INSTRUCTION MANUAL

ISOLATION AMPLIFIER
(current output, output isolation)

MODEL **20VS5-170**

BEFORE USE ....

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

Amplifier ..... (1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

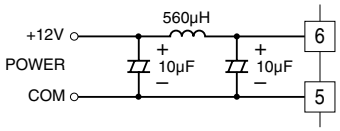
■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ POWER INPUT RATING & OPERATIONAL RANGE

- Power Supply
  Operational voltage range, power consumption
  Operational rating 12V DC ± 10%, 60mA approx. (at 20mA output)
  Install the filter for the power supply as indicated below.



■ ENVIRONMENT

- Indoor use
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +70°C (14 to 158°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables (power supply, input and output) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
- Do not layout traces or components to the area of printed wiring board under this device.

■ INSTALLING THE MODULE

When it is installed on the printed wiring board, land diameter ø1.6 and through-hole ø0.8 are recommended.

■ AND ....

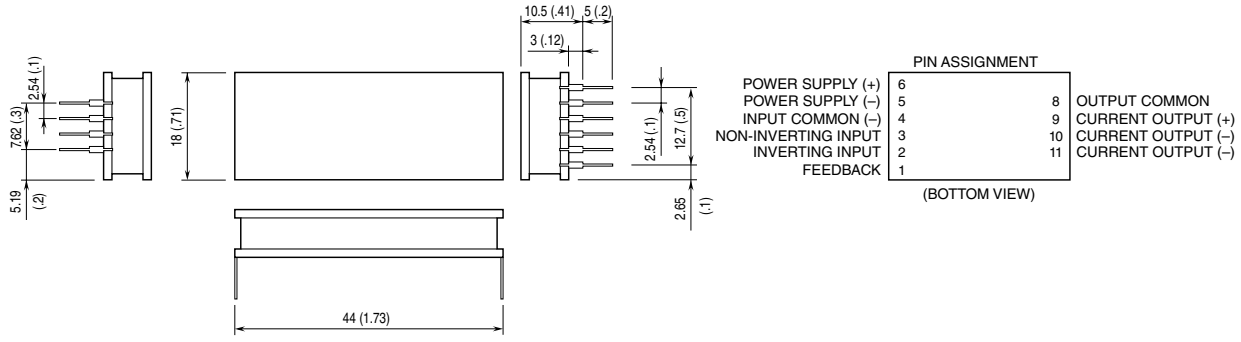
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.
- Do not touch devices or pins while handling the amplifier.
- Do not pull or push the nameplate strongly.
- Do not crosswire between the terminals 8 and 9 to avoid breackdown and damages of this device

CHECKING

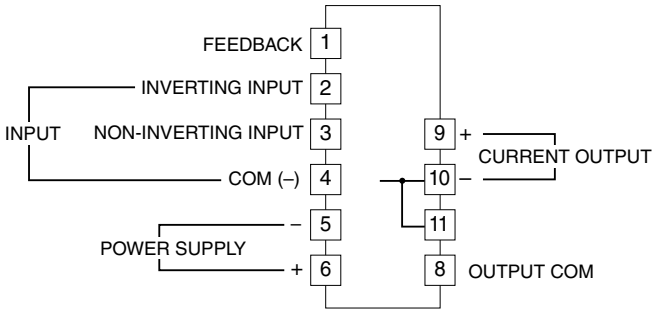
1) Terminal wiring: Check that wiring is correctly connected according to the connection diagram.
2) Power input voltage: Check voltage across the pins.
3) Input: Check that the input signal is within 0 – 100% of the full-scale.
4) Output: Check that the load resistance meets the described specifications.

TERMINAL CONNECTIONS

■ EXTERNAL DIMENSIONS mm (inch)



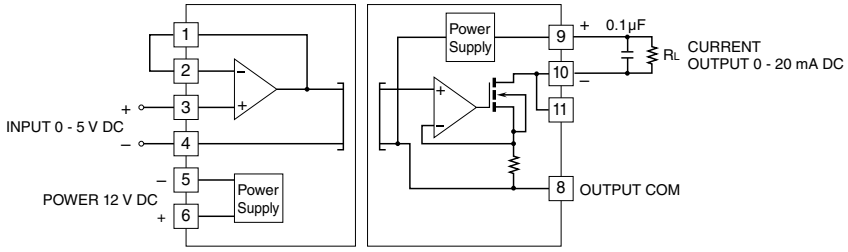
■ TERMINAL ASSIGNMENTS



APPLICATION EXAMPLES

The primary amplifier in this unit is high accurate. Installing external resistors to the inverting input (pin 2) and the feedback (pin 1), this unit can be used as a non-inverting or inverting amplifier.
The combined input resistance of the amplifier must be between 20kΩ and 100kΩ.

