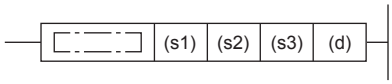
Zone control of 32-bit binary data

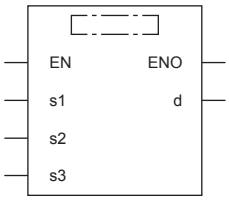
DZONE(P)(_U)

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	
	ENO:=DZONE(EN,s1,s2,s3,d); ENO:=DZONEP(EN,s1,s2,s3,d);	ENO:=DZONE_U(EN,s1,s2,s3,d); ENO:=DZONEP_U(EN,s1,s2,s3,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

Operand		Description	Range	Data type	Data type (label)
(s1)	DZONE(P)	Negative bias value to be added to the input value	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DZONE(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(s2)	DZONE(P)	Positive bias value to be added to the input value	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DZONE(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(s3)	DZONE(P)	Input value for performing the zone control	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DZONE(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(d)	DZONE(P)	Head device number storing the output value controlled by the zone	—	32-bit signed binary	ANY32_S
	DZONE(P)_U			32-bit unsigned binary	ANY32_U
EN		Execution condition	—	Bit	BOOL
ENO		Execution result	—	Bit	BOOL

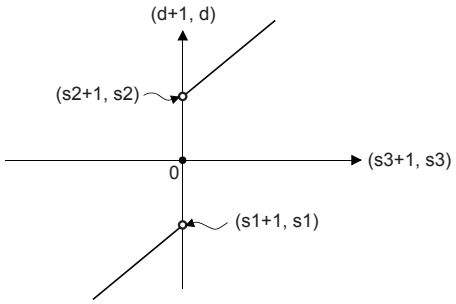
■Applicable devices

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 add the bias value specified by (s1) or (s2) to the input value (32-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), (s3)+1) < 0	Input value ((s3), (s3)+1) + Negative bias value (s1), (s1)+1
Input value ((s3), (s3)+1) = 0	0
Input value ((s3), (s3)+1) > 0	Input value ((s3), (s3)+1) + Positive bias value (s2), (s2)+1



- When the output values to be stored in the devices specified by (d) and (d)+1 are 32-bit signed binary values and the operation result exceeds the range of -2147483648 to 2147483647, the output value is calculated as follows.

Ex.

When (s1) and (s1)+1 are -1000, and (s3) and (s3)+1 are -2147483648: Output value = -2147483648+(-1000) = 80000000H-FFFFFC18H = 7FFFFC18H = 2147482648

- When the output values to be stored in the devices specified by (d) and (d)+1 are 32-bit unsigned binary values and the operation result exceeds the range of 0 to 4294967295, the output value is calculated as follows.

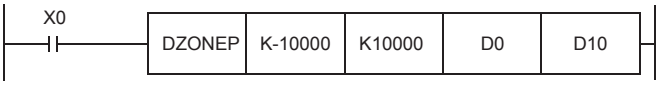
Ex.

When (s2) and (s2)+1 are 1000, and (s3) and (s3)+1 are 4294967295: Output value =4294967295+1000 = FFFFFFFFH-00003E8H = 000003E7H = 999

- When the DZONE(P)_U instructions are used, (s1) and (s1)+1 are regarded as dummy data and ignored.

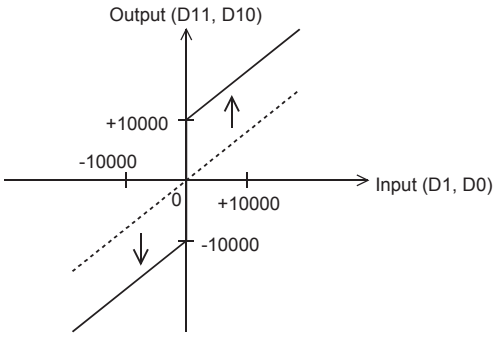
Program example

In the program example shown below, the data of D0 and D1 is controlled by the zone of the limit values “-10000” to “+10000”, and the controlled values are output to D10 and D11 when X0 is set to ON.



Operation

- In the case of “(D1, D0) < 0”, “(D1, D0) + (-10000)” is output to (D11, D10).
- In the case of “(D1, D0) = 0”, the “0” is output to (D11, D10).
- In the case of “0 < (D1, D0)”, “(D1, D0) + 10000” is output to (D11, D10).



Operation error

There is no operation error.