



§ SPECIFICATION APPROVAL SHEET §

Fdt Tech Module No LP080A1|~~xx~~-F~~x~~R

Description: 8" Digital TFT-LCD Module

SPEC No.: SAS-1008004

Version: 0.4

Issue Date: July 2, 2013

※ This approval sheet contains 27 pages including the cover and appendix.

Customer: _____ **APPROVED BY:** _____

Date: ____ / ____ / 13

APPROVED BY:

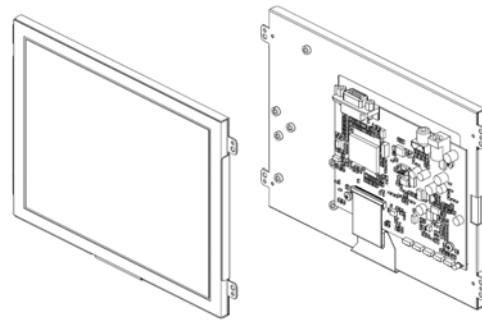
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FLAT DISPLAY TECHNOLOGY

8" Digital TFT-LCD Module



■ LP080A1Ixx-FxR

1. General Descriptions

1.1 Features

- CMI AT080TN52 V1 Digital TFT LCD
- Ultra Compact
- NTSC/PAL/SECAM Video Auto Switch
- Single Operation Voltage +12V
- CVBS / Analog RGB (PC Mode) Signal Input
- All Functions can be controlled by UART
- Support Touch Screen Function (Option)

1.2 Applications

- Portable product
- Industrial
- Hand-held
- Security
- Instrument Display
- Office Electronics

1.3 Application Precautions

Do not use the products herein for the following equipment which demands extremely high performance in terms of functionality, reliability, or accuracy.

- Aerospace equipment
- Communication equipment for trunk lines.
- Control equipment for the nuclear power industry.
- Medical equipment related to life support, etc.

The other application that demands high reliability and functionality should first contact a sales representative.

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2. Contents

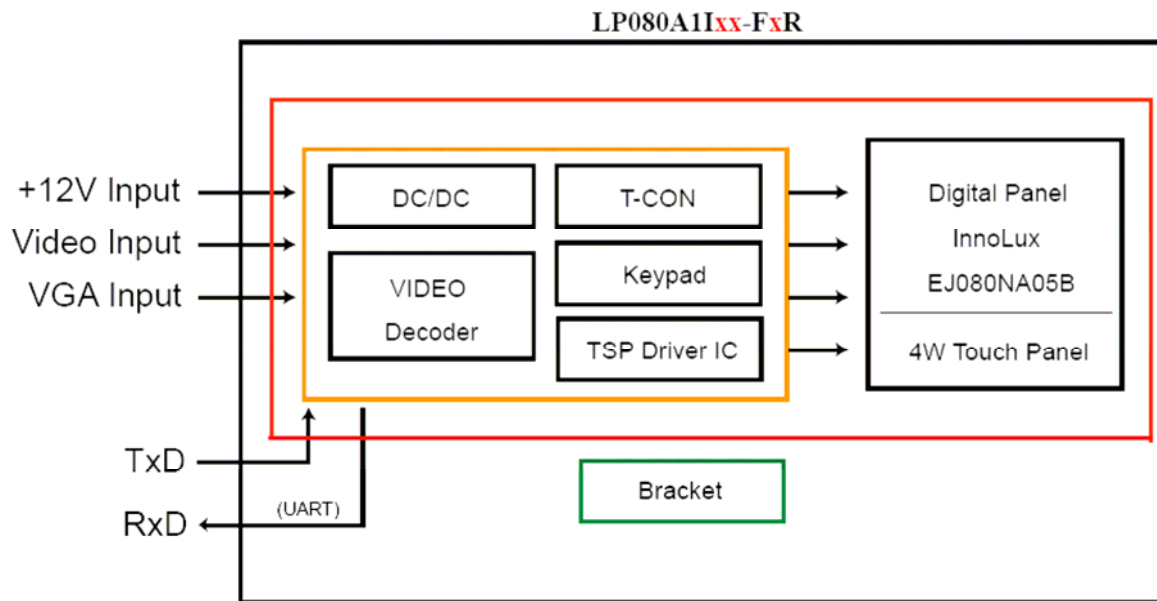
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Preliminary

3. Block Diagram

3.1 Block Diagram



Preliminary

4. TFT-LCD Information

4.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	8.0 (diagonal)	inch
Display Format	800 x (R.G.B) x 600	dot
Active Area	162(W) x 121.5(H)	mm
Pixel Pitch	0.2025(W) x 0.2025(H)	mm
Pixel Configuration	Stripe	
Outline Dimension	183(W) x 141(H) x 6.3(D)	mm
Surface Treatment	Anti – Glare	
Weight	258(Typ)	g

4.2 TFT-LCD Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	60	70	---	deg	
		Right	60	70	---	deg	
	Vertical	Top	60	70	---	deg	
		Bottom	40	50	---	deg	
Contrast Ratio	CR	$\theta = 0^\circ$	400	500	---	---	
Response time	Rise Fall	Tr	---	10	20	ms	
		Tf	---	15	30	ms	
Uniformity	U	$\theta = 0^\circ$	70	75	---	%	
Brightness	L	$\theta = 0^\circ$	200	250	---	Cd/m ²	
Brightness With TSP			160	200			
White Chromaticity	x	$\theta = 0^\circ$	0.26	0.31	0.36		
	y	$\theta = 0^\circ$	0.28	0.33	0.38		
LED Life Time		+25°	20000	---	---	Hrs	Note

Note: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IL =180mA.

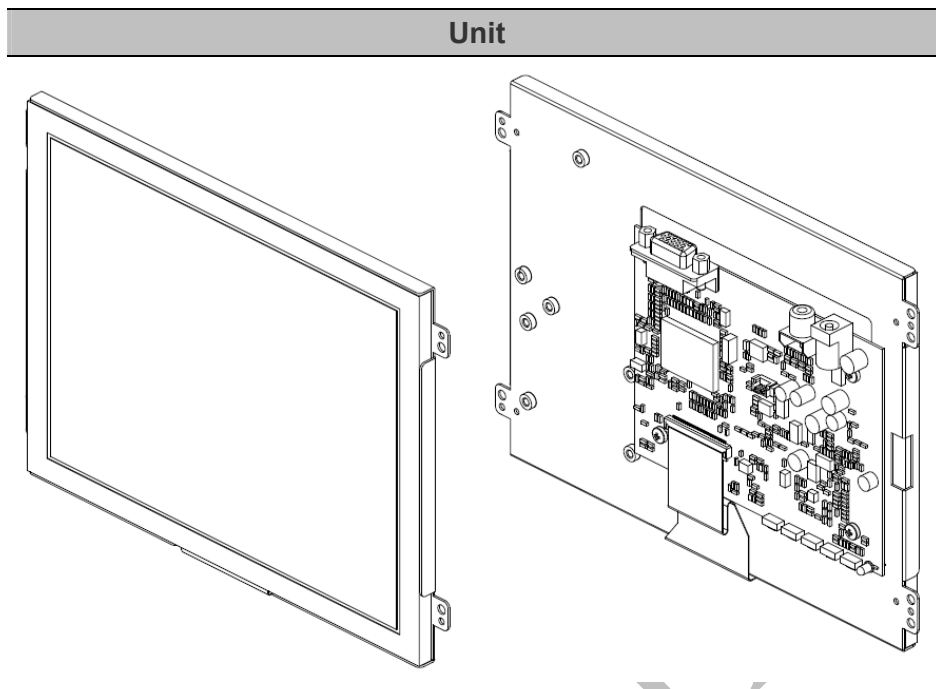
The LED lifetime could be decreased if operating IL is larger than 180 mA.

