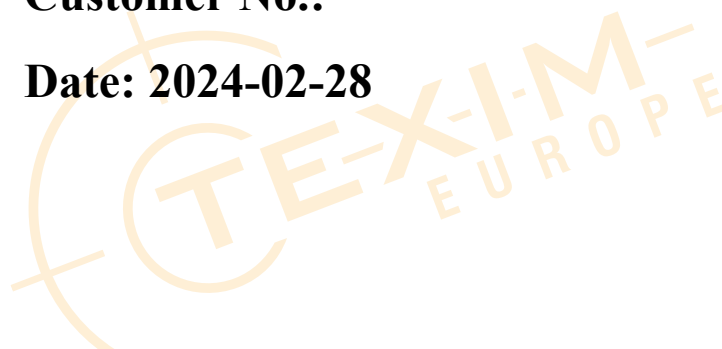# SPECIFICATION FOR CTP+LCD MODULE

Part No.: TF080TM002-V1

Customer No.:

Date: 2024-02-28

JUTOUCH			Customer
Prepared	Checked	Approved	Approved

Record of Revision

Rev.	Description	Page	Date
0	Preliminary specification released		20240228

Table of Contents

1 General Specifications

1.1 Definition

The specification is used for capacitive touch module with TFT LCD & Backlight Unit.

1.2 Features and General Description

General	Specification	Unit	Note
Module size	8.0	inch	diagonal
Structure	GG+LCD. Optical Bonding		
Resolution	1280(RGB) × 720		
Display Mode	Normally Black. Transmissive		
Pixel Pitch	0.1383(W) × 0.1383(H)	mm	
Pixel Arrangement	RGB stripe		
Viewing direction	ALL	O'clock	
Outline dimensions	207.64(W) × 130.36(H) × 9.18(D)	mm	W/O PCBA
Active area	177.024(W) × 99.58(H)	mm	
LCD interface	LVDS 8bit		
CTP Interface	USB or I2C		
CTP IC	EXC81W32		
Touch point	10		
Surface hardness	6	H	

2 Mechanical Drawing

RoHS

Front view

Side view

Back view

General Specification:
1. Structure:G+G+LCD, Optical bonding
2. CG: soda-lime glass, Chemical strengthened
8.0" IPS TFT-LCD, Transmissive, Normally Black
3. Resolution: 1280*(RGB)*720
3. Surface Hardness:≥6H
4. LCD Interface: LVDS
5. CTP IC: EXC81W32, TX17*RX30
CTP Interface: USB or I2C
6. LCD Power supply(VDD): 3.3V
Backlight Power supply(VLED): 12V
CTP Power supply: VBUS=5V(USB), VCC=3.3V(I2C)
7. I2C communication voltage: 3.3V
Operating Temp.: -30 to 85℃
8. Storage Temp.: -40 to 85℃
9. Luminance: 720cd/m² (Min.), 1000cd/m² (Typ.)
9. General Tolerance: ±0.3

VER.	1	SYMBOL	Preliminary drawing	AMENDMENT	20240120	DATE

DRAWN	Alex
CHECKED	
APPROVED	
Customer No:	

SHEET 1 OF 1   3rd Angle

CTP+LCD

Drawing NO:

Product NO: TF080TM002-V1

3 Pin assignment

3.1 LCD Pin assignment

CN1   Module Side Connector : STM MSBKT2407P30 or Compatible
User Side Connector : JAE FI-X30H

Pin No.	Symbol	Description
1	VLED	Backlight power supply : +12V
2	VLED	Backlight power supply : +12V
3	VLED	Backlight power supply : +12V
4	NC	Not connection
5	LED_EN	Backlight on/off control
6	LED_PWM	Backlight dimming control
7	GND	Power Ground
8	NC	Not connection
9	VDD	LCD power Supply : +3.3V
10	VDD	LCD power Supply : +3.3V
11	NC	Not connection
12	GND	Power Ground
13	RXIN0-	Negative LVDS differential data input (0)
14	RXIN0+	Positive LVDS differential data input (0)
15	GND	Power Ground
16	RXIN1-	Negative LVDS differential data input (1)
17	RXIN1+	Positive LVDS differential data input (1)
18	GND	Power Ground
19	RXIN2-	Negative LVDS differential data input (2)
20	RXIN2+	Positive LVDS differential data input (2)
21	GND	Power Ground
22	RXCLKIN-	Negative LVDS differential clock input
23	RXCLKIN+	Negative LVDS differential clock input
24	GND	Power Ground
25	RXIN3-	Negative LVDS differential data input (3)
26	RXIN3+	Positive LVDS differential data input (3)
27	GND	Power Ground
28	NC	Not connection
29	NC	Not connection
30	NC	Not connection

3.2 CTP Pin assignment

CN2   Module Side Connector : Molex 53216-1071 or Compatible
            User Side Connector : Molex 51021-1000

Pin No.	Symbol	Description
1	VCC	I2C Power Supply : +3.3V
2	SDA	I2C data signal
3	SCL	I2C clock signal
4	INT	I2C interrupt signal
5	RST	Reset pin, active low
6	GND	Power Ground
7	VBUS	USB Power Supply : +5V
8	D-	USB data port minus
9	D+	USB data port plus
10	GND_E	Power Ground

4 Absolute Maximum Rating

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table

Parameter	Symbol	Min.	Max.	Unit
Power Supply Voltage	VDD	-0.3	4.0	V
	VCC	-0.3	3.6	V
	VBUS	-0.5	5.5	V
Operating Temperature	T_{OP}	-30	+85	°C
Storage Temperature	T_{ST}	-40	+85	°C

5 Electrical Characteristic

5.1 Driving LCD Panel

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Power Supply Voltage	VDD	3.0	3.3	3.6	V	Ta=25℃
Power Supply Current	I_{VDD}	-	100	200	mA	

## 5.2 CTP recommended Operating Condition

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Power Supply Voltage	VCC	3.0	3.3	3.6	V	Ta=25℃
	VBUS	4.7	5.0	5.3	V	
Power Supply Current	I_{VCC}	-	TBD	TBD	mA	
	I_{VBUS}	-	TBD	TBD	mA	

