

Hybrid IC Isolation Amplifiers 20 Series

ISOLATION AMPLIFIER

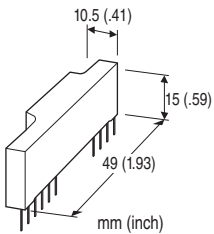
(ultra-high speed response, input isolation)

Functions & Features

- Being used for printed wiring board installation
- Response time 10 μ s
- Isolation between input to output or power supply up to 1500 V AC
- Power 15V 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: 20VS5-200-U

ORDERING INFORMATION

- Code number: 20VS5-200-U

INPUT RANGE -5 - +5 V DC

OUTPUT RANGE -5 - +5 V DC

POWER INPUT

DC Power

U: 15 V DC

GENERAL SPECIFICATIONS

Construction: Hybrid IC

Housing material: Epoxy resin

Isolation: Input or reference voltage source to output or power supply

INPUT SPECIFICATIONS

■ **DC Voltage**

Input : -5 - +5 V DC

Input resistance: $\geq 1 \text{ M}\Omega$ (10 k Ω in power failure)

Overload input voltage: 30 V DC continuous

Input offset voltage: $\pm 129 \text{ mV}$ (15 mV TYP.)

Input bias current: 100 pA TYP. (@25°C)

OUTPUT SPECIFICATIONS

■ **DC Voltage:** -5 - +5 V DC

Load resistance: $\geq 2 \text{ k}\Omega$

Output impedance: $\leq 1 \Omega$

REFERENCE VOLTAGE SOURCE

Output voltage:

$\pm 14 \text{ V DC TYP. (+15 V power supply)}$

$\pm 10 \text{ V DC TYP. (+11.5 V power supply)}$

Load current: $\leq 2 \text{ mA}$

INSTALLATION

Power input

• **DC:**

Operational voltage range 11.5 - 16 V;

ripple 2 %p-p max.; approx. 40 mA with no load

Operating temperature: -10 to +70°C (14 to 158°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Soldering to the printed wiring board

Weight: 8 g (0.28 oz)

PERFORMANCE in percentage of span

Linearity: $\pm 0.5 \%$ @G = 1

Temp. coefficient:

Offset drift 50 ppm/°C

Span drift 200 ppm/°C

Frequency characteristics: Approx. 50 kHz, -3 dB

Response time: $\leq 10 \mu\text{sec.}$ (0 - 90 %)

Conversion gain: $\times 1 \pm 8 \%$ max.

Gain adjustable range: $\times 1$ to $\times 10$

Ripple: $\pm 7 \%$ p-p max. (G = 1)

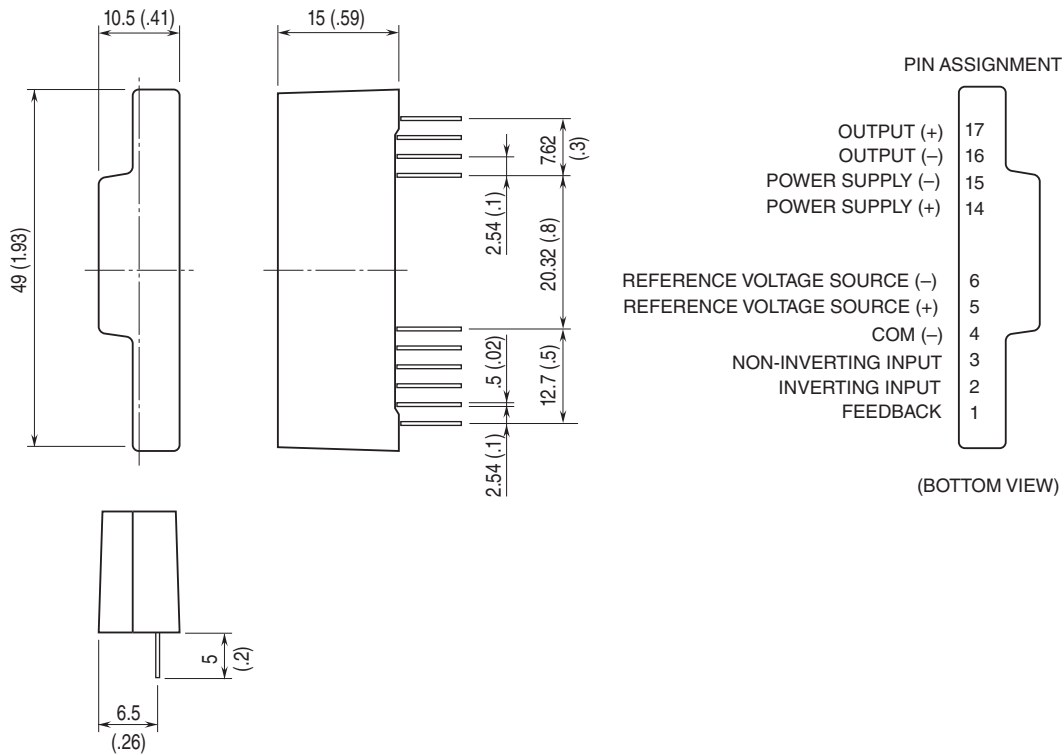
Line voltage effect: $\pm 0.5 \%$ over voltage range

