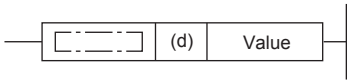
Timer

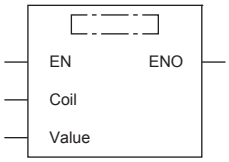
OUT T, OUTH T, OUTHS T, OUT ST, OUTH ST, OUTHS ST

FX5S FX5UJ FX5U FX5UC

The timer counts up to the set value when the operation result up to the OUT instruction is ON and the coil of the timer/retentive timer specified by (d) turns ON. When the timer times up, NO contact becomes conductive and NC contact becomes non conductive.

Ladder diagram	Structured text
	ENO:=OUT_T(EN,Coil,Value); ENO:=OUTH(EN,Coil,Value); ENO:=OUTHS(EN,Coil,Value);

FBD/LD



("OUT_T", "OUTH", "OUTHS" enters □.)

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(d)*1	Timer Number	—	Timer/retentive timer	ANY*3
(Set value)*2	Timer set value	0 to 32767	16-bit unsigned binary*4	ANY16*4
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

*1 In the case of the ST language and the FBD/LD language, d displays as Coil.
*2 In the case of the ST language and the FBD/LD language, Set value displays as Value.
*3 Only timer type/retentive timer type label can be used.
*4 In the case of the OUT_T instruction of the ST language and the FBD/LD language , data type is ANY_INT.
Digit specified bit type label cannot be used.

■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	$	
(d)	—	○*1	—	—	—	—	—	—	—	—	—
(Set value)	—	○*2	○	—	—	—	—	○*3	—	—	—

*1 Only T and ST can be used.
*2 T, ST, and C cannot be used.
*3 Only decimal constant (K) can be used.

Processing details

- These instructions count up to the set value when the operation result up to the OUT instruction is ON and the coil of the timer/retentive timer specified by (d) turns ON. When the timer reaches the end of its count (current value ≥ set value), NO contact becomes conductive and NC contact becomes non-conductive.
- Operation is as follows when the operation result up to the OUT instruction changes from ON to OFF.

Timer type	Timer coil	Current timer value	Before time-out		After time-out	
			NO contact	NC contact	NO contact	NC contact
Timer	off	0	Non-Conductive state	Conductive state	Non-Conductive state	Conductive state
Retentive timer	off	Holds current value	Non-Conductive state	Conductive state	Conductive state	Non-Conductive state

- After the timer times up, clear the current value of the retentive timer and turn the contact off by the RST instruction.
- The following processing is executed when the OUT instruction is executed:
  - The coil in the OUT T, OUTH T, OUTHS T, OUT ST, OUTH ST and OUTHS ST instructions turns ON/OFF
  - The contact in the OUT T, OUTH T, OUTHS T, OUT ST, OUTH ST and OUTHS ST instructions turns ON/OFF
  - The current value in the OUT T, OUTH T, OUTHS T, OUT ST, OUTH ST and OUTHS ST instructions changes
- When the OUT T instruction is skipped using the CJ instruction, etc. while the OUT T and OUT ST instructions are ON, these instructions do not update the current value or turn ON/OFF the contacts.
- When the same OUT T and OUT ST instructions are executed in the same scan twice or more, these instructions update the current value for the same number of times of execution.

Point

Values used for timers can be set in the range 1 to 32767. Actual timer constants are as follows since the OUT, OUTH, and OUTHS instructions operate as 100 ms, 10 ms, and 1 ms timers, respectively.

- OUT instruction: 0.1 to 3276.7 seconds
- OUTH instruction: 0.01 to 327.67 seconds
- OUTHS instruction: 0.001 to 32.767 seconds

For the counting method, refer to the following.

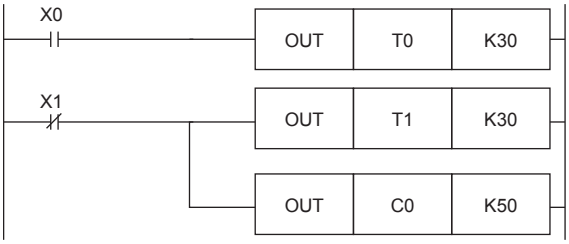
MELSEC iQ-F FX5 User's Manual (Application)

Program example

The set value is required after OUT instruction for the coil of a timer or counter.

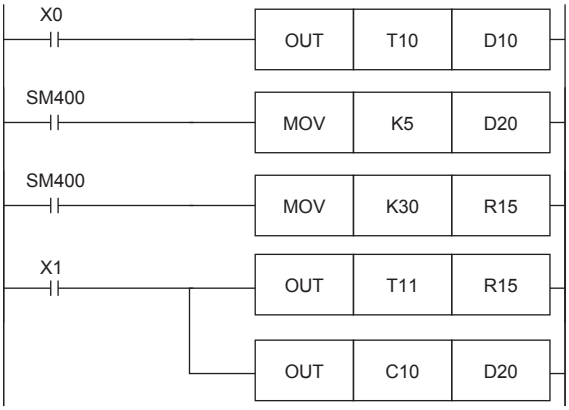
The set value can be specified directly by a decimal number (K) or indirectly using a data register (D) or file register (R).

• Direct specification



The set value of a timer or counter can be specified directly by a decimal number (K).

• Indirect specification



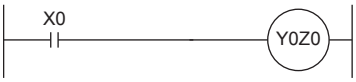
The set value of a timer or counter can be set by a data register (D) or file register (R). At this time, the current value of the data register (D) or file register (R) is regarded as the set value of the timer or counter.

It is necessary to write the set value to a data register (D) or file register (R) used for the set value by MOV instruction, DSW instruction or indicator before driving the timer or counter.

• Indexing

Devices used in OUT instruction can be indexed with index registers (Z and LZ).

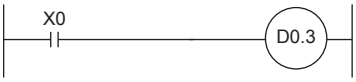
(State relays (S), long counter (LC), and "D□.b" cannot be indexed.)



24 words in total as the number of points of Z and LZ are available for indexing.
When a used device is an input (X) or output (Y), the value of an index register (Z and LZ) is converted into an octal number, and then added.
Example: When the value of Z0 is 20, Y24 turns ON or OFF.

• Bit specification of word devices

A bit in data register (D) can be specified as a device used in OUT instruction.



When specifying a bit in data register, input "." after a data register (D) number, and then input a bit number (0 to F) consecutively.
Only 16-bit data registers are available.
Specify a bit number as "0, 1, 2, ... 9, A, B, ... F" from the least significant bit.
Example: In the example shown on the left, the bit 3 of D0 turns ON or OFF when X0 turns ON or OFF.

Operation error

Error code (SD0/SD8067)	Description
3405H	A negative value is specified for the timer value.