

|                   |        |                      |           |
|-------------------|--------|----------------------|-----------|
| MC41605A12W-VNMLG | 4 x 16 | 5mm Character Height | VA Module |
| Specification     |        |                      |           |
| Version: 1        |        | Date: 29/09/2016     |           |
| Revision          |        |                      |           |
|                   |        |                      |           |

| Display Features      |                          |  |                  |
|-----------------------|--------------------------|--------------------------------------------------------------------------------------|------------------|
| Character Count       | 4 x 16                   |                                                                                      |                  |
| Appearance            | Green on Black           |                                                                                      |                  |
| Logic Voltage         | 5V                       |                                                                                      |                  |
| Interface             | Parallel                 |                                                                                      |                  |
| Font Set              | English / Japanese       |                                                                                      |                  |
| Display Mode          | Transmissive             |                                                                                      |                  |
| Character Height      | 4.75mm                   |                                                                                      |                  |
| LC Type               | VATN                     |                                                                                      |                  |
| Module Size           | 87.00 x 60.00 x 13.60 mm |                                                                                      |                  |
| Operating Temperature | -20°C ~ +70°C            |                                                                                      |                  |
| Construction          | COB                      | Box Quantity                                                                         | Weight / Display |
| LED Backlight         | Green                    | ---                                                                                  | ---              |

\* - For full design functionality, please use this specification in conjunction with the RW1063 specification. (Provided Separately)

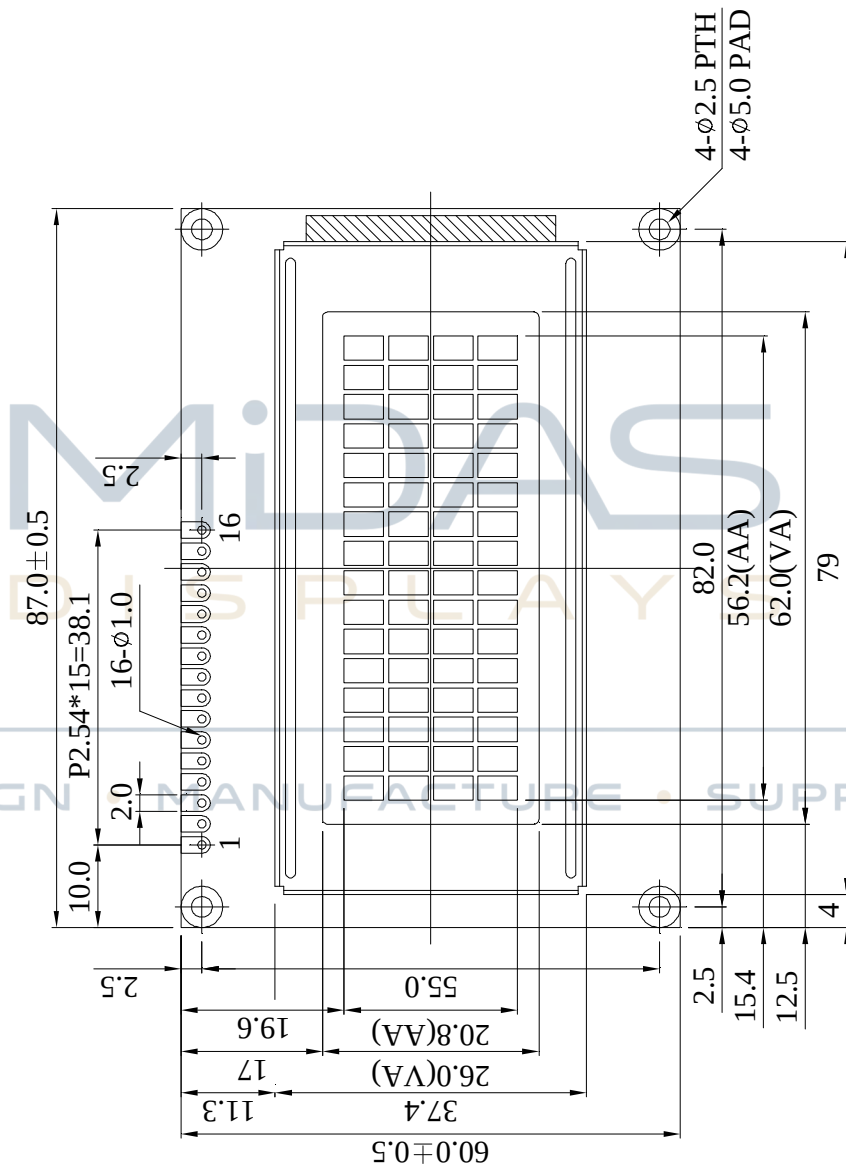
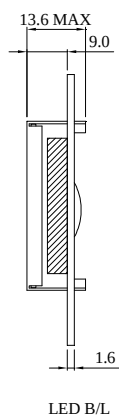
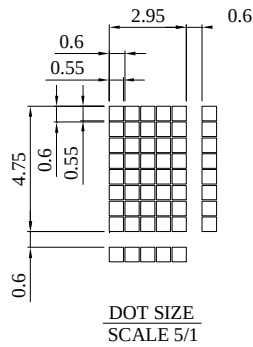
| Display Accessories      |                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------|
| Part Number              | Description                                                                                          |
| MCCMDB-16SIL             | LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output. |
| MCCBL1A16SLIP-16DILS-150 | 16 Way, Single in-line to Dual In-line connector Cable.                                              |
| MCCBL1A16SLIP-16SILS-150 | 16 Way, Single in-line to Single In-line connector Cable.                                            |

