

## SPECIFICATION APPROVAL SHEET

7" (1024x600) Digital TFT LCD 200nits, Aspect Ratio: 16:9, Input Signal HDMI 1.3a  
Maximum Support Resolution 1920x1080, Headphone Driver, 46mW@32Ω, No  
Touch, 5 Key Buttons Control, UART / RS232 Serial Remote Control  
(Option), 9 Language OSD Menu, LED Backlight, Single Operation Voltage +5V,  
Operating Temp -10 to 40C, No cables, no accessories, no Power adapter.

**MODEL: FCOPW0700**



i-Tech Company LLC

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## *1. General Description*

### **1.1 Features**

- 7" (1024x600) Digital TFT LCD
- Aspect Ratio: 16:9
- Input Signal HDMI 1.3a
- Maximum Support Resolution 1920x1080
- Headphone Driver, 46mW@32Ω
- Touch Screen 4W Resistive
- 5 Key Buttons Control
- UART / RS232 Serial Remote Control (Option)
- 9 Language OSD Menu
- LED Backlight
- Single Operation Voltage +5V

### **1.2 Applications**

- Industrial
- Medical Environment
- Instrument Display
- Kiosk
- Security
- Signage
- Office Electronics
- Home Application
- Educate Application



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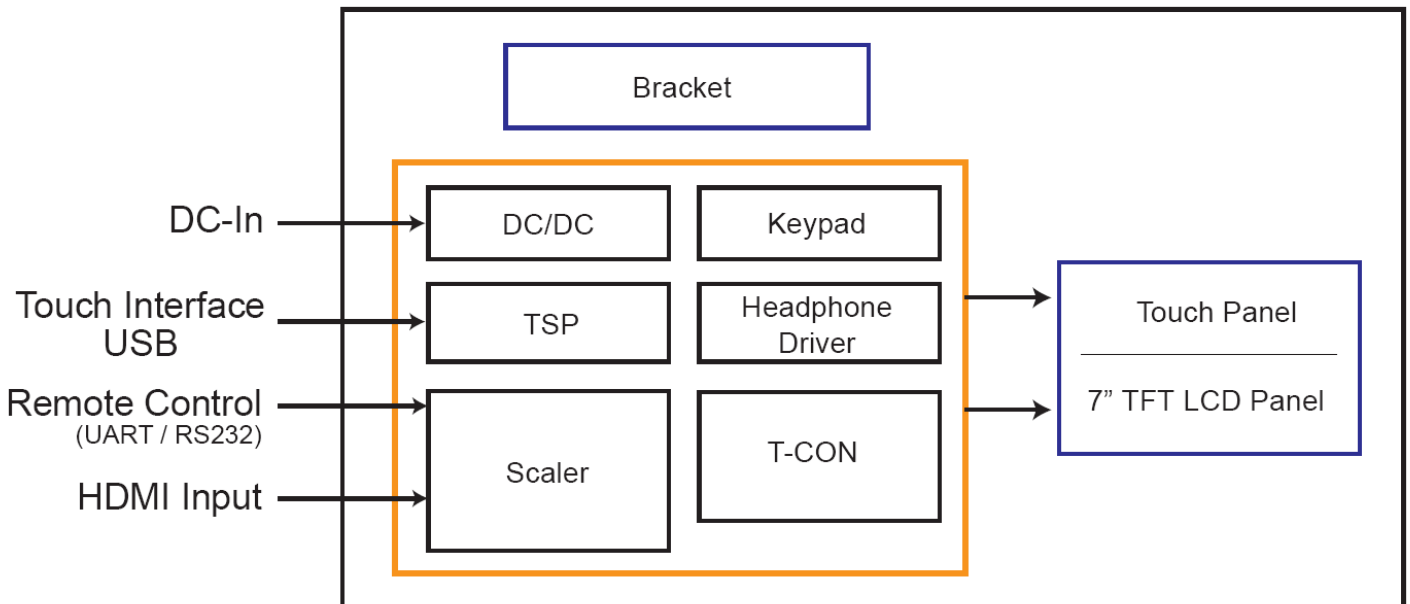
### 3. Specifications

LCD	
Panel Size	7"
Resolution (Pixels)	1024x600
Color	262K
Luminance without RTP	250 cd/m <sup>2</sup>
Luminance (RTP)	200 cd/m <sup>2</sup>
Contrast Ratio	700
Viewing Angle	75 / 75 / 70 / 75
LED Life Time	15K (Min)
Power Requirement	
Power Input (DC Jack 2.5 φ)	+5VDC
Power Consumption	3.6 Watts
Touch Screen	
Resistive Type	USB / RS232(Optional) Interface
Resistive Type Support OS	Windows / Linux / DOS / Mac / QNX

Input Signal		
HDMI	1.3a	
Audio		
Headphone Driver	46mW@32Ω Phone Jack φ 3.5	
Controls		
Key	5 Buttons	
Serial Remote Control	UART / RS232 (Option)	
Environment		
	Without RTP	4W RTP
Temperature Range	Operating	-10~+40 (Ts) °C
	Storage	-20~+60°C
High Temperature & High Humidity (Non-condensing)	Operating	40°C / 90%

### 4. Block Diagram

FCOPW0700





## 5. Order Information

### 5.1 Unit

Parameter	FCOPW0700			Unit	Remark
HDMI	⊙				
Touch Panel Type	-				
Touch Screen Interface	-				
Headphone Driver	⊙				
5 Keys	⊙				
UART Remote Control	⊙				
Dimension	180.5 x 107.2 x 22.2			mm	
Weight	314.5			g	±10%
Condition	Standard				

**Note: 1.** The assembling of panel and bracket is aimed for delivery, packaging and experiment. If the demand of shockproof and long-term fix, pls have it into consideration of mechanism design.

Optional Functions	
<b>Parameter</b>	<ul style="list-style-type: none"> <li>- RS232 Remote Control</li> <li>- External Key</li> <li>- Accessories (Refer to Page 6)</li> </ul>

## 6. Accessories (Option)

Before you begin installing the KIT, please make sure that the following materials have been shipped:



A.



