

SPECIFICATION FOR CTP+LCD MODULE

Part No.: TF133TM005-V1

Customer No.:

Date: 2026-4-23

Supplier			Customer
Prepared	Checked	Approved	Approved

Table of Contents

1 General Specifications	4
2 Mechanical Drawing	5
3 Pin assignment	6
4 Absolute Maximum Rating	9
5 LCD Electrical Characteristic	10
6 Optical Characteristics	13
7 Reliability Test	16
8 Appearance Inspection	17
9 Notices	20



1 General Specifications

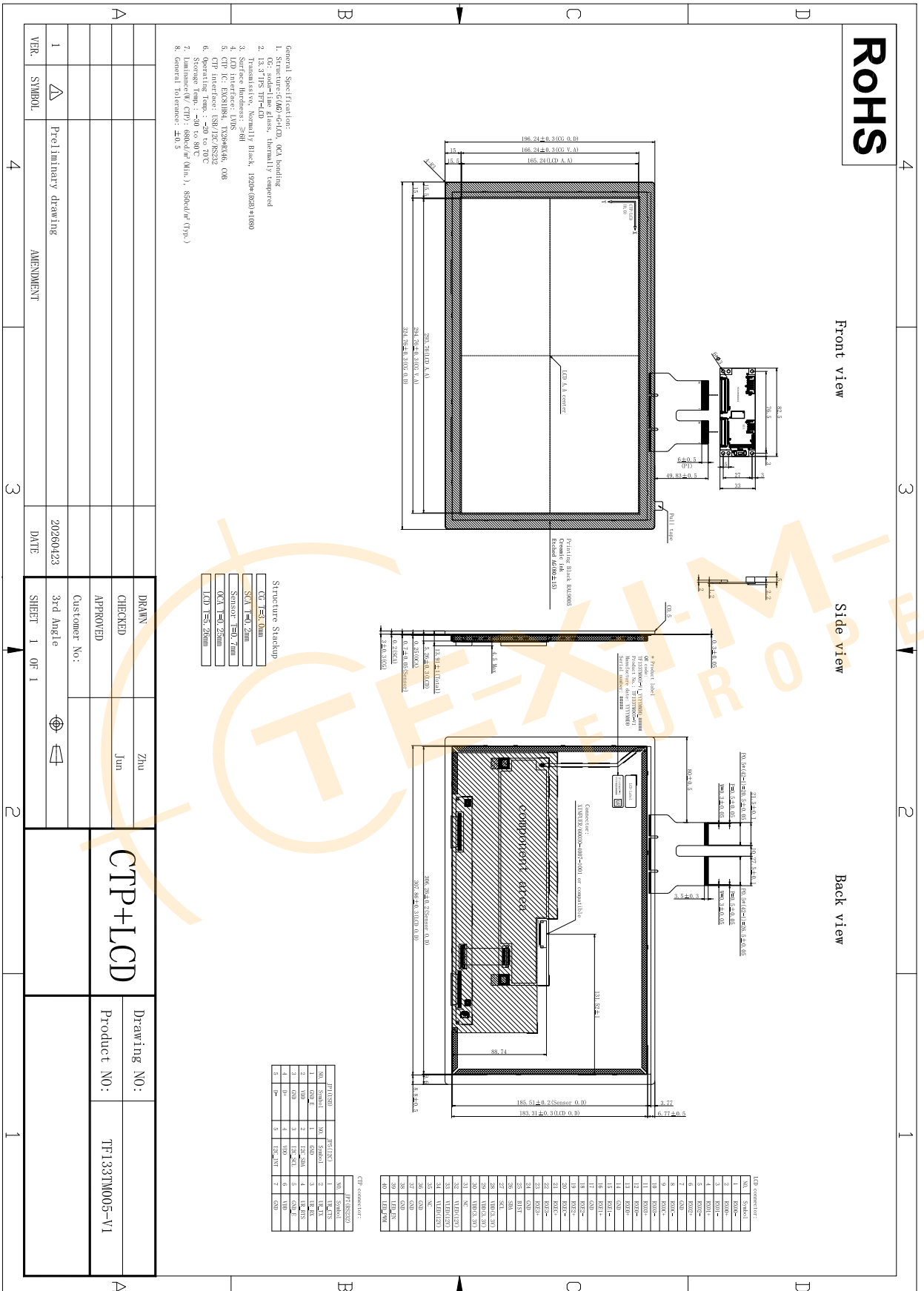
1.1 Definition

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	13.3	inch	diagonal
Structure	G+G+LCD, OCA Bonding		
Resolution	1920(RGB) × 1080		
Display Mode	Normally Black. Transmissive		
Pixel Pitch	0.153(W) × 0.153(H)	mm	
Pixel Arrangement	RGB Vertical stripe		
Viewing Direction	ALL	O'clock	
Outline Dimensions	324.76(W) × 196.24(H) × 13.91(D)	mm	
Viewing Area	294.76(W) × 166.24(H)		
Active Area	293.76(W) × 165.24(H)	mm	
LCD Interface	LVDS(2ch)		
CTP Interface	USB / I2C / RS232		
CTP IC	EXC81H84		
Touch Point	10		
Surface Hardness	6	H	
Surface Treatment	Etched AG(Gloss: 80±15)		

2 Mechanical Drawing



3 Pin assignment

3.1 LCD Pin assignment

FPC Connector is used for the module electronics interface. The recommended model is 60030-4007-1001 manufactured by XFE.

Pin	Symbol	Description	Note
1	RXO0-	Negative Transmission data of Pixel 0 (ODD)	
2	RXO0+	Positive Transmission data of Pixel 0 (ODD)	
3	RXO1-	Negative Transmission data of Pixel 1 (ODD)	
4	RXO1+	Positive Transmission data of Pixel 1 (ODD)	
5	RXO2-	Negative Transmission data of Pixel 2 (ODD)	
6	RXO2+	Positive Transmission data of Pixel 2 (ODD)	
7	GND	Ground	
8	RXOC-	Negative Transmission Clock (ODD)	
9	RXOC+	Positive Transmission Clock (ODD)	
10	RXO3-	Negative Transmission data of Pixel 3 (ODD)	
11	RXO3+	Positive Transmission data of Pixel 3 (ODD)	
12	RXE0-	Negative Transmission data of Pixel 0 (EVEN)	
13	RXE0+	Positive Transmission data of Pixel 0 (EVEN)	
14	GND	Ground	
15	RXE1-	Negative Transmission data of Pixel 1 (EVEN)	
