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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: ErrorMonType: INTDescription: Error Monitor |
| Input Tag | Name: ControlMonType: INTDescription: Control signal monitor |
| Input Tag | Name: OkType: BOOLDescription: 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: InputOffsetType: INTDescription: Common path offset adjust |
| Output Tag | Name: PolType: BOOLDescription: Input 1 polarity |
| Output Tag | Name: InEnType: BOOLDescription: Input 1 enable |
| Output Tag | Name: Comp1Type: BOOLDescription: Enable compensation filter 1 |
| Output Tag | Name: GainType: INTDescription: Input gain |
| Output Tag | Name: Comp2Type: BOOLDescription: switch second compensation filter |
| Output Tag | Name: OptionType: BOOLDescription: Enable optional daughter board |
| Output Tag | Name: InternalType: BOOLDescription: Disable control of VCO through internal connection |
| Output Tag | Name: FilterType: BOOLDescription: Generic filter enable |
| Output Tag | Name: VCOCompType: BOOLDescription: VCO filter compensation enable |
| Output Tag | Name: LowPassType: BOOLDescription: Low Pass filter enable |
| Output Tag | Name: ExcEnType: BOOLDescription: 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: ErrorType: ErrorStructDescription: Calls error handler |

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| **Function Block**FUNCTIONBLOCK PLLforVCOFB:VAR\_INPUT Request: SaveRestoreEnum; PLLforVCOIn: PLLforVCOInStruct;END\_VARVAR\_OUTPUT PLLforVCOOut: PLLforVCOOutStruct;END\_VARVAR\_IN\_OUT PLLforVCOInit: PLLforVCOStruct; PLLforVCO: PLLforVCOStruct;END\_VARVAR 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 |