*LIGO Laboratory / LIGO Scientific Collaboration*

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TwinCAT Library for   
Auxiliary Channels

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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 |

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| **Hardware Input Type**  TYPE AuxiliaryInStruct :  STRUCT  AI1: INT;  AI2: INT;  AI3: INT;  AI4: INT;  BI1: INT;  BI2: INT;  BI3: INT;  BI4: INT;  END\_STRUCT  END\_TYPE | |
|  | AuxiliaryInStruct |
| Description | Structure of the hardware input that are wired up for the auxiliary |
| Definition | STRUCT |
| Element | Name: AI1  Type: INT  Description: Analog input 1 |
| Element | Name: AI2  Type: INT  Description: Analog input 2 |
| Element | Name: AI3  Type: INT  Description: Analog input 3 |
| Element | Name: AI4  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 |

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| **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 |

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| **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 |

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