

## Hybrid IC Isolation Amplifiers 20 Series

### ISOLATION AMPLIFIER

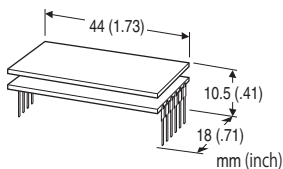
(current output, output isolation)

#### Functions & Features

- Being used for printed wiring board installation
- High-linearity
- Low power consumption
- Small installation area in printed wiring board
- Isolation and 1500 V AC dielectric strength between input or power supply and output
- 12 V DC power supply
- Current output

#### Typical Applications

- Isolating the fields and output circuit of microprocessor to reduce common mode noise
- Available for manufacturers of small-lot products to omit the development of isolation circuit



### MODEL: 20VS5-170-S

#### ORDERING INFORMATION

- Code number: 20VS5-170-S

INPUT RANGE 0 - 5 V DC

OUTPUT RANGE 0 - 20 mA DC

#### POWER INPUT

##### DC Power

S: 12 V DC

#### GENERAL SPECIFICATIONS

Construction: Hybrid IC

Isolation: Input or power to output

#### INPUT SPECIFICATIONS

##### DC Voltage

Input : 0 - 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:  $\pm 15 \text{ mV}$

Input bias current: 2 nA TYP. (@25°C)

#### OUTPUT SPECIFICATIONS

■ DC Current: 0 - 22 mA DC

Load resistance:  $\leq 750 \Omega$  @ 12 V power input and 20 mA output

Output impedance:  $\geq 1 \text{ M}\Omega$

#### INSTALLATION

##### Power input

##### •DC:

Operational voltage range: Rating  $\pm 10 \%$ ;

ripple 2 % p-p max.; approx. 60 mA @ 20 mA output

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:  $\pm 0.05 \%$  (at output 0 - 20 mA) @G = 1

##### Temp. coefficient:

Offset drift 20 ppm/°C max. @G = 1

Span drift 100 ppm/°C max. @G = 1

Frequency characteristics: Approx. 500 Hz, -3 dB

Response time:  $\leq 1 \text{ msec.}$  (0 - 90 %)

Conversion gain:  $\times 1 \pm 10 \%$  @ 250  $\Omega$  load

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

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

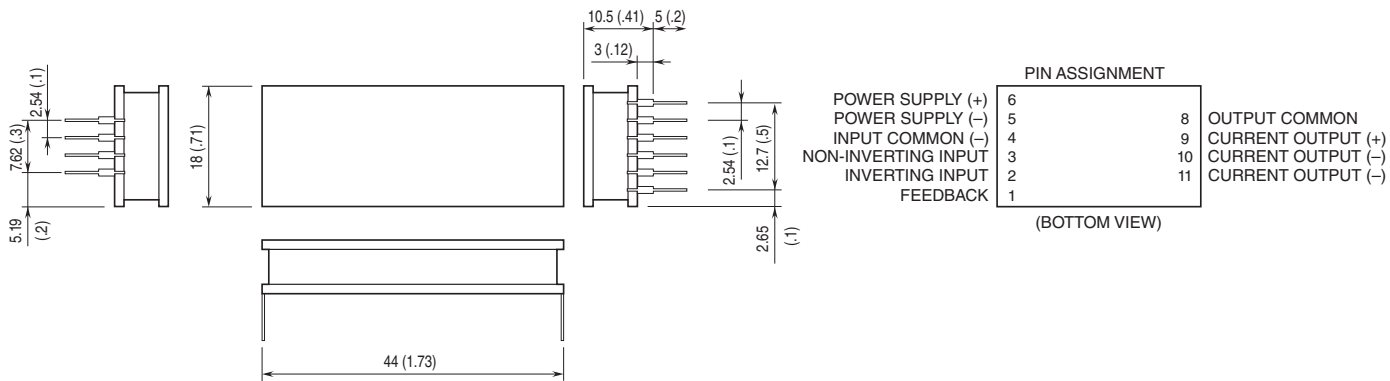
Insulation resistance:  $\geq 100 \text{ M}\Omega$  with 500 V DC

##### Dielectric strength:

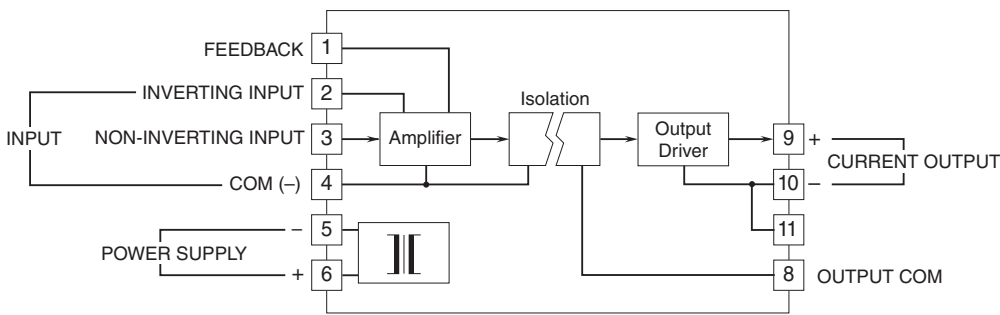
1500 V AC @ 1 minute (input or power to output)

