

Tactical

340TC MULTI-CHANNEL TEMPERATURE CONTROLLER



FEATURES

- **1 to 4 channels, each controlled independently**
 - **Each channel settable to PID, PD, ON/OFF or channel switched-off**
 - **High, low or band alarm for each channel**
 - **Occupies only 96 x 96mm of panel space**
 - **9 thermocouple types - user selectable**
 - **Resistance thermometer - version**
 - **Any channels user configurable for dc inputs**
 - **Initial ramping facility for each channel**
 - **Protection of critical set values from operator interference**
 - **Very user friendly**
 - **High accuracy and stability**
 - **Automatic calibration**
 - **Auto-ranging**
 - **Low drift and high immunity to noise**
 - **Highly cost-effective compared with 4 individual controllers**
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DESCRIPTION

The 340TC is a highly accurate, compact multi-loop controller, providing precise closed loop control and associated alarms, for each of four independent temperature, or process dc, controlled channels.

Each channel has a main set-point for closed-loop control and a further two set points combine to provide either a high, low or band alarm. The control mode, individually settable for each channel, can be PID, PD or ON/OFF and a single shot pre-tune enables loops to be tuned automatically. Alternatively, time constants, pulsing rates and power limits can all be individually and securely set - manually. At an even more secure level in the system the controller may be configured for various temperature sensor types or dc inputs, scales in °C, °F or dc units, range setting limits and channel activation or de-activation.

The 340TC is housed in a 96 X 96 mm DIN sized panel mounting enclosure and, being very compact, is particularly cost-effective for applications which would otherwise use up to four individual controllers.

Used in either a 4, 3, 2 or even a single channel capacity, the 340TC is highly suitable for a wide variety of industrial and scientific applications such as conveyor ovens, diffusion furnaces, environmental chambers, materials testing rigs, crystal growing plants, extrusion and moulding machinery for plastics and rubber processing, fermentation systems, process dryers etc..

Designed for user-friendliness, the 340TC has two rows of large, bright,

4-digit displays. In the normal display mode, for any

selected channel, the top row shows the measured value and the bottom row shows the corresponding setpoint value. In the interrogation or setting mode, the lower display gives alpha-numeric parameter identification, as for example, 'SP 3' for the set-point of channel 3, and the upper display the value or state of that parameter, say, '250'; thus giving the information that the set-point of channel 3 is 250°. Additionally, four green LEDs are used to indicate the channel being displayed and also, by flashing, any channel or channel in alarm. Four yellow LEDs give a telltale of the power being pulsed to each channel.

All outputs are logic pulse, for both loop controls and alarms and these can be used for directly controlling solid state relays or heavy current thyristor units.

Where other output types are required such as relay or analogue, 4-20mA for example, an auxiliary unit the 340DU is available.

The 340TC is easily re-configured on site through the front push buttons enabling selection of sensor type, scale ranges, PID parameters, output power and pulsing rates, operator setpoint limits and alarm parameters, while easily operated security interlocks prevent non-authorized re-configuration of these and other critical parameters.

A rate settable setpoint ramp for each channel provides a useful feature for start-up and together with maximum and minimum power settings provide additional aids for system protection.

An optional RS232 or RS485 communications interface enables access to all parameters for remote monitoring, parameter re-configuration and control.

Technical specifications

(stated at 25 °C)

Inputs - Voltage

Linear voltages Ranges 0 to 100mV maximum.
Input impedance 100Kohm.

Inputs - Thermocouple

Standards J Iron-constantan.
J (DIN) Iron-constantan.
K Nickel chromium-nickel aluminium.
N Nicrosil.
T Copper constantan.
S Platinum 10% rhodium.
R Platinum 13% rhodium.
E Nickel chromium-copper nickel.
B Platinum 30% rhodium.
CJC Typically 0.05 °C/ °C ambient change
(20:1) over 0 to 50 °C.
Linearisation Better than +/- 0.2 °C. Effect of
thermocouple lead resistance 0.5uV/ohm.

