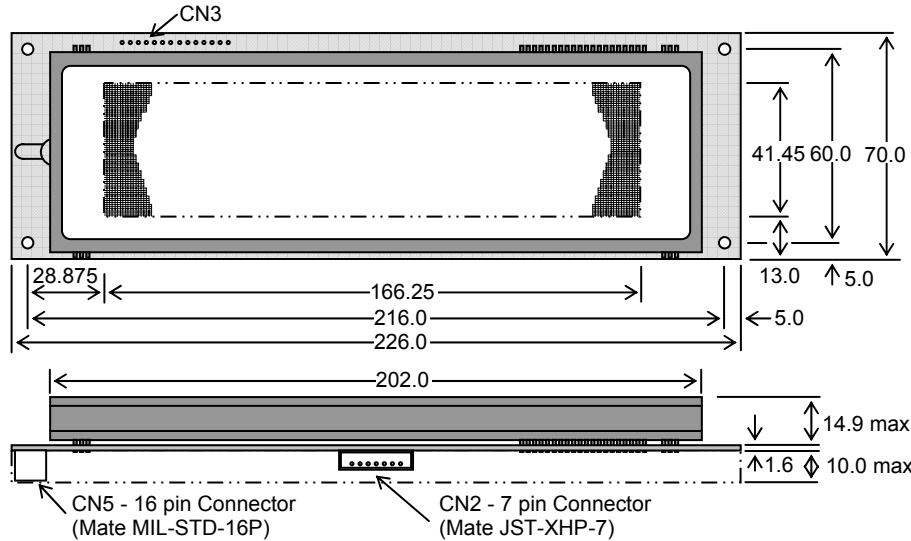


# Dot Graphic VFD Module

# GU256x64F-3900

- ❑ 256x64 Dot Graphic
- ❑ Single 24V Supply
- ❑ High Brightness Blue Green Display
- ❑ Operating Temp -40°C to +70°C
- ❑ 3 ASCII Fonts (6x8, 8x16, 16x16)
- ❑ 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. Three character font tables can be software selected. User defined characters and many control commands are available.



## ELECTRICAL SPECIFICATION

| Parameter                | Symbol | Value          | Condition   |
|--------------------------|--------|----------------|-------------|
| Power Supply Voltage     | VCC    | 24.0VDC +/- 5% | GND=0V      |
| Power Supply Current     | ICC    | 280mADC typ.   | VCC=24V     |
| RS232 Serial High Input  | VIH    | 3.0VDC min.    | VCC=24V     |
| RS232 Serial Low Input   | VIL    | -3.0VDC max.   | VCC=24V     |
| RS232 Serial High Output | VOH    | 5.0VDC min.    | VCC=24V     |
| RS232 Serial Low Output  | VOL    | -5.0VDC max.   | VCC=24V     |
| Logic High Input         | VIH    | 0.8VDC min.    | VCC=24V     |
| Logic Low Input          | VIL    | 0.2VDC max.    | VCC=24V     |
| 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.

## 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 (CN2)

| Pin | Sig         |
|-----|-------------|
| 1   | RXD         |
| 2   | DTR         |
| 3   | DSR         |
| 4   | TXD         |
| 5   | NC          |
| 6   | VCC1 (+24V) |
| 7   | GND         |

## PARALLEL INTERFACE (CN5)

| 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  | VCC1  |
| 8   | D0  | 16  | VCC1  |

## I/O PORT & POWER CON. (CN3)

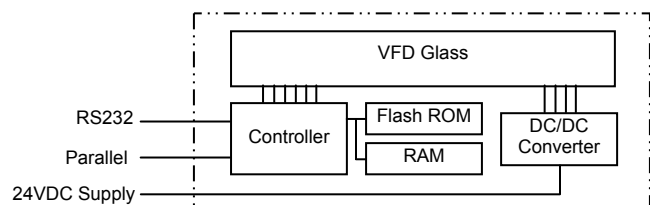
| Pin | Sig   | Pin | Sig   |
|-----|-------|-----|-------|
| 1   | Bit 7 | 8   | Bit 0 |
| 2   | Bit 6 | 9   | Bit 3 |
| 3   | Bit 5 | 10  | Bit 2 |
| 4   | Bit 4 | 11  | Bit 1 |
| 5   | Bit 3 | 12  | Bit 0 |
| 6   | Bit 2 | 13  | VCC1  |
| 7   | Bit 1 | 14  | GND   |

Subject to change without notice.  
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## OPTICAL and ENVIRONMENTAL SPECIFICATIONS

| Parameter                           | Value                           |
|-------------------------------------|---------------------------------|
| Display Area (XxY mm)               | 166.25 x 41.45                  |
| Dot Size/Pitch (XxY mm)             | 0.5 x 0.5 / 0.65 x 0.65         |
| Luminance                           | 700 cd/m <sup>2</sup> Typ.      |
| Colour of Illumination              | Blue-Green (Filter for colours) |
| Operating Temperature               | -40°C to +70°C                  |
| Storage Temperature                 | -40°C to +85°C                  |
| Operating Humidity (non condensing) | 20 to 80% RH @ 25°C             |

## MODULE BLOCK DIAGRAM



## 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     |

## 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 |

## BAUD RATE SELECT

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

## CONTACT

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