

Hybrid IC Isolation Amplifiers 20 Series

Input offset voltage: ± 15 mV
 Input bias current: 0.5 nA TYP. (@25°C)

ISOLATION AMPLIFIER

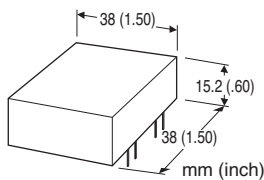
(5 kV input isolation)

Functions & Features

- Being used for printed wiring board installation
- Up to 5 kV isolation between input to output or power input
- High CMRR
- 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: 20VS4-384-U

ORDERING INFORMATION

- Code number: 20VS4-384-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: ≥ 1 M Ω (10 k Ω in power failure)
Overload input voltage: 240 V AC continuous

OUTPUT SPECIFICATIONS

■ **DC Voltage:** -5 - +5 V DC
Load resistance: ≥ 2 k Ω
Output impedance: ≤ 1 Ω

REFERENCE VOLTAGE SOURCE

Output voltage:
 ± 7.5 V DC TYP. (+15 V power supply)
 ± 7.0 V DC TYP. (+14 V power supply)
Load current: ≤ 5 mA

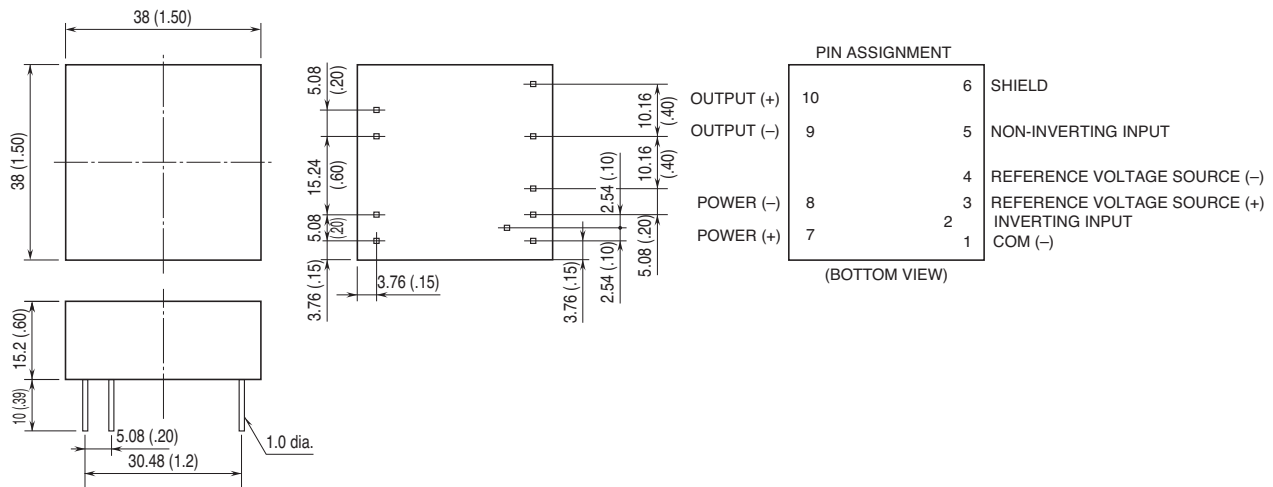
INSTALLATION

Power input
 • **DC:**
 Operational voltage range 13 - 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)

