DCN: 20130103-100

Product Specification

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TFT LCD Specification

Model No.: PQ070WS01

Customer: _____

Approved by: _____

Note:

REVISION HISTORY

Version	Date	Part Rev.	Page (New)	Section	Description
1.8	March 3, 2012	A	All	All	Customer release
1.9	May 25, 2012		7		Connector description clarified
1.10	June 25, 2012			2.1, 7	Environmental ratings updated
1.11	July 16, 2012			7	Environmental ratings updated
1.12	Sept 13, 2012			2.1, 3.1, 6.2, 7.2	Environmental and optical specifications updated, some text revised for clarity.
1.13	Jan 3, 2013		25-28	8, 9	Precautions, EDID added

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1 GENERAL DESCRIPTION

1.1 OVERVIEW

PQ070WS01 is a 7.0" TFT Liquid Crystal Display module with a LED backlight unit and a 30-pin LVDS interface. This module supports 1024 x 600 Wide-SVGA (WSVGA) mode and can display 262,144 colors. This module also supports two low power modes: a transflective mode with lower color and a reflective black and white mode with 64 grayscales. The LED converter for backlight module is also built in.

1.2 FEATURES

- WSVGA (1024 x 600 pixels) resolution
- 3.3V LVDS (Low Voltage Differential Signaling) interface with 1 pixel/clock
- Built in LED Converter
- Transmissive, transflective, and reflective display modes

1.3 APPLICATIONS

- Mobile notebook or netbook
- Multimedia tablet

1.4 GENERAL SPECIFICATI0NS

Item	Specification	Unit	Note
Panel Diagonal	7.0	inch	
Pixels per inch color	170	ppi	
Active Area	153.60 (H) x 90.00 (V) (7.0" diagonal)	mm	
Bezel Opening Area	156.50 (H) x 92.90 (V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1024 x R.G.B. x 600	pixel	(1)
Pixel Pitch	0.150 (H) x 0.150 (V)	mm	-
Pixel Arrangement	RGB vertical stripe + 3 reflective subpixels	-	-
Display Colors	262,144	color	18 bit
Display Operating Modes	Transmissive, transflective, reflective. Normally black	-	-
Surface Treatment	Hard coating (3H), Anti-Glare	-	-

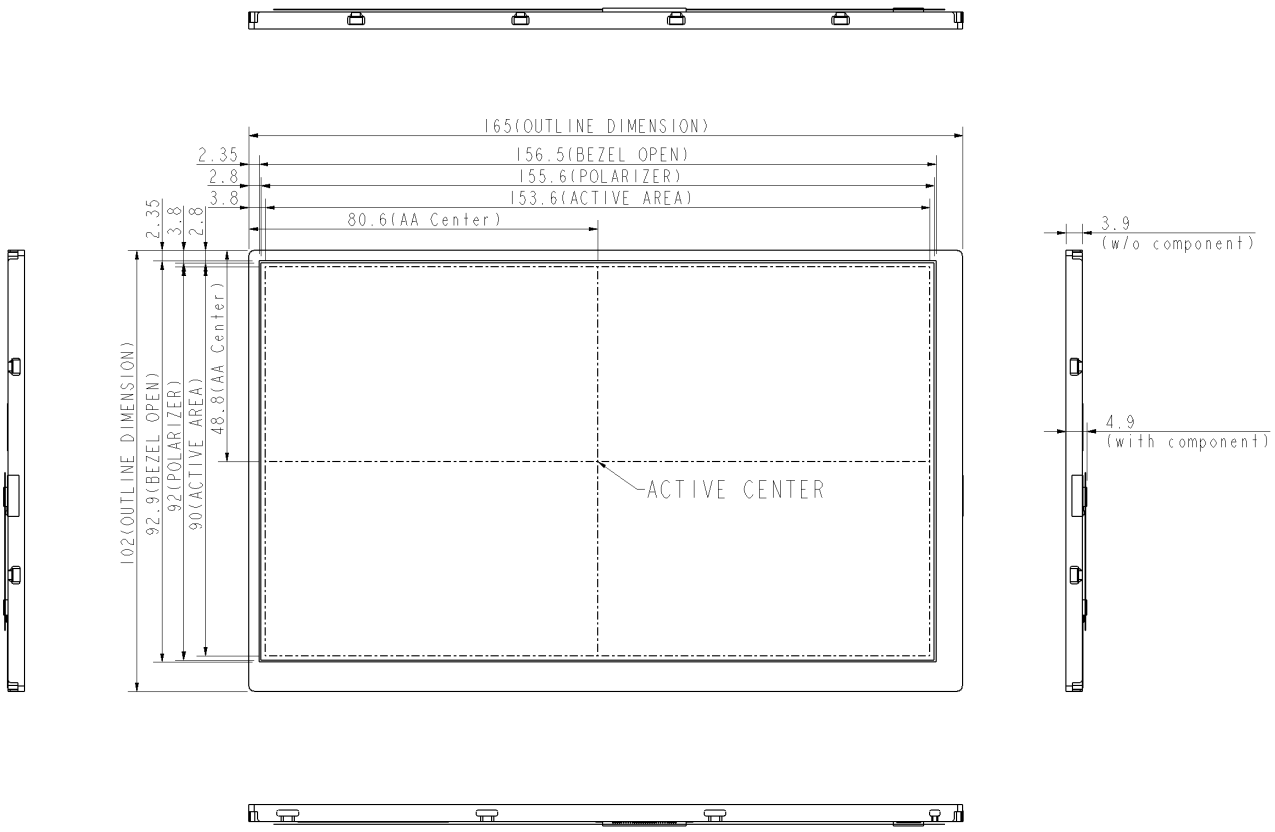
1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)		165.0		mm	(2)
	Vertical(V)		102.0		mm	
	Thickness(T)	-	3.9		mm	
Weight		-	95		g	

Note (1) Each pixel is composed of 3 transmissive subpixels (RGB) and 3 reflective subpixels (grayscale).

Note (2) The thickness specification does not include PCB and components on the PCB.

