

## 1.0 RECEIVING AND UNPACKING

Please inspect the packaging and instrument thoroughly for any signs of transit damage. Contact the returns department with any queries and if necessary a returns number can be allocated.

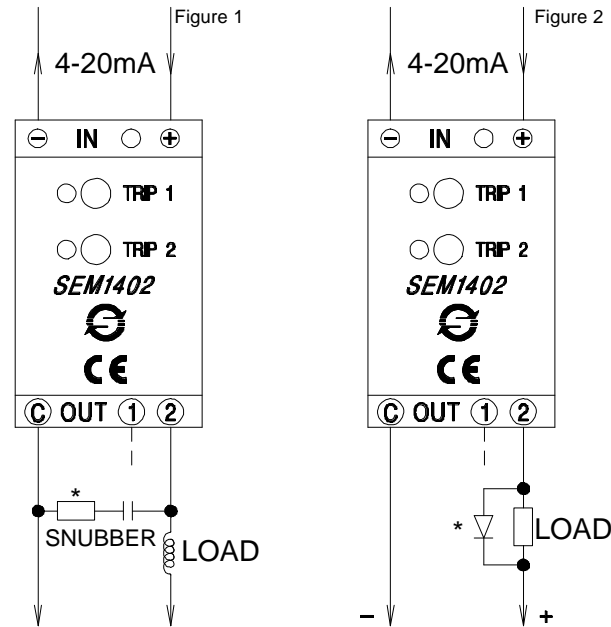
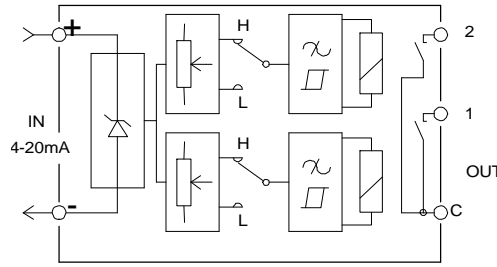
## 2.0 SPECIFICATION @20°C

### 2.1 SEM1402 LOOP POWERED TRIP

<b>INPUT</b>	<b>Type</b>	Two wire 4-20 mA, 50 mA Max
	<b>Protection</b>	Reverse connection protected
	<b>Loop Drop</b>	5 V max
<b>OUTPUTS</b>	<b>Alarms</b>	Dual Alarm Contacts
	<b>Contact</b>	2 x high/low alarms selected by switches (side entry)
	<b>Rating</b>	2 x N.O. relay contacts with shared common Resistive Load 2A @ 250V AC/125V DC Max Power 150 W (Inductive Loads)
	<b>Max Vibration</b>	12G 10 to 55 Hz at double amplitude 2mm
	<b>Shock Res</b>	12G
	<b>Indication</b>	2 X Alarm LED on module front face
	<b>Setpoint</b>	0 - 100% multi turn trip set potentiometer, (access on module front face). (Repeatability ± 0.2%)
	<b>Hysteresis</b>	Fixed at 0.5 %
	<b>Delay</b>	0.5 second fixed delay
	<b>Failure Mode</b>	On loss of signal :- HIGH level, No alarm condition LOW level, Alarm condition (ie Alarm operates as if signal has fallen to -25% or 0mA)
	<b>Mounting</b>	Snap on top hat (DIN EN 50022-35)
	<b>Minimum Current</b>	3.5mA

### 2.2 GENERAL SPECIFICATION

<b>Isolation</b>	3000V AC rms between contacts and input 1000V AC rms between contacts
<b>Ambient</b>	0 - 50 °C; 10-95% RH non condensing
<b>Compliant With</b>	EN50081-1, EN50082-1
<b>Connection</b>	Captive clamp screws
<b>Cable Size</b>	4 mm sq solid / 2.5mm sq stranded
<b>Case Material</b>	Grey Polyamide
<b>Case Flammability</b>	To UL94-V0 VDE 0304 pt3 level 111A
<b>Dimensions</b>	60 x 60 x 21mm (67,5 above rail)
<b>Mounting</b>	Snap on top hat (DIN EN 50022-35)
<b>Weight</b>	60 grams



\* Components not supplied

### 3.0 INSTALLATION

**WARNING** - Hazardous voltages may be present on the terminals - the equipment must be installed by suitability qualified personnel and mounted in an enclosure providing protection to at least IP20.

**WARNING** - If not installed and used in accordance with these instructions, protection against hazards may be impaired.

(IMPORTANT NOTE: it may be preferable to set the user adjustment on the bench prior to installation. Please read Section 3 before installation).

## 3.1 MECHANICAL

This trip 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 maintained. As SEM1402 contains high quality relays, the usual precautions taken when using products containing relays apply, such as care must be taken to ensure the trip is not subjected to strong shock or vibration, as this may result in momentary opening of the relay contacts. The SEM1402 must not be located near a strong magnetic field, such as a transformer, solenoid or electric motor.

