Flat Panel TV Control Board Specification

Customer：

Product Type： ND-LA.MV9.P

Applicable Size： 26 "or less

Date Issued： 2013-01-17

Approved By Customer		
Confirmed	Approved	Signature

Electrical Specification					
History					
REV.	Description	Date	Drafter	Checked	Approved
1.0	INITIAL ISSUE	JAN 17.2012			

CONTENT

1. General Description

ND-LA.MV9.P* is a flat panel TV control board designed for Asia-Pacific Market , the board is excellent performance and mature. ND-LA.MV9.P' can support LCD and LED panel, maximum resolution supported is1920x 1080. It's apt to drive a LCD or LED panel smaller than 26' to get a cost-effective and high performance and popular flat panel analog TV set.

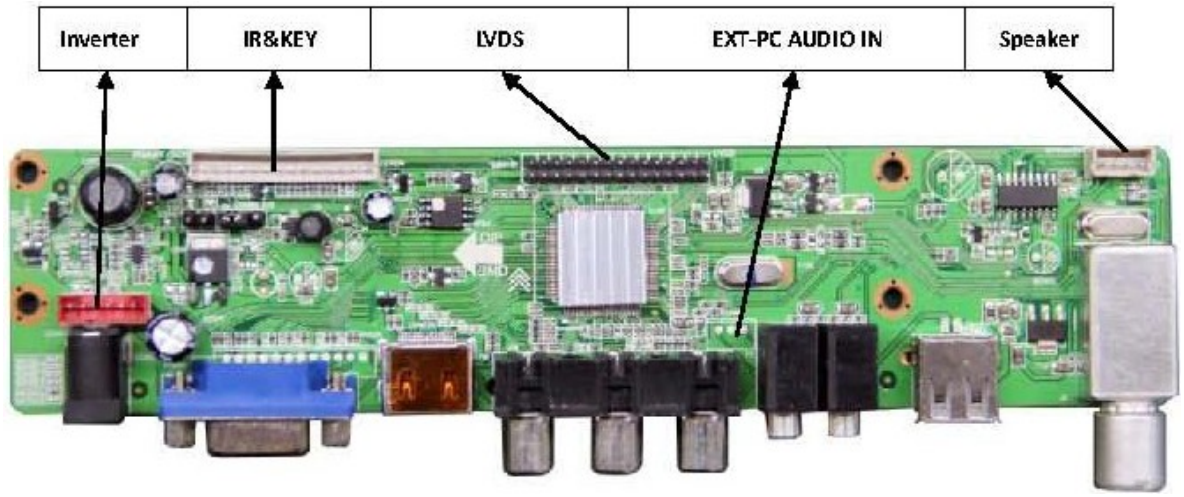
ND-LA.MV9.P*supports normal input type, such HDMI, USB, AV, VGA, ATV etc.

ND-LA.MV9.P*can support three main chips:TSUMV29，TSUMV39,TSUMV59 .W hen TSUMV29 IC is adopted, LA.MV9.P'has no multimedia function. When TSUMV39 IC is Adopted, it can play MP3 and image files through its USB slot. When TSUMV59 IC is adopted, ND-LA.MV9.P*has powerful multimedia play back capability can play most multimedia files through its USB Slot， include 1080P video files.

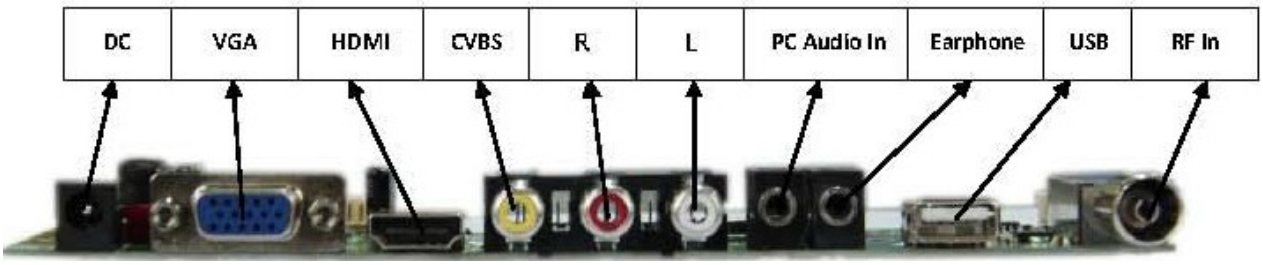
It's very easy to upgrade firmware by a USB disk for ND- LA.MV9.P*.

