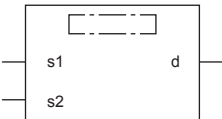



22.6 Exponentiation

EXPT(_E)

FX5S **FX5UJ** **FX5U** **FX5UC**

These functions output the exponentiation of an input value.

| Ladder diagram, FBD/LD | | Structured text |
|---|---|--|
| [Without EN/ENO] | [With EN/ENO] | [Without EN/ENO] d:=EXPT(s1,s2); [With EN/ENO] d:=EXPT_E(EN,ENO,s1,s2); |
|  |  | |

Setting data

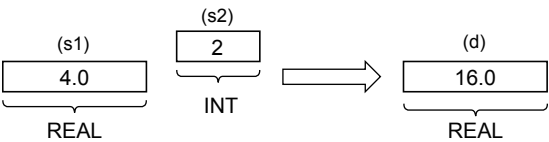
■Descriptions, types, and data types

| Argument | Description | Type | Data type |
|-------------|--|-----------------|-----------|
| EN | Execution condition (TRUE: Execution, FALSE: Stop) | Input variable | BOOL |
| s1(IN1) | Cardinal number | Input variable | REAL |
| s2(IN2) | Exponent | Input variable | ANY_NUM |
| ENO | Output status (TRUE: Normal, FALSE: Abnormal) | Output variable | BOOL |
| d(EXPT(_E)) | Output | Output variable | REAL |

Processing details

■Operation processing

- These functions raise the REAL type data input to (s1) by INT, DINT, or REAL specified by (s2), and output the operation result from (d).



■Operation result

1. Function without EN/ENO

The following table lists the operation results.

| Operation result | (d) |
|-----------------------------|------------------------|
| No operation error occurred | Operation output value |
| An operation error occurred | Indefinite value |

2. Function with EN/ENO

The following table lists the execution conditions and operation results.

| Execution condition | Operation result | |
|---------------------------|--------------------------------------|------------------------|
| EN | ENO | (d) |
| TRUE (Executes operation) | TRUE (Operation error did not occur) | Operation output value |
| | FALSE (Operation error occurred)*1 | Indefinite value |
| FALSE (Stops operation) | FALSE*1 | Indefinite value |

*1 When FALSE is output from ENO, data output from (d) is undefined. In that case, modify a program so that the data output from (d) is not used.

Operation error

- (s1) is the REAL type and (s2) is the INT type

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

- (s1) is the REAL type and (s2) is the DINT type

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

- (s1) and (s2) are REAL

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