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|----------------------|------------|--------------------------------|-------------|
| MCOB22010A1V-EYP | 2 x 20 | Euro/Jap/Cyrillic | OLED Module |
| Specification | | | |
| Version: 4 | | Date: 16/05/2017 | |
| Revision | | | |
| 0 | 25/06/2014 | First release | |
| A | 26/11/2015 | Add Low Temperature storage. | |
| B | 26/11/2015 | Modify Block Diagram | |
| C | 01/06/2016 | Modify Static electricity test | |

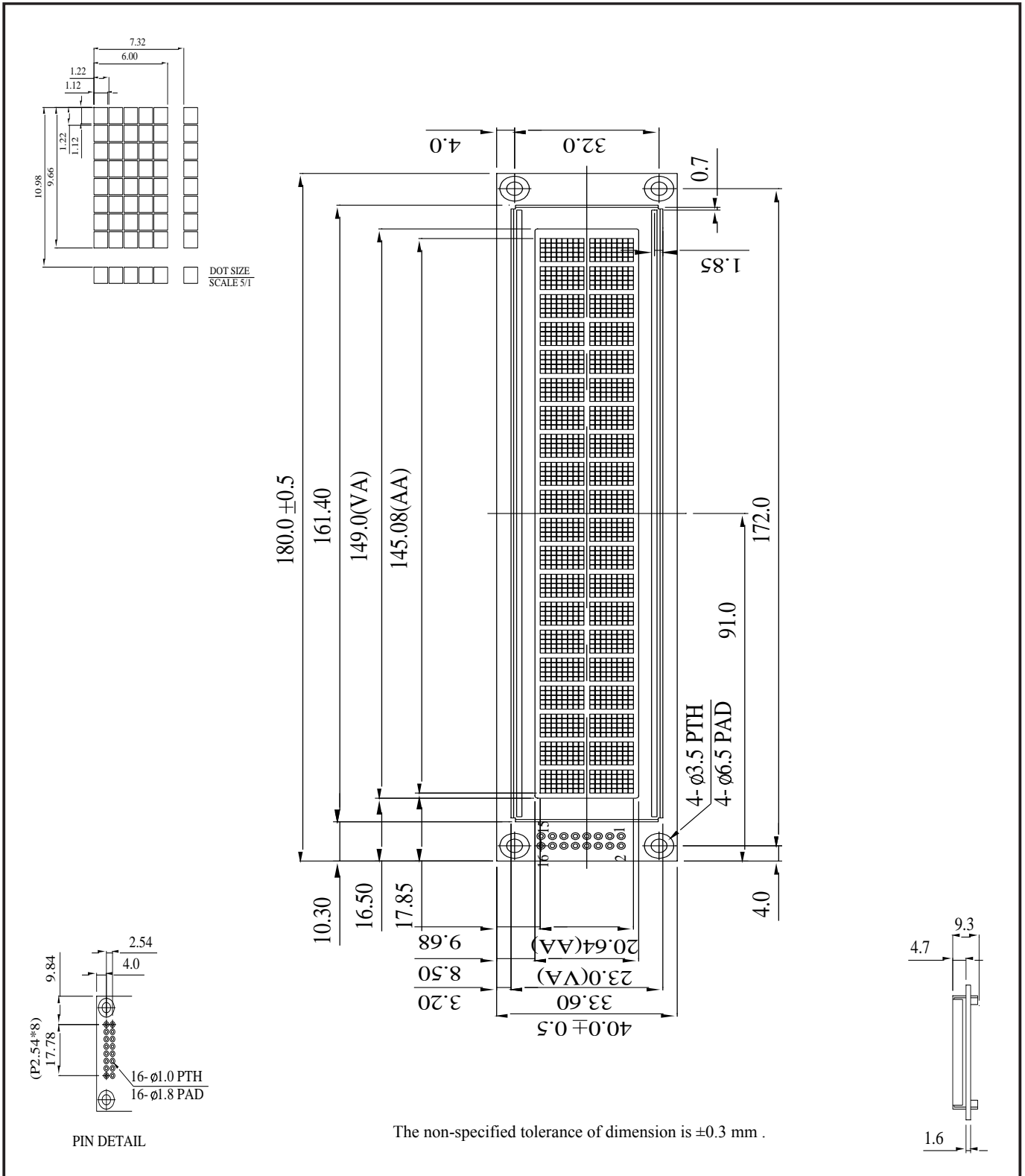
| Display Features | |  | | | |
|-----------------------|-------------------------------|--|-----|--------------|------------------|
| Character Count | 2 x 20 | | | Box Quantity | Weight / Display |
| Appearance | Yellow on Black | | | | |
| Logic Voltage | 5V | | | | |
| Interface | Parallel | | | | |
| Font Set | English / European / Cyrillic | | | | |
| Character Height | 9.66 mm | | | | |
| Module Size | 180.00 x 40.00 x 9.30 mm | | | | |
| Operating Temperature | -40°C ~ +80°C | | | | |
| Construction | COB | | | | |
| | | --- | --- | | |

| 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. |
| MCCBL1A16DILP -DILS-150 | 16 Way, Dual in-line to Dual in-line connector cable. |
| | |

| Optional Variants | |
|---|---------|
| Appearance | Voltage |
| Blue on Black White on Black Green on Black | |

