Searching character string

INSTR(P)
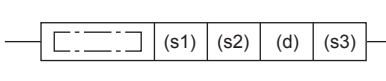
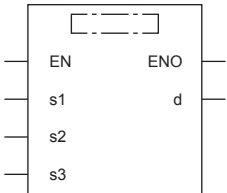`FX5S` `FX5UJ` `FX5U` `FX5UC`

These instructions search the character string data stored in the device specified by (s2) and later starting from the (s3)th character from the left, for the character string data stored in the device specified by (s1) and later and store the search result in the device specified by (d).

Ladder diagram	Structured text
[▢:▢] (s1) (s2) (d) (s3)	ENO:=INSTR(EN,s1,s2,s3,d); ENO:=INSTRP(EN,s1,s2,s3,d);

FBD/LD
┌─────────┐ │ [▢:▢] │ │ EN   ENO │ │ s1   d │ │ s2   │ │ s3   │ └─────────┘

Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s1)	Character string to be searched for or head device number storing a character string to be searched for	—	Character string	ANYSTRING_SINGLE
(s2)	Character string to be searched or head device number storing a character string to be searched	—	Character string	ANYSTRING_SINGLE
(d)	Head device number storing search result	—	16-bit signed binary	ANY16
(s3)	Search start position	1 to 16383	16-bit signed binary	ANY16
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

■Applicable devices

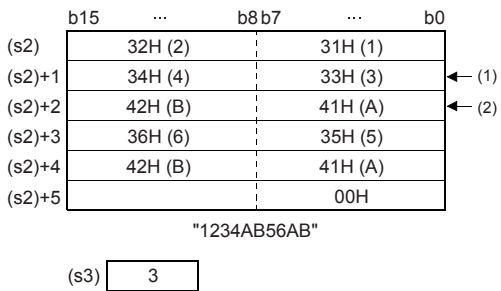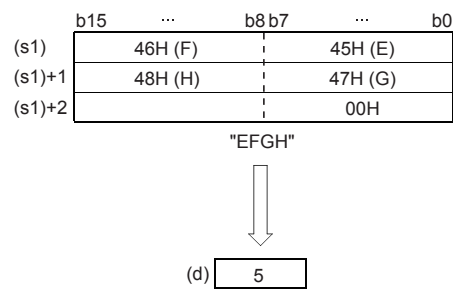| Operand	Bit	Word		Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	
(s1)	—	○*1	—	—	—	—	○	—	—	○	—
(s2)	—	○*1	—	—	—	—	○	—	—	○	—
(d)	○	○	○	○	—	—	○	—	—	—	—
(s3)	○	○	○	○	—	—	○	○	—	—	—

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

Processing details

- These instructions search the character string data stored in the device specified by (s2) and later starting from the (s3)th character from the left, for the character string data stored in the device specified by (s1) and later and store the search result in the device specified by (d). The search result stores the position where the first detected character is located from the start character in the character string data stored in (s2).

	b15 ··· b8	b7 ··· b0	
(s2)	42H (B)	41H (A)	
(s2)+1	44H (D)	43H (C)	← (1)
(s2)+2	46H (F)	45H (E)	← (2)
(s2)+3	48H (H)	47H (G)	
(s2)+4	4AH (J)	49H (I)	
(s2)+5	00H	4BH (K)	

"ABCDEFGHIJK"

(s3) 3

	b15 ··· b8	b7 ··· b0
(s1)	46H (F)	45H (E)
(s1)+1	48H (H)	47H (G)
(s1)+2	00H	

"EFGH"

⇓

(d) 5
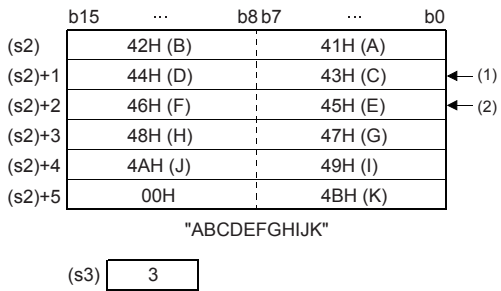
(1): Search start position (s3): 3rd character
(2): Fifth character from the head character

- If no matched character string data is found, 0 is stored in (d).
- When the search start position "s3" is a negative number or "0", search processing is not executed.
- A character string can be directly specified in the character string (s1).

