

# eMotion ST2:3

## Product Specification

This document might be changed without prior notice

Revision: 001  
Date: 2018-12-17  
PrA: 12027482

## Revision History

Rev.	Date	Author	Modifications
000	01.08.2017	M. Schmidt	Initial revision
001	17.12.2018	R. Muhler	Minor Changes in 10.3; comments to connector part-nrs. added, formatting improved

Change History (Optional)

## Table of contents

<b>1. Preamble .....</b>	<b>5</b>
1.1. Purpose of this document .....	5
1.2. Abbreviations .....	5
<b>2. Product description .....</b>	<b>6</b>
2.1. Functionally description of the product .....	6
2.2. Special Features .....	6
<b>3. Drawing of PCB and dimensions .....</b>	<b>7</b>
<b>4. Connector overview .....</b>	<b>8</b>
4.1. Power connector, J1 .....	10
4.2. Alternative power connector, J101 .....	10
4.3. AUX power connector, J8 .....	10
4.4. Power out, J2.....	11
4.5. Display-Port, J7.....	11
4.6. DVI-I, J6.....	12
4.7. LVDS-output, J3.....	13
4.9. Backlight Supply Voltage, J5.....	14
4.10. OSD-Keyboard-Connector, J4 .....	15
4.11. I2S-Audio Connector, J100 .....	16
4.12. RS232-connector 4pin, CN109 .....	17
4.13. TCON-Supply-Select, CN500.....	17
4.14. Backlight PWM voltage select, CN502 .....	18
4.15. BLT_EN Voltage-Select, CN504 .....	18
4.16. BLT_EN Logic-Level-Select, CN506 .....	18
<b>5. Jumper settings and configuration .....</b>	<b>19</b>
5.1 Panel supply voltage (CN500).....	19
5.2 Backlight Dimming (CN502) .....	19
5.3 Backlight Enable Signal (CN504, CN506) .....	19
5.4 Panel file configuration.....	19
<b>6. Technical Details .....</b>	<b>20</b>
6.1. Block diagram of emotionST2:3 .....	20
6.2. Supply voltages and current consumption.....	20
6.3. Input and output signals .....	21
DP input .....	21
DVI input.....	21
LVDS connector.....	21
<b>7. OSD (On Screen Display) .....</b>	<b>22</b>
7.1. Mechanical dimensions OSD board (CU70008 incl. input cable).....	22

7.2. Operation & buttons .....	22
7.3. Hotkeys.....	23
7.4. OSD Status LED .....	23
7.5. OSD Structure.....	24
7.5.1 Picture Menu.....	25
7.5.2 VGA Settings Menu .....	25
7.5.3 Setup Menu .....	25
7.5.4 Color Menu .....	25
7.5.5 User Color Menu.....	26
7.5.6 Inputs Menu .....	26
7.5.7 OSD Menu .....	26
7.5.8 OSD Position Menu .....	27
7.5.9 OSD Position Menu .....	27
7.5.10 Advanced Setup Menu .....	27
<b>8. Serial Control RS232.....</b>	<b>28</b>
<b>9. DDC/CI Interface .....</b>	<b>28</b>
<b>10. Qualification .....</b>	<b>29</b>
10.1. Environmental conditions .....	29
10.2. EMI-Standards .....	29
10.3. Safety .....	30
10.4. Shock and Vibration.....	30
10.5. Reliability, MTBF .....	31
<b>11. Warranty, Quality and Environmentalism .....</b>	<b>31</b>
11.1. Warranty .....	31
11.2. Quality .....	31
11.3. Environmentalism .....	31
<b>12. Label and package .....</b>	<b>32</b>
12.1. <i>Label and material number</i> .....	32

## 1. Preamble

### 1.1. Purpose of this document

The purpose of this document is the definition of the technical parameters, the electrical connections and the mechanical dimensions for the development of the eMotionST2:3-board.

### 1.2. Abbreviations

UXGA	ULTRA EXTENDED GRAPHICS ARRAY
I <sup>2</sup> C	INTER-IC
EMI	ELECTRO MAGNETIC INTERFERENCE
EMC	ELECTRO MAGNETIC COMPATIBILITY
EN	EUROPEAN NORM
ESD	ELECTRO STATIC DISCHARGE
UL	UNDERWRITER LAB
PCB	PRINTED CIRCUIT BOARD
SMT	SURFACE MOUNT TECHNOLOGY
ROHS	RESTRICTION FOR THE USE OF HAZARDOUS SUBSTANCES
NC	NOT CONNECTED
T.B.D.	TO BE DEFINED
TMDS	TRANSITION MINIMIZED DIFFERENTIAL SIGNALING
DVI	DIGITAL VIDEO INTERFACE
DP	DISPLAY PORT
OSD	ON SCREEN DISPLAY
DPMS	DISPLAY POWER MANAGEMENT SYSTEM
VESA	VIDEO ELECTRONICS STANDARDS ASSOCIATION
DDC / CI	DISPLAY DATA CHANNEL / COMMAND INTERFACE
VGA	VIDEO GRAPHICS ARRAY
WUXGA	WIDE ULTRA EXTENDED GRAPHICS ARRAY

## 2. Product description

### 2.1. Functionally description of the product

Based on the latest design of highly integrated LCD controller (STDP60xx/Chandler), the eMotionST2:3 board is able to control panels from VGA up to WUXGA.

The eMotionST2:3 graphic controller board can be connected to input signals coming from DP and DVI-I sources.

The board can be controlled by a 5-key OSD keyboard. The OSD menu allows the selection of at least six different languages (more languages on request).

The interface board is compatible with VESA DPMS, DDC2B, DDC/ CI and can be controlled by RS232.

