FABS-1XX Series

7”, 10.1”, 12.1”, 15”, 15.6”, 17”, 18.5”, 19”and 21.5” Flat Front Panel IP66 / IP69K(option) Stainless Steel Chassis Display

User Manual

Release Date	Revision
Jan. 2022	V1.3

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Revision History

Reversion	Date	Description
1.0	2019/08/28	Official Version
1.1	2020/11/05	Modify 1.2 Spec data
1.2	2021/07/15	Add 15.6” model information
1.3	2022/01/10	Add 18.5” model, add R model to all sizes

Warning!_____

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Disclaimer

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Chapter 1 Getting Started

1.1 Features

- Stainless Steel front bezel display
- Flat front panel touch screen
- IP66 / **IP69K** compliant front panel
- VGA, DVI-D/HDMI, and DP input
- Wide range DC 9~36V power input
- High Brightness LCD and Auto dimming for option
- Projected Capacitive Touch, Resistive Touch, or AR Glass for option
- OSD at rear side
- System power LED light

1.2 Specifications

	FABS-1XX Series
Outside I/O Port	
VGA	1
DVI-D	1 x DVI-D input (share with HDMI)
DP	1
HDMI	1 x HDMI input (share with DVI-D)
Audio	1 x audio line-in phone jack
OSD control	OSD on the rear side
LED Light	1 x system power LED light
Speaker	1 x 2W speaker for option
Power	1 x 3-pins terminal block for DC 9~36V power input
Others	1 x USB type B for touch control 1 x RS-232 DB-9 for touch control for option
Power	
Power Input	DC 9~36V
Touch Screen	
Type	Projected capacitive touch screen (for P model) Resistive Touch window type (for R model) Protective AR glass with non-touch version(for G model)
Light Transmission	Over 90%

Mechanical	
Construction	**304 Stainless Steel chassis(default); 316 Stainless Steel chassis(option)**
Mounting	Panel mount VESA mount 75 x 75(FABS-107) VESA mount 100 x 100
IP Rating	IP66/**IP69K** compliant front panel
Environmental	
Operating temperature	**0 ~ 50°C /-20~60°C (option) for 7”~19” models** **0 ~40°C for 21.5” models**
Storage temperature	-30~70°C
Humidity	10 to 95% @ 40°C, non- condensing
Vibration	1G / 5~500Hz (Random) / Operation
Shock	15G peak acceleration (11 msec. duration) / Operation
Certification	**CE / FCC Class A→R Models** **CE / FCC Class A/ EN1672-2→P(H) and G(H) Models**

- **Power Consumption**

Model Name	FABS-107 P/R/G(H)	FABS-110 P/R/G(H)	FABS-112 P/R/G(H)	FABS-115 P/R/G(H)	FABS-116 P/R/G(H)	FABS-117 P/R/G(H)	FABS-118 P/R/G(H)	FABS-119 P/R/G(H)	FABS-121 P/R/G(H)
Power Consumption(Max)	2.4W	6W	12W	16W	12.6W	29W	17.5W	TBD	38.1W

- **Mechanical Specification**

Model Name	FABS-107 P/R/G(H)	FABS-110 P/R/G(H)	FABS-112 P/R/G(H)	FABS-115 P/R/G(H)	FABS-116 P/R/G(H)	FABS-117 P/R/G(H)	FABS-118 P/R/G(H)	FABS-119 P/R/G(H)	FABS-121 P/R/G(H)
Dimensions(mm)	217 x 163 x 40	296 x 200 x 46.9	331 x 257 x 52	422 x 322 x 54.1	423.8 x 289.6 x 58	449.4 x 358.4 x 63.8	510 x 325 x 63.7	485 x 361 x 63.8	573.8 x 378.8 x 59.8
Net Weight(kg)	TBD	2.3	3.3	4.9	5.3	6.4	6.6	7.3	8.5

- **Standard LCD**

	FABS-107PRG	FABS-110PRG	FABS-112PRG		FABS-116PRG	
Display Type	7” color TFT LCD	10.1” color TFT LCD	12.1” color TFT LCD		15.6” color TFT LCD	
Max. Resolution	800 x 480	1280 x 800	800 x 600	1024 x 768	1366 x 768	1920 x 1080
Max. Colors	262K	16.7M	262K/16.2M	262K/16.2M	16.7M	16.7M
Contrast Ratio	400:1	800:1	1500:1	1000:1	500:1	800:1
Luminance (cd/m^2)	350	350	450	500	300	450
Viewing Angle(H/V)	140/120	170/170	178/178	178/178	160/160	170/170
Backlight Lifetime(Hrs)	50,000	25,000	50,000	50,000	50,000	50,000

	FABS-115PRG	FABS-117PRG	FABS-118PRG		FABS-119PRG	FABS-121PRG
Display Type	15” color TFT LCD	17” color TFT LCD	18.5” color TFT LCD		19” color TFT LCD	21.5” color TFT LCD
Max. Resolution	1024 x 768	1280 x 1024	1366 x768	1920 x1080	1280 x 1024	1920 x 1080
Max. Colors	16.2M	16.7M	16.7M		16.7M	16.7M
Contrast Ratio	2000:1	800:1	1000:1		1000:1	3000:1
Luminance (cd/m^2)	300	350	300		350	250

Viewing Angle(H/V)	176/176	170/160	170/170	170/160	178/178
Backlight Lifetime(Hrs)	70,000	30,000	50,000	50,000	30,000

- **High Brightness LCD (Option)**

	FABS-107PRGH	**FABS-110PRGH**	**FABS-112PRGH**		**FABS-116PRGH**	
Display Type	7” color TFT LCD	10.1” color TFT LCD	12.1” color TFT LCD		15.6” color TFT LCD	
Max. Resolution	800 x 480	1280 x 800	800 x 600	1024 x 768	1366 x 768	1920 x 1080
Max. Colors	262K	16.7M	16.2M/262K	16.2M/262K	16.7M	16.2M
Contrast Ratio	400:1	1000:1	700:1	700:1	500:1	800:1
Luminance (cd/m^2)	1000	1000	1000	1000	1000	1000
Viewing Angle(H/V)	140/130	170/170	178/178	160/140	160/160	170/170
Backlight Lifetime(Hrs)	50,000	50,000	50,000	50,000	50,000	50,000

	FABS-115 PRGH	**FABS-117 PRGH**	**FABS-118 PRGH**	**FABS-119 PRGH**	**FABS-121 PRGH**
Display Type	15” color TFT	17” color TFT	18.5” color	19” color TFT	21.5” color TFT

	LCD	LCD	TFT LCD	LCD	LCD
Max. Resolution	1024 x 768	1280 x 1024	1366 x768	1280 x 1024	1920 x 1080
Max. Colors	16.7M	16.7M	16.7M	16.7M	16.7M
Contrast Ratio	800:1	1000:1	1000:1	1000:1	3000:1
Luminance (cd/m^2)	1000	1000	1000	1000	1000
Viewing Angle(H/V)	160/150	170/160	160/170	170/160	178/178
Backlight Lifetime(Hrs)	50,000	50,000	50,000	50,000	50,000

