

Writing clock data

TWR(P)

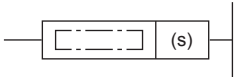
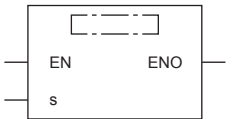
FX5S

FX5UJ

FX5U

FX5UC

This instruction writes the clock data to the built-in CPU module real time clock.

Ladder diagram	Structured text
	ENO:=TWR(EN,s); ENO:=TWRP(EN,s);
FBD/LD	
	

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s)	Head device number where the clock write source data is stored	—	16-bit signed binary	ANY16_ARRAY (Number of elements: 7)
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

- These instructions write the clock data stored in device numbers (s) to (s)+6 to the clock data area (SD210 to SD216 and SD8013 to SD8019) of the built-in real time clock in the CPU module.

Time setting data			Special registers	
Device	Item	Clock data	Device	Item
(s)	Year	1980 to 2079 (year, four digits)	SD210, SD8018	Year
(s)+1	Month	1 to 12	SD211, SD8017	Month
(s)+2	Day	1 to 31	SD212, SD8016	Day
(s)+3	Hour data	0 to 23	SD213, SD8015	Hour data
(s)+4	Minute data	0 to 59	SD214, SD8014	Minute data
(s)+5	Second data	0 to 59	SD215, SD8013	Second data
(s)+6	Day-of-the-week data	0 (Sunday) to 6 (Saturday)	SD216, SD8019	Day-of-the-week data

- Executing these instructions immediately changes the real time clock data. Therefore, transfer the clock data of a few minutes ahead the current time to the clock data area (s) to (s)+6 in advance. Execute the instruction when the actual time matches the clock data time.
- When using these instructions to set the clock data (i.e., performing time adjustment), control of special relay SM8015 (clock stop/adjustment) is not required.
- If incorrect values (i.e., values out of range) are set to the write source area, the clock data will not be updated. In this case, correct the clock data in the write source area and execute the instruction.

- Day of the week (SD216 and SD8019) is automatically corrected.
- The table below shows the related devices.

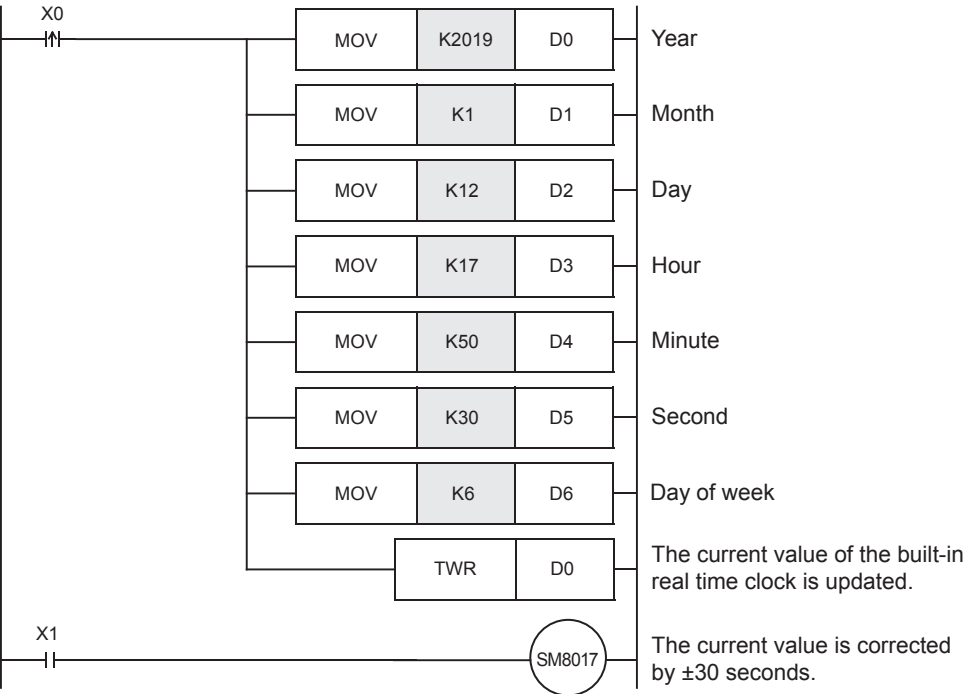
Device	Name	Description
SM8019	Real time clock error	This special data register turns on when the clock data value in the special register is exceeding the setting range.
Binary code		
SD210	Binary clock data (year)	The year data in the clock data is stored as a four-digit binary code.
SD211	Binary clock data (month)	The month data in the clock data is stored as a binary code.
SD212	Binary clock data (day)	The day data in the clock data is stored as a binary code.
SD213	Binary clock data (hour)	The hour data in the clock data is stored as a binary code.
SD214	Binary clock data (minute)	The minute data in the clock data is stored as a binary code.
SD215	Binary clock data (second)	The second data in the clock data is stored as a binary code.
SD216	Binary clock data (day of the week)	The day-of-a-week data in the clock data (0: Sunday, 1: Monday, ..., 6: Saturday) is stored as a binary code.
Binary code (FX3 compatible area)		
SD8013	Binary clock data (second)	The second data in the clock data is stored as a binary code.
SD8014	Binary clock data (minute)	The minute data in the clock data is stored as a binary code.
SD8015	Binary clock data (hour)	The hour data in the clock data is stored as a binary code.
SD8016	Binary clock data (day)	The day data in the clock data is stored as a binary code.
SD8017	Binary clock data (month)	The month data in the clock data is stored as a binary code.
SD8018	Binary clock data (year)	The year data in the clock data is stored as a four-digit binary code.
SD8019	Binary clock data (day of the week)	The day-of-a-week data in the clock data (0: Sunday, 1: Monday, ..., 6: Saturday) is stored as a binary code.

Precautions

- These instructions occupy seven points of device starting from device number specified by (s). Make sure that these devices are not used by other machine controls.

Program example

In the program example shown below, the CPU built-in real time clock is set (to 17:50:30 on Saturday, January 12, 2019).



- The shaded area indicates the set value of each item.
- When setting the time, it is recommended to set the time to several minutes ahead in advance, and then set X0 to ON when the accurate time is reached. The set time is then immediately written to the real time clock, and the clock data is updated.
- Every time X1 is set to ON, SM8017 is turned on and the current time can be corrected by ±30 seconds. For SM8017, refer to MELSEC iQ-F FX5 User's Manual (Application).

Operation error

Error code (SD0/SD8067)	Description
2820H	The device range specified by (s) exceeds the corresponding device range.