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**VERSION AMENDMENTS**

NO.	VERSION	APPROVED
1	V 1.0	29.07.2008

**Software Description**

**JENCOLOR Library  
Col2LibInterface**

**Description of the interface source code Col2LibInterface.  
Interface between JenColorDLL.dll and MTCsApi.dll.  
Revision: 1.00**

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	Created:	11.12.2007	Status: Valid	
	Checked:	11.12.2007		
	Released:	29.07.2008	DOC. NO.: DB08241e	Page 1 of 27

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# 1 JENCOLOR Library: Col2LibInterface

## 1.1 Introduction

The following document describes the use of the interface sourcecode between the library "JenColorDLL" and the MTCS-C2 Colorimeter board.

Copy the eight files "Col2LibInterface.c", "Col2LibInterface.h", "MTCSApi.dll", "MTC-SApi.lib", "MTCSApi.h", "JenColorDLL.dll", "JenColorDLL.lib" and "JenColorDLL.h" in your project folder. To use the libraries you only have to include "JenColorDLL.h" and "Col2LibInterface.h" in your project.

Functions beginning with 'Mva\_', 'Mdi\_' or 'Mcm\_' are included in "JenColorDLL.dll" and described in the software documentation "JenColorDLL".

Functions beginning with 'MTCS' are included in "MTCSApi.dll" for the USB communication and are described in the software documentation "MTCS-C2".

Functions beginning with 'Col2' are included in "Col2LibInterface.c" to handle special functions of the MTCS-C2 Colorimeter and are described in this document.

Functions beginning with 'pCol2' are self-programmed callback functions as interface between "MTCSApi.dll" and "JenColorDLL.dll" and are described in this document. They are initialised as function pointer to use them out of the "JenColorDLL.dll".

If the MTCS-C2 Colorimeter is replaced by another true color sensor board, delete all functions beginning with:

'Col2', 'MTCS' and reprogram all callback functions beginning with pCol2. It is possible to rename these functions, but then the function pointer for the "JenColorDLL.dll" have to be initialised with the new functions as explained in the use of function SetCallbackProcAddr().

### See also:

Software description of JenColorDLL (JenColorDLL.dll).

Software description of MTCS-C2 DLL (MTCSApi.dll).

All callback functions of the "JenColorDLL" are programmed "compiler ready". To adapt this sourcecode to your application just replace the printf() and scanf() functions (out of the standard library <stdio.h>) with your own application specific code. Also in some functions global variables have to be changed to your needs. Go through these functions named in the todo list and programm it to your needs.

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## 1.2 Todo

The following functions have to be adjusted for your application (further information in the corresponding description and source code):

**pCol2InitGlobals()** (p. 15)

**pCol2LoadTargetXYZ()** (p. 16)

**pCol2LoadSettings()** (p. 15)

**pCol2SetTargetColor()** (p. 18)

**pCol2StartADCReturnFloat()** (p. 19)

**pCol2MeasuringError()** (p. 17)

**Col2InitLibInterface()** (p. 12)

**Col2SetSysParam()** (p. 14)

**Col2LoadStandardParam()** (p. 13)

**Col2ChangeSysParam()** (p. 11)

In any case, the initialisation has to be done at first. Afterwards a sensor calibration or measurements can be done. Before closing the software, the steps in section 'Disconnect USB interface' has to be executed.

## 1.3 Library initialisation

1. step: **InitCol2LibInterface()** explained in **Col2LibInterface.c** (p. 9)
2. step: **Mdi\_InitLibrary()** explained in the documentation of "JenColorDLL".

## 1.4 Sensor calibration

1. step: **Col2ChangeSysParam()** (p. 11) explained in **Col2LibInterface.c** (p. 9)
2. step: **Col2SetSysParam()** (p. 14) explained in **Col2LibInterface.c** (p. 9)
3. step: **Mva\_StartCalibration()** explained in the documentation of "JenColorDLL".
4. step: **pCol2SaveSettings()** (p. 18) explained in **Col2LibInterface.c** (p. 9)

## 1.5 Measurements

1. step: **Mva\_GetAdjustedValues()** explained in the documentation of "JenColorDLL".

