

## Hybrid IC Isolation Amplifiers 20 Series

### ISOLATION AMPLIFIER

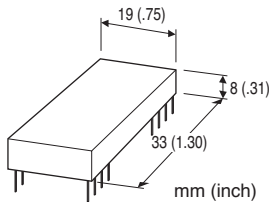
(3-port isolation)

#### 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: 20VS2-02-U

#### ORDERING INFORMATION

- Code number: 20VS2-02-U

#### TYPE

02: 3-port isolation

INPUT RANGE 0 - 5 V DC

OUTPUT RANGE 0 - 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 : 0 - 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: 0 - 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.

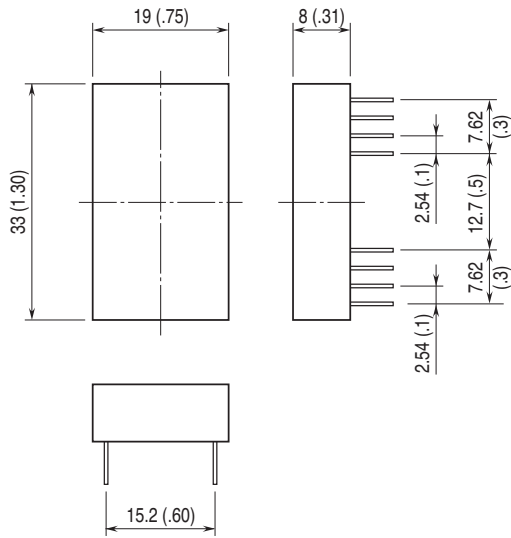
Line voltage effect:  $\pm 0.05 \%$  over voltage range

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]

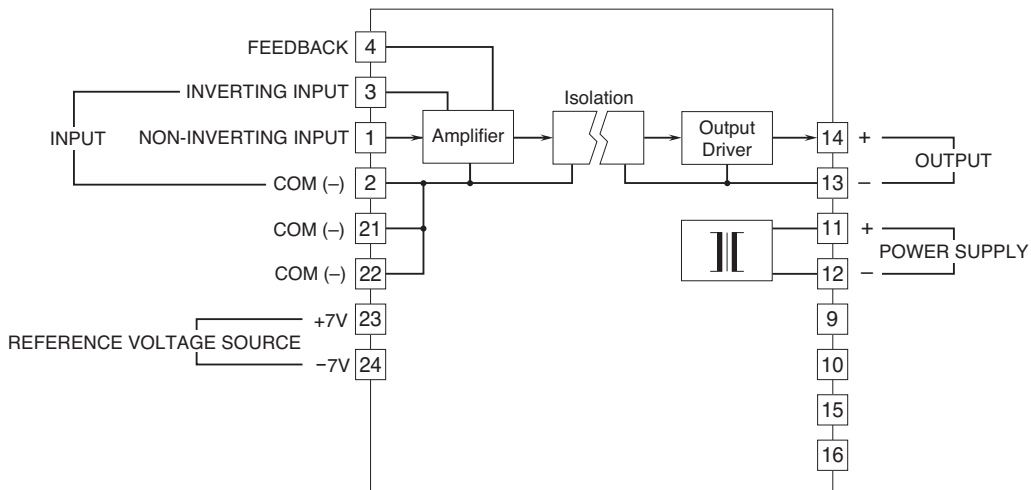


PIN ASSIGNMENTS

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)

