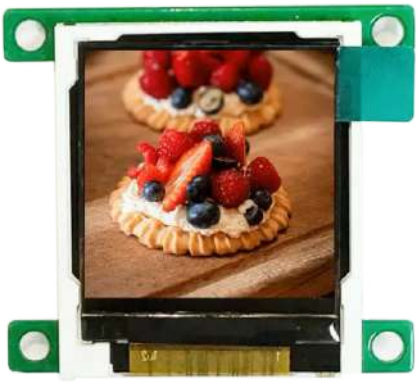
ORIENT DISPLAY
MAKE THINGS POSSIBLE

Specification for TFT

AGU128128A00-1.44N6NSN

Revision 01



A	Orient Display
GU	GUS System
128128	Resolution 128 x 128
A00	Serial A00
1.44	1.44”, Module Dimension 44.36 * 39.93 * 7.9 mm (PCB)
N	TN Display
6	6 O’clock Viewing Direction
N	Top: -20~+70°C; Tstr: -30~+80°C
S	Standard Configuration
N	Normal Brightness, 240cd/m2
/	No Touch Panel
/	Transmissive Polarizer
/	ST7735S OR COMPATIBLE
/	UART Interface

REVISION RECORD

Rev No.	Rev date	Contents	Remarks
01	2022-7-30	First release	Preliminary

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1. DISPLAY CHARACTERISTICS

Item	Contents	Note
Resolution(H*V)	128×128 Dots	
Colors	65k(R5G6B5)	
Active area (L*W)	25.5 mm(L)×26.46 mm(W)	
Viewing area (L*W)	26.3 mm(L)×27.25 mm(W)	
Module size (L*W*H)	44.36 mm(L)×39.93 mm(W)x7.9(H)	
Back light type	LED	
Touch Panel Type	With TP or without TP	
Controller IC	NP9158	
Viewing Direction	6 o'clock	
Contrast Ratio	500(typ.)	

2. Pin Description

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	GND
2	RX	MPU	3.3V TTL level 232_RX-
3	TX	MPU	3.3V TTL level 232_TX-
4	VDD	Power Supply	3.3V

3. Electrical Characteristics

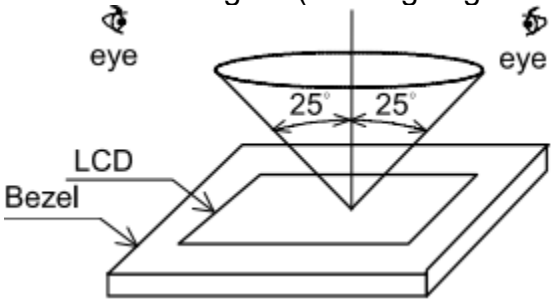
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	-	+70	^{0}C
Storage Temperature Range	Tst	Absolute Max	-30	-	+80	^{0}C
Supply Voltage	VDD		3.0	3.3	3.6	V
Input High Voltage	VIH		0.8*VDD	-	VDD	V
Input Low Voltage	VIL		0	-	0.2*VDD	V
Supply Current	IVCI		-	25	-	mA
Power Consumption	PLCM		-	83	-	mW

4. Appearance Standard

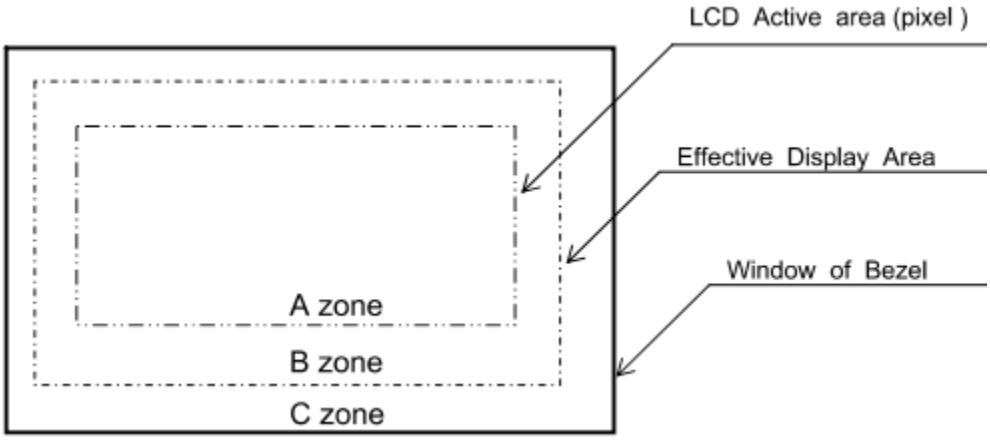
4.1 Appearance Inspection Condition

Visual inspection should be done under the following condition.