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## 1.6 Disconnect USB interface

1. step: **Col2DisconnectUSB()** (p. 12) explained in **Col2LibInterface.c** (p. 9)

## 1.7 Callback functions of JenColorDLL

This enumeration lists all function pointer used as callback functions in the JenColorDLL. Numeration marked with \* are not needed with the MTCS-C2 Colorimeter. So they are left unprogrammed.

**a)** **TMva\_LoadTargetXYZ()**: Called from **Mva\_StartCalibration()**.

**b)** **TMva\_SetTargetColor()**: Called from **Mva\_StartCalibration()**.

**c)** **TMva\_SaveSettings()**: Needs to be called after calibration.

**d)** **TMva\_LoadSettings()**: Called from **Mdi\_InitLibrary()**.

**e)** **TMdi\_InitGlobals()**: Called from **Mdi\_InitLibrary()**.

**f\*)** **TMdi\_StartADCReturnInt()**:

Called from **Mva\_StartCalibration()** and **Mva\_GetAdjustedValues()**.

**g)** **TMdi\_StartADCReturnFloat()**:

Called from **Mva\_StartCalibration()** and **Mva\_GetAdjustedValues()**.

**h)** **TMdi\_MeasuringError()**:

Called from **Mva\_StartCalibration()** and **Mva\_GetAdjustedValues()**.

**i\*)** **TMdi\_LightingOn()**:

Called from **Mva\_StartCalibration()** and **Mva\_GetAdjustedValues()**.

**j\*)** **TMdi\_LightingOff()**:

Called from **Mva\_StartCalibration()** and **Mva\_GetAdjustedValues()**.

Further information in software description of JenColorDLL.

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## 2 JENCOLORLibrary Data Structure Documentation

### 2.1 colorimeter2 Struct Reference

Structure for correction and result values and system parameter of the MTCS-C2 Colorimeter.

```
#include <Col2LibInterface.h>
```

#### Data Fields

- float **XnYnZn** [3]  
*Reference white to compute  $L^*a^*b^*$  values.*
- float **MatrixXYZRGB** [9]  
*(3,3) matrix for calculating RGB monitor values out of XYZ values.*
- int **CoIDI**  
*Saves the system configuration of the MTCS-C2 Colorimeter.*
- unsigned int **iTime**  
*Integration time in millisecond of one measurement.*
- unsigned int **iCounts**  
*Number of accumulation.*
- unsigned int **iAmplification**  
*Amplification stage of the transimpedance amplifier MTI04 placed on the MTCS-C2 Colorimeter.*
- int **iLimit**  
*Upper limit of ADC values if  $iAmplification = 0$ .*
- unsigned int **iShift**  
*Shifting the ADC values bit by bit.*

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- unsigned int **iIndex**

*Device number of the MTCS-C2 Colorimeter for using the USB protocol.*

- char **FirmwareVersion** [5]

*Contains the firmware version of the MTCS-C2 Colorimeter.*

## 2.1.1 Detailed Description

Structure for correction and result values and system parameter of the MTCS-C2 Colorimeter.

Definition at line 47 of file Col2LibInterface.h.

## 2.1.2 Field Documentation

### 2.1.2.1 float colorimeter2::XnYnZn[3]

Reference white to compute  $L^*a^*b^*$  values.

The reference white is used in function `Mcm_XYZtoLab()` of the `JenColorDLL`.

i.e., possible values are:

reference white	Xn	Yn	Zn
C	98.07	100.00	118.22
D55	95.66	100.00	92.10
D65	94.96	100.00	122.52
D75	95.03	100.00	108.88

Definition at line 65 of file Col2LibInterface.h.