1.3 Dimensions

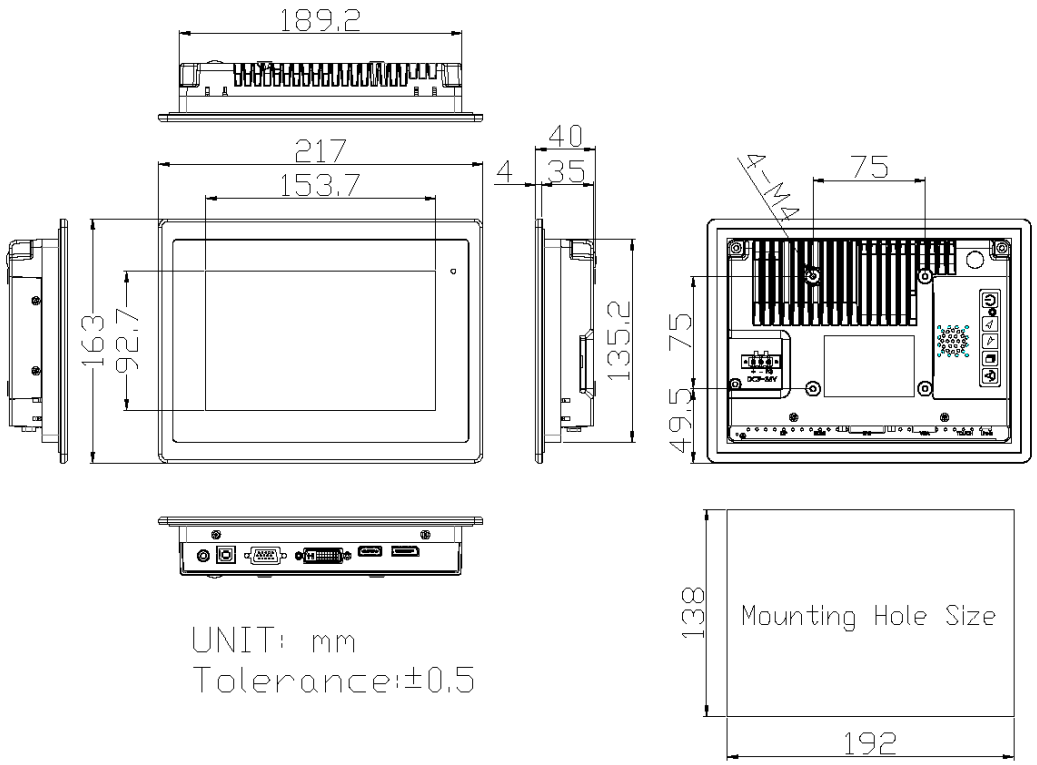


Figure 1.1: Dimensions of FABS-107PRG(H)

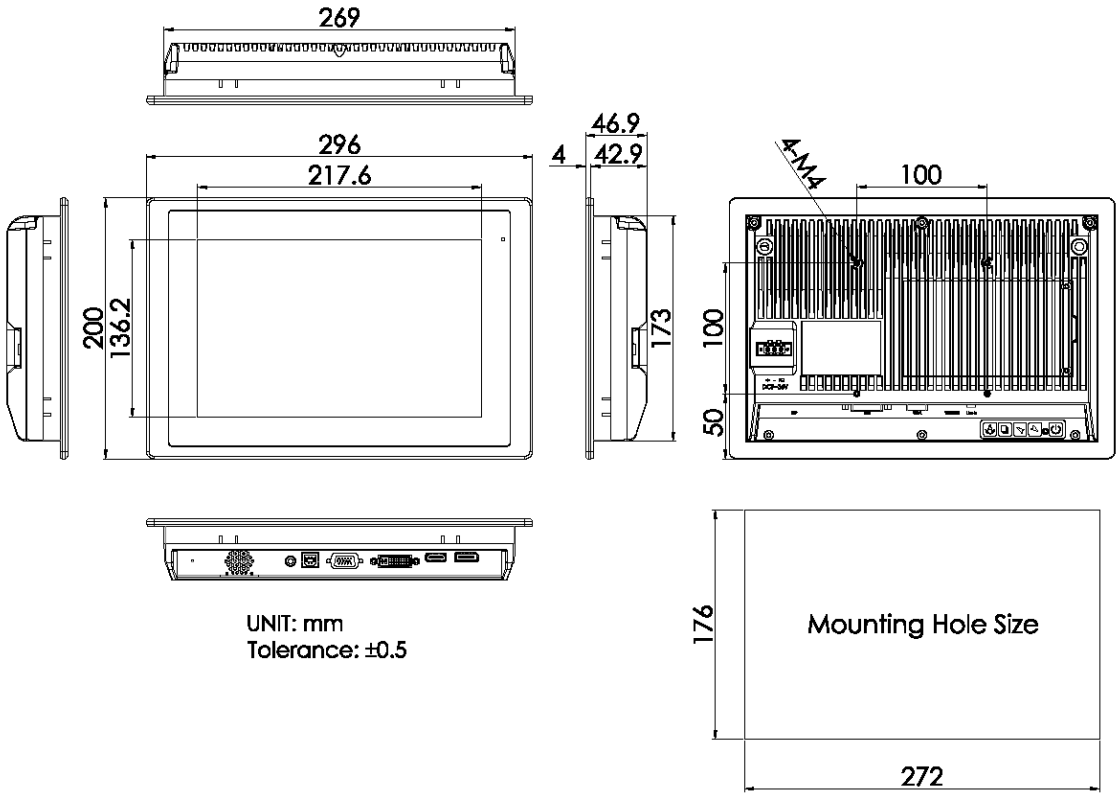


Figure 1.2: Dimensions of FABS-110PRG(H)

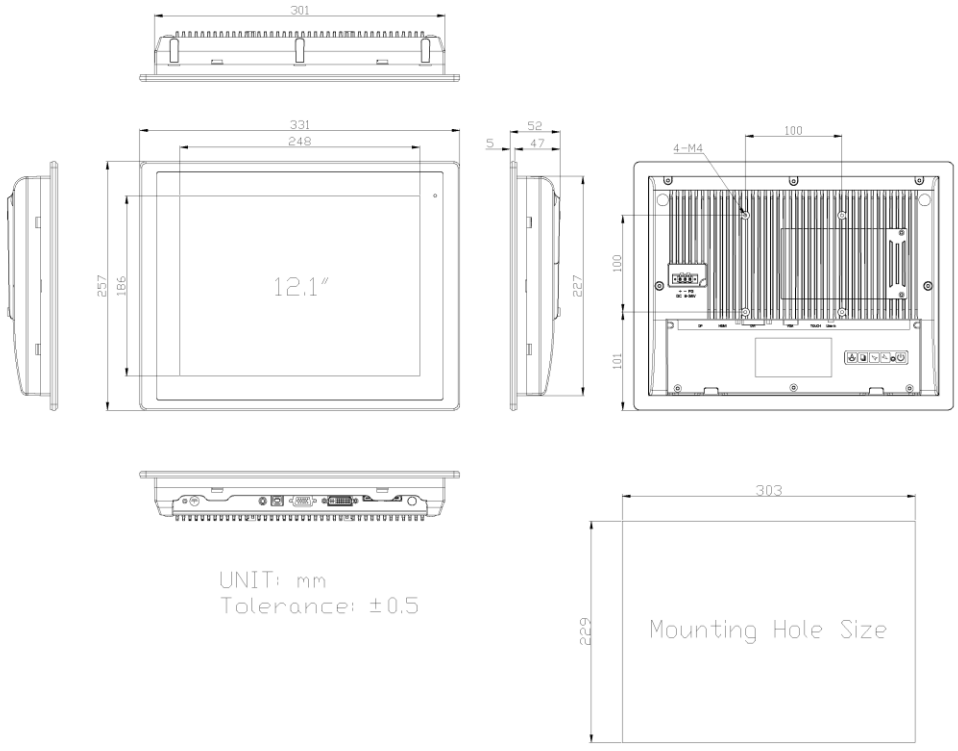


Figure 1.3: Dimensions of FABS-112PRG(H)

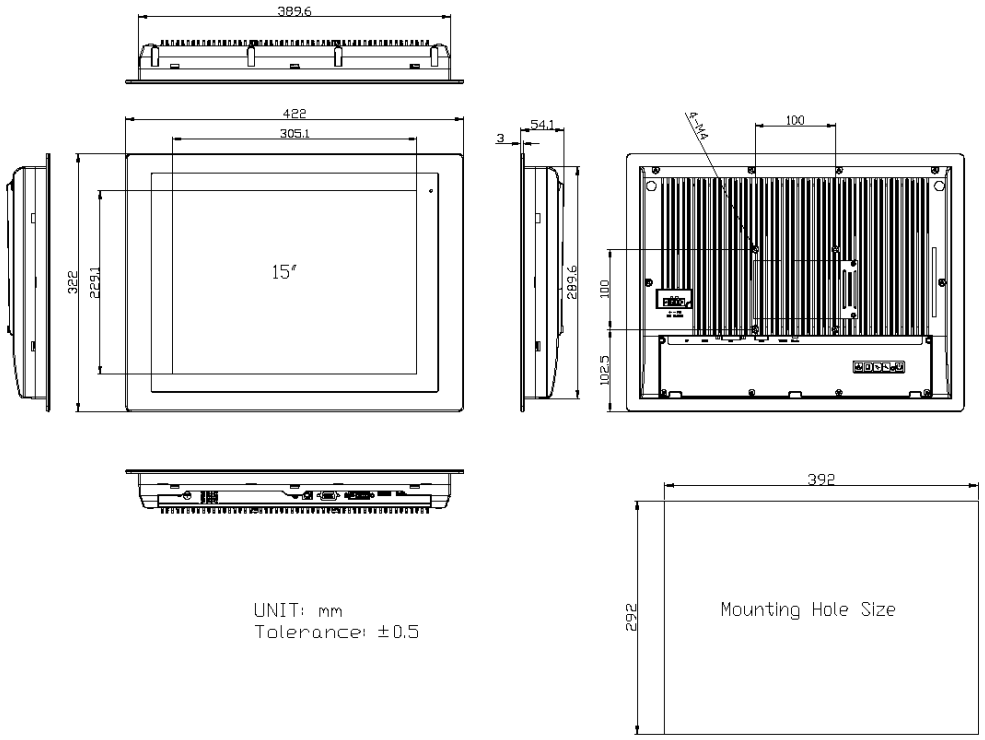


Figure 1.4: Dimensions of FABS-115PRG(H)