1) The inspection should be done under in the dark room(about 1000lx,500lx min, and non-directive)
2) The distance between eyes of an inspector and the LCD module is 30cm.
3) The Viewing zone is shown the figure.(Viewing angle ≤25°)



4.2 Definition Of Each Zone

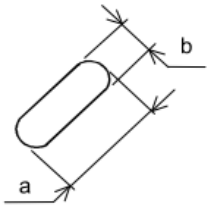


4.3 Appearance Specification

Note: if a problem occurs in respect to any of these items, both parties will discuss in more detail.

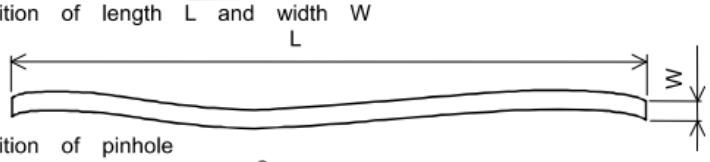
Note

(1) Definition of average diameter D

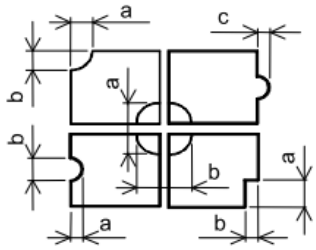


$$D = \frac{a+b}{2}$$

(2) Definition of length L and width W



(3) Definition of pinhole



c : Salience

No.	ITEM	CRITERIA				A	B
L C D	Scratches	Serious one is not allowed				*	-
	Dent	Serious one is not allowed				*	-
	Wrinkles in Polarizer	Serious one is not allowed				*	-
	Bubbles	Average diameter D(mm)		Maximum number acceptable		○	-
		D≦0.2		Ignore			
		0.2<D≦0.3		12			
		0.3<D≦0.5		3			
		0.5<D		None			
	Stains, Foreign Materials, Dark Spot	Filamentous				○	-
		Length L(mm)	Width W(mm)	Maximum number acceptable			
		L≦2.0	W≦0.03	Ignore			
		L≦3.0	0.03<W≦0.05	6			
		L≦2.5	0.05<W≦0.1	1			
		Round					
		Average diameter D(mm)	Maximum number acceptable	Minimum space			
		D<0.2	Ignore	-			
		0.2 ≦D<0.33	8	10mm			
		0.33≦D	None	-			
		Total	Filamentous + Round = 10				
		Those wiped out easily are acceptable				○	○
	Pinhole	Average diameter D(mm)		Maximum number acceptable		○	-
		D≦0.15		Ignore			
		0.15<D≦0.3		10			
		C≦0.015		ignore			
	Contrast Irregularity (Spot)	Average diameter D(mm)	Maximum number acceptable	Minimum space			
		D≦0.25	Ignore	-			
		0.25<D≦0.35	10	20mm			
		0.35<D≦0.5	4	20mm			
		0.5 <D	None	-			
	Contrast Irregularity (Line) (Filamentous)	Width D(mm)	Length L(mm)	Maximum number acceptable	Minimum space	○	-
		W≦0.25	L≦1.2	2	20mm		
		W≦0.2	L≦1.5	3	20mm		
		W≦0.15	L≦2.0	3	20mm		
		W≦0.1	L≦3.0	4	20mm		
		Total		6			

No.	ITEM	CRITERIA			APPLIED ZONE
TOUCH PANEL	Scratches	Width W(mm)	Length L(mm)	Maximum number acceptable	
		W>0.1	L≧10	None	A,B
		0.10≧W>0.05	L<10	4 pcs max.	
		0.05≧W	L<10	Ignored	
	Foreign Materials	Filamentous (Line shape)			
		Width W(mm)	Length L(mm)	Maximum number acceptable	A,B
		W>0.10	-	Dust (circular)	
		0.10≧W>0.05	3<L	None	
		0.05≧W	L≦3	Ignored	
		Round(Dot shape)			
		Average diameter D(mm)	Maximum number acceptable		A,B
		D>0.35	None		
		0.35≧D>0.25	6 psc max.		B
		D≦0.25	Ignored		A,B

