

EXAMINED BY :  <i>Bob Hu</i>	EMERGING DISPLAY  TECHNOLOGIES CORPORATION	FILE NO . CAS-10148
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<i>Roger Yang</i>		TOTAL PAGE : 8
		VERSION : 3

CUSTOMER                      ACCEPTANCE                      SPECIFICATIONS

MODEL :

162G0(LED TYPES)

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

LCD type + LCD color	Code Value
Yellow-Green	Y
STN + Gray	G
STN + Blue	B

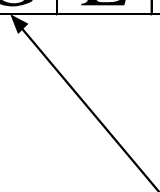
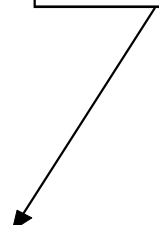
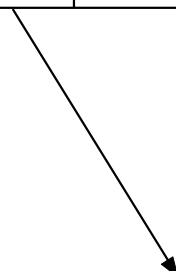


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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

EU - 002A

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER :

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 ----- 80.0W \* 36.0H \* 14.0D (max.) mm
- (3) EFFECTIVE AREA ----- 64.5W \* 13.8H 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 \*
- (12) ROM CODE ----- EW162G0GLY\*59  
SPLC780C-02A-C ( ENGLISH/EUROPEAN )

\* 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 )
LED POWER DISSIPATION	PD	—	1.26	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	-20°C	70°C	-30°C	80°C	NOTE ( 2 ), ( 3 )
HUMIDITY	—	90 % RH	—	90 % RH	WITHOUT CONDENSATION
VIBRATION	—	4.9 m/s <sup>2</sup> ( 0.5 G )	—	19.6 m/s <sup>2</sup> ( 2 G )	
SHOCK	—	29.4 m/s <sup>2</sup> ( 3 G )	—	490.0 m/s <sup>2</sup> ( 50 G )	XYZ DIRECTIONS
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE ( 2 ) : Ta AT -30°C : 48HR MAX .  
80°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	—	1.0	3.0	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 = 70 °C	—	4.4	—	V
CLOCK OSCILLATION FREQUENCY	FOSC	Ta = 25 °C	—	270	—	KHZ
LED FORWARD VOLTAGE	VF	IF=110mA	—	4.2	4.6	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 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 = 70°C	—	104	—		
	tf ( fall )		Ta = -20°C	—	2316	—		
			Ta = 25°C	—	174	—		
			Ta = 70°C	—	85	—		
THE BRIGHTNESS OF BACK-LIGHT	L	VDD = 5.0 V	—	20	—	cd/m <sup>2</sup>	1, 2	
			—	40	—		1, 3	
PEAK EMISSION WAVELENGTH	λP	VDD = 5.0 V	—	572	—	nm	1	

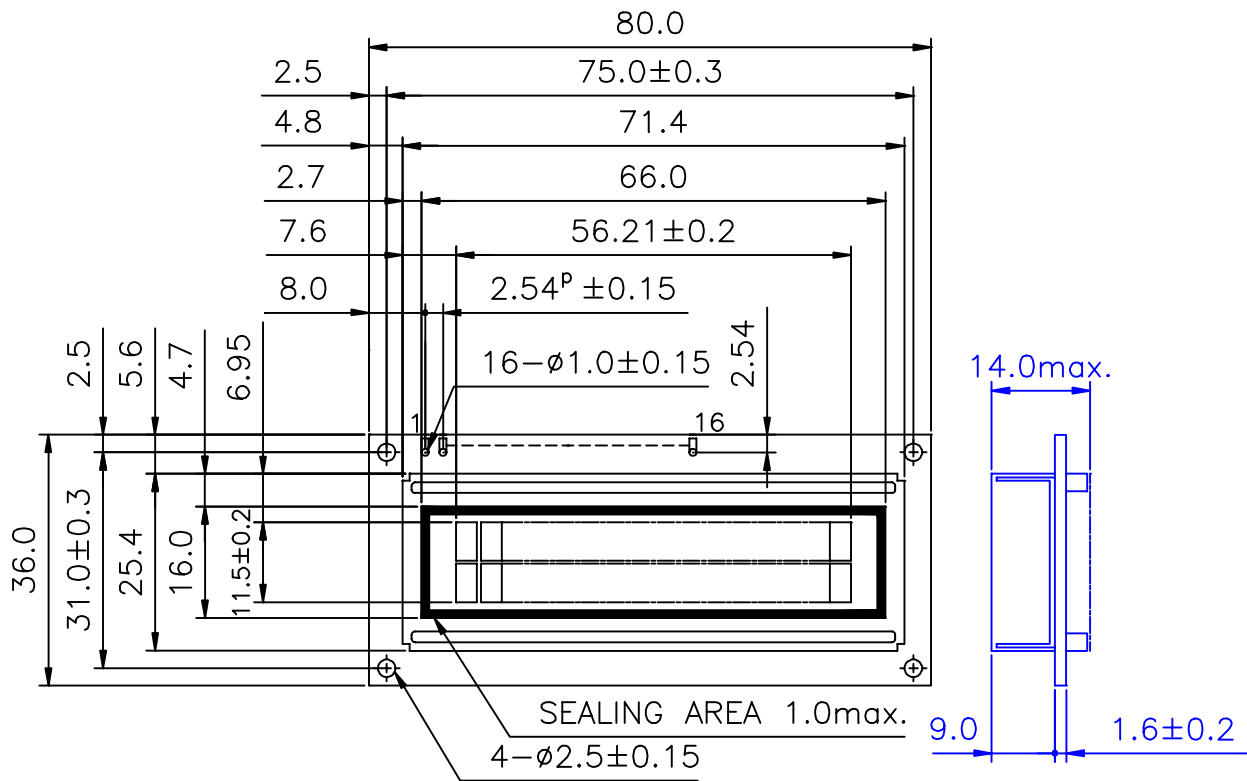
NOTE (1) : PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATION : EU-002A

