

























Setup Mode

- The parameters in this mode can be used only when the “security” parameter (protect mode) is set to “0” and “1”.
- This mode contains the parameters for checking or setting the basic specifications of the E5AK-T controller. These parameters include parameters for specifying the input type, scaling, output assignments, and direct/reverse operation.
- To select this mode, press the  key for 1 second minimum. The display changes to the menu display. If you select [SEt] pressing the  and  keys, and then press the  key for 1 second minimum, the controller enters the setup mode.
- To select parameters in this mode, press the  key. To change parameter settings, use the  or  keys.
- The following table shows the parameters supported in this mode and the page where the parameter is described.

Symbol	Parameter Name	See
	Input type	Below
	Scaling upper limit	Below
	Scaling lower limit	Below
	Decimal point	Below
	°C/°F selection	Below
	Parameter initialize	Below
	Control output 1 assignment	Below
	Control output 2 assignment	Below
	Auxiliary output 1 assignment	Below
	Auxiliary output 2 assignment	Below
	Alarm 1 type	Below
	Alarm 1 open in alarm	Below
	Alarm 2 type	Below
	Alarm 2 open in alarm	Below
	Alarm 3 type	Below
	Alarm 3 open in alarm	Below
	Direct/Reverse operation	Below



Function

- Sets the sensor type by the code.



Comment

- Set the code according to the following table. Default is “2 : K1 thermocouple”.

Set value	Input Type	
0	JPt100 -199.9 to 650.0 (°C) /-199.9 to 999.9 (°F)	Platinum resistance thermometer
1	Pt100 -199.9 to 650.0 (°C) /-199.9 to 999.9 (°F)	
2	K1 -200 to 1300 (°C) /-300 to 2300 (°F)	Thermocouple
3	K2 0.0 to 500.0 (°C) /0.0 to 900.0 (°F)	
4	J1 -100 to 850 (°C) /-100 to 1500 (°F)	
5	J2 0.0 to 400.0 (°C) /0.0 to 750.0 (°F)	
6	T -199.9 to 400.0 (°C) /-199.9 to 700.0 (°F)	
7	E 0 to 600 (°C) /0 to 1100 (°F)	
8	L1 -100 to 850 (°C) /-100 to 1500 (°F)	
9	L2 0.0 to 400.0 (°C) /0.0 to 750.0 (°F)	
10	U -199.9 to 400.0 (°C) /-199.9 to 700.0 (°F)	
11	N -200 to 1300 (°C) /-300 to 2300 (°F)	
12	R 0 to 1700 (°C) /0 to 3000 (°F)	
13	S 0 to 1700 (°C) /0 to 3000 (°F)	
14	B 100 to 1800 (°C) /300 to 3200 (°F)	
15	W 0 to 2300 (°C) /0 to 4100 (°F)	
16	PLII 0 to 1300 (°C) /0 to 2300 (°F)	
17	4 to 20mA	Current input
18	0 to 20mA	
19	1 to 5V	Voltage input
20	0 to 5V	
21	0 to 10V	



See

- Related description
3–2 Setting Input Specifications

- Related parameter

When input type is set to temperature input:

“°C/°F selection” (setup mode)

When input type is set to voltage input or current input:

“Scaling upper limit” “Scaling lower limit” “Decimal point” (setup mode)

Ln-H**Scaling upper limit****Ln-L****Scaling lower limit****dP****Decimal point**

Conditions of Use

The input type must be set to analog input (voltage or current input).



Function

- This parameter can be used when voltage input or current input is selected as the input type.
- When voltage input or current input is selected as the input type, scaling is carried out. Set the scaling upper limit in the “scaling upper limit” parameter and the scaling lower limit in the “scaling lower limit” parameter.
- The “decimal point” parameter specifies the decimal point position of parameters (set point, etc.) whose unit is set to EU (Engineering Unit).



