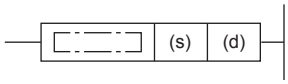
Converting single-precision real number radian to angle

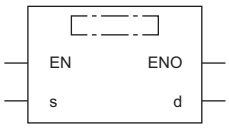
DEG(P)/DDEG(P)

FX5S FX5UJ FX5U FX5UC

These instructions convert a unit of angle from radians specified by (s) into degrees (DEG.), and store the converted angle in the device specified by (d). The DEG(P) instructions can also be used as DDEG(P).

Ladder diagram	Structured text
	ENO:=DEG(EN,s,d); ENO:=DEGP(EN,s,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

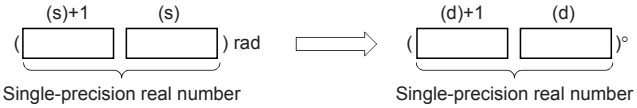
Operand	Description	Range	Data type	Data type (label)
(s)	A value in radians to be converted into a value in degrees or the head device number storing a value in radians	—	Single-precision real number	ANYREAL_32
(d)	Head device number storing a value in degrees acquired by conversion	—	Single-precision 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	$	
(s)	—	○	○	—	○	—	○	—	○	—	—
(d)	—	○	○	—	○	—	○	—	—	—	—

Processing details

- These instructions convert a unit of angle from radians specified by (s) into degrees (DEG.), and store the converted angle in the device specified by (d).



- The conversion from radians into degrees is executed as follows:

$$\text{Degrees} = \text{Radians} \times \frac{180}{\pi}$$

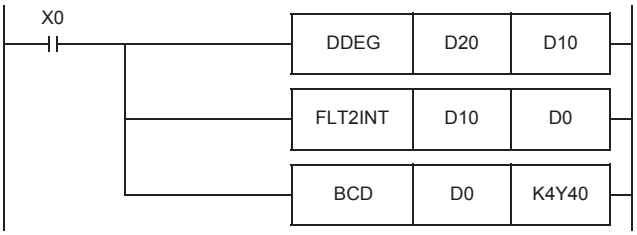
- The table below shows the related devices.

Device	Name	Description	
		Condition	Operation
SM700	Carry	The absolute value of the operation result ≥ 2^{128}	The value of (d) is the maximum value (2^{128}) of 32-bit real numbers and the carry flag SM700 turns on.

Device	Name	Description	
		Condition	Operation
SM8020	Zero	The operation result is true "0". (The mantissa part is "0").	The zero flag SM8020 turns on.
SM8021	Borrow	The absolute value of the operation result < 2^{-126}	The value of (d) is the minimum value (2^{-126}) of 32-bit real numbers and the borrow flag SM8021 turns on.
SM8022	Carry	The absolute value of the operation result ≥ 2^{128}	The value of (d) is the maximum value (2^{128}) of 32-bit real numbers and the carry flag SM8022 turns on.

Program example

In the program example shown below, a single-precision real number set in radians in D20 and D21 is converted into a BCD value in degrees, and stored to Y40 and Y57 when X0 turns ON.

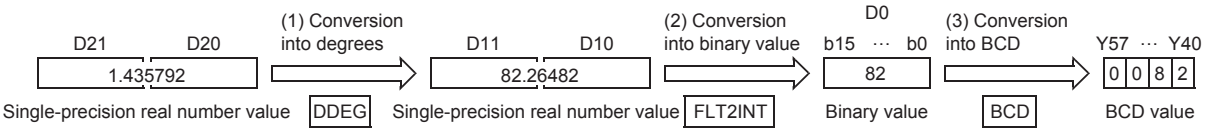


A value in radians is converted into a value in degrees (1).

The angle in single-precision real number is converted into an integer (2).

The converted integer is output to the seven-segment display unit (3).

- Operation when "1.435792" is specified in D20 and D21



Operation error

Error code (SD0/SD8067)	Description
3402H	The specified device value is -0, denormalized number, NaN (not a number), or ±∞.