



Figure 1. Photo of AD202JYATI

FEATURES

- Isolated Power Outputs
- Small Size: 4 Channels/Inch Low
- Uncommitted Input Amplifier
- High CMR: 130dB (Gain = 100V/V)
- High Accuracy: $\pm 0.2\%$ Max Nonlinearity
- High CMV Isolation: $\pm 2000\text{V}$ Continuous

APPLICATIONS

It can be applied for multichannel data acquisition, current shunt measurements motor controls, process signal isolation, high voltage instrumentation amplifier, etc.

DESCRIPTION

Upgraded Drop-in Replacement for AD202JY

We guarantee production for ≥ 10 years.

The AD202JYATI is a high voltage isolation amplifier designed for multiple applications where input signals are measured, processed, or transmitted without a galvanic connection. These isolation amplifiers in SIP package offer a signal and power isolation function.

With internal transformer-coupling, the AD202JYATI provides total galvanic isolation between the input and output stages of the isolation amplifier. These amplifiers eliminate the need for an external DC-DC converter, which allows the designer to minimize the necessary circuit overhead, thus reducing the overall design and component costs.

The AD202JYATI is powered directly from a 15V DC power supply, featuring small size, high accuracy, low power, wide bandwidth, excellent performance, flexible input, isolated power, etc.

INSIDE THE AD202JYATI

The AD202JYATI uses an amplitude modulation technique to permit transformer coupling of signals down to dc (Figure 2). It also contains an uncommitted input op amp and a power transformer that provides isolated power to the op amp, the modulator, and any external load. The power transformer primary is driven by a 20kHz, 15V_{P-P} square wave generated internally.

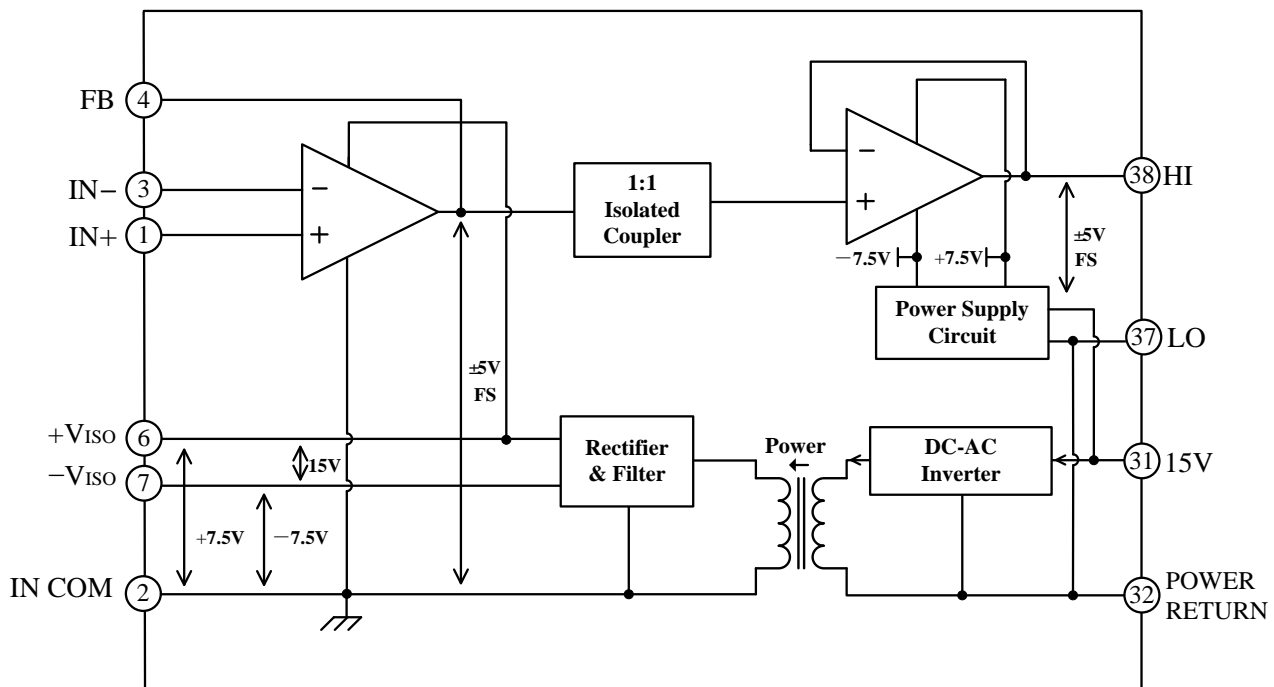


Figure 2. AD202JYATI Functional Block Diagram



SPECIFICATIONS

Table 1. Electrical characteristics. (Typical @ 25 °C and $V_S = 15V$ unless otherwise noted.)

