



PALM TECHNOLOGY CO., LTD.

The LCD(M) Specialist

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PART NO. : PMC1604C-SYL

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 CHARACTER ----- 16 CH * 4 LINE
- (2) MODULE SIZE ----- 72.0 W * 48.0 H * 15.0 T (Max) mm
- (3) EFFECTIVE AREA ----- 61.8 W * 25.2 H mm
- (4) CHARACTER PATTERN ----- 5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE ----- 2.96 W * 4.16 H mm
- (6) CHARACTER PITCH ----- 3.55 mm
- (7) DOT SIZE ----- 0.56 W * 0.56 H mm
- (8) DOT PITCH ----- 0.60 W * 0.60 H mm
- (9) VIEWING DIRECTION ----- 6 O’CLOCK
- (10) LCD TYPE ----- STN.YELLOW-GREEN.TRANSFLECTIVE.
- (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) |
| POWER SUPPLY FOR LED | V _{LED} | ----- | 6.0 | V | ----- |

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

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

| <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 | V _{OH} | -I _{OH} = 0.2 mA | 2.4 | ----- | ----- | V |
| | V _{OL} | I _{OH} = 1.2 mA | ----- | ----- | 0.4 | V |
| POWER SUPPLY CURRENT | I _{DD} | V _{DD} = 5.0 V | ----- | 1.5 | 2.0 | mA |
| RECOMMENDED LCD DRIVING VOLTAGE | V _{DD} -V _O DUTY = 1/16 | T _a = 0 $^\circ$ C | ----- | 4.9 | ----- | V |
| | | T _a = 25 $^\circ$ C | ----- | 4.5 | ----- | V |
| | | T _a = 50 $^\circ$ C | ----- | 4.1 | ----- | V |
| POWER SUPPLY CURRENT FOR LED | I _{LED} | V _{LED} = 5.0V | ----- | 170 | 220 | mA |