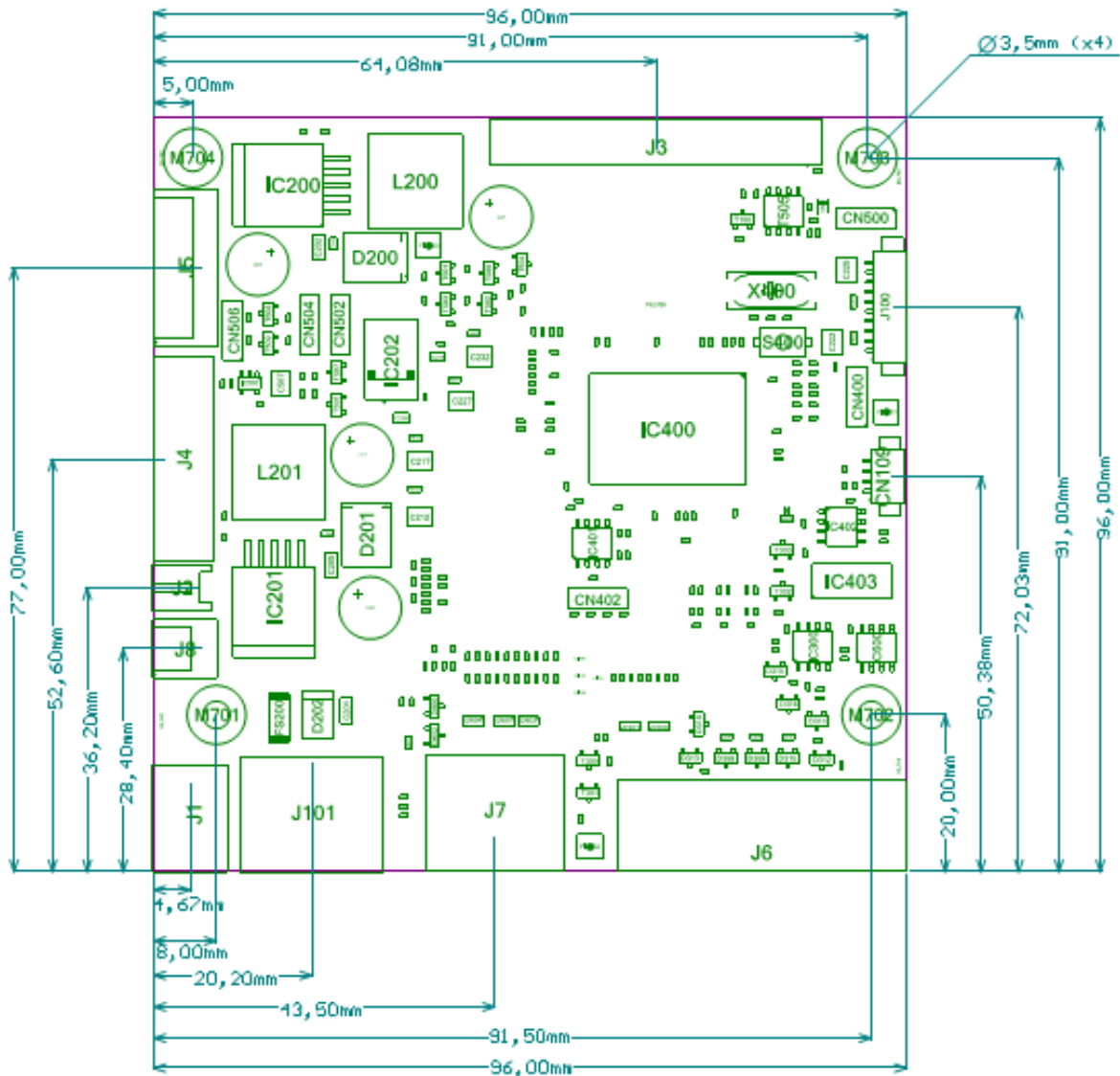
### 2.2. Special Features

- DP 1.1 compliant input
- DVI-I (analoge 205MHz / digital 165MHz)
- Up to WUXGA with 170MHz to the panel (8bit)
- 10-bit color processing
- Built in backlight control for up to 3A backlight current
- Built in power on/off sequencing controller for panel power as well as for backlight
- Support of 3.3V, 5.0V panel voltage and 12V/ 24V backlight voltage
- Multilingual OSD
- Firmware and panel timing stored in separated EEPROM

