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CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO. :

162D0(EL TYPES)

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

EMERGING DISPLAY
TECHNOLOGIES CORPORATION

MODEL NO. 162D0(EL TYPES)	VERSION 1
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RECORDS OF REVISION	DOC . FIRST ISSUE SEP.05,2000
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DATE	REVISED PAGE NO.	SUMMARY

NUMBERING SYSTEM

Polarizer Mode	Backlight	Code value
Transflective	EL	E
Transmissive	EL	F

Backlight Color	Code Value
Blue-Green	B
White	W

E W 16 2 D0 G E W

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 :

EU - 002A

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER : KS0066

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

EU - KS0066

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

- (1) NUMBER OF CHARACTER ----- 16 CH * 2 LINES
- (2) MODULE SIZE ----- 85.0W * 30.0H * 10.0D (max.) mm
- (3) EFFECTIVE AREA ----- 64.5W * 13.8H mm
- (4) CHARACTER FONT ----- 5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE ----- 2.95W * 4.35H mm
- (6) CHARACTER PITCH ----- 3.65W * 5.05H mm
- (7) DOT SIZE ----- 0.55W * 0.50H mm
- (8) DOT PITCH ----- 0.60W * 0.55H mm
- (9) LCD TYPE *
- (10) DRIVING METHOD ----- 1 / 16 DUTY MULTIPLEX DRIVE
- (11) BACKLIGHT*

* PLEASE REFER TO NUMBERING SYSTEM

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS . (AT Ta = 25 °C)

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)
POWER SUPPLY FOR EL BACKLIGHT	VOLTAGE	VEL	—	AC200	Vrms	fEL =1.0 KHZ 60 SEC. MAX
	FREQUENCY	fEL	—	2.0	KHZ	AC115 Vrms 60 SEC. MAX

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	- 20 °C	50 °C	- 30 °C	60 °C	NOTE (2) , (3)
HUMIDITY	—	90 % RH	—	90 % RH	WITHOUT CONDENSATION
VIBRATION	—	4.9 m/s ² (0.5 G)	—	19.6 m/s ² (2 G)	
SHOCK	—	29.4 m/s ² (3 G)	—	490.0 m/s ² (50 G)	XYZ DIRECTIONS
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (2) : Ta AT -30°C : 48HR MAX .
60°C : 168HR MAX .

NOTE (3) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT
TEMPERATURE THIS PHENOMENON IS REVERSIBLE .

4. ELECTRICAL CHARACTERISTICS

Ta = 25 °C

VDD = 5.0 ± 0.25 V

PARAMETER	SYMBOL	CONDITION	MIN .	TYP .	MAX .	UNIT
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	—	2.0	5.0	mA
RECOMMENDED LCD DRIVING VOLTAGE	VDD - VO ∅ = 10°, θ = 0° DUTY= 1/16	Ta = -20 °C	—	4.4	—	V
		Ta = 25 °C	—	4.4	—	V
		Ta = 50 °C	—	4.4	—	V
CLOCK OSCILLATION FREQUENCY	FOSC	Ta = 25 °C	—	270	—	KHZ
POWER SUPPLY FOR EL BACKLIGHT	VEL	fEL=400HZ	—	100	—	Vrms
	IEL	VEL=100V fEL=400HZ	—	4.2	—	mArms

5. OPTICAL CHARACTERISTICS .

Ta = 25 °C

VDD = 5.0 V

I T E M	SYMBOL	CONDITION	MIN .	TYP .	MAX .	UNIT	NOTE	
VIEWING AREA	∅ 2 - ∅ 1	K ≥ 1.4	30	—	—	deg.	1	
CONTRAST RATIO	K	∅ = 10°, θ = 0°	5	—	—	—	1	
RESPONSE TIME	tr (rise)	∅ = 10° θ = 0°	Ta = -20°C	—	5538	—	ms	1
			Ta = 25°C	—	228	—		
			Ta = 50°C	—	104	—		
	tf (fall)		Ta = -20°C	—	2316	—		
			Ta = 25°C	—	174	—		
			Ta = 50°C	—	85	—		
THE BRIGHTNESS OF BACKLIGHT	B	∅ = 10° θ = 0°	—	10	—	cd/m ²	1, 2	
			—	23	—		1, 3	