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5. Order Information

5.1 Unit



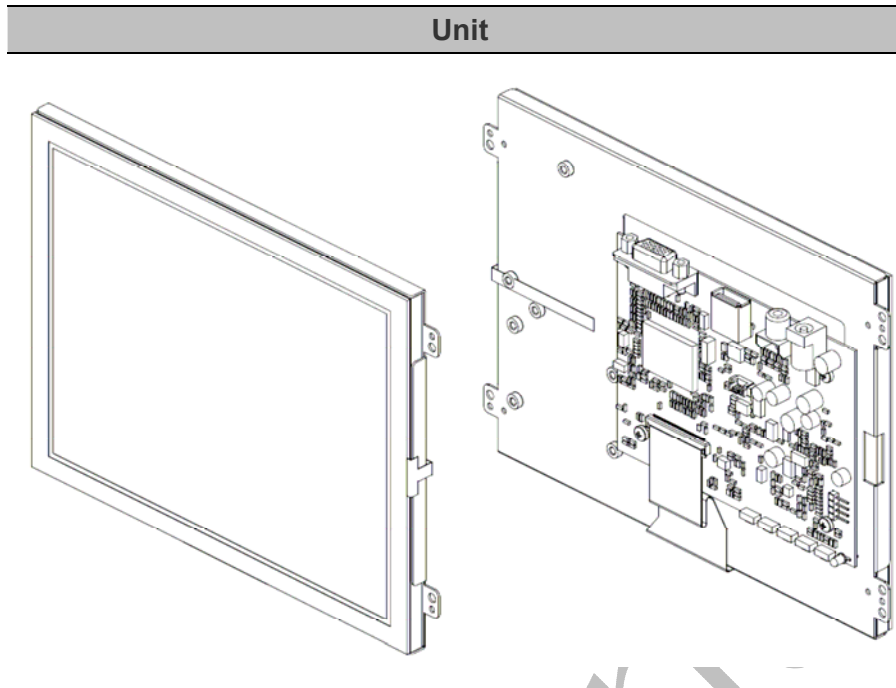
Parameter	LP080A1IB1-FBR	LP080A1IB1-FNR	Unit
CVBS	1	1	
VGA (D-Sub15 / 2.0mm 14Pin)	D-Sub15	D-Sub15	
AC to DC Adapter 12V/2.5A (LASTD12025-FDR)	⊙	-	
Power Cord Plug Type B for USA (LAAC818000-FDR)	⊙	-	
Video Cable (LAVDO18000-FDR)	⊙	-	
VGA Cable (LAVGA16000-FDR)	⊙	-	

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

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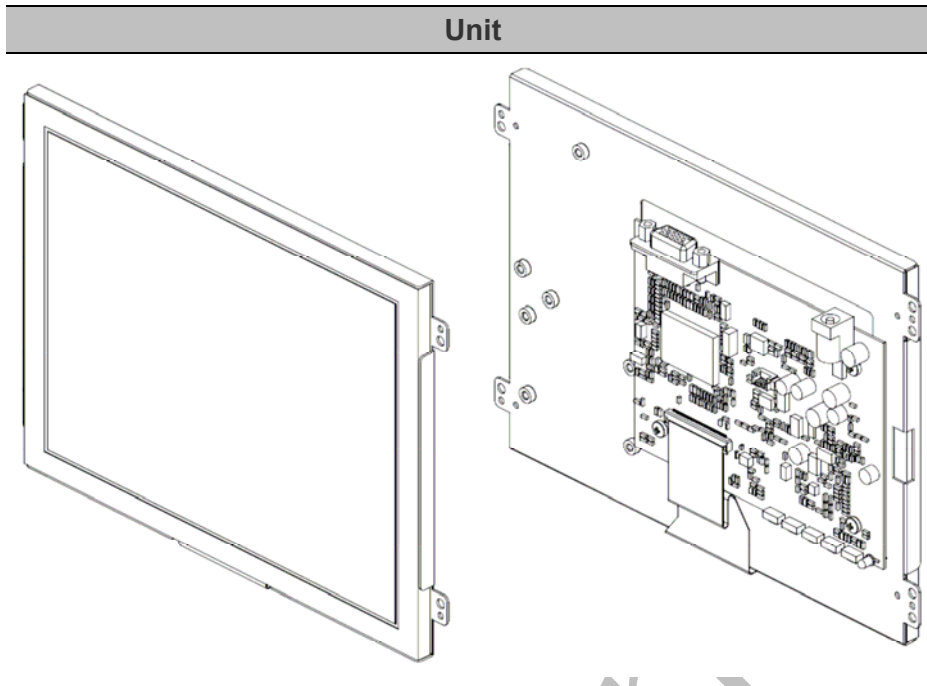
5.2 Unit (4W Touch)



Parameter	LP080A1IB4-FBR	LP080A1IB5-FBR	LP080A1IB4-FNR	LP080A1IB5-FNR	Unit
CVBS	1	1	1	1	
VGA (D-Sub15 / 2.0mm 14Pin)	D-Sub15	D-Sub15	D-Sub15	D-Sub15	
Touch Panel Type	4W Resistive	4W Resistive	4W Resistive	4W Resistive	
Touch Screen Interface	USB	RS232	USB	RS232	
AC to DC Adapter 12V/2.5A (LASTD12025-FDR)	⊙	⊙	-	-	
Power Cord					
Plug Type B for USA (LAAC818000-FDR)	⊙	⊙	-	-	
Video Cable (LAVDO18000-FDR)	⊙	⊙	-	-	
VGA Cable (LAVGA16000-FDR)	⊙	⊙	-	-	
USB Cable (LAUSB18000-FDR)	⊙	-	-	-	
RS-232 Cable (LARS218000-FDR)	-	⊙	-	-	
Touch Screen Driver CD Disk	⊙	⊙	⊙	⊙	

