



PROCESS DISPLAY

programmable with alarms

TYPE 500-TT

- **5 digit display with programmable scaling**
- **Three alarm trip points with programmable delay, hysteresis, relay action, alarm type and interlock function**
- **Linearisation - user programmable**
- **Accepts most standard voltage and milliamp process signals**
- **Scaling 0-100%, voltage, mA or custom engineering units**
- **Optional BCD output**
- **Universal mains power (85 to 265 VAC) or optional LV supply (11 to 32 VDC / 12 to 24 VAC)**
- **Optional front panel protection up to IP65**



The 500-TT provides a scaleable display of an analogue signal in engineering units. User configurable scaling to ranges within - 9999 to +99999, input signal selection and universal mains power enable spares/stock holding to be kept to a minimum. Three alarm relays provide

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.

Input source and scaling

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

Alarms

Three alarms 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 (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 alarm 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.

Linearisation

Up to 10 break points may be entered.

Programming

The programming menu follows a set sequence, stepping onto the next item with each press of the Alarm '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.

BCD output option

4.5 digits of display data plus Polarity and Over-range flags are output in 5 decades of parallel BCD data. The display data outputs reflect the state of the displayed reading. When a conversion is complete, the Data Valid signal is asserted. The BCD output data presented may be held at the value of the last valid measurement by the Hold signal.

Polarity of the BCD outputs (display data, polarity and over-range) is configurable from the front panel to be either active high or active low. The active state of HOLD and DATA VALID may also be inverted by internal jumper links.

Splash resistant front panel

A flexible transparent rubber hood offering front of panel protection up to IP65 is available as an option.

SPECIFICATION

INPUTS

Source: selectable, mA or Volts

Scaling: selectable, 4-20mA, 0-10mA, 0-20mA, 0-2V, 0-1V

Impedance: Current 50 ohms; Voltage >290k ohms

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

DISPLAY

Type: 5 digit red LED, 14.2 mm high

Resolution: 0.01mA or 0.01V

Accuracy: +/- 0.05% of FSD

Decimal point selection: none, 0.0, 0.00, 0.000, 0.0000

Custom engineering units:

Zero Min. -9999, Max. 99999

Span Min. -9999, Max. 99999

ALARMS

Outputs: Volt-free single pole contact per alarm. 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 Type: Adjustable active high or active low

Relay Action: Adjustable de-energise on alarm or energise on alarm

Isolation: relay contacts are isolated from the supply and input.

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

LINEARISATION

Up to 10 break points - user programmable

TEMPERATURE COEFFICIENTS

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

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

TEMPERATURE RANGE

Operating: -10°C to $+60^{\circ}\text{C}$

Storage: -20°C to $+70^{\circ}\text{C}$

SUPPLY VOLTAGE REJECTION

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

TRANSDUCER SUPPLY

24VDC @ 20mA available for current inputs. Used for powering a current loop for two wire transmitters

POWER SUPPLY

Universal ac supply accepts 85 Vac to 265 Vac, 50/60Hz

Protected by a fusible resistor.

Low Voltage Supply Options: 11-32 VDC 4.5W / 12-24 VAC

Protected by an internal self-resetting fuse.

DIMENSIONS

164mm deep (inc. connectors) x 96mm wide x 48 mm high

WEIGHT

Approx. 350 grams

BCD OUTPUT (option)

Outputs: TTL compatible driving up to eight LS TTL loads

Outputs are:

Display data: 20 bits (5 decades of BCD) or 18 bits (4.5 decades of BCD) with over-range output*

Over-range: high when data is beyond displayable range*

NB over-range output is only available for displays up to 19999

Data valid†: asserted when Display Data updated

Hold input‡: when active holds BCD data at the value of the last valid measurement - TTL compatible

* active state may be inverted via the set-up menu

† active state may be inverted via internal jumper links

Connector: 25 way 'D' female

SAFETY & EMC

Safety: EN61010-1

Immunity: EN50082-1

Emissions: EN50081-1

CE certified

DEFAULT SETTINGS

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

Input: 4-20mA

Display: 0-100.00

Hysteresis: 1%

Delay: 1 sec

Relay type: Energise for alarm

Alarm action: Active high

Set-points: Alarm A = 75%, B = 50%, C = 25%

Transducer supply: Disabled

Programme Lock: Off

Linearisation: Off

ORDERING INFORMATION

Unless otherwise specified, will be supplied programmed to the default settings. Customers requiring units preprogrammed to their requirements should provide the following information:

Basic Instrument

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

BCD Output if required please specify the following

Polarity for HOLD / DATA VALID Active high or low

Polarity for BCD data outputs,

Polarity for Over-range Active high or low



THIS UNIT CAN BE MAINS POWERED, AND ALL INPUTS TO IT MUST BE ISOLATED FROM DANGEROUS VOLTAGES BEFORE MAKING CONNECTIONS TO THE UNIT OR REMOVING IT FROM ITS CASE. LIVE TERMINALS WILL BE EXPOSED.

Continuous development may necessitate changes in these details without notice

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