

## Hybrid IC Isolation Amplifiers 20 Series

### ISOLATION AMPLIFIER

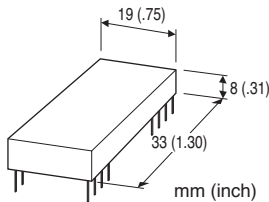
(3-port isolation)

#### Functions & Features

- Being used for printed wiring board installation
- High-linearity
- Low power consumption
- Isolating between input, output and power
- Isolation between input, output and power supply up to 1500V AC
- Power 15V DC

#### Typical Applications

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



**MODEL: 20VS2-01-U**

### ORDERING INFORMATION

- Code number: 20VS2-01-U

### TYPE

**01:** 3-port isolation

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 to output to power

### INPUT SPECIFICATIONS

■ **DC Voltage**

**Input :** -5 - +5 V DC

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

**Overload input voltage:** 30 V DC continuous

**Input offset voltage:**  $\pm 5 \text{ mV}$

**Input bias current:** 2 nA 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:**  $\pm 7 \text{ V DC} \pm 5 \%$  (when power supply is 15 V DC)

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

### INSTALLATION

#### Power input

• **DC:** Operational voltage range:

Rating  $\pm 5 \%$ ; approx. 7 mA with no load;

ripple 2 % p-p max.

**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:** 20 g (0.71 oz)

### PERFORMANCE in percentage of span

**Linearity:**  $\pm 0.001 \%$  TYP. @G = 1 ( $\pm 0.05 \%$  max.)

**Temp. coefficient:**

Offset drift 5 ppm/°C TYP. @G = 1 (20 ppm/°C max.)

span drift 10 ppm/°C TYP. @G = 1 (50 ppm/°C max.)

**Frequency characteristics:** Approx. 1 kHz, -3 dB

**Response time:**  $\leq 390 \mu\text{sec}$ . (0 - 90 %)

**Conversion gain:**  $\times 0.995 \pm 1 \%$  max.

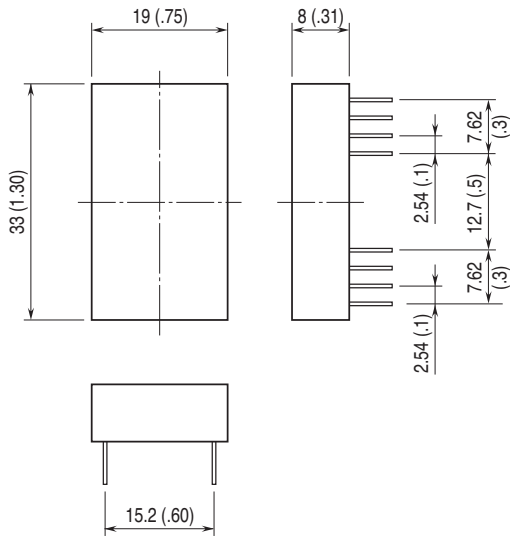
**Line voltage effect:**  $\pm 0.05 \%$  over voltage range

**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 to power)

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

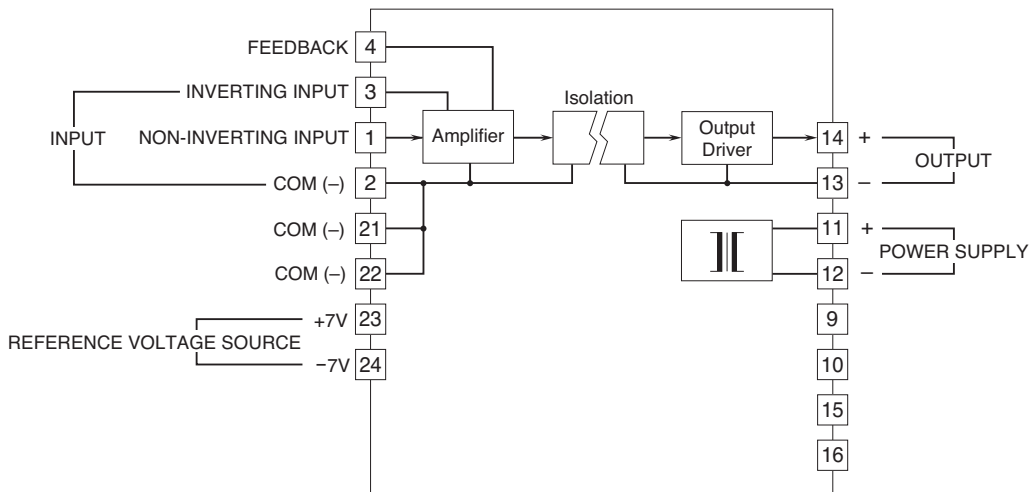
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



