

Hybrid IC Isolation Amplifiers 20 Series**ISOLATION AMPLIFIER**

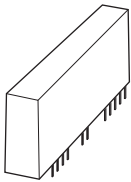
(high speed response, 3-port isolation)

Functions & Features

- Being used for printed wiring board installation
- High-linearity
- High speed response 50 μ sec.
- Isolating between input, output and power
- Isolation between input, output and power supply up to 3000 V AC
- Power 15 V DC

Typical Applications

- Galvanically isolating the I/O circuits of microprocessor from the field side to reduce external noise
- Enabling electronic manufacturers to save efforts and cost for the development of isolation circuits for small-lot products

**MODEL: 20VS1A-4W4W[1]-U****ORDERING INFORMATION**

- Code number: 20VS1A-4W4W[1]-U
- Specify a code from below for [1].
(e.g. 20VS1A-4W4WA-U)

INPUT / OUTPUT**4W4W:** -10 - +10 V DC (Input resistance 1 M Ω min.)/ -10 - +10 V DC (Load resistance 2 k Ω min.)**[1] LINEARITY**

- A:** ± 0.025 %
B: ± 0.012 %
C: ± 0.008 %

POWER INPUT

DC Power
U: 15 V DC

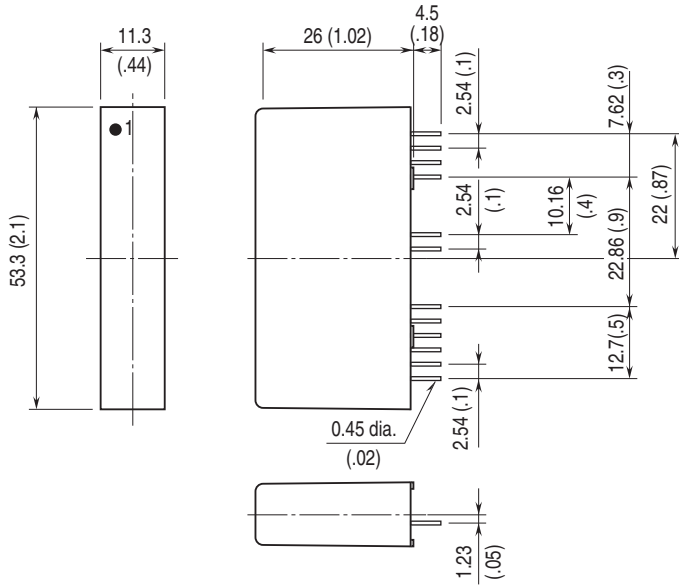
GENERAL SPECIFICATIONS**Construction:** Hybrid IC**Housing material:** Flame-resistant resin (black)**Isolation:** Input to output to power**INPUT SPECIFICATIONS****■ DC Voltage****Input :** -10 - +10 V DC**Input resistance:** ≥ 1 M Ω (10 k Ω in power failure)**Overload input voltage:** ± 15 V DC continuous**Input offset voltage:** ± 2 mV @ G = 1**Input bias current:** 25 pA TYP. (@25°C)**OUTPUT SPECIFICATIONS****■ DC Voltage:** -10 - +10 V DC**Load resistance:** ≥ 2 k Ω **Output impedance:** ≤ 1 Ω **REFERENCE VOLTAGE SOURCE****■ FOR INPUT****Output voltage:** ± 16.5 V DC ± 2.5 V (when power supply is 15 V DC)**Load current:** ≤ 2 mA**■ FOR OUTPUT****Output voltage:** ± 16.5 V DC ± 2.5 V (when power supply is 15 V DC)**Load current:** ≤ 2 mA**INSTALLATION****Power input****• DC:** Rating ± 5 %; approx. 50 mA with no load**Operating temperature:** -25 to +85°C (-13 to +185°F)**Operating humidity:** 30 to 90 %RH (non-condensing)**Mounting:** Soldering to the printed wiring board**Weight:** 20 g (0.71 oz)**PERFORMANCE in percentage of span**

Unless otherwise specified, G = 1.