| Model | AT202JY |
|---|---------------------------------|
| GAIN | |
| Range | 1V/V–100 V/V |
| Error | ±0.5% typ (±4% max) |
| vs. Temperature | ±20ppm/ °C typ (±45ppm/ °C max) |
| vs. Time | ±50 ppm/1000 Hours |
| vs. Supply Voltage | ±0.01%/V |
| Nonlinearity (G = 1V/V) | ±0.01 max |
| Nonlinearity vs. Isolated Supply Load | ±0.0015%/mA |
| INPUT VOLTAGE RATINGS | |
| Input Voltage Range | ±5V |
| Max Isolation Voltage (Input to Output) | |
| AC, 60Hz, Continuous | 1500Vms |
| Continuous (AC and DC) | ±2000V Peak |
| CMRR (Common-Mode Rejection Ratio)* | –74dB |
| CMTC(Common-Mode Transfer Coefficient)* | –0.2 × 10 ³ |
| RS ≤ 100Ω (HI and LO Inputs) G = 1V/V | 105dB |
| G = 100V/V | 130dB |
| RS ≤ 1 kΩ (Input HI, LO, or Both) G = 1V/V | 100dB min |
| G = 100V/V | 110dB min |
| Leakage Current Input to Output @ 240Vrms, 60 Hz | 2 μA rms max |
| INPUT IMPEDANCE | |
| Differential (G = 1V/V) | 10 ¹² Ω |
| Common-Mode | 2GΩ/4.5pF |
| INPUT BIAS CURRENT | |
| Initial, @ 25 °C | ±30pA |
| vs. Temperature (0 °C to 70 °C) | ±10nA |
| INPUT DIFFERENCE CURRENT | |
| Initial, @ 25 °C | ±5pA |
| vs. Temperature (0 °C to 70 °C) | ±2nA |
| INPUT NOISE | |
| Voltage, 0.1Hz to 10Hz | 1.8 μV _{P-P} |
| f > 100Hz | 10.8nV/√Hz |
| FREQUENCY RESPONSE | |
| Bandwidth ($V_O \leq 10V_{P-P}$, G = 1V–50V/V) | 20kHz |
| Settling Time, to ±10mV (10V Step) | 1ms |
| OFFSET VOLTAGE (RTI) | |
| Initial, @ 25 °C Adjustable to Zero | (±5 ±5/G)mV max |
| vs. Temperature (0 °C to 70 °C) | [±10 ± $\frac{10}{G}$] μV/ °C |
| RATED OUTPUT | |
| Voltage (Out HI to Out LO) | ±5V |
| Output Resistance | 7kΩ |
| Output Ripple, 100kHz Bandwidth | 10mV _{P-P} |
| 5kHz Bandwidth | 0.5mV rms |
| ISOLATED POWER OUTPUT | |
| Voltage, No Load | ±7.5V |
| Accuracy | ±10% |
| Current | 400 μA Total |
| Regulation, No Load to Full Load | 5% |
| Ripple | 100mV _{P-P} |
| POWER SUPPLY | |
| Voltage, Rated Performance | 15V ±5% |
| Voltage, Operating | 15V ±10% |
| Current, No Load ($V_S = 15V$) | 10mA |
| TEMPERATURE RANGE | |
| Rated Performance | 0 °C to 70 °C |
| Operating | –40 °C to +85 °C |
| Storage | –40 °C to +85 °C |
| PACKAGE DIMENSIONS | |
| DIP Package (N) | 2.10" × 0.700" × 0.350" |

*Test Schematic Figure 3 @ 100Hz Sine Wave @ $v_s(t) = 1000V$.

