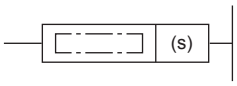
Disabling the interrupt program with specified priority or lower

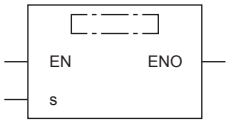
DI

FX5S FX5UJ FX5U FX5UC

This instruction disables the execution of the interrupt program with a priority specified by (s) or lower until the EI instruction is executed, even if the interrupt cause occurs.

Ladder diagram	Structured text
	ENO:=DI_1(EN,s);

FBD/LD



("DI_1" enters □.)

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s)	Priority for disabling interrupts	1 to 3	16-bit unsigned binary	ANY16
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

■Applicable devices

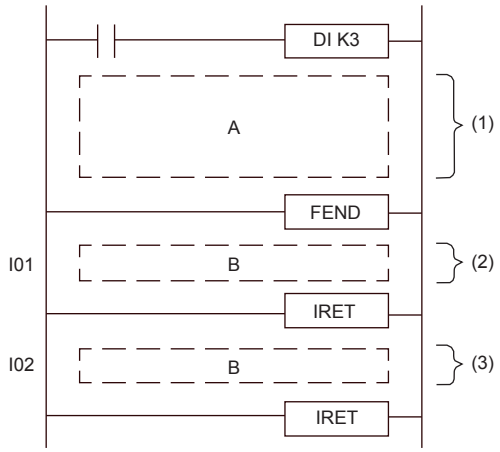
Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	
(s)	○	○	○	○	—	—	○	○	—	—	—

Processing details

- This instruction disables the execution of the interrupt program of the interrupt pointer number with an interrupt priority specified by (s) or lower.

Interrupt priority setting

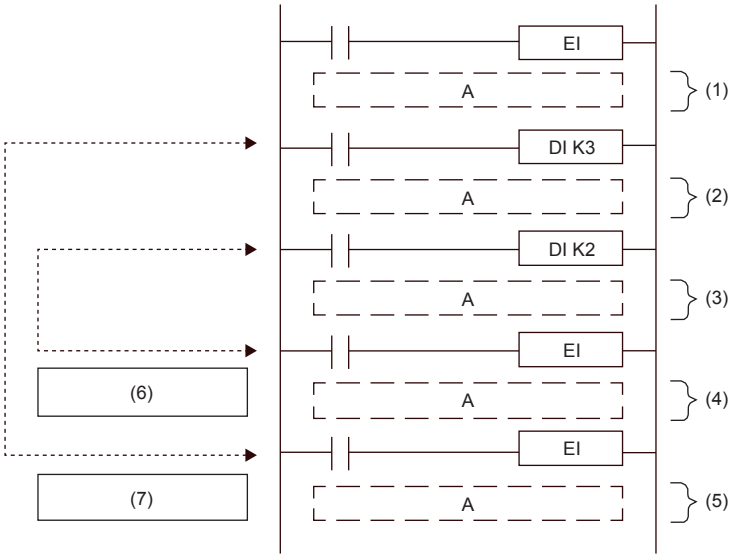
I No.	Priority
I01	2
I02	3



(1): Interrupt-disabled section for the priority 3 or lower (Interrupt-enabled section for the priority 2 or higher)
(2): Can be executed because of the priority 2.
(3): Cannot be executed because of the priority 3.

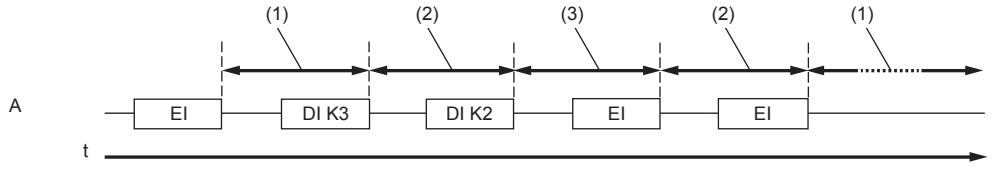
A: Sequence program
B: Interrupt Program

- By executing the EI instruction, the interrupt with the priority disabled by the counterpart DI instruction is enabled. However, when interrupts are disabled only with the DI instruction without an argument, interrupts with all the priorities are enabled by executing the EI instruction once.



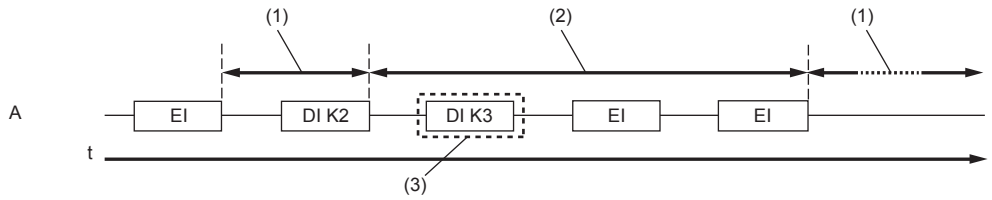
A: Sequence program
(1): Interrupt-enabled section for all priority
(2): Interrupt-disabled section for the priority 3 or lower (Interrupt-enabled section for the priority 2 or higher)
(3): Interrupt-disabled section for the priority 2 or lower (Interrupt-enabled section for the priority 1 or higher)
(4): Interrupt-disabled section for the priority 3 or lower (Interrupt-enabled section for the priority 2 or higher)
(5): Interrupt-enabled section for all priority
(6): EI, which is the counterpart of [DI K2]
(7): EI, which is the counterpart of [DI K3]

