



LC5296-AT

Auto-tune PID Controller

Masibus LC5296-AT is designed to offer outstanding control performance in a compact 96x96x75mm 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 offers 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.

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 without repeating process-cycle and so has no harmful effect on the current operating conditions. Controlling can also be shifted to On-Off mode for non critical applications.

Two relay outputs can be configured for 15 types of alarm functions. These relays can be also configured as heat/cool control operation. It has option of SMPS (85-265 VAC) and DC (18-36 VDC) power supply options.

Features

- Universal Input, 10 Input types
- Relay/SSR/Analogue control output options
- Auto tune PID control
- Fail-safe Design
- 15 Alarm types
- Password protected configurations
- Auto/Manual selection with bump less transfer
- Two Isolated Analogue outputs (option)
- RS485 serial communication (option)
- Universal Power Supply
- Display brightness control

Applications

- Injection Molding machines
- Plastic Extrusion process
- Packaging machines
- Food processing applications

Technical Specifications

Input	
Input Type	Thermocouple (E, J, K, T, B, R, S), RTD (Pt100), Current (Ext. 250Ω), Voltage
Display Range	Table-1
Accuracy	Thermocouple & RTD ±0.25% of FS ±1 Count Linear Input ±0.1% of FS ±1 Count
ADC Resolution	16 bits
Display Resolution	0.1 / 1.0 °C
Sampling Rate	4 Samples/Sec
CJC Error	±3.0 °C
Sensor open	All inputs except 0-5V
Sensor Burnout current	0.25uA
RTD excitation current	0.166 mA Approx.
NMRR	> 40dB
CMRR	> 120dB
Temp-co	< 150ppm/°C
Input Impedance	> 1MΩ (Voltage) / 250Ω (Current)
Max Voltage	20VDC

Display and Keys	
Process Value	0.56" Red 4 digit
Set Value	0.4" Green 4 digit
Status Indication	Discrete LEDs (Relay and Communication), (A/M, SSR)
Keys	SET1, SET2, Increase, Decrease

Output	
Control Output	
Control Type	On/Off, P, PI, Auto tune PID
Manual offset	±50% of P band
Proportional band	0.0 to 999.9 or 0 to 9999
Integral time	0(off) to 1000 Sec
Derivative time	0(off) to 180 Sec
Cycle time	For SSR 1 to 60 Sec For Relay 10 to 300 Sec (Hyst in on/off mode)

Relay Control Output (STD)	
Relays	1 No.
Type	Single Change over (C, NO, NC)
Rating	2A @ 230VAC / 30VDC

SSR Control Output (Option)	
Rating	11V DC@20mA
Resolution	10ms

Analogue MV Output (Option)	
Current	0-20mA/4-20mA@500Ω max
Voltage	0-5V/ 1-5V/ 0-10V @3 KΩ Min
Accuracy	0.25% of FS

Analogue PV Output (Option)	
Current	0-20mA/ 4-20mA @500Ω Max
Voltage	0-5V/ 1-5V/ 0-10V @3 KΩ Min
Accuracy	0.25% FS

Communication Output (Option)	
Interface	RS485
Protocol	Modbus RTU
Baud Rate	9600, 19200, 38400

Alarm Output	
Relays	1 or 2 (If control output is AO)
Type	Single Change over (C, NO, NC)
Rating	2A @ 230VAC / 30VDC

Transmitter supply 24V DC(±10%) @26mA (Current limited)

Power supply	
Standard	85-265VAC/ 125-300VDC
Optional	18-36VDC
Power Consumption	<10 VA

Isolation (Withstanding voltage)
 Between primary terminals* and secondary terminals**: **At least 1500 V AC for 1 minute**
 Between primary terminals* and grounding terminal: **At least 1500 V AC for 1 minute**
 Between grounding terminal 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 @ 500 V DC between power terminals and grounding terminal

Physical	
Size (mm)	96(W) x 96(H) x 75(D)
Front Bezel (mm)	96 x 96
Panel Cutout (mm)	92.5 x 92.5
Depth behind panel (mm)	65
Weight	300 gms approx.
Enclosure Material	Molded ABS
Enclosure Protection	IP20
Terminal Cable Size	2.5mm ²

Environmental	
Operating temperature	0-55 °C
Storage temperature	0-80 °C
Humidity	30-95 % RH non-condensing

Table 1: Display Range

Input Type		Ranges
Thermocouple	E	-200 to 1000 °C
	J	-200 to 1200°C
	K	-200 to 1372°C
	T	-200 to 400°C
	B	450 to 1800°C
	R	0 to 1768°C
RTD	S	0 to 1768°C
	Pt100	-200 to 850°C
Voltage/Current	0/1-5V	-1999 to 9999
	0/4 -20mA (Ext. 250Ω)	

Ordering Code

Model	Input		Power Supply		Control Output		Option			
							1 (AO1*)		2 (AO2** or RS485)	
LC5296-AT	1	E	U1	85-265VAC / 125-300VDC	1	Relay	N	None	N	None
	2	J	U2	18-36VDC	2	SSR	1	4-20 mA	1	4-20 mA
	3	K					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								
	C	1 to 5V								
	D	0 to 5V								
	E	4-20mA								
	F	0-20mA								

*Configurable as MV or PV
 ** PV only

Accessories: Two numbers mounting clamps

Head Office:

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All specifications are subject to change without notice due to continuous improvements.
 Doc. Ref. LC5296-AT/R2F/0914

Masibus Representative:

Blank space for representative information.