MULTI-INNO TECHNOLOGY CO., LTD.

DRIVING BOARD SPECIFICATION

MI703N1

Revision	1.1
Engineering	
Date	
Our Reference	

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CATALOGUE

Modification note

Version	Issue date	Modification content	Note
V1.1	2011.07.01	the 1st version	

1. Application

This driving board fit forthe followingTFT Modules(30*2PIN:MI0700LT-1,MI0700LT-3,MI0700QT,MI0800CT . MI1020BT-1,MI1020AT,MI1020AT-1,50PIN:MI0700ST,MI0800FT.

2. Function description

2.1 VGA ,CVBS1,CVBS2,(optional)input;

2.2 Power input: DC +12V

2.3 Multi-function (5Key) OSD operation

2.4 Remote control (optional)

3. Input sinal

3.1 CVBS: 1.0Vp-p75Ω

3.2 VGA: 800*600 640*480 1024*768 (refresh fre. 60～70Hz) 800*480(refresh fre. 60Hz)

4. Operation environment

4.1 Temperature: -10℃～+60℃

4.2 Humidity:</= 90%RH (without water condensation)

5. Storage environment

5.1 Temperature: -20℃～+70℃

5.2 Humidity: 90%RH (without water condensation)

6. Operation power supply

(Ta=25℃)

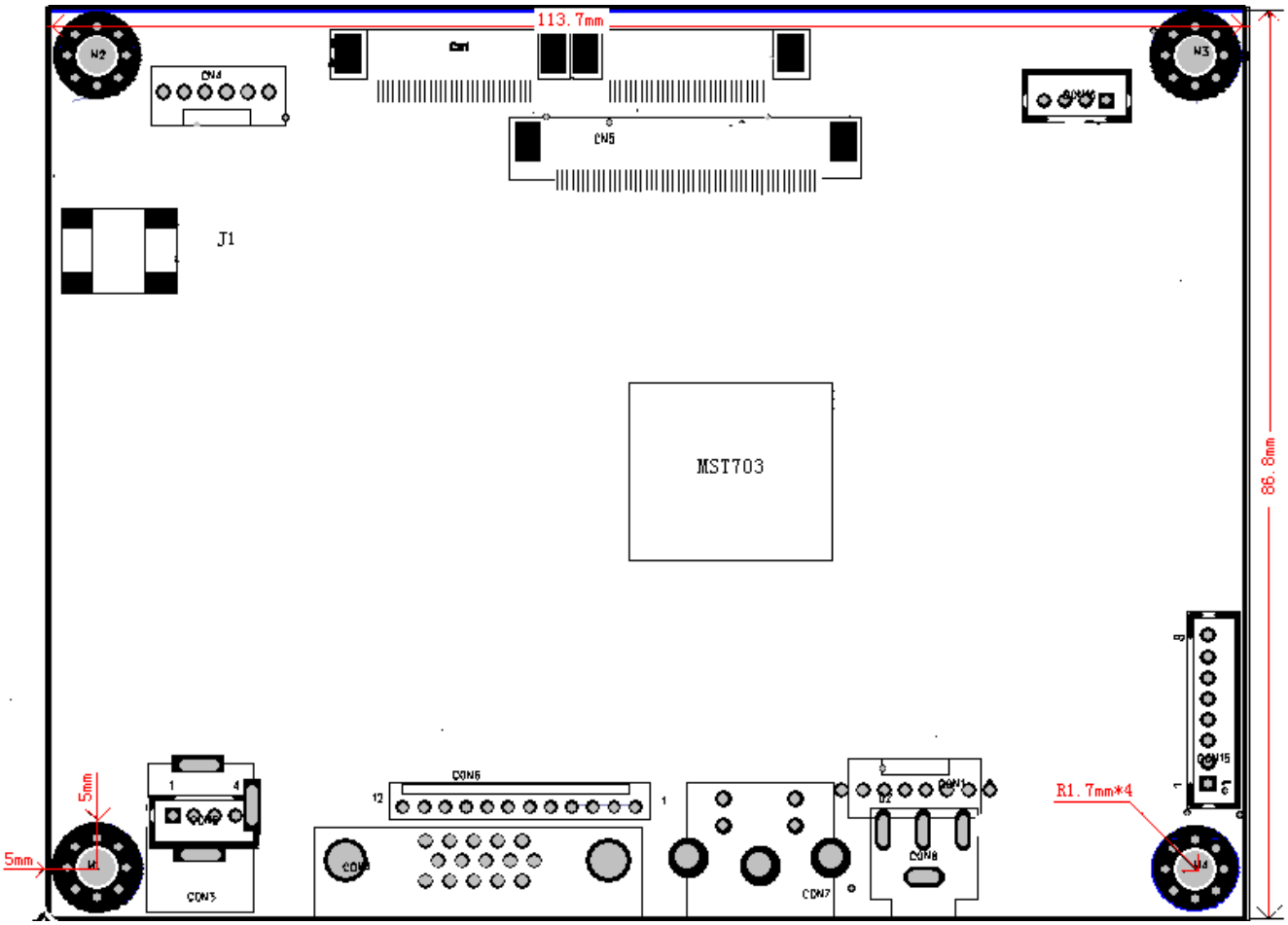
Item	Min.	Typ.	Max.	Unit
Operating voltage	10.5	+12	13.5	V
Operating current	270	230	200	mA

