

## FEATURES

| AVAILABLE OPTIONS          | CHARACTERISTICS                                  | CODE      | No. |
|----------------------------|--|-----------|-----|
| DISPLAY FORMAT             | 16 Characters by 2 Lines                         | FC1602N01 | 1~6 |
| POLARIZER OPTIONS          | Positive Transflective                           | F         | 7   |
| BACKLIGHT TYPE OPTIONS     | Edge Type LED Backlight (Long life span version) | H         | 8   |
| BACKLIGHT COLOR OPTIONS    | Yellow-Green color                               | Y         | 9   |
| LCD PANEL OPTIONS          | Yellow-Green STN                                 | Y         | 10  |
| VIEWING ANGLE OPTIONS      | 6:00 ( Bottom )                                  | B         | 11  |
| TEMPERATURE RANGE OPTIONS  | -20°C ~ 70°C, Single Supply Voltage              | W         | 12  |
| SUGGESTED DRIVING VOLTAGE  | V <sub>lcm</sub> = 5.0V V <sub>led</sub> = 5.0V  | 5         | 13  |
| SUGGESTED LED DRIVING MODE | PIN15: LED+, PIN16:LED-                          | 1         | 14  |
| CONTROLLER ▲1              | SPLC780D+SPLC100A                                | L         | 15  |
| FONT MAP CODE              | R Version  | R         | 16  |
| DRIVING DUTY               | 1/16   | —         | —   |
| DRIVING BIAS               | 1/5  | —         | —   |

▲1 Please ask for datasheet of the mentioned controller from FORDATA or FORDATA's authorized distributors. You can find the related information including AC & DC characteristics, Write & Read Timing diagram, Instruction table and descriptions, DDRAM & CGRAM, Rest Function and so on from the datasheet of controller.

▲1 You can ask for the example of software program (C language) from FORDATA or FORDATA's authorized distributors.


## MECHANICAL SPECIFICATIONS

|                |               |    |                 |               |    |
|----------------|---------------|----|-----------------|---------------|----|
| OVERALL SIZE   | 80.0W x 36.0H | mm | THICKNESS       | max 13.5      | mm |
| VIEWING AREA   | 64.5W x 13.8H | mm | HOLE-HOLE       | 75.0W x 31.0H | mm |
| CHARACTER SIZE | 2.95W x 4.35H | mm | CHARACTER PITCH | 0.7W x 0.7H   | mm |
| DOT SIZE       | 0.55W x 0.50H | mm | DOT PITCH       | 0.05W x 0.05H | mm |

## ABSOLUTE MAXIMUM RATINGS

| ITEM                  | SYMBOL           | CONDITION | MIN                   | TYP | MAX                  | UNIT |
|-----------------------|------------------|-----------|-----------------------|-----|----------------------|------|
| POWER SUPPLY ( LOGIC) | V <sub>dd</sub>  | 25°C      | -0.3                  | —   | 7.0                  | V    |
| POWER SUPPLY (LCD)    | V <sub>0</sub>   | 25°C      | V <sub>dd</sub> -13.5 | —   | V <sub>dd</sub> +0.3 | V    |
| INPUT VOLTAGE         | V <sub>in</sub>  | 25°C      | -0.3                  | —   | V <sub>dd</sub> +0.3 | V    |
| OPERATING TEMPERATURE | V <sub>opr</sub> | —         | -20                   | —   | 70                   | °C   |
| STORAGE TEMPERATURE   | V <sub>stg</sub> | —         | -30                   | —   | 80                   | °C   |

