Engineering Specification

Model No. : APD-A1501-(A)(B)(C)(D)

15.0 inches Flat Panel Monitor

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Revision History

Ver.	Date	Page	Change Description
1.0	Sep. 11. 2012	N.A	Initial Release

Contact Details

Head Office, Factory & R&D Center
#502 103-dong, Bucheon Techno Park 364, Samjeong-dong
Ojeong-gu, Bucheon City, Gyeonggi-do, Korea, 421-741
http://www.alphadisplay.co.kr
Tel. +82-32-321-8029 Fax. +82-32-325-8075

1. Description

This is the industrial-Grade flat panel monitor based on 15.0" XGA TFT LCD panel that is providing high quality screen image.

This monitor supports analog RGB, digital RGB input with expanding to full screen image. (by Model Definition)

It affords convenience to the user in installing various applications such as amusement, industry use and so on.

2. General Features

- Wide input resolution range up to XGA 1024x768@75Hz.
- Enhanced Video Quality thru high performance up and down-scaling characteristic
- Automatic Scanning & Image Adjustment
- The most suitable GUI (Graphic User Interface)
- Auto Power On (Reset Condition)

3. Specification

▪Model Definition

Basic Model : APD-A1501-ONAB

< Optional >

APD-A1501-(**A**)(**B**)(**C**)(**D**)

Suffix	(**A**)	Frame Option	(**O** : Open Frame, **C** : Chassis Type, **P** : Panel Mount, **R** : Rack Mount)
Suffix	(**B**)	Front Option	(**N** : No Option, **R** : Resistive T/S, **C** : Capacitive T/S, **Pc** : Projected Capacitive T/S **S** : SAW T/S, **I** : IR T/S, **P** : Protection Glass (3T))
Suffix	(**C**)	Input Option	(**A** : VGA only, **B** :VGA + DVI, **H** :VGA + Audio, **I** : VGA + DVI + Audio)
Suffix	(**D**)	Power Option	(**A** : AC Power IN, **B** : DC12V-In, **C** : DC18V-In, **D** : DC24V-In, **E** : DC10~32V-In)

** Please contact sales department of alpha display for touch screen and chassis type in detail.*

▪Panel

Type No.			AUO, G150XTN03
Size			15.0 inches
Active Display Area			304.128 mm (H) x 228.096 mm (V)
Number of Pixels			1024 dots (H) x 768 lines (V) XGA
Pixel Pitch (mm)			0.297 mm (H) x 0.297 mm (V)
Color Depth			16.2M colors
Viewing Angle	Horizontal	(θL)	Typ. 85 degrees (Min. 75 degrees)
(CR≥ 10)		(θR)	Typ. 85 degrees (Min. 75 degrees)
	Vertical	(φH)	Typ. 80 degrees (Min. 70 degrees)
		(φL)	Typ. 80 degrees (Min. 70 degrees)

Contrast Ratio		Typ. 700 : 1 (Min. 400 : 1)
Response Time	Rise Time (Tr)	Typ. 5.7 mSec
	Fall Time (Tf)	Typ. 2.3 mSec
Average Brightness		Typ. 250 cd/m^2 (Min. 200 cd/m^2)
Panel Dimension		326.5 mm (W) x 253.5 mm (H) x 12.0 mm (D)
Back Light System		LED BackLight

▪Scanning Frequency

Horizontal	30 ~ 80.0 KHz
Vertical	55 ~ 75 Hz

▪Input Resolution

Analog RGB & Digital RGB

Recommended Resolution	1024x768@60 Hz
Supported Input Resolution	640x480@60/67/72/75 Hz
	800x600@56/60/72/75 Hz
	1024x768@60/70/75 Hz
	** Custom Resolution Available*
	** Digital RGB Input, recommended 60Hz of each mode by VESA.*

▪Input Signal

RGB	Analog RGB
	Amplitude: 0.7±0.05V
	Input Impedance: 75±2% ohms
Sync	H/V Separate (TTL Level)
DVI (Option)	Digital RGB
	Swing Voltage: 400mV ≤ Vsing ≤ 600mV
	Termination Resistance: 50±10% ohms

