

# MaxWell

## Ramp and Soak Controller/Profile Controller

### Programmable Controller

### MTC-P Serials

**Maximum 32 segments  
4 different programs  
Easy to operate**



- Power supply 85~265Vac 50/60Hz
- High accuracy 0.2%F.S
- Selectable input from panel(TC,RTD,Analog)
- Relay/SSR Drive/4-20mA output
- Heating or cooling control mode
- Various alarm mode
- Auto/Manual bumpless transfer from front panel
- PV/SV re-transmission output optional
- RS-485 communication optional
- Master/Slave communication mode
- 24VDC auxiliary power supply available
- Various program execution mode
- User friendly

### Ordering Information

MTC-

1   2   3   4   5   6   7   8

#### 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:Version Code

- P:** Programmable temperature controller also known as Ramp and soak controller

#### 3:Output

- R:** Relay
- V:** SSR drive
- D:** 4-20mA
- 2:** 0-20mA
- 5:** 0-5VDC
- 6:** 0-10VDC
- 7:** 1-5VDC

#### 4:Alarm options

- 1:** 1 alarm
- 2:** 2 alarms
- 3:** 3 alarms

#### 5:Power supply

- 96:** 85~265VAC

#### 6:Re-transmission

- N:** Without 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

#### 7:Communication

- N:** Without communication
- K:** RS-485 Modbus RTU

#### 8:Auxiliary Power supply

- N:** Without auxiliary power supply
- 24:** 24VDC

### Detailed Features

#### ● Input Signals

TC:K,S,E,J,T,B,N,R  
RTD:Pt100  
Analog signal:0-5V,1-5V,0-10V,2-10V,0-20mV,0-50mV,4-20mA, 0-10mA,0-20mA

#### ● Display

Dual line four digits LED display, bar graphic display. Celcius and Fahrenheit switchable

#### ● Measuring accuracy and resolution

0.2%F.S accuracy, maximum 0.1 resolution for TC and RTD input, 0.001 resolution for analog signal such as 4-20mA.

#### ● Main output

Relay contact output, SSR Drive output, 4-20mA output, 0-20mA output, 0-5Vdc output 0-10Vdc output, 1-5Vdc output

#### ● Control action

Heating or cooling control configurable, PID algorithm. when P=0, ON/OFF control.

#### ● Alarm and alarm mode

Maximum 3 alarms,15 different alarm modes, refer to user manual for detailed alarm modes

#### ● Auto/manual control switch

Auto/manual bumpless switch between each other, available for all sizes except size 48mm\*48mm

#### ● PV/SV Re-transmission function

The process value or setting value can be re-transmitted as analog signal such as 4-20mA

#### ● Decimal pp

The process value or setting value can be re-transmitted as analog signal such as 4-20mA

#### ● Programming

Maximum 4 programs can be programmed, each program with maximum 8 segments, all different program can be linked as one program with maximum 32 segments.

#### ● Output restriction

The maximum output can be restrained in certain range, for example 80%, maximum output can be defined at specific segments

#### ● System timing

The system timing unit can be seconds, hours, or minutes and field configurable

#### ● Program monitoring

Be able to check current running segments and program running time. RS-485 optional for remote monitoring and configuration

#### ● Program control

- >Program can be executed from "0" or from the process value
- >Program can be executed automatically right after power on
- >Program can be executed or terminated from front panel
- >Program can be restored after power failure situation.
- >Program can be configured to repeat itself after finish a program
- >Program can be configured to STOP itself after finish a program

#### ● Holdback function

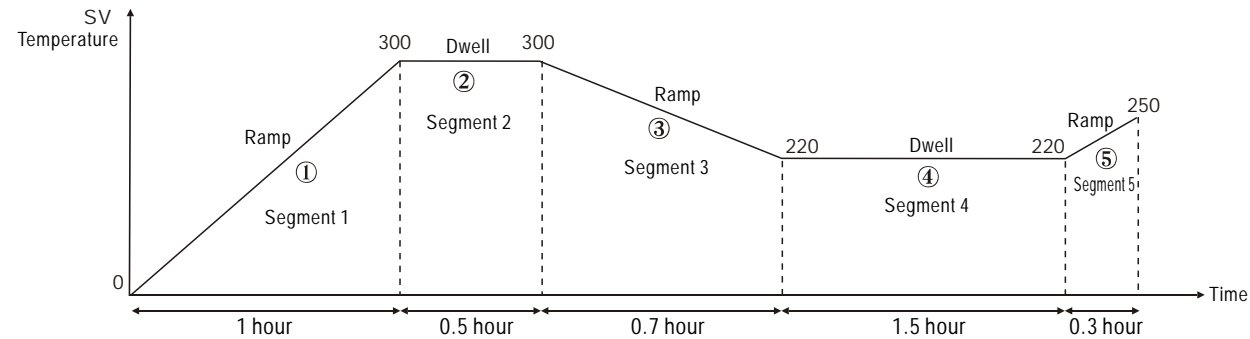
Holdback indicates that the process value is lagging the set point by more than a preset amount and that the program is in HOLD, waiting for the process to catch up.

