

WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

Represented by:

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Winstar Display Co., LTD
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SPECIFICATION

CUSTOMER : _____

MODULE NO.: WG160128B1-TMI-VZ#

APPROVED BY: (FOR CUSTOMER USE ONLY)	PCB VERSION: DATA:

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY

VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2026/05/21		First issue

General Specification

Item	Dimension	Unit
Number of dots	160 x 128	—
Module dimension	129.0 x 102.0 x 16.5 (MAX)	mm
View area	101.0 x 82.0	mm
Active area	95.96 x 76.76	mm
Dot size	0.56 x 0.56	mm
Dot pitch	0.60 x 0.60	mm
LCD type	STN Negative, Blue Transmissive (In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.)	
Duty	1/128	
View direction	6 o'clock	
Backlight Type	LED, White	
IC	RA6963	
Interface	80 series	

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Absolute Maximum Ratings

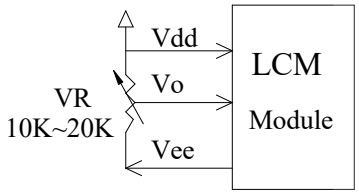
Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Input Voltage	V_{IN}	-0.3	—	V_{DD}+0.3	V
Supply Voltage For Logic	V_{DD}-V_{SS}	-0.3	—	+7.0	V

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Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	V_{DD}-V_{SS}	—	4.5	5.0	5.5	V
Supply Voltage For LCD *Note	V_{DD}-V_0	Ta=-20℃	—	—	22.1	V
		Ta=25℃	18.6	19.2	19.8	V
		Ta=70℃	16.8	—	—	V
Input High Volt.	V_{IH}	—	0.8V_{DD}	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	0	—	0.15V_{DD}	V
Output High Volt.	V_{OH}	—	V_{DD}-0.3	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	0	—	0.3	V
Supply Current	I_{DD}	—	—	31	50	mA

* Note: Please design the VOP adjustment circuit on customer's main board

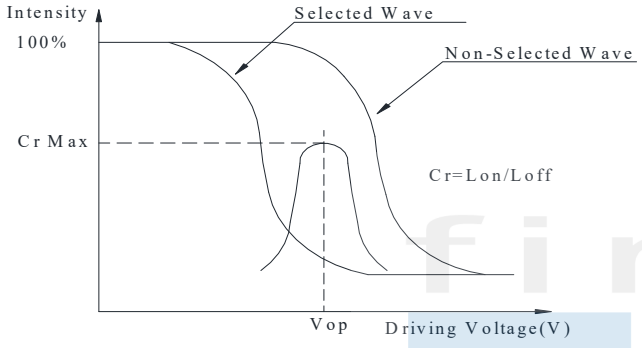


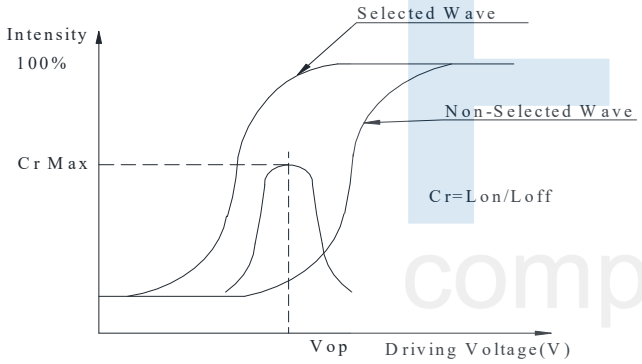
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Optical Characteristics

