

# SEM1200

## 4-20mA ISOLATING SIGNAL SPLITTER

Designed, manufactured and supported by :

**Status Instruments Ltd**

Green Lane, Tewkesbury, Glos, GL20 8HE, U.K.

Telephone : 01684 296818, Fax : 01684 293746

Email: support@status.co.uk

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.

Stock code : 52-214-2100-01

Issue : 01

### 1.0 SPECIFICATIONS

#### 1.1 SEM1200

The SEM 1200 isolator is a dual output isolator, providing two separate isolated 4-20mA current signals from a primary loop. The output loops must be powered externally.

<b>INPUT</b>	<b>TYPE</b>	Current input 2 wire Loop powered
	<b>RANGE</b>	4 - 20 mA (30mA MAX)
	<b>PROTECTION</b>	Reverse connection
	<b>VOLTAGE DROP</b>	5.0 v Maximum

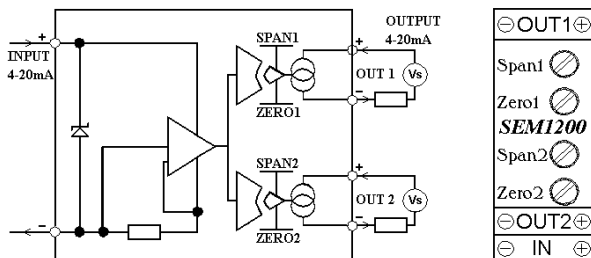
#### OUTPUT 1 & OUTPUT 2

<b>TYPE</b>	2 Wire current sink 4-20mA
<b>LOOP VOLTAGE</b>	5-32 V d.c. (reverse protected) *

Loop volt drop = 5V Load = 900 ohm @ Vs = 24V  
Load = 1200 ohm @ Vs 30V

Loop must be > 250R for ambients > 50°C

\* Quoted specification at 15 volt



### 1.2 GENERAL SPECIFICATION @20°C V OUT <15V

<b>ISOLATION</b>	500 V a.c. (flash tested @ 1 kV) between each port (Isolation method, opto coupler / transformer)
<b>ENVIRONMENT</b>	BS EN61010-1 POLLUTION DEGREE 2; INSTALLATION CAT II ; CLASS I
<b>AMBIENT</b>	0 - 70 °C ; 10-95% RH non condensing
<b>LINEARITY</b>	0.05%
<b>STABILITY</b>	100 ppm/°C
<b>RESPONSE TIME</b>	Less than 100mS to reach 70% of final value.
<b>EMC Tested to</b>	IEC 801-2 Susceptibility to E.S.D. IEC 801-3 Radiated Susceptibility IEC 801-4 Susceptibility to conducted interference EN 55022 Radiated Emissions
<b>CONNECTION</b>	Captive clamp screws
<b>CABLE SIZE</b>	Maximum 4 mm sq solid / 2.5mm sq stranded
<b>CASE MATERIAL</b>	Grey Polyamide
<b>FLAMMABILITY</b>	To UL94-VO VDE 0304 Part 3, Level IIIA
<b>DIMENSIONS</b>	Case C: 60 x 75 x 12.5 mm (67.5 above rail)
<b>MOUNTING</b>	Snap on "top hat" rail (DIN EN 50022-35)
<b>ADJUSTMENT</b>	Front Entry Fine Zero and Span Adjustment for each channel

### 2.0 INSTALLATION

#### 2.1 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.

#### 2.2 Electrical

Connections to the isolator are made via screw terminals. Wire protector plates are provided inside each terminal. To maintain compliance twisted pair (screened) cables are recommended. It is also good practice to ensure that all 4-20mA 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. The 1200 in most applications, requires separate supplies for the secondary loops, these may be provided from separate power supplies or from the instrument monitoring the output loop.

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.

### 3.0 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.

### 4.0 CALIBRATION

- Connect a precision current calibrator to the input, and a precision current meter in series with output loop 1. Power output loop with 24V supply.
- Inject 4.000 mA  $\pm$ 0.001 mA into the input and adjust zero 1 potentiometer for 4.000 mA  $\pm$ 0.001 mA output.
- Inject 20.000 mA  $\pm$ 0.001 mA into the input and adjust span 1 potentiometer for 20.000 mA  $\pm$ 0.001 mA output.
- Repeat steps 4.2 and 4.3 until both points are in calibration.
- Repeat steps 4.1 - 4.3 with connection to out 2 and adjusting zero 2 and span 2.

Notes:

- Current calibrator must be capable of driving the expected loop drop.
- Please note that the reading accuracies quoted in 4.2 and 4.3 above are absolute values and do not include test equipment tolerances.

### 5.0 MECHANICAL DETAIL

