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Temperature controllers



www.delta.com.tw/industrialautomation



Temperature Controllers

Product Features

Delta Temperature Controller is mainly designed to accurately control the temperature in industrial production, equipments, or environment. There are 3 types controllers: DTA (standard), DTB (advanced), and DTC (compact). Also, Celsius or Fahrenheit is selectable to meet user's demand. Main features as the following:

• Various Panel Size

From minimum 48x24 to maximum 96x96. All conform to international specification.

• Quality Guarantee

All series products adopt switching isolation power design with CE, UL, C-Tick international approvals.

• Universal Sensor Inputs

Various built-in input modes. Also, user chooses the sensor based on their demand such as Thermocouple, Platinum RTD and Analog Input.

• Selectable Control Outputs

Relay, Voltage pulse, Current, and Analog input. (Linear Voltage)

• Stable Control

Rapid output response. Output variation cycle: 500ms. Auto-tuning function of PID values enables stable control for different system demand.

• Key Lock Function

To avoid improper operation, controller is equipped with key lock and anti-write functions. Particularly for DTC series, password protection with many levels is added to prevent intended wreck to ensure operation safety.

• RS-485 Communication

Use RS-485 communication with max. transmission speed up to 38400bps. Support MODBUS ASCII/RTU protocols to ensure rapidly stable data transmission.

DTA Standard Type



System Supports

- Input Voltage: 100~240 AC voltage, 85~110%, 50/60Hz
- Built-in EEPROM 4K Bit memory. Data preservation: over 10 years
- Dual 7-segment digital LED display (4 digit)
- Sampling Rate: 0.5 sec/scan
- Auto-Tuning for PID values
- Sensors: Thermocouple, Platinum RTD
- Output Controls: Relay output, Voltage pulse output, Current output
- Control Modes: ON-OFF, PID, and Manual
- 2 groups Alarm output
- Others: Optional CT function for 7272R0

Dimension(mm) W48 × H48 (D80), W72 × H72 (D80),
W96 × H48 (D80), W48 × H96 (D80),
W96 × H96 (D80)

DTB Advance Type



System Supports

- Input Voltage: 100~240 AC voltage, 85~110%, 50/60Hz
- Built-in EEPROM 4K Bit memory. Data preservation: over 10 years
- Dual 7-segment digital LED display (4 digit)
- Sampling Rate: analog input: 0.15 sec/scan, temperature input (Thermocouple or Platinum RTD): 0.4 sec/scan
- Auto-Tuning for PID values
- Sensors: Thermocouple, Platinum RTD, Linear voltage/current input
- Output Controls: Relay output, Voltage pulse output, Current output, Linear voltage output
- Control Modes: ON-OFF, PID, Manual, PID programmable control
- 3 groups Alarm output
- Built-in dual loop output control for heating and cooling
- Others: Optional EVENT and CT functions for some controllers

Dimension(mm) W48 × H24 (D100), W48 × H48 (D80),
W48 × H96 (D80), W96 × H96 (D80)

DTC Compact Type



System Supports

- Input Voltage: 24DC Voltage, +/- 10%
- Built-in EEPROM 4K Bit memory. Data preservation: over 10 years
- LED status display
- Sampling Rate: analog input: 0.15 sec/scan, temperature input (Thermocouple or Platinum RTD): 0.4 sec/scan
- Auto-Tuning for PID values
- Sensors: Thermocouple, Platinum RTD, Linear voltage/current input
- Output Controls: Relay output, Voltage pulse output, Current output, Linear voltage output
- Control Modes: ON-OFF, PID, Manual, PID programmable control
- 2 groups Alarm output (user-defined)
- Built-in dual loop output control for heating and cooling
- Others: three levels password protection setting, wire-saving system, synchronous communication, ID auto-setting

Dimension(mm) W25.2 × H90 (D60)

Temperature Controllers

Functions



■ Support ▲ Part Models Support □ Not Support

Universal Sensor Inputs

▲ DTA ■ DTB ■ DTC

Through parameter setting, user can define the sensor type on demand.

Type and Range: Thermocouple (T, J, K, E, N, R, S, B, L, U, TXK), Platinum RTD (PT100, JPT100), Analog input (0~5V, 0~10V, 0~20mA, 4~20mA)

Auto-Tuning for PID Values

■ DTA ■ DTB ■ DTC

User can use auto-tuning function so that controller will automatically calculate P, I, D values to meet system demand. Meanwhile, required output volume to meet setting can be calculated to ensure the setting time is efficient and accurate.

Various Control Modes

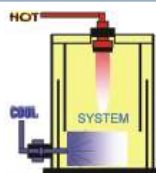
▲ DTA ■ DTB ■ DTC

All series are with built-in PID, ON-OFF, and Manual output. For DTB and DTC, programmable control can be optional to fulfill system demand.

Dual Loop Output Control

□ DTA ■ DTB ■ DTC

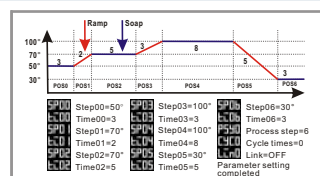
Two built-in control outputs provide heating and cooling to achieve rapid and accurate temperature control on system demand.



Eight built-in patterns for PID Program Control

□ DTA ■ DTB ■ DTC

PID control is with eight patterns (Pattern 0~7). Each pattern contains 8 steps (Step 0~7). User can decide the setting value and time of each step without master controller to complete 64-step temperature and time controls.