## ELECTRONIC CHARACTERISTICS \*

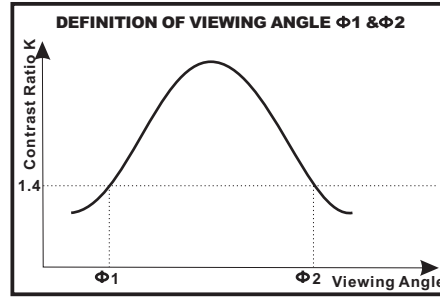
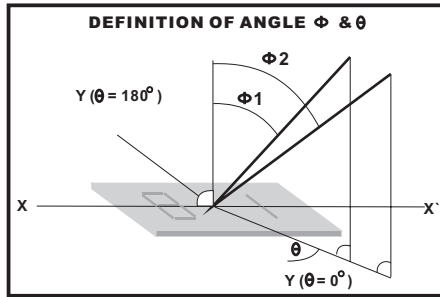
| ICONS   | ITEM                          | SYMBOL   | CONDITION           | MIN  | TYP  | MAX  | UNIT |
|---|-------------------------------|--|---------------------|------|------|------|------|
|   | INPUT VOLTAGE                 | V <sub>lcm</sub> = V <sub>dd</sub>                     | —                   | —    | 5.0  | —    | V    |
|   | SUPPLY CURRENT                | I <sub>dd</sub>  | V <sub>dd</sub> =5V | —    | 1.5  | —    | mA   |
|  | DRIVING VOLTAGE FOR LCD PANEL | V <sub>lcd</sub> = (V <sub>dd</sub> - V <sub>0</sub> ) | -20°C               | 4.30 | —    | 5.00 | V    |
|   |                               |  | 0°C                 | 4.30 | —    | 4.85 |      |
|   |                               |  | 25°C                | 4.30 | 4.50 | 4.85 |      |
|   |                               |  | 50°C                | 4.30 | —    | 4.85 |      |
|   |                               |  | 70°C                | 4.20 | —    | 4.70 |      |

\* All data are recorded from TEST REPORT #FSYP000700078

**LCD CHARACTERISTICS**

**FOR STN/FSTN TYPE LCD Panel (TA=25 °C, Vdd=5.0V ± 0.5V)**

| ICONS | ITEM                | SYMBOL            | CONDITION | MIN | TYP | MAX | UNIT |
|-------|---------------------|-------------------|-----------|-----|-----|-----|------|
|       | VIEWING ANGLE       | $\Phi 2 - \Phi 1$ | K=4       | 40  | —   | —   | deg  |
|       |                     | $\theta$          |           | 60  |     |     |      |
|       | CONTRAST RATIO      | K                 | —         | —   | 10  | —   | —    |
|       | RESPONSE TIME(RISE) | TR                | —         | —   | 150 | 250 | ms   |
|       | RESPONSE TIME(FALL) | TF                | —         | —   | 150 | 250 | ms   |



**LED CHARACTERISTICS**

| ICONS | ITEM                          | SYMBOL      | CONDITION     | MIN | TYP | MAX | UNIT              |
|-------|-------------------------------|-------------|---------------|-----|-----|-----|-------------------|
|       | LED FORWARD VOLTAGE           | Vf          | 25°C Vr=5.0V  | —   | 3.0 | —   | V                 |
|       | LED FORWARD CURRENT <b>▲2</b> | If          | 25°C          | —   | 5   | —   | mA                |
|       | LED REVERSE CURRENT           | Ir          | 25°C Vr=5.0V  | —   | —   | 10  | μA                |
|       | LED PEAK WAVE LENGTH          | λp          | 25°C If = 5mA | 569 | —   | 575 | nm                |
|       | LED BRIGHTNESS (WITHOUT LCD)  | Lv          | 25°C If = 5mA | —   | 140 | —   | cd/m <sup>2</sup> |
|       | LED BRIGHTNESS UNIFORMITY     | Lvmin/Lvmax | 25°C If = 5mA | 70  | —   | —   | Ratio             |
|       | LED LIFE TIME                 | —           | 25°C If = 5mA | 20K | —   | —   | Hours             |

