

## Hybrid IC Isolation Amplifiers 20 Series

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

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

### ISOLATION AMPLIFIER

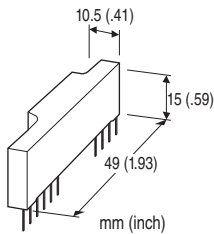
(ultra-high speed response, input isolation)

#### Functions & Features

- Being used for printed wiring board installation
- Response time 10  $\mu$ 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:  $\geq 1$  M $\Omega$  (10 k $\Omega$  in power failure)

Overload input voltage: 30 V DC continuous

#### OUTPUT SPECIFICATIONS

■ **DC Voltage:** -5 - +5 V DC

**Load resistance:**  $\geq 2$  k $\Omega$

**Output impedance:**  $\leq 1$   $\Omega$

#### REFERENCE VOLTAGE SOURCE

**Output voltage:**

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

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

**Load current:**  $\leq 2$  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:**  $\leq 10$   $\mu$ 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)

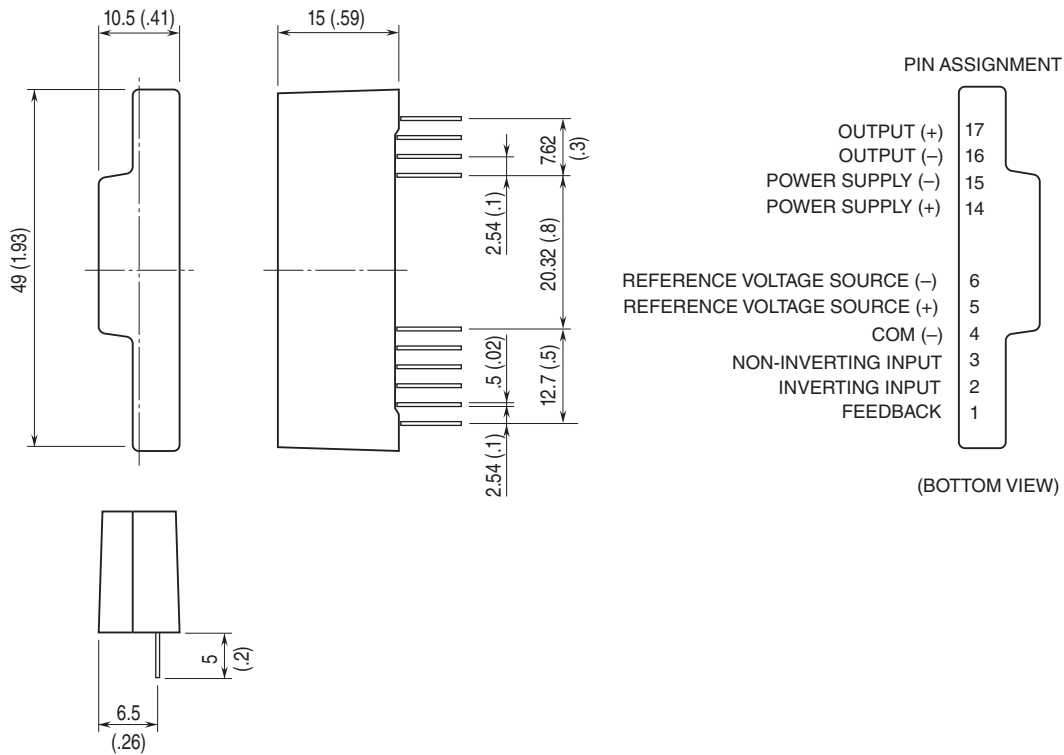
**Line voltage effect:**  $\pm 0.5$  % over voltage range

