Hybrid IC Isolation Amplifiers 20 Series

ISOLATION AMPLIFIER

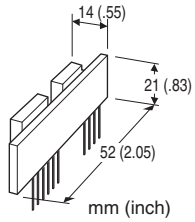
(input isolation)

Functions & Features

- Being used for printed wiring board installation
- Up to 2.3 kV 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, × 1 to × 10
- Power 11.5 - 16 V DC

Typical Applications

- Isolating the field and iput circuit of microprocessor to reduce noise from field
- Available for manufacturers of small-lot products to omit the development of isolation circuit



MODEL: 20VS1B–7W7W–U

ORDERING INFORMATION

- Code number: 20VS1B-7W7W-U

INPUT / OUTPUT

7W7W: -7.5 - +7.5 V DC (Input resistance 1 MΩ min.)
/ -7.5 - +7.5 V DC (Load resistance 5 kΩ min.)

POWER INPUT

DC Power

U: 15 V DC

GENERAL SPECIFICATIONS

Construction: Hybrid IC
Isolation: Input to output or power

INPUT SPECIFICATIONS

■ DC Voltage
Input : -7.5 – +7.5 V DC
Input resistance: ≥ 1 MΩ (10 kΩ in power failure)
Overload input voltage: ±30 V DC continuous
Input offset voltage: ±30 mV
Input bias current: 0.5 nA TYP. (@25°C)

OUTPUT SPECIFICATIONS

■ DC Voltage: -7.5 – +7.5 V DC
Load resistance: ≥ 5 kΩ
Output impedance: ≤ 1 Ω

REFERENCE VOLTAGE SOURCE

Output voltage:
±15 V DC TYP. (+15 V power supply)
±11 V DC TYP. (+11.5 V power supply)
Load current: ≤ 2 mA

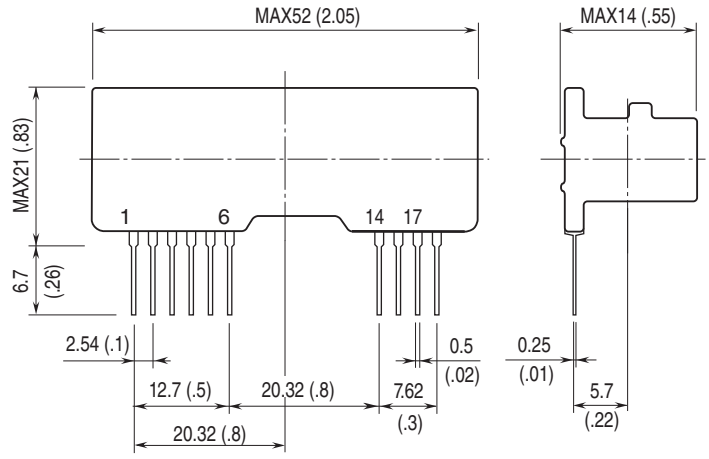
INSTALLATION

Power input
•**DC**:
Operational voltage range 11.5 – 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: 10g (0.35 oz)

PERFORMANCE in percentage of span

Linearity: ±0.05 %
Temp. coefficient:
Offset drift 50 ppm/°C @G = 1
Span drift 50 ppm/°C @G = 1
Frequency characteristics: 1 kHz, 3 dB
Response time: ≤ 450 microsec.
Conversion gain: ×0.95 ±5 %
Gain adjustable range: × 1 to × 10
Line voltage effect: ±0.2 % over voltage range
Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2300 V AC @1 minute (input or reference voltage source to output or power)
CMRR: ≥ 100 dB (500 V AC 50/60 Hz)