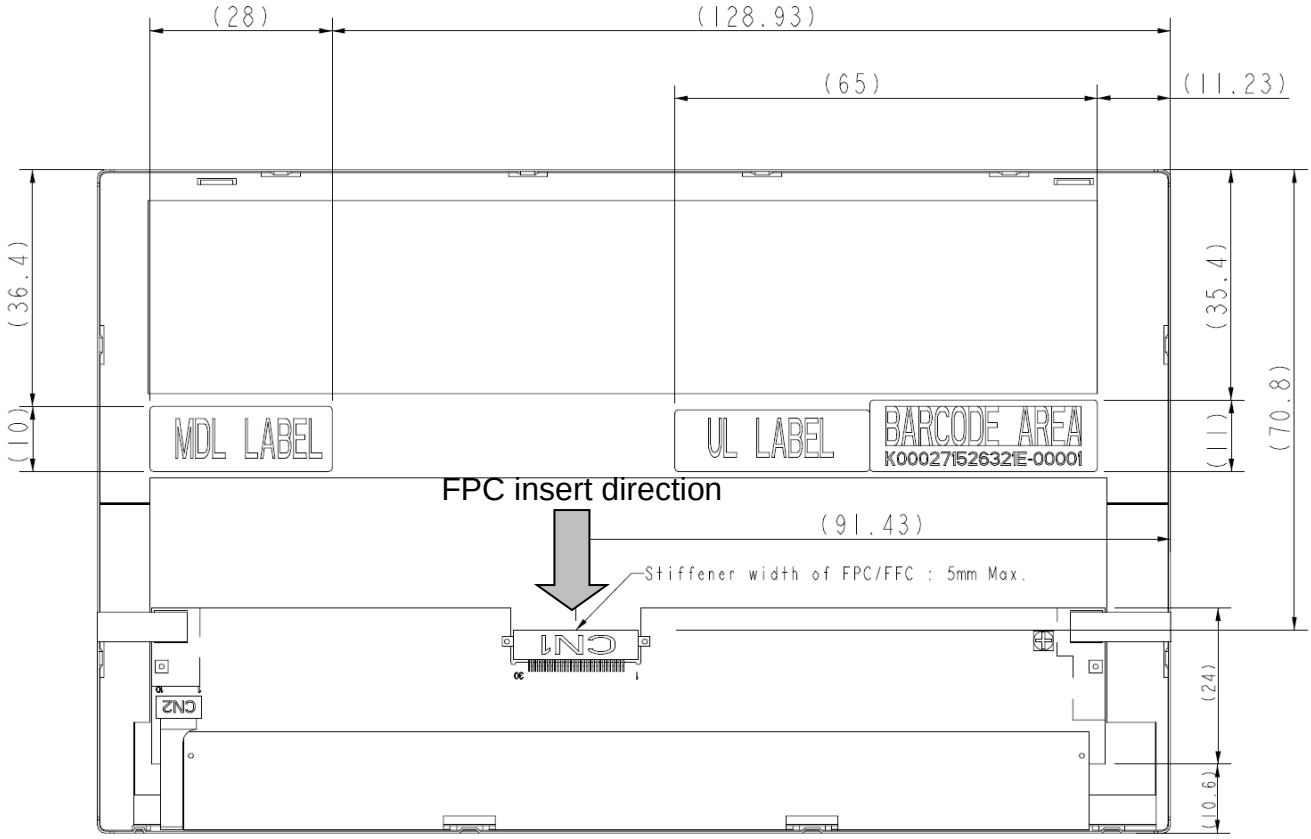
Figure 1.1 Module front and side outline



NOTE:

1. General tolerance：±0.3mm
2. Unit：mm

Figure 1.2 Module rear outline



NOTE：

1. General tolerance：±0.3mm
2. LCD connector CN1(30pin)：STARCONN, P/N：089N30-000R00-G2. FPC should be 30 pin, 0.50 mm pitch. FPC contacts should face down (towards the LCD). Compatible connectors for system boards include Molex 52437-3071 (contacts down) or 52435-3071 (contacts up).

2 ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE MAXIMUMS, ENVIRONMENTAL

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-35	+80	ºC	
Operating Ambient Temperature	T_{OP}	-35	+70	ºC	

2.2 ABSOLUTE MAXIMUMS, ELECTRICAL

Permanent damage to the device may occur if maximum values are exceeded. Operation should be restricted to the conditions described under Normal Operating Conditions.

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCC	-0.3	+4.0	V	
Logic Input Voltage	VIN	-0.3	V_{CC}+0.3	V	

2.2.2 BACKLIGHT CONVERTER INPUT

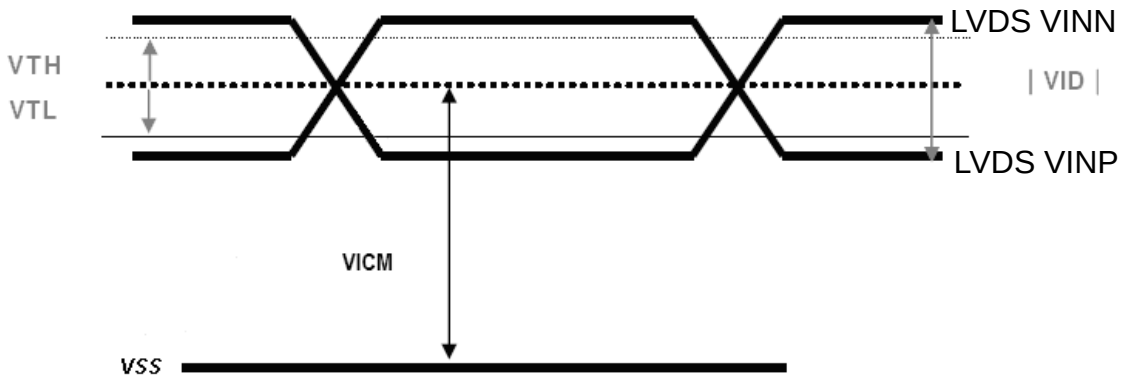
Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Input Voltage	VLED	-0.3	7.0	V	
Converter Control Signal	ADJ	-0.3	VLED	V	

3 ELECTRICAL CHARACTERISTICS

3.1 TFT LCD

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Power Supply Voltage For LCD	VCC	3.0	3.3	3.6	V	
Power Supply Voltage For LED	VLED	2.5	5.0	6.0		
Logic Input Voltage (LVDS:IN+,IN-)	VCM	1.08	1.2	1.32	V	Note1
	| VID |	250	350	450	mV	Note1
	VTH	--	--	100	mV	Note1
	VTL	-100	--	--	mV	Note1 When VCM=+1.2V
U/D, L/R			3.3		V	
V_EDID, CLK_EDID, DATA_EDID		2.7		5.5	V	
ADJ Input Voltage	VIH	1.0		VLED	V	
	VIL	GND		0.4	V	

Note1: LVDS signal

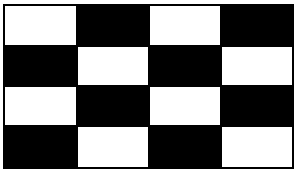


3.2 TFT CURRENT CONSUMPTION

ITEM	SYMBOL	MIN.	TYPICAL	MAX.	UNIT	NOTE
LCD Power Current	ICC				mA	Note1
Black			130	145		
Checkerboard			153	168		
White			176	191		
LED Power Current	ILED		303	350	mA	Note2

Note1:

