

# Special Function Isolator v2 SFI762

## DESCRIPTION

The SFI762 combines two fully independent and isolated input channels and one output for the following process control signal conditioning applications:

- Addition (Output = Input 1 + Input 2).
- Subtraction (Output = Input 1 - Input 2).
- Minimum Selection (Output follows the lower of the two inputs).
- Maximum Selection (Output follows the higher of the two inputs).

The special function is factory configured however both the inputs and the output is coding plug configurable for common process signals (Factory default is 4-20mA in and out). Final calibration can be trimmed by using the front accessible SPAN (S) and ZERO (Z) potentiometers. Isolation is 2kVrms between inputs output and supply eliminating traditional problems with special function transmitters. The two inputs can be set to dissimilar input types and optional card input is available for both inputs. The wide swing DC/DC converter allows for two power supply ranges: 10-60Vdc (16-42Vac), 80-280Vac (80-300Vdc). Connection is via pluggable 8-way screw terminals.



## General Specifications

Mounting: 35mm DIN-Rail.  
 Termination: Plug-in screw terminals.  
 Weight: 0.300 kg.  
 Protection class: IP40 (IP65 Enclosure optional.)  
 Size: 60W x 70H x 110D (mm).  
 Housing material: ABS, aluminium.  
 Calibration accuracy: <0.2% of range.  
 Auxiliary Supplies: 19V/22mA fitted on all inputs except:

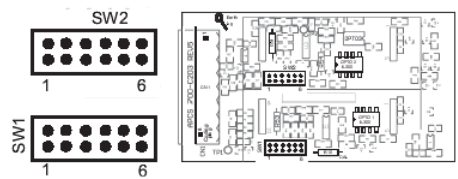
- (36) Frequency NAMUR/Contact =5V
- (42) Potentiometer =5V
- (34) RTD (3 wire connection)

Operating temperature: 0...+60°C.  
 Storage temp. range: -20...+70°C.  
 Temperature effect: 0.02% per °C.  
 Output drive: 0 to 22mA (20V drive) or 0 to 20V (20mA drive).

Response time: 500ms standard (5ms link).  
 Zero/Span adjust: Typically ±20%  
 Power requirements: 4VA.  
 4-way Isolation: 2kV rms.  
 Electromagnetic compatibility: Complies with AS/NZS 4251.1 (EN 50081.1)

## Changing Input Range

There are two independent input circuits; the input circuits do not need to be the same



type or range for the desired function to operate. If a link selectable input is ordered then the range can be changed using table 1. Use SW1 on C203 PCB for channel 1 and SW2 on C203 PCB for channel 2.

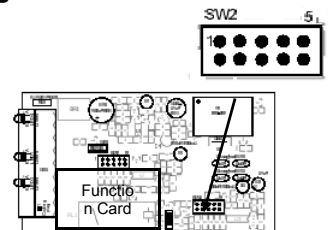
### Input - Table 1 - C203 PCB

Input	1	2	3	4	5
4-20mA	X	X	X		X
0-20mA	X	X	X	X	
0-10V				X	
0-1V		X	X	X	
0-5V		X		X	
1-5V			X		X
<b>Response</b>					6
5msec					
500msec					X

X = coding plug inserted

## Changing Output Range

There is one output circuit; if a link selectable output is ordered then the range can be changed using table 2. Use the SW2 on the C204 PCB.

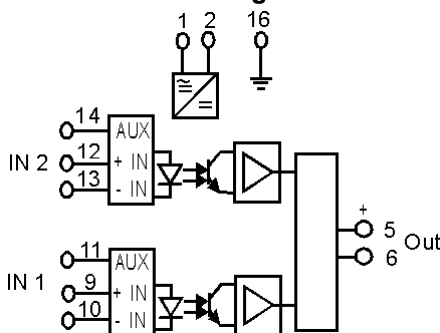


### Output - Table 2 - C204 PCB

Output	1	2	3	4	5
4-20mA	X		X		
0-20mA		X			
0-5V		X			X
1-5V	X		X		X
0-10V		X		X	

X = coding plug inserted

## Block Diagram



After changing ranges final calibration need to be trimmed, follow procedure no the next page.

