STRING

Description

An operand of the STRING data type saves several characters in a character string that can consist of up to 254 characters. In a character string, all characters of the codepage created on the system are permitted. The characters are specified in single quotation marks.

A character string can also contain special characters. The escape character $ is used to identify control characters, dollar signs and single quotation marks.

> **Note**
>
> **Different code pages**
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> Please note that the special characters are coded using the code page currently set in Windows. This means that a string that contains special characters can be displayed differently on a different operating system with a different code page.
>
> The dependency of the codepage on the created system makes an international use of the user program more difficult. Only the characters from the 7-bit ASCII coding are internationally valid.

The following table shows the properties of a STRING tag:

Length (bytes)	Format	Value range	Example of value input
n + 2 [1]	ASCII character string incl. special characters	0 to 254 characters	• 'Name' • STRING#'NAME' • STRING#'Na... (The actual length of the string is longer than the space available on the screen.) • STRING#'' (The string is empty.)
[1] An operand of the STRING data type occupies two bytes more than the specified maximum length in the memory.			

The table below shows examples for the notation of special characters:

Character	Hex	Meaning	Example
$L or $l	0A	Line feed	'$LText', '$0AText'
$N	0A and 0D	Line break The line break occupies 2 characters in the character string and is converted to RL in the display in the editor.	'$NText', '$0A$0DText'
$P or $p	0C	Page feed	'$PText', '$0CText'
$R or $r	0D	Carriage return (CR)	'$RText','$0DText'
$T or $t	09	Tab	'$TText', '$09Text'
$$	24	Dollar sign	'100$$', '100$24'

$'	27	Single quotation mark	'$'Text$'','$27Text$27'

If the escape character $ is followed by a letter from the table, the character indicated in the table is entered in the string. If the escape character $ is followed by a letter that is not in the table, this letter is entered in the string. If the escape character $ is followed by two hexadecimal digits or only one digit, this code is entered in the string.

Use in the watch table

The following applies to a CPU of the S7-300/400 series: If a tag of the STRING data type is being monitored, only the first 30 characters will be displayed. If the actual length is greater than 30 characters, an ellipsis (…) is displayed instead of the final apostrophe ('). STRING values with more than 30 characters cannot be used for modifying.

Maximum length of a character string

The maximum length of the character string can be specified during the declaration of an operand using square brackets after the keyword STRING (for example, STRING[4]). You can also use local or global constants to declare the maximum length (for example, STRING[#loc_const] or STRING["glob_const"]). If the specification of the maximum length is omitted, the standard length of 254 characters is set for the respective operand.

You can find additional information about using local or global constants to declare the maximum length here:

- Declaring the block interface: **Declare variables of the STRING and WSTRING data types**
- Programming data blocks: **Declaring tags of the STRING data type**
- **Examples of using constants**

If the actual length of a specified character string is shorter than the declared maximum length, the characters are written to the character string left-justified and the remaining character spaces remain undefined. Only occupied character spaces that define the actual length of the string are considered for the value processing and all displays.

> **Note**
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> For S7-300/400 CPUs, please note: If a temporary tag of the STRING data type was defined, you must describe the BYTE "Max. length of string" with the defined length before you use the tags in the user program.
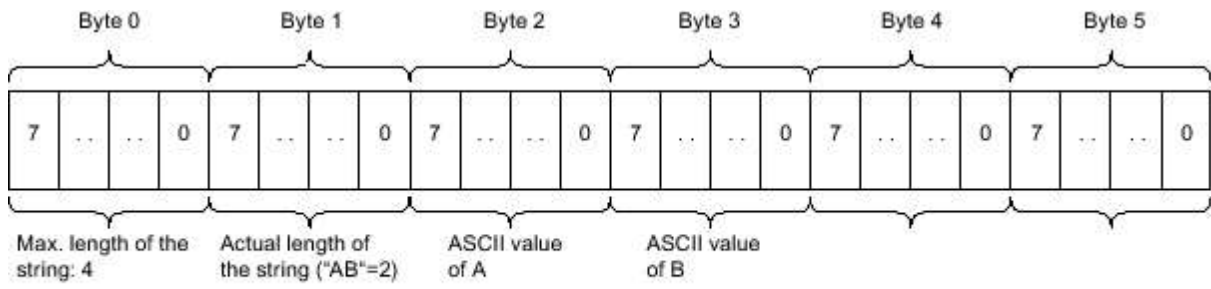
Transferring a STRING for parameter supply

You can transfer the STRING data type as a parameter. You can find additional information on parameter supply with STRING here:

- **Transferring a tag of the STRING or WSTRING data type**
- For S7-1200/1500: **Valid data types in the block interface**
- For S7-300/400: **Valid data types in the block interface**

Example

The example below shows the byte sequence if the STRING[4] data type is specified with output value 'QB':

Byte 0 — Max. length of the string: 4
Byte 1 — Actual length of the string ("AB"=2)
Byte 2 — ASCII value of A
Byte 3 — ASCII value of B

See also

[Overview of the valid data types](#)
[Basics of constants](#)
[Data type conversion for S7-1200 (S7-1200)](#)