

Hybrid IC Isolation Amplifiers 20 Series

Isolation: Input to output to power

ISOLATION AMPLIFIER

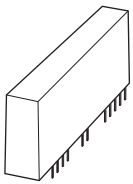
(high speed response, 3-port isolation)

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

- Isolating the field and input circuit of microprocessor to reduce noise from field
- Available for manufacturers of small-lot products to omit the development of isolation circuit



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)

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

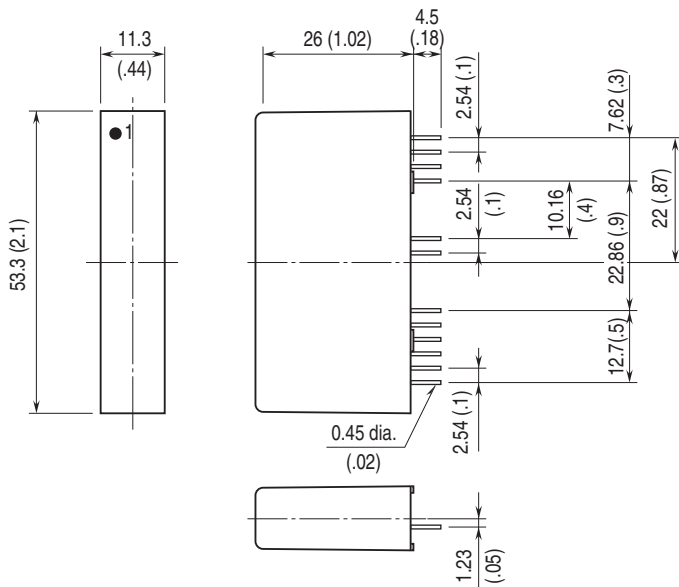
- Power input**
 - DC: Rating ± 5 %; approx. 50 mA with no load
- Operating temperature:** -25 to +85°C (-13 to +185°F)
- Operating humidity:** 30 to 90 %RH (non-condensing)
- Mounting:** Soldering to the printed wiring board
- Weight:** 20 g (0.71 oz)

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/°C (0°C - 70°C; 32 - 158°F)
 - ± 50 ppm/°C (-25°C - +85°C; -13 - +185°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:** ≥ 100 M Ω 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: ≥ 120 dB (500 V AC 50/60 Hz)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

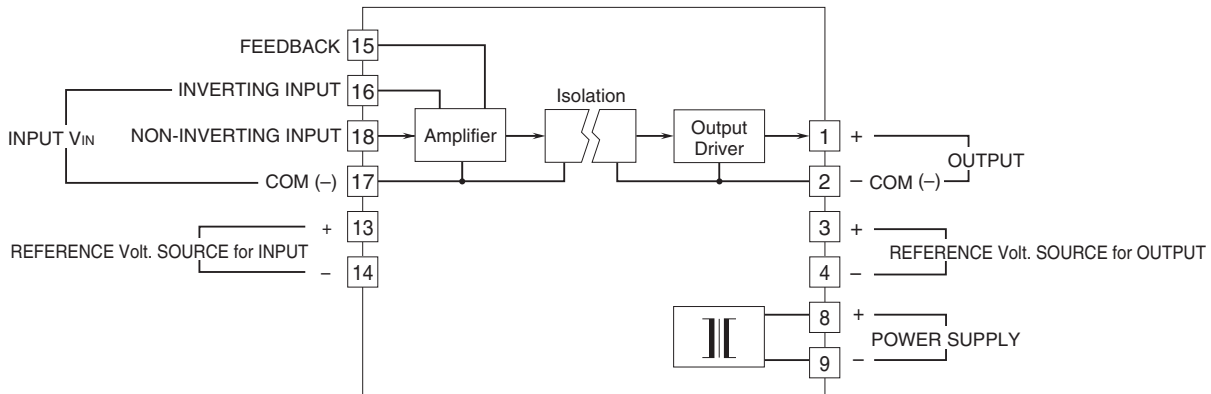


PIN ASSIGNMENTS

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

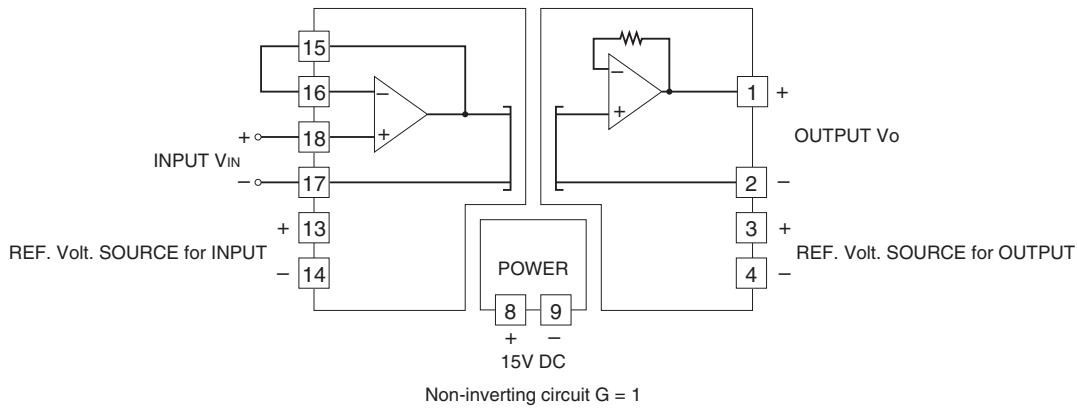


Note. The reference voltage source for input is common to the input COM (-)
 The reference voltage source for output is common to the output COM (-)

