REAL_TO_***: Type conversion

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Function description

The function converts an input value of the REAL data type to a BOOL, BYTE, WORD , DWORD, INT, DINT, UINT, UDINT data type or into the TIME data type.

NOTE: The function converts strictly in accordance with IEC rules. Since this function has been realized as a generic function, there will also be a few illogical conversions, e.g. REAL_TO_BOOL.

When converting to BOOL, BYTE, WORD, the least significant bits of the input value are transferred to the output. A runtime error message is not given and ENO remains 1.

When converting to INT, DINT, UINT, UDINT and TIME, the IEC 559 rules for rounding are applied.

EN and ENO can be configured as additional parameters.

(The output ENO is not used for REAL_TO_BOOL, REAL_TO_BYTE, REAL_TO_WORD and REAL_TO_DWORD; it always has the value "1".)

Available functions

List of available functions:

- REAL_TO_BOOL
- REAL_TO_BYTE
- REAL_TO_WORD
- REAL_TO_DWORD
- REAL_TO_INT
- REAL_TO_DINT
- REAL_TO_UINT
- REAL_TO_UDINT
- REAL_TO_TIME

Example

The following example shows how the IEC 559 rounding is applied.

1,4 -> 1

1,5 -> 2

2,5 -> 2

3,5 -> 4

4,5 -> 4

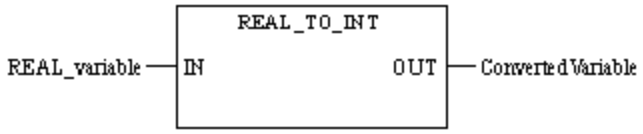
4,6 -> 5

Negative input values

Negative input values cannot be converted into data types UINT, UDINT or TIME.

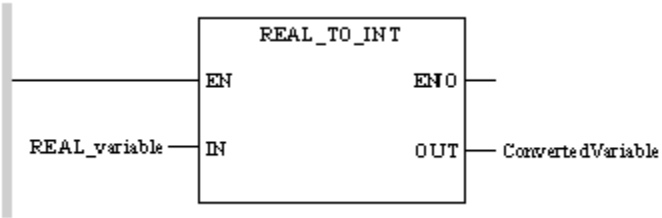
Representation in FBD

Representation of an Integer application:



Representation in LD

Representation of an Integer application:



Representation in IL

Representation of an Integer application:

```
LD REAL_variable
REAL_TO_INT
ST ConvertedVariable
```

Representation in ST

Representation of an Integer application:

```
ConvertedVariable := REAL_TO_INT (REAL_variable) ;
```

Parameter description

Description of input parameters:

Parameter	Data type	Meaning
REAL_variable	REAL	Input value

Description of output parameters:

Parameter	Data type	Meaning
ConvertedVariable	BOOL, BYTE, WORD, DWORD, INT, DINT, UINT, UDINT, TIME	Output value

Runtime error

The system bit %S18 is set to 1, if

- an unauthorized floating point number is set at the input
- the value range on the output is exceeded (numeric data types)
- a negative input value is to be converted into an UDINT-, UINT or TIME output value.
- an unauthorized floating point number is created during the conversion into the REAL data type. In this case, the status is also placed in %SW17.

The system bit %S18 and system word %SW17 are **not** used when data types are converted:

- BOOL
- BYTE
- WORD
- DWORD

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