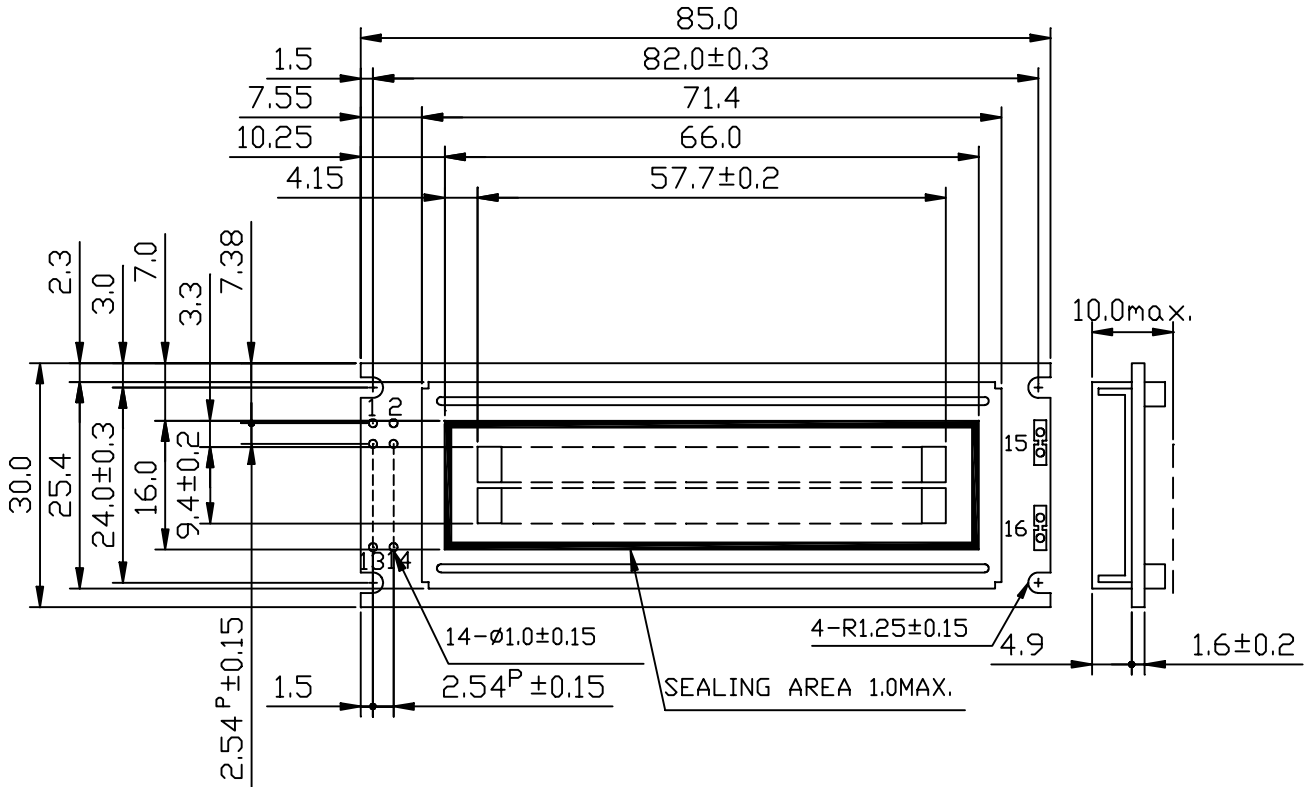
NOTE (1): PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATION : EU-002A

