

# **Multi-Purpose LCD TV Control Board Specification**

**Model: TSUX9 V2.0**

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# RECORD OF REVISIONS ( 修改记录 )

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## GENERAL DESCRIPTION ( 整体概述 )

**TSUX9 V2.0** is a multi-purpose LCD controller, it is suitable for the Asia market. It is designed to support FULL HD LCD panel.

**TSUX9 V2.0** 是一个多功能的 LCD 驱动板，适用于亚洲市场。可支持全高清液晶显示屏幕。）

**TSUX9 V2.0** Support PC - RGB, HDMI, AV, USB, YPBPR, PC - AUDIO input

**TSUX9 V2.0** 支持 PC-RGB, HDMI, AV, USB, YPBPR, PC-AUDIO 输入

**Note:** The specification of the board includes the description of all functions. Therefore, our clients can select the functions which they require to produce the board. But the specification can be introduced universally.

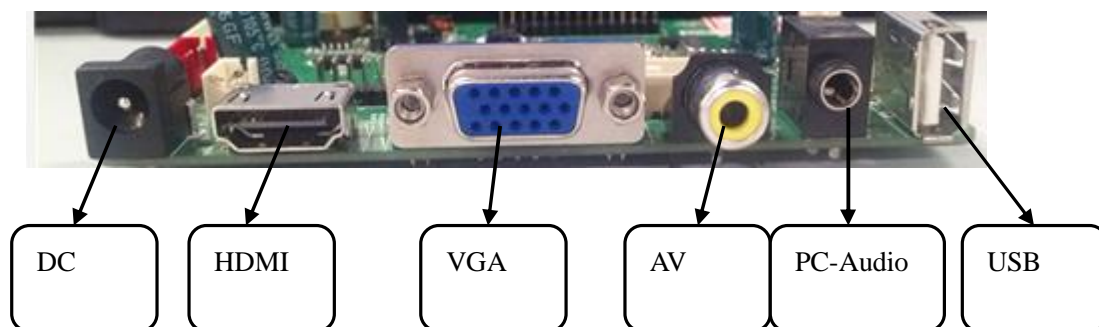
(注：此规格书为板卡全功能规格书，客户可以根据需要选择性的生产。此规格书具有通用性。)

## 2. FUNCTION LAYOUT ( 产品外观图 )

The following all pictures are a reference only. Please take the actual objects as a standard.

(以下图片仅供参考。请以实物为准。)

### Side Elevation of TSUX9 V2.0 ( 侧视图 )



### 3. FEATURES ( 产品特性 )

Below you will find the detailed feature. ( 以下是详细特性 )