**▲2** 请注意, 驱动背光考虑的是恒流而不是恒压. 所以, 这个数值非常重要!

**YOUR ATTENTION:** It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

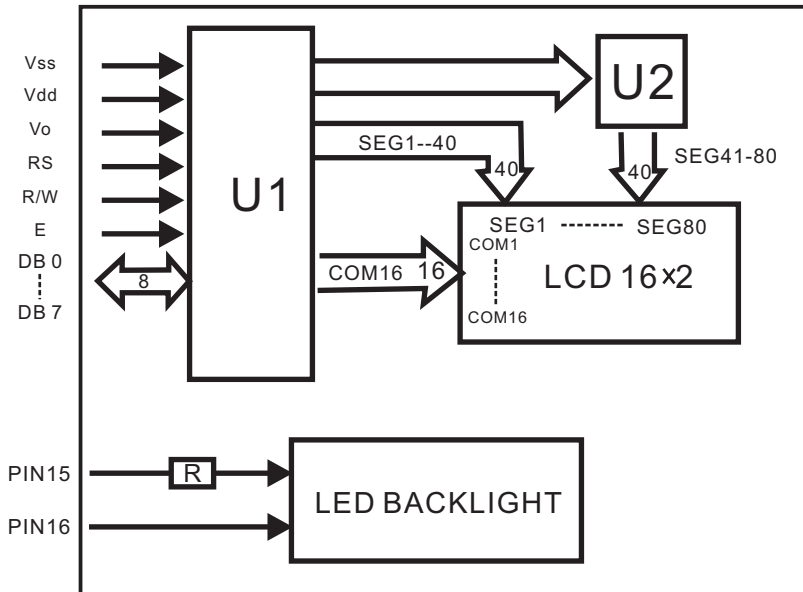
\* 当工作温度高于25°C时, Ifm, Ifp和Pd必须降低; 电流降低率是 -0.36\*1mA/°C (直流驱动), 或-0.86\*1 mA/°C (脉冲驱动), 功率降低率是-75\*1mW/°C. 产品工作电流不能大于对应的工作条件温度Ifm或Ifpr的60%.  
 For operation above 25°C, The Ifm Ifp & Pd must be derated, the Current derating is -0.36\*1mA/°C for DC drive and -0.86\*1 mA/°C for Pulse drive, the power dissipation is -75\*1 mW/°C The product working current must not be more than 60% of the Ifm or Ifp according to the working temperature.



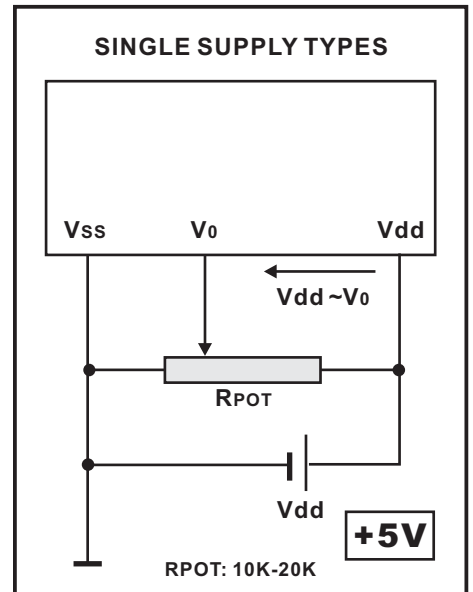
**PIN ASSIGNMENT**

| PIN | SYMBOL | DESCRIPTION            | REMARKS |
|-----|--------|------------------------|---------|
| 1   | Vss    | GND                    |         |
| 2   | Vdd    | Power supply for LCM   | 5.0V    |
| 3   | V0     | Contrast Adjust        |         |
| 4   | RS     | Register Select Signal |         |
| 5   | R/W    | Data Read / Write      |         |
| 6   | E      | Enable Signal          |         |
| 7   | DB0    | Data bus line          |         |
| 8   | DB1    | Data bus line          |         |
| 9   | DB2    | Data bus line          |         |
| 10  | DB3    | Data bus line          |         |
| 11  | DB4    | Data bus line          |         |
| 12  | DB5    | Data bus line          |         |
| 13  | DB6    | Data bus line          |         |
| 14  | DB7    | Data bus line          |         |
| 15  | LED+   | Power supply for BKL   | 5.0V    |
| 16  | LED-   | Power supply for BKL   |         |