PIN ASSIGNMENTS			
NON-INVERTING INPUT	1	24	REFERENCE VOLTAGE SOURCE (-)
COM (-)	2	23	REFERENCE VOLTAGE SOURCE (+)
INVERTING INPUT	3	22	COM (-)
FEEDBACK	4	21	COM (-)
NC	9	16	NC
NC	10	15	NC
POWER SUPPLY (+)	11	14	OUTPUT (+)
POWER SUPPLY (-)	12	13	OUTPUT (-)

(TOP VIEW)

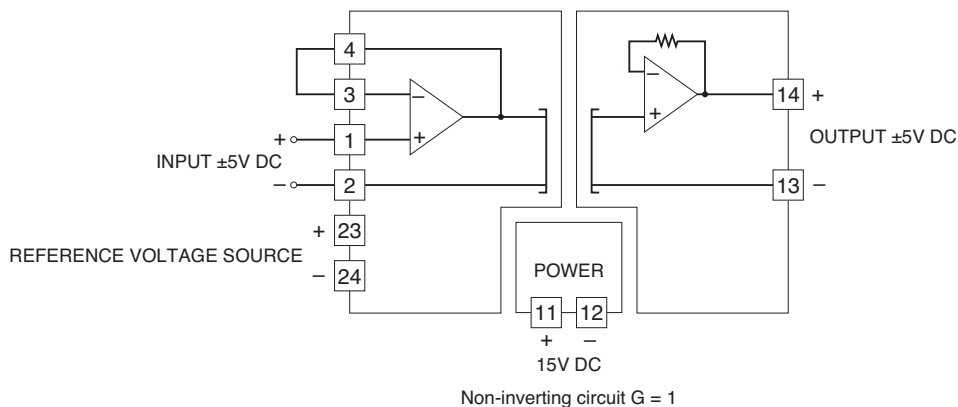
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



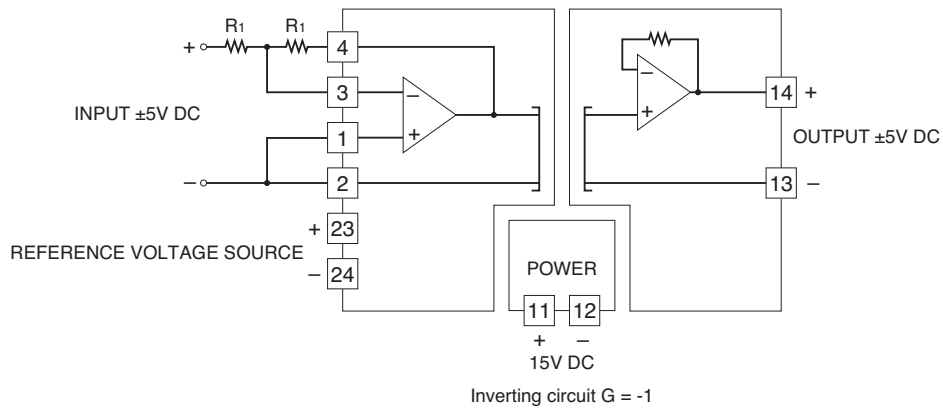
Note. The reference voltage source is common to the COM (-), terminals 2, 21 and 22.

