

Converting character string to 32-bit binary data

DVAL(P)(_U)

FX5S FX5UJ FX5U FX5UC

These instructions convert the character string in the device numbers specified by (s) and later to 32-bit binary data, and store the number of digits in the device specified by (d1) and the binary data in the device specified by (d2).

Ladder diagram	Structured text	
	ENO:=DVAL(EN,s,d1,d2); ENO:=DVALP(EN,s,d1,d2);	ENO:=DVAL_U(EN,s,d1,d2); ENO:=DVALP_U(EN,s,d1,d2);

FBD/LD

Setting data

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■Descriptions, ranges, and data types

Operand	Description		Range	Data type	Data type (label)
(s)	Character string to be converted to binary data, or head device for storing the character string.		—	Character string	ANYSTRING_SINGLE
(d1)	DVAL(P) DVAL(P)_U		—	16-bit signed binary	ANY16_S_ARRAY (Number of elements: 2)
				16-bit unsigned binary	ANY16_U_ARRAY (Number of elements: 2)
(d2)	DVAL(P) DVAL(P)_U		—	32-bit signed binary	ANY32_S
				32-bit unsigned binary	ANY32_U
EN	Execution condition		—	Bit	BOOL
ENO	Execution result		—	Bit	BOOL

■Applicable devices

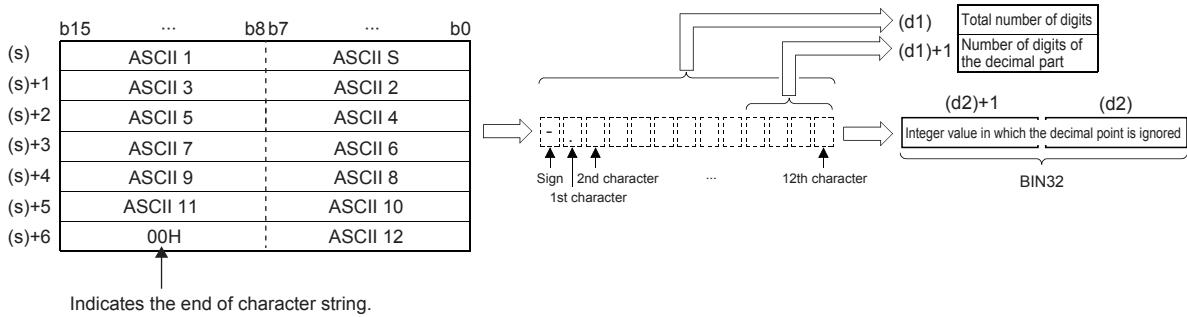
Operand	Bit	Word			Double word		Indirect specification	Constant			Others
		X, Y, M, L, SM, F, B, SB, S	T, ST, C, D, W, SD, SW, R	U□\G□	Z	LC		K, H	E	\$	
(s)	—	○*1	—	—	—	—	○	—	—	○	—
(d1)	○	○	—	—	—	—	○	—	—	—	—
(d2)	○	○	○	○	○	○	○	—	—	—	—

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

Processing details

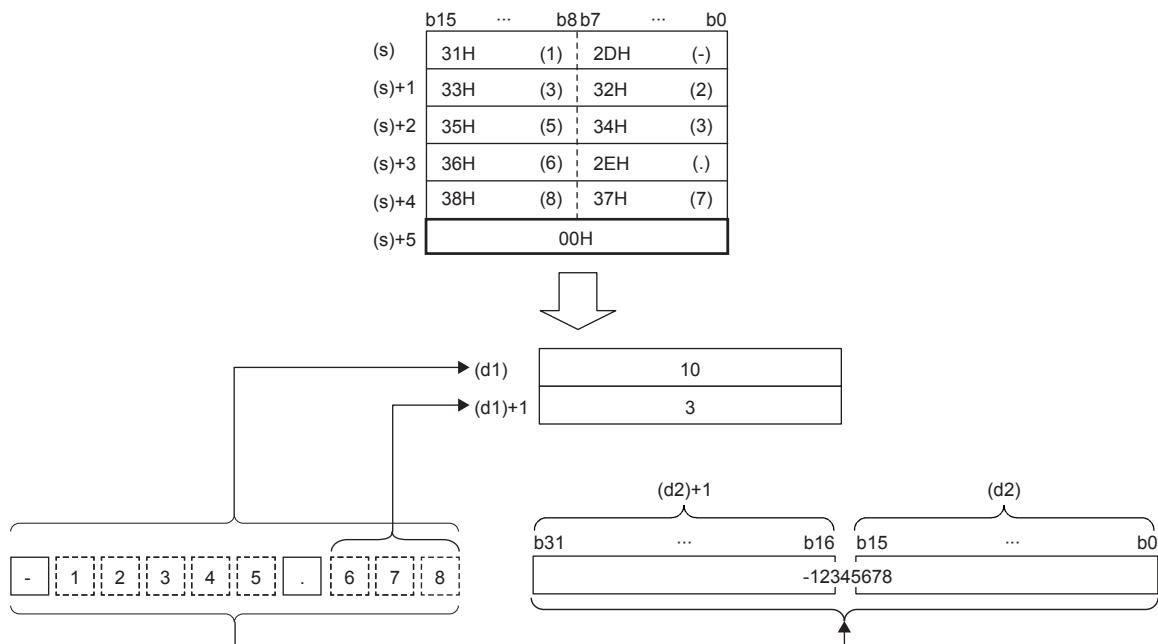
- These instructions convert the character string in the device numbers specified by (s) and later to 32-bit binary data, and store the number of digits in the device specified by (d1) and the binary data in the device specified by (d2). When converting a character string into binary data, the data from the device number specified by (s) to a device number storing "00H" is handled as a character string.

