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APPROVED BY: <i>David Chang</i>		ISSUE : APR.19, 2010
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CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL :

162G0(LED TYPES)

(RoHS)

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

NUMBERING SYSTEM

Polarizer Mode	Backlight	Code value
Transflective	LED	L
Transmissive	LED	M

Backlight Color	Code Value
Yellow-Green	Y

E	W	1	6	2	G	0	G	L	Y
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LCD type + color	Code Value
STN+ Yellow-Green	Y
STN + Gray	G
STN + Blue	B

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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS
PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

E U - 0 0 2 B

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER :
PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

E U - K S 0 0 6 6

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS.

1.4 MATERIAL SAFETY DESCRIPTION
ASSEMBLIES SHALL COMPLY WITH EUROPEAN ROHS REQUIREMENTS, INCLUDING PROHIBITED MATERIALS/COMPONENTS CONTAINING LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM, POLYBROMINATED BIPHENYLS (PBB) AND POLYBROMINATED DIPHENYL ETHERS (PBDE)

2. MECHANICAL SPECIFICATIONS

- (1) NUMBER OF CHARACTER ----- 16 CH * 2 LINES
- (2) MODULE SIZE ----- 80.0W * 36.0H * 14.0D (max.) mm
- (3) EFFECTIVE AREA ----- 66.0W * 16H mm
- (4) CHARACTER FONT ----- 5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE ----- 2.96W * 5.56H mm
- (6) CHARACTER PITCH ----- 3.55W * 5.94H mm
- (7) DOT SIZE ----- 0.56W * 0.66H mm
- (8) DOT PITCH ----- 0.60W * 0.70H mm
- (9) LCD TYPE *
- (10) DRIVING METHOD ----- 1 / 16 DUTY MULTIPLEX DRIVE
- (11) BACK-LIGHT *

* PLEASE REFER TO NUMBERING SYSTEM

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY FOR LOGIC	VDD – VSS	0	7.0	V	
POWER SUPPLY FOR LCD DRIVE	VDD – VO	0	13.0	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	—	—	100	V	NOTE (1)
LED POWER DISSIPATION	PD	—	0.99	W	
LED FORWARD CURRENT	IF	—	220	mA	
LED REVERSE VOLTAGE	VR	—	8	V	

NOTE (1) : TEST METHOD AND CONDITIONS :
AFTER CHARGING UP 200 pF CAPACITOR BY STATED VOLTAGE, THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE MODULE.

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS .

I T E M	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	- 2 0°C	7 0 °C	- 3 0 °C	8 0 °C	NOTE (1), (3)
HUMIDITY	NOTE (2)		NOTE (2)		WITHOUT CONDENSATION
VIBRATION	—	4.9 m /s ² (0 . 5 G)	—	19.6 m /s ² (2 G)	
SHOCK	—	19.4 m /s ² (3 G)	—	490.0 m /s ² (5 0 G)	XYZ DIRECTIONS
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

NOTE (2) : Ta ≤ 60°C : 90%RH (96HRS MAX.)
Ta > 60°C : ABSOLUTE HUMIDITY MUST BE
LOWER THAN THE HUMIDITY OF 90%RH AT 60°C(96HRS MAX.)

NOTE (3) : Ta AT -30°C: WILL BE < 48hrs
80°C: WILL BE < 168hrs

4. ELECTRICAL CHARACTERISTICS

			Ta = 25 °C		VDD = 5.0 ±0.25 V	
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE FOR LOGIC	VDD	—	4.75	5.0	5.25	V
H LEVEL INPUT VOLTAGE	VIH	—	2.2	—	—	V
L LEVEL INPUT VOLTAGE	VIL	—	—	—	0.6	V
H LEVEL OUTPUT VOLTAGE	VOH	-IOH = 0.2 mA	2.4	—	—	V
L LEVEL OUTPUT VOLTAGE	VOL	IOL = 1.2 mA	—	—	0.4	V
POWER SUPPLY CURRENT (LOGIC)	IDD	VDD = 5.0 V	—	1.0	3.0	mA
RECOMMENDED LCD DRIVING VOLTAGE	VDD - VO θy- = 10°, θx = 0° DUTY = 1/16	Ta = - 20 °C	3.9	4.4	4.9	V
		Ta = 25 °C	3.9	4.4	4.9	V
		Ta = 70 °C	3.9	4.4	4.9	V
CLOCK OSCILLATION FREQUENCY	FOSC	Ta = 25 °C	—	270	—	KHz
LED FORWARD VOLTAGE	VF	IF=110mA	—	4.2	4.5	V
LED FORWARD CURRENT	IF	—	—	110	—	mA
LED REVERSE CURRENT	IR	VR=8V	—	—	0.2	mA

