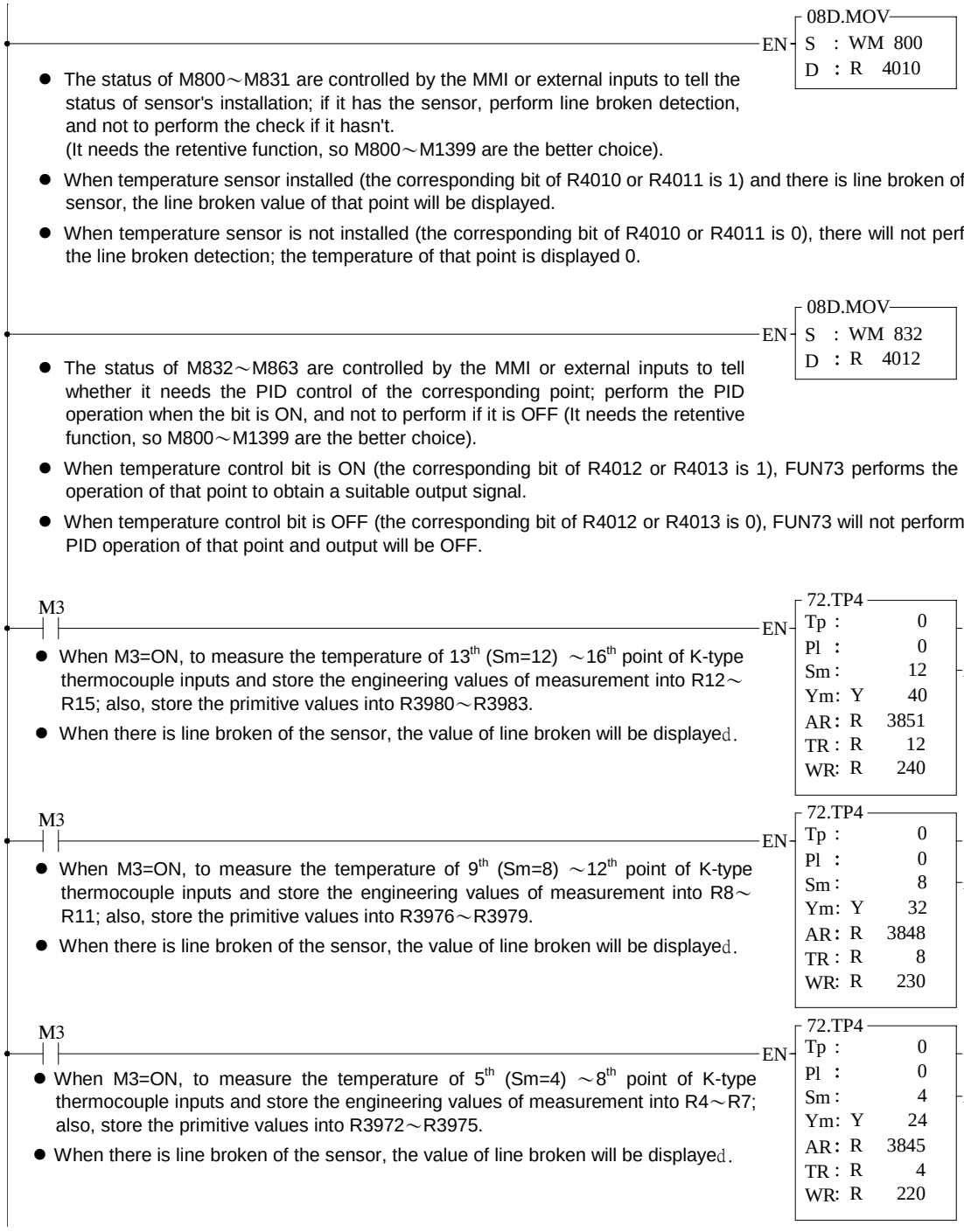
FUN 73 TSTC	Convenient instruction of PID temperature control for FB-2AJ(K)4/FB-2AH(T)4	FUN 73 TSTC

Program example 1 The main unit is FBx-40MC(A) ,and 4 temperature modules of FB-2AK4 are attached. The settings of input span and polarity are all at 0～10V.