Linearity: ± 0.025 % (20VS1A-4W4WA) ± 0.012 % (20VS1A-4W4WB) ± 0.008 % (20VS1A-4W4WC)**Temp. coefficient:** ± 25 ppm/ $^{\circ}$ C (0 $^{\circ}$ C - 70 $^{\circ}$ C; 32 - 158 $^{\circ}$ F) ± 50 ppm/ $^{\circ}$ C (-25 $^{\circ}$ C - +85 $^{\circ}$ C; -13 - +185 $^{\circ}$ F)**Frequency characteristics:** Approx. 20 kHz, -3 dB**Response time:** ≤ 50 μ sec. (0 - 90 %)**Conversion gain:** $\times 1 \pm 1.5$ %**Gain adjustable range:** $\times 1$ to $\times 100$ **Line voltage effect:** ± 0.01 % over voltage range

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC
Dielectric strength: 3000 V AC @1 minute (input or reference voltage source for input to output or reference voltage source for output to power)
CMRR: $\geq 120 \text{ dB}$ (500 V AC 50/60 Hz)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

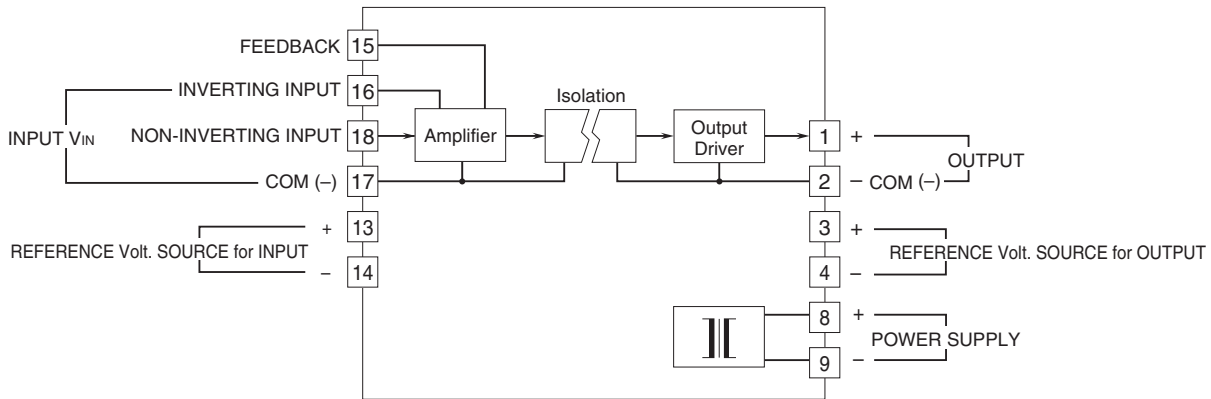


PIN ASSIGNMENTS

1	OUTPUT (+)
2	OUTPUT COM (-)
3	REF. VOLT. SOURCE for OUTPUT (+)
4	REF. VOLT. SOURCE for OUTPUT (-)
8	POWER SUPPLY (+)
9	POWER SUPPLY (-)
13	REF. VOLT. SOURCE for INPUT(+)
14	REF. VOLT. SOURCE for INPUT (-)
15	FEEDBACK
16	INVERTING INPUT
17	INPUT COM (-)
18	NON-INVERTING INPUT

(BOTTOM VIEW)

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

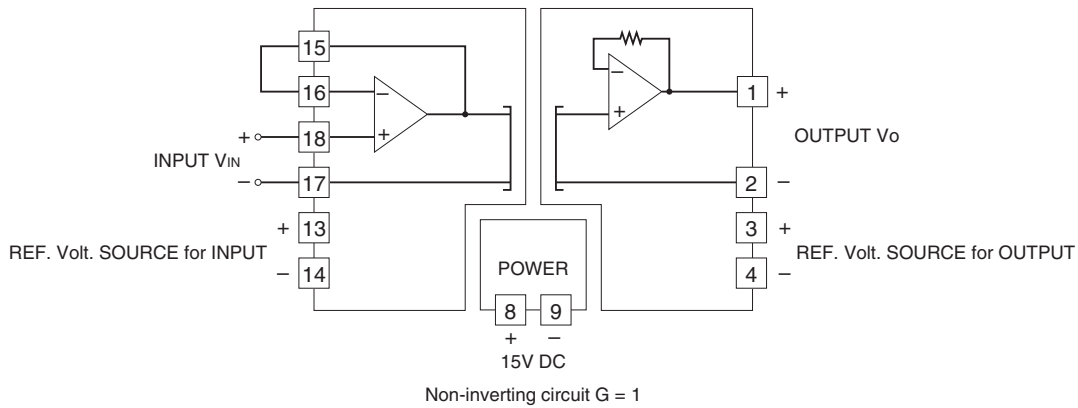


Note. The reference voltage source for input is common to the input COM (-)
 The reference voltage source for output is common to the output COM (-)

