MAXWELL

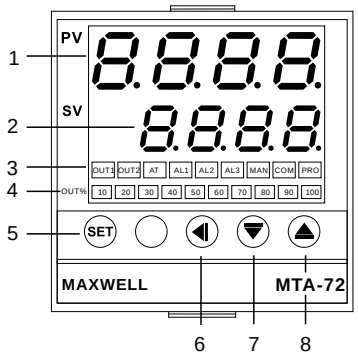
Advanced Version

Digital Temperature Controller

MTA Series — **Advanced PID Temperature Controller**

- Selectable input from panel(TC,RTD,Analog)
- **PID**, Initial power-up overshoot suppression function
- Super large and bright LED Display
- High Measuring accuracy, 0.2%F.S
- Wide range of power supply 85~265VAC
- SSR drive/Relay/4-20mA/Triac output
- Dual Line 4 digits display
- RS-485, 4-20mA Re-Transmission optional
- Decimal points for all input signals.
- C or F display selected on user's discretion
- Alarm standby function intergrated
- Output graphic bar indication
- Soft-start function(analog output only)

Panel Description



1: Measured value (PV) display [RED]
2: Set value(SV)display [GREEN]
3: OUT1lamp: Output indication
OUT2 lamp: Remark lamp
AT lamp: Auto-tuning indication
AL1 lamp: Alarm 1 output indication
AL2 lamp: Alarm 2 output indication
AL3 lamp: Remark lamp
MAN lamp: Remark lamp
COM lamp: Communication indication
PRG lamp: Remark lamp
4 LED bar: Output1 % value indication
5 SET key: Used for parameter calling up and set Value registration
6 ◀ : Shift key and setting SV key
7 ▼ : Down key, decrease numbers
8 ▲ : Up key ,increase numbers

Ordering Information

MTA-□ □ □ □ □ □
1 2 3 4 5 6

1:Size Information

- **48**: 48mm(Width)*48mm(Height)
- **49**: 48mm(Width)*96mm(Height)
- **72**: 72mm(Width)*72mm(Height)
- **96**: 96mm(Width)*96mm(Height)
- **94**: 96mm(Width)*48mm(Height)

2:Output

- **R**: Relay
- **V**: SSR drive
- **D**: 4-20mA
- **M**: Triac

3:Alarm

- **1**: 1 alarm
- **2**: 2 alarms

Temperature Controller/Solid State Relay/Rotary Encoder/Proximity Sensors/Capacitive Sensors

4:Power Supply JP PROGRESS ENGINEERING.CO.LTO

- **96**: 85~265VAC

5:PV or SV Re-Transmission Output

- **N**: Without PV or SV re-transmission
- **P42**: PV re-transmission as 4-20mA
- **P005**: PV re-transmission as 0-5VDC
- **P010**: PV re-transmission as 0-10VDC
- **S42**: SV re-transmission as 4-20mA
- **S005**: SV re-transmission as 0-5VDC
- **S010**: SV re-transmission as 0-10VDC

6:Modus-RTU RS-485 Communication

- **N**: Without RS-485 Communication
- **K**: With RS-485 Communication

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Example: MTA-48-R-1-96-N-K MTA controller, size 48mm*48mm, Relay output, 1 alarm, 85~265VAC source, with RS-485 communication.

General Specifications

Power Supply	:85~265VAC/24DC
Power Consumption	:5 VA(Maximum)
Display	:Dual Line four digits.7 segments LED display
Control method	:P, PID ,PI, PD, ON/OFF(P=0)
Control action	:Reverse(heating) or direct(cooling)
Input	:Thermocouple(K,E,J,N,Wu3_Re25,S,T,R,B,) Pt100(Up to 800 C) Voltage and Current(0-5VDC,0-10VDC,0-50mV,0-20mV,0-20mA 2-10VDC, 1-5VDC, 4-20mA)
Measuring Accuracy	:0.2%F.S
Control Accuracy	:+/- 1 Celsious
Alarm output	:1 alarm/2 alarms
Proportional band(P)	:0.0-200.0
Integral time(I)	:1-3600S
Derivative times(D)	:1-3600S
Control Time(T)	:1-999S
Sampling time(T)	:0.25 second/4 times per second
Ambient Temperature	:0°C~50°C
Memory retention	:yes
Ambient humidity	:45%-85% RH(None Freeze)
Package size	:48mm*48mm(6.5CM*6.8CM*12.5CM),48mm*96mm(10.8cm*12.5cm*6cm) :72mm*72mm(12.5CM*8CM*8.2CM),96mm*96mm(12.5cm*10.1cm*11cm)
Unit Weight	:48mm*48mm(0.18kg),48mm*96mm(0.22kg) :72mm*72mm(0.26kg),96mm*96mm(0.32kg)
Communication	:RS-485 modbus RTU

