

IA294 MEDICAL ISOLATION AMPLIFIER

Low Noise, with Active Input Reference and Shield Drives

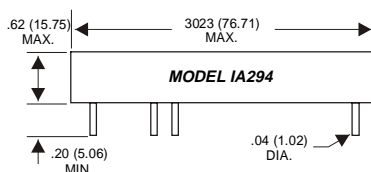
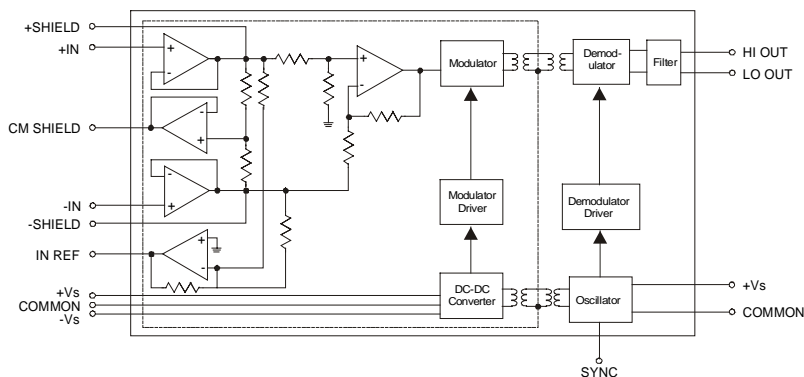


FEATURES

- UL Component Recognized
- True Instrumentation Front-End
- Active Input Reference
- Active Shield Drives
- Low Noise: 8 μ V P-P, .05 to 100Hz
- High CMRR: 126 dB Input to Output,
120 dB Input to Guard
- Isolated Power: \pm 15V @ 15mA
- Small Size: 2" x 3"
- External Sync Capability for Multi-Channel Monitors

The Model IA294 Isolation Amplifier features small size, low noise, high common mode rejection, active guard and shield drives. CMRR is 126 dB input to output with balanced source impedance. CMRR from input to active input reference is 120 dB. This isolation amplifier contains most of the front-end circuitry that is found in monitor and diagnostic ECG's. The IA294 has a true instrumentation front-end for high CMRR, active right leg drive, sync capability for multichannel use, isolated power (\pm 15V @ 15mA) and separate active drives for either individual shielded inputs or a common outer shield. This model also features 6500V input to output protection and 6500V differential input protection for defibrillators. Input to output leakage is less than 10 μ A.

BLOCK DIAGRAM IA294



CHARACTERISTICS

(Typical, @ 25°C, Vs = +15 VDC unless otherwise noted.)

GAIN (Non-inverting)	10V / V
ACCURACY	\pm 2%
Vs. Temperature	\pm .01%/°C
Nonlinearity	\pm 0.1%
Differential Input Impedance	3 X 10 ⁸ Ω 3pF
Common Mode Input Impedance	3 X 10 ¹⁰ Ω 20pF
INPUT VOLTAGE	\pm 1V min.
Max. Safe Differential Input	\pm 240V rms.
Pulse, 10ms Duration	\pm 6500V peak
Max. Safe Common Mode Input (DC cont.)	\pm 5000VDC
INPUT BIAS CURRENT	\pm 2nA
Vs. Temperature (0 to +70°C)	\pm 0.02nA/°C
SAFETY CURRENT LIMITS	10 μ A max.
INPUT NOISE (5K UNBALANCE)	
Voltage .05Hz to 100Hz, pp	8 μ V
Voltage 10Hz to 1kHz, rms.	5 μ V
Current .05Hz to 1kHz, rms.	5pA
COMMON MODE REJECTION	
Input to Output, CMV = 115 VAC, 60Hz	126 dB
Balanced Source Impedance	120 dB
5K Ω Source Imbalance	
Two Inputs to Input Reference	
CMV = 10V p-p, 60Hz	
5K Ω Source Imbalance	120 dB
OUTPUT	
Range (50K Ω Load)	\pm 10V
Output Impedance	1 K Ω
Max. CMV, Outputs to Power Common	\pm 30 V peak
Offset Voltage Referred to Input	\pm 5mV
Vs. Temperature (0° to 70°C)	\pm 100 μ V / °C
Vs. Supply Voltage	\pm 20 μ V / %
FREQUENCY RESPONSE	
Small Signal, -3 dB	1kHz
Full Power, 6V pp	500Hz
Overload Recovery	20mS
ISOLATED POWER OUTPUTS	
Voltage, \pm 10mA Load	\pm 15VDC
Accuracy	\pm 5%
Current, min.	\pm 15mA
NOMINAL WEIGHT	8 Ounces
POWER SUPPLY, SINGLE POLARITY	
Voltage, Rated Performance	\pm 14.5 to +16 VDC
Current, Quiescent	+ 40 mA
TEMPERATURE RANGE	
Rated Performance	0°C to +70°C
Storage	-25°C to +85°C
MATING SOCKET	S135

