

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	1 of 47
Model Name:	Q9W5	Marketing Description :			

### Q9W5–FP92W Service Manual

#### Contents

Chapter 1 Engineering Specification	2
Chapter 2 Circuit Operation Theory	15
Chapter 3 Alignment Procedure	27
Chapter 4 Trouble Shooting Guide	33
Chapter 5 Customer Acceptance Criteria	36
Chapter 6 Screw Torque	45
Chapter 7 Exploded Diagram	47

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	2 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 1 ENG Spec.

### Introduction

This specification describes Q9W5, which is a 19.0" wide dual (DVI + D-Sub) interface color TFT LCD monitor without audio. The monitor supports up to 1440 x 900 pixel resolution and refresh rate of 75 Hz. The independent 6 bits R, G, B colors are capable of displaying 16.2M colors (RGB-6bit + FRC data). In addition, dithering function is supported. The features summary is shown below,

**\*All panel spec. in C201 definition depends on the variance of panel source.**

**\*All spec. of monitor need to warm up at least 1hr**

Feature items	Specifications	Remark
Panel supplier & module name	HannStar 190MGW1-A	
Screen diagonal	19.0" (480mm)	408.24(H) x 255.15(V)
Display Format	WXGA / 1440 (H) x 900 (V)	
Pixel Pitch	0.2835 mm x 0.2835 mm	
Viewing Angle (@ Contrast Ratio = 10)	R/L: 75/75 degrees (typ) U/D: 70/65 degrees (typ) R/L: 65/65 degrees (min.) U/D: 65/55 degrees (min.)	Panel spec.
Analog interface with Scaling supported	Yes	With 15-pin D-sub connector
DVI interface with Scaling supported	Yes	With DVI connector
Video interface with Scaling supported	No	
Max resolution mode supported	1440 x 900 @ 75Hz	
Number of Display Colors supported	16.2M colors	(RGB 6-bits + FRC data)
Contrast Ratio	700 : 1 (typ.), 450 : 1 (min.)	
Luminance	350 cd/m <sup>2</sup> (typ.), 280 cd/m <sup>2</sup> (min.)	White Luminance@CCFL 7.5mA (center)
AC power input	Yes	90-264 Volts, 47-63 Hz.
DC power input (with AC power adapter)	No	
DPMS supported	Yes	≤ 1W at 115±5 VAC ≤ 1W at 230 VAC in Power off Preferred Mode
LED indicator for power status showed	Yes	Green/Amber/Non
OSD for control & information supported	Yes	
Multi-language supported for OSD	Yes	8/14 languages
Buttons control supported	Yes	7 buttons including 1 monitor power on/off control button.
Flywheel control supported	No	
Scaling function supported	Yes	
Auto adjustment function supported	Yes	"i-key" function
DDC function supported (EDID ver. 1.3)	Yes	DDC2B only
Audio speakers supported	No	
Audio Jack (input connector) supported	No	
Earphone Jack (input connector) supported	No	

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	3 of 47
Model Name:	Q9W5	Marketing Description :			

Microphone function supported	No	
Mechanical Tilt base design	<b>Yes</b>	From <b>-2</b> to <b>+22</b> degree
<b>VESA wall mounting design</b>	<b>Yes</b>	
Mechanical Rotate design	<b>No</b>	
Mechanical Lift base design	No	
Kensington compatible lock design	<b>Yes</b>	

## 2. Operational Specification

### 2.1 Power supply

Item	Condition	Spec	OK	N.A	Remark
Input Voltage range	Universal input full range	90~264VAC /47~63Hz	√		
Input Current range	90 ~ 264VAC	≤ 2.0 Arms	√		
Power Consumption	Normal “On” operation	≤ 45 W	√		LED: Green
DPMS	DPMS “Off” state	≤ 1 W in power preferred mode, 115V ≤ 1 W, 230V	√		LED: Amber
Inrush Current	110 VAC 220 VAC	< 30 A (peak) < 60 A (peak)	√		Cold-start
Earth Leakage Current	264 VAC/50Hz	< 3.5 mA	√		
Hi-Pot	1. 1500VAC, 1 sec 2. Ground test: 30A, 1sec	Without damage < 0.1 ohm	√		(on-line test) (in-lab test)
Power Line Transient	IEC1000-4-4	1KV	√		
	IEC1000-4-5 (Surge)	Common: 2KV, Differential: 1KV	√		
CCFL operation range	90 ~ 264VAC	3 mA ~8mA	√		Panel Spec. 3.0 ~ 8.0mA rms
CCFL Frequency	90 ~ 264VAC	40KHz ~ 80KHz	√		Panel Spec. 40KHz ~ 80KHz
Power cord		Color: Black Length: 1500 +/- 50 mm	√		

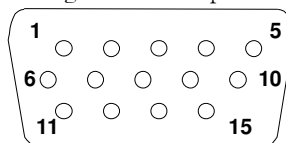
### 2.2 Signal interface

Item	Condition	Spec	OK	N.A	Remark
Signal Cable	15-pin D-Sub	Color: Black Length: 1500 +/- 30 mm	√		
	24-pin DVI-D	Color: Black Length: 2000 +/- 50 mm	√		
Pin assignment	15-pin D-sub connector	See Note-1	√		For 15-pin D-sub
	24-pin DVI-D connector	See Note-2	√		For 24-pin DVI-D
Video input	Signal type	Separate analog R/G/B	√		For 15-pin D-sub
	Level	700 mV (peak to peak)	√		
	Impedance	75 Ohms +/- 1.5 Ohms	√		

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	4 of 47
Model Name:	Q9W5	Marketing Description :			

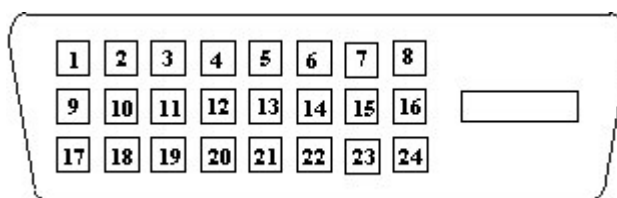
Sync input	Signal type	Separate H/V-sync Composite H/V-sync (Positive/Negative)	√		For 15-pin D-sub
	Level	Logic High: 2.4V ~ 5.5V Logic Low: 0V ~ 0.5V (TTL level)	√		Refer to VESA VSIS Standard V1R1
	Impedance	Minimum 2.2K $\Omega$ (pull down)	√		10K $\Omega$ for application
	Sync Pulse Width (SPW)	0.7 $\mu$ s < H-SPW 1H < V-SPW	√		

**Note-1:** The pin assignment of 15-pin D-sub connector is as below,



Pin	Signal Assignment	Pin	Signal Assignment
1	Red video	9	PC5V (+5 volt power)
2	Green video	10	Sync Ground
3	Blue video	11	Ground
4	Ground	12	SDA
5	Cable Detected	13	H-Sync (or H+V)
6	Red Ground	14	V-sync
7	Green Ground	15	SCL
8	Blue Ground		

**Note-2:** The pin assignment of 24-pin DVI-D connector is as below,



Pin	Signal Assignment	Pin	Signal Assignment
1	TMDS RX2-	13	Floating
2	TMDS RX2+	14	+5V Power
3	TMDS Ground	15	Ground
4	Floating	16	Hot Plug Detect
5	Floating	17	TMDS RX0-
6	DDC Clock	18	TMDS RX0+
7	DDC Data	19	TMDS Ground
8	Floating	20	Floating

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	5 of 47
Model Name:	Q9W5	Marketing Description :			

9	TMDS RX1-	21	Floating
10	TMDS RX1+	22	TMDS Ground
11	TMDS Ground	23	TMDS Clock+
12	Floating	24	TMDS Clock-

### 2.3 Video performance

Item	Condition	Spec	OK	N.A	Remark
Max. support Pixel rate		140 MHz	√		
Max. Resolution		1440 x 900	√		
Rise time + Fall time		< 6.25 ns (50% of minimum pixel clock period)	√		1280 x 1024 @ 75Hz (max. support timing)
Settling Time after overshoot /undershoot		< 5% final full-scale value	√		Refer to VESA VSIS Standard V1R1
Overshoot/Undershoot		< 12% of step function voltage level over the full voltage range	√		Refer to VESA VSIS Standard V1R1

### 2.4 Scan range

Item	Condition	Spec	OK	N.A	Remark
Horizontal		30 ~ 83 KHz	√		
Vertical		56 ~ 76 Hz	√		Without Frame buffer

### 2.5 Plug & Play DDC2B Support

Item	Condition	Spec	OK	N.A	Remark
DDC channel type		DDC2B	√		
EDID		Version 1.3	√		Refer to Q7C4 S/W spec. document to see the detailed EDID data definition.

### 2.6 Support Timings

Input Timing				Actual Output			
Resolution	Horizontal	Vertical	Dot Clock	Actual display	OK	N.A	Remark
640x350	31.47(P)	70.08(N)	25.17	1440x900	√		DOS
720x400	31.47(N)	70.08(P)	28.32	1440x900	√		DOS
640x480	31.47(N)	60.00(N)	25.18	1440x900	√		DOS
640x480	35.00(N)	67.00(N)	30.24	1440x900	√		Macintosh
640x480	37.86(N)	72.80(N)	31.5	1440x900	√		VESA
640x480	37.50(N)	75.00(N)	31.5	1440x900	√		VESA

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	6 of 47
Model Name:	Q9W5	Marketing Description :			

800x600	37.88(P)	60.32(P)	40.00	1440x900	√	VESA
800x600	48.08(P)	72.19(P)	50.00	1440x900	√	VESA
800x600	46.86(P)	75.00(P)	49.50	1440x900	√	VESA
832X624	49.72(N)	74.55(N)	57.29	1440x900	√	Macintosh
1024x768	48.36(N)	60.00(N)	65.00	1440x900	√	VESA
1024x768	56.48(N)	70.10(N)	75.00	1440x900	√	VESA
1024x768	60.02(P)	75.00(P)	78.75	1440x900	√	VESA
1024X768	60.24(N)	74.93(N)	80.00	1440x900	√	Macintosh
1152x864	67.50(P)	75.00(P)	108.00	1440x900	√	VESA
1152x870	68.68(N)	75.06(N)	100.00	1440x900	√	Macintosh
1152x900	61.80(N)	66.00(N)	94.50	1440x900	√	SUN 66
1152x900	71.81(N)	76.14(N)	108.00	1440x900	√	SUN
1280x1024	64.00(P)	60.00(P)	108.00	1440x900	√	VESA
1280x1024	75.83(N)	71.53(N)	128.00	1440x900	√	IBM1
1280x1024	80.00(P)	75.00(P)	135.00	1440x900	√	VESA
1280x1024	81.18(N)	76.16(N)	135.09	1440x900	√	SPARC2
1440x900	55.935(N)	59.887(P)	106.5	1440x900	√	VESA
1440x900	70.5	75	136.48	1440x900	√	VESA

**Note-3:** “P” , “N” stands for “Positive” , “Negative” polarity of incoming H-sync/V-sync (input timing).

### 3. Operational & Functional Specification

#### 3.1 Video performance

**\*All spec. of monitor need to warm up at least 1hr**

Item	Condition	Spec	OK	N.A	Remark
Resolution	Any input resolution modes which are under 1280 x 1024	1440 x 900	√		
Contrast ratio		700 : 1 (typ.), 450 : 1 (min.)	√		
Brightness	At R/G/B saturated condition	350 cd/m <sup>2</sup> (typ.) 280 cd/m <sup>2</sup> (min.)@ 7.5mA	√		
Response time	Rising + Falling time	5 ms (typ.) 10 ms (max.)	√		
Viewing angle	At Contrast ratio = 10	R/L: 75/75 degrees (typ.) 65/65 degrees (min.)	√		
	At Contrast ratio = 10	U/D: 75/65 degrees (typ.) 65/55 degrees (min.)	√		
CIE coordinate of White		(0.31, 0.33) +/- (0.03, 0.03)	√		

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	7 of 47
Model Name:	Q9W5	Marketing Description :			

Display colors		16.2M colors (RGB 6-bits + FRC data)	√		Support dithering
Response time with AMA	Average response time of gray level to gray level	4ms(typ.), 5.5ms(max)		√	Test Condition: Set Contrast at 50, Brightness at 90, Color at User preset.

