



## Models 5660B, 5660C, 5662, 5670, 5676, 5678, and 5682

Olympus NDT's wide series of Panametrics AC-coupled, broadband preamplifiers offers very-low-noise amplification of ultrasonic signals ranging from 500 Hz to more than 40 MHz. Specifically designed for ultrasonic flaw detection, thickness gaging, and acoustic emission instrumentation, these preamplifiers are cost-effective solutions for general applications needing high-gain/low-noise amplification of low-amplitude ultrasonic signals.

The preamplifiers are rugged, completely self-contained, simple to operate, and battery or AC powered. They feature very low noise (5- $\mu$ V peak-to-peak noise referred to the input of Model 5660B), input protection for high-voltage transients such as transducer excitation pulses, and the ability to drive long coaxial cables (over 152 m or 500 ft with Models 5660B and 5660C). Fixed gain and switchable gain versions are available, as well as special order custom units with special gains or bandwidths.

### APPLICATIONS

Some ultrasonic applications need a separate preamplifier unit to the standard test system to supply the necessary additional gain or broadband signal-to-noise enhancement for optimal signal acquisition. This is often the case in industrial applications involving flaw detection or thickness gaging of thick material sections exhibiting high ultrasonic attenuation, as is the case for nodular cast iron, brass, bronze, austenitic steel, rubber, Teflon®, and reinforced composites. A preamplifier is also an important component of acoustic emission test systems requiring amplification of low signal amplitude events and the ability to drive long cables from remotely located sensors.

Panametrics preamplifiers are also used in widely diversified research applications including seismic studies, determination of size and number versus scattered frequency relationships for acoustic scatterers in water (gas bubbles, zooplankton), crack detection in graphite vacuum arc-melt electrodes, and biological tissue analysis.

### MODEL 5682

The Model 5682 ultrasonic preamplifier offers low noise amplification of ultrasonic signals ranging from 500 kHz to 25 MHz. The preamplifier, housed in a rugged, splash-proof enclosure, is very small and lightweight, making it ideal for remote applications. This preamplifier can be powered from a single 9 V battery for up to 50 hours of continuous operation or from a local 9 V to 13 V DC supply (customer supplied). When battery operated, a multicolored LED indicates the status of the battery. The Model 5682 preamplifier is ideal for AUT and TOFD scanning.

**Included**—The unit comes with one 9 V alkaline battery. All cables are sold separately and offered in a variety of lengths and connector styles to accommodate transducer, instrumentation, and application requirements.

# Specifications\*

MODEL	5660B	5660C	5662	5670	5676	5678
<b>Voltage gain</b> (inverting)	40 dB and 60 dB selectable (RL > 1 kΩ)	40 dB and 60 dB selectable (RL > 1 kΩ)	34 dB and 54 dB selectable (RL = 50 Ω)	40 dB fixed (RL = 50 Ω)	40 dB fixed (RL = 50 Ω)	40 dB fixed (RL = 50 Ω)
<b>Bandwidth</b> (-3 dB)	20 kHz to 2 MHz	500 Hz to 2 MHz	50 kHz to 5 MHz	50 kHz to 10 MHz	50 kHz to 20 MHz	200 kHz to 40 MHz
<b>Equivalent input noise</b>	5 μV p-p	5 μV p-p	10 μV p-p	15 μV p-p	20 μV p-p	30 μV p-p
<b>Input resistance</b>	1 MΩ	1 MΩ	100 kΩ	100 kΩ	100K ohm	100K ohm
<b>Input capacitance</b>	approx. 320 pF	approx. 320 pF	approx. 80 pF	approx. 80 pF	approx. 80 pF	approx. 80 pF
<b>Input protection</b>	300 V peak (pulse width < 2 μs, 1 % maximum duty cycle)					
<b>Output voltage</b>	5 V p-p (RL > 1 kΩ) 2 V p-p (RL = 50 Ω)		2 V p-p (RL = 50 Ω)			
<b>Output impedance</b>	50 Ω in series with 4.7 μF					
<b>Max. output cable length</b>	> 152 m (500 ft)	> 152 m (500 ft)	15 m (50 ft)	15 m (50 ft)	15 m (50 ft)	15 m (50 ft)
<b>Power requirements</b>	16 V ±2 V supplied by four alkaline 9-V, 655-mAh batteries Line operated units available. Add /110 VAC, /115 VAC, or /230 VAC to the model number (e.g. 5675/115 VAC).					
<b>Current consumption</b>	28 mA	28 mA	28 mA	32 mA	32 mA	36 mA
<b>Battery life</b>	> 40 h	> 40 h	> 40 h	> 35 h	> 35 h	> 35 h
<b>Dimensions</b> (W x H x D)	76 mm x 51 mm x 127 mm (3 in. x 2 in. x 5 in.)					
<b>Weight</b>	635 g (1.4 lb)					
<b>Operating temperature range</b>	0° C to 50° C (32° F to 122° F)					

## MODEL 5682 ULTRASONIC PREAMPLIFIER

**Voltage gain:** 30 dB, 10 MHz

**High-pass rollover:** 0.6 MHz ± 0.1 MHz

**Low-pass rollover:** 34 MHz ± 4 MHz

**Equivalent input noise:** 20 μV RMS max.

**Input impedance:** nominal 700 Ω

**Output impedance:** nominal 50 Ω

**Output voltage:** 2.0 V, 50 Ω

**Protection:** 500 V peak

**Current consumption:** nominal 14 mA

**Power:** 9-V alkaline battery or 9–13-V DC input (toggle switch)

**Power monitor:** Three-color LED for continuous power level indication

- Green: 7.3 V to 9.0 V
- Yellow: 6.0 V to 7.3 V
- Red: 5.0 V to 6.0 V
- No light: < 5.0 V (low charge, replace battery)

**Battery Life:** >50 hours continuous operation

**Connectors:** Lemo® 00 Type

**Dimensions (W x H x D):**  
57.15 mm x 109.22 mm x 27.94 mm  
(2.25 in. x 4.3 in. x 1.1 in.)

**Weight:** 6.4 oz, 181 gr with battery;  
4.8 oz, 136 gr without battery

**Operating Temperature:** 0° C to 50° C  
(32° F to 122° F)

**Environmental:** IP65

OLYMPUS NDT INC. is ISO 9001 certified.

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