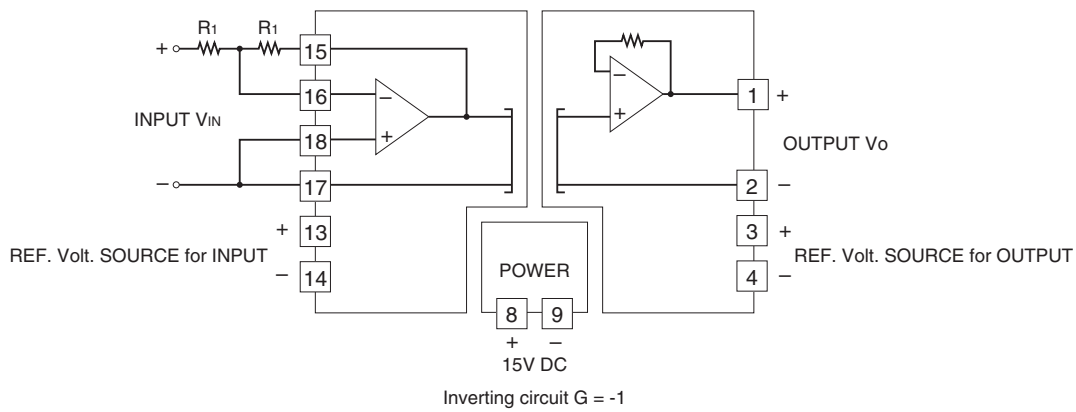
APPLICATION EXAMPLE

$10\text{ k}\Omega \leq (R_1 + R_2) \leq 200\text{ k}\Omega$

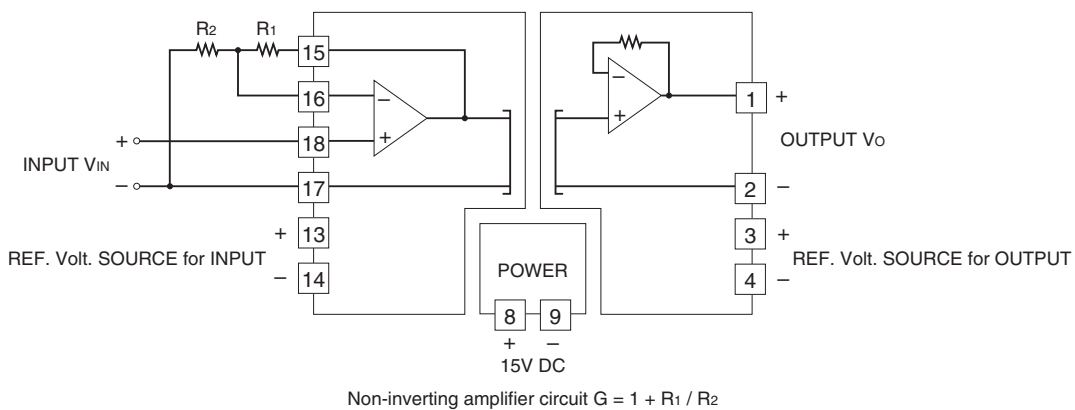
- Non-inverting amplifier circuit: Basic example of $G = 1$



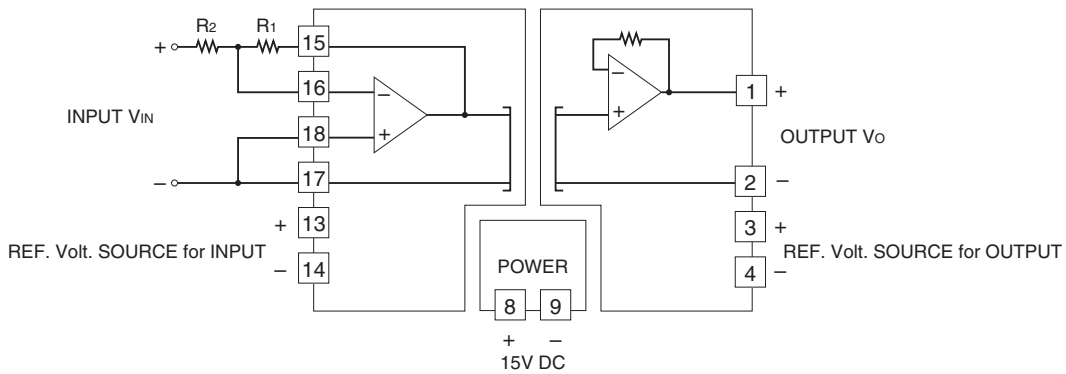
- Inverting amplifier circuit: Basic example of $G = -1$ (output inverted to the input)



