

Zone control of 16-bit binary data

ZONE(P)(_U)

FX5S FX5UJ FX5U FX5UC

These instructions add the bias value specified by (s1) or (s2) to the input value specified by (s3), and store the operation result in the device specified by (d).

Ladder diagram	Structured text
	<pre>ENO:=ZONE(EN,s1,s2,s3,d); ENO:=ZONEP(EN,s1,s2,s3,d);</pre>

FBD/LD

Setting data

■Descriptions, ranges, and data types

Operand	Description		Range		Data type		Data type (label)	
(s1)	ZONE(P)		Negative bias value to be added to the input value		-32768 to +32767		16-bit signed binary	
	ZONE(P)_U		0 to 65535		16-bit unsigned binary		ANY16_U	
(s2)	ZONE(P)		Positive bias value to be added to the input value		-32768 to +32767		16-bit signed binary	
	ZONE(P)_U		0 to 65535		16-bit unsigned binary		ANY16_U	
(s3)	ZONE(P)		Input value for performing the zone control		-32768 to +32767		16-bit signed binary	
	ZONE(P)_U		0 to 65535		16-bit unsigned binary		ANY16_U	
(d)	ZONE(P)		Head device number storing the output value controlled by the zone		—		16-bit signed binary	
	ZONE(P)_U				16-bit unsigned binary		ANY16_U	
EN	Execution condition		—		Bit		BOOL	
ENO	Execution result		—		Bit		BOOL	

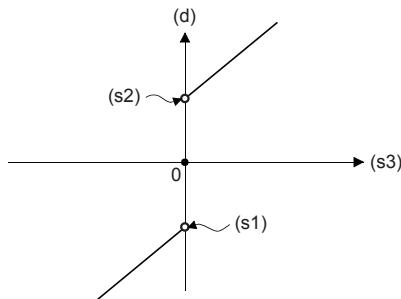
■Applicable devices

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		K, H	E	\$	
(s1)	○	○	○	○	—	—	○	○	—	—	—
(s2)	○	○	○	○	—	—	○	○	—	—	—
(s3)	○	○	○	○	—	—	○	○	—	—	—
(d)	○	○	○	○	—	—	○	—	—	—	—

Processing details

- These instructions add the bias value specified by (s1) or (s2) to the input value (16-bit binary data) specified by (s3), and store the operation result in the device specified by (d). The bias value is controlled as follows.

Condition	Output value
Input value (s3) < 0	Input value (s3) + Negative bias value (s1)
Input value (s3) = 0	0
Input value (s3) > 0	Input value (s3) + Positive bias value (s2)



- When the output value to be stored in the device specified by (d) is a 16-bit signed binary value and the operation result exceeds the range of -32768 to 32767, the output value is calculated as follows.

Ex.

When (s1) is -100 and (s3) is -32768: Output value = $-32768 + (-100) = 8000H - FF9CH = 7F9CH = 32668$

- When the output value to be stored in the device specified by (d) is a 16-bit unsigned binary value and the operation result exceeds the range of 0 to 65535, the output value is calculated as follows.

Ex.

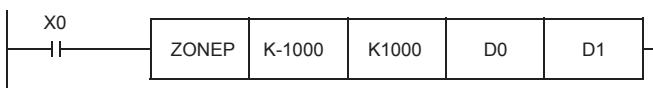
When (s2) is 100 and (s3) is 65535: Output value = $65535 + 100 = FFFFH - 0064H = 0063H = 99$

- When the ZONE(P)_U instructions are used, (s1) is regarded as dummy data and ignored.

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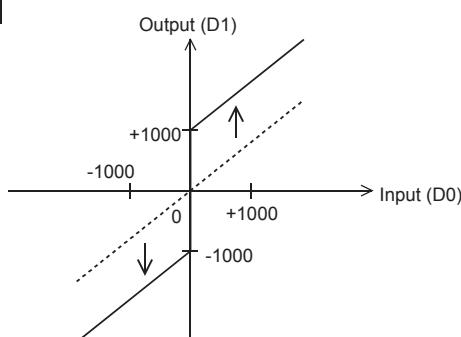
Program example

In the program example shown below, the data of D0 is controlled by the zone of the limit values “-1000” to “+1000”, and the controlled value is output to D1 when X0 is set to ON.



Operation

- In the case of “D0 < 0”, “D0 + (-1000)” is output to D1.
- In the case of “D0 = 0”, “0” is output to D1.
- In the case of “0 < D0”, “D0 + 1000” is output to D1.



Operation error

There is no operation error.