

## Hybrid IC Isolation Amplifiers 20 Series

### ISOLATION AMPLIFIER

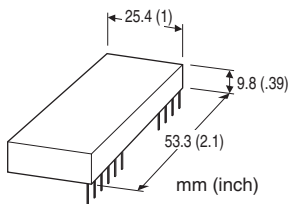
(high speed response, 3-port isolation)

#### Functions & Features

- Being used for printed wiring board installation
- High-linearity
- High speed response 50  $\mu$ sec.
- Isolating between input, output and power
- Isolation between input, output and power supply up to 3000 V AC
- 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: 20VS8-210[1]-U

### ORDERING INFORMATION

- Code number: 20VS8-210[1]-U
- Specify a code from below for [1]  
(e.g. 20VS8-210AN-U)

### TYPE

**210:** High speed response, 3-port isolation

INPUT RANGE -10 - +10 V DC

OUTPUT RANGE -10 - +10 V DC

### [1] LINEARITY

AN:  $\pm 0.025$  %

BN:  $\pm 0.012$  %

CN:  $\pm 0.008$  %

### POWER INPUT

**DC Power**

U: 15 V DC

### GENERAL SPECIFICATIONS

**Construction:** Hybrid IC

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output to power

### INPUT SPECIFICATIONS

#### ■ DC Voltage

**Input :** -10 - +10 V DC

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

**Overload input voltage:**  $\pm 15$  V DC continuous

**Input offset voltage:**  $\pm 2$  mV @ G = 1

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

### OUTPUT SPECIFICATIONS

#### ■ DC Voltage: -10 - +10 V DC

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

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

### REFERENCE VOLTAGE SOURCE

#### ■ FOR INPUT

**Output voltage:**  $\pm 16.5$  V DC  $\pm 2.5$  V (when power supply is 15 V DC)

**Load current:**  $\leq 2$  mA

#### ■ FOR OUTPUT

**Output voltage:**  $\pm 16.5$  V DC  $\pm 2.5$  V (when power supply is 15 V DC)

**Load current:**  $\leq 2$  mA

### INSTALLATION

#### Power input

• **DC:** Rating  $\pm 5$  %; approx. 50 mA with no load

**Operating temperature:** -25 to +85°C (-13 to +185°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

Unless otherwise specified, G = 1.

#### Linearity:

$\pm 0.025$  % (20VS8-210AN)

$\pm 0.012$  % (20VS8-210BN)

$\pm 0.008$  % (20VS8-210CN)

#### Temp. coefficient:

$\pm 25$  ppm/°C (0°C - 70°C; 32 - 158°F)

$\pm 50$  ppm/°C (-25°C - +85°C; -13 - +185°F)

**Frequency characteristics:** Approx. 20 kHz, -3 dB

**Response time:**  $\leq 50$   $\mu$ sec. (0 - 90 %)

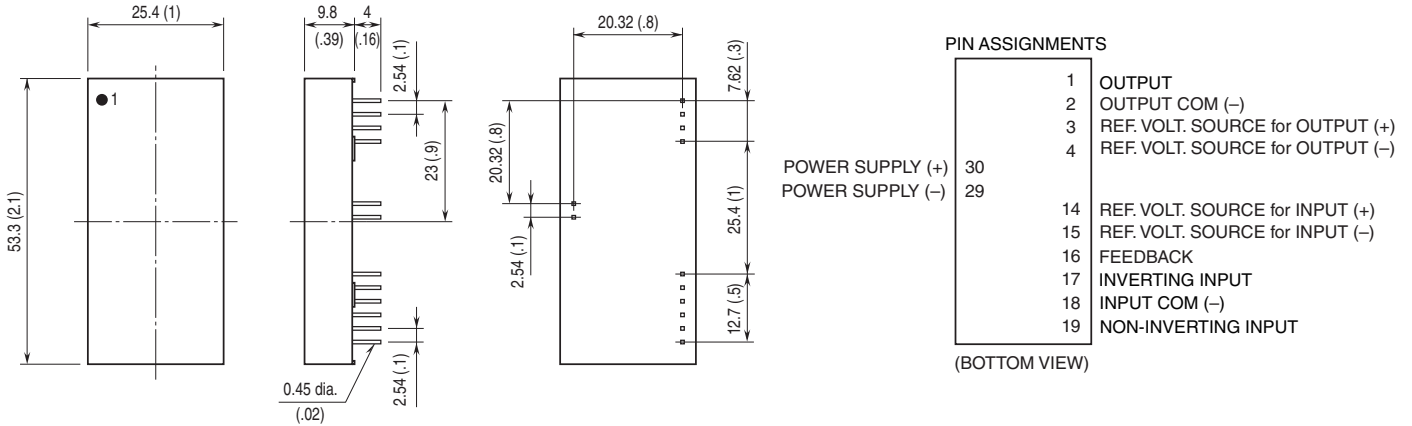
**Conversion gain:**  $\times 1 \pm 1.5$  %