B.



C.



D.



E.



E.

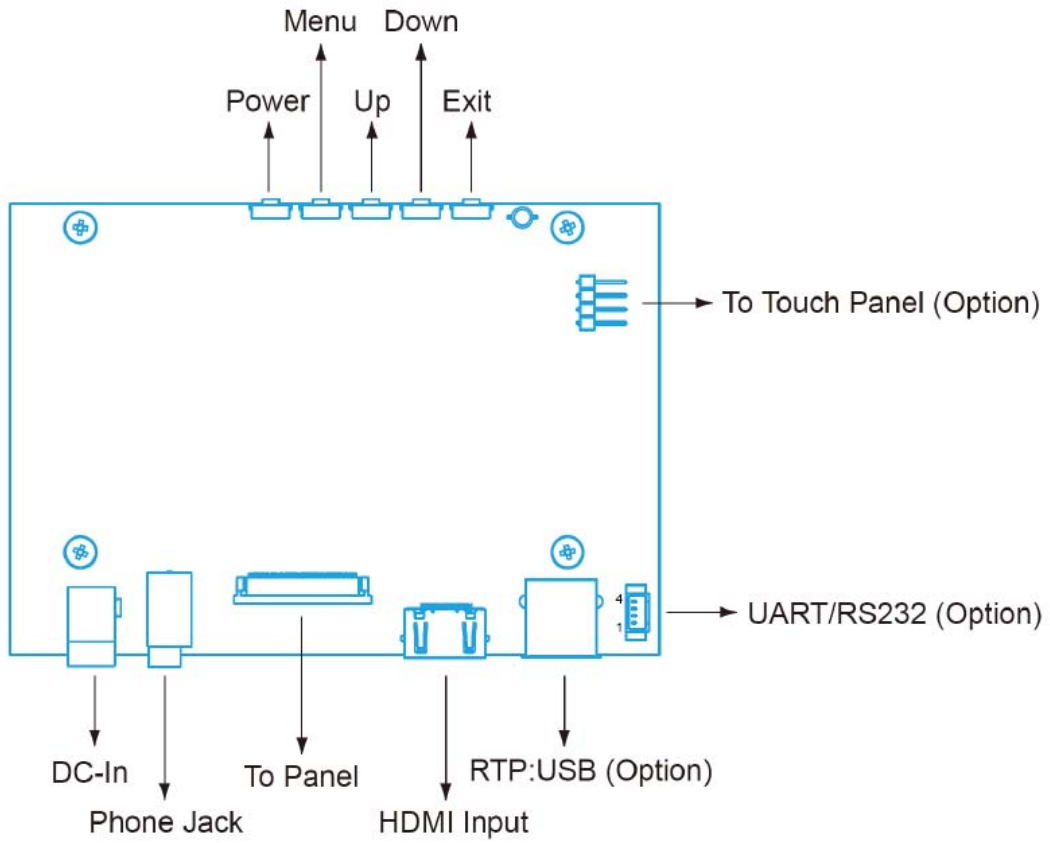


D.

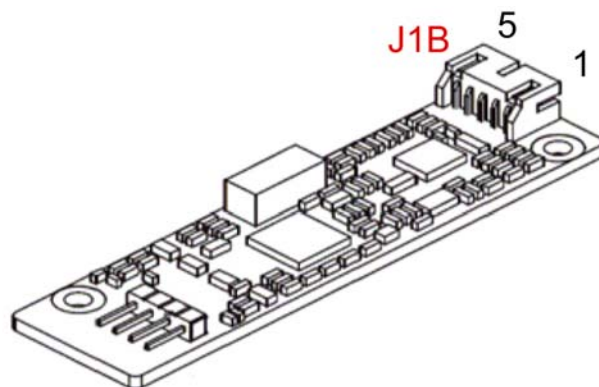
- A. AC to DC Adapter (L:1500mm,100-240V<sub>AC</sub> 50-60Hz to +5V<sub>DC</sub> @ 3A,  $\phi$  2.5)
- B. Power Cord (L:1800mm, Plug Type B for USA)
- C. HDMI Cable (L:1800mm)
- D. USB Cable (L:1800mm)
- E. RS-232 Transmits Line (TSP Cable 5P 2.0mm-RS232 Cable L:1800mm)
- F. AUDIO Cable (L:1800mm)
- G. Touch Screen Driver CD Disk / User Manual

## 7. Operation manual / Connection

### 7.1 Driver Board Manual



### 7.2 RS232 Touch Driver Board





## 8. Pin Description

### 8.1 J101 : Pin Assignment of Power Input (DC Jack Inside Diameter:2.5 ϕ Outside Diameter:5.5 ϕ Side Entry Type)

Pin No.	Symbol	I/O	Description	Remark
1	DC-In	I	+5 Vdc Input Voltage	
2	GND	-	Power Ground	

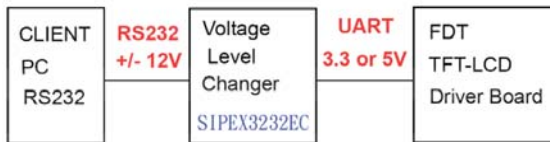
### 8.2 J702 : Pin Assignment of UART (Pitch 1.25mm 4Pin, Top Entry Type)

※ Connector Part No.: MS24014 (STM) [Same as 53398-0471 (MOLEX)] ;

※ Matching Connector Part No.: P24014 (STM) [Same as 51021-0400 (MOLEX)].

