

# Bipolar Signal Isolator v3

**BSI234**

## DESCRIPTION

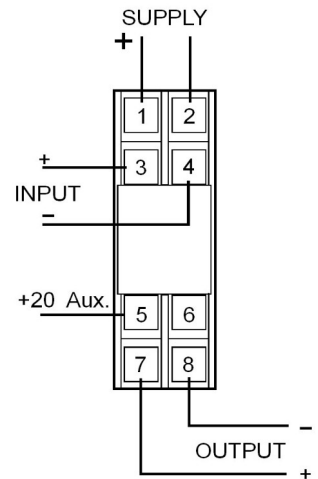
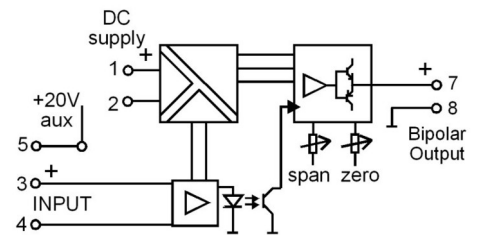
The BSI234 is an isolating converter providing true 3-way galvanic isolation up to 2kV rms. The BSI234 produces an isolated bipolar output signal from an input signal. The BSI234 comes in three, coding plug selectable models to accept either Process, mV or Bipolar input signals. No special tools or components are required for range changing in the field. A 20Vdc/22mA sensor supply is available at the input section, this can be useful for loop powered field transmitters. The output drive circuit is factory configured to provide load independent voltage or current outputs. Final calibration is trimmed using the front accessible zero and span 15-turn trim adjustments. The wide swing 8-60Vdc power supply covers popular DC sources. All units are fitted with a 500ms filter that can be link changed to 5ms for fast response. Surge protection for power supply and input is standard with all APCS modules.



## General Specifications

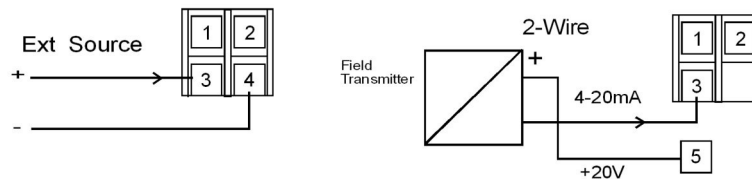
Size: 23.5W x 71.5H x 109D (mm).  
 Mounting: Clip for 35mm DIN-Rail.  
 Housing material: ABS.  
 Termination: Top mounted screw terminals.  
 Protection class: IP40 (IP55 Enclosure Opt).  
 Weight: 0.120 kg.  
 Protection class: IP40.  
 Calibration accuracy: <0.2%.  
 Front 'ZERO' adjust: ±20% typical.  
 Front 'SPAN' adjust: ±25% typical.  
 Linearity: <0.1%.  
 Long term drift: <0.1%.  
 Temperature effect: Typically 0.025% of span per °C.  
 Operating temperature: -10...+60°C.  
 Output drive: 10mA into 0 - 2kΩ, 20mA into 0 - 1kΩ  
 10V into ≥500Ω, 20V into ≥1kΩ.  
 Input impedance: Current 51Ω.  
 Voltage 2M7Ω (10V/5V range).  
 560kΩ (2V/1V range).  
 mV 140kΩ (250-1000mV ranges).  
 30k Ω (40-200mV ranges).  
 Supply/Input/output isolation: 2kV rms.  
 Auxiliary Output: 20Vdc with 22mA drive (Suitable for 2-wire transmitter supply).  
 Electromagnetic compatibility: Complies with AS/NZS 4251.1 (EN 50081.1)

## Block Diagram



## Input Connections

When externally sourced signals are used terminal 3 is the positive input.  
 When a 2-wire field transmitter is used, terminal 5 is a 20V power supply used to supply the loop current.



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

## TYPE NO. DESIGNATION

**BSI234 - X X X 0 X X**

### Power Supply:

- 3 = 8 - 60Vdc.
- \*) 4 = discontinued
- \*) 5 = 20 - 48Vac.
- \*) 6 = discontinued.

