

## Setting Alarm Type

- Three alarm outputs are supported: alarms 1 to 3. Of these, only the alarm assigned as the output can be used.
- Alarm output conditions are determined according to the combination of the “alarm type”, “alarm value” and “alarm hysteresis” parameter settings.
- The contact conditions for when alarm output is ON can be set to “open” or “closed” in the “close in alarm/open in alarm” parameter.

### Alarm type

ALt 1

ALt 2

ALt 3

- The following table shows the alarm types supported by the E5CK-T controller and their respective operations.

Alarm Type		Alarm Output Operation	
		When X is positive	When X is negative
1	Upper-and lower-limit alarm (deviation)	ON OFF	Always ON
2	Upper-limit alarm (deviation)	ON OFF	ON OFF
3	Lower-limit alarm (deviation)	ON OFF	ON OFF
4	Upper-and-lower-limit range alarm (deviation)	ON OFF	Always OFF
5	Upper-and-lower-limit alarm with standby sequence (deviation)	ON OFF	Always OFF
6	Upper-limit alarm with standby sequence (deviation)	ON OFF	ON OFF
7	Lower-limit alarm with standby sequence (deviation)	ON OFF	ON OFF
8	Absolute-value upper-limit alarm	ON OFF	ON OFF
9	Absolute-value lower-limit alarm	ON OFF	ON OFF
10	Absolute-value upper-limit alarm with standby sequence	ON OFF	ON OFF
11	Absolute-value lower-limit alarm with standby sequence	ON OFF	ON OFF

- Alarm types are set independently for each alarm in the “alarm 1 to 3” parameters (setup mode). Default is “2: Upper-limit alarm (devication)”.

### Alarm value

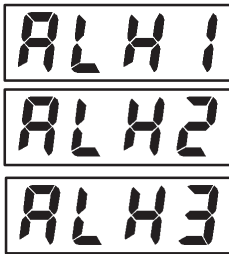
AL - 1

AL - 2

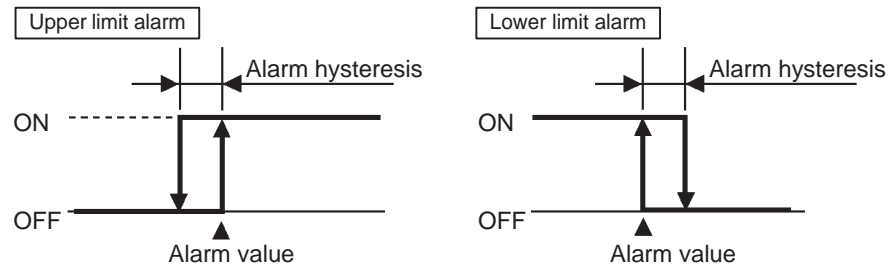
AL - 3

- Alarm values are indicated by “X” in the table above. Alarm output operation differs according to whether the value of the alarm is positive or negative.
- Alarm values are built into the program and are set for each pattern. For details, see 3.5 Setting Patterns” .

## Alarm hysteresis



- The hysteresis of alarm outputs when alarms are switched ON/OFF can be set as follows:



- Alarm hysteresis is set independently for each alarm in the “alarm 1 to 3 hysteresis” parameters (level 2 mode). Default is “0.02: 0.02%FS”.

## Standby sequence

- “Standby sequence” is a function for unconditionally turning alarm output OFF when the process value has left the alarm range once and it next enters the alarm range.
- For example, when the alarm type is set to “lower-limit alarm,” generally the process value is within the alarm range, and alarm output becomes ON when this state continues. However, if the alarm type is set to “lower-limit alarm with standby sequence”, alarm output first becomes ON when the process value exceeds the alarm setting value to leave the alarm range and once again falls below the alarm value.
- The standby sequence is canceled when an alarm is output. It is, however, restarted later by one of the following conditions:

Operation is started or power is turned ON.

A pattern is started.

The program advances to the next step.

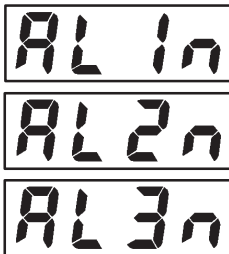
The SP of the current step is changed.

The currently running alarm value is changed.

The input shift value is changed.

Advance is executed.

## Close in alarm/open in alarm



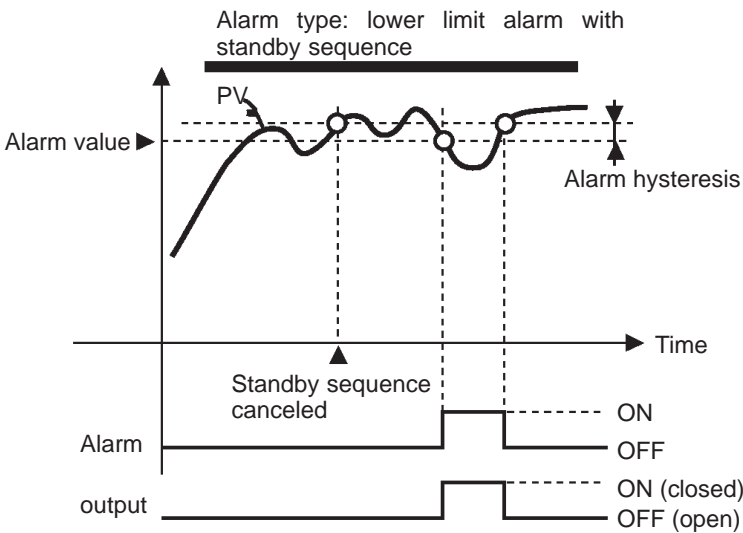
- When the controller is set to “close in alarm,” the status of the alarm output function is output as it is. When set to “open in alarm,” the status of the alarm output function is output inverted.

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

- Alarm type and close in alarm (normally open)/open in alarm (normally close) can be set independently for each alarm.
- Close in alarm/open in alarm is set in the “alarm 1 to 3 open in alarm” parameters (setup mode). Default is “ $\bar{n} - \bar{a}$  : close in alarm”.

**Summary of alarm operations**

The figure below visually summarizes the above descriptions of alarm operations (when alarm type is set to “lower-limit alarm with standby sequence”):



## Setting Example

Alarm 2 is output when the temperature exceeds alarm value 2 programmed to the SP. Parameter factory settings for “alarm type 2,” “alarm hysteresis” and “close in alarm/open in alarm” are used.

In this example, the related parameters are set as follows:

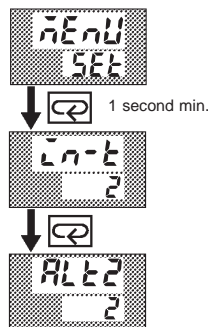
“alarm type 2” = “2: upper-limit”

“alarm value 2” = (set in program setting)

“alarm hysteresis” = “0.02”

“close in alarm/open in alarm” = “ $\bar{a}$  -  $\bar{b}$ : close in alarm”

In this example, let’s check the alarm type.



- (1) Select the menu display, and select “SEt : setup mode” pressing the or keys. For details on selecting the menu display, see Section 1-4 Parameters and Menus.
- (2) Press the key to enter the setup mode. The top parameter in the setup mode “ALt : input type” is displayed.
- (3) Press the key until [ALt2] (“alarm type 2” parameter) is displayed. Default is “2: upper limit”.