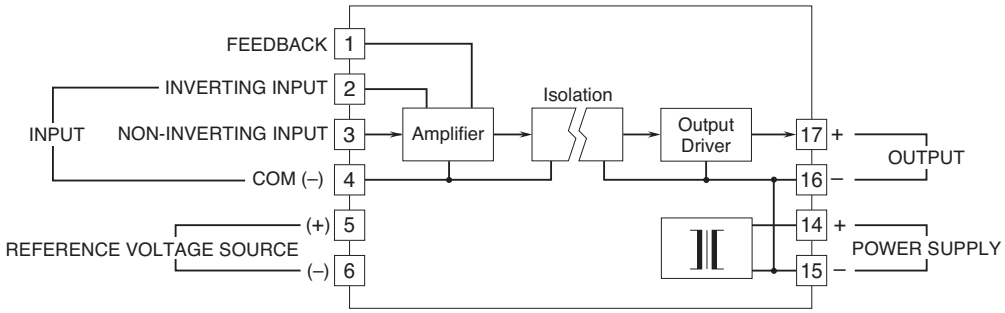
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



PIN ASSIGNMENT

1	FEEDBACK
2	INVERTING INPUT
3	NON-INVERTING INPUT
4	COM (–)
5	REFERENCE VOLTAGE SOURCE (+)
6	REFERENCE VOLTAGE SOURCE (–)
14	POWER SUPPLY (+)
15	POWER SUPPLY (–)
16	OUTPUT (–)
17	OUTPUT (+)

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

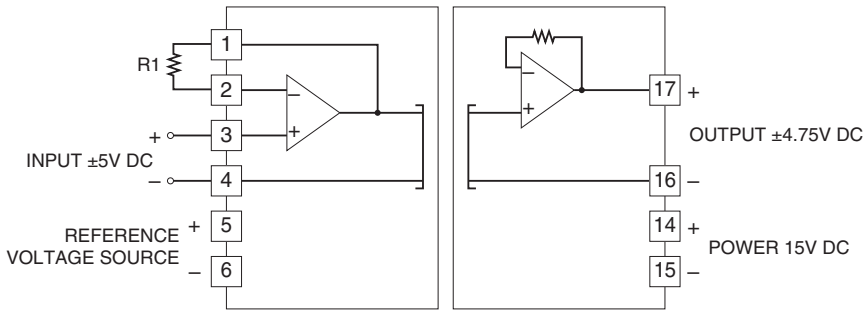


Note. The reference voltage source is common to the COM (–), terminal 4.

APPLICATION EXAMPLE

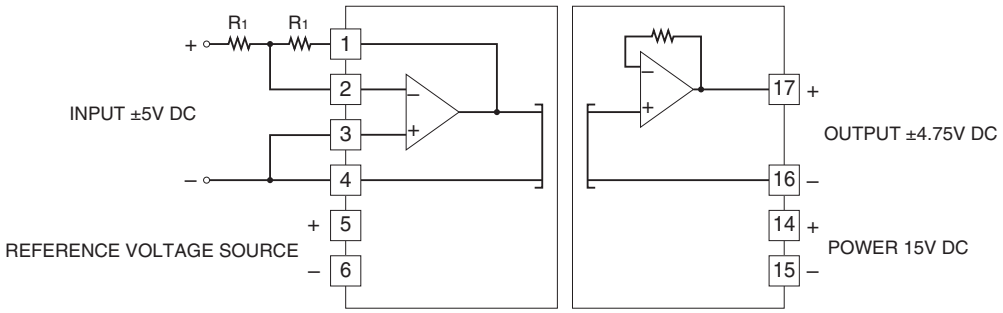
The series resistance of the amplifier, R1 + R2 must be between 10 kΩ and 200 kΩ.

