



# Accelerometer Preamplifier

## Type 2623

- Very high input impedance.
- Low output impedance.
- Wide frequency range.
- Wide dynamic range.
- Low noise level.
- Insensitive to mechanical vibrations.
- Temperature independent gain.

### Description

The Accelerometer Preamplifier Type 2623 is designed specifically as an impedance transformer having a very high input impedance and a low output impedance. The mechanical dimensions are very small and the preamplifier can be mounted either directly on the top of the accelerometer or at a suitable place near the measuring point. Thereby the influence of noise and loss from high impedance cable connections are reduced to a minimum.

The Accelerometer Preamplifier is a two stage transistorized amplifier. The input signal is fed to the first transistor stage via a 1000 pF capacitor. This capacitor determines lower limiting frequency together with the input resistance of the transistor. To obtain this high

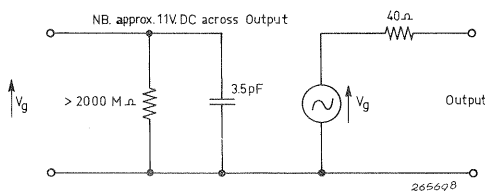


Fig. 2. Equivalent diagram of Type 2623.

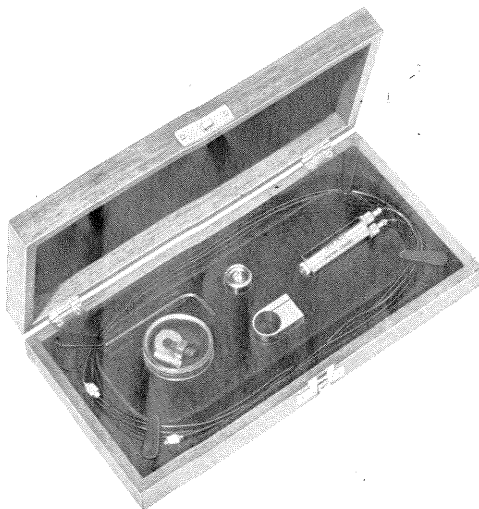


Fig. 1. The Accelerometer Preamplifier Type 2623.

input resistance the transistor is of the field effect type. As the input resistance obtained is about 2700 MΩ (typical) the lower limiting frequency will consequently be 0.06 Hz (typical).

The input transistor is DC coupled to the following stage. This stage produces a negative feed-back which is adjusted so that the total voltage gain is 0 dB. There is a DC potential at the output terminal and therefore the resistance connected across the output should not be less than 50 kΩ. The capacitive load permitted depends on the upper limiting frequency desired and on the signal level (maximum output current is 1 mA). A load of 10000 pF at 1 volt RMS will give an upper limiting frequency of 15 kHz.

The input signal is fed to the Preamplifier either by using a short cable between the accelerometer and the input plug or by mounting the Preamplifier directly on the top of the accelerometer using the adaptor delivered with the amplifier.

The amplifier itself can be mounted by means of a clamping arrangement near the measuring point. From the output socket the low impedance signal can be led to an indicating instrument.

The power is taken from a 28 Volt external battery, and the current consumption is about 2 mA.

For measurements below 2000 Hz the Pre-amplifier Type 2623 can be mounted directly on top of the Accelerometer (Type 4314 or 4315) assuming that the weight of the Pre-amplifier and Accelerometer is small compared with the test object so that it will not influence the measurements. Above 2000 Hz mechanical resonance in the set-up will interfere with the measurements and the pre-amplifier should therefore be placed at some (short) distance away from the Accelerometer.

## Applications

### Measurements in "The Field".

Very often vibration is to be measured in places where it would be inconvenient to place the indicating instrument in the immediate vicinity of the accelerometer. The Pre-amplifier Type 2623 is then very useful

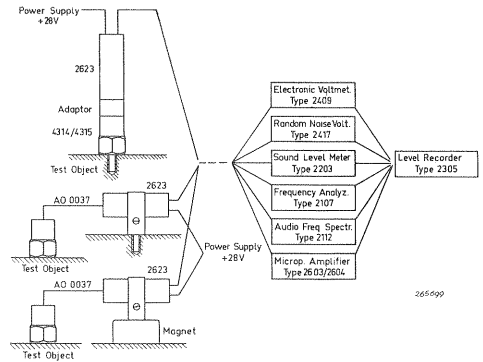


Fig. 3. Applications for the Accelerometer Pre-amplifier Type 2623.

as it makes it possible to place the indicating instrument at a suitable spot away from the measuring point.

A long cable connection from the output of the Pre-amplifier to the indicating instrument will have no influence on the measurements except for a decrease of the upper limiting frequency which in practice will be of no importance.

In Fig. 3 are shown various ways in which the Pre-amplifier can be mounted and some examples of indicating instruments are given.

## Specifications

### Input Resistance:

2000 M $\Omega$  (min.), (min. 200 M $\Omega$  at 100°C)

### Input Capacitance:

3.5 pF (typical)

### Output Resistance:

40  $\Omega$  (typical)

### Maximum Output Current:

1 mA

### Voltage Gain:

0 dB  $\pm$  0.05 dB

### Frequency Range:

0.5 Hz—500 kHz

### Noise (300 pF source, 2—40000 Hz):

max. 15  $\mu$ V

(300 pF source, 2—40000 Hz.

Curve C):

max. 3.5  $\mu$ V

### Dynamic Range (28 V supply):

30  $\mu$ V to 7 Volts RMS

### Power Supply: External battery

28 V

### Diameter:

14 mm (0.55 ins)

### Length:

45 mm (1.77 ins)

Including adaptor for the accelerometer the length is 52 mm (2.05 ins)

### Weight:

(2623): 20.6 g (0.73 oz)

### Accessories Included:

1 Adaptor for Accelerometer: 4.0 g (0.14 oz)

1 Clamp

2 Cable: AO 0037

Screws.