16	RXE1+	Positive Transmission data of Pixel 1 (EVEN)	
17	GND	Ground	
18	RXE2-	Negative Transmission data of Pixel 2 (EVEN)	
19	RXE2+	Positive Transmission data of Pixel 2 (EVEN)	
20	RXEC-	Negative Transmission Clock (EVEN)	
21	RXEC+	Positive Transmission Clock (EVEN)	
22	RXE3-	Negative Transmission data of Pixel 3 (EVEN)	
23	RXE3+	Positive Transmission data of Pixel 3 (EVEN)	
24	GND	Ground	
25	BIST	No connection	
26	NC(SDA)	No connection	
27	NC(SCL)	No connection	
28	LCD_VDD	LCD Power Supply: 3.3V	
29	LCD_VDD	LCD Power Supply: 3.3V	
30	LCD_VDD	LCD Power Supply: 3.3V	

31	NC	No connection	
32	VLED	VIN Voltage(12V TYP)	
33	VLED	VIN Voltage(12V TYP)	
34	VLED	VIN Voltage(12V TYP)	
35	NC	No connection	
36	GND	Ground	
37	GND	Ground	
38	GND	Ground	
39	LED_EN	Backlight On/Off	
40	LED_PWM	System PWM signal input for dimming	



3.2 CTP Pin assignment

USB connector: JP1

Pin	Symbol	Description
1	GND_E	Ground
2	VDD	CTP Power Supply : 5V
3	GND	Ground
4	D+	CTP USB data port plus
5	D-	CTP USB data port minus

I2C connector: JP5

Pin	Symbol	Description
1	GND	Ground
2	I2C_SDA	CTP I2C SDA signal
3	I2C_SCL	CTP I2C SCL signal
4	VDD	CTP Power Supply : 5V
5	I2C_INT	CTP I2C INT signal

RS232 connector: JP5

Pin	Symbol	Description
1	UR_CTS	CTP RS232 CTS signal
2	UR_TX	CTP RS232 TX signal
3	UR_RX	CTP RS232 RX signal
4	UR_RTS	CTP RS232 RTS signal
5	GND_E	Ground
6	VDD	CTP Power Supply : 5V
7	GND	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

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	VDD	-0.3	3.6	V	TA=25°C
Operation Temperature	T _{OP}	-20	70	°C	
Storage Temperature	T _{ST}	-30	80	°C	



5 LCD Electrical Characteristic

5.1 TFT LCD Module

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	VDD	3.0	3.3	3.6	V	Note1
Input logic high voltage	V _{IH}	0.8 VDD	-	VDD	V	
Input logic low voltage	V _{IL}	0		0.2 VDD	V	

Note1:VDD setting should match the signals output voltage of customer' s system board.