- The total number of digits stored in (d1) is the total number of characters (including the sign and decimal point) representing the numeric value. The number of digits in the decimal part stored in (d1)+1 is the number of characters representing the decimal part after 2EH (.). The 32-bit binary data stored in (d2) is binary value converted from a character string with the decimal point ignored.



Ex.

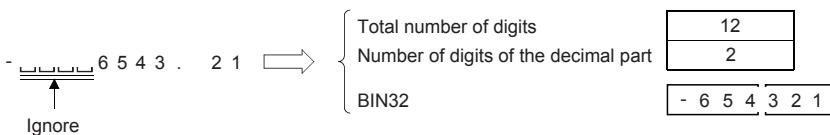
When the character string "-12345.678" (signed) is specified by (s) and later



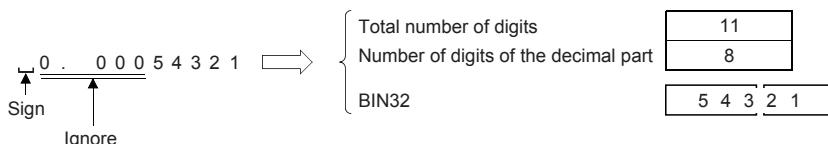
- The total number of characters of the character string specified by (s) is 2 to 13 characters.
- In the character string specified by (s), the number of characters that form the decimal part is 0 to 10 characters. However, be sure to specify "Total number of digits - 3" or below.
- The range of the character string of the numeric value that can be converted to a binary value is -2147483648 to 2147483647 for a signed value with the decimal point ignored, and 0 to 4294967295 for an unsigned value. A character string of a numeric value excluding the sign and decimal point can be specified only within the range of 30H to 39H. (Value with the decimal point ignored ... "-12345.6" becomes "-123456".)
- When representing a positive numeric value, 20H is set in the sign, and when representing a negative numeric value, 2DH is set.
- Set 2EH in the decimal point.
- The total number of digits stored in (d1) includes all characters (including signs and decimal points) that represent a numerical value. The number of digits in the decimal part stored in (d1)+1 is the number of characters representing the decimal part after 2EH (.). The binary data to be stored in (d2) is the binary value converted from the character string with the decimal point ignored.
- When "20H (space)" or "30H (0)" exists between the sign and the first non-zero number in a character string specified by (s), "20H" or "30H" is ignored during conversion to a binary value.

Ex.

When "20H" exists between the sign and the first non-zero number (a signed value is specified)

**Ex.**

When "30H" exists between the sign and the first non-zero number



- Do not set 2EH(.) to the last character of (s). (Example: 1234.)

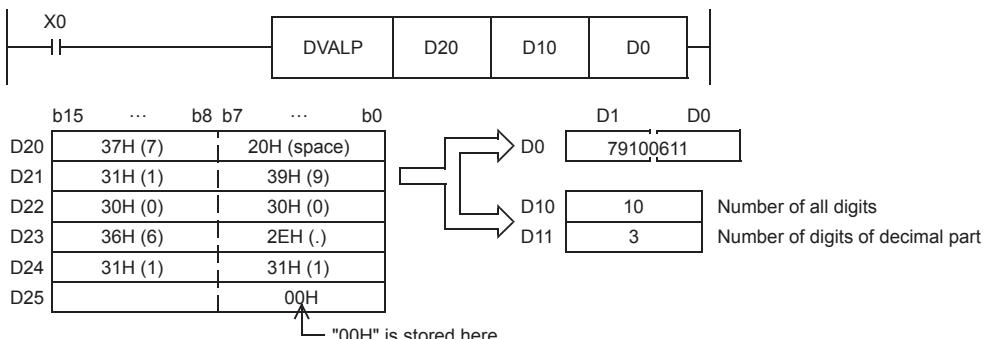
Precautions

- Store sign data, "space (20H)" or "- (2DH)" in the 1st byte (low-order 8 bits of the head device set in (s)). Only the ASCII data "0 (30H)" to "9 (39H)", "space (20H)" and "decimal point (2EH)" can be stored from the 2nd byte to the "00H" at the end of the character string in (s). If "- (2DH)" is stored in the 2nd byte or later, an operation error occurs.

Program example

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In the program below, the character string data stored in D20 to D24 is regarded as an integer value. This value is converted into 32-bit binary data, and stored in D0 and D1 when X0 is set to ON.



Operation error

Error code (SD0/SD8067)	Description
2820H	<p>The device specified by (d1) exceeds the corresponding device range.</p> <p>When "00H" is not set in the corresponding device range after the device specified in (s).</p>
3401H	<p>The number of characters of the character string specified by (s) is other than 2 to 13 characters.</p> <p>The number of characters of the decimal part of the character string specified by (s) is other than 0 to 10 characters.</p> <p>The relationship between the total number of characters specified by (s) and the number of characters of the decimal part is other than that described below. Total number of characters - 3 ≥ Number of characters in the decimal part</p> <p>When the DVAL(P) instruction is used, an ASCII code other than "20H" and "2DH" is set as a sign.</p> <p>When the DVAL(P)_U instruction is used, an ASCII code other than "20H" is set as a sign.</p> <p>An ASCII code other than 30H to 39H, and 2EH (decimal point) is set in the digits of each number.</p> <p>Two or more decimal points are set.</p> <p>The converted binary value exceeds the range that can be converted by each instruction. Signed operation: -2147483648 to +2147483647, unsigned operation: 0 to 4294967295</p> <p>2EH(.) is set to the last character of (s).</p>