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LIGO-E1300805-v1

advanced LIGO

10/22/2013

TwinCAT Library for PLL for VCO

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LIGO Scientific Collaboration

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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

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

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: VCOCComp 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

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;
VCOCComp:	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

<p>Function Block</p> <pre> 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 </pre>	
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