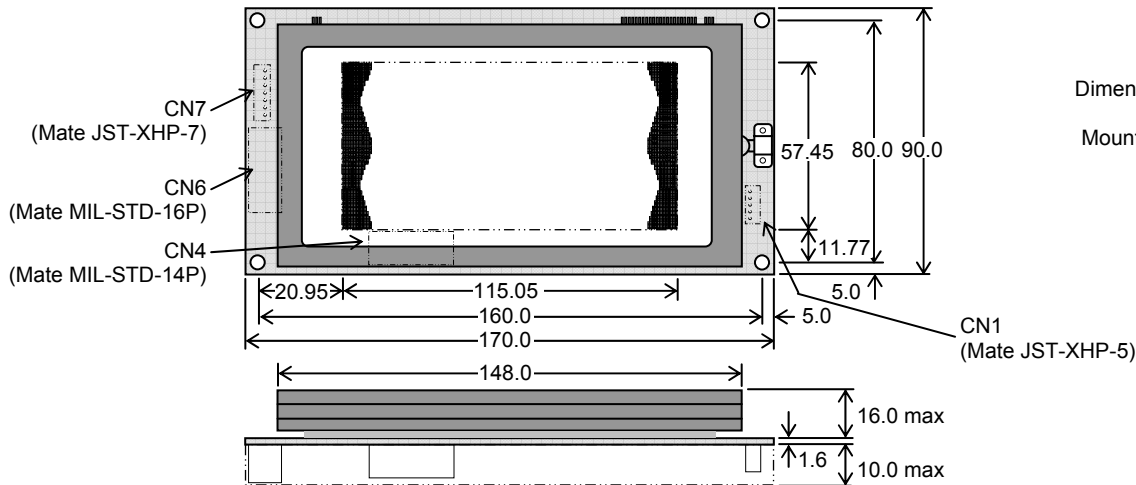


# Dot Graphic VFD Module

## GU256x128D-3900

- ❑ 256x128 Dot Graphic
- ❑ 5V Supply
- ❑ High Brightness Blue Green Display
- ❑ Operating Temp -40°C to +85°C
- ❑ High Speed 8 Bit Parallel Interface
- ❑ Asynchronous Serial Interface

The module includes the Vacuum Fluorescent Display glass, VF drivers and micro-controller ICs with refresh RAM, character generator and interface logic. The high speed 8 bit parallel interface is 5V TTL/CMOS compatible suitable for connection to a host CPU bus. The asynchronous serial interface accepts baud rates up to 38400, none parity. User defined characters and many control commands are available.



Dimensions in mm & subject to tolerances.  
Mounting holes 3.5mm dia.

### ELECTRICAL SPECIFICATION

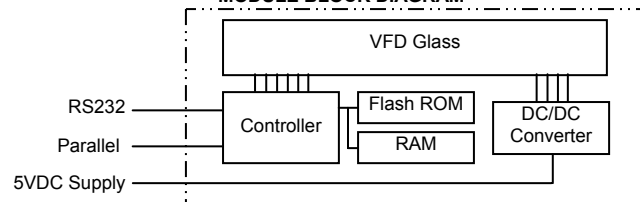
| Parameter                | Symbol | Value         | Condition   |
|--------------------------|--------|---------------|-------------|
| Power Supply Voltage     | VCC    | 5.0VDC +/- 5% | GND=0V      |
| Power Supply Current     | ICC    | 850mADC typ.  | Vcc=5V      |
| RS232 Serial High Input  | VIH    | 3.0VDC min.   | VCC=5V      |
| RS232 Serial Low Input   | VIL    | -3.0VDC max.  | VCC=5V      |
| RS232 Serial High Output | VOH    | 5.0VDC min.   | IOH = -2mA  |
| RS232 Serial Low Output  | VOL    | -5.0VDC max.  | IOL = 4mA   |
| Logic High Input         | VIH    | 0.8VDC min.   | VCC=5V      |
| Logic Low Input          | VIL    | 0.2VDC max.   | VCC=5V      |
| Logic High Output        | VOH    | 3.5VDC min.   | IOH = -10uA |
| Logic Low Output         | VOL    | 0.6VDC max.   | IOL = 4mA   |

The power on rise time should be less than 100ms. The inrush current at power on can be 2 x ICC.

