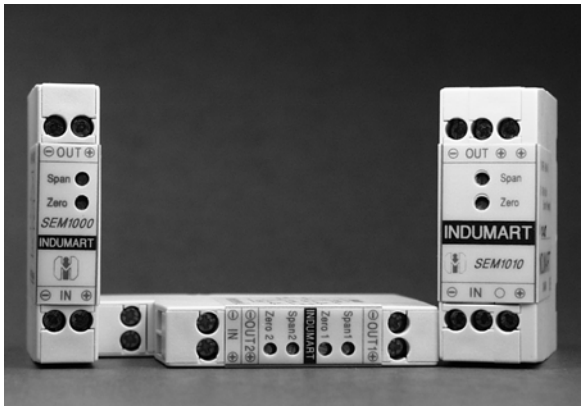
PROCESS SIGNAL ISOLATOR

SEM1000



- 0.05% ACCURACY
- SMALL SIZE
- LOOP BOOSTER
- SIGNAL SPLITTING VERSION
- INPUT AND OUTPUT POWER VERSION

INTRODUCTION

Indumart's *SEM1000 Series* of Loop Powered Analogue Signal Isolators limit the magnitude of the signal so that unwanted, excessive voltages do not enter the instruments, ensuring safe decoupling of the sensor signal from the control electronics such as DCS, DAS, PLC, etc. The *SEM1000 Series* signal isolators accurately transfer the analogue signal and at the same time block the DC continuity between the input and output of the isolator. Signal isolation also protects the data integrity by minimizing the effect of ground loop and electrical noise and provides a non-electric connection between input and output.

When analogue loops are grounded at more than one point, due to potential difference at different earth locations, currents will flow between any two points causing errors, noise and erratic signals. Even when the system has been designed to be grounded at a single point, leakage might occur through some instruments, such as ceramic insulated thermocouple probes to introduce a path to earth and causing errors.

The choice of isolator usually depends on whether power is available on the input side or the output side of the isolator, and also if there is sufficient voltage available in the loop to power a loop powered isolators.

Loop powered isolator **(SEM1000)** is powered from a 4-20 mA input signal side to provide complete signal isolation and eliminate the earth loop. One important application of this small size isolator is isolating inputs to PLCs.

External powered isolator **(SEM1010)** is used for isolating a number of inputs from a single power supply at the system side. Using conventional isolators, a separate power supply is required for each loop to completely isolate each input from each other, while SEM1010 produces an isolated power for each input from a single power supply.

The **SEM1015** provides an isolated 4-20 mA output from a ±0.1 to 100V input (user selectable). It requires a single DC power supply on the output.

In some applications, the volt requirements of a number of devices in a loop is more than what the loop can supply. By using the **SEM1020** isolator, an additional load up to 900 ohms can be driven from a single 24V supply.

If there is a requirement for sending a common signal to two different instruments, the **SEM1200** can satisfy this by providing two isolated 4-20 mA outputs from a single 4-20 mA input. It requires power for all loops.

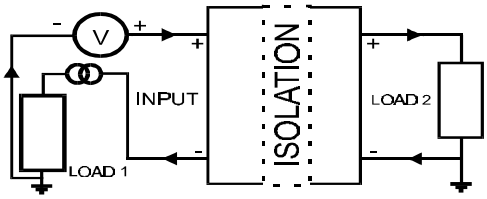
GENERAL SPECIFICATION @ 20°C

Isolation	500 VAC rms
Accuracy	0.05% FRO
Stability	100 ppm / °C
Time Constant	100 msec (63% of final value)
Adjustments	Front access Zero and Span
Mounting	35 mm DIN rail
Case Material	Polyamide (gray)
Ambient	0 to 70°C; 10 to 95% RH

DRIVING TWO EARTHED LOOPS

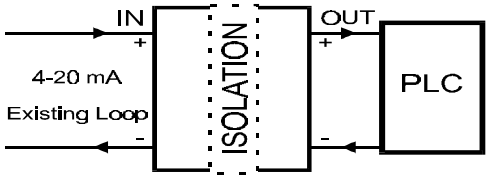
SEM1000

Total Volt Drop = 5 + (0.02 × Load)

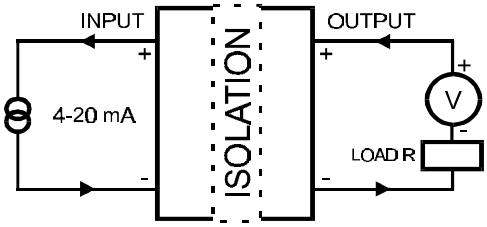


ISOLATING INPUTS INTO A PLC

SEM1000

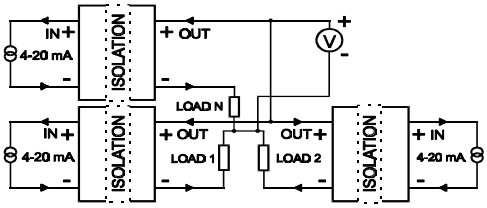


POWER FOR TRANSMITTER



A SYSTEM WITH MULTIPLE INPUTS AND ONE POWER SUPPLY

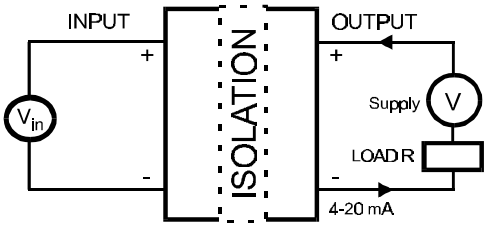
SEM1010



VOLTAGE-CURRENT CONVERTOR

SEM1015

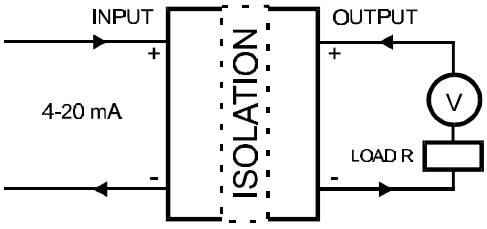
Loop Volt Drop = 8 V
V_{in} = ±0.1 V to 100 V (user selectable)



LOOP BOOSTING (Input & Output Supplies)

SEM1020

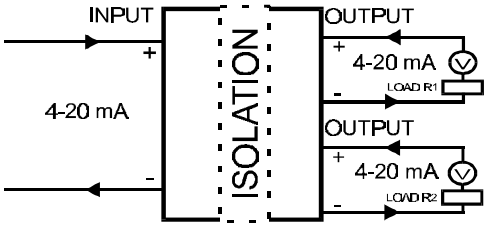
Loop Volt Drop = 2.7 V



SIGNAL SPLITTING

SEM1200

Loop Volt Drop = 5 V
For maximum stability keep volt drop across output to <15 V



Models	SEM1000	SEM1010	SEM1015	SEM1020	SEM1200
Input	4-20 mA		±0.1 to 100 V	4-20 mA	
Output	4-20 mA				2 × 4-20 mA
Power Requirements	Input	Output		Input & Output	
Case (mm)	60×60×12.5	60×60×21	60×60×12.5		60×75×12.5