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

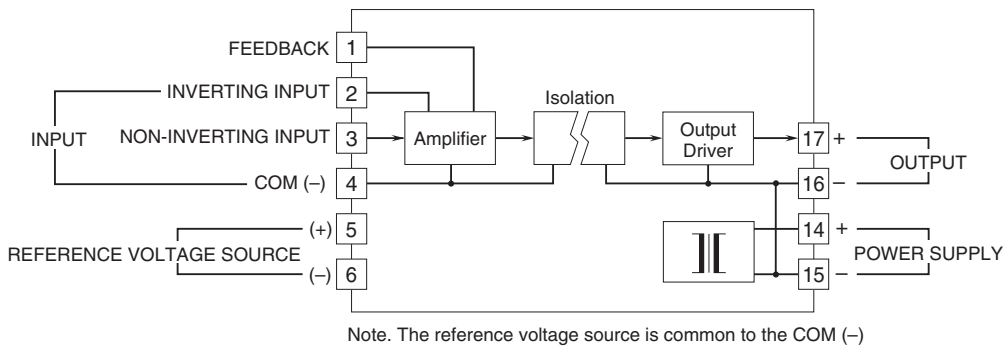
**Dielectric strength:** 1500 V AC @1 minute (input or reference voltage source to output or power)

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

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



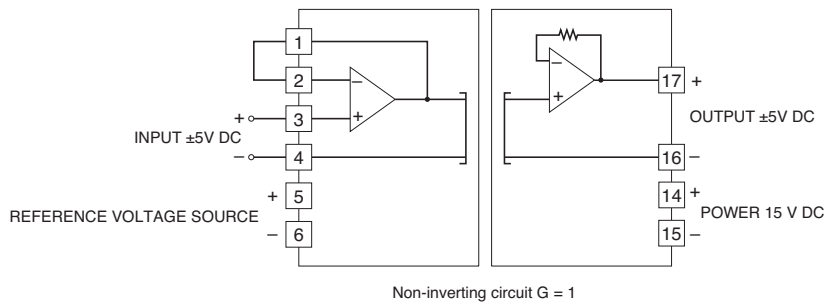
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