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

7. Optical characteristics

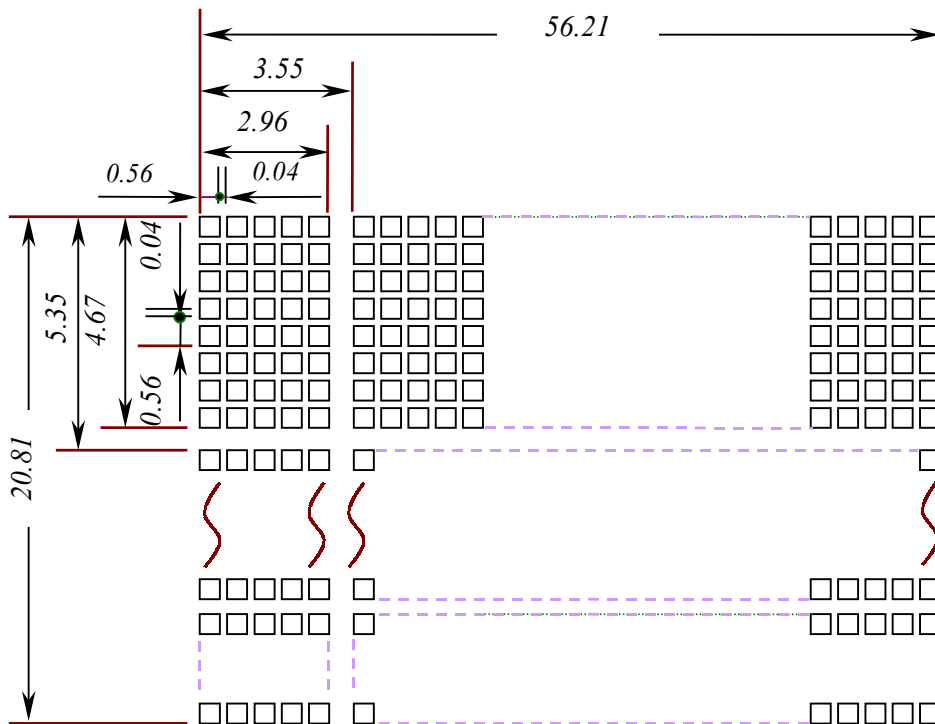
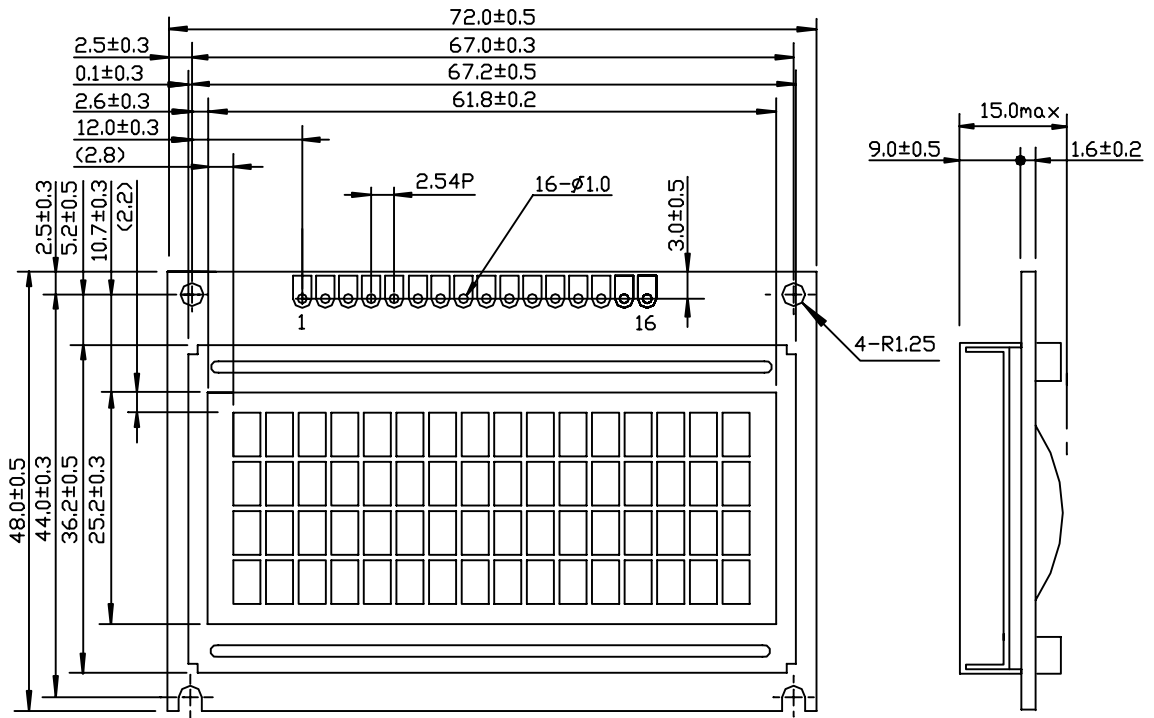
$T_a = 25\text{ }^\circ\text{C}$ $V_{DD} = 5.0\text{V}$

| <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 | Φ 2- Φ 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.

