

TABLE OF CONTENTS

Preface	
Conventions Used in This Manual	
Meanings of Abbreviations	
How to Read Display Symbols	
“Reference” mark	
Notice:	
How this Manual is Organized	
Pay Attention to the Following when Installing this Controller	
CHAPTER 1 INTRODUCTION	
This chapter introduces the E5AK. First-time users should read this chapter without fail.	
For details on how to use the controller and parameter settings, see Chapters 2 onwards.	
1.1 Names of parts	
Main parts	
Front panel	
About the displays	
How to use keys	
1.2 Input and Output	
Input	
Output	
1.3 Parameters and Menus	
Parameter types	
Selecting modes	
Selecting parameters	
Fixing settings	
1.4 About the Communications Function	
1.5 About Calibration	
CHAPTER 2 PREPARATIONS	
This chapter describes the operations you should carry out before turning the E5AK ON.	
2.1 Setting up	
Draw-out	
Setting up the output unit	
Setting up the option unit	
2.2 Installation	
Dimensions	
Panel cutout	
Mounting	
2.3 Wiring Terminals	
Terminal arrangement	
Precautions when wiring	
Wiring	
CHAPTER 3 BASIC OPERATION	
This chapter describes an actual example for understanding the basic operation of the E5AK.	

- 3.1 Convention Used in this Chapter
- 3.2 Setting Input Specifications
- Input type
- Scaling
- 3.3 Setting Output Specifications
- Output assignments
- Direct/reverse operation
- Control period
- 3.4 Setting Alarm Type
- Alarm type
- Alarm value
- Alarm hysteresis
- Close in alarm/open in alarm
- 3.5 Protect Mode
- Security
- A/M key protect
- 3.6 Starting and Stopping Operation
- 3.7 Adjusting Control Operation
- Changing the set point
- Manual operation
- Auto-tuning (A.T.)

CHAPTER 4 APPLIED OPERATION

This chapter describes each of the parameters required for making full use of the features of the E5AK. Read this chapter while referring to the parameter descriptions in chapter 5.

- 4.1 Selecting the Control Method
- Heating and cooling control
- Position-proportional control
- ON/OFF control
- 4.2 Operating Condition Restrictions
- Manipulated variable restrictions
- Set point limiter
- SP ramp
- 4.3 How to Use Event Input
- Input assignments
- Multi-SP
- Other event input functions
- 4.4 How to Use the Remote SP
- Scaling
- SP mode
- Remote SP monitor
- SP tracking
- Operating conditions
- 4.5 How to Use the Heater Burnout Alarm
- Heater burnout detection
- Operating conditions
- How to calculate the heater burnout set value
- 4.6 LBA

4.7	How to Use Transfer Output	
CHAPTER 5 PARAMETERS		
	This chapter describes the parameters of the E5AK. Use this chapter as a reference guide.	
	Conventions Used in this Chapter	
	The meaning of icons used in this chapter	
	About parameter display	
	Protect Mode	
	Manual Mode	
	Level 0 Mode	
	Level 1 Mode	
	Level 2 Mode	
	Setup Mode	
	Expansion Mode	
	Option Mode	
	Calibration Mode	
CHAPTER 6 USING THE COMMUNICATIONS FUNCTION ..		
	This chapter mainly describes communications with a host computer and communications commands.	
6.1	Outline of the Communications Function	
	Outline	
	Transfer procedure	
	Interface	
6.2	Preparing for Communications	
	Cable connections	
	Setting the communications specifications	
6.3	Command Configuration	
6.4	Commands and Responses	
	Reading/writing parameters	
	Issuing special commands	
6.5	How to Read Communications Error Information	
	End code	
	Undefined error	
6.6	Program Example	
	How to use programs	
	Program list (language: IBM PC COMPATIBLE MACHINE)	
	Examples of use	
CHAPTER 7 CALIBRATION		
	This chapter describes procedures for each calibration operation. Read this chapter only when the controller must be calibrated.	
7.1	Structure of Parameters	
7.2	Calibrating Thermocouple	
7.3	Calibrating Platinum Resistance Thermometer	
7.4	Calibrating Current Input	
7.5	Calibrating Voltage Input	
7.6	Checking Indication Accuracy	
CHAPTER 8 TROUBLESHOOTING		

This chapter describes how to find out and remedy the cause if the E5AK does not function properly.

8.1 Initial Checks
8.2 How to Use the Error Display
8.3 How to Use Error Output
8.4 Checking Operation Restrictions
AppEndix
SPECIFICATIONS
 Ratings
 Characteristics
 Output Unit Ratings and Characteristics
 Option Unit Ratings and Characteristics
ABOUT CURRENT TRANSFORMER (CT)
CONTROL BLOCK DIAGRAM
 Standard type
 Position-proportional type
SETTING LIST
MODEL LIST
PARAMETER OPERATIONS LIST
FUZZY SELF-TUNING
 Features
 Fuzzy Self-tuning Function
X FORMAT
 Format
 X FORMAT HEAD LIST
ASCII CODE LIST