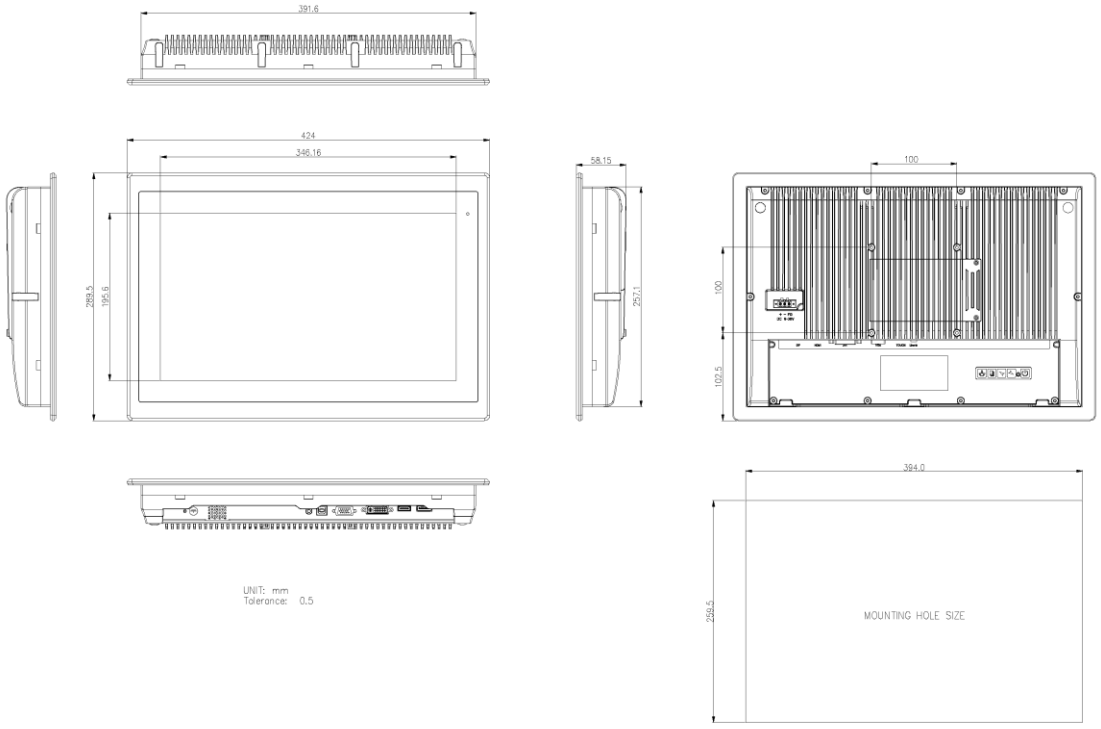


Figure 1.5: Dimensions of FABS-116PRG(H)

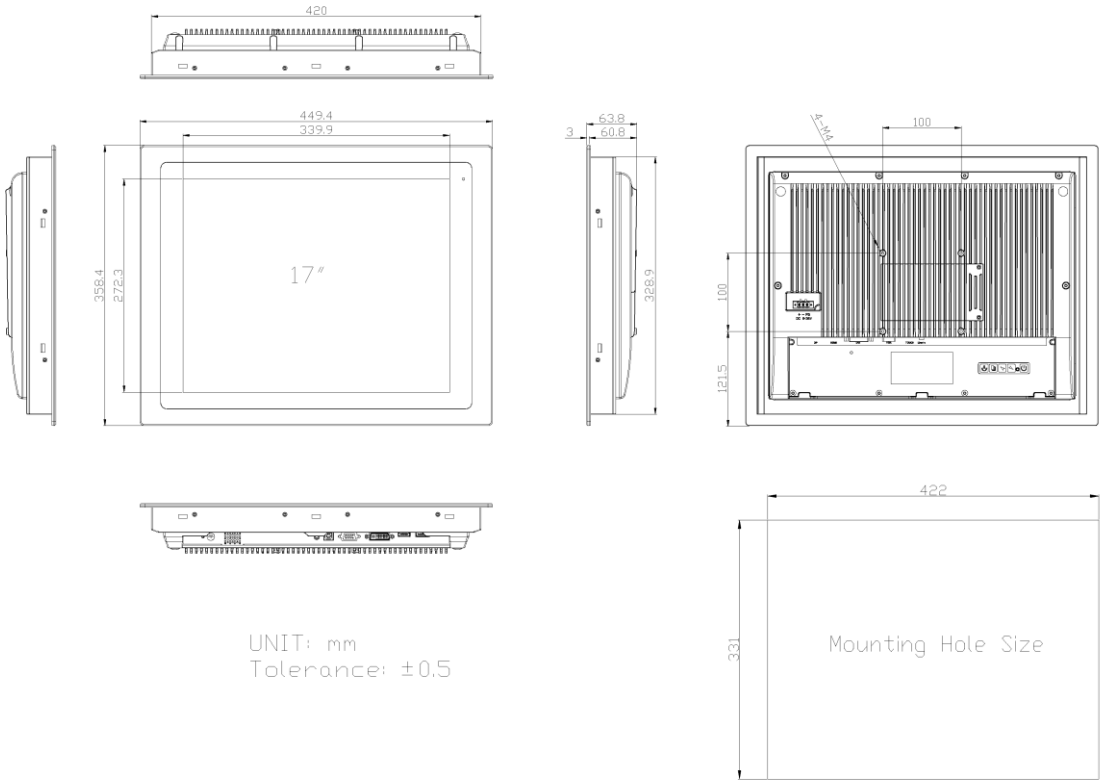


Figure 1.6: Dimensions of FABS-117PRG(H)

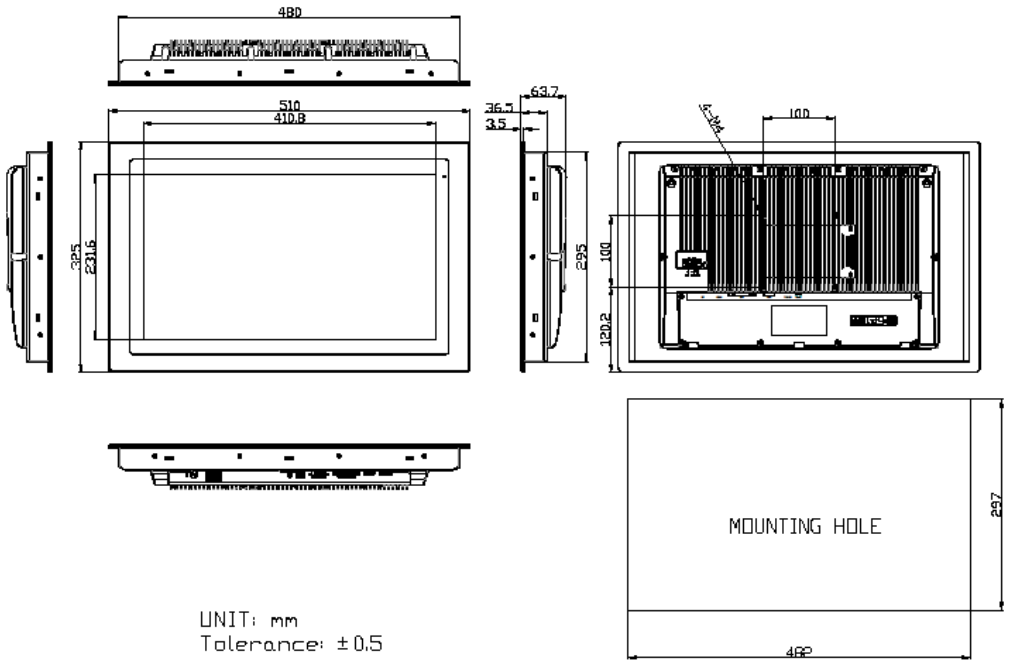


Figure 1.7: Dimensions of FABS-118PRG(H)

