



TC5396

Auto-Tune PID Controller

Large & Bright Display

Advanced. Efficient. Economical

Masibus TC5396 PID Controller is designed to offer advanced performance at a competitive price, the controller comes with a Large White LED display plus 10 segment bargraph for display of MV, universal Input, multiple output options, ideally suited for a wide range of applications such as plastic processing machines, packaging machinery and food processing applications. The controller has four relay outputs which can be configured as control, auxiliary and Alarm.

TC5396 PID Controller improves process efficiency and quality, Input is truly Universal, configurable for any Thermocouple, RTD or mA/Volt. All inputs and outputs parameters are accessible over Modbus communication interface option, Retransmission option can be used for recording/datalogging.

TC5396 PID Controller has a advanced Auto-tuning function and can be set-up in different control modes from On-off, PID and Valve position control without feedback, control output type options include Relay, SSR and Analog, Manual mode override allows operator to manually control the process.

TC5396 PID Controller has extended Alarm capability, 15 different Alarm modes are possible for each Alarm output, the four relays can be configured for control output or Alarm based on the Actuator type.

The unit is easy to configure, operate and password protected, parameters that require frequent changes can be user selected and grouped in first level of access for quick parameterization.

Features

- Advanced Auto-tune PID Algorithm
- Universal input (TC, RTD, Volts, mA)
- 15 Alarm configurations
- RS485 Modbus Communication (optional)
- Variety of Retransmission Output (optional)
- Relay or SSR control output option
- User customized configuration level for quick access
- Auto/Manual selection with bump less transfer
- Auto-tune PID, On-Off or Valve position control
- PV bias for input correction
- Programmable digital filter
- Manual reset to prevent overshoot
- Selectable Ramp and 1 Soak

Applications

- Injection Molding machines
- Packaging machines
- Food and Beverages
- Industrial Ovens
- Plastic Industry
- Hot Stamping Machines

TECHNICAL SPECIFICATIONS

Input 1 PV input		Analog Output 2-AO2 (Option)		
Input Type	Thermocouple (E, J, K, T, B, R, S), RTD (Pt100), Current, Voltage	Function	Retransmission	
Display Range	Refer Table-1	Current	0-20mA/ 4-20mA@500Ω max	
Accuracy	±0.25% of FS ±1 Count for TC, RTD input ±0.1% of FS ±1 digit for Linear input	Voltage	0-5V/ 1-5V/ 0-10V @3 KΩ Min	
ADC Resolution	16 bits	Accuracy	0.25% of FS	
Display Resolution	0.1 / 1.0 °C	Communication Output-RS485 (Option)		
Sampling Rate	5 Samples/Sec	Function	Read/Write all Parameters	
CJC Error	±2.0 °C	Protocol	Modbus RTU	
Sensor open protection	All inputs except 0-5V / 0-10V	Baud Rate	9600, 19200, 38400	
Sensor Burnout current	0.25uA	Transmitter supply	24V DC (±10%) @26mA (Current limited)	
RTD excitation current	≈ 0.16mA	Power Supply		
NMRR	> 40dB	Standard	85-260VAC / 100-300VDC	
CMRR	> 120dB	Optional	18-36VDC	
Temp-co	< 100ppm/°C	Power Consumption	8 VA Approx	
Input Impedance	> 1MΩ	Isolation (Withstanding voltage)		
Max Voltage	20VDC	<ul style="list-style-type: none"> Between primary terminals* and secondary terminals** : At least 1500 V AC for 1 minute Between secondary terminals** : At least 500 V AC for 1 minute 		
Display & Keys		* Primary terminals indicate power terminals and relay output terminals.		
Process Value	0.8", 7 segment, White LED, 4 digits	** Secondary terminals indicate analog I/O signal and Communication O/P.		
Set Value	0.4", 7 segment, Green LED, 4 digits	Insulation resistance: 20MΩ or more at 500 V DC		
Manipulated Value	10 segment bar Orange LED	Physical		
Keys	Enter, A/M, Increase, Decrease,	Mounting type	Panel	
Status LEDs	For Relay, Communication, A/M, Auto tune, SP1, SP2	Dimension (in mm) (H x W x D)	100 x 100 x 55	
Output		Front Bezel (in mm) (H x W)	100 x 100	
Control Type	On/Off, P, PI, Auto tune PID, Valve Position Control (without Feedback)	Panel Cutout (in mm) (H x W)	92 x 92	
Manual offset	±50% of P band	Depth behind Panel (in mm)	52	
Proportional band	0.1 to 200.0 %	Weight (approx.)	300g	
Integral time	0 (off) to 1000 Sec	Enclosure Material	ABS (Front: Polycarbonate)	
Derivative time	0 (off) to 180 Sec	Enclosure Protection	IP20	
Cycle time		Terminal & Cable Size	Barrier type terminal 2.5mm ²	
For SSR	1 to 60 Sec	Environmental		
For SSR	10 to 300 Sec (Hyst in on/off mode)	Operating temperature	0-55 °C	
Relay Output (RL1, RL2)		Storage temperature	0-80 °C	
Function	Control, Alarm	Humidity	30-95% RH non-condensing	
Type	Single Change over (C, NO, NC)	Table-1: Display Range		
Rating	5A @ 230VAC / 30VDC	Input	Input Type	Range
Relay Output (RL3, RL4)		Thermocouple	E	-200 to 1000 °C*
Function	Alarm		J	-200 to 1200 °C*
Type	Single Change over (C, NO)		K	-200 to 1372 °C*
Rating	5A @ 230VAC / 30VDC		T	-200 to 400 °C*
SSR Output (Option in lieu of RL1)			B	450 to 1800 °C
Function	Control		R	0 to 1768 °C
Rating	11V DC@20mA	S	0 to 1768 °C	
Analog Output 1-AO1 (Option)		RTD	PT-100 (3 wire)	-200 to 850 °C*
Function	Control, Retransmission	Linear	1-5V/0-5V/0-10V DC	-1999 to 9999
Current	0-20mA/ 4-20mA @500Ω Max		0/4-20mA (Ext 250 Ω)	
Voltage	0-5V/ 1-5V/ 0-10V @3 KΩ Min	*0.1 °C selectable for range -199.9 to 999.9		
Accuracy	0.25% FS			

Ordering code

Model	Input	Power Supply	Option-1 (RL1/SSR)	Option-2 (AO1)	Option-3 (AO2/RS485)
TC5396	1 E	U1 85-265VAC / 100-300VDC	1 Relay	N None	N None
	2 J		2 SSR	1 4-20 mA	1 4-20 mA
	3 K	U2 18-36VDC		2 0-20 mA	2 0-20 mA
	4 T			3 1-5V	3 1-5V
	5 B			4 0-5V	4 0-5V
	6 R			5 0-10V	5 0-10V
	7 S				6 RS485
	9 Pt-100				
	E 1-5V (4-20mA**)		**Ext 250 Ohm		
	F 0-5V (0-20mA**)				
G 0-10V					