

Hybrid IC Isolation Amplifiers 20 Series

ISOLATION AMPLIFIER

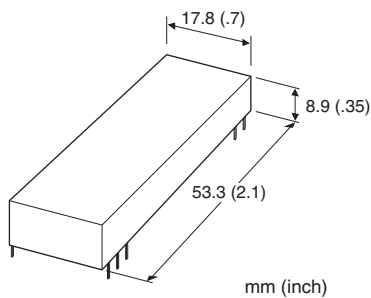
(small size, input isolation, DIP type)

Functions & Features

- Being used for printed wiring board installation
- High-linearity
- High speed response of 150 μ sec.
- Isolating between input and output or power
- Isolation between input and output or power supply up to 3000 V AC
- Power 15 V DC

Typical Applications

- Galvanically isolating the I/O circuits of microprocessor from the field side to reduce external noise
- Enabling electronic manufacturers to save efforts and cost for the development of isolation circuits for small-lot products



MODEL: 20VS8-202N[1]-U

ORDERING INFORMATION

- Code number: 20VS8-202N[1]-U
- Specify a code from below for [1].
(e.g. 20VS8-202NL-U)

TYPE

202N: Input isolation
INPUT RANGE -5 - +5 V DC
OUTPUT RANGE -5 - +5 V DC

[1] LINEARITY

J: ± 0.05 %
K: ± 0.025 %
L: ± 0.012 %

POWER INPUT

DC Power
U: 15 V DC

GENERAL SPECIFICATIONS

Construction: Hybrid IC
Housing material: Flame-resistant resin (black)
Isolation: Input or reference voltage source to output or power supply

INPUT SPECIFICATIONS

■ DC Voltage
Input : -5 - +5 V DC
Input resistance: ≥ 1 M Ω (10 k Ω in power failure)
Overload input voltage: ± 15 V DC continuous
Input offset voltage: ± 2 mV @ G = 1
Input bias current: 25 pA TYP. (@25°C)

OUTPUT SPECIFICATIONS

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

REFERENCE VOLTAGE SOURCE

■ FOR INPUT
Output voltage: ± 8.5 V DC ± 1 V (@ 15 V DC power supply)
Load current: ≤ 1 mA

INSTALLATION

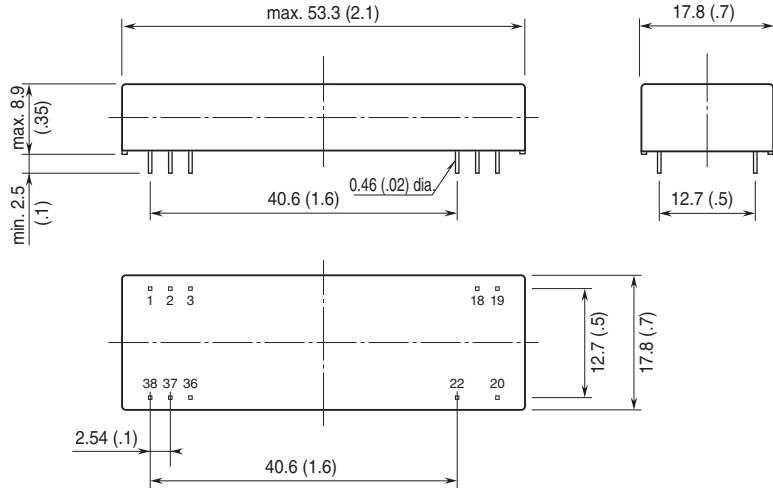
Power input
• DC: Rating ± 5 %; approx. 7.5 mA with no load
Operating temperature: -25 to +85°C (-13 to +185°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: Soldering to the printed wiring board
Weight: 13 g (0.46 oz)

PERFORMANCE in percentage of span

Unless otherwise specified, G = 1.
Linearity:
 ± 0.05 % (20VS8-202NJ)
 ± 0.025 % (20VS8-202NK)
 ± 0.012 % (20VS8-202NL)
Temp. coefficient:
 ± 25 ppm/°C (0°C - 70°C; 32 - 158°F)
 ± 50 ppm/°C (-25°C - +85°C; -13 - +185°F)
Frequency characteristics: Approx. 2 kHz, -3 dB
Response time: ≤ 150 μ sec. (0 - 90 %)
Conversion gain: $\times 1 \pm 1.5$ %
Gain adjustable range: $\times 1$ to $\times 100$

- Line voltage effect: $\pm 0.02\%$ 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 to output or power supply)
- CMRR: $\geq 120\text{ dB}$ (500 V AC 50/60 Hz)