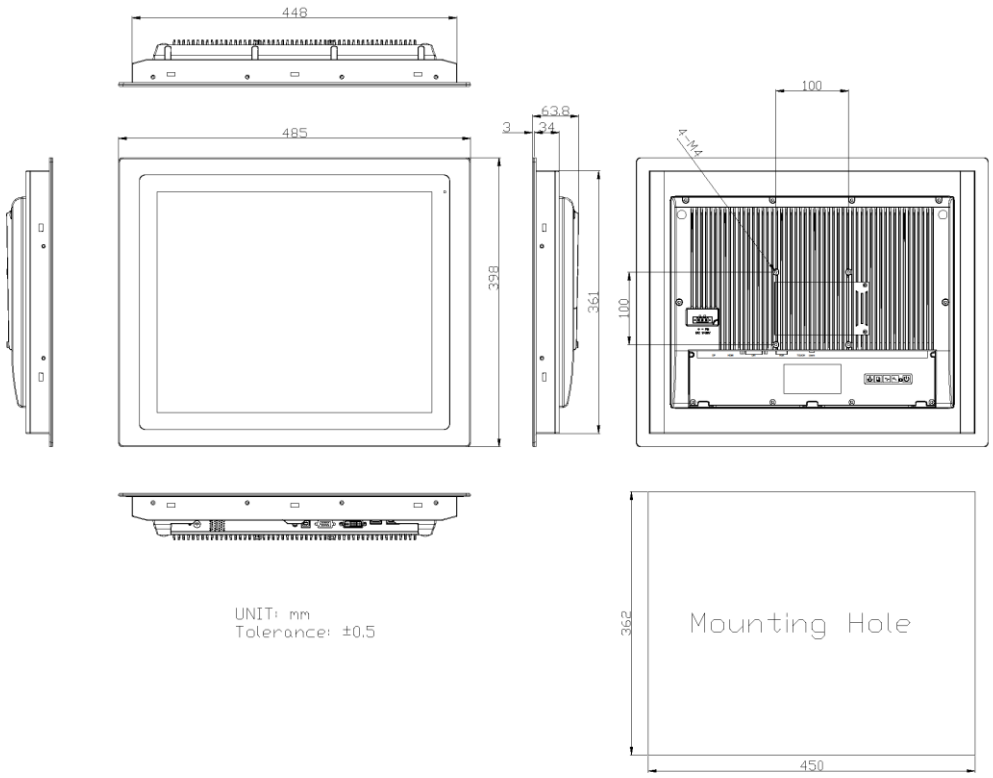


Figure 1.8: Dimensions of FABS-119PRG(H)

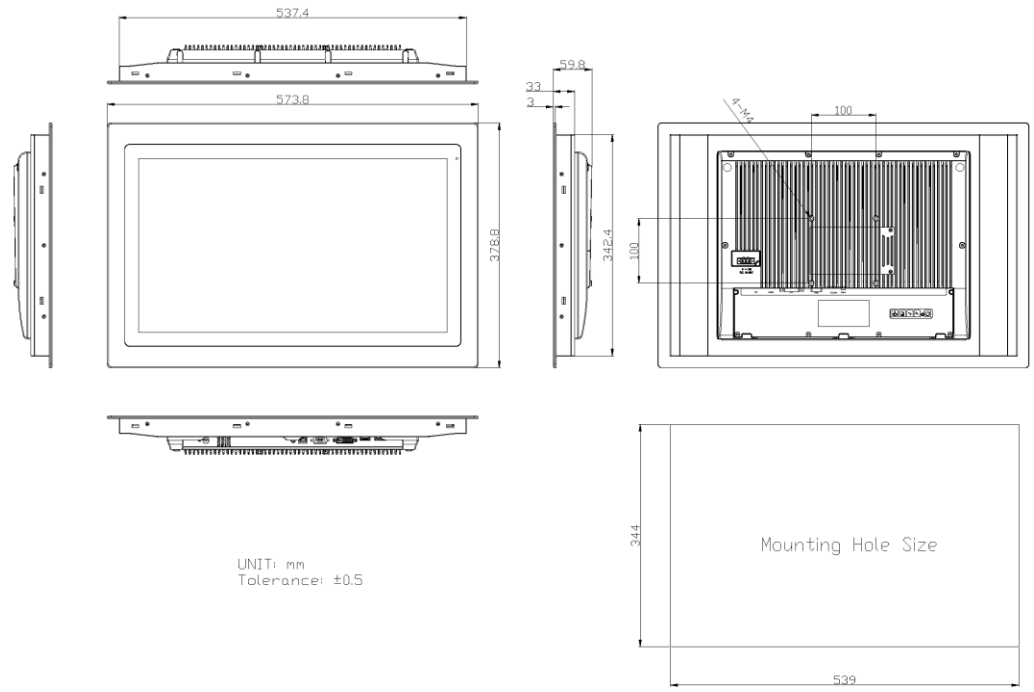


Figure 1.9: Dimensions of FABS-121PRG(H)

1.4 Brief Description of FABS-1XXPRG(H)

FABS-1XXP/R/G(H) is an IP66 / **IP69K** compliant front bezel 304/316(option) stainless steel chassis display, which comes with 7” to 21.5” color TFT LCD. The optional high brightness LCD is ideal for sunlight readable semi-outdoor applications. Furthermore, 12.1” display can be 1024 x 768 resolution for option. The model series supports VGA, DP, and DVI-D/HDMI input, and it can be VESA 100 x 100 mounted. FABS-1XXP/R/G(H) series have more outstanding features, and the best performance in monitoring.

Figure 1.10: Front View of FABS-107PRG(H)

Figure 1.11: Rear View of FABS-107PRG(H)

Figure 1.12: Front View of FABS-110PRG(H)

Figure 1.13: Rear View of FABS-110PRG(H)

Figure 1.14: Front View of FABS-112PRG(H)

Figure 1.15: Rear View of FABS-112PRG(H)

Figure 1.16: Front View of FABS-115PRG(H)

Figure 1.17: Rear View of FABS-115PRG(H)

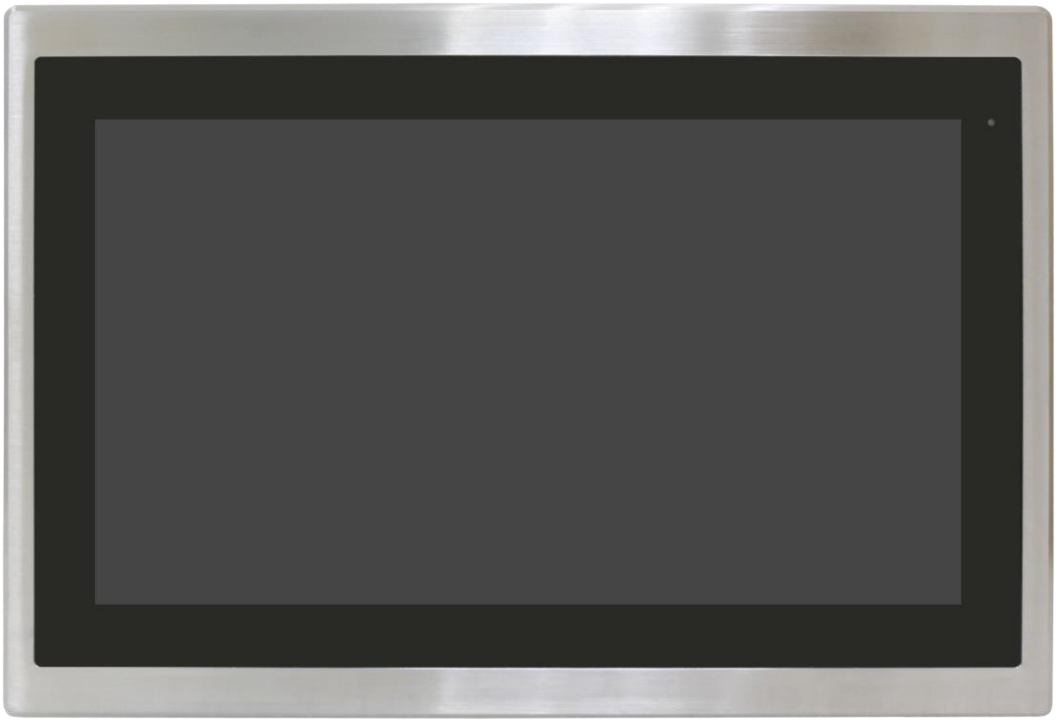


Figure 1.18: Front View of FABS-116PRG(H)

