Concatenating character strings
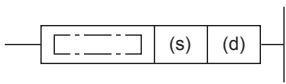
$+(P) [For 2 operands]

| FX5S | FX5UJ | FX5U | FX5UC |

These instructions concatenate the character string data stored in the device specified by (s) and later to the end of the character string data stored in the device specified by (d) and later, and store the concatenated string in the device specified by (d) and later.

Ladder diagram	Structured text
	Not supported (☞ Page 594 $+(P) [For 3 operands])

FBD/LD
Not supported. (☞ Page 594 $+(P) [For 3 operands])

Setting data

■Descriptions, ranges, and data types

| Operand	Description	Range	Data type	Data type (label)
(s)	Head device number storing data to be concatenated or data, or directly specified character string	—	Character string	ANYSTRING_SINGLE
(d)	Head device number storing data to which another data is concatenated	—	Character string	ANYSTRING_SINGLE

■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)	—	○*1	—	—	—	—	○	—	—	○	—
(d)	—	○*1	—	—	—	—	○	—	—	—	—

*1 T, ST, and C cannot be used.

Processing details

- These instructions concatenate the character string data stored in the device specified by (s) and later to the end of the character string data stored in the device specified by (d) and later, and store the concatenated string in the device specified by (d) and later.
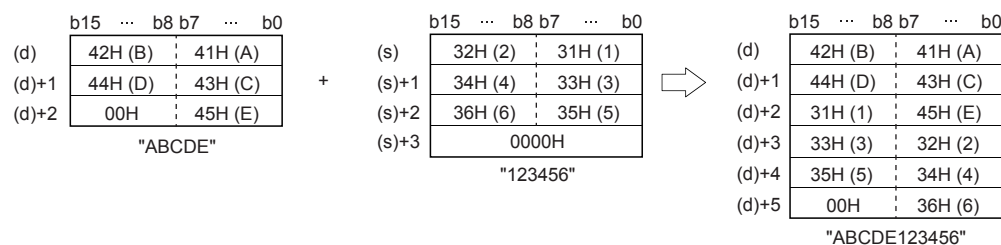
- Character strings in the devices specified by (s) and (d) up to a device that stores 00H are concatenated.
- When character strings are concatenated, 00H indicating an end of the character string specified by (d) is ignored and the character string specified by (s) is concatenated to the last character of (d).

Operation error

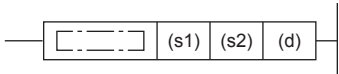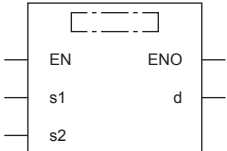| Error code (SD0/SD8067)	Description
2820H	In the corresponding device range after the device specified by (s), "00H" does not exist.
	In the corresponding device range after the device specified by (d), "00H" does not exist.
3406H	The whole concatenated character string cannot be stored in the devices from the device specified by (d) to the last device in the corresponding device range.
	The number of characters of the character string in the device specified by (s)+(d) exceeds 16383.
3405H	The character string specified by (s) has more than 16383 characters.
	The character string specified by (d) has more than 16383 characters.

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$+(P) [For 3 operands]

| FX5S | FX5UJ | FX5U | FX5UC |

These instructions concatenate the character string data stored in the device specified by (s2) and later to the end of the character string data stored in the device specified by (s1) and later, and store the concatenated string in the device specified by (d) and later.

Ladder diagram	Structured text
☐:☐ (s1) (s2) (d)	ENO:=STRINGPLUS(EN,s1,s2,d); ENO:=STRINGPLUSP(EN,s1,s2,d);

FBD/LD
☐:☐ EN　　ENO s1　　d s2

("STRINGPLUS", "STRINGPLUSP" enters ☐.)

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s1)	Head device number storing data to which another data is concatenated or data, or directly specified character string	—	Character string	ANYSTRING_SINGLE
(s2)	Head device number storing data to be concatenated or data, or directly specified character string	—	Character string	ANYSTRING_SINGLE
(d)	Head device number for storing the concatenated data	—	Character string	ANYSTRING_SINGLE
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)	—	○*1	—	—	—	—	○	—	—	○	—
(s2)	—	○*1	—	—	—	—	○	—	—	○	—
(d)	—	○*1	—	—	—	—	○	—	—	—	—

*1　T, ST, and C cannot be used.

Processing details

- These instructions concatenate the character string data stored in the device specified by (s2) and later to the end of the character string data stored in the device specified by (s1) and later, and store the concatenated string in the device specified by (d) and later.
- Character strings in the devices specified by (s1) and (s2) up to a device that stores 00H are concatenated.
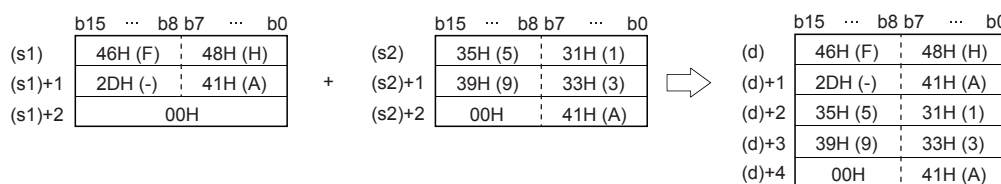
	b15 ⋯ b8	b7 ⋯ b0
(s1)	46H (F)	48H (H)
(s1)+1	2DH (-)	41H (A)
(s1)+2	00H	

+

	b15 ⋯ b8	b7 ⋯ b0
(s2)	35H (5)	31H (1)
(s2)+1	39H (9)	33H (3)
(s2)+2	00H	41H (A)

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	b15 ⋯ b8	b7 ⋯ b0
(d)	46H (F)	48H (H)
(d)+1	2DH (-)	41H (A)
(d)+2	35H (5)	31H (1)
(d)+3	39H (9)	33H (3)
(d)+4	00H	41H (A)

- When character strings are concatenated, 00H indicating an end of the character string specified by (s1) is ignored and the character string specified by (s2) is concatenated to the last character of (s1).
- After two character strings are connected, "00H" is automatically added at the end. When the number of characters after the concatenation is odd, 00H is stored in the upper byte of the device storing the last character. When the number is even, 0000H is stored in the device after the last character.

Precautions

- For direct specification, up to 255 characters can be specified (input). When word devices are specified in (s1) or (s2), this restriction (up to 32 characters) is not applicable.
- When the values in both (s1) and (s2) start from "00H" (that is, when the number of characters is "0"), "0000H" is stored in (d).

Operation error

Error code (SD0/SD8067)	Description
2820H	In the corresponding device range after the device specified by (s1), "00H" does not exist.
	In the corresponding device range after the device specified by (s2), "00H" does not exist.
2821H	The numbers of the character string-storing devices specified by (s1), (s2), and (d) overlap.
3405H	The character string specified by (s1) has more than 16383 characters.
	The character string specified by (s2) has more than 16383 characters.
3406H	The character string specified by (d) has more than 16383 characters.
	The whole concatenated character string cannot be stored in the devices from the device specified by (d) to the last device in the corresponding device range.