The SEM1402 case is designed to snap fit onto a standard "TOP HAT" DIN rail. To remove from DIN 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 trip may be mounted in any orientation and stacked side by side along the rail.

## 3.2 ELECTRICAL

Connections to the trip are made via screw terminals with wire protector plates provided inside each terminal. To maintain CE compliance twisted pair (screened) cables are recommended for signal connections. It is also good practice to ensure that all 4-20 mA loops are grounded at a single point. Before installation ensure the 4-20 mA loop has enough voltage available to drive the trip. Refer to the above specification for the loop voltage drop. The dual contacts provided by the SEM1402 are capable of switching 250V AC 125V DC @ 2A resistive load, 150 Watts inductive load. Internal Varistors are connected across the contacts to protect against over voltage. It is advised that an external R/ C snubber network is used when switching inductive AC loads, see fig 1. When switching DC inductive loads, a diode connected in parallel with the inductor must be used to protect the contacts from the energy stored in the inductor (See fig 2).

Installation overvoltage category 2 (as per BS EN61010-1)

- If this equipment is to be used in environments with overvoltage category 3, transient suppressors should be installed on wiring carrying greater than 50v AC or 75v DC.
- Any power supply to the equipment greater than 50v AC or 75v DC must be protected by a suitable fuse and a switch or circuit breaker which should be near the equipment.
- The equipment contains no user serviceable parts.

## 4.0 ALARM SETUP

### NOTE:

Latching relays are used in this product in conjunction with an advanced relay drive circuit. During commissioning, on initial power up, or after switch settings have been modified, one trip operation must be completed in order to synchronise the latching relay(s). Once this cycle has been completed the unit will function correctly during normal operation cycles. On power down the trip contacts will rest as for a -25% (0mA) process value and take this state indefinitely until power up. The initial power up cycle will only be required again if the unit switch settings are changed, or the unit is removed from the installation and is subjected to shocks greater than 12G, i.e. during transit.

This section deals with the setting up of the trip .Two adjustment are available to the user on each channel:-

- High /Low alarm selection switch located on the side of the trip, for each trip.
- Setpoint adjustment - 15 turn potentiometer front panel provides 0 - 100% setpoint range for each trip.

Hysteresis is fixed at 0.5%. Hysteresis is necessary to stop relay chatter at the trip point.

The alarm status is indicated on the front panel by means of a red LED, one for each channel - "ON" indicates in alarm.

With care, the SEM1402 trip setpoints may be set up in the process but the task is greatly simplified by replacing the process signal with an adjustable 4-20 mA current source, to simulate the 4-20 mA process signal.

The set up process is as follows:-

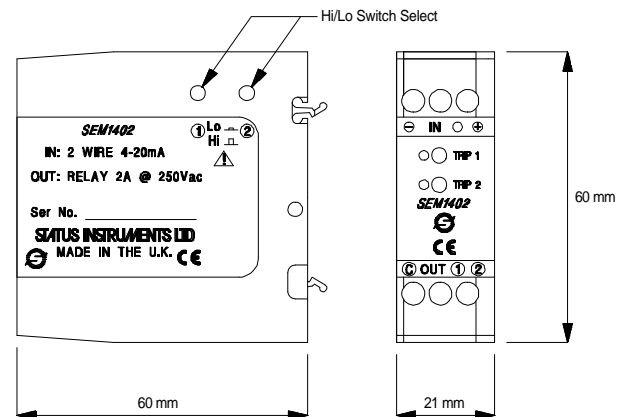
- First decide on the type of trip required for each channel , "High " for alarm ON above setpoint, or "low" for alarm ON below setpoint. Set the High/Low alarm selection switch on the side of the enclosure to the desired setting, by inserting a 3mm blade screw driver into the hole(s) and apply one press against the switch plunger. This will toggle the switch between the the two alarm settings being :-  
 High alarm state - plunger out (flush with the enclosure inside face)  
 Low alarm state - plunger in (depressed below side face)
- Set the process current to the desired trip alarm setting, then using a 3mm screw driver adjust the setpoint until the alarm changes state. Clockwise to increase , anticlockwise to decrease. Adjust the setpoint backwards and forwards until it is positioned at the point at which the alarm LED has just come on. Repeat for other channel.
- Now raise and lower the process input signal about the trip setting and ensure the alarm trips at setpoint and trips off at setpoint plus (minus) hysteresis. If required fine adjust settings.

\* Current calibrator must be capable of driving the expected 5v loop drop.

#### 4.0 OPERATION

Once setup and operating satisfactorily the trip amplifier requires no further user adjustments.

#### 5.0 MECHANICAL DETAIL



# SEM1402 LOOP POWERED TRIP AMPLIFIER

Designed, manufactured and supported by :

**STATUS INSTRUMENTS LTD**

Green Lane  
 Tewkesbury  
 Glos. GL20 8HD  
 UK  
 Sales : 01684 853300  
 Support : 01684 853301  
 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.

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