Inputs - Resistance thermometer

Standards British BS1904; German DIN43760 Pt100.
3-wire
Linearisation Better than +/-0.1 °C.
Bias current 1.2mA.
Lead compensation error
No change in display indication for up to
20 ohms in all three leads.

Inputs - General

Sensor break Upscale: display 9999.
Downscale: display -999.
Common mode and series IEC 801-5 1987, Electromagnetic
mode noise rejection Compatibility for industrial-process
measurement and control equipment.

Outputs - Control

Logic Four logic outputs comprising:
Outputs 1,2,3,4 for channels 1,2,3,4
respectively; non-isolated 10mA at 5Vdc.
Normally used to drive into an Auxiliary
Driver Unit (340DU) or directly via
isolating opto-couplers to external loads.

Outputs - Alarm

Logic Four logic outputs one each for channels
1,2,3 and 4 respectively; non-isolated
10mA at 5Vdc.

Outputs - other

Refer to 340DU Auxiliary Driver Unit
ordering information for converting 340TC
logic output pulses to other output types.
e.g. relay or isolated 4-20mA.

Communications - digital(optional)

RS232 or RS485, running at 300, 600,
1200, 2400, 4800 or 9600 bauds.

Channels - controlled

4 channels maximum; any combination of

channels may be switched off.

Channel Controls - individually settable

Setpoint	SP: over full span.
Setpoint ramp mode	OFF, Startup or Continuous.
Setpoint ramp control	Run or Hold.
Setpoint ramp rate	0 to 9999 in absolute units/minute.
Control	ON/OFF, P, PI, PD or PID.
Auto-tune	Automatically select values for Pb, ti and td on start-up.
Proportional band	Pb: 1 to full span.
Integral time	ti: 0 to 99 minutes 59 seconds.
Derivative time	td: 0 to 99 minutes 59 seconds.
Deadband	DB: 0 to full span.
Adjustable reset	AR: 0 to 100%.
Alarm set level 1	AL1: high, low or band; high and low in absolute units, band in equal +/- deviation about setpoint.
Alarm set level 2	AL2: high, low or band; high and low in absolute units, band in equal +/- deviation about setpoint.
Output cycle time	Oc: 1 - 9 minutes 59 seconds.
Power limit low	PLL: 0 to PLH%.
Power limit high	PLH: PLL to 100%.

Calibration

Auto-zero	Input switch to internal zero once every second for calibrations.
User calibration	Two points linear calibration.
Accuracy	+/-0.2% of span.

Performance

Sample rate	1 samples/sec/channel.
Indication accuracy	Better than 0.25% of span.
Calibration	Better than 0.1% of span.
Temperature coefficient	Less than 50ppm/ °C of span over ambient range 0 to 50 °C.
Absolute resolution	1 part in 10,000.

Display

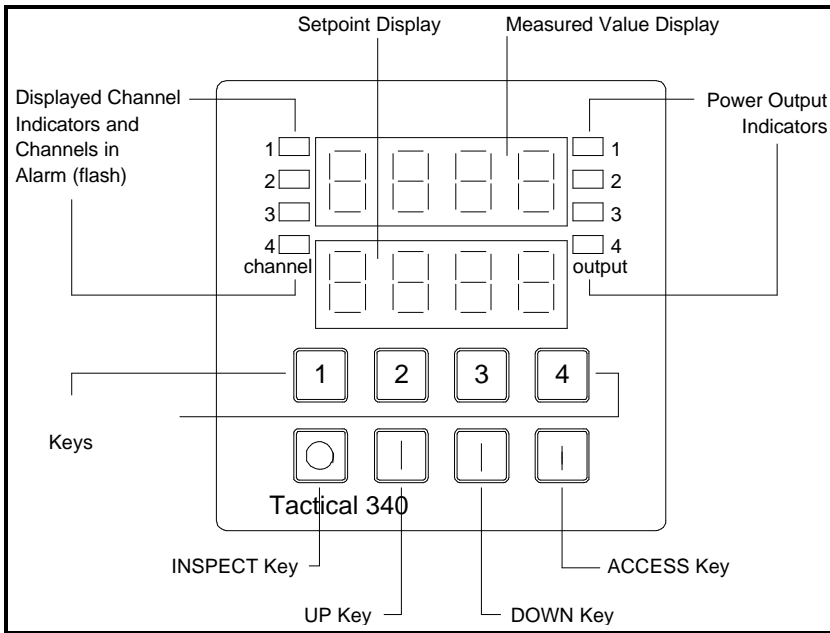
Top display	Four 7-segment green LED 14mm high.
Bottom display	Four 7-segment green LED 14mm high.
Channel	Steady illumination of a green LED (one of four), indicates the channel being displayed; fast flashing of this LED indicates the channel is in alarm.
Alarm	Slow flashing of the relevant channel indication LED when alarm occurs plus alarm message in lower display.
Outputs	4 yellow LEDs.

