

The Library SysLibMem.lib

This library can be used for memory management. If the target system supports the functionality, the following library functions are available to allocate, to free, to define, to compare memory locations and to copy, move or swap between different memory locations. The execution is synchronous.

- SysMemAlloc
- SysMemFree
- SysMemMove
- SysMemSet
- SysMemCmp
- SysMemCpy
- SysMemSwap

SysMemAlloc

This function of type DWORD is used to dynamically allocate memory space.

The return value is either the pointer on the allocated memory location or it is 0, in case there is not as much space available as requested. This return value always should be checked, even if just a small memory area is to be allocated !

Note: This function is not supported by CoDeSys SP RTE.

Input Variable	Data type	Description
dwSize	DWORD	Number of bytes to be allocated

SysMemCmp

This function of type DWORD compares the content of two memory buffers of size dwCount. dwbuf1 and dwbuf2 each show the start address of the buffer.

The function returns the difference of the buffer area contents:

- < 0 buf1 smaller than buf2
- 0 buf1 is of equal size as buf2
- > 0 buf1 bigger than buf2

Input Variable	Data type	Description
dwBuf1	DWORD	Address of memory buffer 1 (buf1)
dwBuf2	DWORD	Address of memory buffer 2 (buf2)

dwCount	DWORD	Number of bytes which should be compared
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SysMemCpy

This function of type DWORD is used to copy a defined number of memory locations from one buffer to another.

The function will return the pointer to the address of the destination buffer area.

The difference to *SysMemMove* is that you only can copy between two non-adjoining buffers.

Input Variable	Data type	Description
dwDest	DWORD	Address of destination buffer
dwSrc	DWORD	Address of source buffer
dwCount	DWORD	Number of memory locations to be copied

SysMemMove

This function of type DWORD moves one memory buffer to another. It will return the address of the destination buffer.

The difference to *SysMemCpy* is that this function allows to copy even memory areas which are adjoining or even overlapping.

Input Variable	Data type	Description
dwDest	DWORD	Address of destination buffer
dwSrc	DWORD	Address of source buffer
dwCount	DWORD	Number of memory locations to be moved

SysMemSet

This function of type DWORD can be used to initialize a memory location with a defined value. It will return the address of the destination buffer.

Input Variable	Data type	Description
dwDest	DWORD	Pointer on address of the initializing memory area
bCharacter	BYTE	Character or numeric value, which should be used to initialize the memory location
dwCount	DWORD	Number of places within the memory location in Byte

SysMemFree

This function of type BOOL is used to deallocate memory space.

The return value is TRUE or FALSE depending on the success of the operation.

Note: This function is not supported by CoDeSys SP RTE.

Input Variable	Data type	Description
dwAddress	DWORD	Address of the memory space which is currently allocated (see SysMemAlloc)
dwSize	DWORD	Number of bytes to get reallocated

SysMemSwap

This function of type BOOL can be used to swap data.

It is used on Motorola byte order systems (PPC) to swap from Motorola to Intel byte order. On Intel systems (ARM, MIPS, SH, x86) the function has no effect. This allows to write portable libraries.

The function will return TRUE if the parameters are correct, otherwise FALSE. Note: The return value does not indicate whether the operation was performed or not.

Input Variable	Data type	Description
dwAddress	DWORD	Address of the memory buffer to be swapped
diSwapSize	DINT	Number of locations to be swapped: 2,4,8
diSwapElements	DINT	Number of elements in the memory area to be swapped