



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	▪ 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	
		* Primary terminals indicate power terminals and relay output terminals.	
		** Secondary terminals indicate analog I/O signal and Communication O/P.	
		Insulation resistance: 20MΩ or more at 500 V DC	
Display & Keys		Physical	
Process Value	0.8", 7 segment, White LED, 4 digits	Mounting type	Panel
Set Value	0.4", 7 segment, Green LED, 4 digits	Dimension (in mm) (H x W x D)	100 x 100 x 55
Manipulated Value	10 segment bar Orange LED	Front Bezel (in mm) (H x W)	100 x 100
Keys	Enter, A/M, Increase, Decrease,	Panel Cutout (in mm) (H x W)	92 x 92
Status LEDs	For Relay, Communication, A/M, Auto tune, SP1, SP2	Depth behindPanel (in mm)	52
Output		Weight (approx.)	300g
Control Type		Enclosure Material	ABS (Front: Polycarbonate)
Control Type	On/Off, P, PI, Auto tune PID, Valve Position Control (without Feedback)	Enclosure Protection	IP20
Manual offset	±50% of P band	Terminal & Cable Size	Barrier type terminal 2.5mm²
Proportional band	0.1 to 200.0 %	Environmental	
Integral time	0 (off) to 1000 Sec	Operating temperature	0-55 °C
Derivative time	0 (off) to 180 Sec	Storage temperature	0-80 °C
Cycle time		Humidity	30-95% RH non-condensing
For SSR	1 to 60 Sec	Table-1: Display Range	
For SSR	10 to 300 Sec (Hyst in on/off mode)	Input	Input Type
Relay Output (RL1, RL2)			Range
Function	Control, Alarm	Thermocouple	E
Type	Single Change over (C, NO, NC)		J
Rating	5A @ 230VAC / 30VDC		K
			T
			B
			R
Relay Output (RL3, RL4)		S	
Function	Alarm	RTD	PT-100 (3 wire)
Type	Single Change over (C, NO)		1-5V/0-5V/0-10V DC
Rating	5A @ 230VAC / 30VDC	Linear	0/4-20mA (Ext 250 Ω)
SSR Output (Option in lieu of RL1)			
Function	Control	*0.1 °C selectable for range -199.9 to 999.9	
Rating	11V DC@20mA		
Analog Output 1-AO1 (Option)			
Function	Control, Retransmission		
Current	0-20mA/ 4-20mA @500Ω Max		
Voltage	0-5V/ 1-5V/ 0-10V @3 KΩ Min		
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								