



§ SPECIFICATION APPROVAL SHEET §

Fdt Tech Module No LP050T4I~~xx~~-F~~x~~R

Description: 5" Digital TFT-LCD Module

SPEC No.: SAS-1107001

Version: 0.1

Issue Date: June 25, 2012

※ This approval sheet contains 17 pages including the cover and appendix.

Customer:

Date: / / 17

APPROVED BY:

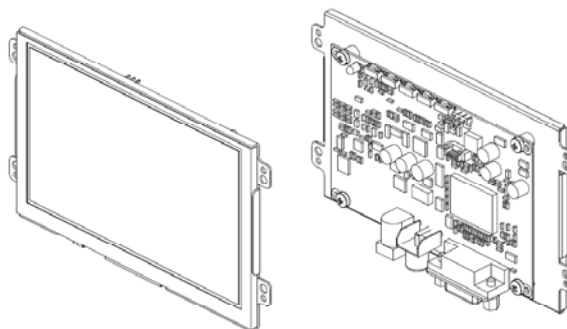
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FLAT DISPLAY TECHNOLOGY

5" Digital TFT-LCD Module



■ LP050T41xx-FxR

1. General Descriptions

1.1 Features

- CMI AT050TN43 V.1 Digital TFT LCD
- Aspect Ratio: 16:9
- 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

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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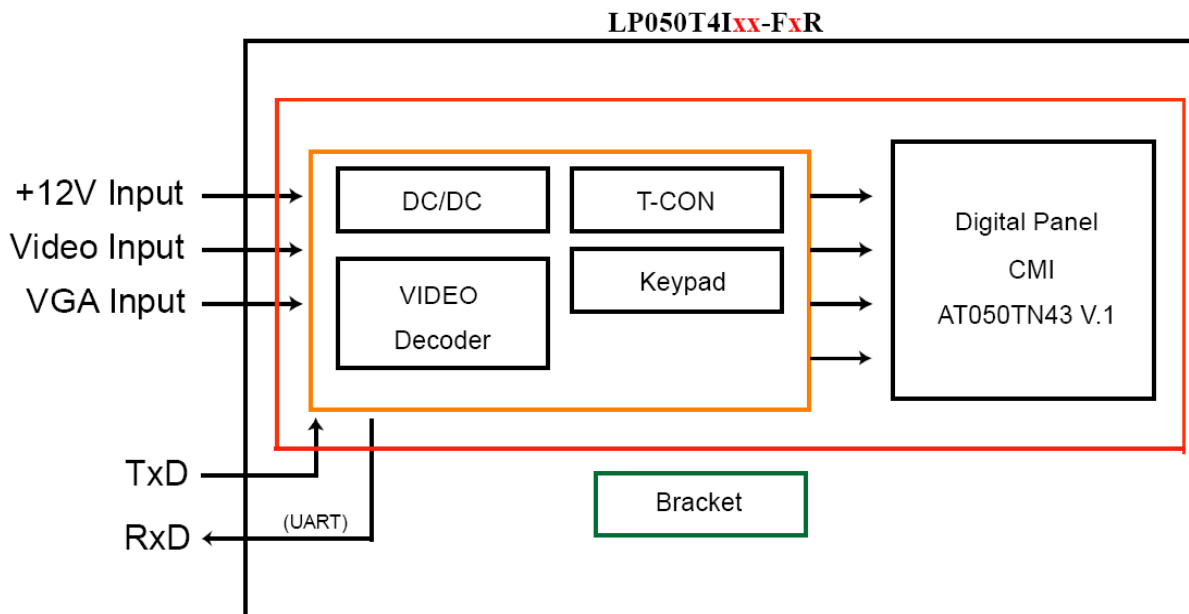


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3. Block Diagram

3.1 Block Diagram



Prelim

4. TFT-LCD Information

4.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	5 (diagonal)	inch
Display Format	800 x (R.G.B) x 480	dot
Active Area	108.0(W) x 64.8(H)	mm
Pixel Pitch	0.135(W) x 0.135(H)	mm
Display mode	Normally White, Transmissive	
Outline Dimension	120.7(W) x 76.3(H) x 3.1(D)	mm
Surface Treatment	Anti-Glare	

