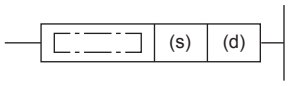
Calculating the square root of 16-bit data

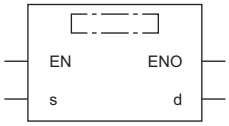
SQRT(P)

FX5S FX5UJ FX5U FX5UC

These instructions calculate the square root of binary 16-bit data specified by (s1), and store the operation result in (d).

Ladder diagram	Structured text*1
	ENO:=SQRTP(EN,s,d);

FBD/LD*1



*1 The SQRT instruction is not supported by the ST language and the FBD/LD language. Use SQRT of the standard function.
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Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s)	Device where the data whose square root is operated is calculated	—	16-bit unsigned binary	ANY16
(d)	Device for storing the calculated square root	—	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	LZ		K, H	E	$	
(s)	—	○	○	○	—	—	○	○	—	—	—
(d)	—	○	○	○	—	—	○	—	—	—	—

Processing details

- These instructions calculate the square root of binary 16-bit data specified by (s1), and store the operation result in (d).

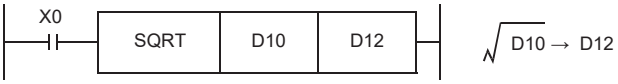
$\sqrt{(s)} \rightarrow (d)$

Precautions

- The obtained square root is an integer because the decimal point is ignored. When the calculated decimal value is ignored, SM8021 (borrow flag) turns on.
- When the operation result is true 0, SM8020 (zero flag) turns on.

Program example

In the program example shown below, the square root of D10 is stored to D12.



- When K100 is specified in D10

$\sqrt{100}$ (D10 = K100) → 10 (D12 = K10)