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

5.3 Unit (PC Only)

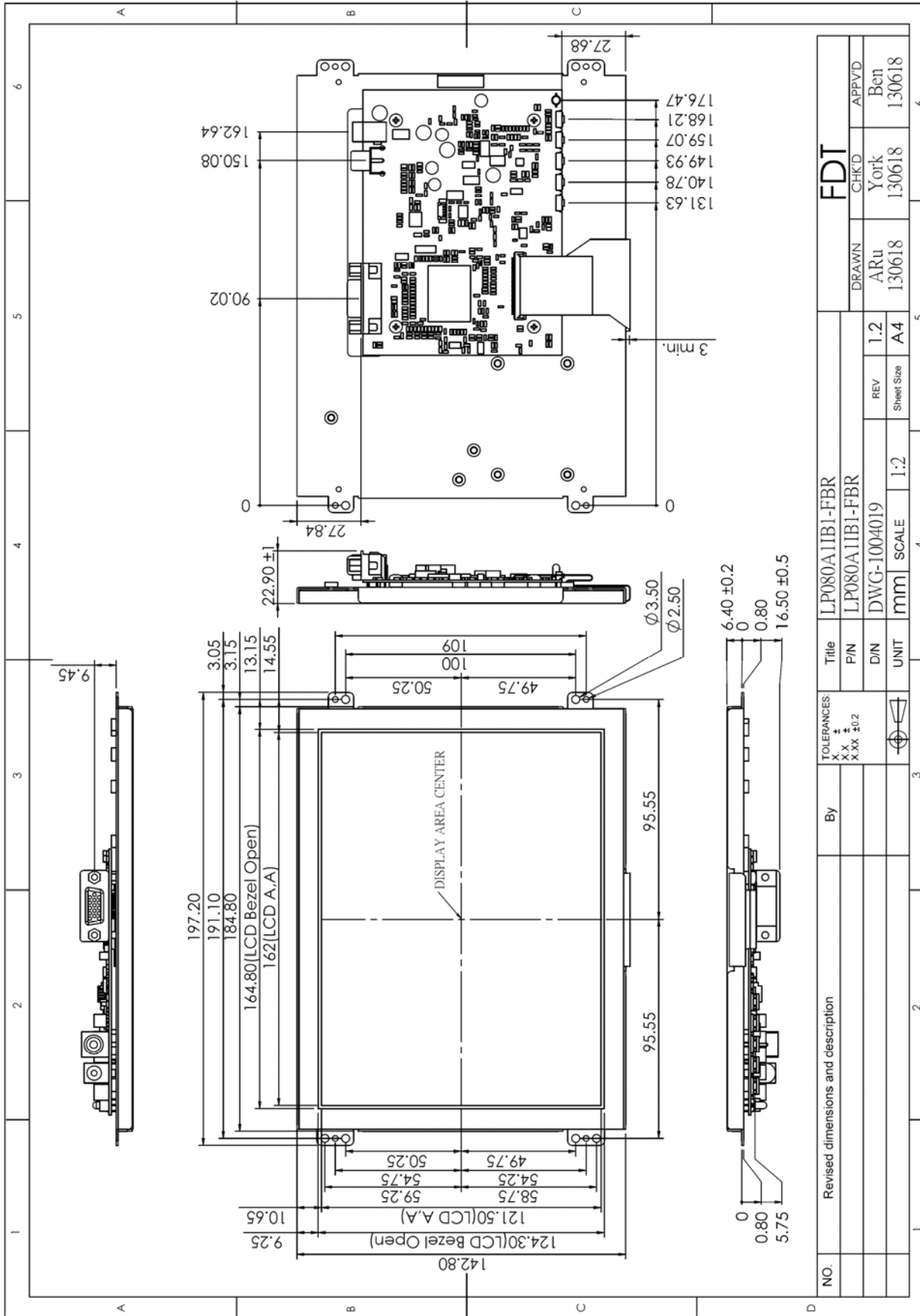


Parameter	LP080A1IC1-FBR	LP080A1IC1-FNR	Unit
VGA (D-Sub15 / 2.0mm 14Pin)	D-Sub15	D-Sub15	
AC to DC Adapter 12V/2.5A (LASTD12025-FDR)	⊙	-	
Power Cord Plug Type B for USA (LAAC818000-FDR)	⊙	-	
VGA Cable (LAVGA16000-FDR)	⊙	-	

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

6. Dimension Information

6.1 Unit (LP080A1IB1-FBR)

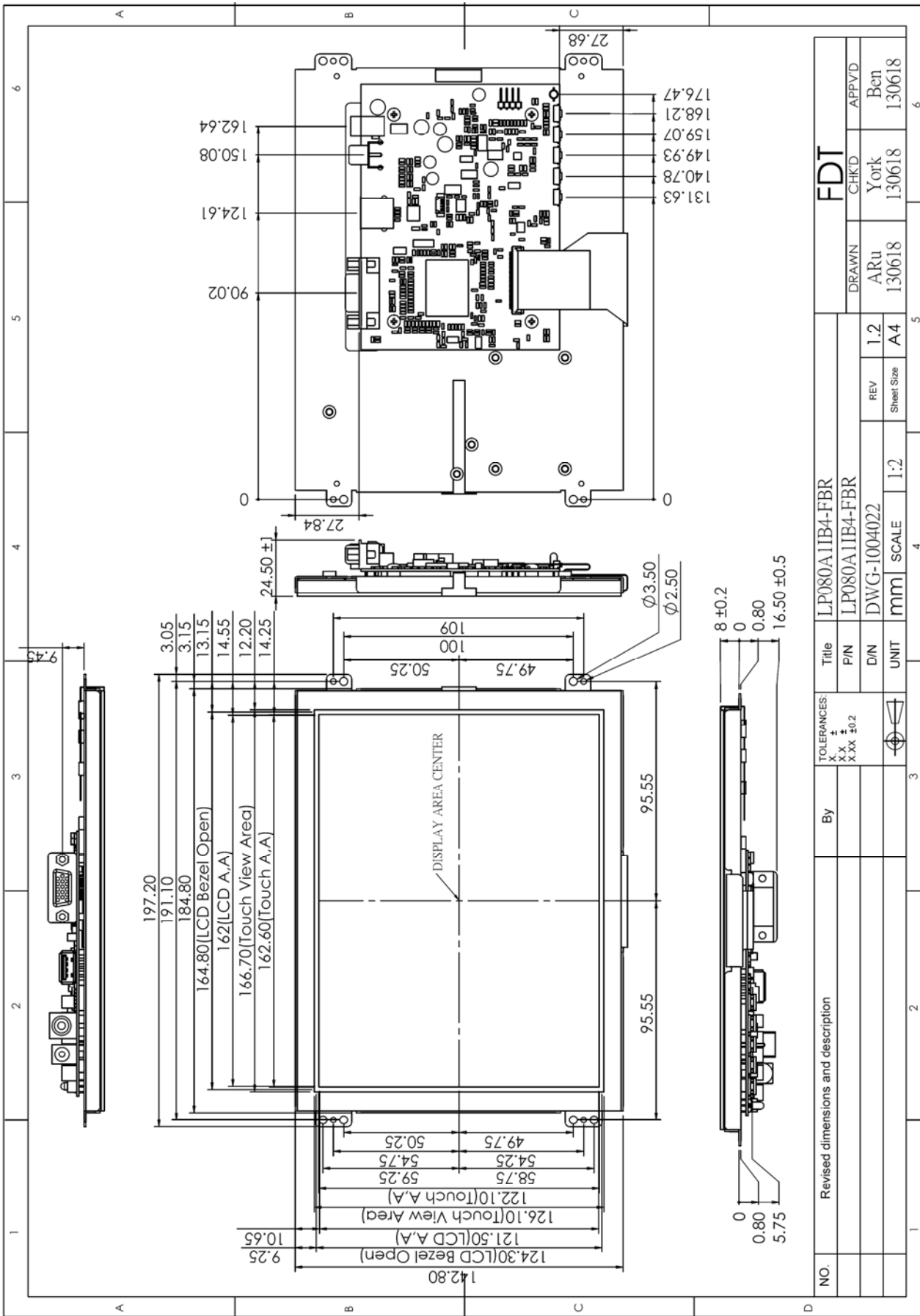


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6.2 Unit (LP080A1IB4-FBR)

