



# INDICATING TRIP AMPLIFIER

## Three point programmable

TYPE B12-TT

- **Three trip points with programmable input source and scale, delay, hysteresis, relay action, alarm type and interlock function**
- **Linearisation - user programmable**
- **Four digit display of monitored variable**
- **Monitored channel status indication**
- **Scaling 0-100%, voltage, mA or custom engineering units**
- **Universal AC/DC supply (85 to 265 VAC, 100 to 200 VDC)**
- **Optional low voltage supply (11-32 VDC, 12 to 24 VAC)**

The B12 three-point trip amplifier provides voltage free contacts that change state when the input signal passes an adjustable reference set-point. Simple to use yet powerful menu-driven software enables fast flexible set-up from the front panel. No adjustment of internal potentiometers, internal links or plug-in cards is necessary. This versatile unit lends itself to numerous applications including detection of high/low alarm conditions and pump control.



### Input source and scaling

The input may be programmed to accept most standard voltage and milliamp process signals. Scaling to user specified engineering units is also catered for.

### User linearisation

Up to 10 break points may be entered.

### Programme lock

When enabled this function prevents tampering with programmed settings

### Trip points

Three trip channels are provided with the following programmable functions:

**Delay** - inhibits an alarm operation until the period programmed has expired (useful for preventing nuisance tripping).

**Hysteresis** - values of up to 100% of the input signal span from either above or below the alarm trip point set. Hysteresis values may be set in percentages or display units.

**Alarm type** - each alarm channel may be set as 'Active High' or 'Active Low'.

**Relay state** - may be set to de-energise (off) on alarm or energise (on) on alarm.

**Interlocked action** - each channel can be independently set to operate at the trip point but reset at a different point using the hysteresis setting. This feature can be used in duty-standby pump control and can also include the delay function.

### Monitored channel status indication

Tri-colour LEDs provide continuous indication of the status of each channel. Green indicates a non-alarmed state, red indicates that the channel is in an alarm state, flashing green indicates that the input signal is within the hysteresis or delay band and is approaching the set-point. A flashing red indicates that the input signal has passed the set-point and is within the hysteresis or delay band. Yellow indicators signal that the unit is in programming mode.

### Programming

The programming menu follows a set sequence, stepping onto the next item with each press of the Trip 'X' button. All parameters are viewed as a label alternating with the value currently set. Parameters are adjusted with the Up - Down arrow keys. Control of the output relays is maintained whilst programming is in progress, however, in this mode the front panel LEDs do not indicate the control state but are used to indicate programming mode in progress.

## SPECIFICATION

### INPUTS

Input source selectable: mA or Volts  
Input scaling selectable: 4-20mA, 0-10mA, 0-20mA, 0-10V, 0-5V  
Input Impedance: Current inputs 50 ohms;  
Voltage inputs >290k ohms  
Custom engineering units:  
Zero Min. -999, Max. 9999  
Span Min. -999, Max. 9999  
Decimal point selection: none, 0.0, 0.00, 0.000

### OUTPUTS

Relay with volt-free single pole contact per channel  
Contact rating: 6A @ 230V AC resistive  
2.5A @ 24V DC resistive

### HYSTERESIS

Adjustable 0-100% of span; value as percentage or display units.

### DELAY

Adjustable 0 - 999.9 sec in 0.1 sec steps

### ALARM ACTION

Adjustable active high or active low

### RELAY TYPE

Adjustable de-energise on alarm or energise on alarm

### LINEARISATION

Up to 10 break points - user programmable

### DEFAULT SETTINGS

The unit may be reset to factory default settings from the programme menu The default settings are:

Input: 4-20mA  
Display: 0-100.0  
Hysteresis: 1%  
Delay: 1 sec  
Relay type: Energise for alarm  
Alarm action: Active high  
Set-points: Trip A = 75%, B = 50%, C=25%  
Programme Lock: Off  
Linearisation: Off

### DISPLAY

Type: Four digit red LED, 7.6mm high  
Resolution: 0.01mA or 0.01V  
Accuracy: +/- 0.05% of FSD

### ISOLATION

The output relay contacts are isolated from the supply and input.

### REPEATABILITY

The switching point will repeat within  $\pm 0.1\%$  of span.

### INPUT OVERRANGE PROTECTION

Voltage Inputs: 250 volts RMS or DC  
Current Inputs: 100mA dc (fused)

### TEMPERATURE COEFFICIENTS

Zero:  $\pm 0.02\%$  span/ $^{\circ}\text{C}$   
Span:  $\pm 0.02\%$  span/ $^{\circ}\text{C}$

### TEMPERATURE RANGE

Operating:  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$   
Storage:  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

### SUPPLY VOLTAGE REJECTION

Span change:  $< 0.1\%$  span / % supply change.

### POWER SUPPLY

Standard: accepts 85 Vac to 265 Vac, 50/60Hz, 100 to 200 VDC  
3VA  
Protected by a 250mA internal fusible resistor  
Low voltage: 11-32 VDC 4W / 12-24VAC  
Protected by a 500mA internal self-resetting fuse.

### DIMENSIONS

106mm deep x 52mm wide x 113 mm high

### WEIGHT

Approx. 0.4kg

### SAFETY & EMC

Safety: EN61010-1, Immunity: EN50082-1  
Emissions: EN50081-1, CE certified

### INFORMATION REQUIRED WHEN ORDERING

#### Standard Unit

Standard units are supplied with the following default settings

**Input:** 4-20mA, **Display:** 0-100.00  
**Hysteresis:** 1%, **Delay:** 1 sec  
**Relay type:** Energise for alarm, **Alarm action:** Active high  
**Set-points:** Alarm A = 75%, B = 50%, C=25%  
**Programme Lock:** Off  
**Linearisation:** Off

Order Code: B12-TT

#### Pre-configured Units

Order Code: B12-TT /9

followed by:-

- |  |  |                                       |
|--|--|---------------------------------------|
| <input type="checkbox"/> Input signal  | <input type="checkbox"/> Display scaling | <input type="checkbox"/> Delay        |
| <input type="checkbox"/> Hysteresis  | <input type="checkbox"/> Alarm type      | <input type="checkbox"/> Relay action |
|  | Active high or low                       | On or Off on alarm                    |
| <input type="checkbox"/> Decimal points  | <input type="checkbox"/> Output option   |                                       |
| <input type="checkbox"/> Linearisation - No of break points, X and Y values for each point |  |                                       |



**THIS UNIT CAN BE MAINS POWERED, AND ALL INPUTS TO IT MUST BE ISOLATED FROM DANGEROUS VOLTAGES BEFORE THE FRONT COVER IS REMOVED. LIVE TERMINALS WILL BE EXPOSED.**

Continuous development may necessitate changes in these details without notice

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