*** It takes only one FUN73 instruction to perform 16 points of PID temperature control when the temperature modules are identical in sensor type and the settings of input span and polarity are the same.

*** When performing the FUN73 instruction of the first time, the system will automatically assign to each point its system default of gain (Kc), integral tuning constant (Ti), and derivative tuning constant (Td), etc. The user may change the settings if necessary.



- The status of M800～M831 are controlled by the MMI or external inputs to tell the status of sensor's installation; if it has the sensor, perform line broken detection, and not to perform the check if it hasn't.
  (It needs the retentive function, so M800～M1399 are the better choice).
- When temperature sensor installed (the corresponding bit of R4010 or R4011 is 1) and there is line broken of the sensor, the line broken value of that point will be displayed.
- When temperature sensor is not installed (the corresponding bit of R4010 or R4011 is 0), there will not perform the line broken detection; the temperature of that point is displayed 0.

- The status of M832～M863 are controlled by the MMI or external inputs to tell whether it needs the PID control of the corresponding point; perform the PID operation when the bit is ON, and not to perform if it is OFF (It needs the retentive function, so M800～M1399 are the better choice).
- When temperature control bit is ON (the corresponding bit of R4012 or R4013 is 1), FUN73 performs the PID operation of that point to obtain a suitable output signal.
- When temperature control bit is OFF (the corresponding bit of R4012 or R4013 is 0), FUN73 will not perform the PID operation of that point and output will be OFF.

- When M3=ON, to measure the temperature of 13th (Sm=12) ～16th point of K-type thermocouple inputs and store the engineering values of measurement into R12～R15; also, store the primitive values into R3980～R3983.
- When there is line broken of the sensor, the value of line broken will be displayed.

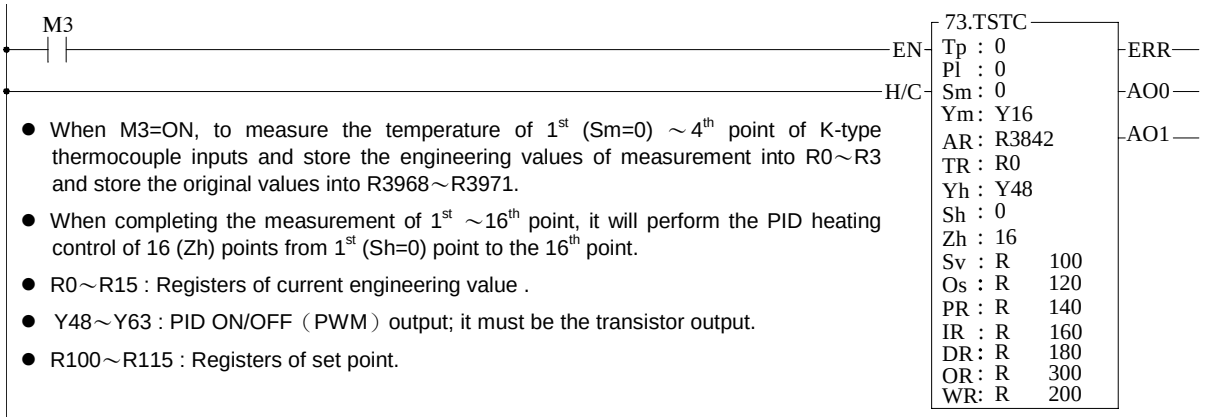
- When M3=ON, to measure the temperature of 9th (Sm=8) ～12th point of K-type thermocouple inputs and store the engineering values of measurement into R8～R11; also, store the primitive values into R3976～R3979.
- When there is line broken of the sensor, the value of line broken will be displayed.

- When M3=ON, to measure the temperature of 5th (Sm=4) ～8th point of K-type thermocouple inputs and store the engineering values of measurement into R4～R7; also, store the primitive values into R3972～R3975.
- When there is line broken of the sensor, the value of line broken will be displayed.