Comment

- Scaling upper limit, Scaling lower limit

Parameter	Setting Range	Unit	Default
Scaling upper limit	Scaling lower limit +1 to 9999	None	100
Scaling lower limit	-1999 to scaling upper limit -1	None	0

- Decimal point : Default is “0”.

Set Value	Setting	Example
0	0 digits past decimal point	1234
1	1 digit past decimal point	123.4
2	2 digits past decimal point	12.34
3	3 digits past decimal point	1.234



See

- Related description
3-2 Setting Input Specifications
- Related parameter
“Input type” (setup mode)

d-U

°C/°F selection

Conditions of Use

The input type must be set to temperature input (thermocouple or platinum resistance thermometer).



Function

- This parameter can be used when thermocouple or platinum resistance thermometer is selected as the input type.
- Set the temperature input unit to either of “°C” or “°F”.



Comment

Setting Range	Default
“ [] ”: °C / “ [] ”: °F	[]



See

- Related description
3–2 Setting Input Specifications
- Related parameter
“Input type” (setup mode)

Init

Parameter initialize




Function

- Returns parameter settings to their factory settings. However, note that the following parameters are not affected by execution of this parameter:
“Input type”, “Scaling upper limit”, “Scaling lower limit”, “Decimal point” and “°C/°F selection”



Example of use

- When this parameter is selected, [nā] (“no”) is first displayed. To initialize parameters, press the  key to specify [yēs] (“yes”).



Control output 1 assignment



Control output 2 assignment

Conditions of use

The control must be standard control or heating and cooling control.



Function

- Assigns the output functions to either of control output 1 or 2.
- The following 11 output functions can be assigned as outputs:
Control output (heat), Control output (cool), Alarms 1 to 3, HBA, LBA, Time signals 1 and 2, Program end and Stage output
- When the output function assigned to control output 1 or control output 2 is ON, the “OUT1” or “OUT2” LED lights. However, note that the “OUT1” or “OUT2” LEDs do not light if the output unit is E53-C□□ or E53-V□□ when control output (heat) or control output (cool) functions are assigned to control outputs.



Comment

Symbol	<i>HEAt</i>	<i>COOL</i>	<i>AL - 1</i> to <i>AL - 3</i>	<i>HbA</i>	<i>LbA</i>
Function	Control output (heat)	Control output (cool)	Alarms 1 to 3	HBA	LBA

Symbol	<i>tS - 1</i> to <i>tS - 2</i>	<i>PEnd</i>	<i>StG</i>
Function	Time signals 1 to 2	Program end	Stage output

Default :

“Control output 1” = [*HEAt*], “Control output 2” = [*AL - 1*].



See

- Related description
3-3 Setting Output Specifications
- Related parameters
 - Alarm-related parameters
 - Heating and cooling related parameter
“Time signal 1 enabled step” “Time signal 2 enabled step” “Time signal 1 to 2 ON time” “Time signal 1 to 2 OFF time” (program mode)
“LBA detection time” (level 2 mode)



Model

E5AK-TAA2

SUB 1

Auxiliary output 1 assignment

SUB 2

Auxiliary output 2 assignment



Function

- Assigns output functions to either of auxiliary output 1 or 2.
- The following 11 output functions can be assigned as outputs:
Alarms 1 to 3, HBA, LBA, Time signals 1 to 2, Program end, Stage output, Error 1 (input error), Error 2 (A/D converter error)
- When the output function assigned to auxiliary output 1 or auxiliary output 2 is ON, the SUB1 or SUB2 LED lights.



Comment

Symbol	<i>AL-1</i> to <i>AL-3</i>	<i>HbA</i>	<i>LbA</i>	<i>tS-1</i> to <i>tS-2</i>
Function	Alarms 1 to 3	HBA	LBA	Time signals 1 to 2

Symbol	<i>PEnd</i>	<i>StG</i>	<i>SErr</i>	<i>E333</i>
Function	Program end	Stage output	Error 1	Error 2

Default :

“Auxiliary output 1”= [*AL-2*], “Auxiliary output 2”= [*AL-3*].



