# Temperature Controller

# PID500

48 x 48mm

## Features :

- 4+4 Digits, 7 Segment LED dual display
- Universal input
- ON - OFF/ PID control
- °C/°F selectable
- Heat cool PID
- Ramp soak
- Soft start
- RS485 Communication MODBUS RTU Protocol
- Retransmission analog output

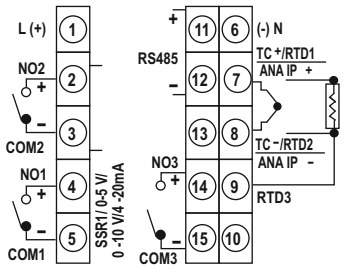
Certifications : CE

## Technical specifications

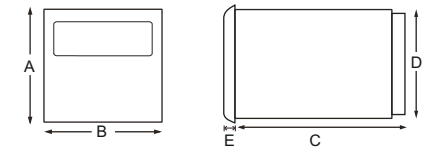
| | |
|---|---|
| **Display specifications** | |
| Display | 4+4 digits 7 Segment LED dual display |
| Height of display | Upper display: 10mm, Lower display: 7mm |
| LED indication | 1: Main output ; 2, 3: Alarm output ; M: Manual output ; T: Tune |
| **Input specifications** | |
| Inputs | Thermocouple (J, K, T, R, S, C, E, B, N, L, U, W, Platinel II), RTD (PT100)<br>Signal inputs (-5 to 56mV, 0 to 10V, 0 to 20mA DC) (Programmable scale type) |
| Resolution | 1/ 0.1 for TC/ RTD only (fixed 1° resolution for R & S type TC)<br>Decimal point position selectable : 1/ 0.1/ 0.01/ 0.001 for analog input |
| Indication accuracy | For TC inputs: 0.25% of F.S. ±1°<br>For R & S type TC inputs: 0.5% of F.S. ±2° (20 min of warm up time for TC inputs)<br>For RTD input: 0.1% of F.S. ±1° For Analog input: ±0.5%, ±1° digit (F.S. = Full scale) |
| Temperature unit | °C/°F selectable |
| Input filter (FTC) | 1 to 99 sec, OFF |
| Sampling time | 200 ms |
| **Output specifications** | |
| **Control output** (Optional) | 1 |
| Contact rating (SPST) | 5A @ 230 VAC/ 30 VDC, resistive |
| SSR drive (Voltage pulse) | 12 VDC, 20 mA |
| Current | 4 to 20mA DC (loop impedance: 500Ω max) |
| Voltage | 0 to 10 VDC (load resistance: 10KΩ min) |
| **Auxiliary output** (Optional) | 2 |
| Contact rating (SPST) | 5A @ 230 VAC / 30 VDC |
| SSR drive | 12 VDC, 20 mA |
| **Retransmission** | |
| Current | 4 to 20mA DC (loop impedance : 500Ω max) |
| Voltage | 0 to 10 VDC (load resistance : 10KΩ min) |
| Update rate | 100 msec |
| **Functional specifications** | |
| Control action | 1) PID Control 2) ON-OFF control |
| Proportional band (P) | 0.0 to 400.0°C |
| Integral time (I) | 0 to 3600 sec |
| Derivative time (D) | 0 to 200 sec |
| Cycle time | 0.1 to 100.0 sec |
| Hysteresis width | 0.1 to 99.9° |
| Manual reset value | -19.9 to 19.9° |
| **Heat-cool** | |
| Control action | PID/ ON-OFF |
| Proportional band-cool | 0.0 to 400.0° |
| Cycle time-cool | 0.1 to 100 sec |
| Dead band | Programmable from set point low limit to set point high limit. |