Insulation resistance: $\geq 100 \text{ M}\Omega$ with 500 V DC

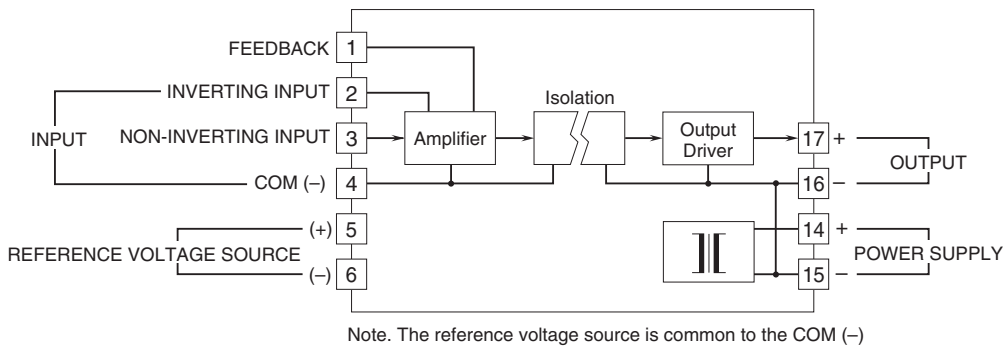
Dielectric strength: 1500 V AC @1 minute (input or reference voltage source to output or power)

CMRR: $\geq 100 \text{ dB}$ (500 V AC 50/60 Hz)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



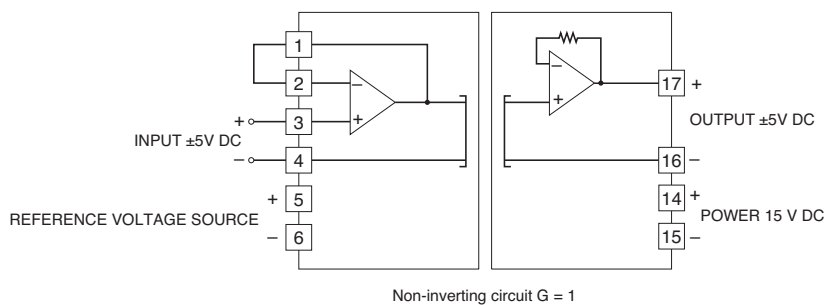
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



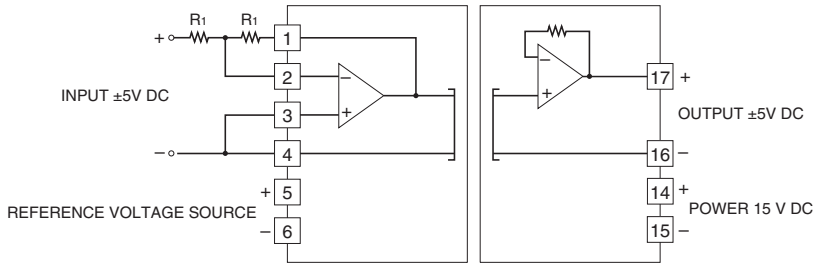
APPLICATION EXAMPLE

The total resistance of the resistors connected to the amplifier must be max. 20 kΩ.

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

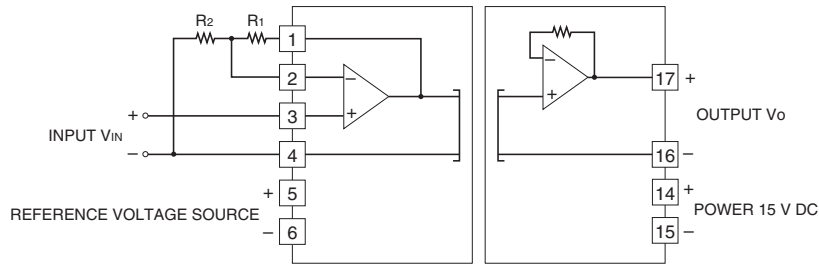


■ Inverting amplifier circuit: Basic example of $G = -1$ (output inverted to the input)