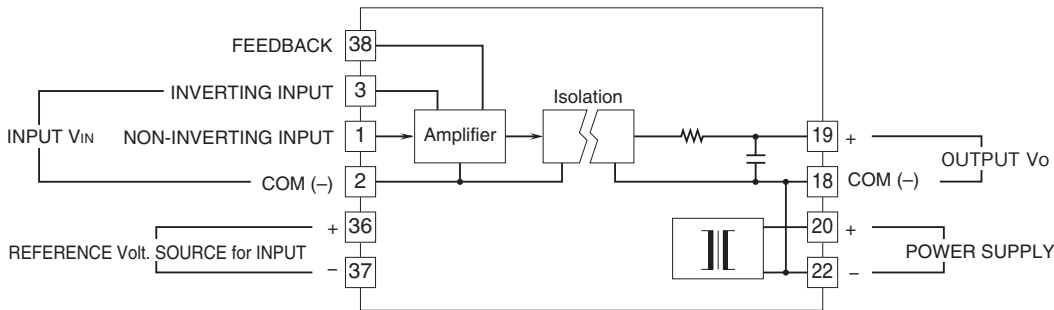
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



PIN ASSIGNMENTS

1	Non-inverting Input
2	Input COM (-)
3	Inverting Input
18	Output COM (-)
19	Output (+)
20	Power Supply (+)
22	Power Supply (-)
36	Reference Voltage Source (+)
37	Reference Voltage Source (-)
38	Feedback

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

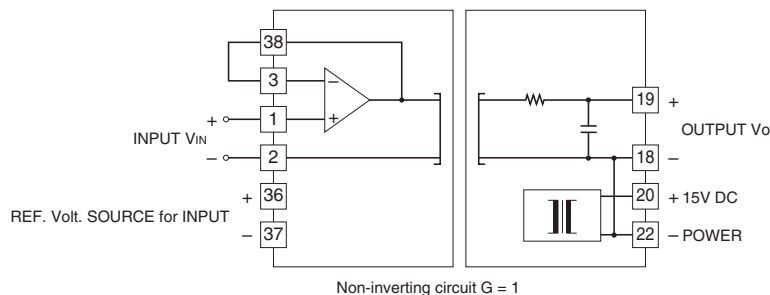


Note. The reference voltage source for input is common to the input COM (-)

APPLICATION EXAMPLE

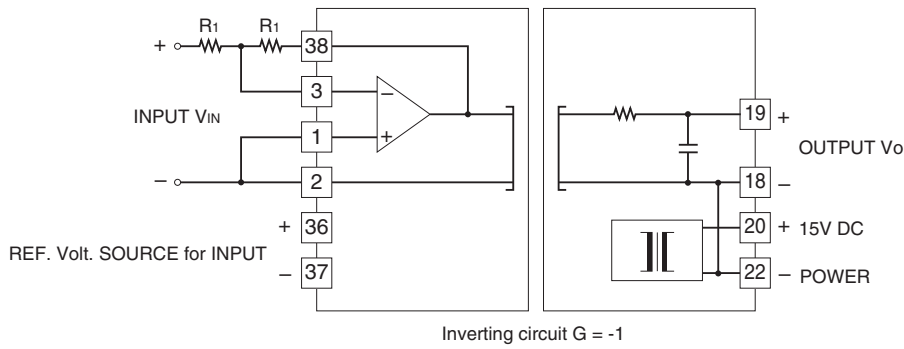
$10\text{ k}\Omega \leq (R_1 + R_2) \leq 200\text{ k}\Omega$