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	40	50	---	deg	
		Bottom	60	70	---	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	$\theta = 0^\circ$	280	350	---	Cd/m ²	
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	

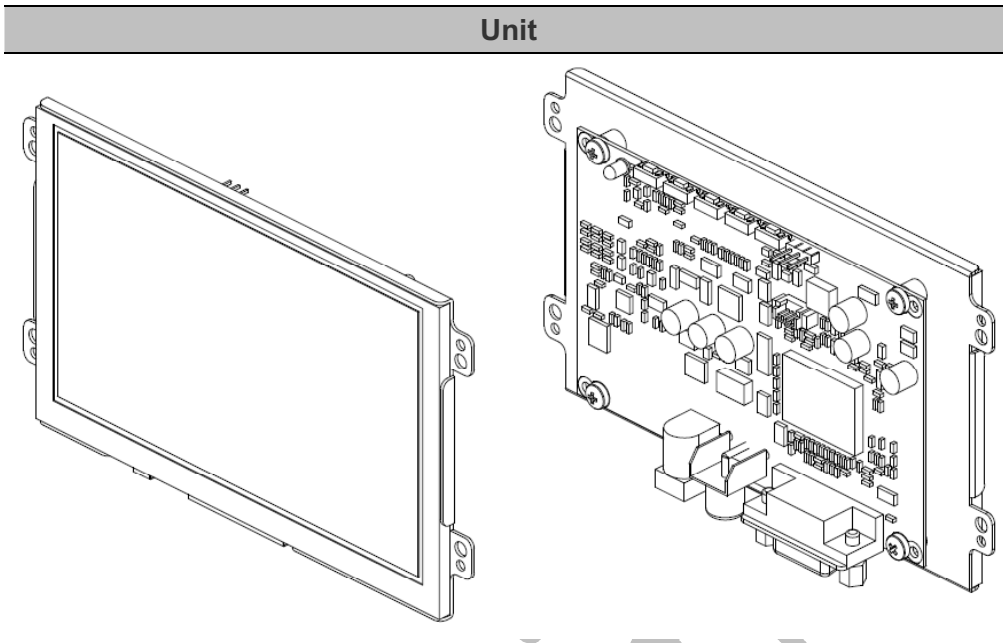
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5. Order Information