NOTE (2) : POLARIZER MODE : TRANSFLECTIVE

NOTE (3) : POLARIZER MODE : TRANSMISSIVE

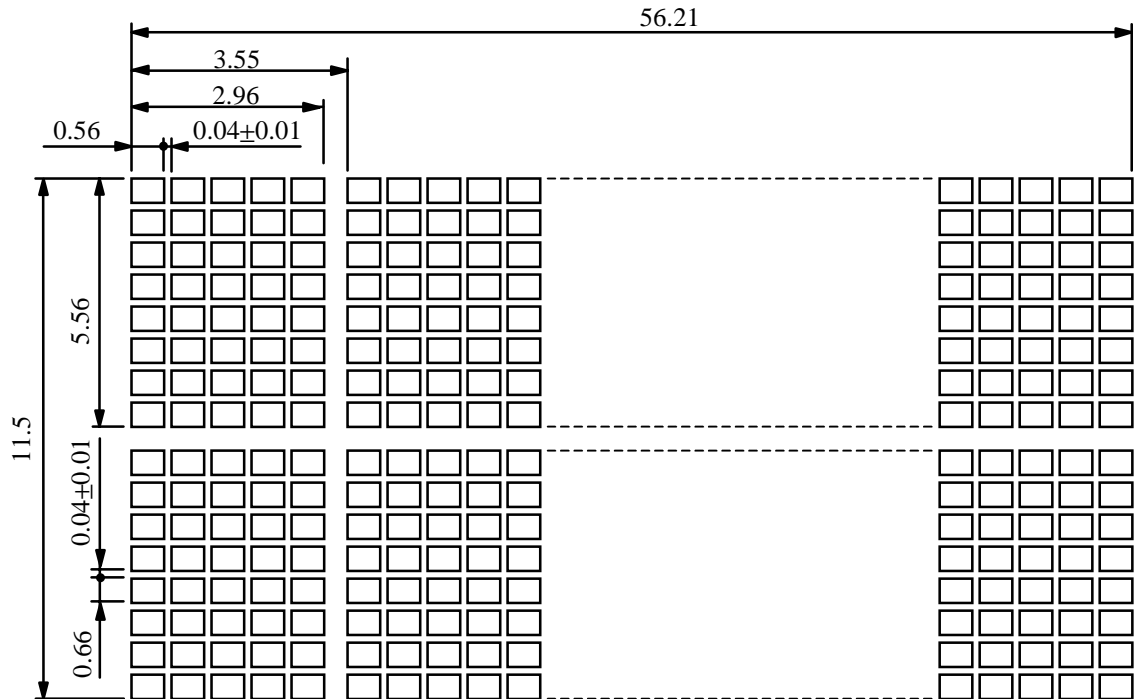
6. OUTLINE DIMENSION



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

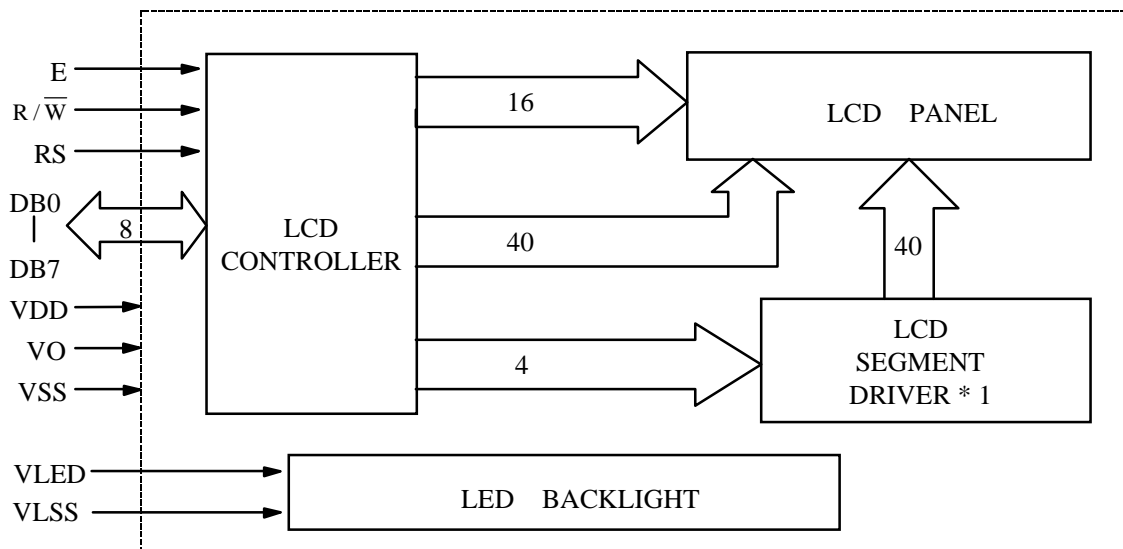


7. DETAIL DRAWING OF DOT MATRIX



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

8. BLOCK DIAGRAM

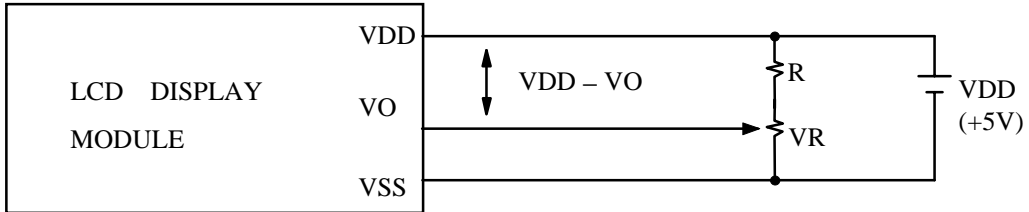


9. INTERFACE SIGNALS

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

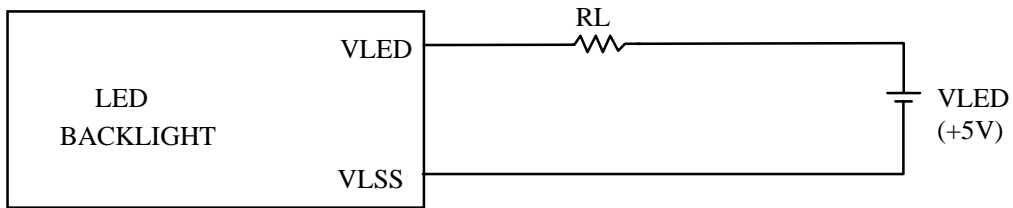


VDD - VO : LCD DRIVING VOLTAGE

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

12. ROM MAP  