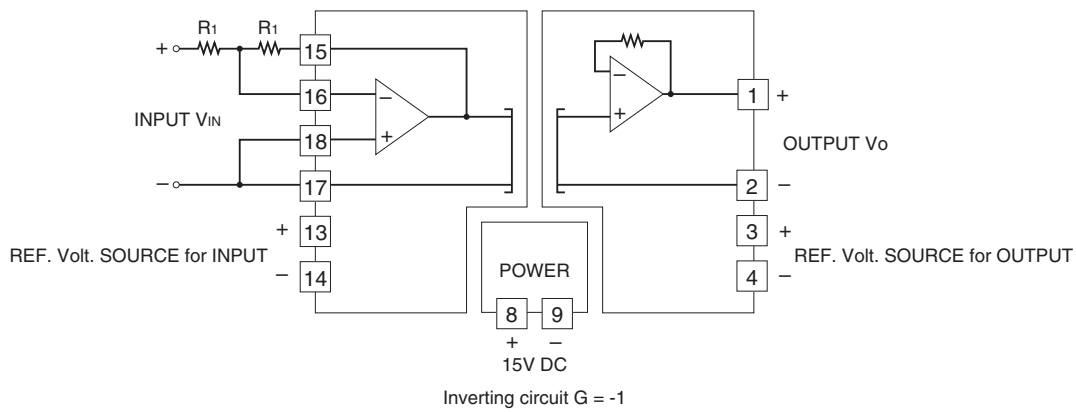
APPLICATION EXAMPLE

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

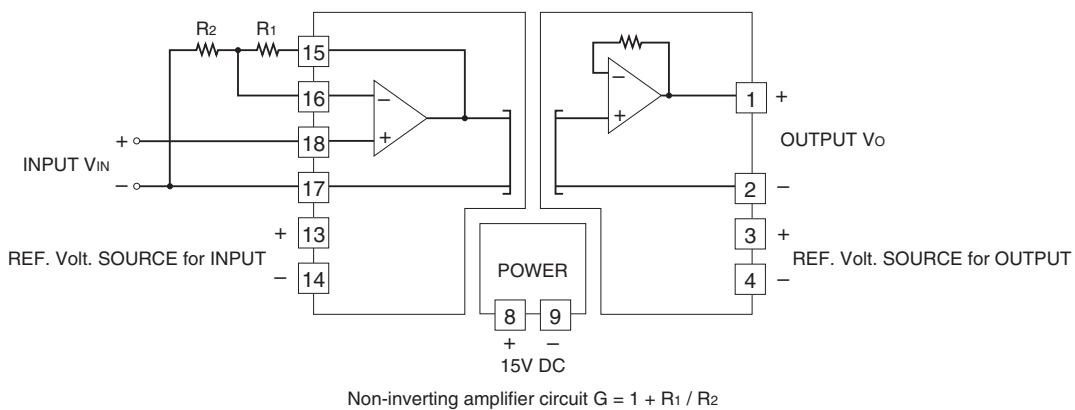
- Non-inverting amplifier circuit: Basic example of $G = 1$



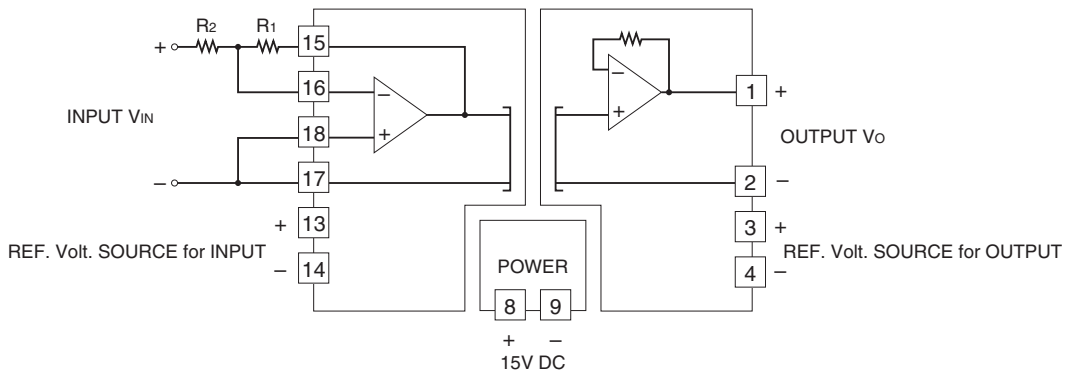
- Inverting amplifier circuit: Basic example of $G = -1$ (output inverted to the input)



