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EVERBOUQUET INTERNATIONAL CO., LTD.

PART NO. : MC1602M-SL

FOR MESSRS. :

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ACCEPTED BY :

PROPOSED BY :

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-12780)”.

3.2 This individual specification is prior to general specifications

4. Mechanical data

- (1) NUMBER OF CHARACTERS -----16 CH * 2 LINE
- (2) MODULE SIZE -----85.0 W * 32.6 H * 15.0 T (Max) mm
- (3) EFFECTIVE AREA -----64.5 W * 16.0 H mm
- (4) CHARACTER PATTERN -----5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE -----2.96 W * 4.86 H mm
- (6) CHARACTER PITCH -----3.55 mm
- (7) DOT SIZE -----0.56 W * 0.66 H mm
- (8) DOT PITCH -----0.60 W * 0.70 H mm
- (9) VIEWING DIRECTION -----6 O’CLOCK

- (11) LED COLOR -----YELLOW-GREEN

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	0	6.0	V	-----
INPUT VOLTAGE	V _I	V _{SS}	V _{DD}	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)

NOTE (1): ELECTRO-STATIC DISCHARGE RESISTANCE IS TESTED BY CHARGING A 200PF CAPACITOR AND DISCHARGING IT BY CONTACT WITH A INTERFACE CONNECTOR PIN.

5.2 Environmental absolute maximum ratings

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	0°C	50°C	-20°C	70°C	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10~300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (2) : Ta ≤ 50°C: 90%RH MAX.

Ta > 50°C: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90% RH AT 50°C. (80% RH AT 60°C)

NOTE (3): 1G = 9.8 m/s²

6. Electrical characteristics

$$T_a = 25^{\circ}\text{C} \quad V_{DD} = 5.0 \pm 0.25 \text{ V}$$

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>
INPUT VOLTAGE	V_{IH}	-----	2.2	-----	-----	V
	V_{IL}		-----	-----	0.6	V
OUTPUT VOLTAGE (H LEVEL)	V_{OH}	$-I_{OH} = 0.2 \text{ mA}$	2.4	-----	-----	V
	V_{OL}	$I_{OL} = 1.2 \text{ mA}$	-----	-----	0.4	V
POWER SUPPLY CURRENT	I_{DD}	$V_{DD} = 5.0\text{V}$	-----	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE NOTE(1)	$V_{DD}-V_O$	DUTY= 1/16 $\Phi = 10^{\circ}$ $\theta = 0^{\circ}$ $T_a = 0^{\circ}\text{C}$	-----	4.9	-----	V
		$T_a = 25^{\circ}\text{C}$	-----	4.5	-----	V
		$T_a = 50^{\circ}\text{C}$	-----	4.1	-----	V
POWER SUPPLY CURRENT FOR LED	I_{LED}	$V_{DD} = 5.0$	-----	120	150	mA

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT $\pm 0.5\text{V}$ BY EACH MODULE.

7. Optical characteristics

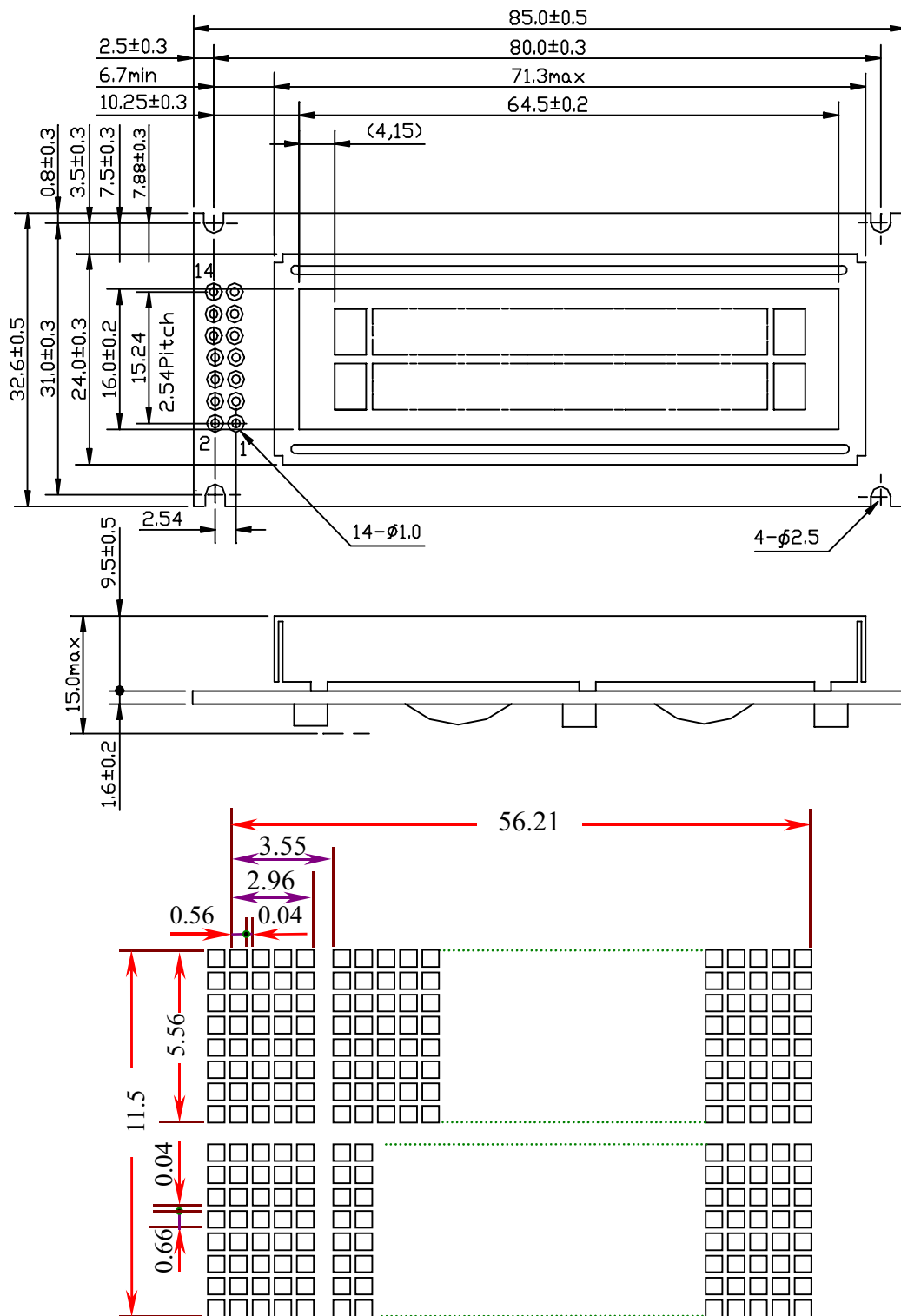
$$T_a = 25^{\circ}\text{C} \quad V_{DD} = 5.0\text{V}$$