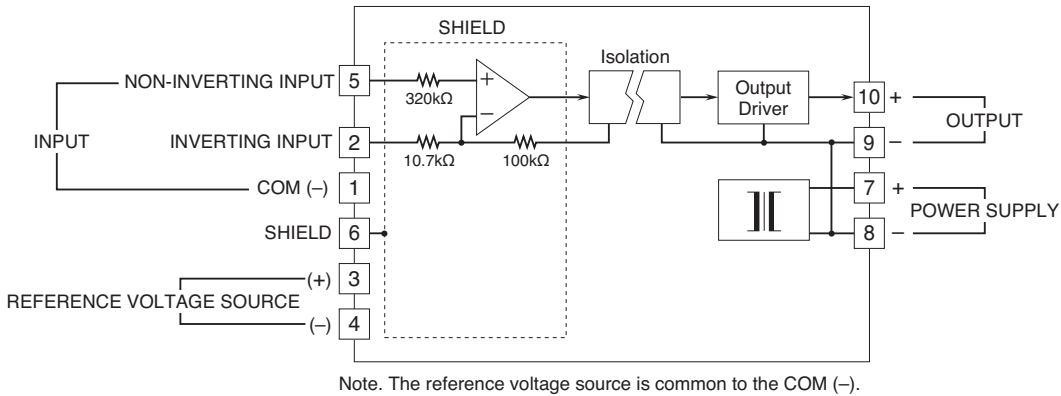
PERFORMANCE in percentage of span

Linearity: ± 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. 1 kHz, -3 dB
Response time: ≤ 450 μ sec. (0 - 90 %)
Conversion gain: $\times 1 \pm 1$ %
Gain adjustable range: $\times 1$ to $\times 10$
Line voltage effect: ± 0.1 % over voltage range
Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 5000 V AC @3 minute (input or reference voltage source to output or power)
CMRR: 114 dB TYP. (500 V AC 50/60 Hz)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

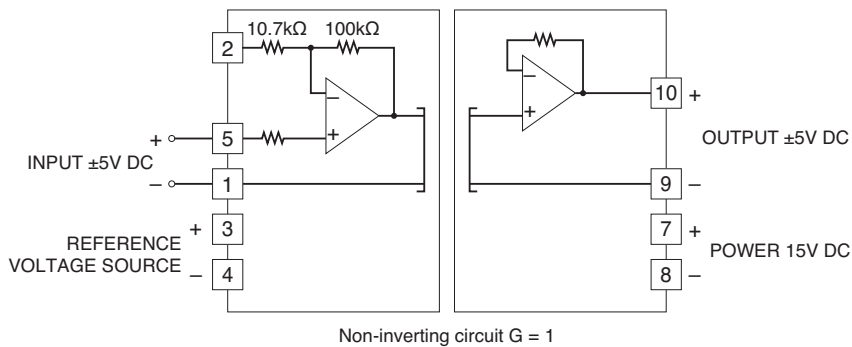


SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

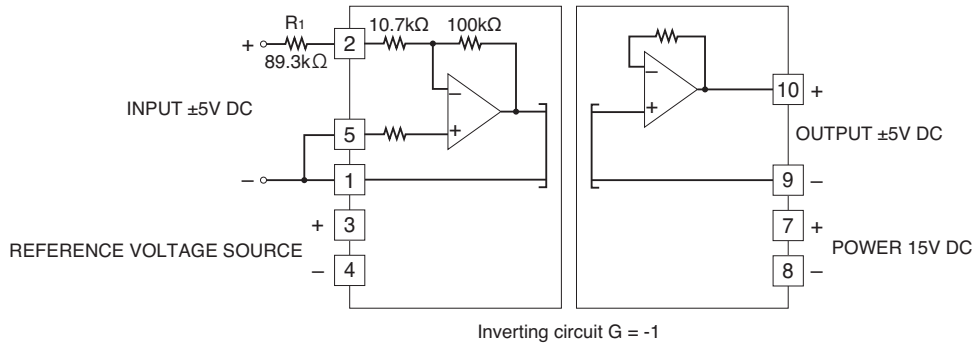


APPLICATION EXAMPLE

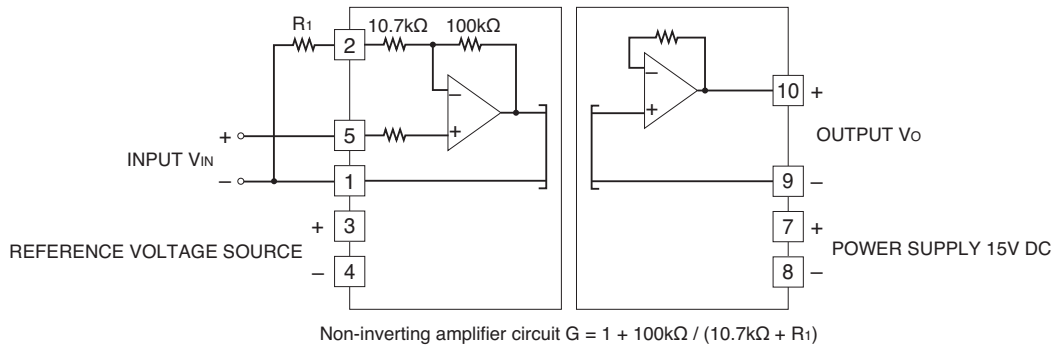
■ Non-inverting amplifier circuit: Basic example of G = 1