▪Input Signal Connector

Analog RGB	15pin D-Sub x 1
Digital RGB (Option)	DVI-D x 1

▪Plug & Play

DDC2B *(VESA Standard)*

▪Power Supply Rating

DC Input Voltage	Typ. DC +12V
Max. Power Dissipation	Less than 15Watts
Power Consumption	15W ± 10%
AC Power Adaptor Rating	DC 12V / 3.5A output
	AC 100~240V@60/50Hz (Universal)

▪User Controls

OSD Keypad	Power, Menu, Select, Up, Down (1Row 5Keys)

OSD Language	English, German, French, Spanish, Korean (5 Languages)

▪Regulation

Safety & Ergonomics	CE
EMC(EMI/EMS)	CE
RoHS Compliant	In compliance with the essential requirements and other relevant provisions of European Union Directive 2002/95/EC (RoHS).

4. Environmental and Reliability Specification

** This specification depends on LCD panel characteristic. Please refer to panel specification in detail.*

▪Operating Conditions

Temperature	0℃~ 65℃
Humidity	10% ~ 90%RH @Ta < 40℃, non-condensing Wet-bulb temperature should be 39℃ Max.
Altitude	Max. 3,000m

▪Transportation Conditions

Temperature	-20℃~ 65℃
Humidity	10% ~ 90% RH @Ta < 40℃, non-condensing Wet-bulb temperature should be 39℃ Max.
Altitude	Max. 12,000m

▪Storage Conditions

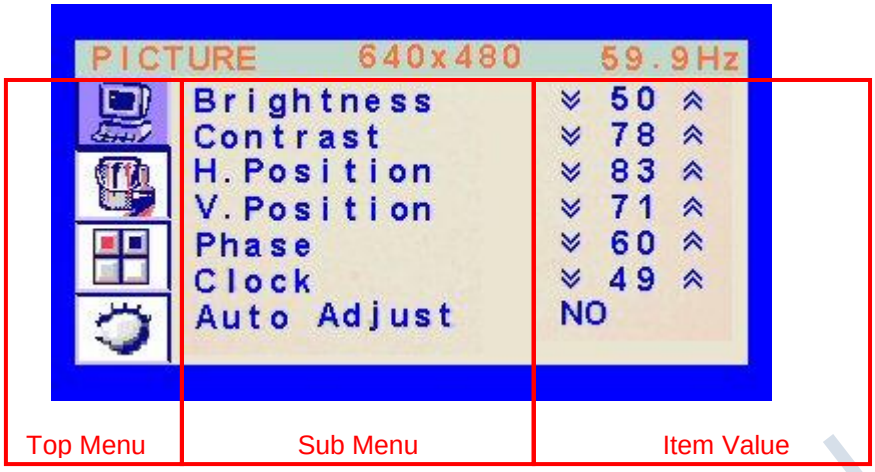
Temperature	-20℃~ 65℃
Humidity	10% ~ 90% RH @Ta < 40℃, non-condensing Wet-bulb temperature should be 39℃ Max.
Altitude	Max. 12,000m

▪Reliability Specifications

Life Time	Min. 30,000 hours at 90% confidence level. (50% of intial Brightness, Ta = 25 ± 5°C)
Reliability	General Specification of reliability test