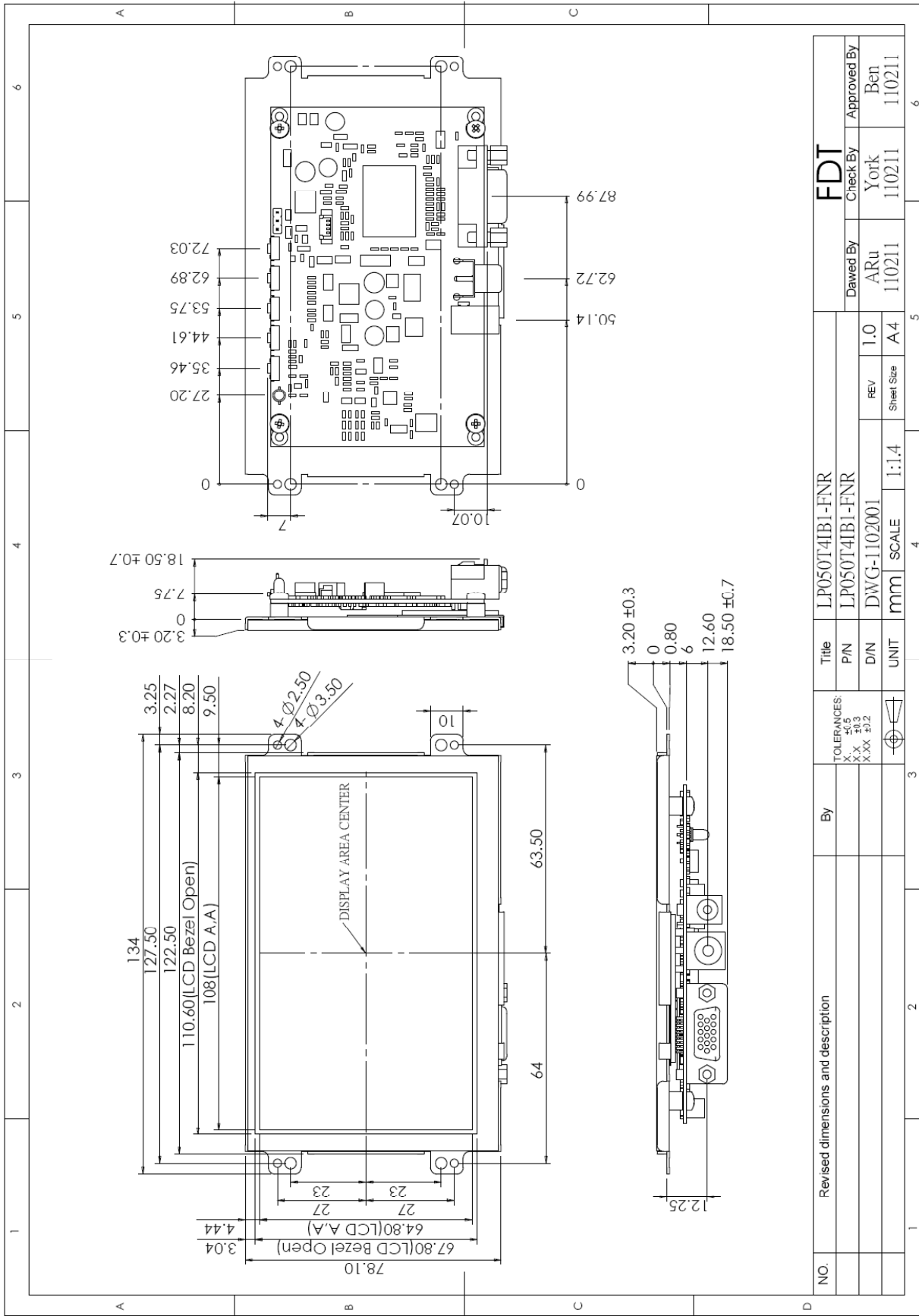
5.1 Unit



Parameter	LP050T4IB1-FBR	LP050T4IB1-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)	⊙	-	

6. Dimension Information

6.1 Unit



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7. Pin Description

7.1 J301 : CMI Panel I/O Terminals (FPC 40 Pin Pitch 0.5mm UP Contact Type)

Pin No	Symbol	I/O	Description	Remark
1	VLED-	P	Power for LED backlight cathode	
2	VLED+	P	Power for LED backlight anode	
3	GND	P	Power ground	
4	VDD	P	Power voltage	
5	R0	I	Red data (LSB)	
6	R1	I	Red data	
7	R2	I	Red data	
8	R3	I	Red data	
9	R4	I	Red data	
10	R5	I	Red data	
11	R6	I	Red data	
12	R7	I	Red data (MSB)	
13	G0	I	Green data (LSB)	
14	G1	I	Green data	
15	G2	I	Green data	
16	G3	I	Green data	
17	G4	I	Green data	
18	G5	I	Green data	
19	G6	I	Green data	
20	G7	I	Green data (MSB)	
21	B0	I	Blue data (LSB)	
22	B1	I	Blue data	
23	B2	I	Blue data	
24	B3	I	Blue data	
25	B4	I	Blue data	
26	B5	I	Blue data	
27	B6	I	Blue data	
28	B7	I	Blue data (MSB)	
29	GND	P	Power ground	
30	CLK	I	Pixel clock	
31	DISP	I	Display on/off	
32	HSYNC	I	Horizontal sync signal	
33	VSYNC	I	Vertical sync signal	
34	DE	I	Data Enable	
35	NC	-	No connection	
36	GND	P	Power ground	
37	NC	-	No connection	
38	NC	-	No connection	
39	NC	-	No connection	
40	NC	-	No connection	