5.2 Backlight Unit

Item	Symbol	MIN	TYP	MAX	UNIT	NOTE	
Backlight Power	VLED	11.5	12	13	V	Ta=25°C	
Backlight Power	IVLED	-	0.834	0.769	A	VLED=12V	
EN Signal Voltage	V _{IH}	LED_EN	3.0	-	5	V	
	V _{IL}		GND	-	0.3	V	
Power Consumption	PLED	-	10.008	9.997	W	100%Brightness (VLED=12V)	
PWM Frequency	LED_PWM	0.1	-	50	KHz	PWM Dimming	
PWM Dimming	Swing Voltage	3.0	-	5	V		
	Dimming duty cycle	1	-	100	%		
Color	White						
Average Brightness	-	800	1000	-	Cd/cm ²		
Luminance uniformity	-	75	80	-	%		
LED life time	-	30,000	-	-	Hr	Note 2	

5.3 Timing Controller

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
DCLK Frequency	-		147.8		MHz	
Horizontal Total	t _{ht}	-	2168	-	DCLK	
Hsync Pulse width	t _{hs}	-	32	-	DCLK	
Horizontal Back Porch	t _{hb}	-	200	-	DCLK	
Horizontal Front Porch	t _{hfp}	-	48	-	DCLK	
Horizontal Valid Data	t _{hd}	1920			DCLK	
Vertical Total	t _{vt}	-	1114	-	THT	
Vsync Pulse width	t _{vpw}	-	6	-	THT	
Vertical Back Porch	t _{vbp}	-	31	-	THT	
Vertical Front Porch	t _{vfp}	-	3	-	THT	
Vertical Valid Data	t _{vd}	1080			THT	
Frame rate			60		Hz	

NOTE:

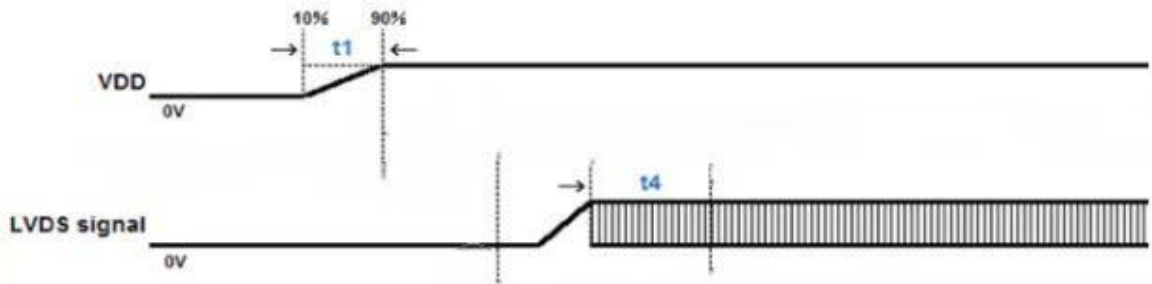
1. FR (Frame Rate) = DCLK / t_{ht}t_{vp}
2. t_{ht} = t_{hb} + t_{hfp} + t_{hd}
3. t_{vp} = t_{vbp} + t_{vfp} + t_{vd}