## APPLICATION EXAMPLE

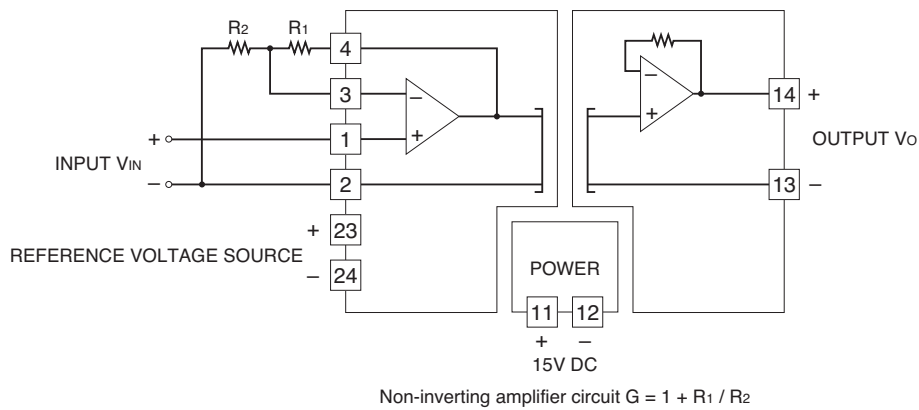
■ Non-inverting amplifier circuit: Basic example of  $G = 1$



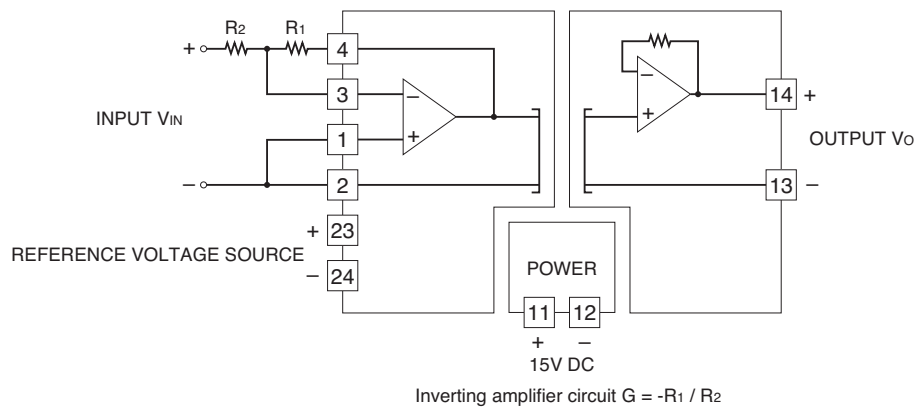
■ Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



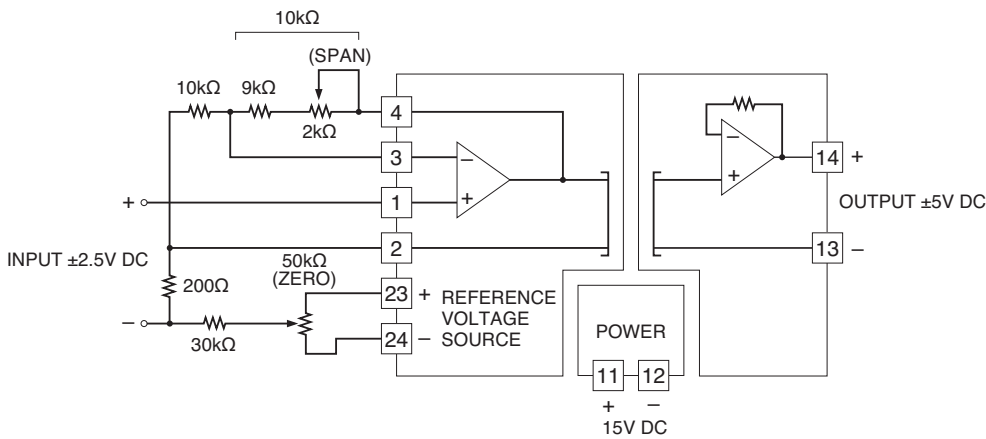
■ Non-inverting amplifier circuit: Example of  $G = 1 + R_1 / R_2$