<b>CHIPSET</b> ( 芯片 )	TSUMV59XU-Z1	Without TELETEXT/NICAM; Without Dolby(100 pin)		
	TSUMV59XC-Z1	Without TELETEXT/NICAM; Without Dolby(100 pin)		
	TSUMV29LU	Without TELETEXT/NICAM; With Dolby(100 pin)		
	TSUMV29LE	With TELETEXT/NICAM; With Dolby(100 pin)		
<b>MARKET AREA</b> ( 市场区域 )	Asia ( 亚洲 )			
<b>OSD LANGUAGE</b> ( 菜单语言 )	English ( 英文 ) ,Chinese ( 中文 ) , French ( 法语 ) ,Spanish ( 西班牙语 ) ,Polish ( 波兰语 ) ,Portuguese ( 葡萄牙语 ) ,Italian ( 意大利语 ) ,German ( 德语 ) ,Dutch ( 荷兰语 ) ,Russian ( 俄语 ) ( Option )			
<b>VIDEO INPUT</b> ( 视频输入 )	CVBS	1.0Vp-p +/-5%		
	YPbPr / YCbCr	480i、480p、576i、576p、720p、1080i、1080p		
	PC-RGB	Format ( 格式 )	Up to 1920*1080@60HZ	
		Color ( 颜色 )	16bit, 24bit, 32bit	
HDMI	480i、480p、576i、576p、720p、1080i、1080p			
<b>POWER</b> ( 功率 )	Build-in power supply ( 内置电源 )	12V (Option)		
	To panel ( 驱屏电压 )	3.3V,5V,12V		
	DC Adapter ( 直流适配器 )	12V Input		
	Management ( 电源管理 )	Low power consumable mode: standby≤0.5W ( 待机功耗 )		
<b>AUDIO INPUT</b> ( 音频输入 )	AV Audio Input	Left and right audio input ( 左右音频输入 )		
	PC-RGB/YUV	Pc: Earphone input		
<b>EXPANSION FUNCTION</b> ( 扩展功能 )	USB	YES		
<b>PANEL RESOLUTIONS</b> ( 屏分辨率 )	Support up to 8-bit dual LVDS FULL HD panel interface ( 最高可支持 8 位双 LVDS 全高清屏接口 )			
<b>KEY FUNCTIONS</b> ( 按键功能 )	CH-, CH+, MENU, VOL-, VOL+, AV/SEL, ON/OFF 频道-, 频道+, 菜单, 音量-, 音量+, 信号源, 开/关			
<b>AUDIO OUTPUT</b> ( 音频输出 )	2*2 W @ 8Ω			
<b>COMB FILTER</b>	3D,2D (V29)			

(梳状滤波功能)			
<b>DE-INTERLACE</b> (解交织功能)	3D,2D (V29)		
<b>WEAK SIGNAL ENHANCEMENT</b> (弱信号增强)	YES		
<b>NOISE REDUCTION</b> (降噪)	3D,2D (V29)		
<b>A2, BTSC</b> (立体声)	YES		
<b>TERMINALS</b> (端子)	Input (输入)	PC-RGB Audio Input	1 Earphone terminal black color (1 耳机端子, 黑色)
		PC-RGB Input	1 D-SUB 15PIN terminal blue color (1 D-SUB 端子, 15PIN, 蓝色)
		HDMI Input	1 HDMI terminal (1 HDMI 端子)
		CVBS Input	1 RCA terminal yellow color (1 RCA 端子, 黄色)
		USB	1 USB terminal (1 USB 端子)
	Output (输出)	To Panel	Double LVDS 30PIN/2.0 jack (双 LVDS 30PIN)
		Speaker Output	1 个 4PIN 喇叭接口

**USB MULTIMEDIA PLAYBACK FORMAT (USB 多媒体支持格式)**

Below USB functions are only applied to TSUV59. (以下 USB 功能仅用于 TSUV59)

<b>MEDIA</b> (媒体)	<b>FILE EXTENSION</b> (文件扩展名)	
Picture	JPEG、BMP、PNG	.jpg、.bmp、.png
Movie	MPEG1、MPEG2、MPEG4、H264、RM、RMVB、MOV、MJPEG、VC1、Divx、FLV	.avi、.mpg、.dat、.vob、.div、.mov、.mkv、.rm、.rmvb、.mp4、.mjpeg、.ts、.trp、.wmv、.asf、.flv
Music	WMA、MP3、M4A、AAC	.wma、.mp3、.m4a

<b>FILE TYPE\THE RELEVANT PARAMETERS</b> (文件类型/相关参数)	<b>RESOLUTION</b> (分辨率)	<b>COMPRESSION OPTION</b> (编码解码格式)	<b>SUPPORT BOUNDARIES</b> (支持范围)
		Progressive JPEG	Resolution Only

JPEG	15360*8640		Support 1024*768
		Baseline("standard")	Support
		Baseline Optimized	Support
BMP	9600*6400	homochromatism	Support
		16color	Support
		256color	Support
		16bit	Support
		24bit	Support
		32bit	Support
PNG	9600*6400	No interlacing	Support

