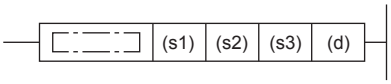
Dead band control of 32-bit binary data

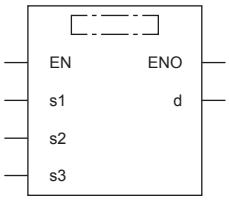
DBAND(P)(_U)

FX5S FX5UJ FX5U FX5UC

These instructions control the output value to be stored in the device specified by (d) by checking the input value (32-bit binary data) in the device specified by (s3) with the upper and lower limit values of the dead band specified by (s1) and (s2).

Ladder diagram	Structured text	
	ENO:=DBAND(EN,s1,s2,s3,d); ENO:=DBANDP(EN,s1,s2,s3,d);	ENO:=DBAND_U(EN,s1,s2,s3,d); ENO:=DBANDP_U(EN,s1,s2,s3,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

Operand		Description	Range	Data type	Data type (label)
(s1)	DBAND(P)	Lower limit value of the dead band (no-output band)	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DBAND(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(s2)	DBAND(P)	Upper limit value of the dead band (no-output band)	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DBAND(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(s3)	DBAND(P)	Input value controlled by the dead band	-2147483648 to +2147483647	32-bit signed binary	ANY32_S
	DBAND(P)_U		0 to 4294967295	32-bit unsigned binary	ANY32_U
(d)	DBAND(P)	Head device number for storing the output value controlled by the dead band	—	32-bit signed binary	ANY32_S
	DBAND(P)_U			32-bit unsigned binary	ANY32_U
EN		Execution condition	—	Bit	BOOL
ENO		Execution result	—	Bit	BOOL

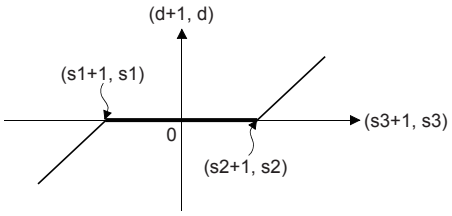
■Applicable devices

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 control the output value to be stored in the device specified by (d) by checking the input value (32-bit binary data) in the device specified by (s3) with the upper and lower limit values of the dead band specified by (s1) and (s2). The output value is controlled as follows.

Condition	Output value
Lower limit value of the dead band ((s1), (s1)+1) > Input value ((s3), (s3)+1)	Input value ((s3), (s3)+1) - Lower limit value of the dead band ((s1), (s1)+1)
Upper limit value of the dead band ((s2), (s2)+1) < Input value ((s3), (s3)+1)	Input value ((s3), (s3)+1) - Upper limit value of the dead band ((s2), (s2)+1)
Lower limit value of the dead band ((s1), (s1)+1) ≤ Input value ((s3), (s3)+1) ≤ Upper limit value of the dead band ((s2), (s2)+1)	0



- When the output value to be stored in the device specified by (d) is a 32-bit signed binary value 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-000003E8H = 7FFFFC18H = 2147482648

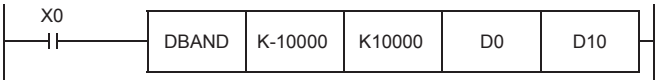
- When the output values to be stored in the devices specified by (d) and (d)+1 are 32-bit unsigned binary values and the operation result exceeds the range of 0 to 4294967295, the output value is calculated as follows.

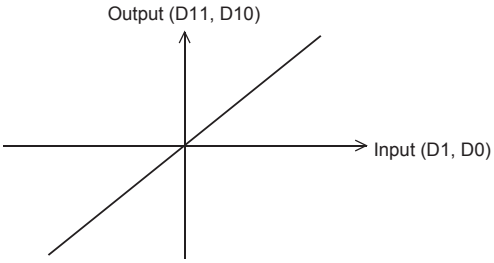
Ex.

When (s1) and (s1)+1 are 100, and (s3) and (s3)+1 are 50: Output value = 50-100 = 00000032H-00000064H = FFFFFFCEH = 4294967246

Program example

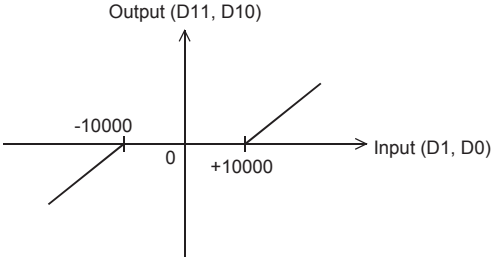
In the program example shown below, the data of D0 and D1 is controlled by the dead band of the limit values “-10000” to “+10000”, and the controlled values are output to D10 and D11 when X0 is set to ON.





Operation

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



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).