068–2–29
Enclosure: According to IEC 60529

POWER OUTPUT CAPACITY
75 VA into 3 Ω exciter or resistive load
Connectors (back panel):
- 4-pin Neutrik® speakON® connector (for Vibration Exciter Type 4809)
- 10 – 32 UNF Microdot socket (for Mini-shaker Type 4810), current limited to 3 A

CURRENT LIMITING
Continuous adjustment potentiometer
Max. 5 A for Vibration Exciter Type 4809
Max. 1.8 A for Mini-shaker Type 4810

FREQUENCY RESPONSE (20 dB GAIN)
10 Hz to 20 kHz (± 0.5 dB)
4 Hz to 40 kHz (± 3 dB)

HARMONIC DISTORTION
<0.1 % (20 Hz to 10 kHz)
<0.2 % (20 Hz to 20 kHz)
At full output capacity

INPUT IMPEDANCE
15 kΩ

OUTPUT IMPEDANCE
<0.04 Ω (10 Hz to 5 kHz)
<0.08 Ω (5 kHz to 20 kHz)

PROTECTION
Current overload
Excessive heat sink temperature

DC STABILITY
<25 mV drift for ±10% supply line variation
<25 mV drift for ambient temperature variations between 10 and 40 °C (50 and 104 °F)

HUM AND NOISE FLOOR, UNWEIGHTED
100 dB below full output (20 Hz to 20 kHz)

MAX. VOLTAGE GAIN AT 1 kHz
40 dB (±1 dB)

CONTROLS
Power on/off
Gain control, 0 to $-\infty$ with integral reset
Amplifier gain, 0, 10, 20, 30 and 40 dB steps
Current limit, adjustable, 1 A to 5 A (RMS)

INDICATOR LAMPS (LEDs)
Power on
Distortion
Temperature overload
Current overload
Phase shift: 0° or 180°

MULTIFUNCTION DISPLAY (LCD)
Voltage (RMS) read-out accuracy ±3%, 50 Hz to 20 kHz
Current (RMS) read-out accuracy ±3%, 50 Hz to 20 kHz

MONITOR OUTPUT
Voltage: 0.1 V/V ±3%, 2 Hz to 35 kHz
Current: 0.1 V/A ±3%, 2 Hz to 35 kHz
Connectors: 2 separate BNC sockets (back panel)

POWER REQUIREMENTS
Single phase 100, 120 or 230 V AC (± 10%, 50 to 60 Hz), Approx. 140 VA at full load

FUSES
100 V or 120 V: T 2.5 A slow blow
230 V: T 1.25 A slow blow

DIMENSIONS
Height: 88 mm (3.5 in), equivalent to 2 RU (rack unit)
Width: 482.6 mm (19 in) with flanges for standard 19-inch rack mounting
Depth: 450 mm (17.7 in)

WEIGHT
13.3 kg (29.3 lb)

Ordering Information

Type 2718 **Power Amplifier**
Includes the following:
- Mains cable

OPTIONAL ACCESSORIES

WL-1325-D-050	Cable, 4-pin Neutrik speakON connector to two banana plugs, length 5 m (16.4 ft), for use with Vibration Exciter Type 4809 (included with Type 4809)
AO-0038-D-012	Cable, super low-noise, 10–32 UNF plug to 10–32 UNF plug, 1.2 m (4.0 ft), for use with Type 4810

Note: Cables are available in different lengths.

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