

Manual | EN

# TX1200

TwinCAT 2 | PLC Library: PlcHelperBC





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# 1 Foreword

## 1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

### Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702  
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## 1.2 Safety instructions

### Safety regulations

Please note the following safety instructions and explanations!  
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

### Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

### Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

### Description of symbols

In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

#### **DANGER**

##### **Serious risk of injury!**

Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.

#### **WARNING**

##### **Risk of injury!**

Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.

#### **CAUTION**

##### **Personal injuries!**

Failure to follow the safety instructions associated with this symbol can lead to injuries to persons.

#### **NOTE**

##### **Damage to the environment or devices**

Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment.



##### **Tip or pointer**

This symbol indicates information that contributes to better understanding.

## 1.3 Notes on information security

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## 2 Overview

The "PlcHelperBC.lb6" library contains a number of functions which provide direct access to memory areas in the PLC controller's (BCxxxx) PLC runtime system.

### Comment

The fact that these functions allow direct access to the physical memory means that special care is called for in applying them! Incorrect parameter values can result in a system crash, or in access to forbidden memory areas.

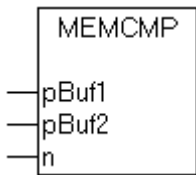
### Content of the library

Name	Description
<a href="#">MEMCMP [▶_9]</a>	Compares the values of variables in two memory areas
<a href="#">MEMCPY [▶_10]</a>	Copies the variable values from one memory area to another
<a href="#">MEMSET [▶_11]</a>	Sets the variables in a memory area to a particular value



### 3 Functions

#### 3.1 MEMCMP



The function MEMCMP allows the values of PLC variables in two different memory areas to be compared.

**FUNCTION MEMCMP : INT**

**VAR\_INPUT**

```
pBuf1 :DWORD;
pBuf2 :DWORD;
n :UINT;
```

**pBuf1**: start address of the first memory area (the first data buffer).

**pBuf2**: start address of the second memory area (the second data buffer).

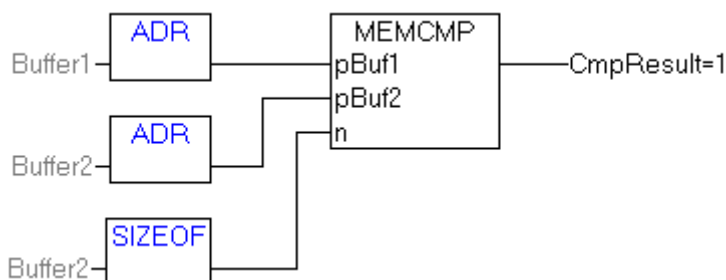
**n**: number of bytes to be compared.

The function compares the first n bytes in the two data buffers and returns a value that corresponds to their relationship.

Return parameter	Relationship of the first byte that differs between the first and second data buffers
-1	pBuf1 smaller than pBuf2
0	pBuf1 identical to pBuf2
1	pBuf1 greater than pBuf2
0xFF	Incorrect parameter values. pBuf1 = 0 or pBuf2 = 0 or n = 0

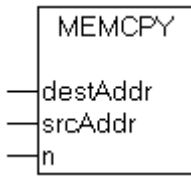
**Sample of a call in FBD**

```
VAR
  Buffer1 : ARRAY[0..3] OF BYTE;
  Buffer2 : ARRAY[0..3] OF BYTE;
  CmpResult : INT;
END_VAR
```



In this sample, 4 bytes of data in *Buffer2* are compared with those in *Buffer1*. The first differing byte is larger in *Buffer1* than it is in *Buffer2*.

## 3.2 MEMCPY



The function MEMCPY can be used to copy the values of PLC variables from one memory area to another.

### FUNCTION MEMCPY : UINT

#### VAR\_INPUT

```
destAddr : DWORD;
srcAddr  : DWORD;
n        : UINT;
```

**destAddr:** start address of the target memory area.

**srcAddr:** start address of the source memory area.

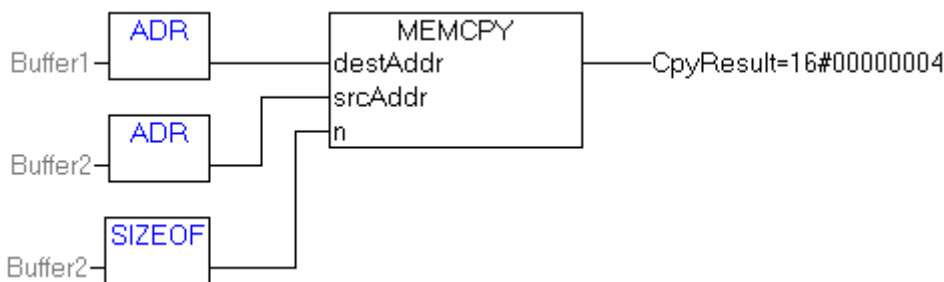
**n:** number of bytes to be copied.

The function copies n bytes from the memory area that starts at *srcAddr* to the memory area that starts at *destAddr*.

Return parameter	Meaning
0	Incorrect parameter values. destAddr == 0 or srcAddr==0 or n == 0
> 0	If successful, the number of bytes copied (n).

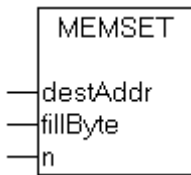
#### Sample of a call in FBD

```
VAR
  Buffer1 : ARRAY[0..3] OF BYTE;
  Buffer2 : ARRAY[0..3] OF BYTE;
  CpyResult : UINT;
END_VAR
```



In the sample, 4 bytes are copied from *Buffer2* to *Buffer1*.

### 3.3 MEMSET



The function MEMSET allows PLC variables in a particular memory area to be set to a particular value.

#### FUNCTION MEMSET : UINT

##### VAR\_INPUT

```
destAddr :DWORD;
fillByte :USINT;
n        :UINT;
```

**destAddr:** start address of the memory area that is to be set.

**fillByte:** value of the padding bytes.

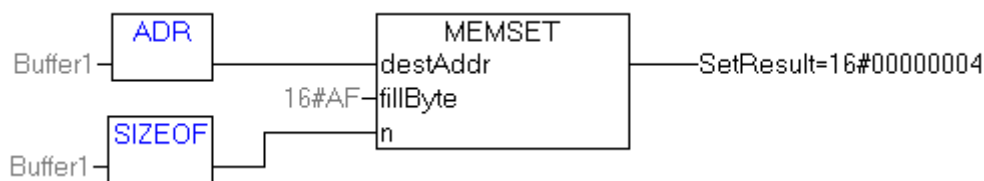
**n:** number of bytes to be set.

The function fills *n* bytes in the memory area that starts at address *destAddr* with the value specified by *fillByte*.

Return parameter	Meaning
0	Incorrect parameter values. destAddr == 0 or n == 0
> 0	If successful, the number of bytes that have been set (n).

#### Sample of a call in FBD

```
VAR
  Buffer1 : ARRAY[0..3] OF BYTE;
  SetResult : UINT;
END_VAR
```



In the sample, 4 bytes in *Buffer1* are set to the value 0xAF.



More Information:  
**[www.beckhoff.com/tx1200](http://www.beckhoff.com/tx1200)**

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