**\*Realize that only when you gain the copyright of the corresponding USB functions, can the above-mentioned USB functions be used.**

(\*请注意只有获得相应的USB功能版权时,才可以使用上述USB功能。)

#### 4. INTERFACE DEFINITION ( 接口定义 )

##### CN2 (6PIN/2.0) INVERTER INTERFACE (背光接口)

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)	ELECTRIC CHARACTER (电气特性)
1	GND	Ground (地)	---
2	GND		
3	ADJ	Brightness adjustment (亮度调节)	0-5V adjustable (0-5V 调节)
4	N/F	Back-light ON/OFF control (背光开关控制)	5V , 1K ohm output impedance (5V, 1000 欧输出阻抗)
5	12V	+12V DC Power supply (+12V 直流供电)	Inverter Power Supply (背光供电)
6	12V		

##### CN3 (2\*15PIN/2.0) LVDS PANEL INTERFACE (LVDS 接口)

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	VCC	Power for panel(屏供电)
2	VCC	
3	VCC	
4	GND	Ground (地)
5	GND	

6	NC	NC
7	O0-	LVDS ODD 0- Signal (LVDS 奇数 0- 信号)
8	O0+	LVDS ODD 0+ Signal (LVDS 奇数 0+ 信号)
9	O1-	LVDS ODD 1- Signal (LVDS 奇数 1- 信号)
10	O1+	LVDS ODD 1+ Signal (LVDS 奇数 1+ 信号)
11	O2-	LVDS ODD 2- Signal (LVDS 奇数 2- 信号)
12	O2+	LVDS ODD 2+ Signal (LVDS 奇数 2+ 信号)
13	GND	Ground (地)
14	GND	
15	OC-	LVDS ODD Clock- Signal (LVDS 奇数 时钟- 信号)
16	OC+	LVDS ODD Clock+ Signal (LVDS 奇数 时钟+ 信号)
17	O3-	LVDS ODD 3- Signal (LVDS 奇数 3- 信号)
18	O3+	LVDS ODD 3+ Signal (LVDS 奇数 3+ 信号)
19	E0-	LVDS EVEN 0- Signal (LVDS 偶数 0- 信号)
20	E0+	LVDS EVEN 0+ Signal (LVDS 偶数 0+ 信号)
21	E1-	LVDS EVEN 1- Signal (LVDS 偶数 1- 信号)
22	E1+	LVDS EVEN 1+ Signal (LVDS 偶数 1+ 信号)
23	E2-	LVDS EVEN 2- Signal (LVDS 偶数 2- 信号)
24	E2+	LVDS EVEN 2+ Signal (LVDS 偶数 2+ 信号)
25	GND	Ground (地)
26	GND	
27	EC-	LVDS EVEN Clock- Signal (LVDS 偶数 时钟- 信号)
28	EC+	LVDS EVEN Clock+ Signal (LVDS 偶数 时钟+ 信号)
29	E3-	LVDS EVEN 3- Signal (LVDS 偶数 3- 信号)
30	E3+	LVDS EVEN 3+ Signal (LVDS 偶数 3+ 信号)

### CN16 (4PIN/2.54) SPEAKER INTERFACE (喇叭)

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	R	Right audio channel output (右声道音频输出)
2	GND	Ground (地)
3	GND	
4	L	Left audio channel output (左声道音频输出)

### CN19 (6PIN/2.0) AV INTERFACE (AV 接口)

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	AV1-V	AV1 (视频 1 信号输入)
2	GND	Ground (地)
3	AV2-V	AV2 (视频 2 信号输入)
4	GND	Ground (地)
5	AV3-V	AV3 (视频 3 信号输入)
6	GND	Ground (地)