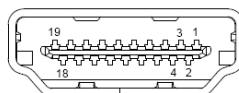
Pin No.	Symbol	I/O	Description	Remark
1	TX / RS232 TX (Option)	O	UART / RS232 (Option) Transmission Data	
2	RX / RS232 RX (Option)	I	UART / RS232 (Option) Receive Data	
3	GND	-	Ground	
4	+3.3Vdc	O	+3.3Vdc Output Voltage	

**Note: All Functions can be controlled by UART , About UART command list please contact FDT sales.**



### 8.3 J401 : Pin Assignment of HDMI-A Type Input (HDMI 1.3a -19Pin Female)

Pin No.	Symbol	I/O	Description	Remark
1	DATA2+	I	Positive HDMI Input for B Link Data Channel 2	
2	DET_HDMI	-	HDMI Detect	
3	DATA2-	I	Negative HDMI Input for B Link Data Channel 2	
4	DATA1+	I	Positive HDMI Input for B Link Data Channel 1	
5	GND	-	Ground	
6	DATA1-	I	Negative HDMI Input for B Link Data Channel 1	
7	DATA0+	I	Positive HDMI Input for B Link Data Channel 0	
8	GND	-	Ground	
9	DATA0-	I	Negative HDMI Input for B Link Data Channel 0	
10	DCLK+	I	Positive HDMI Input for B Link Clock Channel	
11	GND	-	Ground	
12	DCLK-	I	Negative HDMI Input for B Link Clock Channel	
13	NC	-	No Connection	
14	NC	-	No Connection	
15	HDMI_SCL	I	DDC2 Clock	
16	HDMI_SDA	I	DDC2 Data	
17	GND	I	DDC/CEC Ground	
18	HDMI5V	I	HDMI +5Vdc Input	
19	HDMI_HPD	I	Hot Plug Detect	



**8.4 J601D : Pin Assignment of Key Board (Pitch 1.25mm 12Pin , Side Entry Type)(Option)**

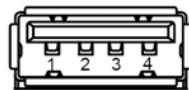
※ Connector Part No.: MS240112R (STM) [Same as 53261-1219 (MOLEX)] ;

※ Matching Connector Part No.: P240112 (STM) [Same as 51021-1200 (MOLEX)].

Pin No.	Symbol	I/O	Description	Remark
1	-	-	Don't Connect	
2	SW5	I	EXIT	
3	SW4	I	DOWN	
4	SW3	I	UP	
5	SW2	I	MENU / S	
6	SW1	I	POWER / SOURCE	
7	GND	-	Ground	
8	VDDP	-	VDDP +3.3Vdc Output Voltage	
9	-	-	Don't Connect	
10	RED	O	Indicator red LED for power off control	
11	GREEN	O	Indicator green LED for power on control	
12	GND	-	Ground	

**8.5 J701 : Pin Assignment of Touch USB (USB A Type - Female 2.0mm, Side Entry Type )(Option)**

Pin No.	Symbol	I/O	Description	Remark
1	VBUS	-	USB VCC	
2	D-	-	DATA (-)	
3	D+	-	DATA (+)	
4	DGND	-	Digital Ground	



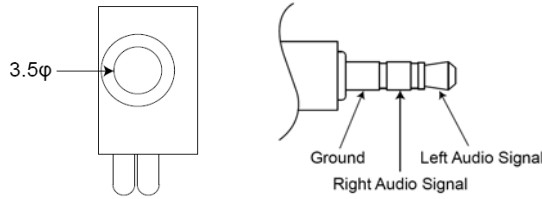
**8.6 J1B : Pin Assignment of Touch RS232 (Pitch 2.0mm 5Pin , Side Entry Type)(Option)**

※ Connector Part No.: M24265R (STM) [Same as S5B-PH-KL (JST)] ;

※ Matching Connector Part No.: P24265 (STM) [Same as PHR-5 (JST)].

Pin No.	Symbol	I/O	Description	Remark
1	GND	-	Ground	
2	V (+5V)	I	+5 Vdc Input Voltage	
3	GND	-	Ground	
4	TX	O	Transmission Data	
5	RX	I	Receive Data	

**8.7 J301 : Pin Assignment of Phone Jack (Outside Diameter:3.5 φ Side Entry Type)**



## 9. Absolute Maximum Ratings

**9.1 Absolute Maximum Ratings**

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	V <sub>in</sub>	+4.5	+6	V	
Digital Input Signal	TTL	0.3	3.6	V	
HDMI Input Signal		-	165	MHz	
Operating Temp. without RTP		-10	+40 (Ts)	°C	
Storage Temp. without RTP		-20	+60	°C	
Operating Temp. 4W RTP		-10	+40 (Ts)	°C	
Storage Temp. 4W RTP		-20	+60	°C	
High Temperature & High Humidity (Non-condensing) without RTP		-	+40 / 90	°C / %	
High Temperature & High Humidity (Non-condensing) 4W RTP		-	+40 / 90	°C / %	

## 10. Recommended Operating Conditions

**10.1 Electrical Characteristics**

Parameter	Symbol	I/O	Min	Typ	Max	Unit	Note
Input Voltage	DC-in	I	+4.8	+5	+5.8	V	
Total Current	I-in	I		720		mA	+5V
Power Consumption		I		3.6		W	±15%
Output Voltage	VDD	O	3.2	3.3	3.4	V	
HDMI Input Signal					165	MHz	

**10.2 Support Display Mode Characteristics**

Dots per inch	H	Unit	Polarity	V	Unit	Polarity	Note
800*600	37.88	KHz	Positive	60.3	Hz	Positive	
1024*600	37.54	KHz	Positive	60	Hz	Positive	
1024*768	48.36	KHz	Positive	60	Hz	Positive	
1280 × 1024	63.98	KHz	Positive	60	Hz	Positive	
1600 × 1200	75	KHz	Positive	60	Hz	Positive	
1920 × 1080	67.5	KHz	Positive	60	Hz	Positive	



## 11. 4W Resistive Touch Panel Characteristics

### 11.1 4W Electrical Performance

Parameter	Symbol	Min	Typ	Max	Unit	Note
Terminal Resistance	X	20		500	$\Omega$	
	Y	20		500	$\Omega$	
Linearity				1.5	%	
Insulation Impedance		20			M $\Omega$	DC 25V
Response Time				10	ms	

### 11.2 4W Optical Performance

Parameter	Specifications
Light Transmittance	>80%
Haze	< 10%

### 11.3 4W Mechanical Performance

Parameter	Specifications
Input Method	Stylus or Finger
Operating Force	100g, R8 Silicon Rubber, 60HS
Surface Hardness	3H pencil, pressure 1N/45°

### 11.4 4W Durability Performance

Parameter	Specifications
Knock Test	1,000,000 times, Weight $\leq$ 100g. 2 times/sec (Tip R8 mm Silicone rubber)
Pen Sliding Test	100,000 times, Weight $\leq$ 100g. 30 times/sec (Tip R0.8 mm Stylus pen)



**11.5 Resistive Touch Panel Operation System Support**

Driver Vender : EETI (eGalax\_eMPIA Technology Inc.)

