## GENERAL SPECIFICATION

| Item | Content |
|---|---|
| Number of Character | 240x64 |
| Module Size | 180.0(W)x65.0(H)x23.0(D)mm Max |
| Viewing Area | 132.0(W)x39.0(H)mm |
| Dot Size/Dot Pitch | 0.51(W)x0.51(H)mm/0.53(W)x0.53(H)mm |
| Backlight | CCFL |
| Options | Black & White Positive/Negative/Gray STN/Yellow STN/Normal/Wide Temperature/Top/Bottom Viewing |
| Built-in Controller | **LC7981** (Sanyo) |

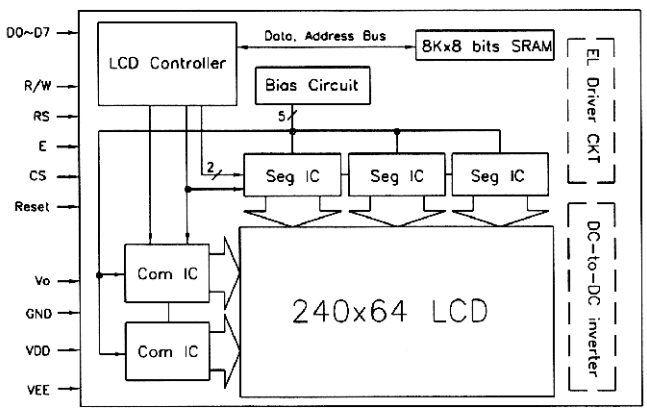
## ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Min. | Typ | Max. | Unit | note |
|---|---|---|---|---|---|---|---|
| Power Supply for Logic | $V_{DD}$-$V_{SS}$ | - | 4.5 | 5.0 | 5.5 | Volt | - |
| Input Voltage | $V_{IL}$ | L level | $V_{SS}$ | 0.2$V_{DD}$ | - | Volt | - |
| | $V_{IH}$ | H level | 0.8$V_{DD}$ | $V_{DD}$ | - | | |
| LCM Recommend LCD Module Driving Voltage | $V_{DD}$-$V_{EE}$ | Ta=0°C | 10.1 | 10.7 | 11.3 | Volt | - |
| | | Ta=25°C | 9.7 | 10.3 | 10.9 | | |
| | | Ta=50°C | 9.6 | 10.2 | 10.8 | | |
| Power Supply Current for LCM | $I_{DD}$ | $V_{DD}$=5.0V Ta=25°C $V_{EE}$-$V_{SS}$=10.3V FLM=64Hz Ta=25°C | - | 24.0 | 30.0 | mA | - |
| | $I_{EE}$ | | - | 1.7 | 3.0 | | |
| CCFL Starting Voltage | $V_{FLS}$ | | - | 750 | - | $V_{RMS}$ | |
| CCFL driving Voltage | $V_{CCFL}$ | $V_{CCFL}$=450$V_{RMS}$ $F_{CCFL}$=30KHz Ta=25°C | - | 360 | - | $V_{RMS}$ | - |
| CCFL driving Current | $I_{CCFL}$ | | - | 5.0 | - | mA | |
| CCFL driving Frequency | $F_{CCFL}$ | | 15 | 30 | 85 | KHz | |
| CCFL Saturation Time | $T_{SAT}$ | | - | 60 | - | Sec-ond | |

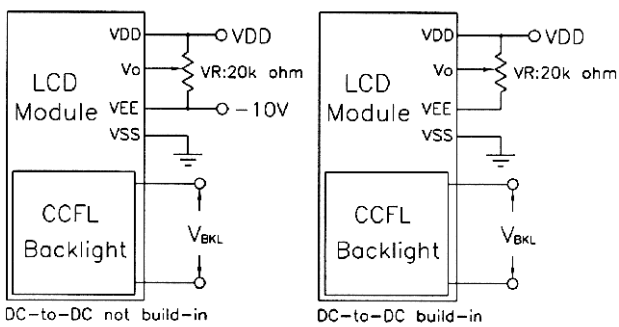
## INTERFACE PIN ASSIGNMENT

| Pin No. | Pin Out | Function Description |
|---|---|---|
| 1 | $V_{SS}$ | GND |
| 2 | $V_{DD}$ | Logic supply voltage |
| 3 | $V_O$ | Power supply for LCD panel, tuned from $V_{DD}$-$V_{EE}$ |
| 4 | RS | Register select, Instruciton register for RS=1, Data register for RS=0 |
| 5 | R/W | Read/Write. R/W=1: MPU<--LCM, Read R/W=0: MPU-->LCM, Write |
| 6 | E | Enable, Data is writtne at the fall of E and Data can be read while E=1 |
| 7~14 | DB0~DB7 | 3-state I/O Data Bus |
| 15 | CS | Chip-select, active Low |
| 16 | RES | Reset, Active Low |
| 17 | $V_{EE}$ | LCD driver supply voltage |
| 18 | NC | No connection |
| 20 | NC | No conneciton |

## BLOCK DIAGRAM




## POWER SUPPLY




BKL : CCFL, 400Vrms/30KHz AC

## MECHANICAL

