



## LC5296-XP-AT

### FLP Auto-Tune PID Controller

Masibus model LC5296-XP-AT FLP Auto-Tune PID controller is certified for use in zone 1 of gas group I, IIA & IIB hazardous areas optionally IIC certified controller also available. The controller is designed with touch sensitive keys to give full programmability and ease of operation which you only find in controllers available for safe areas. The unit is compact, rich in features and comes with add on options to suit any application.

Model LC5296-XP-AT incorporates easy to read 4 digit displays for PV and SV, brightness of which is user adjustable, the unit can be configured for any TC, Pt-100 or Volts and comes with variety of output options for control, alarm and interface.

Model LC5296-XP-AT is designed to accept universal supply of 85-265V AC, it also accepts low voltage 18-36V DC operation as an option, a fast sampling 16-bit ADC is used to provide accurate and repeatable performance required for most critical applications.

While a current limited transmitter supply is standard, options of Re-transmission signal and RS485 can be opted for interfacing with other devices and systems like PLC/ SCADA/ recorder etc.

The Unit is wall mounting with up to 5 gland openings for multi-core cable wiring.

#### Features

- For gas group I, IIA and IIB as per IS:2148/04 and IP65 as per 13346:04 (Optional: IIC group)
- Touch sensitive keys for operation
- 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

#### Applications

Hazardous areas in industries like

- Chemicals
- Pharma
- Mining
- Oil & gas
- Petrochemical
- Fertilizers
- Pesticides

# TECHNICAL SPECIFICATIONS

Input		Communication Output (Option)	
Input Type	Thermocouple (E, J, K, T, B, R, S), RTD (Pt100), Current (Ext. 250Ω), Voltage	Interface	RS485
Display Range	As per Table-1	Protocol	Modbus RTU
Accuracy	±0.25% of FS ±1 Count for TC, RTD input ±0.1% of FS ±1 digit for Linear input	Baud Rate	9600, 19200, 38400
ADC Resolution	16 bits	Alarm Output	
Display Resolution	0.1 / 1.0 °C	Relays	1 or 2 (If control output is AO)
Sampling Rate	5 Samples/sec	Type	Single Change over (C, NO, NC)
CJC Error	±2.0 °C	Rating	5A @ 230V AC / 30V DC
Sensor open	All inputs except 0-5V / 0-10 V	Transmitter supply	24V DC (±10%) @26mA (Current limited)
Sensor Burnout current	0.25uA	Power supply	
RTD excitation current	0.166 mA Approx.	Standard	85-265V AC/ 100-300V DC
NMRR	> 40dB	Optional	18-36V DC
CMRR	> 120dB	Power Consumption	<10 VA
Temp-co	< 100ppm for Input to Display < 150ppm for Input to retransmission output	Isolation (Withstanding voltage)	
Input Impedance	> 1MΩ (Voltage) / 250Ω (Current)	Between primary terminals* and secondary terminals**: <b>At least 1500 V AC for 1 minute</b>	
Max Voltage	20V DC	Between primary terminals* and grounding terminal: <b>At least 1500 V AC for 1 minute</b>	
Display and Keys		Between grounding terminal and secondary terminals**: <b>At least 1500 V AC for 1 minute</b>	
Process Value	0.56", 4-digit, Red 7 segment LED	Between secondary terminals**: <b>At least 500 V AC for 1 minute</b>	
Set Value	0.4", 4-digit, Green 7 segment LED	* Primary terminals indicate power terminals and relay output terminals.	
Status Indication	Discrete LEDs (Relay and Communication), (A/M, SSR)	** Secondary terminals indicate analog I/O signal and Communication O/P.	
Keys	SEL, A/M, Up, Down	<b>Insulation resistance:</b> 20MΩ or more @ 500 V DC between power terminals and grounding terminal	
Output		Physical	
Control Type	On/Off, P, PI, Auto tune PID	Gas Groups	
Manual offset	±50% of P band	IIA/IIB	IIC
Proportional band	0.0 to 999.9 or 0 to 9999	Dimensions (mm)	150(H) x 150(W) x 120(D) 180(H) x 165(W) x 140(D)
Integral time	0(off) to 1000 sec	Weight	2.6 Kg 3 Kg
Derivative time	0(off) to 180 sec	Enclosure	Flameproof (Explosion Proof) EX-d
Cycle time	1 to 60 sec For SSR 10 to 300 sec (Hyst in on/off mode) For Relay	Area Classification	Zone 1 & 2
Relay Control Output (STD)		Ingress Protection	IP65
Relays	1 No	Mounting	
Type	Single Change over (C, NO, NC)	Mounting	Wall mount using 4 Nos of M8 size bolts
Rating	5A @ 230V AC / 30V DC	Plug/Gland details	2 nos of 3/4" ET Cable glands & 3 nos of Blind plugs
SSR Control Output (Option)		Environmental	
Rating	11V DC@20mA	Operating temperature	0-55 °C
Resolution	10 msec	Storage temperature	0-80 °C
Analogue MV Output (Option)		Humidity	30-95 % RH non-condensing
Current	0-20mA/4-20mA @500Ω Max	Table 1: Display Range	
Voltage	0-5V/ 1-5V/ 0-10V @3KΩ Min	Input Type	
Accuracy	0.25% of FS	Ranges	
Analogue PV Output (Option)		Thermocouple	E -200 to 1000 °C
Current	0-20mA/ 4-20mA @500Ω Max	J -200 to 1200°C	K -200 to 1372°C
Voltage	0-5V/ 1-5V/ 0-10V @3KΩ Min	T -200 to 400°C	B 450 to 1800°C
Accuracy	0.25% of FS	R 0 to 1768°C	S 0 to 1768°C
		S -200 to 850°C	
		RTD Pt100	
		Voltage/Current 0/1-5V	
		0/4 -20mA (Ext. 250Ω)	
			-1999 to 9999

## Ordering Code

Model	Input		Power Supply		Control Output Type		Output Option		Gas Groups			
							1 (AO1*)	2 (AO2** or RS485)				
LC5296-XP-AT	X	X	X	X	X	X	X	X	X	X		
	1	E	U1	85-265V AC/ 100-300V DC	1	Relay	N	None	N	None	1	IIA & IIB
	2	J	U2	18-36V DC	2	SSR	1	4-20 mA	1	4-20 mA	2	IIA, IIB & IIC
	3	K			3	AO1*	2	0-20 mA	2	0-20 mA		
	4	T			4	Relay - On/Off	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	Pt100										
	C	1 to 5V										
	D	0 to 5V										
	E	4-20mA										
	F	0-20mA										
	G	0-10V										

\*Configurable as MV or PV  
\*\* PV only  
\*When AO1 is selected as control o/p type, than in Output option AO1 type must be selected from ordering code