

SPECIFICATION APPROVAL SHEET

Open Frame 17" (1280x1024) Digital TFT LCD, Aspect Ratio: 4:3
Input Signal VGA / DVI-D / HDMI 1.3a, Maximum Support Resolution
1920x1080, Stereo Audio Amplifier, Output 2W@4Ω Speaker, Audio Line-In
5 Key Buttons Controls, 5 Wires Resistive Touch Panel
9 Language OSD Menu, LED Backlight, Wide Operation Voltage +11V~28V
No cables, no accessories, no Power adapter.

MODEL: FCOP1700-TR



i-Tech Company LLC

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1. General Description

1.1 Features

- 17" (1280x1024) Digital TFT LCD
- Aspect Ratio: 4:3
- Input Signal VGA / DVI-D / HDMI 1.3a
- Maximum Support Resolution 1920x1080
- Stereo Audio Amplifier, Output 2W@4Ω Speaker
- Audio Line-In
- 5 Wires Resistive Touch Panel
- 5Key Buttons Controls
- 9 Language OSD Menu
- LED Backlight
- Wide Operation Voltage +11V~28V

1.2 Applications

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



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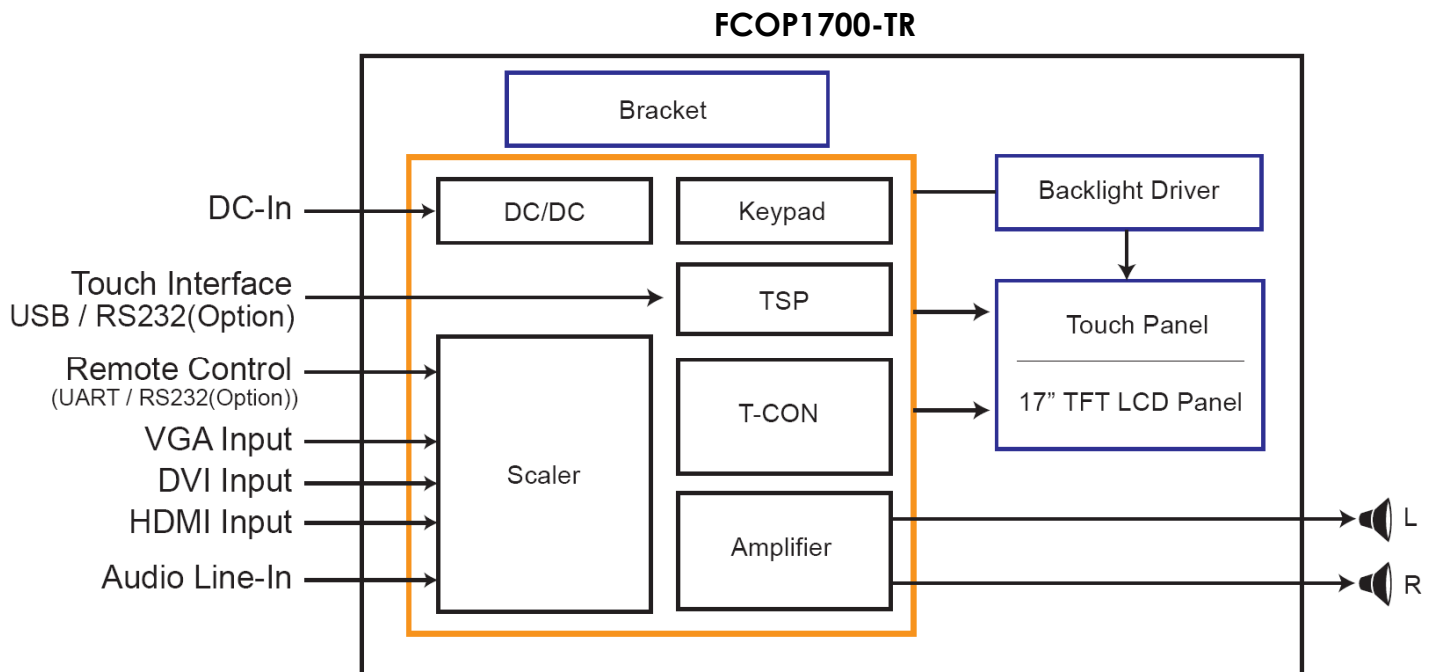
3. Specifications

LCD	
Panel Size	17"
Resolution (Pixels)	1280x1024
Color	16.7M
Luminance without TP	250 cd/m ²
Luminance (RTP)	200 cd/m ²
Contrast Ratio	1000
View Angle	85 / 85 / 80 / 80
LED Life Time	50K (Min)
Power Requirement	
Power Input (DC Jack 2.5 φ)	+11 ~ +28Vdc
Power Consumption@+12V	11 Watts (@Without Amplifier)
Touch Screen	
Resistive Type	5W(USB / RS232 Interface)
Resistive Type Support OS	Windows / Linux / DOS / Mac / QNX

Input Signal			
VGA	D-Sub15		
DVI	DVI-D		
HDMI	1.3a		
Audio			
Amplifier	1W@8Ω / 2W@4Ω		
Line-In	Stereo Input Phone Jack φ 3.5		
Controls			
Key	5 Buttons		
Serial Remote Control	UART / RS232 (Option)		
Environment			
Temperature Range	Without TP	5W RTP	
	Operating	0 ~ +50℃	0 ~ +50℃
	Storage	-20 ~ +60℃	-20 ~ +60℃
High Temperature & High Humidity (Non-condensing)	Operating	+40℃ / 90%	+40℃ / 90%