5.3 Driver LCD Backlight

Parameter		Symbol	Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage		VLED	10	12	15	V	Ta=25℃
Power Supply Current		I_{VLED}	-	0.6	0.8	A	
EN Signal Voltage	High Level	-	1.65	-	5.25	V	
	Low Level		0	-	0.4	V	
PWM Control Level	High Level	-	1.65	-	5.25	V	
	Low Level		0	-	0.4	V	
PWM Frequency		F_{PWM}	100	-	20000	Hz	
PWM Dimming duty		-	5	-	100	%	
LED Life Time		-	30000	-	-	Hour	Note 1
Power Consumption		P_{LED}	-	7.2	-	W	

Note 1: The lifetime is determined as the time at which luminance of LED become 50% of the initial brightness or not normal lighting at IPIN=55mA on condition of continuous operating at 25±2℃

5.4 Power on sequence
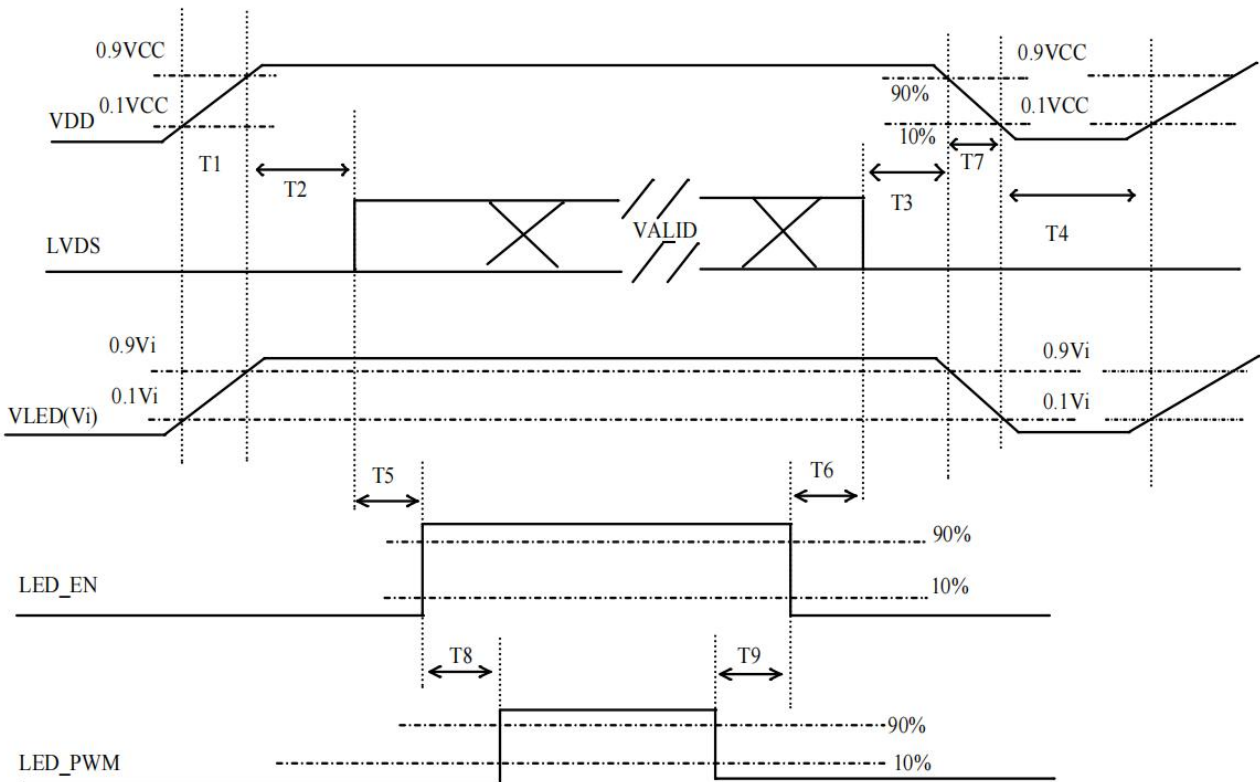
Parameter	Value			Unit
	Min.	Typ.	Max.	
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	0	-	50	ms
T4	500	-	-	ms
T5	200	-	-	ms
T6	20	-	-	ms
T7	5	-	300	ms
T8	10	-	-	ms
T9	10	-	-	ms

Note 1: Please avoid floating state of interface signal at invalid period.
Note 2: When the interface signal is invalid, be sure to pull down the power supply of LCD VDD to 0 V.
Note 3: The Backlight converter power must be turned on after the power supply for the logic and the interface signal is valid. The Backlight converter power must be turned off before the power supply for the logic and the interface signal is invalid.

6 Signal Timing Specification

6.1 AC Electrical Characteristics

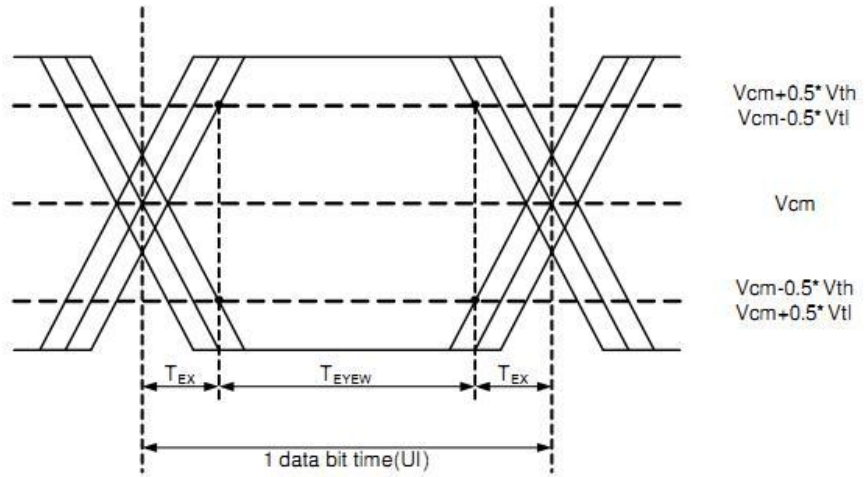| Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock frequency	F_{LVCYC}	10	-	85	MHz
Clock period	T_{LVCYC}	11.76	-	100	ns
1 data bit time	UI	-	1/7	-	T_{LVCYC}
Clock hight time	T_{LVHW}	2.9	4	4.1	UI
Clock low time	T_{LVLW}	2.9	3	4.1	UI
Position 1	T_{POS1}	-0.2	0	0.2	UI
Position 0	T_{POS0}	0.8	1	1.2	UI
Position 6	T_{POS6}	1.8	2	2.2	UI
Position 5	T_{POS5}	2.8	3	3.2	UI
Position 4	T_{POS4}	3.8	4	4.2	UI
Position 3	T_{POS3}	4.8	5	5.2	UI
Position 2	T_{POS2}	5.8	6	6.2	UI
Input eye width	T_{EYEW}	0.6	-	-	UI
Input eye border	T_{EX}	-	-	0.2	UI
LVDS wake up time	T_{ENLVDS}	-	-	150	us