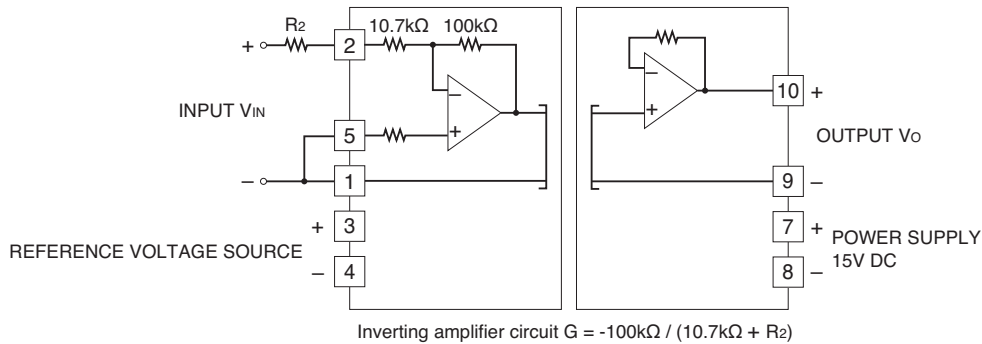
■ Inverting amplifier circuit: Basic example of $G = -1$ (output inverted to the input)



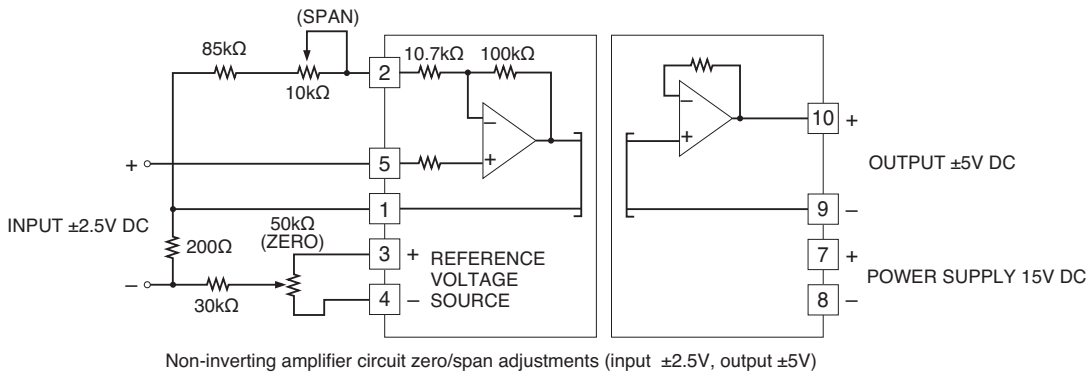
■ Non-inverting amplifier circuit: Example of $G = 1 + 100k\Omega / (10.7k\Omega + R_1)$



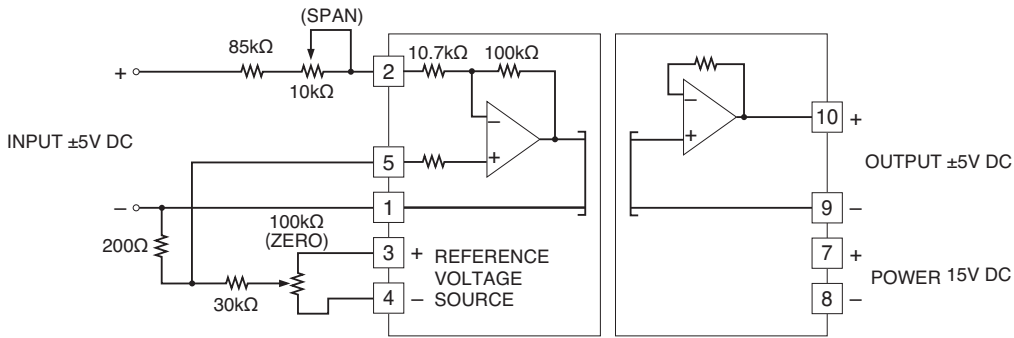
■ Inverting amplifier circuit: Example of $G = -100k\Omega / (10.7k\Omega + R_2)$ (output inverted to the input, $G: -0.5$ to -9.3)