### 2.1.2.2 float colorimeter2::MatrixXYZRGB[9]

(3,3) matrix for calculating RGB monitor values out of XYZ values.

Save the (3,3) matrix line by line into `MatrixXYZRGB[9]`. This matrix is not calculated in `JenColorDLL`.

Definition at line 73 of file Col2LibInterface.h.

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### 2.1.2.3 int colorimeter2::CoDI

Saves the system configuration of the MTCS-C2 Colorimeter.

=0 System configuration for MTCS-C2 Colorimeter without digital integration.

=1 System configuration for MTCS-C2 Colorimeter with digital integration.

Definition at line 84 of file Col2LibInterface.h.

### 2.1.2.4 unsigned int colorimeter2::iTime

Integration time in millisecond of one measurement.

=1..2800 integration time in millisecond (if **colorimeter2::CoDI** (p. 7) == 1).

If pulsed light sources are measured set this value x-times higher than the fundamental frequency.

Definition at line 92 of file Col2LibInterface.h.

### 2.1.2.5 unsigned int colorimeter2::iCounts

Number of accumulation.

=1..65535 Number of accumulation (if **colorimeter2::CoDI** (p. 7) == 0).

Definition at line 99 of file Col2LibInterface.h.

### 2.1.2.6 unsigned int colorimeter2::iAmplification

Amplification stage of the transimpedance amplifier MT104 placed on the MTCS-C2 Colorimeter.

=1..8 fixed amplification stage of the transimpedance amplifier MT104.

=0 searching for the best amplification factor.

Definition at line 107 of file Col2LibInterface.h.

### 2.1.2.7 int colorimeter2::iLimit

Upper limit of ADC values if iAmplification = 0.

=1..100 upper limit in percent while searching an amplification stage (if **colorimeter2::iAmplification** (p. 7) == 0).

Definition at line 114 of file Col2LibInterface.h.

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### 2.1.2.8 unsigned int colorimeter2::iShift

Shifting the ADC values bit by bit.

=0..6 Shifting the ADC values bit by bit.

This is equal to a multiplication of ADC values with  $2^{(0..6)}$ . It does not increase the resolution.

Definition at line 122 of file Col2LibInterface.h.

### 2.1.2.9 unsigned int colorimeter2::iIndex

Device number of the MTCS-C2 Colorimeter for using the USB protocol.

In **Col2LibInterface.c** (p. 9) this value is set to 0.

Definition at line 133 of file Col2LibInterface.h.

### 2.1.2.10 char colorimeter2::FirmwareVersion[5]

Contains the firmware version of the MTCS-C2 Colorimeter.

The firmware version is read out during initialisation.

Definition at line 140 of file Col2LibInterface.h.

The documentation for this struct was generated from the following file:

- **Col2LibInterface.h**

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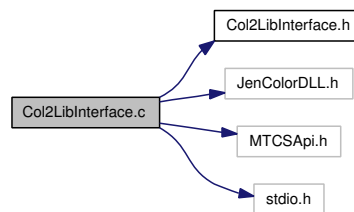
## 3 JENCOLORLibrary File Documentation

### 3.1 Col2LibInterface.c File Reference

Declaration and definition of the self-programmed callback functions as interface between the MTCS-C2 DLL and JenColorDLL.

```
#include "Col2LibInterface.h"  
#include "JenColorDLL.h"  
#include "MTCSApi.h"  
#include <stdio.h>
```

Include dependency graph for Col2LibInterface.c:



### Functions

- int **Col2InitLibInterface** (void)  
*Initialisation of the USB interface and of the function pointer as interface between the JenColorDLL and the hardware DLL of the MTCS-C2 Colorimeter board.*
- int **Col2USBInit** (void)  
*Initialisation of USB interface.*
- void **Col2DisconnectUSB** (void)  
*Disconnect the MTCS-C2 Colorimeter from USB.*
- void **Col2ChangeSysParam** (void)  
*Change system parameter of the MTCS-C2 Colorimeter.*