SPLC 780C-02A-C

Upper 4 bit Lower 4 bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HALL	HHLH	HHHL	HHHH
LLLL				0	1	2	3	4	5	6	7	8	9	.	,	
LLLH			!	1	A	Q	S	9			P	R	W	1	0	
LLHL			"	2	B	R	b	r			E	B	E	U	W	
LLHH			#	3	C	S	C	S			M	B	W	U	Q	Y
LHLL			\$	4	D	T	d	t			3	7	6	8	0	1
LHLH			%	5	E	U	e	u			H	B	S	X	U	7
LHHL			&	6	F	V	f	v			N	*	W	8	W	0
LHHH			'	7	G	W	g	w			J	B	R	I	'	5
HLLL			(	8	H	X	h	x			P	W	0	U	"	6
HLLH			)	9	I	Y	i	y			X	Q	0	↑	"	7
HLHL			*	0	J	Z	j	z			Φ	K	U	↓	0	8
HLHH			+	1	K	0	k	0			9	Q	"	W	0	9
HALL			,	2	L	0	l	0			W	H	W	W	0	0
HHLH			=	3	M	1	m	1			B	H	0	H	*	0
HHHL			.	4	N	0	n	0			B	0	W	0	0	0
HHHH			/	5	0	0	0	0			0	T	E	-	0	0