### 3.2 Brightness Adjustable Range

Item	Condition	Spec	OK	N.A	Remark
Brightness adjustable range	At default contrast level (saturate point) & Full-white color pattern	(Max. brightness value - Min. brightness value) $\geq 100 \text{ cd/m}^2$	√		

### 3.3 Acoustical Noise

Item	Condition	Spec	OK	N.A	Remark
Acoustical Noise	At 1 meter distance & "Audio" function disabled	$\leq 40 \text{ dB/A}$		√	

### 3.4 Environment

Item	Condition	Spec	OK	N.A	Remark
Temperature	Operating	0 ~ +40 °C	√		
	Non-operating	-20 ~ +60 °C	√		
Humidity	Operating	10 ~ 90%	√		Non-condensing
	Non-operating	5 ~ 95%	√		Non-condensing
Altitude	Operating	0~3048m (10,000ft)	√		Without packing
	Non-operating	0~12,192m (40,000ft)	√		With packing

### 3.5 Transportation

Item	Condition	Spec	OK	N.A	Remark
(1) Vibration	Package, Non-Operating	(1) Sine wave 5~200Hz 1.5G, 1 octave/min, 15 min dwell on each resonant frequency, all primary axis, one sweep (30 min minimum) per orientation, total of 90+ min.	√		
		(2) Random 5 ~100 Hz, 0 dB/Oct. 0.015 g <sup>2</sup> /Hz 100 ~200 Hz, -6 dB/Oct. 200 Hz, 0.0038 g <sup>2</sup> /Hz Equivalent to 1.47 Grms, All primary axis, 20 min per-orientation, total is 60 min.			

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	8 of 47
Model Name:	Q9W5	Marketing Description :			

		(3) Procedure: Confirmed sample with appearance and function ready before testing then compare with after test record as brightness, uniformity and contrast ratio. Perform random vibration after sine-wave vibration test.			
(2) Unpackaged Vibration	Unpackaged, Non-Operating	Test Spectrum: 20 Hz 0.0185(g <sup>2</sup> /Hz) 200Hz 0.0185(g <sup>2</sup> /Hz) Duration : 5 Minutes Axis : 3 axis ( Horizontal and Vertical axis ,Z axis)	√		
(3) Drop	Package, Non-Operating	91 cm Height (MP stage) (1 corner, 3 edges, 6 faces)	√		
(4) Shock	Wooden package, Non-Operating	Waveform: half sine Faces: 6 sides/ per orientation 3 shocks. Duration: <3ms Velocity accelerate: 75g	√		

### 3.6 Electrostatic Discharge Requirements

Item	Condition	Spec	OK	N.A	Remark
Electrostatic Discharge	IEC801-2 standard	Contact: 8KV Air: 15KV	√		

### 3.7 EMC

Item	Condition	Spec	OK	N.A	Remark
TCO03	Electric	Band 1 < 10 V/m Band 2 < 1 V/m	√		
	Magnetic	Band 1 < 200nT Band 2 < 25nT	√		
EMI	FCC part 15J class B	After Mass production under 1dBuv for constant measure. Besides DNSF and VCCI class-2 are optional.	√		
	EN55022 class B				

### 3.8 Reliability

Item	Condition	Spec	OK	N.A	Remark
MTBF Prediction	Refer to MIL-217F	> 60,000 Hours	√		Excluding CCFL
CCFL Life time	At 25±2°C, under 7.5mA	50,000 Hours (typ.)	√		See Note-4

**Note-4:** CCFL lifetime is determined as the time at which brightness of lamp is 50%. The typical lifetime of CCFL is on the condition at 7.5mA lamp current.

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	9 of 47
Model Name:	Q9W5	Marketing Description :			

### 3.9 Audio performance

Item	Condition	Spec	OK	N.A	Remark
<b>Preamp + Power amp</b>					
(1)Output power		1 Wrms/CH @ 1KHz		√	
(2)THD (@ 1W)		<1%		√	
(3)S/N ratio		>40dB		√	
<b>Speaker Driver</b>					
(1)Nominal impedance		8 ohm		√	
(2)Rated input power		2 W/CH		√	
(3)Frequency response		180~20KHz SPL-10dB		√	
(4)Output sound pressure level		84 ± 3 dB (1W 0.5M)		√	
(5)Dimension of box		62x33cx20 mm <sup>2</sup>		√	
<b>Audio Control</b>					
(1)Volume range		0 ~100 levels		√	
(2)Mute		On/Off		√	

## 4. LCD Characteristics

### 4.1 The Physical definition & Technology summary of LCD panel

Item	Condition	Spec	OK	N.A	Remark
LCD Panel Supplier		HannStar	√		
Panel type of Supplier		HSD190MGW1-A	√		
Screen Diagonal		480mm(19.0" )	√		
Display area	Unit=mm	408.24(H) x 255.15(V)	√		
Physical Size	Unit=mm	428.0(H) x 278.0(V) x 18.5 (D) (typ.)	√		
Weight	Unit=gram	2200 (typ.)	√		
Technology		TN type	√		
Pixel pitch	Unit=mm	0.2835 x 0.2835	√		Per one triad
Pixel arrangement		R/G/B vertical stripe	√		
Display mode		Normally white	√		
Support color		16.2M colors (RGB 6-bits + FRC data)	√		

### 4.2 Optical characteristics of LCD panel

Item	Unit	Conditions	Min.	Typ.	Max.	Remark
Viewing Angle	[degree]	Horizontal (Right)	65	75	-	
	[degree]	CR = 10 (Left)	65	75	-	
	[degree]	Vertical (Up)	65	75	-	
	[degree]	CR = 10 (Down)	55	65	-	
Contrast ratio		Normal Direction	450	700		
Response Time	[msec]	Rising Time	-	1.5	3	
	[msec]	Falling Time	-	3.5	7	
	[msec]	Rising + Falling	-	5	10	
Color / Chromaticity		Red x	0.640	0.643	0.646	

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	10 of 47
Model Name:	Q9W5	Marketing Description :			

		Red y	0.322	0.325	0.328	
		Green x	0.292	0.295	0.298	
		Green y	0.613	0.616	0.619	
		Blue x	0.140	0.143	0.146	
		Blue y	0.078	0.081	0.084	
Color Coordinates (CIE) White		White x	0.280	0.310	0.340	
		White y	0.300	0.330	0.360	
Luminance Uniformity	[%]	9 points measurement	-	75	-	
White Luminance @ CCFL 7.5mA (center)	[cd/m <sup>2</sup> ]		280	350	-	
Crosstalk (in 75Hz)	[%]		-	-	-	

\* The test methods for the above items' definition, please refer to the relative panel specification.

### 5. User Controls

#### 5.1 User's hardware control definition

Item	Condition	Spec	OK	N.A	Remark
Monitor Power button			√		
Enter button			√		
Right/Inc. button			√		
Left/Dec. button			√		
Exit /Volume button			√		
I-key button			√		
Mode Selection button				√	
Input Select Key			√		
Mute button				√	
Input source select button				√	

#### 5.2 OSD control function definition

Item	Condition	Spec	OK	N.A	Remark
Auto Adjust		Auto-Geometry	√		
Brightness			√		
Contrast			√		
Horizontal Position			√		
Vertical Position			√		
Pixel Clock			√		
Phase			√		
Color		Bluish Reddish Normal User: Separate R/G/B adjustment	√		
OSD Position		OSD Horizontal position OSD Vertical position	√		
OSD Time		From 5 sec to 60 sec	√		
Language		8 / 14 languages	√		

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	11 of 47
Model Name:	Q9W5	Marketing Description :			

Recall		Color recall Recall All	√		
Mode Selection				√	
Input Select		D-sub DVI	√		
Sharpness			√		
Display Information		For input timing	√		
Volume				√	
Mute				√	
Hot key for Brightness			√		
Hot key for Contrast			√		
Hot key for Volume				√	
Hot key for Mode				√	
AMA				√	

\* The detailed firmware functions' specification, please refer to C212 S/W spec. document.

## 6. Mechanical Characteristics

### 6.1 Dimension

Item	Condition	Spec	OK	N.A	Remark
Bezel opening		410.25 x 257.26 mm			
Monitor without Stand	L x W x H mm	450.25*297.3*71.8 m	√		
Monitor with Stand	L x W x H mm	450.2*366.8*169.9 mm	√		
Carton Box (outside)	L x W x H mm	535(L)*452(W)*170(H)	√		
Tilt and Swivel range		Tilt: -2 ~ +22 degree Swivel: 0 degree	√		

### 6.2 Weight

Item	Condition	Spec	OK	N.A	Remark
Monitor (Net)		4.7 Kg	√		
Monitor with packing (Gross)		6.45 Kg	√		

### 6.3 Plastic

Item	Condition	Spec	OK	N.A	Remark
Flammability		94-HB	√		
Heat deflection To	ABS	65 °C	√		
UV stability	ABS	Delta E < 8.0	√		
Resin		MPRII: ABS (VW55/VE0856/D350)	√		
Texture		MT-11010	√		Bezel texture MT-11000
Color		BCS-5003A	√		Bezel painting T8020C

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	12 of 47
Model Name:	Q9W5	Marketing Description :			

#### 6.4 Carton

Item	Condition	Spec	OK	N.A	Remark
Color		Kraft	√		
Material		C Flute	√		
Compression strength		360 KGF	√		
Burst Strength		16 KGF/cm <sup>2</sup>	√		
Stacked quantity		12 Layers	√		

#### 7. Pallet & Shipment

##### 7.1 Container Specification

Stowing Type	Container	Quantity of products (sets) (Every container)	Quantity of Products (sets) (Every Pallet)	Quantity of pallet (sets) (Every Container)
With pallet	20'	600	Pallet A: 48	Pallet A: 5
			Pallet B: 72	Pallet B: 5
	40'	1320	Pallet A: 48	Pallet A: 11
			Pallet B: 72	Pallet B: 11
Without pallet	20'	650	52	5
			78	5
	40'	1430	52	11
			78	11

##### 7.2 Carton Specification

###### Product:

Net Weight (Kg)	Gross Weight (Kg)	Dimension w/o Base L*W*H (mm)	Dimension w/ Base L*W*H (mm)
4.7 Kg	6.45 Kg	450.2*297.3*71.8mm	450.2*366.8*169.9mm

###### Package:

Carton Interior Dimension (mm) L*W*H	Carton External Dimension (mm) L*W*H
525(L)*442(W)*152(H)	535(L)*452(W)*170(H)

#### 8. Certification

Item	Condition	Spec	OK	N.A	Remark
Environment	Green design	API Doc. 715-C49	√		ISO14000 Requirement
	Blue Angel	German Standard		√	
	E-2000	Switzerland		√	
	EPA	USA Standard	√		
	TCO' 99		√		
	TCO' 03		√		
	Green Mark		√		
PC-Monitor	Microsoft Windows	PC98/99	√		

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	13 of 47
Model Name:	Q9W5	Marketing Description :			