Environmental

Operating temperature	0-50 °C.
Storage temperature	-20 to 80 °C.
Supply voltage	115/230 Vac +/-15%, 50/60Hz.
Power consumption	12 VA approximately.
Data retention	Up to 10 years; integral battery back-up.
Relative humidity	0-90% non-condensing.

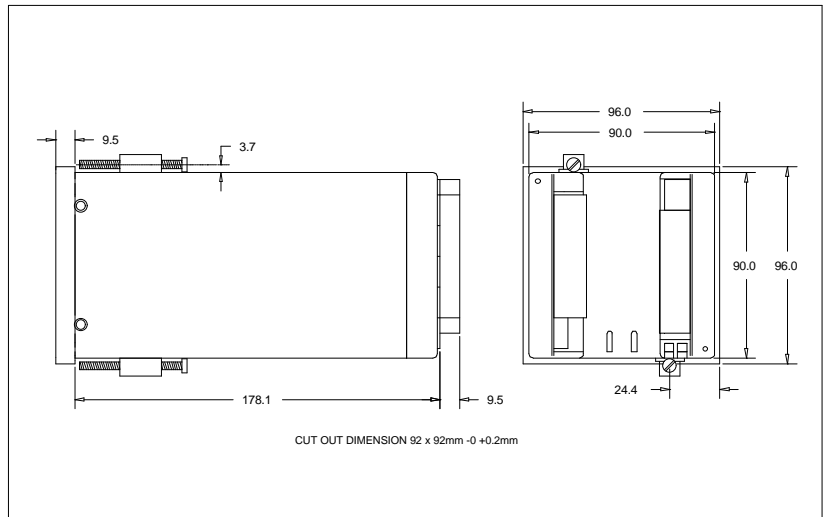
Mechanical

Dimensions	96x96x200mm.
Panel Cut-out	92x92mm -0 +0.2mm.
Weight	1.0Kg maximum.
Terminal connections	Plug-in.



Front panel.

Overall dimensions.



Ordering information

340TC	-	.....	-	.....	-	.....	-00
Channel	.....	|	.....	|	.....	|	.....
Input	.....	.....	.....	.....	.....	.....	.....
Supply Voltage	.....	.....	.....	.....	.....	.....	.....
Communications Interface	.....	.....	.....	.....	.....	.....	.....
End of Code	.....	.....	.....	.....	.....	.....	.....
Channel							
One channel						C1	
Two channels						C2	
Three channels						C3	
Four channels						C4	
Input							
Thermocouple or DC						1	
PRT100						2	
Supply Voltage							
230 +/-15% 50/60Hz						1	
115 +/-15% 50/60Hz						2	
Communications Interface							
No communications interface						NC	
RS232 INTERFACE						01	
RS485 INTERFACE						02	
End of Code							00

Ordering example:

A type 340TC temperature controller having four PRT100 platinum resistance thermometer inputs, supply voltage of 230Vac and a RS232 digital communications interface has the ordering code: 340TC-C4-2-1-01-00

SUPPLIER INFORMATION

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