LVDS input timing is described as beolw:
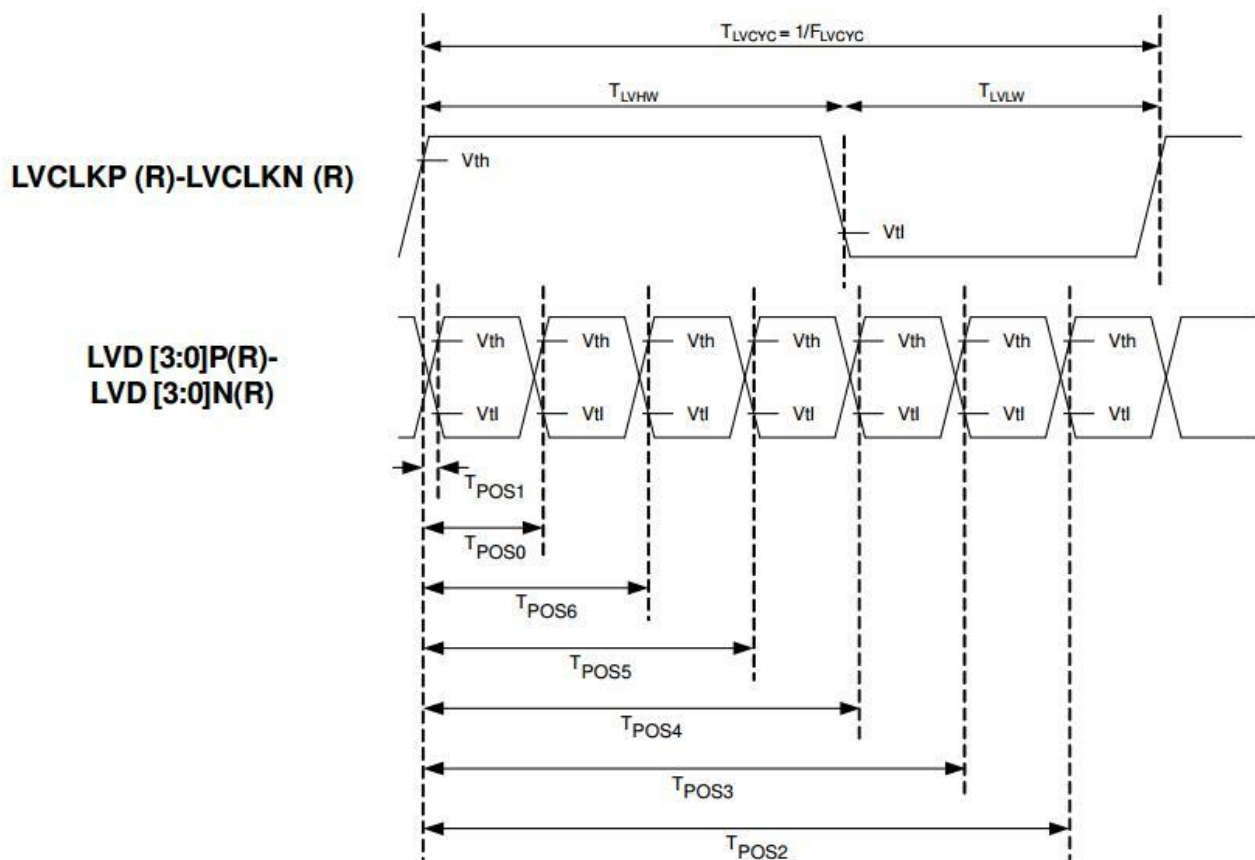
LVDS wake up time:
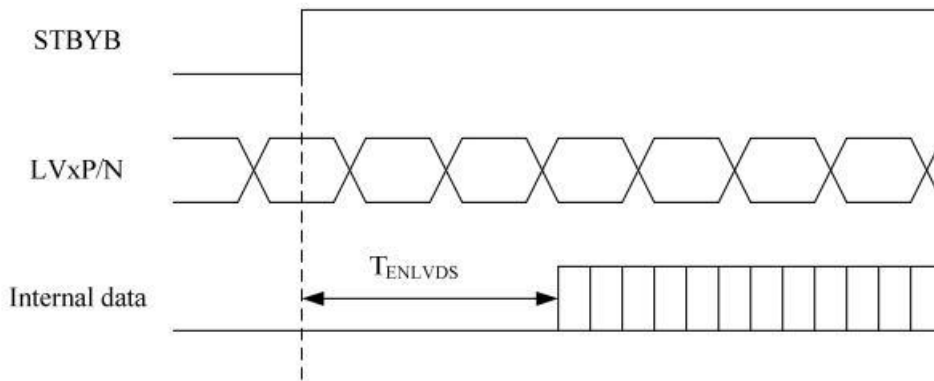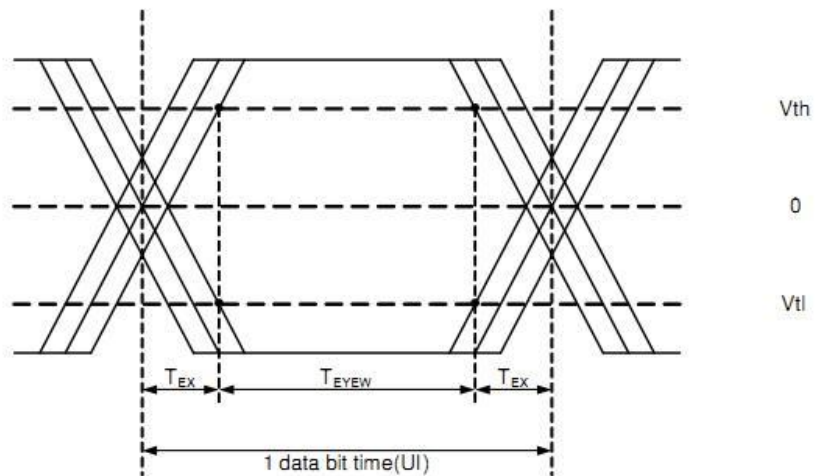