Black Pattern



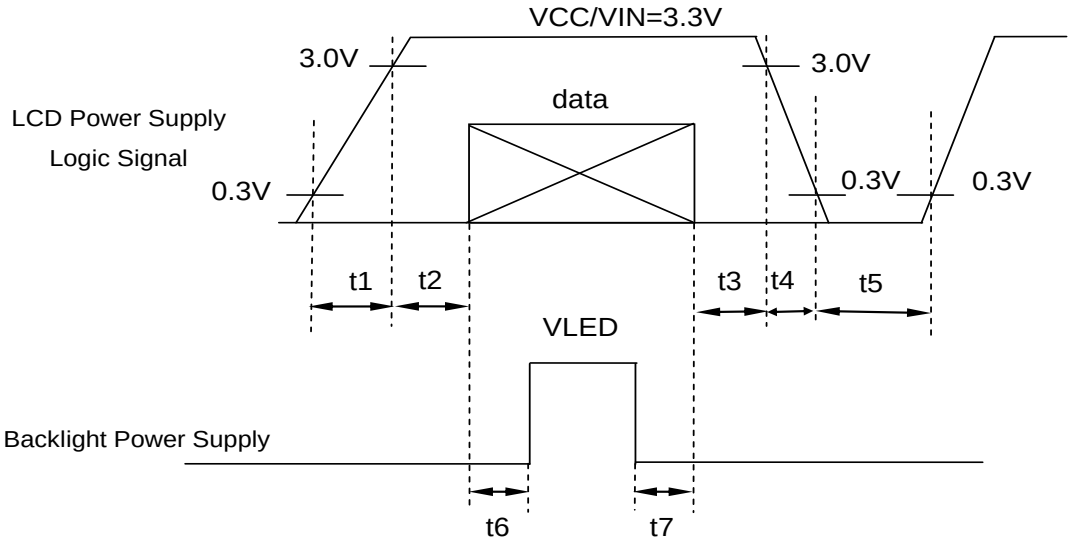
ANSI checkerboard pattern

White pattern

Typical power consumption is further specified in Section 3.6. Frame rate control and backlight duty ratio adjustment at different ambient light condition can further reduce the display power consumption.

Note2: Typical: When VLED is 5V
Maximum: When VLED is 4.5V

3.3 POWER SEQUENCE



Data: RGB DATA, DCLK, DENA

0.5<t1≦10ms	200ms≦t5
0＜t2≦50ms	200ms≦t6
0＜t3≦50ms	200ms≦t7
0＜t4≦10ms	

3.4 BACKLIGHT

Item	Symbol	Condition	Min	Typ	Max	Unit	Remarks
LED Lifetime	-	Ta=25℃	30,000			Hr	

Definition of LED lifetime：Luminance decays less than 50%.

3.5 INTERFACE CONNECTION

CN1：STARCONN P/N (089N30-00R00-G2)

Pin NO.	SYMBOL	DESCRIPTION
1	AVSS	Ground
2	VCC	Power Supply for Digital Circuit
3	VCC	Power Supply for Digital Circuit
4	V_EDID	Power Supply for EDID Circuit
5	ADJ	LED brightness adjustment
6	CLK_EDID	EDID clock input
7	DATA_EDID	EDID data input
8	RXIN0-	Negative LVDS differential data input
9	RXIN0+	Positive LVDS differential data input
10	AVSS	Ground
11	RXIN1-	Negative LVDS differential data input
12	RXIN1+	Positive LVDS differential data input
13	AVSS	Ground
14	RXIN2-	Negative LVDS differential data input
15	RXIN2+	Positive LVDS differential data input
16	AVSS	Ground
17	RXCLK-	Negative LVDS differential clock input
18	RXCLK+	Positive LVDS differential clock input
19	AVSS	Ground
20	NC	NC
21	NC	NC
22	LR	Left / Right Display Control
23	UD	Up / Down Display Control
24	VLED	Power Supply for LED
25	VLED	Power Supply for LED
26	VLED	Power Supply for LED
27	NC	NC
28	NC	NC
29	NC	NC
30	NC	NC

NOTE：

1) NC Pin must be retained; this pin cannot contact GND or other signal.

2) AVSS Pin must connect to ground contact, cannot be floating.

3) ADJ adjusts the brightness of the backlight. Higher pulse duty ratio allows higher LED current flow and generates brighter luminance. However at lower duty ratio, the converting efficiency may drop.

4) ADJ signal operation frequency：120Hz - 30KHz PWM

5) U/D and L/R control display orientation:

L/R	U/D	FUNCTION
1	0	Normal display
0	0	Left and Right reversed
1	1	Up and Down reversed
0	1	Left and Right reversed, Up and Down reversed

3.6 TOTAL POWER CONSUMPTION

Mode	Preliminary Value			Unit	Note
	Min.	Typ.	Max.		
Reflective (Black and white with 64 gray shades)		0.44		W	30 fps, BLU off
		0.49		W	60 fps, BLU off
Transflective (Low Color)		0.65		W	30 fps with ANSI checkerboard pattern, BLU duty10%
		0.72		W	60 fps with ANSI checkerboard pattern, BLU duty 10%
		1.16		W	60 fps with ANSI checkerboard pattern, BLU duty 40%
Transmissive (Full Color Saturation)		1.95		W	30 fps with ANSI checkerboard pattern, BLU duty 100%
		2.02		W	60 fps with ANSI checkerboard pattern, BLU duty 100%

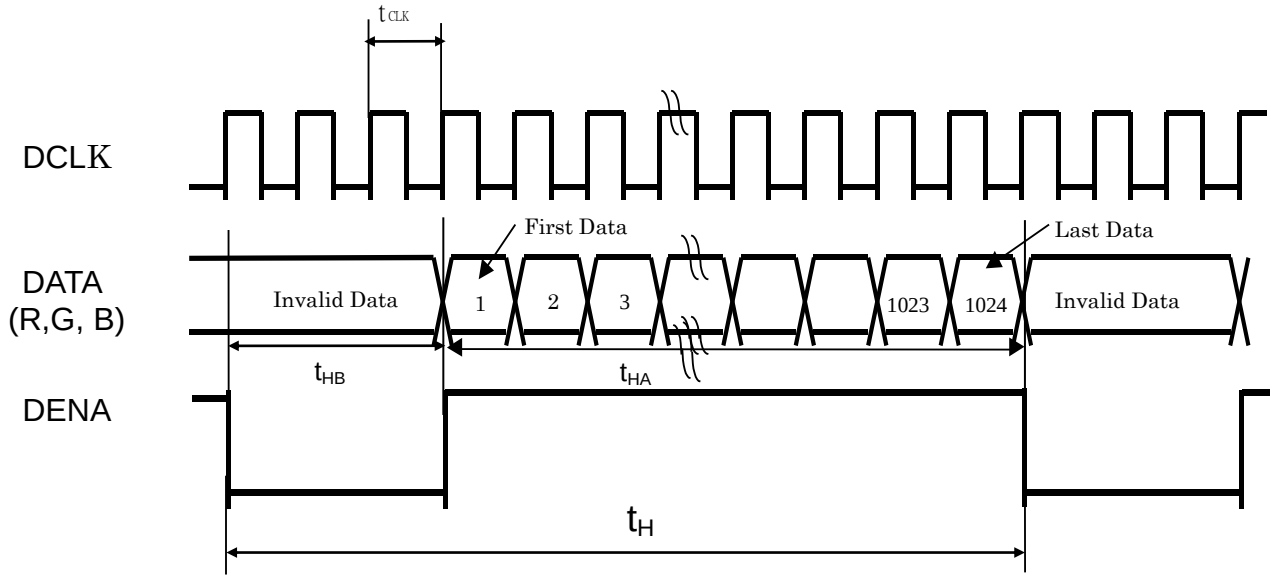
4 INPUT SIGNAL (DE only mode)

