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Email:tech@midasdisplays.com
www.midasdisplays.com

| MC22005A6WK-FPTLW-V2 | 2 x 20 | 5mm Character Height | LCD Module |
|---|---|---|---|
| **Specification** | | | |
| Version: 1 | | Date: 31/10/2016 | |
| **Revision** | | | |
| | | | |

| Display Features | | | |
|---|---|---|---|
| Character Count | 2 x 20 | | |
| Appearance | Black on White | | |
| Logic Voltage | 5V | | |
| Interface | Parallel | | |
| Font Set | English / European | | |
| Display Mode | Transflective | | |
| Character Height | 5.55mm | | |
| LC Type | FSTN | | |
| Module Size | 116.00 x 37.00 x 13.50 mm | | |
| Operating Temperature | -20°C ~ +70°C | | |
| Construction | COB | Box Quantity | Weight / Display |
| LED Backlight | White | 30 pcs | 60 grams |

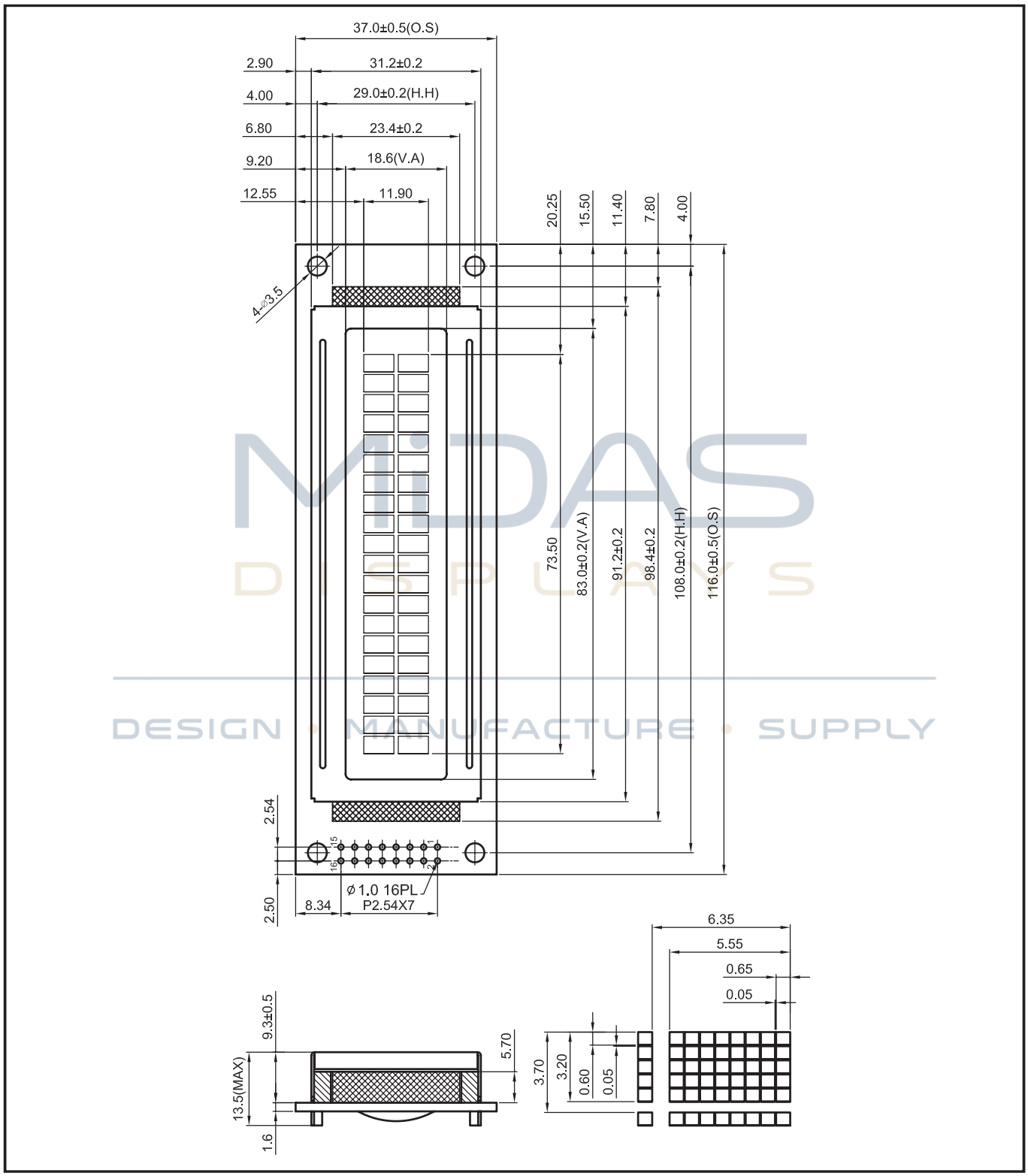
RoHS compliant

* - For full design functionality, please use this specification in conjunction with the ST7066U specification. (Provided Separately)