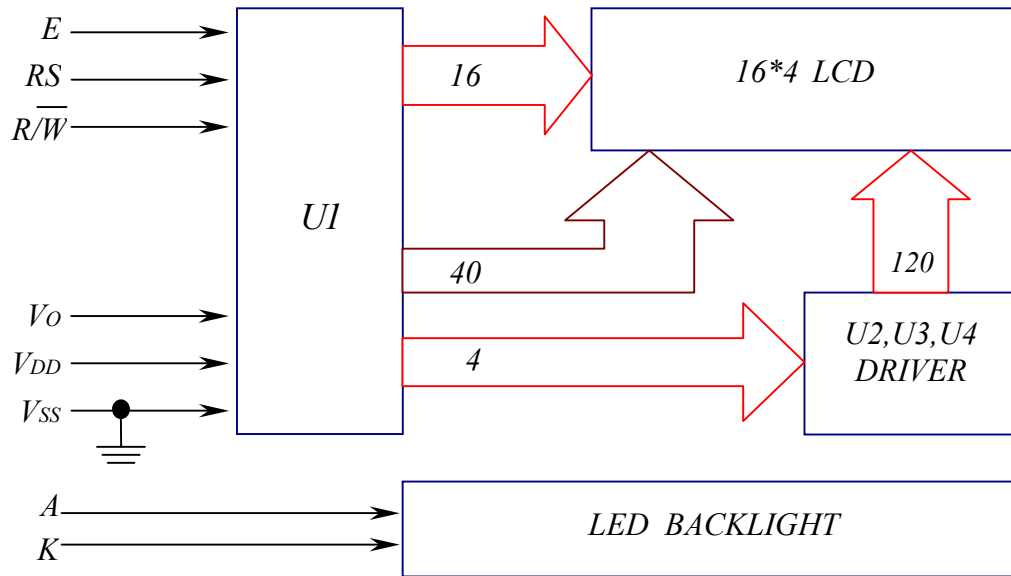
8. Outline dimension



Interface pin connection

| | | | | | | | | |
|----------------|-----------------|-----------------|----------------|-----------|-----------|-----------|-----------|-----------|
| PIN NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| SYMBOL | V _{SS} | V _{DD} | V _O | RS | R/W | E | DB0 | DB1 |
| PIN NO. | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| SYMBOL | DB2 | DB3 | DB4 | DB5 | DB6 | DB7 | A | K |

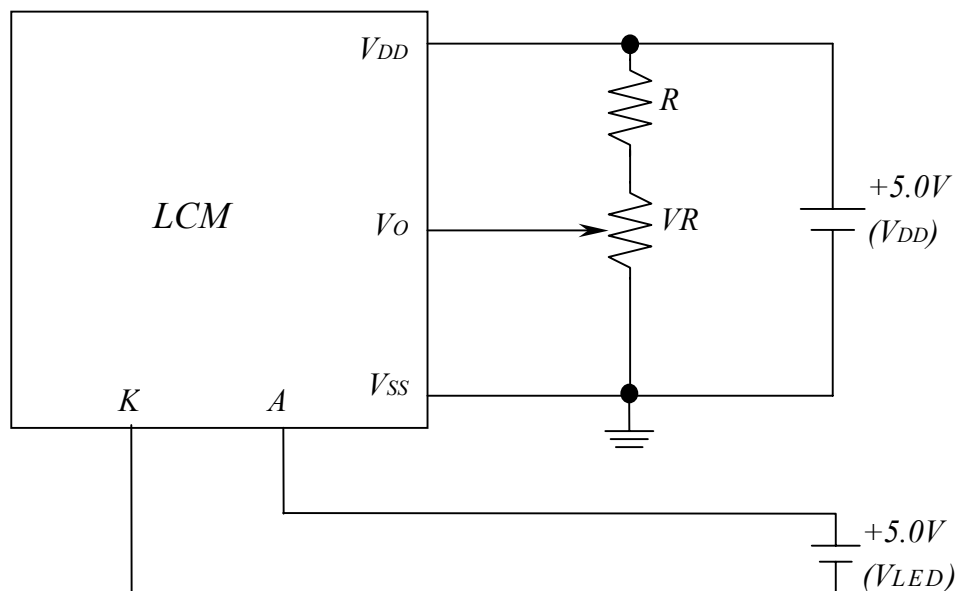
9 Block diagram



Display data address charts

| 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 |
| LINE 3 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 9A | 9B | 9C | 9D | 9E | 9F |
| LINE 4 | D0 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | DA | DB | DC | DD | DE | DF |

10. Power supply for LCM



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

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

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