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

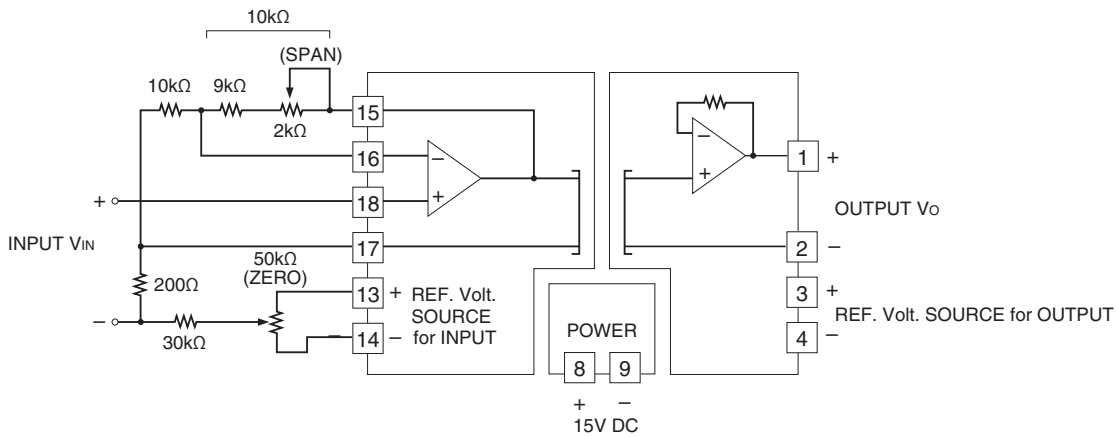


■ Inverting amplifier circuit: Example of $G = -R_1 / R_2$ (output inverted to the input)



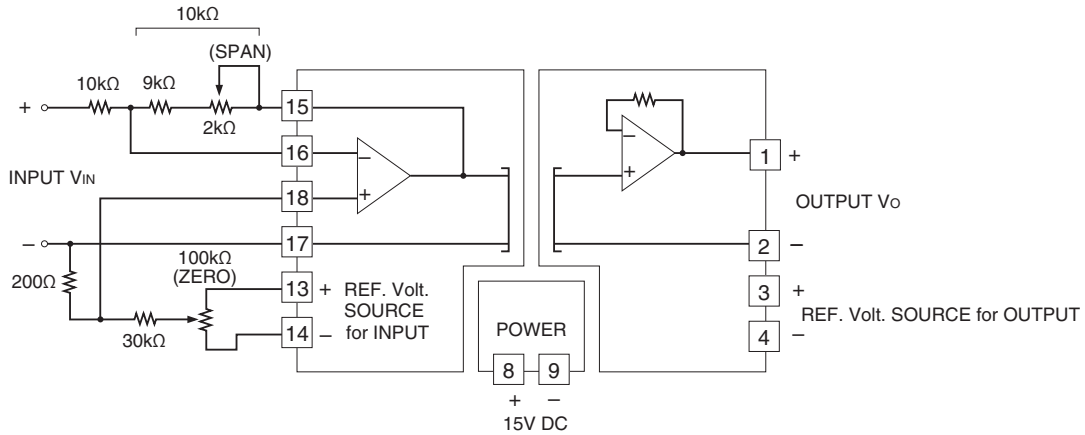
Inverting amplifier circuit $G = -R_1 / R_2$

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



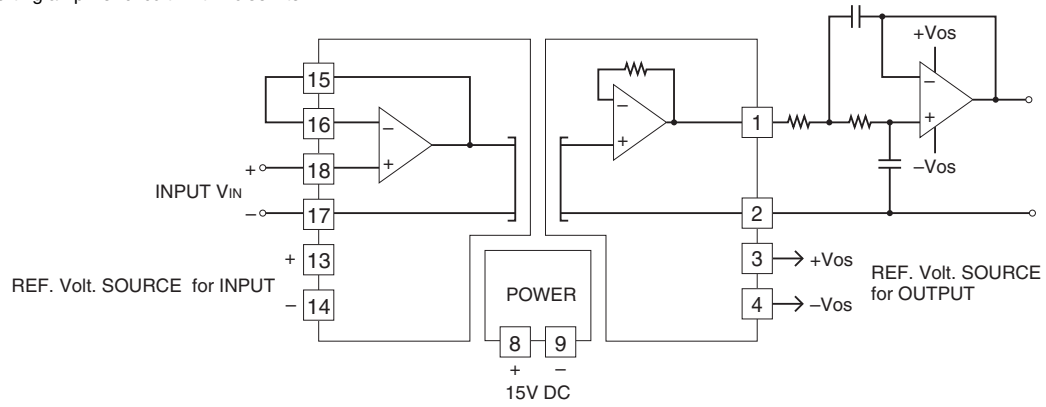
Non-inverting amplifier circuit zero/span adjustments

■ 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.