5.4 Power Sequence

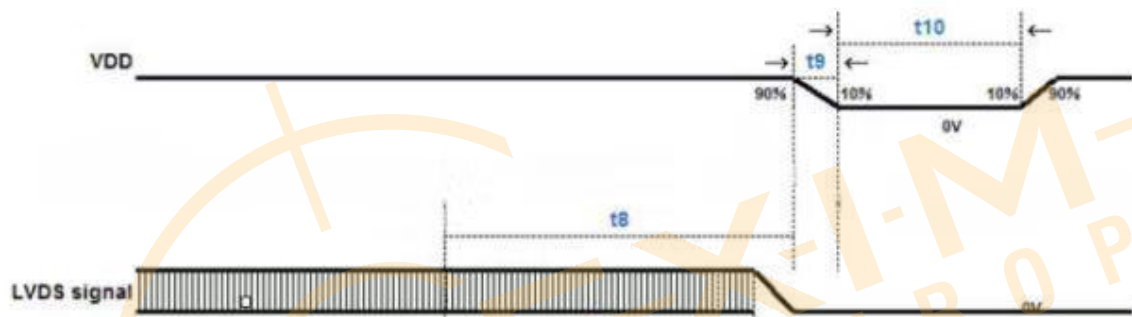
The recommended power on sequence should be: VDD → RESET → STBYB. To power off, reverse this sequence, or turn off all signals and power simultaneously.

VDD=3.0~3.6V

Power on :

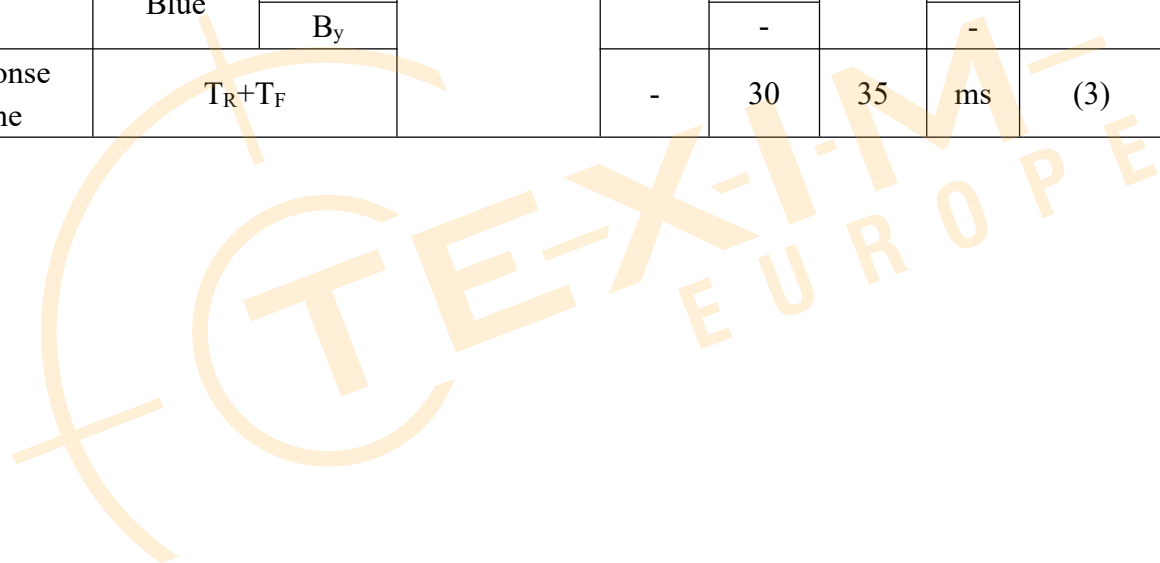


Power off :

