*LIGO Laboratory / LIGO Scientific Collaboration*

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TwinCAT Library for Fiber Polarization Correction

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| **Library** |
| Title | FiberPolCorr |
| Version | 1 |
| TwinCAT version | V2.11.0 |
| Name space |  |
| Author | Daniel Sigg |
| Description | Monitors the fiber polarization  |
| Error Code | None |
| Library Dependencies | Error, SaveRestore |

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| **User Interface Type**TYPE FiberPolCorrChannel :STRUCT Error: ErrorStruct; END\_STRUCT;END\_TYPE; |
| Type Name | FiberPolCorrChannel |
| Description | Structure used in the user interface for various channels |
| Definition | STRUCT |
| Ouput Tag | Name: ErrorType: ErroStructDescription: calls error handler |

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| **User Interface Type**TYPE FiberPolCorrStrcut :STRUCT Error: ErrorStruct; X: FiberPolCorrChannel; Y: FiberPolCorrChannel;END\_STRUCT;END\_TYPE; |
| Type Name | FiberPolCorrStruct |
| Description | Structure used in the user interface |
| Definition | STRUCT |
| Output Tag | Name: ErrorType: ErrorStructDescription: calls error handler |
| Output Tag | Name: XType: FiberPolCorrChannelDescription: X channel |
| Output Tag | Name: YType: FiberPolCorrChannelDescription: Y channel |

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| **User Interface Type**TYPE FiberPolCorrMsgInStruct :STRUCT D: ARRAY [0…255] of BYTE; ID: INT; TimeLo: UDINT; TimeHi: UDINT;END\_STRUCT;END\_TYPE; |
| Type Name | FiberPolCorrMsgInStruct |
| Description | Structure used in the user interface |
| Definition | STRUCT |
| Output Tag | Name: DType: ARRAY [0…255} OF BYTEDescription:  |
| Output Tag | Name: IDType: INTDescription:  |
| Output Tag | Name: TimeLoType: UDINTDescription:  |
| Output Tag | Name: TimeHiType: UDINTDescription:  |

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| **User Interface Type**TYPE FiberPolCorrMsgOutStruct :STRUCT D: ARRAY [0…255] of BYTE; ID: INT; TimeLo: UDINT; TimeHi: UDINT;END\_STRUCT;END\_TYPE; |
| Type Name | FiberPolCorrMsgOutStruct |
| Description | Structure used in the user interface |
| Definition | STRUCT |
| Output Tag | Name: DType: ARRAY [0…255} OF BYTEDescription:  |
| Output Tag | Name: IDType: INTDescription:  |
| Output Tag | Name: TimeLoType: UDINTDescription:  |
| Output Tag | Name: TimeHiType: UDINTDescription:  |

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| **User Interface Type**TYPE FiberPolCorrSerialPortBufferStruct :STRUCT RxBuffer: ComBuffer; TxBuffer: ComBuffer; COMportControlError: BOOL; COMportControlErrorID: ComError\_t;END\_STRUCT;END\_TYPE; |
| Type Name | FiberPolCorrSerialPortBufferStruct |
| Description | Structure used in the user interface |
| Definition | STRUCT |
| Output Tag | Name: RxBufferType: ComBufferDescription: Receive data buffer; used with all receive function blocks |
| Output Tag | Name: TxBufferType: ComBufferDescription: Transmit data buffer; used with all transmit function blocks |
| Output Tag | Name: COMportControlErrorType: BOOLDescription: Error flag |
| Output Tag | Name: COMportControlErrorIDType: BOOLDescription: Error ID |

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| **Function Block**TYPE FiberPolCorrFB:VAR\_INPUT Request: SaveRestoreEnum; MsgIn: FiberPolCorrMsgOutStruct;END\_VAR;VAR\_OUTPUT MsgOut: FiberPolCorrMsgInStruct;END\_VAR;VAR\_IN\_OUT FiberPolCorr: FiberPolCorrStruct; FiberPolCorrInit: FiberPolCorrStruct;END\_VAR:END\_TYPE; |
| Type Name | FiberPolCorrFB |
| Description | Function block used to monitor the fiber polarization corr  |
| Definition | Function Block |
| Input Argument | Name: RequestType: SaveRestoreEnumDescription: Request for save/restore/safe mode or noop |
| Input Argument | Name: MsgInType: FiberPolCorrMsgOutStructDescription: Input structure |
| Output Argument | Name: MsgOutType: FiberPolCorrMsgInStructDescription: Output structure |
| In/out Argument | Name: FiberPolCorrType: FiberPolCorrStructDescription: User interface structure |
| In/out Argument | Name: FiberPolCorrInitType: FiberPolCorrStructDescription: Save/restore variable in persistent memory |

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| **Function Block**TYPE FiberPolCorrMsgFB:VAR\_INPUT MsgIn: FiberPolCorrMsgInStruct;END\_VAR;VAR\_OUTPUT MsgOut: FiberPolCorrMsgOutStruct;END\_VAR;VAR\_IN\_OUT ComPortData: FiberPolCorrSerialPortBufferStruct;END\_VAR:END\_TYPE; |
| Type Name | FiberPolCorrMsgFB |
| Description | Function block used to monitor the fiber polarization corr message  |
| Definition | Function Block |
| Input Argument | Name: MsgInType: FiberPolCorrMsgInStructDescription: Input structure |
| Output Argument | Name: MsgOutType: FiberPolCorrMsgOutStructDescription: Output structure |
| Out/in Argument | Name: ComPortDataType: FiberPolCorrSerialPortBufferStructDescription: Receive and transmit buffers |

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| **Function Block**TYPE FiberPolCorrSerialPortControlFB:VAR\_INPUT Mode: ComSerialLineMode\_t; pComIn: POINTER TO ARRAY[0..65] OF BYTE; pComOut: POINTER TO ARRAY[0..65] OF BYTE; SizeComIn: UNIT:END\_VAR;VAR\_IN\_OUT Com: FiberPolCorrSerialPortBufferStruct;END\_VAR:END\_TYPE; |
| Type Name | FiberPolCorrSerialPortControlFB |
| Description | Function block used to monitor the fiber polarization corr serial port control  |
| Definition | Function Block |
| Input Argument | Name: ModeType: ComSerialLineMode\_tDescription:  |
| Input Argument | Name: pComIn:Type: POINTER TO ARRY [0..65] OF BYTEDescription: |
| Input Argument | Name: pComOut:Type: POINTER TO ARRY [0..65] OF BYTEDescription: |
| Input Argument | Name: SizeComIn:Type: UNITDescription: |
| In/out Argument | Name: ComType: FiberPolCorrSerialPortByfferStructDescription |