Power Up Overshoot Supression

The overshoot is common when controller just power up during the PV is getting closer to SV, this controller offers a useful features for application where the overshoot can not be tolerated

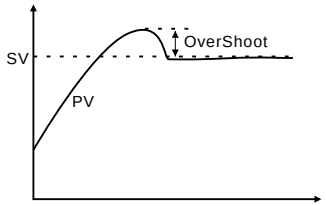


Figure 1

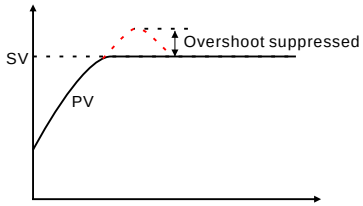
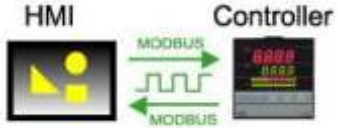


Figure 2

The figure 1 shows significant overshoot after PV reaches to SV, this is harmful to some of system, MTA offers a feature to suppress the overshoot, the PV getting close to SV slowly therefore the overshoot suppressed.

RS-485 Communication(Optional function)



Controller supports Modbus RS-485 RTU protocal, communication between controller and HMI or other equipment is very convenient.

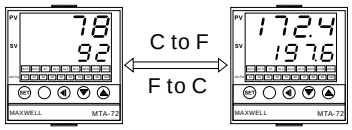
LED display and indicator built together on ONE PCB board

The LED display and LED indicators was built as one panel ,most of controller with their LED display and LED indicator installed separately, the chance of the malfunction is high. This controller with all the display and indicator units built together on one board, makes it easier to install and easy to test with higher reliability.

PV/SV Re-transmission(Optional function)

The PV or SV value can be re-transmitted as analog signal 0-5VDC,0-10VDC,4-20mA, and the re-transmission signal can be feed to recorder, digital display or other device

C or F display selectable



This controller offers display based on Celcius and Fahrenheit. and the display is switchable between C and F.

Decimal points for all input signals

The decimal points display is available for all input signals. For TC and RTD sensors, the resolution is 0.1, for analog signal, the resolution is 0.001.

Temperature Controller/Solid State Relay/Rotary Encoder/Proximity Sensors/Capacitive Sensors

Alarm standby/Suppression function

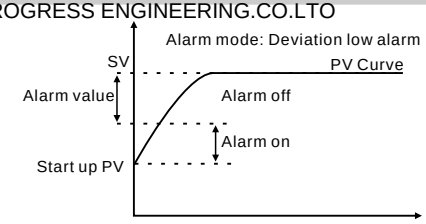


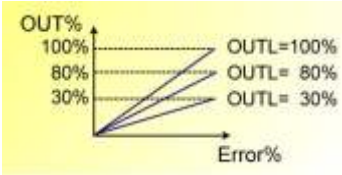
Figure 3

Refer to figure 3, in an application, the alarm mode is deviation low alarm, when machine just powered up, the ambient temperature is within the alarm range, the alarm should be activated but actually there is no problem in the system, the alarm will be suppressed first time.use this function can avoid alarm acts at start-up. the alarm action is suppressed at start-up until PV enters to non-alarm range.

Output graphic bar indication

Output percentage displayed on the bar-graphic in 10 LEDs resolution it's easier to have a close and direct monitor on the output.

Output high/low limit setting

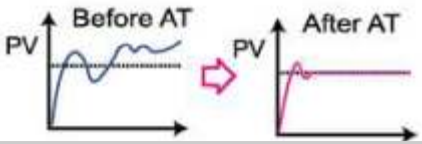


Controller with built-in output limit function, use this function user can set the output high/low limit

Soft-Start function

Controller offers soft-start function when output is analog such as 4-20mA, to maintain a stable system, the output changing rate can be restrained in a certain range, for example, if the output changes from 4mA to 8mA in 1 seconds, then the changing rate is 4mA/S, the changing rate can be restrained within 5%,means in the next seconds, the output only changes between 4mA*(1-5%) to 4mA*(1+5%). which is 3.8mA to 4.2mA. this is very useful features for some of system where the load is sensitive to rapid output changes. it can protect the load from being damaged.

Auto-tuning function



Auto-tuning function can calculate optimized PID values for the control system, best control result can be achieved.

Various input and output