

275-270 to 275-300

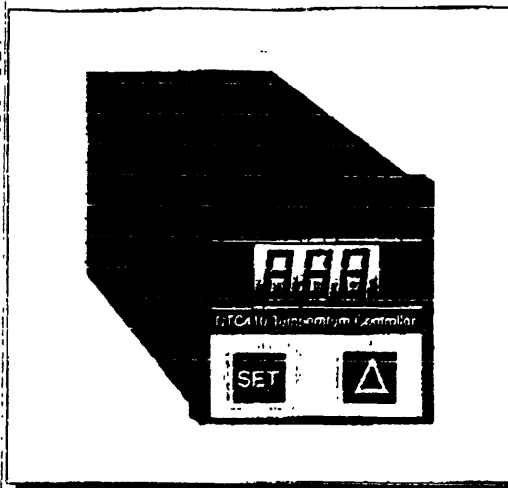
TEMPATRON

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The DTC410 is a Digital On/Off Temperature or Process Controller designed to provide the functionality of general purpose PID Controllers but at a price suited to On/Off applications. The simple programming with just two front panel keys and uncluttered LCD display, combined with uncomplicated control functions and alarm programmability, have enabled the DTC410 to be widely used in applications as varied as flue gas monitoring to paint driers or even overheat control of generator windings.

Features

- 4 Programmable Thermocouple Input options
- 10 Programmable Alarm options
- PT100 and 4-20mA options
- Control Action selection
- Set-point limits
- Dual Relay outputs



- 1) When momentarily pressed, enables Setpoint to be viewed
- 2) When held for >4 secs, enables access to Setpoint
- 3) When adjusting Setpoint, scrolls from left to right across each digit.
- 4) When in programming mode, scrolls through parameters and, for selected parameter, scrolls from left to right across each digit.

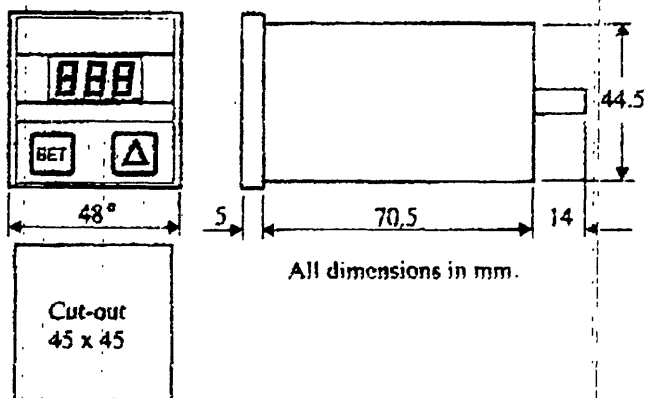


- 1) When adjusting Setpoint, increments the value of each digit selected by SET key.
- 2) When in Programming mode, increments the variable of parameters or digits selected by SET key.

With a suitable probe connected to the DTC410, when the supply is first applied, the display will go through the start-up routine of displaying the software issue (2.4 e.g.) followed by a display check (888) and then by the measured value (usually ambient temperature). It is advisable not to connect a load initially, as the Controller will attempt to control against the default values set at the factory.

After accessing the Setpoint (by holding down SET for >4 seconds) and adjusting it to the desired process value, the DTC410 will display CdE. The code 410 must then be entered to access the other programmable parameters; otherwise, if no other adjustments are required, a further press of SET will return the display to the process value. For details of how to program the DTC410, see Program Parameter Map on page 3.

