

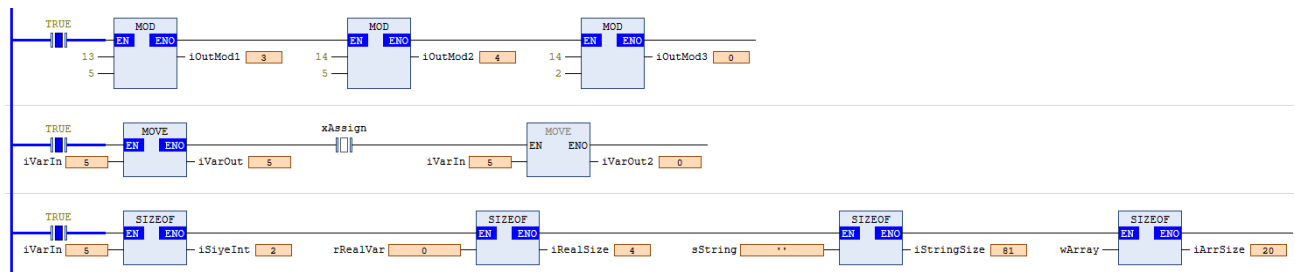
AC500 V3 PLC – Arithmetic operators

MOD, MOVE & SIZEOF Operators and Examples

The arithmetic operators, MOD, MOVE & SIZEOF are explained in this document. The simple mathematical operators ADD, SUB, MUL and DIV are shown in the document AC500 V3 PLC – Mathematical operators.

- The MOD operator returns the remainder of division.
- The MOVE operator is used for assigning a variable to another variable.
- The SIZEOF operator returns the number of bytes required by a variable.

Examples:



The screenshot above shows a simple logic in ladder diagram, explaining the three operators.

Starting on top left, the first MOD block returns the remainder of 13 by 5 this is 2 with a remainder of 3.

Similar to this in the next box 14 by 5 is 2 r 4. The remainder is 4.

The last MOD block divides 14 by 2. There is no remainder, the output is 0. [WJN1]

The MOVE block assigns a variable to another one. The input variable is assigned to the output variable. As the second MOVE block is not enabled the output is not assigned.

For the SIZEOF operator the value of a variable is irrelevant. Only the data type is taken into account. The size of an integer variable is two bytes. The size of a real variable is 4 bytes.

```
sString: STRING(80);
wArray: ARRAY[0..9] OF WORD;
```

The size of a string, containing 80 characters is 81 bytes. The last byte is the terminating 0 at the end of the string. An array containing 10-word variables has a size of 20 bytes, as each of the 10 words is two bytes long.

The same logic as shown and described above, can be found in structured text below.

```
iOutMod1 3 := 13 MOD 5;
iOutMod2 4 := 14 MOD 5;
iOutMod3 0 := 14 MOD 2;

iIntSize 2 := SIZEOF(iVarIn 5);
iRealSize 4 := SIZEOF(rRealVar 0);
iStringSize 81 := SIZEOF(sString "");
iArrSize 20 := SIZEOF(wArray);

iOutMod1 := 13 MOD 5;
iOutMod2 := 14 MOD 5;
iOutMod3 := 14 MOD 2;

iIntSize := SIZEOF(iVarIn);
iRealSize := SIZEOF(rRealVar);
iStringSize := SIZEOF(sString);
iArrSize := SIZEOF(wArray);
```

In structured text the MOVE operator does not exist. The assign ':=' can be used to assign a variable to another.