Figure 1.19: Rear View of FABS-116PRG(H)

Figure 1.20: Front View of FABS-117PRG(H)

Figure 1.21: Rear View of FABS-117PRG(H)

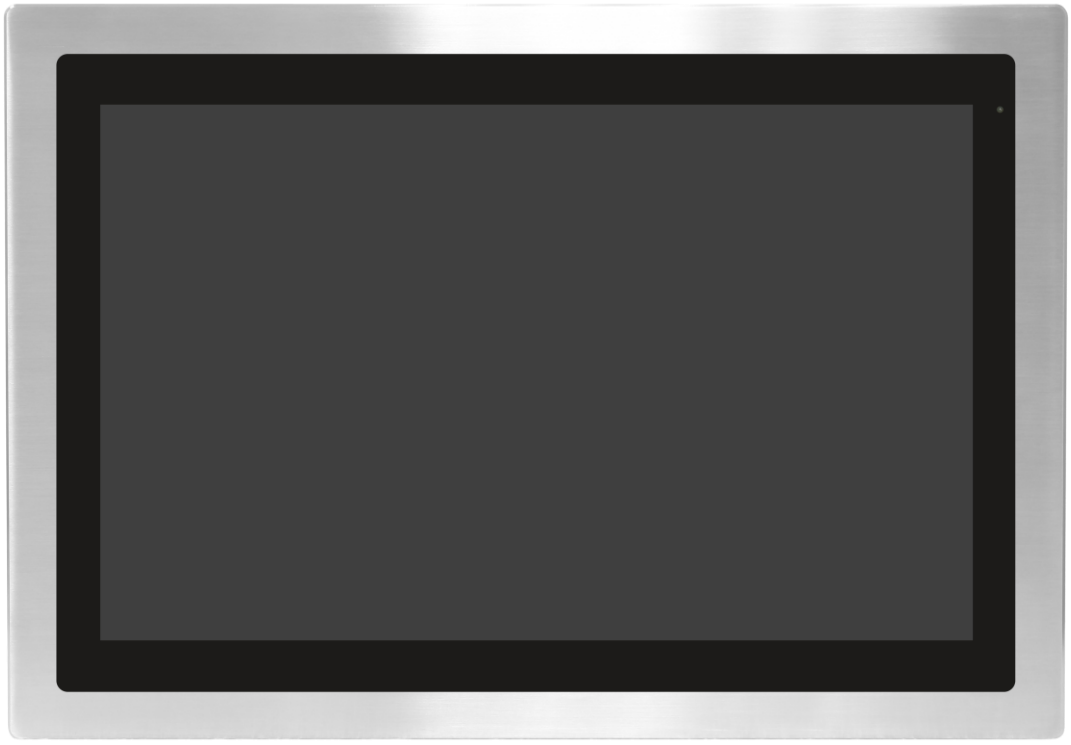


Figure 1.22: Front View of FABS-118PRG(H)

Figure 1.23: Rear View of FABS-118PRG(H)

Figure 1.24 Front View of FABS-119PRG(H)

Figure 1.25: Rear View of FABS-119PRG(H)

Figure 1.26: Front View of FABS-121PRG(H)

Figure 1.27: Rear View of FABS-121PRG(H)

Chapter 2 AD BOARD INFORMATION

2.1 AD Board Specification

Specifications	
Board Size	170 x 113 mm
Scalar IC	Realtek RTD2556T-CG
Input	1 x HDMI Input (Share with DVI-D) 1 x DisplayPort(DP) 1 x USB2.0(Type-B) 1 x DVI-D (Share with HDMI) 1 x VGA
Output	1 x Supports up to 24-bit LVDS FULL HD panel interface 1 x eDP 1 x Line out(Audio Jack)
Resolution	Up to 1920 x1080 @60Hz for LVDS Up to 1920 x1080 @60Hz for eDP
Power input	DC9~36V input
Temperature	Operating: -20℃ to 70℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
EMI/EMS	Meet CE/FCC class A

2.2 Board Dimensions

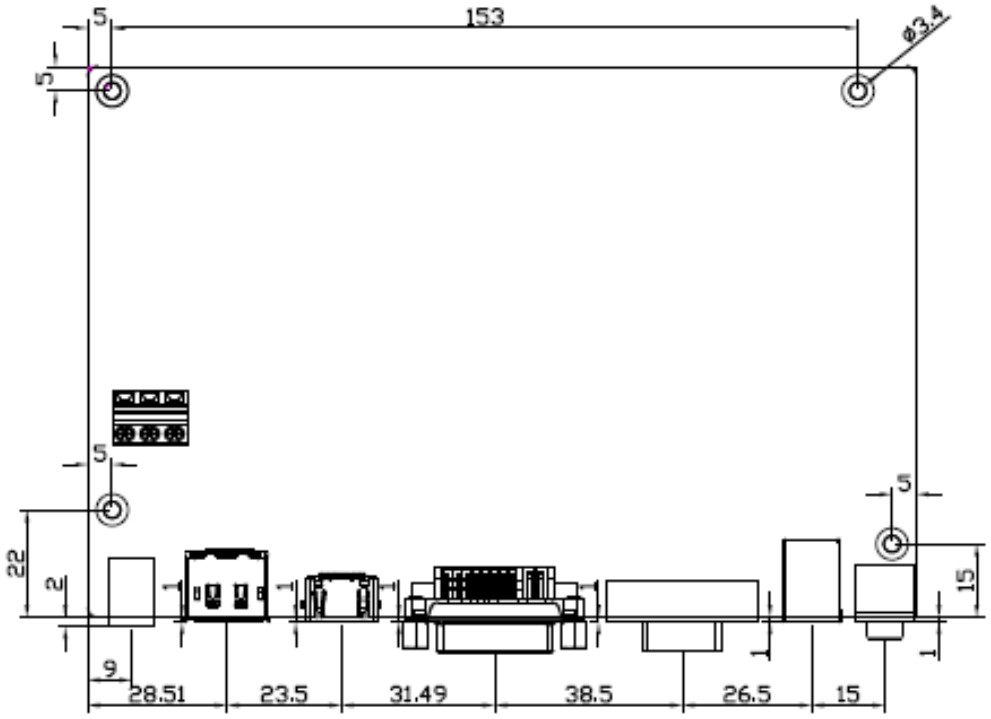


Figure 2.1: Dimension of TB-6802(Top)

