

Preamplifier Types 2663 and 2663-B

Uses

- Vibration measurement on aircraft
- Measurement of vibration in severe environments
- Vibration monitoring on industrial machinery
- General vibration measurement

Features

- Complies with MIL-STD 810D
- Sensitivity adjustable from 1 to 100 mV/pC
- Differential and single-ended inputs
- Adjustable high- and low-pass filters
- Adjustable output bias
- Overload detection
- Rugged construction
- Power supply: single or dual polarity



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Description

Preamplifier Types 2663 and 2663-B are charge amplifiers designed for use with piezoelectric transducers in airborne applications. Type 2663 has a preadjusted frequency range of 0.5 Hz (–3 dB) to 33 kHz (–3 dB) whereas Type 2663-B has a frequency range of 0.5 Hz (–3 dB) to 100 Hz (–3 dB).

Gain and frequency range can be adjusted by exchanging appropriate resistors in the preamplifier circuit to meet user requirements.

For operation with different types of transducers, the preamplifiers have three built-in choices of input configuration.

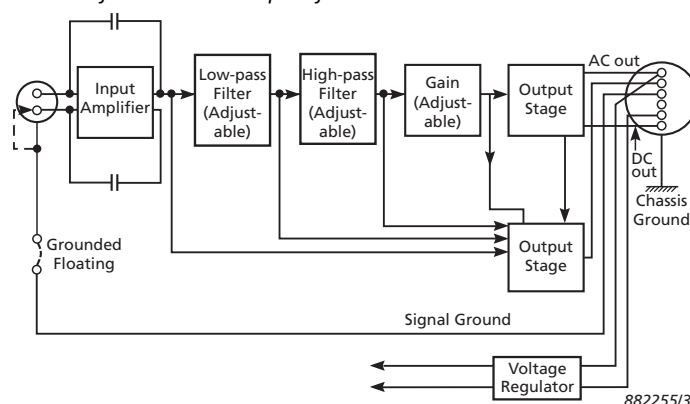
The preamplifier can be used with the following transducers:

- single-ended grounded
- single-ended floating
- differential types

The rugged case of the preamplifier is constructed from milled aluminium. The removable side cover is fitted with a rubber seal which protects the electronics from dirt, oil, humidity and other environmental contamination.

The preamplifier can be powered from either a single-ended or dual-polarity supply. The input connector is a 2-pin TNC socket. The output connector is a 6-pin bayonet socket containing both AC and DC signal output pins; two pins for the power supply; an overload detector pin (which is pulled high during overload); and the signal ground pin. The input amplifier is a differential charge amplifier and the frequency range of the preamplifiers is determined by the low-pass and high-pass filter pair.

Fig. 1 Simplified circuit diagram for Preamplifier Type 2663. For Type 2663-B, the high-pass filter is replaced with a low-pass filter giving overall a fourth-order low-pass filter –3 dB at 100 Hz



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	Type 2663	Type 2663-B
Input		
Input Configurations	Differential, single-ended grounded, single-ended floating	
Nominal Source Capacitance	2000 pF (transducer + cable)	
High-pass Filter	4-pole Butterworth pre-adjusted to 0.5 Hz (–3 dB) (3 Hz $\pm 5\%$, re 160 Hz)	2-pole Butterworth pre-adjusted to 0.5 Hz (–3 dB)
	2 poles adjustable to give cut-off frequency between 0.5 Hz and 1 kHz	
Low-pass Filter	2-pole Butterworth pre-adjusted to 33 kHz (–3 dB) (20 kHz $\pm 5\%$, re 160 Hz)*	4-pole Butterworth, pre-adjusted to 100 Hz (–3 dB)
Inherent Noise (3 Hz – 20 kHz)	$<30 \times 10^{-3}$ pC (2000 pF source capacitance)	
Ground Loop Voltage Rejection	>50 dB at 50 Hz for single-ended accelerometer – floating input >55 dB at 50 Hz ($< 1.6 \times 10^{-3}$ mV/pC) for differential accelerometer at sensitivity 1 mV/pC	
Overload Detection	Overload Detection pin on output connector, signal on pin is set high during overload	
Max. Input Signal	5000 pC	
Connectors		
Output Connector	6-pole, Cannon type KPT1A10-6P-F42-Ex-SPL; MIL specified	
Input Connector	2-pole TNC socket	
Case Earth Connection	Metric Insert M3	
Power		
Supply Voltage	Single Supply: +20 V to +32 V; Dual Supply: ± 20 V to ± 32 V	
Supply Current	<30 mA	
Isolation	Signal ground isolated from chassis	
Gain		
Charge Conversion Factor	>3Hz: Adjustable between 1 – 100 mV/pC <3Hz: Adjustable between 1 – 25 mV/pC, pre-adjusted to 1 mV/pC	
Output		
Max. Output Signal	7.0 V peak-to-peak, symmetric	
Max. Output Current	5 mA peak	
Distortion:	<0.1%, 3 Hz – 3 kHz; <0.3%, 0.5 Hz – 33 kHz	<0.4%, at 80 Hz
Output Impedance	Direct coupled: 50 Ω ; AC coupled: 50 Ω in series with 5 μ F	
Output Bias	Adjustable from 0 to +5.5 V referred to supply ground (+0.5 to 5.5 V for single supply), pre-adjusted to +2.5 V $\pm 3\%$	
Min. Load Impedance	1 k Ω	
Max. Capacitive Load	100 nF	
Output Coupling	Direct and AC	
Environment		
Temperature	Operating: –55 to +100 °C (–67 to +212 °F), Non-Operating: –65 to +125 °C (–85 to +257 °F)	
Humidity	Meets MIL–STD 810 D, method 507.2, procedure III up to 100% humidity	
Electromagnetic Fields	100 A/m, 50 – 400 Hz, sensitivity <0.1 mV/A/m	
Vibration	Meets MIL–STD 810 D, method 514.3, category 6	
Shock	Max. 100 g, meets IEC 58.2.27	
Physical Dimensions		
Height: 31 mm (1.22"), Width: 54 mm (2.13"), Length: 86 mm (3.46"), Weight: 167 grams		

* Adjustable between 250 Hz and 33 kHz (200 kHz with reduced specifications)

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TYPE 2663 PREAMPLIFIER

Includes the following accessory:


JJ-0615 1 \times 6-pin Cannon-plug, solder terminals, MIL-C-26482 series 1, operating temp. –55 to +125 °C (–67 to 257 °F)


TYPE 2663-B PREAMPLIFIER

Includes the following accessory:

JJ-0624 1 \times 6-pin Cannon-plug, crimp terminals, MIL-C-26482 series 2, operating temp. –55 to +200 °C (–67 to 392 °F)

Optional Accessories	
JJ-0207	Microdot TNC Adaptor
WH-3100	Low-pass filter 50 Hz (–6 dB)
WH-3108	Low-pass filter 200 Hz (–6 dB)
AO-0250-X	TNC Accelerometer Cable, various lengths (X = F: 3 m; G: 5 m; H: 10 m; I: 15 m)

 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

