

<h2 style="margin: 0;">ISOLATION AMPLIFIER</h2> <p style="margin: 0;">(top adjustment, for current output, output isolation)</p>	<h2 style="margin: 0;">MODEL 20VS1D</h2>
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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**

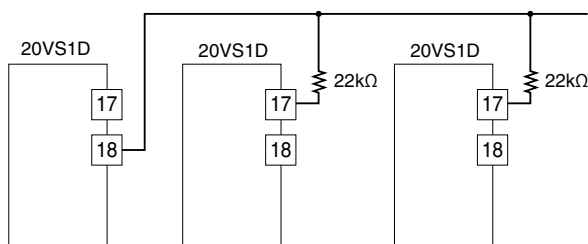
- Locate the power input rating marked on the product and confirm its operational range as indicated below:
 15V DC $\pm 2\%$, approx. 35mA with 20mA output
- When there is spike noises in the power, make a filter with an appropriate capacitor and inductor to cut it off.

■ **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 0 to 60°C (32 to 140°F) with relative humidity within 10 to 95% 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.
- Mounting multiple isolator modules on single printed wiring board could cause beat. In such case, use the way shown as below to make the power supply oscillation frequency of each module to a same one for prevention.



■ **INSTALLING THE MODULE**

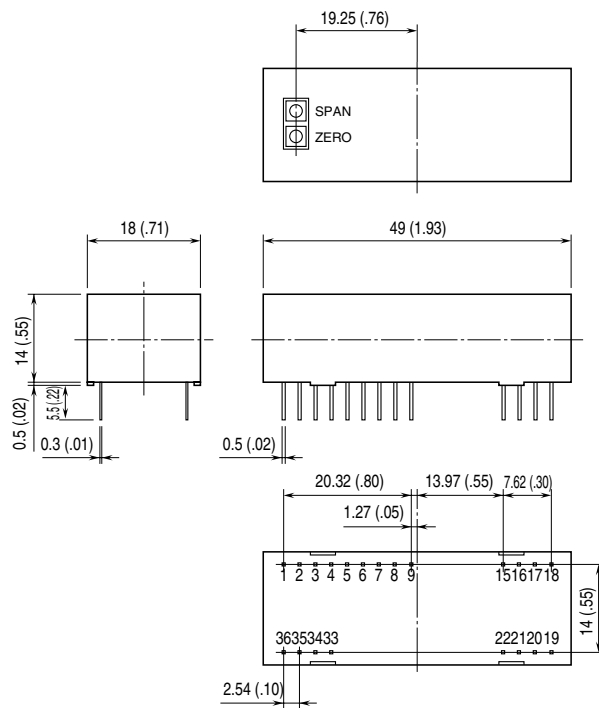
When it is installed on the printed wiring board, land diameter $\phi 1.5$ and through-hole $\phi 0.9$ are recommended.

■ **AND**

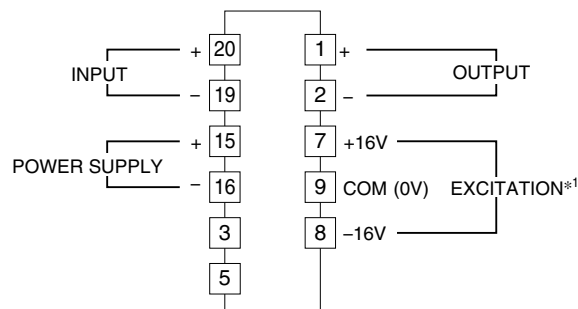
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.
- With voltage output, do not leave the output terminals shortcircuited for a long time. The unit is designed to endure it without breakdown, however, it may shorten appropriate life duration.

TERMINAL CONNECTIONS

■ **EXTERNAL DIMENSIONS mm (inch)**



■ **TERMINAL ASSIGNMENTS**



*To be used in the printed wiring board on which the unit is mounted.

PIN ASSIGNMENT

NO.	FUNCTION
1	Current Output (+)
2	Current Output (-)
3	NC
4	NC
5	NC
6	NC
7	Excitation (+)
8	Excitation (-)
9	Excitation (COM)
15	Power Supply (+)
16	Power Supply (-)
17	Synchronous Input
18	Synchronous Output
19	Input (-)
20	Input (+)
21	Input Amplification
22	Input Attenuation
33	NC
34	NC
35	NC
36	NC

APPLICATION EXAMPLE

To adjust zero and span, use top adjusters.

For input 1-5V DC, output is 4-20mA DC.

In order to shift the zero at input, supply reference voltage to pin 21. The following formula shows how much the zero shifts. (input signal at pin 20 = V_{IN} ; output signal at pin 1 = V_{OUT} ; reference voltage = V_{REF} ; zero shift = $V_{OUTSHIFT}$.)

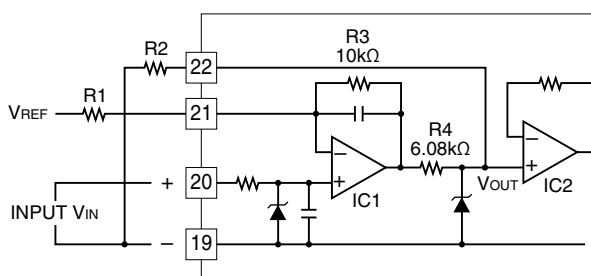
$$V_{OUTSHIFT} = - \left(\frac{10k\Omega}{R1} \right) \times V_{REF}$$

$$V_{OUT} = \frac{(10k\Omega + R1)}{R1} \times V_{IN} + V_{OUTSHIFT}$$

In order to attenuate input signal, connect a resistor to pin 22. The following formula shows the attenuated output.

$$V_{OUT} = \left(\frac{R2}{R2 + 6.08k\Omega} \right) \times V_{IN}$$

External resistors and adjusters make zero and span adjustment available.



CHECKING

- 1) Terminal wiring: Check that all cables are 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.

ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to meet the ordered specifications, therefore you usually do not need any calibration.

For matching the signal to a receiving instrument or in case of regular calibration, adjust the output as explained in the following.

HOW TO CALIBRATE THE OUTPUT SIGNAL

Use a signal source and measuring instruments of sufficient accuracy level. Turn the power supply on and warm up for more than 10 minutes.

- 1) ZERO: Apply 0% input and adjust output to 0%.
- 2) SPAN: Apply 100% input and adjust output to 100%.
- 3) Check ZERO adjustment again with 0% input.
- 4) When ZERO value is changed, repeat the above procedure 1) – 3).

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.