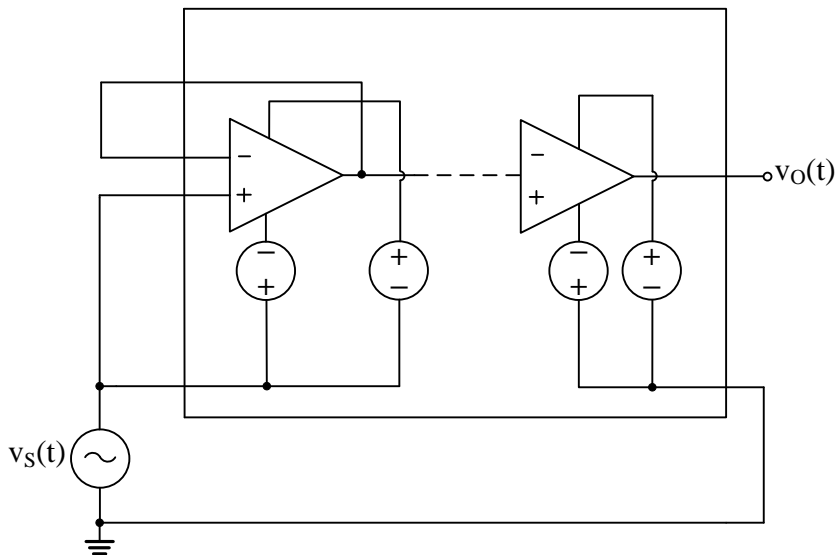


Figure 3. CMRR & CMTC Test Schematic

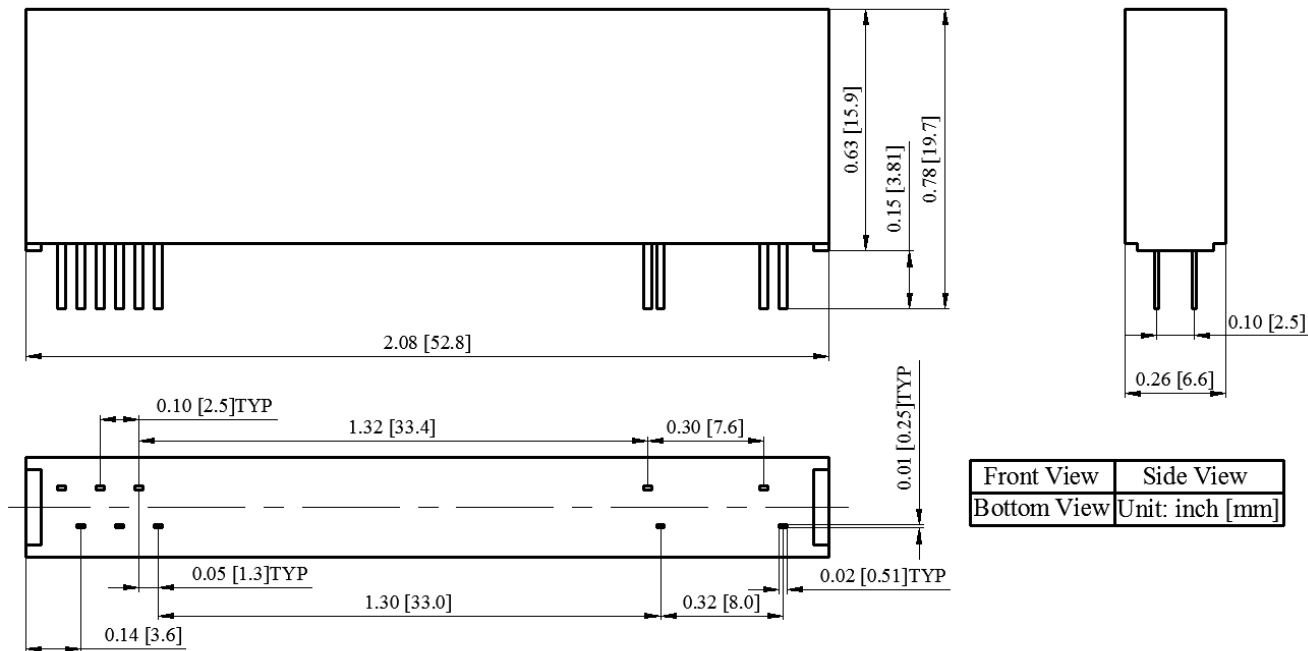
PIN DESIGNATIONS

| Block | Pin # | Pin Name | Type | Function Description |
|----------------|-------|--------------|------------------------|--|
| Isolated Block | 1 | IN+ | Isolated analog input | Isolated positive (Non-inverting) input |
| | 2 | IN COM | Isolated analog ground | Isolated ground |
| | 3 | IN- | Isolated analog input | Isolated negative (inverting) input |
| | 6 | +VISO OUT | Isolated power output | Isolated positive power supply output, +7.5V, referenced to pin 2 IN COM |
| | 5 | -VISO OUT | Isolated power output | Isolated negative power supply output, approximately -7.0V, referenced to pin 2 IN COM |
| | 4 | FB | Isolated analog output | Isolated op amp output as a feedback signal |
| Local Block | 37 | LO | Analog ground | Output voltage ground reference, internally connected to pin 22 POWER RETURN |
| | 38 | HI | Analog output | Op amp output, equals to the voltage difference between FB and IN COM |
| | 31 | 15 V | Analog input | Positive 15V power supply input |
| | 32 | POWER RETURN | Analog input | Power supply return, internally connected to pin 18 GND |



MECHANICAL DIMENSIONS

The dimensions of AD202JYATI in SIP package are shown in Figure 4.



| | |
|-------------|-----------------|
| Front View | Side View |
| Bottom View | Unit: inch [mm] |

Figure 4. Dimensions of AD202JYATI SIP Package



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