- Non-inverting amplifier circuit: Example of $G = 1 + R_1 / R_2$

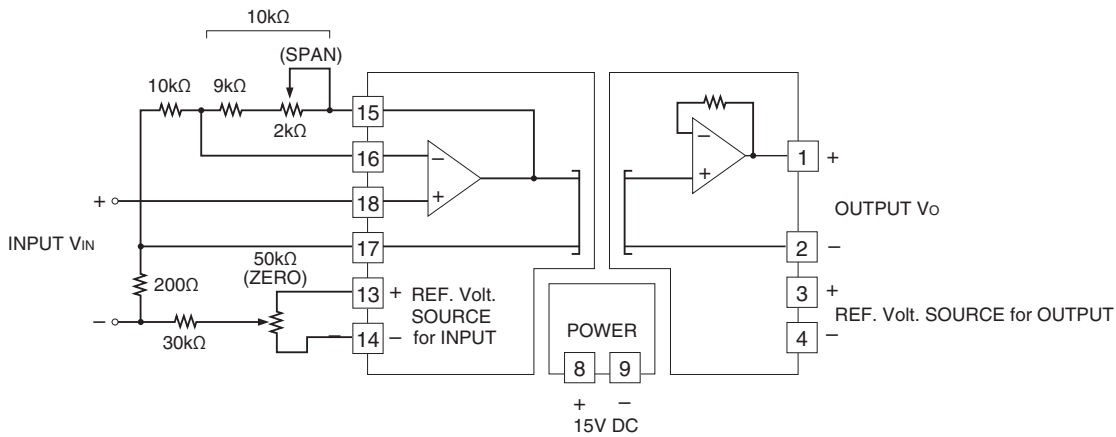


■ Inverting amplifier circuit: Example of $G = -R_1 / R_2$ (output inverted to the input)



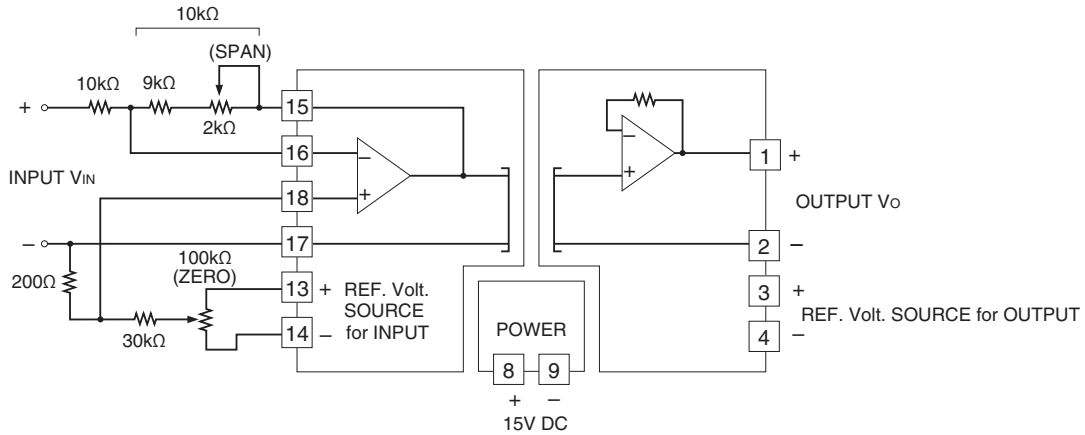
Inverting amplifier circuit $G = -R_1 / R_2$

■ Non-inverting amplifier circuit with external adjustments: Example of $G = 2$



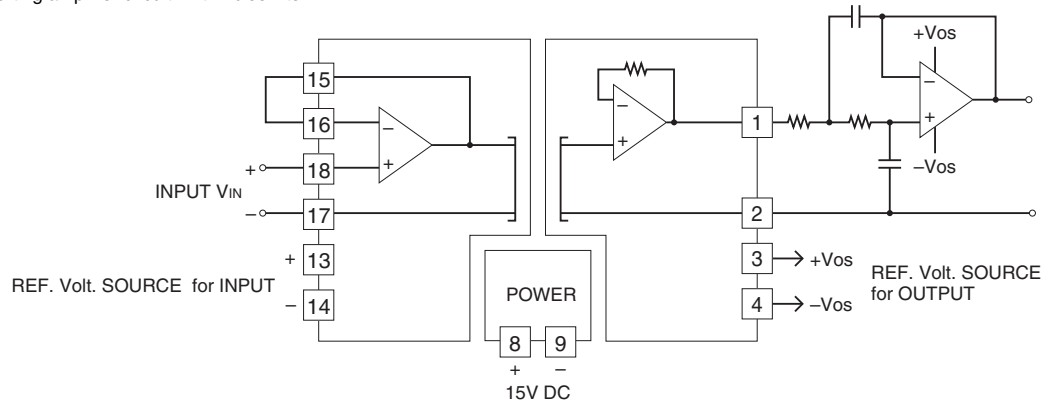
Non-inverting amplifier circuit zero/span adjustments

■ Inverting amplifier's circuit with external adjustments: Example of $G = -1$ (output inverted to the input)



Inverting amplifier circuit zero/span adjustments

■ Non-inverting amplifier circuit: With noise filter



Specifications are subject to change without notice.