LVDS input eye diagram:

Single-ended:
LVD [3:0]P,
LVD [3:0]N

Differential:
LVD [3:0]P-LVD [3:0]N

LVDS with SSC:

The LVDS receiver can support spread spectrum clock (SSC) .Limitation is listed as below. Note that modulation frequency is proportional to LVDS clock frequency.

| Parameter	Symbol	Condition	Spec.			Unit
			Min.	Typ.	Max.	
Modulation frequency	SSC$_{MF}$	LVDS clock frequency centered at 80MHz.	-	-	200	KHz
		LVDS clock frequency centered at 60MHz.	-	-	150	KHz
		LVDS clock frequency centered at 40MHz.	-	-	100	KHz
		LVDS clock frequency centered at 20MHz.	-	-	50	KHz
Modulation rate	SSC$_{MR}$	LVDS clock frequency + SSC$_{MR}$ is in the range of 10~85MHz.	-	-	±5	%

6.2 DC electrical characteristics

Parameter	Symbol	Condition	Spec.			Unit
			Min.	Typ.	Max.	
Differential input high Threshold voltage	Vth	Vcm=1.2V	-	-	+0.1	V
Differential input low threshold voltage	Vtl		-0.1	-	-	V
Differential input common Mode voltage	Vcm	-	1	1.2	1.8-$|V_{id}|$/2	V
LVDS input voltage	V$_{INLV}$		0.7		1.8	V
Differential input voltage	$|Vid|$	-	0.2	-	0.6	V
Differential input leakage Current	Ilvleak	-	-10	-	+10	µA
Termination Resistor	Zid	-	80	100	120	Ω

Single-ended:
LVCLKP (R),
LVCLKN (R),
LVD [3:0]P(R),
LVD [3:0]N(R)
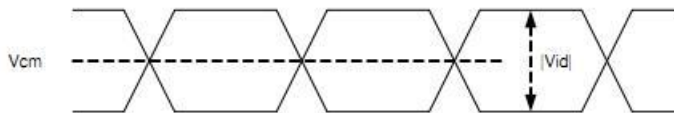
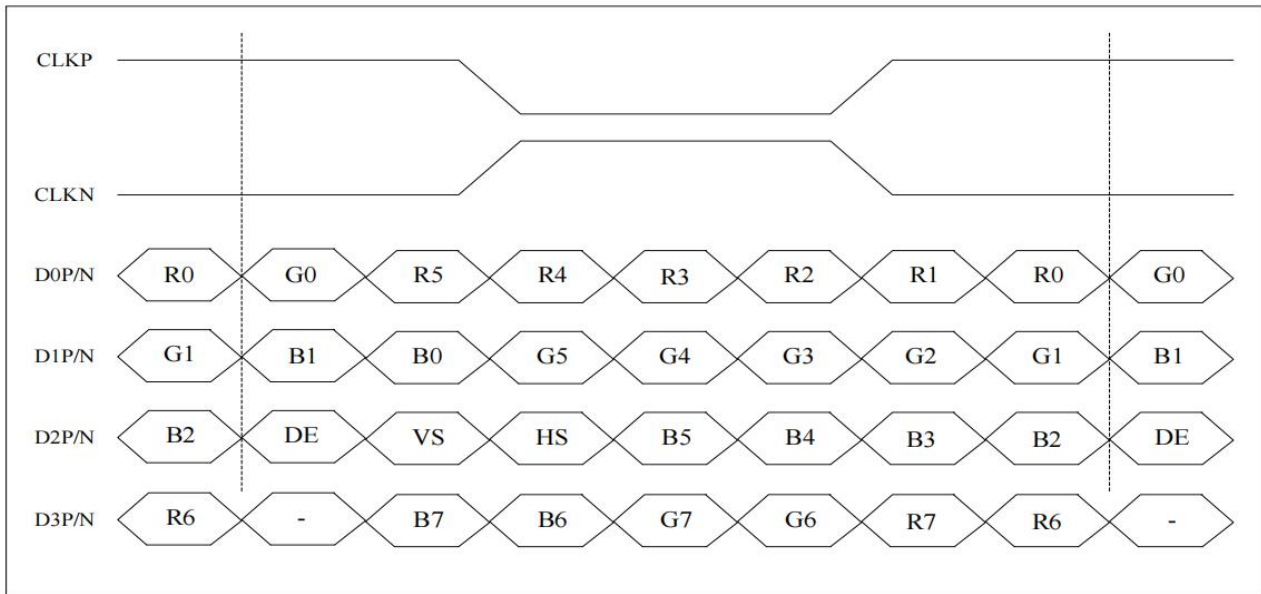Differential:
LVCLKP (R)-LVCLKN (R),
LVD [3:0]P(R)-
LVD [3:0]N(R)