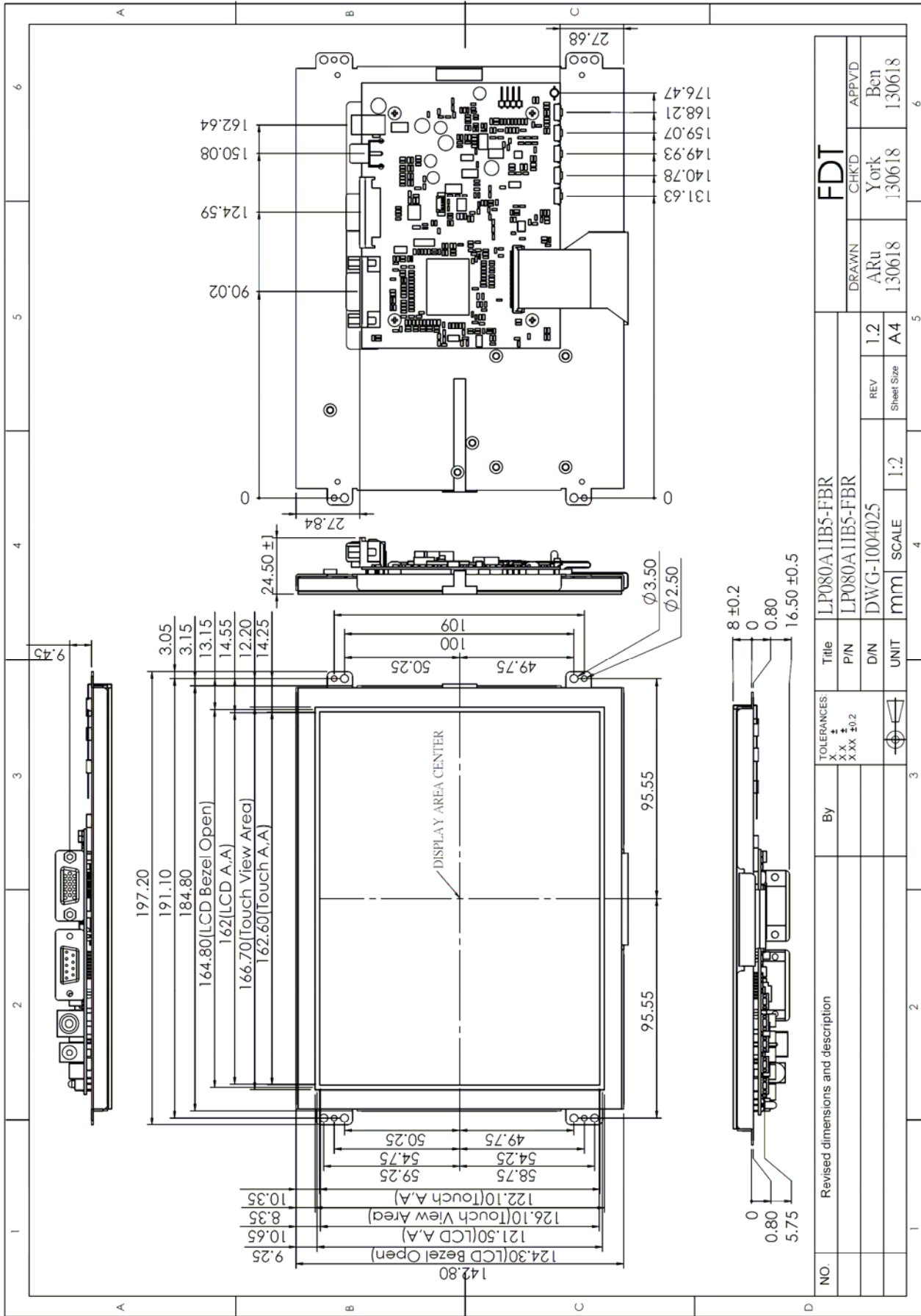


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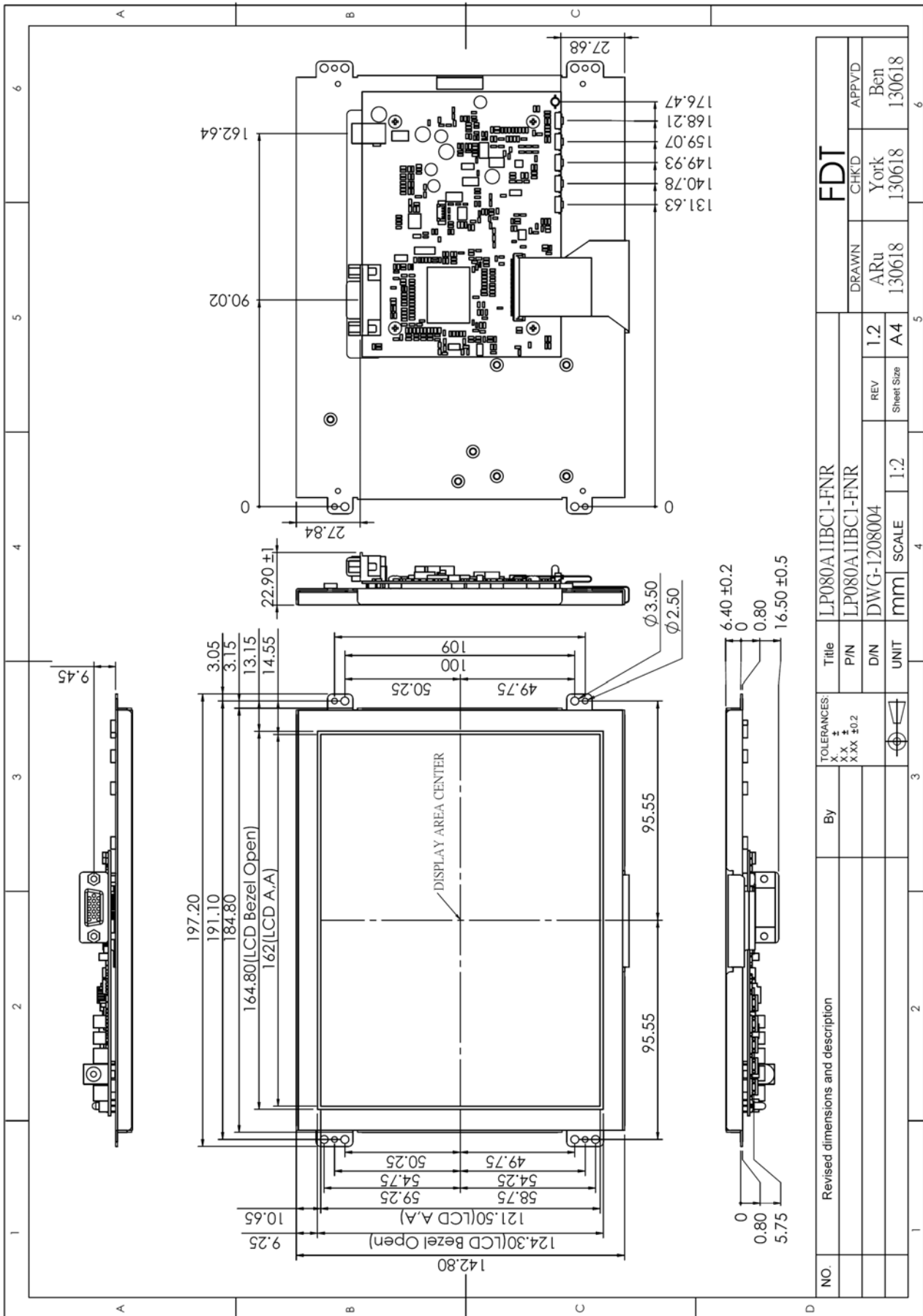
6.3 Unit (LP080A1IB5-FBR)