## Type No. Designation SFI762 – X X XX XX X X

### Supply:

- 1 = 80-300Vdc / 80 – 280Vac.
- 2 = 10-60Vdc / 16 – 42Vac

### Function:

- 1 = Add / Average
- 2 = Subtract
- 3 = Select minimum
- 4 = Select maximum
- 9 = Other

Refer to the USC701  
for more complex  
mathematical  
equations.

### Option:

- 0 = none.
- \*) 2 = Customised response time.

### Output:

- 1 = Link selectable (default 4-20mA).
- \*) 9 = Other specify

**Input 2:** See input codes.

**Input 1:**

## CH1 and CH2 Input Codes

- 01 = Link selectable (default 4-20mA)
- \*) 21 = DC voltage 2kV max.
- \*) 22 = DC millivolt, <100mVdc.
- \*) 23 = Bipolar voltage 10mV to □2kV.
- \*) 24 = DC current 10A max.
- \*) 30 = AC voltage 10mV to 500V span.
- \*) 32 = True rms.
- \*) 33 = Thermocouple (Linearised 0.2%).
- \*) 34 = RTD input.
- \*) 35 = Frequency input. (Sine, Triangle, Square, Pulse).  
Cal range: 0-10Hz 0 - 5kHz. Sensitivity:  
200mVpp. (70mV rms) min. 22Vpp. max.
- \*) 36 = Frequency (NAMUR, contact).
- \*) 37 = Frequency (NPN Prox 20V).
- \*) 38 = Frequency (PNP Prox 20V).
- \*) 39 = Resistance input (constant current excitation).
- \*) 42 = Potentiometer 3W voltage excited.
- \*) 99 = Other.

Specify calibration details for all inputs.

\*) = Price Extra.

### Add / Average final calibration

1. For output = C...D:
2. Set both inputs to min & adjust both "Z" pots fully anticlockwise.
3. Measure the output = Y.
4. With both inputs at min, adjust output to (C+Y)/2 with CH 1 "Z" pot (or slightly above zero if C = 0).
5. With both inputs at min, adjust output to C with CH 2 "Z" pot (or slightly above zero if C = 0).
6. With CH2 at min & CH 1 max input, adjust output to 50% with CH 1 "S" pot.
7. With both inputs at max, adjust output to D with CH 2 "S" pot.
8. Repeat steps 4 to 7 as required.
9. Check, with CH1 = CH2 = 50% input, that output = 50%

### Subtract final calibration

1. For output = C...D:
2. With both inputs at min, turn CH 2 "Z" pot fully anticlockwise and adjust output to C with CH 1 "Z" pot.
3. Adjust CH 2 "Z" pot clockwise until output just starts to rise above C.
4. With CH 1 input at max & Ch 2 input at min, adjust output to D with CH 1 "S" pot.
5. With both inputs at max, adjust output to C with CH 2 "S" pot.
6. Repeat above until no further adjustment is required.
7. Check, with CH1 = CH2 = any input in range, that output = C.

### Minimum Select final calibration

1. For output = C...D:
2. With CH 2 max input, & CH 1 at min, adjust output to C with CH 1 "Z" pot.
3. With CH 1 max input, & CH 2 at min, adjust output to C with CH 2 "Z" pot.
4. With CH 2 > max input, & CH 2 "S" pot fully clockwise, set CH1 to 90% of range and adjust output to 90% of range with CH 1 "S" pot.
5. With CH 1 max input, set CH2 to 90% of range and adjust output to 90% of range with CH 2 "S" pot.
6. With CH2 max input check output follows CH1 as CH1 is varied throughout range.
7. With CH1 max input check output follows CH2 as CH2 is varied throughout range.

### Maximum Select final calibration

1. For output = C...D:
2. With CH 2 < min input, & CH 2 "Z" pot fully anticlockwise, set CH 1 at 10% of range & adjust output to 10% of range with CH 1 "Z" pot.
3. With CH 1 at min input, set CH 2 at 10% of range & adjust output to 10% of range with CH 2 "Z" pot.
4. With CH 2 at min input, set CH 1 at 10% of range & check output is 10% of range – if not, adjust with CH 1 "Z" pot.
5. With CH 2 at min input, & CH1 max, adjust output to D with CH 1 "S" pot.
6. With CH 1 at min input, & CH2 max, adjust output to D with CH 2 "S" pot.
7. Repeat steps 3 to 6 as required.
8. With CH2 min input, check output follows CH1 as CH1 is varied throughout range.
9. With CH1 min input, check output follows CH2 as CH2 is varied throughout range.