

LGF_MatrixTranspose

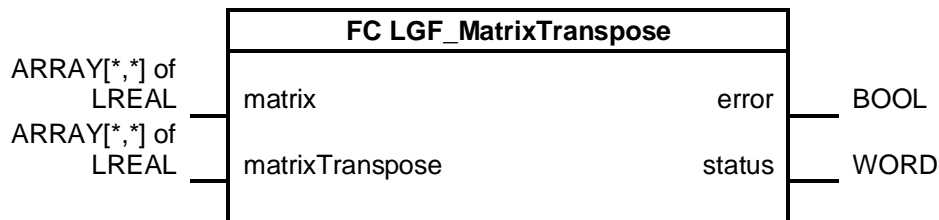
Short description

This block transposes a matrix of the data type ARRAY[*,*] of LREAL.

Condition: Input matrix (m x n) = output matrix (n x m)

$$A = \begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix}; \quad A^T = \begin{pmatrix} a_{11} & \cdots & a_{m1} \\ \vdots & \ddots & \vdots \\ a_{1n} & \cdots & a_{mn} \end{pmatrix}$$

Block



Input/output parameters (InOut)

Parameters	Data type	Description
matrix	ARRAY[*,*] of LREAL	Matrix to be transposed
matrix Result	ARRAY[*,*] of LREAL	Transposed 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 array of Matrix1 and lower-limit columns(Dim2) of the array of Result Matrix are different.	-
16#8201	Lower-limit columns(Dim1) of the array of Matrix1 and lower-limit rows(Dim2) of the array of Result Matrix are different.	-
16#8202	Upper-limit rows(Dim1) of the array of Matrix1 and upper-limit columns(Dim2) of the array of Result Matrix are different.	-
16#8203	Upper-limit columns(Dim1) of the array of Matrix1 and lower-limit rows(Dim2) of the array of Result Matrix are different.	-

Principle of operation

A matrix is transposed by making columns out of the rows.

Note

Note that the number of rows of the input matrix must be equal to the number of columns of the output matrix. Also, the number of columns of the input matrix must be equal to the number of rows of the output matrix.

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>