Selectable Control Outputs

▲ DTA ■ DTB ■ DTC

It is selectable for control outputs on series demand: Relay, Voltage pulse, Current, Linear voltage.

Specification as below:

- 1 Relay output (R) Single Valve (4824/4848), AC250V/5A resistance load
- 2 Voltage pulse (V) 14DC Voltage, max. output current: 40mA
- 3 Current output (C) 4~20mA DC output (load resistance: less than 600Ω)
- 4 Linear voltage output (L) (excluding DTA) : 0~10V

Alarming Output Setting

■ DTA ▲ DTB ■ DTC

2~3 groups alarming output are available for all series. Each group provides more than 10 alarm types in setting mode.

Support RS-485 Communication

▲ DTA ■ DTB ■ DTC

Support MODBUS ASCII/RTU protocols with baud rate 2400~38400bps. External devices (such as HMI, PC, PLC) can place communication orders and set ID number (1~247) of temperature controllers to complete network connection monitoring.

Key Lock Function

■ DTA ■ DTB □ DTC

To avoid incorrect operation, two key lock functions are provided for DTA and DTB. Lock 1: all parameters and temperature settings can be locked to disable changes. Lock 2: all parameters and temperature settings can be locked except SV value.

Current Transformer Function

▲ DTA ▲ DTB □ DTC

Current Transformer Function is optional for DTB and DTA (7272R0 only). It enables users to read the latest current volume and define current range with integrating alarm output function to inform error status.

EVENT Inputs Option

□ DTA ▲ DTB □ DTC

DTB series provides two optional EVENT inputs. EVENT input allows RUN/STOP operation and two changeable independent temperature settings.

Wire-Saving Module

□ DTA □ DTB ■ DTC

With modular configuration, DTC can monitor up to 8 temperature points. RUN/STOP switch in DTC1000 can control outputs of all external devices connected in parallel. Besides, through DTC1000 power and communication signal inputs, it is no need to wire power and communication cables to spare more flexible space for users.

Flexible Output Selection

□ DTA □ DTB ■ DTC

There are two groups built-in outputs for user's request to define among control output, alarm output, or proportional output (only for linear voltage/current output) and make output operation more flexible and convenient.

Synchronous communication protocol

□ DTA □ DTB ■ DTC

Once DTC1000 is instructed with synchronous communication, all the external controllers in parallel will automatically number in sequential order rather than number each controllers manually by users.

Password Protection

□ DTA □ DTB ■ DTC

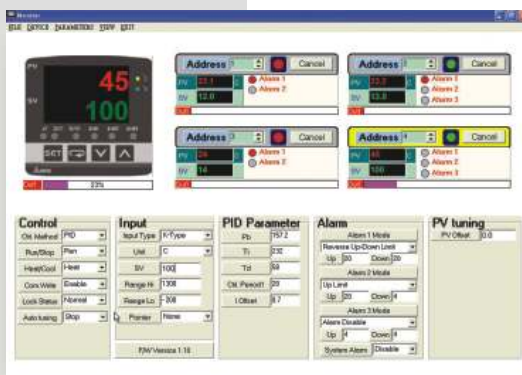
There are three levels password protection for DTC. Once 4-byte password is set, user can not access to communication function until password is decoded to prevent incorrect operation.



Temperature Controllers

DTCCOM Monitoring Software

Parameter Program Setting



DTC communication software supports DTA, DTB, and DTC. Through RS-485 communication interface, it is able to connect many controllers at the same time and monitor the status and setting of controllers. Besides, user can read, set, and save parameters via this Software.

Communication Setting Function

For DTC unknown ID and communication format, this software can automatically search ID number and communication format or define the communication protocol in PC site. Also, with DTCCOM software DTC can modify communication setting and auto-synchronous numbering function of extensions.

Recording Temperature Program



Through RS-485 interface, it is able to monitor 10 temperature controllers in one PC. DTCCOM provides graphic function to record temperature curve and the recorded data can be saved for future review.

Optional Purchase

DTA (Standard type)

DTA ☐ ☐ ☐ ☐ ☐
1 2 3

- Panel : 4848 (W48×H48, 1/16DIN), 4896 (W48×H96, 1/8DIN), 7272 (W72×H72), 9648 (W96×H48, 1/8DIN), 9696 (W96×H96, 1/4DIN)
- Control outputs : R (Relay output, 250VAC, 5A); V (Voltage output, 14VDC, +10~20%); C (Current output, 4~20mA)
- Communication function: 0 (No), 1 (Yes)

DTB (Advanced type)

DTB ☐ ☐ ☐ ☐ ☐ ☐
1 2 3 4

- Panel : 4824 (W48×H24, 1/32DIN), 4848 (W48×H48, 1/16DIN), 4896 (W48×H96, 1/8DIN), 9696 (W96×H96, 1/4DIN)
- Group 1 output : R (Relay output, 250VAC, 5A); V (Voltage output, 14VDC, +10~-20%); C (Current output, 4~20mA); L (Linear voltage output, 0~10V)
- Group 2 output: R (Relay output, 250VAC, 5V); V (Voltage output, 14VDC, +10~-20%)
- Optional functions: E (Event), T (CT); DTB4824 without any optional function

DTC (Compact type)

DTC ☐ ☐ ☐ ☐
1 2 3 4

- Controller position : 1 (the first MPU); 2 (extension in parallel)
- Auxiliary output group : 0 (No)
- Optional function : 00 (No)
- Control output : R (Relay output, 250VAC, 5A); V (Voltage output, 14VDC, +10~-20%); C (Current output, 4~20mA); L (Linear voltage output, 0~10V)