4. Block Diagram

4.1 Block Diagram





5. Order Information

5.1 Unit

Parameter	FCOP1700-TR			Unit	Remark
VGA	⊙				
DVI	⊙				
HDMI	⊙				
Touch Panel Type	5W Resistive				
Touch Screen Interface	USB				
Audio Amplifier	⊙				
Audio Line-In	⊙				
5 Keys	⊙				
Dimensions	378.7 x 298.4 x 34.62			mm	
Weight	3.3			Kg	±10%
Condition	Standard				

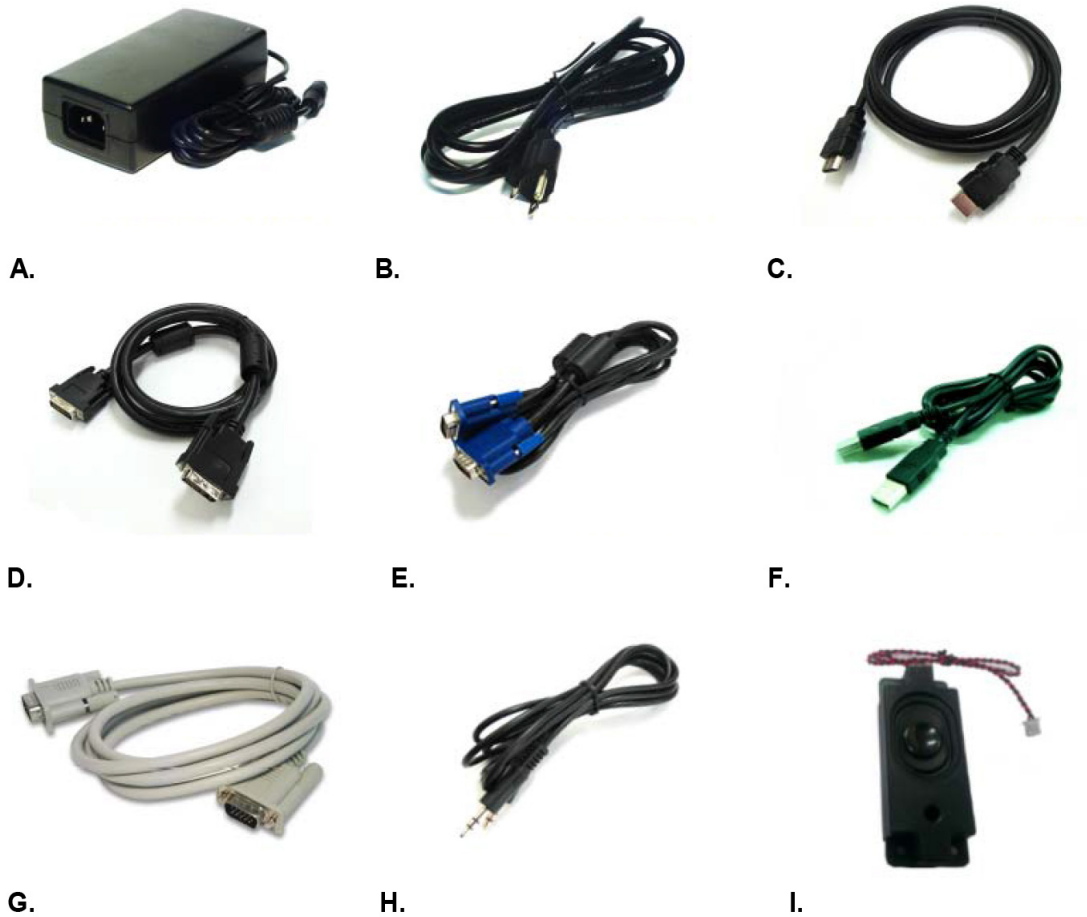
Note: 1. The assembling of panel and bracket is aimed for delivery, packaging and experiment. If the demand of shockproof and long-term fix, pls have it into consideration of mechanism design.

Parameter	Condition
Ear Phone	Customized
RS232 Remote Control	
UART Remote Control	
Back Cover	
External Key	
Light Sensor	

Note: Special order condition will apply to non-standard items and pls contact salespersons in iTech.