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6.4 Unit (LP080A1IBC1-FNR)



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7. Pin Description

7.1 J301 : CMI LCD Panel I/O Terminals (FPC 50 Pin Pitch 0.5mm UP Contact Type)

Pin No	Symbol	I/O	Description	Remark
1	NC		No connection	
2	NC		No connection	
3	NC		No connection	
4	NC		No connection	
5	GND	P	Power ground	
6	VCOM	I	Common voltage	
7	VCC	P	Power for Digital circuit	
8	MODE	I	DE/SYNC mode select	
9	DE	I	Data Input Enable	
10	VS	I	Vertical Sync Input	
11	HS	I	Horizontal Sync Input	
12	B7	I	Blue data(MSB)	
13	B6	I	Blue data	
14	B5	I	Blue data	
15	B4	I	Blue data	
16	B3	I	Blue data	
17	B2	I	Blue data	
18	B1	I	Blue data	
19	B0	I	Blue data(LSB)	
20	G7	I	Green data (MSB)	
21	G6	I	Green data	
22	G5	I	Green data	
23	G4	I	Green data	
24	G3	I	Green data	
25	G2	I	Green data	
26	G1	I	Green data	
27	G0	I	Green data (LSB)	
28	R7	I	Red data (MSB)	
29	R6	I	Red data	
30	R5	I	Red data	
31	R4	I	Red data	
32	R3	I	Red data	
33	R2	I	Red data	
34	R1	I	Red data	
35	R0	I	Red data (LSB)	
36	GND	P	Power ground	
37	DCLK	I	Sample clock	

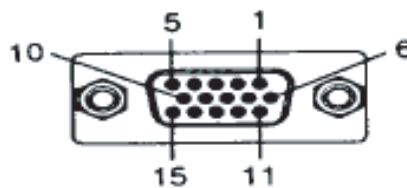
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38	GND	P	Power ground
39	L/R	I	Right/ left selection
40	U/D	I	Up/down selection
41	VGH	P	Gate ON voltage
42	VGL	P	Gate OFF voltage
43	AVDD	P	Power for Analog circuit
44	RESET	I	Global reset pin.
45	NC		No connection
46	VCOM	I	Common voltage
47	DITHB	I	Dithering function
48	GND	P	Power ground
49	NC		No connection

7.2 J101B : 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	NC	-	No Connection	
5	GND	-	Ground	
6	AGND	-	Analog Ground	
7	AGND	-	Analog Ground	
8	AGND	-	Analog Ground	
9	VGA5V	-	VGA +5V Input	
10	VGA-Det	I	VGA Detect	
11	NC	-	No Connection	
12	NC	-	No Connection	
13	HS_IN	I	TTL Horizontal sync	
14	VS_IN	I	TTL Vertical sync	
15	N.C	-	No Connection	



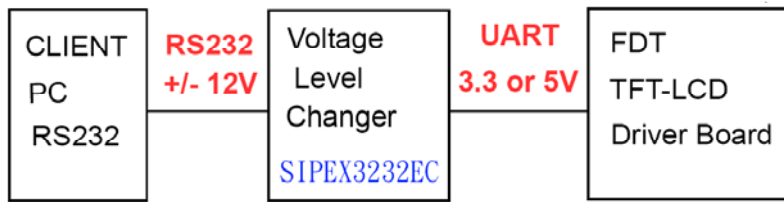
7.3 J104: Pin Assignment of UART (Pitch 1.25mm 4Pin, Top Entry Type)

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

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

Pin No	Symbol	I/O	Description	Remark
1	TX	O	UART Transmission Data	
2	RX	I	UART Receive Data	
3	GND	-	Ground	
4	+5VA	O	+5V Output Voltage	

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



7.4 DC JACK: Pin Assignment of Power Input (Inside Diameter:2.1 φOutside Diameter:5.5 φSide Entry Type)

Pin No	Symbol	I/O	Description	Remark
1	VIN	I	+12V Input Voltage	
2	GND	-	Power Ground	

7.5 RCA: Pin Assignment of Video Input (RCA JACK Yellow, Side Entry Type)

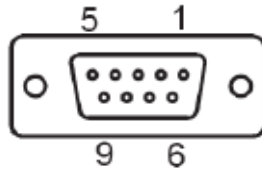
Pin No	Symbol	I/O	Description	Remark
1	Video	I	Video Input	
2	AGND	-	Analog Ground	

7.6 J401B : Pin Assignment of Touch USB (USBA-Female 2.0mm, Side Entry Type)(Option)

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

7.7 J401C : Pin Assignment of Touch RS232 (D-SUB 9 FEMALE)(Option)

Pin No	Symbol	I/O	Description	Remark
1	NC	-	No Connection	
2	TXD	-	Transmit Data	
3	RXD	-	Receive Data	
4	NC	-	No Connection	
5	GND	-	Ground	
6	NC	-	No Connection	
7	NC	-	No Connection	
8	NC	-	No Connection	
9	NC	-	No Connection	



8. Absolute Maximum Ratings

8.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	Vin	9	15	V	
Video Input Signal	Video in	0.5	2.0	Vp-p	@75Ω
Analog RGB Input Signal	Analog RGB in	0.5	2.0	Vp-p	@75Ω
Digital Input Signal	TTL	+0.3	+3.6	V	
Operating Temperature		-20	+70	°C	
Storage Temperature		-20	+70	°C	
Operating Temperature With TSP		-10	+60	°C	
Storage Temperature With TSP		-20	+70	°C	

9. Recommended Operating Conditions

9.1 Electrical Characteristics

Parameter	Symbol	I/O	Min	Typ	Max	Unit	Note
Input Voltage	Vin	I	+10	+12	+14	V	
Total Current	Iin (+12V)	I		360		mA	±15%
Power Consumption		I		4.32		W	@+12V
Output Voltage	VDD	O	+3.2	+3.3	+3.4	V	I=10mA
Video Input Signal	Video in	I		1.0		Vp-p	@75Ω
Analog RGB Input Signal	Analog RGB in	RGB	0.6	0.7	1.0	Vp-p	@75Ω