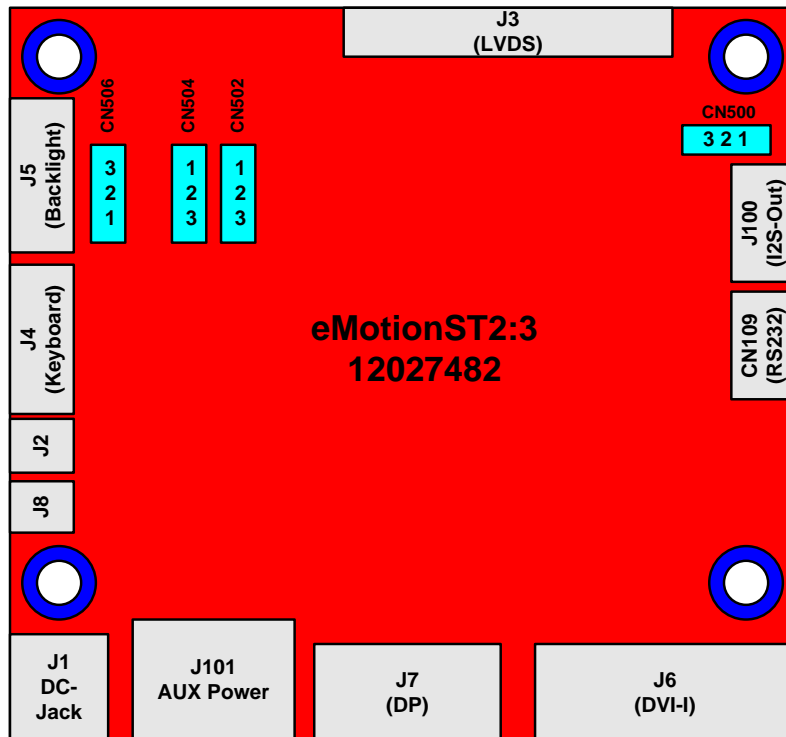
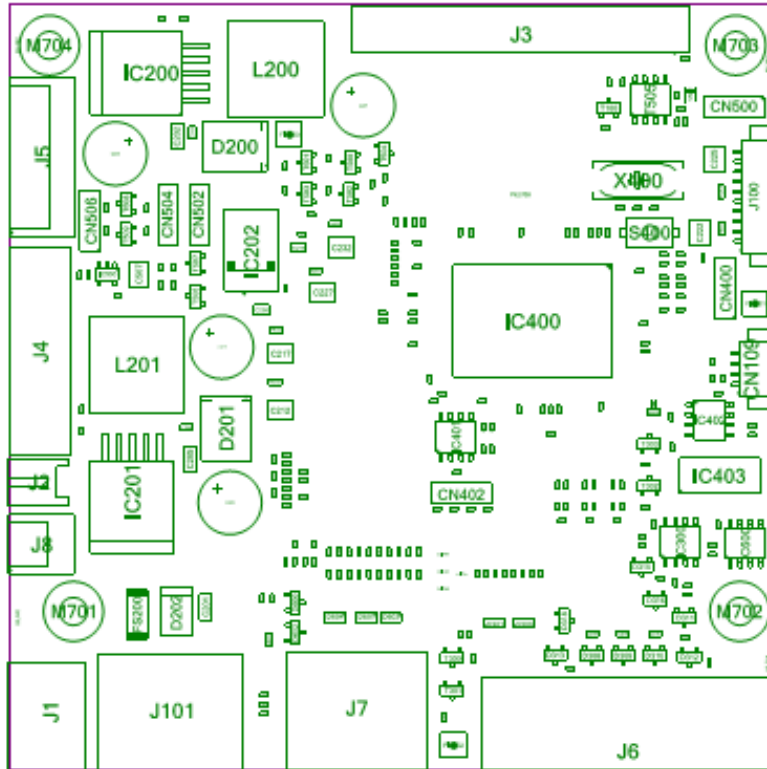
### 3. Drawing of PCB and dimensions

The dimensions of eMotionST2:3 will be the same as eMotionST2:2. Most of the connectors will have the same position as on the eMotionST2:2.

Dimensions: 96mm (L) x 96mm (W) x 17mm (H)



## 4. Connector overview

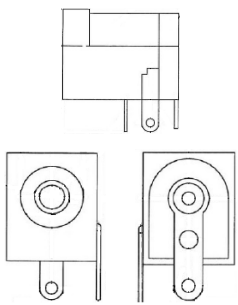




Item	Description	Remark
J1	Power connector	DC-Jack , 2.5mm max 5A
J2	Power out	5V power output, max 100mA
J3	LVDS Dual link out	Display Interface Connector
J4	External OSD connector	OSD, LED, etc.
J5	Inverter / Backlight connector	Power supply / dimming Note: inverter input voltage must fit to the input voltage of the board
J6	DVI-I Input	24+5pin DVI-I connector female
J7	DP Input	15pin HD-Sub female
J8	AUX power connector	2pin connector, max 3A
J100	I2S Audio	10 pin I2S Audio
J101	Alternative power connector	4pin connector, max 5A
CN109	RS232	LVTTTL signal level
CN400	LVDS mapping (N.C)	(LVDS mapping is done with panel file)
CN402	JTAG enable (N.C)	(only for debug purpose not for MP)
CN500	TCON supply select	3V3 / 5V Panel VCC select
CN502	Backlight dimming voltage select	3V3 / 5V PWM dimming level select 3V3 / 5V analog dimming range select
CN504	Backlight enable voltage select	3V3 / 5V enable voltage select
CN506	Backlight enable polarity select	Active High / Active low select

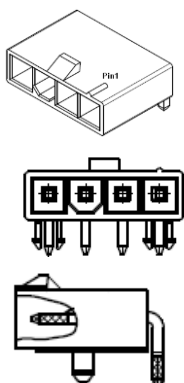
#### 4.1. Power connector, J1

Type: W+P Products, W+P-No.: 649-2-2.5-20-5A, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 Side-, Front-, Rear-View	1	+Vin	I	+12V/5A or +24V/5A
	2	GND	I/O	GND / 5A
	3	GND	I/O	GND / 5A

#### 4.2. Alternative power connector, J101

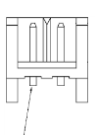
Type: Molex-Ref.-No: 0039303045, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 Top- Front-, Side-View	1	GND	I/O	GND
	2	GND	I/O	GND
	3	+Vin	I	+12V/4A* or +24V/4A*
	4	+Vin	I	+12V/4A* or +24V/4A*

\* 4A per pin / max 5A on connector

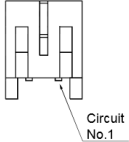
#### 4.3. AUX power connector, J8

Type: JST-Ref.-No. S2B-EH, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 Circuit No.1	1	+Vin	O	+12V/3A or +24V/3A
	2	GND	I/O	GND

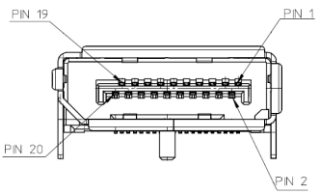
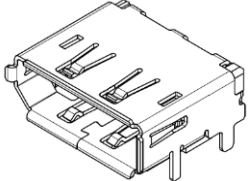
#### 4.4. Power out, J2

Type: JST-Ref.-No. S2B-PH-K-S, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
	1	+5V	O	+5V DC $\pm$ 5%, 100mA
	2	GND	I/O	GND