| Display Accessories | |
|---|---|
| **Part Number** | **Description** |
| MCCMDB-16DIL | LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output. |
| MCCBL1A16DLIP -16DILS-150 | 16 Way, Dual in-line to Dual In-line connector Cable. |
| | |

| Optional Variants | | |
|---|---|---|
| **Fonts** | **Appearances** | **Voltage** |
| English / Russian | Black on Yellow/Green<br>Black on Red<br>Black on Amber<br>White on Blue | |

| Mechanical Specifications | | | | | |
|---|---|---|---|---|---|
| Module Size | 116.00 x 37.00 x 13.50 ( With Backlight) | | | | W x H x D mm |
| Viewing Area | 83.00 x 18.60 | W x H mm | Hole-to-Hole | 108.00 x 29.00 | W x H mm |
| Character Size | 3.20 x 5.55 | W x H mm | Character Pitch | 0.50 x 0.80 | W x H mm |
| Dot Size | 0.60 x 0.65 | W x H mm | Dot Pitch | 0.05 x 0.05 | W x H mm |




MIDAS DISPLAYS
DESIGN • MANUFACTURE • SUPPLY

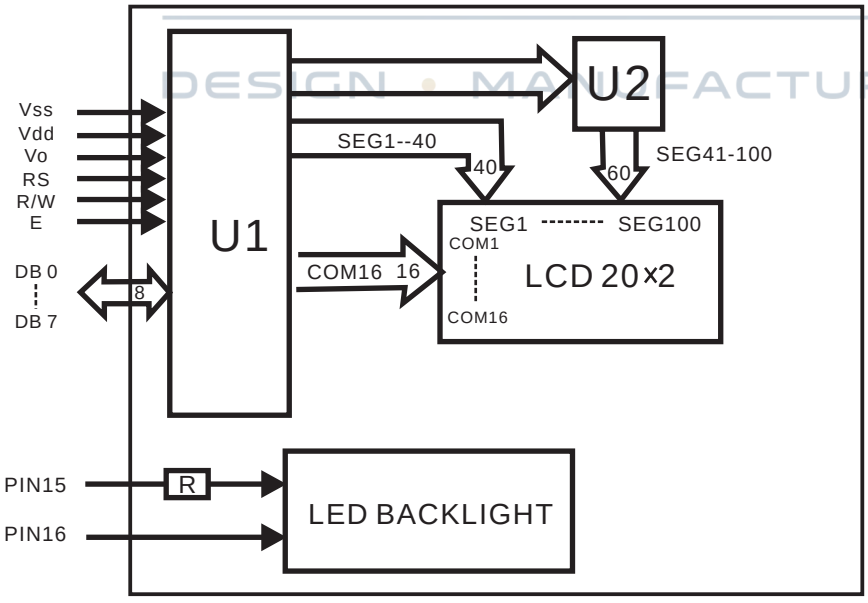
| MC22005A6WK-FPTLW-V2 | 2 x 20 | 5mm Character Height | LCD Module |
|---|---|---|---|
| **Specification** | | | |
| Version: 1 | Date: 31/10/2016 | | |
| **Revision** | | | |
| | | | |

# Pin Layout

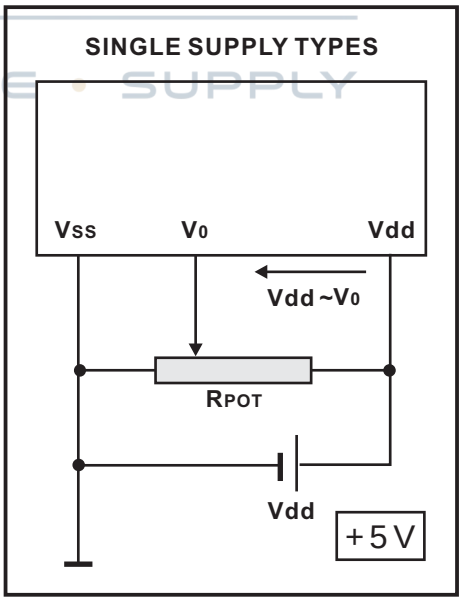
| PI | SYMBOL | DESCRIPTION | REMARKS |
|---|---|---|---|
| 1 | Vss | GND | |
| 2 | Vdd | Power supply for LCM | 5.0V |
| 3 | V0 | Contrast Adjust | |
| 4 | RS | Register Select Signal | |
| 5 | R/W | Data Read / Write | |
| 6 | E | Enable Signal | |
| 7 | DB0 | Data bus line | |
| 8 | DB1 | Data bus 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 | |

