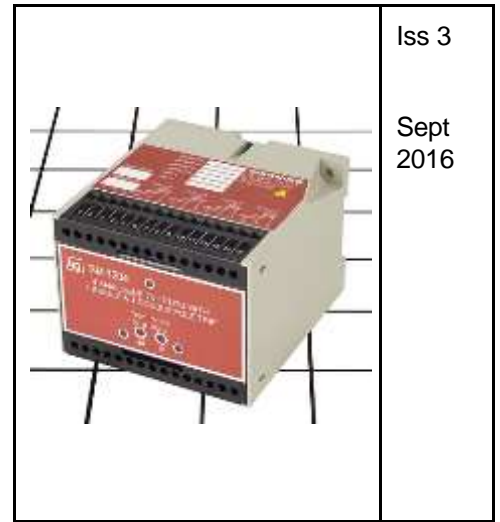


## Combined Single Level Trip Amplifier and Multi-Output Isolating Signal Converter

**BM1101 BM1102  
BM1103 BM1104**

- BM1101 Single Trip with Single Isolated output
- BM1102 Single Trip with Dual isolated outputs
- BM1103 Single Trip with Triple isolated outputs
- BM1104 Single Trip with Quadruple isolated outputs

Function: Single Level Trip Amplifier from a single process signal input combined with up to 4 isolated current or voltage outputs. The trip action can be arranged so that the Alarm condition can be above (High Trip) or below (Low Trip) the set point, and that the relay can be either normally energised to de-energise in the Alarm condition (Fail-Safe), or normally de-energised to energise in the Alarm condition (Non Fail-Safe).



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The four instruments above can, as an optional extra, accept two mA or Voltage inputs and perform an Adder, Subtractor or Averager function on the input stage.

Options on 4 to 20mA input versions: i) Standard 4 to 20mA into 62 ohms; ii) Protected Input and iii) Protected Input with Upscale Drive on loss of input signal. Protected inputs have a short circuit or spike detection circuit that drives the input impedance high when either occurs. The input recovers when the anomaly is removed. Upscale drive is implemented when the input falls below 3.8mA as standard, although this can be amended if required.

### SPECIFICATIONS

Please note that the following are typical ranges. Other ranges available, please contact sales office.

#### INPUTS:

##### D C Current

Standard Ranges  
0 to 10mA into 100 ohms  
4 to 20mA into 62 ohms  
Optional Ranges  
0 to 1mA into 100 ohms  
0 to 10mA into 10 ohms  
4 to 20mA into 10 ohms  
Default Drive: Downscale

##### Option: Protected Upscale drive on loss of 4 to 20mA input signal

Other current inputs as required  
Minimum current 10µA,  
Maximum current 100mA

##### D C Voltage

Between -250 and +250 Volts DC  
Minimum voltage span 5mV  
Maximum voltage span 500V

##### Input Impedance

1M ohm or greater

##### A C Current (True RMS)

0 to 1 Amp

##### A C Voltage (True RMS)

0 to 250 Volt

##### Resistance (2 wire)

Between 0 and 20K ohms  
Minimum span 5 ohms  
Maximum span 20K ohms

##### Potentiometer (3 wire)

Between 0 and 10K ohms  
Minimum span 10 ohms  
Maximum span 10K ohms

#### Resistance Thermometers (RTDs, PT100s)

2 or 3 wire, 100 or 130 ohms at 0°C  
Measurable range, -200°C to +800°C  
Minimum temperature span 10°C  
Maximum temperature span 600°C  
Input is linearised

#### Thermocouples

Type B, E, J, K, N, R, S & T  
Temperature covered:  
Type Range MinTemp Change  
B 600 to 1800°C 400°C  
E -260 to 1000°C 65°C  
J -200 to 1200°C 80°C  
K -260 to 1370°C 100°C  
N 0 to 1300°C 150°C  
R 50 to 1760°C 400°C  
S 80 to 1760°C 400°C  
T -260 to 400°C 100°C  
Automatic cold junction compensation  
Open circuit thermocouple monitoring  
upscale or downscale drive

#### OUTPUTS:

##### TRIP AMPLIFIER

##### Relay - Contacts

One Single Pole Change Over contact (SPCO) relay

##### Contact Ratings

Max current 2A  
Max voltage 220V dc / 250V ac  
Maxi load 60W 62.5VA

##### Switching Differential

0.5% of span approx

##### Switching Mode

Relay energises or de-energises on rising or falling signal as required (see over for more details)

