XMT-808P 30 Segment Program Type

Insruction Manual

（一）function and concept

Program StEP: The NO.of the program StEP can be defined from 1 to 30, and the current StEP is the program StEP being executing.

StEP time: the total running time of the whole program StEP. The unit is minute and the available value range from 1 to 9999.

Running time: time that the current StEP has run. As the running time reaches the StEP time, the program will jump to the next StEP automatically.

Jump: the program can jump to any other steps in the range of 1 to 30 automatically as you programmed in the program StEP, and realize cycle control. If StEP NO. Is modified, the program also will jump. Furthermore if the program StEP reaches and finished the 30^{th} StEP, the program will jump back to the first StEP and run automatically.。

Run/Hold: when program is in the running status, timer works, and set point value changes according to the preset curve. When program is in the holding status, timer stops, and set point remains.

The holding operation can be programmed into the program StEP. When the program meets with the StEP, the StEP time of that is set to zero, or when a jumping StEP jumps to another jumping StEP, the program will get in Hold status. Hold/Run operation can also be performed manually at any time.

Event output: Event output can be programmed in the instrument, it can trigger two alarm contacts to make external equipment operate with interlock.

Power on/power off: means power on of the instrument or unexpected power failure at running status. Altogether 4 handling modes are selectable for user.。

Curve fitting: curve fitting is adopted as a kind of control technology for XMT-808P series instrument. As controlled process often has lag time in system response, by the way of curve fitting the instrument will smooth the turning point of the linear heating-up, cooling-down and constant temperature curves automatically. The degree of the smooth is relevant with the system's lag time, the longer of the lag time, the deeper of the smooth degree. On the opposite the smooth function will be weaker. Generally the shorter of the process lag time (such as temperature inertia), the better of the program control on effect. By the way of the curve fitting to deal with the program curves, will avoid overshoot. Note: The characteristic of the curve fitting will force the program control to generate fixed negative deviation during the linear heating-up and fixed positive deviation during the linear cooling-down, the deviation is direct proportional to the lag time (t) and the speed of heating-up (cooling-down). This phenomenon is normal.

（二）Program operation

1、Setup program

Press the ◁key once and release in the display status , the instrument will be in the setup program status. At first the instrument will display the temperature setpoint of the current StEP, and the last "unit's place) decimal point of the data will flash. Press the ▽key to decrease the data, press the △ key to increases the data, and press the◁ key to shift the decimal point position (cursor). After finish changing the temperature setpoint, press SET key once again, the program value (current StEP time) will be display. In each program StEP the temperature and the time is displayed in turn. Modifying the program during running is allowed. When setup the program, press and hold the ◁key, and press the SET key at the same time, the instrument will exit the program setup status. Press the ▽key may return to set the preceding value.

2、Run/Hold

At stoP status, press and hold the ▽key for about 2 seconds in the display status , until the lower display window displays the "Run" symbol, the instrument then will start the program. At running status, press and hold the▽ key for about 2 seconds until the lower display window displays the "Hold" symbol, the instrument will be in hold status. At the status of Hold, READY and AUTO TUNING, the running indicator lamp flashes. At running status, the RUN indicator lap is on. At Hold status, the program is still executing, and the process value is control led around the setpoint, but the timer stop working, and the running time and setpoint remains. At Hold status, press and hold the

▽key for about 2 seconds, until the lower display window displays the "Run" symbol, the instrument then restart.

3、Stop

Press and hold the △ key for about 2 seconds in the display status until the lower display window displays the "stoP" symbol, the stoP operation is executed now. This operation forces the instrument to stop running, and the StEP number is reset to 1, the event output is cleared, the control output is also stopped, If user want to restart the program, the running operation can be executed and the program will restart form the 1st StEP.

4、Display and modify the running StEP NO.(StEP) of the program

Some times it is expected that the program begin with a certain StEP, or jump directly to one StEP and execute from there. For example, when the current program reaches the 4th StEP but the user hopes to finish the StEP in advance and execute the 5th StEP, the function of modifying the program StEP number will meet you need. Via setting StEP, XMT-808P series instrument can start the program running from any StEP of 30 steps. If steps of the temperature curve the user needed are less than 30 steps. If steps of the temperature curve the user needed are less than 30 steps, the instrument also allows several different curves to be set and executed individually, if only the total steps (include necessary controls steps) don't beyond 30 steps. For example, when a process curve only needs nine program steps, it is possible to set three such process curves in the instrument. Changing the StEP number with the production ill call up deferment curve.