■ **Non-inverting amplifier circuit: Basic example of G = 0.95**



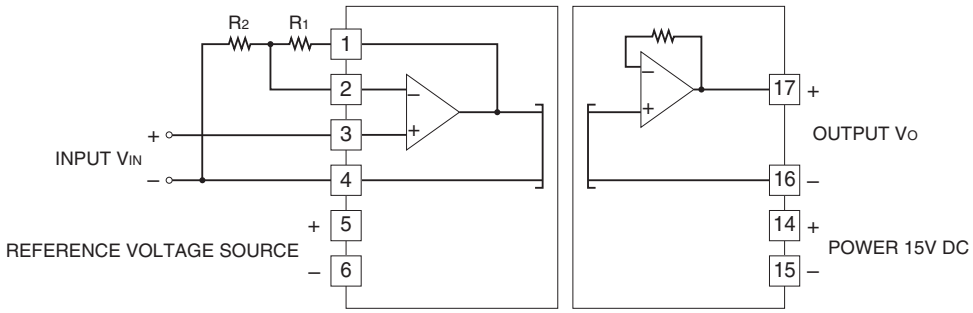
Non-inverting circuit G = 0.95

■ **Inverting amplifier circuit: Basic example of G = -0.95 (output inverted to the input)**



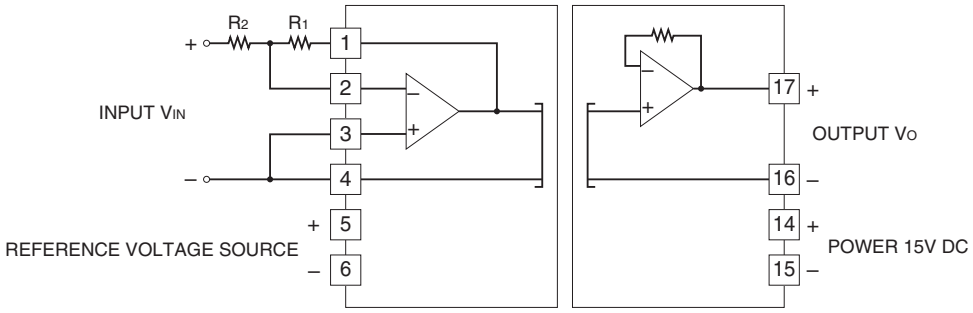
Inverting circuit G = -0.95

■ **Non-inverting amplifier circuit: Example of G = 1 + R1 / R2**



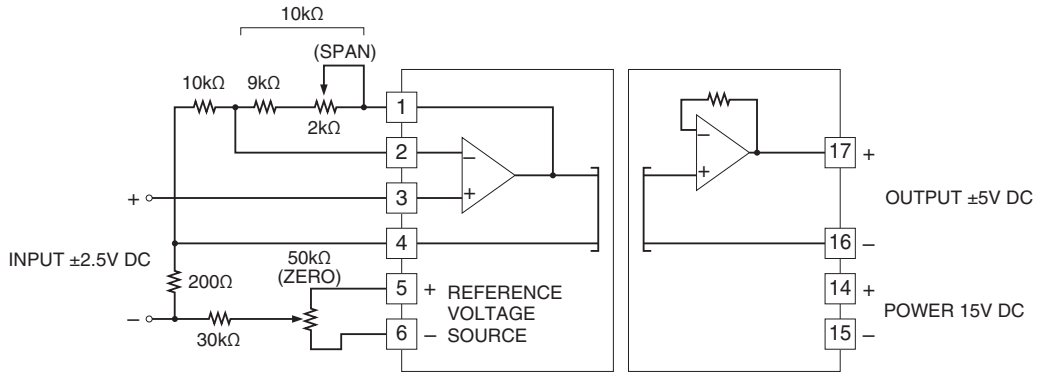
Non-inverting amplifier circuit G = 1 + R1 / R2

■ **Inverting amplifier circuit: Example of G = -R1 / R2 (output inverted to the input)**



