

IA184 LOW-COST, HIGH-LINEARITY ISOLATION AMPLIFIER WITH EXTERNAL SYNC CAPABILITY

Fully compatible with 10-Bit Acquisition Systems

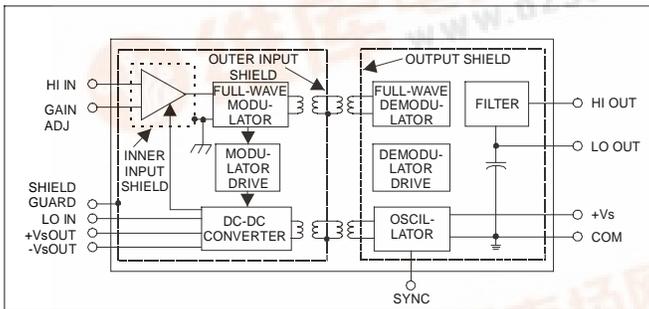


FEATURES

- UL Component Recognized (IA184)
- Provision for External Synchronization
- High Linearity: 0.025% Peak, Typical
- 2500V Input/output Isolation
- 126dB Common-Mode Rejection
- 1000:1 Programmable Gain
- Small Size: only 1.5" x 1.5" x 0.63"

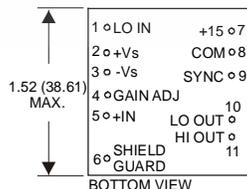
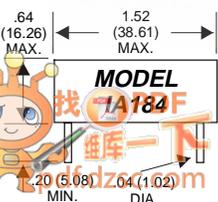
The Model IA184 Isolation Amplifier is an ultra-compact module offering high linearity, 2500-Volt input/output isolation, 126dB common-mode rejection, externally programmable gain, a floating internal supply for powering an external transducer, and external synchronization of the internal oscillator used in obtaining the input isolation. Its 0.1% linearity assures compatibility with 10-bit data acquisition systems, and input voltage noise is held to 1µV, 10Hz to 1kHz, with 10pA maximum current noise for the same range. The internal oscillator used to provide modulation and demodulation for input isolation can be synchronized with those of associated Model IA184 amplifiers by an external trigger, to prevent imposition of beat-frequency phenomena on the output signal. An independent ±15 DC, ±15mA supply in the input section, with the same voltage isolation as the input, can be used to power an external transducer or preamplifier.

BLOCK DIAGRAM IA184



CONNECTION NOTES:

1. Gain adjustment resistor (Rg) is connected between GAIN and LO-IN pins.
2. If no output-offset adjustment is required, connect LO-OUT to COMMON pin. Otherwise, consult factory.



CHARACTERISTICS

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

GAIN (Non-inverting)	
Range	1 to 1000V/V
Formula	Gain = $(1 + \frac{100K\Omega}{R_g})$
Deviation from Formula	±3%
Vs. Temperature (0 to +70°C)	±0.015%/°C
Nonlinearity, G = 1V/V to 10V/V	@ ±5V, ±0.025% @ ±10V, ±0.1% @ ±10V, ±0.2% max.
INPUT VOLTAGE RATINGS	
Linear Differential Range, G = 1V/V	10V min.
Max. Safe Differential Input	
Continuous	125V rms.
Pulse, 10ms Duration, 1 Pulse/10 Sec	±600V pk max.
Max. CMV, Inputs to Outputs	
AC, 60Hz, 1 Minute Duration	±2500V rms.
Pulse, 10ms Duration, 1 Pulse/10sec	±2500V pk max.
With 510Ω in Series with Guard	±5000V pk max.
Continuous, AC or DC	±2500V pk max.
CMR, Inputs to Outputs, 60Hz, Rs<5KΩ	
Balanced Source Impedance	126dB
5KΩ Source Imbalance	120dB
CMR, Inputs to Guard, 60Hz	
1KΩ Source Imbalance	80dB
Max. Leakage Current, Inputs to Power Common @115VAC, 60Hz	1.2µA rms. max.
INPUT IMPEDANCE	
Differential	10 ⁹ Ω 3pF
Overload	27KΩ
Common Mode	5 x 10 ¹⁰ Ω 20pF
INPUT BIAS CURRENT	
Initial, @ +25°C	±2nA
Vs. Temperature (0 to +70°C)	±0.01nA/°C
INPUT NOISE	
Voltage	
0.05Hz to 10Hz	3µV p-p
10Hz to 1kHz	1µV rms.
Current	
0.05Hz to 10Hz	5pA p-p
10Hz to 1KHz	10pA rms.
FREQUENCY RESPONSE	
Small Signal, -3dB G = 1V/V to 10V/V	1kHz
Full Power, 10V p-p Output	
Gain = 1V/V	500HZ
Gain = 10V/V	500HZ
Recovery Time to ±100µV after application of ±600V pk differential input ulse	50ms
OFFSET VOLTAGE, REFERRED TO INPUT	
Initial, @ +25°C	±(1 + 5/G)mV
Vs. Temperature (0 to +70°C)	
Gain = 1 V/V (µV/°C max.)	± 65
Gain = 100V/V (µV/°C max.)	±15
At other Gains (µV/°C max.)	±(15 + 50/G)
Vs. Supply Voltage	±(1 + 50/G)µV/V
RATED OUTPUT	
Voltage, 50KΩ Load	±10V min.
Output Impedance	1kΩ
Max. CMV, Output Common to Power Common, Peak AC or DC Continuous	±50V pk.
ISOLATED POWER OUTPUTS	
Voltage, ±5mA Load	±15VDC
Accuracy	±5%
Current	± 15mA min.
Regulation, No Load to Full Load	+0, -3%
Ripple, 100kHz Bandwidth	100mV p-p
POWER SUPPLY, SINGLE POLARITY	
Voltage, Rated Performance	+15VDC, ±5V
Voltage, Operating	+(8 to 15.5)VDC
Current, Quiescent	20mA
Current, Full Load	50mA
External Sync. Frequency	33 to 37 kHz, 5VDC @ 50% duty cycle
TEMPERATURE RANGE	
Rated Performance	0 to +70°C
Storage	-55°C to +85°C
CASE DIMENSIONS	
	1.5" x 1.5" x .62"
MATING SOCKET	
	S134