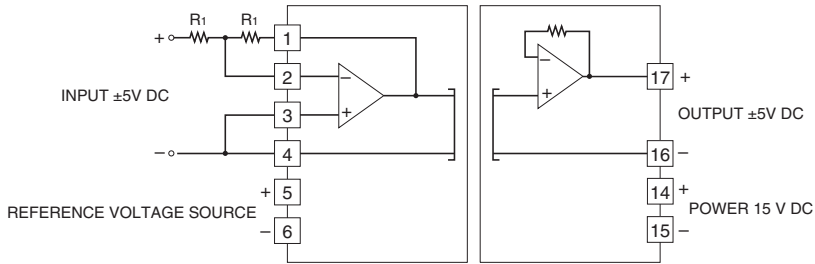
## APPLICATION EXAMPLE

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

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

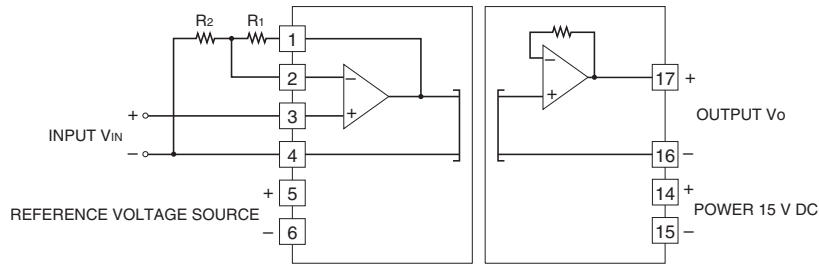


■ Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



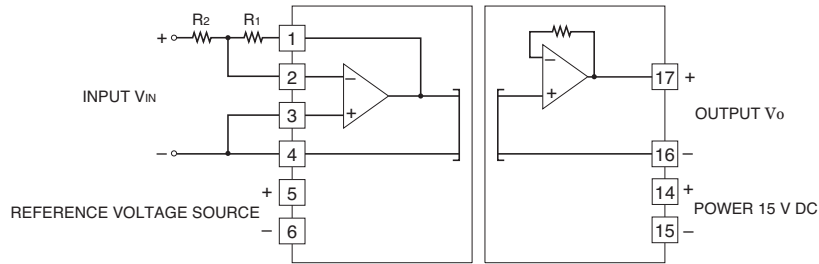
Inverting circuit  $G = -1$

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



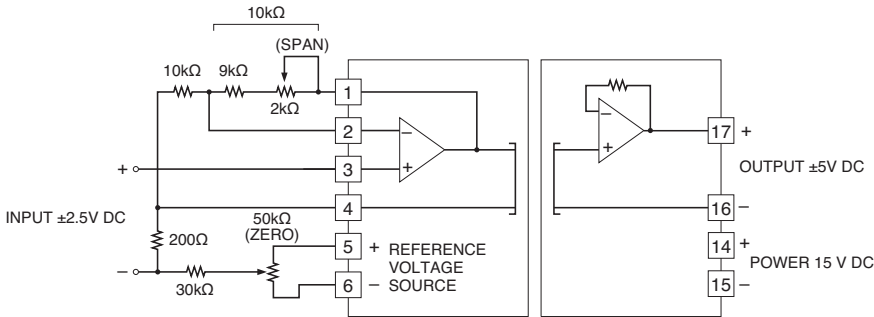
Non-inverting amplifier circuit  $G = 1 + R_1 / R_2$

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



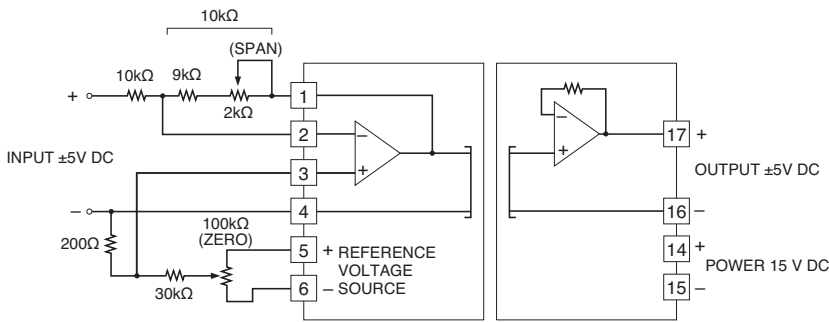
Inverting amplifier circuit  $G = -R_1 / R_2$

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



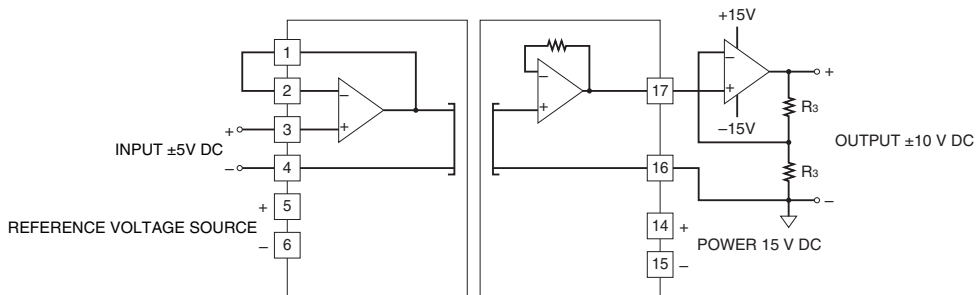
Non-inverting amplifier circuit zero/span adjustments (input ±2.5V, output ±5V)

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



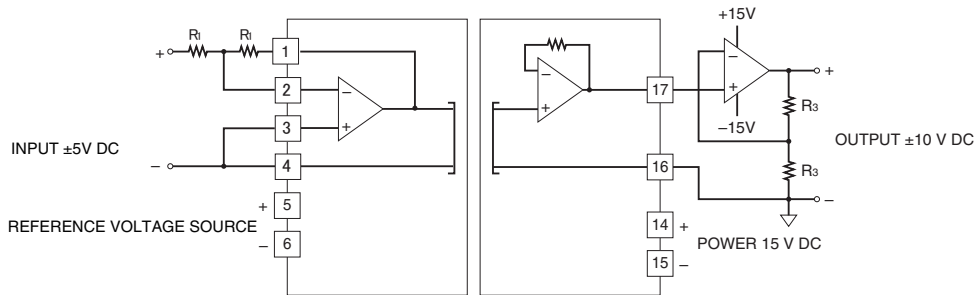
Inverting amplifier circuit zero/span adjustments (input ±5V, output ±5V)

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



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

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



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



Specifications are subject to change without notice.