5.Reliability Test Conditions

No.	Test item	Test condition	Inspection after test
1	High temperature storage	80±2°C/120 hours	Note 1,2
2	Low temperature storage	-30±2°C/120 hours	
3	High temperature operating	70±2°C/120 hours	
4	Low temperature operating	-20±2°C/120 hours	
5	Temperature cycle	-20±2°C~25°C~70±2°C*10cycles (30min.) (5min.) (30min.)	
6	Damp proof test	60°C*90% RH/96 hours	
7	Vibration test	Frequency : 10Hz~55Hz~10Hz Amplitude : 1.5mm , X , Y , Z direction for total 3hours (Packing condition)	
8	Dropping test	Drop to the ground from 1m height, one time, every side of carton. (Packing condition)	
9	ESD test	Voltage : ±800V R : 330Ω C : 150pF Air discharge, 1 time	

Remark :
Note 1: No condensation to be observed.
Note 2: Conducted after 4 hours of storage at 25^{0}C, 0%RH.

6. HANDLING PRECAUTIONS

6.1 Mounting method

The LCD module consists of two thin glass plates with polarizes which easily be damaged. And since the module in so constructed as to be fixed by utilizing fitting holes in the printed circuit board.
Extreme care should be needed when handling the LCD modules.

6.2 Caution of LCD handling and cleaning

When cleaning the display surface, Use soft cloth with solvent
[recommended below] and wipe lightly :
●.Isopropyl alcohol
●.Ethyl alcohol
Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.
Do not use the following solvent :
●.Water
●.Aromatics
Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns
Do not use the following solvent on the pad or prevent it from being contaminated :
●.Soldering flux
●.Chlorine (Cl) , Sulfur (S)
If goods were sent without being silicon coated on the pad, ITO patterns could be damaged due to the corrosion as time goes on.
If ITO corrosion happen by miss-handling or using some materials such as Chlorine (CI), Sulfur (S) from customer, Responsibility is on customer.

6.3 Caution against static charge

The LCD module use C-MOS LSI drivers, so we recommended that you :
Connect any unused input terminal to Vdd or Vss, do not input any signals before power is turned on, and ground your body, work/assembly areas, assembly equipment to protect against static electricity.

6.4 Packing

Module employ LCD elements and must be treated as such.
●.Avoid intense shock and falls from a height.
●.To prevent modules from degradation, do not operate or store them exposed direct to sunshine or high temperature/humidity.

6.5 Caution for operation

●.It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life.
●.An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.
●.Response time will be extremely delayed at lower temperature then the operating temperature range and on the other hand at higher temperature LCD's how dark color in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operation temperature.
●.If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.
●.A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.
●.Usage under the maximum operating temperature, 50%Rh or less is required.
●.When fixed patterns are displayed for a long time,remnant image is likely to occur.

6.6 Storage

In the case of storing for a long period of time for instance, for years for the purpose or replacement use, the following ways are recommended.
●.Storing in an ambient temperature 10°C to 30°C, and in a relative humidity of 45% to 75%. Don't expose to sunlight or fluorescent light.
●.Storing in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it . And with no desiccant.
●.Placing in a dark place where neither exposure to direct sunlight nor light's keeping the storage temperature range.
●.Storing with no touch on polarizer surface by the anything else.
It is recommended to store them as they have been contained in the inner container at the time of delivery

from us.

6.7 Safety

●.It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should be burned up later.

●.When any liquid leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water.

7. PRECAUTION FOR USE

7.1 A limit sample should be provided by the both parties on an occasion when the both parties agreed its necessity. Judgment by a limit sample shall take effect after the limit sample has been established and confirmed by the both parties.

7.2 On the following occasions, the handing of problem should be decided through discussion and agreement between responsible of the both parties.

●.When a question is arisen in this specification.

●.When a new problem is arisen which is not specified in this specifications.

●.When an inspection specifications change or operating condition change in customer is reported to ORIENTDISPLAY, and some problem is arisen in this specification due to the change.

●.When a new problem is arisen at the customer's operating set for sample evaluation in the customer site.

8. PACKING SPECIFICATION

---TBD

9.Mechanical Drawing (Unit mm, Un-tolerated ±0.3mm)