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

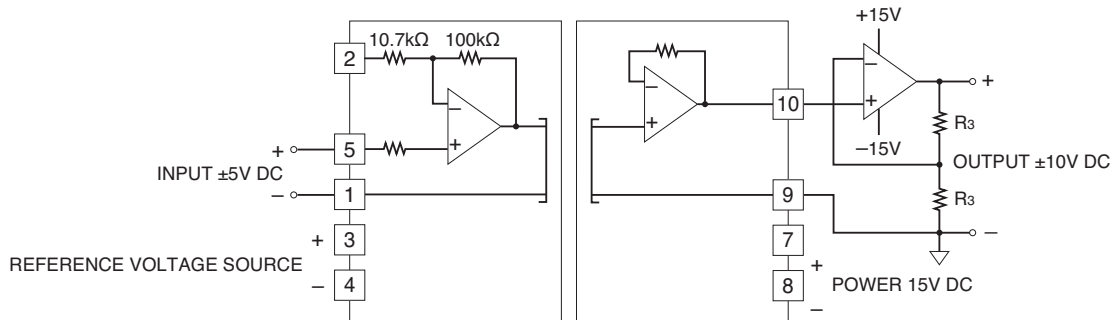


■ Inverting amplifier's circuit with external adjustments: Example of $G = -1$ (output inverted to the input)



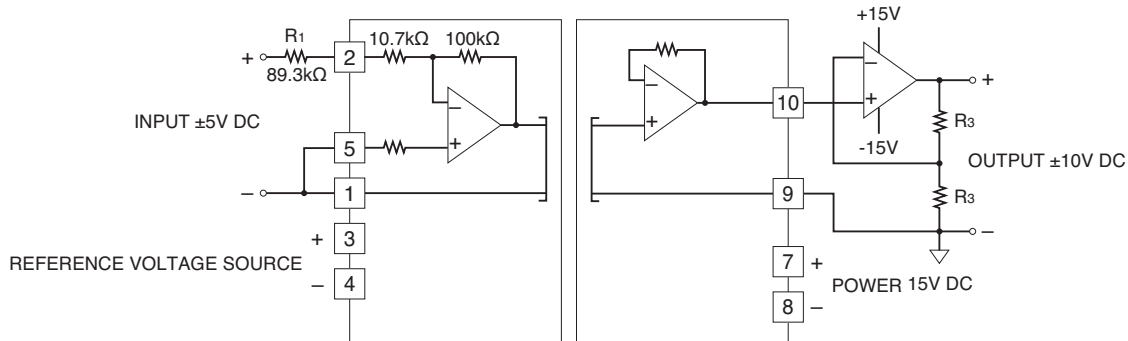
Inverting amplifier circuit zero/span adjustments (input $\pm 5V$, output $\pm 5V$)

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



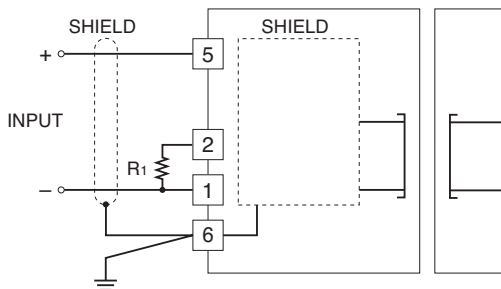
Non-inverting circuit $G = 1 + R_3 / R_3 = 2$

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



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

• Shield Cable Wiring



Specifications are subject to change without notice.