

### POWERED ISOLATING CONVERTOR

#### 1.0 DESCRIPTION

The isolator provides isolated re-transmission of the input signal, which can (by internal selection switches), be set to accept and re-transmit most common process signals. The isolator can either be DIN rail or surface mounted.

#### 2.0 SPECIFICATION @ 20°C

##### 2.1 SEM1100

**WARNING!** Operation outside the quoted maximum figures may result in the failure of the transmitter.

##### SUPPLY

Range	Option S1	90 - 253	V AC 50/60 Hz
	Option S2	20 - 35	V DC
Power Consumption		22 - 28	V AC 50/60 Hz
Protection		Internal Fuse Rating 500 mA (T)	

##### INPUT

Current <sup>1</sup>	0-20 mA	4-20 mA	(40 mA max)
Voltage	0-100mV	20-100mV	20V max
	0-1V	2-1V	
	0-5V	1-5V	
	0-10V	2-10V	
Selection	Internal switches		
Input Impedance	Current	<50 ohm	
	Voltage	>1MΩ	
Protection	Reverse connection, over voltage		
Loop Supply	25V DC @ 25 mA maximum (27V maximum)		

##### OUTPUT

Type	Current <sup>1</sup>	0-20 mA	/ 4-20 mA
	Passive mode, Vloop	30V max	
	Voltage <sup>1</sup>	0-1V <sup>2</sup>	0.2-1V <sup>3</sup>
		0-5V <sup>2</sup>	1.5V <sup>3</sup>
Load	0 to 1kΩ Current output		
	5 mA max current drive Voltage output		
Linearity	0.05%		
Stability	150 ppm/°C		
Response time	<100mS to reach 70% of final value		

<sup>1</sup> Current and voltage outputs are not isolated from each other  
<sup>2</sup> Available simultaneously with 0-20 mA output  
<sup>3</sup> Available simultaneously with 4-20 mA output

#### 2.2 General Specifications

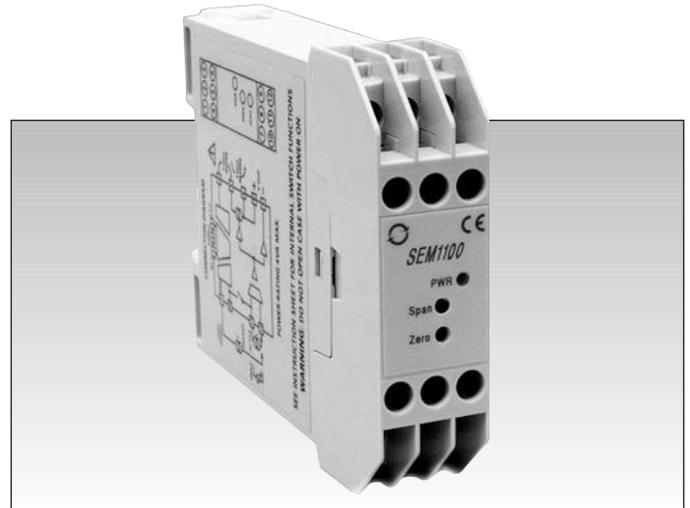
Isolation/Input/Output	500V DC (flash tested @ 1 kV)
Isolation/Supply	3KV DC to input or output
Mounting	DIN - EN 50022-35 or surface mount
Ambient	0 - 50°C; 10-95% RH non condensing
Connection	Captive terminal screws
Cable size	1mm <sup>2</sup> diameter wire
Flammability	UL 94: V-0; VDC 0304 STEP 11b
Dimensions	82 x 22.5 x 99mm
EMC	Emissions BS EN50081-1 Susceptibility BS EN50082-2
Electrical Safety	BS EN 61010-1 Installation overvoltage category II Pollution Degree II

#### 3.0 CONFIGURATION

The Isolator leaves the factory calibrated for the input output ranges specified at time of order. If no ranges have been specified then the isolator range will be 4-20 mA in and out. If required, the isolator ranges may be changed by the installer, provided access is available to suitable calibration equipment in order to simulate the required input/output signals. Configuration and calibration are best carried out prior to installation. The isolator is configured by means of internal switches.