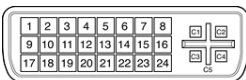
#### 4.5. Display-Port, J7

Type: W+P: 8470-2-2-1-80-TR, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Front-View</p> 	1	ML_L3N	I	Main Link Ch. 3 Differential Input negative
	2	GND		Ground
	3	ML_L3P	I	Main Link Ch. 3 Differential Input positive
	4	ML_L2N	I	Main Link Ch. 2 Differential Input negative
	5	GND		Ground
	6	ML_L2P	I	Main Link Ch. 2 Differential Input positive
	7	ML_L1N	I	Main Link Ch. 1 Differential Input negative
	8	GND		Ground
	9	ML_LN1P	I	Main Link Ch. 1 Differential Input positive
	10	ML_LN0N	I	Main Link Ch. 0 Differential Input negative
	11	GND		Ground
	12	ML_LN0P	I	Main Link Ch. 0 Differential Input positive
	13	Config 1	O	Config Pin1, connect to GND with 1M
	14	Config 2	O	Config Pin2, connect to GND with 1M
	15	AUXP	I	Auxiliary Ch. Differential Input positive
	16	GND		Ground
	17	AUXN	I	Auxiliary Ch. Differential Input negative
	18	HPD	I/O	Hot Plug Detect
	19	POR	I/O	Connect to Ground
	20	PO	O	Not Connected to internal circuits

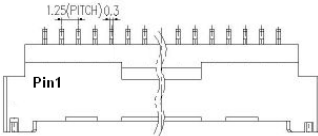

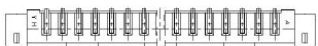
## 4.6. DVI-I, J6

Type: DVI-socket W+P: 507-29-2-2-20, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Front view</p>	1	DT2-	In	TMDS Data2-
	2	DT2+	In	TMDS Data2+
	3	TX2/4-SHLD		TMDS Data2 Shield
	4	N.C.		
	5	N.C.		
	6	DDC-CLK	In	I2C-Clock, +5V level
	7	DDC-Data	I/O	I2C-Data, +5V level
	8	AVS	In	Analog Vertical Sync
	9	DT1-	In	TMDS Data1-
	10	DT1+	In	TMDS Data1+
	11	TX1/3-SHLD		TMDS Data1 Shield
	12	N.C.		
	13	N.C.		
	14	+5V	In	+5V Power*
	15	Ground (for +5V)		
	16	HP Detect	Out	Hot Plug Detect
	17	DT0-	In	TMDS Data0-
	18	DT0+	In	TMDS Data0+
	19	TX0/5-SHLD		TMDS Data0 Shield
	20	N.C.		
	21	N.C.		
	22	TXC-SHLD		TMDS Clock Shield
	23	CLK+	In	TMDS Clock +
	24	CLK-	In	TMDS Clock -
	C1	ARED	In	Analog Red
	C2	AGRN	In	Analog Green
	C3	ABLU	In	Analog Blue
	C4	AHS	In	Analog Horizontal Sync
	C5	Analog RGB Ground		

## 4.7. LVDS-output, J3

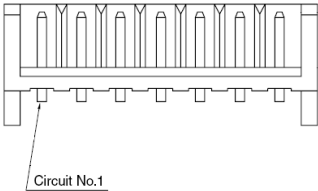
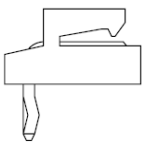
Type: Hirose-Ref.-No. DF14-30P-1.25H, (YEON-HO 12507WR-30), or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top-View</p>	1	Panel VCC SW	O	Panel VCC *
	2	Panel VCC SW	O	Panel VCC*
	3	Panel VCC SW	O	Panel VCC*
	4	Panel VCC SW	O	Panel VCC*
	5	GND	I/O	Ground
	6	REVERSE_SCAN	O	Digital out (3V3 or 0V)
	7	GND	O	Ground
	8	LVDS.E3_P	O	TX3 odd positive
	9	LVDS.E3_N	O	TX3 odd negative
	10	LVDS.EC_P	O	Clock odd positive
 <p>Front-View</p>	11	LVDS.EC_N	O	Clock odd negative
	12	LVDS.E2_P	O	TX2 odd positive
	13	LVDS.E2_N	I/O	TX2 odd negative
	14	GND	O	Ground
	15	LVDS.E1_P	O	TX1 odd positive
	16	LVDS.E1_N	O	TX1 odd negative
	17	LVDS.E0_P	O	TX0 odd positive
	18	LVDS.E0_N	I/O	TX0 odd negative
	19	GND	O	Ground
	 <p>Rear-View</p>	20	LVDS.O3_P	O
21		LVDS.O3_N	O	TX3 even negative
22		LVDS.OC_P	O	Clock even positive
23		LVDS.OC_N	O	Clock even negative
24		LVDS.O2_P	O	TX2 even positive
25		LVDS.O2_N	I/O	TX2 even negative
26		GND	O	Ground
27		LVDS.O1_P	O	TX1 even positive
28		LVDS.O1_N	O	TX1 even negative
29		LVDS.O0_P	O	TX0 even positive
30	LVD.O0_N	I/O	TX0 even negative	

\* Note: Pin1, 2, 3, 4: Output voltage 3.3V / 5.0V - selectable with jumpers on CN500

## 4.9. Backlight Supply Voltage, J5

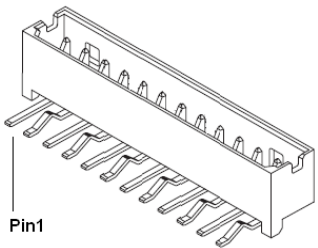

Type: JST-Ref.-No. S7B-EH, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top-View</p>  <p>Side-View</p>	1	ADIM	O	Analog dimming voltage
	2	PWM	O	PWM diming output*
	3	EN	O	ON/OFF **
	4	VDD*	O	Operating voltage +12V / +24V
	5	VDD*	O	Operating voltage +12V / +24V
	6	GND	I/O	Ground
	7	GND	I/O	Ground

\* Note: VDD follows the board supply voltage. Board supply should always match with the inverter supply voltage!