13
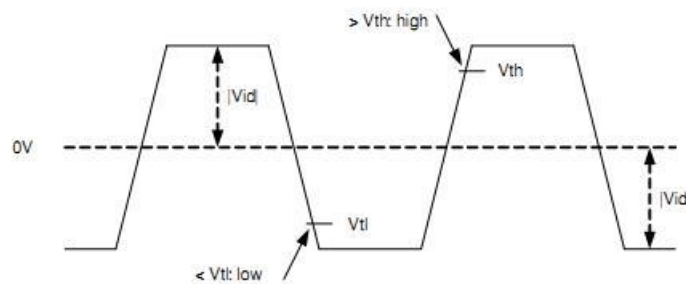
6.3 Timing Table

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
DCLK frequency	Fclk	57.1	63.7	81.4	MHz	Frame rate =60Hz
Hsync period time	Th		1340		DCLK	
Horizontal valid data	thd		1280		DCLK	
Hsync pulse Width	thpw	1	2	72	DCLK	
Hsync back porch	thbp	5	16	73	DCLK	
Hsync front porch	thfp	16	42	87	DCLK	
Vsync period time	Tv		792		H	
Vertical valid data	tvd		720		H	
Vsync pulse width	tvpw	1	2	38	H	
Vsync back porch	tvbp	5	5	39	H	
Vsync front porch	tvfp	5	65	100	H	

6.4 LVDS Data Input Format

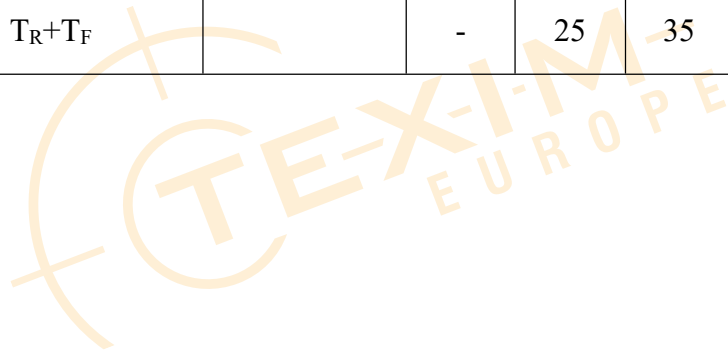|									
CLKP									
CLKN									
D0P/N	R0	G0	R5	R4	R3	R2	R1	R0	G0
D1P/N	G1	B1	B0	G5	G4	G3	G2	G1	B1
D2P/N	B2	DE	VS	HS	B5	B4	B3	B2	DE
D3P/N	R6	-	B7	B6	G7	G6	R7	R6	-

8-bit LVDS input

7 Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle	Horizontal	θ_X+	CR≥10	75	85	-	Deg.	(1), (5)
		θ_X-		75	85	-	Deg.	
	Vertical	θ_Y+		75	85	-	Deg.	
		θ_Y-		75	85	-	Deg.	
Luminance (W/ CTP)		Lv		720	1000	-	nit	(4), (5)
Uniformity	9 points	$\Delta Y9$	$\theta_X=0°, \theta_Y=0°$	75	-	-	%	(5), (6)
Contrast ratio		CR		800	1000	-		(2), (5)
Color Chromaticity (CIE 1931)	White	W_x	$\theta_X=0°, \theta_Y=0°$ R=G=B=255 Gray scale	Typ-0.05	0.30	Typ+0.05	-	(1), (5)
		W_y			0.33		-	
	Red	R_x			-		-	
		R_y			-		-	
	Green	G_x			-		-	
		G_y			-		-	
	Blue	B_x			-		-	
		B_y			-		-	
Response Time		T_R+T_F		-	25	35	ms	(3)

Note (1) Definition of Viewing Angle (θ_X, θ_Y):
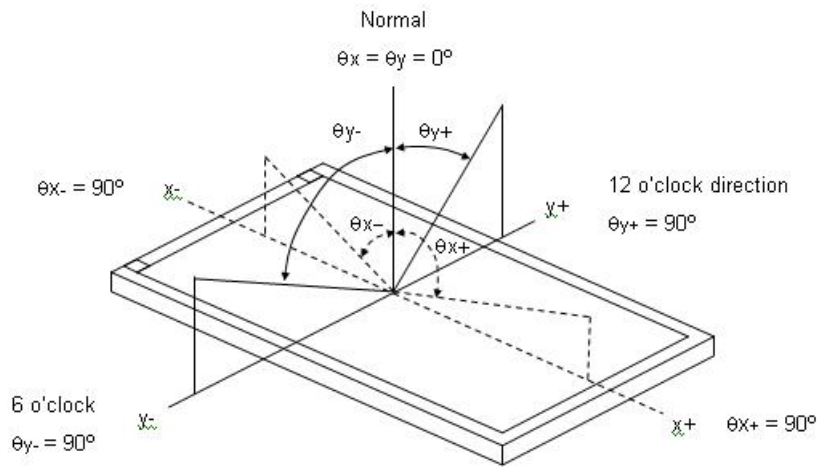
Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255

L 0: Luminance of gray level 0

CR = CR (5)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (6).

Note (3) Definition of Response Time (T_R, T_F):
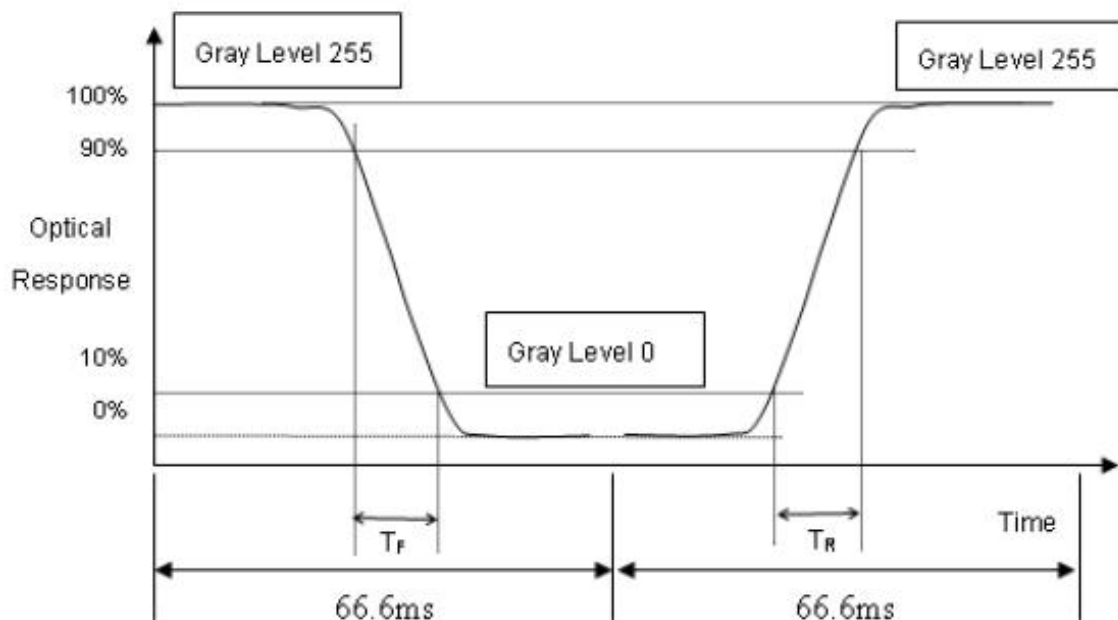
Note (4) Definition of Luminance of White (LC):