OS	Version	Interface
<b>Windows</b>	Windows XP Embedded	USB
	Windows Vista, XP, 2000	
	Windows Embedded POSReady 2009	
	Windows Embedded 7, 8	
	Windows 7, 8, 8.1, 10	
<b>Windows CE</b>	Windows CE.Net (4.x / 5.0)	USB
	Windows CE 6.0	
	Windows Embedded Compact 7	
	Windows Embedded Compact 2013	
<b>Linux</b>	Kernel 2.4.x (x86)	USB
	Kernel 2.6.23 Downward (X86)	
	Kernel 2.6.24 Upward and 3.x.x (X86 / ARM / MIPS)	
<b>Android</b>	Android Version 2.3.x upwards (X86 / ARM / MIPS)	USB
<b>Mac OS</b>	Mac OS X 10.5.3 Leopard ( Power PC )	USB
	Mac OS X 10.7.4 Earlier ( 32Bit ) ( Intel CPU )	
	Mac OS X 10.7.4 Earlier ( 64Bit ) ( Intel CPU )	
	Mac OS X 10.7.5 ( 32Bit ) ( Intel CPU )	
	Mac OS X 10.7.5 ( 64bit ) ( Intel CPU )	
	Mac OS X 10.8.x Mountain Lion ( Intel CPU )	
	Mac OS X 10.9.x Mavericks ( Intel CPU )	
	Mac OS X 10.10.x Yosemite ( Intel CPU )	
<b>QNX</b>	QNX RTOS V6.3	USB
	QNX Neutrino RTOS V6.5/6.4	
<b>DOS</b>	DOS	PS2

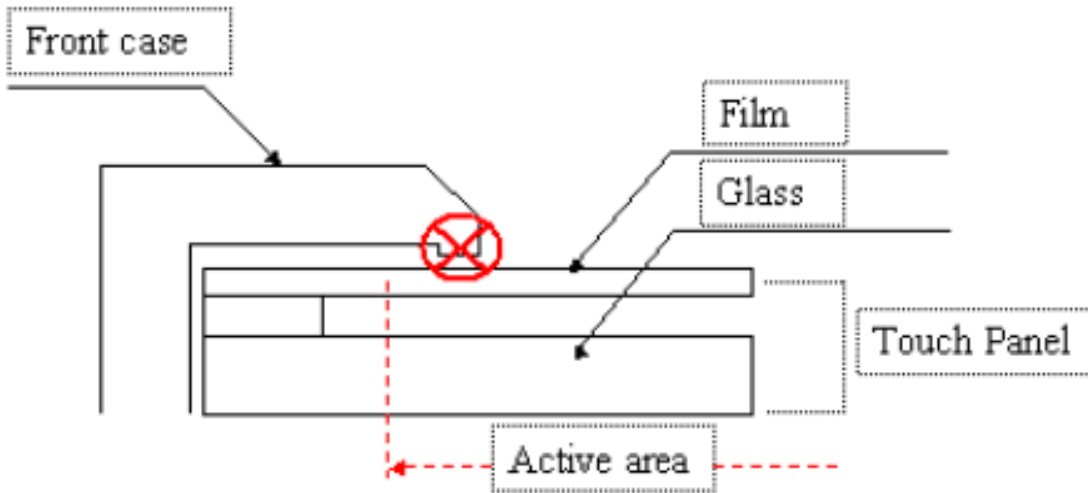
Please refer to the iTech website for the latest driver version and support operating system.

iTech website: <http://www.itechlcd.com>

**11.6 Resistive Touch Panel Integration Design Guide**

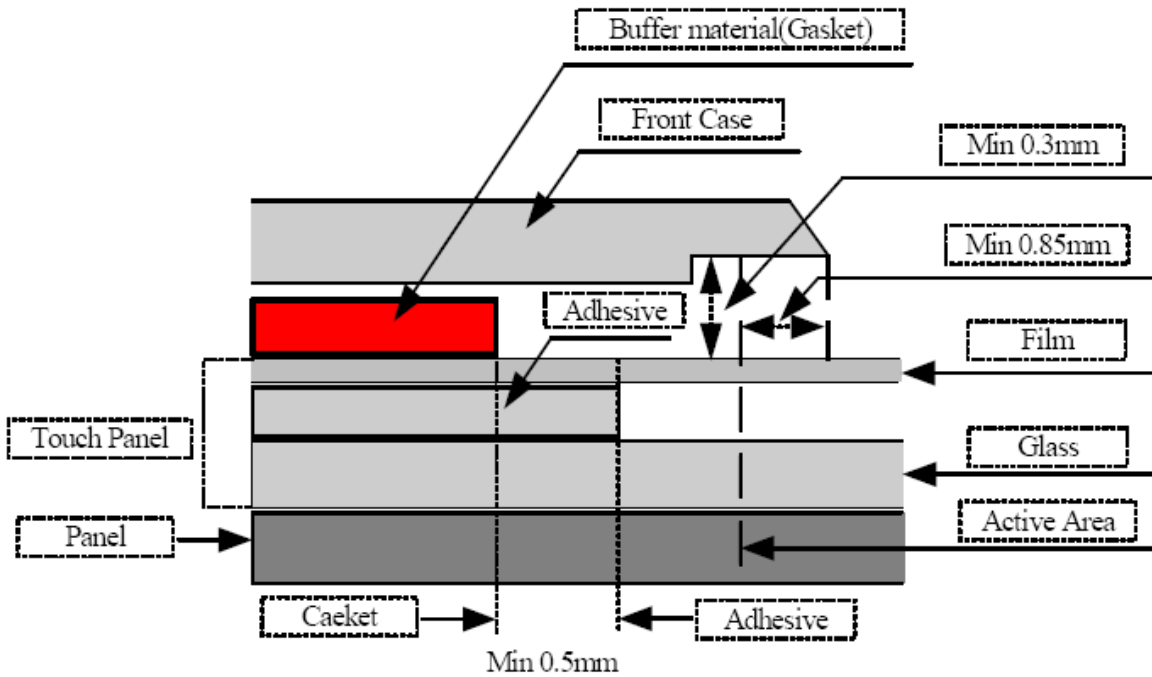
Avoid the design that Front-case overlap and press on the active area of the touch-panel.

