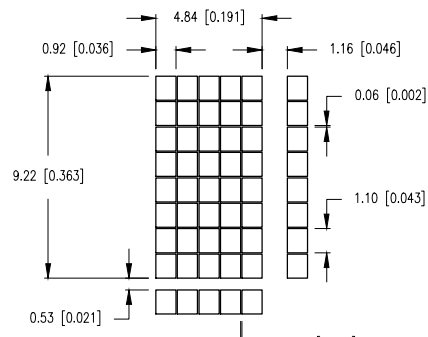
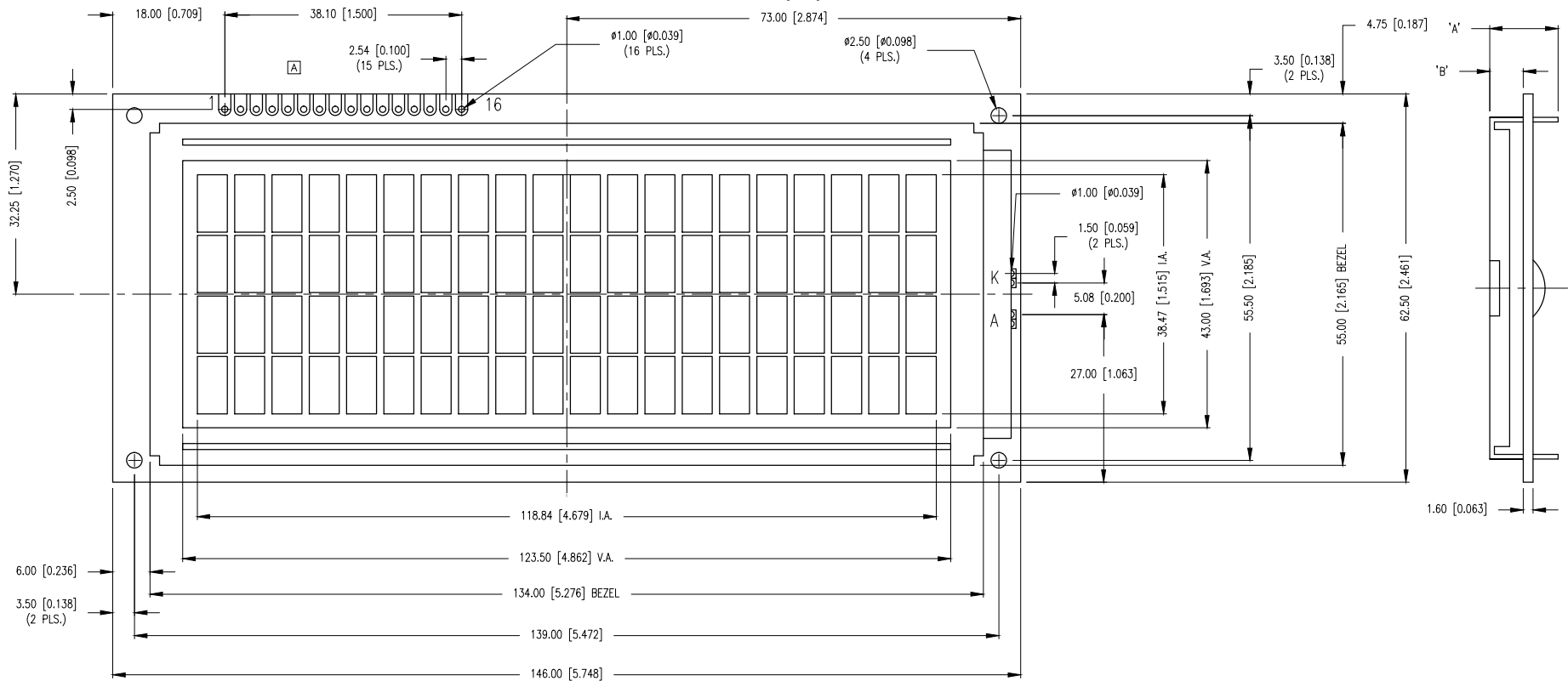


CAUTION: STATIC SENSITIVE DEVICE
FOLLOW PROPER E.S.D. HANDLING PROCEDURES
WHEN WORKING WITH THIS PART.

CHARACTER DETAIL



| TYPE | DIM. | A | B |
|----------------|------|-----|---|
| WITH BACKLIGHT | 13.0 | 9.0 | |
| NO BACKLIGHT | 11.0 | 5.4 | |



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290 E. HELEN ROAD
PALATINE, IL 60067-6976
PHONE: +1.847.359.2790
FAX: +1.847.359.6538
WEB: WWW.LUMEX.COM

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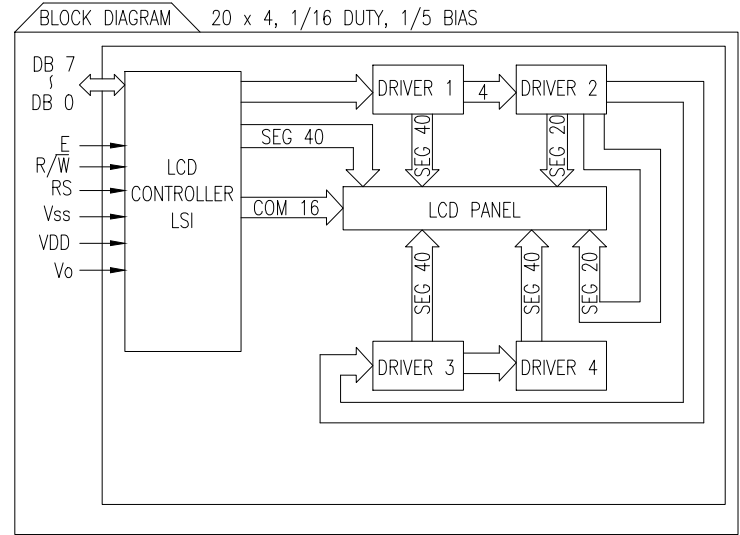
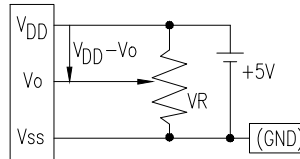
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| DATE: | 09.28.07 | DRAWN BY: | JN |
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| UNIT: | mm [INCH] | | (PL) |