#### OUTPUTS:

##### TRIP AMPLIFIER (Cont)

##### Set Point

270° screw driver potentiometer through front panel

##### Relay State Indication

Bi-colour red/green LED  
Green = Stable State  
Red = Alarm State

##### SIGNAL CONVERTER

Up to four independently isolated outputs -

##### DC Current

0 to 10mA into 10 to 2000 ohms  
4 to 20mA into 10 to 1000 ohms  
Other ranges as required  
Minimum span 1mA  
Maximum span 20mA

##### DC Voltage

The voltage output is derived from passing a mA signal through an internal resistor  
0 to 1 Volt DC thru 51 ohms  
0 to 10 Volt DC thru 510 ohms  
1 to 5 Volt DC thru 240 ohms  
Other ranges as required  
Minimum span 1 Volt DC  
Maximum span 10 Volt DC

##### Input/Output/Supply Isolation

600 Volts > 20M ohms

##### N.B. Each output can be of a different type and range i.e.

**3 x 4 to 20mA and  
1 x 0 to 10 Volts**

#### SUPPLY:

##### Power Supply Voltage

9 to 30 Volt DC

##### Power Required

4 Watts Maximum

#### GENERAL:

##### Temperature Coefficient

±0.1% of span/ Δ10°C  
(for inputs > 100mV)  
+ Cold junction error, for thermocouple inputs

##### Operating / Storage Temperature Range

0 to +45°C / -20 to +60°C

##### Operating / Storage Humidity Range

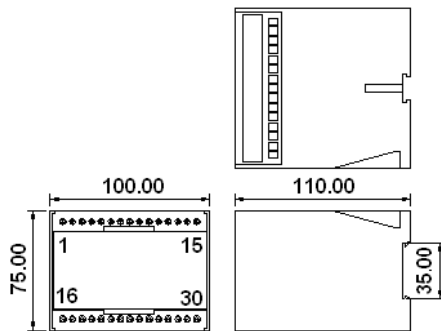
0 to 95% RH non-condensing

##### Weight

??? gms



**MECHANICAL DETAILS**



**TERMINATION DETAILS**

Inputs	AC Current	AC Volts	DC mA	DC mV/V	T/Cs	2 Wire Slidewire	3 Wire Pot	Resistance Thermometer	Inputs
1	~	~	-ve	-ve	-ve	0%	100%		B+
2	~	~	+ve	+ve	+ve	100%	Wiper		A+
3							0%		Common
4 }		Passive -ve				16	Unused		
5 } Output A		Active +ve				17	Unused		
6 }		Active -ve / Passive +ve				18	Unused		
7 ]		Passive -ve				19	{ N/O		
8 ] Output B		Active +ve				20	Trip 1 { Common		
9 ]		Active -ve / Passive +ve				21	{ N/C		
10 }		Passive -ve				22	Unused		
11 } Output C		Active +ve				23	Unused		
12 }		Active -ve / Passive +ve				24	Unused		
13 ]		Passive -ve				25	Unused		
14 ] Output D		Active +ve				26	Unused		
15 ]		Active -ve / Passive +ve				27	Unused		
						28	Power Supply +ve		
						29	Earth		
						30	Power Supply -ve		

**ORDERING DETAILS**

- a) Give identification code, i.e. BM1104
- b) Give power supply voltage, i.e. 9 to 30 Volt DC.
- c) Give details of input signal, i.e. input type (as listed above) and range.
- d) Give details of Options required: For thermocouple input please specify upscale or downscale drive for open circuit protection. For 4 to 20mA input, please specify if protected input is required and if upscale drive is required on loss of input signal.
- e) Give details of signal type and range required for each output, i.e. output 1 = 4 to 20mA, output 2 = 4 to 20mA, output 3 = 0 to 10V and output 4 = 0 to 10V
- e) Give details of trip action required, i.e.
- HNF = High Non Fail Safe
  - HFS = High Fail Safe
  - LNF = Low Non Fail Safe
  - LFS = Low Fail Safe
- where
- H = High Trip = Alarm condition above the set point
  - L = Low Trip = Alarm condition below the set point
  - FS = Fail Safe = Relay energised when the process is in a healthy state to de-energise in the alarm condition
  - NF = Non Fail Safe = Relay de-energised when the process is in a healthy state to energise in the alarm condition