To modify the StEP number, press the SET key once and release, the StEP number will be displayed. Press the △, ▽keys to change the StEP number. The StEP number increases or decreases automatically with the program executing. If the StEP number is manually changed, the running time will be cleared to 0 and program will begin with the new StEP. If the StEP number is not change, pressing the SET key will not affect the program running.

Sometimes it need to set special step for the instrument's complete stop output, so as follows,

Heat control：C30=-999、t30=0,stop heat control and enter into a provisional state.

Cold control：C30=3000、t30=0,stop cold control and enter into a provisional state.

Set the program to 30 step when it need to stop heat or cold, also can set "StEP' to 30 Artificially.

（三）Programming and operation

Programming of XMT series instrument has uniform format of temperature-time-temperature, which means that temperature set current StEP will change to temperature set for next StEP after the time set for the current StEP. The unit of temperature set is ℃ and the unit of time set is minute. The following example includes 6 steps, which is linear temperature heating up, constant temperature, linear temperature cooling down, jump cycling, ready, Hold and event output.

StEP1: C01=100, t01=30 Start linear temperature heating up from 100℃, and the time needed is 30 minutes.

StEP2: C02=400, t02=60 Raise temperature to 400℃, slope of raising curve is 10℃/minute, and the time for temperature to remain constant is minutes.

StEP3: C03=400, t03=120 The StEP for temperature cooling down, slope of cooling curve is 2℃/minute, and the time needed is 120 minutes.

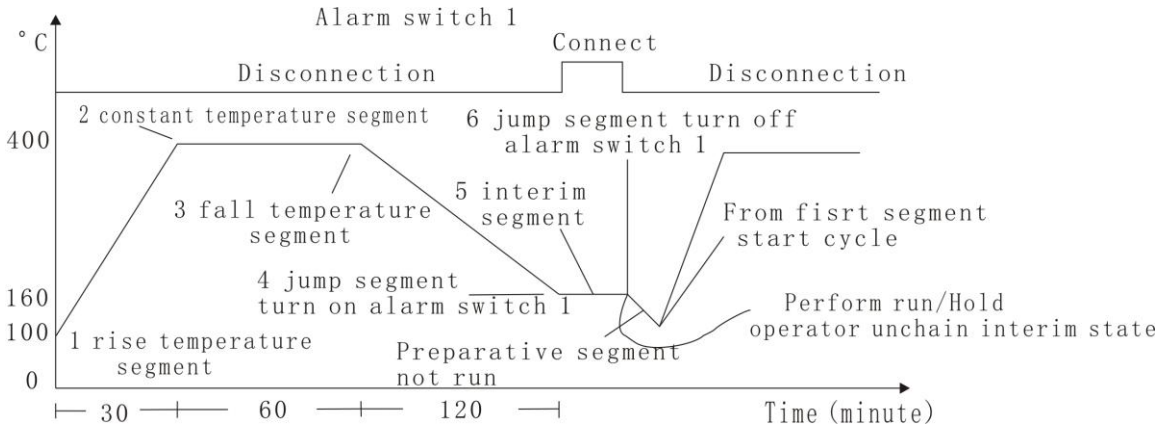
StEP4: C04=160, t04=-35 Temperature cool down to 160℃, then alarm 1 is triggered, and the program jump to StEP5.

StEP5: C05=160, t05=0 The program get in Hold state, and run operation executed by operator is needed for the program to continue running to StEP6.

StEP6: C06=100, t06=-151 Alarm 1 is switch off, and jump to StEP1 to start from beginning.

In this example, it is assumed that the positive deviation alarm is set to 5℃. Because the temperature of StEP 6 is 160℃, and the temperature of StEP1 is 100℃, when program jumps from StEP 6 to StEP1, the program will get in ready state at first, i.e., Control the temperature until the deviation between set point ant PV is less than positive deviation alarm value. After temperature is controlled to 105℃, the program is started up from StEP 1 for temperature heating up. The temperature control block is shown below.