5. OSD Control Functions & Keypad Description

5-1. OSD Control Functions

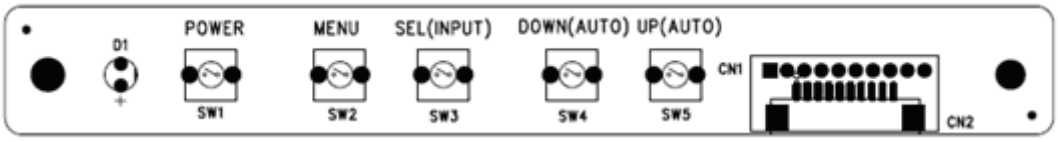


Top Menu	Sub Menu	Control Description
PICTURE	**Brightness**	Adjust the brightness of the display.
	Contrast	Adjust the contrast of the display.
	H Position	Adjust horizontal position of the displayed image.
	V Position	Adjust vertical position of the displayed image.
	Phase	Adjust pixel pahse of the displayed image.
	Clock	Adjust pixel clock (hor. total) of the displayed image.
	Auto Adjust	Adjust to optimize the displayed image automatically.*(analog RGB input only)*
COLOR	**Color Temp.**	Select the preset of the color temperatures such as Reddish, Bluish or User. User's color can be changed by a user.
	Red	Adjust the RED color temperature for User's color.
	Green	Adjust the GREEN color temperature for User's color.
	Blue	Adjust the BLUE color temperature for User's color.
	Auto Color	Calibrate the analog input level for red, green and blue to remove the difference between each other. *(analog RGB input only)*
OSD	**OSD H Position**	Move OSD menu horozentally.
	OSD V Position	Move OSD menu vertically.
	OSD Timer	Take Time until OSD Menu Off after doing OSD control.
	Transparency	Adjust the transparency of OSD Menu window.
MISC	**Lanaguage**	Select the language on OSD Menu. (Language : English, German, French, Spanish, Korean)
	Recall	Recall to the intial factory settings.

Input Select	Change the current input source to another. *(suffix D, V or F)*
Audio	Not available *(grayed color)*
Volume	Not available *(grayed color)*

5-2. Keypad Function

a. Key Description



Direct Keys	**POWER**	Power On and Off
	MENU	- **Enter to Top Menu** from no OSD menu. - **Exit to no OSD Menu** from Top Menu. - **Or exit to Top Menu** from Sub Menu.
	SELECT	**- Navigate Top Menu** as PICTURE, COLOR, OSD and MISC. - **Navigate** between each item **on Sub Menu**.
	UP	- **Navigate between Sub Menu and Top Menu.** - **Select the Item Value** to control the item of Sub Menu. - **Increase the Item Value** of selected Sub Menu.
	DOWN	**Decrease the Item Value** of selected Sub Menu.
Hot Keys	**UP+DOWN** ***(Auto Adjust)***	**Excutes 'Auto Adjust'** to automatically optimize the displayed image if pressed on No OSD menu. *(analog RGB input only)*
	SELECT	**Change the current source input** to another if pressed on No OSD Menu. *(dual inputs only)*

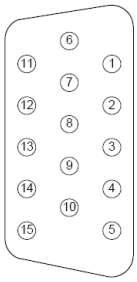
* How to control the OSD menu

ex.) Adjust CONTRAST on PICTURE top menu

a. Press <MENU> key to enter to PICTURE menu of Top Menu.
b. Press <UP> key to navigate to Sub Menu. (Selected Brightness on Sub Menu)
c. Press <SEL> key to navigate to Contrast on Sub Menu.
d. Press <UP> key to select the Item Value of Contrast (high-lighted Item Value on Sub Menu)
e. Press <DOWN> key to decrease the adjust value or press <UP> key to increase it.
f. Press <MENU> key to exit to Sub Menu.
g. Press <MENU> key to exit to Top Menu and Press it again to exit to No OSD menu.

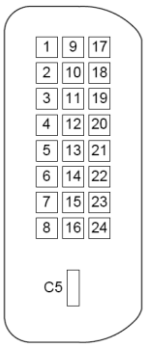
6. Cable Pin Configuration

Analog RGB Cable (15 Pin Mini D-SUB Connector)



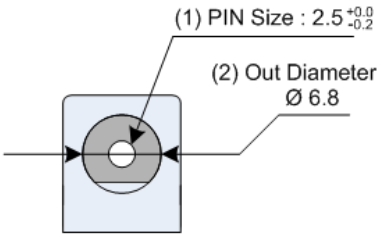
1	Red	9	+5V
2	Green (SOG in)	10	Ground - Sync
3	Blue	11	No Connection
4	Ground	12	DDC Serial Data
5	Ground	13	Horizontal or Composite Sync
6	Ground - Red	14	Vertical Sync
7	Ground – Green	15	DDC Serial Clock
8	Ground – Blue		

Digital RGB Cable (DVI-D Connector)