6. Accessories (Option)

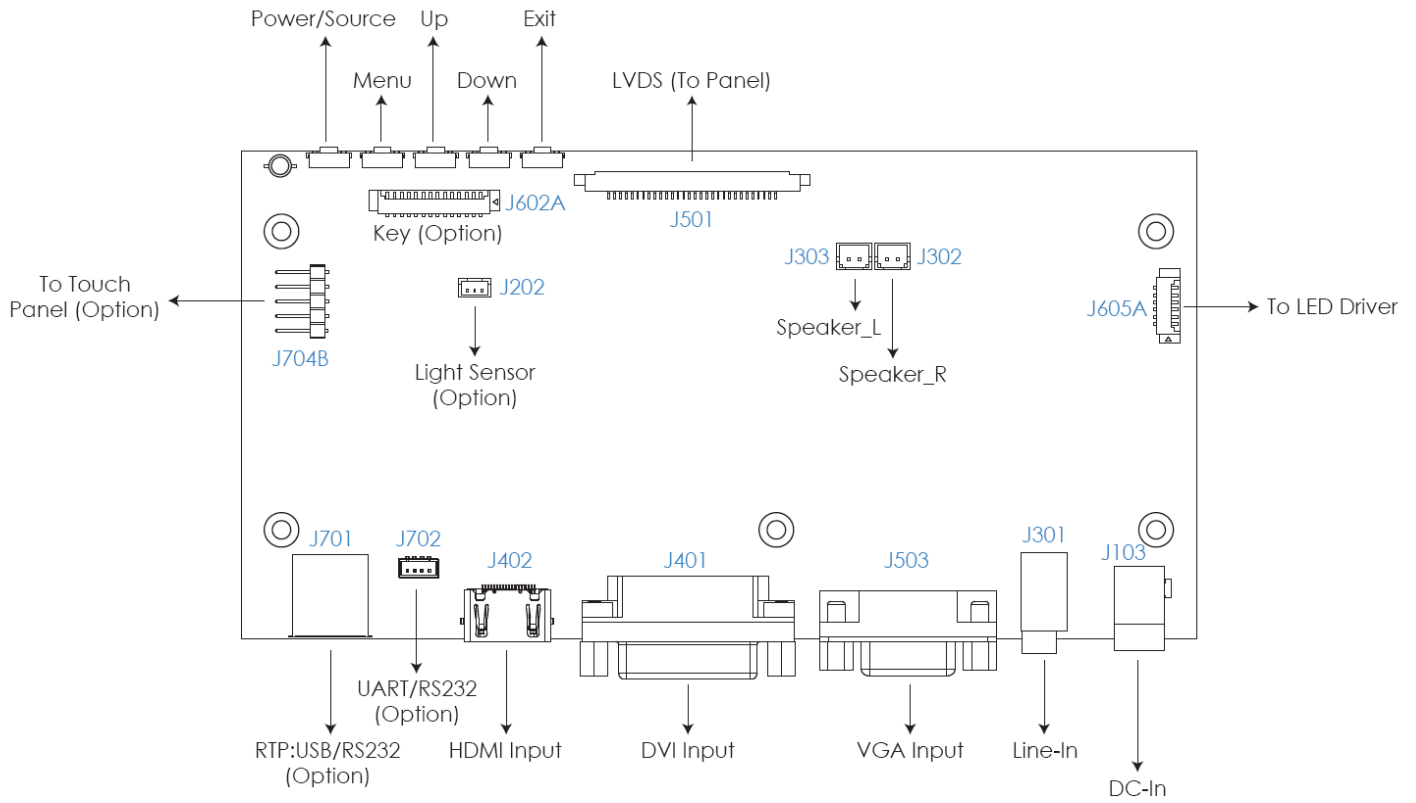
Before you begin installing the KIT, please make sure that the following materials have been shipped:



- A. AC to DC Adapter (L:1500mm,100-240V_{AC} 50-60Hz to +12V_{DC} @ 5A, ϕ 2.5)
- B. Power Cord (L:1800mm, Plug Type B for USA)
- C. HDMI Cable (L:1800mm)
- D. DVI Cable (L:1800mm)
- E. VGA Cable (L:1800mm)
- F. USB Cable (L:1800mm)
- G. RS232 Cable (L:1800mm, Null Modem)
- H. AUDIO Cable (L:1800mm)
- I. Touch Screen Driver CD Disk / User Manual
- J. Speaker (2.5W @ 4 Ω L:400mm *2 Pieces)

7. Operation manual / Connection

7.1 Driver Board Manual



8. Pin Description

8.1 J103 : 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	+11~+28 Vdc Input Voltage	
2	GND	-	Power Ground	

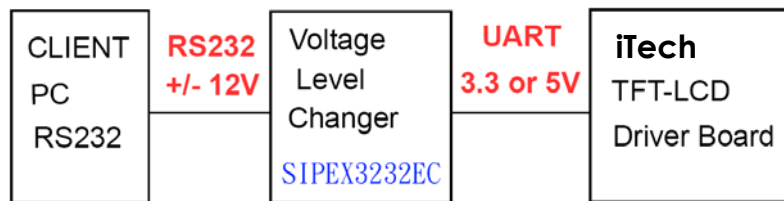
8.2 J702 : Pin Assignment of UART (Pitch 1.25mm 4Pin, Top Entry Type)

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

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

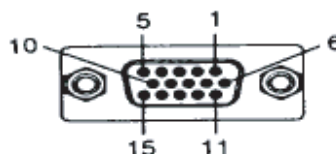
Pin No.	Symbol	I/O	Description	Remark
1	TX / RS232 TX (Option)	O	UART / RS232 (Option) Transmission Data	
2	RX / RS232 RX (Option)	I	UART / RS232 (Option) Receive Data	
3	GND	-	Ground	
4	+3.3Vdc	O	+3.3V Output Voltage	

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



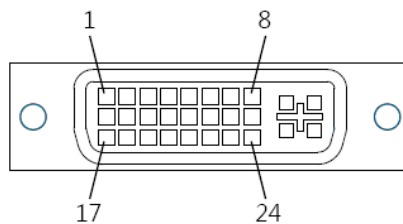
8.3 J503 : Pin Assignment of Analog RGB Input (D-Sub 15Pin)

Pin No.	Symbol	I/O	Description	Remark
1	RI+	I	Analog Red Signal	
2	GI+	I	Analog Green Signal	
3	BI+	I	Analog Blue Signal	
4	GND	-	Ground	
5	VGA-Det	I	VGA Detect	
6	AGND	-	Analog Ground	
7	AGND	-	Analog Ground	
8	AGND	-	Analog Ground	
9	VGA5V	-	VGA +5V Input	
10	GND	-	Ground	
11	GND	-	Ground	
12	VGA_SDA	-	DDC2 Data	
13	HS_IN	I	TTL Horizontal sync.	
14	VS_IN	I	TTL Vertical sync.	
15	VGA_SCL	-	DDC2 Clock	



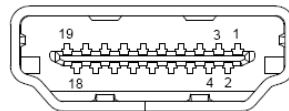
8.4 J401 : Pin Assignment of DVI-D (24 Pin)