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

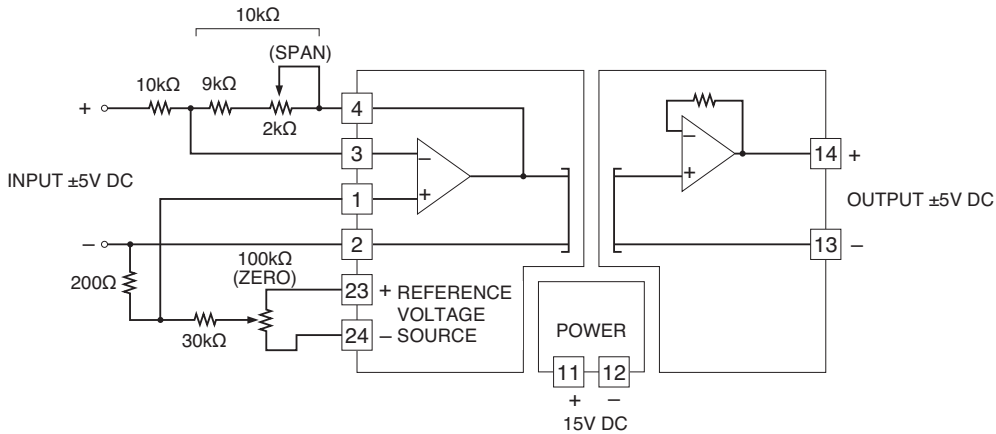


■ Non-inverting amplifier circuit with external adjustments: Example of  $G = 2$



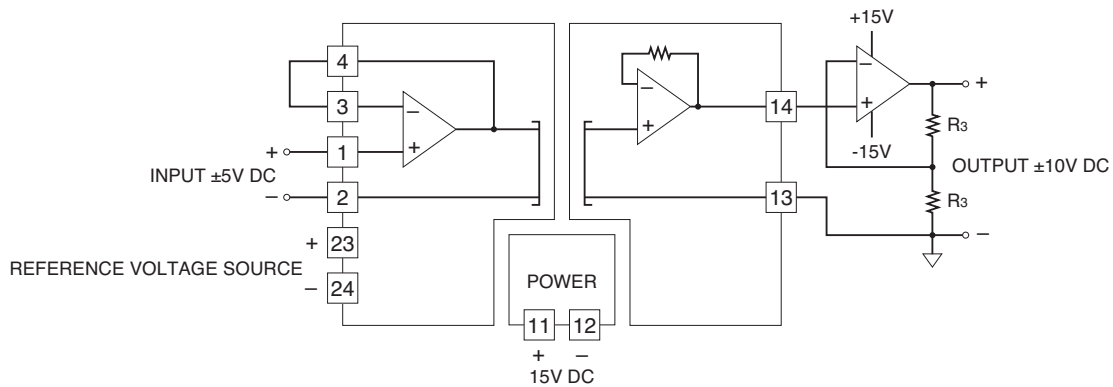
Non-inverting amplifier circuit zero/span adjustments (input  $\pm 2.5V$ , output  $\pm 5V$ )

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



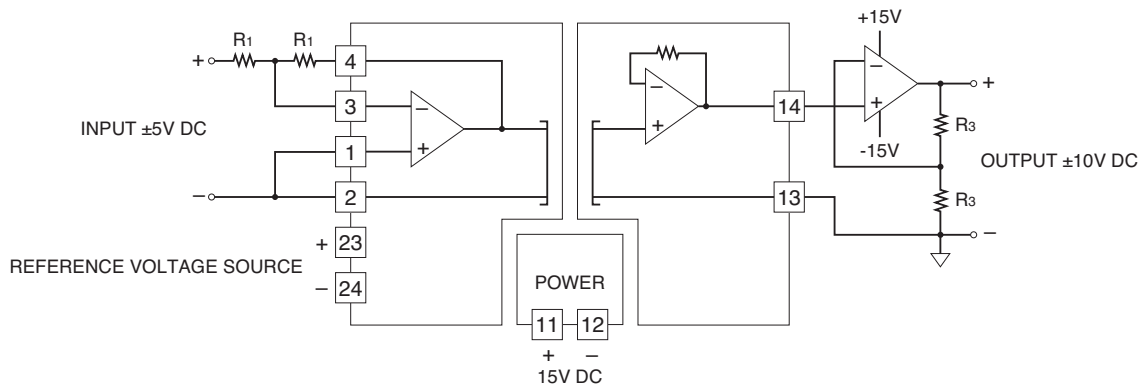
Inverting amplifier circuit zero/span adjustments (input  $\pm 5V$ , output  $\pm 5V$ )

■ 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 ±10V DC output (output inverted to the input)



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



Specifications are subject to change without notice.