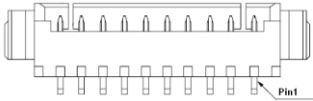
#### 4.10. OSD-Keyboard-Connector, J4

Type: MOLEX: 53015-1210 or YEONHO: 20017WR-12A00, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Side-View</p>  <p>Front-View</p>	1	LED1	O	LED Green
	2	LED2	O	LED RED
	3	IR	I	IR remote / not connected
	4	Vcc	O	5V
	5	GND	I/O	Ground
	6	SW3	I	Button3 (UP)
	7	SW2	I	Button2 (DOWN)
	8	SW4	I	Button4 (SELECT)
	9	SW6	I	Button6 (POWER)
	10	SW1	I	Button1 (MENU)
	11	N.C.		Not connected
	12	GND	I/O	Ground

#### 4.11. I2S-Audio Connector, J100

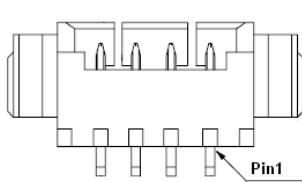
Type: MOLEX: 53261-1071 or YEONHO: 12505WR-10, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>TOP-View</p>	1	GND	I/O	Ground
	2	5V	P	Power
	3	I2S_WS	O	I2S Word Select
	4	GND	I/O	Ground
	5	I2S_Data	O	I2S Data
	6	GND	I/O	Ground
	7	I2S_BCLK	O	I2S Clock
	8	GND	I/O	Ground
	9	I2S_MCLK	O	I2S MCLK
	10	GND	I/O	Ground



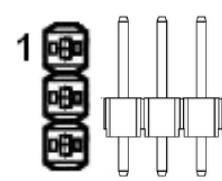
#### 4.12. RS232-connector 4pin, CN109

Type: Molex-Ref.-No: 53261-0471 or YEONHO: 12505WR-04, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top-View</p>	1	DVDD33	O	3.3V
	2	UART_EXT.TxD	O	Transmit Data (LVTTTL)
	3	UART_EXT.RxD	I	Receive Data (LVTTTL)
	4	GND	I/O	Ground

#### 4.13. TCON-Supply-Select, CN500

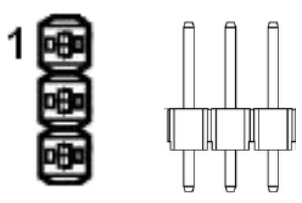
Type W+P: 944-12-006-50, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top- an Side-View</p>	1	SEL_3V3		Select 3V3 by connecting jumper to PIN2
	2	PNL_VCC		
	3	SEL_5V		Select 5V by connecting jumper to PIN2

Jumper Type W+P: 165-101-10-00, or equivalent

#### 4.14. Backlight PWM voltage select, CN502

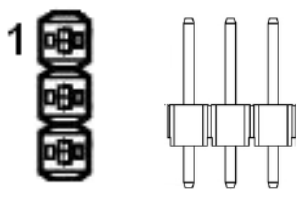
Type W+P: 943-10-003-50, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top- an Side-View</p>	1	5V		Select 5V by connecting jumper to PIN2
	2	BLT_PWM		Supply for Pull Up of BLT_PWM-SIGNAL
	3	DVDD33		Select 3V3 by connecting jumper to PIN2

'Note: only one jumper must be mounted on CN502! Jumper Type W+P: 165-101-10-00, or equivalent

#### 4.15. BLT\_EN Voltage-Select, CN504

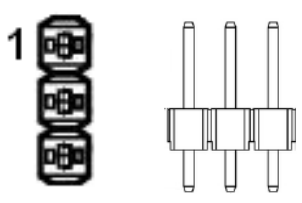
Type W+P: 943-10-003-50, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top- an Side-View</p>	1	5V		Select 5V by connecting jumper to PIN2
	2	BLT_EN		Supply for Pull Up of BLT_EN-SIGNAL
	3	DVDD33		Select 3V3 by connecting jumper to PIN2

'Note: only one jumper must be mounted on CN504! Jumper Type W+P: 165-101-10-00, or equivalent

#### 4.16. BLT\_EN Logic-Level-Select, CN506

Type W+P: 943-10-003-50, or equivalent

Pin arrangement	Pin	Signal	I/O	Description
 <p>Top- an Side-View</p>	1	BLT_EN-AH		Signal BLT_EN ACTIVE-HIGH
	2	BLT_EN	O	BLT_EN-SIGNAL for output
	3	BLT_EN-AL		Signal BLT_EN ACTIVE-LOW

'Note: only one jumper must be mounted on CN506! Jumper Type W+P: 165-101-10-00, or equivalent

## 5. Jumper settings and configuration

WARNING! Do not change the jumper settings and configuration of the board! Changing the jumpers and configuration may cause fatal damage to the board and to the connected display or cause malfunction.

### 5.1 Panel supply voltage (CN500)

The supply voltage of the panel can be selected with the Jumper CN500.

Note: Do only use one jumper cab at the same time. Combinations of jumper cabs are not allowed.

CN500	
Panel Voltage	Position
3.3V	1-2
5.0V	2-3

Table 1: Panel power supply

### 5.2 Backlight Dimming (CN502)

The range of the analog dimming voltage and the signal high level of the digital PWM dimming signal can be selected with the jumper CN502.

CN502	Analog Dimming (J5 Pin1)	Digital Dimming (J5 Pin 2)
1-2	0V – 5.0V	High level: 5.0V
2-3	0V - 3.3V	High level 3.3V

Note: Signal polarity can be changed in the panel file.

### 5.3 Backlight Enable Signal (CN504, CN506)

Select the level of the backlight enable signal (J5 Pin3) with the jumper CN504.

CN504	Backlight enable signal (J5 Pin3)
1-2	High level 5.0V
2-3	High level 3.3V

Select the polarity of the enable signal with jumper CN506.

