25.3 Limit Control

LIMIT(_E)

FX5S	FX5UJ	FX5U	FX5UC

These functions output an input value controlled with the upper and lower limits.

Ladder diagram, FBD/LD		Structured text

[Without EN/ENO]	[With EN/ENO]	[Without EN/ENO]
		d:=LIMIT(s1,s2,s3);
		[With EN/ENO]
		d:=LIMIT_E(EN,ENO,s1,s2,s3);

Setting data

■Descriptions, types, and data types

| Argument	Description	Type	Data type
EN	Execution condition (TRUE: Execution, FALSE: Stop)	Input variable	BOOL
s1(MIN)	Lower limit value (minimum output threshold value)	Input variable	ANY_ELEMENTARY
s2(IN)	Input value to be controlled with the upper and lower limits	Input variable	ANY_ELEMENTARY
s3(MX)	Upper limit value (maximum output threshold value)	Input variable	ANY_ELEMENTARY
ENO	Output status (TRUE: Normal, FALSE: Abnormal)	Output variable	BOOL
d(LIMIT(_E))	Output	Output variable	ANY_ELEMENTARY
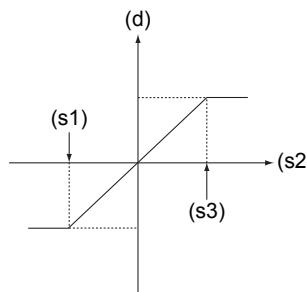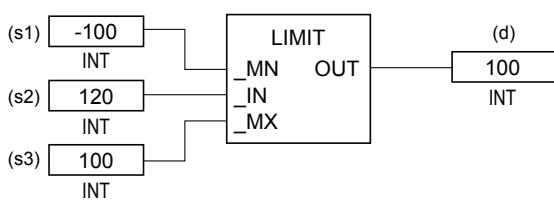
Processing details

■Operation processing

- These functions output an input value according to the BOOL, INT, DINT, WORD, DWORD, REAL, STRING, or TIME type data input to (s1), (s2), and (s3) in the same data type as (s1), (s2), and (s3) from (d).
  - When the input value of (s2) is larger than the one of (s3), these functions output the input value of (s3) from (d).
  - When the input value of (s2) is smaller than the one of (s1), these functions output the input value of (s1) from (d).
  - When the input value of (s1) ≤ the input value of (s2) ≤ the input value of (s3), these functions output the input value of (s2) from (d).

Ex.
Data type is INT

- A data value of the BOOL, INT, DINT, WORD, DWORD, REAL, STRING, or TIME type can be input to (s1), (s2), and (s3). (The input value of (s1) must be smaller than the one of (s3).)

■Operation result

1. Function without EN/ENO

The following table lists the operation results.

Operation result	(d)
No operation error occurred	Operation output value
An operation error occurred	Indefinite value

2. Function with EN/ENO

The following table lists the execution conditions and operation results.

Execution condition	Operation result	
EN	ENO	(d)
TRUE (Executes operation)	TRUE (Operation error did not occur)	Operation output value
	FALSE (Operation error occurred)[1]	Indefinite value
FALSE (Stops operation)	FALSE[1]	Indefinite value

[1] When FALSE is output from ENO, data output from (d) is undefined. In that case, modify a program so that the data output from (d) is not used.

Operation error

• (s1), (s2), and (s3) are INT or WORD

Error code (SD0/SD8067)	Description
3405H	The lower limit value specified by (s1) is greater than the upper limit value specified by (s2).

• (s1), (s2), and (s3) are DINT, DWORD, or TIME

Error code (SD0/SD8067)	Description
3405H	The lower limit value specified by (s1) is greater than the upper limit value specified by (s2).

• (s1), (s2), and (s3) are BOOL

Error code (SD0/SD8067)	Description
3405H	The lower limit value specified by (s1) is greater than the upper limit value specified by (s3).

• (s1), (s2), and (s3) are the REAL type

Error code (SD0/SD8067)	Description
3402H	The value of (s1) is outside the following range. $0, 2^{-126} \leq |(s1)| < 2^{128}$
	The data specified by (s1) is -0, denormalized number, NaN (not a number), or $\pm\infty$.
	The value of (s2) is outside the following range. $0, 2^{-126} \leq |(s2)| < 2^{128}$
	The data specified by (s2) is -0, denormalized number, NaN (not a number), or $\pm\infty$.
	The value of (s3) is outside the following range. $0, 2^{-126} \leq |(s3)| < 2^{128}$
	The data specified by (s3) is -0, denormalized number, NaN (not a number), or $\pm\infty$.
3405H	The lower limit value specified by (s1) is greater than the upper limit value specified by (s3).

• (s1), (s2), and (s3) are STRING

Error code (SD0/SD8067)	Description
2820H	"00H" is not set to a label specified by (s1), (s2), and (s3) or devices from specified device number to the end device number of corresponding device.
3405H	The lower limit value specified by (s1) is greater than the upper limit value specified by (s3).
	The character strings specified by (s1), (s2), and (s3) have more than 16383 characters.
3406H	The specified character string cannot be stored in a label specified by (d) or devices from specified device number to the end device number of corresponding device.