5. OPTICAL CHARACTERISTICS .

			Ta = 25 °C		VDD = 5.0 ±0.25 V			
I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE	
VIEWING ANGLE	θy+	K ≥ 1.5	θx=0°	(53)	(58)	—	deg.	1
	θy-			(43)	(48)	—		
	θx+		θy=0°	(60)	(65)	—		
	θx-			(60)	(65)	—		
CONTRAST RATIO	K	θy- = 10 °, θx = 0°	2.0	3.0	—	—	1	
RESPONSE TIME	tr (rise)	θx = 0° θy- = 10°	Ta = -20°C	—	5538	7199	ms	1
			Ta = 25°C	—	228	296		
			Ta = 70°C	—	104	135		
	tf (fall)		Ta = -20°C	—	2316	3011		
			Ta = 25°C	—	174	226		
			Ta = 70°C	—	85	111		
THE BRIGHTNESS OF MODULE	L	VDD = 5.0 V	15	20	—	cd/m ²	1, 2	
			22.5	30	—		1, 3	
PEAK EMISSION WAVELENGTH	λP	VDD = 5.0 V	570	572	575	nm	1	

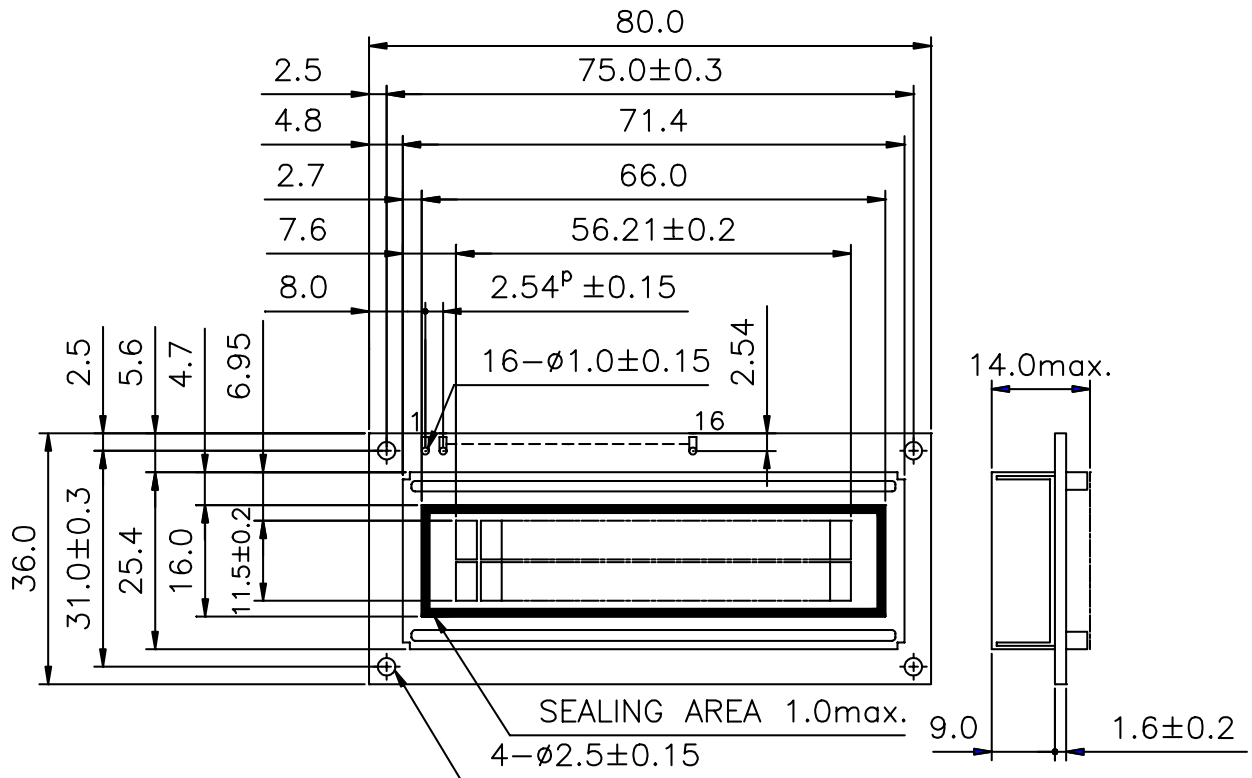
NOTE (1) : PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATION : EU-002B