**WARNING!** Extreme caution must be exercised when replacing the terminal housing.

Align holes in front panel with trim pots and LED within. Failure to do so may cause the installer to wire the unit incorrectly.

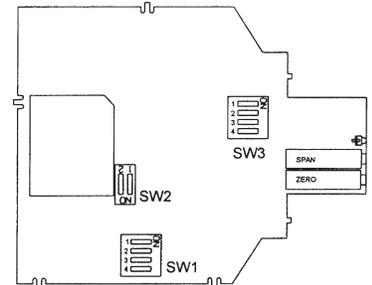


#### 3.1 Configuration

**WARNING!** Mains power may be present. NEVER open the isolator case when powered. Follow steps 1-4 to gain access to the internal configuration switches.

Refer to 4.1 diagram.

1. Disconnect from all power sources.
2. Insert screwdriver to release clips either side of case.
3. Slide terminal housing assembly forward to reveal circuit board and configuration switches.
4. To identify switches read PCB copper text or SW1, SW2 and SW3.
5. To reassemble, push circuit card back into shell (using clips provided) and clip into place.



Switch selection (- = off; on = on; \* = either)

INPUT	SW1				SW2	
	1	2	3	4	1	2
4-20 mA Passive	on	-	-	on	on	on
4-20 mA Active	on	-	-	on	on	-
0-20 mA Passive	on	-	-	-	on	-
0-100mV	-	-	-	-	-	-
20-100mV	-	-	-	on	-	-
0.0-1V	on	-	-	-	-	-
0.2-1V	on	-	-	on	-	-
0.0-5V	-	on	-	-	-	-
1-5V	-	on	-	on	-	-
0-10V	-	-	on	-	-	-
2-10V	-	-	on	on	-	-

OUTPUT	SW3				CURRENT
	1	2	3	4	
VOLTAGE					
0.0-1V	*	-	-	-	0-20 mA
0.2-1V	*	-	-	on	4-20 mA
0.0-5C	*	on	-	-	0-20 mA
1-5V	*	on	-	-	4-20 mA
0-10V	*	on	on	-	0-20 mA
2-10C	*	on	on	on	4-20 mA

Using the tables listed, select the required switch positions for the desired input and output. Re-assemble case ready for calibration.

### 3.2 Calibration

**WARNING!** For safety reasons NEVER calibrate with the case open. Mains power may be present

- Refer to section 4.2 for connection details. Connect a suitable calibrator to the input to simulate the input signal. Monitor the output with either a digital volt or mA meter. Connect the isolator to a suitable supply. Turn power on and allow 2 minute warm-up period.  
**Note:** Due to the current output stage not being capable of drawing negative negative currents, 0-20 mA output must be calibrated at 1 mA and 20 mA scale points. This will ensure the correct setting of VR1.
- Set input to low scale, adjust ZERO potentiometer for correct low scale output  $\pm 0.02\%$ .
- Set input to high scale, adjust SPAN potentiometer for correct high scale output  $\pm 0.02\%$ .
- Repeat steps b. and c. until both points are in scale.
- If transmitter will not calibrate correctly, turn off power, open case and check internal switches.
- End of calibration, turn off power and remove calibration equipment.

### 4.0 INSTALLATION

**THIS SECTION FOR USE BY COMPETENT PERSONNEL ONLY**

**WARNING - READ SAFETY INFORMATION BELOW BEFORE WIRING**

**WARNING** Hazardous voltages may be present on the terminals - the equipment must be installed by suitably 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.

- The mains power supply to the equipment must be protected by a suitable fuse and switch (or circuit breaker) which should be near the equipment.
- The equipment contains no user serviceable parts.

