

Quartz

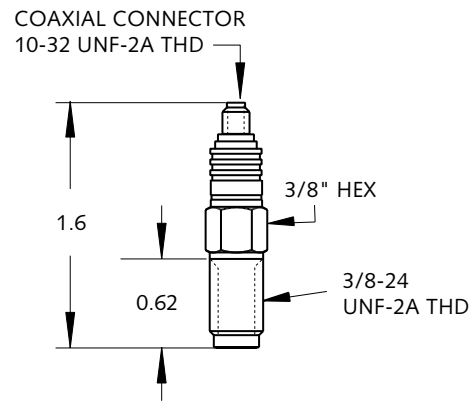
Type 217C
617C

High Pressure, Ballistics Pressure Sensors

The 217C and 617C sensors are specifically designed to measure high pressures in weapons development and munitions testing.

Both models have a 75,000 psi measuring range but the 217C is a low impedance, voltage mode version while the 617C is a high impedance charge mode type capable of quasi-static measurement.

- Low impedance voltage mode and high impedance, charge mode
- Low thermal transient response
- Excellent accuracy and repeatability
- Less than two microsecond rise time
- Low impedance version conforming to CE



Description

Type 217C and 617C Ballistics Pressure Sensors are intended for measuring high frequency pressure variations found in ammunition acceptance testing, weapon development and closed-bomb powder proof tests. Their fast (2 microsecond) rise time and 75,000 psi measuring range along with excellent accuracy and repeatability make both units well suited for measuring detonation rise time peak pressures and pressure wave forms. Both the 217C and the 617C feature a unique end seal design which assures a positive pressure seal when the correct mounting torque is applied. The units are equipped with heat shields and when used in conjunction with a thermal protector, the affects of flash heat pulses during the pressure measurement are minimized.

Signal and DC excitation power to the 217C is conducted through a single coaxial cable, such as Series 1761 or 1762. Power and signal processing to the sensor can be provided by any one of the series 5100 couplers or by any industry standard voltage mode IEPE (Integral Electronic Piezo-Electric) power supply/coupler.

The charge signal from the 617C sensor is transmitted through a low noise coaxial cable, such as the 1631series, then converted and amplified to a proportional voltage in a multi-range charge amplifier, such as Kistler types 5010.

Technical Data

| Type | Units | 217C | 617C |
|---------------------------------------|--------------------------------|-------------------|-------------------|
| Pressure Range | psi | 75000 | 75000 |
| Max Pressure | psi | 80000 | 80000 |
| Threshold nom. | psirms | 1 | 1 |
| Sensitivity nom. | (217C) mV/psi (617C) pc/psi | 0.05 - | -0.09 |
| Non-linearity, zero based BFSL | %FSO | ±1.5 | ±1.5 |
| Hysteresis max. | % | 1 | 1 |
| Resonant Frequency nom. | kHz | 200 | 200 |
| Rise Time 10 ... 90% | µsec | 2 | 2 |
| Time Constant @ room temperature nom. | sec | 1500 | - |
| Frequency Response | Hz | near DC ... 20000 | near DC ... 20000 |

continued

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Technical Data

| Type | Units | 217C | 617C |
|-------------------------------|-------------------|----------------|----------------|
| Temperature Sensitivity Shift | %/°F | -0.025 | -0.015 |
| Vibration Sensitivity max. | psi/g | 0.06 | 0.06 |
| Shock (1ms pulse width) | g | 5000 | 5000 |
| Vibration Limit | g | 500 | 500 |
| Temperature Range | °F | -65 ... 250 | -65 ... 400 |
| Temperature Range on thread | °F | -65 ... 400 | -65 ... 400 |
| Flash Temperature | °F | 3000 | 3000 |
| Capacitance | pF | 6 | |
| Output: | | | |
| Voltage full scale nom. | V | 3.75 | - |
| Current | mA | 2 | - |
| Impedance | Ω | <100 | - |
| Bias nom. | VDC | 11 | - |
| Source: | | | |
| Constant Current nom. | mA | 2 ... 20 | - |
| Impedance min. | kΩ | 250 | - |
| Voltage | VDC | 20 ... 30 | - |
| Ripple max. | mV _{rms} | 25 | - |
| Mechanical: | | | |
| Case Material | type | maraging steel | maraging steel |
| Mounting Torque | lbf-ft | 13 ... 17 | 13 ... 17 |
| Weight | grams | 20 | 20 |

1 g = 9.80665 m/s², 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 Nm

Application

Ideally suited for accurate and reliable measurement of gun barrel pressures up to 75,000psi under actual repetitive firing conditions. Both models do not require grease or other protective coatings. Life expectancy of about 2000 rounds is typical in most applications.

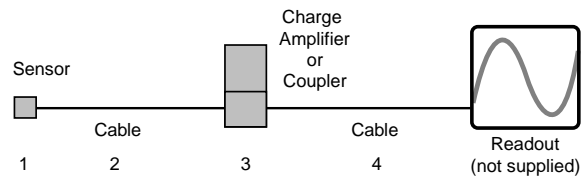
Mounting

Reliable and accurate pressure measurements require precise machining of the mounting hole. The Operating Instruction Manual for the 217C and 617C provides dimensional detail and machining instruction for installing the sensor in a test structure.

Supplied Accessories

- 200E24 (1) thermal protector
- 600A10 (5) seal ring, 304 stainless steel 0.010 in thk

Ordering Information



sp = specify cable length in meters

- 1 - 217C voltage mode pressure sensor or 617C charge mode pressure sensor
- 2 - 1631Asp charge mode sensor cable, 10-32 pos. to BNC pos. or 1761Bsp voltage mode sensor cable 10-32 pos. to BNC pos.,
- 3 - 5000 charge amplifier series or 5100 coupler series
- 4 - 1511sp output cable, BNC pos. to BNC pos.

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