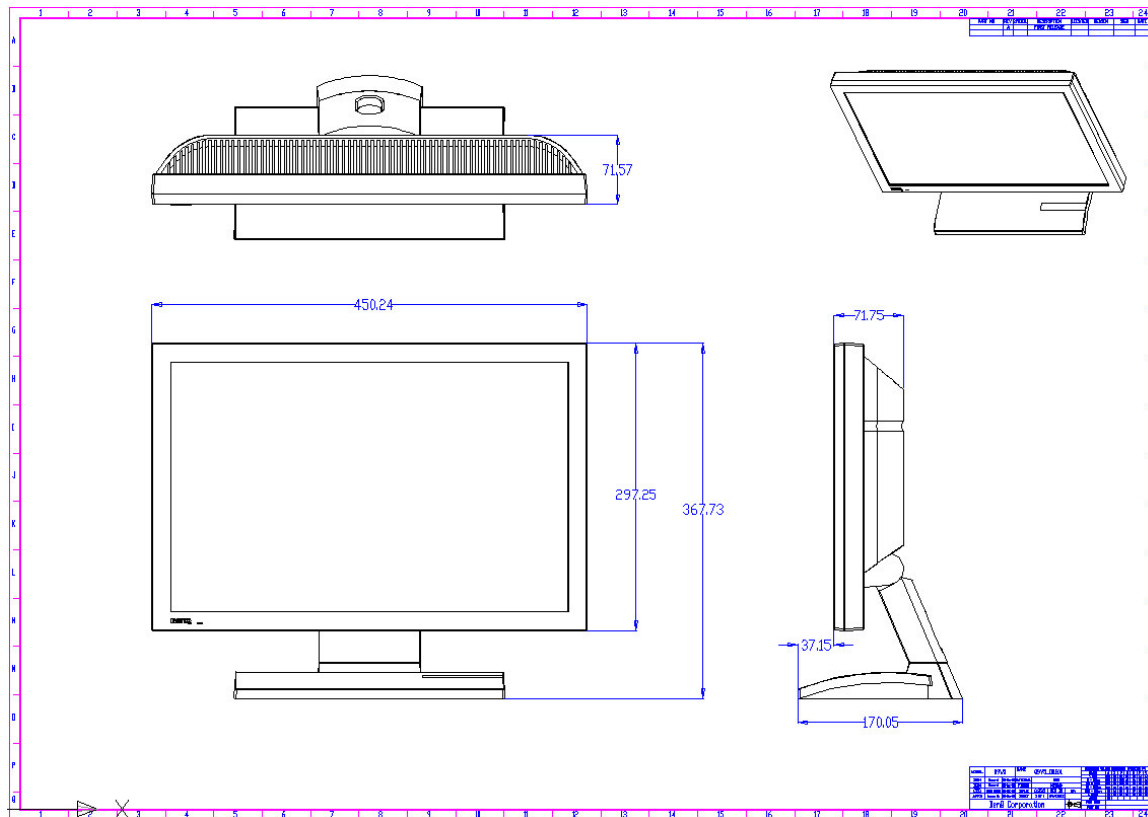
	DPMS	VESA	√		
	DDC 2B	Version 1.3	√		
	USB	External		√	
Safety	UL (USA)	UL60950 3 <sup>rd</sup> edition	√		
	CSA (Canada)	CAN/CSA-C22.2 No. 60950		√	
	Nordic / D.N.S.F	EN60950		√	
	FIMKO	EN60950	√		
	CE Mark	73/23/EEC	√		
	<b>IEC60950</b>		√		
	EN60950		√		
	CB	EN60950	√		
	TUV/GS	EN60950 / EK1-ITB 2000:2003	√		
	CCC (China)		√		
	GOST	EN60950	√		
	SASO		√		
EMC	CE Mark	89/336/EEC	√		
	FCC (USA)	FCC Part 15 B	√		
	EN55022	Class B	√		
	CISPR 22	Class B	√		
	VCCI (Japan)	VCCI Class B	√		
	BSMI (Taiwan)	CNS 13438	√		
	C-Tick (Australia)	AS/ NZS CISPR22	√		
X- Ray Requirement	DHHS (21 CFR)	USA X- Ray Standard		√	
	DNHW			√	
	PTB	German X- Ray standard		√	
Ergonomics	TUV / Ergo		√		
	ISO 13406-2		√		
	prEN50279		√		

Appendix: Physical Dimension Front View and Side view

Fig. 1 Physical Dimension Front View and Side view

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	14 of 47
Model Name:	Q9W5	Marketing Description :			



□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	15 of 47
Model Name:	Q9W5	Marketing Description :			

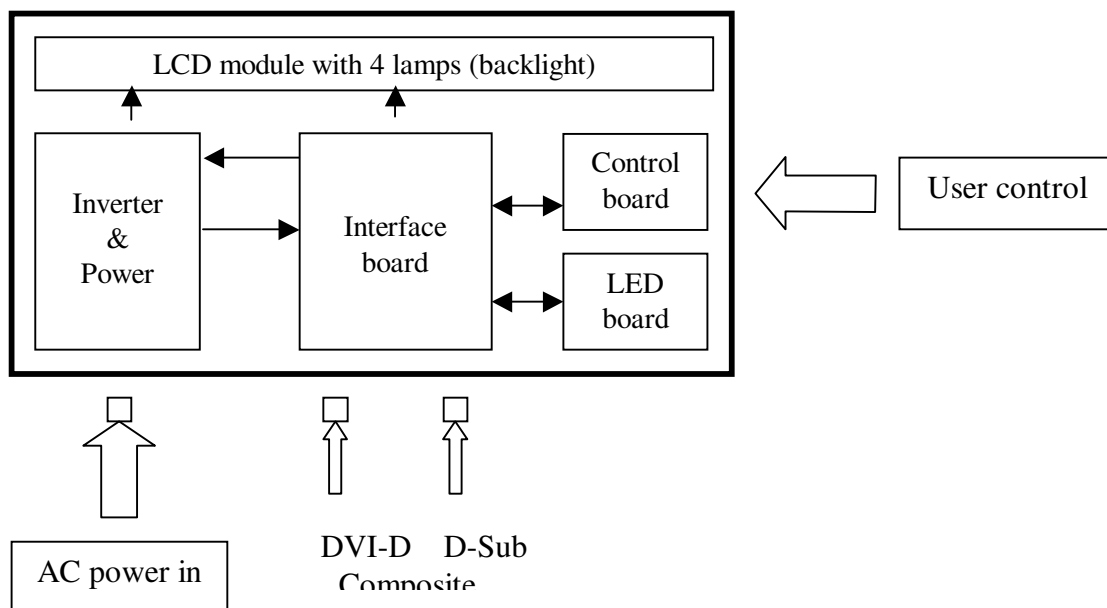
## Chapter 2 Circuit Operation

### I. Introduction:

The Q9W5 is a 19" WXGA (1440x900), 16.2M (R/G/B 6-bit+ FRC for V.A00 version) TFT LCD monitor with multi-media function. It's a Dual (analog and digital) interface LCD monitor with a 15 pins D-sub signal cable and a 24 pins DVI-D cable. It's compliant with VESA specification to offer a smart power management and power saving function. It also offers OSD menu for users to control the adjustable items and get some information about this monitor, and the best function is to offer users an easy method to set all adjustable items well just by pressing one key, we called it "I-Key" which can auto adjusting all controlled. Items Q9W5 also offer DDC2 function to meet VESA standard.

### II. Block diagram

The Q9W5 consists of a head and a stand (base). The head consists of a LCD module with 4 lamps, a power board (include AC/DC, DC/DC and inverter board), a control board and an interface board. The block diagram is shown as below.



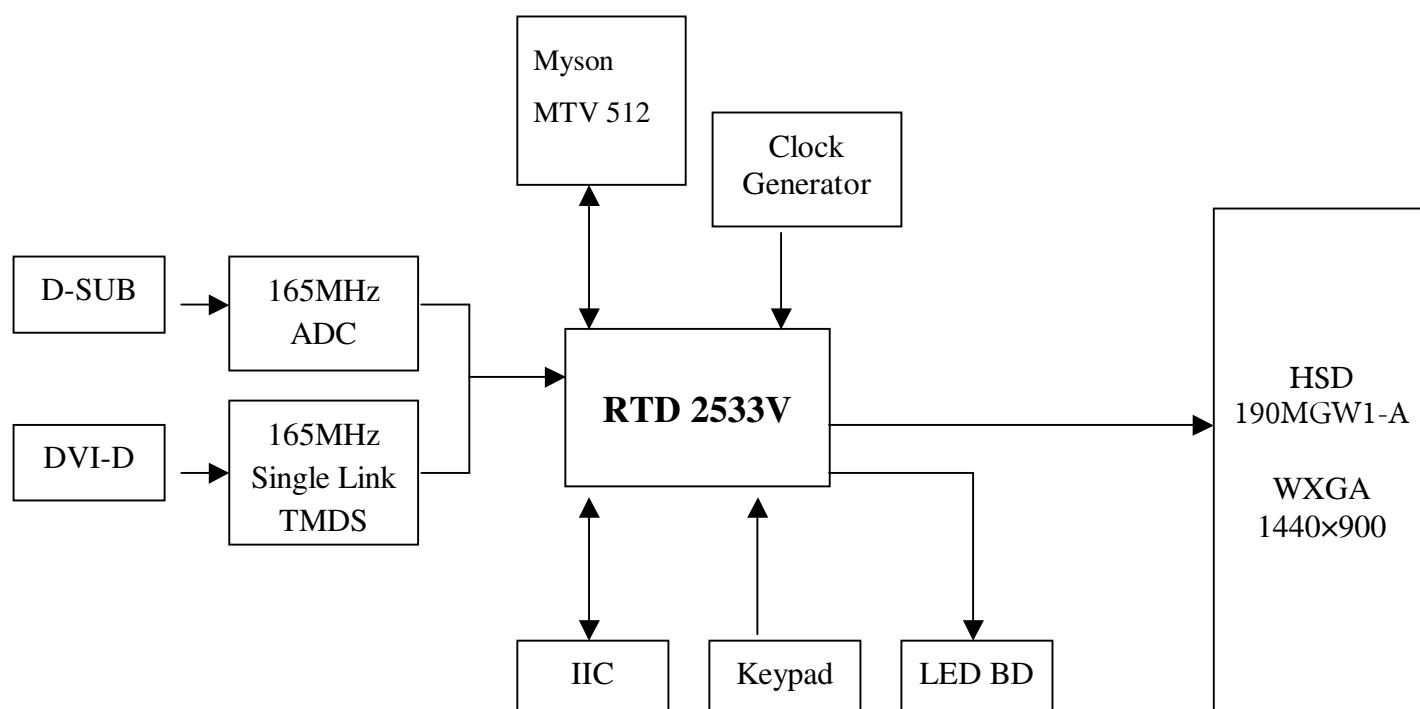
□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	16 of 47
Model Name:	Q9W5	Marketing Description :			

### III. Circuit operation theory:

#### A.) HEAD:

##### A-1.) Interface board diagram:



#### (a) Circuit operation theory:

A basic operation theory for the interface board is to convert input signal into digital RGB. Analog RGB signal is converted to digital signal through ADC. DVI-D signal is converted through TMDS receiver. The microprocessor RTD 2533V receives video data and optimizes the image automatically. It also supports input source selection, maximum 8 multi-color fonts as well as 256 color palette to form a bitmap OSD, and keypad controlling. The output data are sent to LCD module.

#### (b) IC introduction:

- 1) DDC (Display Data Channel) function: We use DDC IC to support DDC2B function. DDC data is stored in 24C02(EEPROM). Those data related to LCD monitor specification. PC can read them by "SDA" and "SCL" serial communication for I<sup>2</sup>C communication for DDC2B.
- 2) RTD 2533V IC: There are A/D, Scaling and OSD functions in the RTD 2533V IC. Scaling IC is revolutionary scaling engine, capable of expanding any source resolution to a highly uniform and sharp image, combined with the critically proven integrated 8-bit triple-ADC and patented Rapid-lock digital clock recovery system. It also support detect mode and DPMS control.

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	17 of 47
Model Name:	Q9W5	Marketing Description :			

3)EEPROM: We use EEPROM(24C04) to store all the adjustable data and user settings, and use 24C02 to store Digital and Analog EDID data.

4)MCU(Micro Controller Unit):We use MTV512 to save the code and link with RTD 2533V.