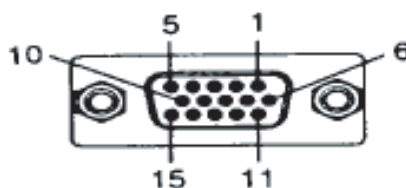
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7.2 J101B : Pin Assignment of Analog RGB Input (D-Sub 15Pin)

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	



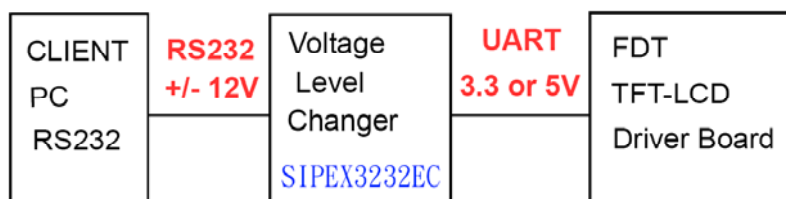
7.3 J104: Pin Assignment of UART (Pitch 1.25mm 4Pin, Top Entry Type)

※ 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	+3.3VA	O	+3.3V Output Voltage	

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



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7.4 DC JACK: Pin Assignment of Power Input (Inside Diameter:2.1 ϕ Outside Diameter:5.5 ϕ Side 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	

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	@75 Ω
Analog RGB Input Signal	Analog RGB in	0.5	2.0	Vp-p	@75 Ω
Digital Input Signal	TTL	+0.3	+3.6	V	
Operating Temperature		-20	+60	$^{\circ}$ C	
Storage Temperature		-20	+70	$^{\circ}$ C	

9. Recommended Operating Conditions

9.1 Electrical Characteristics

Parameter	Symbol	I/O	Min	Typ	Max	Unit	Note
Input Voltage	V _{in}	I	+10	+12	+14	V	
Total Current	I _{in}	I		213		mA	
Power Consumption		I		2.6		W	@+12V
Output Voltage	VDD	O	+3.2	+3.3	+3.4	V	I=10mA
Video Input Signal	Video in	I		1.0		V _{p-p}	@75Ω
Analog RGB Input Signal	Analog RGB in	RGB	I	0.7		V _{p-p}	@75Ω

9.2 VGA Mode Characteristics

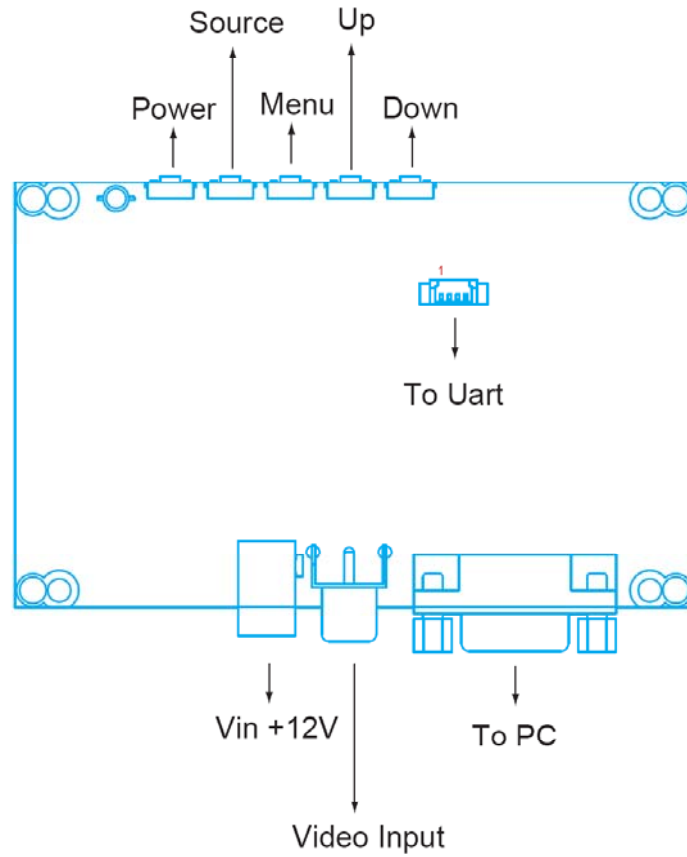
Dots per inch	H	Unit	Polarity	V	Unit	Polarity	Note
640*480	31.469	KHz	Negative	59.941	Hz	Negative	
800*600	37.879	KHz	Positive	60.317	Hz	Positive	
1024*768	48.363	KHz	Negative	60.004	Hz	Negative	

