ComCasp 1.0

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Contents

Chapter 1

ComCasp - Communication with Caspian board

1.1 Introduction

Varioptic provides a set of functions in a DLL to communicate with Caspian Board.

This DLL allows customers to use its own programming language (C ...) or tool (Labview ...)

1.2 Installation

DLL require Microsoft Windows XP/Vista/Seven/8 32/64 bit operating system.

Caspian board must be properly installed on system, and must be seen as a virtual Serial port.

1.3 Version

Current Version is 1.0.

See DLL Revision - History for version history.

1.4 DLL Overview

DLL provides some sub-set of functions :

- Communication management functions
- Board's Settings
- Code Range
- Direct Register Access

1.5 Connection

DLL is fairly simple to use.

Once board plugged, the first call must be Casp_OpenCOM().

This function will search for connected board on workstation. Once board is found, function return eCaspSuccess.

Most functions return an eCOMCaspErr code to indicate if completion was successfull or not.

eCOMCaspErr code can be converted to a string using Casp_GetErrorMsg() function.

Once communication is no more needed, Casp_CloseCOM() must be call for cleanup.

1.6 Change Settings

Once connection is etablish, Board settings may be changed.

To change Focus Voltage, see Casp_SetFocus().

1.7 Registers access

Using Registers map, this set of function allow low level access on board. Use with caution.

See Direct Register Access.

Chapter 2

DLL Revision - History

2.1 Version 1.0

- Initial public release.

Chapter 3

Module Documentation

3.1 Communication management functions

Defines

- #define MAX_PORT_NUMBER 20

Enumerations

- enum eCOMCaspErr {
eCaspSuccess = 0, eCaspTimeOut, eCaspCmdFailed, eCaspNACKResponse,
eCaspNotFound, eCaspNotConnected, eCaspOutOfRange, eCaspCRCErr,
eCaspWriteErr, eCaspResponseIncomplete, eCaspErrTotal }

Functions

- COMCASP_API eCOMCaspErr Casp_OpenCOM ()
- COMCASP_API eCOMCaspErr Casp_OpenCOMIdx (int paIdxPort)
- COMCASP_API eCOMCaspErr Casp_CloseCOM ()
- COMCASP_API int Casp_SysCOMCount ()
- COMCASP_API const char ∗ Casp_SysCOMName (int paIdxPort)
- COMCASP_API void Casp_SysCOMNames (const char ∗paCOMArray[MAX_PORT_NUMBER], int ∗paSize)
- COMCASP_API const char ∗ Casp_GetErrorMsg (eCOMCaspErr eErr)

3.1.1 Detailed Description

Etablish and manage communication with board.

eCOMCaspErr is return by most functions as a return of execution.

See also

Casp_GetErrorMsg() to convert code to string

First call must be Casp_OpenCOM() or Casp_OpenCOMIdx(), last one Casp_CloseCOM().

Retrieve user friendly message from eCOMCaspErr with Casp_GetErrorMsg()

. In case of manual COM port selection, use Casp_SysCOMCount() for available COM port on current system.

Casp_SysCOMName() provides individual convenient name for each available port, Casp_SysCOMNames() provides name for every ports.

3.1.2 Define Documentation

3.1.2.1 #define MAX_PORT_NUMBER 20

Max COM port supported

3.1.3 Enumeration Type Documentation

3.1.3.1 enum eCOMCaspErr

Enumerator:

eCaspSuccess Function call success.

eCaspTimeOut Timeout occur before completion.

eCaspCmdFailed Command failed.

eCaspNACKResponse Wrong response from command.

eCaspNotFound Board not found at call Casp_OpenCOM().

eCaspNotConnected Not connected to Board (call Casp_OpenCOM() first).

eCaspOutOfRange Parameter out of range.

eCaspCRCErr CRC Error.

eCaspWriteErr Error while writing to serial port.

eCaspResponseIncomplete Response incomplete.

eCaspErrTotal

3.1.4 Function Documentation

3.1.4.1 COMCASP_API eCOMCaspErr Casp_OpenCOM ( )

Open Communication with board.

3.1.4.2 COMCASP_API eCOMCaspErr Casp_OpenCOMIdx (int *paIdxPort*)

Open Communication with board on a given COM port index.

3.1.4.3 COMCASP_API eCOMCaspErr Casp_CloseCOM ( )

Close Communication with board.

3.1.4.4 COMCASP_API int Casp_SysCOMCount ( )

Query system COM port count.

3.1.4.5 COMCASP_API const char∗ Casp_SysCOMName (int *paIdxPort*)

Query system COM port name by index.

Parameters

paIdxPort	COM port index.

See also

Casp_SysCOMCount().

Returns

Pointer to COM name, of NULL if error.

