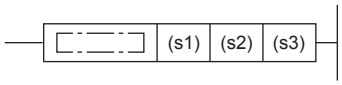
Start/stop of the 32-bit data high-speed I/O function

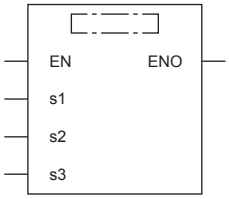
DHIOEN(P)

FX5S FX5UJ FX5U FX5UC

These instructions control the start and stop operations of a high-speed I/O function.

Ladder diagram	Structured text
	ENO:=DHIOEN(EN,s1,s2,s3); ENO:=DHIOENP(EN,s1,s2,s3);

FBD/LD



Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s1)	Function number to be started or stopped	Refer to Function number (☞ Page 1105)	16-bit signed binary	ANY16
(s2)	Set the bit of the channel number where the function is started.	-2147483648 to +2147483647	32-bit signed binary	ANY32
(s3)	Set the bit of the channel number where the function is stopped.	-2147483648 to +2147483647	32-bit signed binary	ANY32
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)	○	○	○	○	○	○	○	○	—	—	—
(s3)	○	○	○	○	○	○	○	○	—	—	—

Processing details

Specify the number of the function to be started or stopped in (s1), the bit of the channel to be started in (s2), and the bit of the channel to be stopped in (s3).

The following table shows the function numbers which can be specified in (s1).

■Function number

Function number	Function name
K0	High-speed counter
K10*1	Pulse density/rotation speed measurement
K20*1	High-speed comparison table (CPU module)
K21	High-speed comparison table (first high-speed pulse input/output module)
K22	High-speed comparison table (second high-speed pulse input/output module)
K23	High-speed comparison table (third high-speed pulse input/output module)
K24	High-speed comparison table (fourth high-speed pulse input/output module)
K30*1*2	Multi-output high-speed comparison table
K40	Pulse width measurement
K50	PWM

*1 When high-speed counter (function number: K0) is stopped during function operation, the function continues to operate, but nothing will be processed.

*2 When multi-output high-speed comparison table (function number: K30) is stopped, high-speed counter of the same ch is also stopped.

The following table shows the values which can be specified in (s2) and (s3) for each function number.

• Function number K0

The counting start and stop of a high-speed counter can be controlled for each channel of high-speed counter.

CH1 to CH8 are for the CPU module, and CH9 to CH16 are for the high-speed pulse input/output module.

Bit position															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
CH16	CH15	CH14	CH13	CH12	CH11	CH10	CH9	CH8	CH7	CH6	CH5	CH4	CH3	CH2	CH1

Ex.

To start CH3, set 04H in (s2). To stop it, set 04H in (s3).

To start CH1, CH4, and CH5, set 19H in (s2). To stop it, set 19H in (s3).

To start CH1 and CH4 and to stop CH5, set 09H in (s2) and set 10H in (s3).

• Function number K10

The measuring start and stop of the pulse density (rotation speed measurement) can be controlled for each channel of the high-speed counter.

Bit position															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
—								CH8	CH7	CH6	CH5	CH4	CH3	CH2	CH1

• Function number K20 to K24

Set the value to turn on the bit of the high-speed comparison table number which is to be started or stopped.

In the case of the CPU module (K20), b0 to b31 can be used.

In the case of the high-speed pulse input/output module (K21 to K24), b0 to b14 can be used.

Low-order bit position															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

High-order bit position															
b31	b30	b29	b28	b27	b26	b25	b24	b23	b22	b21	b20	b19	b18	b17	b16
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

• Function number K30

For the multi-output high-speed comparison table, specification of a channel is not required. To start the multi-output high-speed comparison table, set 01H in (s2). To stop it, set 01H in (s3).

Bit position															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
—															Valid

• Function numbers K40 and K50

The measuring start and stop of pulse width measurement and PWM can be controlled for each channel.
CH1 to CH4 are for the CPU module, and CH5 to CH12 are for the high-speed pulse input/output module.

Bit position															
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
—				CH12	CH11	CH10	CH9	CH8	CH7	CH6	CH5	CH4	CH3	CH2	CH1

Precautions

- Do not specify channel numbers of the high-speed pulse input/output module in a program with interrupt priority set to "1".
- When values that turn on the same channel are set for start and stop, the stop operation is prioritized.
- If there is a channel where an error occurs (error code: 3781H) when the high-speed counter (function number: K0) is executed by the DHIOEN instruction, the counter can no longer be started/stopped for the applicable channel and subsequent channels.
- When the high-speed comparison table (function number: K20) is used with the DHIOEN instruction, the total number of high-speed comparisons, including the DHSCS instruction, DHSCR instruction, DHSZ instruction, and interrupt input of built-in positioning, must be 32 or less.
- When using the high-speed comparison table (function numbers: K21 to K24) with the DHIOEN instruction, set the number of high-speed comparisons used within the same high-speed pulse input/output module to 15 times or less.
- For the high-speed comparison table numbers and total number of high-speed comparisons, refer to ☞ Page 1452 Added and Changed Functions.
- To start the high-speed comparison table (function numbers: K20 to K24) or the multi-output high-speed comparison table (function number: K30), the high-speed counter must be started using the DHIOEN instruction in advance.
- The high-speed input/output instructions operate according to the following parameters.

Function number	Function specified by the DHIOEN instruction	Parameter setting
K0	High-speed counter	Channel setting of the high-speed counter
K10	Pulse density (rotation speed measurement)	Channel setting of the pulse density/rotation speed measurement High-speed counter
K20	High-speed comparison table (CPU module)	Output setting of the high-speed counter
K21	High-speed comparison table (first high-speed pulse input/output module)	Output setting of the high-speed counter
K22	High-speed comparison table (second high-speed pulse input/output module)	Output setting of the high-speed counter
K23	High-speed comparison table (third high-speed pulse input/output module)	Output setting of the high-speed counter
K24	High-speed comparison table (fourth high-speed pulse input/output module)	Output setting of the high-speed counter
K30	Multi-output high-speed comparison table	Output setting of the high-speed counter
K40	Pulse width measurement	Channel setting of the pulse width measurement
K50	PWM	Channel setting of PWM

Operation error

Error code (SD0/SD8067)	Description
1810H	The channel specified by instructions using communication functions or built-in I/O is already used by other instructions.
2801H	The channel number of a module that does not exist is specified.
3056H	Timeout occurred while communicating with the target modules during execution of the instruction.
3060H	Signal error was detected while accessing the target modules during execution of the instruction.
3405H	An invalid function number is specified in (s).
3580H	An instruction that cannot be used in an interrupt program is used.
3600H	A channel number which is not selected in the parameter setting is executed.
3781H	Ring length ≤ preset value is specified and executed in channel for which ring length is set and preset input is enabled.