

# Rotating 32-bit data to the left

## DROL(P), DRCL(P)

**FX5S    FX5UJ    FX5U    FX5UC**

- DROL(P): These instructions rotate the 32-bit binary data in the device specified by (d) to the left by (n) bit(s) (not including the carry flag).
- DRCL(P): These instructions rotate the 32-bit binary data in the device specified by (d) to the left by (n) bit(s) (including the carry flag).

Ladder diagram	Structured text <sup>*1</sup>
	ENO:=DROLP(EN,n,d); ENO:=DRCL(EN,n,d); ENO:=DRCLP(EN,n,d);

FBD/LD <sup>*1</sup>

\*1 The DROL instruction is not supported by the ST language and the FBD/LD language. Use ROL of the standard function.

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## Setting data

### ■Descriptions, ranges, and data types

Operand	Description	Range		Data type		Data type (label)	
(d)	Head device number where the rotation target data is stored	—		32-bit signed binary		ANY32	
(n)	Number of rotations	0 to 31		16-bit unsigned binary		ANY16	
EN	Execution condition	—		Bit		BOOL	
ENO	Execution result	—		Bit		BOOL	

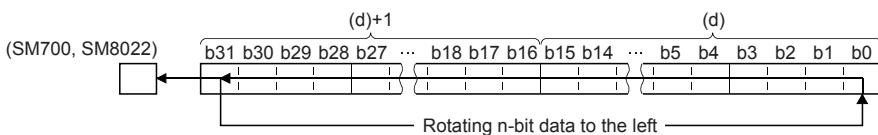
### ■Applicable devices

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		K, H	E	\$	
(d)	○	○	○	○	○	○	○	—	—	—	—
(n)	○	○	○	○	—	—	○	○	—	—	—

## Processing details

### ■DROL(P)

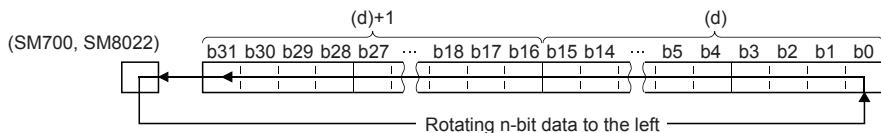
- These instructions rotate the 32-bit binary data in the device specified by (d) to the left by (n) bit(s) (not including the carry flag). The carry flag is on or off depending on the status prior to the execution of the instruction.



- When (d) is a bit device, bits are rotated to the left within the device range specified by digit specification. The number of bits actually to be rotated is the remainder of (n)÷(specified number of bits). For example, when (n) is 31 and the specified number of bits is 24, 7 bits are rotated because 31 divided by 24 equals 1 with a remainder of 7.
- Specify any value between 0 and 31 for (n). If a value 32 or bigger is specified, bits are rotated by the remainder value of n÷32. For example, when (n) is 34, 2 bits are rotated because 34 divided by 32 equals 1 with a remainder of 2.

## ■DRCL(P)

- These instructions rotate the 32-bit binary data in the device specified by (d) to the left by (n) bit(s) (including the carry flag). The carry flag is on or off depending on the status prior to the execution of the instruction.



- When (d) is a bit device, bits are rotated to the left within the device range specified by digit specification. The number of bits actually to be rotated is the remainder of  $(n) \div (\text{specified number of bits})$ . For example, when (n) is 31 and the specified number of bits is 24, 7 bits are rotated because 31 divided by 24 equals 1 with a remainder of 7.
- Specify any value between 0 and 31 for (n). If a value 32 or bigger is specified, bits are rotated by the remainder value of  $n \div 32$ . For example, when (n) is 34, 2 bits are rotated because 34 divided by 32 equals 1 with a remainder of 2.

## Precautions

- Do not set a negative value to the number of bits to be rotated (n).
- In the case of continuous operation type instructions (DROL and DRCL), note that shift and rotation are executed in every scan time (operation cycle).

## Operation error

There is no operation error.