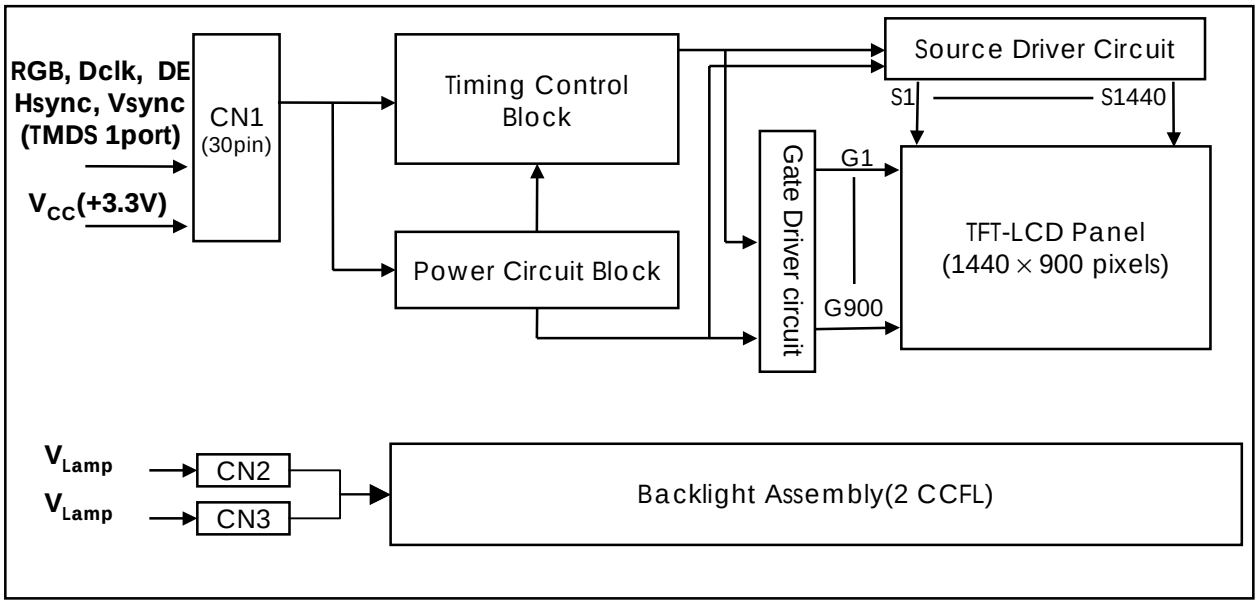
1. General Description

The LM171W02-A4 is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Lamp(CCFL) backlight system. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 17.1 inch diagonally measured active display area with WXGA resolution(900 vertical by 1440 horizontal pixel array) Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262,144 colors.
The LM171W02-A4 has been designed to apply the 8Bit TMDS interface method.The LM171W02-A4 is intended to support displays where high brightness, wide viewing angle, high color saturation, and high color depth are very important.



General Features

Active Screen Size	17.1 inches(43.3019cm) diagonal
Outline Dimension	395(H) x 256.4(V) x 11(D)mm (Typ.)/11.5(D)mm(Max.)
Pixel Pitch	0.255mm x 0.255m
Pixel Format	1440 horiz. By 900 vert. Pixels RGB strip arrangement
Color Depth	262,144 Colors (6bit)
Luminance, White	200 cd/m^2 (Typ.)
Power Consumption	Total 11.5 Watt(Typ.)
Weight	1,250 g (Max.)
Display Operating Mode	Transmissive mode, normally white
Surface Treatment	Hard coating(3H) Anti-glare treatment of the front polarizer,

2. Electrical Specifications

The LM171W02-A4 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input which powers the CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