| Optional Variants |                                                                    |         |
|-------------------|--------------------------------------------------------------------|---------|
| Fonts             | Appearances                                                        | Voltage |
|                   | White on Black<br>Yellow on Black<br>Blue on Black<br>Red on Black |         |



## Mechanical Specifications

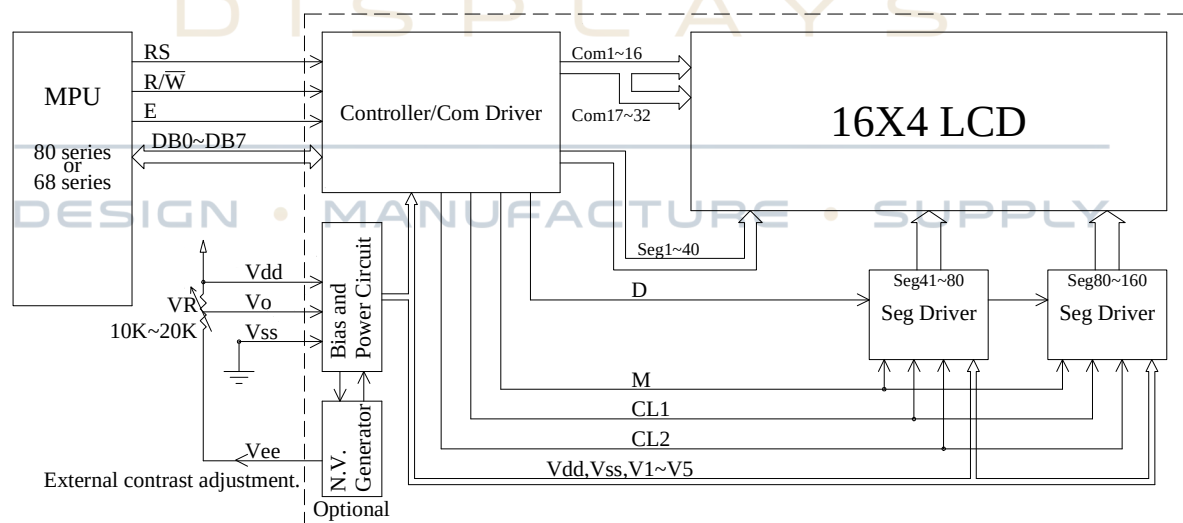
| Module Size    | 87.00 x 60.00 x 13.60 ( With Backlight) |          |                 |               | W x H x D mm |
|----------------|-----------------------------------------|----------|-----------------|---------------|--------------|
| Viewing Area   | 62.00 x 26.00                           | W x H mm | Hole-to-Hole    | 82.00 x 55.00 | W x H mm     |
| Character Size | 2.95 x 4.75                             | W x H mm | Character Pitch | 3.55 x 5.35   | W mm         |
| Dot Size       | 0.55 x 0.55                             | W x H mm | Dot Pitch       | 0.60 x 0.60   | W x H mm     |