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

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



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

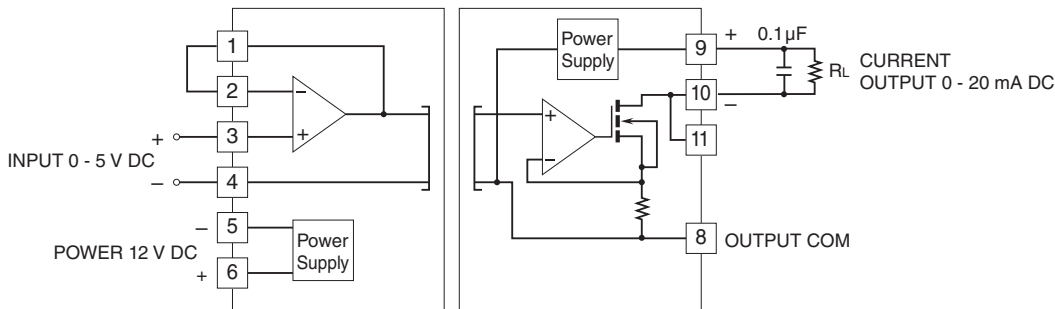


Note: Do not crosswire between the terminals 8 and 9 to avoid breakdown and damages of this device

## APPLICATION EXAMPLE

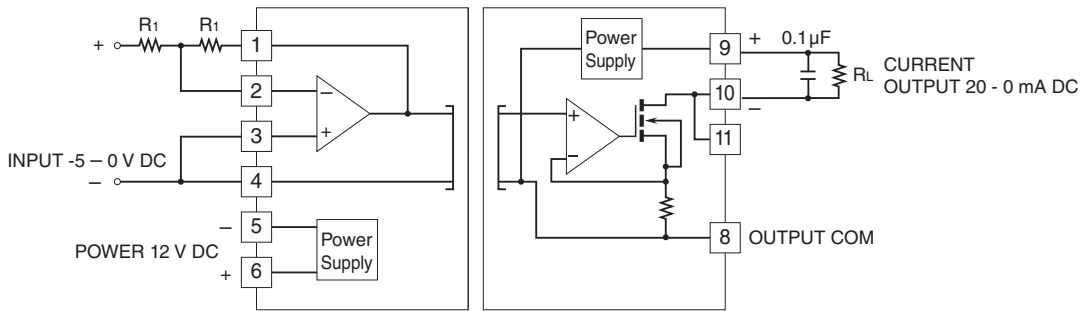
The total resistance of the resistors connected to the amplifier must be 20 kΩ minimum and 100 kΩ maximum.  
 $(100 \text{ k}\Omega \geq R_1 \times R_2 \div (R_1 + R_2) \geq 20 \text{ k}\Omega)$

■ Non-inverting amplifier circuit: Basic example



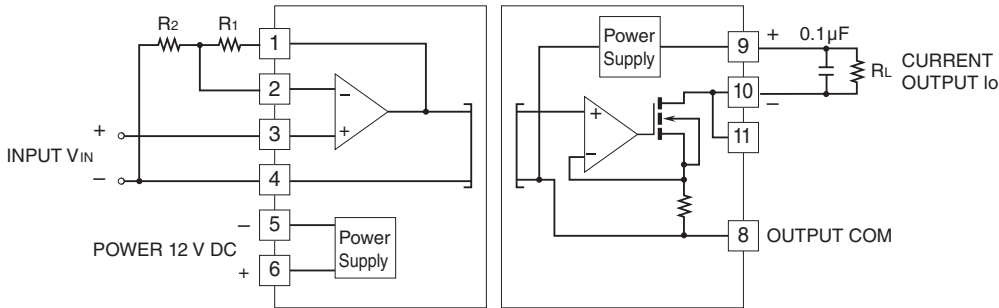
Non-inverting circuit G = 1

■ Inverting amplifier circuit: Basic example (output inverted to the input)



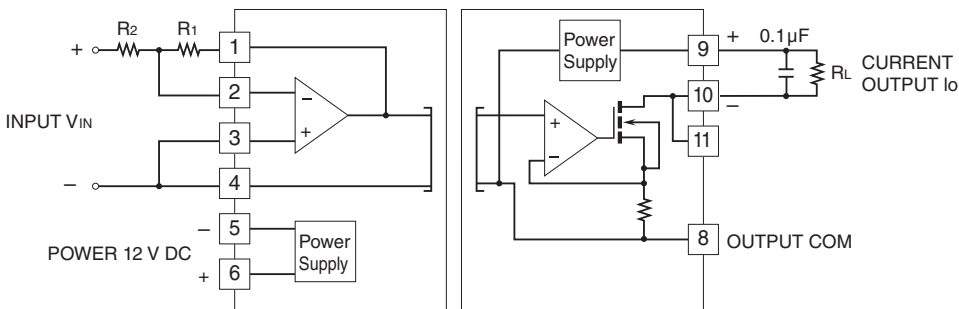
Inverting circuit  $G = -1$

■ Non-inverting amplifier circuit




Non-inverting amplifier circuit  $G = 1 + R_1/R_2$   
 $I_o = 4 \times G \times V_{IN}$

■ Inverting amplifier circuit



Inverting amplifier circuit  $G = -R_1/R_2$   
 $I_o = 4 \times G \times V_{IN}$

 Specifications are subject to change without notice.