2. Product Photograph

Top View of LA.MV9.P*



Front View of LA.MV9.P*



3. Configuration & General Precautions

3.1 For safety Issue, please keep the board 8.0mm away from metal parts of the 1V at least.

3.2 A ESD shield bag is offered to protect the board from electrostatic or magnetic shock during delivery .But there is no metal case to ensure safety，so ESD handle is needed all time.

3.3 The brightness of panel is influence greatly by temperature. You must measure it in the same condition and wait until after power on10~30 minutes.

3 .4 Keep the board surface clean. Cheek appearance of the board to see if there are any issues that may cause failure or unreliability, such as dilapidate, weighty nick, etc.

3 .5 Keep the board away from conductor when it is working.

3.6 Don't press ,distort or disassemble the board.

3.7 Clean the board with soft dry cloth when it's dirty.

3.8 Don't wire in the board to power supply before panel is correctly connected.

4. Product Feature

Chipset	TSUMV29LU, TSUMV29LE TSUMV39LU, TSUMV39 LE TSUMV5 9XU(With Dolby) TSUMV5 9XU-Zl (Does not support Dolby) TSUMV5 9XE(With Teletext.NICAM and Dolby)		
Target Market	Asia		
OSD Language	Simple Chinese, Traditional Chinese, English, French, German , Italian, Spanish, Portuguese , Japanese, Korean		
Panel	Panel Type	LCD/LED	
	Panel Interface	Single/Double LVDS	
	Max Resolution	1920x1080	
TV INPUT	TV	Receive Range	48.25MHz -863.25MHz
		Input Impedance	750
		Color system	PAL/SECAM/NTSC
		Sound system	B/G, D/K, I, M/N
			NICAM/A2,BTSC
		Channels	200
		TELETEXT	V59: 1000 Pages V29: 10 Pages V39: 10 Pages
VIDEO INPUT	PC	Format	Max Resolution 1920 ×1080@60Hz
	AV	Color system	PAL/NTS C/SECAM

VIDEO INPUT	AV	Color System	
		Video Level	1.0Vp-p ±5%
	HDMI ,YPBPR	480i,480p,576i,576p,720p,10 80i,1080p	
Audio Input	PC	Input Level	0.22.o VRMS
	AV	Input Level	0.22.o VRMS
Audio Output	Frequency Response	100~Hz 15KHz±3dB(1KHz,0Db reference signal)	
	Max Output Power	2x2.3 W(40) 1HD+N<10%@1KHz	
Power	Power supply	12V	
	Panel Power	3.3V,5V, 2V	
	Power Management	standby Power Consumption <0.3W(Board Only)	
Comb Filter	20 (TSUMV29LE,TSU MV29LU) 30(TSUMV39LE,TSUMV39LU, TSUMV59XU,TSUMV59XU-Zl ,TSUMV59XE)		
De interlace	20 (TSUMV29LE,TSU MV29LU) 30(TSUMV39LE,TSU MV39LU, TSUMV59XU,TSUMV59XU-Zl ,TSUMV59XE)		

