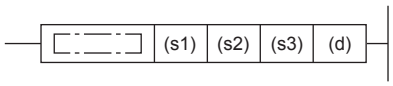
8.13 Data Control Instruction

Upper and lower limit control of 16-bit binary data

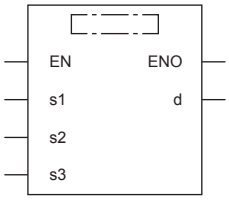
LIMIT(P)(_U)

FX5S FX5UJ FX5U FX5UC

These instructions control the output value to be stored in the device specified by (d) by checking the input value (16-bit binary data) in the device specified by (s3) with the upper and lower limit values specified by (s1) and (s2).

Ladder diagram	Structured text*1	
	ENO:=LIMITP(EN,s1,s2,s3,d);	ENO:=LIMITP_U(EN,s1,s2,s3,d);

FBD/LD*1



*1 The LIMIT and LIMIT_U instructions are not supported by the ST language and the FBD/LD language. Use LIMIT of the standard function.
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Setting data

■Descriptions, ranges, and data types

Operand		Description	Range	Data type	Data type (label)
(s1)	LIMIT(P)	Lower limit value (minimum output value)	-32768 to 32767	16-bit signed binary	ANY16_S
	LIMIT(P)_U		0 to 65535	16-bit unsigned binary	ANY16_U
(s2)	LIMIT(P)	Upper limit value (maximum output value)	-32768 to 32767	16-bit signed binary	ANY16_S
	LIMIT(P)_U		0 to 65535	16-bit unsigned binary	ANY16_U
(s3)	LIMIT(P)	Input value controlled by the upper and lower limit values	-32768 to 32767	16-bit signed binary	ANY16_S
	LIMIT(P)_U		0 to 65535	16-bit unsigned binary	ANY16_U
(d)	LIMIT(P)	Head device number storing the output value controlled by the upper and lower limit values	—	16-bit signed binary	ANY16_S
	LIMIT(P)_U			16-bit unsigned binary	ANY16_U
EN		Execution condition	—	Bit	BOOL
ENO		Execution result	—	Bit	BOOL

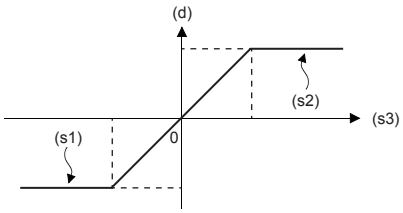
■Applicable devices

Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	
(s1)	○	○	○	○	—	—	○	○	—	—	—
(s2)	○	○	○	○	—	—	○	○	—	—	—
(s3)	○	○	○	○	—	—	○	○	—	—	—
(d)	○	○	○	○	—	—	○	—	—	—	—

Processing details

- These instructions control the output value to be stored in the device specified by (d) by checking the input value (16-bit binary data) in the device specified by (s3) with the upper and lower limit values specified by (s1) and (s2). The output value is controlled as follows.

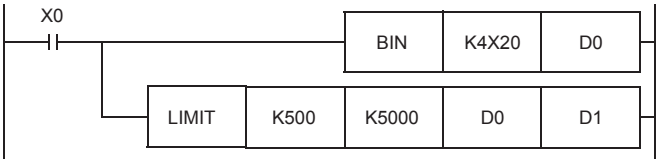
Condition	Output value
Lower limit value (s1) > Input value (s3)	Lower limit value (s1)
Upper limit value (s2) < Input value (s3)	Upper limit value (s2)
Lower limit value (s1) ≤ Input value (s3) ≤ Upper limit value (s2)	Input value (s3)



- To control the input value only with the upper limit, set the minimum value within the setting range in (s1).
- To control the input value only with the lower limit, set the maximum value within the setting range in (s2).

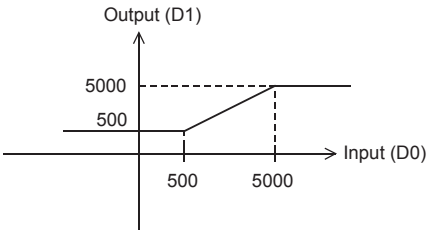
Program example

In the program example shown below, the BCD data set in X20 to X37 is controlled by the limit values “500” to “5000”, and the controlled value is output to D1 when X0 turns ON.



Operation

- In the case of “D0 < 500”, “500” is output to D1.
- In the case of “500 ≤ D0 ≤ 5000”, the value of D0 is output to D1.
- In the case of “D0 > 5000”, “5000” is output to D1.



Operation error

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