NOTE (2): POLARIZER MODE : TRANSFLECTIVE

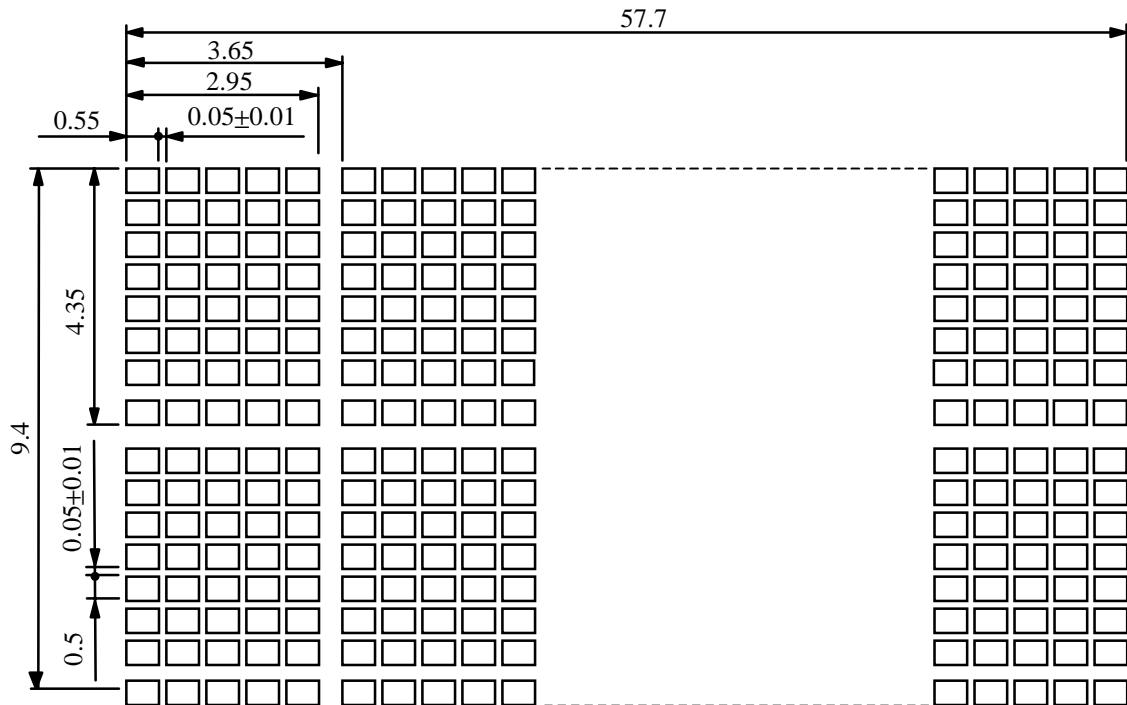
NOTE (3): POLARIZER MODE : TRANSMISSIVE

6. OUTLINE DIMENSION



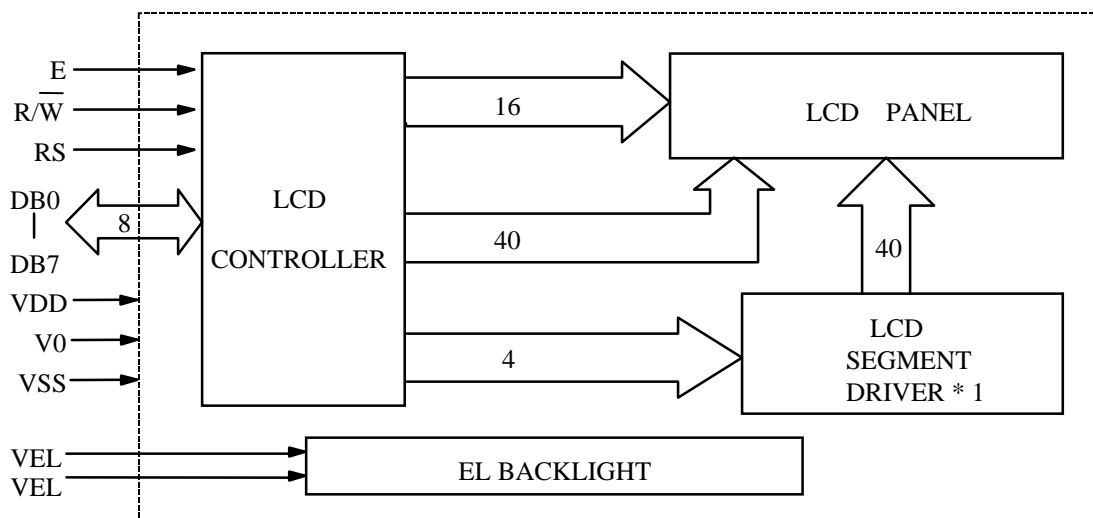
SUIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS $\pm 0.5\text{mm}$

