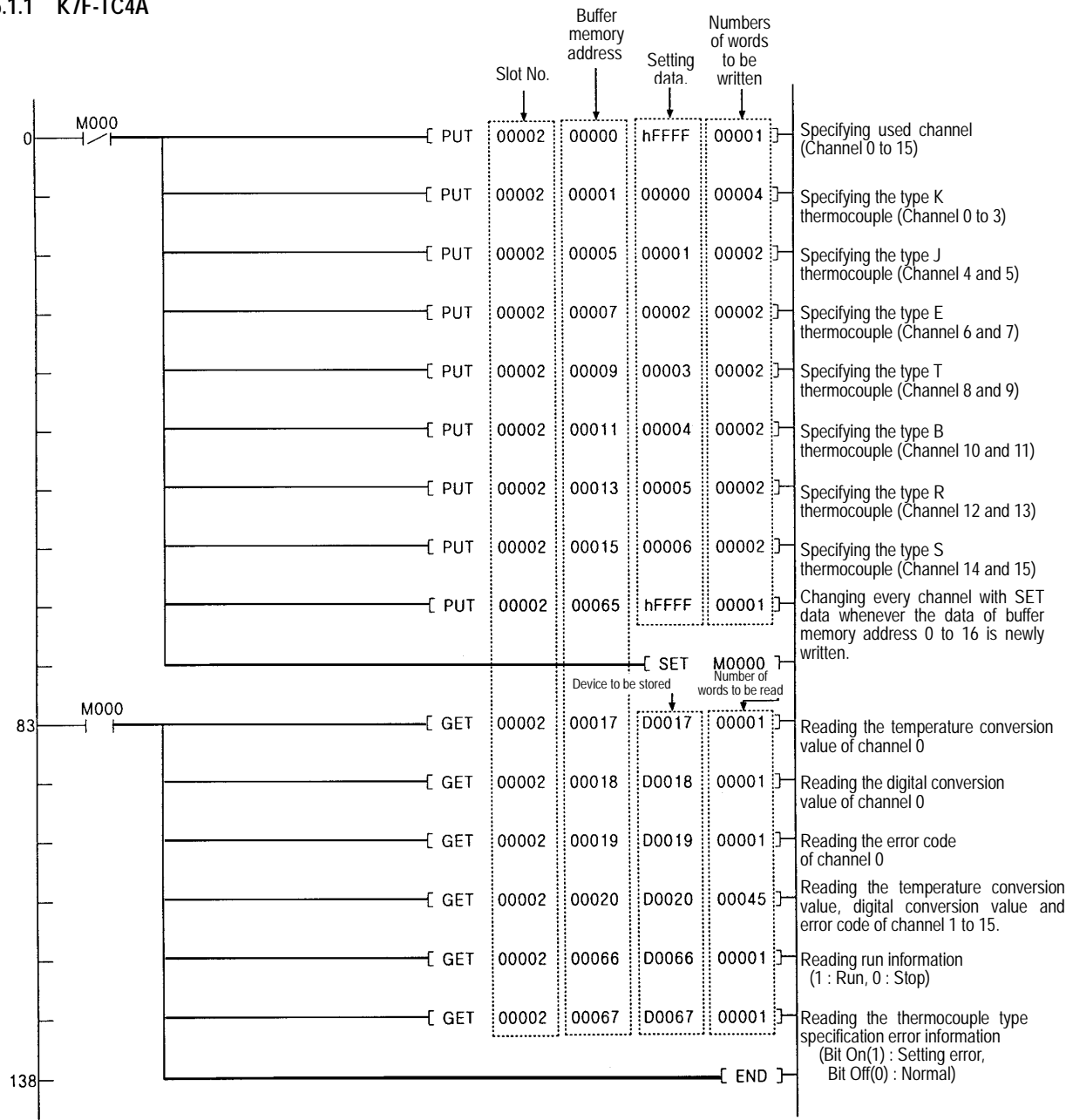


Chapter 5. PROGRAMMING

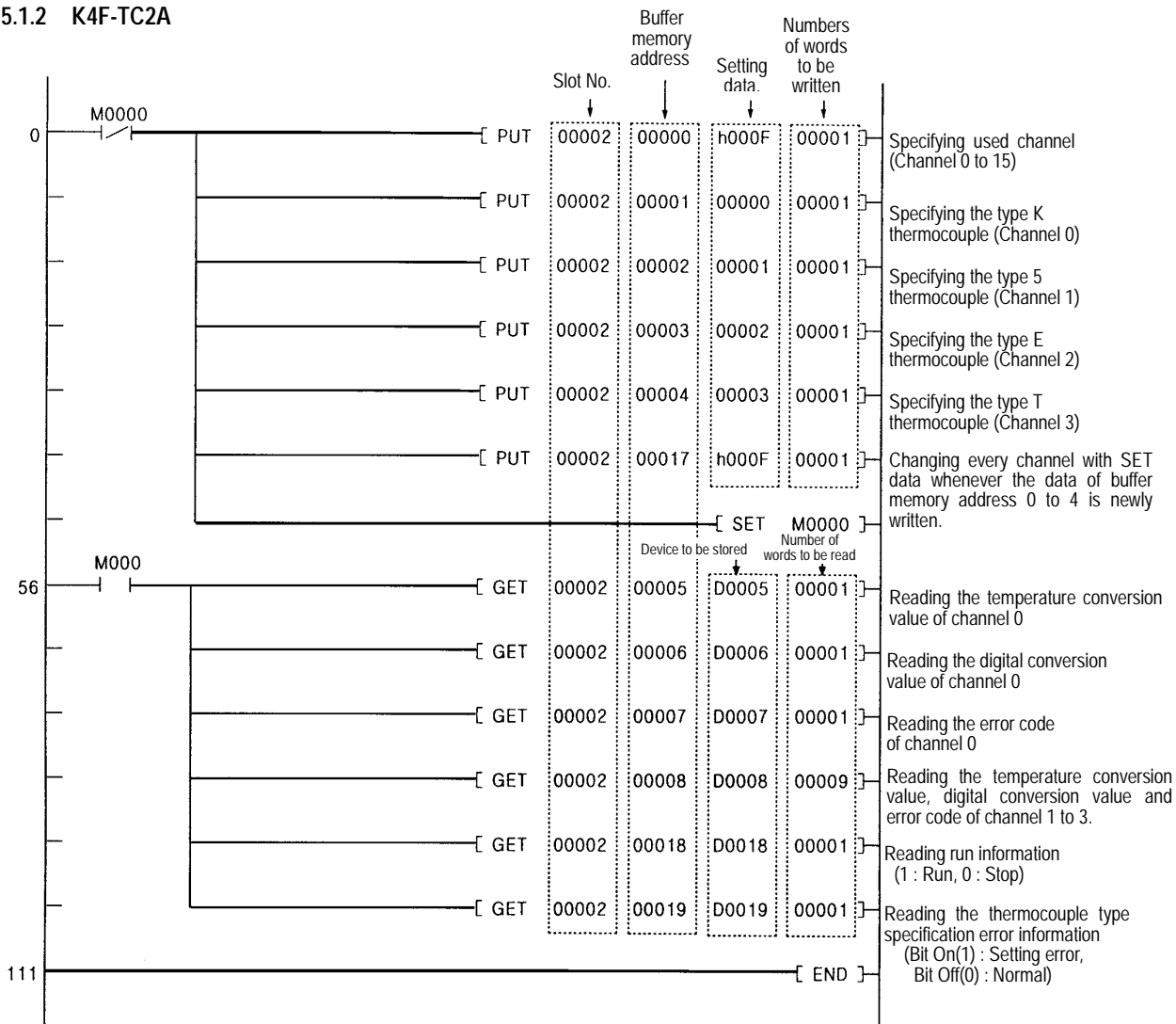
5.1 Basic Programming

- ▶ The following describes the method to set the running conditions in the buffer memories of the thermocouple-input module.
- ▶ The thermocouple input module is already mounted on the slot 2.
- ▶ The thermocouple input module occupies 16 I/O points.