**Gain adjustable range:**  $\times 1$  to  $\times 100$

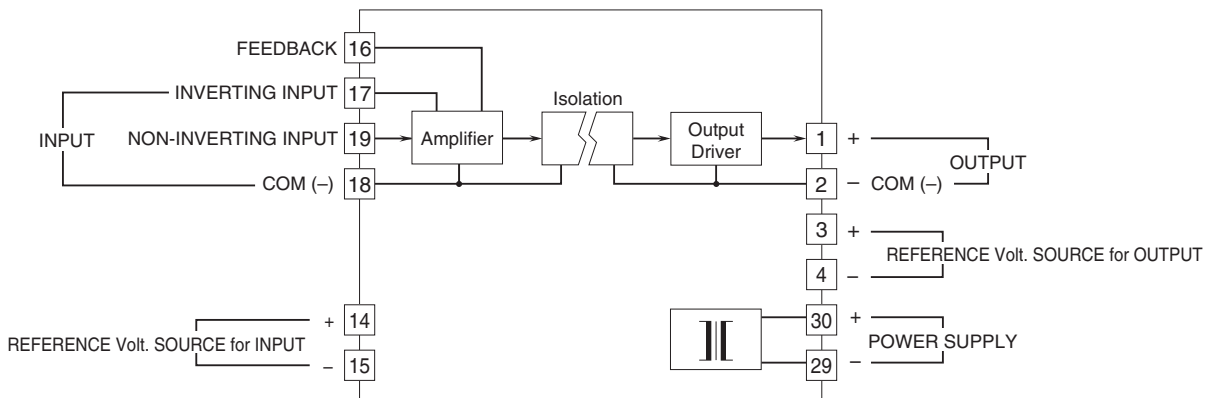
**Line voltage effect:**  $\pm 0.01$  % over voltage range

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC  
**Dielectric strength:** 3000 V AC @1 minute (input or reference voltage source for input to output or reference voltage source for output to power)  
**CMRR:**  $\geq 120 \text{ dB}$  (500 V AC 50/60 Hz)

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



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

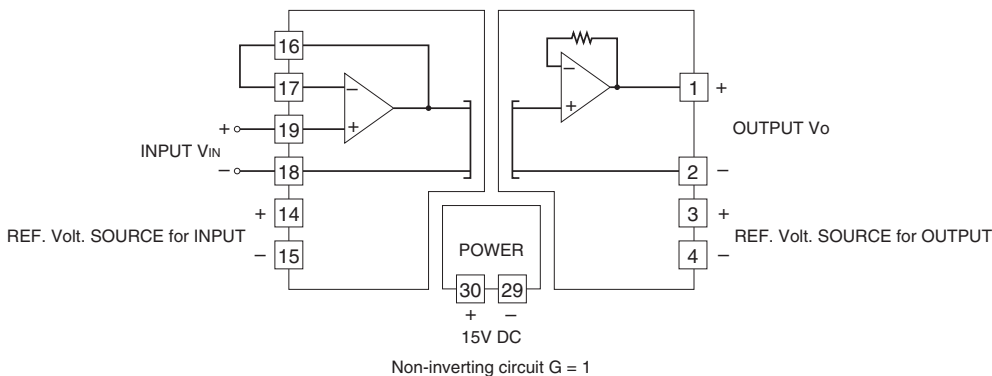


Note. The reference voltage source for input is common to the input COM (-)  
 The reference voltage source for output is common to the output COM (-)