### A-2.) Power board diagram:

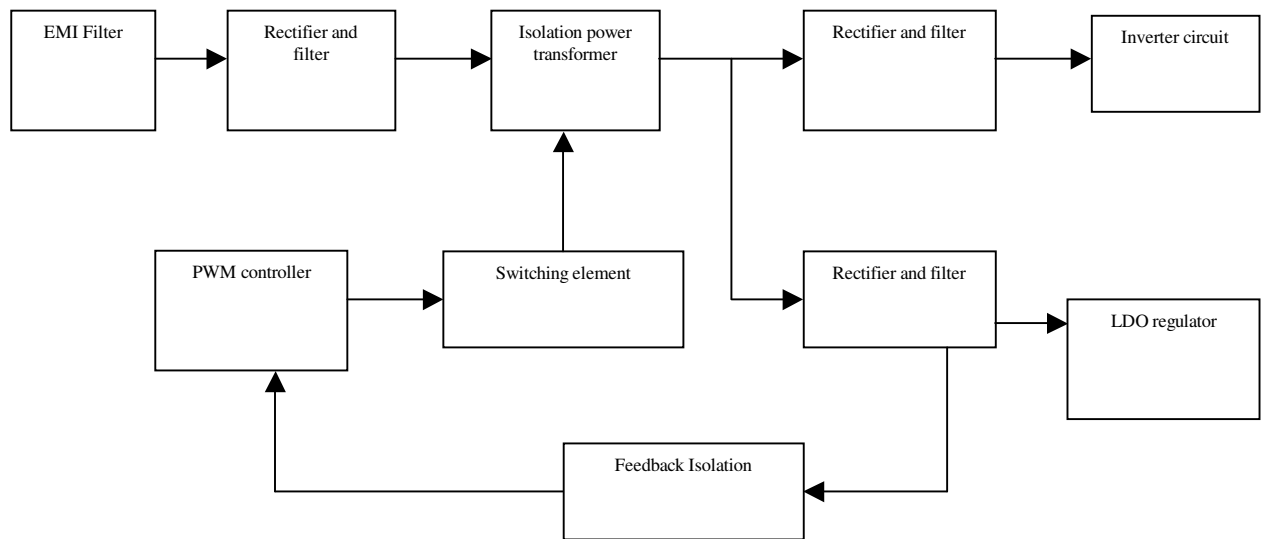


Fig.1

### #1 EMI Filter

This circuit (fig. 2) is designed to inhibit electrical and magnetic interference for meeting FCC, VDE, VCCI standard requirements.

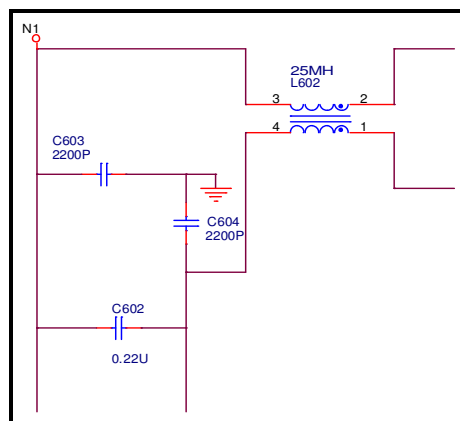


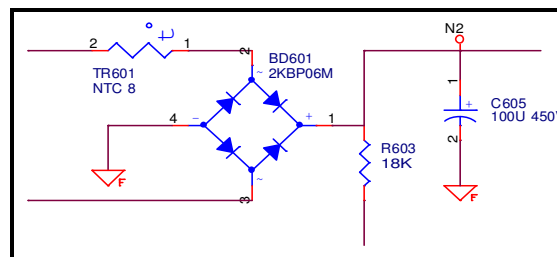
Fig. 2

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	18 of 47
Model Name:	Q9W5	Marketing Description :			

## #2 Rectifier and filter

AC Voltage (90-264V) is rectified and filtered by BD601, C605 (See Fig 3) and the DC Output voltage is  $1.4 \times (\text{AC input})$ . (See Fig.3)



**Fig. 3**

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	19 of 47
Model Name:	Q9W5	Marketing Description :			

### #3 Switching element and Isolation power transformer

When the Q601 turns on, energy is stored in the transformer. During Q601 turn-off period, the stored energy is delivered to the secondary of transformer. R607, C607 and D601 are a snubber circuit. R615 is current sense resistor to control output power. (See Fig.4)

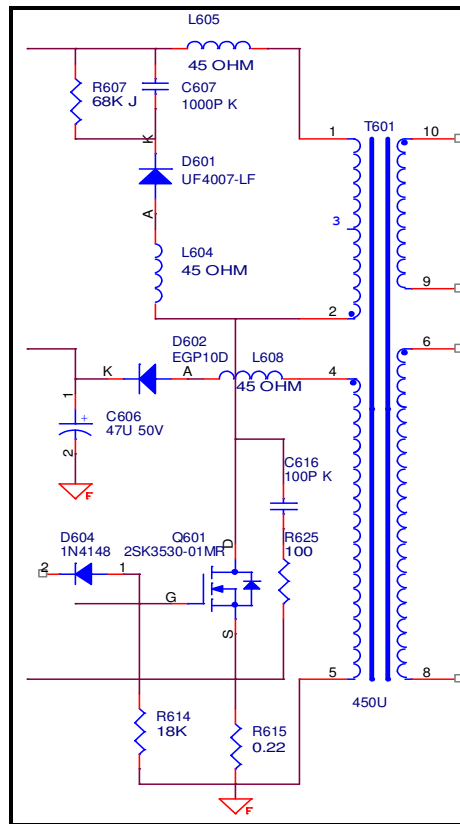


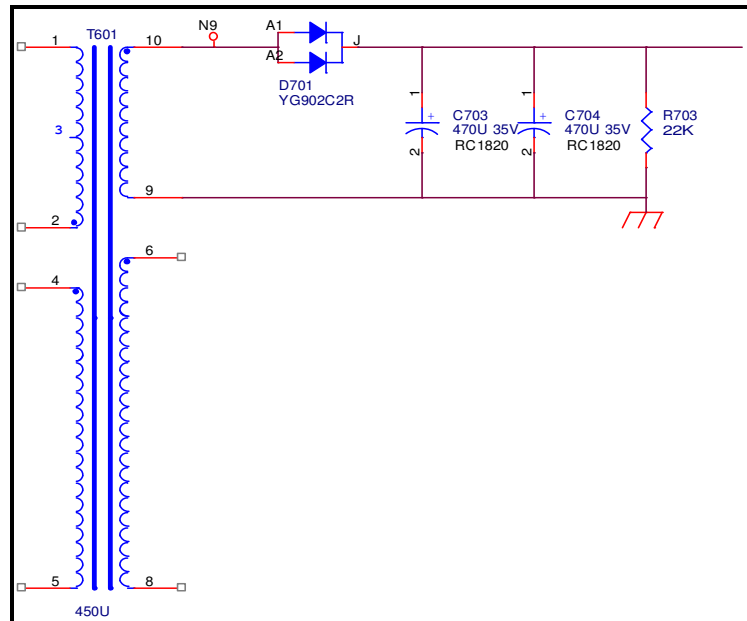
Fig. 4

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	20 of 47
Model Name:	Q9W5	Marketing Description :			

### #4 Rectifier and filter

D701 and C703 are to produce DC output. (See Fig.5)



**Fig. 5**

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	21 of 47
Model Name:	Q9W5	Marketing Description :			

### #5 PWM Controller

The PWM controller NCP1200A implements a standard current mode architecture. With an internal structure operating at a fixed 40KHz. Where the switch time is dictated by the peak current set-point. When the current set-point falls below a given value. The output power demand diminishes, the IC automatically enters the so-called skip cycle mode and provides excellent efficiency.

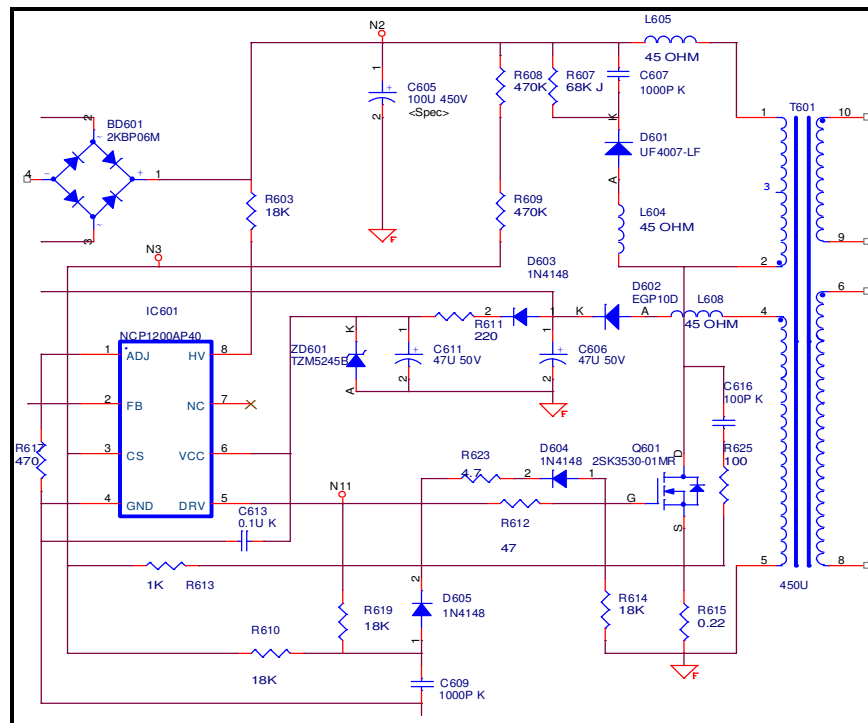


Fig. 6

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	22 of 47
Model Name:	Q9W5	Marketing Description :			

### #6 Feedback circuit

PC123 is a photo-coupler and TL431 is a shunt regulation. They are used to detect the output voltage change and be the primary and secondary isolation. When output voltage changes, the feedback voltage will be compared and duty cycle will be decided to control the correct output voltage. (See Fig.7)

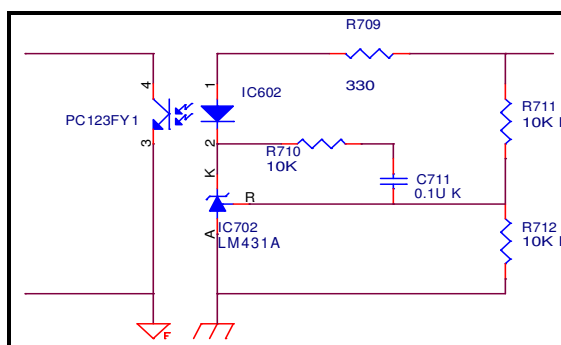


Fig. 7

### A-3.) Inverter Circuit Operation Theory

#### An Intelligent CCFL Inverter Controller --- OZ9938

The OZ9938 is a high- performance, cost-effective CCFL (Cold Cathode Fluorescent Lamp) controller designed for driving large-size Liquid Crystal Display (LCD) applications requiring 2 to 6 CCFLs.

The OZ9938 provides two drive signals for most power conversion topologies while maintaining high-efficiency operation. The PWM controller provides a soft-start operation, current and voltage regulation, over-voltage and over-current protection, high drive capability and multiple dimming functions (internal PWM or external PWM or analog dimming functions).

The controller converts unregulated DC voltages into a nearly sinusoidal lamp voltage and current waveforms.

The control logic provides a regulated ignition voltage and appropriate protection features for over-voltage or over-current conditions. The OZ9938 offers a high level of integration, while maintaining flexibility and high-efficiency operation that reduces external component heating, resulting in higher reliability and longer CCFL life. The proprietary design technique provides a simple, low-cost system solution.

#### Pin Assignment of OZ9938

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	23 of 47
Model Name:	Q9W5	Marketing Description :			

Pin No.	Names	Description
1	DRV1	Drive output
2	VDDA	Supply voltage input
3	TIMER	Timing capacitor to set striking time and shutdown delay time
4	DIM	Analog dimming or Internal LPWM dimming or external PWM pulse input for dimming function
5	ISEN	Current sense feedback
6	VSEN	Voltage sense feedback
7	OVPT	Over-voltage/ over-current protection threshold setting pin
8	NC	No connection
9	NC	No connection
10	ENA	ON/OFF control of IC
11	LCT	Timing capacitor to set internal PWM dimming frequency and also a pin for analog dimming selection
12	SSTCMP	Capacitor for soft start time and loop compensation
13	CT	Timing resistor and capacitor for operation and striking frequency
14	GNDA	Ground for analog signals
15	DRV2	Drive output
16	PGND	Ground for power paths

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	24 of 47
Model Name:	Q9W5	Marketing Description :			

## Push-Pull Configuration

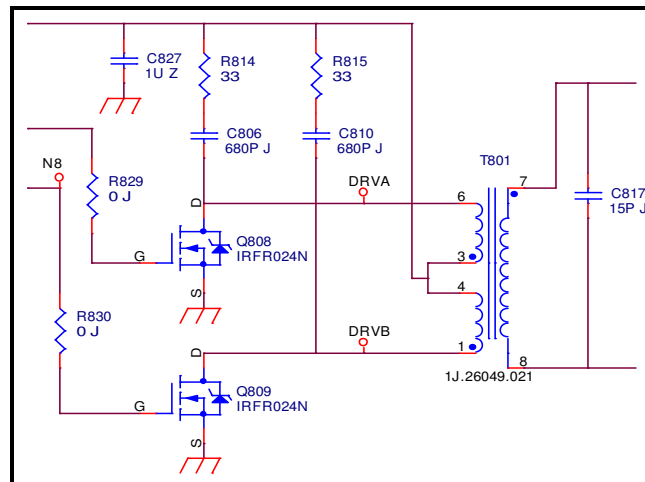


Fig. 1

Fig. 1 the Q808, Q809 and T801 form a full-bridge configuration. When Q808 turn on, then Q809 turn off, Q808 turn off, then Q809 turn on. The result in T801 primary coil has an AC square waveform. Certainly, the secondary of T801 will produce high voltage AC square waveform. Through C817 filter capacitor, will output sin waveform. T802, C824 are also the same.

