

## Hybrid IC Isolation Amplifiers 20 Series

Input bias current: 0.5 nA TYP. (@25°C)

### ISOLATION AMPLIFIER

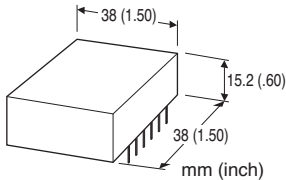
(high speed response, 5 kV input isolation)

#### Functions & Features

- Being used for printed wiring board installation
- Up to 5kV isolation between input to output or power input
- Small stray capacitance between input and output
- Small installation area in printed wiring board
- Gain adjustable range,  $\times 1$  to  $\times 10$
- 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: 20VS5-500-U

#### ORDERING INFORMATION

- Code number: 20VS5-500-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: Flame-resistant resin (black)

Isolation: Input to output or 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:  $\pm 15 \text{ mV}$

#### 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:

$\pm 7.5 \text{ V DC TYP. (+15 V power supply)}$

$\pm 7.0 \text{ V DC TYP. (+14 V power supply)}$

Load current:

$\leq 5 \text{ mA (+15 V power supply)}$

$\leq 1 \text{ mA (+14 V power supply)}$

#### INSTALLATION

Power input

##### • DC:

Operational voltage range 14 - 16 V;

ripple 2 %p-p max.; approx. 7 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: 20 g (0.71 oz)

#### PERFORMANCE in percentage of span

Linearity:  $\pm 0.05 \%$

Temp. coefficient:

Offset drift 10 ppm/°C TYP. @G = 1 (20 ppm/°C max.)

span drift 20 ppm/°C TYP. @G = 1 (50 ppm/°C max.)

Frequency characteristics: Approx. 5 kHz, -3 dB

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

Conversion gain:  $\times 1 \pm 1 \%$

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

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

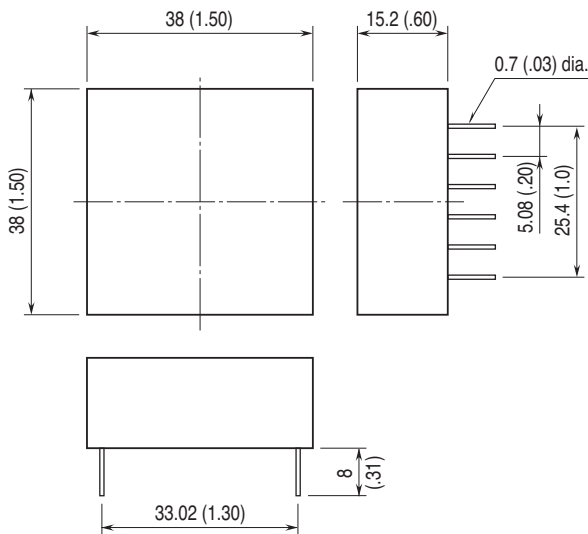
Insulation resistance:  $\geq 100 \text{ M}\Omega$  with 500 V DC

Dielectric strength: 5000 V AC @1 minute (input or

reference voltage source to output or power)

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

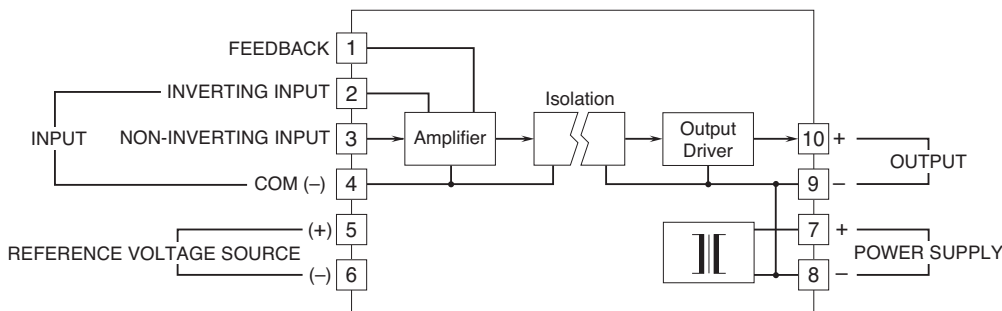
## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



PIN ASSIGNMENT	
6	7 POWER SUPPLY (+)
5	8 POWER SUPPLY (-)
4	9 OUTPUT (-)
3	10 OUTPUT (+)
2	
1	

(BOTTOM VIEW)

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

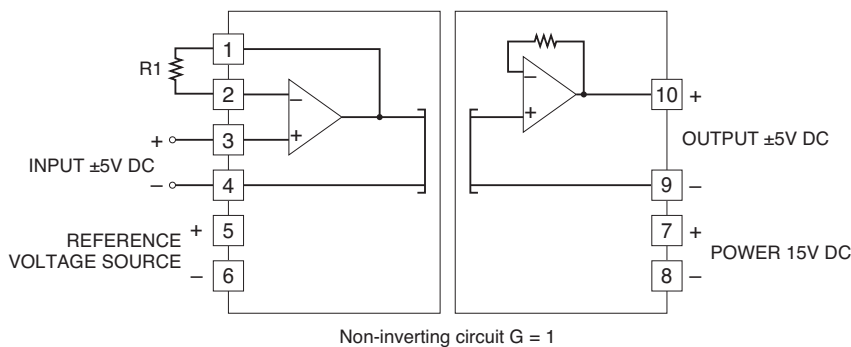


Note. The reference voltage source is common to the COM (-), terminal 4.

