STATUS INSTRUMENTS

SEM1015

DIN Rail Mounted Isolated Transmitter

http://fluidic-ltd.co.uk/product/status-galvanic-isolators/

52-214-2410-01 Issue: Web 1015

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1.0 DESCRIPTION

This (4 to 20) mA isolator can be configured to accept most of the common voltage ranges found in both commercial and industrial applications. The input is fully isolated from the output circuit. The isolator range can be specified at the time of order, but if required the user may re-range the transmitter to a new range. The Isolator is housed inside a plastic enclosure, suitable for DIN rail mounting. Screw terminals are provided for wire connections. The enclosure provides side entry access to coarse offset and span adjusters and a range selector switch.

2.0 SPECIFICATION @ 20 °C

2.1 OUTPUT

Type	Passive 2 wire current output
Range	(4 to 20) mA (30 mA max.)
Protection	Reverse connection plus overvoltage
Voltage	(10 to 30) VDC
Stability	Typical 0.01 %/°C
Ripple	Less than 40 µA/V (Measured at 1 V ripple 50 Hz)
Response	200 ms to reach 70 % of final value

2.2 INPUT

Type — Isolated DC Voltage covered by six ranges:

Span	Offset
(20 to 200) mV	(-20 to 80) mV
(0.2 to 1.0) V	(-0.1 to 0.4) V
(1.0 to 5.0) V	(-0.5 to 2.0) V
(5.0 to 25) V	(-2.5 to 10) V
(25 to 48) V	(-5 to 25) V
(20 to 100) V	(-10 to 40) V

The above settings are capable of covering most standard industrial ranges.

NOTE: VMAX IN is limited to 48 VDC for BS EN61010-1 compliance.

Breakdown Isolation	500 VDC (Flash tested to 1 kV)
Impedance	> 1 MΩ
Accuracy	Typical linearity ± 0.01 % (0.05 % maximum)
Range Select	Coarse settings, by side entry 16 setting position rotary screw adjustment switches. Fine by front access potentiometers. Range setting by side entry rotary switch.

2.3 GENERAL

Ambient	(0 to 50) °C; (10 to 95) % RH non condensing
Connection	Captive clamp screws
Cable Size	4 mm^2 solid/2.5 mm^2 stranded
Case Material	Grey Polyamide
Dimensions	(60 x 60 x 11.5) mm (67.5 mm above Rail)
Mounting	Snap on “Top Hat” (DIN EN50022-35)

3.0 INSTALLATION

- **IMPORTANT NOTE!** This Isolator is not suitable for providing isolation from hazardous voltages, such as mains supplies. It is intended for use in with low voltage signals only.

3.1 MECHANICAL

This isolator must be housed within a suitable enclosure that will provide protection from the external environment, to ensure that the stated temperature and humidity operating ranges are not exceeded. It is good practice to mount the isolator away from sources of electrical and magnetically radiated noise, such as switch gear and transformers. The transmitter enclosure is designed to snap fit onto a standard “Top Hat” DIN rail. To remove from 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 isolator may be mounted in any orientation and stacked side by side along the rail. Span and offset fine adjustments can be made from the front panel, whilst re-ranging the transmitter, access to adjusters in the case side is required.

3.2 ELECTRICAL

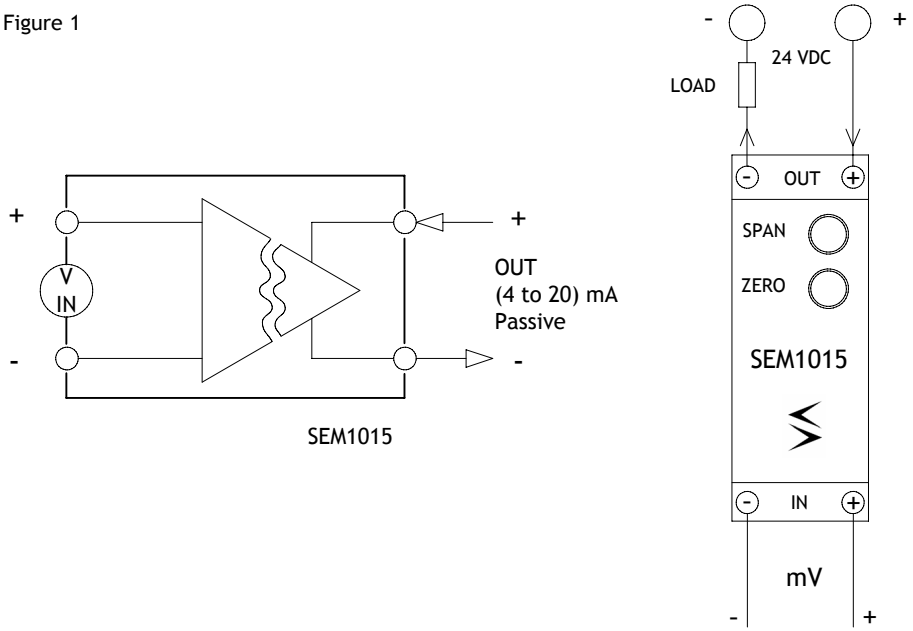
Connection to the isolator are made via screw terminals. To maintain EMC compliance, twisted pair (screened) cables are recommended for the signal connections. The correct type of wire must be used for sensor connections, compensating wire for thermocouple inputs, mV inputs must use screened copper wires. Incorrect sensor connection or sensor wire burnout will result in the output current saturating up scale on standard units (optionally downscale if requested at time of order).