#### ● Master/Slave communication mode

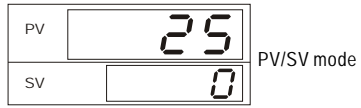
Number of controllers can be connected to a master controller as slave controller, any setting you made to the master controller will be reflected to the slave controller, This will save a lot of time if more controllers are doing the same job at the same time with same settings.

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

Suppose we need a program with 5 segments, using #1 program for the application, check below curve.  
 the maximum output ratio restricted to 80% at segment 4 to avoid damage.  
 system timing unit: hours



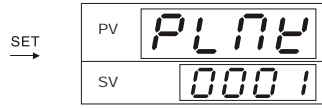
How to create a program like figure shows at right



Press SET until you see PLCK



SET PLCK=2 to access to program configuration menu



SET PLNK=1 to use the #1 program for the application

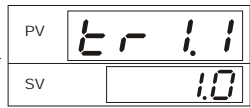


SET PSEL=1 goes to parameter menu for #1 program

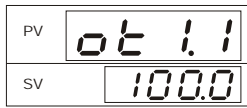


Set the SV for #1 segment at 300C

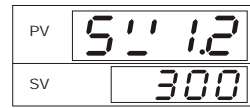
SET



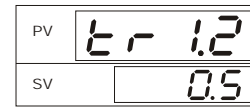
Set the ramp time for #1 segment at 1 hour



Maximum output for #1 segment is 100%

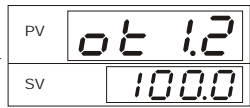


Set the SV for #2 segment at 300

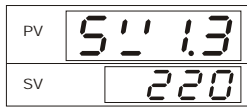


Dwell time for #2 segment at 0.5 hour

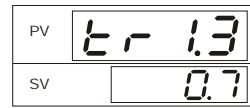
SET



Maximum output for #2 segment is 100%



Set the SV for #3 segment at 220 C

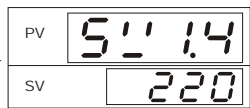


Ramp time for #3 segment is 0.7 hour

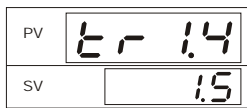


Maximum output for #3 segment is 100%

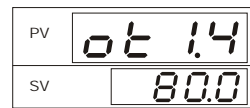
SET



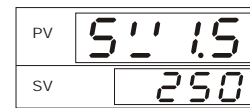
Set the SV for #4 segment at 220 C



Dwell time for #4 segment at 1.5 hour

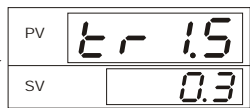


Maximum output for #4 segment is 80%

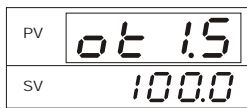


Set the SV for #5 segment at 250 C

SET



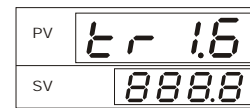
Ramp time for #5 segment is 0.3 hour



Maximum output for #5 segment is 100%

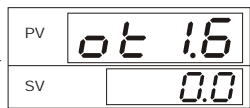


SET SV as any random value for #6 segment



SET any random value for time of #6 segment

SET



SET maximum output as 0.0% for #6 segment

Press SET key for 3 seconds or light press A/M key to save the configuration and exit from the programming menu



PV/SV mode

\*Program automatically terminated

Set the maximum output menu as 0.0% at certain segment if a program less than 8 segments and program ending when it comes to the last segment. in above case, the program only have 5 segments, then set the maximum output for #6 segment as 0.0%, program ends after 5 segments.

\*Program automatically jumping

If a program needs to skip on certain segments, set the segment time as 0.0, when program runs to the segment where the time has been set as 0.0, it will go to next segment automatically, for example, in a program where we want to skip on segment 4, then SET the time for segment 4 as "0.0", then program automatically goes to segment 5 from segment 3.