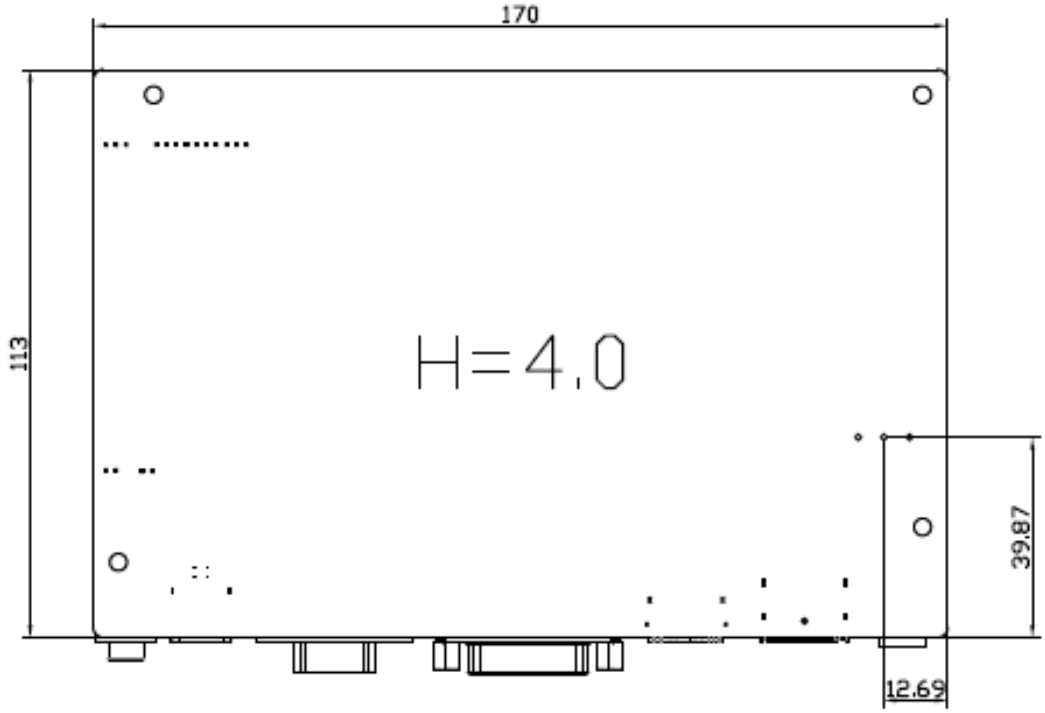
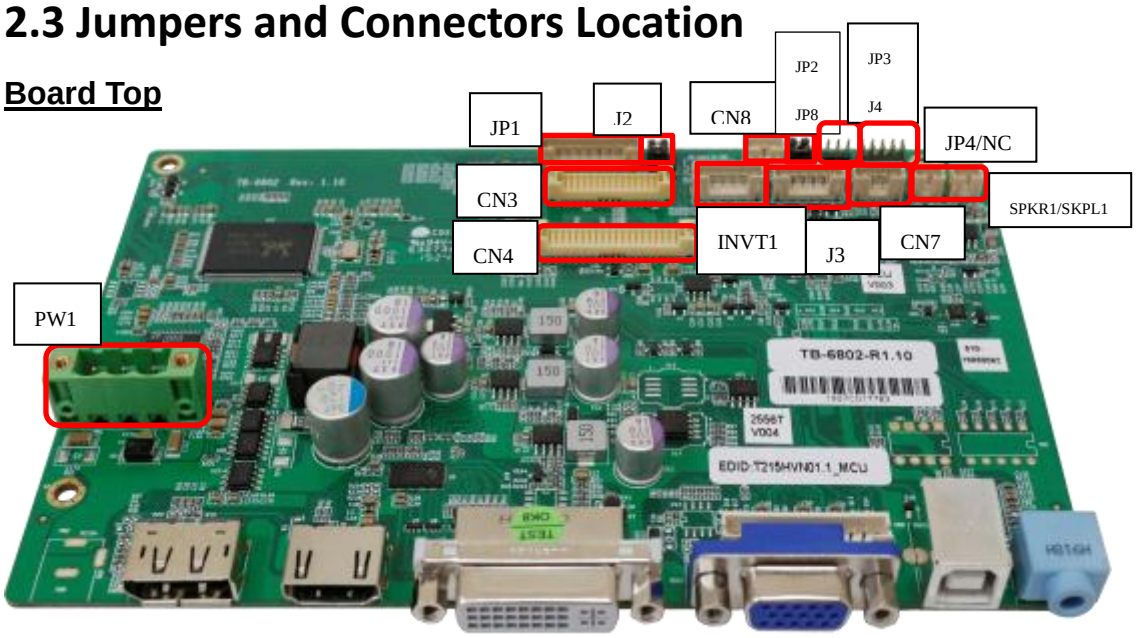


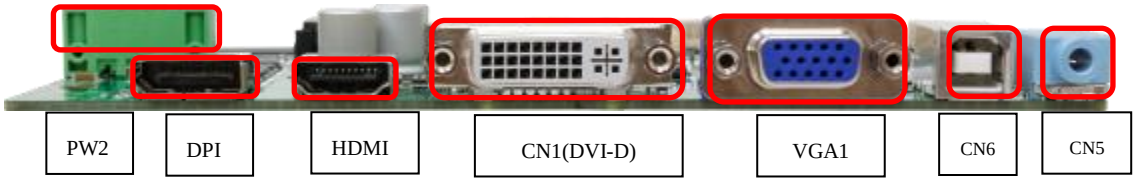
Figure 2.2: Dimension of TB-6802(Bottom)

2.3 Jumpers and Connectors Location

Board Top



External I/O



2.4 Jumpers Settings and Connectors

1. PW1:

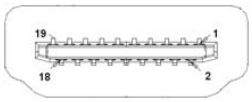
(5.08mm Pitch 1x3 Pin Connector),DC24V power input connector。

Pin#	Power Input
1	DC+24V
2	Ground
3	FG

Model	Connector Type
TB-6802	2EHDVM-03P
TB-6802P	ELK508S-03P

2. PW2（Option）：

DC Jack



3. HDMI1（HDMI Input） ：

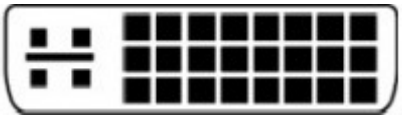
(HDMI Connector), High Definition Multimedia Interface connector, provide high-quality video and audio input.

Signal Name	Pin#	Pin#	Signal Name
DATA2+	1	2	DATA2 Shield
DATA2-	3	4	DATA1+
DATA1 Shield	5	6	DATA1-
DATA0+	7	8	DATA0 Shield
DATA0-	9	10	CLK+
HDMI CAB DET	11	12	CLK-
NC	13	14	NC
HDMI SCL	15	16	HDMI SDA
GND	17	18	HDMI 5V
HDMI HPD	19		

4.DP1（DisplayPort Input） :

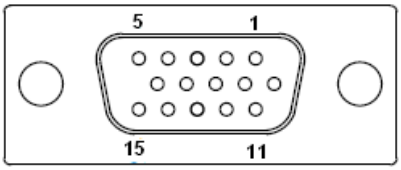
(DisplayPort Connector), DisplayPort Interface connector, provide high-quality video and audio input.

Signal Name	Pin#	Pin#	Signal Name
LANE3-	1	2	GND
LANE3+	3	4	LANE2-
GND	5	6	LANE2+
LANE1-	7	8	GND
LANE1+	9	10	LANE0-
GND	11	12	LANE0+
GND	13	14	GND
AUX_CHP	15	16	DP CAB DET
AUX_CHN	17	18	DP HPD
RETURN	19	20	DP 3.3V



5.CN1（DVI-D Iutput）:

(DVI-D Connector), Digital Visual Interface-Integrated input connector.



6. VGA1（VGA Input）:

(CRT DB15 Connector),Video Graphic Array Port, provide high-quality video input.

Pin#	Signal Name
1	CRT_RED
2	CRT_GREEN

3	CRT_BLUE
4	Ground
5	Ground
6	R-
7	G-
8	B-
9	VGA_5V
10	DET_VGA
11	Ground
12	DDCA-SDA
13	HSYNC
14	VSYNC
15	DDCA-SCL

7. CN2（IR Connect）: ***Reserved***

(2.0mm 1x4 Pin wafer connector), Reserved for IR receiver.

Pin#	Signal Name
1	GND
2	IR
3	3.3V
4	NC

8. CN3（eDP Output）:

(1.25mm Pitch 2x15 Connector) eDP output connector.

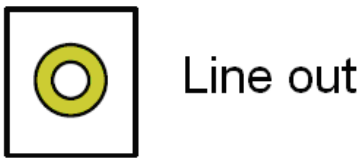
Signal Name	Pin#	Pin#	Signal Name
LVDS_12V	1	2	LVDS_12V
BKLT_CTRL	3	4	BKLT_EN
GND	5	6	GND
LVDS_VCC5	7	8	LVDS_VCC5
LVDS_VCC3	9	10	LVDS_VCC3
GND	11	12	GND
TXA3N	13	14	TXA3P
VTX_TX1N	15	16	VTX_TX1P

TXB0N	17	18	TXB0P
TXB1N	19	20	TXB1P
DPTX_AUX_N	21	22	DPTX_AUX_P
GND	23	24	GND
NC	25	26	AB_IICSCL
NC	27	28	AB_IICSDA
NC	29	30	TX2_HPD_2

9. CN4（LVDS Output）：

(1.25mm Pitch 2x20 Connector),For 24-bit LVDS output connector, the interface features dual channel 18/24-bit output.