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	25 of 47
Model Name:	Q9W5	Marketing Description :			

### Feed-back Circuit

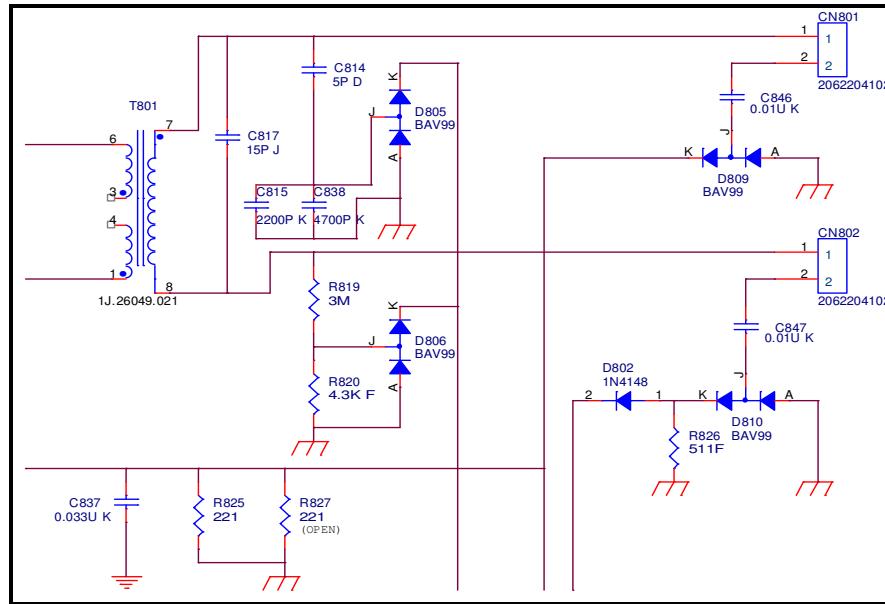


Fig. 2

Fig. 2 shows the feedback circuit consists of a lamp, C846, D809, R825, R827 and C837. With the lamp current through D809, a half sin-waveform voltage signal is produced. We may get the Maximum value through R825/R827/C837. After OZ9938 gets the feedback voltage signal from PIN5, the duty of the PWM driver outputs is decided.

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	26 of 47
Model Name:	Q9W5	Marketing Description :			

#### A-4.) Control board introduction:

The main parts of the control board are a push button and a LED.

(a) **Push button:** It's a simple switch function. Pressing it for "ON" to do the auto adjustment, select (unselect) adjustment or adjusting bar.

(b) **LED:** It indicates the DPMS status of this LCD monitor; green light means DPMS on (Normal operating condition), amber light means DPMS off (Power off condition)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	27 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 3 Alignment Procedure

### 1. Alignment procedure (for function adjustment)

#### A. Preparation:

1. Setup input timing ICL-605 (1280x1024@75Hz ), 5-Mosaic (pattern 42).
2. Setup unit and keep it warm up at least 30 minutes.

#### B. Timing adjustment:

1. Enter factory setting area (press “ENTER”, “EXIT” and then press “SOFT POWER”).
2. Check the settings to following values:

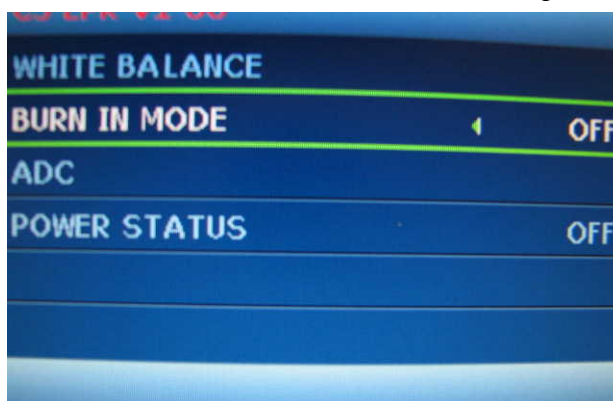
Contrast = 50  
 Brightness = 90  
 OSD time = 5  
 Color = Normal  
 Language = English

Then, turn off the monitor power.

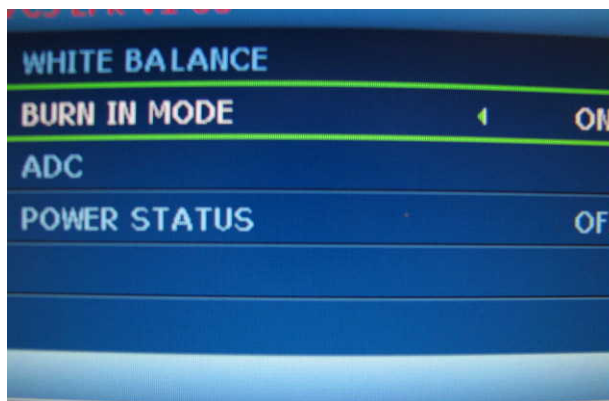
3. Turn on power enter user area.

#### C. Color balance adjustment:

1. Enter factory setting area (press “ENTER”, “Menu” and then press “SOFT POWER”).
2. Setup input timing ICL\_605 (1280x1024@75Hz), 5-Mosaic (pattern 42) .
3. Press “I-KEY”, and than OSD will show “White Balance” item and than press “ENTER” button or just press “Left Key” to do auto color before need to Enable Burn-In flag..



Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	28 of 47
Model Name:	Q9W5	Marketing Description :			



### D. Color adjustment:

1. Setup input timing 1440x900 60Hz, white pattern .
2. Confirm auto color adjustment had already done.
3. Measure color temperature by Minolta CA-110 (or equivalent equipment).
4. Check the color temperature Bluish, Reddish & Normal. The color temperature specification as follows:

White Balance (Bluish, 9300K set on OSD)	X+-	0.283+(-) 0.03
	Y+-	0.297+(-) 0.03
White Balance (Reddish, 5800K set on OSD)	X+-	0.326+(-) 0.03
	Y+-	0.342+(-) 0.03
White Balance (Normal, 6500K set on OSD)	X+-	0.313+(-) 0.03
	Y+-	0.329 +(-) 0.03

5. Setup input timing, 32 -Gray pattern.

To check if there are any abnormal display problems of preset timing modes.

### Check the following preset timings with General pattern:

No.	Mode	H	V
1	720×400 @ 70Hz	31.468	70.8
2	640×480 @ 60Hz	31.469	59.940
3	640×480 @ 75Hz	37.500	75.000
4	800×600 @ 60Hz	37.879	60.317
5	800×600 @ 75Hz	46.875	75.000
6	1024×768 @ 60Hz	48.363	60.004
7	1024×768 @ 75Hz	60.023	75.029
8	1152x864 @ 75Hz	67.500	75.000
9	1280×1024 @ 60Hz	63.981	60.020
10	1280×1024 @ 75Hz	79.976	75.025
11	<u>1440x900@60Hz</u>	55.9	59.8
12	<u>1440x900@75Hz</u>	70.5	75

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	29 of 47
Model Name:	Q9W5	Marketing Description :			

6. Checking if the picture is no good, reject this monitor.
7. To check the power consumption by disabling “burn-in mode” setting
8. To clear user data and program complete DDC data to monitor by IIC bus communication.

#### E. Writing EDID file:

1. Setup a PC with DDC card.
2. Connect PC to monitor with a D-sub signal cable.
3. Please refer to the C212 for the correct EDID file.
4. Runs the writing program to write the EDID file into EEPROM.
5. Read EEPROM data and confirm it to match with the C212 document definition.

#### F. Command definition :

PC Host will send 0x7C IIC slave address and then following 4 bytes command							
I2C Send Command	Byte1	Byte2	Byte3	Byte4	OK	N.A.	Remark
Write Contrast to <a href="#">MCU RAM</a>	CA	55	Data	cksum	✓		Write data to MCU RAM and update the related register to refresh the screen immediately. <b>Don't store data to EEPROM.</b>
Write Brightness to <a href="#">MCU RAM</a>	CA	56	Data	cksum	✓		
Write Red Gain to <a href="#">MCU RAM</a>	CA	57	Data	cksum	✓		
Write Green Gain to <a href="#">MCU RAM</a>	CA	58	Data	cksum	✓		
Write Blue Gain to <a href="#">MCU RAM</a>	CA	59	Data	cksum	✓		
Read Contrast from MCU RAM	C3	55	XX	cksum	✓		
Read Brightness from MCU RAM	C3	56	XX	cksum	✓		
Read Red Gain from MCU RAM by color index	C3	57	XX	cksum	✓		Base on current color index to read back the right gain value.
Read Green Gain from MCU RAM by color index	C3	58	XX	cksum	✓		
Read Blue Gain from MCU RAM by color index	C3	59	XX	cksum	✓		
Write C1 (Bluish) R-Gain Data to EEPROM	AA	3C	Data	cksum	✓		
Write C1 (Bluish) G-Gain Data to EEPROM	AA	3D	Data	cksum	✓		
Write C1 (Bluish) B-Gain Data to EEPROM	AA	3E	Data	cksum	✓		
Write C2 (sRGB) R-Gain Data to EEPROM	AA	4C	Data	cksum	✓		
Write C2 (sRGB) G-Gain Data to EEPROM	AA	4D	Data	cksum	✓		
Write C2 (sRGB) B-Gain Data to EEPROM	AA	4E	Data	cksum	✓		
Write C3 (Reddish) R-Gain Data to EEPROM	AA	5C	Data	cksum	✓		
Write C3 (Reddish) G-Gain Data to EEPROM	AA	5D	Data	cksum	✓		
Write C3 (Reddish) B-Gain Data to EEPROM	AA	5E	Data	cksum	✓		
Write User R-Gain Data to EEPROM	AA	6C	Data	cksum	✓		
Write User G-Gain Data to EEPROM	AA	6D	Data	cksum	✓		
Write User B-Gain Data to EEPROM	AA	6E	Data	cksum	✓		

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	30 of 47
Model Name:	Q9W5	Marketing Description :			