Table 2. ELECTRICAL CHARACTERISTICS

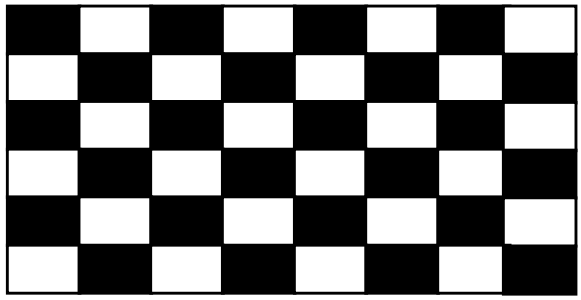
Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
MODULE :						
Power Supply Input Voltage	Vcc	3.15	3.3	3.45	Vdc	
Power Supply Input Current	Icc	-	570	950	mA	1
Power Consumption	Pc	-	1.9	3.1	Watt	1
LAMP :						
Operating Voltage	V_{BL}	580(9mA)	600(8mA)	785(2.5mA)	V_{RMS}	3
Operating Current	I_{BL}	2.5	8.0	9.0	mA_{RMS}	
Established Starting Voltage	Vs					4
at 25 °C				1000	V_{RMS}	
at 0 °C				1300	V_{RMS}	
Operating Frequency	f_{BL}	40	60	80	kHz	5
Discharge Stabilization Time	Ts			3	minutes	6
Power Consumption	P_{BL}		9.6	10.6	Watt	7
Life Time		40,000			Hrs	8

Note. The design of the inverter must have specifications for the lamp in LCD Assembly.
The performance of the Lamp in LCM, for example life time or brightness, is extremely influenced by the characteristics of the DC-AC Inverter. So all the parameters of an inverter should be carefully designed so as not to produce too much leakage current from high-voltage output of the inverter. When you design or order the inverter, please make sure unwanted lighting caused by the mismatch of the lamp and the inverter(no lighting,flicker,etc) never occurs.When you confirm it,the LCD Assembly should be operated in the same condition as installed in your instrument.

Note. Do not attach a conducting tape to lamp connecting wire.. If the lamp wire attach to conducting tape, TFT-LCD Module have a low luminance and the inverter has abnormal action because leakage current occurs between lamp wire and conducting tape.

Notes:

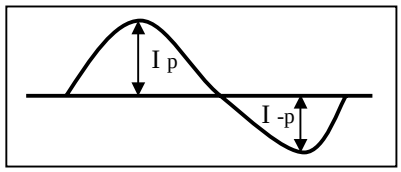
1. The specified current and power consumption are under the V_{CC}=3.3V, 25˚C,f_V=60Hz condition whereas mosaic pattern(8 x 6) is displayed and f_V is the frame frequency.



2. This impedance value is needed to proper display and measured from $TMDST_X$ to the mating connector.
3. Operating voltage is measured at 25˚C. The variance of the voltage is ±10%.
4. The output voltage at the transformer in the inverter must be high considering to the loss of the ballast capacitor in the inverter. The voltage above V_S should be applied to the lamps for more than 1 second for start-up. Otherwise, the lamps may not be turned on.
5. Lamp frequency may produce interface with horizontal synchronous frequency and as a result this may cause beat on the display. Therefore lamp frequency shall be as away possible from the horizontal synchronous frequency and from its harmonics in order to prevent interference.
6. Let's define the brightness of the lamp after being lighted for 5 minutes as 100%.
   T_S is the time required for the brightness of the center of the lamp to be not less than 95%.
   The used lamp current is the lamp typical current.
7. The lamp power consumption shown above does not include loss of external inverter at 25˚C.
   . The used lamp current is the lamp typical current.
8. The life is determined as the time at which luminance of the lamp is 50% compared to that of initial value at the typical lamp current on condition of continuous operating at 25 ± 2˚C.

Note. The output of the inverter must have symmetrical(negative and positive) voltage waveform and symmetrical current waveform(Asymmetry ratio is less than 10%). Please do not use the inverter which has asymmetrical voltage and asymmetrical current and spike wave.
Requirements for a system inverter design, which is intended to have a better display performance, a better power efficiency and a more reliable lamp.
It shall help increase the lamp lifetime and reduce its leakage current.

a. The asymmetry rate of the inverter current and voltage waveform should be 10% below;
b. The distortion rate of the current and voltage waveform should be within √2 ±10%;
c. The ideal sine current and voltage waveform shall be symmetric in positive and negative polarities.