9.2 VGA Mode Characteristics

Dots per inch	H	Unit	Polarity	V	Unit	Polarity	Note
640*480	31.469	KHz	Negative	59.941	Hz	Negative	
800*600	37.879	KHz	Positive	60.317	Hz	Positive	
1024*768	48.363	KHz	Negative	60.004	Hz	Negative	

9.3 Panel Backlight Data

Parameter	Symbol	Min	Typ	Max	Unit	Note
LED Backlight Voltage	VLED	9.3	9.9	10.5	Vrms	
LED Backlight Current	ILED	162	180	198	mA	

10. 4W Resistance Touch Panel Characteristics

10.1 Pin assignment

Pin No	Symbol	Description	Remark
1	Y1	Upper Electrode Y (Down Side)	
2	X1	Lower Electrode X (Left Side)	
3	Y2	Upper Electrode Y (Upper Side)	
4	X2	Lower Electrode X (Right Side)	

10.2 Electrical Performance

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Terminal Resistance	X	300		1100	Ω	
	Y	150		650	Ω	
Linearity		-	-	1.5	%	
Insulation Impedance		20	-	-	M Ω	DC 25V
Response Time		-	-	10	ms	

10.3 Optical Performance

Parameter	Specifications
Light Transmittance	82% Typ.
Haze	5.0% Typ.

10.4 Mechanical Performance

Parameter	Specifications
Input Method	Finger or stylus pen
Operating Force	$\leq 50g$
Surface Hardness	3H or more

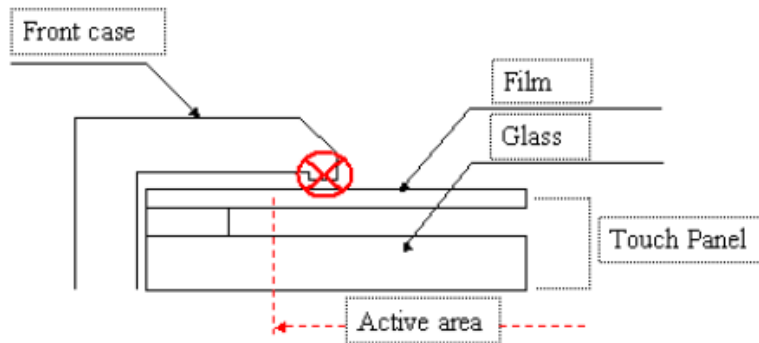
10.5 Durability Performance

Parameter	Specifications
Hitting Durability	≥ 1000000 times, with R8.0 mm silicon rubber, 200g, 5Hz
Sliding Durability	≥ 100000 words, with R0.8 mm polyacetal stylus, 250g, 60 mm / sec

10.6 Touch Screen Integration Design Guide

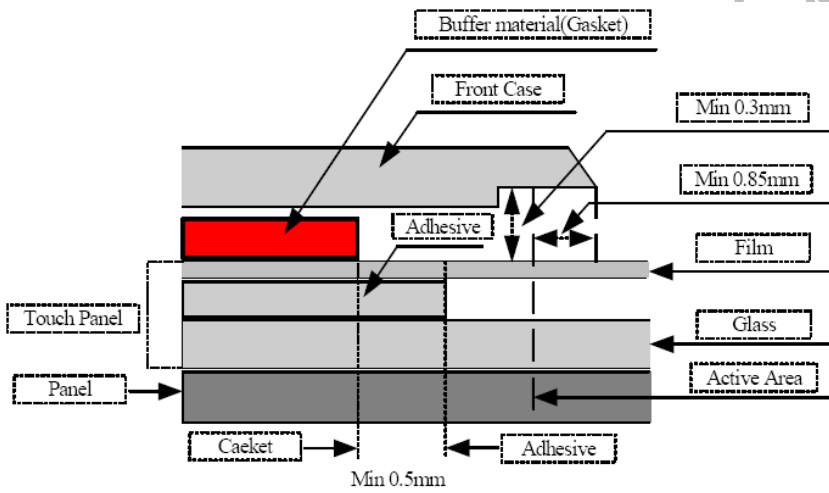
Avoid the design that Front-case overlap and press on the active area of the touch-panel.

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



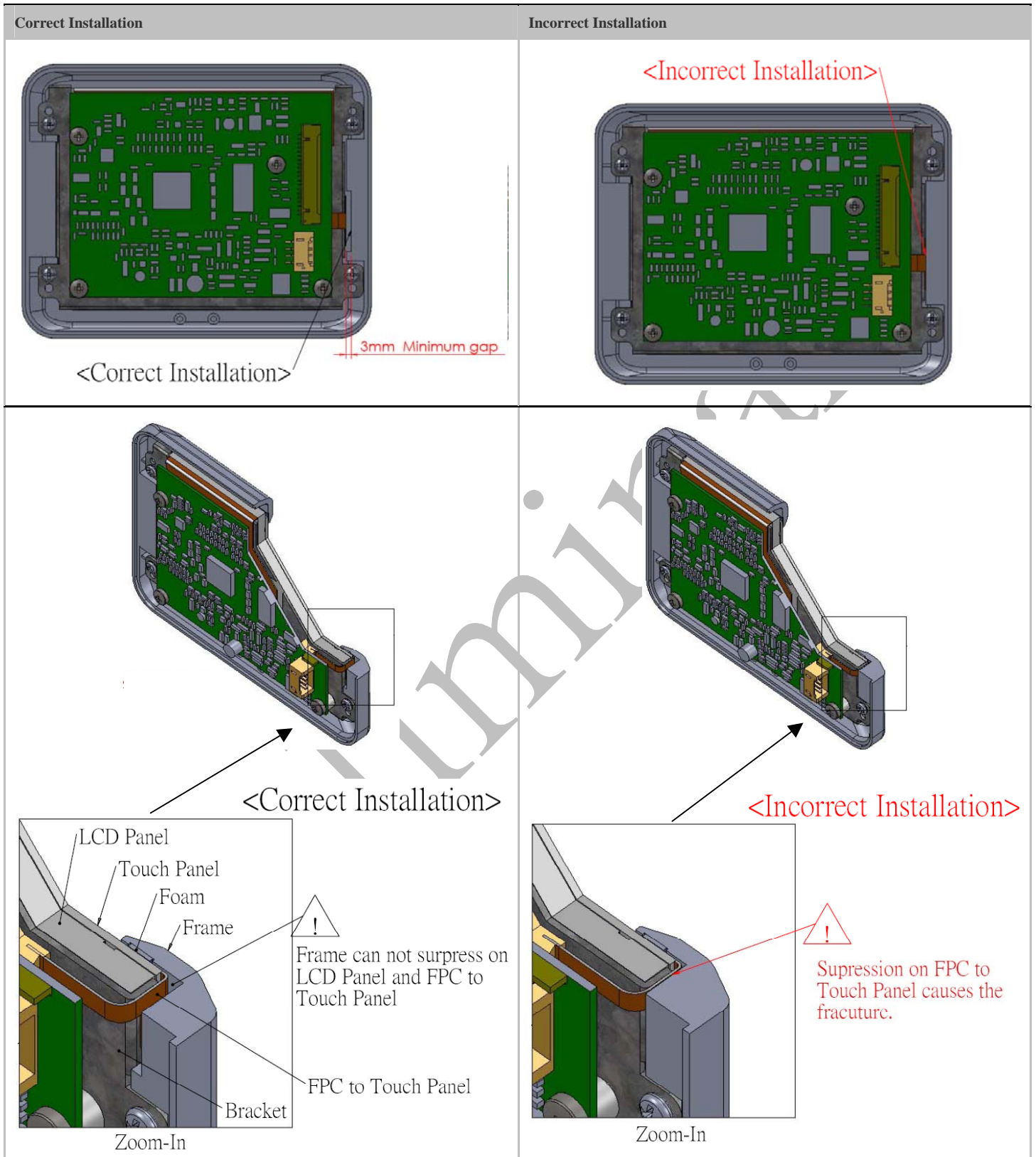
Use a buffer material (Gasket) between the touch-panel and front-case to protect damage and wrong operating.