**CN20 (6PIN/2.0) PC\_AUDIO AND AV\_AUDIO INTERFACE (PC\_Audio/ AV\_AUDIO 接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	AV1-L	AV1 LEFT AUDIO INPUT(AV1 左声道输入)
2	GND	Ground (地)
3	AV1-R	AV1 RIGHT AUDIO INPUT(AV1 右声道输入)
4	PC-LIN	PC LEFT AUDIO INPUT(电脑左声道输入)
5	GND	Ground (地)
6	PC-RIN	PC RIGHT AUDIO INPUT(电脑右声道输入)

**CN4(4PIN/2.0) 12V POWER (12V 电源)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	12V	+12V DC POWER SUPPLY(+12V 直流供电)
2	12V	+12V DC POWER SUPPLY(+12V 直流供电)
3	GND	Ground (地)
4	GND	Ground (地)

**CN12(2\*8PIN/2.0) HDMI INTERFACE (HDMI 接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	GND	Ground (地)
2	GND	Ground (地)
3	RX2N	HDMI1-RX2N Signal (差分数据 2-)
4	RX2P	HDMI1-RX2P Signal (差分数据 2+)
5	RX1N	HDMI1-RX1N Signal (差分数据 1-)
6	RX1P	HDMI1-RX1P Signal (差分数据 1+)
7	RX0N	HDMI1-RX0N Signal (差分数据 0-)
8	RX0P	HDMI1-RX0P Signal (差分数据 0+)
9	CKN	HDMI1-CLKN Signal (差分时钟-)
10	CKP	HDMI1-CLKP Signal (差分时钟+)
11	SCL	HDMI1-DDC-SCL Signal(IIC 时钟线)
12	CEG	CEC (消费类电子控制)
13	PLUG	HDMI1-HPD Signal(热插拔检测)
14	SDA	HDMI1-DDC-SDA Signal(IIC 数据线)
15	GND	Ground (地)
16	H5V	+5V DC POWER SUPPLY (+5V 直流供电)



**CN17(4PIN/2.0) I2C INTERFACE (I2C 接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	GND	Ground (地)
2	SDA	DATA OF I2C (I2C 数据线)
3	SCL	CLOCK OF I2C (I2C 时钟线)
4	3.3V_STB	+3.3V DC POWER SUPPLY (+3.3V 直流供电)

**CN21(6PIN/2.0) YPbPr INTERFACE (YPbPr 接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	GND	Ground (地)
2	Y1	Y1 OF YPbPr (亮度分量)
3	GND	Ground (地)
4	PB1	PB1 OF YPbPr (蓝色分量)
5	GND	Ground (地)
6	PR1	PR1 OF YPbPr (红色分量)

**CN13(12PIN/2.0) VGA INTERFACE (VGA 接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	RX	SCL/UART_RX (接受数据)
2	TX	SDA/UART_TX (发送数据)
3	GND	Ground (地)
4	B	BLUE IN(蓝色分量)
5	GND	Ground (地)
6	G	GREEN IN(绿色分量)
7	GND	Ground (地)
8	R	RED IN(红色分量)
9	GND	Ground (地)
10	HS	HORIZONTAL SYNC (行同步)
11	VS	VERTCAL SYNC (场同步)
12	GND	Ground (地)

**CN11(14PIN/2.0) KEY & IR BOARD INTERFACE (按键和遥控接口)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	GND	Ground (地)
2	NC	NO CONNECT(不连接)

3	EN	ON/OFF key (开关)
4	M	MENU key (菜单)
5	V-	VOL- Key (音量-)
6	V+	VOL+ Key (音量+)
7	C-	CH- key (频道-)
8	C+	CH+ Key(频道+)
9	S	SOURCE Key (信号源)
10	GND	Ground (地)
11	IR	Remote receiver (遥控信号输入端)
12	G	Green indicator (绿色指示器)
13	R	Red indicator (红色指示器)
14	VCC	+5V DC power supply (+5V 直流供电)