MiDAS DISPLAYS
DESIGN • MANUFACTURE • SUPPLY

## Block Diagram

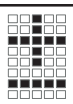
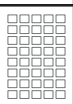
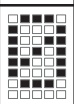
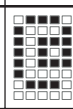
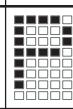
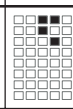
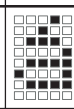
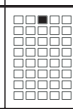
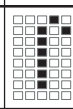
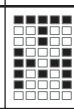
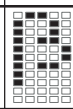
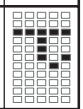
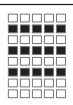
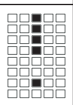
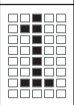
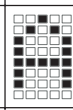
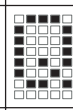
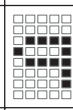
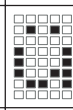
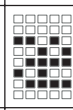
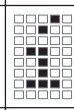
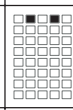
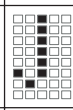
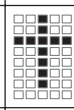
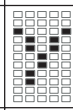
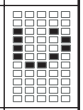
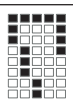
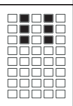
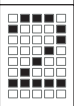
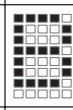
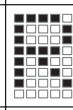
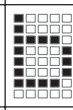
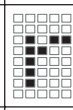
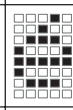
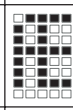
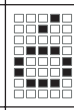



## Power Supply Diagram




| MC22005A6WK-FPTLW-V2 | 2 x 20 | 5mm Character Height | LCD Module |
|---|---|---|---|
| **Specification** | | | |
| Version: 1 | | Date: 31/10/2016 | |
| **Revision** | | | |
| | | | |

# Font Map

| Upper 4bit / Lower 4bit | LLLL | LLLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHLH | HHHL | HHHH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LLLL | CG RAM (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) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

DISPLAY ELECTRONICS

## Absolute Maximum Ratings

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Power Supply ( LOGIC) | Vdd | 25°C | -0.3 | --- | 7.0 | V |
| Power Supply (LCD) | V0 | 25°C | Vdd -13.5 | --- | Vdd +0.3 | V |
| Input Voltage | Vin | 25°C | -0.3 | --- | Vdd +0.3 | V |
| Operating Temperature | Vopr | --- | -20 | --- | 70 | C |
| Storage Temperature | Vstg | --- | -30 | --- | 80 | C |

## Electronic Characteristics

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Input Voltage | Vlcm = Vdd | --- | --- | 5.0 | --- | V |
| Supply Current | Idd | Vdd=5V | --- | 1.5 | --- | mA |
| Driving Voltage for LCD Panel | Vlcd = (Vdd - V0) | -20°C | 4.50 | --- | 5.00 | V |
| | | 0°C | 4.40 | --- | 4.90 | |
| | | 25°C | 4.30 | 4.50 | 4.80 | |
| | | 50°C | 4.25 | --- | 4.80 | |
| | | 70°C | 4.15 | --- | 4.80 | |

## LCD Characteristics

For STN/FSTN LCD Panel Types

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Viewing Angle | Φ2 – Φ1 | K = 4 | 40° | --- | --- | Deg |
| | Θ | | 60° | | | |
| Contrast Ratio | K | --- | --- | 10 | --- | --- |
| Response Time (Rise) | TR | --- | --- | 150 | 250 | ms |
| Response Time (Fall) | TF | --- | --- | 150 | 250 | ms |

## LED Characteristics

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| LED Forward Voltage | Vf | 25°C If=15mA | 2.75 | --- | 3.1 | V |
| LED Forward Current* | If | 25°C | --- | 30 | --- | mA |
| LED Reverse Current | Ir | 25°C | --- | --- | 20 | µA |
| LED Colour Range | X Coordinate | 25°C If=15mA | 0.26 | --- | 0.30 | --- |
| | Y Coordinate | | 0.27 | --- | 0.31 | --- |
| LED Brightness (Without LCD) | Lv | 25°C If=15mA | --- | 540 | --- | $cd/m^2$ |
| LED Brightness Uniformity | Lvmin/Lvmax | 25°C If=15mA | 70 | --- | --- | Ratio |
| LED Life Time | --- | 25°C If=15mA | 9K | --- | --- | Hours |

**Attention:** It is constant current, not constant voltage, which should be applied when driving the LED backlight, please ensure you adhere to this rule.

MIDAS DISPLAYS
DESIGN • MANUFACTURE • SUPPLY