| PIN CONFIGURATION | | | | | | |
|-------------------|-----------------|---------------------|------------------------------------------------------------------------------------|---------------|--|--|
| PIN NO. | SYMBOL | LEVEL | FUNCTION | | | |
| 1 | V _{SS} | - | POWER SUPPLY | GND (0V) | | |
| 2 | V _{DD} | - | | 5V | | |
| 3 | V _O | - | | FOR LCD DRIVE | | |
| 4 | RS | H/L | REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT | | | |
| 5 | R/ \bar{W} | H/L | H: DATA READ (MODULE \rightarrow MPU) L: DATA WRITE (MODULE \leftarrow MPU) | | | |
| 6 | E | H,H \rightarrow L | ENABLE | | | |
| 7~14 | DB0~DB7 | H/L | DATA BUS-SOFTWARE SELECTABLE 4 OR 8 BIT MODE. | | | |
| 15 | | | | | | |
| 16 | | | | | | |

V_{DD}-V_O: LCD DRIVING VOLTAGE
VR: 10K Ω - 20K Ω



| ELECTRICAL CHARACTERISTICS | | | | | | |
|-------------------------------------------------------|----------------------------------|---------------------|---------------------------|------|------|-----------------|
| V _{DD} =4.75V to 5.25V, T _A =25°C | | | | | | |
| ITEM | SYMBOL | CONDITION | STANDARD VALUE | | | UNIT |
| | | | MIN. | TYP. | MAX. | |
| SUPPLY VOLTAGE FOR LOGIC | V _{DD} -V _{SS} | - | - | 5.0 | - | V |
| SUPPLY CURRENT FOR LOGIC | I _{DD} | V _{DD} =5V | - | 1.0 | 2.2 | mA |
| INPUT VOLTAGE | HIGH | V _{IH} | - | 2.2 | - | V _{DD} |
| | LOW | V _{IL} | - | 0 | - | 0.6 |
| OUTPUT VOLTAGE | HIGH | V _{OH} | I _{OH} =-0.205mA | 2.4 | - | - |
| | LOW | V _{OL} | I _{OL} =1.6mA | - | - | 0.4 |

| DDRAM ADDRESS | | | | | | | | | | | | | | | | | | | | |
|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| LINE1: | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | 51 | 52 | 53 |
| LINE2: | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F | 10 | 11 | 12 | 13 |
| LINE3: | 14 | 15 | 16 | 17 | 18 | 19 | 1A | 1B | 1C | 1D | 1E | 1F | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| LINE4: | 54 | 55 | 56 | 57 | 58 | 59 | 5A | 5B | 5C | 5D | 5E | 5F | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 |

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|------------------------------|----------------------------------|----------------------|-----------------|-----------------|------|
| ITEM | SYMBOL | TEST CONDITION | STANDARD VALUE | | UNIT |
| | | | MIN | MAX | |
| SUPPLY VOLTAGE FOR LOGIC | V _{DD} -V _{SS} | T _a =25°C | -0.3 | 7.0 | V |
| SUPPLY VOLTAGE FOR LCD DRIVE | V _{DD} -V _O | - | 0 | 4.9 | V |
| INPUT VOLTAGE | V _I | T _a =25°C | V _{SS} | V _{DD} | V |
| OPERATING TEMPERATURE | T _{opr} | LCM-H | -20 | 70 | °C |
| STORAGE TEMPERATURE | T _{stg} | LCM-H | -30 | 80 | °C |

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| UNIT: | mm [INCH] | | (R) |

| Upper 4 bit Lower 4 bit | LLLL | LLH | LLHL | LLHH | LHLL | LHLH | LHHL | LHHH | HLLL | HLH | HLHL | HLHH | HHLL | HHH | HHHL | HHHH |
|----------------------------------|------|-----|------|------|------|------|------|------|------|-----|------|------|------|-----|------|------|
| LLLL | 士 | 0 | 0 | P | ° | F | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LLLH | 三 | ! | 1 | A | Q | 8 | 7 | 0 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LLHL | 7 | " | 2 | B | R | 6 | r | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LLHH | U | # | 3 | C | S | 5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LHLL | Y | # | 4 | D | T | d | t | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LHLH | U | % | 5 | E | U | e | u | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LHHL | Y | & | 6 | F | V | f | v | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| LHHH | J | ' | 7 | G | W | w | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HLLL | J | 0 | 8 | H | 8 | h | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HLLH | J | 9 | 9 | I | Y | i | y | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HLHL | 8 | * | 8 | J | Z | z | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HLHH | J | + | 8 | K | C | c | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HHLL | = | , | X | L | X | l | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HHLH | 8 | - | = | M | J | m | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HHHL | 8 | . | X | N | ^ | n | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| HHHH | 8 | / | ? | 0 | L | o | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

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