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Precision Isolation Amplifier High CMV/CMR, $\pm 15V$ Floating

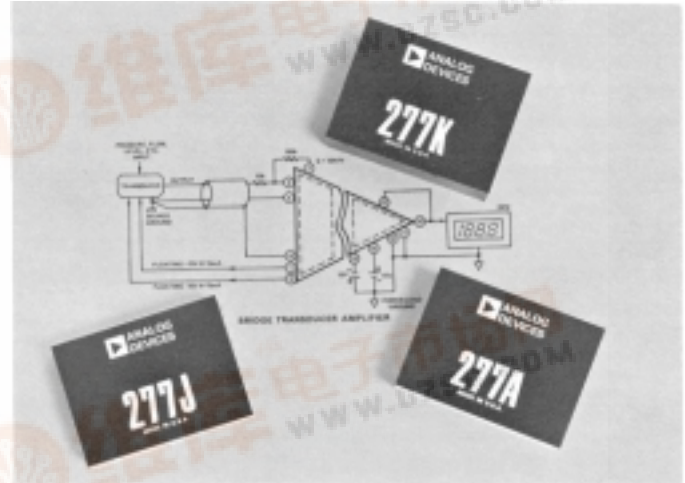
Model 277

FEATURES

- Versatile Op Amp Front End: Inverting, Non-Inverting, Differential Applications
- Low Nonlinearity: 0.025% max, Model 277K
- Low Input Offset Voltage Drift: $1\mu V/^\circ C$ max, Model 277K
- Floating Power Output: $\pm 15V$ @ $\pm 15mA$
- High CMR: 160dB min @ dc
- High CMV: 3500V rms

APPLICATIONS

- Programmable Gain Isolated Amplifier
- Isolated Power Source and Amplifier for Bridge Measurements Instrumentation Amplifier
- Instrumentation Grade Process Signal Isolator
- Current Shunt Measurements



GENERAL DESCRIPTION

Model 277 is a versatile isolation amplifier which combines a high-performance, uncommitted operational amplifier front end with a precision, isolated output stage and a floating power supply section. This configuration, shown in Figure 1, makes the 277 ideally suited to instrumentation applications where the need for various forms of signal conditioning, high CMV protection and isolated transducer power requirements are encountered.

The input stage is a low drift ($\pm 1\mu V/^\circ C$ max, model 277K) differential op amp that may be connected for use in inverting, non-inverting and differential configurations. The circuitry employed around the operational amplifier input stage can be designed by the user to suit each application's particular signal processing needs. A full $\pm 10V$ signal range is available at the output of the front-end amplifier.

output stage's low nonlinearity (0.05%, models 277J/A and 0.025% model 277K), these high CMR and CMV ratings facilitate accurate measurements in the presence of noisy electrical equipment such as motors and relays. In addition, model 277A offers a $-25^\circ C$ to $+85^\circ C$ rated operating temperature range. All versions of model 277 have a ± 10 volt output range.

The floating power supply section provides isolated ± 15 volt outputs capable of delivering currents up to $\pm 15mA$. This feature permits model 277 to power transducers and auxiliary isolated circuitry, thereby eliminating the need for a separate isolated DC/DC converter.

All of the features of the model 277 isolation amplifier are packaged in a compact (3" x 2.2" x 0.59") module. As an assurance of high performance reliability, every model 277 is factory tested for CMV rating by application of 3500V rms ($\pm 4900V$ peak) between input and output common terminals for one minute (meets NEMA and CSA requirements for 660Vrms service.) In addition, the 277 has a calculated MTBF of 133,000 hours.

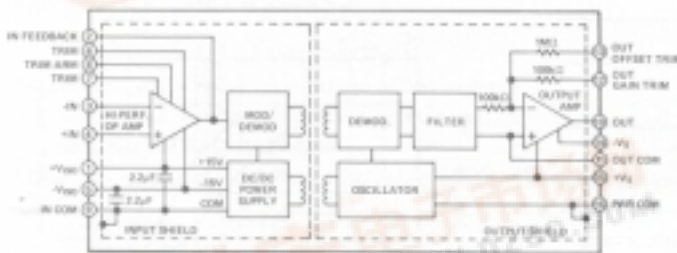


Figure 1. Model 277 Functional Block Diagram

The isolated output stage includes a special modulator/demodulator technique which provides the 277 with 160dB minimum DC common mode rejection between input and output common and an input-to-output CMV rating of 3500V rms. When combined with the



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