CHAPTER 8 TROUBLESHOOTING

This chapter describes how to find out and remedy the cause if the E5EK does not function properly.

8.1 Initial Checks

If trouble occurs, first of all check the following.

(1) Power supply
Make sure that the power supply is ON. Also, make sure that the power supply is within the rated voltage range.

(2) Wiring
Make sure that all cables are properly connected.

(3) Communications condition
When communicating using the RS-232C, RS-422 or RS-485 communications interfaces, make sure that the baud rate and other communications condition settings on the host computer and E5EK controller are matching, and are within the permissible ranges.

If there appears to be nothing wrong after checking the E5EK controller, and the same phenomenon continues, check the controller in more detail, for example, on the error display.

8.2 How to Use the Error Display

When an error has occurred, the No.1 display alternately indicates error codes together with the current display item.
This section describes how to check error codes on the display, and the actions you must be taken to remedy the problem.

S.Err Input error

Meaning Input is in error.

Action Check the wiring of inputs, disconnections, and shorts, and check the input type.

Operation at error For control output functions, output the manipulated variable matched to the setting of the “MV at PV error” parameter (level 2 mode). Alarm output functions are activated when the upper limit is exceeded.

E111 Memory error

Meaning Internal memory operation is in error.

Action First, turn the power OFF then back ON again. If the display remains the same, the E5EK controller must be repaired. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.

Operation at error Control output functions turn OFF (2mA max. at 4 to 20mA output, and output equivalent to 0% in case of other outputs). Alarm output functions turn OFF.

E333 A/D converter error

Meaning Internal circuits are in error.

Action First, turn the power OFF then back ON again. If the display remains the same, the E5EK controller must be repaired. If the display is restored to normal, then a probable cause can be external noise affecting the control system. Check for external noise.

Operation at error Control output functions turn OFF (2mA max. at 4 to 20mA output, and output equivalent to 0% in case of other outputs). Alarm output functions turn OFF.

A.Err Calibration data error

This error is output only during temperature input, and is displayed for two seconds when the power is turned ON.

Meaning Calibration data is in error.

Action Must repair.

Operation at error Both control output functions and alarm output functions operate. However, note that readout accuracy is not assured.

cccc / ɔɔɔɔ Display range over

Meaning Though not an error, this is displayed when the process value exceeds the display range when the control range (setting range ±10%) is larger than the display range (-1999 to 9999).

- When less than "-1999" [cccc]
- When greater than "9999" [ɔɔɔɔ]

Operation Control continues, allowing normal operation.

8.3 How to Use Error Output

The E5EK controller allows you to assign error output to terminals as outputs.
For details on output assignments, see 3.3 Setting Output Specifications (page 3-6).

LBA

- LBA (Loop Break Alarm) can be used as a means for detecting loop breaks when the control loop is not functioning normally. For details, see page 4-15.
- LBA allows you to detect the following errors:
  (1) Heater burnout
  (2) Output error (contact weld, damaged transistors, etc.)
  (3) Sensor error (constant input values, etc.)
- If you use the LBA function, set the loop break detection time matched to the control characteristics in the “LBA detection time” parameter (level 2 mode).

Input errors

- If you assign error 1 as the output, an error can be output to auxiliary output 1 or auxiliary output 2 when input is in error. When this error occurs, remedy by following the description for “Input error” (page 8-3).

A/D converter error

- If you assign error 2 as the output, an error can be output to auxiliary output 1 or auxiliary output 2 when the A/D converter is in error. When this error occurs, remedy by following the description for “A/D converter error” (page 8-3).

Remote SP input error

- If you assign error 3 as the output, an error can be output to auxiliary output 1 or auxiliary output 2 when the remote SP input error occurs while the remote SP function is enabled. For details on error displays and meanings, see Chapter 4 Applied Operation/4.4 How to Use the Remote SP (page 4-11).
- When an error occurs, check the state of the remote SP connection. If the lead is broken or disconnected, the remote SP scaling lower limit is displayed blinking on the PV/SP display or remote SP monitor display.

8.4 Checking Operation Restrictions

With the E5EK controller, auto-tuning or self-tuning sometimes do not operate depending on the way functions are combined. The table below summarizes the main operating restrictions.
If the E5EK controller is not operating properly, first check whether operating conditions violate the restrictions in this table.

Restriction	Inoperable or Invalid Functions			
	ST Execution	AT Execution	Limiter Function	Other
At analog input	×			
At heating and cooling control	×	40%AT		
At position-proportional control	×	40% AT	Manipulated variable	ON/OFF control
At ON/OFF control	×	×	Manipulated variable MV change rate	
ST = ON		×	Manipulated variable MV change rate	SP ramp function
At AT execution	–		MV change rate	Parameter setting
At stop	×	×	Manipulated variable MV change rate	

Items marked by a "x" indicates combinations of conditions not acceptable during ST or AT execution.
Items marked by "–" are impossible combinations.