4.1 TIMING SPECIFICATION

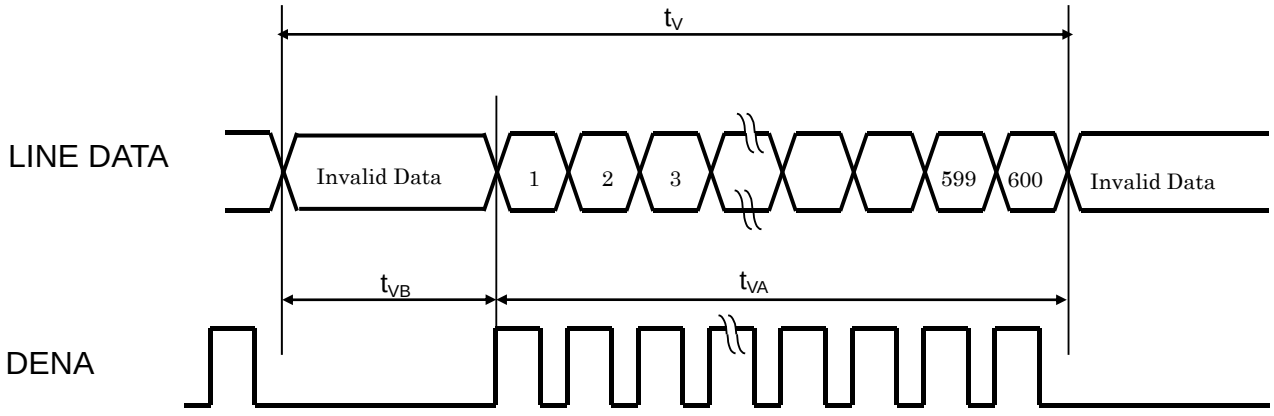
ITEM				SYMBOL	MIN.	TYP.	MAX.	UNIT
LVDS input signal sequence	CLK Frequency			f_{CLKin}	22	45	52	MHz
LCD input signal sequence （Input LVDS Transmitter）	DENA	Horizontal	Horizontal total Time	t_H	1184	1200	1250	t_{CLK}
			Horizontal effective Time	t_{HA}	1024			t_{CLK}
			Horizontal Blank Time	t_{HB}	160	176	226	t_{CLK}
		Vertical	Frame	f_V	30	60	65	Hz
			Vertical total Time	t_V	619	625	640	t_H
			Vertical effective Time	t_{VA}	600			t_H
			Vertical Blank Time	t_{VB}	19	25	40	t_H

