



Model 5058PR High Voltage Pulser-Receiver

The Panametrics® Model 5058PR High Voltage pulser-receiver is designed especially for ultrasonic test and measurement applications in attenuating mediums. The pulser section of the Model 5058PR can deliver up to 900 volts in an impulse type excitation pulse to appropriate low frequency transducers. The flexible receiver section provides switchable 40/60 dB gain with an additional 30 dB available from an integral low noise preamplifier. Four position high and low pass filters and 1 dB attenuation steps further optimize signal response.

A full range of front panel controls permits discrete calibrated settings or continuous adjustments for easy and repeatable instrument setup. The unit is packaged in a rack adaptable 483 mm (19 in.) wide enclosure.

APPLICATIONS

Used with an analog or digital oscilloscope, the Model 5058PR can be the basis of a benchtop measurement system for determination of material quality or properties. Flaw detection, time of flight, thickness, velocity, attenuation, and frequency content are investigated. The high voltage pulser and high gain receiver of the Model 5058PR make it particularly useful for applications that challenge the penetrating capability of conventional pulser/receivers in such materials as:

- Coarse grain cast metals
- Concrete, stone, soil, or sand
- Composites and fiberglass
- Very thick plastics or rubber
- Highly attenuating liquids, slurries, or emulsions
- Wood and fiberboard
- Air gaps

FEATURES

- High voltage pulser, switched settings or continuously adjustable to 900 volts
- High gain, low noise broadband (10 MHz) receiver
- Pulse-echo and thru-transmission modes
- High isolation (80 dB) in thru-transmission mode
- 60 dB RF gain
- Additional 30 dB gain available from internal auxiliary preamplifier
- Receiver attenuation range of 0 dB to 80 dB in 1 dB steps
- 1 dB vernier for fine adjustment
- Switchable high pass and low pass filters
- PRF rate switch selectable from 20 Hz to 2 kHz
- Controls permit either discrete, calibrated settings, or continuous adjustment

Model 5058PR Specifications*

PULSER

Pulse Type (Main Bang): Negative impulse

Available Pulse Voltage: -100 V to -900 V continuously variable; -100 V, -200 V, -400 V or -900 V switch selectable (meter measures available voltage on pulse storage capacitor)

Pulse Rise Time: <40 nS @ 900 V, <10 nS @ 100 V

Available Pulse Energy: 11 to 890 microjoules, stepless, or 11, 44, 170, or 890 microjoules in selected pulse voltage positions

Damping: 50 Ω to 333 Ω , continuously variable; 50 Ω , 100 Ω , 200 Ω , or 500 Ω switch selectable

Pulse Repetition Rate:

Internal: 20, 50, 100, 200, 500, 1k or 2 kHz, switch selectable

External: 0 to 2 kHz maximum

Sync Output Pulse: TTL compatible, or +1V minimum into 50 Ω (occurs approx. 75 nS before main bang when externally triggered)

External Trigger Input: Edge triggered, accepts + or - input pulses

Zin = 50 or 500 Ω (internal switch)

Max pulse height in: 65 V

Rise time: <30 μ S

Pulse width: 0.1 μ S <PW<4 μ S

Delay after Ext. Trig.: <200 nS

Mode: Pulse-echo or through-transmission, switch selectable

Isolation: Typically 80 dB (BW + 10 MHz) in through-transmission mode

RECEIVER

Maximum Receiver Input Power: The maximum average power that receiver input can dissipate is 1W. Sine wave RF input should be limited to 10 V rms or 40 V rms at 25% duty cycle.

Input Impedance: 500 Ω (linear range). Approx. 140 Ω for signals > linear range

Voltage Gain: 40 dB or 60 dB (RL = 50 Ω), switch selectable

Phase: Normal (0°) or inverted (180°), switch selectable

Bandwidth: 10 kHz to 10 MHz (-3 dB)

High Pass Filters: 0.01 MHz(out), 0.03 MHz, 0.1 MHz, 0.3 MHz or 1.0 MHz, switch selectable

Low Pass Filters: 0.5 MHz, 1.0 MHz, 3.0 MHz, 5.0 MHz, or 10 MHz (out), switch selectable

Attenuation: 0 dB to 80 dB in 1 dB steps

Attenuation Vernier: 1 dB continuous (vernier can be switched off) with status LED

Noise: Typically 50 μ V pk to pk referred to the input

Output Impedance: 50 Ω in series with 10 nF

Maximum Signal Out:

± 0.5 V peak ($R_L = 50 \Omega$),

± 1 V peak ($R_L \geq 1 K \Omega$)

AUXILIARY PREAMPLIFIER

Input Impedance: 100 K ohm in parallel with 50 pF

Maximum Input Power: The maximum average power that the receiver can dissipate is 1 W.

Gain: 30 dB, non-inverting (RL = 500 Ω)

Bandwidth: 600 Hz to 5 MHz (-3dB)

Noise: 25 μ V pk to pk referred to the input ($R_s = 500 \Omega$, $R_L = 500 \Omega$)

Output Impedance: 50 Ω in series with 4.7 μ F

Maximum Output Level: ± 0.5 V pk (RL = 500 Ω)

UNIT

Signal Connectors: BNC

Power Requirements: 100, 120, 220, or 240 VAC selectable, 50-60 Hz, 45 watts maximum

Fusing: 0.5A Slow Blow for 100 or 120 VAC, 0.25A Slow Blow for 220 or 240 VAC

Size: W x H x D
424 mm x 88.9 mm x 323 mm
(16.7 in. x 3.5 in. x 12.7 in.)

Weight: 6 kg (13.3 lb)

Interior Controls (user adjustable)

Ext Trigger Termination: 50 Ω or 500 Ω , selectable (factory set to 50 Ω)

Ext Trigger Threshold: 0.1 V to 1 V (factory set to 0.5 V)

STANDARD INCLUSIONS

The Model 5058PR is shipped with two BCB-58-4 cables, one 50 ohm terminator, application, detachable power/mains cord, and operating manual. An optional rack-mount kit is available and should be specified at time of ordering.

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