20 X 2 ALPHANUMERIC LCM

CONTENTS

Other references: Controller datasheet - HD44780 or its equivalent (LSI SPLC780A or KS0066)

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A. OVERVIEW

A liquid crystal display (LCD) is an increasingly popular type of display used in a variety of digital display applications. LCD's utilize two sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them. Each crystal, therefore, is like a shutter, either allowing light to pass through or blocking the light. LCD's have the advantage of *low power consumption*, *sharpness and brightness of images, perfectly flat screens* and *zero geometric distortion*.

B. FEATURES

I. FUNCTIONS & FEATURES

- Display format : 20 characters x 2 line
- Display type : STN /transmissive; yellow-green
- Input data : 8-bit interface; 4 bit interface also available
- Display font : 5 x 8 dots
- Display mode : Positive
- Connector position : 6 O'clock
- Driving mode : 1/16 duty cycle, 1/5 bias
- Operating voltage : 5 V (+/- 0.25V)
- LCD driving voltage : 4.5V
- Operating temp. : -20°C - +70°C
- Storage temp. : -30°C - +80°C
- Backlight : LED, yellow-green

II. MECHANICAL SPECIFICATIONS

- Module size : 116.0mm(L) * 37.0mm (W) * Max12.5 mm(H)
- Viewing area : 85.0 mm (L) * 19.8 mm (W)
- Character pitch : 3.70 mm (L) * 5.95mm (W)
- Character size : 3.20 mm (L) * 5.55mm (W)
- Dot pitch : 0.65 mm (L) * 0.70mm (W)
- Dot size : 0.60 mm (L) * 0.65mm (W)
- Weight : Approximately 50 grams

*NOTE: Extended use at elevated temperatures will affect the life & performance of your LCD.

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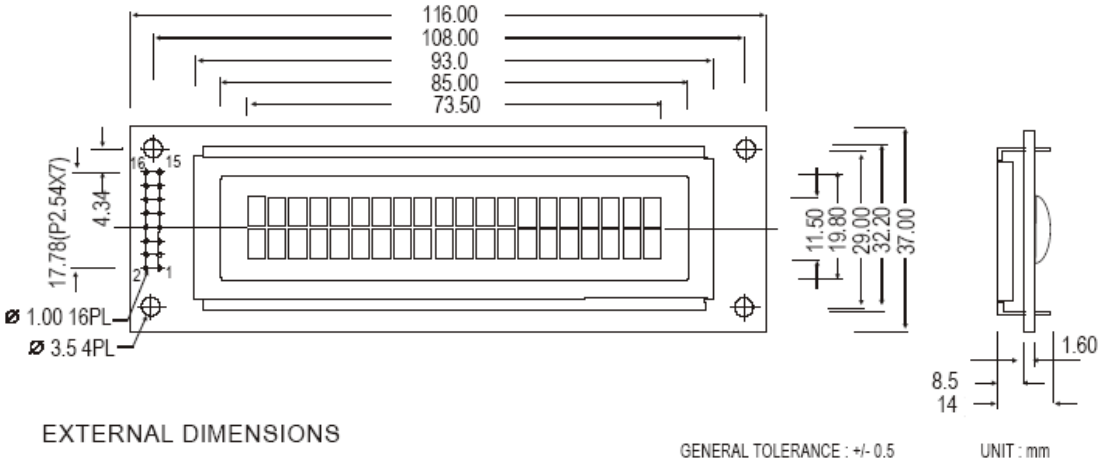
III. DIMENSIONAL OUTLINE



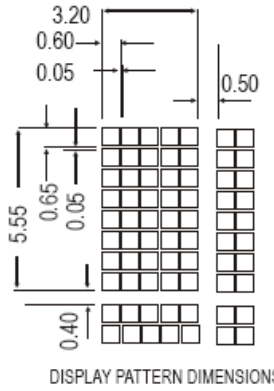


Figure 1: Dimensional Outline

IV. BLOCK DIAGRAM

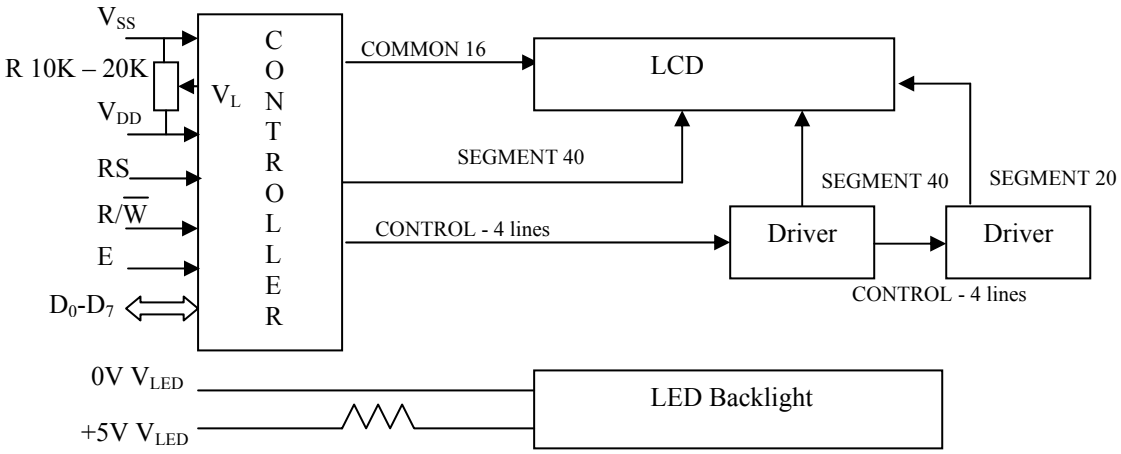


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Figure 2: System Block Diagram

V. PIN DESCRIPTION

NO.	Symbol	Level	Function
1	V_{SS}	--	Ground (0V)
2	V_{DD}	--	Power supply for logic (+5V)
3	V_L	--	Power supply for LCD 3.9V (Reference for best contrast)
4	RS	H/L	Register H: Data register Select L: Instruction register
5	R/W	H/L	H - Read ; L - Write
6	E	H,H-L	Start enable signal to read or write the data
7 - 10	$D_0 – D_3$	H/L	Data bus used in 8 bit transfer
11 - 14	$D_4 – D_7$	H/L	Data bus for both 4 and 8 bit transfer
15	$+V_{LED}$	--	LED backlight (+)
16	$-V_{LED}$	--	LED backlight (-)

VI. LEB BACKLIGHT CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward voltage	V_F	I_F=180mA	3.8	4.2	4.4	V
Reverse current	I_R	V_R=8V	---	---	1	mA
Luminous intensity (With LCD dots off)	IV	I_F=180mA	---	30	---	Cd/m^2
Wavelength	λρ	I_F=180mA	---	572	---	nm
Color	Yellow-green					

C. *APPLICATIONS*

Portable display devices

-Hand held terminals, data loggers, attendance recorders, weigh bridge displays, energy meters & other handheld devices.

Digital signage

-PCO displays, temperature indicators, schedules displayed outside conference rooms, flight boards at airports etc.

Medical equipment, digital displays, PLCs etc

For electrical characteristics & technical specifications please refer to controller datasheet. Controller used is LSI SPLC780A or KS0066

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