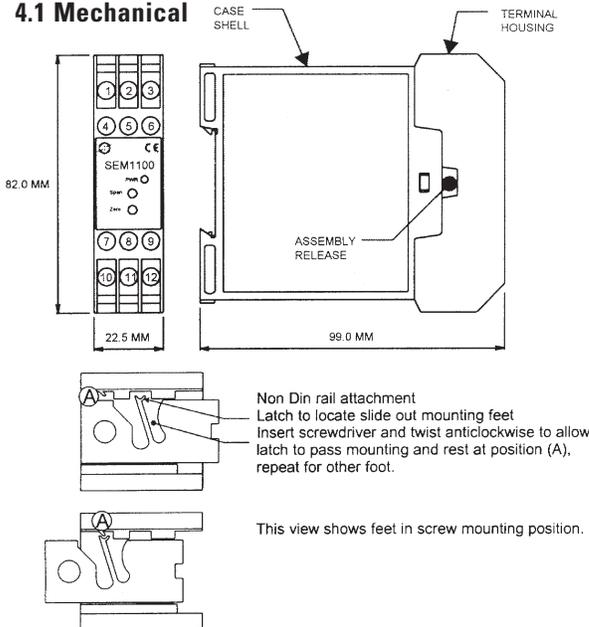
### ISOLATION

The power supply terminals and associated internal circuitry are isolated from all other parts of the equipment in accordance with BS EN61010-1 for connection to a Category II supply.

Functional isolation (500V DC max) is provided between input and output circuits.

Any terminals or wiring connected to the input or output terminals which are **accessible in normal operation** must **ONLY** be connected to signals complying with the requirements for safety extra low voltage (SELV) circuits.

### 4.1 Mechanical

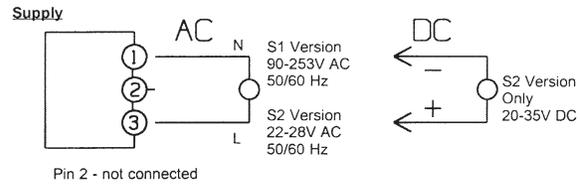


This transmitter must be housed within an enclosure that will provide suitable protection against the external environment, ensuring the stated operational ambient temperature, humidity and pollution levels are not exceeded. It is good practice to mount the transmitter away from sources of electrical noise, such as switch gear and large transformers. Although the transmitter has an excellent temperature stability, best performance will be maintained with a stable ambient temperature. The transmitter can be mounted in any orientation and stacked side by side. (Note: Each transmitter can dissipate up to 4 watts of power in the form of heat, dependent on external loading. If a number of transmitters are to be mounted inside an enclosure, adequate ventilation must be provided).

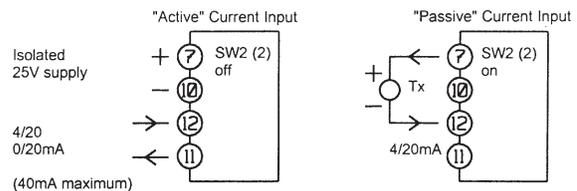
### 4.2 Electrical

Connections to the transmitter are made via screw terminals, with wire protection plates provided on each terminal. To maintain CE compliance twisted pair (screened) cables are recommended for the signal connections. It is good practice to ensure all signal loops are grounded at one point. Care must be taken when designing a 4-20 mA circuit to ensure that the total burden of the loop (that is the total voltage requirement of all the equipment connected in the loop at 20 mA) does not exceed the loop power supply voltage. The transmitter is protected against reverse connection and over voltage.

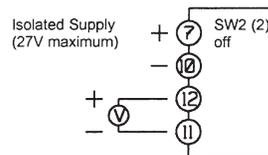
### 5.0 CONNECTIONS



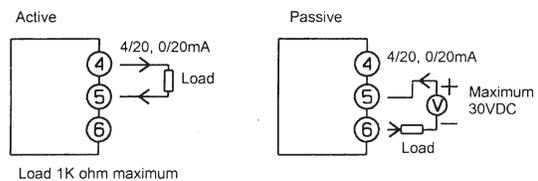
### Current Inputs



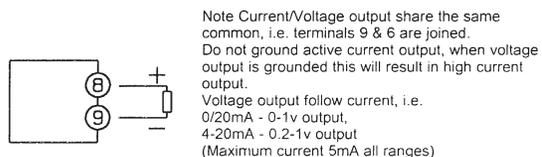
v @ 25mA



### Current Outputs



### Voltage Output



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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