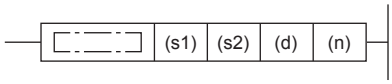
8.23 Data Operation Instruction

Searching 16-bit data

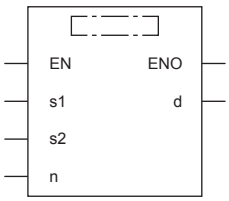
SERMM(P)

FX5S FX5UJ FX5U FX5UC

These instructions search for the same data, maximum value and minimum value in a data table.

Ladder diagram	Structured text
	ENO:=SERMM(EN,s1,s2,n,d); ENO:=SERMMP(EN,s1,s2,n,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s1)	Head device number in which same data, maximum value and minimum value are searched	—	16-bit signed binary	ANY16
(s2)	Data to be searched for or device number storing data	—	16-bit signed binary	ANY16
(d)	Head device number storing number of same data, maximum value and minimum value detected by search	—	16-bit unsigned binary	ANY16_ARRAY (Number of elements: 5)
(n)	Number of data in which same data, maximum value and minimum value are searched	1 to 65535	16-bit unsigned binary	ANY16_U
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)	○	○	○	○	—	—	○	○	—	—	—
(d)	○	○	○	○	—	—	○	—	—	—	—
(n)	○	○	○	○	—	—	○	○	—	—	—

Processing details

- These instructions search the same data as the 16-bit binary data of (s2) in (n) data starting from (s1), and store the search result in (d) to (d)+4.
- When the same data exists, five devices starting from (d) store the number of same data, first position, last position, maximum value position and minimum value position.
- When the same data does not exist, five devices starting from (d) store the number of same data, first position, last position, maximum value position and minimum value position. In this case, however, 0 is stored in three devices starting from (d) (which store the number of same data, first position and last position).

• The following table shows example of search result table configuration and data. (n=10)

Searched device (s1)	Searched data (s1) value (example)	Comparison data (s2) value (example)	Data position	Search result		
				Maximum value (d)+4	Same (d)	Minimum value (d)+3
(s1)	K100	K100	0		○ (First time)	
(s1)+1	K111		1			
(s1)+2	K100		2		○	
(s1)+3	K98		3			
(s1)+4	K123		4			
(s1)+5	K66		5			○
(s1)+6	K100		6		○ (Last)	
(s1)+7	K95		7			
(s1)+8	K210		8	○		
(s1)+9	K88		9			

• The following table shows example of search result table.

Device number	Description	Search result item
(d)	3	Number of same data
(d)+1	0	Same data position (first position)
(d)+2	6	Same data position (last position)
(d)+3	5	Minimum value position (last position)
(d)+4	8	Maximum value position (last position)

Precautions

- Comparison is executed algebraically. (-10<2)
- When there are two or more maximum or minimum values in the searched data, the last position of the max/min is stored respectively.
- When these instructions are driven, five devices ((d), (d)+1, (d)+2, (d)+3, and (d)+4) are occupied for storing the search result (d). Make sure that these devices are not used in other controls for the machine.

Operation error

Error code (SD0/SD8067)	Description
2820H	The device range specified by (s1) or (d) exceeds the corresponding device range.
3405H	The value stored in a device specified by (n) is 0.