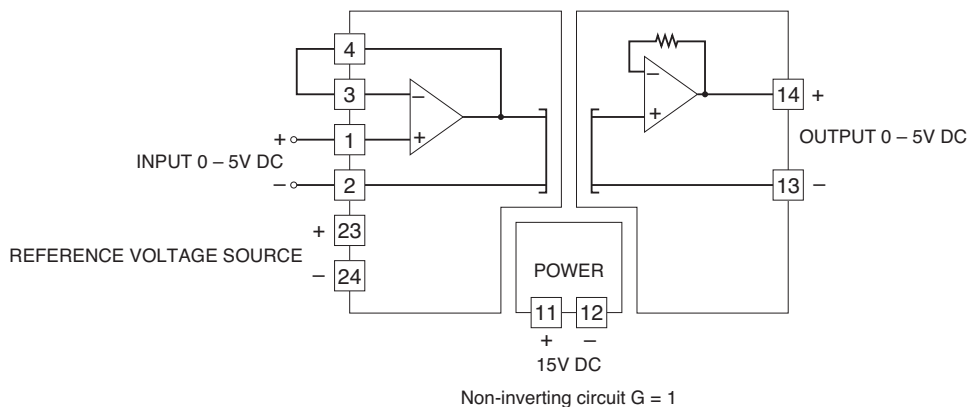
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



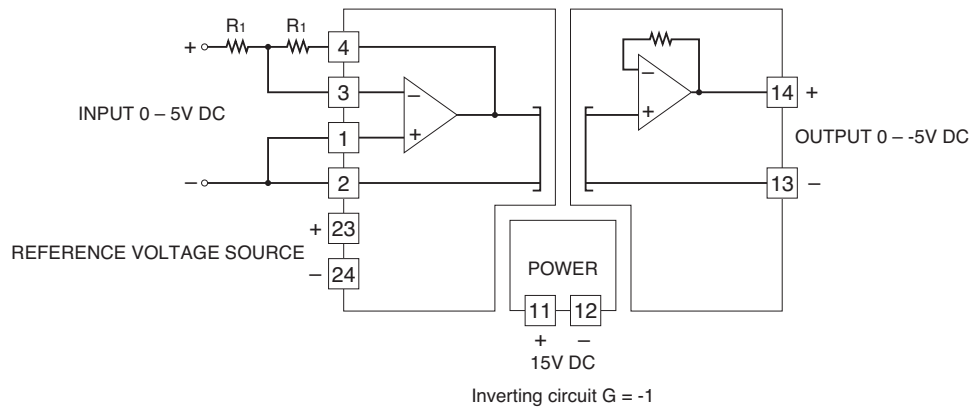
Note. The reference voltage source is common to the COM (-), terminals 2, 21 and 22.

## APPLICATION EXAMPLE

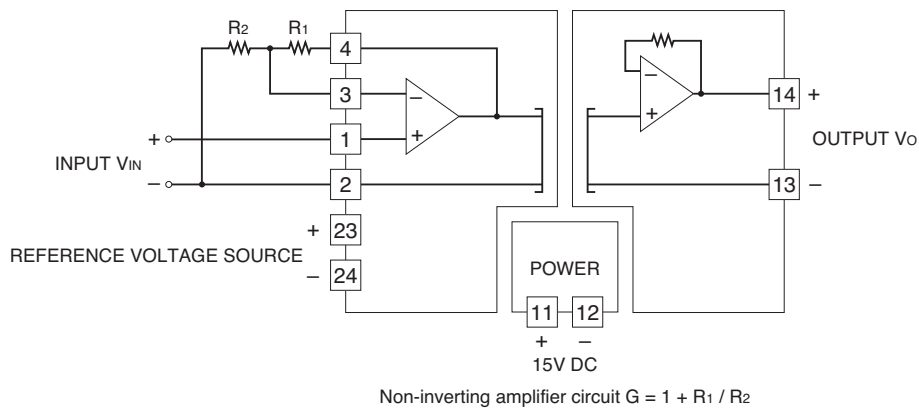
■ Non-inverting amplifier circuit: Basic example of  $G = 1$