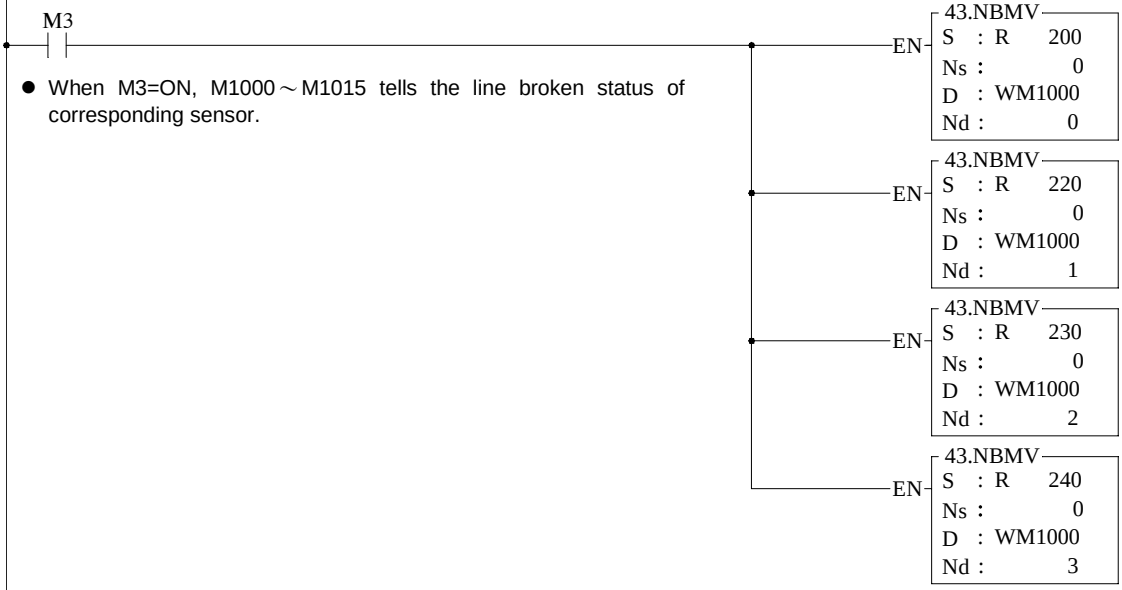
Temperature instruction proper to FB-2AJ(K)4/ FB-2AH(T)4

FUN 73 TSTC	Convenient instruction of PID temperature control for FB-2AJ(K)4/FB-2AH(T)4	FUN 73 TSTC

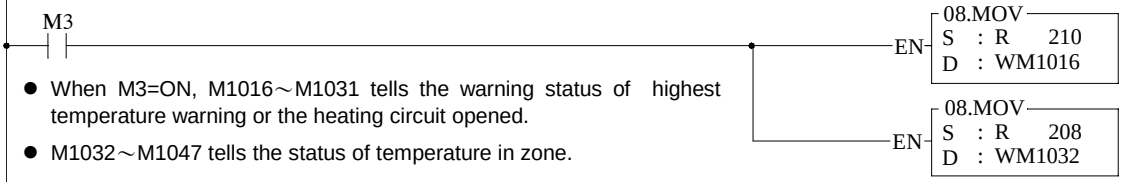
＊When total control points(Zh) of the FUN73 are greater than 4, it must be Sh≧Sm and the registers storing the current values (starting from TR) must be continous.



- When M3=ON, to measure the temperature of 1st (Sm=0) ～4th point of K-type thermocouple inputs and store the engineering values of measurement into R0～R3 and store the original values into R3968～R3971.
- When completing the measurement of 1st ～16th point, it will perform the PID heating control of 16 (Zh) points from 1st (Sh=0) point to the 16th point.
- R0～R15 : Registers of current engineering value .
- Y48～Y63 : PID ON/OFF（PWM）output; it must be the transistor output.
- R100～R115 : Registers of set point.
- R120～R135 : Registers of deviation zone, it determines whether temperature falls in setting range.
  E.g. Set point is 200 and deviation zone is 5,
  then 195≤ Current value ≤ 205 means the temperature is in zone.
- R140～R155 : Setting point of gain (Kc).
- R160～R175 : Setting point of integral tuning constant (Ti)
- R180～R195 : Setting point of derivative tuning constant (Td).
- R300～R315 : Output of PID calculation (value from 0~4095).
- R200～R216 : Working registers.



- When M3=ON, M1000～M1015 tells the line broken status of corresponding sensor.