Write Cx R-Gain Data to EEPROM	AA	7C	Data	cksum	✓	Reserved for some model have extra color temperature
Write Cx G-Gain Data to EEPROM	AA	7D	Data	cksum	✓	
Write Cx B-Gain Data to EEPROM	AA	7E	Data	cksum	✓	
Write Contrast to EEPROM	AA	92	Data	cksum	✓	
Write Brightness to EEPROM	AA	93	Data	cksum	✓	
Write C/T index to EEPROM	AA	94	0~4	cksum	✓	1=C1/9300/Bluish, 2=C2/6500/sRGB/, 3=C3/5800/Reddish, 4=User, 5=Cx
Write OSD-Hpos to EEPROM	AA	95	Data	cksum	✓	
Write OSD-Vpos to EEPROM	AA	96	Data	cksum	✓	
Write Language to EEPROM	AA	97	0~7	cksum	✓	0=DE, 1=EN, 2=ES, 3=FR, 4=IT, 5=JA, 6=繁中, 7=簡 中 (Also Update MCU RAM)
Write EEPROM OSD Timer	AA	98	Data	cksum	✓	
Write EEPROM Volume	AA	99	Data	cksum	✓	
Write EEPROM Gamma index	AA	9A	Data	cksum	✓	For model with Gamma curve selection function
Write OSD Transparency to EEPROM	AA	9E	Data	cksum	✓	
Write OSD Rotation to EEPROM	AA	9F	Data	cksum	✓	
Read C1 (Bluish) R-Gain data from EEPROM	A3	3C	XX	cksum	✓	
Read C1 (Bluish) G-Gain data from EEPROM	A3	3D	XX	cksum	✓	
Read C1 (Bluish) B-Gain data from EEPROM	A3	3E	XX	cksum	✓	
Read C2 (sRGB) R-Gain data from EEPROM	A3	4C	XX	cksum	✓	
Read C2 (sRGB) G-Gain data from EEPROM	A3	4D	XX	cksum	✓	
Read C2 (sRGB) B-Gain data from EEPROM	A3	4E	XX	cksum	✓	
Read C3 (Reddish) R-Gain data from EEPROM	A3	5C	XX	cksum	✓	
Read C3 (Reddish) G-Gain data from EEPROM	A3	5D	XX	cksum	✓	
Read C3 (Reddish) B-Gain data from EEPROM	A3	5E	XX	cksum	✓	
Read User R-Gain data from EEPROM	A3	6C	XX	cksum	✓	
Read User G-Gain data from EEPROM	A3	6D	XX	cksum	✓	
Read User B-Gain data from EEPROM	A3	6E	XX	cksum	✓	
Read Cx R-Gain data from EEPROM	A3	7C	XX	cksum	✓	Reserved for some model have extra color
Read Cx G-Gain data from EEPROM	A3	7D	XX	cksum	✓	

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	31 of 47
Model Name:	Q9W5	Marketing Description :			

Read Cx B-Gain data from EEPROM	A3	7E	XX	cksum	✓	
Read Contrast from EEPROM	A3	92	XX	cksum	✓	
Read Brightness from EEPROM	A3	93	XX	cksum	✓	
Read C/T index from EEPROM	A3	94	XX	cksum	✓	1=C1/9300/Bluish, 2=C2/6500/sRGB/, 3=C3/5800/Reddish, 4=User, 5=Cx
Read OSD-Hpos EEPROM	A3	95	XX	cksum	✓	
Read OSD-Vpos from EEPROM	A3	96	XX	cksum	✓	
Read Language from EEPROM	A3	97	XX	cksum	✓	0=DE, 1=EN, 2=ES, 3=FR, 4=IT, 5=JA, 6=繁中, 7=簡中
Read OSD Timer from EEPROM	A3	98	XX	cksum	✓	
Read Volume from EEPROM	A3	99	XX	cksum	✓	
Read Gamma index from EEPROM	A3	9A	XX	cksum	✓	For model with Gamma curve selection function
Read OSD Transparency from EEPROM	A3	9E	XX	cksum	✓	
Read OSD Rotation from EEPROM	A3	9F	XX	cksum	✓	
Change Color Temp. to C1/9300K/Bluish	CC	01	XX	cksum	✓	Change C/T immediately. And store C/T index to EEPROM.
Change Color Temp. to C2/6500K/sRGB	CC	02	XX	cksum	✓	
Change Color Temp. to C3/5800K/Reddish	CC	03	XX	cksum	✓	
Change Color Temp. to User	CC	04	XX	cksum	✓	
Change Color Temp. to Cx	CC	05	XX	cksum	✓	Reserved
Change Input Source to D-Sub	CD	01	XX	cksum	✓	
Change Input Source to DVI	CD	02	XX	cksum	✓	
On burn in mode	CE	01	XX	cksum	✓	Store data to EEPROM
Off burn in mode	CE	XX*	XX	cksum	✓	XX* = Non "1" value Store data to EEPROM
Monitor is forced power saving	CF	01	XX	cksum	✓	
Monitor wake up from power saving	CF	XX*	XX	cksum	✓	XX* = Non "1" value
User mode to factory mode	1A	5A	XX	cksum	✓	
Auto Color (Offset1, Offset2, Gain)	1B	5A	XX	cksum	✓	
Copy EDID Serial number to EEPROM	1C	5A	XX	cksum	✓	For specified "Industry Customer" model.
Factory mode to User mode	1E	5A	XX	cksum	✓	
Clear user mode and factory recall	1F	5A	XX	cksum	✓	Store data to EEPROM
Write EDID data to MCU DDC RAM	55	NA	NA	NA	✓	For MTV312 MCU type
Copy DDC RAM data to EEPROM	BB	NA	NA	NA	✓	For MTV312 MCU type
Drive WP pin to low to enable write DDC IC	55	NA	NA	NA	✓	For stand alone DDC IC
Drive WP pin to high to disable write function	BB	NA	NA	NA	✓	For stand alone DDC IC

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	32 of 47
Model Name:	Q9W5	Marketing Description :			

EEPROM Bank R/W (For Debug using only, not for Production Line Write EEPROM directly)							
Read EEPROM Bank 0	B0	Addr ess	XX	cksum	✓		
Read EEPROM Bank 1	B1	Addr ess	XX	cksum	✓		
Read EEPROM Bank 2	B2	Addr ess	XX	cksum		✓	(For 24C08 type)
Read EEPROM Bank 3	B3	Addr ess	XX	cksum		✓	(For 24C08 type)
Write EEPROM Bank 0	B8	Addr ess	Data	cksum	✓		
Write EEPROM Bank 1	B9	Addr ess	Data	cksum	✓		
Write EEPROM Bank 2	BA	Addr ess	Data	cksum		✓	(For 24C08 type)
Write EEPROM Bank 3	BB	Addr ess	Data	cksum		✓	(For 24C08 type)

Note A: Byte4 (cksum) = Byte1 + Byte2 + Byte3  
 Note B: Data = The value write to MCU or EEPROM  
 Note C: XX = don't care, any value (<=0xFF).

When PC Host sends 0x7D command to MCU, MCU must return as following (2 bytes)

Return Code	R-Byte1	R-Byte2
Checksum error code	FC	AA
Normal return code	the above Byte3 (/data)	FC
If normal return code is exact FCh	FC	CF

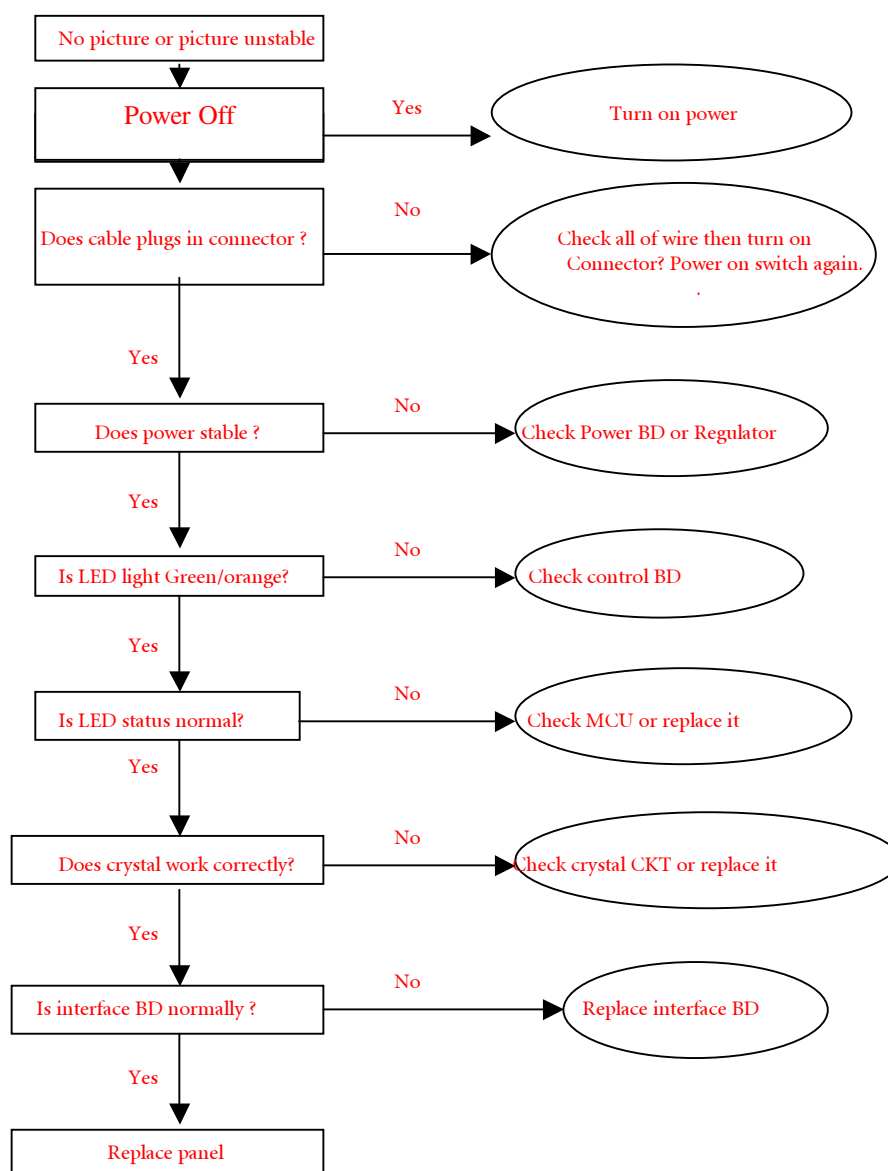
Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	33 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 4 Trouble Shooting Guide

### Q9W5 TROUBLE SHOOTING GUIDE

No Display or display is unstable:

#### 1.1 Interface Board:

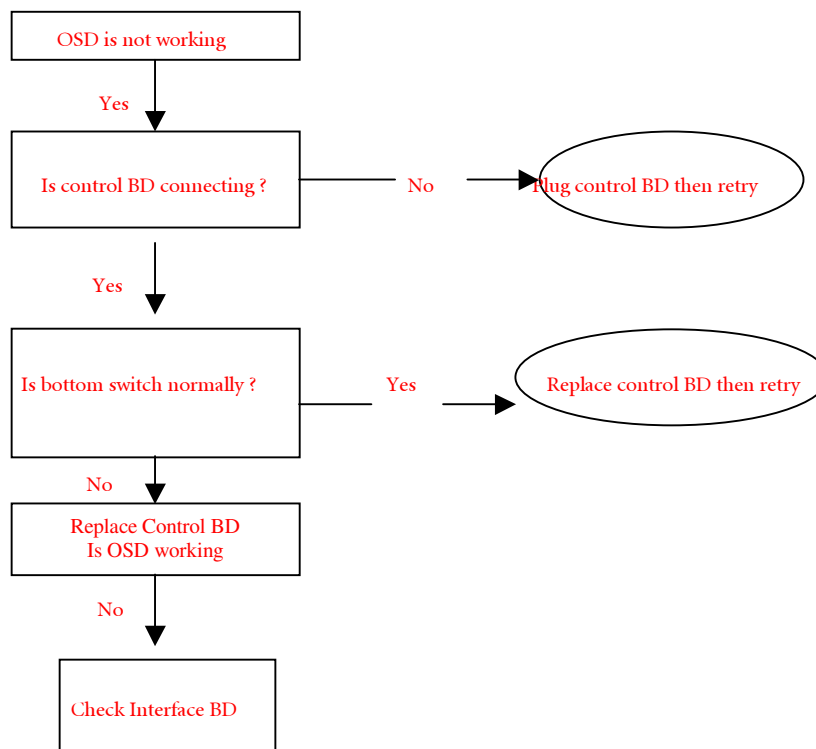


□ Product System (PS)

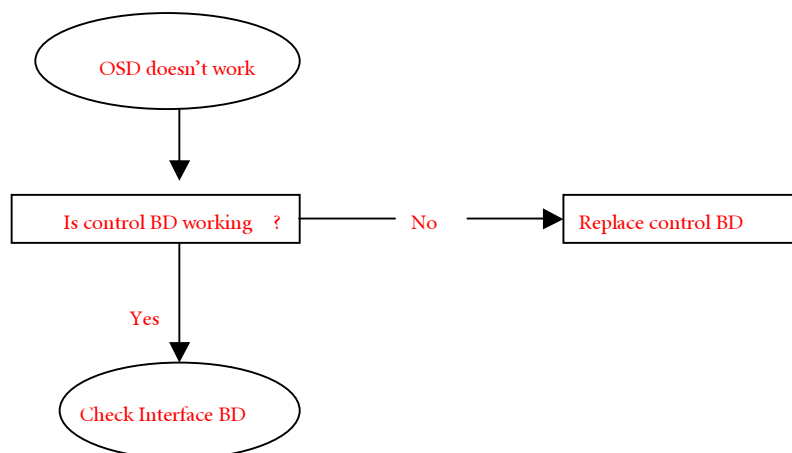
Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	34 of 47
Model Name:	Q9W5	Marketing Description :			