Mechanical Specifications

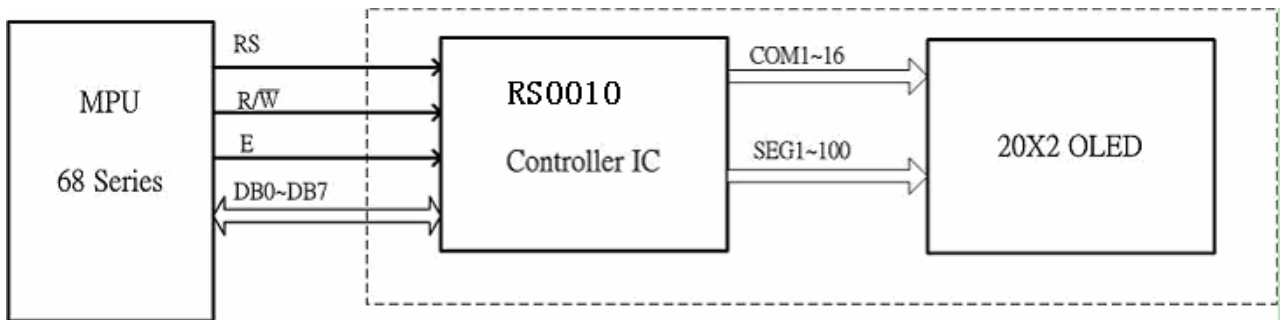
| | | | | | |
|----------------|---|----------|-----------------|---------------|--------------|
| Module Size | 180.00 x 40.00 x 9.30 (With Backlight) | | | | W x H x D mm |
| Viewing Area | 149.00 x 23.00 | W x H mm | Hole-to-Hole | 75.00 x 31.00 | W x H mm |
| Character Size | 6.00 x 9.66 | W x H mm | Character Pitch | 7.32 x 10.98 | W x H mm |
| Dot Size | 1.12 x 1.12 | W x H mm | Dot Pitch | 1.22 x 1.22 | W x H mm |



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Pin layout

| Pin | Symbol | Description | Remarks |
|-----|--------|---|----------|
| 1 | VSS | Ground | |
| 2 | VDD | Supply Voltage for Logic | 5V |
| 3 | NC | No Connection | |
| 4 | RS | H: Data L: Instruction Code | H/L |
| 5 | R/W | H: Read (Module-->MPU) L: Write(MPU-->Module) | H/L |
| 6 | E | Chip Enable Signal | H, H-->L |
| 7 | DB0 | Data Bus Line | H/L |
| 8 | DB1 | Data Bus Line | H/L |
| 9 | DB2 | Data Bus Line | H/L |
| 10 | DB3 | Data Bus Line | H/L |
| 11 | DB4 | Data Bus Line | H/L |
| 12 | DB5 | Data Bus Line | H/L |
| 13 | DB6 | Data Bus Line | H/L |
| 14 | DB7 | Data Bus Line | H/L |
| 15 | NC | No Connection | |
| 16 | NC | No Connection | |



| Address Format | DB7 | DB6 | DB5 | DB4 | DB3 | DB2 | DB1 | DB0 |
|------------------------|-----|------|------|------|------|------|------|------|
| CA (Character Address) | 1 | ADD6 | ADD5 | ADD4 | ADD3 | ADD2 | ADD1 | ADD0 |

| 1 | 2 | 3 | 4 | | | 17 | 18 | 19 | 20 |
|------------|------------|------------|------------|-------|-------|------------|------------|------------|------------|
| CA10000000 | CA10000001 | CA10000010 | CA10000011 | | | CA10010000 | CA10010001 | CA10010010 | CA10010011 |
| CA11000000 | CA11000001 | CA11000010 | CA11000011 | | | CA11010000 | CA11010001 | CA11010010 | CA11010011 |

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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) | | | | | | | | | | | | | | | |

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| 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) | | | | | | | | | | | | | | | |

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| 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) | | | | | | | | | | | | | | | |

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Absolute Maximums Ratings

| Item | Symbol | Minimum | Typical | Maximum | Unit |
|--------------------------|--------|---------|---------|---------|------|
| Supply Voltage for Logic | V0 | -0.30 | --- | 5.30 | V |
| Operating Temperature | Vopr | -40 | --- | 80 | °C |
| Storage Temperature | Vstg | -40 | --- | 80 | °C |

Electronic Characteristics

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|-----------------------------------|---------|------------|---------|---------|---------|------|
| Input High Voltage | VIH | --- | 0.80 | --- | VDD | V |
| Input Low Voltage | VIL | --- | GND | --- | 0.20 | V |
| Output High Voltage | VOH | IOH=-0.5mA | 0.80 | --- | VDD | V |
| Output Low Voltage | VOL | IOL=0.5mA | GND | --- | 0.20 | V |
| Supply Voltage for Logic | VDD~VSS | --- | 4.80 | 5.00 | 5.30 | V |
| 50% Checkboard Operating Current. | IDD | VDD=5V | 65 | 70 | 75 | mA |

OLED Characteristics

| Item | Symbol | Condition | Minimum | Typical | Maximum | Unit |
|--|--------|-----------|---------|---------|---------|-------------------|
| Viewing Angle | (V)θ | --- | 160 | --- | --- | Deg |
| | (H)φ | --- | 160 | --- | --- | Deg |
| Contrast Ratio | CR | Dark | 2000:1 | --- | --- | --- |
| Response Time | T Rise | --- | --- | 10 | --- | μs |
| | T Fall | --- | --- | 10 | --- | μs |
| Display with 50% Checkboard Brightness | | | 70 | 90 | --- | cd/m ² |
| CIEx(Yellow) | | (CIE1931) | 0.45 | 0.47 | 0.49 | --- |
| CIEy(Yellow) | | (CIE1931) | 0.48 | 0.50 | 0.52 | --- |

OLED Life Time

| Item | Conditions | Typical | Remark |
|---------------------|--|---------------|--------|
| Operating Life Time | Ta=25°C. Initial checkboard brightness, 50%. | 100,000 Hours | --- |

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