

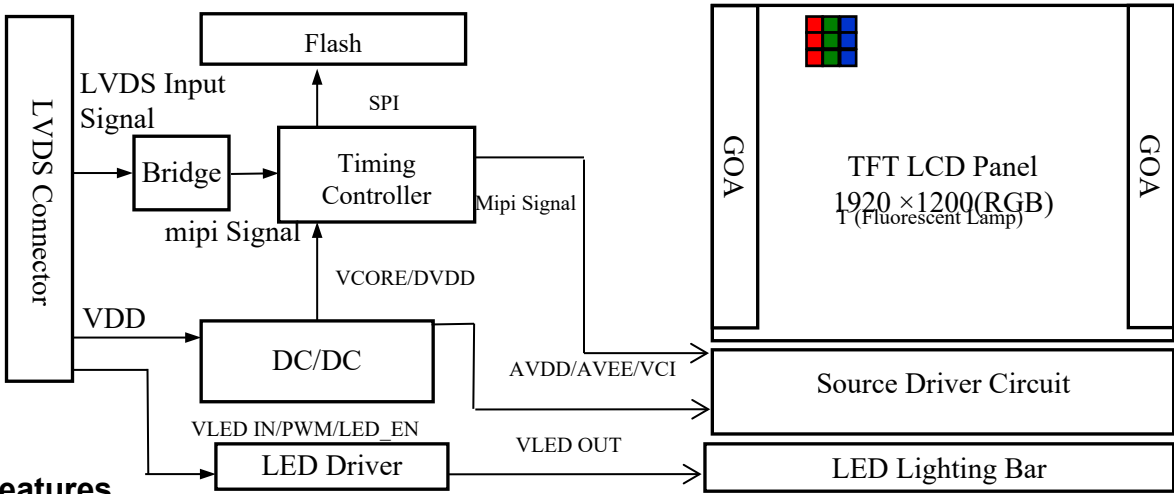
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|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

## 1.0 GENERAL DESCRIPTION

### DCE121MDL-N80-500

is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. It is a transmissive type display operating in the normal black. The TFT-LCD has a **12.1** inch diagonally measured active area with 1920×1200 resolutions (1920 horizontal by 1200 vertical pixel arrays). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this panel can display 16.7M colors. The TFT-LCD panel used for this module is adapted for a low reflection and higher Luminance type.

<Figure 1. FOG>



### 1.2 Features

- LVDS Interface with 2 pixel / clock
- 8bit color depth, color gamut typ 70% @ C light
- Single LED lighting bar (Bottom side/Horizontal Direction)
- Both Data enable , Hsync , Vsync signal
- Green product (RoHS & Halogen free product)
- On board LED driving circuit
- Low driving voltage and low power consumption
- Adjust brightness with PWM pin
- Wide viewing angle (U/D/L/R): 85/85/85/85
- RoHS Compliant

### 1.3 Application

- Automotive CID

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|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121MDL-N80-500 Specification Rev.2 | 4 OF 23 |

|                                                                                 |                   |       |            |
|---------------------------------------------------------------------------------|-------------------|-------|------------|
|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

## 2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage values are listed in Table 2. All the measurements should be operated with driver IC and FPC mounted.

<Table 2. Absolute Maximum Ratings>

| Parameter                           | Symbol          | Min. | Max. | Unit | Remarks  |
|-------------------------------------|-----------------|------|------|------|----------|
| Supply Voltage                      | VDDIN           | -0.3 | +3.3 | V    | Note 1&2 |
| Operating Temperature<br>(Humidity) | T <sub>OP</sub> | -20  | +70  | °C   |          |
|                                     | RH              | -    | 90   | %    | At 60°C  |
| Storage Temperature<br>(Humidity)   | T <sub>ST</sub> | -30  | +80  | °C   |          |
|                                     | RH              | -    | 90   | %    | At 60°C  |

**Note:**

1. These range above is maximum value not the actual operating temperature . Actual Operating temperature is no more than 40°C and temperature refers to the LCM surface temperature;
2. BOE is not responsible for product problems beyond the use conditions.

|              |                                       |         |
|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121WUM-N80-500 Specification Rev.2 | 5 OF 23 |

|                                                                                 |                   |       |            |
|---------------------------------------------------------------------------------|-------------------|-------|------------|
|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