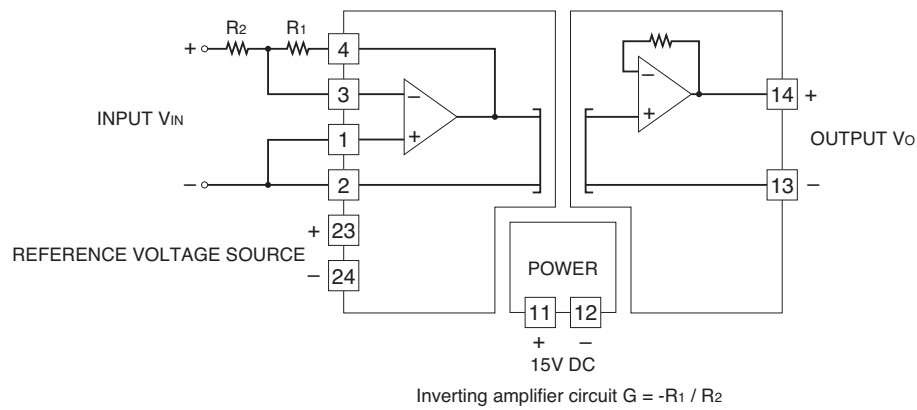
- Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



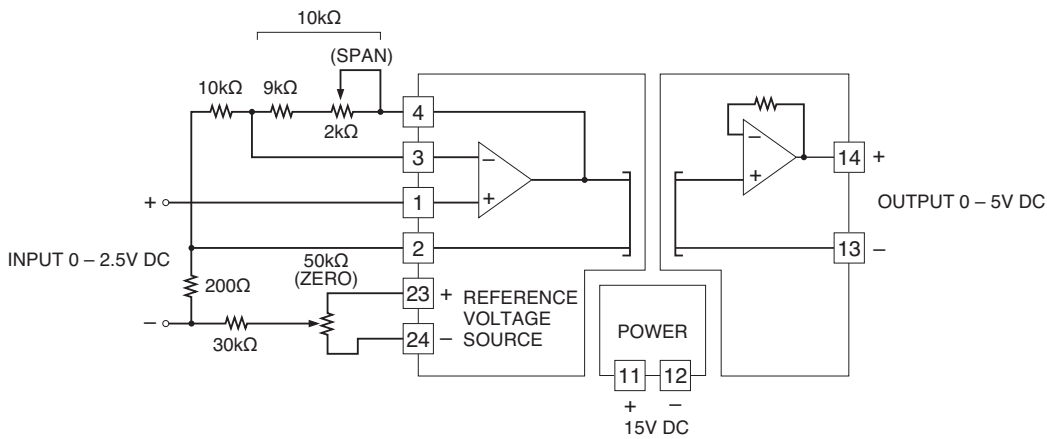
- Non-inverting amplifier circuit: Example of  $G = 1 + R_1 / R_2$