* Asymmetry rate = $| I_p - I_{-p} | / I_{rms} * 100\%$

* Distortion rate = I_p (or I_{-p}) / I_{rms}

3. Interface Connections

- LCD Connector(CN1) : FI-XB30SL-HF10 (JAE) or equivalent
- Mating Connector : TBD

Table 3-1. MODULE CONNECTOR(CN1) PIN CONFIGURATION

Pin No	Symbol	Description
1	GND	Ground
2	GND	Ground
3	RX2+	TMDS Low Voltage Differential Signal Input Data 2(+)
4	RX2-	TMDS Low Voltage Differential Signal Input Data 2(-)
5	GND	Ground
6	RX1+	TMDS Low Voltage Differential Signal Input Data 1(+)
7	RX1-	TMDS Low Voltage Differential Signal Input Data 1(-)
8	GND	Ground
9	RX0+	TMDS Low Voltage Differential Signal Input Data 0(+)
10	RX0-	TMDS Low Voltage Differential Signal Input Data 0(-)
11	GND	Ground
12	RXC+	TMDS Low Voltage Differential Signal Input Data C(+)
13	RXC-	TMDS Low Voltage Differential Signal Input Data C(-)
14	GND	Ground
15	VEDID	DDC Power Supply 3.3V
16	NC	NC
17	CLK-EDID	DDC Clock
18	DATA-EDID	DDC Data
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	VCC	Power Supply 3.3V
23	VCC	Power Supply 3.3V
24	VCC	Power Supply 3.3V
25	POWER-ON	Power Control
26	HSYNC	Hsync Output
27	VSYNC	Vsync Output
28	GND	Ground
29	NC	NC, Reserved for HDCP
30	NC	NC, Reserved for HDCP

Note: 1. All GND(ground) pins should be connected together and to Vss which should also be connected to the LCD's metal frame.
2. All Vcc (power input) pins should be connected together.

User Connector Diagram

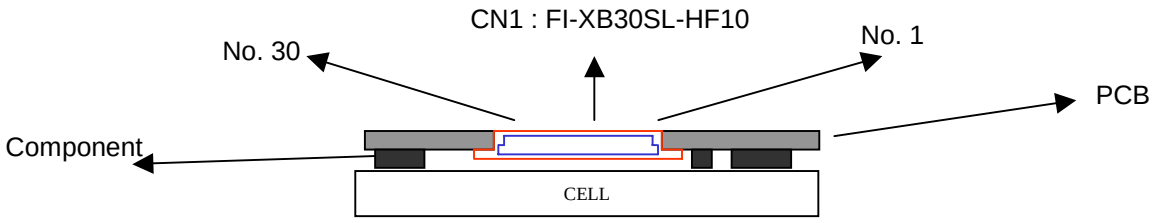
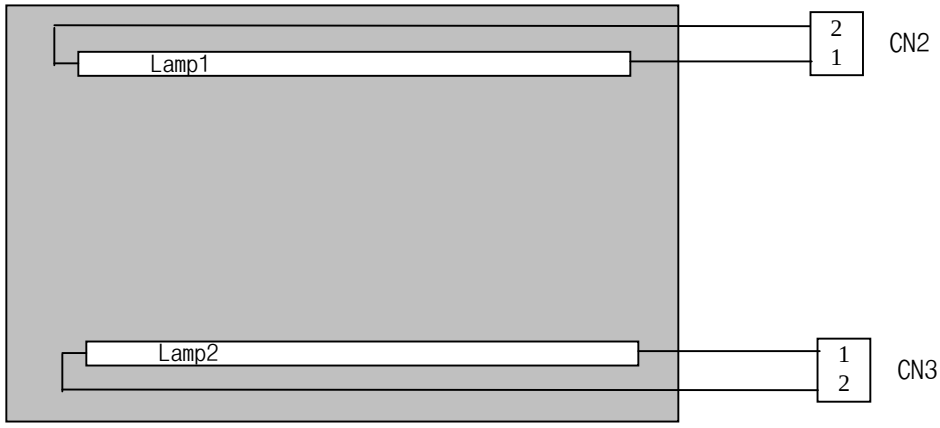