Pin No.	Symbol	I/O	Description	Remark
1	DATA2-	I	Negative DVI Input for A Link Data Channel 2	
2	DATA2+	I	Positive DVI Input for A Link Data Channel 2	
3	GND	-	Ground	
4	NC	-	No Connection	
5	NC	-	No Connection	
6	DVI_SCL	I	DDC2 Clock	
7	DVI_SDA	I	DDC2 Data	
8	NC	-	No Connection	
9	DATA1-	I	Negative DVI Input for A Link Data Channel 1	
10	DATA1+	I	Positive DVI Input for A Link Data Channel 1	
11	GND	-	Ground	
12	NC	-	No Connection	
13	NC	-	No Connection	
14	DVI5V	I	DVI +5V Input	
15	DET_DVI	I	DVI Detect	
16	DVI_HPD	-	Hot Plug Detect	
17	DATA0-	I	Negative DVI Input for A Link Data Channel 0	
18	DATA0+	I	Positive DVI Input for A Link Data Channel 0	
19	GND	-	Ground	
20	NC	-	No Connection	
21	NC	-	No Connection	
22	GND	-	Ground	
23	DCLK+	I	Positive DVI Input for A Link Clock Channel	
24	DCLK-	I	Negative DVI Input for A Link Clock Channel	



8.5 J402 : 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 +5V Input	
19	HDMI_HPD	I	Hot Plug Detect	



8.6 J602A : 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 +3.3V 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	

8.7 J303 : Pin Assignment of Speaker Left (Pitch 2.0mm 2Pin , Top Entry Type)

※ Connector Part No.: A2001WV2-2P(JWT) ;

※ Matching Connector Part No.: A2001H02-2P(JWT) .

Pin No.	Symbol	I/O	Description	Remark
1	+LOUT	O	Left Speaker Out+	
2	-LOUT	O	Left Speaker Out -	

8.8 J302 : Pin Assignment of Speaker Right (Pitch 2.0mm 2Pin , Top Entry Type)

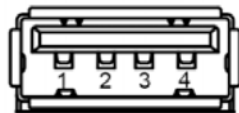
※ Connector Part No.: A2001WV2-2P(JWT) ;

※ Matching Connector Part No.: A2001H02-2P(JWT) .

Pin No.	Symbol	I/O	Description	Remark
1	+ROUT	O	Right Speaker Out+	
2	-ROUT	O	Right Speaker Out-	

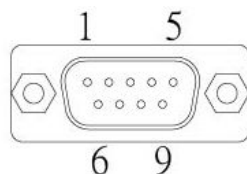
8.9 J701 : Pin Assignment of Touch USB (USB A Type - Female 2.0mm, Side Entry Type)(Option)

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

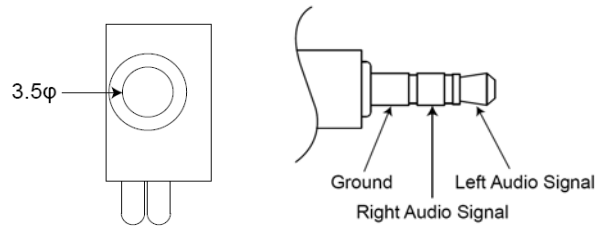


8.10 J705 : Pin Assignment of Touch RS232 (D-SUB 9 male)(Option)

Pin No.	Symbol	I/O	Description	Remark
1	-	-	Don't Connect	
2	RXD	I	Receive Data	
3	TXD	O	Transmit Data	
4	-	-	Don't Connect	
5	GND	-	Ground	
6	NC	-	No Connection	
7	NC	-	No Connection	
8	-	-	Don't Connect	
9	-	-	Don't Connect	



8.11 J301 : Pin Assignment of Line-In/Ear Phone (Option) (Outside Diameter:3.5 φSide Entry Type)



9. Absolute Maximum Ratings

9.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	Vin	10.5	28.5	V	
Analog RGB Input Signal	Analog RGB in	0.5	2.0	Vp-p	
Digital Input Signal	TTL	0.3	3.6	V	
DVI Input Signal		-	165	MHz	
HDMI Input Signal		-	165	MHz	
Line-in		-	1.8	Vp-p	
Operating Temp. without TP		0	+50	°C	
Storage Temp. without TP		-20	+60	°C	
Operating Temp. 5W RTP		0	+50	°C	
Storage Temp. 5W RTP		-20	+60	°C	
High Temperature & High Humidity (Non-condensing) without RTP		-	+40 / 90	°C / %	
High Temperature & High Humidity (Non-condensing) 5W 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	+11	12	+28	V	
Total Current	I-in	I	-	1400	-	mA	+12V
Power Consumption		I	-	17	-	W	±15% @Without Amplifier
Output Voltage	VDD	O	3.2	3.3	3.4	V	
Analog RGB Input Signal	Analog RGB in	RGB	I	0.7	-	Vp-p	@75Ω
DVI Input Signal			-	-	165	MHz	
HDMI Input Signal			-	-	165	MHz	



10.2 VGA Mode Characteristics

Dots per inch	H	Unit	Polarity	V	Unit	Polarity	Note
640 x 480	31.47	KHz	Positive	59.9	Hz	Positive	
800 x 600	37.88	KHz	Positive	60.3	Hz	Positive	
1024 x 768	48.36	KHz	Positive	60	Hz	Positive	
1280 x 1024	63.98	KHz	Positive	60	Hz	Positive	
1600 x 1200	75	KHz	Positive	60	Hz	Positive	
1920 x 1080	67.5	KHz	Positive	60	Hz	Positive	

11. 5W Resistive Touch Panel Characteristics

11.1 Electrical Performance

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

11.2 Optical Performance

Parameter	Specifications
Light Transmittance	80% \pm 5%
Haze	< 15%

11.3 Mechanical Performance

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

11.4 Durability Performance

Parameter	Specifications
Knock Test	10,000,000 times



11.5 Resistive Touch Panel Operation System Support

Driver Vender : EETI (eGalax_eMPIA Technology Inc.)