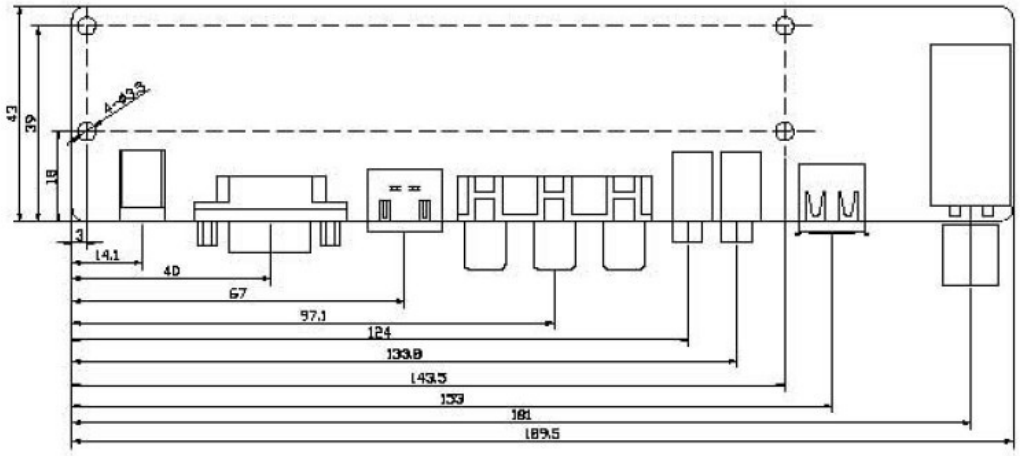
TSUMV59 USB MULTIMEDIA FORMAT

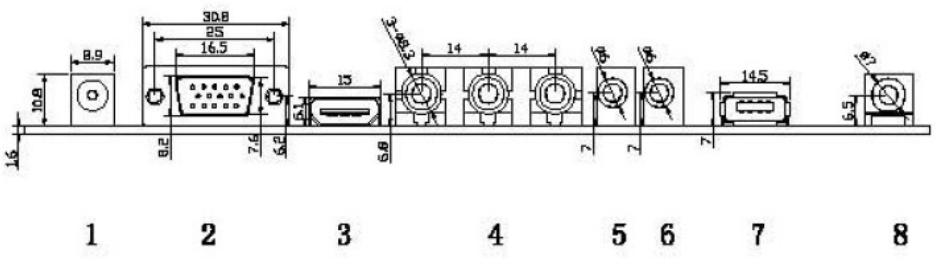
Media	File Ext.	Codec		Remark
		Video	Audio	
Movie	.AV1	MJPEG	P3, WMA, AAC, MP2, PCM, AC3	Max Resolution And Frame Rate: 640×480@30fps Max Data Rate: 10 Mbps
		Xvid.MPEG -2.MPEG-4.DivX.H.264		Max Resolution And Frame Rate: 1920x1080@30fbs Max Data Rate: 20 Mbps
	.MP4	MPEG-2, MPEG-4, DivX,H.264		
	.TS/.TRP	MPEG-2,H. 264		
	.MKV/MOV	MPEG-4,H.264		
	.MPG	MPEG-1, MPEG-2		
	.DAT	MPEG-1	MP2	Max Resolution: 352x288 Max Data Rate: 20 Mbps
	.VOB	MPEG-2		Max Resolution: 720x 576 Max Data Rate: 20 Mbps
	.RM/ .RMVB	VS, RV9, RVIO	COOK	Max Resolution And Frame Rate: 1280x720@30fbs Max Data Rate:10 Mbps
Music	.mp3		MP3	Sample Rate: 32K48KHzBit Rate: 128K32o Kbps Channel: Mono/stereo

	.wma		WMA	Bit Rate: 8K~48Kbps Sample Rate:l28K~320Kbps Channel: Mono/stereo
	.M4a/.acc		AAC	Sample Rate:8K~48KHz Bit Rate: 128K~442Kbps Channel: Mono/stereo
Photo	.jpg/ .Jpeg	Progressive JPEG		Max Resolution: 1024×768
		Baseline JPEG		Max Resolution: 15360×8640
	.bmp			Max Resolution: 9600 ×6400
	.PNG	Non-Interlaced		Max Resolution: 9600 ×6400
		Interlaced		Max Resolution: 1200 ×800
Text	.txt	ANSI/UNICODE GB/UTF8		File Size: Max 1MB

File system: Hi speed Fs, FAT32, FAT16, NTFS (NTFS compressed file is not supported).
Note:
1. Licenses involved in specifications above are supposed to be obtained by customers themselves, EG: AC3 and DIVX.
2. MP4 cannot support GMC.

