Signal Isolator v3 SI231

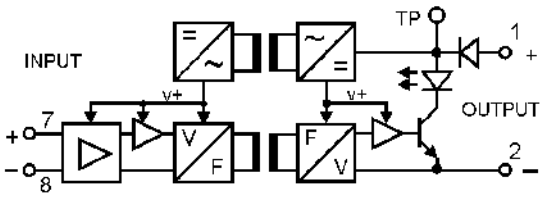
DESCRIPTION

The SI231 is a loop powered transmitter that combines signal isolation and conversion in one compact package. The SI231 is ideal for in field enclosures or as a space saver in larger control cabinets. The base unit features link select-ability for standard process inputs. No special tools or components are required for range changing in the field. Reverse or direct action mode is easily changed by solder pads on the base board. Standard output is 4 - 20mA with a wide supply range of 7.5 to 40Vdc. This enables the SI231 to be used in 12V battery supply in automotive applications. Other factory set output configurations are 10 - 50 mA loop powered and 0 - 10 mA, 0 - 20 mA or voltage output in 3-wire connection. Reference for 3-wire connection is the negative supply. Double surge protection is standard with all Series 200 loop powered transmitters to prevent failure due to spikes induced by DC switched inductive loads. Final calibration is trimmed using the front accessible zero and span 15-turn trim adjustments. A front mounted L.E.D. and a test socket verify module function and assist in calibration checks without disconnection of output wires.

General Specifications

Size:	23.5W x 71.5H x 109D (mm).
Mounting:	Clip for 35mm DIN-Rail.
Housing material:	ABS.
Connection:	Screw terminals.
Weight:	0.120 kg.
Protection class:	IP40.
Calibration accuracy:	<0.2%.
Linearity:	<0.1%.
Long term drift:	<0.10%.
Ambient operating temperature range:	-10...+65°C.
Temperature drift error:	0.01% per °C.
Supply voltage:	8 - 40V continuous (50V 30 seconds).
Load for 4 - 20mA output:	$RLmax = \frac{SupplyVoltage - 8\text{V}}{0.02\text{A}} \Omega$
Load change effect:	0.1% up to RL max.
Response time:	Programmable - see table 2 overleaf.
Input impedance:	51Ω (20mA/10mA range). 1kΩ (1mA range). 2M7Ω (10V/5V range). 560kΩ (2V/1V range).
Overload continuous:	500% of rated input.
(Zero suppression/elevation)	
Front Zero adjust:	+20/ -10% typical.
Front Span adjust:	±25% typical.
Internal offset adjust:	±50%.
Noise immunity:	130dB CMRR.
Input/output isolation:	>2kV r.m.s.
Electromagnetic compatibility:	Complies with AS/NZS 4251.1 (EN 50081.1)

Block Diagram



For input / output combinations refer to TYPE NO. DESIGNATION overleaf.

SI231 - X X X X

Output:

1 = 4 - 20mA. } 2 -wire
*) 2 = 10 - 50mA.
*) 3 = 0 - 1mA. } 3 – wire
*) 4 = 0 - 10mA.
*) 5 = 0 - 20mA.

*) 6 = 0 - 1V.
*) 7 = 0 - 5 V, min supply 10.5Vdc.
*) 8 = 0 - 10V. min supply 15.5Vdc. } 3 – wire
*) 9 = Other specify.

Input:

1 = Process input (see table 1, specify required input).

Action:

1 = Direct. *) 2 = Reverse.

Input Options:

0 = Standard response 5ms/50ms/500ms. *) 1 = Custom link response 500ms/750ms/1s

Programming Links

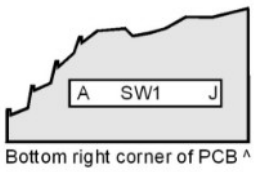
A 10 way 2 row header shown below is used to set the process input type (table 1) and input output response time (table 2). After the links have been set for the required input the span and zero adjustments must be set.
Standard factory settings are :-
Input: 4-20mA, Response Time: 500mS.

Table 1 Process Inputs

SW1	A	B	C	D	E	F	G	H
4-20mA		X	X	X				X
0-1mA	X		X	X			X	
0-10mA		X	X	X	X		X	
0-20mA		X	X	X			X	
0-1V			X	X			X	
0-2V			X				X	
0-5V				X			X	
1-5V				X				X
0-10V							X	

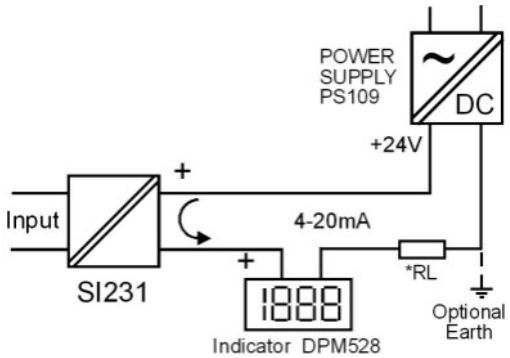
Table 2 Response Time

Standard	Custom	I	J
5mS	500ms		
50mS	750ms	X	
500mS	1s		X



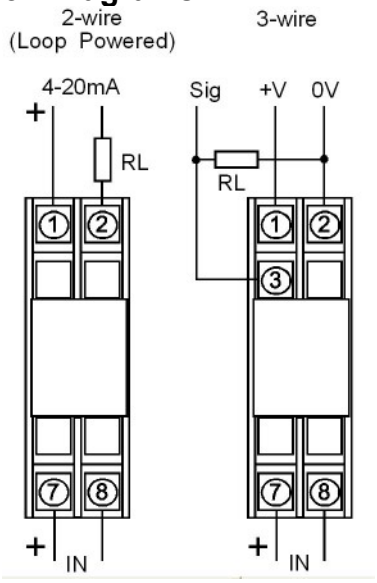
Bottom right corner of PCB ^

Wiring Example



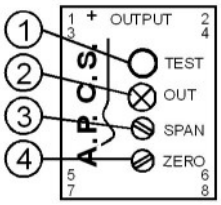
*RL is input load of PLC, VSD, or other process instrument.

Connection Diagrams



Front Control Explanation

1. Test socket - output signal access with reference to terminal (1) loop integrity is maintained when digital multi-meter Rin <30 Ω is used.
2. Loop indicator - dim at 4mA, bright at 20mA.
3. SPAN (full scale) adjust 15 turn.
4. ZERO (start scale) adjust 15 turn.



*) = Price Extra..