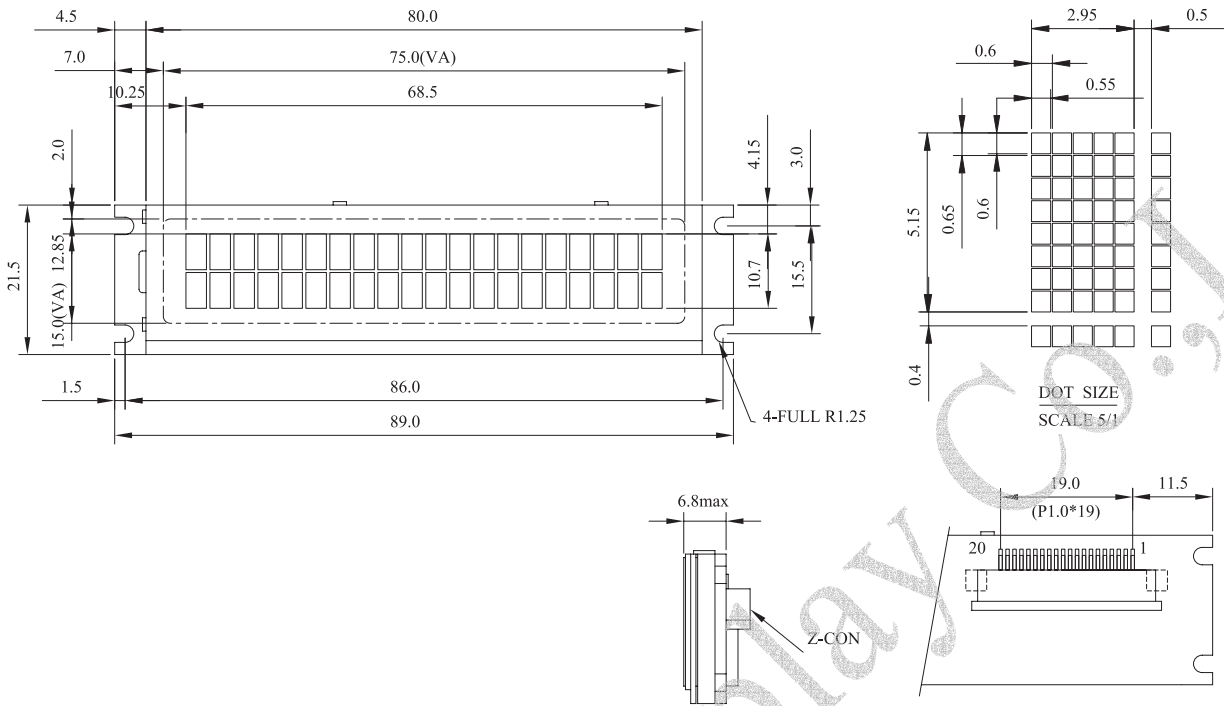




## WH2002D Character 20x2

### Dimension drawing



### Feature

- 1. 1.5x8 dots include cursor
- 2. Built-in controller KS0066 or Eguivalent
- 3. +5V power supply (Also available for +3V)
- 4. 1/16 duty cycle
- 5. LED can be driven by Pin17, Pin18
- 6. N.V option for +3V power supply

### Mechanical Data

Item	Standard Value	Unit
Module Dimension	89.0x21.5	mm
Viewing Area	75.0x15.0	mm
Mounting hole	86.0x15.5	mm
Dot Pitch	2.95x5.15	mm

Character type

Pin NO.	Symbol	Function
1	NC	No Connection
2	NC	No connection
3	Vss	GND
4	Vdd	+3 or +5V
5	V <sub>c</sub>	contrast Adjustment
6	RS	H/L Register select signal
7	R/W	Data Read/write
8	E	H→L Enable signal
9	DB0	Data bit 0
10	DB1	Data bit 1
11	DB2	Data bit 2
12	DB3	Data bit 3
13	DB4	Data bit 4
14	DB5	Data bit 5
15	DB6	Data bit 6
16	DB7	Data bit 7
17	VLED+	Power supply for LED+
18	VLED-	Power supply for LED-
19	Vee	Negative voltage output
20	NC	No connection

### Absolute Maximum Rating

Item	Symbol	Standard Value			Unit
		min.	typ.	max.	
Power Supply	VDD-VSS	-0.3	---	6.7	V
Input Voltage	V <sub>I</sub>	-0.3	---	VDD	V

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

### Electronical Characteristics

Item	Symbo	Condition	Standard Value			Unit
			min.	typ.	max.	
Input Voltage	VDD	VDD=+5V	4.75	---	5.25	v
Supply Current	IDD	VDD= +5V	---	1.2	---	mA
Recommended LC Driving Voltage for Normal Temp. Version module	VDD-V0	-20°C	---	---	5.2	V
		0°C	---	---	4.5	
		25°C	---	4.2	---	
		50°C	---	3.8	---	
		70°C	3.5	---	---	

### Display Character Address Code :

Display position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
DD RAM Address	00	01																	0F		13
DD RAM Address	40	41																	4F		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	