Dimensions

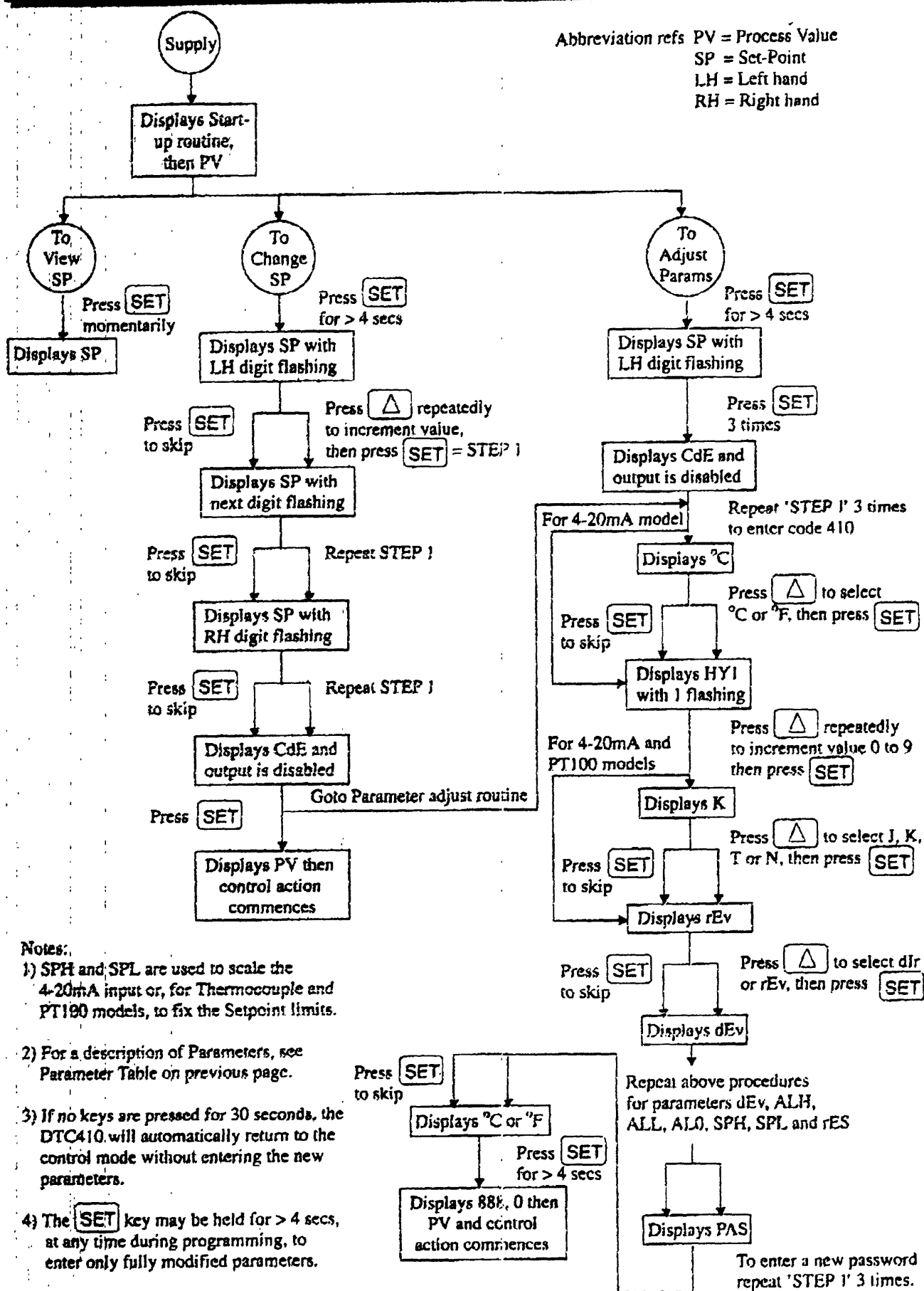


Ordering Code: DTC410-01-230

DTC410	Series	Options
01	Input	01 = Thermocouple 02 = PT100 03 = 4-20mA
230	Supply	230 = 230Vac 110 = 110Vac 24 = 24Vac/dc

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Ref No: Q03339 iss1



Parameter	Display Code	Default Value	Range or options	Function/Comments	
Scale units	°C	°C	°C, °F	This parameter is skipped for 4-20mA models.	
Hysteresis	HY*	HY1	HY0 to HY9	Determines the band over which the On/Off control function operates. For HY0 the controller operates as a latch forcing the output permanently off when the set value has been reached, until the supply is removed.	
Sensor Type	H(K)	K	K, J, T, N	Ensures compatibility of the controller with the applied sensor. This parameter is automatically skipped for PT100 and 4-20mA models.	
Control Action	rEu	REV	REV, DIR	Selects the type of control action: reverse for heating, in which the output is on below the set-point(SP), and direct for cooling, where the output is on above the set-point (SP).	
Deviation Alarm	dEu	00	00 to 99	Sets the value, above or below the SP, at which the alarm output is activated. For this mode, the alarm always tracks the SP. When set to 00 the deviation alarm function is inactive.	
High Alarm	RLH	999	SP to 999	Sets a value above which the Alarm output is activated. This value is independent of the SP.	
Low Alarm	RLL	-99	-99 to SP	Sets a value below which the Alarm output is activated. This value is independent of the SP.	
Alarm Action	RL*	0.	0 to 9	This parameter provides three functions:- 1) To determine the status of the Alarm contacts when an Alarm condition is satisfied (Note: the de-energised state of the alarm relay is normally open (N-O)). 2) To decide the symmetry of the Deviation Alarm. For AL0 to AL3 the Deviation Alarm band is 2 X dEv setting. For AL4 to AL9, the Alarm band is asymmetrical and dependent upon the Control Action. 3) To decide whether the Alarm output is active immediately, at power-up, or inhibited until after the process has first reached the SP.	
Code	Status at Alarm condition	Alarm Action	Deviation Alarm Band		
			rev		dir
AL0	Close	Inhibited	Symmetrical		
AL1	Open	Inhibited	Symmetrical		
AL2	Close	Immediate	Symmetrical		
AL3	Open	Immediate	Symmetrical		
AL4	Close	Inhibited	Low		High
AL5	Open	Inhibited	Low		High
AL6	Close	Immediate	Low		High
AL7	Open	Immediate	Low	High	
AL8	Close	Inhibited	High	Low	
AL9	Open	Inhibited	High	Low	
Set-point High	SPH	999	SP to 999	Sets the limit above which the SP cannot be adjusted. For 4-20mA models, this parameter scales the 20mA value.	
Set-point Low	SPL	-99	-99 to SP	Sets the limit below which the SP cannot be adjusted. For 4-20mA models, this parameter scales the 4mA value.	
Reset	rES	00	-99 to +99	Sets a +ve or -Ve offset to compensate for sensor differences or unavoidable process errors, such as displacement between sensor and desired control point temperatures.	
Password	PR5	410	-99 to 999	Provides a means of restricting access to program parameters by unauthorised personnel. When set to any number >500, the Set-point can be viewed but not adjusted. Warning!! If the password is amended then forgotten, the unit must be returned to the manufacturer to install the default settings.	

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Each time the DTC410 is powered-up, the software checks the two portions of memory which contain the User Parameters and Calibration Constants. If the back-up battery fails or the controller is subjected to excessive electrical noise, either or both of these sets of parameters may become corrupted. In this case the following corrective actions must be taken:-

User Parameter Corruption

Once corrupted, the controller will immediately switch it's output off and then reset the User Parameters to the default values, warning the operator by flashing **SEt** on the display. By pressing **SET** the display will change to **CdE** and the default password (410) can be entered to access the set-up routine. Please refer to Parameter Map for programming details.

Operating Temperature: 0 to 50°C.

Power Supply: 24Vac/dc @ 60mA max.
110Vac, 47-63Hz @ 1.5VA max.
230Vac, 47-63Hz @ 1.5VA max.

Sensor Options: 4-20mA, PT100, I,K,T & N T/C.

Ranges: 4-20mA = scaleable
PT100 = -99 to 400°C (700°F)
J T/C = -99 to 700°C (999°F)
K T/C = -99 to 999°C (999°F)
T T/C = -99 to 300°C (570°F)
N T/C = -99 to 999°C (999°F)

LCD Annunciators: Control output and Fahrenheit indicators.

Gain Accuracy: T/C = +/- 0.25% of full scale
PT100 = +/- 0.60% of full scale
4-20mA = +/- 0.60% of full scale

Offset Accuracy: T/C = +/- 5°C, PT100 = +/- 2°C

Control Output: SPDT relay rated @ 3A, 240VAC

Alarm Output: SPNO relay rated @ 0.5A, 120Vac

Isolation: 1500Vac for 1 minute between contacts and sensor terminals.

Approvals: CE approved to EMC generic standards EN50081-1 and 50082-1
Memory Back-up: Lithium battery, 10 years operating, 5 years shelf life.

WARNINGS!! When pin 11 and the sensor are both earthed, the DTC410 indicates **DPn** and will not operate correctly.
24V models are not isolated and must only be used with isolated or unearthed sensors.

Calibration Constant Corruption

When corrupted, the message **CR** will be displayed. The controller must now be re-calibrated using two known input values. By pressing **SET** the display will change to **LL** to prompt entry of a low calibration value (e.g. 25°C), via the **Δ** key. Pressing **SET** will enter this value, after which, the controller will display an arbitrary number and then progressively tune to the value entered. Once reached, the controller will display **LLH**, prompting entry of a high calibration value (e.g. 400°C). Using the same procedure as for **LL**, the controller will tune to the new value and again prompt with **LL**. The calibration procedure is iterative so the procedure must be repeated (usually only once more) until the display goes immediately to **LL** and **LLH**. Holding **SET**, for >4 seconds, with either value entered, until **BBB** is displayed, will complete the procedure.

Note: This procedure should only be attempted by trained personnel and only where the premises has the facilities for simulating calibrated temperature references. Otherwise the unit should be returned to the manufacturer.