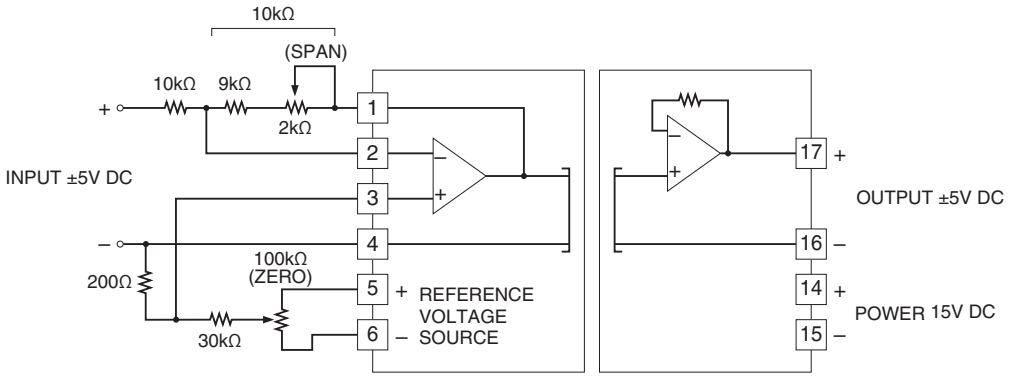
Inverting amplifier circuit G = -R1 / R2

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



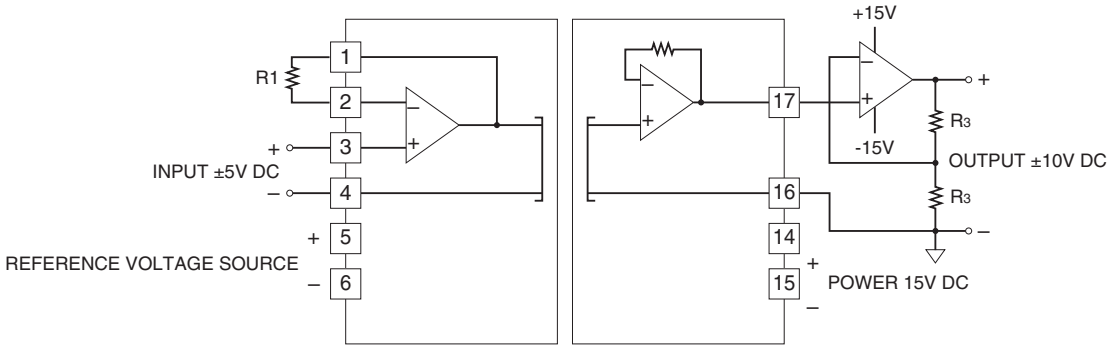
Non-inverting amplifier circuit zero/span adjustments (input ±2.5V, output ±5V)

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



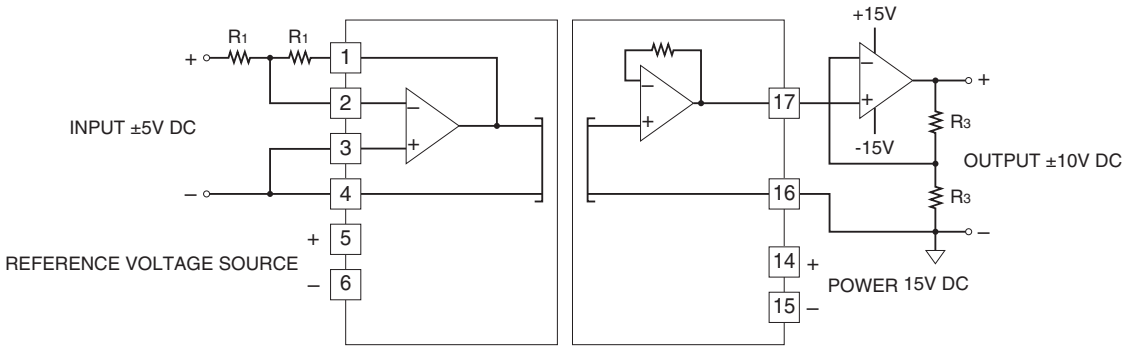
Inverting amplifier circuit zero/span adjustments (input ±5V, output ±5V)

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



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

■ **Inverting amplifier circuit: Example of ±10V DC output (output inverted to the input)**



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

⚠ Specifications are subject to change without notice.