4.2 TIMING SEQUENCE

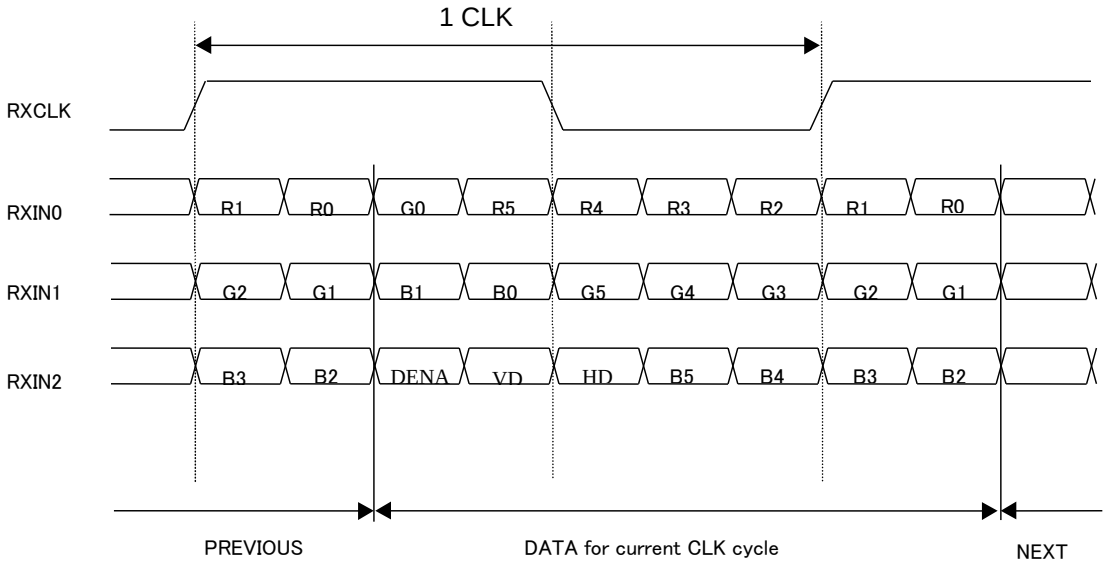
Horizontal Timing Sequence



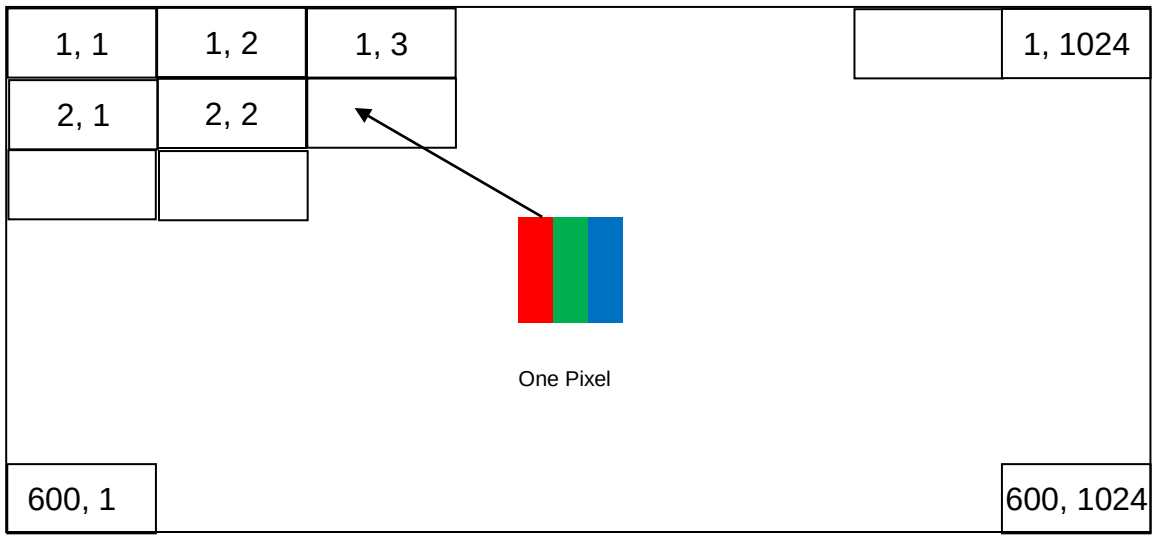
Vertical Timing Sequence



4.3 LVDS INPUT DATA MAPPING



4.4 PIXEL FORMAT



COLOR DATA ASSIGNMENT

COLOR	INPUT DATA	R DATA						G DATA						B DATA					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
		MSB					LSB	MSB					LSB	MSB					LSB
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	CYAN	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	MAGENTA	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	RED(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	GREEN(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	BLUE(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

NOTE：

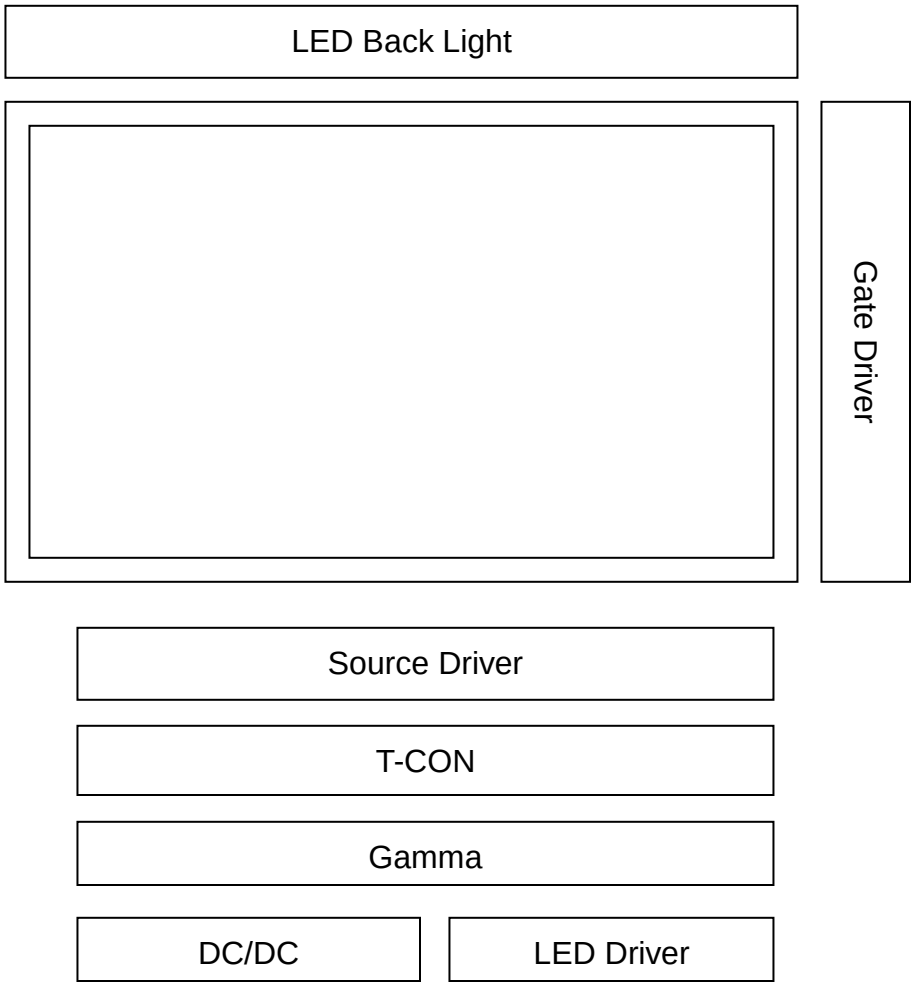
(1) Definition of Gray Scale

color(n)：n is level of Gray Scale

The higher n is, the higher the color intensity.

(2) Data:1-High,0-Low

5 BLOCK DIAGRAM



6 OPTICAL CHARACTERISTICS

6.1 REFLECTIVE MODE (Backlight OFF)*

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
Hemispheric Reflectance*	HR	$\theta = \phi = 0^\circ$		20		%	Note 1
Reflective Contrast Ratio	CR	$\theta = 0^\circ$		8		--	Note 2
Reflective Viewing Angle	Vertical, θ *2	CR≧2		140		Degree	Note 3
	Horizontal, ϕ *2	CR≧2		140		Degree	Note 3

* Ambient condition：25°C±2°C, 60±10%RH.

Note 1: Use the Reflectance Measurement Tool (RMT) developed by Pixel Qi. RMT includes a Falcon Hemispheric Illumination Device FLDM and X-rite i1 Basic Pro Spectrophotometer. The panel under measurement is placed 0 mm from the RMT.

The definition of Hemispheric Reflectance is:

$$\frac{\text{Measured reflective optical output of panel displaying “white”}}{\text{Measured reflective optical output of “white standard”}}$$

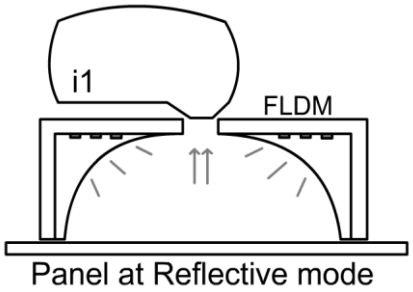


Figure 6.1 Reflectance Measurement Tool

Note 2: Use the X-rite i1 Basic Pro Spectrophotometer in reflective measurement mode.

The definition of Reflective Contrast Ratio is:

$$\frac{\text{Measured reflective optical output of panel displaying “white” } \theta=0^\circ}{\text{Measured reflective optical output of panel displaying “Black” } \theta=0^\circ}$$

Note 3: Using the diffuse illumination measurement system of DMS 803 with a D65 illumination source, the definition of Reflective Viewing Angle:

Vertical reflective viewing angle = θ *2, at which measured CR≧2

Horizontal reflective viewing angle = ϕ *2, at which measured CR≧2

Measurement angles are defined in Figure 6.2.