7. DETAIL DRAWING OF DOT MATRIX



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

8. BLOCK DIAGRAM

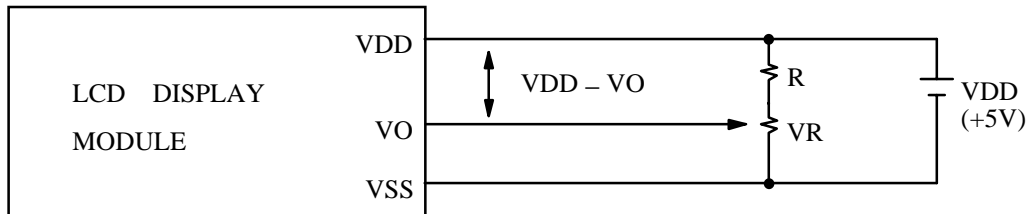


9. INTERFACE SIGNALS

PIN NO.	SYMBOL	DESCRIPTION	FUNCTION
1 8	DB7 DB0	DATA INPUT/OUTPUT LINES	4 BIT/ 8 BIT SELECTABLE 4 BIT:DB4-DB7 8 BIT:DB0-DB7
9	E	ENABLE INPUT	
10	$\overline{R/W}$	READ/WRITE SELECTION	$\overline{R/W} = 0$: REGISTER WRITE $\overline{R/W} = 1$: REGISTER READ
11	RS	INSTRUCTION/DATA REGISTER SELECTION	RS = 0 : INSTRUCTION REGISTER RS = 1: DATA REGISTER
12	VO	LCD CONTRAST ADJUSTMENT	
13	VSS	GROUND	0V (GND)
14	VDD	POWER SUPPLY FOR LOGIC CIRCUIT	+5V
15	VEL	POWER SUPPLY FOR LED EL BACKLIGHT	
16	VEL	POWER SUPPLY FOR LED EL BACKLIGHT	

10. POWER SUPPLY

10.1 POWER SUPPLY FOR LCD MODULE

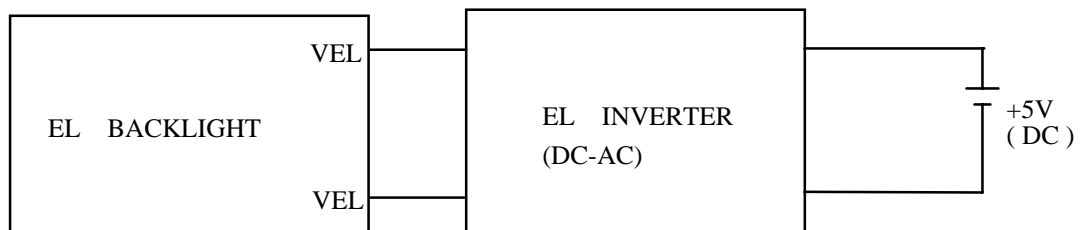


VDD - VO : LCD DRIVING VOLTAGE

VR : 10KΩ ~ 20KΩ

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

10.2 POWER SUPPLY FOR EL BACKLIGHT



RECOMMENDED INVERTER : SOUN50350

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