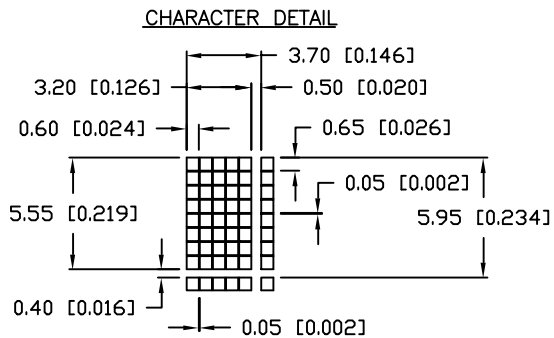


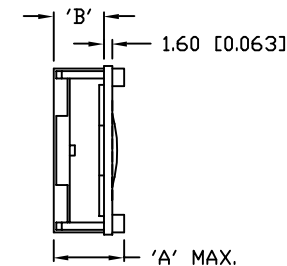
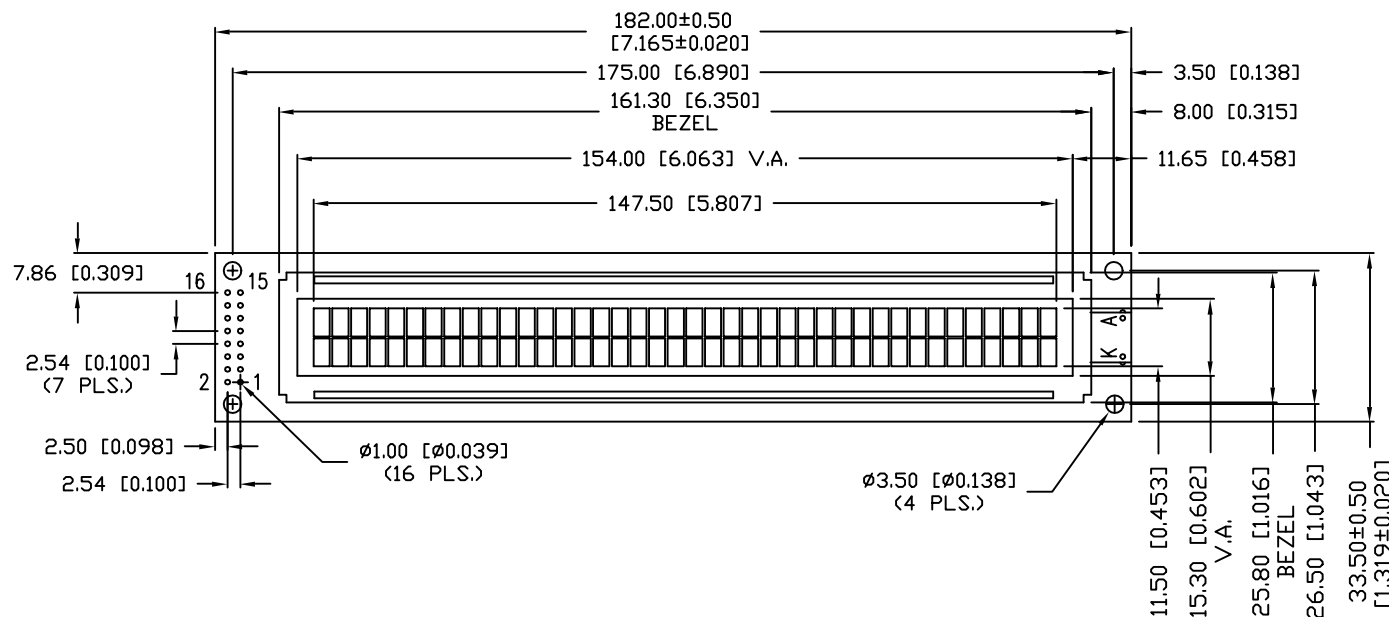
|               |                                     |      |
|---------------|-------------------------------------|------|
| PART NUMBER   |                                     | REV. |
| LCM-X04002DXX |                                     |      |
| REV.          | E.C.N. NUMBER AND REVISION COMMENTS | DATE |

