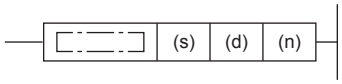
Converting HEX code data to ASCII

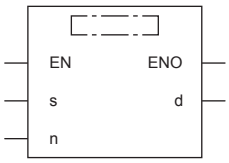
ASCI(P)

FX5S FX5UJ FX5U FX5UC

These instructions convert the (n) characters (digits) within the hexadecimal code data specified by (s) to ASCII, and store the converted data in the device specified by (d) and later.

Ladder diagram	Structured text
	ENO:=ASCI(EN,s,n,d); ENO:=ASCIP(EN,s,n,d);

FBD/LD



Setting data

■Descriptions, ranges, and data types

Operand	Description	Range	Data type	Data type (label)
(s)	Head device number storing hexadecimal code to be converted	—	16-bit signed binary	ANY16
(d)	Head device number storing converted ASCII code	—	Character string	ANYSTRING_SINGLE
(n)	Number of characters (digits) of hexadecimal code to be converted	1 to 32767	16-bit unsigned binary	ANY16_U
EN	Execution condition	—	Bit	BOOL
ENO	Execution result	—	Bit	BOOL

■Applicable devices

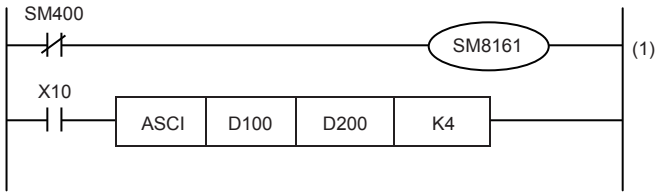
Operand	Bit	Word			Double word		Indirect specification	Constant			Others
	X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC	LZ		K, H	E	$	
(s)	○	○	○	○	—	—	○	○	—	—	—
(d)	○	○*1	○	—	—	—	○	—	—	—	—
(n)	○	○	○	○	—	—	○	○	—	—	—

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

Processing details

- These instructions convert the (n) characters (digits) within the hexadecimal code data specified by (s) to ASCII, and store the converted data in the device specified by (d) and later.
- The 16-bit mode and 8-bit mode options are available for the ASCI(P) instructions. For the operation in each mode, refer to the proceeding pages.
  - 16-bit conversion mode (while SM8161 is OFF)

    Each digit of hexadecimal data stored in the device specified by (s) and later is converted into ASCII code, and transferred to the upper 8 bits and lower 8 bits of each device specified by (d) and later. SM8161 must always be off in the 16-bit conversion mode.
    In the following program, conversion is executed as follows:



Devices specified by (s) and later
(D100)=0ABCH
(D101)=1234H
(D102)=5678H

(1): 16-bit mode

■Number of specified digits (characters) and conversion result

(n) / (d)	K1	K2	K3	K4	K5	K6	K7	K8	K9
D200 lowest-order byte	"C"	"B"	"A"	"0"	"4"	"3"	"2"	"1"	"8"
D200 highest-order byte		"C"	"B"	"A"	"0"	"4"	"3"	"2"	"1"
D201 lowest-order byte			"C"	"B"	"A"	"0"	"4"	"3"	"2"
D201 highest-order byte				"C"	"B"	"A"	"0"	"4"	"3"
D202 lowest-order byte					"C"	"B"	"A"	"0"	"4"
D202 highest-order byte						"C"	"B"	"A"	"0"
D203 lowest-order byte			(1)				"C"	"B"	"A"
D203 highest-order byte								"C"	"B"
D204 lowest-order byte									"C"

(1): Do not change

■Bit configuration when (n) is K4

D100 = 0ABCH

0	0	0	0	1	0	1	0	1	0	1	1	1	1	0	0
0				A				B				C			

D200

0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0
"A" → 41H								"0" → 30H							

D201

0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0
"C" → 43H								"B" → 42H							

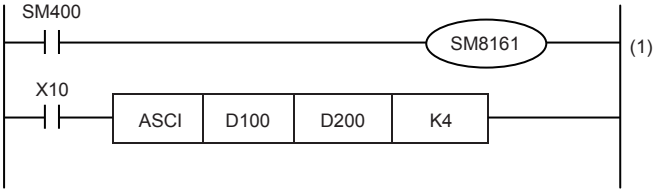
ASCII code

"0" = 30H	"1" = 31H	"5" = 35H
"A" = 41H	"2" = 32H	"6" = 36H
"B" = 42H	"3" = 33H	"7" = 37H
"C" = 43H	"4" = 34H	"8" = 38H

• 8-bit conversion mode (while SM8161 is ON)

Each digit of hexadecimal data stored in the device specified by (s) and later is converted into ASCII code, and transferred to the lower 8 bits of each device specified by (d) and later. SM8161 must always be on in the 8-bit conversion mode.

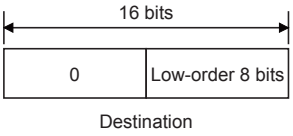
In the following program, conversion is executed as follows:



Devices specified by (s) and later
(D100)=0ABCH
(D101)=1234H
(D102)=5678H

(1): 8-bit mode

When SM8161 is set to on, the 8-bit mode is selected.
The conversion processing is executed as follows.



■Number of specified digits (characters) and conversion result

(n) / (d)	K1	K2	K3	K4	K5	K6	K7	K8	K9
D200	"C"	"B"	"A"	"0"	"4"	"3"	"2"	"1"	"8"
D201		"C"	"B"	"A"	"0"	"4"	"3"	"2"	"1"
D202			"C"	"B"	"A"	"0"	"4"	"3"	"2"
D203				"C"	"B"	"A"	"0"	"4"	"3"
D204					"C"	"B"	"A"	"0"	"4"
D205						"C"	"B"	"A"	"0"
D206			(1)				"C"	"B"	"A"
D207								"C"	"B"
D208									"C"

(1): Do not change

■Bit configuration when (n) is K2

D100 = 0ABCH

0	0	0	0	1	0	1	0	1	0	1	1	1	1	0	0
0				A				B				C			

D200 = ASCII code of B = 42H

0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
								4				2			

D201 = ASCII code of C = 34H

0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
								4				3			

ASCII code

"0" = 30H	"1" = 31H	"5" = 35H
"A" = 41H	"2" = 32H	"6" = 36H
"B" = 42H	"3" = 33H	"7" = 37H
"C" = 43H	"4" = 34H	"8" = 38H

Precautions

- When outputting data in the BCD format for a printer, for example, it is necessary to convert binary data into BCD data before executing the ASCI(P) instructions.
- Whether NULL (00H) is stored after the last character or not depends on the ON/OFF status of the output character number selector signal SM701. When SM701 is off, NULL (00H) is stored. When SM701 is on, the original data remains.
- Depending on the ON/OFF status of SM701 and SM8161, the number of devices occupied by (d) differs.

SM701	SM8161	Number of devices occupied by (d)
ON	ON	Number of letters
ON	OFF	Number of letters ÷ 2
OFF	ON	Number of letters ÷ 1
OFF	OFF	(Number of letters ÷ 2) + 1

- When HEXA(P), CRC(P), or CCD(P) is used, the extension flag SM8161 is common to other instructions. When using an instruction described above and the ASCI(P) instructions in the same program, make sure to set SM8161 to ON or OFF just before each instruction so that SM8161 does not apply to another instruction.

Operation error

Error code (SD0/SD8067)	Description
2820H	The device specified by (s) or (d) exceeds the corresponding device range.
3405H	The value specified by (s) is other than any of 1 to 32767.