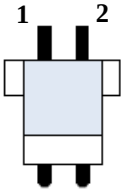
1	TMDS Data 2-	14	+5V Power
2	TMDS Data 2+	15	Ground (for +5V)
3	TMDS Data 2/4 Shield	16	Hot Plug Detection
4	TMDS Data 4-	17	TMDS Data 0-
5	TMDS Data 4+	18	TMDS Data 0+
6	DDC Serial Clock	19	TMDS Data 0/5 Shield
7	DDC Serial Data	20	TMDS Data 5-
8	No Connect	21	TMDS Data 5+
9	TMDS Data 1-	22	TMDS Clock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

Power Connector (Using DC Jack, 2Pin) / YAW396-02V 2Pin (Option) (YeonHO Elec)



1	+12V Input	2	GND

2Pin (Option)



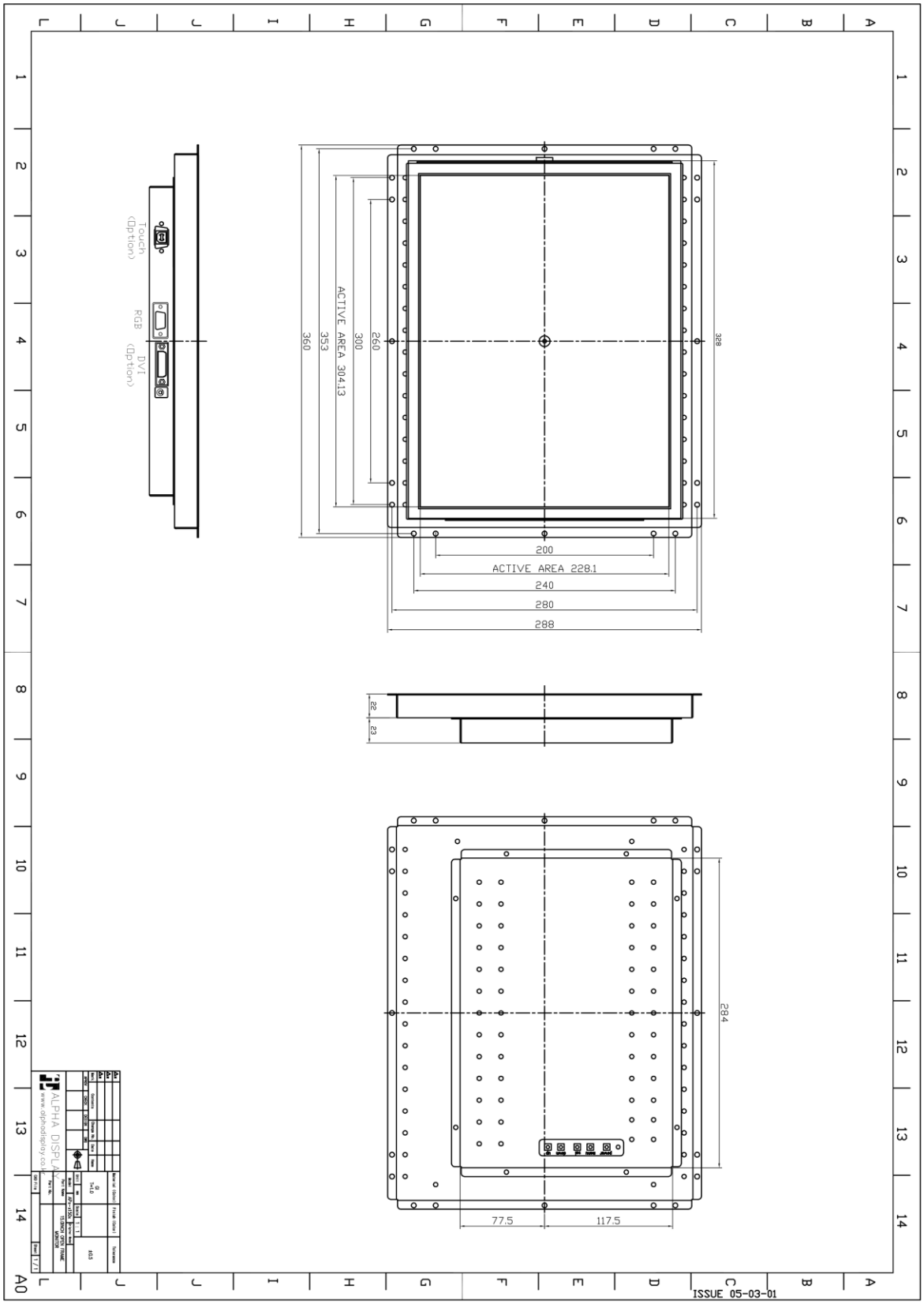
1	+12V Input	2	GND

7. Standard Display Mode

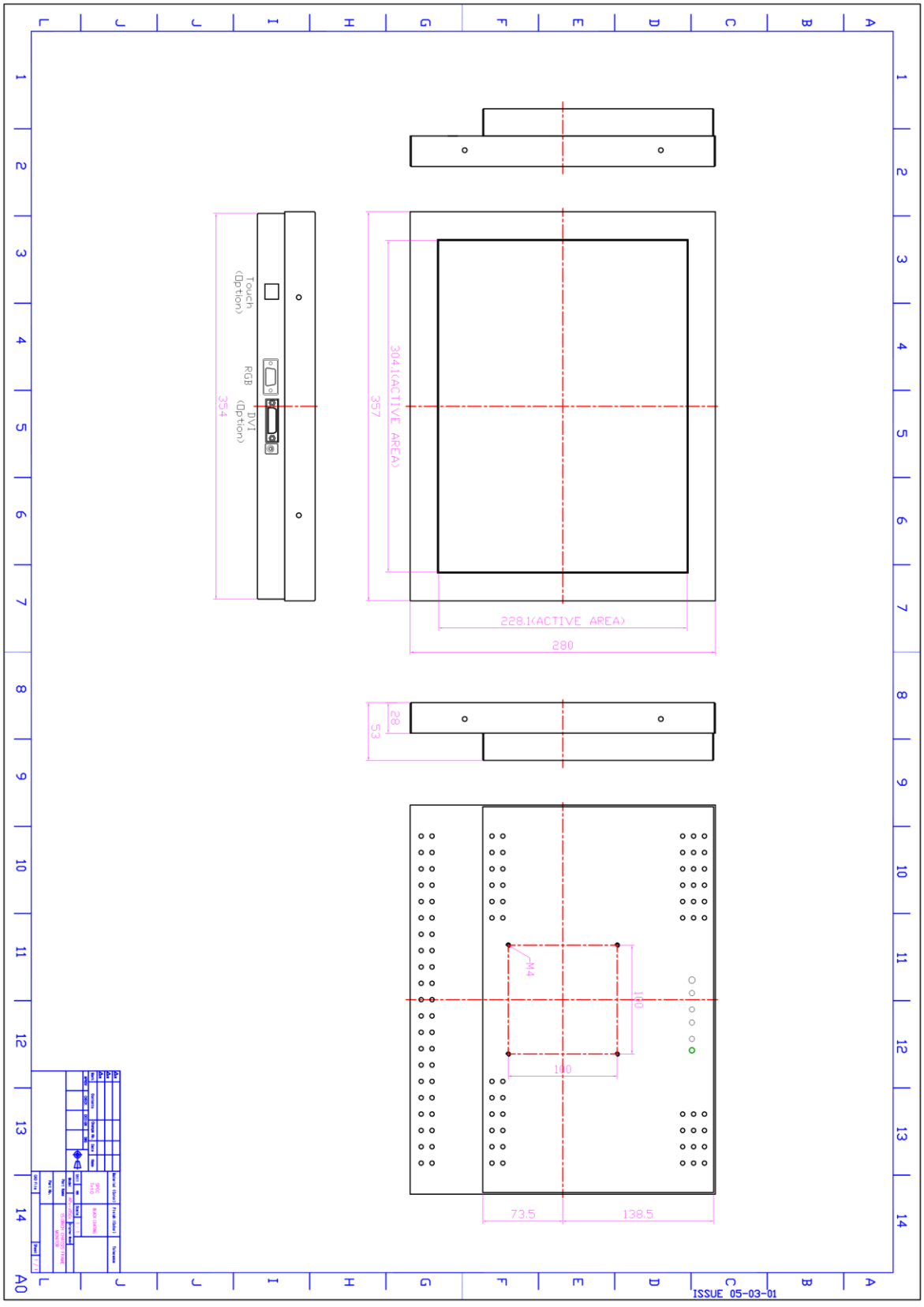
No	Mode	Resolution	Horizontal		Vertical		Pixel clock	Remark
			Frequency	Polarity	Frequency	Polarity		
1	DOS	640x350	31.47 KHz	P	70.1 Hz	N	25.18 MHz	IBM
2		720x400	31.47 KHz	N	70.1 Hz	P	28.32 MHz	VESA
3	VGA	640x480	31.47 KHz	N	60.0 Hz	N	25.18 MHz	VESA
4		640x480	35.00 KHz	N	66.7 Hz	N	30.24 MHz	VESA
5		640x480	37.86 KHz	N	72.8 Hz	N	31.50 MHz	VESA
6		640x480	37.50 KHz	N	75.0 Hz	N	31.50 MHz	VESA
7	SVGA	800x600	35.16 KHz	N / P	56.3 Hz	N / P	36.00 MHz	VESA
8		800x600	37.88 KHz	P	60.3 Hz	P	40.00 MHz	VESA
9		800x600	48.08 KHz	P	72.2 Hz	P	50.00 MHz	VESA
10		800x600	46.88 KHz	P	75.0 Hz	P	49.50 MHz	VESA
11	XGA	1024x768	48.36 KHz	N	60.0 Hz	N	65.00 MHz	VESA
12		1024x768	56.48 KHz	N	70.1 Hz	N	75.00 MHz	VESA
13		1024x768	60.02 KHz	P	75.0 Hz	P	78.75 MHz	VESA
**** Regarding the specific input resolution, please contact to engineering team.***								

