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TwinCAT Library for PLL for VCO

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| **Library** | |
| Title | PLLforVCO |
| Version | 1 |
| TwinCAT version | V2.11.0 |
| Name space |  |
| Author | Sheila Dwyer |
| Description | Controls and readbacks for the PLL for the low noise VCO |
| Error Code | 16#01 — Power supply voltages out-of-range |
| Library Dependencies | Error, ReadADC, WriteADC, SaveRestore |

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| **Hardware Input Type**  TYPE PLLforVCOInStruct :  STRUCT  (\*Analog Inputs\*)  ErrorMon: INT; (\* [D17] pins 1/14\*)  ControlMon: INT; (\*[D18] pins 2/15\*)  (\*Binary Inputs\*)  PowerOK: BOOL; (\* pin 25\*)  END\_STRUCT;  END\_TYPE; | |
| Type Name | PLLforVCOInStruct |
| Description | Input structure |
| Definition | STRUCT |
| Input Tag | Name: ErrorMon  Type: INT  Description: Error Monitor |
| Input Tag | Name: ControlMon  Type: INT  Description: Control signal monitor |
| Input Tag | Name: Ok  Type: BOOL  Description: Voltages are within range |

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| **Hardware Output Type**  TYPE PLLforVCOOutStruct :  STRUCT  (\*Analog outputs\*)  InputOffset: INT; (\* D19 pins 3/16\*)  (\*Binary outputs\*)  InEn: BOOL; (\* D0 pin4\*)  Pol: BOOL; (\*D1 pin 17 \*)  Comp1: BOOL; (\* D2 pin 5\*)  Comp2: BOOL; (\*D3 pin 18\*)  Gain: INT; (\* D[4-9] pin 6,19,7,20,8,21\*)  Option: BOOL; (\*D10 pin9\*)  Internal: BOOL; (\*D11 pin 22\*)  Filter: BOOL;(\*D13 pin 23\*)  VCOComp: BOOL; (\*D14 pin 11\*)  LowPass: BOOL; (\*D15 pin 24\*)  ExcEn: BOOL; (\*D16 pin 12\*)  END\_STRUCT;  END\_TYPE; | |
| Type Name | SummingNodeOutStruct |
| Description | Out structure |
| Definition | STRUCT |
| Input Tag | Name: InputOffset  Type: INT  Description: Common path offset adjust |
| Output Tag | Name: Pol  Type: BOOL  Description: Input 1 polarity |
| Output Tag | Name: InEn  Type: BOOL  Description: Input 1 enable |
| Output Tag | Name: Comp1  Type: BOOL  Description: Enable compensation filter 1 |
| Output Tag | Name: Gain  Type: INT  Description: Input gain |
| Output Tag | Name: Comp2  Type: BOOL  Description: switch second compensation filter |
| Output Tag | Name: Option  Type: BOOL  Description: Enable optional daughter board |
| Output Tag | Name: Internal  Type: BOOL  Description: Disable control of VCO through internal connection |
| Output Tag | Name: Filter  Type: BOOL  Description: Generic filter enable |
| Output Tag | Name: VCOComp  Type: BOOL  Description: VCO filter compensation enable |
| Output Tag | Name: LowPass  Type: BOOL  Description: Low Pass filter enable |
| Output Tag | Name: ExcEn  Type: BOOL  Description: Excitation enable |

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| **User Interface Type**  TYPE PLLforVCOStruct :  STRUCT  Error: ErrorStruct;  (\* Analog inputs \*)  ErrMon: LREAL;  CtrlMon: LREAL;  (\* Binary Inputs\*)  Ok: BOOL;  (\* Analog ouputs \*)  Ofs: LREAL;  Gain: INT;  (\* Binary outputs \*)  InEn: BOOL;  Pol: BOOL;  Comp1: BOOL;  Comp2: BOOL;  Option: BOOL;  Internal: BOOL;  Boost: BOOL;  Filter: BOOL;  VCOComp: BOOL;  LowPass: BOOL;  ExcEn: BOOL;  END\_STRUCT;  END\_TYPE; | |
| Type Name | PLLforVCOStruct |
| Description | Structure used in the user interface |
| Definition | STRUCT |
| In/Out Tag | Name: Error  Type: ErrorStruct  Description: Calls error handler |

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| **Function Block**  FUNCTIONBLOCK PLLforVCOFB:  VAR\_INPUT  Request: SaveRestoreEnum;  PLLforVCOIn: PLLforVCOInStruct;  END\_VAR  VAR\_OUTPUT  PLLforVCOOut: PLLforVCOOutStruct;  END\_VAR  VAR\_IN\_OUT  PLLforVCOInit: PLLforVCOStruct;  PLLforVCO: PLLforVCOStruct;  END\_VAR  VAR  ErrorHandler: ErrorHandlerFB;  Init: BOOL;  END\_VAR | |
| Type Name | PLLforVCOFB |
| Description | Function block used to monitor and control the PLL, simply read and write inputs and outputs, generate error if voltages out of range |
| Definition | Function Block |