OS	Version	Interface
Windows	Windows XP Embedded	RS232/USB
	Windows Vista, XP, 2000	
	Windows Embedded POSReady 2009	
	Windows Embedded 7, 8	
	Windows 7, 8, 8.1, 10	
Windows CE	Windows CE.Net (4.x / 5.0)	RS232/USB
	Windows CE 6.0	
	Windows Embedded Compact 7	
	Windows Embedded Compact 2013	
Linux	Kernel 2.4.x (x86)	USB
	Kernel 2.6.23 Downward (X86)	
	Kernel 2.6.24 Upward and 3.x.x (X86 / ARM / MIPS)	
Android	Android Version 2.3.x upwards (X86 / ARM / MIPS)	USB
Mac OS	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)	
QNX	QNX RTOS V6.3	USB
	QNX Neutrino RTOS V6.5/6.4	
DOS	DOS	PS2

Note: 1. How to use Touch Driver, please refer to Readme of Touchkit Disk.

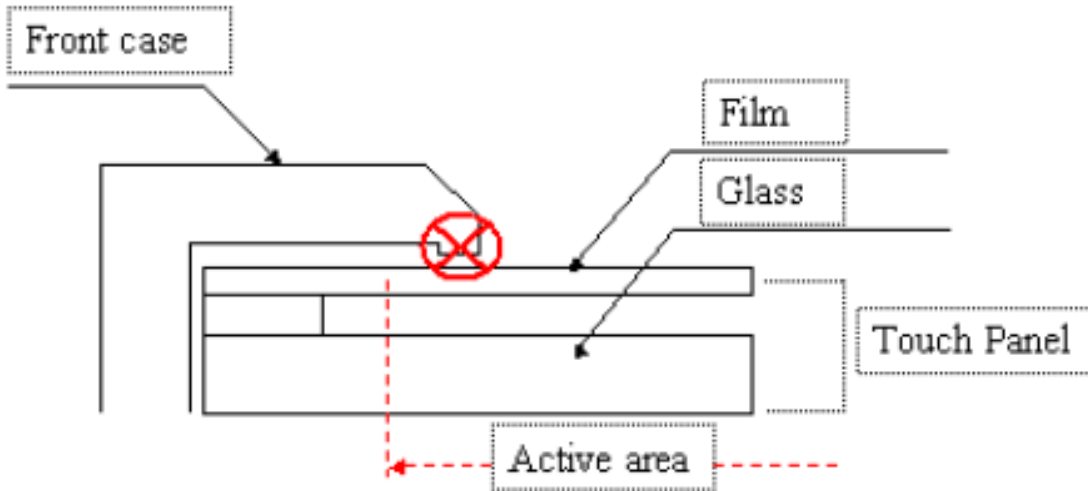
2. Please refer to the iTech website for the latest driver version and support operating system.

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

11.6 Resistive Touch Panel Integration Design Guide

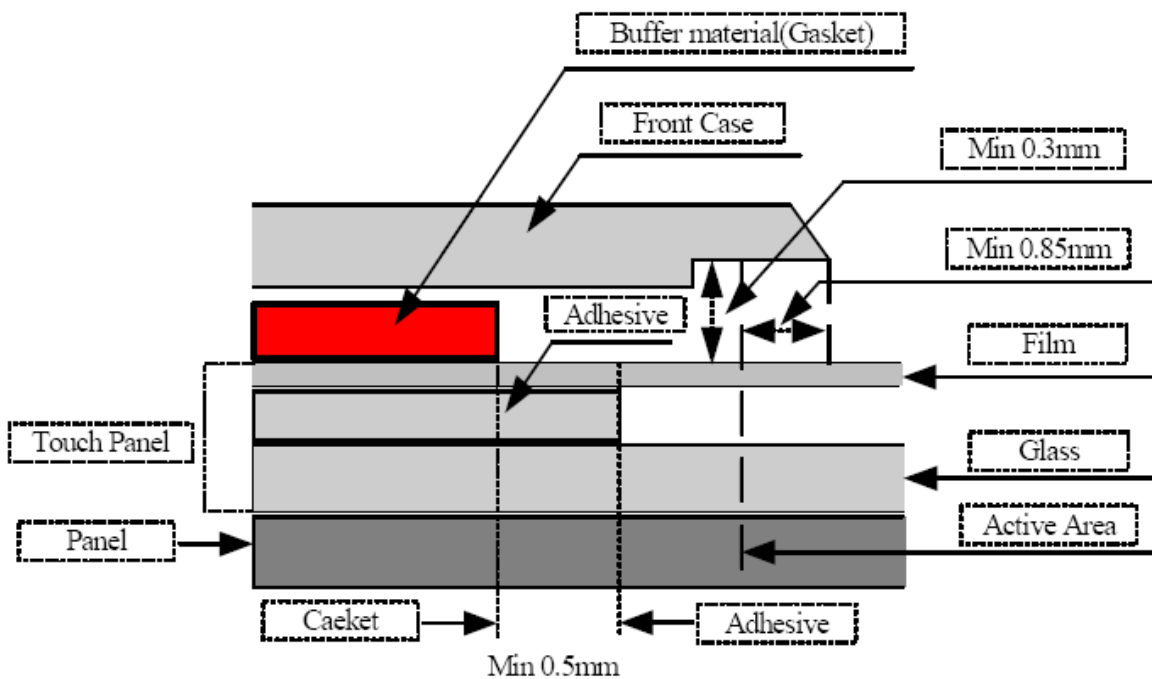
Avoid the design that Front-case overlap and press on the active area of the touch-panel.

