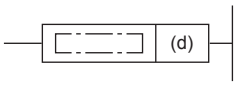
Two's complement of 16-bit binary data (sign inversion)

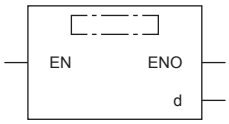
NEG(P)

FX5S FX5UJ FX5U FX5UC

These instructions invert the sign of the 16-bit binary data in the device specified by (d), and store the resultant data in the device specified by (d).

Ladder diagram	Structured text
	ENO:=NEG(EN,d); ENO:=NEGP(EN,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

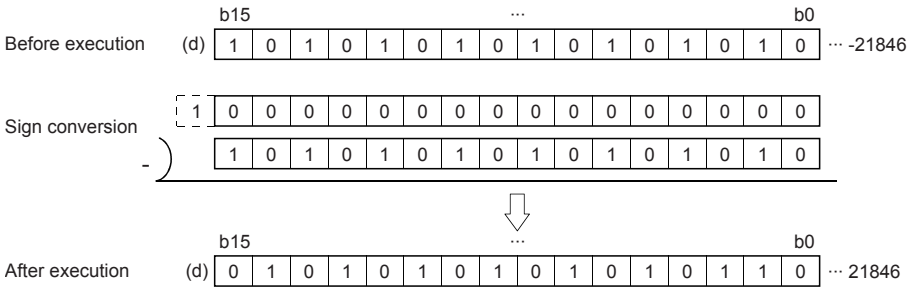
Operand	Description	Range	Data type	Data type (label)
(d)	Head device for storing the data that performs two's complement	-32768 to +32767	16-bit signed binary	ANY16
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

■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	$	
(d)	○	○	○	○	—	—	○	—	—	—	—

Processing details

- These instructions invert the sign of the 16-bit binary data in the device specified by (d), and store the resultant data in the device specified by (d).
- They are used when a positive or negative sign is to be inverted.



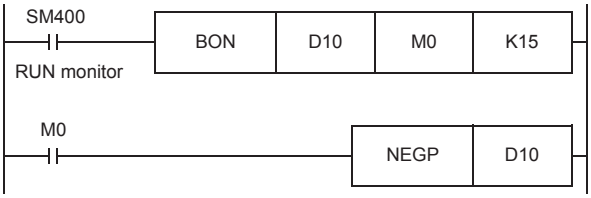
Precautions

Note that data is inverted in every operation cycle in a continuous operation type (NEG) instruction.

Program example

The program examples below are provided to obtain the absolute value of a negative binary 16-bit data.

- Obtaining the absolute value of a negative value using NEG instruction



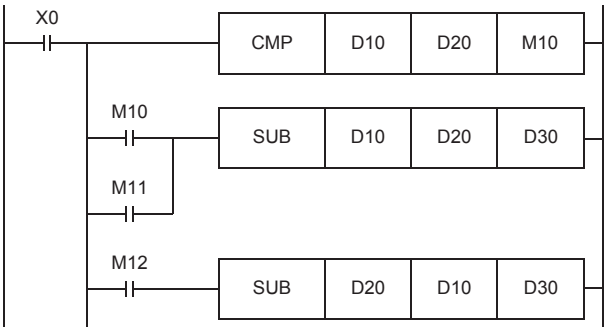
In BON (ON bit check) instruction, M0 turns ON when the bit 15 (b15 among b0 to b15) of D10 is "1".

NEGP instruction is executed for D10 only when M0 turns ON.

$\overline{D10} \rightarrow D10$

- Obtaining the absolute value by SUB (subtraction) instruction

Even if NEG instruction is not used, D30 always stores the absolute value of the difference.



(D10)>(D20) (D10)=(D20) (D10)<(D20)
M10=ON M11=ON M12=ON

In the case of "(D10) ≥ (D20)", (D10) - (D20) → (D30).

In the case of "(D10) < (D20)", (D20) - (D10) → (D30).

Operation error

There is no operation error.