| | |
|---|---|
| **Settings for alarm output** | |
| Modes | Deviation high/ low, Absolute high/ low, Band, Sensor break |
| Hysteresis | 0.1 to 99.9° |
| Ramp rate | 1 to 9999°/ hr |
| Soak time | 0 to 1440 min |
| Soft start time | 0 to 999 min |
| **Auxiliary supply specifications** | |
| Supply voltage | 90 to 270 VAC/ DC (50/ 60Hz) |
| Power consumption | 5 VA max @ 230 VAC |
| **Environment specifications** | |
| Temperature | Operating: 0°C to 50°C (32 to 122°F); Storage: 20°C to 75°C (-4 to 167°F) |
| Humidity (non - condensing) | 85% RH |
| **Mechanical specifications** | |
| Mounting | Panel |
| Weight | 105 gms |
| **Optional specifications** | |
| Serial communication | |
| Interface standard | RS485 |
| Communication address | 1 to 99, maximum of 32 units per line |
| Transmission mode | Half duplex |
| Transmission protocol | MODBUS RTU |
| Transmission distance | 500 m maximum |
| Transmission speed | 9600, 4800, 2400, 1200, 600, 300 bits/ sec |
| Parity | None, Odd, even |
| Stop bits | 1 or 2 |
| Response time | 100 ms (Max and independent of boud rate) |

## Terminal connections




## Dimensions (All are in mm)




| MODEL / DIM | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| PID500 | 52 | 52 | 100 | 45 | 4 | 46 | 46 |

## Compliance

| Applicable EMI / EMC Standards | | |
|---|---|---|
| **Product Standard :** IEC 61326-1 | | |
| **Category** | | **Standards Compliance** |
| ESD Immunity | IEC 61000-4-2 | Level III |
| Surge Immunity | IEC 61000-4-5 | +/- 2 kV common mode,<br>+/- 1 kV differential mode |
| Radiated Susceptibility | IEC 61000-4-3 | Level III, 80 to 1000MHz<br>Level II, 1.4GHz to 2GHz<br>Level I, 2GHz to 2.7GHz |
| Conducted Susceptibility | IEC 61000-4-6 | Level II |

| Applicable EMI / EMC Standards | | |
|---|---|---|
| **Product Standard :** IEC 61326-1 | | |
| **Category** | | **Standards Compliance** |
| Voltage Dips and Interruptions | IEC 61000-4-11 | **Dips** : 0% residual voltage / 1 cycle (Criteria B), 40% residual voltage / 10 cycles 50Hz / 12 cycles 60Hz (Criteria C)70% residual voltage / 25 cycles50Hz / 30 cycles 60Hz (Criteria C)<br>**Interruptions** : 0% residual voltage / 250 cycles 50Hz / 300 cycles 60Hz (Criteria C) |
| Conducted Emission | CISPR-11 | Class A (150KHz to 30MHz) |
| Radiated Emission | CISPR-11 | Class A (30MHz to 1GHz) |
| Electrical Fast Transient | IEC 61000-4-4 | Level III |

## Ordering information

| Product code | Output 1 | Output 2 | Output 3 | Comm. (RS485) | Supply voltage | Certification |
|---|---|---|---|---|---|---|
| **PID500-2-0-04** | 4-20mA | RELAY (5A) | RELAY (5A) | YES | 90 to 270 VAC/ DC | --- |
| **PID500-2-0-04 V2-CE** | 4-20mA | RELAY (5A) | RELAY (5A) | YES | 90 to 270 VAC/ DC | CE |
| **PID500-3-0-00** | 0 - 10V | RELAY (5A) | --- | --- | 90 to 270 VAC/ DC | --- |
| **PID500-3-0-00 V2-CE** | 0 - 10V | RELAY (5A) | --- | --- | 90 to 270 VAC/ DC | CE |
| **PID500-0-0-01 V2-CE** | RELAY (5A) | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | CE |
| **PID500-0-0-01** | RELAY (5A) | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | --- |
| **PID500-0-0-04** | RELAY (5A) | RELAY (5A) | RELAY (5A) | YES | 90 to 270 VAC/ DC | --- |
| **PID500-0-0-04 V2-CE** | RELAY (5A) | RELAY (5A) | RELAY (5A) | YES | 90 to 270 VAC/ DC | CE |
| **PID500-2-0-01** | 4-20mA | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | --- |
| **PID500-2-0-01 V2-CE** | 4-20mA | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | CE |
| **PID500-1-0-01** | SSR (12V DC) | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | --- |
| **PID500-1-0-01 V2-CE** | SSR (12V DC) | RELAY (5A) | RELAY (5A) | --- | 90 to 270 VAC/ DC | CE |
| **PID500-1-0-00** | SSR (12V DC) | RELAY (5A) | --- | --- | 90 to 270 VAC/ DC | --- |
| **PID500-1-0-00 V2-CE** | SSR (12V DC) | RELAY (5A) | --- | --- | 90 to 270 VAC/ DC | CE |