masibus

LC5296-AT

Auto-tune PID Controller (96x96mm)

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

- Auto-tune PID
- Universal input (TC, RTD, Volts, mA)
- Accuracy 0.25% of F.S.
- 15 Alarm configurations
- RS485 Modbus Communication
- Retransmission with accuracy: 0.25% of F.S.
- Fail-safe Design protecting the process in case of system malfunctioning
- Display brightness control
- Transmitter Power Supply

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, Voltage
Display Range	Refer Table-1
Accuracy	±0.25% of FS ±1 Count
ADC Resolution	16 bits
Display Resolution	0.1 / 1.0 °C
Sampling Rate	4 Samples/Sec
CJC Error	±2.0 °C
Sensor open	All inputs except 0-5V
Sensor Burnout current	0.25uA
RTD excitation current	0.166mA (Approx)
NMRR	> 40dB
CMRR	> 120dB
Temp-co	< 150ppm/°C
Input Impedance	> 1MΩ
Max Voltage	20VDC

Display & Keys

Process Value	0.56", Red 4-digit
Set Value	0.4", Green 4-digit
Relay & Communication	Discrete LEDs
Keys	SET1, SET2, Increase, Decrease

Output

Control

Output Options	Relay	2A @ 230VAC / 30VDC Single Change over (C, NO, NC)
	SSR	18VDC, 20mA
	Voltage	0/1-5V, 0-10V @2KΩ Min.
	Current	0/4-20mA @500Ω Max.

Alarm

Relays	2 Nos. (Max) 2A @ 230VAC / 30VDC Single Change over (C, NO, NC)
SSR	1 nos. 11VDC (10mA)

Retransmission Output

Current	0/4-20mA @500Ω Max.
Voltage	0/1-5V, 0-10V @2KΩ Min.
Accuracy	0.25% of FS

Transmitter Supply	24VDC (±10%) @30mA (Current limited)

Communication Output

Interface	RS485
Protocol	Modbus-RTU
Baud Rate	9600, 19200, 38400

Environmental

Operating temperature	0-55 °C
Storage temperature	0-80 °C
Humidity	20-95% RH non-condensing

Functional

Control Mode	P, PI, PID, and ON/OFF control for Relay-1/SSR

Parameter	Range
Proportional Band	0 to 9999
Integral Time	0 to 1000 seconds
Derivative Time	0 to 180 seconds
Cycle Time	SSR: 1 to 60 sec Relay: 10 to 300 sec

Power Supply

Standard	85-260VAC / 125-300VDC
Optional	18-36VDC
Power Consumption	10 VA Approx.

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 at 500 V DC between power terminals and grounding terminal

Physical

Dimensions:

Size	96(W) x 96(H) x 75(D) mm
Front Bezel	96 x 96 mm
Panel Cutout	92.5 x 92.5 mm
Depth behind panel	65 mm

Weight	300 gms approx.
Enclosure Material	Molded ABS
Enclosure Protection	IP20
Terminal Cable Size	2.5mm^2

Table-1: Display Range

Input Type	Range
E	-200 to 1000 ˚C
J	-200 to 1200 ˚C
K	-200 to 1372 ˚C
T	-200 to 400 ˚C
B	450 to 1820 ˚C
R	0 to 1768 ˚C
S	0 to 1768 ˚C
Pt100	-200 to 850 ˚C, -199.0 to 850.0 ˚C
0/1-5V	-1999 to 9999
0/4-20mA (Ext.250Ω)	

Ordering Code

Model	Input		Auxiliary Power Supply		Output		Options: Output-1		Options: Output-2	
LC5296-AT	1	E	U1	80-265VAC / 125-300VDC	1	Relay-1 + Relay-2	N	None	N	None
	2	J	U2	18-36VDC	2	SSR + Relay-2	1	4-20mA	1	4-20mA
	3	K					2	0-20mA	2	0-20mA
	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	1-5V								
	D	0-5V								
	E	4-20mA								
	F	0-20mA								

Accessories: Two numbers mounting clamps

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