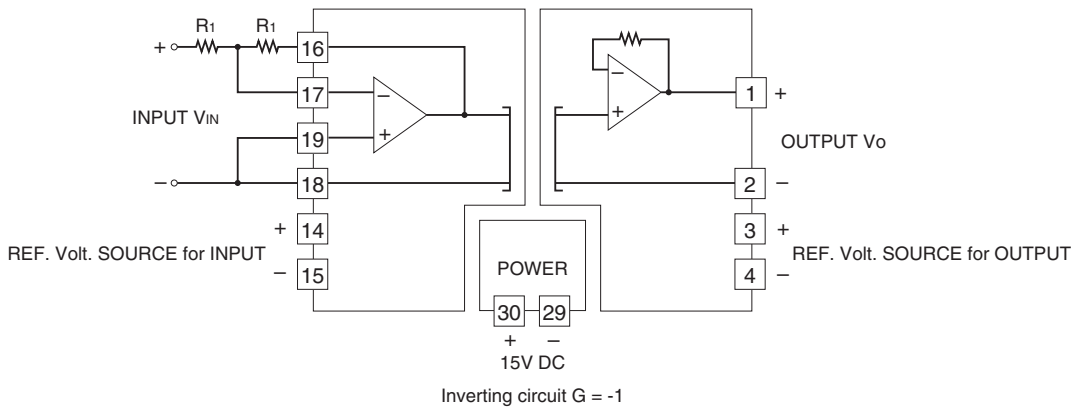
## APPLICATION EXAMPLE

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

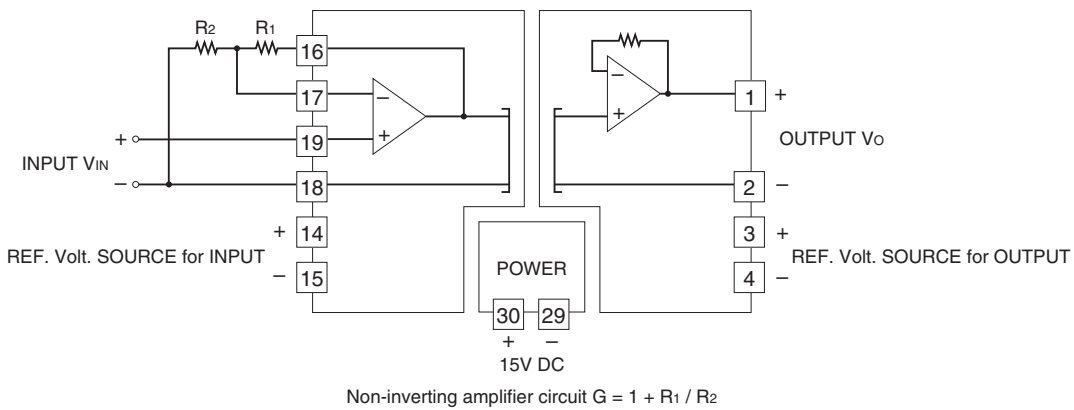
■ Non-inverting amplifier circuit: Basic example of  $G = 1$



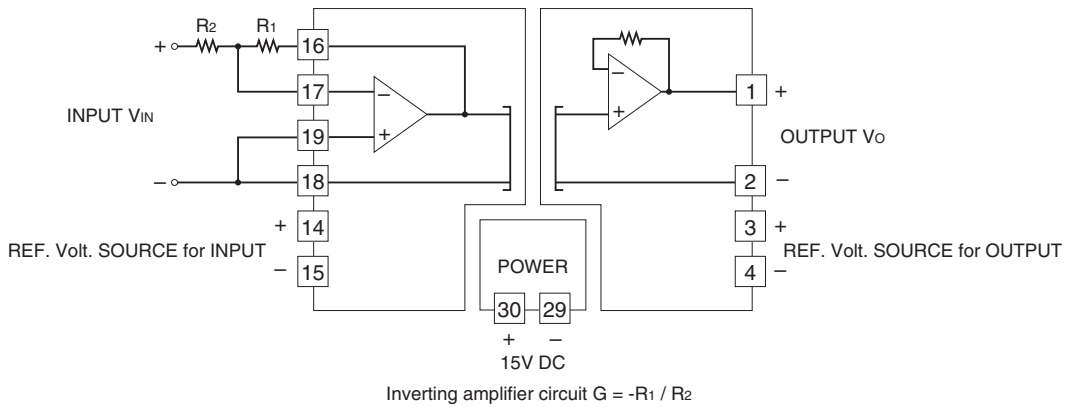
■ Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