1.4 General Specification

The followings are general specifications of the **DCE121WUM-N80-500**

<Table 1. General Specifications> [Ta= 25±2°C]

| Parameter           | Specification                | Unit   | Remark         |
|---------------------|------------------------------|--------|----------------|
| Dimensional Outline | 268.8288(H) ×171.918(V)      | mm     | Without/PCB    |
| Active Area         | 262.8288(H) ×164.268(V)      | mm     | Note 1.1       |
| Number of Pixels    | 1920(H)×RGB×1200 (V)         | pixels | -              |
| Pixel Pitch         | 136.89(H)×136.89(V)          | μm     | -              |
| Pixel Arrangement   | RGB Vertical Stripe          | -      | -              |
| Display Colors      | 16.7M                        | -      | -              |
| Color Gamut         | 70% (Typ.)                   |        | CF @C<br>Light |
| Display Mode        | Normally Black               | -      | -              |
| Viewing Direction   | U/D/L/R Typ. 85/85/85/85     | Deg.   | CR>=10         |
| interface           | 2-port LVDS (8bit/SYNC MODE) | -      | -              |
| S-IC                | FT8201P                      |        | Note 1.2       |

**Note 1.1:** H: horizontal length, V: vertical length.

**Note 1.2:** Compatible IC for this product include FT8201P, Please contact IC manufacturer and vetify it when you choose any one of them. The information we suppose about IC just for reference.

|              |                                       |         |
|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121WUM-N80-500 Specification Rev.2 | 6 OF 23 |

|                                                                                 |                   |       |            |
|---------------------------------------------------------------------------------|-------------------|-------|------------|
|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

<Table 3. LCD FOG Electrical Specifications >

| Parameter           | Symbol | Values |      |      | Unit | Notes                |
|---------------------|--------|--------|------|------|------|----------------------|
|                     |        | Min.   | Typ. | Max. |      |                      |
| Input Voltage       | VDD    | 3.0    | 3.3  | 3.6  | V    | Ta = 25 °C<br>Note 1 |
| Input Current       |        | -      | -    | -    | MA   |                      |
| Current Consumption | VDD    | -      | -    | -    | W    |                      |

Note:

1. Stresses exceed the absolute maximum ratings listed above may cause permanent damage to IC. The IC should be operated under the condition of DC/AC characteristics for normal operation. If this condition is not met, the IC may be malfunctioned, or the reliability may drop. Parameters are valid in the operating temperature range unless otherwise specified. All voltages are with respect to VSS unless otherwise noted.

2.This current test is the actual current value tested under the L255 white pattern, for reference only

|              |                                       |         |
|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121WUM-N80-500 Specification Rev.2 | 7 OF 23 |

|                                                                                 |                   |       |            |
|---------------------------------------------------------------------------------|-------------------|-------|------------|
|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

4.0 INTERFACE CONNECTION.

Electrical Interface Connection

The electronics interface connector is FH345RJ-45S-0.5SH(50) or Compatible.  
The connector interface pin assignments are listed in Table 4.