   Measure the luminance of gray level 255 at center point

   LC = L (5)

   L (x) is corresponding to the luminance of the point X at Figure in Note (6).

Note (5) Measurement Setup:

   The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.
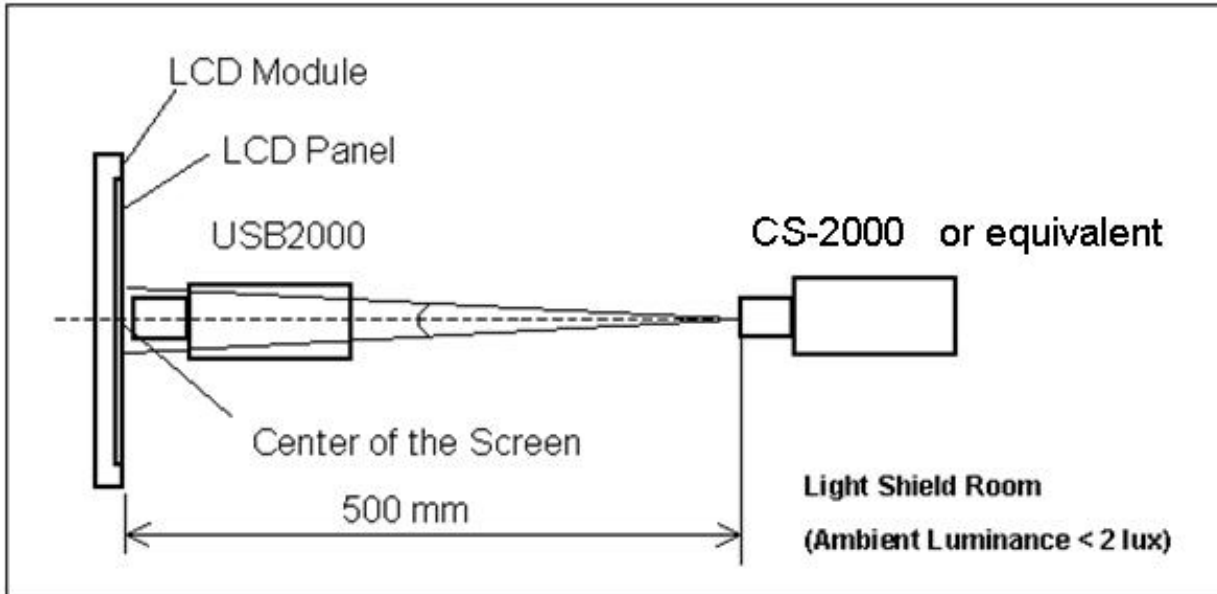
Note (6) Definition of White Variation (δ W):

   Measure the luminance of gray level 255 at 9 points

   δ W = (Minimum [L (1) ~ L (9)] / Maximum [L (1) ~ L (9)]) *100%
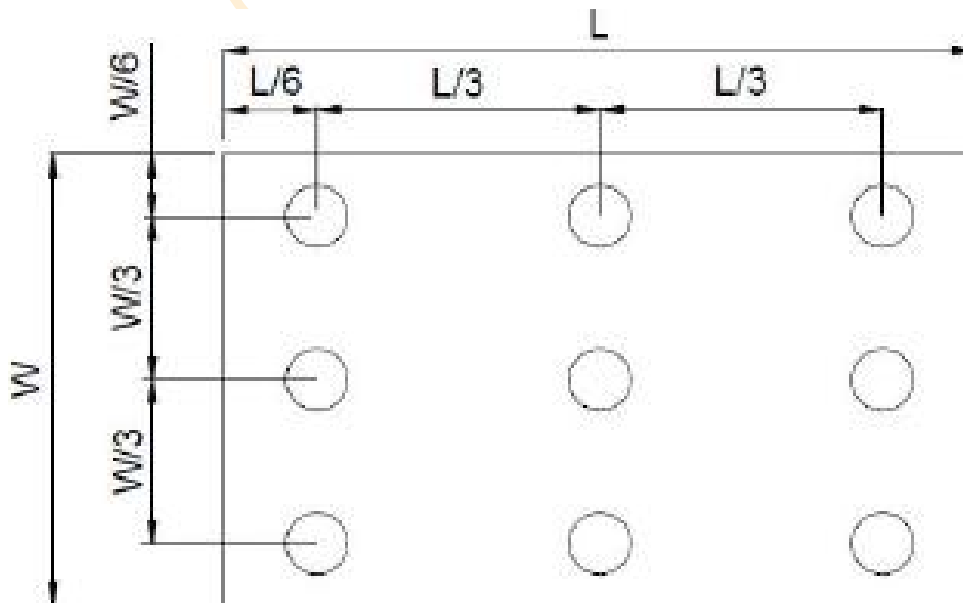
8 Reliability Test

Test Item	Condition
High Temperature Storage Test	85℃, 240 hours
Low Temperature Storage Test	-40℃, 240 hours
High Temperature Operation Test	80℃, 240 hours
Low Temperature Operation Test	-30℃, 240 hours
High temperature & high humidity operation Test	60℃ , 90%RH, 240 hours
Thermal Shock(Non-operation)	-30℃/30 min ~ +85℃/30 min, change time:5min, for a total 100 cycles, Start with cold temperature and end with high temperature.
ESD	Contact ±4KV, Air ±8KV (R=330R,C=150pF)

Note 1: There should be no condensation on the surface of panel during test.