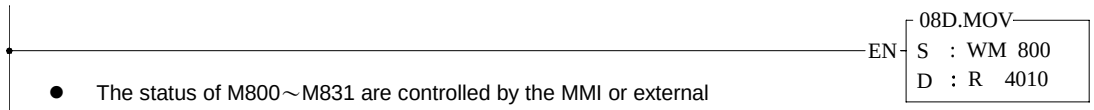
- When M3=ON, M1016～M1031 tells the warning status of highest temperature warning or the heating circuit opened.
- M1032～M1047 tells the status of temperature in zone.

FUN 73 TSTC	Convenient instruction of PID temperature control for FB-2AJ(K)4/FB-2AH(T)4	FUN 73 TSTC

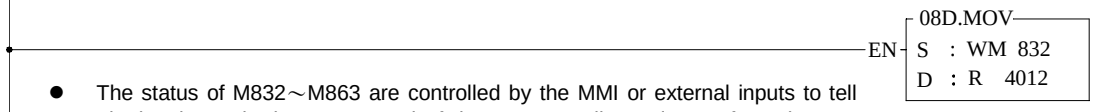
Program example 2 The main unit is FBx-40MC(A) ,and 4 temperature modules of FB-2AH4 are attached. The settings of input span are all at 5V (the polarity are fixed at bipolar).

*** It takes only one FUN73 instruction to perform 16 points of PID temperature control when the temperature modules are identical in sensor type and the settings of input span and polarity are the same.

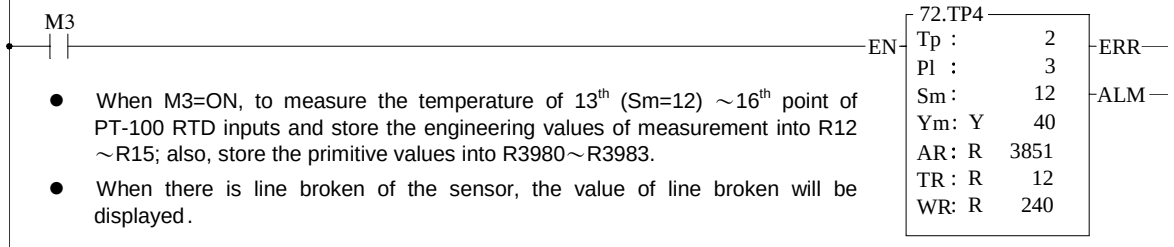
*** When performing the FUN73 instruction of the first time, the system will automatically assign to each point its system default of gain (Kc), integral tuning constant (Ti), and derivative tuning constant (Td), etc. The user may change the settings if necessary.



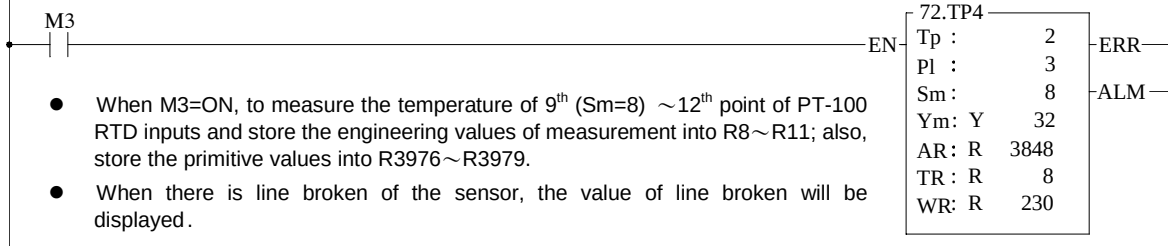
- The status of M800～M831 are controlled by the MMI or external inputs to tell the status of sensor's installation; if it has the sensor, perform line broken detection, and not to perform the check if it hasn't. (It needs the retentive function, so M800～M1399 are the better choice).
- When temperature sensor installed (the corresponding bit of R4010 or R4011 is 1) and there is line broken of the sensor, the line broken value of that point will be displayed.
- When temperature sensor is not installed (the corresponding bit of R4010 or R4011 is 0), there will not perform the line broken detection; the temperature of that point is displayed 0.