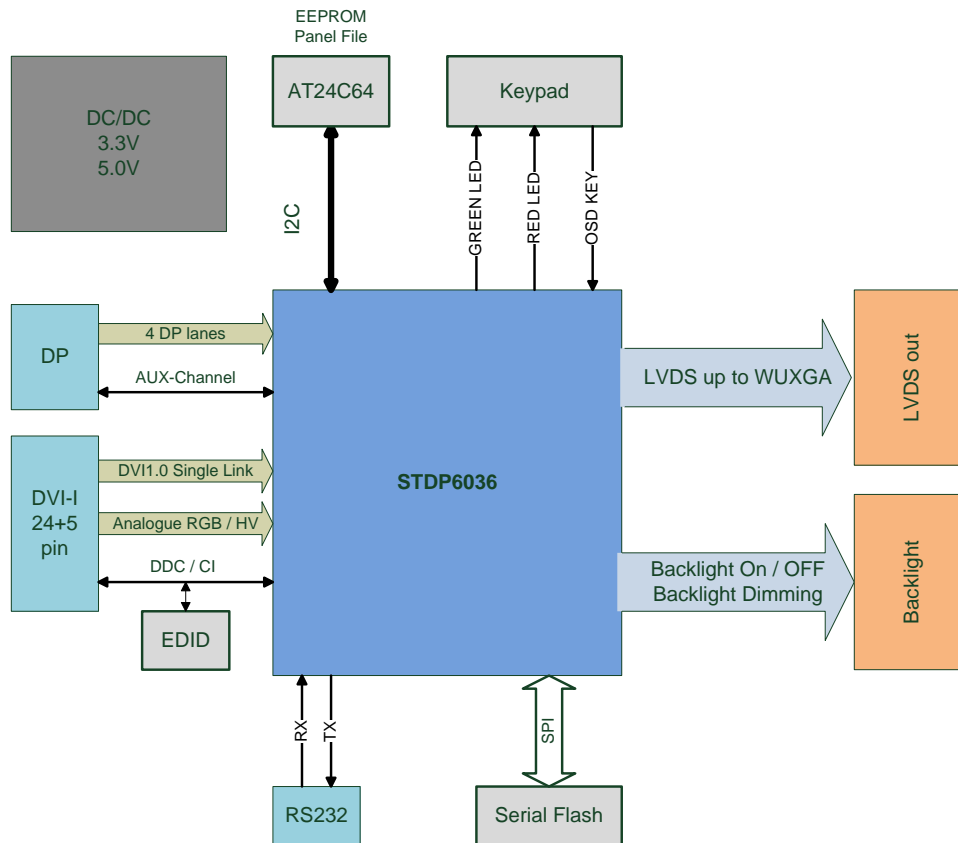
CN506	Backlight enable signal (J5 Pin3)
1-2	High active
2-3	Low active

### 5.4 Panel file configuration

The panel timing is defined in a panel file. To modify the panel file you have to use the Data Modul BoardProgrammer.exe. The board is shipped out with the correct panel and inverter configuration.

## 6. Technical Details

### 6.1. Block diagram of emotionST2:3



ST2:3 Block Diagram

### 6.2. Supply voltages and current consumption

The eMotionST2:3 can handle 12V or 24V DC input voltage. The inverter output voltage (J5) is always equivalent to the DC input voltage of the eMotionST2:3 (J5). The board is designed for a single power supply. All other supply voltages are generated on the eMotionST2:3.

Note: The backlight inverter must fit to the input voltage.

Supply voltage	Nominal value	Regulation	Ripple & noise	Comment
+12V	12V	+/-10%	0.3V	
+24V	24V	+/-10%	0.3V	

### 6.3. Input and output signals

#### DP input

PARAMETER	MIN	TYP	MAX	UNIT	Remark
Peak-to-peak input differential voltage	0.12		1.4	$V_{p-p}$	
Rx DC Common Mode Voltage	0		$V_{DD}$	V	
$R_T$ Termination Resistance	45	50	55	Ohm	

#### DVI input

PARAMETER	MIN	TYP	MAX	UNIT	Remark
Differential Input Voltage	150		1200	mV	
Input Common Mode Voltage	-300		-37	mV	
Input Clock frequency	20		165	MHz	

#### LVDS connector

PARAMETER	MIN	TYP	MAX	UNIT	Remark
Differential Output Voltage	300	500	700	mV	
Common Mode Voltage		1.25		V	
Clock Frequency			100 90	MHz	Single Channel Dual Channel

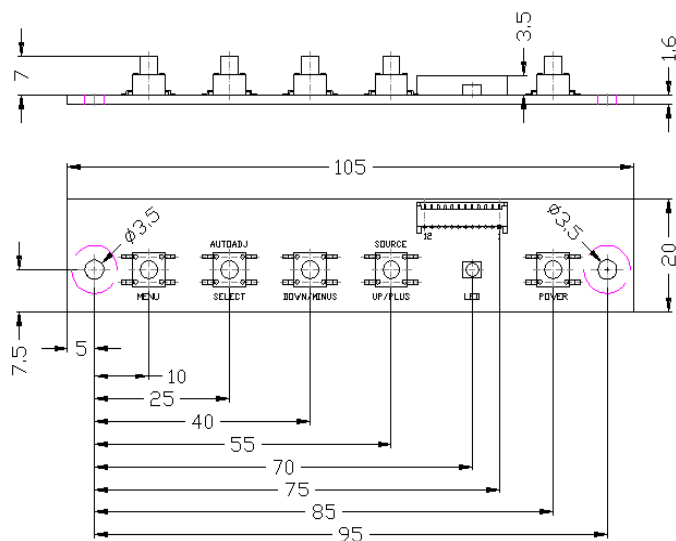
## 7. OSD (On Screen Display)

The eMotionST2:3 can operate with an external OSD board (optional item). Generally the OSD offers the user various possibilities of customizing the appearance of the TFT display. By using the OSD board, brightness, contrast, input selection, OSD appearance and much more can be adjusted easily.

The eMotionST2:3 supports a 5 button OSD. Other customized OSDs (4button/6button) may be realized upon request.

