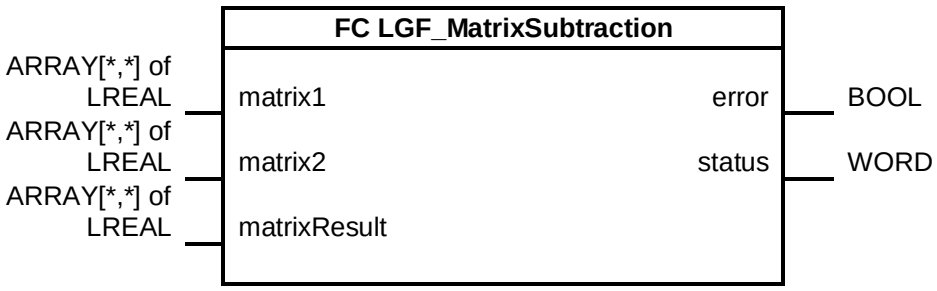
LGF_MatrixSubtraction

Short description

This function block subtracts a matrix of the data type ARRAY[*,*] of LREAL from another one.

$$\begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix} - \begin{pmatrix} b_{11} & \cdots & b_{1n} \\ \vdots & \ddots & \vdots \\ b_{m1} & \cdots & b_{mn} \end{pmatrix} = \begin{pmatrix} a_{11} - b_{11} & \cdots & a_{1n} - b_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} - b_{m1} & \cdots & a_{mn} - b_{mn} \end{pmatrix}$$

Block



Input/output parameters (InOut)

Parameters	Data type	Description
matrix1	ARRAY[*,*] of LREAL	Minuend: “Matrix2” is subtracted from this matrix.
matrix2	ARRAY[*,*] of LREAL	Subtrahend: This matrix is subtracted from “matrix1”.
matrix Result	ARRAY[*,*] of LREAL	Difference: The resulting matrix

Output parameters

Parameters	Data type	Description
error	BOOL	FALSE: No error TRUE: An error occurred during the execution of the FB.
status	WORD	16#0000-16#7FFF: Status of the FB, 16#8000-16#FFFF: Error identification (see following Table).

Status and error displays

status	Meaning	Remedy / notes
16#0000	No error	-
16#8200	Lower limit rows(Dim1) of the arrays of Matrix1 and Matrix2 are different.	All arrays must have the same low limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8201	Lower-limit rows(Dim1) of the arrays of Matrix1 and Result Matrix are different.	All arrays must have the same low limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8202	Lower-limit columns(Dim2) of the arrays of Matrix1 and Matrix2 are different.	All arrays must have the same low limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8203	Lower-limit columns(Dim2) of the arrays of Matrix1 and Result Matrix are different.	All arrays must have the same low limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8204	Upper-limit rows(Dim1) of the arrays of Matrix1 and Matrix2 are different.	All arrays must have the same high limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8205	Upper-limit rows(Dim1) of the arrays of Matrix1 and Result Matrix are different.	All arrays must have the same high limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8206	Upper-limit columns(Dim2) of the arrays of Matrix1 and Matrix2 are different.	All arrays must have the same high limit, for example: Array[**0**..2, **0**..2] of LREAL
16#8207	Upper-limit columns(Dim2) of the arrays of Matrix1 and Result Matrix are different.	All arrays must have the same high limit, for example: Array[**0**..2, **0**..2] of LREAL

Principle of operation

The block subtracts two matrices of variable size. The individual fields of the two matrices are read, subtracted and then output in the matrix “matrix Result”.

Note Note that all input and output matrices must have the same number of columns and rows.

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