7. Product specification

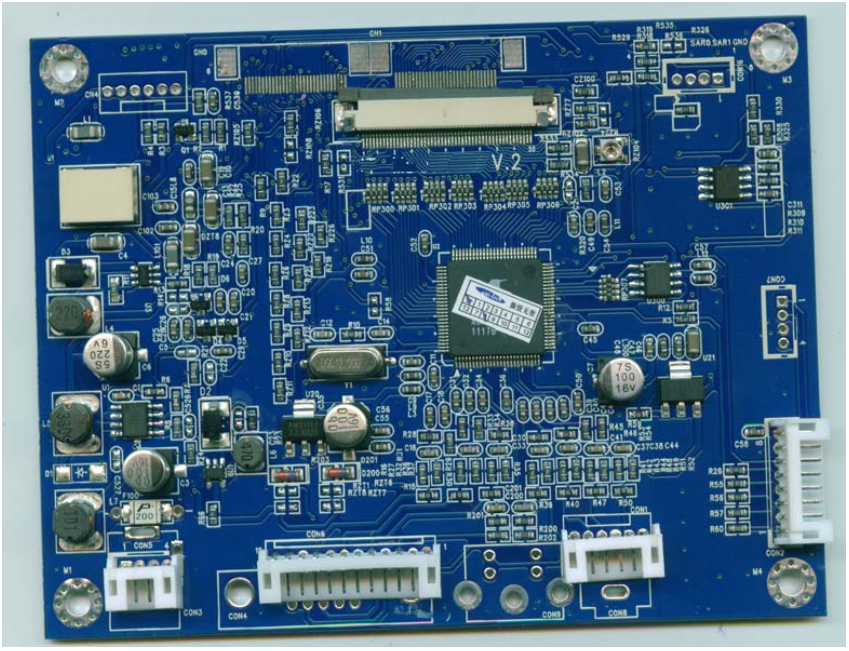
7.1 Main components

No.	Component	Part-no	Manufacturer	Qty	Note
1	IC	MST703	Mstar	1PCS	U2
		PM25LV010		1PCS	U301
2	Oscillator	12.000MHz	鸿康/柯茨	1PCS	Y1