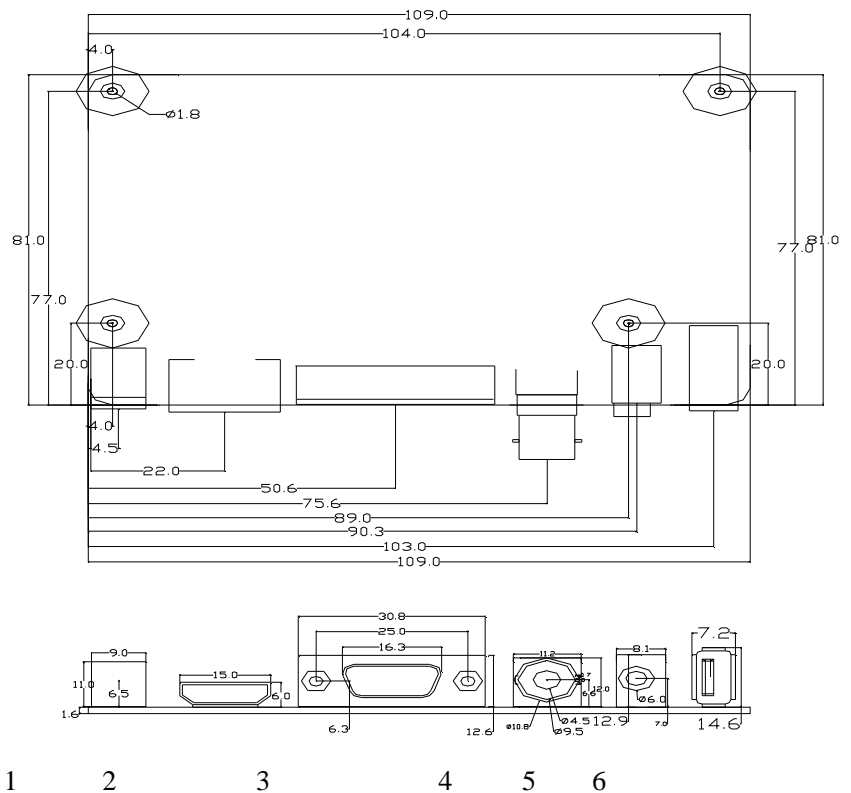
**CN6(4PIN/2.0) USB INTERFACE (外甩 USB 座子)**

NO. (管脚)	SYMBOL (板上丝印)	DESCRIPTION (描述)
1	+5V	+5V DC Power supply (+5V 直流供电)
2	D-	DATA - (数据-)
3	D+	DATA + (数据+)
4	GND	Ground (地)

