LCD / LCM SPECIFICATION



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.: WG16032D5-YYH-VGB#

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

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
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VERSION	DATE	REVISED PAGE NO.	SUMMARY
D	2021/07/15		Add Interface

General Specification

Item	Dimension	Unit
Number of dots	160 x 32	—
Module dimension	122.0 x 44.0x 13.6 (MAX)	mm
View area	99.0 x 24.0	mm
Active area	95.95 x 19.15	mm
Dot size	0.55 x 0.55	mm
Dot pitch	0.60 x 0.60	mm
LCD type	STN Positive, Yellow Green Transflective (In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.)	
Duty	1/32	
View direction	6 o'clock	
Backlight Type	LED, Yellow Green	
IC	ST7920	
Interface	68 series	

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Absolute Maximum Ratings

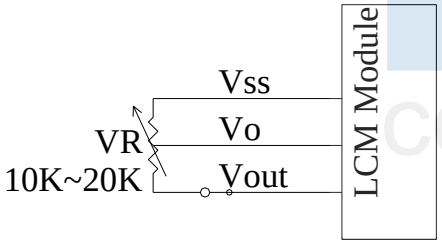
Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T_{OP}	-20	—	+70	℃
Storage Temperature	T_{ST}	-30	—	+80	℃
Input Voltage	V_{IN}	-0.3	—	V_{DD}+0.3	V
Supply Voltage For Logic	V_{DD}-V_{SS}	-0.3	—	5.5	V
LCD Driver Voltage	V_{LCD}	-0.3	—	7.0	V

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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_0-V_{SS}	Ta=-20℃	—	—	—	V
		Ta=25℃	4.6	4.75	4.9	V
		Ta=+70℃	—	—	—	V
Input High Volt.	V_{IH}	—	0.7V_{DD}	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	-0.3	—	0.6	V
Output High Volt.	V_{OH}	—	0.8 V_{DD}	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	—	—	0.4	V
Supply Current	I_{DD}	V_{DD}=5.0V	4.48	5.15	5.73	mA

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

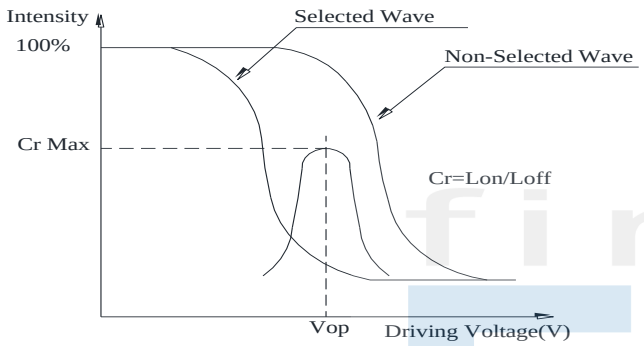


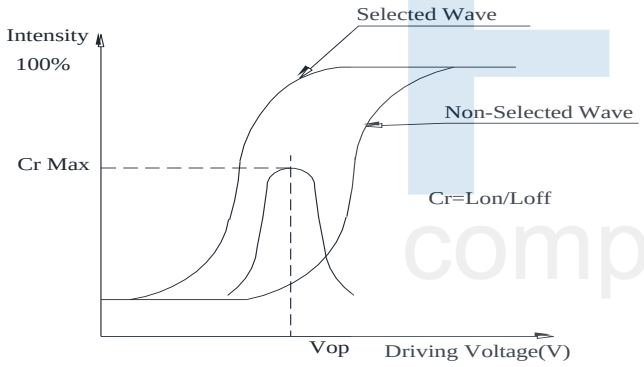
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Optical Characteristics

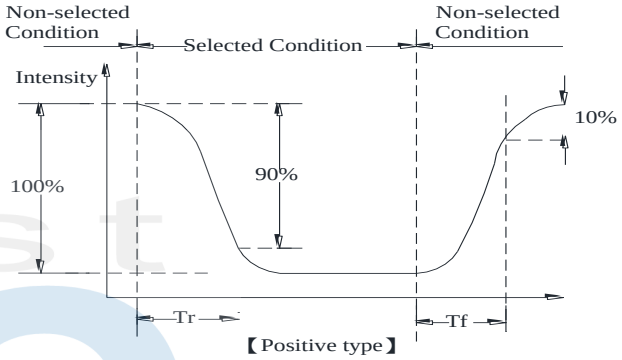
Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	θ	CR≧2	0	—	20	ϕ = 180°
	θ	CR≧2	0	—	40	ϕ = 0°
	θ	CR≧2	0	—	30	ϕ = 90°
	θ	CR≧2	0	—	30	ϕ = 270°
Contrast Ratio	CR	—	—	3	—	—
Response Time	T rise	—	—	200	300	ms
	T fall	—	—	250	350	ms

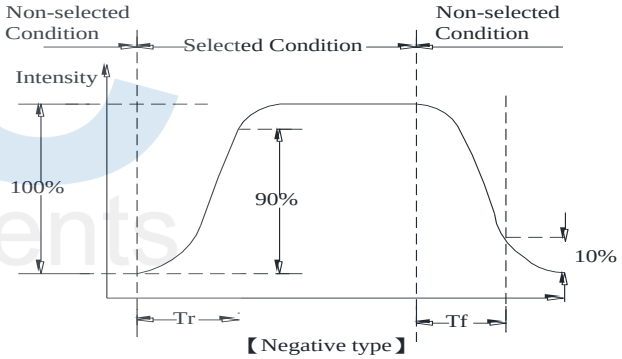
Definition of Operation Voltage (Vop)





