

Quadruple Level Trip Amplifier

BM140



Iss 3

Jul 09

Function: Quadruple Level Trip Amplifier from a single process signal input. The trip action can be arranged so that the Alarm condition can be above (High Trip) or below (Low Trip) each of the set points, and that the relays 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).

Input option for Adder, Subtractor or Averager on mA or Voltage inputs only. The BM140 can only accept two inputs.

Options on 4 to 20mA input versions, Upscale Drive on loss of input signal.

SPECIFICATIONS

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

INPUTS:

DC 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

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

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

DC Voltage

Between -250 to +250 Volt DC
Minimum voltage span 5mV
Maximum voltage span 500V

AC Current

0 to 1A

AC Voltage

0 to 250 V

Input Impedance

1M ohms or greater

Resistance (2 wire)

Between 0 and 20K ohms
Minimum span 5 ohms

Maximum span 20K ohms

Potentiometers (3 wire)

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

Resistance Thermometers

2 or 3 wire, 100 ohms at 0°C 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
Temperatures covered:
Type Range Min Temp 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

Transducer Power Supply

Unregulated nominal 24 Volt DC
25mA maximum

OUTPUTS:

Relay - Contacts

Four SPCO relay contacts - one per level

Response Time

50mS or better

Contact Ratings

Maximum current 2A
Maximum voltage 250V AC
Maximum voltage 24 Volt DC

Switching Differential

0.5% of span approx

Switching Mode

Relay energises or de-energises on rising or falling signal as required

Set Point

270° screw driver operated potentiometer through front panel

Relay State Indication

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

SUPPLY:

Power Supplies

9 to 30 Volt DC with converter to maintain signal to power supply isolation

Power Required

2.5 Watts Maximum

GENERAL:

Temperature Coefficient

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

Operating Temperature Range

0 to +50°C

Storage Temperature Range

-20 to +60°C

Operating / Storage Humidity Range

0 to 95% RH non-condensing

Weight

290 gms

MECHANICAL DETAILS

| | Inputs | AC Current | AC Volts | DC mA | DC mV/V | T/Cs | 2 Wire Slidewire | 3 Wire Pot | Resistance Thermometer | Dual Input | |
|--|---------|-----------------------------|----------|-------|---------|------|------------------|---------------|------------------------|------------|--|
| | 1 | ~ | ~ | -ve | -ve | -ve | 0% | 0% | | B+ | |
| | 2 | ~ | ~ | +ve | +ve | +ve | 100% | Wiper | | A+ | |
| | 3 | | | | | | | 100% | | Common | |
| | 4 | Transducer Power Supply -ve | | | | | | 22 | Relay N/O | | |
| | 5 | Transducer Power Supply +ve | | | | | | 23 | Common Trip 3 | | |
| | 6 to 15 | Unused | | | | | | 24 | Relay N/C | | |
| | 16 | Relay N/O | | | | | | 25 | Relay N/O | | |
| | 17 | Common | Trip 1 | | | | 26 | Common Trip 4 | | | |
| | 18 | Relay N/C | | | | | | 27 | Relay N/C | | |
| | 19 | Relay N/O | | | | | | 28 | Power Supply +ve | | |
| | 20 | Common | Trip 2 | | | | 29 | Unused | | | |
| | 21 | Relay N/C | | | | | | 30 | Power Supply -ve | | |

ORDERING DETAILS

- Give identification code, i.e. BM140
- Give power supply voltage, i.e. 8 to 30 Volt DC
- Give details of input signal, i.e. input type (as listed above) and range.
If thermocouple input please specify upscale or downscale drive for open circuit protection
- 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 upscale drive required on loss of input signal.
- Give details of trip action required, i.e. HLLFS

For each setpoint:

H = High Trip = Alarm condition above the set point
L = Low Trip = Alarm condition below the set point

and for the operation of the relays:

FS = Fail Safe = Relays normally energised to de-energise in the alarm condition
NF = Non Fail Safe = Relays normally de-energised to energise in the alarm condition



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