5.1.1 K7F-TC4A



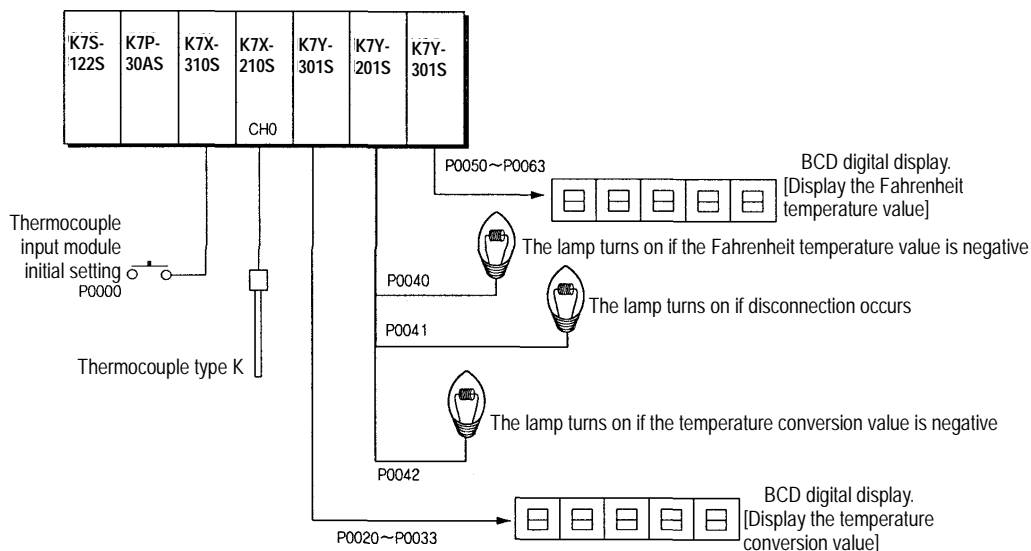
5.1.2 K4F-TC2A



5.2 Application Programming

5.2.1 A program for Converting a Detected Temperature Value(°C) into Fahrenheit(°F) and Outputting as a BCD Value

1) System



2) Initial Setting

- (1) Specifying used channel : Channel 0
- (2) Specifying the type of the thermocouple : Type K

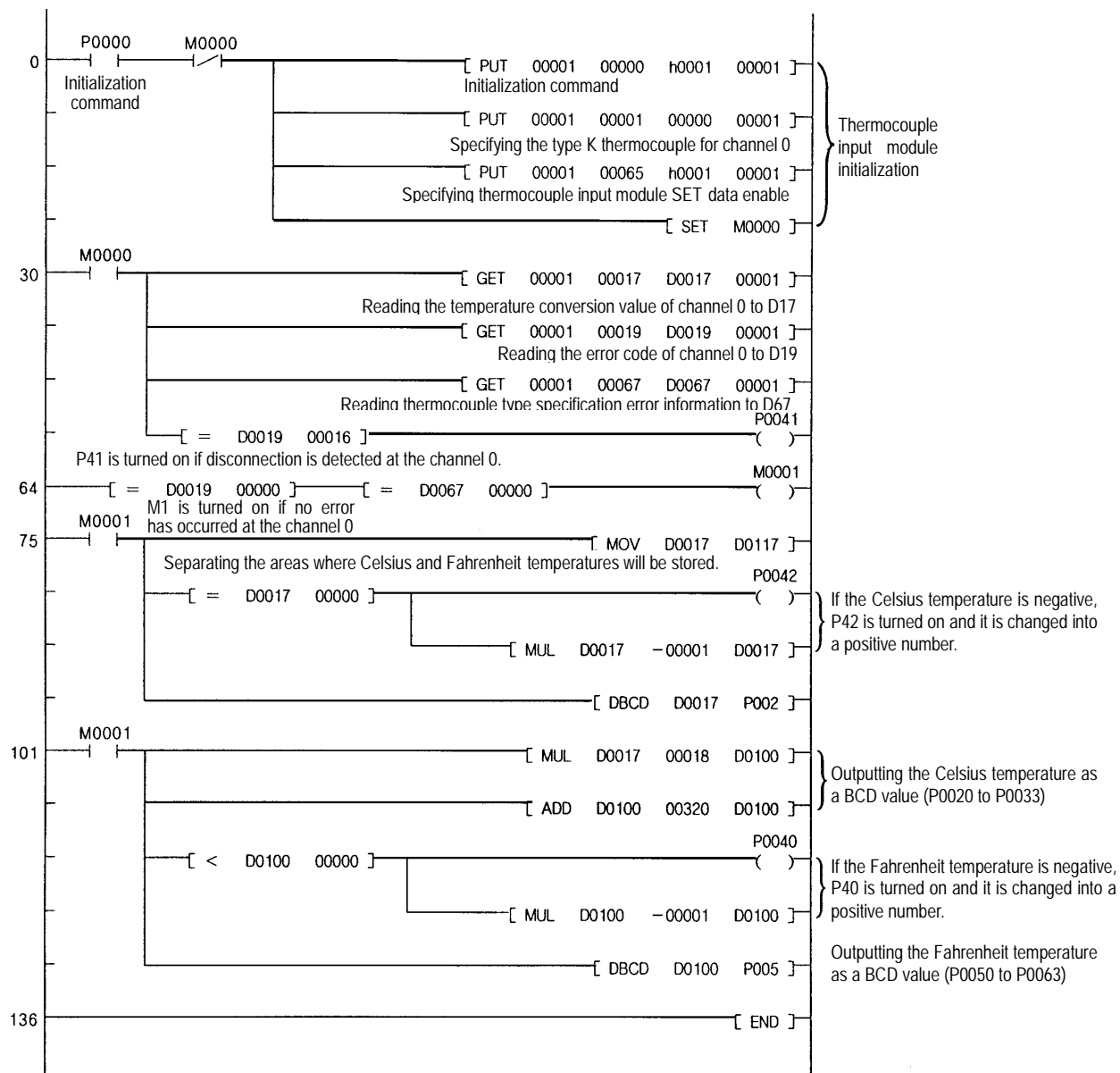
3) Expression for conversion of a temperature conversion value into a Fahrenheit temperature(°F)