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

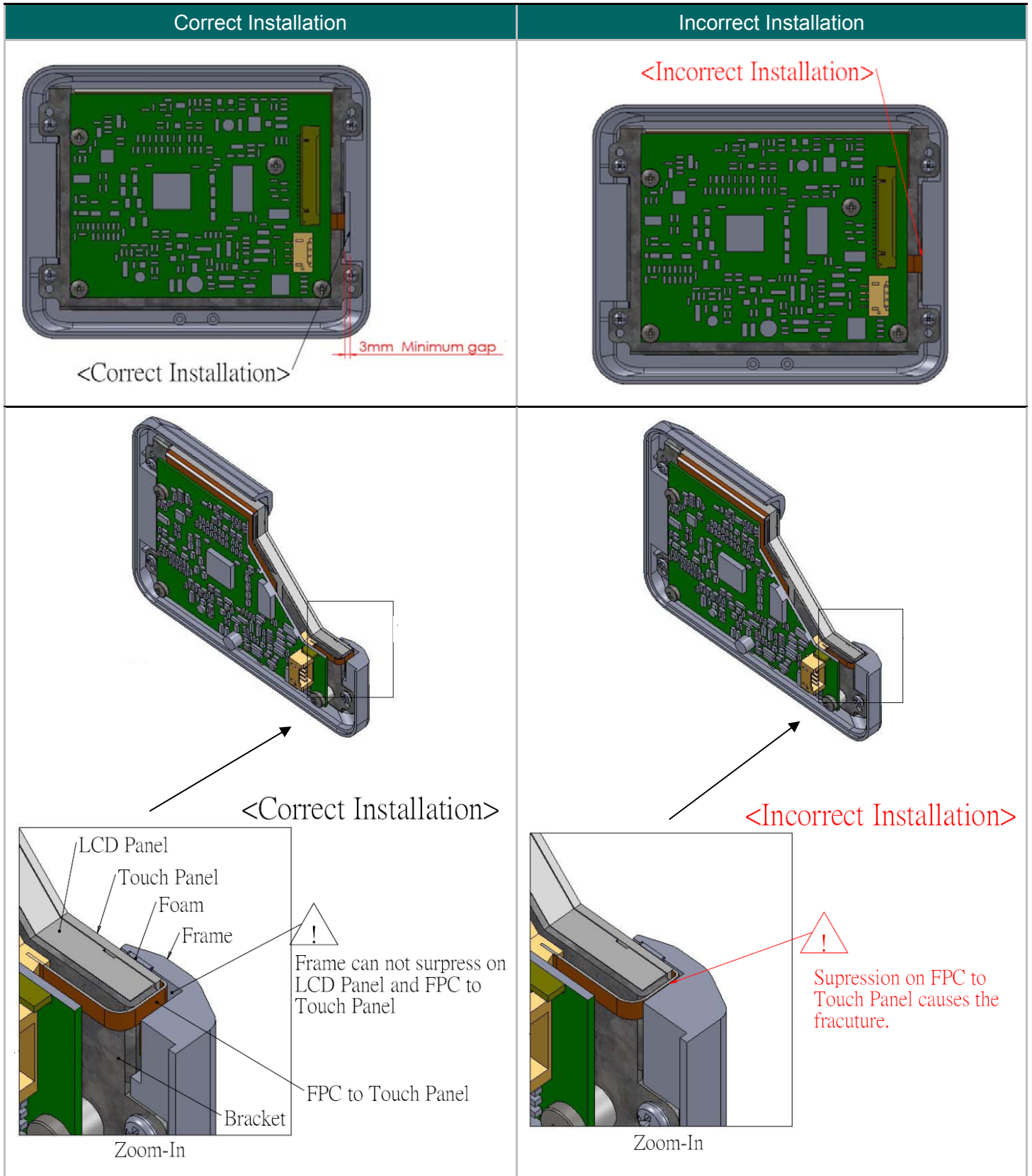


Use a buffer material (Gasket) between the touch-panel and front-case to protect damage and wrong operating.