6.2 TRANSMISSIVE MODE (Backlight ON)*

ITEM		SYMBOL		CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Contrast Ratio		CR		Point-5	--	100	--	--	Note 4
Luminance		Lw		Point-5	180	220	--	cd/m^2	Note 5
Luminance Uniformity		ΔL			70	80	--	%	Note 6
Response Time (White - Black)		Tr+ Tf		Point-5	--	30	---	ms	Note 7
Viewing Angle		Vertical	η*2	CR≧10 Point-5		100	--	Degree	Note 8
		Horizontal				100	--		
Color Coordinate	White	Wx Wy			0.26 0.28	0.31 0.33	0.36 0.38		
	Red	Rx Ry			0.49 0.27	0.54 0.32	0.59 0.37		
	Green	Gx Gy			0.29 0.505	0.34 0.555	0.39 0.605		
	Blue	Bx By			0.105 0.053	0.155 0.103	0.205 0.153		
	NTSC				--	45		%	Note 9
Image Retention					2			hours	Note 10

* Ambient condition：25°C±2°C, 60±10%RH,; under 10 Lux in the darkroom

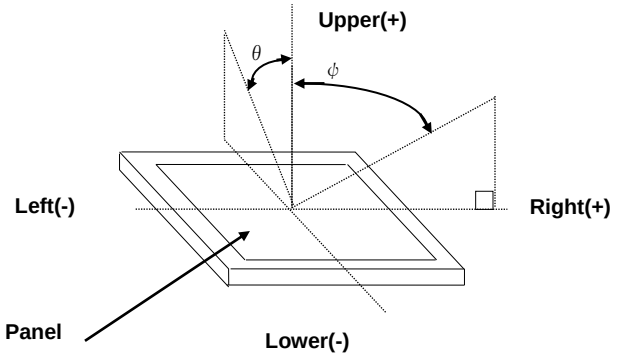


Figure 6.2 Measurement angles definition

Note 4: Use Minolta CA-210 for transmissive mode contrast ratio measurement.

Definition of Contrast Ratio： CR = White Luminance (ON) / Black Luminance (OFF)

Note 5: Use Minolta CA-210 for transmissive mode luminance measurement.

Definition of luminance：Measure white luminance on the point 5 as figure 6.3

Note 6: Use Minolta CA-210 for transmissive mode luminance uniformity measurement.

Definition of Luminance Uniformity:

Measure white luminance on the point1～9 as figure 6.3

$\Delta L = [L(MIN)/L(MAX)] \times 100$

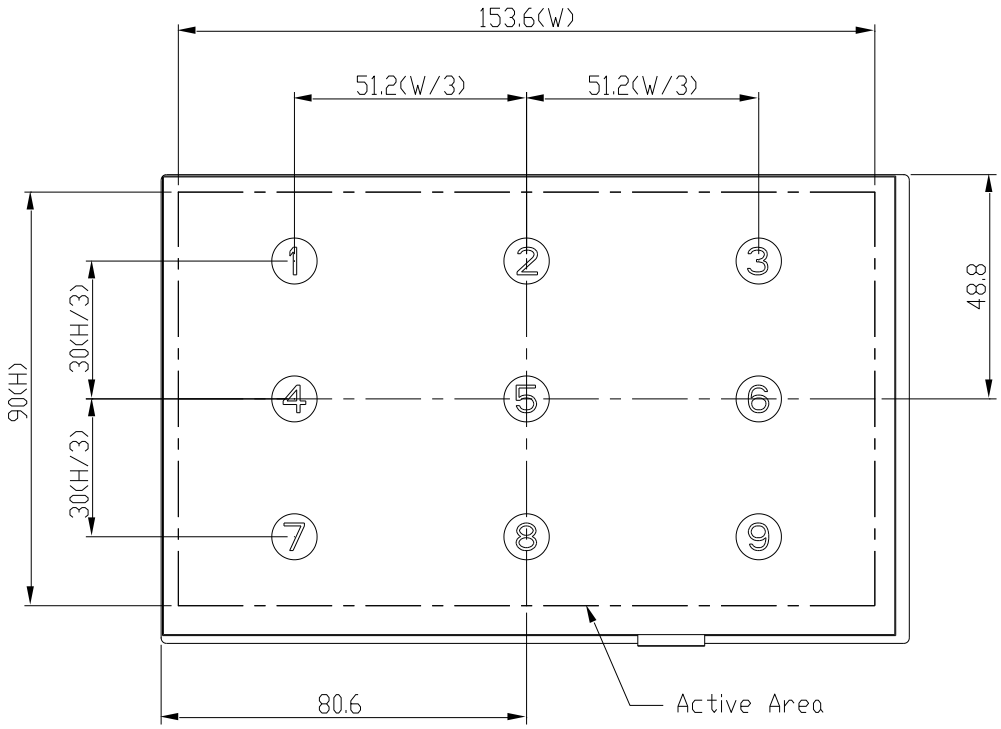
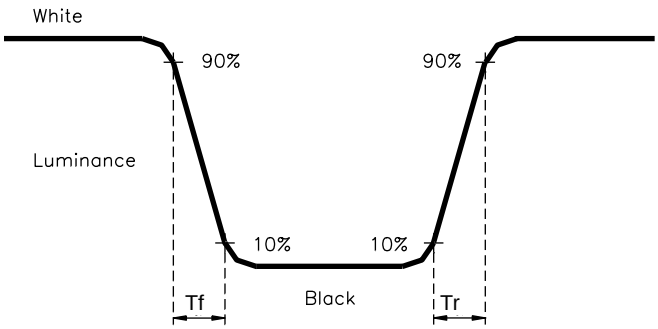


Figure 6.3 Measuring points

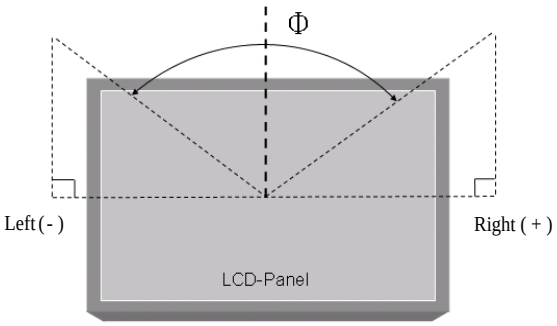
Note 7: Definition of response time：The response time is defined as the time interval between the 10% and 90% amplitudes.