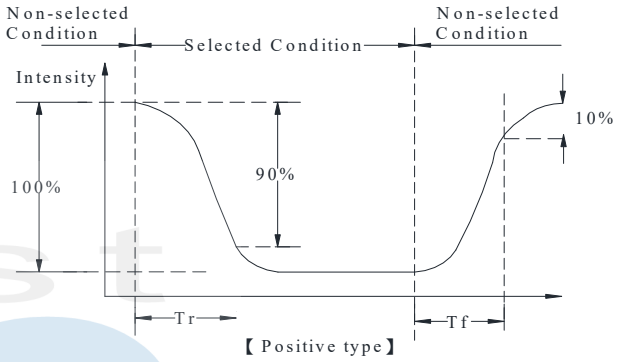
Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	θ	CR≧2	0	—	20	$\phi = 180^\circ$
	θ	CR≧2	0	—	40	$\phi = 0^\circ$
	θ	CR≧2	0	—	30	$\phi = 90^\circ$
	θ	CR≧2	0	—	30	$\phi = 270^\circ$
Contrast Ratio	CR	—	—	3	—	—
Response Time	T rise	—	—	200	300	ms
	T fall	—	—	250	350	ms

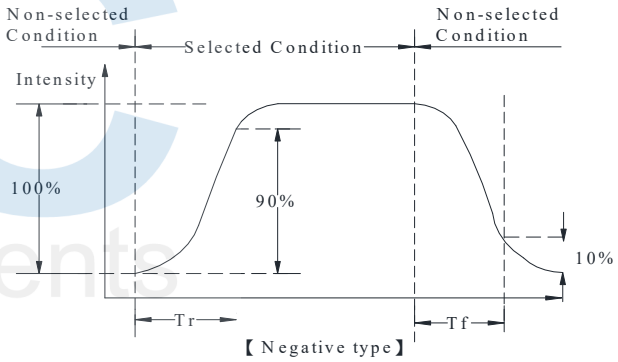
Definition of Operation Voltage (Vop)





Definition of Response Time (Tr , Tf)



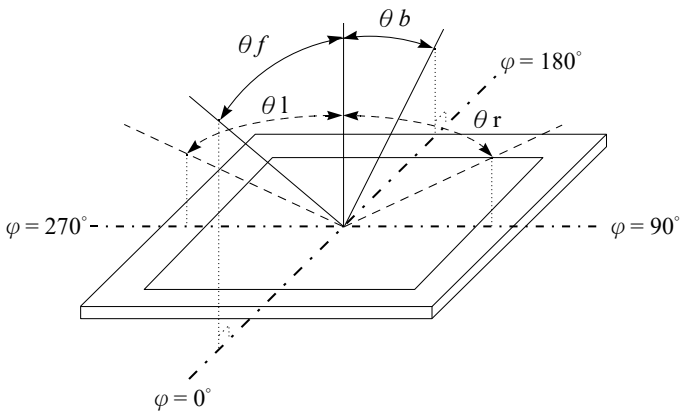


Conditions :

Operating Voltage : Vop　　Viewing Angle(θ ， φ) : 0°， 0°

Frame Frequency : 64 HZ　　Driving Waveform : 1/N duty , 1/a bias

Definition of viewing angle(CR≧2)