Note: if an alarm condition is satisfied and defined as alarm 1, then alarm 1 cannot be switched off at StEP 6 because alarm 1 is triggered by the alarm occurred.



1、Time setup

t××=1～9999 (min) setting time of NO. ×× StEP

t××=0 the instrument hold on NO. ×× StEP, program is held then

t××=-1～-240 minus value represent an operation command such as: run, Hold, stop, jump and even output, the signification is as follows:

t××=-(A×30+B)

B It is value (range from 1 to 30) of the StEP that the program jump onto

A Dominant two even output, control the work of AL1, AL2 and automatic stop, as follows:

A=0 no effect (for jump function only)

A=1 switch on AL2

A=2 switch on AL1

A=3 switch on AL1 and AL2

A=4 Stop the instrument (B must be set to B=1)

A=5 switch off AL2

A=6 switch off AL1

A=7 switch off AL1 and AL2

Example:

- StEP 4 is defined as: jump to StEP5 and than switch on AL1.
  Time setup is: t04=-(1×30+5)=-35
- StEP6 is defined as: jump to StEP1 and then switch off AL1.
  Time setup is: t06=-(5×30+1)=-151
- Program stop at StEP8
  Time setup is: t08=-(4×30+1)=-121

Note: The program will be held if it jump from a control section to another control section (an Hold action will be inserted between two control sections), external run/Hold operation is needed to release the Hold status. It is not allowed that the jump section jump to itself (for example: t06=-6), otherwise, the Hold status can't be released.

2、Set point setup

Setting range of set point is from –1999 to +9999, indicating the required temperature (℃) or linear defined unit.

3、Program arrangement of multicurve operation

XMT-808P has the advanced function of flexible program arrangement. According to the instrument character that the program will start out from StEP1 on stop status, users can choose different running curve by setting to 1.

For example: There are three curves with the length of 8 steps represent three groups of process parameter. They are separately arranged on StEP2-StEP9, StEP10-StEP17, StEP18-StEP25. Settings are as follows:

T01=-2 Execute the program of curve 1 (StEP2-StEP9)

T01=-10 Execute the program of curve 2 (StEP10-StEP17)

T01=-18 Execute the program of curve 3 (StEP18-StEP25)

Note: If t01 setup is omitted, you can also choose the curves by setting the value of StEP before the program startup. For example, if curve 2 is needed in the current process, StEP must be set to 10 at the very start of program running.

（四）Disposal on power off

Disposal on power off of Step 30 Program Insrument is very important.The purpose of Program on temperature is to improve equipment's automation level,so as to improve productive tempo and product's consistency and percent of pass, debase artificial productive negative factor.But under accidental power off,,if the disposal is not right,it will intermit the execute of Program on temperature.For the disposal on power off of Step 30 Program Insrument,consumer can set by their technical request.so as to avoid the lost by the power off.

No matter how long is the power off, Step 30 Program Insrument can save the current Program step,and can resume when the power on.

Choose three function, A-M parameter define as follows,

A-M=A×1+B×4

A=0 Anyway, the program will jump to 29th segment to begin the program running and clear event output status at the same time. This mode is suitable for the application of an extremely high process demand, in which power failure is not allowed at any time. User may do trouble handling in NO 29 segment, for example, switch on the event output to trigger alarm.

A=1 If these is no deviation alarm after power on, it will continue the program running from the original break point, and the event output state remains. Otherwise, the program will jump to the 29th segment to begin the program running and clear event output status at the same time. This mode is suitable for the application of a fairly high process demand.

A=2 After power on, it will continue the program running from the original break point, and the event output state remains. This mode is suitable for the application in which power failure dose not affect the production.

B=0, series instrument is have control and output when it is hold.

B=1, series instrument is OutL output when it is hold.

Power cut safely

It called Power cut safely when the instrument accord with the following two condition.

1.After the power cut,the power on,it also unfailingly save the running time value in the CPU. The time of power cut should in relation to hardware,currently ,it is 10 minutes.

2.There is no windage when the power on .

If it accord with the two condition,and A-M=1,the instrument is considered as Power cut safely,and can protect production from the damage.

When A-M=2，and it not accord with the condition ,the instrument ‘s current running time will be cleared up.the instrument will renewedly execute the program.