STATUS INSTRUMENTS

SEM1000

(4 to 20) mA Loop Isolator

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1.0 DESCRIPTION

The SEM1000 isolator is designed to be series connected into a new or existing (4 to 20) mA current loop and provide an isolated (4 to 20) mA signal capable of driving into 500 R. The output is powered from the input loop.

2.0 SPECIFICATIONS

2.1 INPUT

Type	Current input 2 wire loop powered
Range	(4 to 20) mA (30 mA maximum)
Protection	Reverse connection
Voltage Drop	5.5 V + O/P V Drop (O/P V Drop = O/P load x 0.02)
Max Loop Supply	35 V

2.2 OUTPUT

Type	(4 to 20) mA source (Powered from input)
Load	(0 to 500) Ω (O/C limits at approximately 15 V)

2.3 GENERAL SPECIFICATION @20°C

Isolation	500 VAC (flash tested @ 1 kV) (Isolation method, opto coupler/transformer)
Electrical Safety	BS EN61010-1 Pollution Degree 2; Installation CAT II; CLASS I
Ambient	(0 to 70) °C; (10 to 95) % RH non condensing
Accuracy	0.05 % full range output
Stability	0.01 %/°C
Response Time	Less than 100 ms to reach 63 % of final value.
EMC	Compliant with BS EN50081-1, BS EN50082-1
Connection	Captive clamp screws
Cable Size	Maximum 4 mm² solid/2.5 mm² stranded
Case Material	Grey Polyamide
Flammability	To UL94-VO VDE 0304 Part 3, Level IIIA
Dimensions	(60 x 60 x 12.5) mm (67.5 mm above rail)
Mounting	Snap on "Top Hat" rail (DIN EN 50022-35)
Adjustments	Zero and Span Adjustment

3.0 INSTALLATION

3.1 MECHANICAL

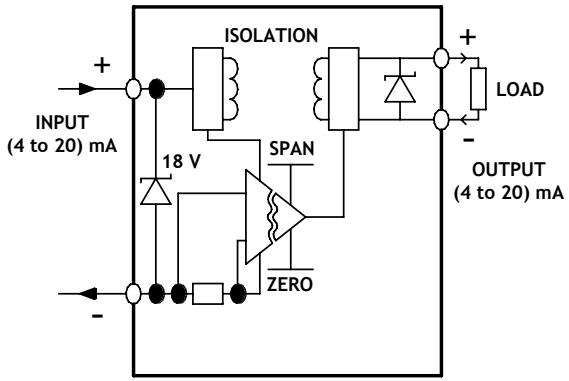
This unit must be housed within a suitable enclosure that will provide protection from the external environment, ensuring that the stated temperature and humidity operating ranges are not exceeded. It is good practice to mount the unit away from sources of electrical noise, such as switch gear and transformers. The unit enclosure is designed to snap fit onto a standard "Top Hat" DIN rail. To remove from rail, apply pressure at the bottom face at the back upwards towards the rail to release the spring clip and tip away from the top. The unit may be mounted in any orientation and stacked side by side along the rail.

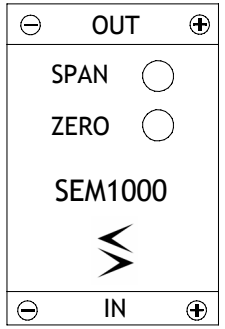
3.2 ELECTRICAL

Connections to the isolator are made via screw terminals. Wire protector plates are provided inside each terminal. To maintain CE compliance twisted pair (screened) cables are recommended. It is also good practice to ensure that all (4 to 20) mA loops are grounded at a single point in the loop. Before installation, care must be taken to ensure enough voltage is available in the loop to drive the total loop load. Refer to the specifications listed for the voltage drop. In the case of the SEM1000 the additional voltage drop of the load connected in the isolated circuit, will be added to the loop drop of the isolator, for example a SEM1000 isolator driving into a 250 W load will have a total loop drop of 10.5 V maximum.

Refer to the SEM1000 series data sheet for further information on applications of this series of isolators. Please note the isolation provided by this device is only suitable for providing isolation between two process signals and therefore must not be used to provide isolation from hazardous voltages, such as mains supplies.

Figure 1





4.0 OPERATION

This isolator requires no user adjustment during commissioning. Minor adjustments can be made to the calibration of the device by means of the two front panel accessible calibration potentiometers. Incorrect connection in the loop will not damage the device as long as the specified maximum currents/voltages are not exceeded. If the isolator fails to operate, check loop for bad connections. Ensure enough voltage is available in the loop to power the isolator. In the unlikely event of the isolator not working, it should be returned to the supplier for repair or replacement.

5.0 CALIBRATION

1. Connect a precision current calibrator to the input and a precision current meter to the output of the device to be calibrated.*1

2. Inject 4.000 mA ± 0.001 mA into the input and adjust ZERO potentiometer for 4.000 mA ± 0.001 mA output.*2

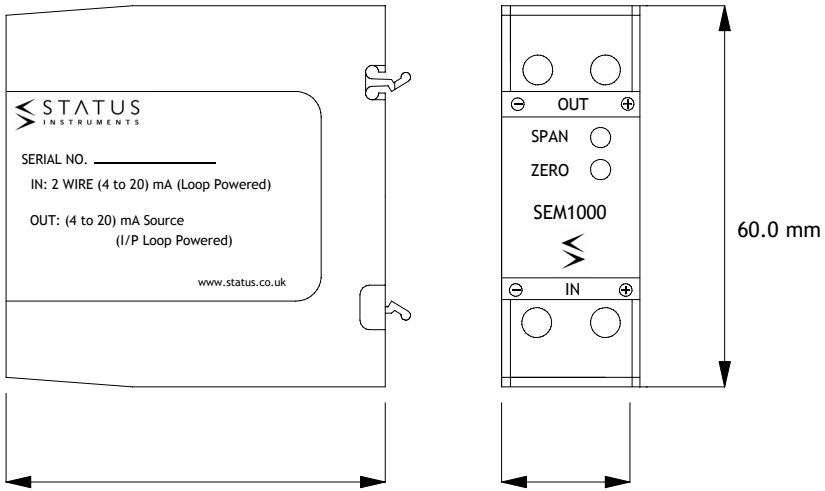
3. Inject 20.000 mA ± 0.001 mA into the input and adjust span potentiometer for 20.000 mA ± 0.001 mA output.*2

4. Repeat Steps 2 and 3 until both points are in calibration.

*NOTES:
1. Current calibrator must be capable of driving the expected loop drop.
2. Please note that the above reading accuracies quoted in 2 and 3 are absolute values and do not include test equipment tolerances.

6.0 MECHANICAL DETAIL

Figure 2



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