### Input (Specify required range from selected table):

- 1 = Process Signals, Table 2 (# 4-20mA).
- 2 = Millivolt Signals, Table 4 (# 75mV).
- 3 = Bipolar Signals, Table 5 (# +10V).
- 3 = Bipolar Signals, Table 5 (# +10V).
- \*) 9 = Voltage < 100Vdc.
- \*) A = Potentiometer 3W voltage excitation.
- \*) B = Adder, 2 inputs 4 - 20mA floating.
- \*) C = Subtractor, 2 inputs 4 - 20mA floating.
- \*) D = MIN selector, 2 inputs 4-20mA signal.
- \*) E = MAX selector, 2 inputs 4-20mA signal.
- \*) F = Voltage input specify (>100 < 1000Vdc).
- \*) G = -20..0..+20Vdc (withstand 8kV 8/20us pulse).

Refer to DS23432 for optional input connections, specification and ordering requirements.

### Output 1 (Specify required range):

- 1 = -1...+1V (50Ω min).
- 2 = -5...+5V (250Ω min).
- 3 = -10...+10V (500Ω min).
- 4 = -20...+20V (1kΩ min).
- 5 = -1...+1mA (20kΩ max).
- 6 = -5...+5mA (4kΩ max).
- 7 = -10...+10mA (2kΩ max).
- 8 = -20...+20mA (1kΩ max).
- \*) 9 = Other. (Specify)
- \*) A = -10..0..+10Vdc @ 30mA

### Action:

- 1 = Direct.
- 2 = Reverse.

### Options:

- 0 = None.
- \*) 1 = Customised response time (Specify).
- 3 = Bipolar Millivolt Signals, DS23423 (# ±75mV)
- \*) 9 = Other.

### Response time Table 1

Table 1	SW1/1
5ms	
500ms	X

### Process input Table 2

Table 2	SW1					
Input	2	3	4	5	6	7
4-20mA	X	X	X			X
0-20mA	X	X	X		X	
0-10mA	X	X	X	X	X	
0-1V		X	X		X	
0-2V		X			X	
0-5V			X		X	
1-5V			X			X
0-10V						X
Other non-standard						
0-0.5V		X	X	X	X	
0-2.5V			X	X	X	
0-4V			X			
0-6V				X		
0-7.5V				X	X	

### Millivolt input Table 4

Table 4	SW1						
Input	2	3	4	5	6	7	
0-40mV		X	X	X			
0-50mV		X	X	X	X		
0-75mV		X	X				
0-100mV		X	X		X		
0-150mV		X		X	X		
0-200mV		X			X		
0-250mV			X	X	X		
0-400mV			X				
0-500mV			X		X		
0-600mV				X			
0-750mV				X	X		
0-1000mV					X		

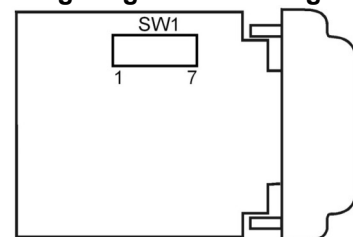
### Bipolar input Table 5

Table 5	SW1						
Input	2	3	4	5	6	7	
±20mA	X	X	X		X		
±10mA	X	X	X	X	X		
±1V		X	X		X		
±2V		X			X		
±5V			X		X		
±10V					X		

### To change ranges

1. Disconnect power unclip housing lid and withdraw unit from housing.
2. Set coding plugs as required.
3. Reassemble unit and connect power.
4. Adjust "Span and "Offs" pots to recalibrate.
5. Change the label information to the new input/output values.

### Coding Plug Location Diagram



\*) = Price Extra. All extra price inputs disable future use of the program links.  
# = Default calibration from factory unless specified otherwise.

In the interest of development and improvement, APCS reserve the right to amend, without notice, details contained in this publication. APCS will accept no legal liability for any errors, omissions or amendments.