Definition of Response Time (Tr , Tf)



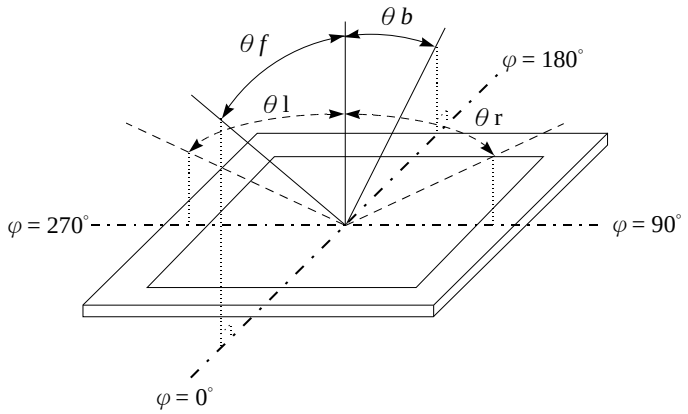


Conditions :

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)



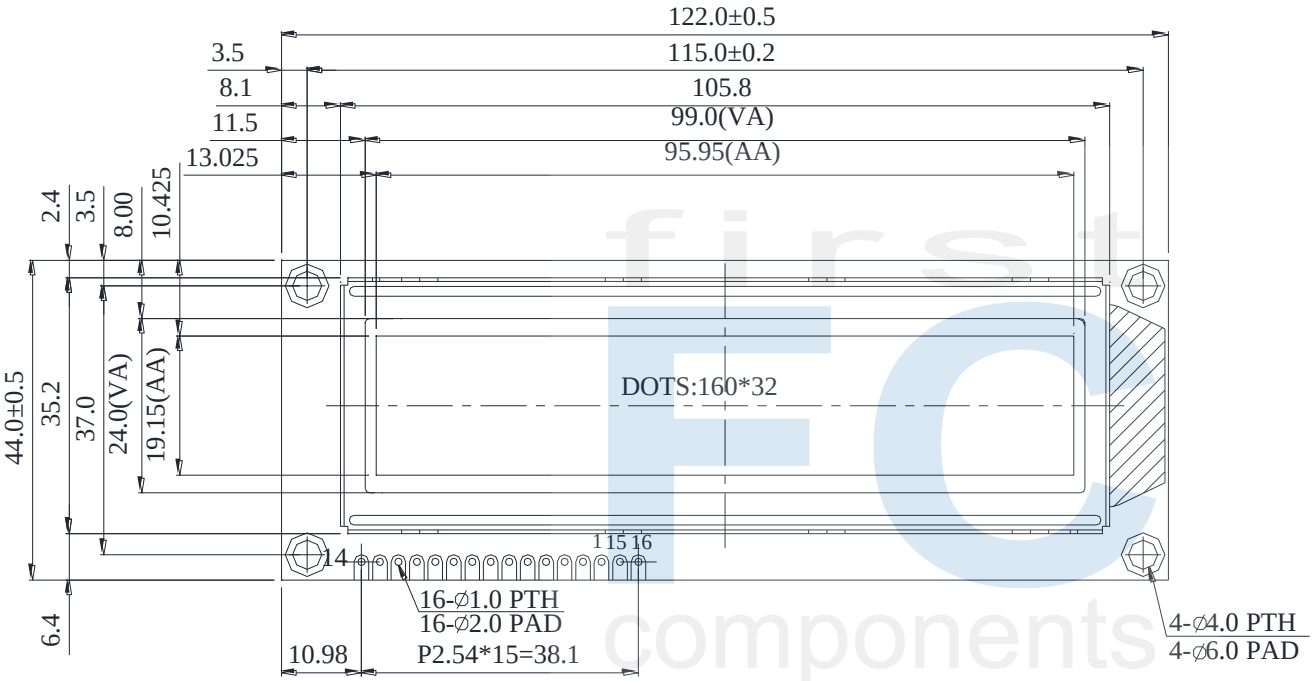
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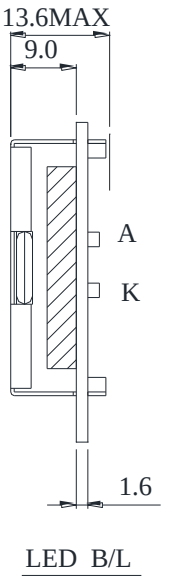
Interface Pin Function

Pin No.	Symbol	Level	Description
1	VSS	0V	Ground
2	VDD	5.0V	Supply voltage for logic
3	V_O	—	Supply voltage for LCD
4	RS	H/L	Register select signal
5	R/W	H/L	H: read data L: write data
6	E	H/L	Enable signal
7	DB0	H/L	Data bus line
8	DB1	H/L	Data bus line
9	DB2	H/L	Data bus line
10	DB3	H/L	Data bus line
11	DB4	H/L	Data bus line
12	DB5	H/L	Data bus line
13	DB6	H/L	Data bus line
14	DB7	H/L	Data bus line
15	Vout	—	Positive Voltage Output
16	NC	—	No connection

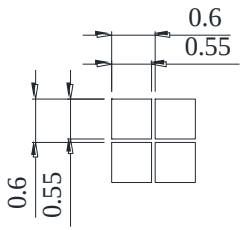
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Contour Drawing &Block Diagram





PIN NO.	SYMBOL
1	Vss
2	Vdd
3	VO
4	RS
5	R/W
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	Vout
16	NC



DOT SIZE
SCALE 10/1

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