| P/N PREFIX/SUFFIX TABLE |     |  |
|-------------------------|-----|--|
| LCM-X                   | DXX | DESCRIPTION                            |
| STANDARD                | S   | SR<br>STN, REFLECTIVE                  |
|                         |     | SF<br>STN, TRANSFLECTIVE(W/ BACKLIGHT) |
| HIGH TEMP.              | H   | TR<br>TN, REFLECTIVE                   |
|                         |     | TF<br>TN, TRANSFLECTIVE(W/ BACKLIGHT)  |

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



| TYPE           | DIM. | A    | B   |
|----------------|------|------|-----|
| WITH BACKLIGHT |      | 12.7 | 8.7 |
| NO BACKLIGHT   |      | 8.8  | 4.7 |

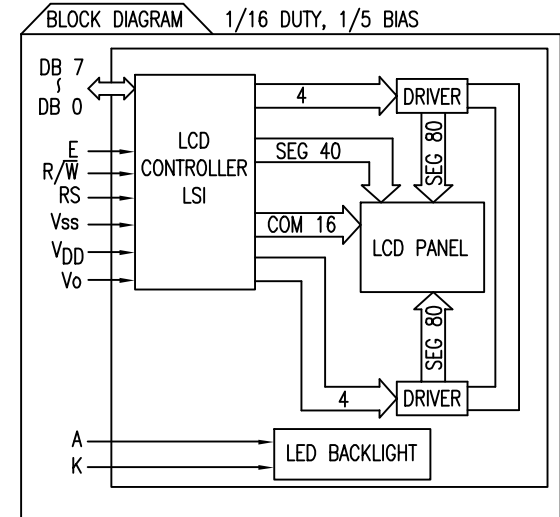
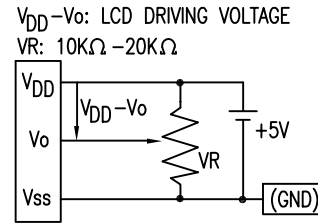


UNCONTROLLED DOCUMENT  
\*UNLESS OTHERWISE SPECIFIED TOLERANCE IS ±0.25mm (±0.010")

|  |                              |  |  |               |
|--|------------------------------|--|--|---------------|
| REV.   | PART NUMBER<br>LCM-X04002DXX | CONFIDENTIAL INFORMATION<br>THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES. | <b>LUMEX</b><br>INCORPORATED<br>290 E. HELLEN ROAD<br>PALATINE, ILLINOIS 60067<br>PHONE: 1-847-359-2790<br>WEB: HTTP://WWW.LUMEX.COM |               |
| 5.55mm CHARACTER HEIGHT, 5 x 8 DOT MATRIX, 40 x 2 LCD CHARACTER MODULE, 1/16 DUTY, 1/5 BIAS. |                              | RELIABILITY NOTE<br>OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.   | DRAWN BY:<br>SA/BC   | CHECKED BY:   |
|  |                              |  | APPROVED BY:   | DATE: 9-30-98 |
|  |                              |  |  | PAGE: 1 OF 2  |
|  |                              |  |  | SCALE: N/A    |

PIN CONFIGURATION

| PIN NO. | SYMBOL          | LEVEL  | FUNCTION  |
|---------|-----------------|--------|---|
| 1       | V <sub>SS</sub> | -      | POWER SUPPLY<br>GND (0V)<br>5V<br>FOR LCD DRIVE                 |
| 2       | V <sub>DD</sub> | -      |   |
| 3       | V <sub>O</sub>  | -      |   |
| 4       | RS              | H/L    | REGISTER SELECT SIGNAL<br>H: DATA INPUT<br>L: INSTRUCTION INPUT |
| 5       | R/W             | H/L    | H: DATA READ (MODULE-->MPU)<br>L: DATA WRITE (MODULE<--MPU)     |
| 6       | E               | H,H->L | ENABLE  |
| 7~14    | DB0~DB7         | H/L    | DATA BUS-SOFTWARE SELECTABLE 4 OR 8 BIT MODE.                   |
| 15      | A               | -      | ANODE<br>LED BACKLIGHT  |
| 16      | K               | -      | CATHODE<br>LED BACKLIGHT  |



