Calculating the exponentiation of single-precision real number

POW(P)
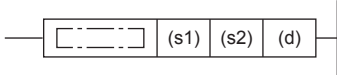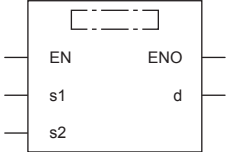
| FX5S | FX5UJ | FX5U | FX5UC |

These instructions raise float (single precision) data stored in a device specified by (s1) by the single-precision real number specified by (s2), and store the operation result in a device specified by (d).

Ladder diagram	Structured text
⬚ ⬚ (s1) (s2) (d)	ENO:=POW(EN,s1,s2,d); ENO:=POWP(EN,s1,s2,d);

FBD/LD
EN   ENO s1   d s2

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s1)	Data to be raised, or head device number which stores such data	$0, 2^{-126} \leq |(s1)| < 2^{128}$	Single-precision real number	ANYREAL_32
(s2)	Power data, or head device number which stores such data	$0, 2^{-126} \leq |(s2)| < 2^{128}$	Single-precision real number	ANYREAL_32
(d)	Head device number for storing the operation result	—	Single-precision real number	ANYREAL_32
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)	—	○	○	—	○	—	○	—	○	—	—
(d)	—	○	○	—	○	—	○	—	—	—	—

Processing details

- These instructions raise float (single precision) data stored in a device specified by (s1) by the single-precision real number specified by (s2), and store the operation result in a device specified by (d).
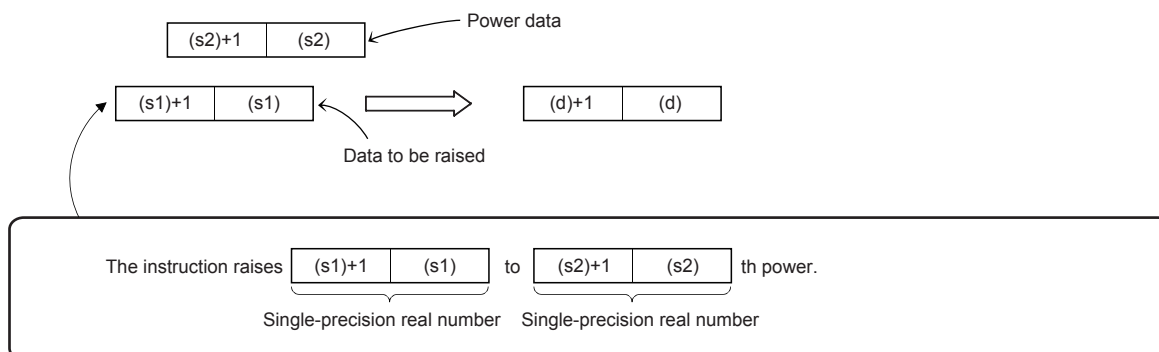
- Values in the devices specified (stored) by (s1) and (s2) should be 0 or $2^{-126} \leq$ |specified value (stored value)| $< 2^{128}$.
- When the operation result is -0 or underflow occurs, the operation result is regarded as 0.
- When an input value is set from the engineering tool, a rounding error may be occur.

Operation error

Error code (SD0/SD8067)	Description
3402H	The value specified by (s1) or (s2) is outside the following range. 0, $2^{-126} \leq$ |specified value (stored value)| $< 2^{128}$
	The specified device value is -0, denormalized number, NaN (not a number), or $\pm\infty$.
3403H	The operation result is within the following range. (An overflow has occurred.) $2^{128} \leq$ |operation result|