### 7.1. Mechanical dimensions OSD board (CU70008 incl. input cable)

OSD connector J4: Molex 53015-1210



### 7.2. Operation & buttons

Item	Description
Menu	Enter OSD main menu Leave sub menu Leave OSD main menu
Select	Navigate down in menu
Down / Minus	Navigate left in main menu Decrease value
Up / Plus	Navigate up in main menu Increase value
Power	Turn power on/off
2 color LED	RED / GREEN

### 7.3. Hotkeys

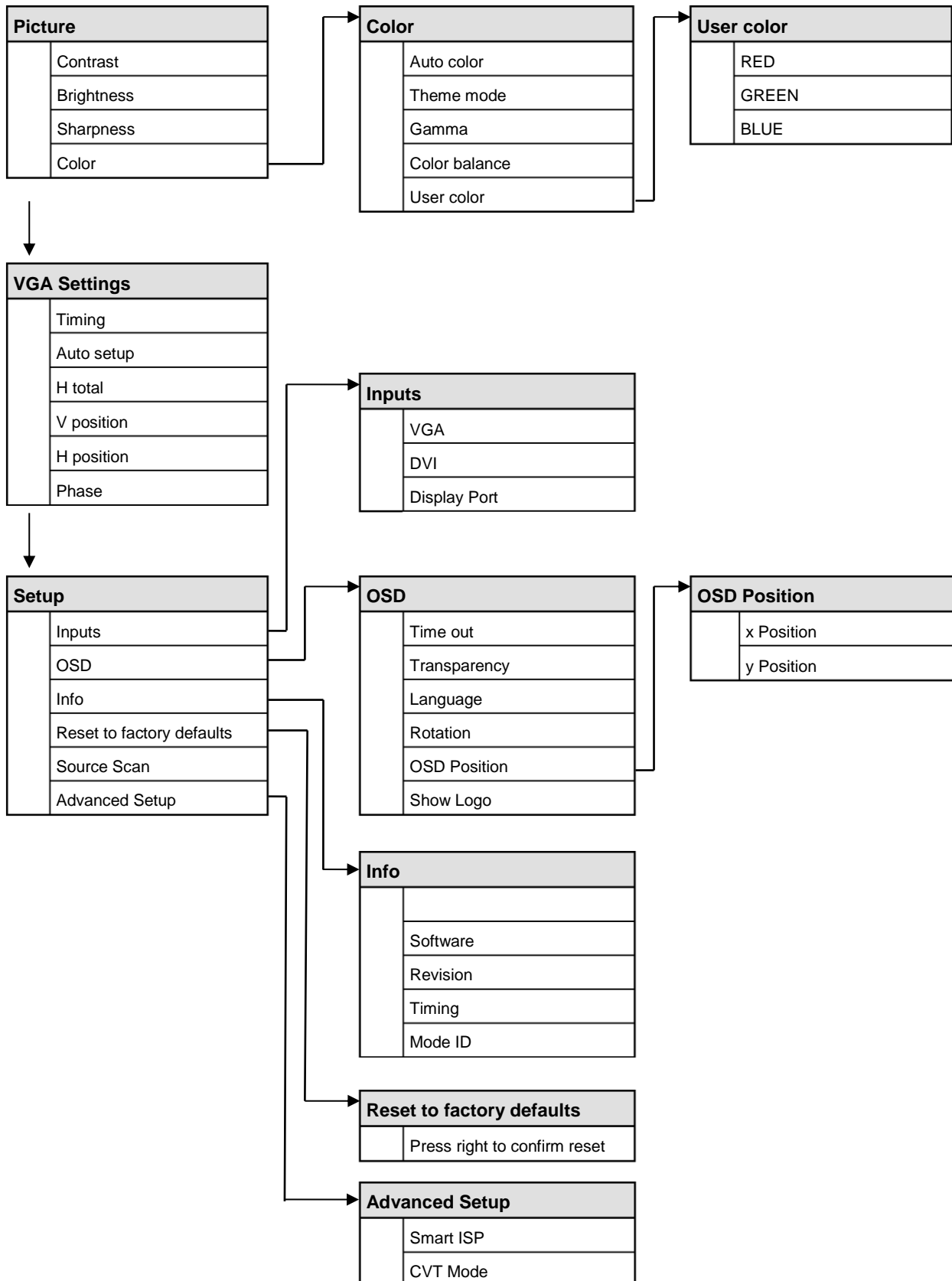
The OSD offers hot key functions. To access these functions the user must not open the OSD via <Menu>. The hotkey functions offer a direct access to the equivalent function.

Button	Direct access
Up / Plus	Source select, switch to next input source
Down / Minus	Brightness
Select	Auto adjust

### 7.4. OSD Status LED

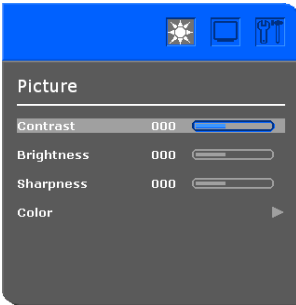
Condition	Description
Amber flashing	Stand by (searching input)
Green flashing	Searching display mode (source)
Green ON	OK (displaying signal)
Red ON	Power off

## 7.5. OSD Structure

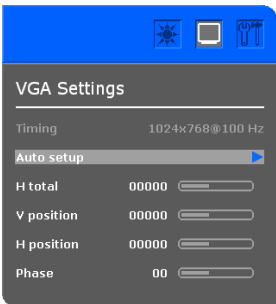





### 7.5.1 Picture Menu

	Picture	Contrast
		Brightness
		Sharpness
		Color

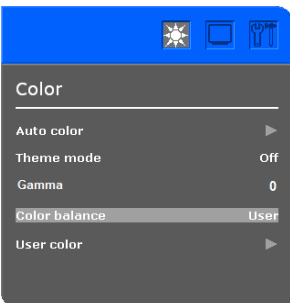
### 7.5.2 VGA Settings Menu

	VGA Settings	Timing
		Auto setup
		H total
		V position
		H position
		Phase


### 7.5.3 Setup Menu

	Setup	Inputs
		OSD
		Info
		Reset to factory defaults
		Source scan
		Advanced Setup