$$\begin{aligned}
 \text{Temperature conversion value} &= \text{Detected temperature value} \times 10 \\
 \text{Fahrenheit temperature(°F)} &= \text{Detected temperature value} \times 1.8 + 32 \\
 &= \frac{\text{Temperature conversion value}}{10} \times 1.8 + 32 \\
 &= \frac{\text{Temperature conversion value} \times 18 + 320}{10}
 \end{aligned}$$

4) Program Description

- (1) If P0000 turns on then the thermocouple input module would be initialized.
- (2) The temperature conversion value is displayed on the BCD digital display of P0020 to P0033. If the value is negative the ramp P0042 will turn on.
- (3) After the conversion of the temperature conversion value into a Fahrenheit temperature (°F), it will be displayed on the BCD digital display of P0050 to P0063. If it is negative the ramp P0040 will turn on.
- (4) If disconnection is detected during conversion of temperature of the channel 0, the ramp P0041 will turn on.

5) Program



5.2.2 A Program for Magnitude Comparison of a Detected Temperature Value

1) System Configuration

K7S-122S	K7P-30AS	K7F-TC4A	K7Y-201S		
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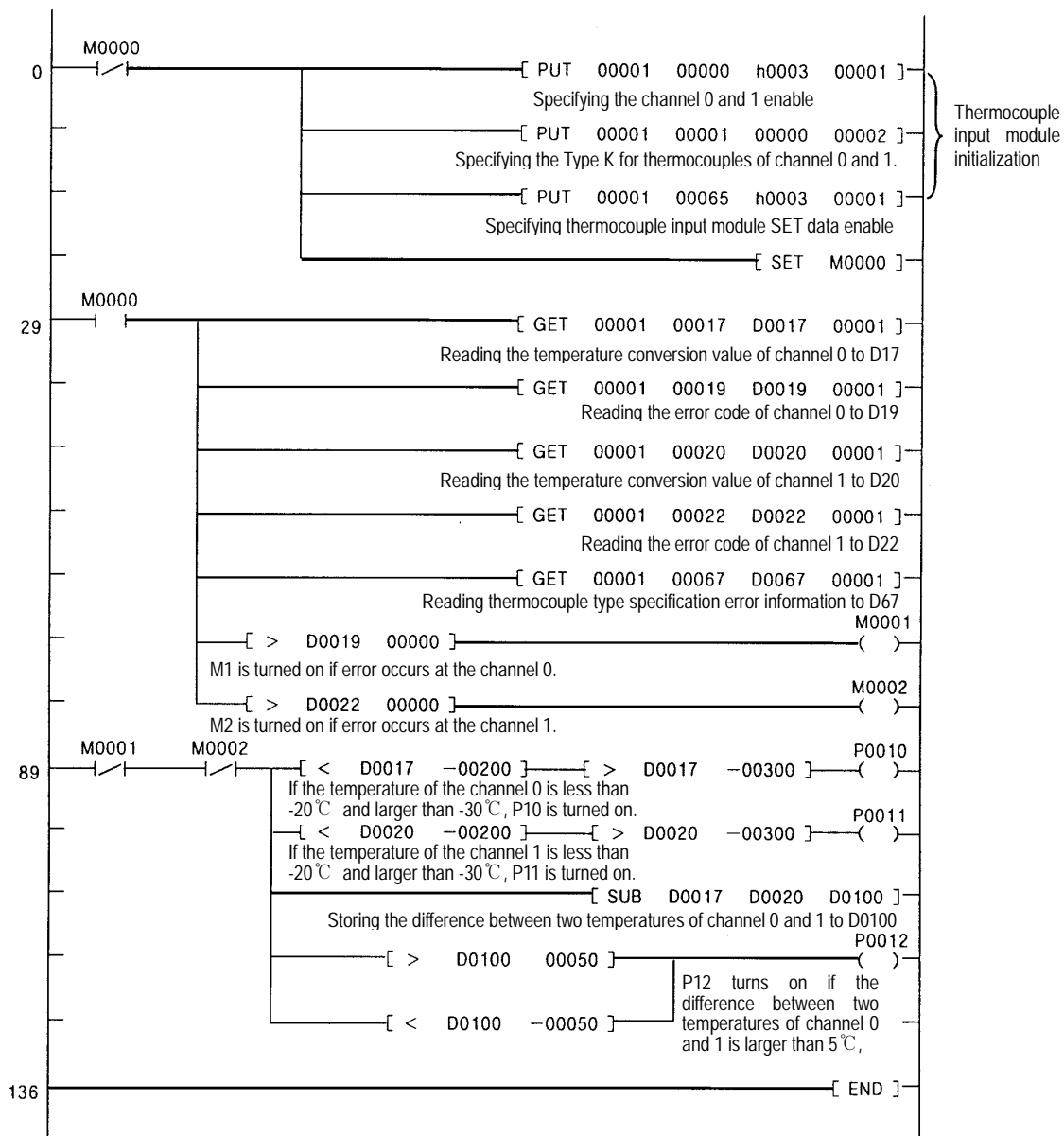
2) Initial Settings

