



Masibus LC5296-AT / LC5248E-AT / LC5296L-AT / LC5248L-AT / LC5296V-AT PID Controller series is designed to offer outstanding control performance in a compact package providing a comprehensive solution for a wide variety of applications: such as plastic manufacturing, packaging machinery and food processing applications requiring precise heat/cool control and processes protection alarming.

LC5296-AT / LC5248E-AT / LC5296V-AT PID Controller offer a cost-effective alternative to implement loops in a PLC while at the same time improving loop performance. It accepts one universal process input suitable for thermocouple, RTD or linear mA/Volt. All inputs and outputs can be read directly over the modbus communication interface by the supervisory host system as well as process value can be retransmitted to remote PLC/DCS. This expands capabilities of available PLC/DCS and host supervisory system I/O, simplifies machine troubleshooting and remote diagnostics.

LC5296-AT / LC5248E-AT / LC5296L-AT / LC5248L-AT / LC5296V-AT PID Controller With a fast responsive PID auto-tuning algorithm it is equipped with Heat/Cool relay or SSR output for control function. Auto-tuning adjusts the PID parameters for desired set-point according to the current process dynamics so it has no harmful effect on the current operation. It has flexibility to switch control to On-Off or manual mode for non-critical applications.

LC5296-AT / LC5248E-AT / LC5296V-AT PID Controller has outputs available providing a combination of relay (alarm output) and relay or SSR (control output) or Motarized valve Forward/Reverse without feedback (control output) based on application requirement. Whereas LC5296L-AT / LC5248L-AT PID controller has 3 outputs providing combination of 2 Relay (alarm output) or SSR (control output)

Compact size and simple programming makes the installation and operation of controller easier and user-friendly.

## **Features**

- Auto-tune PID
- Universal input (TC, RTD, Volts, mA)
- 15 Alarm configurations
- RS485 Modbus communication (optional in LC5296-AT / LC5248E-AT / LC5296V-AT model)
- Retransmission output (optional in LC5296-AT model)
- Relay / SSR control output option
- Password protected configurations
- Auto/manual selection with bump less transfer
- Fail-safe design protecting the process in case of system malfunctioning
- Display brightness control
- Transmitter power supply in LC5296-AT/LC5296L-AT/ LC5248E-AT /LC5296V-AT model
- Function Key: selectable for RUN/STOP or auto/manual or none.(LC5296L-AT/LC5248L-AT)

## **Applications**

- Injection molding machines
- Plastic extrusion process
- Packaging machines
- Food processing applications