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## Pin Layout

| PI | SYMBOL | DESCRIPTION             | REMARKS |
|----|--------|-------------------------|---------|
| 1  | Vss    | GND                     |         |
| 2  | Vdd    | Power supply for LCM    | 5.0V    |
| 3  | VO     | Contrast Adjustment     |         |
| 4  | RS     | Instruction Code        |         |
| 5  | R/W    | Data Read / Write       |         |
| 6  | E      | Chip 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 | Vee    | Negative Voltage Output |         |
| 16 | K      | LED-                    |         |



|                   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Character located | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| DDRAM address     | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F |
| DDRAM address     | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F |
| DDRAM address     | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 1A | 1B | 1C | 1D | 1E | 1F |
| DDRAM address     | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F |

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## Font Map

| Upper<br>4bit<br>Lower<br>4bit | LLLL             | LLHH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLLH | HLHL | HLHH | HHLL | HHHL | HHHL | HHHH |
|--------------------------------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| LLLL                           | CG<br>RAM<br>(1) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| LLHH                           | (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)              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

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| Absolute Maximum Ratings |        |           |         |     |           |      |
|--------------------------|--------|-----------|---------|-----|-----------|------|
| Item                     | Symbol | Condition | Min     | Typ | Max       | Unit |
| Power Supply ( LOGIC)    | Vdd    | 25 °C     | -0.3    | --- | 5.50      | V    |
| Power Supply (LCD)       | V0     | 25 °C     | Vss-0.3 | --- | Vss +7.00 | 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             | Minimum | Typical | Maximum         | Unit |
| Input Voltage High         | V <sub>IH</sub>                   | ---                   | 2.50    | ---     | V <sub>DD</sub> | V    |
| Input Voltage Low          | V <sub>IL</sub>                   | ---                   | -0.3    | ---     | 0.60            | V    |
| Output Voltage High        | V <sub>OH</sub>                   | ---                   | 3.90    | ---     | Vdd             | V    |
| Output Voltage Low         | V <sub>OL</sub>                   | ---                   | ---     | ---     | 0.40            | V    |
| Supply Voltage Logic       | V <sub>DD</sub> ~ V <sub>SS</sub> | ---                   | 4.50    | 5.00    | 5.50            | V    |
| Supply Voltage LCD         | V <sub>DD</sub> ~ V <sub>0</sub>  | Ta=25°C               | 6.20    | 6.50    | 6.80            | V    |
| Supply Current             | I <sub>DD</sub>                   | V <sub>DD</sub> =5.0V | ---     | 3.00    | ---             | mA   |

| LCD Characteristics          |         |           |         |         |         |        |
|------------------------------|---------|-----------|---------|---------|---------|--------|
| For STN/FSTN LCD Panel Types |         |           |         |         |         |        |
| Item                         | Symbol  | Condition | Minimum | Typical | Maximum | Unit   |
| Viewing Angle                | Φ2 – Φ1 | CR ≥ 10   | ---     | 60      | ---     | ψ=180° |
|                              | Θ       | ---       | ---     |         |         |        |
| Contrast Ratio               | CR      | ---       | 10      | ---     | ---     | ---    |
| Response Time (Rise)         | TR      | ---       | ---     | 300     | 350     | ms     |
| Response Time (Fall)         | TF      | ---       | ---     | 300     | 350     | ms     |

| LED Characteristics     |                  |                         |         |         |         |                   |
|-------------------------|------------------|-------------------------|---------|---------|---------|-------------------|
| Item                    | Symbol           | Condition               | Minimum | Typical | Maximum | Unit              |
| Supply Current          | I <sub>LED</sub> | V=5.0V                  | ---     | 128     | 160     | mA                |
| Supply Voltage          | V                | ---                     | 4.90    | 5.00    | 5.10    | V                 |
| Reverse Voltage         | VR               | ---                     | ---     | ---     | 5       | V                 |
| Luminance (Without LCD) | IV               | I <sub>LED</sub> =128mA | 800     | 1000    | ---     | Cd/m <sup>2</sup> |
| Wave Length             | λP               | I <sub>LED</sub> =128mA | 520     | ---     | 532     | nm                |
| LED Life Time           | ---              | I <sub>LED</sub> =128mA | ---     | 20K     | ---     | Hour              |

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