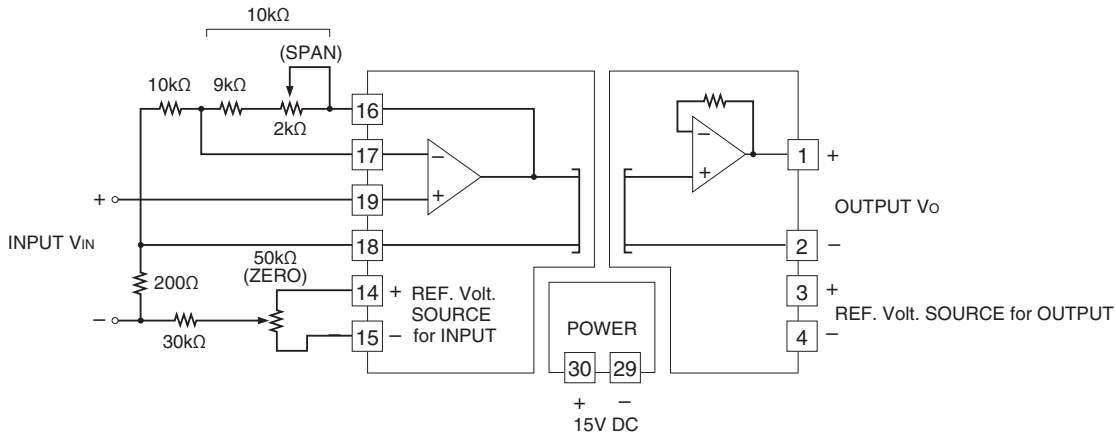
■ Non-inverting amplifier circuit: Example of  $G = 1 + R_1 / R_2$



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

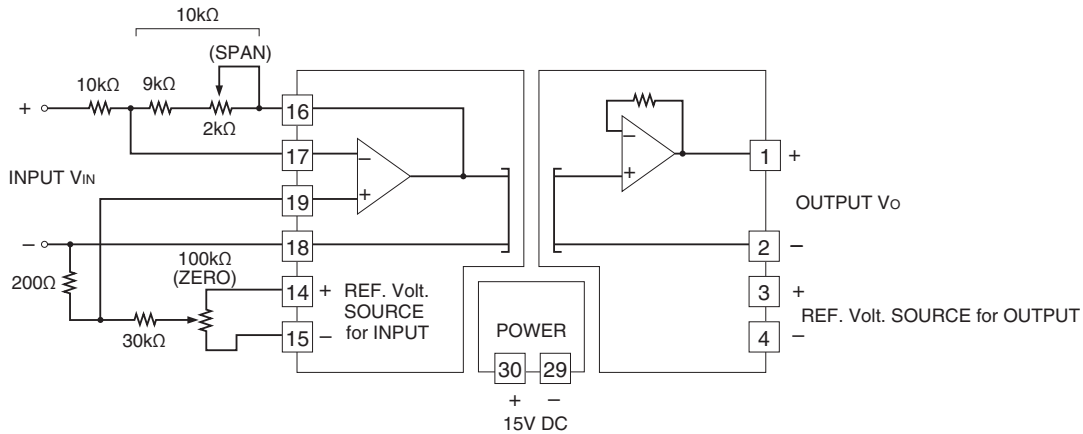


■ Non-inverting amplifier circuit with external adjustments: Example of  $G = 2$



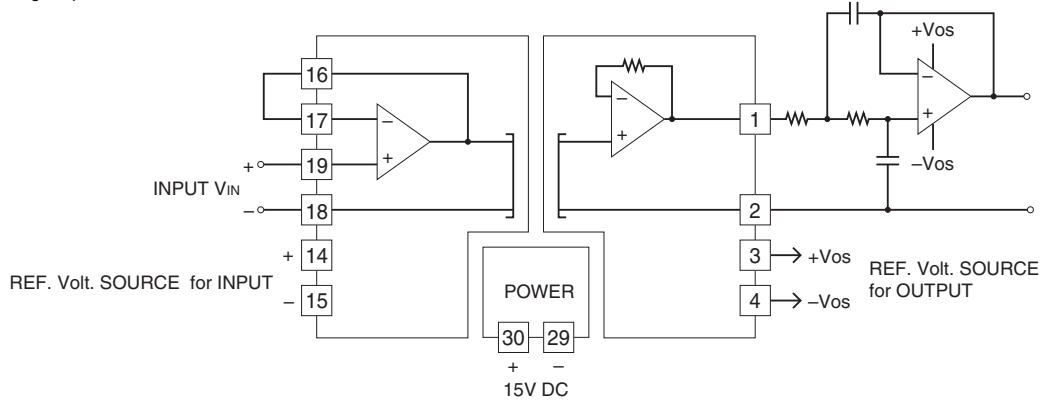
Non-inverting amplifier circuit zero/span adjustments

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



Inverting amplifier circuit zero/span adjustments

■ Non-inverting amplifier circuit: With noise filter



Specifications are subject to change without notice.