## 2. BUTTON function:

### 2.1 Control Board

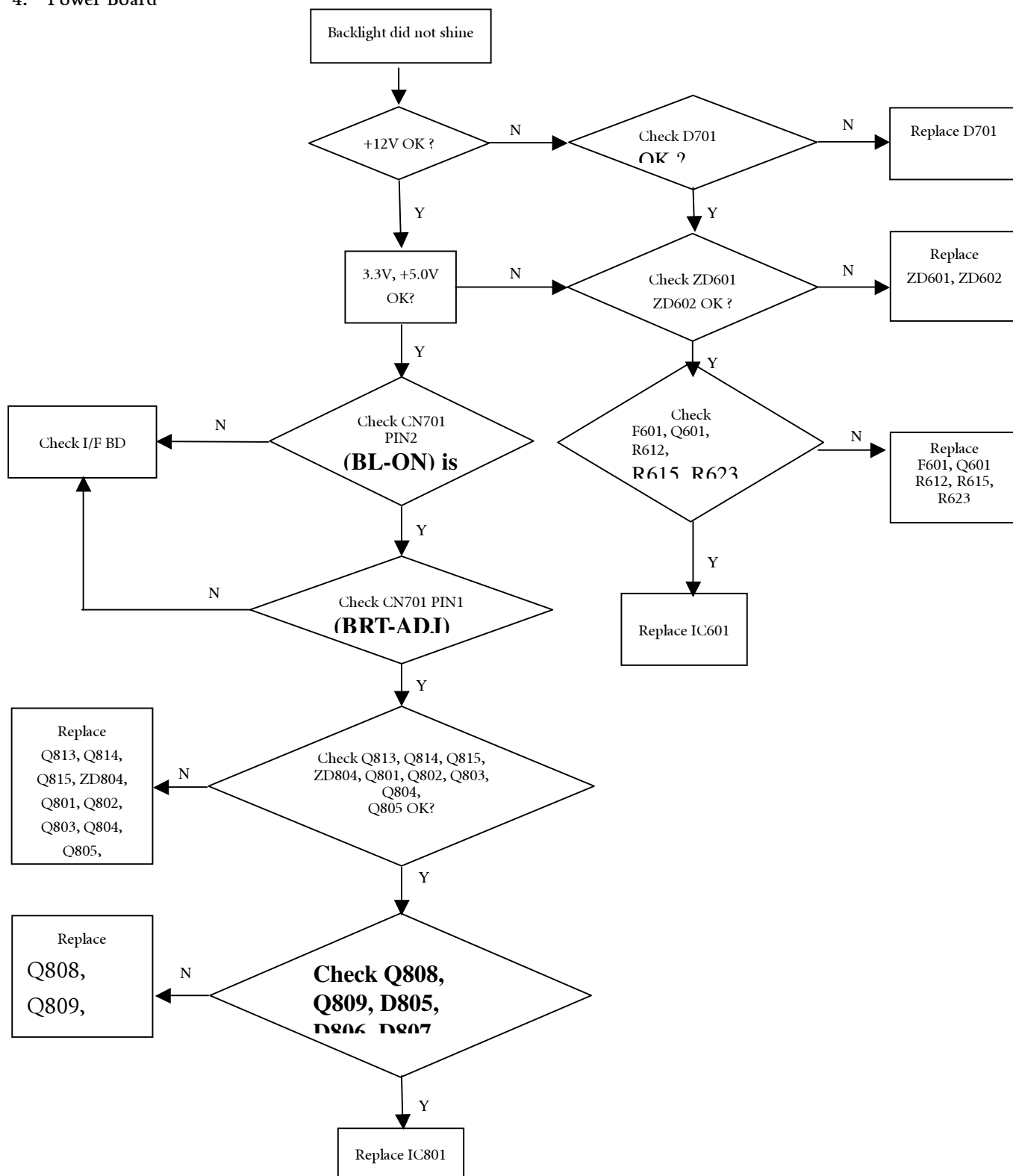


## 3. OSD function:



Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	35 of 47
Model Name:	Q9W5	Marketing Description :			

### 4. Power Board



□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	36 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 5.Customer Acceptance Criteria

### CONTENTS

- 1.0 SCOPE
- 2.0 PURPOSE
- 3.0 APPLICATION
- 4.0 DEFINITION
- 5.0 CLASSIFICATION OF DEFECTS
- 6.0 CLASSIFICATION OF DEFECTIVES
- 7.0 EXPRESSION OF DEFECTIVES
- 8.0 INSPECTION STANDARD
- 9.0 GENERAL RULES
- 10.0 TEST CONDITIONS
- 11.0 TEST EQUIPMENTS

### PART I VISUAL INSPECTION CRITERIA

- 1. PACKING
- 2. ACCESSORIES
- 3. APPEARANCE
- 4. AC POWER AND SIGNAL CABLE
- 5. INTERIOR OF THE PRODUCT

### PART II OPERATIONAL INSPECTION CRITERIA

- 1. TEST PATTERN
- 2. SPECIFICATIONS
- 3. OPERATIONAL INSPECTION CRITERIA

### PART III PANEL INSPECTION CRITERIA

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	37 of 47
Model Name:	Q9W5	Marketing Description :			

### Q9W5 LCD Color Monitor

#### Customer Acceptance Criteria

#### 1.0 SCOPE

This document establishes the general workmanship standards and functional Acceptance criteria for LCD color monitor model Q9W5 Produced by BenQ Corp.

#### 2.0 PURPOSE

The purpose of this publication is to define a procedure for inspection of the LCD monitor by means of a customer acceptance test, the method of evaluation of defects and rules for specifying acceptance levels.

#### 3.0 APPLICATION

The "Customer Acceptance Criteria" is applicable to the inspection of the LCD monitor, completely packed and ready for dispatch to customers. **Unless otherwise specified, the customer acceptance inspection should be conducted at manufacturer's site.**

#### 4.0 DEFINITION

The "Customer Acceptance Criteria" is the document defining the process of examining, testing or otherwise comparing the product with a given set of specified technical, esthetic and workmanship requirements leading to an evaluation of the "degree of fitness for use", including possible personal injury or property damage for the user of the product.

#### 5.0 CLASSIFICATION OF DEFECTS

The defects are grouped into the following classes:

##### 5.1 Critical defect

A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product.

##### 5.2 Major defect

A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose.

##### 5.3 Minor defect

A minor defect is a defect that is not likely to reduce materially the usability of the product for its intended purpose, or is a departure from established standards having little bearing on the effective use of operation of the product.

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	38 of 47
Model Name:	Q9W5	Marketing Description :			

### 6.0 CLASSIFICATION OF DEFECTIVES

A defective is a product which contains one or more defects. The defective will be classified into following classes:

#### 6.1 Critical defective

A critical defective contains one or more critical and may also contain major and/or minor defects.

#### 6.2 Major defective

A major defective contains one or more defects and may also contain minor defects but contains no critical defect.

#### 6.3 Minor defective

A minor defective contains one or more minor defects but contains no critical and major defects.

### 7.0 EXPRESSION OF DEFECTIVES

$$\text{Percent of defects} = \frac{\text{Number of defects}}{\text{Number of products inspected}} \times 100\%$$

### 8.0 INSPECTION STANDARD

Unless otherwise specified, the inspection standard will be defined by MIL- STD-105E(ISO-2859), SINGLE SAMPLING PLAN. level II is in use all the time , inspection levels are normal ,reduce and tighten .

#### 8.1 Acceptance Quality Level

8.1.1 When a critical defect is found, this must be reported immediately upon detection, the lot or batch shall be rejected and further shipments shall be held up pending instructions from the responsible person in relevant organization.

#### 8.1.2

Major Defective: 0.4 AQL  
Minor Defective: 1.50 AQL

### 9.0 GENERAL RULES

The inspection must be carried out by trained inspectors having good knowledge of the meaning of "fitness for use". The inspection must be based upon the documents concerning the completely assembled and packed product When more defects appear with the same cause only the most serious defect must be taken into account. Defects found in accessories packed with the product as connecting cables, plugs, adapters and the like, and being inspected as a part of the complete product, must be included in the evaluation.

The evaluation must be within the limits of the product specification and, for not specified characteristics, be related to the design model, limit samples or judgment of a jury of experts.

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	39 of 47
Model Name:	Q9W5	Marketing Description :			

Faults must be demonstrable.

### 10.0 TEST CONDITIONS

Unless otherwise prescribed, the test conditions are as follows:

- . Nominal mains voltage
- Temperature: +5~+35°C
- . Warm up time : 30minutes minimum .
- . Visual inspection shall be down with the distance from eyes to the sample 35-50 cm .
- . Display mode: Primary mode 1280\*1024

### 11.0 TEST EQUIPMENTS

- 11.1 Acer PCs with API display adapter or other specific display adapter which is agreed upon by both parties
- 11.2 Test program by API
- 11.3 Ruler
- 11.4 Power saving test tool
- 11.5 Minolta color analyzer ( CA-110 or BM – 7 )

## PART I VISUAL INSPECTION CRITERIA

1. PACKING
2. ACCESSORIES
3. APPEARANCE
4. AC POWER AND SIGNAL CABLE
5. INTERIOR OF THE PRODUCT

No	Description	Class
<b>1</b>	<b>Packing</b>	
1.1	Wrong packing material	Major
1.2	Carton damaged(over 6cm dia).wet, badly taped or stapled, product will not arrive in good condition at customer	Minor
1.3	Carton damaged(3cm to 6cm dia), badly taped or stapled , product will arrive in good condition at customer	Minor
1.4	Wrong marking of trade mark	Major
1.5	Wrong marking of model number	Major
1.6	Wrong serial # marking on carton	Major
1.7	Product wrongly placed in box ( upside down )	Major
1.8	Broken polyfoam or PU foam	Major
1.9	Broken packing bag	Major
1.10	Wrong size or poor printing for artwork/character	Major
1.11	Bar-code wrong, missing, or damaged	Major
1.12	Label on box missing or damaged	Major
1.13	Strange object in the box	Major
1.14	Unit not corresponding to model stated on external label	Major
1.15	Superficial breaking 5 ~ 10 cm dia	Minor
<b>2</b>	<b>Accessories</b>	

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	40 of 47
Model Name:	Q9W5	Marketing Description :			

2.1	Missing accessory parts	Major
2.2	Wrong Accessory parts	Major
<b>3</b>	<b>Appearance of product</b>	
3.1	Incorrect color of cabinet	Major
3.2	Incorrect color of tilt/swivel base	Major
3.3	Wrong logo or name plate	Major
3.4	Poor print of logo or name plate	Major
3.5	Label on product Wrong or missing	Major
3.6	Scratched or dirty but legible spec. label	Minor
3.7	GAP between LCD and front bezel is over 2.0 mm	Major
3.8	Dot/area discolor over 1mm dia. in front or over 2mm dia. in other areas	Major
3.9	Cabinet warped, sagged or bulging >0.5% of surface length	Major
3.10	Cabinet warped, sagged or bulging noticeable but <0.5% of surface length	Minor
3.11	Sharp stud or edge, which can cause damage not safe	Major
3.12	Finishing of piece parts will not arrived in good condition at the customer	Major
3.13	Cabinet step ( between housing and bezel ) > 1.0mm , < 1.5mm	Minor
3.14	Cabinet step ( between housing and bezel ) > 1.5mm	Major
3.15	Wiring or fixing cord comes out of cabinet or jammed	Major
3.16	Auxiliary material used during production not removed	Major
3.17	Cabinet parts come loose during normal handling, not safe	Critical
3.18	Cabinet parts come loose during normal handling, but safe	Major
3.19	Tilt/swivel too flexible/not working	Major
3.20	Tilt/swivel stiff	Minor
3.21	Dirty front bezel and housing can't remove	Major
3.22	Dirty front bezel and housing removable easily	Minor
3.20	Sticker or loose user control switch which will not function correctly	Major
3.21	Missing knob or switch, not safe	Critical
3.23	Missing knob or switch, but safe	Major
3.24	Poor functional user controls in mechanical	Major
3.25	Unreadable printing of user controls label	Major
3.26	Rubber foot missing	Major
3.27	LED wrong material or missing	Major
3.28	LED sagged >1.0mm or bulging>0.5mm	Minor
3.29	Wrong S/N between spec. label and monitor display	Major
<b>4</b>	<b>AC power and signal cable</b>	
4.1	AC power or connector not correct or damaged, not safe	Critical
4.2	AC power or connector not correct or damaged, but safe	Major
4.3	Signal cable contact pin dirty	Minor
4.4	Signal cable plug dirty or surface damaged, but safe	Minor
4.5	Cable crack	Major
4.6	Cable scratch ( wire not exposed ), or dirty	Major
4.7	AC-DC adapter no function	Minor
4.8	Signal cable contact pin dirty	Major
<b>5</b>	<b>Interior of the product</b>	
5.1	Use Non-QVL ( Qualify vendor list )component	Major
5.2	Wrong parts, broken component, but safe	Major
5.3	Foreign material	
	Conductive (Has potential to short circuit)	Major