8. Mechanical Specification

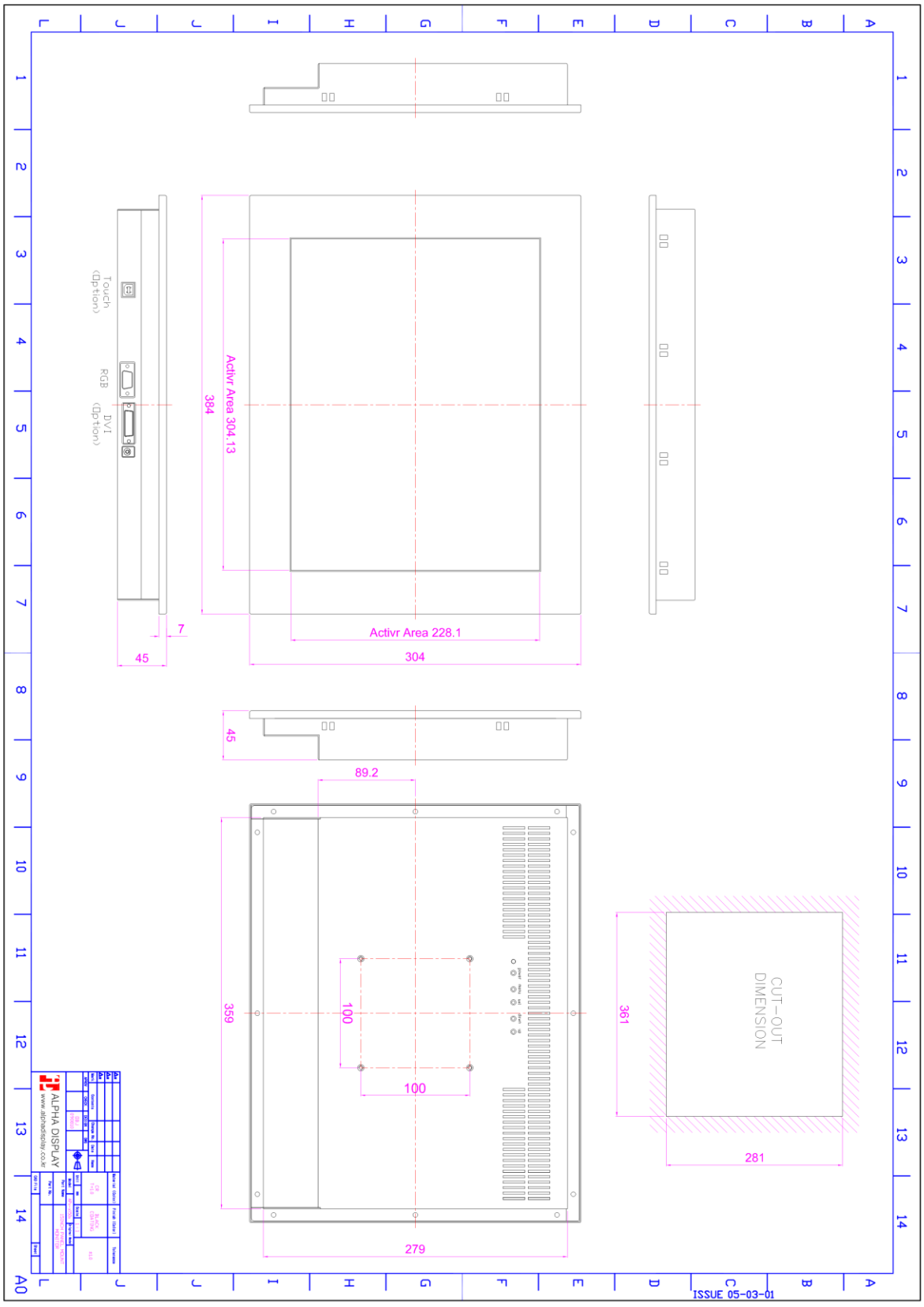
▶ APD-A1501-ONxB, OPxB, ORxB



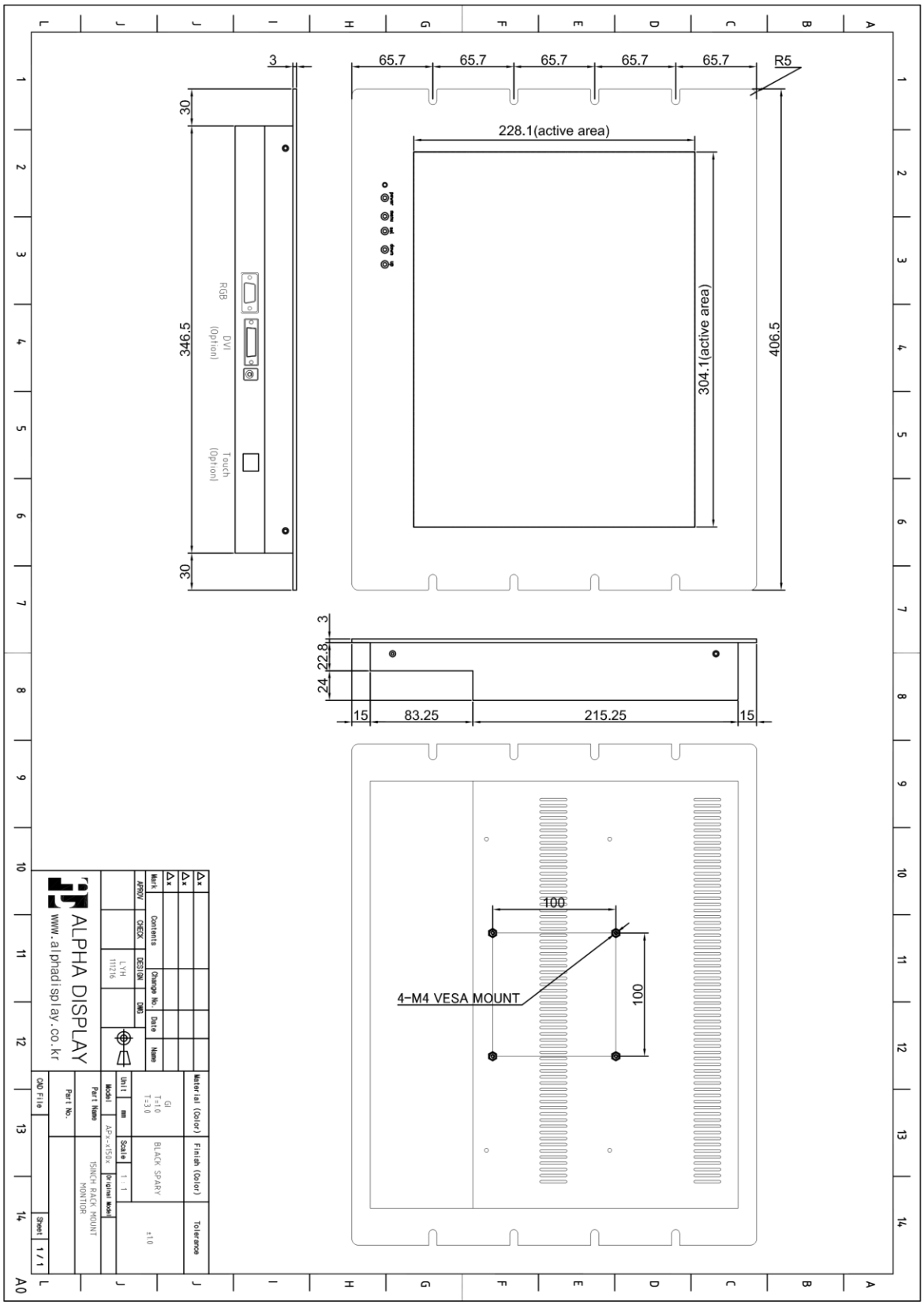
▶ APD-A1501-CNxB, CPxB, CRxB



▶ APD-A1501-PNxB, PPxB, PRxB

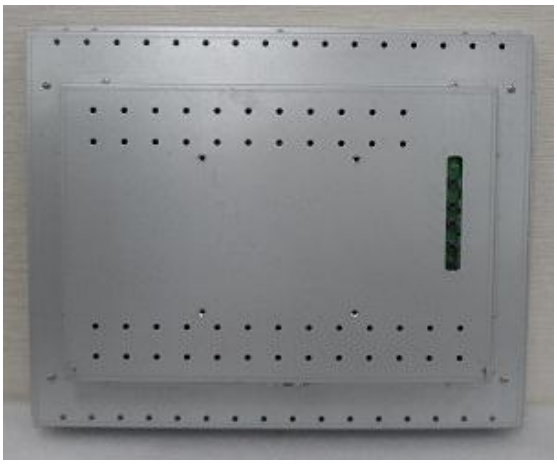


▶ APD-A1501-RNxB, RPxB, RRxB



9. Pictures (Reference)

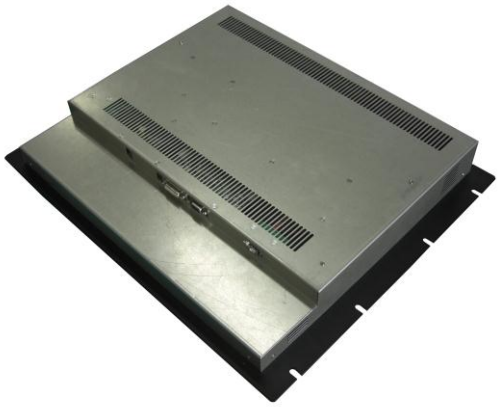
▶ Open Frame



▶Chassis Frame

▶Panel Mount

▶Rack Mount



Appendix1. Touch Screen Specification (Option)

▪Touch Screen

** This specification depends on Touch Screen characteristic. Please refer to Touch Screen specification in detail.*

Model	Inotouch, B150N18AG26-01 (15inch 5-Wire Resistive Touch)
Active Area	304.5mm x 228.5mm (11.99” x 9.00”)
Viewing Area	307.5mm x 231.5mm (12.11” x 9.11”)
Glass Area	328.0mm x 250.0mm (12.91” x 9.84”)
Relative Humidity	95% at +60℃
Storage Temperature	-40℃ to +80℃
Operating Temperature	0℃ to +70℃

▪Touch Controller

** This specification depends on Touch Controller characteristic. Please refer to Touch Controller specification in detail.*

Model	Inotouch, ETP-SAT4500G-G (ETP-MB-5UEC)
Communications Protocol	USB type
Dimensions	20mm x 75mm (0.79” x 2.95”)
Relative Humidity	95% at +60℃
Storage Temperature	-40℃ to +80℃
Operating Temperature	-25℃ to +80℃
Power Requirements	DC +5V (100mA typical, 50mV peak to peak maximum ripple and noise)