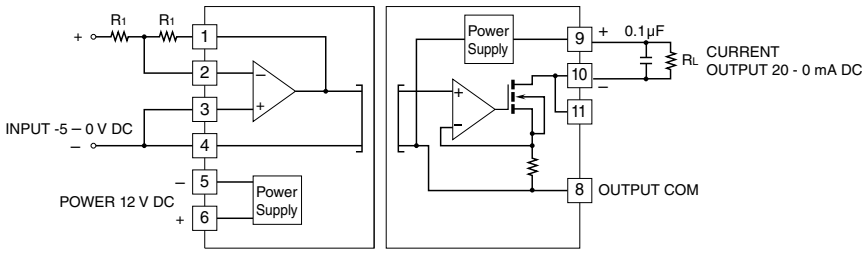
■ Non-inverting amplifier circuit: Basic example



Non-inverting circuit G = 1

The output is proportional to the input.
E.g. 0 – 20 mA for 0 – 5V DC input

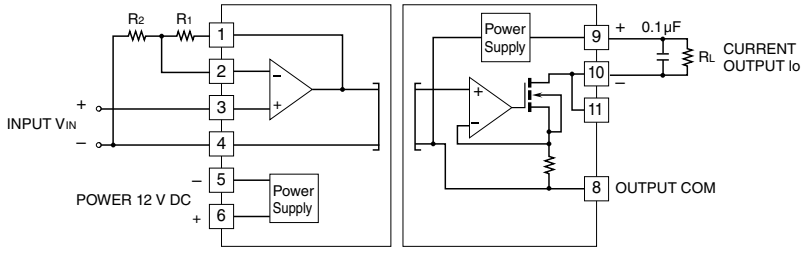
■ Inverting amplifier circuit: Basic example (output inverted to the input)



Inverting circuit G = -1

The output is inverted to the input.
E.g. 20 – 0 mA for -5 – 0V input

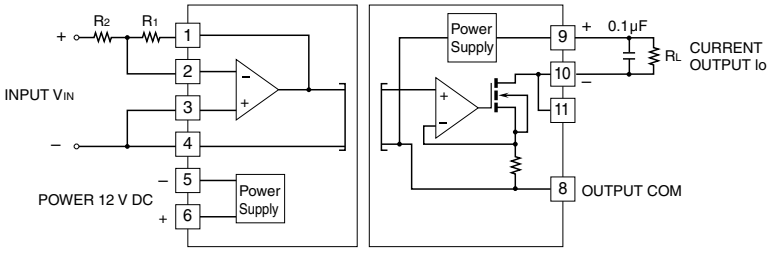
■ Non-inverting amplifier circuit



Non-inverting amplifier circuit G = 1 + R1/R2
Io = 4 × G × VIN

For a non-inverting amplification the output is following.
$I_O = 4 \times (1 + R_1 / R_2) \times V_{IN}$ (mA)
When R_1 = 10kΩ, R_2 = 10kΩ, then the output is $I_o = 8 \times V_{IN}$
Note: 0mA ≤ Io ≤ 22mA.

■ Inverting amplifier circuit



Inverting amplifier circuit G = -R1/R2
Io = 4 × G × VIN

For an inverting amplification the output is following.

$I_O = -4 \times (R_1 / R_2) \times V_{IN}$ (mA)

When R_1 = 20kΩ, R_2 = 10kΩ, then the output is $I_o = -4 \times (20k\Omega / 10k\Omega) \times V_{IN} = -8 \times V_{IN}$

Note: 0mA ≤ Io ≤ 22mA.

MAINTENANCE

Regular calibration procedure is explained below:

■ CALIBRATION

Warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input signal. Check that the output signal for the respective input signal remains within accuracy described in the data sheet.