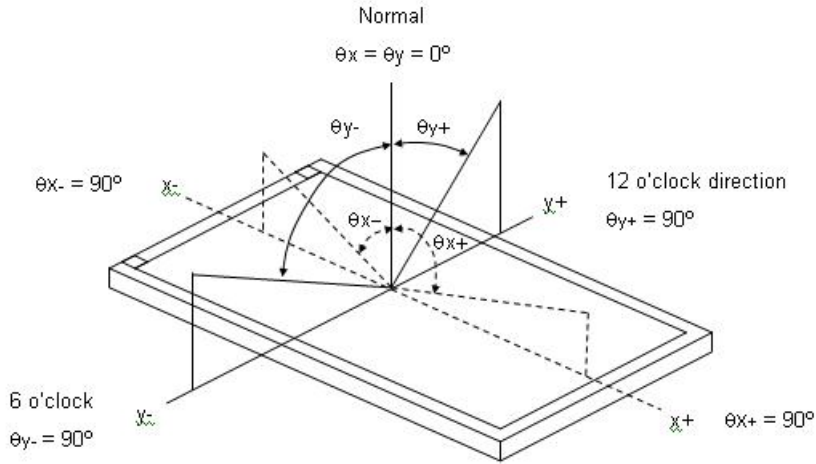


6 Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle	Horizontal	θ_{X+}	$CR \geq 10$	80	85	-	Deg.	(1), (5)
		θ_{X-}		80	85	-	Deg.	
	Vertical	θ_{Y+}		80	85	-	Deg.	
		θ_{Y-}		80	85	-	Deg.	
Luminance (W/ CTP)		Lv	$\theta_X=0^\circ, \theta_Y=0^\circ$	680	850	-	nit	(4), (5)
Uniformity	9 points	$\Delta Y9$		75	80	-	%	(5), (6)
Contrast ratio		CR		600	800	-		(2), (5)
Color Chromaticity (CIE 1931)	White	W_x	$\theta_X=0^\circ, \theta_Y=0^\circ$ R=G=B=255 Gray scale	Typ- 0.05	0.31	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		-	30	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.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

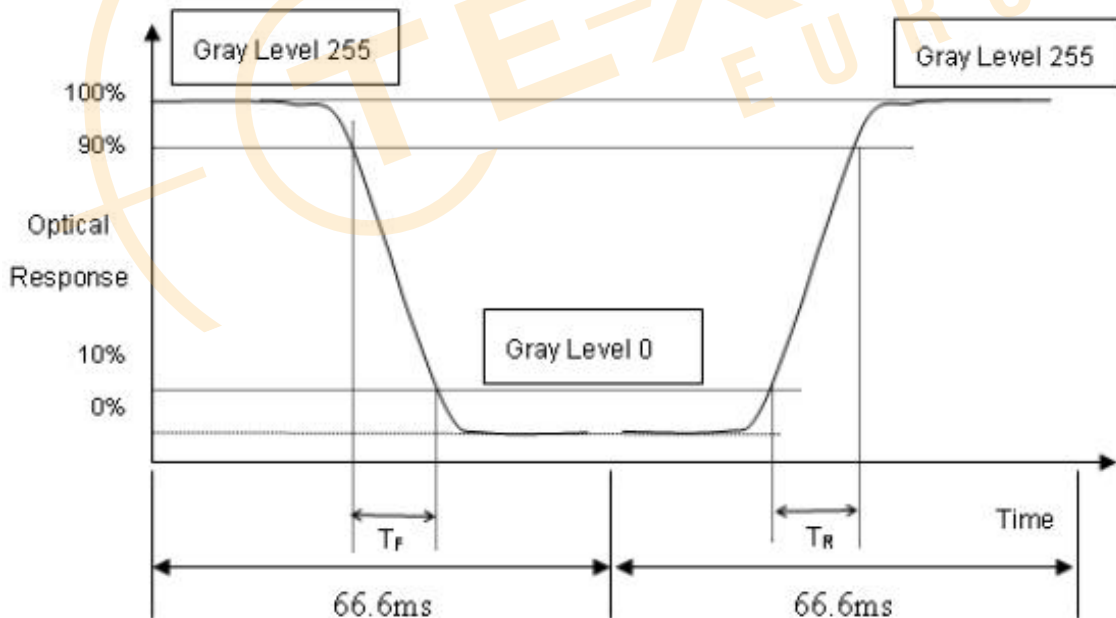
L255: Luminance of gray level 255

L 0: Luminance of gray level 0

$$\text{CR} = \text{CR} (5)$$

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):

