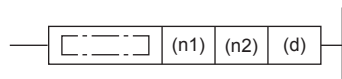# 8.26 Timing Check Instruction
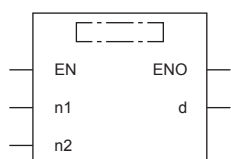
Generating timing pulses

DUTY

| FX5S | FX5UJ | FX5U | FX5UC |

This instruction sets user timing clock output destinations (SM420 to SM424 and SM8330 to SM8334) specified by (d) to on for the number of scans specified by (n1) and to off for the number of scans specified by (n2).

Ladder diagram	Structured text
┌─┈──┐ (n1) (n2) (d)	ENO:=DUTY(EN,n1,n2,d);

FBD/LD
┌─┈──┐ EN   ENO n1   d n2

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(n1)	Number of scans to be turned on	0 to 32767	16-bit unsigned binary	ANY16
(n2)	Number of scans to be turned off	0 to 32767	16-bit unsigned binary	ANY16
(d)	Special relay of the timing clock output destination	(SM420 to SM424, SM8330 to SM8334)	Bit	ANY_BOOL
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	$	
(n1)	○	○	○	○	—	—	○	○	—	—	—
(n2)	○	○	○	○	—	—	○	○	—	—	—
(d)	○*1	—	—	—	—	—	—	—	—	—	—

*1 Only SM can be used.

Processing details

- This instruction sets user timing clock output destinations (SM420 to SM424 and SM8330 to SM8334) specified by (d) to on for the number of scans specified by (n1) and to off for the number of scans specified by (n2).

SM420 to SM424,
SM8330 to SM8334
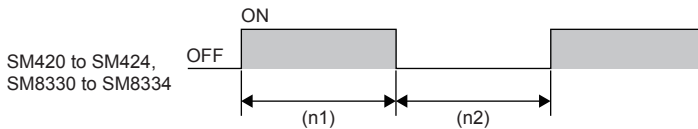
(n1): (n1) scans
(n2): (n2) scans

- Specify SM420 to SM424 (SM8330 to SM8334) in the special relay of the timing clock output destination specified by (d).
- In SM420 to SM424 (SM8330 to SM8334), when one device is turned on, another device is also turned on at the same time.
- The counted number of scans is stored among SD8330 to SD8334 in accordance with the special relay of the timing clock output destination specified by (d).
- The counted number of scans stored among SD8330 to SD8334 is reset when the counted value reaches "(n1)+(n2)" or when the command input (instruction) is set to on.

Special relay (d) for outputting the timing clock	Scan counting device
SM420(SM8330)	SD8330
SM421(SM8331)	SD8331
SM422(SM8332)	SD8332
SM423(SM8333)	SD8333
SM424(SM8334)	SD8334

- When the command input is set to ON, the operation is started. The special relay of the timing clock output destination is set to ON or OFF by the END instruction. Even if the command input is set to OFF, the operation is not stopped. In the STOP mode, the operation is stopped. When the power to the CPU module is turned OFF, the operation is stopped.
- When (n1) and (n2) are set to "0", the status is as shown below:

Status of (n1) and (n2)	ON/OFF status of (d)
(n1)=0, (n2)≥0	(d)= Fixed to OFF
(n1)>0, (n2)=0	(d)= Fixed to ON

- The table below shows the related devices (special relay).

Special relay	Name	Description
SM420(SM8330)	Timing clock output 1	Timing clock output in the DUTY instruction
SM421(SM8331)	Timing clock output 2	
SM422(SM8332)	Timing clock output 3	
SM423(SM8333)	Timing clock output 4	
SM424(SM8334)	Timing clock output 5	

- The table below shows the related devices (special register).

Special register	Name	Description
SD8330	Counted number of scans for timing clock output 1	Counted number of scans for timing clock output 1 in the DUTY instruction
SD8331	Counted number of scans for timing clock output 2	Counted number of scans for timing clock output 2 in the DUTY instruction
SD8332	Counted number of scans for timing clock output 3	Counted number of scans for timing clock output 3 in the DUTY instruction
SD8333	Counted number of scans for timing clock output 4	Counted number of scans for timing clock output 4 in the DUTY instruction
SD8334	Counted number of scans for timing clock output 5	Counted number of scans for timing clock output 5 in the DUTY instruction

Precautions

- The DUTY instruction can be used up to 5 times (points). It is not permitted, however, to use the same timing clock output destination device for two or more DUTY instructions.

Program example

In the program shown below, when X0 is set to ON, SM420 is set to ON for 1 scan, and is set to OFF for 3 scans.
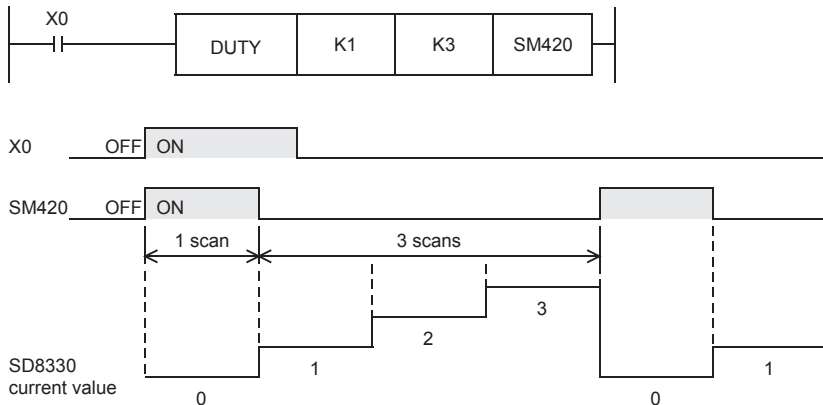
Operation error

Error code (SD0/SD8067)	Description
2820H	The device specified by (d) is out of the range from SM420 to SM424 (SM8330 to SM8334).
3405H	The value specified by (n1), (n2) is other than 0 to 32767.