www.masibus.com sales@masibus.com

## TECHNICAL SDECIEICATIONS

TECHNICAL SPECIFICATIONS											
Input							Analogue PV Output*(Option) (only in LC5296-AT model)				
Thermocouple (F. L.K. T. B. R. S.)						Current 0-20mA/ 4-20mA @500Ω Max					
	Input Type RTD (Pt100), Current (Ext. 250Ω), Voltage				Voltage 0-5V/ 1-5V/ 0-10V @3 KΩ Min						
Display Rang	Display Range Refer Table-1				Accuracy 0.25% FS Communication Output (Optional in LC5296-AT/LC5248E-AT/LC5296V-AT)						
$\pm 0.25\%$ of FS $\pm 1$ count for TC, RTD input Accuracy $\pm 0.1\%$ of FS $\pm 1$ digit for linear input				Interface RS485							
ADC Resolution 16 bits					Protocol		Modbus	RTU			
Display Resolution 0.1 / 1.0 °C				Baud Rate		9600, 19	200, 38400				
Sampling Rate 5 Samples/Sec					Alarm Output						
CJC Error ±2.0 °C Sensor open All inputs except 0-5V / 0-10 V						LC5296-AT/LC5248E-AT/LC5296V-AT LC5296L-AT / LC5248L-AT					
Sensor Burnout current 0.25 µA						2 (If control o/p is AO) or 1 (If control o/p s SSR) is Relay/ SSR) or Not available (If control o/p is AO) or 1 (If control o/p is SSR)					
RTD excitation current 0.166 mA (Approx.)						o/p is F/R without feedback)					
NMRR > 40dB					Type Single Change over (C, NO, NC), For LC5248L-AT(C, NO)						
CMRR > 120dB				Rating 5A @ 230VAC / 30VDC  Transmitter supply In LC5296-AT/LC5296L-AT/ 24V DC (±10%) @26mA							
< 100ppm for Input to Display Temp-co < 150ppm for Input to retransmission output				Transmitter supply In LC5296-AT/LC5296L-AT/ LC5248E-AT /LC5296V-AT model only (Current limited)							
(LC5296-AT/LC5248E-AT/LC5296V-AT)					Power Supply						
Input Impedance $> 1M\Omega$ (Voltage) / 250 $\Omega$ (Current)					Standard						
Max Voltage 20VDC					Optional 18-36VDC						
Display & Keys  LC5296-AT LC5296L-AT LC5248E-AT LC5248L-AT LC5296V-AT						Power Consumption 10 VA Approx. (LC5296-AT/LC5248E-AT/LC5296V-AT) 5VA Approx. (LC5296L-AT / LC5248L-AT)					
	0.56",	0.56",	0.4",	0.4",	0.36",		standing voltage)			·	
Process 7 s	segment,	7 segment,	7 segment,	7 segment,	7 segment,				nals**: At least 1500 V nal: At least 1500 V AC		
	ed LED,	Red LED,	Red LED,	Red LED,	Red LED, 4 digits				inals**: <b>At least 1500 v</b> AC		
2	4 digits 0.4",	4 digits 1 digits				Between secondary terminals**: <b>At least 500 V AC for 1 minute</b> * Primary terminals indicate power terminals and relay output terminals.					
Set 7 s	segment,	7 segment,	7 segment,	7 segment,	0.31", 7 segment,				and Communication O	/P.	
	een LED,	Green LED,	-	Green LED,	Green LED,			nore at 500 V D	C between power term	inals and	
	4 digits	4 digits	4 digits	4 digits	4 digits	grounding tern	ninai	Phys	sical		
	T1, SET2, ncrease,	Enter, Increase.	Enter, Increase,	Enter, Increase,	Enter, Increase,					C5248L- LC5296V-	
Decre	ease. A/M	Decrease, A/N		M Decrease, A/I	M DecreaseA/M			LC5296L		AT AT	
	Relay,		Relay,		Relay,	,	n mm)(H x W x	,		8x48x85 96x48x85	
LEDs Communication, Relay & SSR Communication, Relay & SSR Communication,						Front bezel (in mm) (H x W) 96x96 48x48 48x48 96x48					
A/M & SSR A/M & SSR A/M & SSR						Panel cutout (in mm) (H x W) 92.5x92.5 44x44 45x45 92x45  Depth behind panel (in mm) 65 115 77 75					
Output Control Output						Weight (approx.) 300g 120g 120g 300g					
Control Output Control Type On/Off, P, PI, Auto tune PID						Enclosure material ABS					
Manual offset ±50% of P band						Enclosure protection IP20					
Proportional band 0.0 to 999.9 or 0 to 9999						Terminal cable size 2.5mm <sup>2</sup>					
Integral time O(off) to 1000 Sec						Environmental           Operating temperature         0 to 55 °C					
Derivative time O(off) to 180 Sec Cycle time For SSR 1 to 60 Sec						Storage temperature 0 to 80°C					
For Relay 10 to 300 Sec (Hyst in on/off mode)						Humidity	ě ,				
Relay Control Output							Table-1: Display Range				
Relays 1 No or 2 Nos in case of F/R without feed back o/p Single change over (C, NO, NC).							Input Input Type Range				
Туре	Type Single change over (C, NO, NC), For LC5248L-AT (C, NO)				,		E		-200 to 1000 °C		
Rating		5A	@ 230VAC /	30VDC		K -200 to 1200 C					
SSR Control Output (Optional in lieu of Relay control o/p)					Thermocouple T -200 to 400°C						
Rating 11V DC@20mA Resolution 10ms							В		450 to 1800°C		
Resolution 10ms Analogue MV Output (Optional in LC5296-AT/LC5248E-AT/LC5296V-AT)							R S		0 to 1768 °C 0 to 1768 °C		
Current 0-20mA/4-20mA@500Ω max					RTD PT-100 (3 wire) -200 to 850 °C,-199.0 to 850.0 °C						
Voltage					1-5V/0-5V/0-10V DC Linear 0/4 20 - 4 /5 + 250 Q) -1999 to 9999						
Accuracy 0.25% of FS  Ordering Code							0/4-20m	A (Ext 250 Ω	Ordering Code		
		,	Power	Control	Output O	ption	Model	Input	Power Supply	Output	
Model	Inpu		Supply	Output	1 (AO1*) 2 (AO		LC5296L-AT		85-260VAC/	·	
LC5296-AT	1		35-260VAC/ 00-300VDC	1 Relay I	N None N	None	LC5248L-AT		U2 18-36VDC 2		
LC5248E-AT		J U2				4-20 mA#		3 K		Relay1+Relay2+SSR	
LC5296V-AT		<				0-20 mA#		4 T			
		T 3		On/Off	3 1-5 V 3 4 0-5 V 4	1-5 V# 0-5 V#		5 B 6 R			
	6	2		5 F/R without feedback	5 0-10 V 5	0-10 V#		7 S			
		S	*Confa		6	RS485		9 Pt-100			
		100 ) mA	** PV only	e as MV or PV				C 4-20 mA D 0-20 mA			
		0-20 mA # Not available in LC5248E-AT/LC5296V-AT						E 1-5 V			
		E 1-5 V "*Default I/P type configured from factory is 1						F 0-5 V			
			<b>▲</b> 1.4.0	F 0-5 V							
	F 0-	5 V						G 0-10 V Default I/P type##			

ordering code Head Office: Masibus Automation And Instrumentation Pvt. Ltd. B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India. Tel: +91 79 23287275-77, Fax: +91 79 23287281. E-mail: sales@masibus.com, Web: www.masibus.com

X Default I/P type##

All specifications are subject to change without notice due to continuous improvements. Doc. Ref. LC5296-AT/LC5248E-AT/LC5296L-AT/LC5248L -AT/LC5296V-AT\_R5F\_1120

X I/P type##