23 BIT SHIFT FUNCTIONS

23.1 n-bit Left Shift

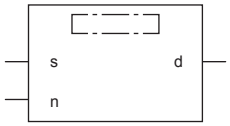
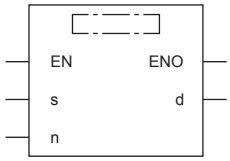
SHL(_E)

FX5S FX5UJ FX5U FX5UC

These functions shift an input value leftward by (n) bits and output the result.

Ladder diagram, FBD/LD		Structured text

[Without EN/ENO]	[With EN/ENO]	[Without EN/ENO]
		d:=SHL(s,n);
		[With EN/ENO]
		d:=SHL_E(EN,ENO,s,n);

Setting data

■Descriptions, types, and data types

Argument	Description	Type	Data type
EN	Execution condition (TRUE: Execution, FALSE: Stop)	Input variable	BOOL
s(IN)	Input	Input variable	ANY_BIT
n(N)	Number of shift bits	Input variable	ANY_BIT
ENO	Output status (TRUE: Normal, FALSE: Abnormal)	Output variable	BOOL
d(SHL(_E))	Output	Output variable	ANY_BIT

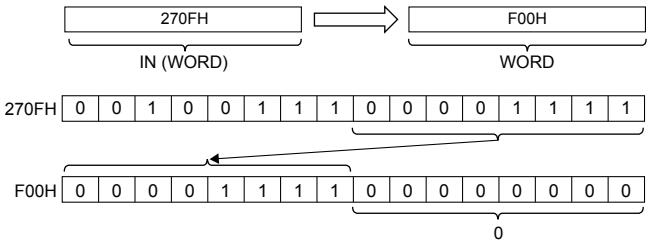
Processing details

■Operation processing

- These functions shift the 16-bit or 32-bit data (WORD or DWORD type) input to (s) left by (n) bits and output the result in the same data type as (s) from (d).
- The number input in (n) is used as the number of left-shift bits.

Ex.

When the data type of (s) is 16-bit data (WORD) and 8 is input in (n)



- "0" is set to "n" bits from the least significant bit.
- The input data to (s) is 16-bit data/32-bit data (WORD or DWORD type).
- A value input to (n) (Number of shift bits) is the INT type data value and within the following range.

When the data of (s) is 16-bit data (WORD)	When the data of (s) is 32-bit data (DWORD)
A value in (n) is within 0 to 15. The lower 4-bit data of the value in (n) is used. [Example] When the input value is 6: 6 When the input value is 22: 6	A value in (n) is within 0 to 31. The lower 5-bit data of the value in (n) is used. [Example] When the input value is 6: 6 When the input value is 22: 22

■Operation result

1. Function without EN/ENO

The operation processing is executed. The operation output value is output from (d).

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 output 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

There is no operation error.