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- int **Col2SetSysParam** (void)  
*Set system parameter amplification factor, shift and limit of the MTCS-C2 Colorimeter.*
- void **Col2LoadStandardParam** (void)  
*Load standard system parameter into global arrays and structures.*
- void **Col2LoadEepromParam** (short int \*Buf)  
*Loading system parameter into global arrays and structures read from EEPROM of the MTCS-C2 Colorimeter.*
- unsigned char **pCol2InitGlobals** (unsigned char \*NumberOfTC, unsigned char \*aNotUsedForCol2, unsigned char \*bNotUsedForCol2, unsigned char \*NumberOfTargets, unsigned char \*cNotUsedForCol2)  
*Initialisation of global variables used in the JenColorDLL.*
- void **pCol2LoadTargetXYZ** (float pTargetValues[ ])  
*Load XYZ target values during calibration.*
- int **pCol2LoadSettings** (void)  
*Load and initialise calibration and sensor data.*
- unsigned char **pCol2SaveSettings** (void)  
*Non-volatile storage of the calibration and sensor data.*
- unsigned char **pCol2SetTargetColor** (unsigned char TargetNumber)  
*Set the passed target number during calibration.*
- void **pCol2StartADCReturnFloat** (unsigned char MeasureSensor, float pAavgADC[ ])  
*Start ADC and return float values.*
- void **pCol2MeasuringError** (unsigned char Sensor, unsigned char Channel, unsigned char Error)  
*Error handling routine during measurements.*

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## Variables

- **colorimeter2 Col2**

*Structure for handling MTCS-C2 Colorimeter.*

### 3.1.1 Detailed Description

Declaration and definition of the self-programmed callback functions as interface between the MTCS-C2 DLL and JenColorDLL.

Project : JENCOLOR Library

Package : Col2LibInterface

Company : MAZeT GmbH; Goeschwitzer Strasse 32; D-07745 Jena

Version History:

V 0.10 11.12.2007 First Revision

Definition in file **Col2LibInterface.c**.

### 3.1.2 Function Documentation

#### 3.1.2.1 void Col2ChangeSysParam (void)

Change system parameter of the MTCS-C2 Colorimeter.

#### Todo

Replace printf() and scanf() with your own user interface.

#### Parameters:

*None.*

#### Return values:

**colorimeter2::ColDI** (p. 7) Value range and explanation see on referenced page.

**colorimeter2::iAmplification** (p. 7) Value range and explanation see on referenced page.

**colorimeter2::iShift** (p. 8) Value range and explanation see on referenced page.

**colorimeter2::iTime** (p. 7) Value range and explanation see on referenced page.

**colorimeter2::iLimit** (p. 7) Value range and explanation see on referenced page.

**colorimeter2::XnYnZn** (p. 6) Value range and explanation see on referenced page.

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**Returns:**

None.

Definition at line 404 of file Col2LibInterface.c.

**3.1.2.2 void Col2DisconnectUSB (void)**

Disconnect the MTCS-C2 Colorimeter from USB.

**Parameters:**

*None.*

**Return values:**

*None.*

**Returns:**

None.

Definition at line 328 of file Col2LibInterface.c.

**3.1.2.3 int Col2InitLibInterface (void)**

Initialisation of the USB interface and of the function pointer as interface between the JenColorDLL and the hardware DLL of the MTCS-C2 Colorimeter board.

Notice:

The functions MDI\_STARTADCRETURNTINT, MDI\_LIGHTINGON and MDI\_LIGHTINGOFF are not necessary for the MTCS-C2 Colorimeter board.

**Todo**

Replace printf() and with your own user interface.