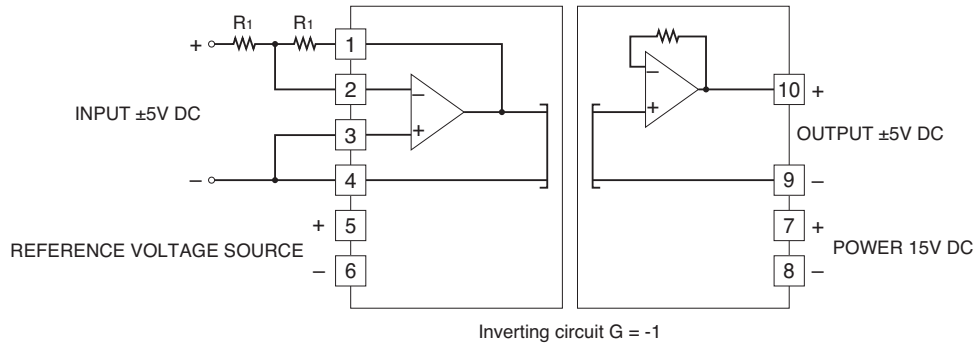
## APPLICATION EXAMPLE

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

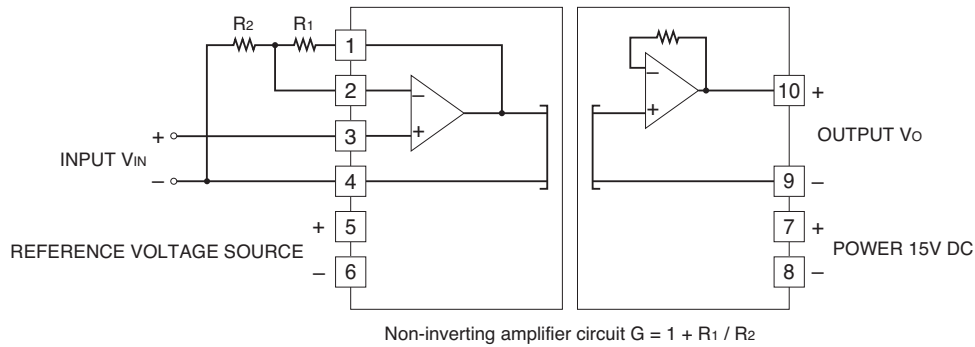
■ Non-inverting amplifier circuit: Basic example of  $G = 1$



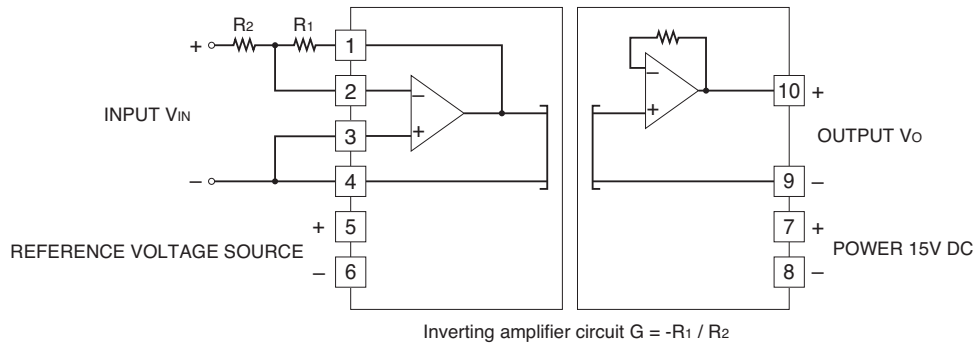
■ Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



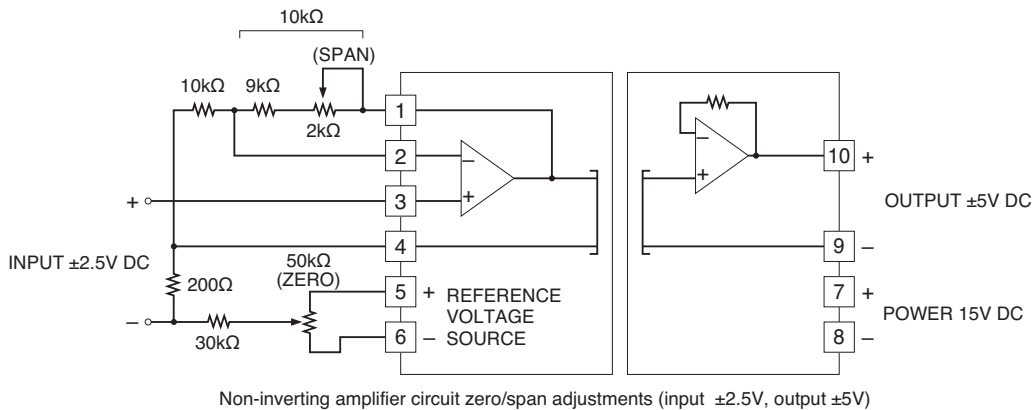
■ Non-inverting amplifier circuit: Example of  $G = 1 + R_1 / R_2$