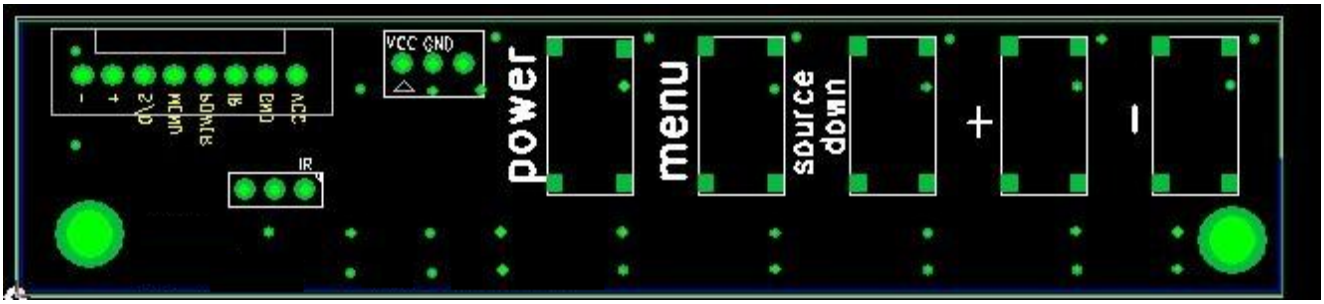
7.2 Structure size (Unit:mm)