Give enough gap (over 0.5mm at compressed) between the front case and touch-panel to protect wrong operating.

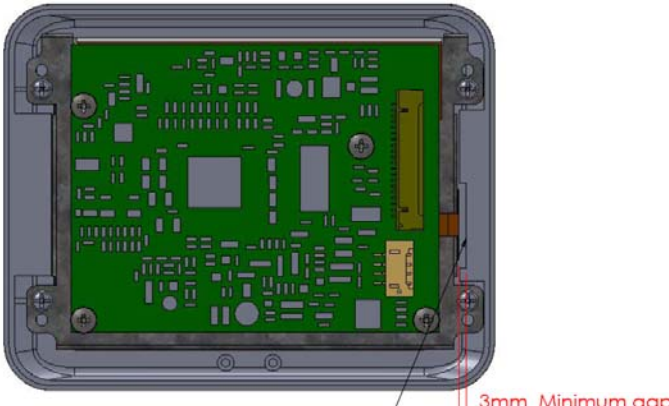
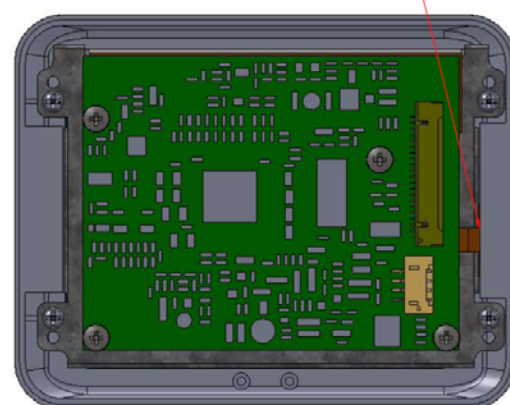
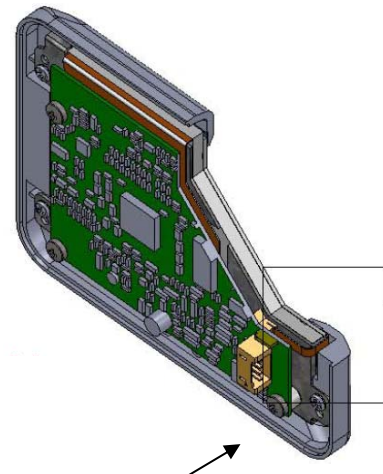
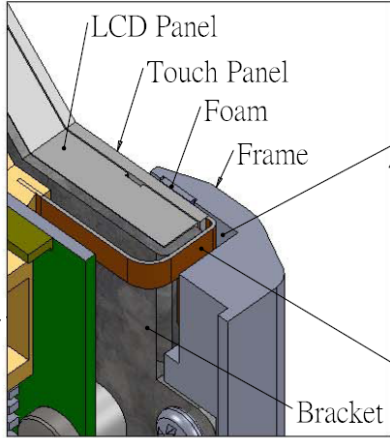

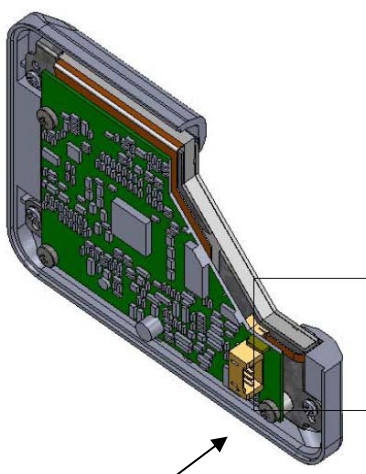
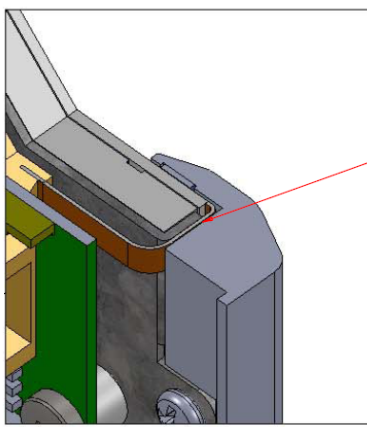


Use a buffer material (Gasket) between the touch-panel and front-case to protect damage and wrong operating.

Avoid the design that buffer material overlap and press on the inside of touch-panel viewing area.