Note 2: Temperature of panel display surface area should be 85℃ Max.

Note 3: At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Note 4: In the standard conditions, there is no function failure issue occurred. All the cosmetic specification is judged before reliability test.

Note 5: Before cosmetic and function test, the product must have enough recovery time, at least 24 hours at room temperature.
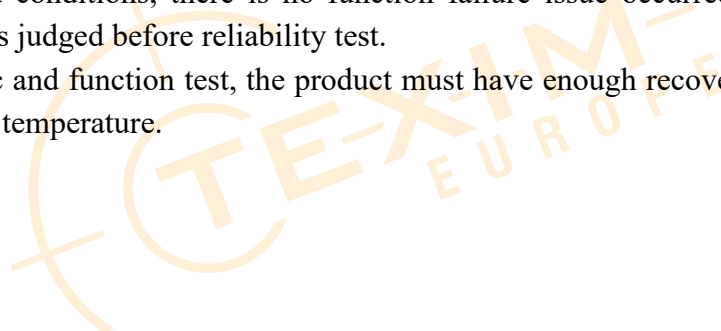
9 Appearance Inspection

9.1 Inspection Sampling Method:

Unless there is other agreement, the sampling plan for incoming inspection shall follow GB2828.1-2012.

(1) Lot size: Quantity per shipment as one lot (different model as different lot).
(2) Sampling type: Normal inspection, single sampling.
(3) Sampling level: Level II.

9.2 Inspection Conditions

The environmental condition and visual inspection shall be conducted as below:
(1) Light: 800~1200Lux;
(2) Vision requirement: Naked or corrected vision of at least 1.0 and no color blindness;
(3) Inspection background: black and white board is used as the background below the product;
(4) Inspection distance: 20~30cm from human eyes to the measured surface;
(5) Inspection Angle: the detected surface is 90 degree from to line of sight, and the measured Object should be rotated 45 degree from side to side;
(6) Inspection time: 5~10s;

9.3 Inspection equipment

Secondary elements, calipers, feelers, filinka, petroleum ether, ND filter

9.4 Defect code comparison table

Code	Name (Unit)	Code	Name (Unit)
N	Number	D	Diameter (mm)
L	Length (mm)	H	Depth (mm)
W	Width (mm)	S	Distance (mm)
S	Area (mm^2)		

9.5 Inspection precautions

(1) Inspectors must wear finger gloves and electrostatic bracelets.
(2) Place the inspected product in front of the inspector, and hold the edge of the product with both hands carefully. Do not bend the product.
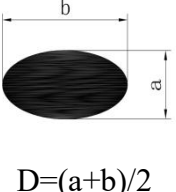
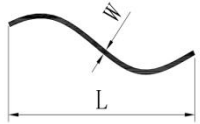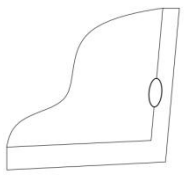## 9.6 Product region division

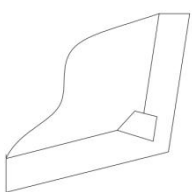Divide the products into nine parts. The center part is area A, and the surrounding part is area B, as shown in the figure below
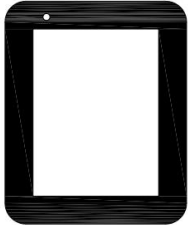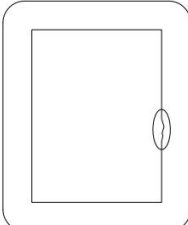
B	B	B
B	A	B
B	B	B

9.7 Inspection Standards for Modules

CTP and LCD fitting components

Items		Standard	Conclusion	Inspection tools
Dot (white, black, heterochromatic) D=(a+b)/2	A	D≤0.15	D≤0.15, it can be disregard.	Visual inspection
		0.15＜D≤0.5	The distance with another dent or bubble is more than 15 mm, it allows to has two existence	
		D＞0.3	NG	
	B	D≤0.2	D≤0.2, it can be disregard.	
		0.2＜D≤0.5	The distance with another dent or bubble is more than 15 mm, it allows to has three existence	
		D＞0.5	NG	
Linear defects (fibers/foreign bodies/ scratches, etc.)	A	W≤0.04	W≤0.04, it can be disregard.	Visual inspection
		0.04＜W≤0.06	L≤6, the distance with another scratch or impurity is more than 15 mm, it allows to has two existence	
		0.06＜W≤0.09	L≤6, the distance with another scratch or impurity is more than 15 mm, it allows to has one existence	
		W＞0.09, L＞6	NG	
	B	W≤0.05	W≤0.05, it can be disregard.	
		0.05＜W≤0.07	L≤7, the distance with another scratch or impurity is more than 15 mm, it allows to has three existence	
		0.07＜W≤0.1	L≤7, the distance with another scratch or impurity is more than 15 mm, it allows to has two existence	
		W＞0.125, L＞8	NG	
Bubble	A	Zone A is judged according to the point standard		Visual inspection
	B	Zone B is judged according to the point standard		
Edge broken loss	B	1. The sensor edge creaks, without damaging the line. The function test is OK for reception, and the front side is not visible after fitting. 2. Edge creak on front of cover plate: NG. 3. Back X＜1.5mm; Y＜1.5mm; Z＜GT(GT= glass thickness), without affecting the functionality of the product, each side is allowed one, no more than two in total.		Visual inspection
Corner broken loss	B			

Items		Standard	Conclusion	Inspection tools
Creak	A + B	Creaks found at any location are not allowed		Visual inspection
Newton's rings	A	No more than 1/3 of the display area, light up invisible. If there are special requirements, the limited sample shall prevail.		
Panel color		Consistent with the sample, no serious color difference		
Size		Meet the requirements of finished product inspection drawings		
Ink pinhole	B	D≤0.25	Distance of two pinholes greater than 15mm, the paint can be repaired with a paint pen of the same color as the cover plate.	
Ink sawtooth	A + B	W≤0.2, L≤1	The distance between two serrations near the VA area is greater than or equal to 50mm, two serrations may be allowed.	
Circular White Mura, Lumination Mura, Black/White Mura, etc.	A	Refer to 5% ND filter in 50% Should not be perceived, If needed or limit sample		Visual inspection

10 Notices

10.1 Cautions for storage

Store the module in a dark room where must keep at 25±10°C and 65%RH or less. Don't   expose the products to the direct sunlight or stresses.