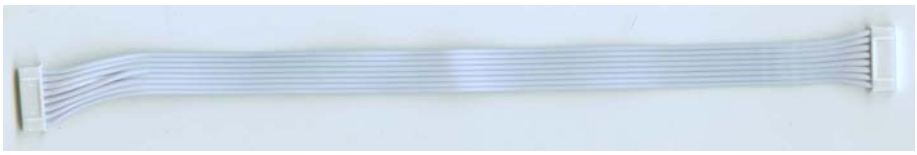
Length = 113.7
Wide = 86.8m



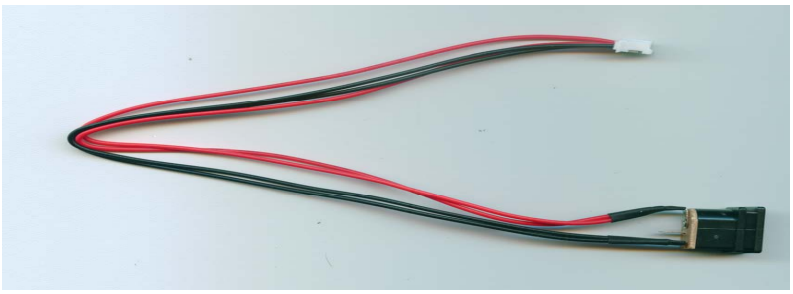
Key size



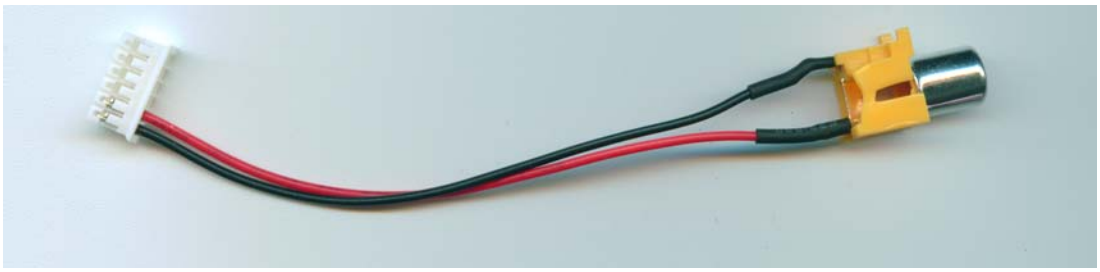
Length = 81.9mm
Wide =17.2



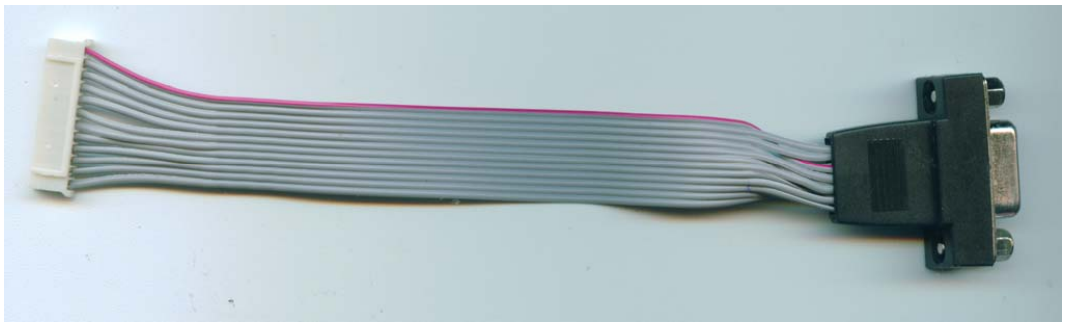
Key line



Power line



AV line



VGA line

7.3 Interface definition

CON1(Signal input) 6PIN/2.0		
Pin	Define	Description
1	C+	S-Video
2	Y+	S-Video
3	CVBS2	AV source
4	GND	Ground
5	CVBS1	AV source
6	GND	Ground

CON6(VGA input) 12PIN/2.0

Pin	Define	Description
1	GND	Ground
2	VS	VSYNC signal
3	HS	HSYNC signal
4	GND	Ground
5	R+	Red signal +
6	GND	Red signal ground
7	G+	Green signal +
8	GND	Green signal ground
9	B+	Blue signal +
10	GND	Blue signal ground
11	NC	
12	NC	

CN4 （INVERTER control）6PIN/2.0

Pin	Define	Description
1	VCC_12V	INVERTER Power 12V
2	VCC_12V	INVERTER Power 12V
3	On/off	Backlight voltage switch
4	+5V	+5V
5	GND	Ground
6	GND	Ground

CON15(Keyboard define) 8PIN/2.0

Pin	Define	Description
1	KEY5	MENU
2	KEY4	RIGH
3	KEY3	LEFT
4	KEY2	SOURCE/UP
5	KEY1	POWER
6	IR	Infrared Ray interface

7	GND	Ground
8	VCC	3.3V

CON5 （Power）4PIN/2.0

Pin	Define	Description
1	+12V	Power supply
2	+12V	Power supply
3	GND	Ground
4	GND	Ground

CON16 （Debug） 4PIN/2.0

Pin	Define	Description
1	+5V	Debug power
2	GND	Ground
3	TX	Transmit
4	RX	Receive

1 （背光接口）2PIN 窄口高压座

Pin	Define	Description
1	LED+	LED anode
2	LED-	LED cathode

CN1 (FPC interface define） 30PIN*2/ 0.5

Pin	Define	Description
1	POL	Polarity Selection
2	STVD	Vertical start
3	OEV	Output enable
4	CKV	Vertical clock

5	STVU	Vertical start
6	GND	Power ground
7	EDGSL	Select rising
8	V_{CC}	Power supply
9	V9	Gamma voltage
10	V_{GL}	Gate OFF
11	V2	Gamma voltage
12	V_{GH}	Gate ON
13	V6	Gamma voltage
14	U/D	Up/down selection
15	V_{COM}	Common voltage
16	GND	Power ground
17	AV_{DD}	Power supply
18	V14	Gamma voltage
19	V11	Gamma voltage
20	V8	Gamma voltage
21	V5	Gamma voltage
22	V3	Gamma voltage
23	GND	Power ground
24	R5	Red data(MSB)
25	R4	Red data
26	R3	Red data
27	R2	Red data
28	R1	Red data
29	R0	Red data(LSB)
30	GND	Power ground
31	GND	Power ground
32	G5	Green data(MSB)
33	G4	Green data
34	G3	Green data
35	G2	Green data
36	G1	Green data
37	G0	Green data(LSB)
38	STHL	Horizontal start
39	INV	Control signal
40	GND	Power ground
41	DCLK	Sample clock
42	V_{CC}	Voltage for digital circuit
43	STHR	Horizontal start pulse input when R/L = L
44	LD	Latches the polarity of outputs and switches the new data to outputs
45	B5	Blue data (MSB)
46	B4	Blue data
47	B3	Blue data
48	B2	Blue data
49	B1	Blue data
50	B0	Blue data
51	R/L	Right/left
52	V1	Gamma voltage