3.1.4.6 COMCASP_API void Casp_SysCOMNames (const char * *paCOMArray[MAX_PORT_NUMBER],* int * *paSize*)

Query system COM port names.

Parameters

paCOMArray	array of strings. Use define MAX_PORT_NUMBER for initial size.
paSize	Effective string in array.

See also

Casp_SysCOMCount() for array size.

Note

Array's string are internal. No need to free them.

3.1.4.7 COMCASP_API const char* Casp_GetErrorMsg (eCOMCaspErr *eErr*)

Retrieve String from execution code.

Parameters

eErr	Execution code return by a previous functions.

See also

eCOMCaspErr

3.2 Board's Settings

Functions

- COMCASP_API eCOMCaspErr Casp_SetFocus (double paFocus)

3.2.1 Detailed Description

Change settings on board.

Set Focus voltage with Casp_SetFocus().

Function return eCOMCaspErr on completion.

3.2.2 Function Documentation

3.2.2.1 COMCASP_API **eCOMCaspErr Casp_SetFocus** (double *paFocus*)

Set Focus voltage

Parameters

paFocus	Set focus voltage (range from 24 Vrms to 70 Vrms)

3.3 Board's Status

Functions

- COMCASP_API eCOMCaspErr Casp_GetFocus (double ∗paVoltage)

3.3.1 Detailed Description

Retrieve status from board.

Read Focus voltage with Casp_GetFocus().

Ffunction return eCOMCaspErr on completion.

3.3.2 Function Documentation

3.3.2.1 COMCASP_API eCOMCaspErr Casp_GetFocus (double ∗ *paVoltage*)

Read focus voltage

Returns

paVotlage Focus Voltage (range from 24 Vrms to 70 Vrms)

3.4 Code Range

Defines

- #define FOCUS_VOLTAGE_MIN 20.0
- #define FOCUS_VOLTAGE_MAX 70.0

3.4.1 Detailed Description

Set of usefull defines.

define Limits for Focus Voltage, Tilt Range, Driver Range and Delta.

3.4.2 Define Documentation

3.4.2.1 #define **FOCUS_VOLTAGE_MIN** 20.0

Focus Voltage Low value

3.4.2.2 #define **FOCUS_VOLTAGE_MAX** 70.0

Focus Voltage High value

3.5 Direct Register Access

Defines

- #define REG_FOCUS_LSB 0x00
- #define REG_FOCUS_MSB 0x01

Functions

- COMCASP_API eCOMCaspErr Casp_ReadAddress (unsigned char paAddr, unsigned char ∗paValue)
- COMCASP_API eCOMCaspErr Casp_ReadAddressArray (unsigned char paAddr, unsigned char ∗paArray, unsigned char paArraySize)
- COMCASP_API eCOMCaspErr Casp_WriteAddress (unsigned char paAddr, unsigned char paValue)
- COMCASP_API eCOMCaspErr Casp_WriteAddressArray (unsigned char paAddr, unsigned char ∗paArray, unsigned char paArraySize)

3.5.1 Detailed Description

Low level function to access board registers.

Define Name for register addresses.

Set of function for registers access. See documentation for registers map. Registers are unsigned 8bit. Read single register value with Casp_ReadAddress().

Write single register value with Casp_WriteAddress().

To write several registers in a row, use Casp_WriteAddressArray().

All functions return eCOMCaspErr on completion.

3.5.2 Define Documentation

3.5.2.1 #define REG_FOCUS_LSB 0x00

Focus LSB address

3.5.2.2 #define REG_FOCUS_MSB 0x01

Focus MSB address

3.5.3 Function Documentation

3.5.3.1 COMCASP_API eCOMCaspErr Casp_ReadAddress (unsigned char *paAddr,* unsigned char ∗ *paValue*)

Read register value by address.

Parameters

paAddr	Register adress.
paValue	Register's value read.

3.5.3.2 COMCASP_API eCOMCaspErr Casp_ReadAddressArray (unsigned char _paAddr,_ unsigned char * _paArray,_ unsigned char _paArraySize_)

Read array of registers by address.

Parameters

paAddr	Register adress.
paArray	Storage array for values to read.
paArraySize	Number of value to read.

3.5.3.3 COMCASP_API eCOMCaspErr Casp_WriteAddress (unsigned char _paAddr,_ unsigned char _paValue_)

Write register single value by address.

Parameters

paAddr	Register adress.
paValue	Register's value to write.

3.5.3.4 COMCASP_API eCOMCaspErr Casp_WriteAddressArray (unsigned char _paAddr,_ unsigned char * _paArray,_ unsigned char _paArraySize_)

Write array of values at a starting address.

Parameters

paAddr	First register address.
paArray	Array of values to write.
paArraySize	Number of value to write.