LGF_CountRisInDWord

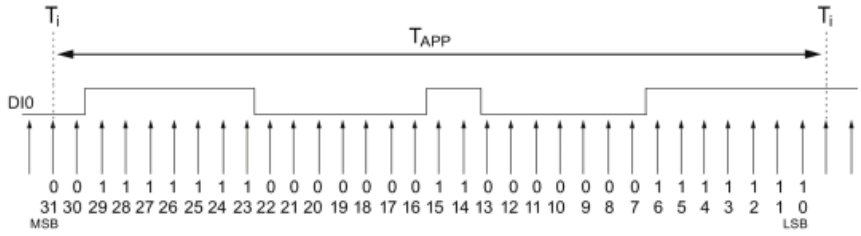
Short description

This block analyzes a variable of the type DWORD and outputs how often a 0-1 sequence (rising edge) occurs in the variable.

Application example:

Excerpt from the manual of the technology module TM Timer DIDQ 16x24V:

With the oversampling function, the technology module records the state of the respective digital input per application cycle (e.g. OB61) at 32 points in time with a uniform time interval. The 32 states are jointly returned as 32-bit values in the checkback interface.



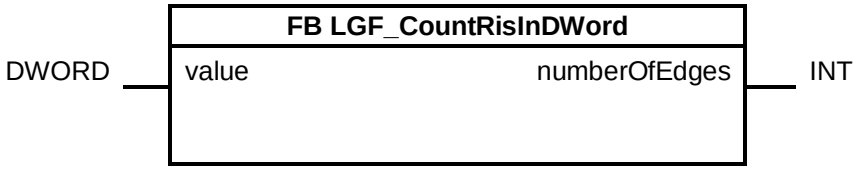
T_{APP}	Applikationszyklus
MSB	Most significant bit
LSB	Least significant bit

The block LGF_CountRisInDWordFB is used in this case to count how often a rising edge occurs.

SIMATIC ET 200MP/S7-1500 Technology Module TM Timer DIDQ 16x24V (6ES7552-1AA00-0AB0)

https://support.industry.siemens.com/cs/ww/en/view/95153313

Block



Input parameters

Parameters	Data type	Description
value	DWORD	Double word in which the rising edges are counted

Output parameters

Parameters	Data type	Description
numberOfEdges	INT	Number of rising edges in the double word

Principle of operation

In a variable of the data type DWORD, the block counts the rising edges (0-1 transitions) from left to right. The output “countRisInDWord” outputs the number of rising edges.

So that rising edges at the variable limit are also detected, the input “value” is copied to the static variable “statDWordPrevCycle” at the end of the evaluation and evaluated in the next cycle.

Example

The following example illustrates the block’s functionality. In this case, it is assumed that a signal of unknown length is continuously sampled in the form of double words (DWORD) per cycle.

Within this signal, the 0-1 sequences (rising edges) must be counted and output continuously. In order to detect the rising edge at variable limits, as in this example, the input “statDWordPrevCycle” must be interconnected with the double word of the previous sampling.

DWORD previous cycle (statDWordPrevCycle)	DWORD actual cycle (value)
1001_0000_0001_1010_1001_0000_0001_1010	**1**01**0**_**1**01**0**_000**1**_1111_0**1**00_00**1**1_1000_0**1**0**1**

Number of 0-1 sequences (rising edges): “Ret_Val” = 9

Further information on libraries in TIA Portal:

- Topic page libraries
  https://support.industry.siemens.com/cs/ww/en/view/109738702
- Guideline on Library Handling
  https://support.industry.siemens.com/cs/ww/en/view/109747503
- Programming Guideline for S7-1200/1500 in chapter “Libraries”
  https://support.industry.siemens.com/cs/ww/en/view/81318674
- Programming Styleguide
  https://support.industry.siemens.com/cs/ww/en/view/81318674