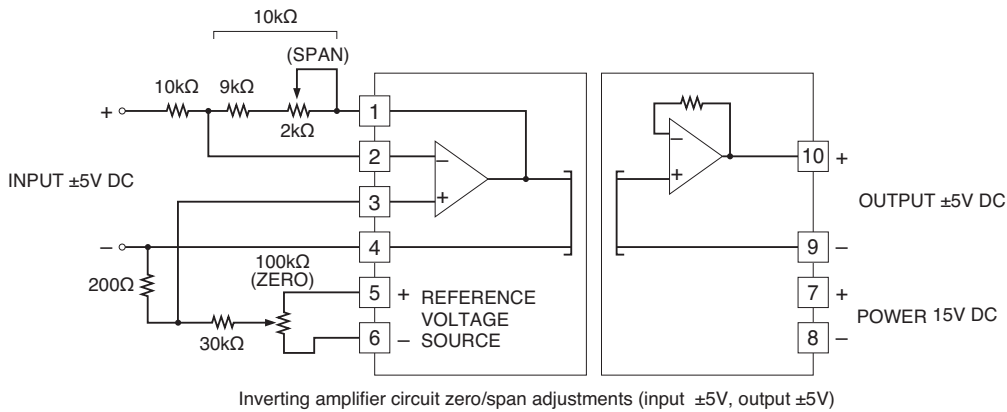
■ Inverting amplifier circuit: Example of  $G = -R_1 / R_2$  (output inverted to the input)



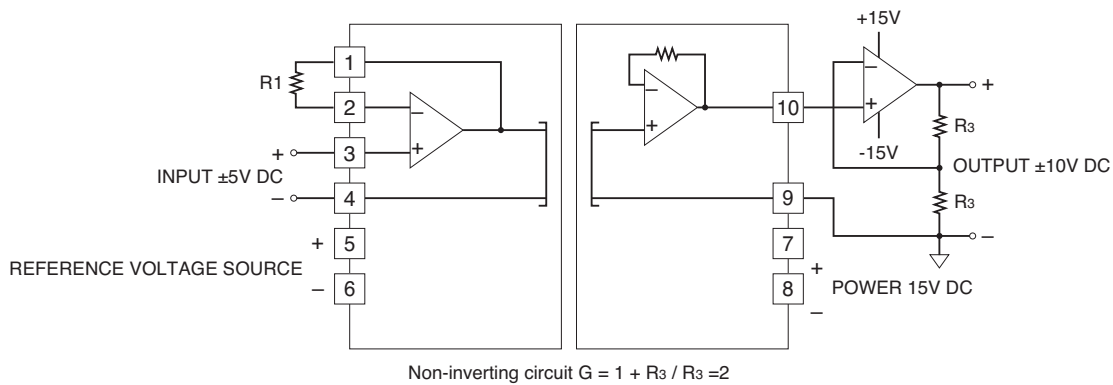
■ Non-inverting amplifier's circuit with external adjustments: Example of  $G = 2$



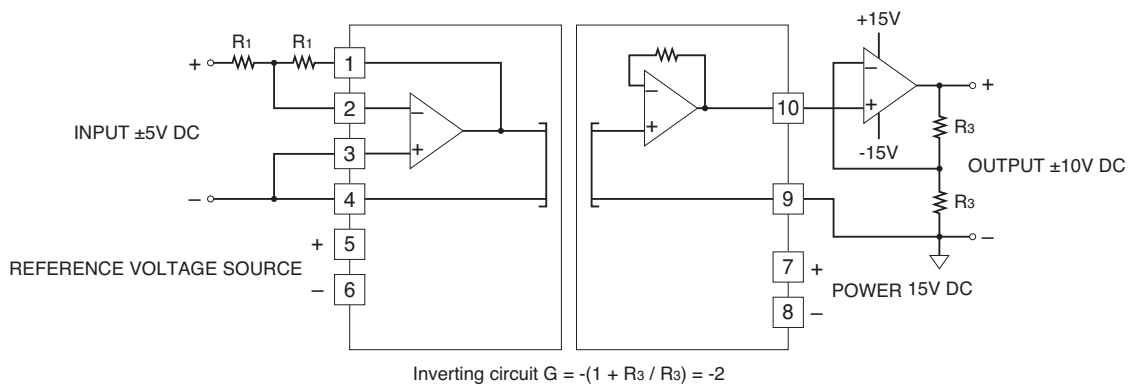
■ Inverting amplifier's circuit with external adjustments: Example of  $G = -1$  (output inverted to the input)



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



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



Specifications are subject to change without notice.