5. PCB Dimension





No.	Description
1	DC
2	VGA
3	HDMI
4	AV IN
5	PC AUDIO
6	EARPHONE
7	USB
8	RF

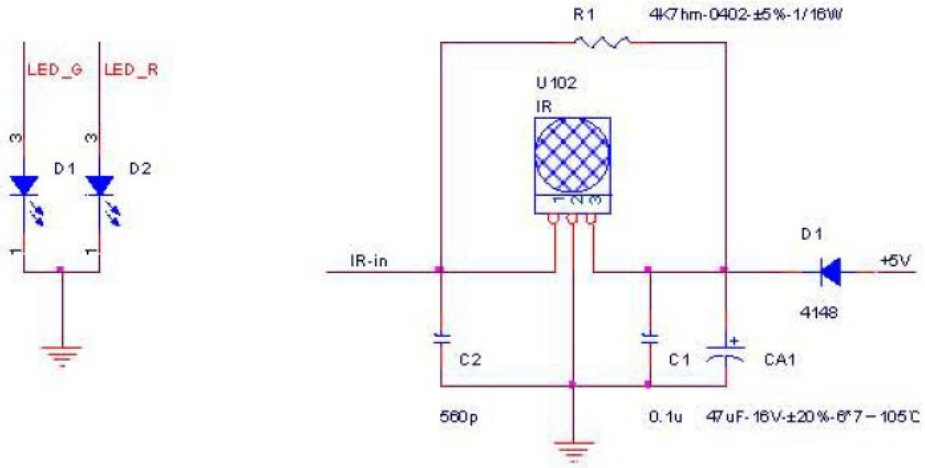
UINT：MM

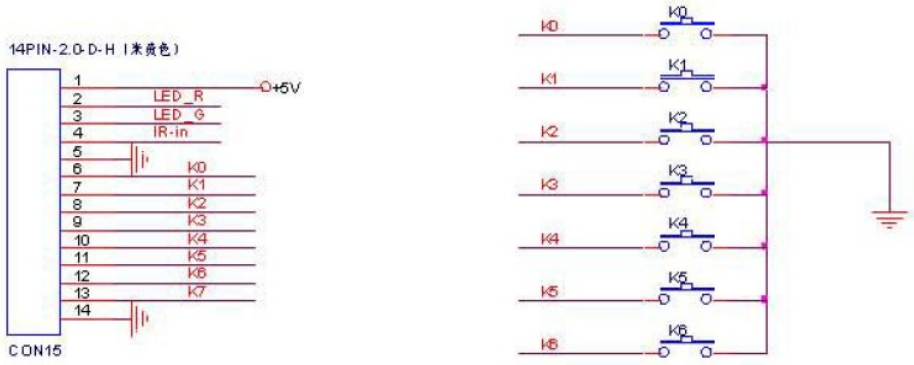
6. IR & Key Schematic

ND-LA.MV9.P* Supports keypad of 7 IO keys, but AISO supports keypad of 1AD input.

The LEDS (Green, Red) are Common cathode.

The following schematic is for reference only:





7. Interface definition

Note: The square pad is defined as N0.1

Definition of universal socket board is based on the socket opening inward, start Counting from left to right (except custom-type card)

7.1 Inverter (6PIN/2.0) Backlit Interface

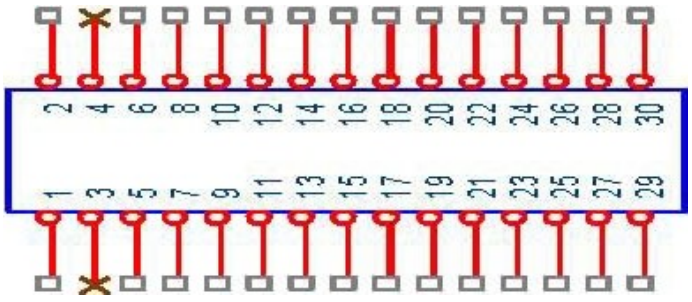
No.	Symbol	Description
1	+12V	+12V Power supply for Backlight
2	+12V	
3	BLON	Backlight On/OFF Control
4	ADJ	Brightness Adjust Voltage Signal
5	GND	Ground
6	GND	

