

# masibus®

A Sonepar Company



## 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"> <li>Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute</li> <li>Between secondary terminals**: At least 500 V AC for 1 minute</li> </ul>		
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	<b>Insulation resistance:</b> 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		Panel Cutout (in mm) (H x W)	92 x 92	
Control Type	On/Off, P, PI, Auto tune PID, Valve Position Control (without Feedback)	Depth behind Panel (in mm)	52	
Manual offset	±50% of P band	Weight (approx.)	300g	
Proportional band	0.1 to 200.0 %	Enclosure Material	ABS (Front: Polycarbonate)	
Integral time	0 (off) to 1000 Sec	Enclosure Protection	IP20	
Derivative time	0 (off) to 180 Sec	Terminal & Cable Size	Barrier type terminal 2.5mm <sup>2</sup>	
Cycle time		Environmental		
For SSR	1 to 60 Sec	Operating temperature	0-55 °C	
For SSR	10 to 300 Sec (Hyst in on/off mode)	Storage temperature	0-80 °C	
Relay Output (RL1, RL2)		Humidity	30-95% RH non-condensing	
Function	Control, Alarm	Table-1: Display Range		
Type	Single Change over (C, NO, NC)	Input	Input Type	Range
Rating	5A @ 230VAC / 30VDC	Thermocouple	E	-200 to 1000 °C*
Relay Output (RL3, RL4)			J	-200 to 1200 °C*
Function	Alarm		K	-200 to 1372 °C*
Type	Single Change over (C, NO)		T	-200 to 400 °C*
Rating	5A @ 230VAC / 30VDC		B	450 to 1800 °C
			R	0 to 1768 °C
SSR Output (Option in lieu of RL1)		S	0 to 1768 °C	
Function	Control	RTD	PT-100 (3 wire)	-200 to 850 °C*
Rating	11V DC@20mA	Linear	1-5V/0-5V/0-10V DC	-1999 to 9999
Analog Output 1-AO1 (Option)			0/4-20mA (Ext 250 Ω)	
Function	Control, Retransmission	*0.1 °C selectable for range -199.9 to 999.9		
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					