NOTE (2) : POLARIZER MODE : TRANSFLECTIVE

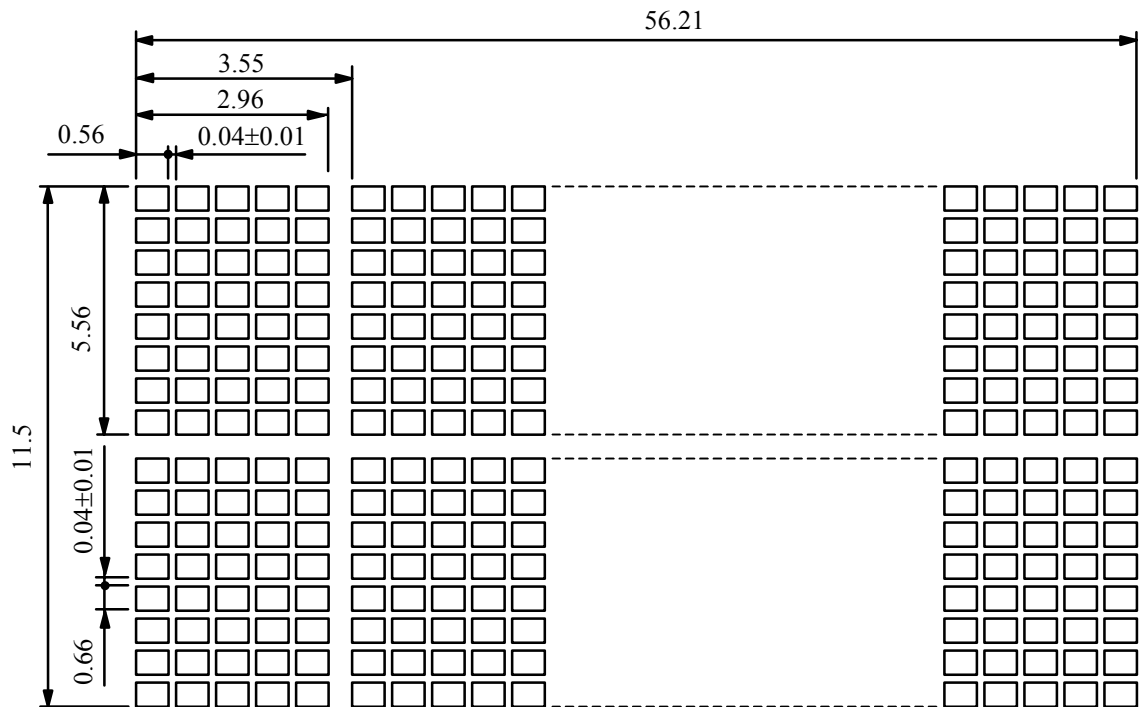
NOTE (3) : POLARIZER MODE : TRANSMISSIVE

6. OUTLINE DIMENSIONS



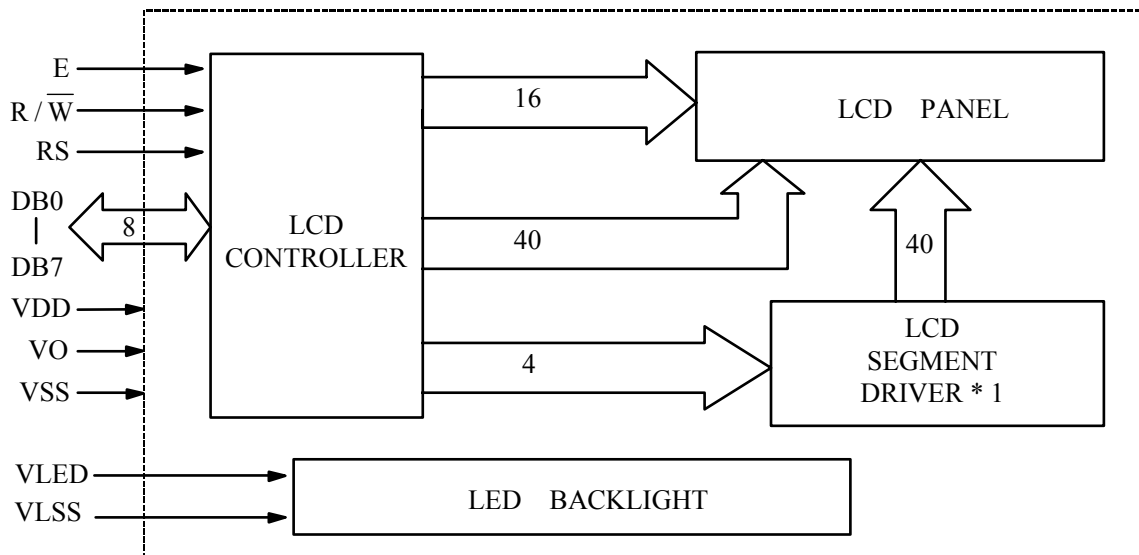
UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ±0.5

7. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ± 0.1

8. BLOCK DIAGRAM

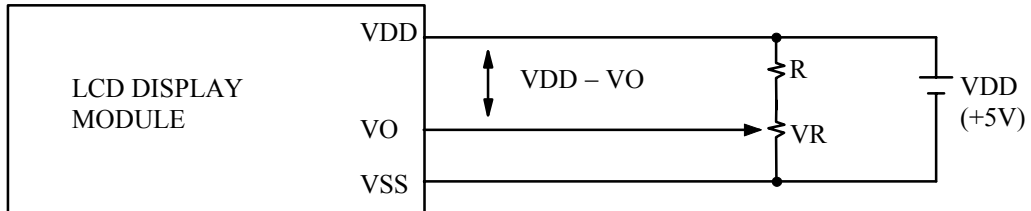


9. INTERFACE SIGNALS

PIN NO.	SYMBOL	DESCRIPTION	FUNCTION
1	VSS	GROUND	0V (GND)
2	VDD	POWER SUPPLY FOR LOGIC CIRCUIT	+5V
3	VO	LCD CONTRAST ADJUSTMENT	
4	RS	INSTRUCTION/DATA REGISTER SELECTION	RS = 0 : INSTRUCTION REGISTER RS = 1 : DATA REGISTER
5	R / \overline{W}	READ/WRITE SELECTION	R / \overline{W} = 0 : REGISTER WRITE R / \overline{W} = 1 : REGISTER READ
6	E	ENABLE INPUT	
7	DB0	DATA INPUT/OUTPUT LINES	4 BIT/8BIT SELECTABLE 4 BIT : DB4 - DB7 8 BIT : DB0 - DB7
8	DB1		
9	DB2		
10	DB3		
11	DB4		
12	DB5		
13	DB6		
14	DB7		
15	VLED	POWER SUPPLY FOR LED BACKLIGHT (ANODE)	—
16	VLSS	POWER SUPPLY FOR LED BACKLIGHT (CATHODE)	0V(GND)

10. POWER SUPPLY

10.1 POWER SUPPLY FOR LCD MODULE

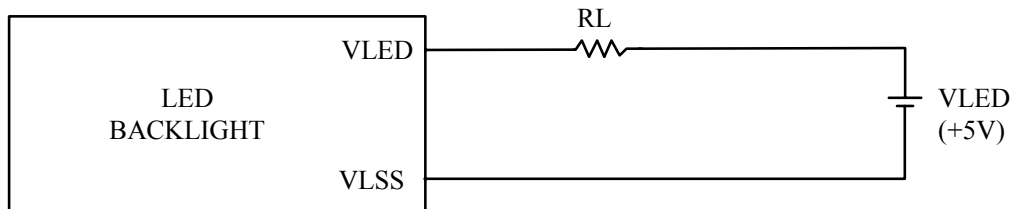


VDD - VO : LCD DRIVING VOLTAGE

VR : 10KΩ ~ 20KΩ

RECOMMENDED RESISTOR R : $VDD - VO \geq 1.5 V$

10.2 POWER SUPPLY FOR LED BACKLIGHT



RECOMMENDED RESISTOR $RL = 6 \sim 15\Omega, 1/4 W$, (CONTROLLED BY USER)

* THE BRIGHTNESS WOULD BE ALTERED SUBJECT TO DIFFERENT VALUES OF RL

11. DISPLAY DATA RAM ADDRESS

CHARACTER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
LINE 2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF