

Industrial LCD Monitor
MODEL : 21.5" Open Frame Monitor
 [PN: DW215SFS-LV12]

<input checked="" type="radio"/> Preliminary Specification
<input type="radio"/> Final Specification

Customer

Customer's Approval	
<u>Signature</u>	<u>Date</u>

<u>Prepared By</u>	<u>Date</u>
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Revision History

Revision No.	Revision Date	Page	Description
0.0	30/JUN/2022	-	First Draft
0.1	01/JUL/2022	4, 11, 13	Add Tempered Glass (3T)
0.2	05/JUL/2022	4, 8, 9, 10, 11, 13	Change AD Board
0.3	26/JUL/2022	5	Power Supply Rating Update

1. Description

Industrial TFT-LCD Open Frame monitor DW215SFS-LV12 is a high performance TFT LCD monitor and providing high image from the analog RGB, DVI.

2. General Features

- 1920 x 1080 pixels resolution
- Low Power consumption
- RGB and DVI
- Light Emitting Diode(LED) Backlight system

3. Specification

- Product Configuration

Boards	MH502CL
Enclosure	<input checked="" type="checkbox"/> OPEN Frame <input type="checkbox"/> Bezel Frame
UI Control	<input checked="" type="checkbox"/> 5Key <input type="checkbox"/> Remote Control
Option	Tempered Glass (3T)

- Display

Size	21.5 inches
Active Display Area	476.064 mm(H) x 267.786 mm(V)
Outline Dimension	504.2 mm(H) x 339.2 mm(V) x 47.0 mm(D)
Number of Pixels	1920 horiz. By 1080 vert. Pixels RGB stripes arrangement
Pixel Pitch	0.24795 mm(H) x 0.24795 mm(V)
Color Depth	16.7M colors
Viewing Angle (CR=10)	L/R : 89°/89° (Typ.)
	U/D : 89°/89° (Typ.)
Contrast Ratio	1000 : 1 (Typ.)
Response Time	14 msec (Typ.) (Raising + Falling)
Average Brightness	250 cd/m ² (Typ.)
Back Light System	LED Backlight
Base Panel	LGD LM215WF3-SLS1

● Scanning Frequency

Horizontal	30 ~ 80KHz
Vertical	50 ~ 75Hz

● Input Resolution [Analog RGB & DVI]

Recommended Resolution	1920x1080@60 Hz
Supported Input Resolution	640x480@60/72/75 Hz 800x600@56/60/72/75 Hz 1024x768@60/70/75 Hz 1280x768@60 Hz 1280x1024@60/75 Hz 1366x768@60 Hz 1440x900@60 Hz 1600x900@60 Hz 1600x1200@60 Hz 1680x1050@60 Hz 1920x1080@60 Hz

● Input Signal

RGB (VGA)	Analog RGB Amplitude : $0.7 \pm 0.05V$ Input Impedance : $75 \pm 2\%$ ohm Sync : H/V Separate (TTL Level)
DVI	Swing Voltage : $400mV \leq V_{sing} \leq 600mV$ Termination Resistance : $50 \pm 10\%$ ohm

● Plug & Play

DDC2B (VESA Standard)

● Power Supply Rating

Power Consumption	14.16 Watt (Typ.) @Set
DC Output	12Vdc 3.33A
AC input	100~240Vac

● User Controls

OSD Key Button	5Key
OSD Language	English

4. Environment

- Operating Conditions

Temperature	0 ~ 40°C
Humidity	20 ~ 80% (without condensation)

- Non Operating Conditions

Temperature	- 20 ~ 60°C
Humidity	5 ~ 90% (without condensation)

- Transport Conditions (1month packed)

Temperature	- 20 ~ 60°C
Humidity	5 ~ 85% (without condensation)

- Storage Conditions

Temperature	- 20 ~ 60°C
Humidity	5 ~ 90% (without condensation)

5. Specifically for Liquid Crystal Display ("LCD") Screens

- Panel Grade : "A" Grade
- Pixel error classes : ISO 9241-307 CLASS I

Native Resolution	No. of Million Pixels	ISO-9241-307 Class I Allowable Defects		
		Pixel	Sub-Pixel (Dot)	
		ISO-9241-307 Class I	ISO-9241-307 Class I	
			Bright	Black
1024x768	0,79	1	2	1
			1	3
			0	5
1366x768	1	1	2	1
			1	3
			0	5
1440x900	1,3	1	2	1
			1	3
			0	5
1280x1024	1,31	1	2	1
			1	3
			0	5
1680x1050	1,76	2	4	2
			2	6
			0	10
1920x1080	2,07	2	4	2
			2	6
			0	10
1920x1200	2,3	2	4	2
			2	6
			1	10
2048x1536	3,15	3	6	3
			3	9
			0	15
3840x2160	8	8	16	8
			8	24
			0	40

※ LCD displays are made up of a set number of pixels and each pixel is made from 3 sub-pixels: one Red, one Blue and one Green

6. Electronic Component Temperature Characteristics

- A/D Board

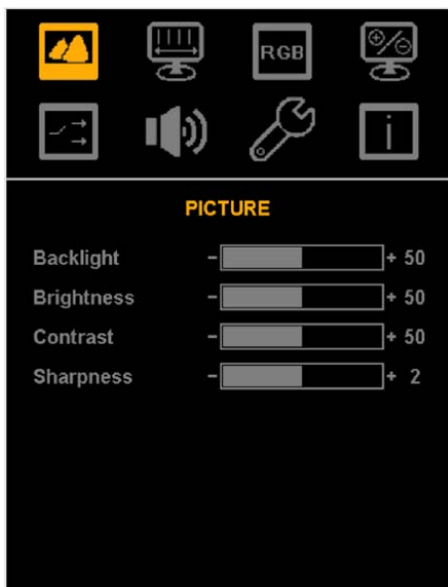
Electrolytic Capacitors	105°C (Type : BXJ / MVK)
Printed Circuit Board	FR-4 2xArray

7. Key Button Function & OSD Control Function

● Key Button Function

Button	Function	Status	HOT Key
LED	Indicates operation status	Green : Normal Operation Red : Off Mode Amber : No valid input, Sleep mode Green Blinking : No Signal	
POWER	Turn on or turn off the power		
MENU	Display the OSD menu on no menu status Exit a menu of sub-menu		
SELECT	Select highlighted function		Input Source Change on no menu status
DOWN	Select previous menu item Decrease slider value		Auto Configuration on no menu status
UP	Select next menu item Increase slider value		Auto Color on no menu status

● OSD Format



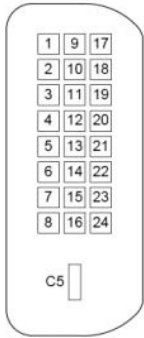
8. Cable Pin Configuration

● Analog RGB Cable (15pin D-SUB Connector)



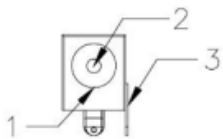
- | | | | |
|---|----------------|----|------------------------------|
| 1 | Red | 9 | +5V |
| 2 | Green (SOG in) | 10 | Ground - Sync |
| 3 | Blue | 11 | No Connector |
| 4 | Ground | 12 | DDC Serial Data |
| 5 | Ground | 13 | Horizontal or Composite Sync |
| 6 | Ground - Red | 14 | Vertical Sync |
| 7 | Ground - Green | 15 | DDC Serial Clock |
| 8 | Ground - Blue | | |

● DVI Cable (DVI-D Connector)



- | | | | |
|----|----------------------|----|----------------------|
| 1 | TMDS Data 2- | 14 | +5V |
| 2 | TMDS Data 2+ | 15 | Ground (for +5V) |
| 3 | TMDS Data 2/4 Shield | 16 | Hot Plug Detection |
| 4 | TMDS Data 4- | 17 | TMDS Data 0- |
| 5 | TMDS Data 4+ | 18 | TMDS Data 0+ |
| 6 | DDC Serial Clock | 19 | TMDS Data 0/5 Shield |
| 7 | DDC Serial Data | 20 | TMDS Data 5- |
| 8 | No Connect | 21 | TMDS Data 5+ |
| 9 | TMDS Data 1- | 22 | TMDS Clock Shield |
| 10 | TMDS Data 1+ | 23 | TMDS Clock + |
| 11 | TMDS Data 1/3 Shield | 24 | TMDS Clock - |
| 12 | TMDS Data 3- | C5 | Ground |
| 13 | TMDS Data 3+ | | |

● Power Input (DC Jack, Ø2.5)

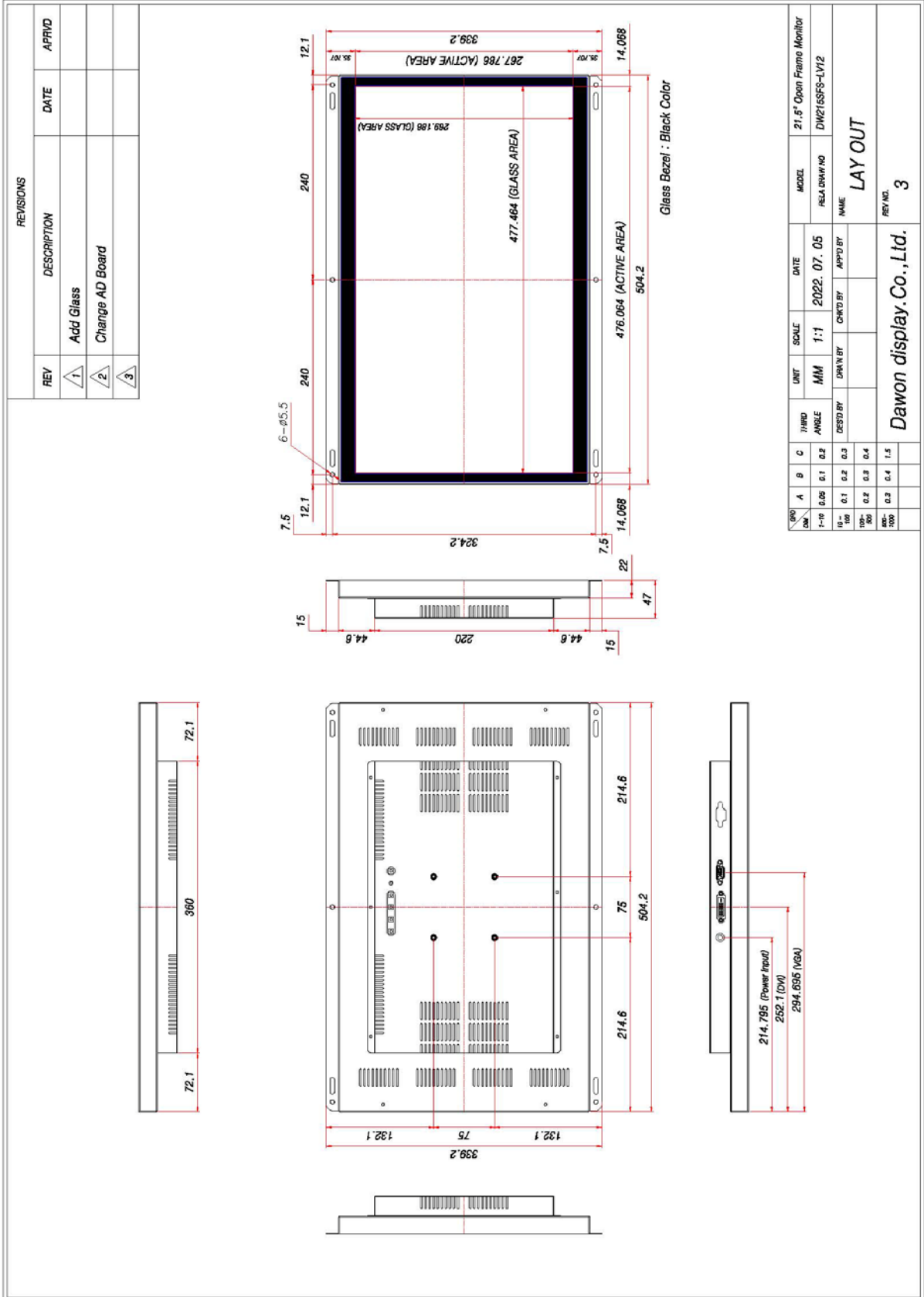


- | | |
|------|------|
| 1, 3 | GND |
| 2 | +12V |

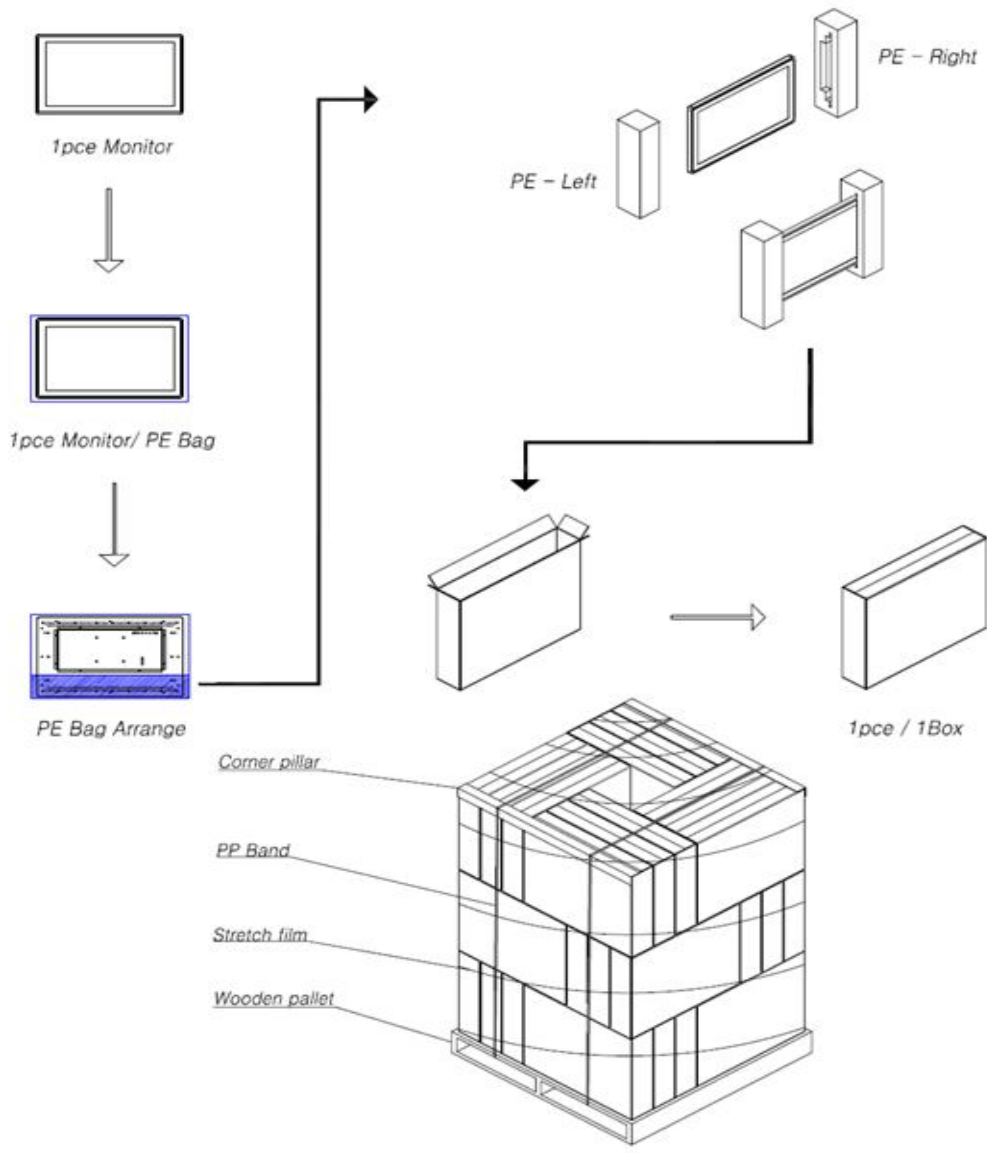
9. Standard Display Mode

Mode	Pixel Freq.	Horizontal Timing				Vertical Timing			
		SP	Freq.	Total	Active	SP	Freq.	Total	Active
	MHz		KHz	Pixel	Pixel		Hz	Line	Line
640*350@70Hz	25.144	P	31.43	800	640	N	70.00	449	350
640*400@56Hz	21.043	N	24.80	800	640	N	56.40	440	400
640*400@60Hz	25.200	N	31.50	800	640	P	60.00	525	400
720*400@70Hz	28.287	N	31.50	900	720	P	70.00	449	400
640*480@50Hz	23.831	N	24.60	800	640	N	49.60	496	480
640*480@60Hz	25.175	N	31.47	800	640	N	59.94	525	480
640*480@72Hz	31.500	N	37.86	832	640	N	72.81	520	480
640*480@75Hz	31.500	N	37.50	840	640	N	75.00	500	480
800*600@56Hz	36.000	P	35.16	1024	800	P	56.25	625	600
800*600@60Hz	40.000	P	37.88	1056	800	P	60.32	628	600
800*600@72Hz	50.000	P	48.08	1040	800	P	72.19	666	600
800*600@75Hz	49.500	P	46.88	1056	800	P	75.00	625	600
848*480@60Hz	33.750	P	31.02	1088	848	P	60.00	517	480
1024*768@60Hz	65.000	N	48.36	1344	1024	N	60.00	806	768
1024*768@70Hz	75.000	N	56.48	1328	1024	N	70.07	806	768
1024*768@75Hz	78.750	P	60.02	1312	1024	P	75.03	800	768
1152*864@60Hz	81.620	N	53.69	1520	1152	P	60.00	895	864
1152*864@75Hz	108.000	P	67.50	1600	1152	P	75.00	900	864
1280*720@60Hz	74.250	P	45.00	1650	1280	P	60.00	750	720
1280*768@60Hz	79.500	N	47.78	1664	1280	P	59.87	798	768
1280*768@75Hz	102.250	N	60.29	1696	1280	P	74.89	805	768
1280*800@60Hz	83.500	N	49.70	1680	1280	P	59.81	831	800
1280*800@75Hz	106.500	N	62.79	1696	1280	P	74.93	838	800
1280*960@60Hz	108.000	P	60.00	1800	1280	P	60.00	1000	960
1280*1024@60Hz	108.000	P	63.98	1688	1280	P	60.02	1066	1024
1280*1024@75Hz	135.000	P	79.98	1688	1280	P	75.02	1066	1024
1360*768@60Hz	85.500	P	47.41	1792	1360	P	60.02	795	768
1366*768@60Hz	85.500	P	47.71	1792	1366	P	59.79	798	768
1440*900@60Hz(RB)	88.750	P	55.47	1600	1440	N	59.90	926	900
1440*900@60Hz	106.500	N	55.93	1904	1440	P	59.89	934	900
1440*900@75Hz	136.750	N	70.64	1936	1440	P	74.98	942	900
1600*900@60Hz	108.000	P	60.00	1800	1600	P	60.00	1000	900
1600*1200@60Hz	162.000	P	75.00	2160	1600	P	60.00	1250	1200
1680*1050@60Hz(RB)	119.000	P	64.67	1840	1680	N	59.88	1080	1050
1680*1050@60Hz	146.250	N	65.29	2240	1680	P	59.95	1089	1050
1920*1080@60Hz	148.500	P	67.50	2200	1920	P	60.00	1125	1080
1920*1200@60Hz(RB)	154.00	P	74.04	2080	1920	N	59.95	1235	1200

10. Mechanical Specification



11. Packing Specification



	Item	Specification			Remark
		Q'ty	Dimension	Weight	
1	Monitor	1	504.2(L)mm x 339.2(W)mm x 47(H)mm	5.9 kg	Nont1
2	Packing Box	1pce / Box	630(L)mm x 130(W)mm x 460(H)mm	7.3kg	
3	Pallet	1	1060(L)mm x 1060(W)mm x 120(H)mm	11kg	
4	Pallet after Packing	36Box / pallet	1060(L)mm x 1060(W)mm x 1550(H)mm	275kg	
5	Dry Container	10Pallet / 20ft	5899(L)mm x 2348(W)mm x 2390(H)mm		
6	Dry Container	22Pallet / 40ft	12034(L)mm x 2348(W)mm x 2390(H)mm		

Note : Estimated value which is subject to change based on real measured data.

Appendix : Block Diagram