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

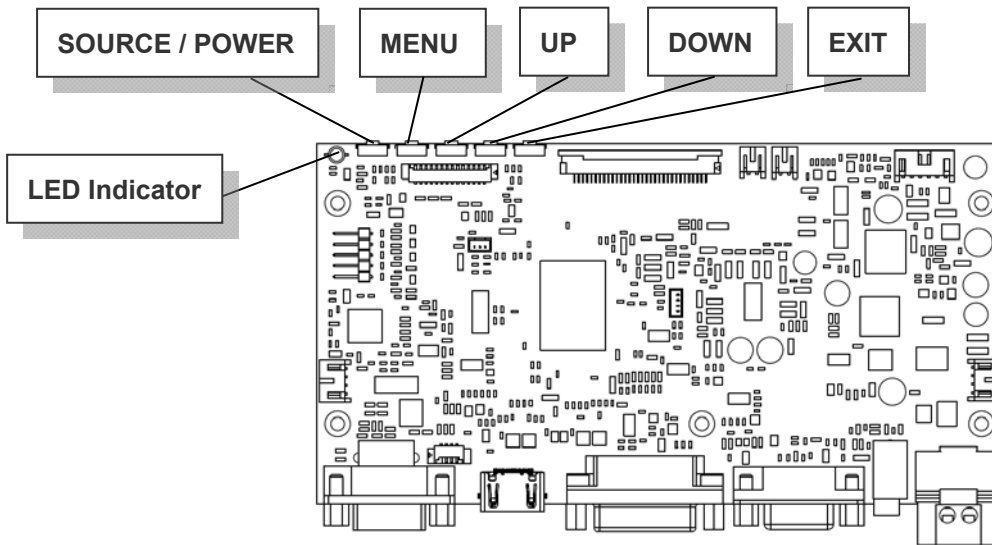


11.7 Mechanical Design Notice For Resistive Touch Panel



12. Key Function by OSD

12.1 Menu Operation

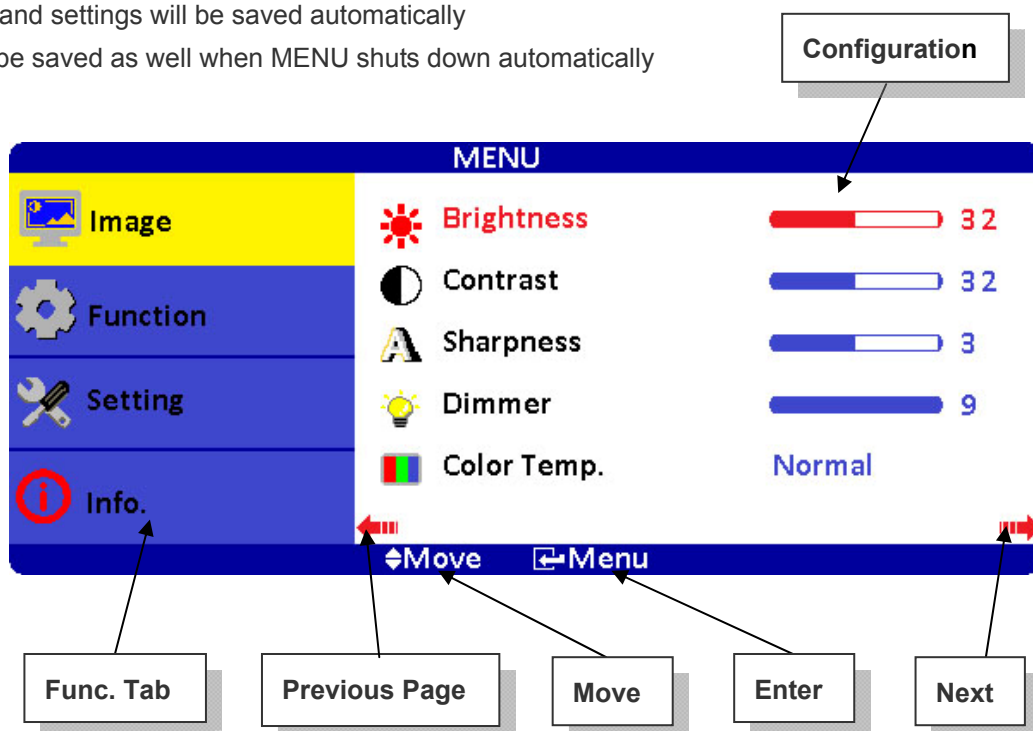


OSD ICON Instructions :

1. SOURCE / POWER : Input Source Switch / Power On/Off (※Press for 3 secs to turn 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		1~5	Adjust-Bar
	Dimmer		0~15	Adjust-Bar
	Color Temp.	Normal	Normal / Warm / Cool	
	H-Position	0	-25~+25	VGA only
	V-Position	0	-25~+25	VGA only
	Clock	0	-25~+25	VGA only
	Phase	32	0~63	VGA only
	Auto	By different resolution		VGA only
	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
	Detect Source	On	On / Off	Auto detect input source.	ON: Auto ; OFF: Normal
	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
	Source	VGA	VGA / DVI / HDMI	
	Volume	32	0~63	
	Mute	Off	On / Off	On : Mute · Off : Sound
	Language	English	English / 中文 / 日本語 / 한국의 / Française / Deutsch / Italiano / Española / Português	
	Reset			Restore to default
	Exit			



Info.

MENU

Image

Source : VGA

Function

Resolution : 1024x768

Setting

H-Position : 48.2KHz

V-Position : 59.8Hz

Information

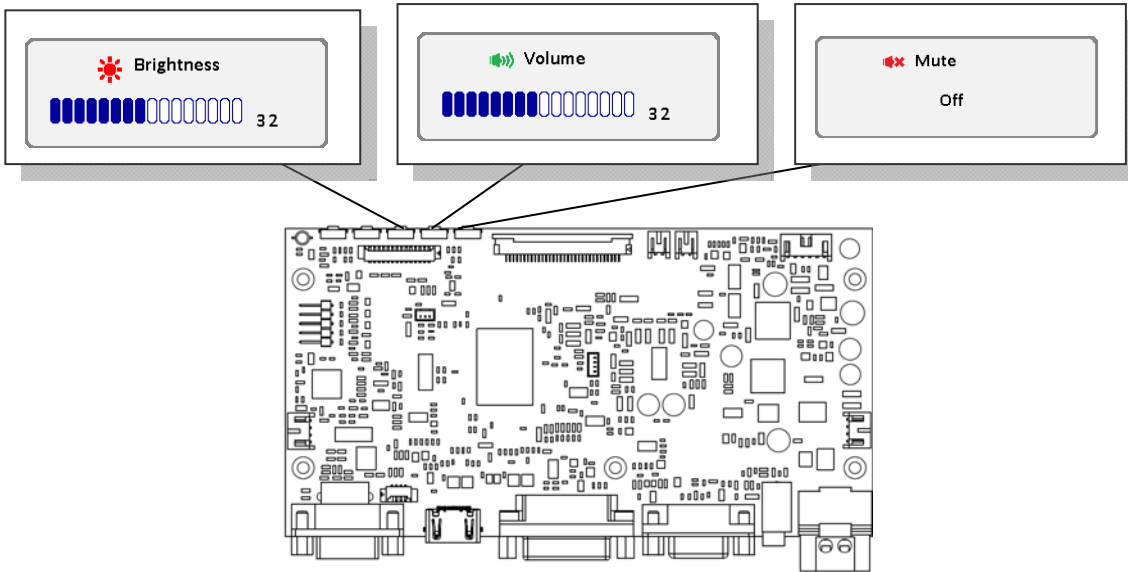
Program Ver : 1.00

Command Ver : 1.00

◀ Move ▶ Exit / Menu



HOT KEY When OSD Menu is Off :



Information of Input Source and Functionality :

The screenshot shows the OSD menu with the following information:

- Input Source:** Points to 'VGA'.
- Resolution:** Points to '1024x768'.
- Detect Source Remaining Secs:** Points to a timer showing '5' seconds.
- VGA Mode Remaining Secs:** Points to a timer showing '1' second.