< Table 4. Pin Assignments for the Interface Connector >

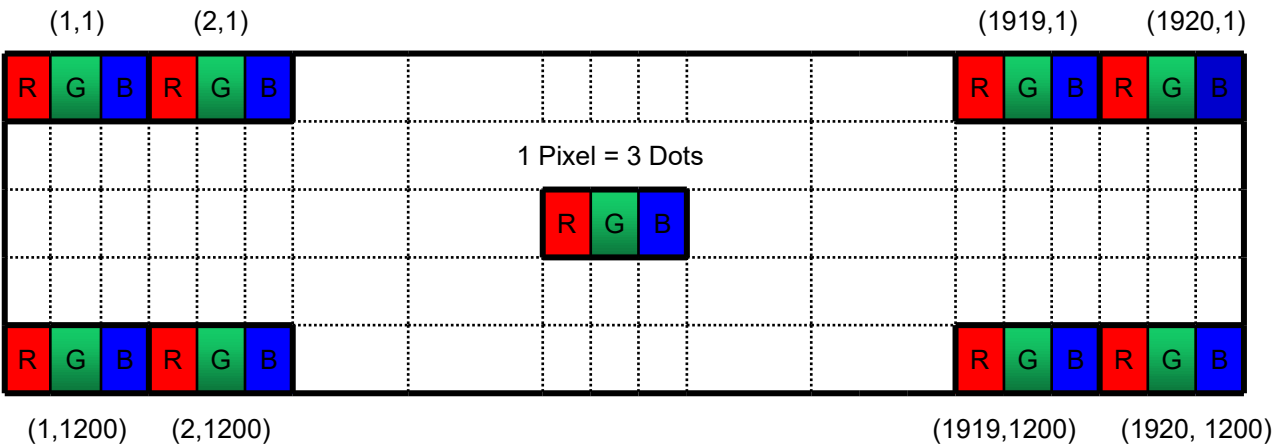
| Pin No. | Symbol  | Description               | Pin No. | Symbol      | Description               |
|---------|---------|---------------------------|---------|-------------|---------------------------|
| 1       | VLEDIN  | Power for LED backlight   | 25      | OLVCLKP     | LVDS Positive CLK signal  |
| 2       | VLEDIN  | Power for LED backlight   | 26      | OLVCLKN     | LVDS Negative CLK signal  |
| 3       | VLEDIN  | Power for LED backlight   | 27      | GND         | Ground                    |
| 4       | PWM     | PWM For LED               | 28      | OLV2P       | LVDS Positive data signal |
| 5       | LED EN  | LED ENABLE                | 29      | OLV2N       | LVDS Negative data signal |
| 6       | GND     | Ground                    | 30      | GND         | Ground                    |
| 7       | ELV3P   | LVDS Positive data signal | 31      | OLV1P       | LVDS Positive data signal |
| 8       | ELV3N   | LVDS Negative data signal | 32      | OLV1N       | LVDS Negative data signal |
| 9       | GND     | Ground                    | 33      | GND         | Ground                    |
| 10      | ELVCLKP | LVDS Positive CLK signal  | 34      | OLV0P       | LVDS Positive data signal |
| 11      | ELVCLKN | LVDS Negative CLK signal  | 35      | OLV0N       | LVDS Negative data signal |
| 12      | GND     | Ground                    | 36      | GND         | Ground                    |
| 13      | ELV2P   | LVDS Positive data signal | 37      | I2C_SDA(NC) | No Connection             |
| 14      | ELV2N   | LVDS Negative data signal | 38      | I2C_SCL(NC) | No Connection             |
| 15      | GND     | Ground                    | 39      | MCU_RST(NC) | No Connection             |
| 16      | ELV1P   | LVDS Positive data signal | 40      | TP_RST(NC)  | No Connection             |
| 17      | ELV1N   | LVDS Negative data signal | 41      | VDDIN       | Power Supply              |
| 18      | GND     | Ground                    | 42      | VDDIN       | Power Supply              |
| 19      | ELV0P   | LVDS Positive data signal | 43      | VDDIN       | Power Supply              |
| 20      | ELV0N   | LVDS Negative data signal | 44      | VDDIN       | Power Supply              |
| 21      | GND     | Ground                    | 45      | VDDIN       | Power Supply              |
| 22      | OLV3P   | LVDS Positive data signal |         |             |                           |
| 23      | OLV3N   | LVDS Negative data signal |         |             |                           |
| 24      | GND     | Ground                    |         |             |                           |

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|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121WUM-N80-500 Specification Rev.2 | 8 OF 23 |

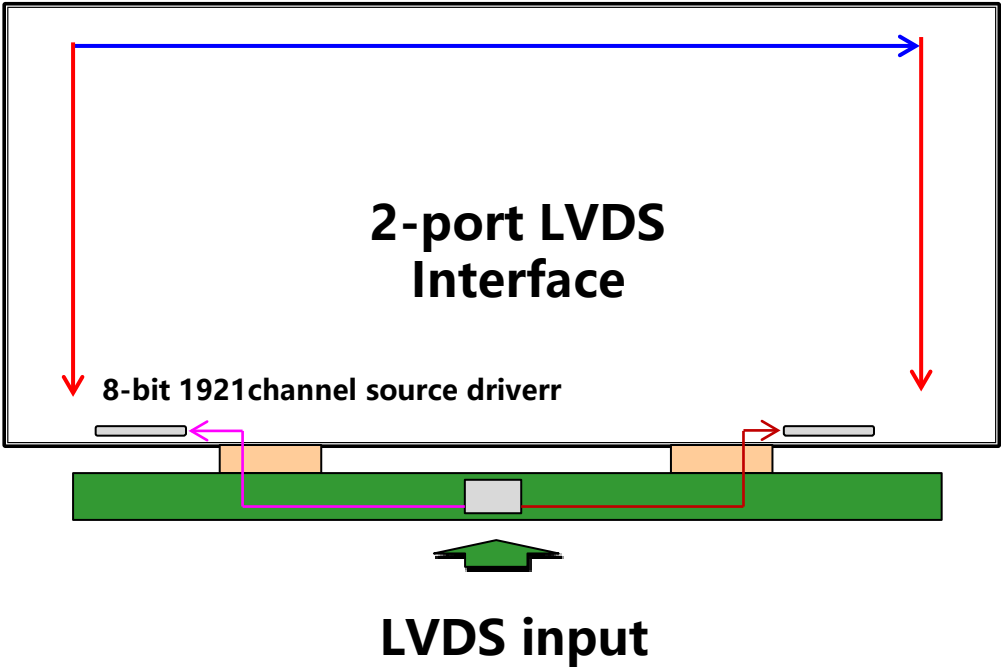
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|---------------------------------------------------------------------------------|-------------------|-------|------------|
|  | PRODUCT GROUP     | REV   | ISSUE DATE |
|                                                                                 | DCE121WUM-N80-500 | Rev.2 | 2025.07.07 |