10.2 Cautions for operation

(1) Do not put a heavy, hard or sharp object on the product.

(2) Do not bend the product in order to assure the reliability.

(3) Do not put one product on the other. Otherwise, the product to may be scratched or be changed.

(4) Do not oile the touch panel, Do not put heavy goods on the touch panel.

(5) Do not use any organic solvent acid or alkali solution to clean the surface of the product. Please use dry clothes or soft clothes with ethanol to clean the surface.

10.3 Cautions for operation

Light transmission is an important factor for the product. So, please wear clean finger sacks, gloves and mask to protect the products from fingerprint or stain attach, and also must ensure the area where your finger touches is outside the view area when handing the panel.

10.4 Others

(1) Please note that dew gathering in the panel due to abrupt temperature or humidity change, etc. Which may cause deterioration of performance.

(2) When this product was built into the package, if there is vulcanization material such as vulcanized rubber which has a possibility of generating the salutation gas near the package since abnormalities will be caused to wring of the product and it will become the cause if functional degradation, please give a constitutional cations.

(3) Cation for product safety set

Although full care is taken to ensure product quality, failure modes such as degradation, short circuits, or open circuits might be caused, Therefore, to design a product set, please study the effects of any single failure of the panel in advance and consider the safety of product configuration.

Quality function livers for on year, outward appearance haves non-color variation in six months.

Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Texim Europe B.V. its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Texim"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Texim makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product.

It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application.

Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time.

All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts.

Please contact us if you have any questions about the contents of the datasheet.

This may not be the latest version of the datasheet. Please check with us if a later version is available.

Texim Europe - contact details
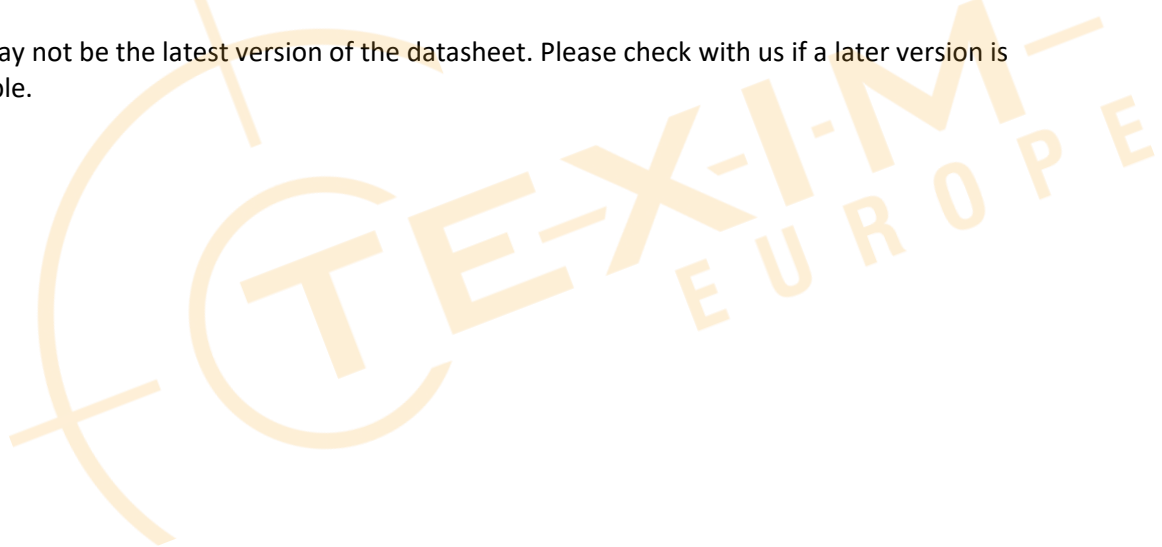
Headquarters & Warehouse

Elektrostraat 17
NL-7483 PG Haaksbergen
The Netherlands

T: +31 (0)53 573 33 33
E: info@texim-europe.com
Homepage: www.texim-europe.com

The Netherlands

Elektrostraat 17
NL-7483 PG Haaksbergen

T: +31 (0)53 573 33 33
E: nl@texim-europe.com

Belgium

Zuiderlaan 14, box 10
B-1731 Zellik

T: +32 (0)2 462 01 00
E: belgium@texim-europe.com

UK & Ireland

St Mary's House, Church Lane
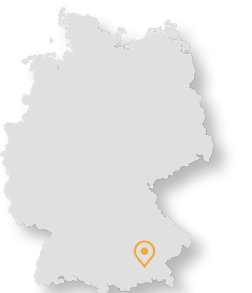Carlton Le Moorland
Lincoln LN5 9HS

T: +44 (0)1522 789 555
E: uk@texim-europe.com

Germany - North

Bahnhofstrasse 92
D-25451 Quickborn

T: +49 (0)4106 627 07-0
E: germany@texim-europe.com

Germany - South

Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
E: muenchen@texim-europe.com

Austria

Warwitzstrasse 9
A-5020 Salzburg

T: +43 (0)662 216 026
E: austria@texim-europe.com

Nordic

Søndre Jagtvej 12
DK-2970 Hørsholm

T: +45 88 20 26 30
E: nordic@texim-europe.com

Italy

Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
E: italy@texim-europe.com

A **TKH** TECHNOLOGY COMPANY