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	$\Phi 2-\Phi 1$	$K = 2.0$	30	40	-----	deg.	2
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	3.0	4.0	-----	-----	2
RESPONSE TIME	t_r (rise)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	200	350	ms	2
	t_f (fall)	$\Phi = 10^{\circ}$ $\theta = 0^{\circ}$	-----	300	400	ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^{\circ}$ $\theta = 0^{\circ}$	5.0	-----	-----	cd/m ²	2,3

NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

NOTE (3): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM.

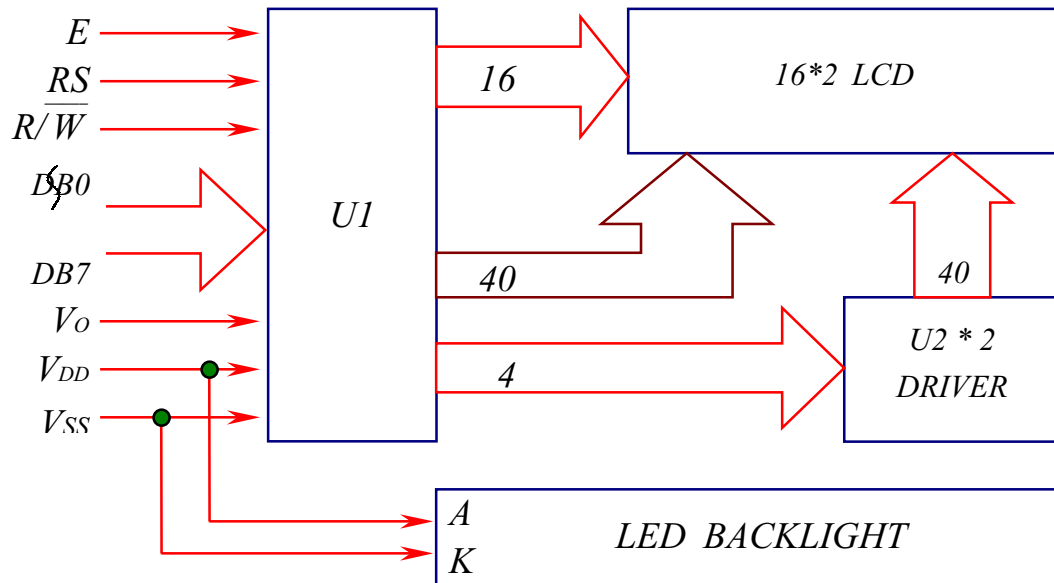
8. Outline dimension



Interface pin connection

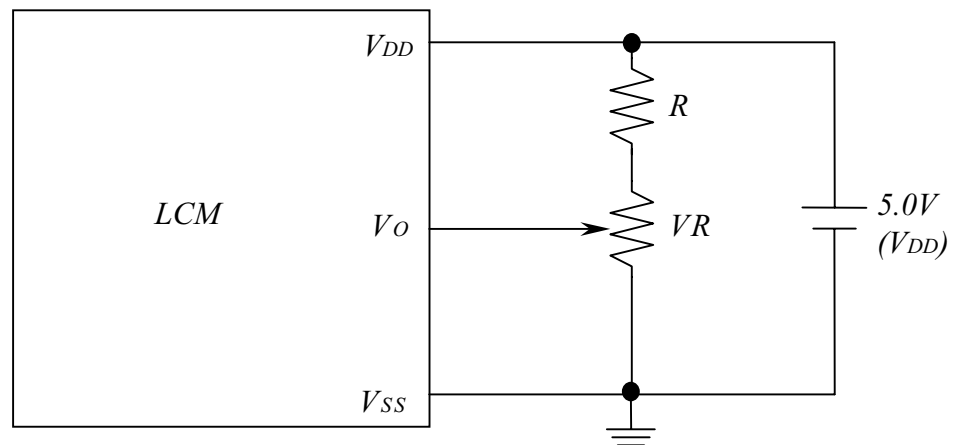
<i>PIN NO.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
SYMBOL	V _{SS}	V _{DD}	V _O	RS	R/ $\overline{W}$	E	DB0
<i>PIN NO.</i>	<i>9</i>	<i>8</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>
SYMBOL	DB1	DB2	DB3	DB4	DB5	DB6	DB7

9. Block diagram



Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
LINE 2	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F

10. Power supply for LCM



RECOMMENDED RESISTOR R: $V_{DD} - V_O \geq 1.5V$

$V_{DD} - V_O$: LCD DRIVING VOLTAGE

VR: $10K\Omega \sim 20K\Omega$