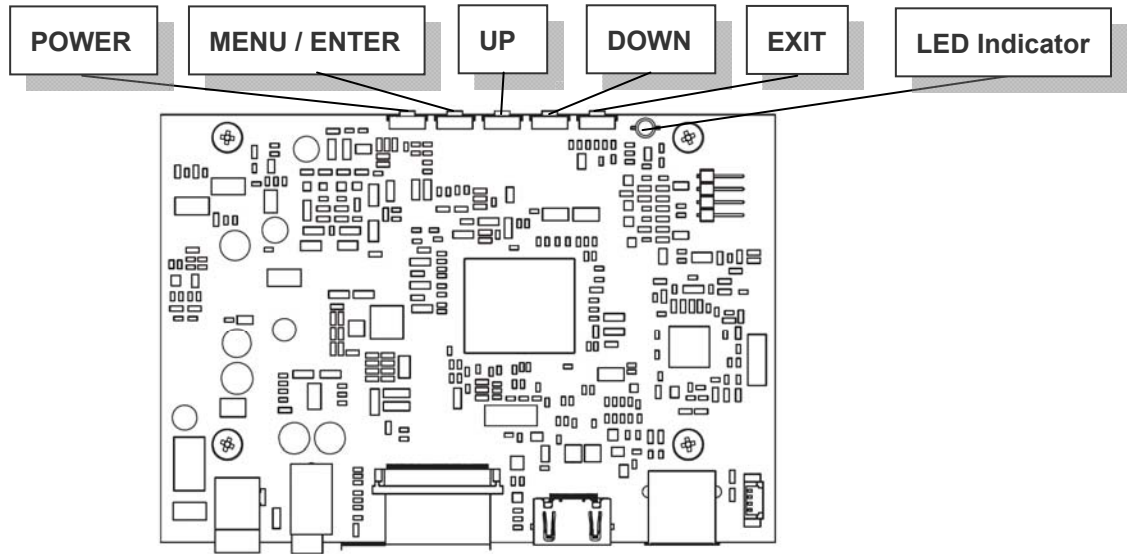


**11.7 Mechanical Design Notice For Resistive Touch Panel**

Correct Installation	Incorrect Installation
 <p data-bbox="159 795 478 840">&lt;Correct Installation&gt;</p> <p data-bbox="558 761 766 795">3mm Minimum gap</p>	 <p data-bbox="957 369 1308 414">&lt;Incorrect Installation&gt;</p>
 <p data-bbox="399 1400 766 1444">&lt;Correct Installation&gt;</p> <div data-bbox="87 1456 478 1892">  <p data-bbox="159 1467 399 1881">LCD Panel Touch Panel Foam Frame Bracket</p> </div> <p data-bbox="223 1892 319 1926">Zoom-In</p> <div data-bbox="478 1568 782 1859">  <p data-bbox="478 1635 782 1724">Frame can not surpress on LCD Panel and FPC to Touch Panel</p> <p data-bbox="478 1814 734 1859">FPC to Touch Panel</p> </div>	 <p data-bbox="1117 1411 1500 1456">&lt;Incorrect Installation&gt;</p> <div data-bbox="813 1456 1181 1881">  <p data-bbox="1197 1568 1260 1635">!</p> <p data-bbox="1197 1646 1500 1747">Supression on FPC to Touch Panel causes the fracture.</p> </div> <p data-bbox="957 1881 1053 1915">Zoom-In</p>

## 12. Key Function by OSD

### 12.1 Menu Operation

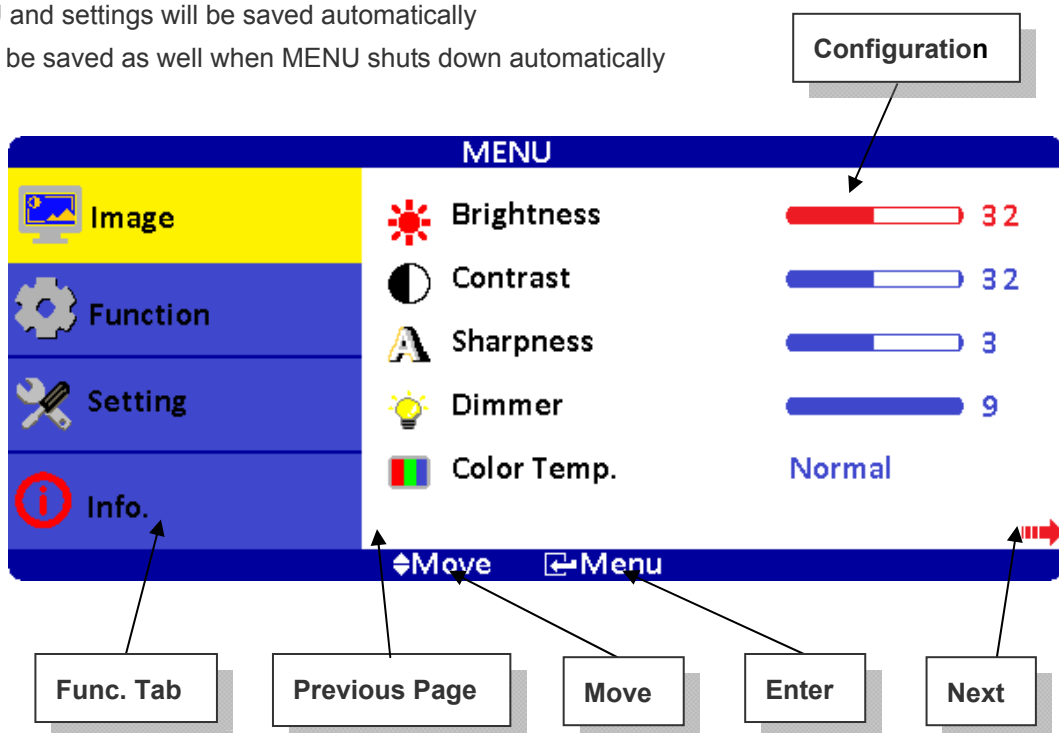


### OSD ICON Instructions :

1. POWER : Power On/Off
2. MENU / ENTER : (After turning on MENU, only ENTER is available)
3. UP : Move Upward / Increase Value / Option Switch
4. DOWN : Move Downward / Decrease Value / Option Switch
5. EXIT : Return to Previous Page
6. LED Indicator
  - Waiting : Flickering Green
  - Power ON : Green
  - Power OFF : Red

### Save OSD Setting:

1. EXIT MENU and settings will be saved automatically
2. Settings will be saved as well when MENU shuts down automatically





## Overview of the Menu :



### Image

Indicator	Meaning	Default	Adjustable range	Remark
	Brightness	32	0~63	Adjust-Bar
	Contrast	32	0~63	Adjust-Bar
	Sharpness	3	1~5	Adjust-Bar
	Dimmer	15	0~15	Adjust-Bar
	Color Temp.	Normal	Normal / Warm / Cool	
	Exit			



### Function

ICON	Meaning	Default	Adjustable range	Function	Remark
	Show Status	On	On / Off	Information of input source	ON: Show ; OFF: Hidden
	Blue Screen	On	On / Off	No signal input shows blue or black screen.	ON: Blue ; OFF: Black
	Auto Power On	On	On / Off	Modules turns on automatically Without power key input.	ON: Auto ; OFF: Manual
	Auto Power Saving	Off	6s / 15s / 30s / Off	Modules go ready when no input source is detected.	ON: Auto ; OFF: Normal
	Auto Sleep	Off	15M / 30M / 60M / Off	Modules go sleep when set timing is out.	ON: Auto ; OFF: Normal
	Exit				

**Note :** After configuration is set, **RESET** won't restore to default setting.



### Setting

Indicator	Meaning	Default	Adjustable range	Remark
	Volume	32	0~63	
	Mute	Off	On / Off	On : Mute · Off : Sound
	Mirror	Off	On / Off	Left-right reversal
	Flip	Off	On / Off	Upside down
	Language	English	English / 中文 / 日本語 / 한국의 / Française / Deutsch / Italiano / Española / Português	Reset won't restore to default setting
	Reset			Restore to default
	Exit			



Info.