ELECTRICAL CHARACTERISTICS

V<sub>DD</sub>=4.7V to 5.3V, T<sub>A</sub>=25°C

| ITEM                     | SYMBOL                           | CONDITION           | STANDARD VALUE        |      |      | UNIT              |
|--------------------------|----------------------------------|---------------------|-----------------------|------|------|-------------------|
|                          |                                  |                     | MIN.                  | TYP. | MAX. |                   |
| SUPPLY VOLTAGE FOR LOGIC | V <sub>DD</sub> -V <sub>SS</sub> | -                   | -                     | 5.0  | -    | V                 |
| SUPPLY CURRENT FOR LOGIC | I <sub>DD</sub>                  | V <sub>DD</sub> =5V | -                     | 2.0  | 3.0  | mA                |
| INPUT VOLTAGE            | HIGH                             | V <sub>IH</sub>     | -                     | 2.2  | -    | V <sub>DD</sub>   |
|                          | LOW                              | V <sub>IL</sub>     | -                     | 0    | -    | 0.6               |
| OUTPUT VOLTAGE           | HIGH                             | V <sub>OH</sub>     | -                     | 2.4  | -    | V                 |
|                          | LOW                              | V <sub>OL</sub>     | -                     | -    | 0.4  | V                 |
| *LED BACKLIGHT           | VOLTAGE                          | V <sub>f</sub>      | -                     | 4.2  | 4.6  | V                 |
|                          | CURRENT                          | I <sub>f</sub>      | -                     | 210  | -    | mA                |
|                          | POWER CONSUMPTION                | PD                  | -                     | 882  | -    | mW                |
|                          | LUMINOUS                         | L                   | I <sub>f</sub> =210mA | 70   | -    | cd/m <sup>2</sup> |
|                          | COLOR                            | -                   | -                     | -    | -    | nm                |

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

ABSOLUTE MAXIMUM RATINGS

| ITEM                         | SYMBOL                           | TEST CONDITION       | STANDARD VALUE  |                 | UNIT |
|------------------------------|----------------------------------|----------------------|-----------------|-----------------|------|
|                              |                                  |                      | MIN             | MAX             |      |
| SUPPLY VOLTAGE FOR LOGIC     | V <sub>DD</sub> -V <sub>SS</sub> | T <sub>a</sub> =25°C | 4.7             | 5.3             | V    |
| SUPPLY VOLTAGE FOR LCD DRIVE | V <sub>DD</sub> -V <sub>O</sub>  | -                    | 4.2@50°C        | 4.8@0°C         | V    |
| INPUT VOLTAGE                | V <sub>I</sub>                   | T <sub>a</sub> =25°C | V <sub>SS</sub> | V <sub>DD</sub> | V    |
| OPERATING TEMPERATURE        | T <sub>opr</sub>                 | LCM-S                | 0               | 50              | °C   |
|                              |                                  | LCM-H                | -20             | 70              | °C   |
| STORAGE TEMPERATURE          | T <sub>stg</sub>                 | LCM-S                | -20             | 70              | °C   |
|                              |                                  | LCM-H                | -30             | 85              | °C   |

\*UNLESS OTHERWISE SPECIFIED TOLERANCE IS ±0.25mm (±0.010")

|      |                              |
|------|------------------------------|
| REV. | PART NUMBER<br>LCM-X04002DXX |
|------|------------------------------|

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| DRAWN BY:<br>SA/BC | CHECKED BY: | APPROVED BY: | DATE: 9-30-98 |
|                    |             |              | PAGE: 2 OF 2  |
|                    |             |              | SCALE: N/A    |