- (1) Specifying used channel : Channel 0, 1
- (2) Specifying the type of the thermocouple : Type K

3) Program Description

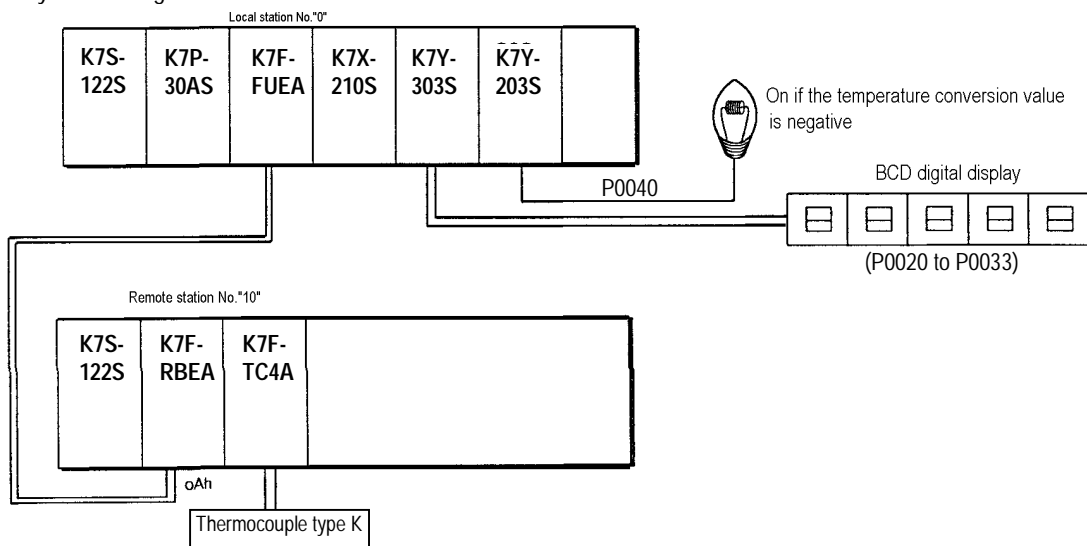
- (1) If the temperature that is input through the channel 0 of the thermocouple input module is less than -20°C or larger than -30 °C, P0010 turns on.
- (2) If the temperature that is input through the channel 1 of the thermocouple input module is less than -20°C or larger than -30 °C, P0011 turns on.
- (3) If the difference between the two temperatures that are input through the channel 0 and 1 is larger than 5°C, P0012 turns on.

4) Program



5.2.3 A Program Used When Mounting a Thermocouple Input Module on the Remote I/O Station

1) System Configuration



2) Initial Settings

- (1) Specifying used channel : Channel 0
- (2) Specifying the type of the thermocouple : Type K

3) Program Description

- (1) P0040 will be turned on if the temperature conversion value is negative and the value will be converted into positive.
- (2) If no error occurs, the temperature conversion value will be output to P0020 to P0033.

4) Program

