

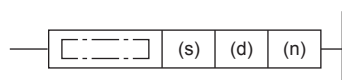
# Decoding from 8 to 256 bits

## DECO(P)

FX5S    FX5UJ    FX5U    FX5UC

These instructions decode the lower-order (n) bits of the device specified by (s), and store the result in the 2 (to the power (n)) bit from the device specified by (d).

**Ladder diagram**



**Structured text**

ENO:=DECO(EN,s,n,d);  
ENO:=DECOP(EN,s,n,d);

**FBD/LD**



### Setting data

#### ■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s)	Decode data or device number for storing the decode data	—	Bit/16-bit signed binary	ANY_ELEMENTARY
(d)	Head device for storing the decode result	—	Bit/16-bit unsigned binary	ANY_ELEMENTARY*1
(n)	Valid bit length	1 to 8	16-bit unsigned binary	ANY16
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

\*1 Digit specified bit type label cannot be used.

#### ■Applicable devices

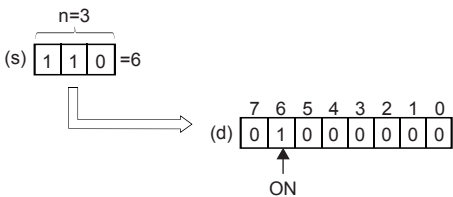
Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	\$	
(s)	○	○	○	○	—	—	○	○	—	—	—
(d)	○*1	○*2	○	—	—	—	○	—	—	—	—
(n)	○	○	○	○	—	—	○	○	—	—	—

\*1 Digit specified bit device cannot be used.

\*2 Bit-specified word device cannot be used.

### Processing details

- These instructions turn ON the bit position of the device specified by (d) in correspondence to the BIN value specified by the lower-order (n) bits of (s).

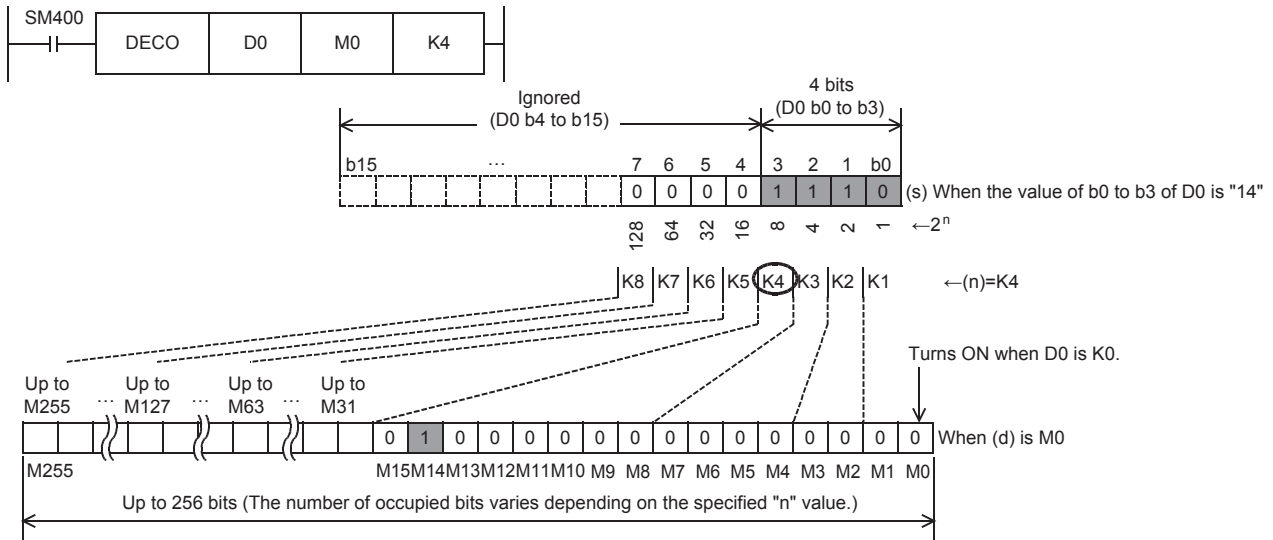


- When (n) is 0, no processing is performed, and the contents of the device specified by (d) do not change.
- The bit device is handled as a device storing one-bit data and the word device is handled as a device storing 16-bit data.

## Program example

- When setting bit devices to ON according to the value of a data register

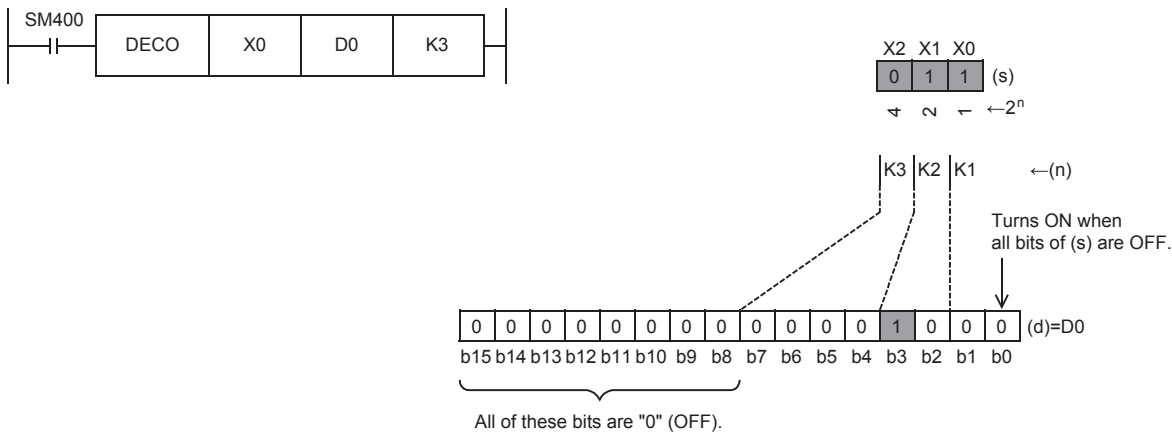
The value of D0 (whose current value is "14" in this example) is decoded to M0 to M15.



- When the value of b0 to b3 of D0 is "14" (= 0 + 2 + 4 + 8)", M14 (which is the 15th from M0) becomes "1" (turn ON).
- When the value of D0 is "0", M0 becomes "1" (turns ON).
- When "n" is set to "K4", either one point among M0 to M15 turns ON according to the value of D0 (0 to 15).
- By changing "n" from K1 to K8, D0 can correspond to numeric values from 0 to 255. However, because the device range of (d) is occupied for decoding accordingly, such device range should not be used for another control.

- Turning ON the bit out of word devices according to the contents of bit devices

The value expressed by X0 to X2 is decoded to D0 (X0 and X1 are ON, and X2 is OFF in this example.).



- When the values expressed by X0 to X2 are "3" (= 1 + 2 + 0)", b3 (which is the 4th from b0) becomes 1 (turns ON).
- When all of X0 to X2 are "0" (OFF), b0 becomes "1" (turns ON).

## Operation error

Error code (SD0/SD8067)	Description
2820H	The device specified by (s) exceeds the corresponding device range.
	The device specified by (d) exceeds the corresponding device range.
3401H	(d) is specified as a bit device and (n) is other than 0 to 8.
	(d) is specified as a word device and (n) is other than 0 to 4.