**Parameters:**

*None.*

**Return values:**

*None.*

**Returns:**

iErr Error returned from SetCallbackProcAddr() or **Col2USBInit()** (p. 14).  
=0 USB initialisation and set of function pointer successful.  
!=0 USB initialisation or set of function pointer caused an error.

Definition at line 232 of file Col2LibInterface.c.

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#### 3.1.2.4 void Col2LoadEepromParam (short int \* *Buf*)

Loading system parameter into global arrays and structures read from EEPROM of the MTCS-C2 Colorimeter.

##### Parameters:

\**Buf* Buffer read from EEPROM in function **pCol2LoadSettings()** (p. 15).

##### Return values:

*glibAdjust* Explanation see on referenced page.

*colorimeter2::ColDI* (p. 7) Explanation see on referenced page.

*colorimeter2::iCounts* (p. 7) Explanation see on referenced page.

*colorimeter2::iTime* (p. 7) Explanation see on referenced page.

*colorimeter2::iShift* (p. 8) Explanation see on referenced page.

*colorimeter2::iAmplification* (p. 7) Explanation see on referenced page.

*colorimeter2::XnYnZn* (p. 6) Explanation see on referenced page.

##### Returns:

None.

Definition at line 518 of file Col2LibInterface.c.

#### 3.1.2.5 void Col2LoadStandardParam (void)

Load standard system parameter into global arrays and structures.

##### Todo

You can change the standard parameter. Not necessary.

##### Parameters:

*None.*

##### Return values:

*glibAdjust* Explanation see the software documentation of JenColorDLL. The correction matrix is loaded as unit matrix. Offset values are set to zero.

*colorimeter2::ColDI* (p. 7) Explanation see on referenced page. Value is set to 0 (configuration without digital integration).

*colorimeter2::iCounts* (p. 7) Explanation see on referenced page. Value is set to 100.

*colorimeter2::iTime* (p. 7) Explanation see on referenced page. Value is set to 10.

*colorimeter2::iShift* (p. 8) Explanation see on referenced page. Value is set to 0.

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***colorimeter2::iAmplification*** (p. 7) Explanation see on referenced page. Value is set to 8.

***colorimeter2::XnYnZn*** (p. 6) Explanation see on referenced page. Value is set to reference white C.

**Returns:**

None.

Definition at line 468 of file Col2LibInterface.c.

**3.1.2.6 int Col2SetSysParam (void)**

Set system parameter amplification factor, shift and limit of the MTCS-C2 Colorimeter.

**Todo**

Replace printf() and scanf() with your own user interface.

**Parameters:**

***colorimeter2::iIndex*** (p. 8) Explanation see on referenced page.

***colorimeter2::iShift*** (p. 8) Explanation see on referenced page.

***colorimeter2::iAmplification*** (p. 7) Explanation see on referenced page.

***colorimeter2::iLimit*** (p. 7) Explanation see on referenced page.

**Return values:**

***None.***

**Returns:**

iErr Error returned from MTCSSetShift(), MTCSSearchAmplification() or MTCSSet-Parameter()

=0 Set system parameter successful.

!=0 Set system parameter caused an error.

Definition at line 350 of file Col2LibInterface.c.

**3.1.2.7 int Col2USBInit (void)**

Initialisation of USB interface.

**Parameters:**

***None.***

**Return values:**

***None.***

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#### Returns:

iErr Error returned from MTCSInitSystem() or MTCSReadVersion().  
=0 USB initialisation successful.  
!=0 USB initialisation caused an error.

Definition at line 289 of file Col2LibInterface.c.

#### 3.1.2.8 unsigned char pCol2InitGlobals (unsigned char \* *NumberOfTC*, unsigned char \* *aNotUsedForCol2*, unsigned char \* *bNotUsedForCol2*, unsigned char \* *NumberOfTargets*, unsigned char \* *cNotUsedForCol2*)

Initialisation of global variables used in the JenColorDLL.