It is good practice to ensure all (4 to 20) mA signal loops are grounded at one point. Care must be taken when designing a (4 to 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.

To operate correctly the isolator requires a minimum of 10 V across its output terminals.

The isolator is protected against reverse connection and over voltage. Figure 1 shows a typical (4 to 20) mA circuit, the load resistor represents equipment such as indicators loggers PLC etc.

Figure 1



4.0 RANGES

The isolator is normally supplied factory ranged but if required the range can be changed by means of the range selection switch plus a sixteen step coarse, and multi turn fine, offset and span adjusters accessible from the side of the housing.

The following equipment is required:

- Precision mV/V calibrator, to simulate input
- DC milliamp meter (digital); accuracy 0.05 % on (0 to 20) mA range
- Power Supply; 24 VDC 30 mA minimum
- Trim tool

Decide on the range required and ensure the transmitter is capable of this range. If a range has not been specified at time of order, the transmitter will leave the factory set as (0 to 1) V. Remove range selection switch cover by prising out with a screw driver. Re-fit cover after calibration. Refer to the table below and set the range selection switch to the correct position.

SWITCH POSITION	RANGE	OFFSET
0	(20 to 200) mV	(-20 to 80) mV
1	(0.2 to 1.0) V	(-0.1 to 0.4) V
2	(1.0 to 5.0) V	(-0.5 to 2.0) V
4	(5.0 to 25) V	(-2.5 to 10) V
8	(25 to 48) V	(-5 to 25) V
F	(20 to 100) V	(-10 to 40) V

Range F is provided to allow for (-10 to 10) V inputs.

5.0 CALIBRATION

1. Connect the calibrator to input terminals, ensure polarity is correct. Connect as above with mA meter in place of, or in series with load. Turn on and wait a few minutes before calibration, to allow the transmitter to stabilise.

   Let Va = Input voltage for 4 mA output

   Vb = Input voltage for 20 mA output

2. Set calibrator to simulate Va, first rotate coarse offset to obtain a output reading close to 4 mA. Use fine ZERO adjuster to trim reading to 4 mA ± 0.005 mA. (If fine trim hits end of travel re-adjust COARSE adjuster one step re-adjust fine ZERO).

3. Set calibrator to simulate Vb, first rotate COARSE GAIN to obtain a output reading close to 20 mA. Use fine SPAN adjuster to trim reading to 20 mA ± 0.005 mA. (If fine trim hits end of travel re-adjust COARSE adjuster one step re-adjust fine SPAN. Note clockwise rotation of the COARSE adjuster reduces output current)

4. Set calibrator to Va, adjust fine ZERO for 4.000 mA ± 0.005 mA.

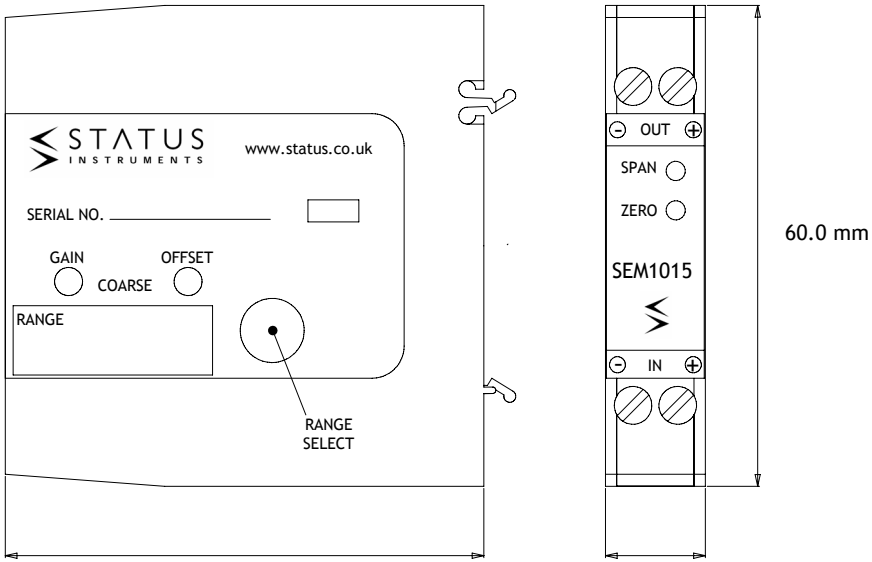
5. Set calibrator to Vb, adjust fine SPAN for 20.000 mA ± 0.005 mA.

6. Repeat Steps 4, 5 until both points are in calibration.

7. Turn off power and remove wires. Mark isolator with the new range.

6.0 MECHANICAL DETAIL

Figure 2



ALSO AVAILABLE:

- Smart In Head Temperature Transmitters
- DIN Rail Mounted Temperature Transmitters
- Panel & Field Temperature Indicators
- Temperature Probes
- Trip Amplifiers
- Signal Conditioners
- And many other products

For further information on all products:

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