### 4.2 Data Input Format

<Figure 2. Pixel Format>



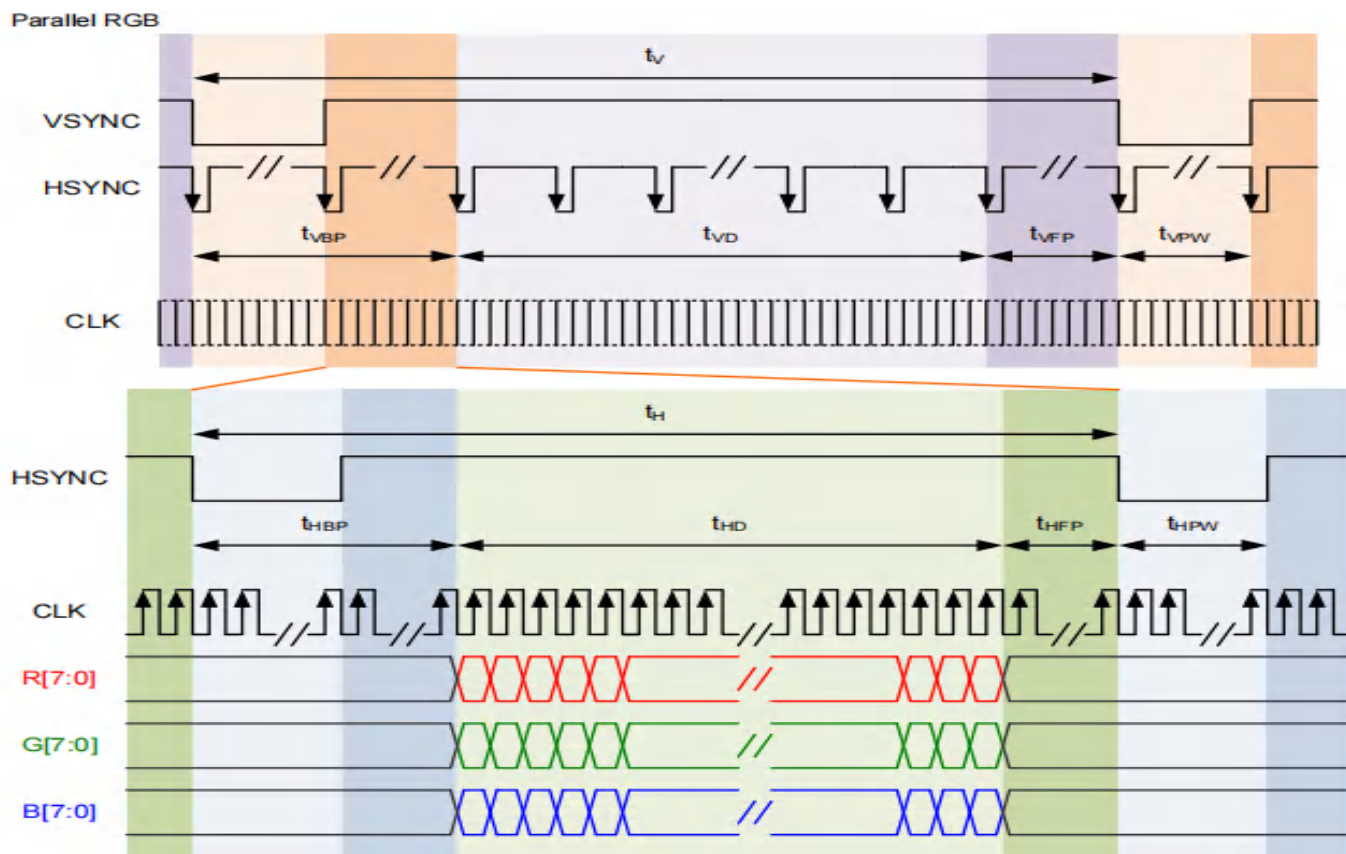
<Figure 3. Scan direction>



|              |                                       |         |
|--------------|---------------------------------------|---------|
| SPEC. NUMBER | SPEC. TITLE                           | PAGE    |
|              | DCE121WUM-N80-500 Specification Rev.2 | 9 OF 23 |

