

### 4-20 mA LOOP ISOLATOR

#### 1.0 DESCRIPTION

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

#### 2.0 SPECIFICATION @ 20°C

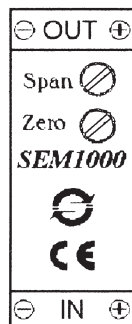
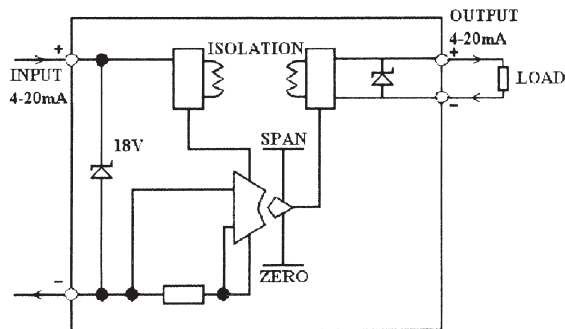
##### 2.1 SEM1000

###### INPUT

TYPE	Current input 2 wire Loop powered
RANGE	4-20 mA (30 mA MAX)
PROTECTION	Reverse connection
VOLTAGE DROP	5.0 V typical, 5.5 V Maximum (Plus output load drop)
MAX LOOP SUPPLY	35 Volts

###### OUTPUT

TYPE	4-20 mA source (Powered from input)
LOAD	0 to 500 R



#### 2.2 General Specifications

ISOLATION	500V AC (flash tested @ 1 kV)
ENVIRONMENT	BS EN61010-1 POLLUTION DEGREE 2; INSTALLATION CAT II; CLASS I
AMBIENT	0 - 70°C; 10-95% RH non condensing
LINEARITY	0.05%
STABILITY	100 PPM/°C
RESPONSE TIME	Less than 100mS to reach 70% of final value.
EMC Tested to	IEC 801-2 Susceptibility to E.S.D. IEC 801-3 Radiated Susceptibility IEC 801-4 Susceptibility to conducted interference EN 55022 Radiated Emissions
CONNECTION	Captive clamp screws
CABLE SIZE	Maximum 4 mm sq solid/2.5mm sq stranded
CASE MATERIAL	Grey Polyamide
FLAMMABILITY	To UL94-VO VDE 0304 Part 3, Level IIIA
DIMENSIONS	Case A: 60 x 60 x 12.5mm (67.5 above rail)
MOUNTING	Snap on "top hat" rail (DIN EN 50022-35)
ADJUSTMENT	Front Entry Fine Zero and Span Adjustment

## 3.0 INSTALLATION

### 3.1 Mechanical

This isolator is designed to be housed within a suitable enclosure that will provide protection from the external environment, and ensure the stated temperature and humidity ranges are not exceeded. The isolator case is designed to snap fit onto a standard "top hat" DIN rail. The isolator may be removed if required by applying pressure with one hand to the bottom face of the enclosure, in a direction parallel with the DIN rail and at the same time gripping the top of the isolator and pulling away from the rail. The isolator 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 4-20 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 above for the loop drop voltage. 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 250Ω load will have a total loop drop of 10.5 volts.

## 4.0 OPERATION

This isolator requires no user adjustment during commissioning, apart from an initial test, to ensure it operates correctly over its full working range. 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.

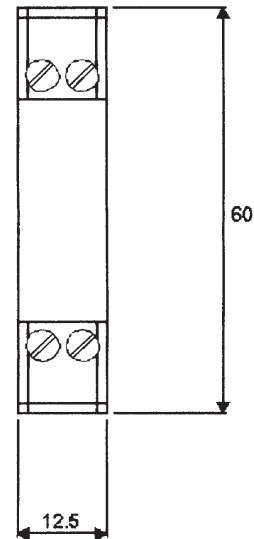
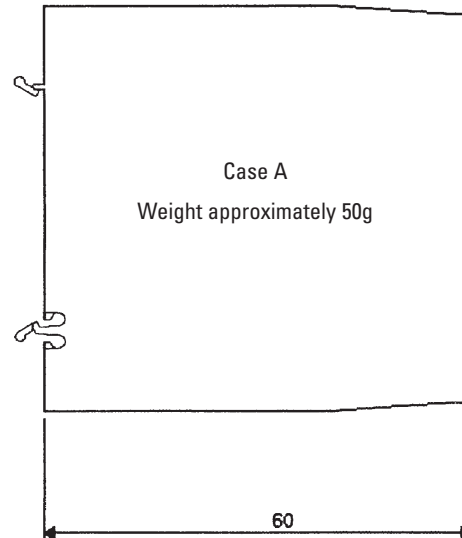
## 5.0 CALIBRATION

- 5.1 Connect a precision current calibrator to the input and a precision current meter to the output of the device to be calibrated.
- 5.2 Inject 4.000 mA  $\pm$ 0.001 mA into the input and adjust zero potentiometer for 4.000 mA  $\pm$ 0.001 mA output.
- 5.3 Inject 20.000 mA  $\pm$ 0.001 mA into the input and adjust span potentiometer for 20.000 mA  $\pm$ 0.001 mA output.
- 5.4 Repeat steps 5.2 and 5.3 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 5.2 and 5.3 are absolute values and do not include test equipment tolerances.

## 6.0 MECHANICAL DETAIL



*Every effort has been taken to ensure the accuracy of this specification, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.*



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