

AUTO-TUNE PID



WESMAN

COMBUSTION EQUIPMENT

TEMPERATURE CONTROLLER

The Fuzzy Logic plus PID microprocessor-based controller series, incorporate two bright, easy to read 4-digit LED displays, indicating process value and set point value. The Fuzzy Logic technology enables a process to reach a predetermined set point in the shortest time, with the minimum of overshoot during power-up or external load disturbance.

WTC 4848 is a 1/16 DIN size panel mount controller. WTC 7272 is a 72X72 DIN size panel mount controller. WTC 4896 is a 1/8 DIN size panel mount controller and WTC 9696 is a 1/4 DIN size panel mount controller. These units are powered by 11-26 or 90-264 VDC/VAC supply, incorporating a 2 amp. control relay output as standard. The second output can be used as cooling control, or an alarm. Both outputs can select triac, 5V logic output, linear current or linear voltage to drive external device. There are six types of alarm plus a dwell timer can be configured for the third output. The units are fully programmable for Pt100 and thermocouple types J, K, T, E, B, R, S, N, L with no need to modify the unit. The input signal is digitized by using a 18-bit A to D converter. Its fast sampling rate allows the unit to control fast processes.

Digital communications RS-485 or RS-232 (for WTC-4848, WTC-4896, WTC-9696) are available as an additional option. These options allows the units to be integrated with supervisory control system and software.

A programming port is available for automatic configuration, calibration and testing without the need to access the keys on front panel.

SPECIFICATIONS

POWER

90-264 VAC, 47-63 Hz, 12VA, 5W maximum 11-26 VAC/VDC, 12VA, 5W maximum

SINGLE INPUT

Resolution: 18 bits

Sampling Rate: 5 times / second

Maximum Rating: -2 VDC minimum, 12 VDC maximum (1 minute for mA input)

Temperature Effect: $\pm 1.5 \mu\text{V}/^\circ\text{C}$ for all input except mA input

Temperature Effect: $\pm 3.0 \mu\text{V}/^\circ\text{C}$ for mA input

Sensor Lead Resistance Effect:

T/C: 0.2uV/ohm

3-wire RTD: 2.6°C/ohm of resistance difference of two leads

2-wire RTD: 2.6°C/ohm of resistance sum of two leads



OUTPUT 1/ OUTPUT 2

Relay Rating: 2A/240 VAC, life cycles 200,000 for resistive load

Pulsed Voltage: Source Voltage 5V, current limiting resistance 66Ω.

ALARM

Alarm Relay: Form C, Max. rating 2A/240VAC, life cycles 200,000 for resistive load.

Alarm Functions: Dwell timer, Deviation High/Low Alarm, Band High/Low Alarm, Process High/Low Alarm,

Alarm Mode: Normal, Latching, Hold, Latching/Hold.

Dwell Timer: 0.1 - 4553.6 minutes

DATA COMMUNICATION

Interface: RS-232 (1 Unit), RS-485 (up to 247 units)

Protocol: Modbus Protocol RTU mode

Address : 1 - 247

Baud Rate : 2.4 ~38.4 Kbits/sec

Data Bits : 7 or 8 bits

Parity Bits : None, Even or Odd

Stop Bit : 1 or 2 bits

Communication Buffer : 160 bytes

Keypad: 4 keys

Programming Port: For automatic setup, calibration and testing

Communication Port: Connection to PC for supervisory control

CONTROL MODE

Output 1: Remove (heating) or direct (cooling) action

Output 2: PID cooling control, cooling P band 50~300% of PB

ON-OFF: 0.1 - 90.0°F hysteresis control (P band = 0)

P or PD: 0 - 100.0 % offset adjustment

PID: Fuzzy logic modified

Proportional band 0.1 ~ 900.0°F

Integral time 0 - 1000 seconds

Derivation time 0 - 360.0 seconds

Cycle Time: 0.1 - 90.0 seconds

Manual Control: Heat (Mv1) and Cool (Mv2)

Auto Tuning: Cold start and warm start

Failure Mode: Auto-transfer to manual mode while break or A-D converter damage

Ramping Control : 0 - 900.0° F/minute or
0 - 900.0° F/hour ramp rate

DIGITAL FILTER

Function: First Order

Time Constant: 0, 0.2, 0.5, 1, 2, 5, 10, 20, 30, 60 seconds programmable

ENVIRONMENTAL & PHYSICAL

Operating Temperature: 10°C to 50°C

Storage Temperature: -40°C to 60°C

Humidity: 0 to 90 % RH (non-condensing)

Insulation Resistance: 20 Mohms min. (at 500 VDC)

Dielectric Strength: 2000 VAC, 50/60 HZ for 1 minute

Vibration Resistance: 10 - 55 Hz, 10 m/s² for 2 hours

Shock Resistance: 200 m/s² (20g)

Mouldings: Flame retardant polycarbonate

ORDERING CODE

WTC - 4848

WTC - 4896

WTC - 7272

WTC - 9696

Power Unit

4: 90 - 264 VAC, 50/60 HZ

5: 11 - 26 VAC or VDC

9: Special Order

Signal Input

1: Standard Input

Thermocouple: J, K, T, E,
B, R, S, N, L

RTD: Pt100 DIN, Pt100 JIS

9: Special Order

Output 1

0: None

1: Relay rated 2A/240VAC

2: Pulsed voltage to drive
SSR, 5V/30mA

3: Isolated 4 - 20mA/0 - 20mA

4: Isolated 1- 5V/ 0 - 5V

5: Isolated 0 - 10V

6: Triac output, 1A / 240VAC, SSR

9: Special Order

Output 2

0: None

1: From A relay 2A/240VAC

2: Pulsed voltage to drive
SSR, 5V/30mA

3: Isolated 4 - 20mA /0 - 20mA

4: Isolated 1- 5V/ 0 - 5V

5: Isolated 0 - 10V

6: Triac output, 1A / 240VAC, SSR

7: Isolated 20V/25mA Transducer
Power Supply

8: Isolated 12V/40mA Transducer
Power Supply

9: Isolated 5V/80mA Transducer
Power Supply

A: Special Order

Alarm

0: None

1: From C relay 2A/240VAC

9: Special Order

Communications

0: None

1: RS - 485 interface

1: RS - 232 interface (not available for WTC 7272)

9: Special Order

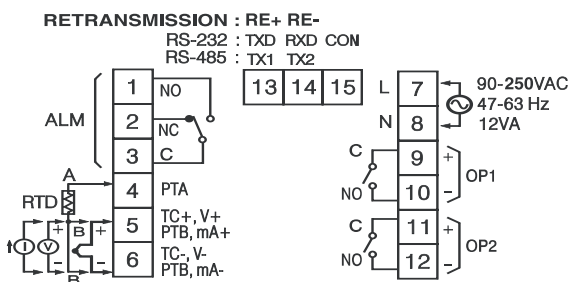
Protective class

0: IP50 standard

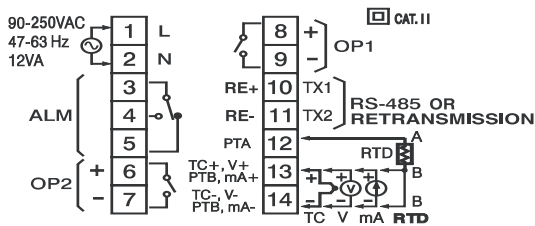
1: IP65 water resistant rubber installed

CONNECTION DIAGRAMS

WTC - 4848



WTC - 7272



WTC - 4896, WTC 9696

