



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. For the first time 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 but is also available for 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
- **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 | |
|------------------------|---|
| Input Type | Thermocouple (E, J, K, T, B, R, S), RTD (Pt100), Current (Ext. 250Ω), Voltage |
| Display Range | Table-1 |
| Accuracy | ±0.25% of FS |
| 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 | SEL, A/M, Up, Down |

| 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 | |
|---------------------|-----------------------------------|
| Dimensions (mm) | 180(H) x 150(W) x 140(D) |
| Enclosure | Flameproof (Explosion Proof) EX-d |
| Area Classification | Zone 1 & 2 |
| Gas Groups | I, IIA & IIB |
| Ingress Protection | IP65 |
| Weight | 3.1 Kg approx |

| Mounting | |
|--------------|--|
| Mounting | Wall mountings with the help of 4 NOS bolts of size M8 |
| Plug Details | 3 Blind Plug & 2 Cable gland ¾"ET |

| 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 |
| | 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 |
| | S | 0 to 1768°C |
| RTD | 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-XP-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 | | | | | | | | |

*Configurable as MV or PV
 ** PV only

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