**BLOCK DIAGRAM**



**POWER SUPPLY DIAGRAM**



| Upper<br>4bit<br>Lower<br>4bit | LLLL             | LLLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHLH | HHHL | HHHH |
|--------------------------------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| LLLL                           | CG<br>RAM<br>(1) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LLLH                           | (2)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LLHL                           | (3)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LLHH                           | (4)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LHLL                           | (5)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LHLH                           | (6)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LHHL                           | (7)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LHHH                           | (8)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HLLL                           | (1)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HLLH                           | (2)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HLHL                           | (3)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HLHH                           | (4)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HHLL                           | (5)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HHLH                           | (6)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HHHL                           | (7)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HHHH                           | (8)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |





| FULL-SIZED PACKAGE           |
|------------------------------|
| 45 PCS/BOX                   |
| 10 BOXES/CARTON              |
| 450 PCS/CARTON               |
| 13.00 KGS/CTN(G.W.)          |
| 0.054 M <sup>3</sup> /CARTON |

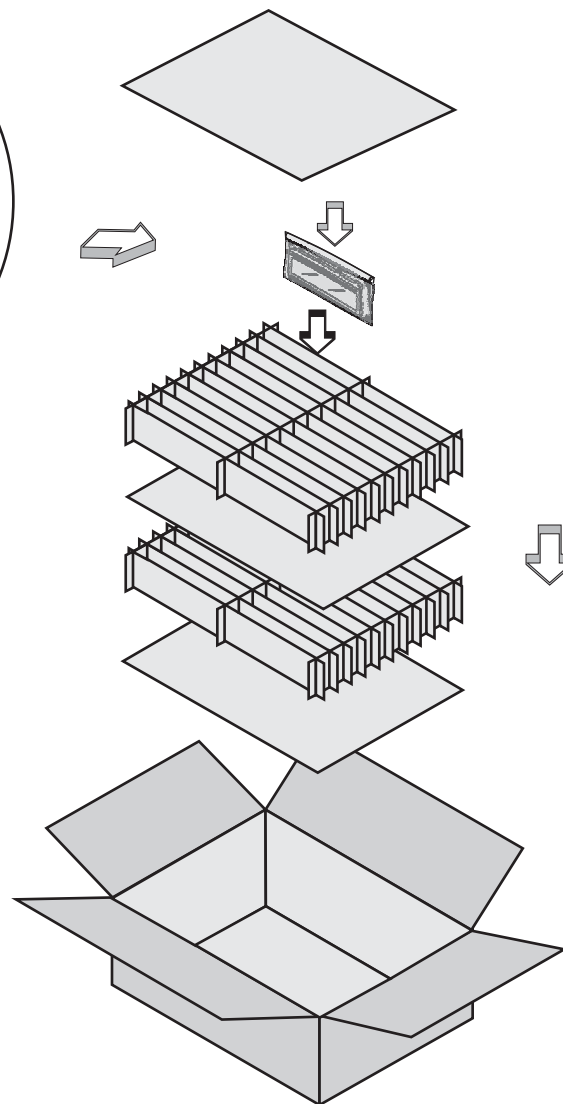
| HALF-SIZED PACKAGE           |
|------------------------------|
| 45 PCS/BOX                   |
| 5 BOXES/CARTON               |
| 225 PCS/CARTON               |
| 6.00 KGS/CTN(G.W.)           |
| 0.027 M <sup>3</sup> /CARTON |

| PACKING DECLARATION  |
|--|
| 1. This packaging information is for reference only. The actual information is subject to the actual packaging. Especially for packaging of LCL, tolerances may exist.                           |
| 2. FORDATA will not be responsible for quality problems caused by unnormal transportation conditions (including but not limited to climate factors or human factors, such as improper handling). |



BOX 

CARTON 



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