CHAPTER 8
TROUBLESHOOTING

This chapter describes how to find out and remedy the cause if the E5AK-T does not function properly.
Remedy E5AK-T trouble in the order of the descriptions in this chapter

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 conditions
When communicating via the RS-232C, RS-422 or RS-485 interfaces, make sure that the baud rate and other communications condition settings on the host computer and E5AK-T controller are matching, and are within the permissible ranges.

If there appears to be nothing wrong after checking the E5AK-T 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 take 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, the manipulated variable matched to the setting of the “MV at PV error” parameter (level 2 mode) is output.
Alarm output functions are activated as if the upper limit is exceeded.
Program operation is continued.

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 E5AK-T 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 (2 mA max. at 4 to 20 mA 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 E5AK-T 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 (2 mA max. at 4 to 20 mA output, and output equivalent to 0% in case of other outputs). Alarm output functions turn OFF. Program operation is stopped.

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 E5AK-T must be repaired.

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.

About Errors That Occur During Motor Calibration

If an error occurs during motor calibration, [Err] is displayed on the No.2 display. The following causes of errors are possible:

- Control motor or potentiometer malfunction
- Incorrect control motor or potentiometer wiring
- Potentiometer is not connected

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8.3 How to Use the Error Output

The E5AK-T controller allows you to assign error output to terminals as outputs.
For details on output assignments, see 3.3 Setting Output Specifications (page 3-7).

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 4-26.
- LBA allows you to detect the following errors:
  (1) Heater burnout (HBA)
  (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”.

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”.

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8.4 Checking Operation Restrictions

With the E5AK-T controller, auto-tuning or self-tuning sometimes do not operate depending on how functions are combined. The table below summarizes the main operating restrictions.
If the E5AK-T controller is not operating properly, first check whether operating conditions violate the restrictions in this table.

Restriction	Inoperable or Invalid Functions		
	AT Execution	Limitter Function	Other
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	
At AT execution		MV change rate	Parameter setting
At reset	×	Manipulated variable MV change rate	

Items marked by a “x” indicate combinations of conditions that are not acceptable during AT execution.

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