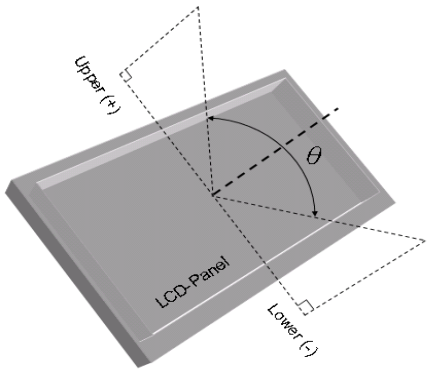


Note 8: Definition of transmissive viewing angle; symmetric around the normal

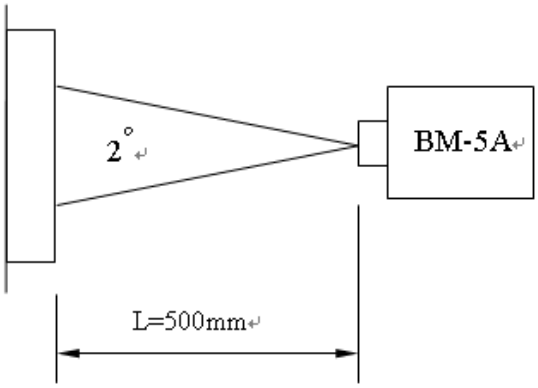
Transmissive viewing angle = η *2, at which measured CR≧10

Definition of viewing angle(θ, ψ) :





Measure condition：25°C±2°C, 60±10%RH, under 10 Lux in the dark room. BM-5A (TOPCON), viewing angle 2°, VCC=3.3V, VLED=5V.



Note 9: NTSC% measurement is based on CIE 1976.

Note 10:

a) Display ANSI checkerboard pattern for the specific duration of time.
b) Turned off the panel for 30 minutes.
c) Display 32/256 grayscale screen and visual inspect the panel for image retention of the checkerboard pattern.

7 RELIABILITY TEST

7.1 TEMPERATURE AND HUMIDITY

TEST ITEMS	CONDITIONS	NOTE
High Temperature Operation	70°C, 240Hrs	Note 1
High Temperature Storage	80°C, 240Hrs	
High Temperature High Humidity Operation	40°C, 90%RH, 240Hrs	No condensation
Low Temperature Operation	-35°C, 240Hrs	
Low Temperature Storage	-35°C, 240Hrs	
Thermal Shock	-20°C（0.5Hr）~ 60°C (0.5Hr) 100 cycles	

Note 1: Note that above 50 ºC ambient temperature, the backlight duty cycle must be reduced to 40% or lower.

7.2 SHOCK AND VIBRATION

TEST ITEMS	CONDITIONS
Shock (Non-operation)	● Shock level: 980m/s^2(equal to 100G) ● Waveform: half sinusoidal wave, 6ms. ● Number of shocks: one shock input in each direction of three mutually perpendicular axes for a total of three shock inputs.
Vibration (Non-operation)	● Frequency range: 8~33.3Hz ● Stroke: 1.3mm ● Vibration: sinusoidal wave, perpendicular axis (both x, z axis:2Hrs, y axis:4Hrs). ● Sweep: 2.9G,33.3Hz-400Hz ● Cycle:15min

7.3 ESD

ITEM	CONDITION	NOTE
ESD	150pF, 330Ω, ±8KV&±15KV air test	[Note1]
	200pF, 0Ω, ±200V contact test	[Note2]

[Note1] LCD glass and metal bezel

[Note2] Connector pins

7.4 JUDGEMENT STANDARD

The judgment of the above tests should be made as follows:

Pass: Normal display image with no obvious non-uniformity and no line defect. Partial transformation of the module parts should be ignored.

Fail: No display image, obvious non-uniformity, or line defect.

8 PRECAUTIONS – System integration, handling and storage, operation

1. Please keep radio antennas away from the PCB to avoid wireless interference
2. The module should be assembly firmly into the system. Strong or uneven pressure should not be applied to the rear surface of the panel. Shock cushioning material may be required for robustness in certain applications. Please make sure the module is not bent or twisted during assembly or operation.
3. Module assembly must be done in a clean environment. Dust or oil may cause electrical damage or impact optical performance.
4. Use finger or hand coverings to keep display clean during inspection and assembly.
5. Do not press or scratch the display surface with anything harder than an HB pencil.
6. The display surface may be cleaned with absorbent cotton or other soft cloth. Please do not use Ketone type materials (e.g. Acetone), Ethyl alcohol, Toluene, Ethyl acid, or Methyl chloride to avoid permanent damage to the top polarizer. Small quantities of Isopropyl alcohol are preferred for cleaning.
7. Wipe off any droplets of fluid (water, oil, etc) immediately. Staining or discoloration may appear if fluids are allowed to remain on the panel.
8. If the liquid crystal material leaks from the panel it should be kept away from the eyes or mouth. In case of contact with skin or clothing, it should be washed thoroughly with soap.
9. The module is a static sensitive device. Please protect from ESD events to avoid damage.
10. Do not disassemble the module or insert anything into the backlight unit.
11. Do not pull or fold any of the flex cables.
12. Do not directly touch the pins of the cable connector.
13. Optical performance may be reduced at high or low ambient temperatures or high humidity. For example, switching speed will be reduced at low ambient temperatures. Please operate and store the module within the specified environmental conditions.
14. When fixed patterns are displayed for a long time, residual images may occur.
15. Please do not expose the module to moisture.
16. Please do not connect the panel when the cable is powered, and do not disconnect the panel when it is operating.
17. Always follow the correct power on and power off sequences specified.

9 EDID DATA:

Byte (hex)	Field Name and Comments	Value (hex)	Value (binary)
0	Header	0	00000000
1	Header	FF	11111111
2	Header	FF	11111111
3	Header	FF	11111111
4	Header	FF	11111111
5	Header	FF	11111111
6	Header	FF	11111111
7	Header	0	00000000
8	EISA ID manufacturer name (“PQi”)	42	01000010
9	EISA ID manufacturer name (Compressed ASCII)	29	00101001
0A	ID product code (PQ070WS01)	0A	00001010
0B	ID product code (hex LSB first; PQ070WS01)	10	00010000
0C	ID S/N (fixed “0”)	0	00000000
0D	ID S/N (fixed “0”)	0	00000000
0E	ID S/N (fixed “0”)	0	00000000
0F	ID S/N (fixed “0”)	0	00000000
10	Week of manufacture (fixed week code)	X	X
11	Year of manufacture (fixed year code)	X	X
12	EDID structure version # (“1”)	1	00000001
13	EDID revision # (“3”)	3	00000011
14	Video I/P definition (“digital”)	80	10000000
15	Max H image size (“15.360 cm”)	0F	00001111
16	Max V image size (“9.000 cm”)	9	00001001
17	Display Gamma (Gamma = ”2.2”)	78	01111000
18	Feature support (“Active off, RGB Color”)	0A	00001010
19	Rx1, Rx0, Ry1, Ry0, Gx1, Gx0, Gy1, Gy0	0B	00001011
1A	Bx1, Bx0, By1, By0, Wx1, Wx0, Wy1, Wy0	97	10010111
1B	Rx=0.52	85	10000101
1C	Ry=0.32	52	01010010
1D	Gx=0.33	54	01010100
1E	Gy=0.53	87	10000111
1F	Bx=0.15	26	00100110
20	By=0.11	1c	00011100
21	Wx=0.29	4A	01001010
22	Wy=0.30	4C	01001100
23	Established timings 1	0	00000000
24	Established timings 2	0	00000000
25	Manufacturer’s reserved timings	0	00000000
26	Standard timing ID # 1	1	00000001
27	Standard timing ID # 1	1	00000001
28	Standard timing ID # 2	1	00000001
29	Standard timing ID # 2	1	00000001
2A	Standard timing ID # 3	1	00000001
2B	Standard timing ID # 3	1	00000001