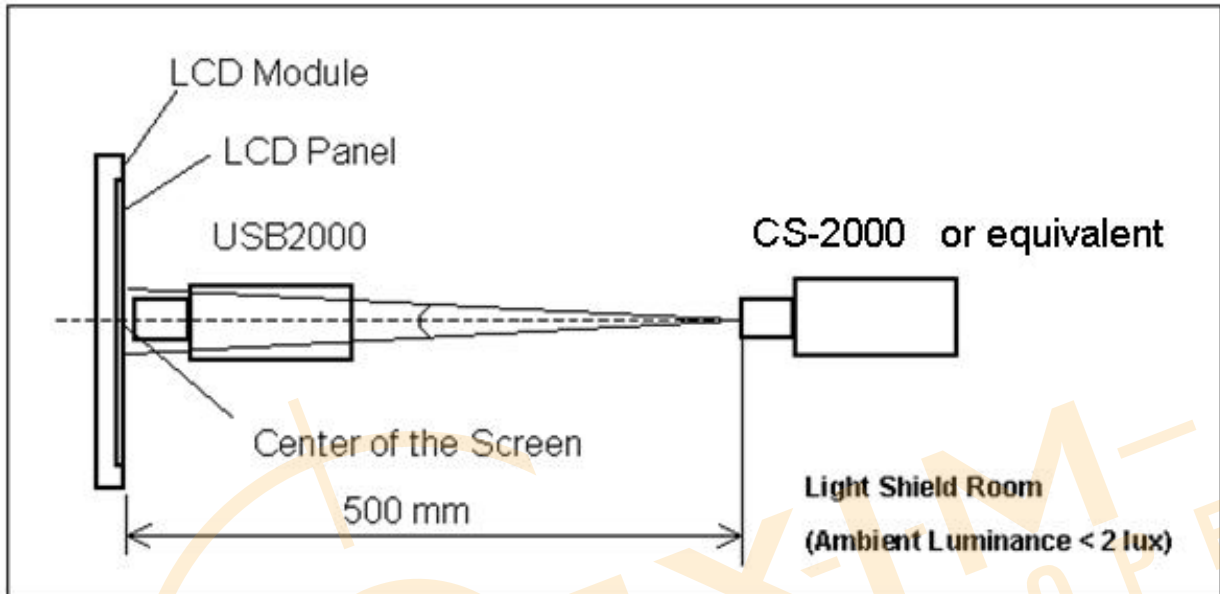
Measure the luminance of gray level 255 at center point

$$LC = L (5)$$

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

Note (5) Measurement Setup:

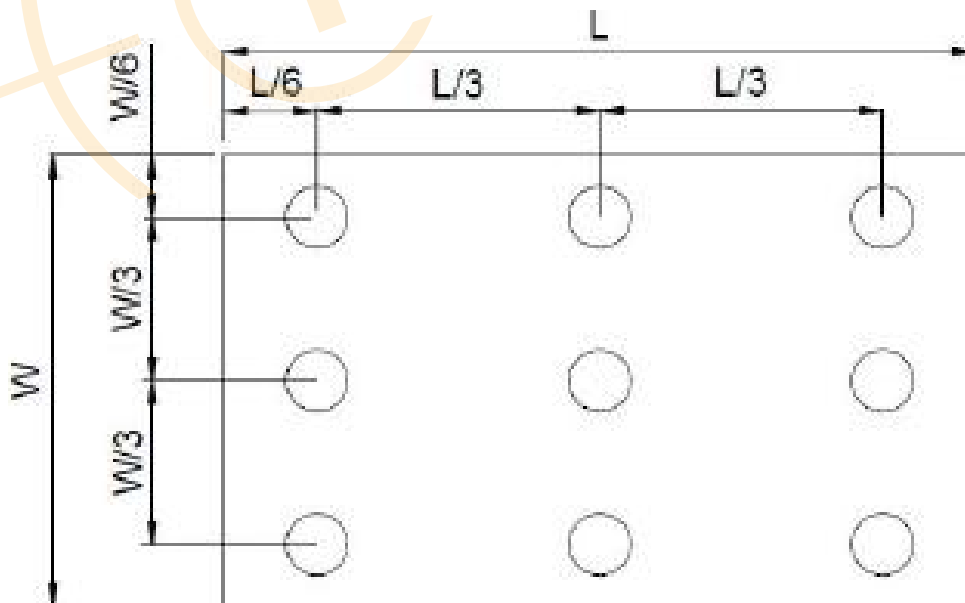
The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.



Note (6) Definition of White Variation (δW):

Measure the luminance of gray level 255 at 9 points

$$\delta W = (\text{Minimum} [L (1) \sim L (9)] / \text{Maximum} [L (1) \sim L (9)]) * 100\%$$

