

#### Bipolar Signal Converter v5 **BSC133**

### DESCRIPTION

The BSC133 has been designed to produce a bipolar output signal from any type of input signal. Input signals can be bipolar or unipolar process signals such as -10, +10V or 4 - 20mA. A special input conditioning card (optional) permits the use of the BSC133 for low level, AC or sensor inputs. The 4 - 20mA input version also features a 24Vdc (25mA) auxiliary supply output to operate loop-powered transmitters connected to its input. The output drive circuit is factory configured to provide load independent voltage or load independent bipolar current output. Maximum current drive for voltage output is 50mA at ±20V output. Applications requiring output >50mA up to 2A as is the case with hydraulic drive solenoids can be accommodated using an external bipolar DC-power supply. Models with outputs above 50mA output have an external heat-sink. Final calibration is trimmed using the front accessible 'offs' and 'span' 15-turn trim adjustments. The output signal level is indicated by a green LED on the front, giving a clear indication of module function. All units are fitted with a 0.1 second filter. This filter



**Block Diagram** 

8 0

10 O

input

constant can be increased or decreased if required. RF and power transient protection is also standard as with all APCS modules. The input/output mode can be factory configured for direct or reverse action. The basic BSC133 does not provide galvanic isolation from input to output. Refer to BSI134 for input/output isolation. Various power supply choices are available ranging from 240Vac down to 8Vdc, all provide power isolation.

## **General Specifications**

Size 0 to 500mA output: 52W x 70H x 110D mm. Size 500mA to 2A output: Width increases to 85mm.

Size 2A to 5A output: Separate heat- sink see option drawing.

Mounting: DIN-Rail, gear plate. Termination: Screw terminals on front.

Protection class: **IP40** Weight: 0.300 kg. Housing material: ABS.

Accuracy: 0.2% of span. Front 'OFFS' adjust: ±25% typical Front 'SPAN' adjust: ±25% typical Temperature effect: 0.01% per °C.

Operating temperature

-10...+60°C. range:

Output load effect: less than 0.25% up to max. load.

Output loop drive:  $\pm 10$ mA into 0 -  $2000\Omega$ 

 $\pm 20$ mA into 0 - 1000 $\Omega$ .  $\pm 10V$  into  $200\Omega$  minimum.

Output voltage load:  $\pm 20V$  into  $400\Omega$  minimum.

10 minutes max.

Input/output isolation: None (use BSI134).

Power requirements: 3W. 2kV rms. Power supply isolation:

Electromagnetic compatibility: Complies with AS/NZS 4251.1 (EN 50081.1)

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

**NESS Corporation** APCS division

Bipolar Signal Converter v5 BSC133 Drawing: DS13351 Issue: 2 13/06/14

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## **BSC133 – X XX X X X X X**

#### TYPE NO. DESIGNATION

# Power Supply: 1 = 90-280Vac 50/60Hz (65-280Vdc). \*) 3 = 16-48Vac 50/60Hz (10-60Vdc) Input:-Unipolar $05 = 0 - 2V (1M\Omega)$ . $06 = 0 - 5V (1M\Omega)$ . $07 = 0 - 10V (1M\Omega).$

- \*) 6 = 8 60 Vdc.
- \*) 9 = Other (Specify).

## **Bipolar**

```
01 = 0 - 100 \text{mV} (1 \text{M}\Omega).
                                                11 = 0 - 100\mu A (1k\Omega).
                                                                                                21 = \pm 1V (1M\Omega).
                                                12 = 0 - 1mA (1kΩ).
02 = 0 - 200 \text{mV} (1 \text{M}\Omega).
                                                                                                22 = \pm 5V (1M\Omega).
                                                                                               23 = \pm 10V (1M\Omega).

24 = \pm 20V (1M\Omega).
03 = 0 - 500 \text{mV} (1 \text{M}\Omega).
                                                13 = 0 - 5 \text{mA} (220\Omega).
04 = 0 - 1V (1M\Omega).
                                                14 = 0 - 10 \text{mA} (100 \Omega).
```

- $15 = 0 20 \text{mA} (51 \Omega)$ . \*) 25 = 3-wire Potentiometer.  $16 = 0 - 50 \text{mA} (20 \Omega)$ . #) 17 = 4 - 20mA  $(51\Omega)$ .
- $08 = 0 20V (1M\Omega).$  $18 = 10 - 50 \text{mA} (20 \Omega)$ .  $09 = 0 - 50V (1M\Omega).$ \*) 19 = CARD (See options). \*) 20 = Other (Specify).
- $10 = 0 100V (1M\Omega).$

## Output:-

```
1 = -1...+1V (25\Omega min).
                                                                  5 = -1...+1mA (20k\Omega max).
2 = -5...+5V (100\Omega min).
                                                                  6 = -5... + 5 \text{mA} (4 \text{k}\Omega \text{ max}).
3 = -10... + 10V (200\Omega \text{ min}).
                                                                  7 = -10... + 10 \text{mA} (2k\Omega max).
4 = -20... + 20V (400\Omega \text{ min}).
                                                                  8 = -20... + 20 \text{ mA} (1 \text{ k}\Omega \text{ max}).
                                                             *) 9 = Other (Specify).
```

#### Action: -

1 = In/Out Direct.

2 = In/Out Reverse.

## **Output Options: -**

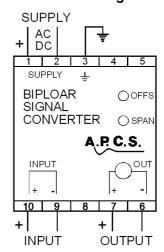
- 0 = None
- \*) 1 = Output ramp
- \*) 2 = Output 50 500mA
  - External bipolar supply
- \*) 3 = Output 500mA 2A External bipolar supply
- \*) 4 = Output 2A 5A External bipolar supply
- \*) 5 = External ratio 0.5 1.5
- \*) 6 = Auxiliary supply 24Vdc/25mA max
- \*) 9 = Other (Specify).
- \*) A = Output 40mA side mounted heat sink See DS13352 for reduced power supply range

### Input Options:-

#### NOTE:- Specify type of sensor and calibration details.

- 00 = None.
- 01 = RTD input (Pt100 20...400°C span).
- 02 = mV input (up to 100mVdc span).
- \*) 03 = Thermocouple input (all types 4-80mV span).
- \*) 04 = AC voltage (5mV up to 50V).
- 05 = AC current (0.5 up to 10A isolated using internal CT).
- 06 = Resistance 2W const. current exc. (5Ω to  $5k\Omega$ ).
- 07 = pH/ORP electrode input (>100M $\Omega$ ).
- 08 = Frequency (sine) input (5Hz up to 5kHz Span).
- 09 = DC pulse input (5Hz up to 5kHz Span).
- 10 = Floating differential.
- 11 = Adder or Subtractor (2 x 4-20mA floating).
- \*) 17 = Load cell input.
- \*) 21 = Dither for hydraulic applications.
- \*) 99 = Other (Specify).
- # Includes 24Vdc/25mA auxiliary supply on terminal 8.
- \*) Price Extra.

## **Connection Diagrams**



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