The return value decides which function is called to read out the ADC values. With pCol2StartADCReturnInt() an averaging is done with a number of measurements saved in glibMeasure. With **pCol2StartADCReturnFloat()** (p. 19) the value in glibMeasure is ignored and you can program your own signal processing like FIR filter.

#### Todo

Change the number of calibration targets to your applications need (min = 3, max = 100).

#### Parameters:

*None.*

#### Return values:

**NumberOfTC** Number of True Color sensors.

The "Col2LibInterface.c" can only handle one MTCS-C2 Colorimeter.

**aNotUsedForCol2** Not used with MTCS-C2 Colorimeter.

**bNotUsedForCol2** Not used with MTCS-C2 Colorimeter.

**NumberOfTargets** Number of calibration targets (min = 3, max = 100).

**cNotUsedForCol2** Not used with MTCS-C2 Colorimeter.

#### Returns:

Status value for function call during measurement.  
= 0 Start ADC with pCol2StartADCReturnInt()  
!= 0 Start ADC with **pCol2StartADCReturnFloat()** (p. 19)

Definition at line 692 of file Col2LibInterface.c.

#### 3.1.2.9 int pCol2LoadSettings (void)

Load and initialise calibration and sensor data.

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The calibration and sensor data saved with **pCol2SaveSettings()** (p. 18) are loaded for the initialisation of the JenColorDLL.

**Todo**

Choose a measure sequence of the sensor and write it into `glibSensor[0]`. Explained in the documentation of the "JenColorDLL".

**Todo**

Copy a RGB to XYZ (3,3) matrix into **colorimeter2::MatrixXYZRGB** (p. 6).

**Warning:**

ATTENTION FOR OVERFLOW:

Arraysizes cannot be checked inside the JenColorDLL!

Arraysize `glibMeasure` = 17

Arraysize `glibScale` = 17

Arraysize `glibSensor` = 51

Arraysize `glibAdjust` = 1624

**Parameters:**

*None.*

**Return values:**

***glibAdjust*** Contains offset values, black-white offset values and calibration matrices of the sensors.

***glibMeasure*** Contains the number of measurements for the sensors.

***glibScale*** Contains scale factors of the sensors.

***glibSensor*** Contains the measure sequence, bit resolution and system lighting of the sensors.

**Returns:**

`iErr` Error code defined by user. This value is not checked in the JenColorDLL.

User can check this value, when it is returned from `Mdi_InitLibrary(pError)`.

`=0` Settings loaded successfully.

`!=0` Userdefined error.

Definition at line 870 of file `Col2LibInterface.c`.

**3.1.2.10 void pCol2LoadTargetXYZ (float pTargetValues[ ])**

Load XYZ target values during calibration.

**Todo**

The XYZ target values in `gXYZCalibrationTargets` have to be adjusted on the application! Measure your calibration targets with a calibrated spectrometer and replace

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the XYZ target values.

**Warning:**

ATTENTION FOR OVERFLOW:

Arraysizes cannot be checked inside the JenColorDLL!

The maximum size of pTargetValues[] is:  $3 * \text{NumberOfTargets} - 1$

i.e.: 24 Targets: maximum size =  $3 * 24 - 1 = 71$

**Parameters:**

*None.*

**Return values:**

**pTargetValues** Pointer on array for the XYZ target values. The order of the values is pTargetValues[] = {X1, Y1, Z1, X2, Y2, Z2, ...}.

**Returns:**

None.

Definition at line 730 of file Col2LibInterface.c.

**3.1.2.11 void pCol2MeasuringError (unsigned char *Sensor*, unsigned char *Channel*, unsigned char *Error*)**

Error handling routine during measurements.

This routine is called, if a sensor channel caused a zero signal or a signal overflow (ADC value reaches maximum value minus 1% tolerance) after a AD conversation.

**Todo**

Replace printf() and scanf() with your own user interface.