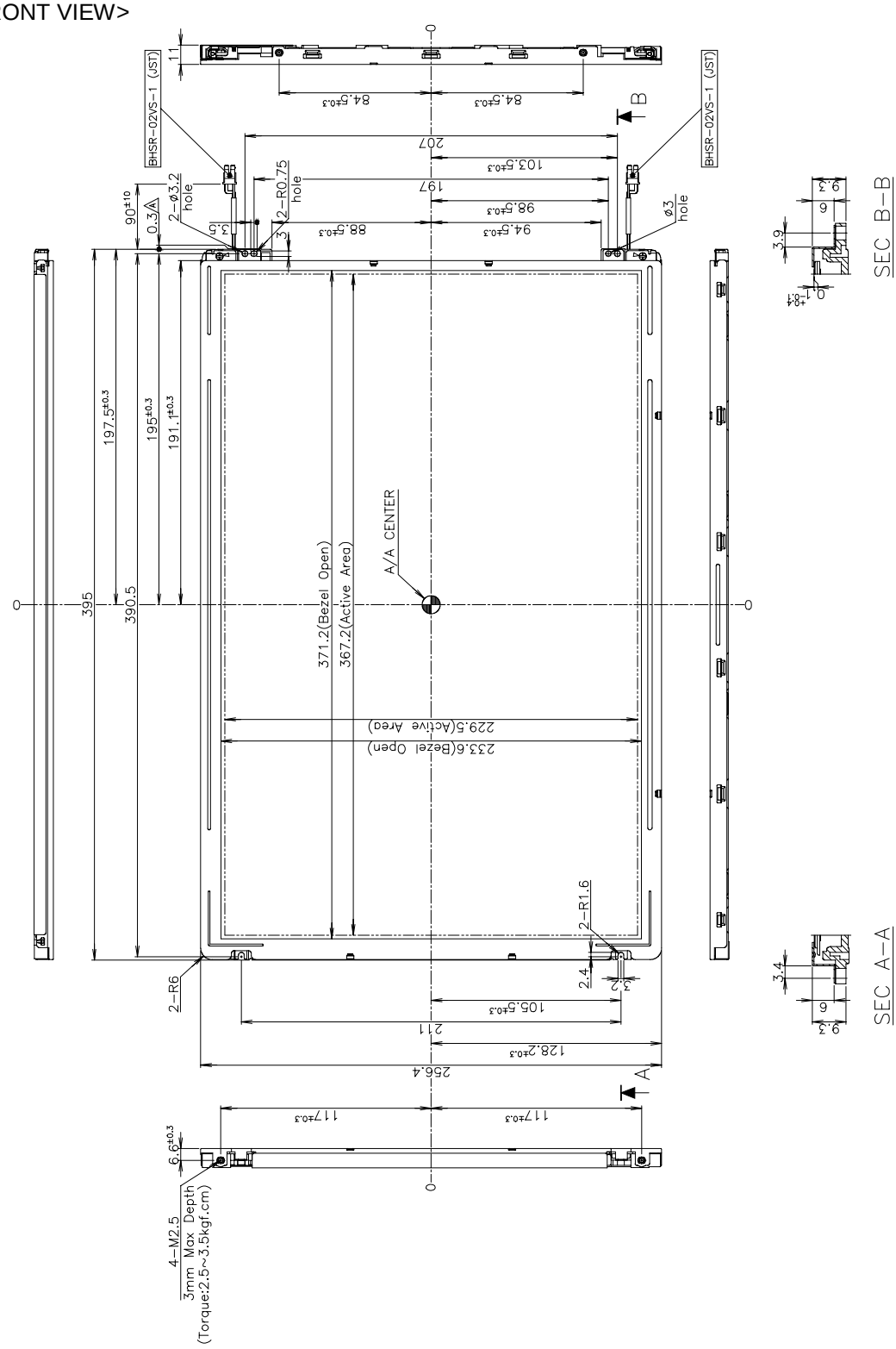
Table 4. BACKLIGHT CONNECTOR PIN CONFIGURATION (CN2,CN3)

Pin	Symbol	Description	Notes
1	HV	Power supply for lamp (high)	1) LCD : BHSR-02VS-1 (JST) 2) System : SM02B-BHSS-1 (JST)
2	LV	Power supply for lamp (Low)	