Signal Name	Pin#	Pin#	Signal Name
LVDS_12V	1	2	LVDS_12V
BKLT_CTRL	3	4	BKLT_EN
GND	5	6	GND
LVDS_VCC5	7	8	LVDS_VCC5
LVDS_VCC3	9	10	LVDS_VCC3
GND	11	12	GND
TXA0N	13	14	TXA0P
TXA1N	15	16	TXA1P
TXA2N	17	18	TXA2P
TXA3N	19	20	TXA3P
TXACN	21	22	TXACP
TXB0N	23	24	TXB0P
TXB1N	25	26	TXB1P
TXB2N	27	28	TXB2P
TXBCN	29	30	TXB3P
TXB3N	31	32	TXBCP
LVDS_DDC_DET	33	34	GND
CPT-USB_N	35	36	CPT-USB_P
DDCSDA_AUTO	37	38	LVDS_USB_5V
DDCSCL_AUTO	39	40	LVDS_VCC3



10. CN5（Line Out）：

(Diameter 3.5mm Jack), Audio port, provide high quality audio I/O ports. Line Out can be connected to a headphone or amplifier.

11. CN6（USB2.0）：

(USB Type-B), For external USB2.0 signal input.

Pin#	Signal Name
1	USB 5V
2	USB-
3	USB+
4	GND

12. CN7（COM Input）：

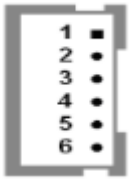
(2.0mm 1x4 Pin wafer connector).For external RS-232 signal input.

Pin#	Signal Name
1	TXDD1
2	RXDD1
3	RTS1
4	GND

13. CN8 :

(2.0mm 1x3 Pin wafer connector), For external light sensor.

Pin#	Signal Name
1	5V
2	Sensor
3	GND



14. INVT1:

(2.0mm Pitch 1x6 wafer Pin Header), Backlight control connector for LVDS.

Pin#	Signal Name
1	LVDS_DC12V
2	LVDS_DC12V
3	Ground
4	Ground
5	BKLT_EN
6	BKLT_CTRL

15. JP1（OSD）:

(2.0mm 1x9 Pin wafer connector), On Screen Display menu Control connector.

Pin#	Signal Name
1	Power Key
2	R_LED
3	G_LED
4	GND
5	MENU Key
6	Down Key
7	UP Key
8	Select Key
9	NC

16. JP2 :

(2.0mm Pitch 1x3 Pin Header)

JP2 Pin#	Function
Close 1-2	Backlight Enable & Backlight PWM Level select 3.3V
Close 2-3	Backlight Enable & Backlight PWM Level select 5V

17. JP3 :

(2.0mm Pitch 1x3 Pin Header), Backlight control setting.

JP3 Pin#	Function
Close 1-2	For PWM Mode
Close 2-3	For DC Mode

18. JP4/NC（Debug Interface & Off Page） :

(2.0mm Pitch 2x5 Pin Header)

Pin#	Signal Name
1	NC
2	VCC3
3	NC
4	TICEDAT
5	NC
6	TICECLK
7	UART0_TX
8	nRST
9	UART0_RX
10	GND

19. JP8 :

(2.0mm Pitch 1x3 Pin Header),

JP8 Pin#	Function
Close 1-2	Backlight Control & Backlight PWM Level select 3.3V
Close 2-3	Backlight Control & Backlight PWM Level select 5V

20. J1（VGA input）:

(2.0mm Pitch 1X12 Pin Wafer),Video Graphic Array Port, Provide 12Pin cable to VGA output.

Pin#	Signal Name
1	GND
2	VSYNC

3	HSYNC
4	GND
5	CRT_RED
6	GND
7	CRT_GREEN
8	GND
9	CRT_BLUE
10	GND
11	DDCA-SDA
12	DDCA-SCL

21. J2:

(2.0mm Pitch 2X3 Pin Header), RS232 or USB input for PM6000 Touch Controller Signal jumper setting.

J2	PM6000 input Signal	CN4/USB output
Close（3-5,4-6）	NC	●
Close（1-3,2-4）	USB(CN6)	NC
Close（1-3,2-4）	RS232(CN7)	NC
Close（1-3,2-4）	RS232(CN7)	NC

22. J3:

(2.0mm Pitch 1X6 Pin Wafer),Touch Screen connecting Lines.

Pin#	4-Wire	5-Wire
1	N/A	Sense (S)
2	Right	LR
3	Left	LL
4	Bottom	UR
5	Top	UL
6	GND	GND

23. J4 : ***Reserved***

(2.0mm Pitch 1x2 Pin Header), 4-Wire/8-Wire resistive touch select.

24. SPKL1（Audio output）:

(2.0mm 1x2 Pin wafer connector),Amplifier left channel output.

Pin#	Signal Name
1	L+ (output)
2	L- (output)

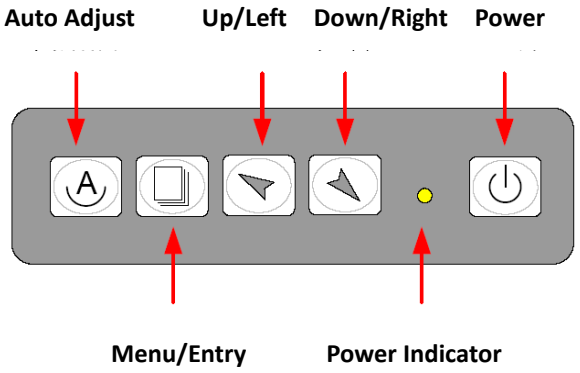
25.SPKR1（Audio output）:

(2.0mm 1x2 Pin wafer connector), Amplifier right channel output.

Pin#	Signal Name
1	R+ (output)
2	R- (output)

Chapter 3 OSD

3.1 AD Board OSD Functions



Power switch: To turn ON or OFF the power

Shift the icon to the right side or shift it up

Shift the icon to the left side or shift it down

Menu: To enter OSD menu for related icon and item.

Auto Button: One-touch auto adjustment

1.) Getting into Burn-in Mode

Before setting into a burn-in mode, first disconnect the AC power cord. Then press (don't let them go) the buttons until the AC power cord is connected and the "RGB" appears on the top left corner of your screen. Now it can be put into the burn-in mode for changing colors.

2.) Getting Out of Burn-in Mode

Before getting out of the burn-in mode, please first disconnect the AC power cord. Then press the button (If not workable, press the button and don't let them go) until the AC power cord is connected. Please don't let your fingers go until the AC power cord is connected again and the wording of "RGB" appears on the top left corner of your screen, and wait for 3 second. Under the non-signal entry situation, if **Cable Not Connected** is seen, exit is thus successfully made.

When the Burn-in Mode is Unable to Eradicate…

1.) If the “RGB” is still on the top left corner of the screen, press to enter “Miscellaneous” and choose “Reset”, and then **Yes,** and press . When the screen goes black, disconnect power and repeat the above steps.

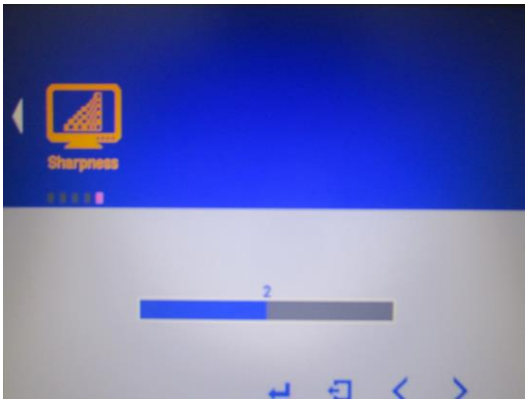
2.) If the “RGB” is not found, disconnect the AC power cord first. Then press the buttons (don’t let them go) until the AC power cord is connected, and wait for 2 to 3 seconds. When “RGB” appears, repeat the above steps.