53	V4	Gamma voltage
54	V7	Gamma voltage
55	V10	Gamma voltage
56	V12	Gamma voltage
57	V13	Gamma voltage
58	AV_{DD}	Voltage for analog circuit
59	GND	Power ground
60	V_{COM}	Commonvoltage

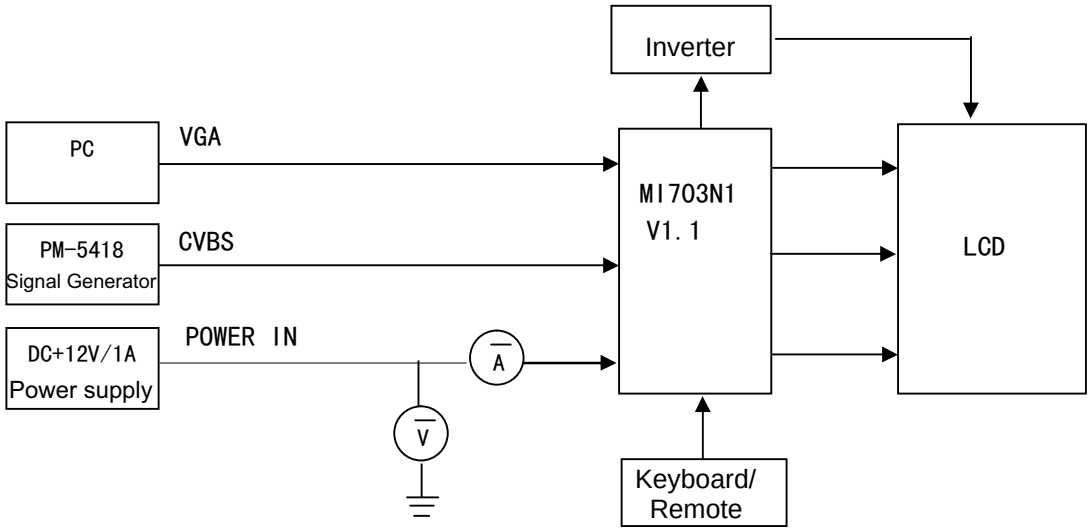
CN5(FPC 座定义) 50PIN/ 0.5

Pin	Define	Description
1	NC	No connection
2	NC	No connection
3	NC	No connection
4	NC	No connection
5	GND	Power ground
6	V_{COM}	Commont voltage
7	V_{CC}	Power for Digital circuit
8	MODE	DE/SYNC mode select
9	DE	Data input Enable
10	VS	Vertical Sync input
11	HS	Horizonal Sync input
12	B_7	Blue data(MSB)
13	B_6	Blue data
14	B_5	Blue data
15	B_4	Blue data
16	B_3	Blue data
17	B_2	Blue data
18	B_1	Blue data
19	B_0	Blue data (LSB)
20	G_7	Green data(MSB)
21	G_6	Green data
22	G_5	Green data
23	G_4	Green data
24	G_3	Green data
25	G_2	Green data
26	G_1	Green data
27	G_0	Green data(LSB)
28	R_7	Red data (MSB)
29	R_6	Red data
30	R_5	Red data
31	R_4	Red data
32	R_3	Red data
33	R_2	Red data
34	R_1	Red data
35	R_0	Red data(LSB)
36	GND	Power ground
37	DCLK	Sample clock
38	GND	Power ground
39	L/R	Right/left selection

