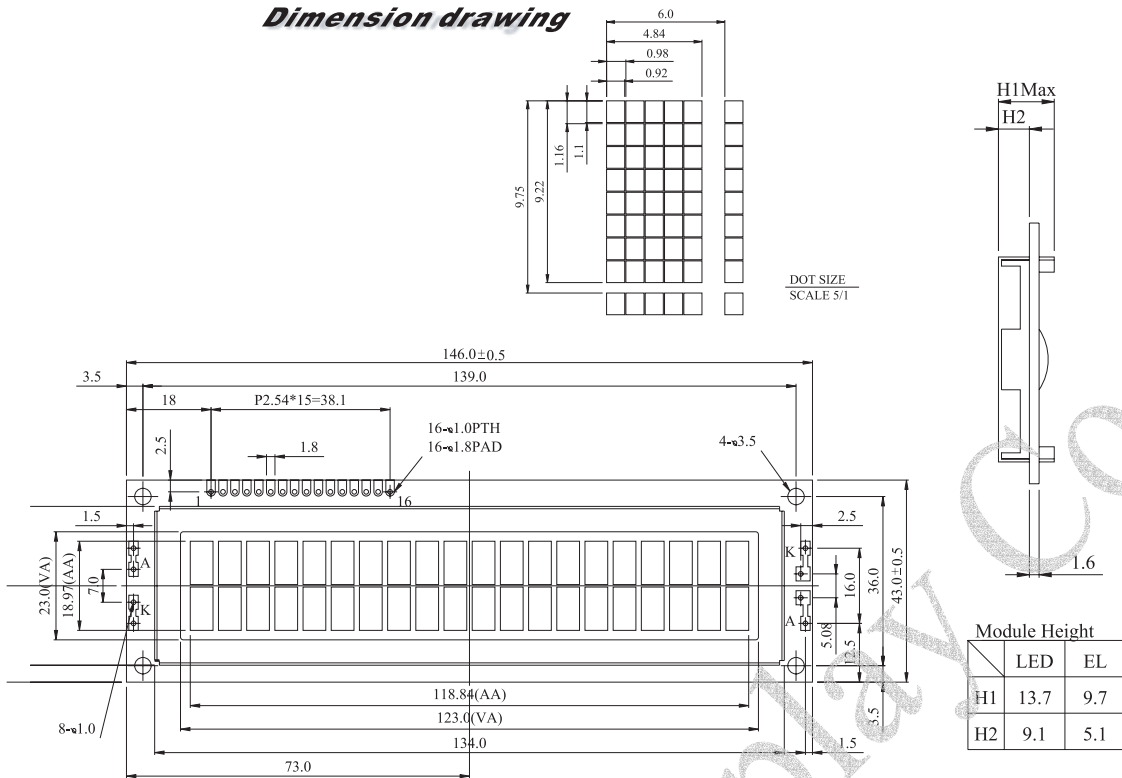




## WH2002M Character 20x2

**Dimension drawing**



### Feature

- 5x8 dots includes cursor
- Built-in controller (KS 0066 or Equivalent)
- +5V power supply (Also available for +3V)
- 1/16 duty cycle
- B/L to be driven by pin1, pin2, or pin15, pin16 or A and K
- N.V. optional for +3V power supply

### Mechanical Data

Item	Standard Value	Unit
Module Dimension	146.0x43.0	mm
Viewing Area	123.0x23.0	mm
Mounting hole	139.0x36.0	mm
Character Size	4.84x9.22	mm

Character type

Pin NO.	Symbol	Function
1	Vss	GND
2	Vdd	+3V or +5V
3	Vo	Contrast Adjustment
4	RS	H/L Register select signal
5	R/W	H/L Read / write signal
6	E	H → L Enable signal
7	DB0	H/L Data bus line
8	DB1	H/L Data bus line
9	DB2	H/L Data bus line
10	DB3	H/L Data bus line
11	DB4	H/L Data bus line
12	DB5	H/L Data bus line
13	DB6	H/L Data bus line
14	DB7	H/L Data bus line
15	A/Vee	+4.2V for LED(RA=0Ω)/Negative Voltage output
16	K	Power supply for B/L (0V)

### Absolute Maximum Rating

Item	Symbol	Standard Value			Unit
		min.	typ.	max.	
Power Supply	VDD-VSS	-0.3	---	7.0	V
Input Voltage	VI	-0.3	---	VDD	V

Note : VSS=0 Volt, VDD=5.0 Volt.

### Electronical Characteristics

Item	Symbol	Condition	Standard Value			Unit
			min.	typ.	max.	
Input Voltage	VDD	VDD=+5V	4.7	5.0	5.3	V
		VDD=+3V	2.7	3.0	5.3	V
Supply Current	IDD	VDD=5V	---	1.65	---	mA
Recommended LC Driving Voltage for Normal Temp. Version module	VDD-V0	-20°C	5.0	5.1	5.7	V
		0°C	4.6	4.8	5.2	
		25°C	4.1	4.5	4.7	
		50°C	3.9	4.2	4.5	
EL Power Supply Current	IEL	Vel=110VAC;400Hz	---	---	5.0	mA

### Display Character Address Code :

Display position	1	2	3	4	5	6	7	8	9	10	11	12	13	---	---	20
DD RAM Address	00	01														13
DD RAM Address	40	41														53

	<b>2</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>						
<b>W</b>	<b>H</b>	<b>16</b>	<b>02</b>	<b>B</b>	<b>—</b>	<b>Y</b>	<b>G</b>	<b>B</b>	<b>—</b>	<b>JP</b>	<b>**</b>
<b>1</b>		<b>3</b>		<b>5</b>			<b>7</b>			<b>9</b>	

NO	Code value	Description	Remark							
1	W	WINSTAR products	Winstar Display							
2	H,G,X,O	H:Character ; G: Graphic ; X:TAB;O:COG	LCM type							
3	08,16,20,24...	Words per line	Character							
	122,128,240...	Row dots	Graphic							
4	01,02,04,...	Lines	Character							
	32,64,128...	Column dots	Graphic							
5	A~Z	Serials number	Model name							
6	N	Without backlight	Backlight type							
	B	EL backlight , Blue								
	D	EL backlight , Green								
	W	EL backlight , White								
	Y	LED backlight , Yellow-Green								
	A	LED backlight , Amber								
	R	LED backlight , Red								
	G	LED backlight , Green								
	T	LED backlight , White								
	P	LED backlight , Blue								
	F	CCFL backlight , White								
7	B	STN positive , Gray	LCD type							
	N	TN negative , Black								
	G	STN positive , Gray								
	Y	STN positive Yellow-Green								
	M	STN negative , Blue								
	F	FSTN positive White								
	T	FSTN negative , Black								
	E	ISTN negative								
8	Temperature	Normal temp,				Wide temp,				Polarizer type/ Temperature range/ View direction
	View angle	6:00	12:00	3:00	9:00	6:00	12:00	3:00	9:00	
	Reflective	A	D	M	P	G	J	S	V	
	Transflective	B	E	N	Q	H	K	T	W	
	Transmissive	C	F	O	R	I	L	U	X	
9	Character						Graphic			
	English/ Japanese European	English/ Japanese	English/ Europe	English/ Europe	English/ Cyrillic	English/ Hebrew	Negative Voltage	Without Negative Voltage	Temperature Compensation	
	JW	JP, JT	EP,ET	EC,ES	CP,CT	H2	V	N	T	
10	**	Special Code							Touch panel, Backlight	