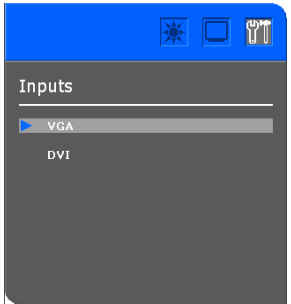
### 7.5.4 Color Menu

	Color	Auto color
		Theme mode
		Gamma
		Color balance
		User color


### 7.5.5 User Color Menu

	User color	RED
		GREEN
		BLUE

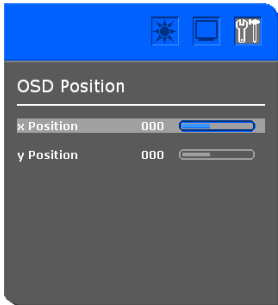
### 7.5.6 Inputs Menu

	Inputs	VGA
		DVI


### 7.5.7 OSD Menu

	OSD	Time out
		Transparency
		Language
		Rotation
		OSD Position
		Show logo

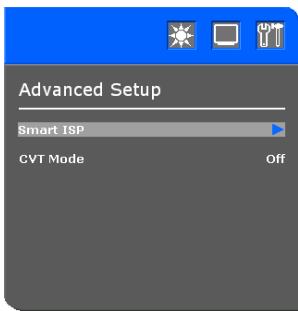
### 7.5.8 OSD Position Menu

	OSD Position	x Position
		y Position

### 7.5.9 OSD Position Menu

	Info	
		Software
		Revision
		Timing
	Mode ID	

### 7.5.10 Advanced Setup Menu

	Advanced Setup	Smart ISP
		CVT Mode

## 8. Serial Control RS232

The eMotionST2:3 can be controlled by a serial command set using the RS232. For using the RS232 a level converter from LVTTTL to RS232 level must be used. Detailed information about the RS232 protocol are provided on request!

## 9. DDC/CI Interface

The eMotionST2:3 can be controlled by DDC/CI. Detailed information are provided on request!

## 10. Qualification

### 10.1. Environmental conditions

- Temperature (operating):  
max. +60°C (+140°F)  
min. 0°C (+32°F)
- Temperature (storage) : -20°C ... +70°C (-4°F ... +158°F)
- Relative humidity: < 80%
- Tolerable air-pressure: > 689 hPa (approx. altitude 3000m)

### 10.2. EMI-Standards

EMC (Electro-Magnetic Compatibility) : Immunity for industrial environments, according to EN 61000-6-2:

Description	Requirements	Test parameter	Criteria
Electrostatic discharge immunity test	EN 61000-4-2	7kV contact, 9kV air	criteria B
Radiated, radio frequency, electromagnetic field immunity test	EN 61000-4-3	80-2000MHz 10V/m, 2-2,7GHz 1V/m 80% AM (1kHz)	criteria A
Electrical fast transient/burst immunity test	EN 61000-4-4	3kV on mains AC, 2kV on mains DC, 2kV on I/O lines	criteria B
Surge immunity test	EN 61000-4-5	Mains AC/DC L-PE 2kV, Mains AC/DC L-L 1kV, I/O 1kV	criteria B
Immunity to conducted disturbance, induced by radio-frequency fields	EN 61000-4-6	0,15 – 80 MHz 10V 80% AM (1kHz)	criteria A
Immunity to magnetic field	EN 61000-4-8		criteria A

EMI: Emission for residential, commercial and light-industrial environments, according to EN 61000-6-3:

Description	Requirements	Test parameter	Criteria
Electro-Magnetic Compatibility (EMC) Emission	EN 55022 Class B	30Mhz – 6GHz, -3dB lower than limit	Tbd
Electro-Magnetic Compatibility (EMC) Emission	FCC 47 part 15 Class B	30Mhz – 5GHz	Tbd

Note: To ensure that the board meets the standard mentioned above, an adequate shielding cover must be added. Alternatively the housing of the monitor must act as shielding cover (e.g. aluminium enclosure).

### 10.3. Safety

Description	Requirements	Test parameter	Remarks
Safety for Multimedia products	IEC 62368-1		
UL Standard	UL 62368-1		

### 10.4. Shock and Vibration

The following standards have to be fulfilled according to industrial standard

Description	Requirements	Test parameter	Remarks
Operating shock	EN 60068-2-27	15 G, 11 ms, half sine, on 3 axes ; 10 shocks per axis and direction	
Storage shock	EN 60068-2-27	30 G, 11 ms, half sine, on 3 axes, 10 shocks per axis and direction	
Operating vibration	EN 60068-2-6	5 – 500 Hz, 1.0 G, on 3 axes, 4 cycles	1 Octave/min
Storage vibration	EN 60068-2-6	5 – 500 Hz, 2.0 G, on 3 axes, 4 cycles	1 Octave/min

## 10.5. Reliability, MTBF

### 0-hour-failure

- Start of MP (0-6 months): 1,0%
- 6 months after start of MP: 0,25%

### Failure within the first 6 month of operating

- Start of MP (0-6 months): 1,5%
- 6 months after start of MP: 1,0%

### MTBF

- min. 500.000h at Ta = 40°C, determined according to Telcordia SR-332

## 11. Warranty, Quality and Environmentalism

### 11.1. Warranty

- Manufacturer warranty: 24 month after delivery

### 11.2. Quality

The producing process of the board is aligned with the guideline according to the DIN ISO 9001 certification.  
Workmanship standard: IPC-A-610D Class2

### 11.3. Environmentalism

The list of used materials is still under preparation based on the parts list.

The PCB is produced under lead free soldering conditions.

All components are produced according to European RoHS (RoHS-1 = 2002/95/EU, RoHS-2 = 2011/65/EU) and REACH (2006/1907/EU) regulations. The board is designed and manufactured to meet ISO 14001.

The packing complies to directive 1994/62/EU.

## 12. Label and package

### 12.1. *Label and material number*

The following points are visible on the label of the eMotionST2:3 board.

- Material number
- DATA MODUL Logo
- Serial- and Revision-number
- Manufacturing date
- UL-Sign on PCB



# DATA MODUL



ALL TECHNOLOGIES. ALL COMPETENCIES. ONE SPECIALIST.



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