- Interrupts (requests) that are generated after the DI instruction are processed after the EI instruction is executed.
- When multiple DI instructions are executed and the argument has a priority higher than the currently disabled priority, interrupts with a priority lower than that of the argument are disabled.
- When multiple DI instructions are executed and the argument has a priority lower than the currently disabled priority, the interrupt disabled state is not changed.
- The DI instruction can be nested in up to 16 levels.
- The interrupt priority of the interrupt pointer can be set with parameters. (MELSEC iQ-F FX5 User's Manual (Application))
- The interrupt-disabled priority can be checked with SD758 (interrupt-disabling priority setting value).
- The following shows the interrupt-disabled section when the DI or EI instruction is executed.
  - When multiple DI instructions are executed (when interrupts with a priority higher than the currently disabled priority are specified and disabled)



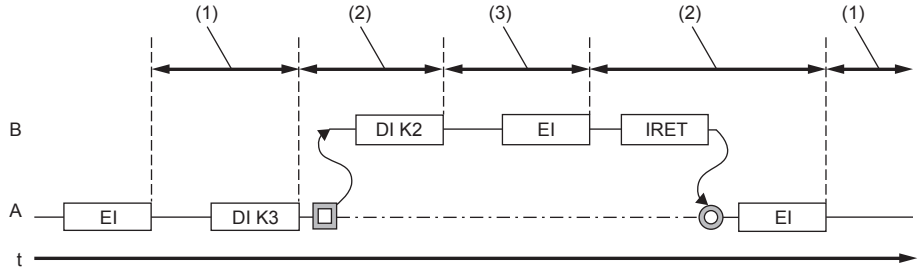
A: Scan execution type program
(1): Interrupt-enabled section for all priority
(2): Interrupt-disabled section for the priority 3 or lower (interrupt-enabled section for the priority 2 or higher)
(3): Interrupt-disabled section for the priority 2 or lower (interrupt-enabled section for the priority 1 or higher)

  - When multiple DI instructions are executed (when interrupts with a priority lower than the currently disabled priority are specified and disabled)



A: Scan execution type program
(1): Interrupt-enabled section for all priority
(2): Interrupt-disabled section for the priority 2 or lower (interrupt-enabled section for the priority 1 or higher)
(3): Because interrupts with the priority 2 or lower are already disabled, the interrupt-disabling priority is not changed.

• When the DI instruction is executed in an interrupt program



A: Scan execution type program

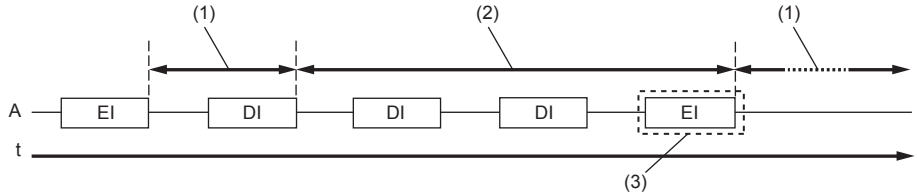
B: Interrupt Program

(1): Interrupt-enabled section for all priority

(2): Interrupt-disabled section for the priority 3 or lower (interrupt-enabled section for the priority 2 or higher)

(3): Interrupt-disabled section for the priority 2 or lower (interrupt-enabled section for the priority 1 or higher)

• When the DI instruction without an argument is executed



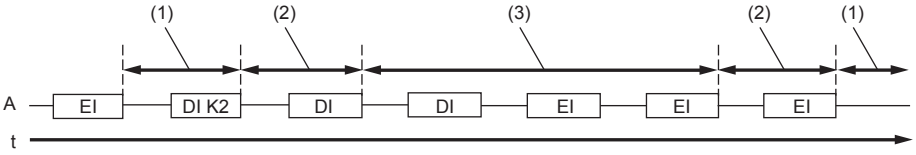
A: Scan execution type program

(1): Interrupt-enabled section for all priority

(2): Interrupt-disabled section for the priority 1 or lower (where all the interrupts are disabled)

(3): Because interrupts are disabled with the DI instruction without an argument, interrupts with all the priorities are enabled by executing the EI instruction once.

• When the DI instructions with and without an argument are executed (Execution order is DI instruction with an argument → DI instruction without an argument)



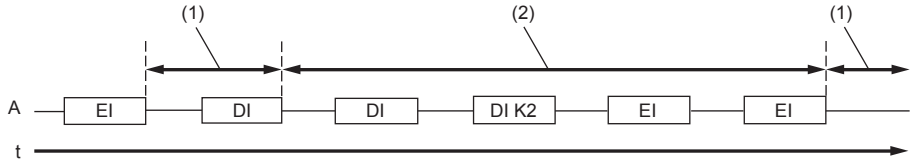
A: Scan execution type program

(1): Interrupt-enabled section for all priority

(2): Interrupt-disabled section for the priority 2 or lower (interrupt-enabled section for the priority 1 or higher)

(3): Interrupt-disabled section for the priority 1 or lower (where all the interrupts are disabled)

• When the DI instructions with and without an argument are executed (Execution order is DI instruction without an argument → DI instruction with an argument)



A: Scan execution type program

(1): Interrupt-enabled section for all priority

(2): Interrupt-disabled section for the priority 1 or lower (where all the interrupts are disabled)

Operation error

Error code (SD0/SD8067)	Description
3405H	The value specified by (s) is other than the following. 1 to 3
3362H	Nesting of the DI instruction exceeds 16 levels.