4290

Accelerometer/Microphone & Differential Amplifier

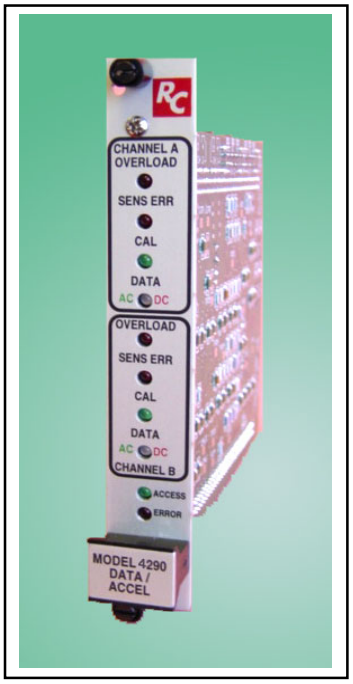
Description

The Model 4290 Accelerometer/ Data Amplifier is a dual-channel, medium gain device. Each channel can be configured as an AC-coupled amplifier with constant-current excitation for sensors, or as a differential input AC or DC amplifier. Designed for use in the instrumentation systems test environment, it includes many features that simplify the test setup of accelerometers and other sensors requiring differential input signal processing.

The 4290 provides a full 100 kHz bandwidth at a gain of 200. High frequency noise is significantly reduced using a 4 pole low pass filter with programmable cutoffs at 1, 5, or 20kHz. A bypass mode in this filter allows the user to utilize the full 100 kHz bandwidth if desired.

In order to simplify the setup of a large number of channels, the 4290 contains both Zero and Calibrate signal relays, which can be controlled from either the front panel or remotely via the RS-232 serial link. When actuated, the Zero relays provide the user with the ability to short the input of any amplifier to determine a base line noise for the amplifier. This is a simple way to deduce the amount of noise contributed by the sensor prior to amplification. A quick check of gain settings and accuracy can be made by activating the Calibrate signal relay that applies one of three internal DC reference signal levels (1V, 100mV, 40mV) or a user-supplied AC or DC signal to the input of a selected channel. These two features allow the user to quickly troubleshoot large channel count systems.

To ensure a long operating life, the 4290 is manufactured with high quality potentiometers, switches, and electronic components which operate in extended temperatures of 0°C to 50°C.



4290 Dual Channel Data/Accel Module

Features

- **Mode:**
  - **Integrated Electronics Piezoelectric Sensor**
  - **Differential Amplifier**
  - **DC/AC Coupling**
- **Excitation:**
  - **Constant Current @ 24V**
- **100 kHz Frequency Response**
- **4 Pole Butterworth Filter**
  - **1 kHz**
  - **5 kHz**
  - **20 kHz**
  - **Wideband**
- **Voltage Substitution Calibration**
- **Zero/Span Adjustment**
- **Overload & Sensor Fault Indicator**

Specifications

Input Amplifier	
Gain Range:	0.1 to 200 in 65,000 steps
Frequency Response	DC: 0 to 100 kHz AC: 0.2 Hz to 100 kHz
Operating Modes	Integrated Electronics (ICP®), 4 µV, or 10 µV AC DC Amplifier
Common Mode Rejection	100 dB @ 60 Hz (Gain 200)
Gain Accuracy	±1%
Linearity	±0.01%
Gain Temperature Stability	±100 ppm/°C
Input Noise	10 µV rms for 100 kHz Bandwidth
Output Noise	1 mV rms
Input Voltage Range	±10V
Zero Range	±10V in 1mV steps
Output	
Voltage Range	±10V @ 25 mA
Output Impedance	100Ω
Short Circuit Protection	Yes
Overload Indicator Settings	0.1V to 10.0V in 0.1V increments
Low Pass Filter	
Type	4 Pole Butterworth
Frequencies	1 kHz, 5 kHz, 20 kHz, Wideband
Calibration Capability	
Voltage Substitution	1V, 100 mV, 40mV, ext.
Excitation	
Constant Current	4 or 10 mA
Voltage Compliance	24V DC
Accuracy	±20%
LED Indicators	
Overload, Accelerometer Operation, CAL On/Off, and Coupling (AC/DC)	
Environmental	
Power Requirements	+15V, 55 mA -15V, 35 mA +5V, 45 mA
Temperature Range	0°C to 50°C

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