*LIGO Laboratory / LIGO Scientific Collaboration*

LIGO- E1200545-v1 Advanced LIGO 5/29/2012

TwinCAT Library for Error Handling

Daniel Sigg

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| **California Institute of Technology****LIGO Project – MS 18-34****1200 E. California Blvd.****Pasadena, CA 91125**Phone (626) 395-2129Fax (626) 304-9834E-mail: info@ligo.caltech.edu | **Massachusetts Institute of Technology****LIGO Project – NW22-295****185 Albany St****Cambridge, MA 02139**Phone (617) 253-4824Fax (617) 253-7014E-mail: info@ligo.mit.edu |
| **LIGO Hanford Observatory****P.O. Box 159****Richland WA 99352**Phone 509-372-8106Fax 509-372-8137 | **LIGO Livingston Observatory****P.O. Box 940****Livingston, LA 70754**Phone 225-686-3100Fax 225-686-7189 |

http://www.ligo.caltech.edu/

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| **Library** |
| Title | Error |
| Version | 1 |
| TwinCAT version | 2.11 |
| Name space | – |
| Author | Daniel Sigg |
| Description | Handles error conditions for TwinCAT libraries.The library exports an error structure for reporting error conditions. This structure is typically declared as the first element of an interface structure. A handler is provided to report errors. Errors are bit encoded into a DWORD. Error messages for multiple simultaneous conditions are concatenated until the maximum string length is reached. If there are additional error conditions, this is indicated with a ‘+’ character at the end of the string. Multiple error conditions can always be reconstructed from the bit-encoded error code. |
| Error codes | Library dependent |
| Library dependencies: | none |

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| **User Interface Type**TYPE ErrorStruct :STRUCT Error: BOOL; ErrorCode: DWORD; ErrorMessage: STRING;END\_STRUCTEND\_TYPE |
| Type name | ErrorStruct |
| Description | Structure in a user interface to define an error condition |
| Definition | STRUCT |
| Output Tag | Name: ErrorType: BOOLDescription: Flag indicating any error condition |
| Output Tag | Name: ErrorCodeType: DWORDDescription: Bit-encoded value describing the error condition(s) |
| Output Tag | Name: ErrorMessageType: STRINGDescription: Human readable text describing the error |

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| **Enum Type**TYPE ErrorMethodEnum : (Init, Report, Commit);END\_TYPE |
| Type name | ErrorMethodEnum |
| Description | Describes the handler method |
| Definition | ENUM |
| Enum tag | Name: InitDescription: Initializes the error handler |
| Enum Tag | Name: ReportDescription: Reports an error condition |
| Enum Tag | Name: CommitDescription: Commit the error to the interface structure |

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| **Function Block**FUNCTION\_BLOCK ErrorHandlerFBVAR\_INPUT ErrorMethod: ErrorMethodEnum; ErrorCode: DWORD := 0; ErrorMessage: STRING := '';END\_VARVAR\_IN\_OUT Error: ErrorStruct;END\_VAR |
| Name | ErrorHandlerFB |
| Description | Handles error conditions. |
| Input argument | Name: ErrorMethodType: ErrorMethodEnumDescription: For initialization, report and commit |
| Input argument | Name: ErrorCodeType: DWORDDescription: Error code |
| Input argument | Name: ErrorMessageType: STRINGDescription: Error message string |
| In/out argument | Name: ErrorType: ErrorStructDescription: Error structure |

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| **Example:**VAR ErrorHandler: ErrorHandlerFB;END\_VAR(\* Initialize \*)ErrorHandler (ErrorMethod := Init, Error := LowNoiseVco.Error);(\* read and process values... report an error... process further... \*)...IF NOT LowNoiseVco.PowerOk THEN ErrorHandler (ErrorMethod := Report, Error := LowNoiseVco.Error, ErrorCode := 16#01, ErrorMessage := 'Power supply voltages out-of-range');END\_IF;...(\* Finally commit \*)ErrorHandler (ErrorMethod := Commit, Error := LowNoiseVco.Error); |