### 4.3 LVDS Interface Timing

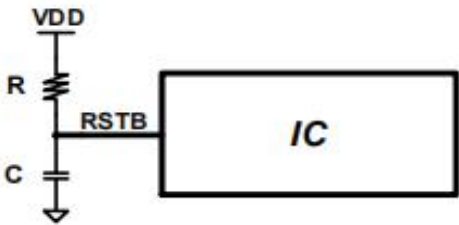
< Figure 4. Timing Chart of Signals in LVDS Interface SYNC Mode >



| 1920x1200(Only 2-Port)   |        |       |      |      |      |              |
|--------------------------|--------|-------|------|------|------|--------------|
| Parameter                | Symbol | Value |      |      | Unit | Note         |
|                          |        | Min.  | Typ. | Max. |      |              |
| CLK frequency            | tcLK   | 150   | 151  | -    | MHz  |              |
| Horizontal blanking time | tHBT   | 80    | 100  | 255  | tcLK | tHBP+tHFP    |
| Horizontal back porch    | tHBP   | 36    | 40   | 60   | tcLK | Include tHPw |
| Horizontal display area  | tHD    |       | 1920 |      | tCLK |              |
| Horizontal front porch   | tHFP   | 40    | 60   | 255  | tcLk |              |
| Horizontal period        | tH     | 2000  | 2020 | 2220 | tcLK |              |
| Horizontal pulse width   | tHPW   | 2     | 10   | 20   | tcLK |              |
| Vertical blanking time   | tVBT   | 20    | 40   | 255  | tH   | tVBP+tVFP    |
| Vertical back porch      | tVBP   | 10    | 20   | 168  | tH   | Include tvpw |
| Vertical display area    | tVD    |       | 1200 |      | tH   |              |
| Vertical front porch     | tVFP   | 10    | 20   | 255  | tH   |              |
| Vertical period          | tV     | 1200  | 1240 | 1300 | tH   |              |
| Vertical pulse width     | tvpw   | -     | 2    | -    | tH   |              |
| Frame rate               | FR     | 60    | 60   | 60   | Hz   |              |

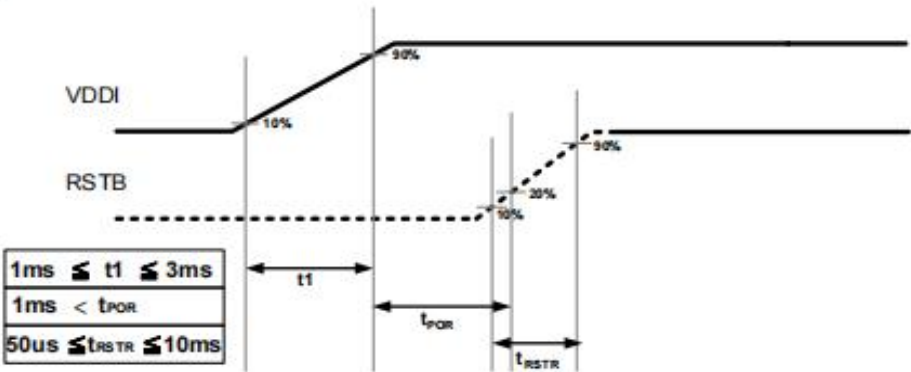
4.4 Reset Timing:

Setting RSTB pin to “L” (hardware reset) can initialize internal function. Generally, VDDI is not stable at the time that the system power is just turned ON. The hardware reset is required to initialize internal registers after VDDI is stable. Initialized by RSTB pin is essential before operating. There are two suggestions for the hardware reset connection. One is RSTB controlled by MCU. The other is connecting an external RC circuit with RSTB pin, and the recommended RC circuit is 47 KΩ ~ 200KΩ + 0.47uF. (For 1ms ≤ t1 ≤3ms)



Recommend power on reset timing is shown as below.

\* For RSTB pin +RC:



\* For RSTB pin controlled by external MCU:

