

### Models 284J, 286J, 281

#### FEATURES

**High CMV Isolation:**  $\pm 5000V$  pk, 10ms Pulse;  $\pm 2500V$  dc Continuous

**High CMR:** 110dB min with 5k $\Omega$  imbalance

**Low Nonlinearity:** 0.05% @ 10V pk-pk Output

**High Gain Stability:**  $\pm 0.0075\%/^{\circ}C$ ,  $\pm 0.001\%/1000$  hours

**Low Input Offset Voltage Drift:** 10 $\mu V/^{\circ}C$ , G = 100V/V (Model 286J)

**Resistor Programmed Gain:** 1 to 10V/V (284J)

1 to 100V/V (286J)

**Isolated Power Supply:**  $\pm 8.5V$  dc @  $\pm 5mA$  (284J)

$\pm 15V$  dc @  $\pm 15mA$  (286J)

**Meets IEEE Std 472: Transient Protection (SWC)**

**Meets UL Std 544 Leakage @ 115V ac, 60Hz:**

2.0 $\mu A$  max (284J)

2.5 $\mu A$  max (286J)

#### APPLICATIONS

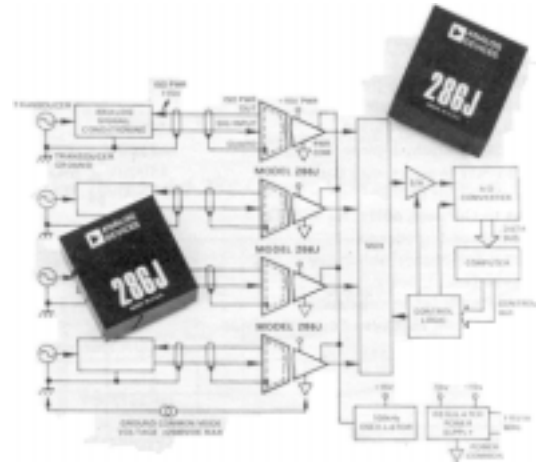
**Fetal Heartbeat Monitoring**

**Multi-Channel ECG Recording**

**Ground Loop Elimination in Industrial and Process**

**Control High Voltage Protection in Data Acquisition**

**Systems 4-20mA Isolated Current Loop Receiver**



4 CHANNEL ISOLATED DATA ACQUISITION SYSTEM

#### GENERAL DESCRIPTION

The models 284J, 286J are low cost, high performance isolation amplifiers designed for high CMV isolation and low leakage in biomedical, industrial and data acquisition systems. Using modulation techniques with reliable transformer isolation, the models 284J, 286J protect both patients and ultrasensitive equipment from high CMV transients up to  $\pm 5000V$  pk (10ms pulse) or 2500V dc continuous, high CMR of 110dB (5k $\Omega$  imbalance) and feature maximum leakage current of less than 3 $\mu A$  rms, @ 115V ac, 60Hz (inputs to power common).

The model 284J is a self-contained isolation amplifier for single channel applications. For multi-channel applications, the model 286J combined with an external synchronizing oscillator such as the model 281 may be used; up to 16 model 286J amplifiers can be driven from 1 model 281 oscillator. Additional channels may be obtained by configuring an unlimited number of 284Js with several ganged 281 oscillators.

Both models also provide resistor-programmable gain of 1 to 10V/V (284J) or 1 to 100V/V (286J), high gain stability of 0.0075%/ $^{\circ}C$ , low nonlinearity of 0.05% @ 10V pk-pk output and isolated power supply outputs of  $\pm 15V$  dc @  $\pm 15mA$  (286J) or  $\pm 8.5V$  dc @  $\pm 5mA$  (284J).

#### WHERE TO USE MODELS 284J, 286J

**Industrial Applications:** In data acquisition systems, computer interface systems, process signal isolators and high CMV instrumentation, models 284J, 286J offer complete galvanic isolation and protection against damage from transients and fault voltages. High level transducer interface capability is afforded

with model 286J's 20V pk-pk or model 284J's 10V pk-pk input signal range at a gain of 1V/V operation. In portable field designs, single supply, wide range operation (+8V to +16V) offers simple battery operation.

**Medical Applications:** In biomedical and patient monitoring equipment such as multi-channel VCG, ECG, and polygraph recorders, models 284J, 286J offer protection from lethal ground fault currents as well as 5kV defibrillator pulse inputs. Low level bioelectric signal recording is achieved with low input noise (8 $\mu V$  pk-pk @ G = max gain) and high CMR (110dB, min @ 60Hz).

#### DESIGN FEATURES AND USER BENEFITS

**High Reliability:** Models 284J, 286J are conservatively designed, compact modules, capable of reliable operation in harsh environments. Models 284J, 286J have calculated MTBF of over 390,000 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).

**Isolated Power Supply:** Dual regulated supplies, completely isolated from the input power terminals ( $\pm 2500V$  dc isolation), provides the capability to excite floating signal conditioners, front end buffer amplifiers as well as remote transducers such as thermistors or bridges.

**Adjustable Gain:** A single external resistor enables gain adjustment from 1V/V to 100V/V (286J) or 1V/V to 10V/V (284J) providing the flexibility of applying models 284J, 286J in both high level transducer interfacing as well as low level sensor measurements.