7211 Dynamic Strain Gage Signal Conditioning Amplifier

Features:

- Differential signal amplifier with high bandwidth up to 1MHz
- Gain Accuracy ± 0.1%
- Fully adjustable calibrated programmable gain from 1 to 9,999
- Accepts foil type strain gage, piezo resistive, potentiometers, etc.
- Selectable bridge Constant-voltage excitation: 0 to 10V
- Plug-in amplifier
- Automatic bridge balance, with EEROM to preserve balance without power
- Built-in with all bridge completion including 120 or 1000 and 350 Ω dummies.
- Built-in with shunt calibration circuits
- Built-in with optically isolated shunt calibration relays
- Built-in five-pole Bessel low-pass filter
- 10 Selectable cutoff frequencies of 10 Hz to 100kHz and wide-band
- Possess other filter type and cut-off frequency
- Front-panel monitoring: Automatic balance status

Applications:

- Dynamic Material Test
- Strain/Stress Analysis
- Dynamic Material Elasticity Testing
- SHPB Signal Conditioning
- Load Cell Signal Conditioning
- Foil Strain Gage Signal Conditioning
- Piezo Resistive Sensor Signal Conditioning
- Semiconductor Strain Gage Signal Conditioning

Description:

7211 Signal Conditioning System is designed with and incorporates all the features necessary for dynamic precise conditioning of strain gage and transducer inputs in the most severe operating environments.

7211 Signal Conditioning and amplifier's low-level signals to high-level outputs for multiple channels can be simultaneously and dynamically recorded and displayed on external devices.

- Optional Accessories
  - 7001C Single-Channel Enclosure with power supply
  - 7002C 2-Channel Enclosure with power supply
  - 7006C 6-Channel Enclosure with power supply
  - 7012C 12-Channel Enclosure with power supply
  - 7012C-PT 12-Channel Enclosure with power supply for PT06A-14-15P(SR) input connector

7211 Dynamic Strain Gage Signal Conditioning Amplifier

Specification:

- Input
  - Strain gages: Quarter, half or full-bridge (50 to 1000 Ω)
  - Built-in 120 Ω and 350 Ω dummy gages; 1000 Ω dummy capability
  - Transducers: Foil or piezo resistive strain gage types; DCDT displacement transducers; Potentiometers
- Excitation
  - Fixed settings: 0,1, 2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7, 8, 9, 10 VDC ± 3 mV
  - Current: 100 mA, min
  - Regulation (0-100 mA ± 10% line change) ± 0.05 mV ± 0.004 %, max measured at remote sense points. (Local sense: -5 mV, typical, 100 mA, measured at plug.)
  - Remote sense error: 0.0005% per Ω of lead resistance (350 Ω load)
  - Noise and ripple: 0.005% Vp-p, max (dc to 10 kHz)
  - Stability: ± 0.002%/° C
  - Level: Normally symmetrical above ground; either side may be grounded with no effect on performance.
- Bridge Balance
  - Method: Automatic
  - Ranges (Auto ranging): ± 13000 μ ε Resolution 2.5 μV (0.0012 mV/V)
  - Balance time: 8 seconds
  - Manual vernier balance range: 0.1 V/Step, Max ± 5 V
- Calibration
  - Four internal shunt calibration resistors, ± 0.01% tolerance
    - 174.8k, 1000 μ ε (0.50 mV/V) 350 Ω bridge; 874.8k, 200 μ ε (0.10 mV/V) 350 Ω bridge; 59.94k, 1000 μ ε (0.50 mV/V) 120 Ω bridge.
  - Activated by front-panel switch, or by optically isolated remote contact closure or low TTL level
  - Internal selector switches for selection of two-point unipolar, bipolar, or two-point double shunt calibration circuits bipolar
- Amplifier
  - Gain: 1 to 10,000 continuously variable. Direct reading, Accuracy ± 0.1% Max, 4 digital Led (X 1 to X 9.999) plus decade multiplier (X 1 to X 1000)
  - Frequency response, all gains full output
    - DC coupled: DC to 1 MHz, -3 dB Max @ Vout < ± 600mV
    - DC to 60 kHz, -0.5 dB Max
  - Frequency response versus all gain (1~9,999), output:

Output	-0.5 dB	-3 dB
0.3 VPP	1.8 MHz	2 MHz
1. VPP	1 MHz	1.1 MHz
1.2 VPP	860 kHz	1 MHz
2 VPP	500 kHz	700 kHz
3 VPP	500 kHz	700 kHz
4 VPP	300 kHz	400 kHz
5 VPP	230 kHz	300 kHz

  - Stability (gain over X 100)
    - ± 2 μV/° C, max, RTI (referred to input)
  - Nonlinearity < 0.05% ▪ Nonlinearity < 0.05%
  - Noise (gain over X 100, all outputs)
    - 0.01 to 10 Hz: 1μVp-p RTI
    - 0.5 to 125 kHz: 6 μVRMS, Max, RTI
- Display
  - 4 digital LED display for amplifier output voltage
  - Fine gain setting from 1.000 to 9.999
- Filter
  - Characteristics
    - Low-pass active four-pole linearity Butterworth standard
    - Frequencies (-3 ± 1dB): 10 Hz, 30 Hz, 100 Hz, 300Hz, 1k, 3k, 10k, 30k, 100kHz and wide-band
- Input & Output
  - D type 15 pin input connector for sensor input
  - Optional PT06A-14-15P(SR) 15 pin input connector for sensor input
  - Enclosure to sensor input impedance > 1 G Ω
  - BNC connector for each 7211 amplifier output, ± 10 V
  - Each enclosure have one D type 15 pin connector and terminal board for output signal
  - 4 Digital DVM, resolution 1mV
- Operational Environment
  - Operation temperature: -10° C ~ 60° C
  - Storage: -20° C ~ 70° C
  - Humidity: Below 95% RH, non-condensing
- Power Requirement
  - Input: 110 or 220 VAC ± 10% by switch, 50 or 60 Hz, 2 A
- Dimensions & Weight
  - Panel: 1.3” X 5.2” (33.4 X 133.3 mm)
  - Amplifier depth behind panel: 10.6” (270 mm)
  - Weight: 1.32 Lb (0.6 Kg)
- Order code
  - 7211 : D type 15 pin input connector for sensor input
  - 7211-PT : PT06A-14-15P(SR) 15 pin input connector for sensor input