**Parameters:**

**Sensor** Mismeasuring of passed sensor.

**Channel** Mismeasuring of passed channel.

**Error** =1 zero signal  
=2 overamplify

**Return values:**

*None.*

**Returns:**

None.

Definition at line 640 of file Col2LibInterface.c.

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### 3.1.2.12 unsigned char pCol2SaveSettings (void)

Non-volatile storage of the calibration and sensor data.

The calibration and sensor data have to be stored non-volatile. During the library initialisation Mdi\_InitLibrary() these values are reloaded and the sensor has not to be calibrated again.

#### Warning:

##### ATTENTION FOR OVERFLOW:

Arraysizes cannot be checked inside the JenColorDLL!

Arraysize glibMeasure = 17

Arraysize glibScale = 17

Arraysize glibSensor = 51

Arraysize glibAdjust = 1624

#### Parameters:

***glibAdjust*** Contains offset values, black-white offset values and calibration matrices of the sensors.

***glibMeasure*** Contains the number of measurements for the sensors.

***glibScale*** Contains scale factors of the sensors.

***glibSensor*** Contains the measure sequence, bit resolution and system lighting of the sensors.

#### Return values:

***None.***

#### Returns:

iErr Error code defined by user. This value is not checked in the JenColorDLL.

=0 Settings saved successfully.

!=0 Userdefined error.

Definition at line 773 of file Col2LibInterface.c.

### 3.1.2.13 unsigned char pCol2SetTargetColor (unsigned char *TargetNumber*)

Set the passed target number during calibration.

#### Todo

Adjust this function to your application.

i.e. this function can be automated if a multicolor LED or a display is measured. The LED/display can be set automatically to the specific color without asking the user to do this.

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**Todo**

Replace printf() and scanf() with your own user interface.

**Parameters:**

**TargetNumber** =1..n Set the target number n.  
=0 special case: Offset measurement of sensors.

**Return values:**

**None.**

**Returns:**

NextTarget Variable to stop calibration.  
=0 Last target or offset measurement is set.  
!=0 Further calibration targets available.

Definition at line 943 of file Col2LibInterface.c.

**3.1.2.14 void pCol2StartADCReturnFloat (unsigned char *MeasureSensor*, float *pAavgADC*[])**

Start ADC and return float values.

If only one sensor is connected, it can be read out without checking parameter "MeasureSensor".

Stick to the following sequence, when measuring a true color sensor:

- pAavgADC[0] = Channel Red
- pAavgADC[1] = Channel Green
- pAavgADC[2] = Channel Blue

**Todo**

Replace printf() with your own user interface.

**Warning:**

**ATTENTION FOR OVERFLOW:**  
Arraysizes cannot be checked inside the JenColorDLL!  
max. arraysize of pAavgADC[] = Number of channels of the measured sensor.  
i.e. True Color sensor: max. arraysize = 3

**Parameters:**

**MeasureSensor** =1..10 Measuring sensor.

**Return values:**

**pAavgADC[]** Pointer on float ADC-values of the measured sensor.

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**Returns:**

None.

Definition at line 591 of file Col2LibInterface.c.

### 3.1.3 Variable Documentation

#### 3.1.3.1 struct colorimeter2 Col2

Structure for handling MTCS-C2 Colorimeter.

Definition at line 113 of file Col2LibInterface.c.

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## 3.2 Col2LibInterface.h File Reference

Header-file of **Col2LibInterface.c** (p. 9).

This graph shows which files directly or indirectly include this file:



## Data Structures

- struct **colorimeter2**

*Structure for correction and result values and system parameter of the MTCS-C2 Colorimeter.*

## Defines

- #define **MAX\_ADDRESS** 55

*Maximum count of adress to read or write the EEPROM of MTCS-C2 Colorimeter.*

- #define **MAX\_CALIBRATION\_TARGETS** 100

*Maximum number of XYZ target values during calibration.*

## Functions

- int **Col2InitLibInterface** (void)

*External declaration.*

- int **Col2SetSysParam** (void)

*External declaration.*

- void **Col2ChangeSysParam** (void)

*External declaration.*

- void **Col2DisconnectUSB** (void)

*External declaration.*

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- unsigned char **pCol2SaveSettings** (void)

*External declaration.*

## Variables

- **colorimeter2 Col2**

*Structure for handling MTCS-C2 Colorimeter.*

### 3.2.1 Detailed Description

Header-file of **Col2LibInterface.c** (p. 9).