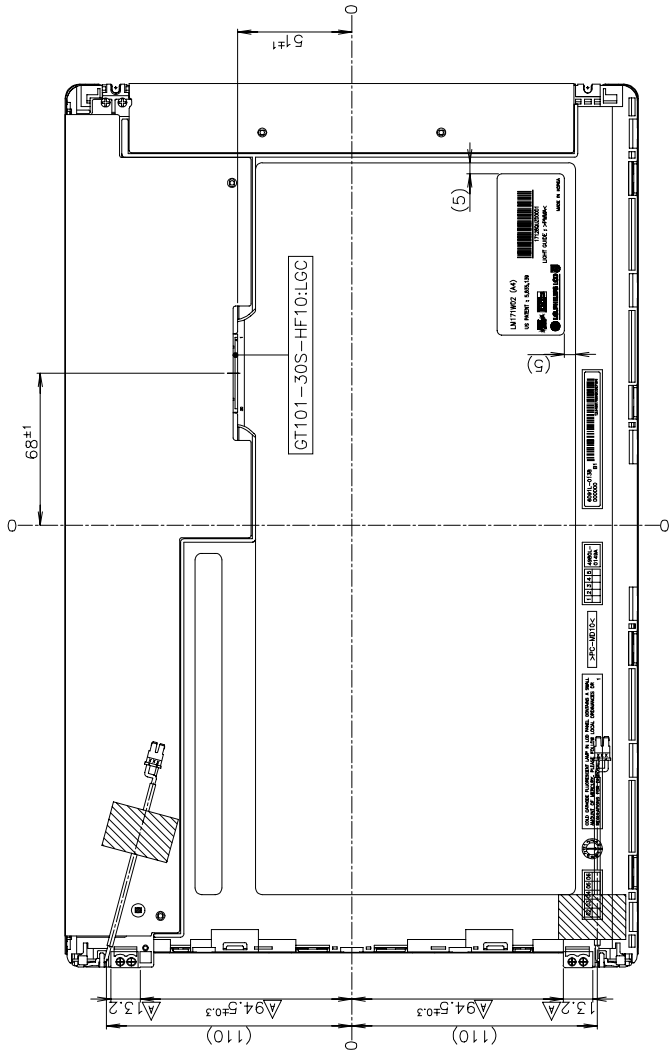
Notes : 1. The high voltage side terminal is colored pink.
2. The low voltage side terminal is colored white.



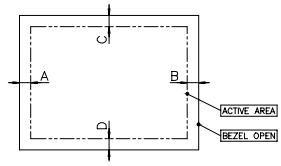
<FRONT VIEW>


BHSR-02VS-1 (JST)
BHSR-02VS-1 (JST)
11
84.5±0.3
84.5±0.3
B
207
103.5±0.3
197
98.5±0.3
94.5±0.3
88.5±0.3
90±10
0.3/A
2-ø3.2 hole
2-R0.75 hole
ø3 hole
3
3
SEC. B-B
9.3
6
3.9
1±0.1
197.5±0.3
195±0.3
191.1±0.3
395
390.5
371.2(Bezel Open)
367.2(Active Area)
A/A CENTER
229.5(Active Area)
233.6(Bezel Open)
2-R1.6
2-R6
2.4
3
105.5±0.3
211
128.2±0.3
256.4
A
SEC. A-A
3.4
6
9.3
117±0.3
117±0.3
6.6±0.3
4-M2.5
3mm Max Depth
(Torque:2.5~3.5kgf.cm)

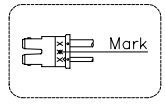
<REAR VIEW>



NOTES
1. UNSPECIFED TOLERANCE IS ±0.5.
2. BACKLIGHT WIRES AND CONTRACTION TUBES ARE EXCLUDED FROM OUTLINE DIMENSIONS.
3. TILT AND A PARTIAL DISPOSITION TOLERANCE OF DISPLAY AREA ARE AS FOLLOWS.
   1) X-DIRECTION : | A-B | ≤ 1.0mm.
   2) Y-DIRECTION : | C-D | ≤ 1.0mm.



4. LAMP(CCFL) LOT NO. IS MARKED AT BACKLIGHT CONNECTOR.



5. DO NOT WIND CONDUCTIVE TAPE AROUND THE BACKLIGHT WIRES.

4. PRECAUTIONS

The LCD Products listed on this documents are not suitable for use of Military, Industry, Medical etc. System
If customers intend to use these LCD products for above application, Please contact sales people In advance.