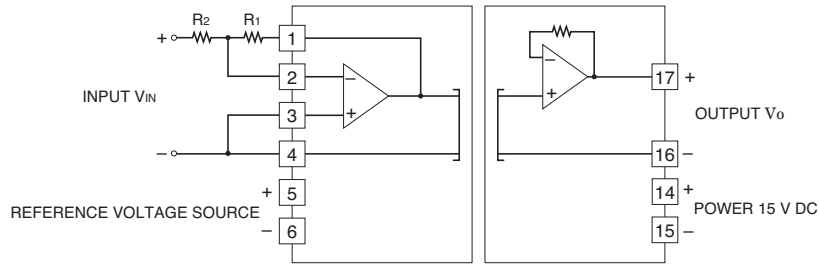
Inverting circuit $G = -1$

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



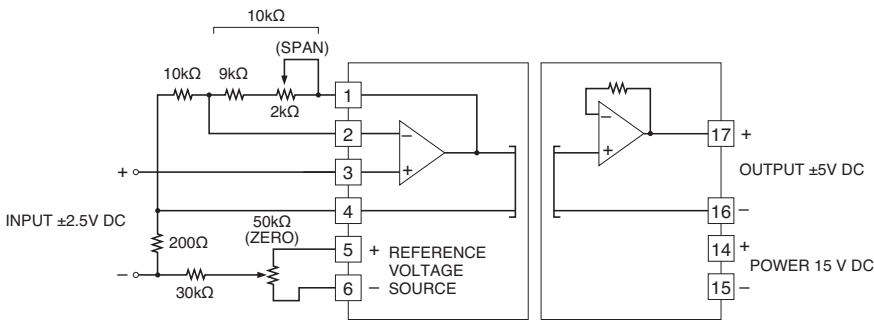
Non-inverting amplifier circuit $G = 1 + R_1 / R_2$

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



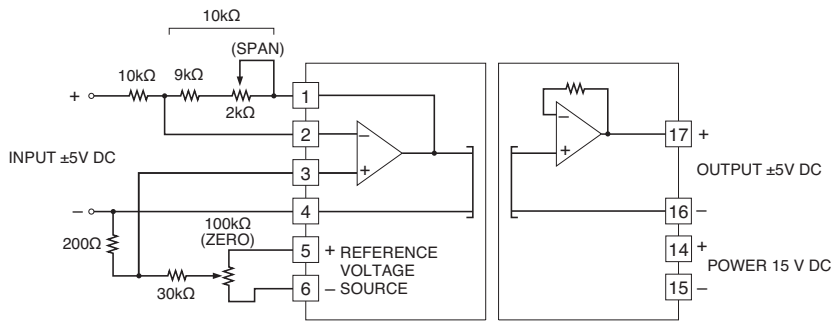
Inverting amplifier circuit $G = -R_1 / R_2$

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



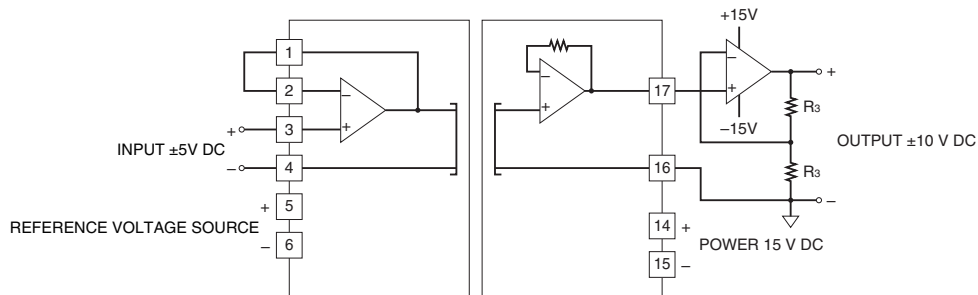
Non-inverting amplifier circuit zero/span adjustments (input ±2.5V, output ±5V)

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



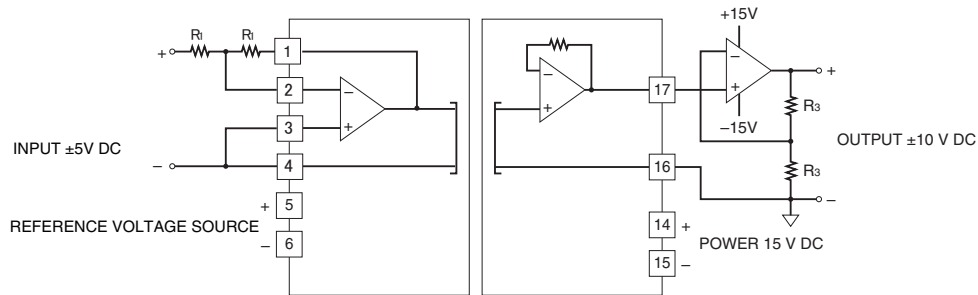
Inverting amplifier circuit zero/span adjustments (input $\pm 5V$, output $\pm 5V$)

■ Non-inverting amplifier circuit: Example of $\pm 10V$ DC output ($\pm 10V$ DC to the input $\pm 5V$ DC)



Non-inverting circuit $G = 1 + R_3 / R_3 = 2$

■ Inverting amplifier circuit: Example of $\pm 10V$ DC output (output inverted to the input)



Inverting circuit $G = -(1 + R_3 / R_3) = -2$



Specifications are subject to change without notice.