See

- Related description
3–3 Setting Output Specifications
- Related parameters
- Alarm-related parameters
“Time signal 1 enabled step” “Time signal 2 enabled step” “Time signal 1 to 2 ON time” “Time signal 1 to 2 OFF time” (program mode)
“LBA detection time” (level 2 mode)

ALT 1 Alarm 1 type

ALT 2 Alarm 2 type

ALT 3 Alarm 3 type

Conditions of Use

Alarms must be assigned as outputs. For example, if alarm output 1 and 2 only are assigned as outputs, the “alarm 3 type” parameter cannot be used.



Function

- “Alarm 1 to 3 type” parameters specify the operation of the alarm by the one of the set values in the following table. For details of operation at an alarm, see Section 3–4 Setting Alarm Type.



Comment

Set Value	Settings	Set Value	Settings
1	Upper- and lower-limit alarm	7	Lower-limit alarm with standby sequence
2	Upper-limit alarm	8	Absolute-value upper-limit alarm
3	Lower-limit alarm	9	Absolute-value lower-limit alarm
4	Upper- and lower-limit range alarm	10	Absolute-value upper-limit alarm with standby sequence
5	Upper- and lower-limit alarm with standby sequence	11	Absolute-value lower-limit alarm with standby sequence
6	Upper-limit alarm with standby sequence		

Default is “2 : upper limit”.



See

- Related description
3–4 Setting Alarm Type
- Related parameters
“Alarm value 1” “Alarm value 2” “Alarm value 3” (Program mode)
“Alarm 1 hysteresis” “Alarm 2 hysteresis” “Alarm 3 hysteresis” (level 2 mode)
“Alarm 1 open in alarm” “Alarm 2 open in alarm” “Alarm 3 open in alarm” “Control output 1 assignment” “Control output 2 assignment” “Auxiliary output 1 assignment” “Auxiliary output 2 assignment” (setup mode)

AL1n**Alarm 1 open in alarm****AL2n****Alarm 2 open in alarm****AL3n****Alarm 3 open in alarm****Conditions of Use**

Alarms must be assigned as outputs. For example, if alarm outputs 1 and 2 only are assigned as outputs, the “alarm 3 open in alarm” parameter cannot be used.



Function

- Sets the output states of alarms 1 to 3.
- When the controller is set to “close in alarm,” the status of the alarm output function is output as it is. When set to “open in alarm,” the status of the alarm output function is output inverted. The following table shows the relationship between alarm output functions, alarm output and output LEDs.

	Alarm Output Function	Alarm Output	Output LED
Close in alarm	ON	ON	Lit
	OFF	OFF	Not lit
Open in alarm	ON	OFF	Lit
	OFF	ON	Not lit



Comment

Setting Range	Default
“n - ā” : Close in alarm/ “n - ĩ” : Open in alarm	n - ā



See

- Related description
3–4 Setting Alarm Type
- Related parameters
“Alarm value 1” “Alarm value 2” “Alarm value 3” (level 1 mode)
“Alarm 1 hysteresis” “Alarm 2 hysteresis” “Alarm 3 hysteresis” (level 2 mode)
“Alarm 1 open in alarm” “Alarm 2 open in alarm” “Alarm 3 open in alarm” “Control output 1 assignment” “Control output 2 assignment” “Auxiliary output 1 assignment” “Auxiliary output 2 assignment” (setup mode)

ā r ĩ u**Direct/Reverse operation**

Function

- “Direct operation” (or normal operation) refers to control where the manipulated variable is increased according to the increase in the process value. Alternatively, “reverse operation” refers to control where the manipulated variable is increased according to the decrease in the process value.



Comment

Setting Range	Default
“ā r - r” : Reverse operation/ “ā r - ā” : Direct operation	ā r - r