9.3 Panel Backlight Data

Parameter	Symbol	Min	Typ	Max	Unit	Note
LED Backlight Voltage	VLED	19.6	21.7	23.8	V _{rms}	
LED Backlight Current	ILED	36	40	44	mA	

10. Operation Manual

10.1 Driver Board Manual



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11. 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



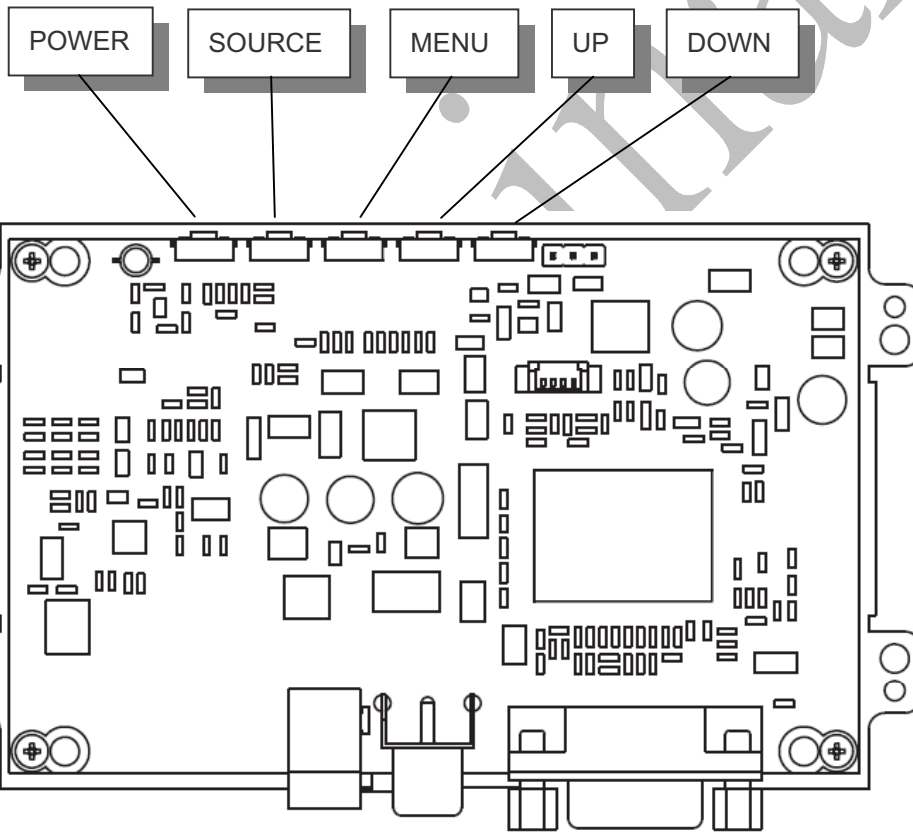
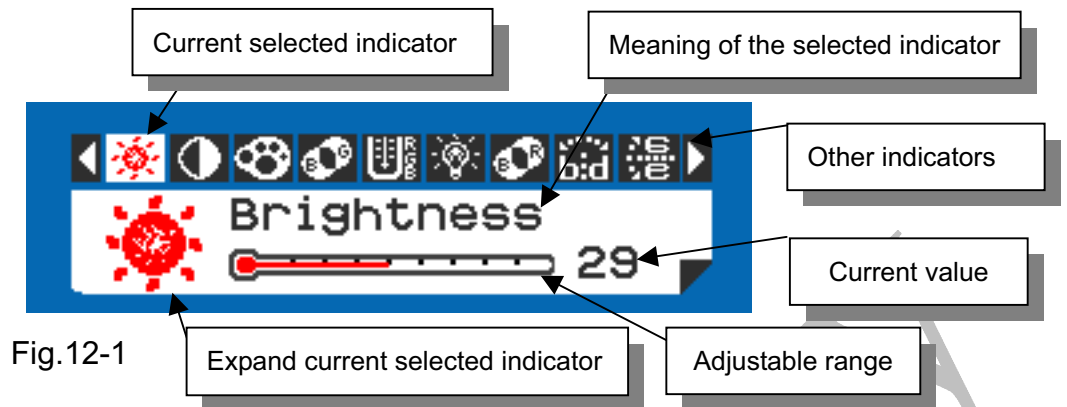
D. LAVGA16000-FDR