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



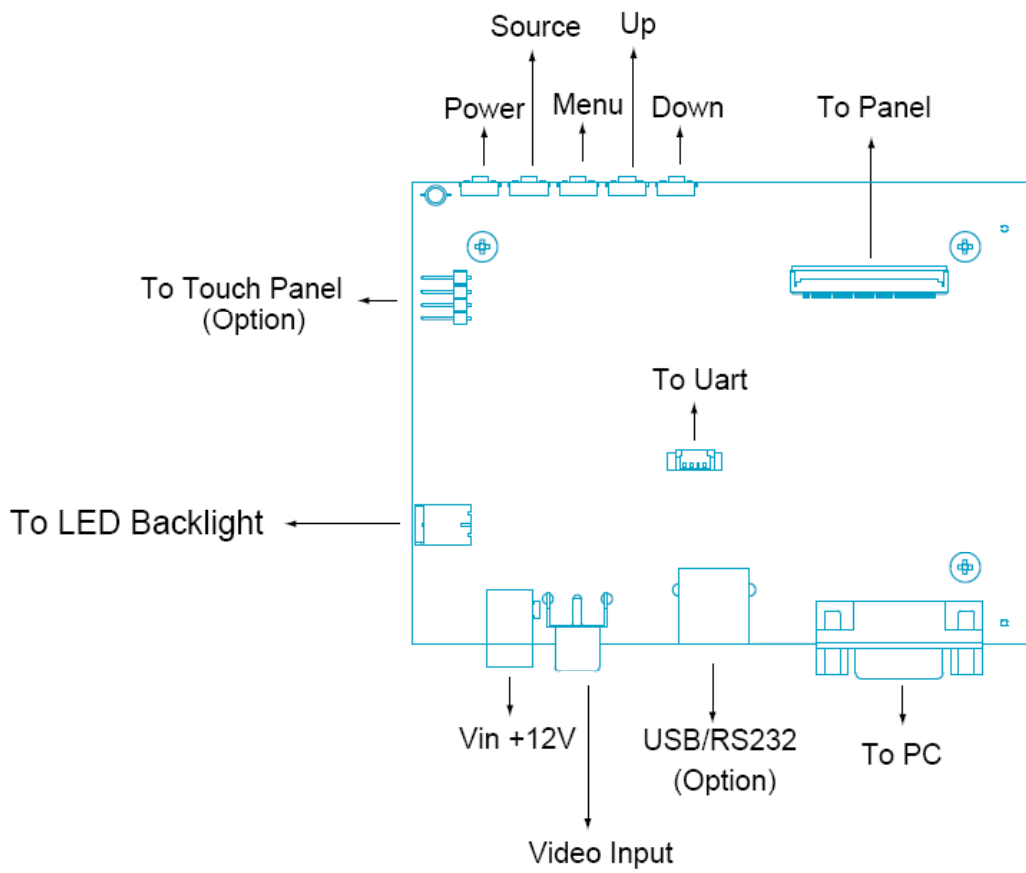
Note: We strongly suggest to follow above design guide to avoid the linear defect happened on the touch panel.

10.7 Mechanical Design Notice For Touch Panel



11. Operation Manual

11.1 Driver Board Manual



PREL

12. Packing List

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



A. LASTD12025-FDR



B. LAAC818000-FDR



C. LAVDO18000-FDR



D. LAVGA16000-FDR



E. LAUSB18000-FDR



F. LARS218000-FDR



G.

- A. AC to DC Adapter (L:1500mm, 100-240VAC 50-60Hz to +12VDC @ 2.5A)
- B. Power Cord (L:1800mm, Plug Type B for USA)
- C. Video Cable (L:1800mm)
- D. VGA Cable (L:1600mm)
- E. USB Cable (L:1800mm)
- F. RS-232 Cable (L:1800mm)
- G. Touch Screen Driver CD Disk / User Manual

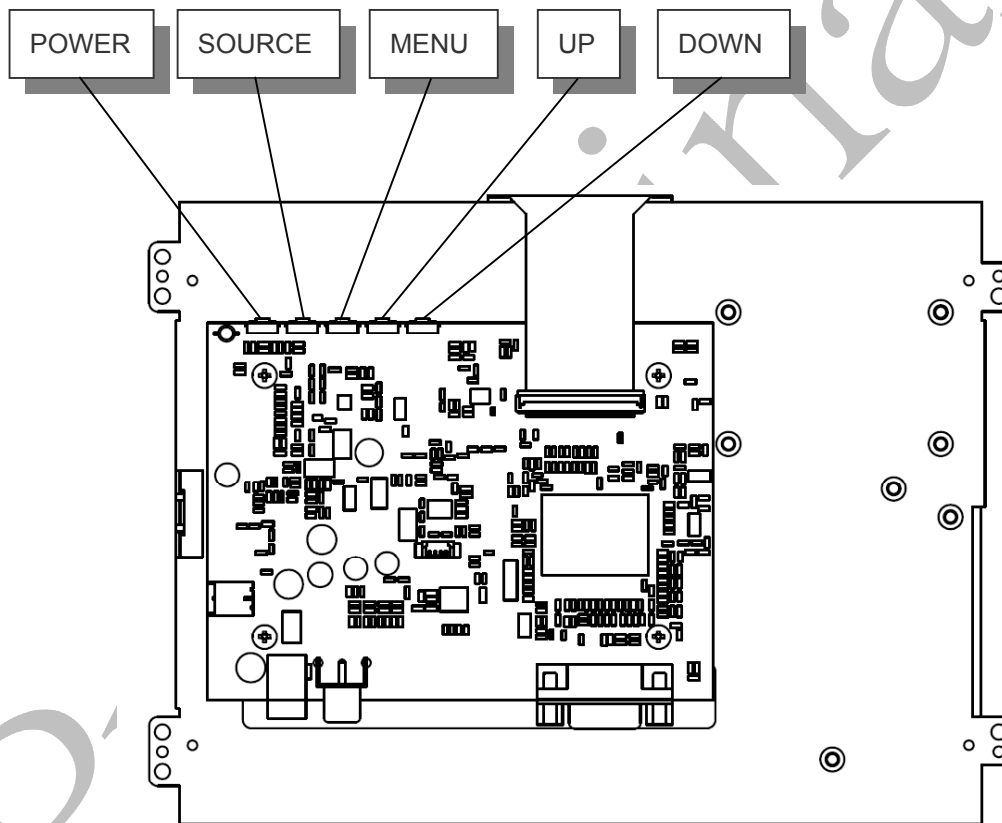
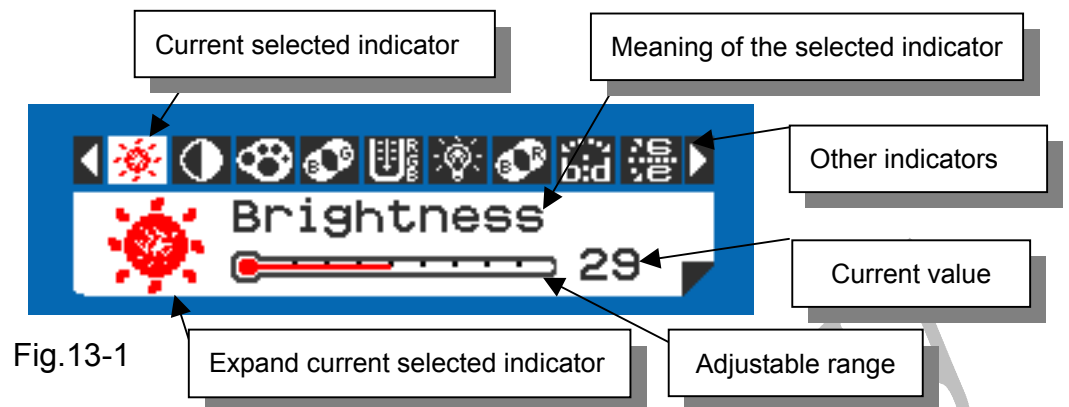
If any of these items are missing or damaged, contact your distributor or sales representative immediately.