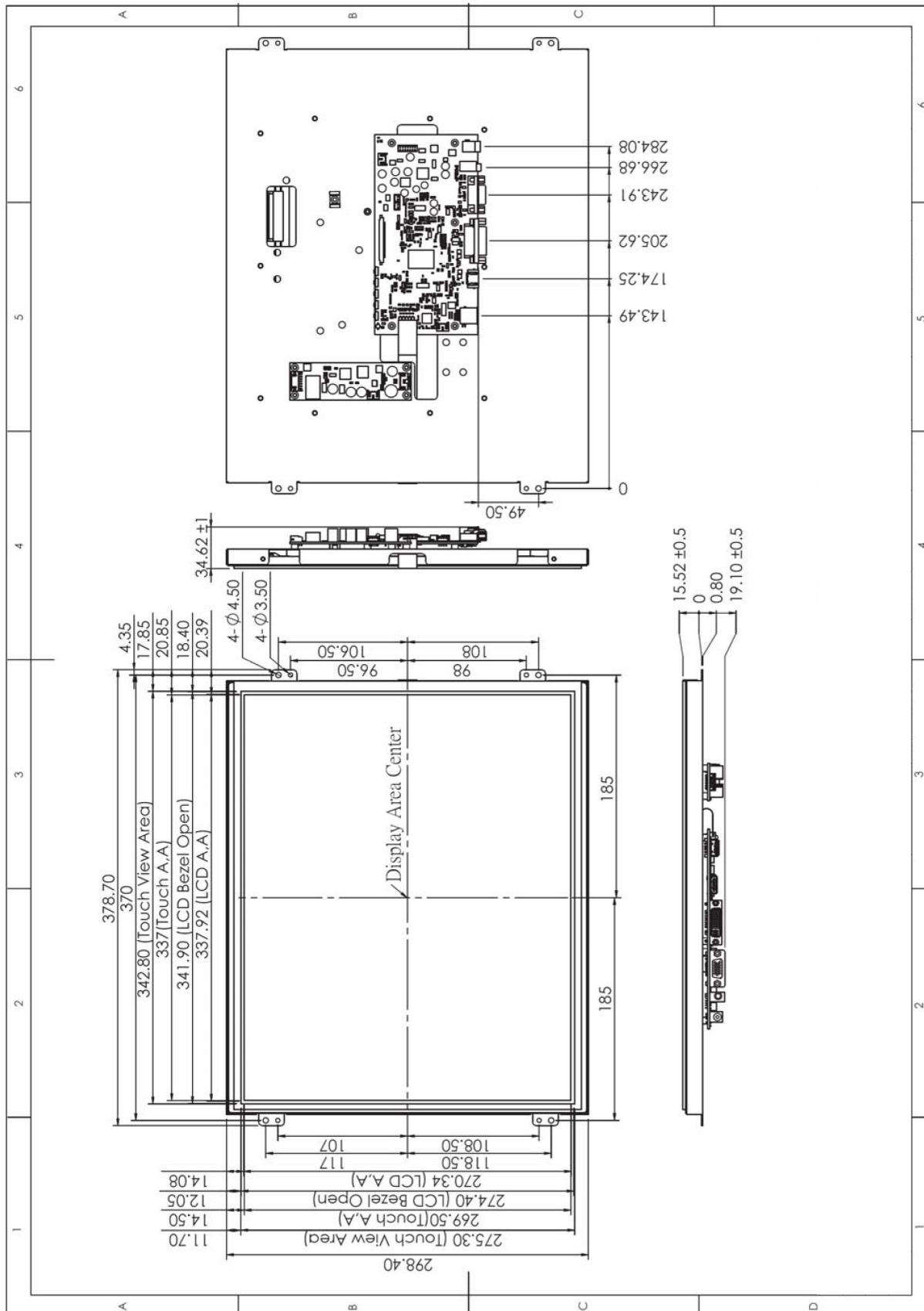
 A legend at the bottom left defines the [Source] as the Input Signal Switch.

Overview of Input Signals :

Indicator	Interface
	VGA
	DVI
	HDMI

13. Dimension Information

13.1 Unit (FCOP1700-TR)





14. Appendix

14.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	17 (diagonal)	Inch
Display Format	1280 x (R.G.B) x 1024	Dot
Active Area	337.92(H) x 270.336(V)	mm
Pixel Pitch	0.264(H) x 0.264(V)	mm
Pixel Arrangement	RGB vertical stripe	
Surface Treatment	Anti-Glare, Haze=25%, Hard Coating (3H)	
Bezel Opening Area	341.9(H) x 274.4(V)	

14.2 TFT-LCD Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	75	85	---	deg	
		Right	75	85	---	deg	
	Vertical	Top	70	80	---	deg	
		Bottom	70	80	---	deg	
Contrast Ratio	CR	At optimized Viewing angle	---	1000	---	---	
Luminance without TP	L		200	250	---	cd/m ²	
LED Life Time		25°C	50000	---	---	Hrs	Note

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