7.2 IR and Key Board Connector (14PIN/2.0 ）

No.	Symbol	Description
1	+5V	+5V Power Supply for IR
2	IR-IN	IR Input
3	GND	Ground
4	K0	(By default) Power
5	LEDR	Red LED
6	GND	Green LED
7	GND	Ground
8	K1	(By default) Menu
9	K2	(By default) Input source
10	K3	(By default) VOL+
11	K4	(By default) VOL
12	KS	(By default) CH+
13	K6	(By default) CH
14	K7	(By default) Reserved

Note: If customers have special requirements for defined keys, the keys can be modified According to the actual needs of customers defined as POWER button pin defaults to KO.

7.3 LVDS Interface (2x15PIN/2.0)



No.	Symbol	Description
1	VSEL	Power Supply for Panel
2	VSEL	
3	NC	NC
4	NC	NC
5	GND	Ground
6	GND	
7	TXO0-	LVDS ODD 0- Signal
8	TXO0+	LVDS ODD O+ Signal
9	TXO1 -	LVDS ODD 1- Signal
10	TXO1+	LVDS ODD 1+ Signal
11	TX02-	LVDS ODD 2- Signal
12	TX02+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	TXOC-	LVDS ODD Clock- Signal
16	TXOC+	LVDS ODD Clock+ Signal
17	TX03-	LVDS ODD 3- Signal
18	TX03+	LVDS ODD 3 + Signal
19	TXE0	LVDS EVEN 0- Signal
20	TXE0+	LVDS EVEN 0 + Signal
21	TXE1-	LVDS EVEN 1- Signal
22	TXE1+	LVDS EVEN 1+ Signal
23	TXE2-	LVDS EVEN 2- Signal
24	TXE2+	LVDS EVEN 2+ Signal
25	GND	Ground
26	GND	
27	TXEC-	LVDS EVEN Clock- Signal
28	TXEC+	LVDS EVEN Clock Signal
29	TXE3 -	LVDS EVEN 3 - Signal
30	TEX3 +	LVDS EVEN 3 + Signal

7.4 EXT-PC AUDIO IN (3PIN/2.0）

No.	Symbol	Description
1	PC-R	PC Right Channel Input
2	GND	Ground
3	PC-L	PC Left Channel Input

7.5 Speaker (4PIN/2.0)

No.	Symbol	Description
1	LOUT+	Left Channel Output+
2	LOUT-	Left Channel Output
3	ROUT-	Right Channel Output
4	ROUT+	Right Channel Output+

7.6 VGA Connector

No.	Symbol	Description
1	GND	Ground
2	VS	Vertical Synchroniz Signal
3	HS	Horizontal Synchroniz Signal
4	GND	Ground
5	R	Red Signal Input
6	GND	Ground
7	G	Green Signal Input
8	GND	Ground
9	B	Blue Signal Input
10	GND	Ground
11	SDA	SDA
12	SCL	SCL

8. Environmental Characteristics

8.1 Temperature

Operating： 10% to +40 ℃ Store： -20℃to +70℃

8.2 Humidity

Operating ： 10% to 90% (non-condensing) Store ： 5% to 95% (non-condensing)

8.3 Altitude

Operating： 10,000 ft. (max) Store： 20,000 ft. (max)

8.4 High Temperature & Storage

Test method &condition Please Refer to GB2423.2” Test BD & BB”

8.5 Low Temperature & Storage

Test method &condition Please Refer to GB2423.1”Test Ad & AB”

8.6 Humidity &Temperature Test

Test method &condition Please Refer to GB2423.3” Test CA”&

GB2423.22”Test NB”。

8.7 Vibration Test

Test method &condition Please Refer to GB2423.10”Test FC”

8.8 Drop Test

Test method &condition Please refer to GB4857.5 Item 3.5.2 A

After ALL the test from item 8.4 to 8.8, the Product must be meet ALL

The Requirements on this Specification