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

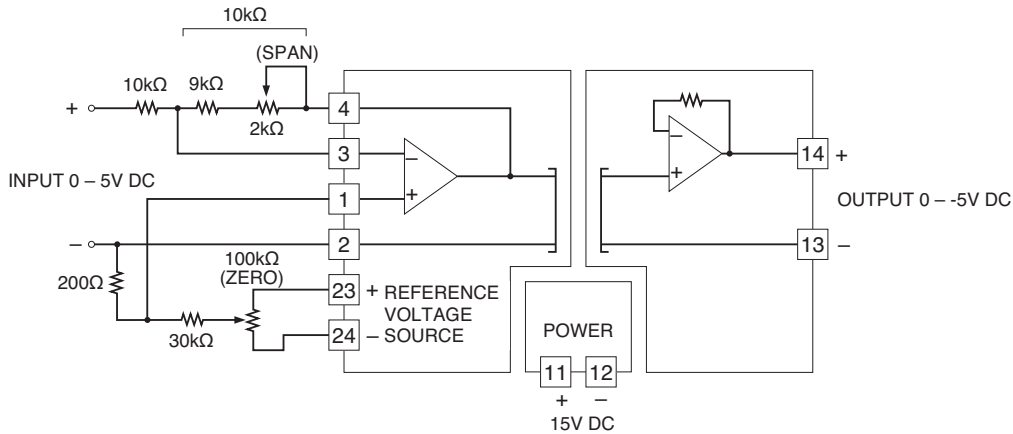


■ Non-inverting amplifier circuit with external adjustments: Example of  $G = 2$



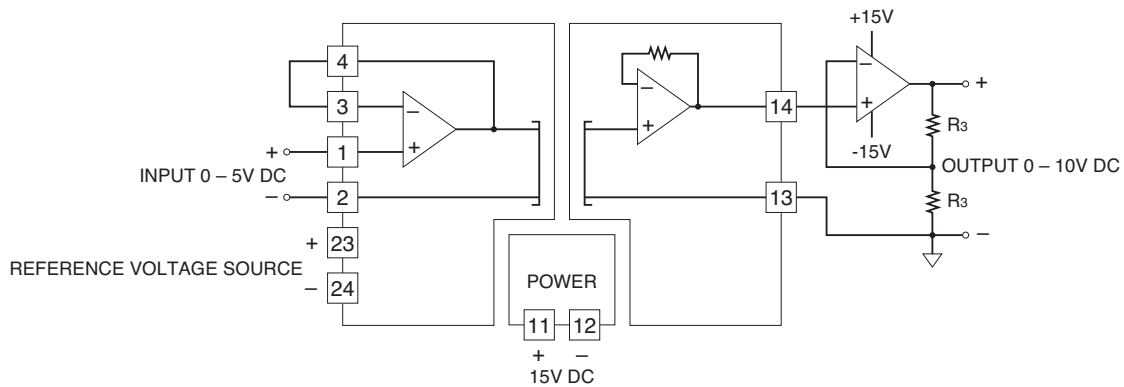
Non-inverting amplifier circuit zero/span adjustments (input 0 – 2.5V, output 0 – 5V)

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



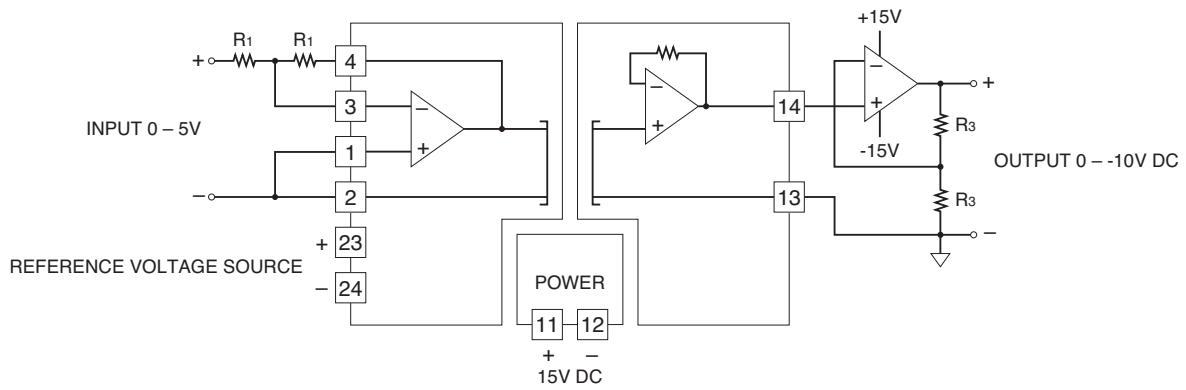
Inverting amplifier circuit zero/span adjustments (input 0 – 5V, output 0 – -5V)

■ Non-inverting amplifier circuit: Example of 0 – 10V DC output (0 – 10V DC to the input 0 – 5V DC)



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

■ Inverting amplifier circuit: Example of 0 – -10V DC output (output inverted to the input)



$$\text{Inverting circuit } G = -(1 + R_3 / R_3) = -2$$



Specifications are subject to change without notice.