	b15 ··· b8	b7 ··· b0	
(s2)	32H (2)	31H (1)	
(s2)+1	34H (4)	33H (3)	← (1)
(s2)+2	42H (B)	41H (A)	← (2)
(s2)+3	36H (6)	35H (5)	
(s2)+4	42H (B)	41H (A)	
(s2)+5		00H	

"1234AB56AB"

(s3) 3

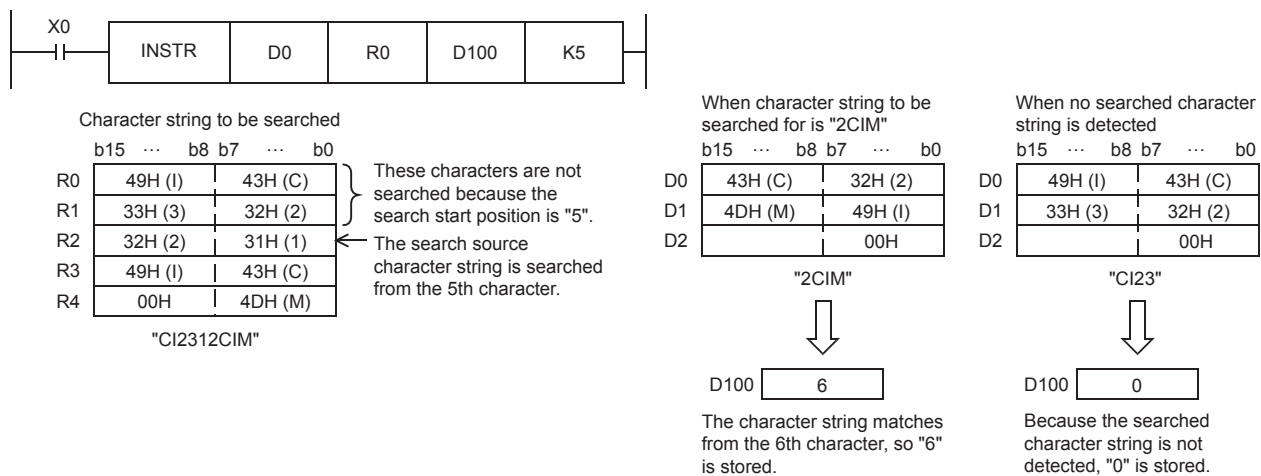Character string to be searched for (s1)

"AB"

⇓

(d) 5

(1): Search start position (s3): 3rd character
(2): Fifth character from the head character
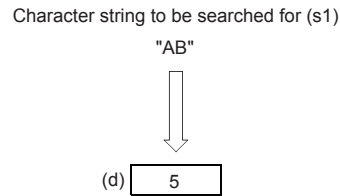
Program example

In the program shown below, the character string stored in D0 and later is searched from the 5th character of the character string "CI2312CIM" stored in R0 and later when X0 is set to ON. The search results are stored in D100.

```
  X0
──┤├──┤ INSTR │ D0 │ R0 │ D100 │ K5 ├──
```

Character string to be searched

	b15 ··· b8	b7 ··· b0
R0	49H (I)	43H (C)
R1	33H (3)	32H (2)
R2	32H (2)	31H (1)
R3	49H (I)	43H (C)
R4	00H	4DH (M)

"CI2312CIM"

} These characters are not searched because the search start position is "5".

← The search source character string is searched from the 5th character.

When character string to be searched for is "2CIM"

	b15 ··· b8	b7 ··· b0
D0	43H (C)	32H (2)
D1	4DH (M)	49H (I)
D2		00H

"2CIM"

⇩

D100	6

The character string matches from the 6th character, so "6" is stored.

When no searched character string is detected

	b15 ··· b8	b7 ··· b0
D0	49H (I)	43H (C)
D1	33H (3)	32H (2)
D2		00H

"CI23"

⇩

D100	0

Because the searched character string is not detected, "0" is stored.

Operation error

Error code (SD0/SD8067)	Description
2820H	No NULL code (00H) exists in the corresponding device range of the device specified by (s1) and later.
	No NULL code (00H) exists in the corresponding device range of the device specified by (s2) and later.
3405H	The value stored in a device specified in (s3) exceeds the number of characters of (s2).
	The character string specified by (s1) has more than 16383 characters.
	The character string specified by (s2) has more than 16383 characters.