Project : JENCOLOR Library

Package : Col2LibInterface

Company : MAZeT GmbH; Goeschwitzer Strasse 32; D-07745 Jena

Version History:

V 0.10 11.12.2007 First Revision

Definition in file **Col2LibInterface.h**.

### 3.2.2 Define Documentation

#### 3.2.2.1 #define MAX\_ADDRESS 55

Maximum count of adress to read or write the EEPROM of MTCS-C2 Colorimeter.

Definition at line 33 of file Col2LibInterface.h.

#### 3.2.2.2 #define MAX\_CALIBRATION\_TARGETS 100

Maximum number of XYZ target values during calibration.

Definition at line 37 of file Col2LibInterface.h.

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### 3.2.3 Function Documentation

#### 3.2.3.1 void Col2ChangeSysParam (void)

External declaration.

See **Col2ChangeSysParam()** (p. 11) for detailed description.

#### 3.2.3.2 void Col2DisconnectUSB (void)

External declaration.

See **Col2DisconnectUSB()** (p. 12) for detailed description.

#### 3.2.3.3 int Col2InitLibInterface (void)

External declaration.

See **Col2InitLibInterface()** (p. 12) for detailed description.

#### 3.2.3.4 int Col2SetSysParam (void)

External declaration.

See **Col2SetSysParam()** (p. 14) for detailed description.

#### 3.2.3.5 unsigned char pCol2SaveSettings (void)

External declaration.

See **pCol2SaveSettings()** (p. 18) for detailed description.

### 3.2.4 Variable Documentation

#### 3.2.4.1 struct colorimeter2 Col2

Structure for handling MTCS-C2 Colorimeter.

Definition at line 113 of file Col2LibInterface.c.

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## 4 JENCOLORLibrary Page Documentation

### 4.1 Todo List

**Global Col2ChangeSysParam (p. 11)** Replace printf() and scanf() with your own user interface.

**Global Col2InitLibInterface (p. 12)** Replace printf() and with your own user interface.

**Global Col2LoadStandardParam (p. 13)** You can change the standard parameter. Not necessary.

**Global Col2SetSysParam (p. 14)** Replace printf() and scanf() with your own user interface.

**Global pCol2InitGlobals (p. 15)** Change the number of calibration targets to your applications need (min = 3, max = 100).

**Global pCol2LoadSettings (p. 15)** Choose a measure sequence of the sensor and write it into glibSensor[0]. Explained in the documentation of the "JenColorDLL".

**Global pCol2LoadSettings (p. 15)** Copy a RGB to XYZ (3,3) matrix into **colorimeter2::MatrixXYZRGB** (p. 6).

**Global pCol2LoadTargetXYZ (p. 16)** The XYZ target values in gXYZCalibrationTargets have to be adjusted on the application! Measure your calibration targets with a calibrated spectrometer and replace the XYZ target values.

**Global pCol2MeasuringError (p. 17)** Replace printf() and scanf() with your own user interface.

**Global pCol2SetTargetColor (p. 18)** Adjust this function to your application.

i.e. this function can be automated if a multicolor LED or a display is measured. The LED/display can be set automatically to the specific color without asking the user to do this.

**Global pCol2SetTargetColor (p. 18)** Replace printf() and scanf() with your own user interface.

**Global pCol2StartADCReturnFloat (p. 19)** Replace printf() with your own user interface.

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Col2LibInterface

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