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

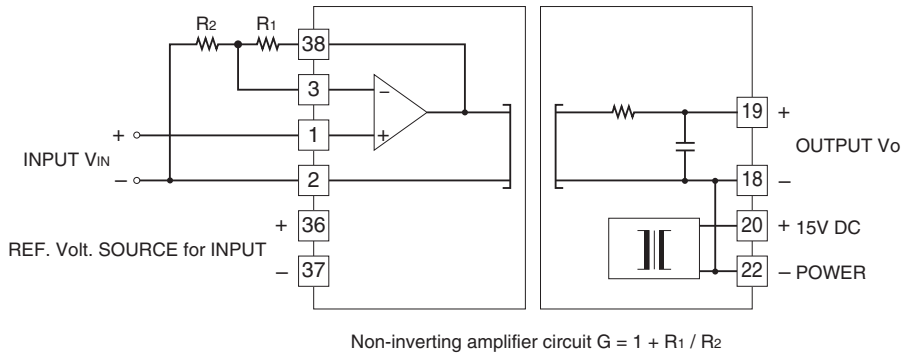


Non-inverting circuit $G = 1$

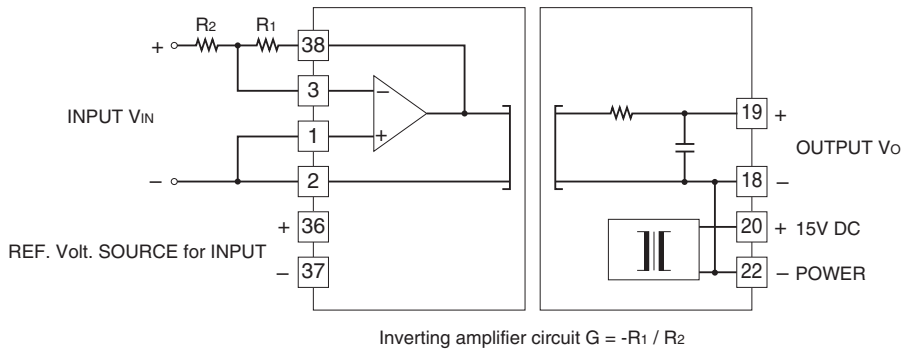
■ Inverting amplifier circuit: Basic example of $G = -1$ (output is inverted from the input)



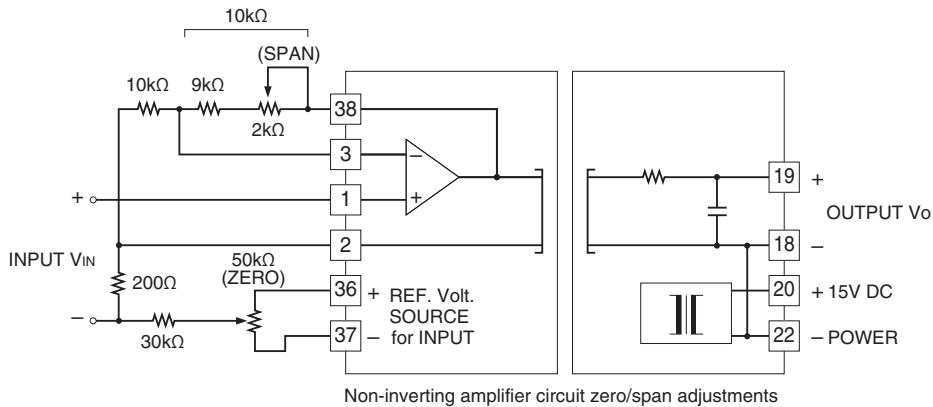
■ Non-inverting amplifier circuit: Example of $G = 1 + R_1 / R_2$



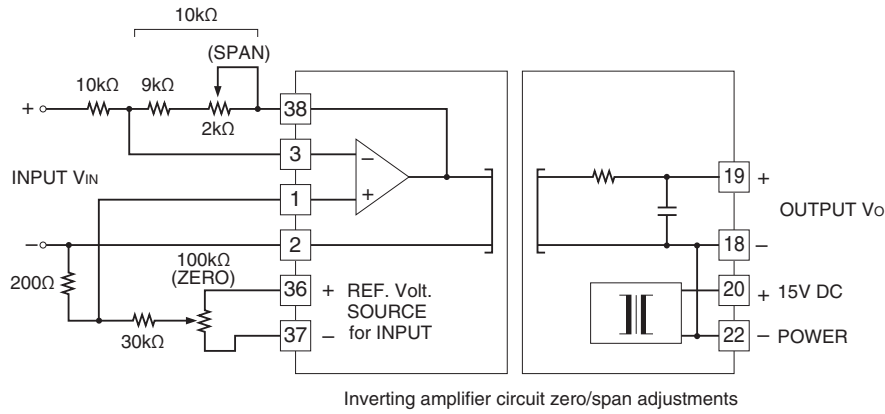
■ Inverting amplifier circuit: Example of $G = -R_1 / R_2$ (output is inverted from the input)



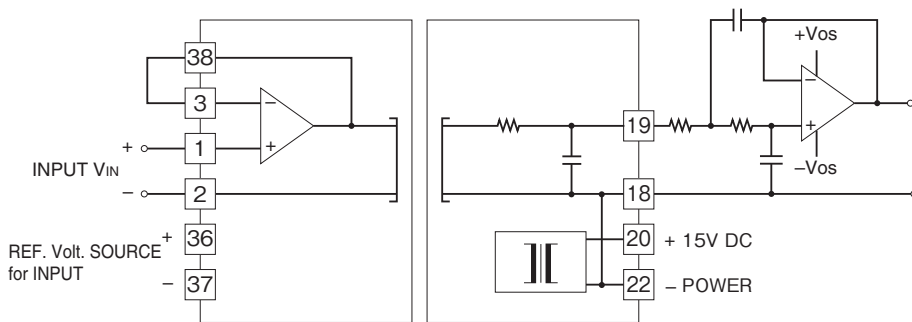
■ Non-inverting amplifier circuit with external adjustments: Example of $G = 2$



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



■ Non-inverting amplifier circuit: With noise filter



Specifications are subject to change without notice.