40	U/D	Up/down analog selection
41	V_{GH}	Gate ON voltage
42	V_{GL}	Gate OFF voltage
43	AV_{DD}	Power ground
44	RESET	Global reset pin
45	NC	No connection
46	V_{COM}	Common voltage
47	DITHB	Dithering function
48	GND	Power ground
49	NC	No connection
50	NC	No connection

8. Power supply

8.1 Testing structure



9. Electric parameters

9.1 Power consumption

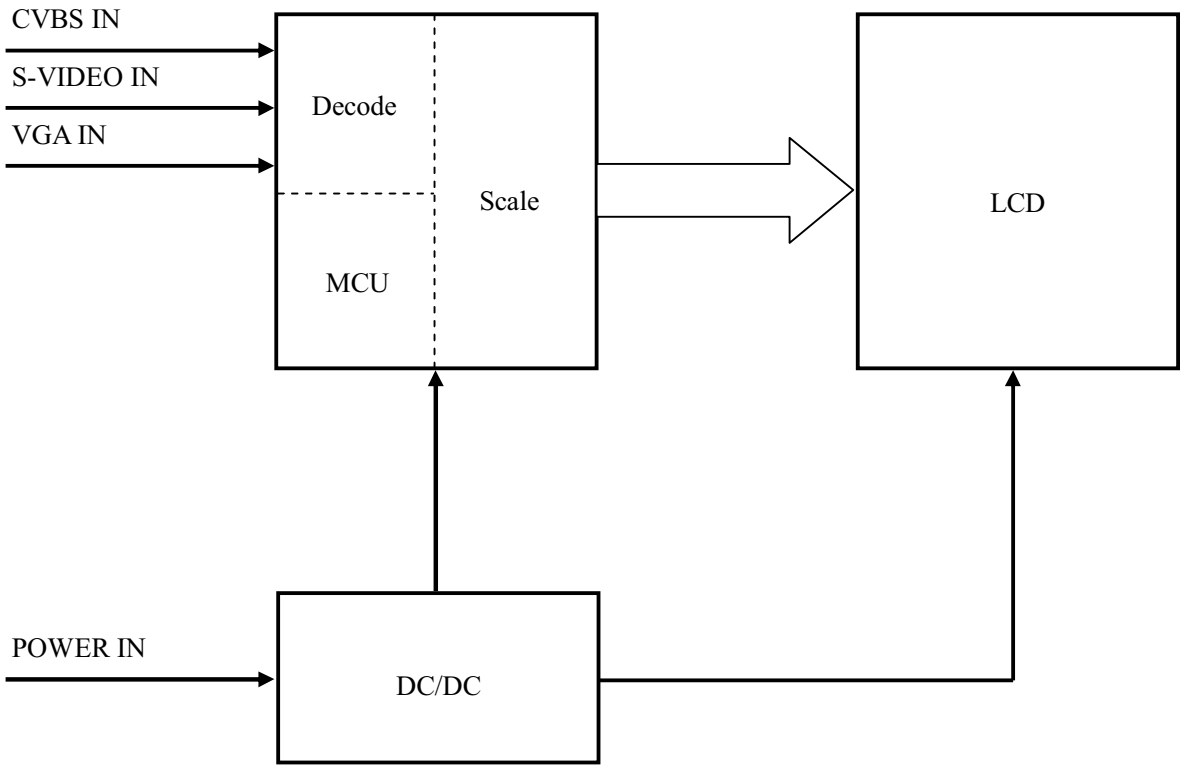
(Ta=25 ℃)

Input voltage (V_{IN})	Input current (I_{IN})				Remark
	Min.	Typ.	Max.	Unit	
+12V	200	230	270	mA	

10. LCD specification

Please refer to the specification of the modules.

11. Electric circuit



12. Basic operation notes

12.1 Button function:

5 buttons including POWER,MENU,SOURCE/UP,LEFT,RIGHT.