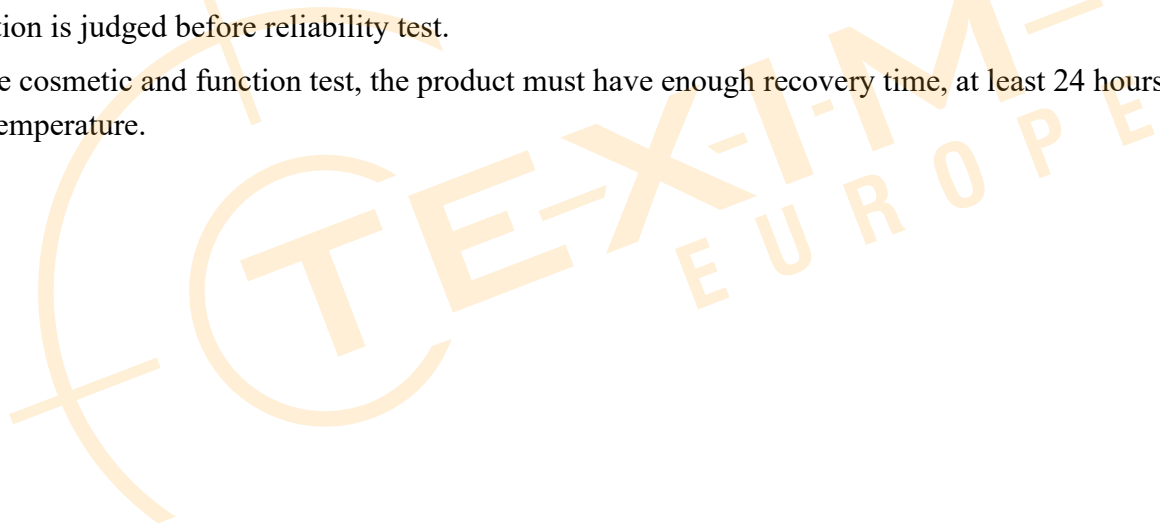


7 Reliability Test

Test Item	Condition
High Temperature Storage Test	80°C, 240 hrs
Low Temperature Storage Test	-30°C, 240 hrs
High Temperature Operation Test	70°C, 240 hrs
Low Temperature Operation Test	-20°C, 240 hrs
High temperature & high humidity operation Test	60°C, 90%RH, 240 hrs
Thermal Shock Test (TST)	-20°C/30min, 70°C/30min, 100 cycles
Electro-static discharge test (non-operating)	Air : 150 pF, 330Ω, 8 KV Contact : 150 pF, 330Ω, 4 KV

Note :

- (1) There should be no condensation on the surface of panel during test.
- (2) 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.
- (3) In the standard conditions, there is no function failure issue occurred. All the cosmetic specification is judged before reliability test.
- (4) Before cosmetic and function test, the product must have enough recovery time, at least 24 hours at room temperature.



8 Appearance Inspection

8.1 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.

8.2 Inspection Conditions

The environmental condition and visual inspection shall be conducted as below:

- (1) Light: 800~1400Lux;
- (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: 30~40cm 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;

8.3 Inspection equipment

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

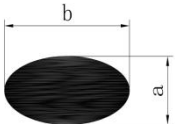
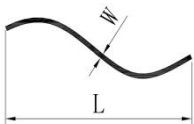
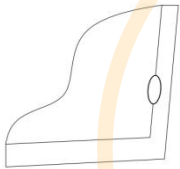
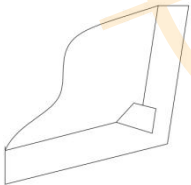
8.4 Defect code comparison table

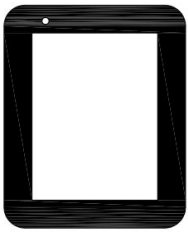
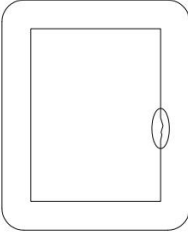

Code	Name (Unit)	Code	Name (Unit)
N	Number	D	Diameter (mm)
L	Length (mm)	H	Depth (mm)
W	Width (mm)	S	Distance (mm)
S	Area (mm ²)		

8.5 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.