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13. Key Function by OSD

13.1 Menu Operation



Operations of key board :


















1. To navigate the menu, press [MENU]. (Fig.13-1)
2. The indicator lighting up in white color is the selected adjustment item.
3. To Next Item of the menu, press [MENU] again.
4. The operations below are only available when “Menu” is started.
5. Press [UP] / [DOWN] to adjust the value of the selected item.

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Overview of the menu :

Firmware Version must be \geq VER 0.26

Indicator	Meaning	Adjustable range	For	Remark
	Brightness	0 ~ 64	AV / VGA	Adjust-Bar
	Contrast	0 ~ 64	AV / VGA	Adjust-Bar
	Color	0 ~ 64	AV	Adjust-Bar
	Tint	0 ~ 32	AV	Adjust-Bar
	Sharpness	0 ~ 16	AV	Adjust-Bar
	Dimmer	0 ~ 9	AV / VGA	
	Color Tone	Normal / Warm / Cool	AV / VGA	
	Mirror	OFF / ON	AV / VGA	
	Flip	OFF / ON	AV / VGA	
	H-Position	-25 ~ +25	AV / VGA	Balance-Bar
	V-Position	-10 ~ +10	AV / VGA	Balance-Bar
	Auto		VGA	
	Scan	Over Scan / Under Scan	AV	
	Information		AV / VGA	Fig.13-2
	Setup		AV / VGA	Fig.13-3
	Factory Set		AV / VGA	
	Exit		AV / VGA	

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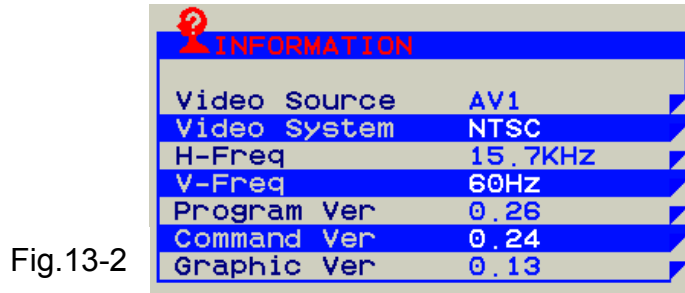


Fig.13-2

Setup Menu :



Fig.13-3

Indicator	Meaning	Adjustable range	Function	Remark
	Show Status	ON / OFF	Show signal status.	ON: Show OFF: Hidden
	Blue Screen	ON / OFF	If loss signal will put on the blue or black screen.	ON: Blue OFF: Black
	Auto Power On	ON / OFF	Power input module will be auto turn on.	ON: Auto OFF: Manual
	Auto Saving	OFF / 3s / 5s / 15s / 30s	If signal lost over setting times will be power off.	ON: Auto OFF: Normal
	Detect Source	ON / OFF	Auto detection which source is existence and change.	ON: Auto OFF: Normal



Return

Note : VGA only type don't have Detect Source function.

13.2 Operations

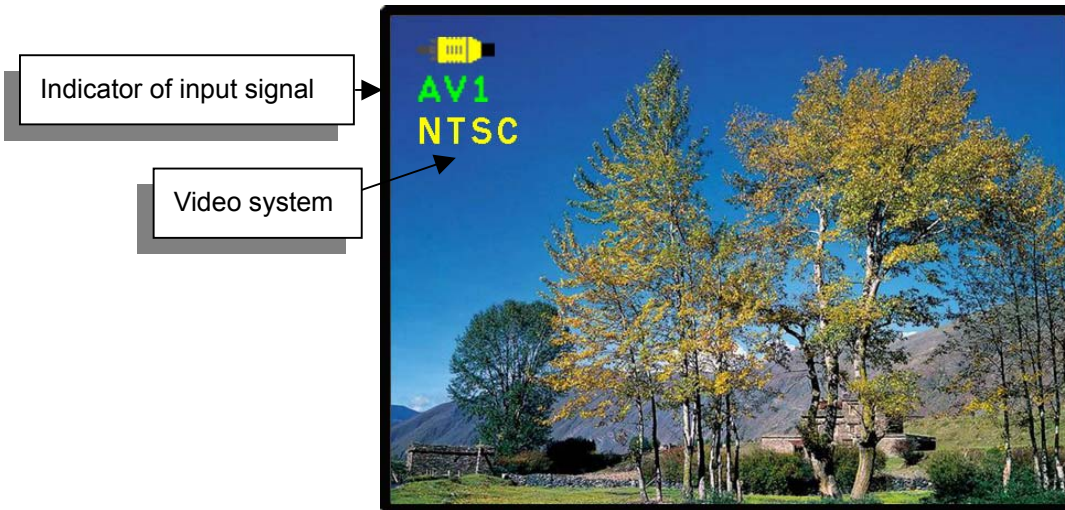




Fig.13-4

[Power] : Monitor power on / off

[Source] : Input signal switch

Overview of input signals :

Indicator	Input signal	Interface	Video system
	AV1	Composite	NTSC / PAL / SECAM
	VGA	Analog RGB	640x480_60 / 800x600_60 / 1024x768_60