3.2 OSD Controls

To make any adjustment, select the following:

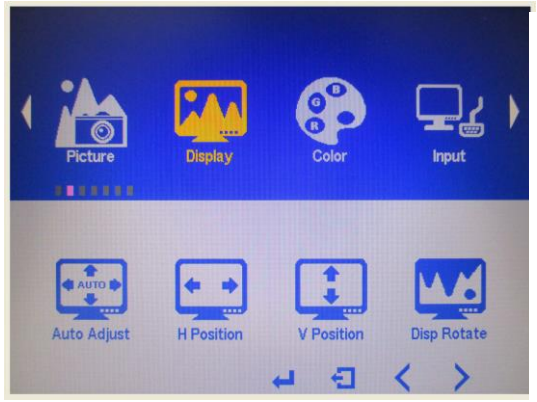
1. Press (Menu) to show the OSD menu or disable the OSD menu.
2. Select the icon that you wish to adjust with the (/ or +/-) key in the menu.
3. Press (Menu) and then choose the item or adjust the numerals with the (/ or +/-) key.

3.3 Main Menu



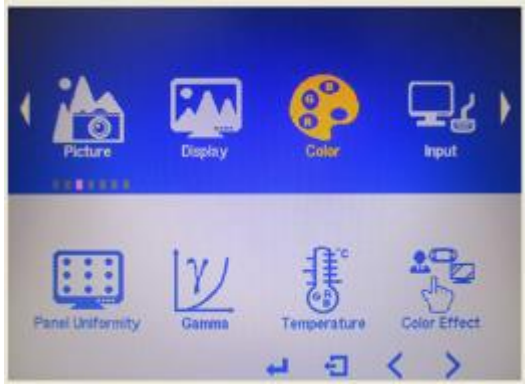
In the **PICTURE**, there are the following items:

- AutoBacklight
- Backlight
- Brightness:
- Contrast
- Sharpness
- Exit



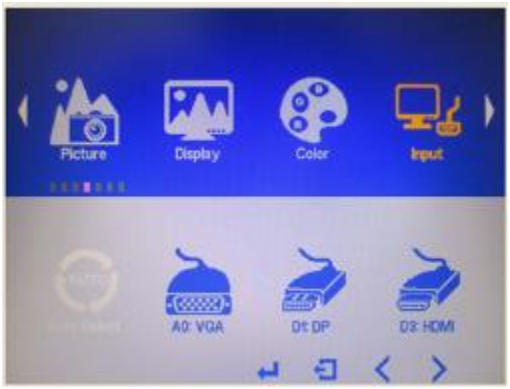
In the **DISPLAY**, there are the following items:

- AutoAdjust
- H Position
- V Position
- Disp Rotate
- Exit



In the **COLOR**, there are the following items:

- Panel Uniformity
- Gamma
- Temperature
- Color Effect
- Exit

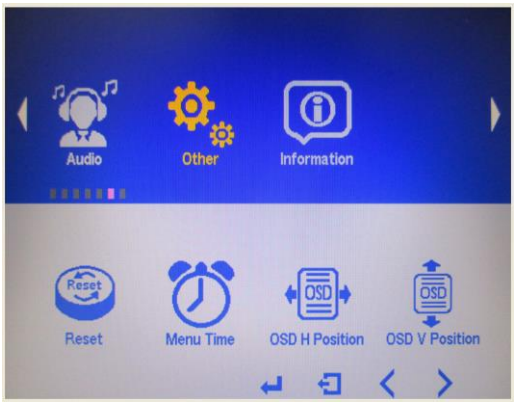


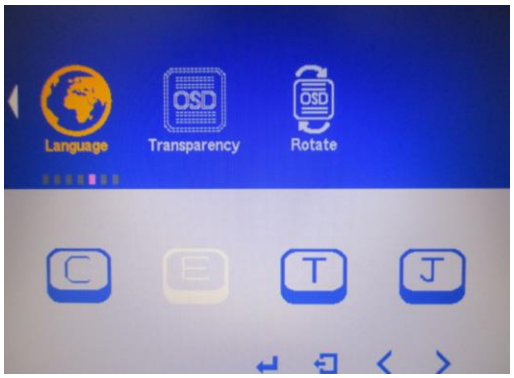
In the **INPUT**, there are the following items:

- A0:VGA
- D1:DP
- D3:HDMI
- Exit

In the **AUDIO**, there are the following items:

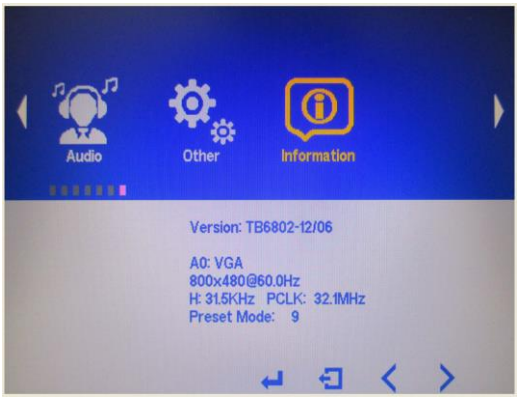
- Volume
- Mute
- Audio Source
- Exit





In the **OTHER**, there are the following items:

- Reset
- Menu Time
- OSD H Position
- OSD V Position
- Language
- Transparency
- Rotate
- Exit



Information part.

Appendix A: Panel Mounting and VESA Mounting

The FABS-1XXPRG(H) is designed to be panel-mounted and VESA mounted as shown in Picture. Just carefully place the unit through the hole and tighten the given screws from the rear to secure the mounting.

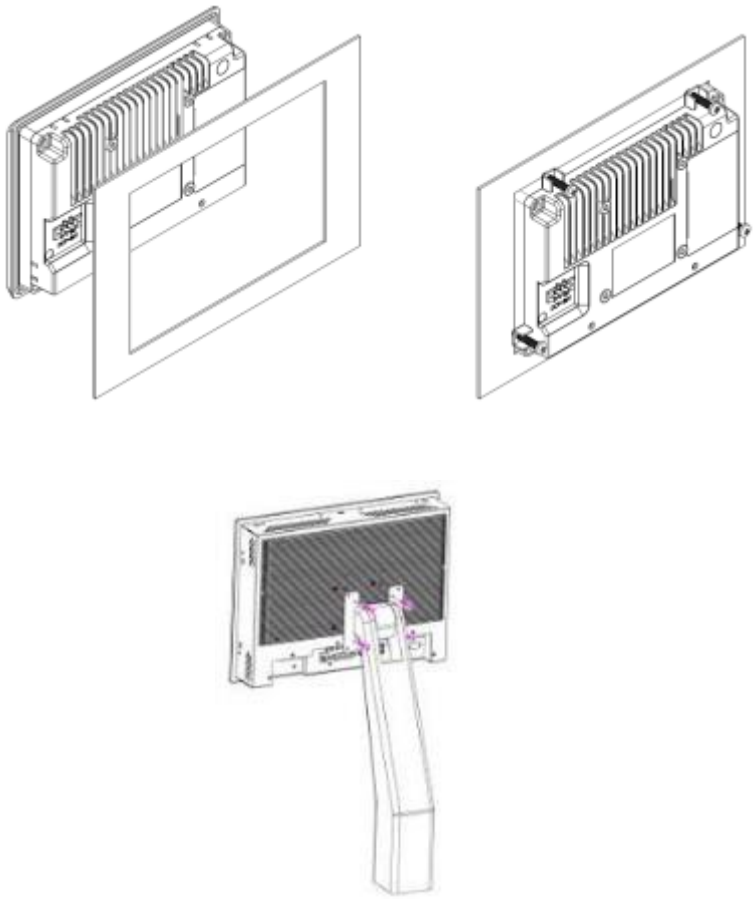


Figure A: Panel mounting and VESA mounting

Attention

***Notice：**

Tighten the mounting clip screws by hand until the gasket seal contacts the mounting surface uniformly.

Tighten the mounting clips screws to a torque of 8 ~ 10 kgf-cm by using the specified sequence, making sure not to overtighten.

*Tighten the mounting clips to the specified torque to provide a proper seal and to prevent damage to the product. Aplex assumes no responsibility for water or chemical damage to the product or other equipment within the enclosure due to improper installation.