Low Cost Single and Multichannel Isolation Amplifier

Models 290A, 292A

FEATURES
Low Cost
Isolated Power Supply: ±13V dc @ ±5mA (290A) or ±15mA (292A)
Low Nonlinearity: 0.1% @ 10V pk-pk Output
High Gain Stability: 0.001 %/1000 Hours; 0.01%/°C
Small Size: 1.5” x 1.5” x 0.62”
Range: 20V pk-pk
Low Input Offset Voltage Drift: 10μ/°C (Gain = 100V/V)
Wide Input/Output Dynamic Range: 20V pk-pk
High CMV Isolation: 1500V dc, Continuous
Wide Gain Range: 1 to 100V/V
Multichannel Capability Using External Oscillator (292A)

APPLICATIONS
Ground Loop Elimination in Industrial and Process Control High Voltage Protection in Data Acquisition Systems
Fetal Heart Biomedical and Monitoring Instrumentation
Off -Ground Signal Measurements

GENERAL DESCRIPTION

Models 290A and 292A are low cost, compact, isolation amplifiers that are optimized for single and multichannel industrial applications, respectively. The model 290A has a self-contained oscillator and is intended for single channel applications. A single external synchronizing oscillator can drive up to 16 model 292A's or, a virtually limitless number of model 292A's can be configured using multiple oscillators. The user can supply the external oscillator circuit or specify model 281 oscillator module, which includes a voltage regulator for operation over a wide single supply voltage range of +8V to +28V.

Models 290A and 292A design features include: adjustable gain, from 1 to 100V/V, dual isolated power, ±l3V dc, ±1500V dc off ground isolation, l00dB minimum CMR at 60Hz, 1kΩ source imbalance, in a compact 1.5" X 1.5" X 0.6" module. Models 290A and 292A achieve low input noise of lμV pk-pk (10Hz bandwidth, G = 100V/V), nonlinearity of ±0.1% @ 10V pk-pk output, and an input/output dynamic range of 20V pk-pk.

Using modulation techniques with reliable transformer isolation, models 290A and 292A will interrupt ground loops, leakage paths, and voltage transients, while providing dc to 2kHz (-3dB) response.

WHERE TO USE MODELS 290A AND 292A

Industrial Applications: In data acquisition systems, computer interface systems, process signal isolators and high CMV instrumentation, models 290A and 292A offer complete galvanic isolation and protection against damage from transients and fault voltages. High level transducer interface capability is afforded with 20V pk-pk input signal range at a gain of 1V/V operation. In portable single or multichannel designs, single power supply operation (+8V to +16V) enables battery operation.

DESIGN FEATURES AND USER BENEFITS

Isolated Power: Dual ±l3V dc output, completely isolated from the input power terminals (±1500V dc isolation), provides the capability to excite floating signal conditioners, front end buffer amplifiers and remote transducers such as thermistors or bridges.

Adjustable Gain: Models 290A and 292A adjustable gain offers compatibility with a wide class of input signals. A single external resistor enables gain adjustment from 1V/V to 100V/V providing flexibility in both high level transducer interfacing as well as low level sensor measurement applications.

Floating, Guarded Front-End: The input stage of models 290A and 292A can directly accept floating differential signals or it may be configured as a high performance instrumentation front-end to accept signals having CMV with respect to input power common.

High Reliability: Models 290A and 292A are conservatively designed, compact modules, capable of reliable operation in harsh environments. They have a calculated MTBF of over 400,000 hours and are designed to meet MIL-STD-202E environmental testing as well as the IEEE Standard for Transient Voltage Protection (472-1974: Surge Withstand Capability).

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