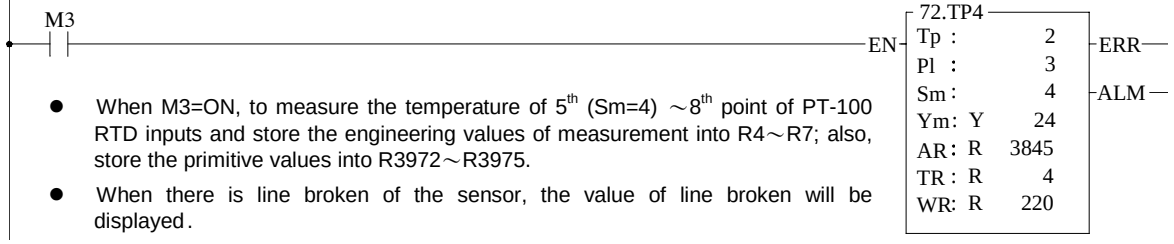
- The status of M832～M863 are controlled by the MMI or external inputs to tell whether it needs the PID control of the corresponding point; perform the PID operation when the bit is ON, and not to perform if it is OFF (It needs the retentive function, so M800～M1399 are the better choice).
- When temperature control bit is ON (the corresponding bit of R4012 or R4013 is 1), FUN73 performs the PID operation of that point to obtain a suitable output signal.
- When temperature control bit is OFF (the corresponding bit of R4012 or R4013 is 0), FUN73 will not perform the PID operation of that point and output will be OFF.



- When M3=ON, to measure the temperature of 13th (Sm=12) ～16th point of PT-100 RTD inputs and store the engineering values of measurement into R12 ～R15; also, store the primitive values into R3980～R3983.
- When there is line broken of the sensor, the value of line broken will be displayed.



- When M3=ON, to measure the temperature of 9th (Sm=8) ～12th point of PT-100 RTD inputs and store the engineering values of measurement into R8～R11; also, store the primitive values into R3976～R3979.
- When there is line broken of the sensor, the value of line broken will be displayed.

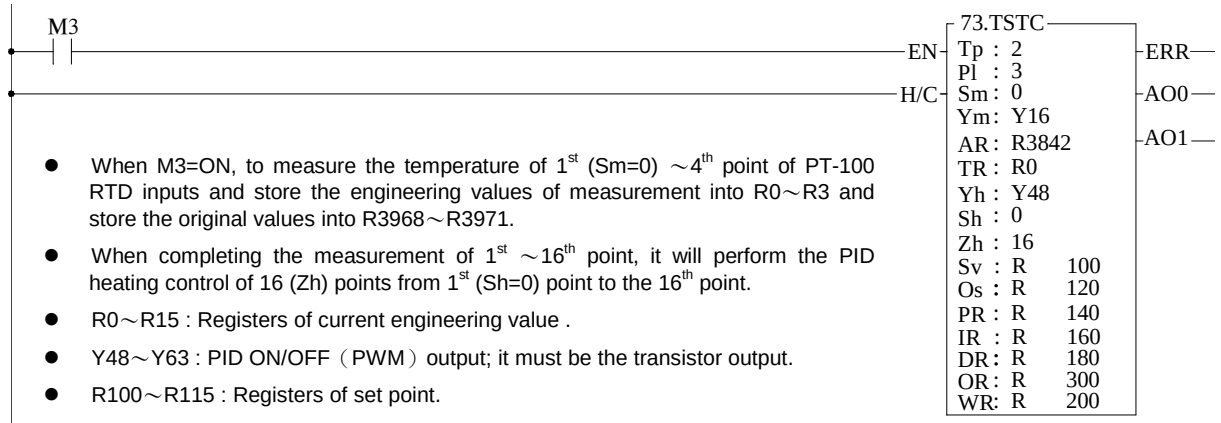


- When M3=ON, to measure the temperature of 5th (Sm=4) ～8th point of PT-100 RTD inputs and store the engineering values of measurement into R4～R7; also, store the primitive values into R3972～R3975.
- When there is line broken of the sensor, the value of line broken will be displayed.

Temperature instruction proper to FB-2AJ(K)4/ FB-2AH(T)4

FUN 73 TSTC	Convenient instruction of PID temperature control for FB-2AJ(K)4/FB-2AH(T)4	FUN 73 TSTC

＊When total control points(Zh) of the FUN73 are greater than 4, it must be Sh≧Sm and the registers storing the current values (starting from TR) must be continous.