12.1.1 Button definition:

POWER: for power on and off by pressing it.

SOURCE/UP: as source switch when without OSD menu, as UP button when with OSD menu

MENU: main menu items switching, the sequence is:PICTURE,OPTION,SYSTEM,CLOCK,QUIT.

LEFT: when without any displayed menu windows, for volume reducing;when with menu windows,for data reducing.

RIGHT:when without any displayed menu windows, for volume increasing;when with menu windows,for data increasing.

12.1.2 Under AV/S-VIDEO state, the definition of menu:

The menu includes PICTURE、AUDIO、FUNCTION、SYSTEM 4 windows.

The functions of each window:

PICTURE

BRIGHTNESS：adjust the pictures brightness;

CONTRAST：adjust the pictures contrast;

COLOR： adjust the shade of pictures color;

ENGLISH； Switch different languages.

OPTION

NORMAL：pictures turn up and down

SYSTEM

AV；switching between AV and VGA

CLOCK

SLEEP； sleeping off

TIME；clock

OFF-TIME；the time for power off

ON-TIME；the time for power on

12.1.3 Under VGA state the definition of menu：

The menu includes PICTURE、AUDIO、FUNCTION、SYSTEM 4 windows.

The functions of each window：

PICTURE

BRIGHTNESS： adjust the pictures brightness;

CONTRAST： adjust the pictures contrast;

ENGLISH； Switch between different languages.

OPTION

NORMAL：pictures turn up and down

HPOSITION；picture correction in horizontal direction

VPOSITION；picture correction in vertical direction

AUTO；picture automatic correction in horizontal and vertical directions

SYSTEM

VGA；switching between AV and VGA

CLOCK

SLEEP： sleeping off

TIME；clock

OFF-TIME；the time for power off

ON-TIME；the time for power on

12.1.4 Operation explanation：

To press MENU having windows displayed,pressing SOURCE/UP to choose each item,the selected item shows red; then pressing LEFT or RIGHT to adjust the parameters of selected item.

In window of PICTURE,selecting brightness, shade of color,contrast, pressing LEFT or RIGHT to adjust them in 100 grades.

In window of OPTION,adjusting NORMAL and UP or HPOSITION,VPOSITION,AUTO(these 3 ones only valid under VGA. state) by LEFT or RIGHT.

In window of SYSTEM (only valid under AV/S-VIDEO state), switching AV and VGA modes by LEFT or RIGHT BUTTON.

12.2 Remote-control operation :

Remote-control includes POWER,MENU,LEFT,RIGHT,UP,DOWN 6 buttons,their operation is the same as for buttons.

13. Inspection facility

13.1 PHILIPS PM-5418TD Video signal generator ;

13.2 PS-305D DC Power supply ;

13.3 Fluke 45 multimeter;

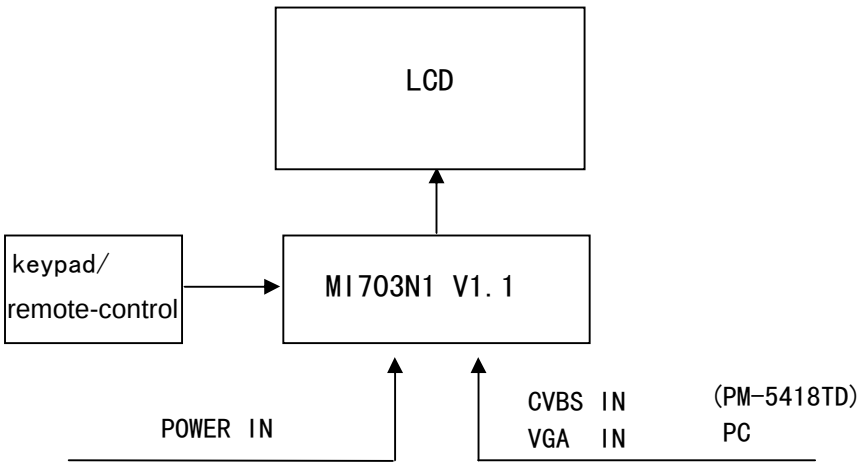
13.4 Lecroy Wave Surfer 454/Tektronix TDS 1012 oscillograph;

13.5 cold and hot temperatures alternating

14. Function test(Ta=25℃)

14.1 Display test under CVBS input

14.1.1 Connect the tested PCB



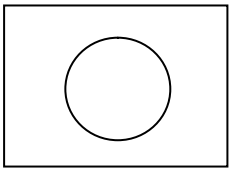
14.1.2 Input power and CVBS, check the display

14.1.3 Switch to CVBS input

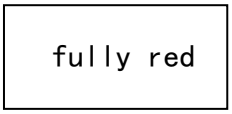
14.1.4 Selecting grey-scale output from PM5418TD, the display shows grey strips.

14.1.5 Selecting color strips output from PM5418TD, the display shows 8 colors strips.

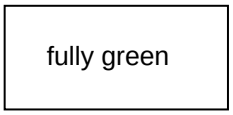
14.1.6 Selecting electric circle output from PM5418TD, the display shows picture below



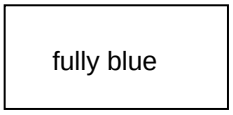
14.1.7 Selecting red output from PM5418TD, the display shows red in full screen



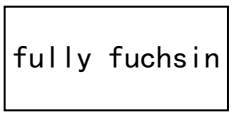
14.1.7 Selecting green output from PM5418TD, the display shows green in full screen



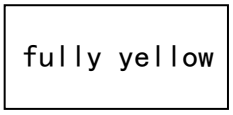
14.1.8 Selecting blue output from PM5418TD, the display shows blue in full screen



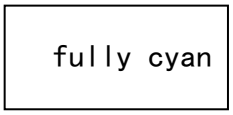
14.1.9 Selecting fuchsin output from PM5418TD, the display shows fuchsin in full screen



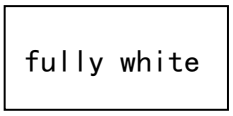
14.1.10 Selecting yellow output from PM5418TD, the display shows yellow in full screen



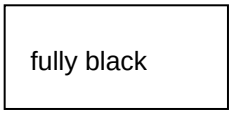
14.1.11 Selecting cyan output from PM5418TD, the display shows cyan in full screen



14.1.12 Selecting white output from PM5418TD, the display shows white in full screen



14.1.13 Selecting black output from PM5418TD, the display shows black in full screen



14.2 Display test under VGA input

Switch to VGA input, connect with PC, refer to 14.1 for all tests.

15. Reliability Test Items

Item		Test condition	Quantity	Criteria
Storage environment Test	High Temperature	+70℃ 96Hr	2	operating ok at room temperature
	Low Temperature	−20℃ 96Hr	2	
Operating environment Test	High Temperature	+60℃ 96Hr	2	OK
	Low Temperature	−10℃ 96Hr	2	
Turn On at low temperature		Storage at -20℃ 40min → turn on 2Hour → turn on 4times (1taim/5min) 2Hour → turn on 4times (1taim/5min) 4Hour → turn on	2	
Thermal Shock		-20℃ 30min→ 25℃ 30min→ 60℃ operating 30 cycles.	2	
Operate at High Temperature and Humidity		+60℃ 90%RH operating 240 hours.	2	

Notes:

1. test at the enviroment no dew
2. After test,must storage at least 24hours in oven,at room temperature and humidity.

16. Delivery inspection criterion

NO.	Item	Method	Sampling Criteria	Criteria
1	Electrical characteristic	GB2828-2003	II	Serious Defects: CR=0
2	Demension			Major Defects: AQL=0.65
3	Appearance / Package			Minor Defects: AQL=1.0

16. Drawing