## MENU

Image

Source : HDMI

Function

Resolution : 1024x600

Setting

H-Position : 37.5KHz  
V-Position : 59.8Hz

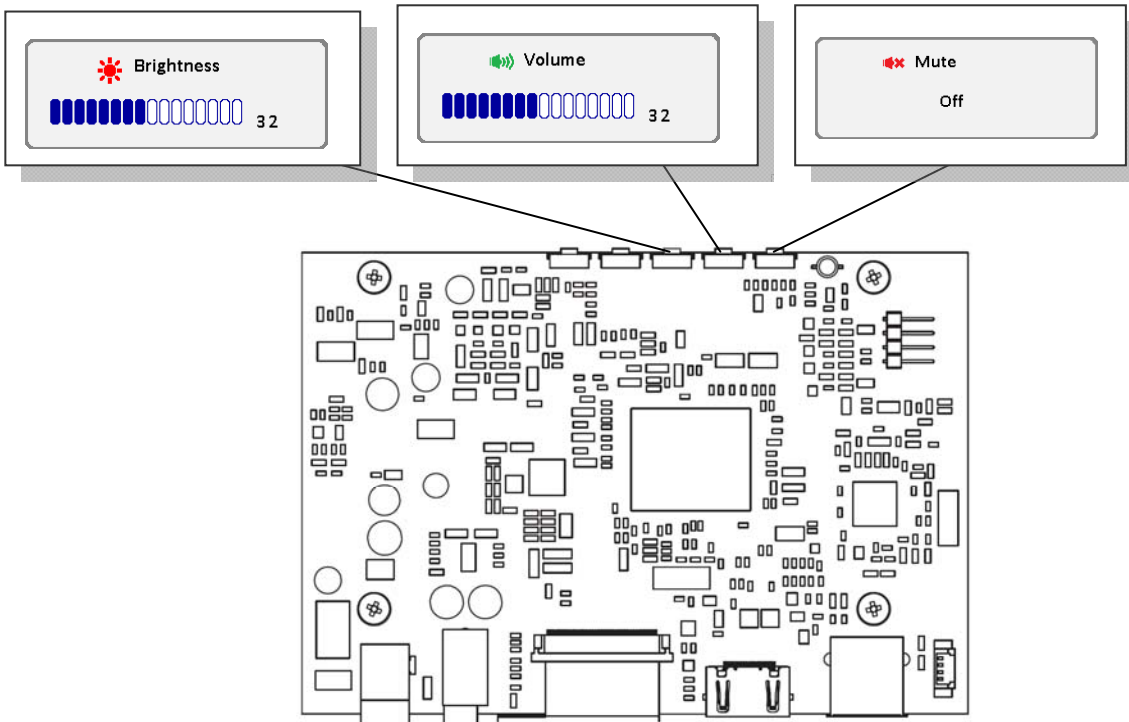
Information

Program Ver : 1.00  
Command Ver : 1.00

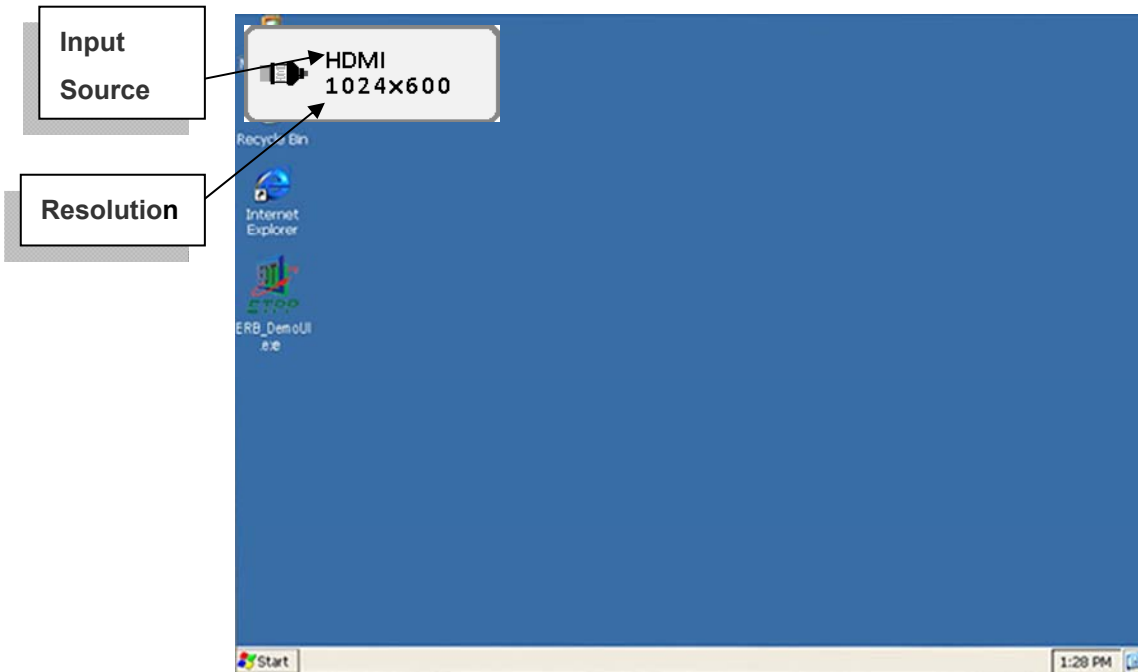
↔ Move   ← Exit / Menu



### Hot Key When OSD Menu is Off :




## Information of Input Source and Functionality :



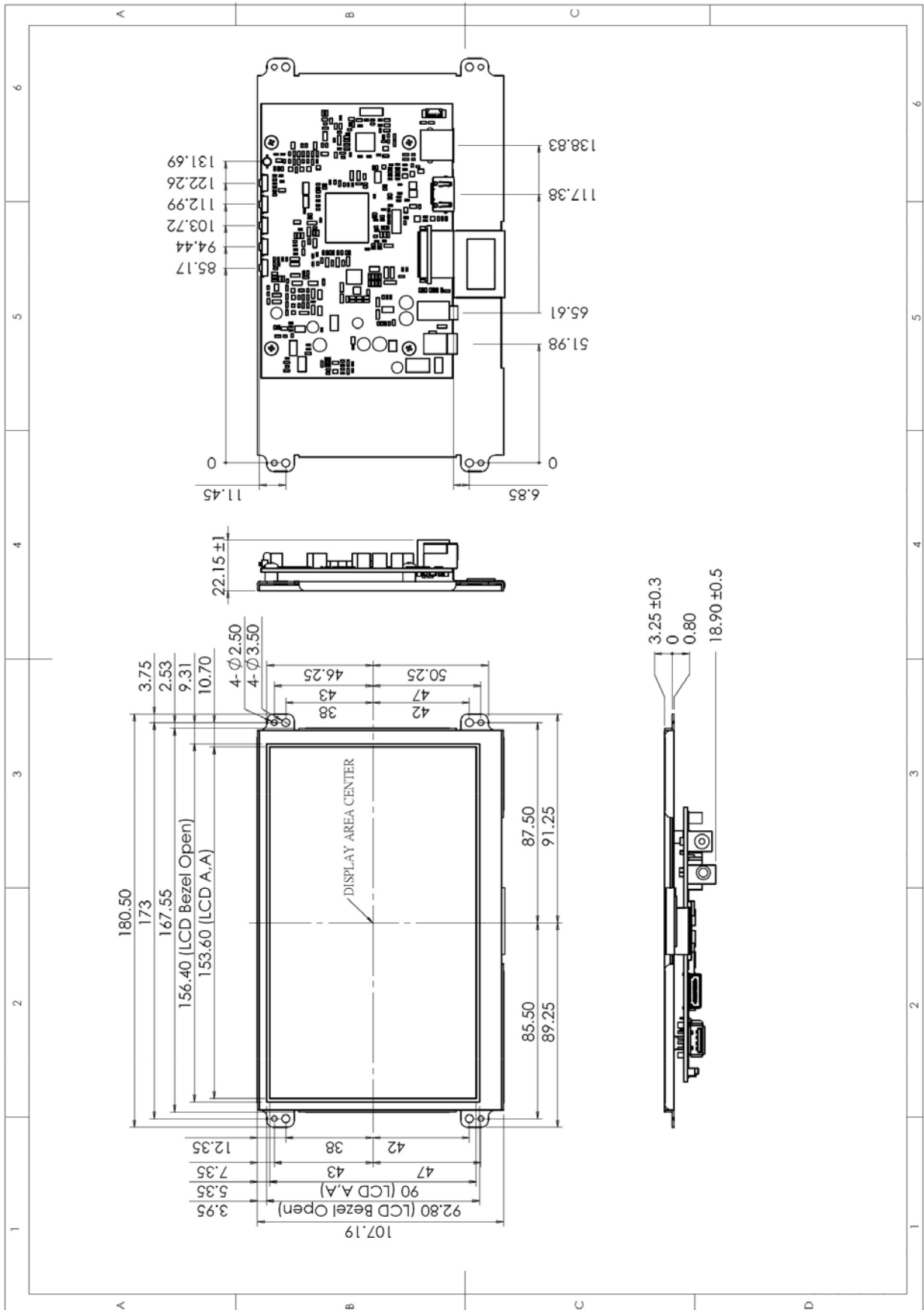
[Source] : Input Signal Switch

## Overview of Input Signals :

Indicator	Interface
	HDMI

## 13. Dimension Information

### 13.1 Unit (FCOPW0700)





## 14. Appendix

### 14.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	7 (diagonal)	Inch
Display Format	1024 x (R.G.B) x 600	Dot
Active Area	153.6(W) × 90.0(H)	mm
Pixel Pitch	0.15(H) x 0.15(V)	mm
Pixel Arrangement	RGB-stripe	
Surface Treatment	Clear	

### 14.2 TFT-LCD Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	65	75	---	deg	
		Right	65	75	---	deg	
	Vertical	Top	60	70	---	deg	
		Bottom	65	75	---	deg	
Contrast Ratio	CR	At optimized Viewing angle	500	700	---	---	
Luminance without RTP	L		200	250	---	cd/m <sup>2</sup>	
LED Life Time		25°C	15000	---	---	Hrs	Note

Note: The "LED Life Time" is defined as the module brightness decrease to 50% original.



## 15. Revision History

### 15.1 Record of Revision

NO	Date	Description	Page	Note
1.0	October 6, 2014	· First draft	21	
1.1	September 11, 2015	· Modify 10.1 Electrical Characteristics	11	
		· Modify 14.1 Menu Operation	17	
1.2	October 13, 2015	· Modify 7. Dimension Information	8	
		· Modify 10.1 Electrical Characteristics	11	
1.3	October 6, 2016	· Modify Operating Temperature	4, 10	
		· Add High Temperature & High Humidity	4, 10	
		· Add Dimension · Weight · Condition	5	
		· Modify HDMI Cable length	6	
		· Modify 11.5 Resistive Touch Panel Operation System Support	12	
1.4	December 27, 2017	· Add RS232	-	
		· Modify 1.1 Features	1	
		· Add 11.5 Resistive Touch Panel Operation System Support Note	12	