- When M3=ON, to measure the temperature of 1st (Sm=0) ～4th point of PT-100 RTD inputs and store the engineering values of measurement into R0～R3 and store the original values into R3968～R3971.
- When completing the measurement of 1st ～16th point, it will perform the PID heating control of 16 (Zh) points from 1st (Sh=0) point to the 16th point.
- R0～R15 : Registers of current engineering value .
- Y48～Y63 : PID ON/OFF（PWM）output; it must be the transistor output.
- R100～R115 : Registers of set point.
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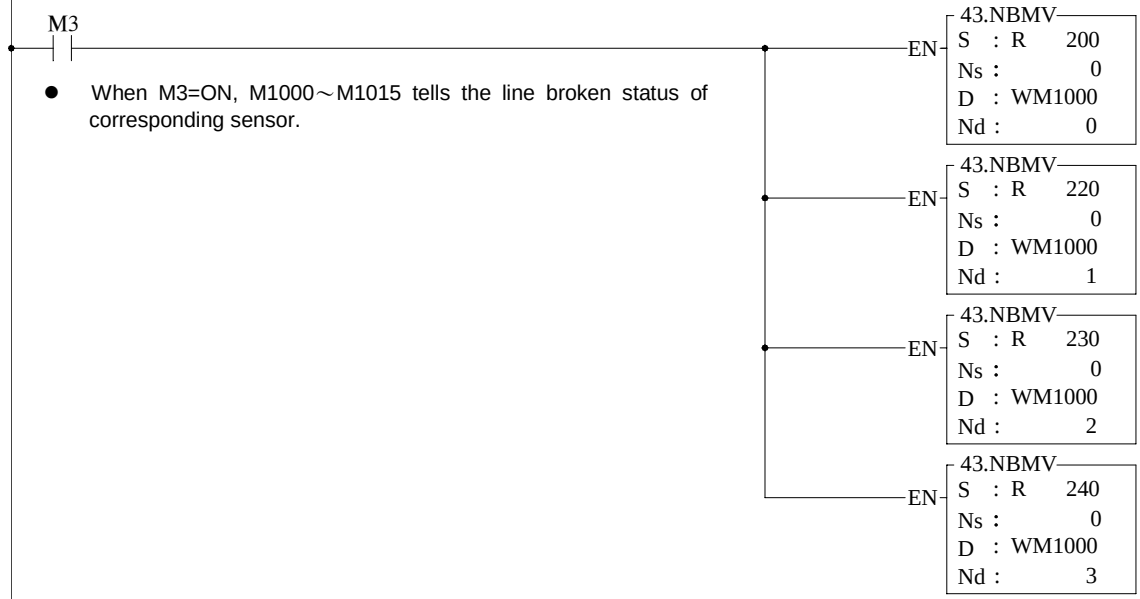
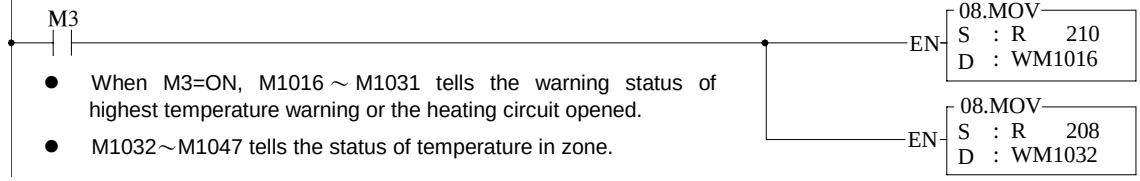
  E.g. Set point is 200 and deviation zone is 5,
  then 195≤ Current value ≤ 205 means the temperature is in zone.
- R140～R155 : Setting point of gain (Kc).
- R160～R175 : Setting point of integral tuning constant (Ti)
- R180～R195 : Setting point of derivative tuning constant (Td).
- R300～R315 : Output of PID calculation (value from 0~4095).
- R200～R216 : Working registers.



- When M3=ON, M1000～M1015 tells the line broken status of corresponding sensor.



- When M3=ON, M1016 ～ M1031 tells the warning status of highest temperature warning or the heating circuit opened.
- M1032～M1047 tells the status of temperature in zone.