**5. CONTROLLER DIMENSIONS (板卡结构图)**

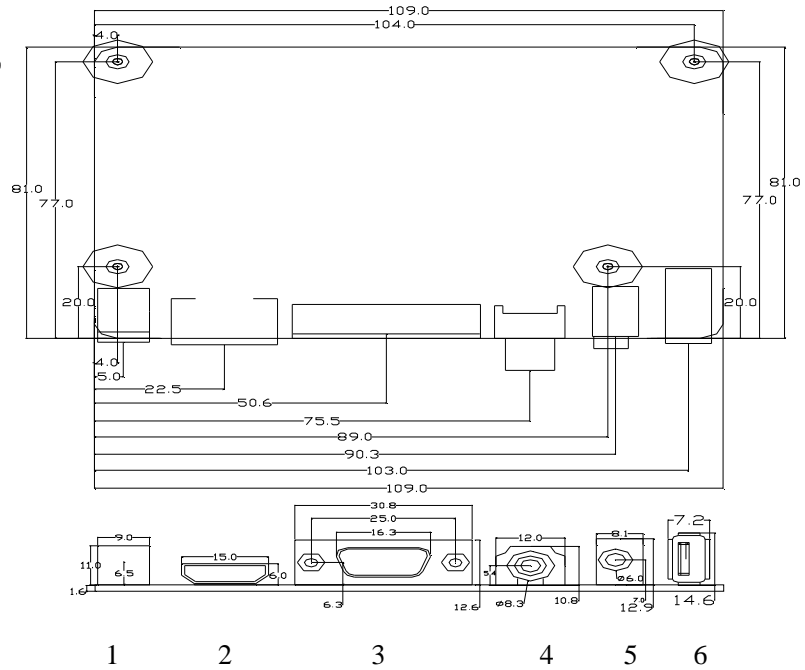
**Configuration One (标准配置 1)**

1	DC
2	HDMI
3	VGA
4	AV
5	PC-Audio
6	USB

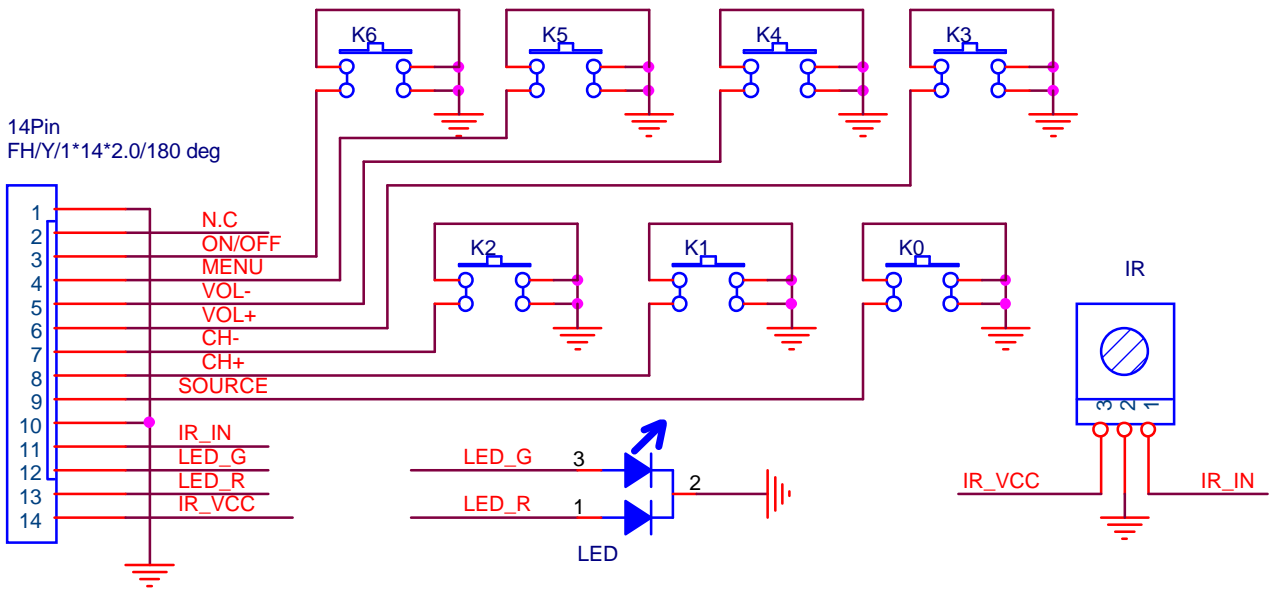


Configuration two (标准配置 2)

1	DC
2	HDMI
3	VGA
4	AV
5	PC-Audio
6	USB



6. KEY & IR BOARD SYSTEM SCHEMATIC (按键和遥控系统原理图)



7. OPERATION REQUIREMENT (操作要求)

- Do not pressed and distorted. (禁止挤压和弯曲)
- Keep away from static and water. (远离静电和水)
- Relative humidity :  $\leq 80\%$  (相对湿度:  $\leq 80\%$ )
- Storage temperature:  $-10\sim +60^{\circ}\text{C}$  (储存温度:  $-10\sim +60^{\circ}\text{C}$ )
- Operation temperature:  $0\sim +40^{\circ}\text{C}$  (操作温度:  $0\sim +40^{\circ}\text{C}$ )