- 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)

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

12. Key Function by OSD

12.1 Menu Operation



Operations of key board :

1. To navigate the menu, press [MENU]. (Fig.12-1)
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	
	H-Position	-25 ~ +25	AV / VGA	Balance-Bar
	V-Position	-10 ~ +10	AV / VGA	Balance-Bar
	Auto		VGA	
	Scale	Full / 4:3	AV / VGA	
	Display mode	800x600/800x480	VGA	
	Scan	Over Scan / Under Scan	AV	
	Information		AV / VGA	Fig.12-2
	Setup		AV / VGA	Fig.12-3
	Factory Set		AV / VGA	
	Exit		AV / VGA	

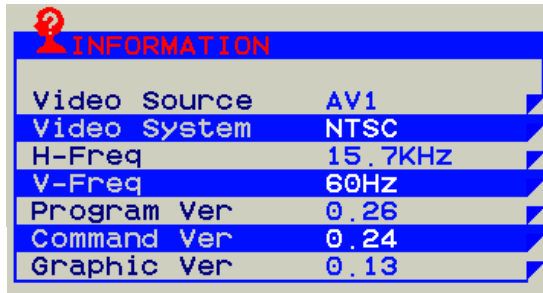


Fig.12-2

Setup Menu :



Fig.12-3

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.

12.2 Operations

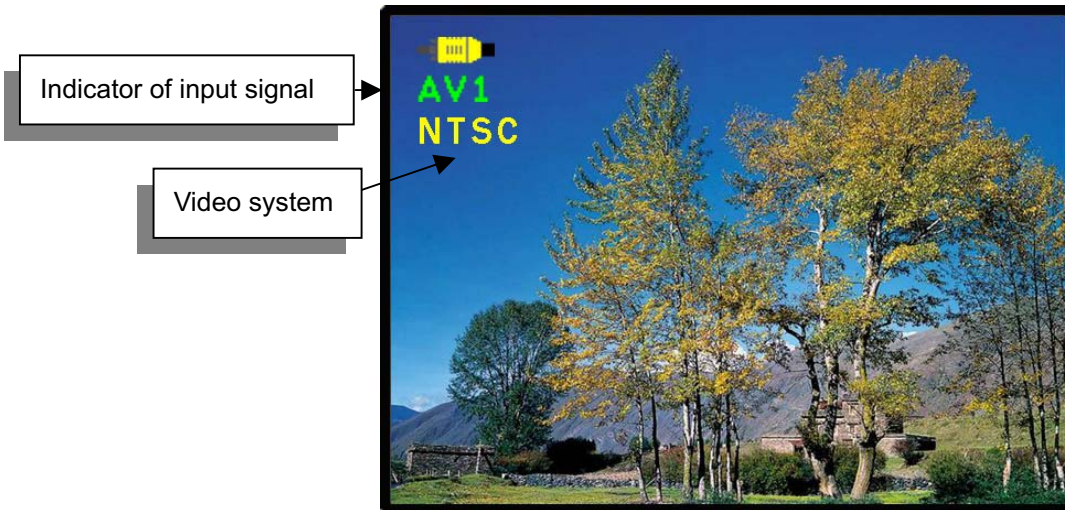




Fig.12-4

[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