### OPTICAL and ENVIRONMENTAL SPECIFICATIONS

| Parameter                           | Value                           |
|-------------------------------------|---------------------------------|
| Display Area (XxY mm)               | 115.05 x 57.45                  |
| Dot Size/Pitch (XxY mm)             | 0.3 x 0.3 / 0.45 x 0.45         |
| Luminance                           | 500 cd/m <sup>2</sup> Typ.      |
| Colour of Illumination              | Blue-Green (Filter for colours) |
| Operating Temperature               | -40°C to +85°C                  |
| Storage Temperature                 | -40°C to +85°C                  |
| Operating Humidity (non condensing) | 20 to 80% RH @ 25°C             |

### MODULE BLOCK DIAGRAM



### SOFTWARE COMMANDS

| Command Name                   | Hex      |
|--------------------------------|----------|
| Back Space                     | 08       |
| Horizontal Tab                 | 09       |
| Line Feed                      | 0A       |
| Cursor Home*                   | 0B       |
| Clear Display                  | 0C       |
| Carriage Return                | 0D       |
| Escape                         | 1B + >   |
| > Specify Download Character   | +25      |
| > Download Char. Definition    | +26      |
| > Delete Download Character    | +3F      |
| > Initialize Display           | +40      |
| > Define International Font    | +52      |
| > Define Char. Code Type       | +74      |
| Overwrite Mode                 | 1F 01    |
| Vertical Scroll Mode           | 1F 02    |
| Horizontal Scroll Mode         | 1F 03    |
| Cursor Set                     | 1F 24    |
| RAM Macro Processing           | 1F 3A    |
| Display Brightness             | 1F 58    |
| Macro Execution                | 1F 5E    |
| Enable/Disable Reverse Display | 1F 72    |
| Horizontal Scroll Speed        | 1F 73    |
| Write Mixture Display Mode     | 1F 77    |
| Dot Pattern Draw               | 1F 28 64 |
| User Set Up Mode Start         | 1F 28 65 |
| I/O Port Control               | 1F 28 70 |

See full data sheet for additional commands.

### RS232 INTERFACE (CN7)

| Pin | Sig |
|-----|-----|
| 1   | RXD |
| 2   | DTR |
| 3   | DSR |
| 4   | TXD |
| 5   | NC  |
| 6   | VCC |
| 7   | GND |

### PARALLEL INTERFACE (CN6)

| Pin | Sig | Pin | Sig   |
|-----|-----|-----|-------|
| 1   | D7  | 9   | GND   |
| 2   | D6  | 10  | /WR   |
| 3   | D5  | 11  | GND   |
| 4   | D4  | 12  | READY |
| 5   | D3  | 13  | GND   |
| 6   | D2  | 14  | GND   |
| 7   | D1  | 15  | VCC   |
| 8   | D0  | 16  | VCC   |

### I/O PORT CONNECTOR (CN4)

| Pin | Sig   | Pin | Sig   |
|-----|-------|-----|-------|
| 1   | Bit 7 | 8   | Bit 0 |
| 2   | Bit 6 | 9   | Bit 3 |
| 3   | Bit 5 | 10  | Bit 2 |
| 4   | Bit 4 | 11  | Bit 1 |
| 5   | Bit 3 | 12  | Bit 0 |
| 6   | Bit 2 | 13  | VCC   |
| 7   | Bit 1 | 14  | GND   |

### DISPLAY ADDRESS SELECT

| SW1 | SW2 | SW3 | SW4 | Address |
|-----|-----|-----|-----|---------|
| OFF | OFF | OFF | OFF | 00H     |
| ON  | OFF | OFF | OFF | 01H     |
| OFF | ON  | OFF | OFF | 02H     |
| ON  | ON  | OFF | OFF | 03H     |
| OFF | OFF | ON  | OFF | 04H     |
| ON  | OFF | ON  | OFF | 05H     |
| OFF | ON  | ON  | OFF | 06H     |
| ON  | ON  | ON  | OFF | 07H     |
| OFF | OFF | OFF | ON  | 08H     |
| ON  | OFF | OFF | ON  | 09H     |
| OFF | ON  | OFF | ON  | 0AH     |
| ON  | ON  | OFF | ON  | 0BH     |
| OFF | OFF | ON  | ON  | 0CH     |
| ON  | OFF | ON  | ON  | 0DH     |
| OFF | ON  | ON  | ON  | 0EH     |
| ON  | ON  | ON  | ON  | 0FH     |

### BAUD RATE SELECT

| SW5 | Baud Rate |
|-----|-----------|
| OFF | 38,400    |
| ON  | 19,200    |

### COMMAND MODE SELECT

| SW6 | Mode           |
|-----|----------------|
| OFF | Normal command |
| ON  | Graphic DMA    |

### OPERATING MODE SELECT

| SW7 | Mode             |
|-----|------------------|
| OFF | Normal Operation |
| ON  | Memory Re-write  |

### PROTOCOL MODE SELECT

| SW8 | Mode        |
|-----|-------------|
| OFF | Direct Mode |
| ON  | Packet Mode |

### CONTACT

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**NORITAKE ITRON VFD MODULES**

**256 x 128 Dot Graphic**