



## MICROPROCESSOR BASED MINIATURE CONTROLLERS

AUTOTUNE PID CONTROLLER

MODEL A4444



**A4444**  
**AUTOTUNE PID CONTROLLER**

### DESCRIPTION

The Model A4444 Autotune PID Process Controller is available for a variety of industrial inputs and generates a control output with a PID control algorithm. The PID values can be entered manually or by autotuning .

The process value is conditioned and read by a microcontroller . The microcontroller computes the error between the set value and the (actual) process value, The rate at which the process is approaching the set value and the Integral of the error. All these values are multiplied by the Proportional, Derivative and Integral constants respectively and summed up to generate the control output. The duty cycle of the output is varied depending on the output power required .

The second output can be configured as an alarm with special functions or as a manual or automatic soak timer or as a cooling control with off delay for compressor applications. All parameters are protected by password protection and keypad lockout. The non volatile memory is used to store all parameters. The (optional) RS232 link can be used to program the controller remotely from a PC .

### SALIENT FEATURES

- AUTOTUNE PID CONTROLLER
- ONE RAMP ONE SOAK FUNCTION
- CONTROLLER AND TIMER OUTPUTS
- SEPARATE PV & SV INDICATION
- HEAT/ COOL WITH OFF DELAY
- DELAYED ON / OFF, OR PULSED TIMER
- PROGRAMMABLE SIGNAL FILTER
- WATCHDOG PROTECTION
- PASSWORD PROTECTION & KEY LOCKOUT
- KEYPAD ZERO & SPAN CALIBRATION
- NON VOLATILE MEMORY
- PULSE / RELAY / SSR OUTPUTS

### APPLICATIONS

The A4444 Autotune PID process controller is used to control Industrial process parameters like temperature, pressure, level etc.

The controller is used to control the Temperature of ovens, furnaces, oil fired boilers very precisely. It can also be used for other engineering processes like Pressure and Level with suitable conditioners.

The Ramp with soak timer facility can be used for nitriding or hydrogenation. The two outputs can be used where heating and cooling (Compressor / Blower) control is used. The Cooler dead band, off-time delay and upper limit protects the compressor. The second output can also be used as an alarm with a variety of special functions like latch, latch-hold and hold. It can be reset from the keypad. The second output can also be used as a Timer with a variety of triggering options and output actions. The combination of a temperature controller and a timer in the same enclosure, is useful in the plastic processing industry.

The RS232/ RS485 serial communication facility can be used in a simple data acquisition system.

# SPECIFICATIONS :

## INPUT

### Input sources (specify)

T/C, RTD, mV or mA

### Operating & setpoint range

As per table

### Input sampling time

20 mS ( 50 samples / sec )

### Ambient temp. effect

Automatic CJC for T/Cs

### Sensor linearisation

Multisegment computation

### RTD input types

2, 3 or 4 wire sensor

### Lead wire compensation

Automatic for 3 / 4 wire RTD

### Digital signal filtering

Selectable time constants

### Zero & span calibration

Keypad programmable

## CONTROL & OUTPUT 1

### Control configuration mode

PID only

### Control functions

Autotune / Ramp & Soak

### Main control output modes

Heat / Cool

### Output control action

Forward / Reverse

### Proportional band

0001 - 9999 PV units

### Integral time limits

0 - 1000 seconds

### Derivative time limits

0 - 1000 seconds

### Cycle time

0.0 - 100.0 seconds

## OUTPUT 2

### Auxiliary O/P configuration

Cooler / Alarm / Timer mode

### Cooler off - time delay

0 - 300 seconds

### Cooler dead band range

-1999 to +1000 PV units

### Alarm output options

High, Low & Deviation

### Alarm special functions

Latched / Hold / Hold & latched

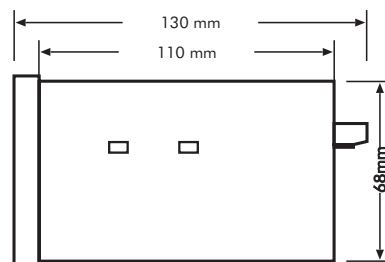
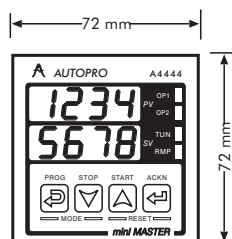
### Timer modes

Delayed On / Off / Pulsed

### Timer setpoint range

0 - 999.9 minutes

## DIMENSIONAL DETAILS :



Enclosure T72 ( Panel mounting ) Cutout : 68 X 68 mm

## INDICATION

### PV & SV display

Separate 4 digit 10.2 mm LED

### Status indication

O/P1, O/P2, Tune & Ramp

## SETUP & SECURITY

### Setup memory

Non-volatile EEPROM

### Setpoint security

Keypad lockout

### System security

Watchdog protection

### Programme security

User-set password protection

### Sensor fail output state

Programmable On or Off

## COMMUNICATION ( optional )

### Serial communication standard

RS232 or RS485 option

### Baud rate selection

1K2 / 2K4 / 4K8 / 9K6 / 19K2 baud

### Serial transmission delay

1 to 9999 seconds

### Data acquisition & logging

On PC by serial link

## GENERAL

### Power supply \*

230 V AC  $\pm$  10 % 50 Hz

### Power consumption

4 VA ( nom. )

### Operating temp.

05° - 50°C Ambient

### Terminals

Suitable for 1.5 mm<sup>2</sup> wire

### Enclosure

T72 : 72 (H) x 72 (W) x 125 (D) mm

## ORDERING INFORMATION

MODEL A 4444 / IXX - 0A - PP

### IXX

I : A : RTD ( standard )

B : Thermocouple

C : Millivolt

D : Milliamps

XX	Input	Range °C	Accuracy
01	RTD1	-150 to + 600	$\pm$ 0.2%
02	RTD2	-150.0 to + 600.0	$\pm$ 0.2%
J	J	0 to + 750	$\pm$ 2
K	K	-200 to + 1200	$\pm$ 2
R	R	0 to + 1750	$\pm$ 2
S	S	0 to + 1750	$\pm$ 2
T	T	-100 to + 400	$\pm$ 2
B	B	0 to + 1800	$\pm$ 2
E	E	-200 to + 900	$\pm$ 2
N	N	-250 to + 1300	$\pm$ 2
11	mV	0 - 100 mV	$\pm$ 0.1%
21	mA	4 - 20 mA	$\pm$ 0.1%
U1		User specified	

### 0A : Output actuation

41 : 6 Amp EM Relay ( standard )

42 : 0.5 Amp SSR ( Internal )

43 : 12 / 24 volt DC pulse @ 30 mA

### PP : Power supply

51 : 230 V AC  $\pm$  10 % 50 Hz ( standard )

52 : 110 V AC  $\pm$  10 % 50 Hz

\* Our other similar products

1 Set point On-off Controllers

1/2 Output PID Controllers

\* for other options check ordering information or consult factory.

# AUTOPRO

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☆ AUTOPRO IS THE FIRST NAME FOR THE LAST WORD IN INNOVATIVE INSTRUMENTATION ☆

☞ Due to our policy of continuous improvement all specifications are subject to change without notice.

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