8.6 Inspection items and standards

Items	Standard	Conclusion	Inspection tools
Dot (white, black, heterochromatic)  $D=(a+b)/2$	$D \leq 0.3$	Ignore, dense density is not allowed	Visual inspection
	$0.3 < D \leq 0.6$	The distance with another dot is more than 5 mm, Transparent areas : $N \leq 3$, Ink areas : $N \leq 5$	
	$D > 0.6$	Not allow	
Linear defects (fibers/foreign bodies/ scratches, etc.) 	$W \leq 0.08$	Ignore, dense density is not allowed	Visual inspection
	$0.08 < W \leq 0.15$	$L \leq 10$, the distance with another scratch or impurity is more than 5mm Transparent areas : $N \leq 3$, Ink areas : $N \leq 5$	
	$W > 0.15, L > 10$	Not allow	
Bubble	According to the point standard		Visual inspection
Edge broken loss 	<ol style="list-style-type: none"> 1. The sensor edge cracks, 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 $X < 0.5\text{mm}$; $Y < 0.5\text{mm}$; $Z < 1/3\text{GT}$ (GT= glass thickness), without affecting the functionality of the product, each side is allowed two 		Visual inspection
Corner broken loss 			

Items	Standard	Conclusion	Inspection tools
Creak	Creaks found at any location are not allowed		Visual inspection
Size	Meet the requirements of finished product inspection drawings		
Ink pinhole 	$D \leq 0.15$	Ignore, dense density is not allowed	
	$0.15 < D \leq 0.25$	$N \leq 5$ $DS \geq 10\text{mm}$, Repair with a paint pen of the same color as the cover plate	
Ink sawtooth 	$W \leq 0.2\text{mm}$	Ignore, dense density is not allowed	
Newton's rings	No more than 1/6 of the display area, light up invisible. If there are special requirements, the limited sample shall prevail.		
FPC 	<ol style="list-style-type: none"> 1. Oxidation, breakage, residual glue, coating peeling, cracking and other phenomena of FPC gold fingers are not allowed. 2. Less components, false welding, deformation are not allowed. 		
Color	Consistent with the sample, no serious color difference		
Mura/Waving/ Hot spot	Not visible through 5% ND filter		

9 Notices

9.1 Cautions for storage

Store the module in a dark room where must keep at $25\pm 10^{\circ}\text{C}$ and 65%RH or less. Don't expose the products to the direct sunlight or stresses.

9.2 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.

9.3 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.

9.4 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.

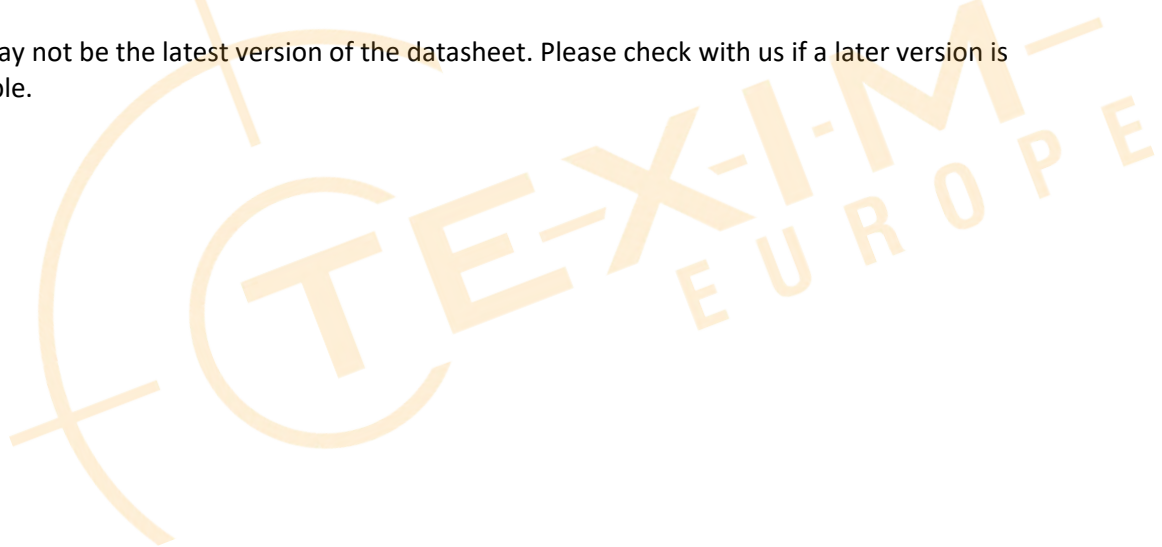
It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application.

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.





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

Bahnhofstrasse 92
 D-25451 Quickborn

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



Germany

Martin-Kollar-Strasse 9
 D-81829 München

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



Austria

Martin-Kollar-Strasse 9
 D-81829 München

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



Nordic

Stockholmsgade 45
 2100 Copenhagen

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