□ Product System (PS)


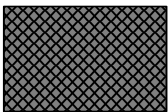

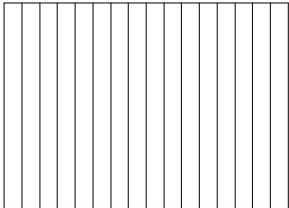
Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	41 of 47
Model Name:	Q9W5	Marketing Description :			

	Non-conductive (Moveable)	Minor
5.4	Missing hardware, component or screw, stripped screw	Major
5.5	Loose hardware/screw or insufficient torque	Major
5.6	Poor wire routing, which is no concerned on EMI	Minor
5.7	Cold soldering/loose connections (Electrical)	Major
5.8	Wires and mechanical structure do not meet UL/CSA or TUV	Critical
5.9	Wrong parts, broken component, not safe	Critical
5.10	Component burn	Critical

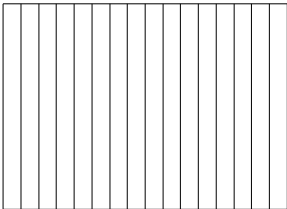
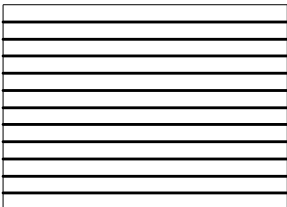
## PART II OPERATIONAL INSPECTION CRITERIA

1. TEST PATTERN
2. SPECIFICATIONS
3. OPERATIONAL INSPECTION CRITERIA

### 1.List of test pattern

KEY	PATTERN	TEST ITEM
A	FULL WHITE 	H - Size , V – Size .Viewing Angle Light Output Impurity, Spot check Contrast Ratio Brightness adjust Range
E	DARK 	Background, Spot check
F	FULL W , R , G , B 	Impurity, Spot check .CIE Coordinate check
G	256 COLORS 	Color Check

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	42 of 47
Model Name:	Q9W5	Marketing Description :			

H	16 GREY 	Gray Check
H	Black/White stripe pattern 	Electric characteristics

## 2.Video performance

Item	Condition	Spec	OK	N.A	Remark
Max. support Pixel rate		135 MHz	√		
Max. Resolution		1280 x 1024	√		
Rise time + Fall time		< 7.4 ns (50% of minimum pixel clock period)	√		1280 x 1024 @ 75Hz (max. support timing)
Settling Time after overshoot /undershoot		< 5% final full-scale value	√		Refer to VESA VSIS Standard V1R1
Overshoot/Undershoot		< 12% of step function voltage level over the full voltage range	√		Refer to VESA VSIS Standard V1R1
Resolution	Any input resolution modes which are under 1280 x 1024	1280 x 1024	√		
Contrast ratio		Samsung 600:1 (typ.)	√		Depends on the panel source
Brightness	Samsung At CCFL 6.5mA & R/G/B saturated condition	Samsung 250 cd/m2 (typ.)	√		Depends on the panel source.
Response time	Rising + Falling time(on/off)	Samsung 20 ms (typ.)	√		Depends on the panel source.
Viewing angle	At Contrast ratio = 10	Samsung R/L: 89/89 degrees (typ.) and U/D: 89/89 degrees (typ.)	√		Depends on the panel source.
CIE coordinate of White		Samsung 0.313, 0.329	√		Depends on the panel source.
Display colors		16.7M colors (RGB 8-bits data)	√		Depends on the panel source.

☐ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	43 of 47
Model Name:	Q9W5	Marketing Description :			

### 3.Support Timings

Input Timing				Actual Output			
Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)	Dot Clock Frequency (MHz)	Actual display Resolution	OK	N.A	Remark
640x350	31.47(P)	70.08(N)	25.17	1280x943	√		DOS
720x400	31.47(N)	70.08(P)	28.32	1280x1024	√		DOS
640x480	31.47(N)	60.00(N)	25.18	1280x1024	√		DOS
640x480	35.00(N)	67.00(N)	30.24	1280x1024	√		Macintosh
640x480	37.86(N)	72.80(N)	31.5	1280x1024	√		VESA
640x480	37.50(N)	75.00(N)	31.5	1280x1024	√		VESA
800x600	37.88(P)	60.32(P)	40.00	1280x1024	√		VESA
800x600	48.08(P)	72.19(P)	50.00	1280x1024	√		VESA
800x600	46.86(P)	75.00(P)	49.50	1280x1024	√		VESA
832X624	49.72(N)	74.55(N)	57.29	1280x1024	√		Macintosh
1024x768	48.36(N)	60.00(N)	65.00	1280x1024	√		VESA
1024x768	56.48(N)	70.10(N)	75.00	1280x1024	√		VESA
1024x768	60.02(P)	75.00(P)	78.75	1280x1024	√		VESA
1024X768	60.24(N)	74.93(N)	80.00	1280x1024	√		Macintosh
1152x864	67.50(P)	75.00(P)	108.00	1280x1024	√		VESA
1152x870	68.68(N)	75.06(N)	100.00	1280x1024	√		Macintosh
1152x900	61.80(N)	66.00(N)	94.50	1280x1024	√		SUN 66
1152x900	71.81(N)	76.14(N)	108.00	1280x1024	√		SUN
1280x1024	64.00(P)	60.00(P)	108.00	1280x1024	√		VESA
1280x1024	75.83(N)	71.53(N)	128.00	1280x1024	√		IBM1
1280x1024	80.00(P)	75.00(P)	135.00	1280x1024	√		VESA

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	44 of 47
Model Name:	Q9W5	Marketing Description :			

1280x1024	81.18(N)	76.16(N)	135.09	1280x1024	√		SPARC2
-----------	----------	----------	--------	-----------	---	--	--------

**Note-3:** “P”, “N” stands for “Positive”, “Negative” polarity of incoming H-sync/V-sync (input timing).

### PART III PANEL INSPECTION CRITERIA

Dot defects		Comments
	Max allowed Q'ty	
Single bright	2	Distance between 2 bright dot $\leq$ 15mm Distance between 2 dark dot $\leq$ 15mm Distance between bright dot and dark dot $\leq$ 10mm
2 adjacent Bright	1	
3 adjacent Bright	0	
Single Dark	5	
2 adjacent Dark	2	
3 adjacent Dark	0	
Total Dot defects(bright and dark)	5	
Line defects	Not allowable	

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	45 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 6 Screw Torque

### (A) STANDARD SCREW TORQUE SPEC.

ITEM	P/N	DESCRIPTION	MOUNTING MATERIAL	TORQUE (KG-CM)	HOLE SIZE (MM)	Screw Head
1	86.20FB4.019 8F.20FB4.019	SCRW MACH HEX #4-40*0.3" NI	METAL	5.0±0.6	#4-40	X
2	86.5A224.6R0 8F.5A224.6R0	SCRW MACH FLAT M3*6L ZN	METAL	Side mount: 3±0.6 Other: 4±0.6	M3*0.5	#2
3	86.8A356.100 8F.8A356.100	SCREW MACH FPH M4*10L B-ZN NYL	METAL	11.0±1.0	M4*0.7	#2
4	86.8A325.6R0 8F.8A325.6R0	SCRW MACH FLAT-P M3*6L B-ZN	METAL	Side mount: 3±0.6 Other: 4±0.6	M4*0.7	#2
5	86.5A356.8R0 8F.5A356.8R0	SCRW MACH FH M4*8L B-ZN NYL	METAL	9.0±1.0	M4*0.7	#2
6	86.5A356.120 8F.5A356.120	SCRW MACH FH M4*12L B-ZN NYL	METAL	11.0±1.0	M4*0.7	#2
7	60.L7204.001 6K.L7204.001	ASSY SCREW M4*10 FP527	METAL	11.0±1.0	M4*0.7	#2
8	60.L8810.001 6K.L8810.001	ASSY SCREW M4*8 FP726A NLK ISU	METAL	9.0±1.0	M4*0.7	#2
9	86.WA314.8R0 8F.WA314.8R0	SCRW TAP CAP M3*1.34P*8L B-ZN	PLASTIC	5.0±1.0	Ø2.35±0.05	#2
10	86.XA314.8R0 8F.XA314.8R0	SCRW TAP FLAT M3*1.34P*8L B-ZN	PLASTIC	4.5±0.5	Ø2.35±0.05	#2
11	86.00274.8R0 8F.00274.8R0	SCREW FPH TAP M3*8L NI	PLASTIC	5.0±1.0	Ø2.35±0.05	#2
12	86.VG314.120 8F.VG314.120	SCRW TAP PH W/FL PT M3*12L B-Z	PLASTIC	5.0±1.0	Ø2.35±0.05	#2
13	86.VA314.100 8F.VA314.100	SCRW TAP PAN PT M3*10L B-ZN	PLASTIC	5.0±1.0	Ø2.35±0.05	#2
14	86.VA514.100 8F.VA514.100	SCRW TAP PAN PT M3*10L NI	PLASTIC	5.0±1.0	Ø2.35±0.05	#2
15	86.VZ526.6R0 8F.VZ526.6R0	SCRW TAP FLAT+EXT M4*6L ZN-W	STANOFF	10.0±1.0	M4*0.7	#2
16	86.XA326.100 8F.XA326.100	SCRW TAP FLAT M4*10L B-ZN	PLASTIC	7.5±0.5	Ø3.4±0.05	#2
17	86.5A422.2R4 8F.5A422.2R4	SCRW MACH FLAT-P M2*2.4L C-ZN	PLASTIC	1.3±0.1	Ø1.4±0.05	#1

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	46 of 47
Model Name:	Q9W5	Marketing Description :			

18	86.00273.6R0 8F.00273.6R0	SCRW TAP PH F/10WSH M3*6L C-ZN	METAL	No thread : 8~10 Have thread:6~8	Ø2.65±0.05	#2
19	86.VG434.6R0 8F.VG434.6R0	SCRW TAP PAN F/WSH M3*6L C-ZN	METAL	No tread : 8~10 Have thread:6~8	Ø2.65±0.05	#2
20	86.XA213.8R0 8F.XA213.8R0	SCRW TAP FLAT/PT M2.5*8L ZN	PLASTIC	4.0±0.5	Ø2.0±0.05	#1
21	86.MA324.5R5 8F.MA324.5R5	SCRW TAP FPH M3*5.5L B-ZN	METAL	6.0±0.5	Ø2.65±0.05	#2

\*SCREW Q'TY AND POSITION REFERRED TO C328.

\*NOTES:

1. T: TAPPING SCREW
2. M: MACHING SCREW

□ Product System (PS)

Subject:	FP92W C501 Service Manual	Part No.:	9J.L2S72.000	Rev.:	0
		Doc. No.	9J.L2S72.000-C501-001		
Project Code:	9J.L2S72.001	Component Part. No.:	NA	Page	47 of 47
Model Name:	Q9W5	Marketing Description :			

## Chapter 7 Explored Diagram

