

LIGO Laboratory / LIGO Scientific Collaboration

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**TwinCAT Library for
Auxiliary Channels**

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of the LIGO Laboratory.

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Library	
Title	Auxiliary
Version	2
TwinCAT version	2.11
Name space	–
Author	Alexa Staley, Daniel Sigg
Description	Controls the auxiliary
Error codes	None
Library dependencies	Error, SaveRestore

Hardware Input Type	
TYPE AuxiliaryInStruct :	
STRUCT	
A11: INT;	
A12: INT;	
A13: INT;	
A14: INT;	
B11: INT;	
B12: INT;	
B13: INT;	
B14: INT;	
END_STRUCT	
END_TYPE	
	AuxiliaryInStruct
Description	Structure of the hardware input that are wired up for the auxiliary
Definition	STRUCT
Element	Name: A11 Type: INT Description: Analog input 1
Element	Name: A12 Type: INT Description: Analog input 2
Element	Name: A13 Type: INT Description: Analog input 3
Element	Name: A14 Type: INT

	Description: Analog input 4
Element	Name: BI1 Type: INT Description: Binary input 1
Element	Name: BI2 Type: INT Description: Binary input 2
Element	Name: BI3 Type: INT Description: Binary input 3
Element	Name: BI4 Type: INT Description: Binary input 4

Hardware Output Type TYPE AuxiliaryOutStruct : STRUCT AO1: INT; AO2: INT; AO3: INT; AO4: INT; BO1: INT; BO2: INT; BO3: INT; BO4: INT; END_STRUCT END_TYPE	
	AuxiliaryOutStruct
Description	Structure of the hardware output that are wired up for the auxiliary
Definition	STRUCT
Element	Name: AO1 Type: INT Description: Analog output 1
Element	Name: AO2 Type: INT Description: Analog output 2
Element	Name: AO3 Type: INT Description: Analog output 3
Element	Name: AO4 Type: INT Description: Analog output 4
Element	Name: BO1 Type: INT Description: Binary output 1
Element	Name: BO2 Type: INT Description: Binary output 2
Element	Name: BO3 Type: INT Description: Binary output 3
Element	Name: BO4 Type: INT

	Description: Binary output 4
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User Interface Type TYPE AuxiliaryStruct : STRUCT Error: ErrorStruct; BI: ARRAY [1..4] OF BOOL; BO: ARRAY [1..4] OF BOOL; AI: ARRAY [1..4] OF BOOL; AO: ARRAY [1..4] OF BOOL; END_STRUCT END_TYPE	
Type name	AuxiliaryStruct
Description	Structure of the user interface tags that are used to control the auxiliary
Definition	STRUCT
Output Tag	Name: Error Type: ErrorStruct Description: For error handling
Input Tag	Name: AI Type: ARRAY [1..4] OF BOOL; Description: Array of analog inputs
Input Tag	Name: BI Type: ARRAY [1..4] OF BOOL; Description: Array of binary inputs
Output Tag	Name: AO Type: ARRAY [1..4] OF BOOL; Description: Array of analog outputs
Output Tag	Name: BO1 Type: ARRAY [1..4] OF BOOL; Description: Array of binary outputs

Function Block	
FUNCTION_BLOCK AuxiliaryFB	
VAR_INPUT	
Request:	SaveRestoreEnum;
AuxiliaryIn:	AuxiliaryInStruct;
END_VAR	
VAR_OUTPUT	
AuxiliaryOut:	AuxiliaryOutStruct;
END_VAR	
VAR_IN_OUT	
AuxiliaryInit:	AuxiliaryStruct;
Auxiliary:	AuxiliaryStruct;
END_VAR	
Name	AuxiliaryFB
Description	Controls the auxiliary channels
Input argument	Name: Request: Type: SaveRestoreEnum Description: Rquest for save/restore/safemode or noop
Input argument	Name: AuxiliaryIn Type: AuxiliaryInStruct Description: Input hardware structure
Output argument	Name: AuxiliaryOut Type: AuxiliaryOutStruct Description: Output hardware structure
In/out argument	Name: AuxiliaryInit Type: AuxiliaryStruct Description: Save/restore variable in persistent memory
In/out argument	Name: Auxiliary Type: AuxiliaryStruct Description: User Interface structure

Visual	
<p>The visual representation shows a grid of four rows and two columns of data points. The first column contains numerical values 1, 2, 3, and 4, each highlighted in green. The second column contains the same numerical values. Below this grid is an error indicator labeled 'Error' in a green box, followed by a percentage sign and a text field.</p>	
Name	AuxiliaryVis

Description	Displays auxiliary input and output, and standard error message
Placeholder	Name: AuxiliaryStruct Type: Auxiliary Description: Auxiliary structure