2C	Standard timing ID # 4	1	00000001
2D	Standard timing ID # 4	1	00000001
2E	Standard timing ID # 5	1	00000001
2F	Standard timing ID # 5	1	00000001
30	Standard timing ID # 6	1	00000001
31	Standard timing ID # 6	1	00000001
32	Standard timing ID # 7	1	00000001
33	Standard timing ID # 7	1	00000001
34	Standard timing ID # 8	1	00000001
35	Standard timing ID # 8	1	00000001
36	Detailed timing description # 1 Pixel clock (38.52 MHz)	0C	00001100
37	# 1 Pixel clock (hex LSB first)	0F	00001111
38	# 1 H active (“1024”)	0	00000000
39	# 1 H blank (“32”)	20	00100000
3A	# 1 H active : H blank (“1024 : 32”)	40	01000000
3B	# 1 V active (”600”)	58	01011000
3C	# 1 V blank (”8”)	8	00001000
3D	# 1 V active : V blank (”600 : 8”)	20	00100000
3E	# 1 H sync offset (”12”)	0c	00001100
3F	# 1 H sync pulse width ("12”)	0c	00001100
40	# 1 V sync offset : V sync pulse width (”3 : 3”)	33	00110011
41	# 1 H sync offset : H sync pulse width : V sync offset : V sync width (”12: 12 : 3 : 3”)	0	00000000
42	# 1 H image size (”154 mm”)	99	10011001
43	# 1 V image size (”90 mm”)	5A	01011010
44	# 1 H image size : V image size (”154 : 90”)	0	00000000
45	# 1 H border (”0”)	0	00000000
46	# 1 V border (”0”)	0	00000000
47	# 1 Non-interlaced, Normal, no stereo, Separate sync, H/V pol Negatives	18	00011000
48	Detailed timing description # 2 40Hz Timing Pixel clock (25.68 MHz)	8	00001000
49	# 2 40Hz Timing Pixel clock (hex LSB first)	0A	00001010
4A	# 2 40Hz Timing H active (“1024”)	0	00000000
4B	# 2 40Hz Timing H blank (“32”)	20	00100000
4C	# 2 40Hz Timing H active : H blank (“1024 : 32”)	40	01000000
4D	# 2 40Hz Timing V active (”600”)	58	01011000
4E	# 2 40Hz Timing V blank (”8”)	8	00001000
4F	# 2 40Hz Timing V active : V blank (”600 :8”)	20	00100000
50	# 2 40Hz Timing H sync offset (”12”)	0c	00001100
51	# 2 40Hz Timing H sync pulse width ("12”)	0c	00001100
52	# 2 40Hz Timing V sync offset : V sync pulse width (”3 : 3”)	33	00110011
53	# 2 40Hz TimingH sync offset : H sync pulse width : V sync offset : V sync width (”12: 12 : 3 : 3”)	0	00000000
54	# 2 40Hz Timing H image size (”154 mm”)	99	10011001
55	# 2 40Hz Timing V image size (”90 mm”)	5A	01011010
56	# 2 40Hz Timing H image size : V image size (”154 : 90”)	0	00000000
57	# 2 40Hz Timing H border (”0”)	0	00000000
58	# 2 40Hz Timing V border (”0”)	0	00000000

59	# 2 40Hz Timing Non-interlaced ; Normal display, no stereo ; Digital Separate ; V sync POL is negative ; H sync POL is positive	18	00011000
5A	Detailed timing description # 3 30Hz Timing Pixel clock (21.99 MHz)	97	10010111
5B	# 3 30Hz Timing Pixel clock (hex LSB first)	8	00001000
5C	# 3 30Hz Timing H active (“1024”)	0	00000000
5D	# 3 30Hz Timing H blank (“160”)	A0	10100000
5E	# 3 30Hz Timing H active : H blank (“1024 : 160”)	40	01000000
5F	# 3 30Hz Timing V active (”600”)	58	01011000
60	# 3 30Hz Timing V blank (”19”)	13	00010011
61	# 3 30Hz Timing V active : V blank (”600 :19”)	20	00100000
62	# 3 30Hz Timing H sync offset (”48”)	30	00110000
63	# 3 30Hz Timing H sync pulse width ("32”)	20	00100000
64	# 3 30Hz Timing V sync offset : V sync pulse width (”3 : 10”)	3A	00111010
65	# 3 30Hz TimingH sync offset : H sync pulse width : V sync offset : V sync width (”48: 32 : 3 : 10”)	0	00000000
66	# 3 30Hz Timing H image size (”154 mm”)	99	10011001
67	# 3 30Hz Timing V image size (”90 mm”)	5a	01011010
68	# 3 30Hz Timing H image size : V image size (”154 : 90”)	0	00000000
69	# 3 30Hz Timing H border (”0”)	0	00000000
6A	# 3 30Hz Timing V border (”0”)	0	00000000
6B	# 3 30Hz Timing Non-interlaced ; Normal display, no stereo ; Digital Separate ; V sync POL is negative ; H sync POL is positive	18	00011000
6C	Detailed timing description # 4	0	00000000
6D	# 4 Flag	0	00000000
6E	# 4 Reserved	0	00000000
6F	# 4 FE (hex) defines ASCII string (Model Name“PQ070WS01”, ASCII)	FE	11111110
70	# 4 Flag	0	00000000
71	# 4 1st character of name (“P”)	50	01010000
72	# 4 2nd character of name (“Q”)	51	01010001
73	# 4 3rd character of name (“0”)	30	00110000
74	# 4 4th character of name (“7”)	37	00110111
75	# 4 5th character of name (“0”)	30	00110000
76	# 4 6th character of name (“W”)	57	01010111
77	# 4 7th character of name (“S”)	53	01010011
78	# 4 8th character of name (“0”)	30	00110000
79	# 4 9th character of name (“1”)	31	00110001
7A	# 4 New line character indicates end of ASCII string	0a	00001010
7B	# 4 Padding with “Blank” character	20	00100000
7C	# 4 Padding with “Blank” character	20	00100000
7D	# 4 Padding with “Blank” character	20	00100000
7E	Extension flag	00	00000000
7F	Checksum	X	X