

IA296 ULTRA LOW NOISE TRUE INSTRUMENTATION MEDICAL ISOLATION AMPLIFIER

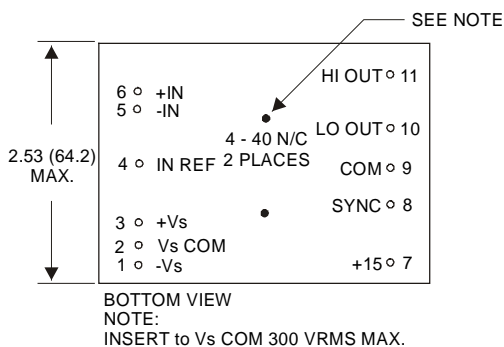
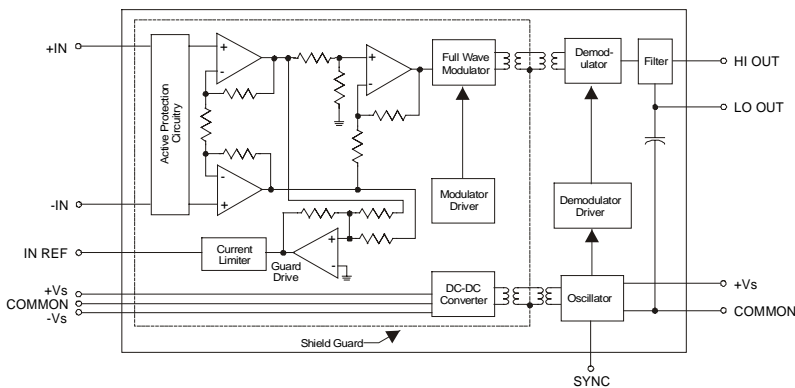


FEATURES

- UL Component Recognized
- Ultra Low Noise
- Failure of Any Internal Component Results in $<10\mu\text{A}$ Bias Current
- Excellent CMRR: 170 dB; 160 dB with $5\text{K}\Omega$ Source Imbalance
- External Sync Capability

The Model IA296 Isolation Amplifier features very high input / output isolation and very low noise. It can operate at common mode input voltages up to 5000 VDC continuous; CMRR is 170 dB with balanced source impedance, and 160 dB with $5\text{K}\Omega$ source imbalance. Input voltage noise is held to $0.3\mu\text{V}$, 10Hz – 1kHz rms. and current noise to 4pA , 0.5Hz – 1kHz rms. Input bias current is only 200pA, and on the failure of any component is limited to $10\mu\text{A}$. An independent $\pm 12\text{VDC}$, 10mA supply in the input section with the same voltage isolation as the amplifier, is used to power optional external circuitry.

BLOCK DIAGRAM IA296



CHARACTERISTICS

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

GAIN (Non-inverting)	10V / V
ACCURACY	$\pm 2\%$
Vs. Temperature	$\pm 0.15\%/^{\circ}\text{C}$
Nonlinearity	$\pm 0.1\%$
Differential Input Impedance	$3 \times 10^8 \Omega \parallel 2.2\text{nF}$
Common Mode Input Impedance	$3 \times 10^{10} \Omega \parallel 10\text{pF}$
INPUT VOLTAGE	$\pm 0.5\text{V min.}$
Max. Safe Differential Input	$\pm 30\text{V rms.}$
Pulse, 10ms Duration	$\pm 500\text{V peak}$
Max. Safe Common Mode Input (DC cont.)	$\pm 5000\text{VDC}$
INPUT BIAS CURRENT	$\pm 200\text{pA}$
Vs. Temperature (0 to + 70°C)	$\pm 5\text{pA}/^{\circ}\text{C}$
SAFETY CURRENT LIMITS	$10\mu\text{A max.}$
INPUT NOISE (5K Unbalance)	
Voltage .05Hz to 100Hz, pp	$1.5\mu\text{V}$
Voltage 10Hz to 1kHz, rms.	$0.3\mu\text{V}$
Current .05Hz to 1kHz, rms.	4pA
COMMON MODE REJECTION	
Input to Output, CMV = 115 VAC, 60Hz	
Balanced Source Impedance	170 dB
5K Ω Source Imbalance	160 dB
Input to Reference	
CMV = 10V p-p, 60Hz	
5K Ω Source Imbalance	120 dB
OUTPUT	
Range (50K Ω Load)	$\pm 5\text{V}$
Output Impedance	1 K Ω
Max. CMV, Outputs to Power Common	$\pm 30\text{V peak}$
Offset Voltage Referred to Input	$\pm 5\text{mV}$
Vs. Temperature (0° to 70°C)	$\pm 100\mu\text{V} / ^{\circ}\text{C}$
Vs. Supply Voltage	$\pm 20\mu\text{V} / \%$
FREQUENCY RESPONSE	
Small Signal, - 3 dB	1kHz
Full Power, 6V pp	500Hz
Overload Recovery	20mS
ISOLATED POWER OUTPUTS	
Voltage, $\pm 10\text{mA}$ Load	$\pm 12\text{VDC}$
Accuracy	$\pm 10\%$
Current	$\pm 10\text{mA}$
NOMINAL WEIGHT	8 Ounces
POWER SUPPLY, SINGLRE POLARITY	
Voltage, Rated Performance	± 14.5 to $+16\text{VDC}$
Current, Quiescent	$+ 40\text{mA}$
TEMPERATURE RANGE	
Rated Performance	0°C to +70°C
Storage	-25°C to +85°C
MATING SOCKET	S132

For 10kHz bandwidth specify P/N IA297 when consulting factory.