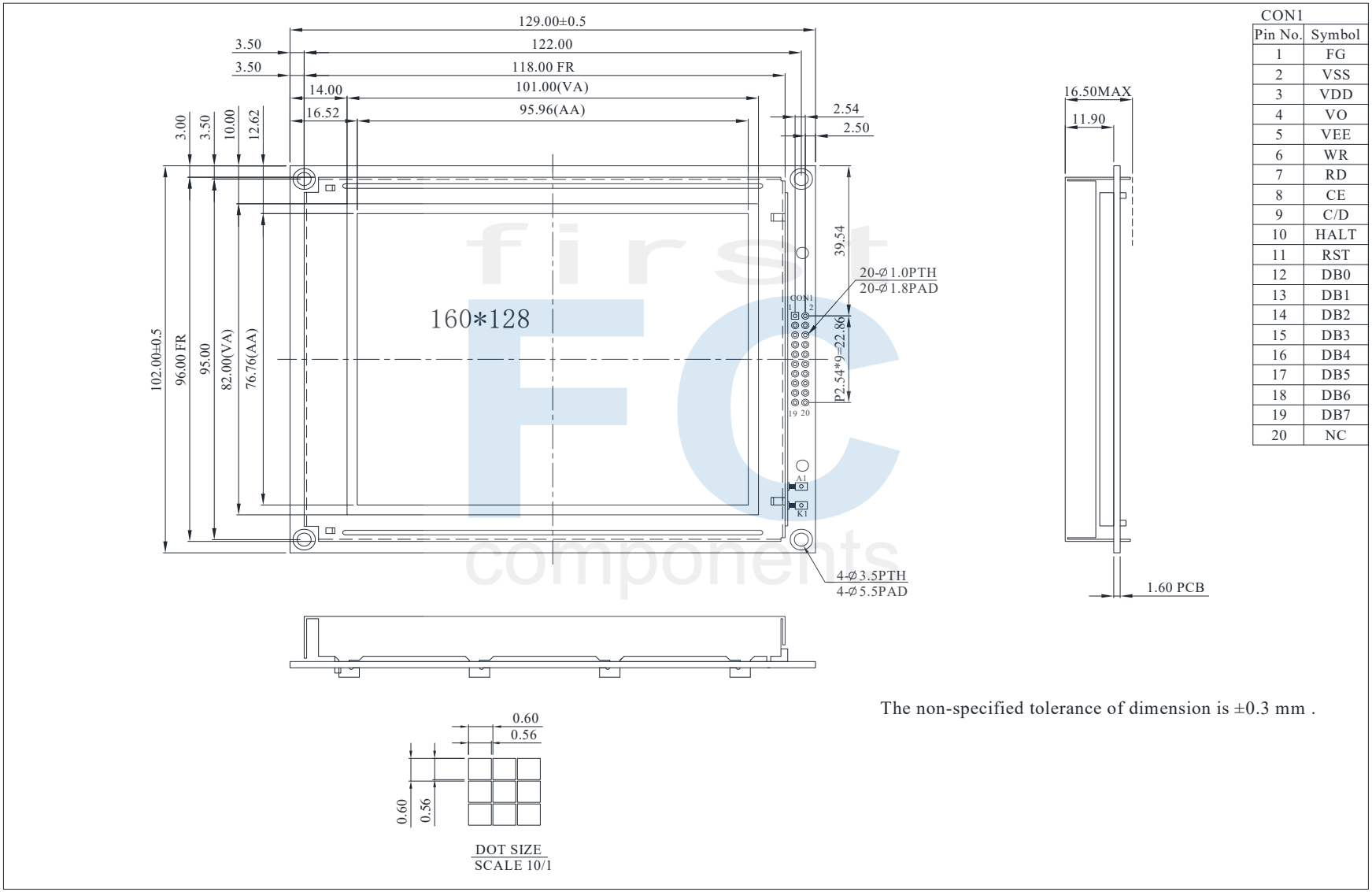


Interface Pin Function

Pin No.	Symbol	Level	Description
1	FG	-	Frame ground
2	VSS	-	Ground
3	VDD	-	Power supply for logic
4	VO	-	contrast adjustment
5	VEE	-	Negative Voltage Output
6	WR	L	Data write. Write data into RA6963when WR = L
7	RD	L	Data read. Read data from RA6963when RD = L
8	CE	L	Chip enable the controller RA6963
9	C/D	H / L	WR=L , C/D=H : Command Write C/D=L: Data write RD=L , C/D=H : Status Read C/D=L: Data read
10	HALT	L	Clock operating stop signal
11	RST	H / L	Reset signal
12	DB0	H / L	Data bus line
13	DB1	H / L	Data bus line
14	DB2	H / L	Data bus line
15	DB3	H / L	Data bus line
16	DB4	H / L	Data bus line
17	DB5	H / L	Data bus line
18	DB6	H / L	Data bus line
19	DB7	H / L	Data bus line
20	NC		No connection

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Contour Drawing &Block Diagram



CON1

Pin No.	Symbol
1	FG
2	VSS
3	VDD
4	VO
5	VEE
6	WR
7	RD
8	CE
9	C/D
10	HALT
11	RST
12	DB0
13	DB1
14	DB2
15	DB3
16	DB4
17	DB5
18	DB6
19	DB7
20	NC

The non-specified tolerance of dimension is ±0.3 mm .

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