VS DISPLAY TECHNOLOGY (HK) LTD

SPECIFICATION

T.V56.03

VS DISPLAY TECHNOLOGY (HK) LTD

REVISION HISTORY

VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V0	2016.04.22	T.V56.03 A16135	All	First Issued.	Mio
V1	2016.07.13	T.V56.03 B16193 & B16190	1	Update the board version.	Mio

Content

VS DISPLAY TECHNOLOGY (HK) LTD *T.V56.03*

1. STANDARD CONFIGURATION（标准配置）

下表为我们主推的标准配置：

标准配置一	亚太，1 路 HDMI，1 路 AV IN，1 路 USB
FUNCTIONS	【03_A10】VGA,HDMI,CVBS/AUDIO IN,PC AUDIO IN,EARPHONE OUT,USB,ATV
Notes	RF 头是否加热缩套管，以实际需求为准；加热缩套管的直径为 11.8mm，不加热缩套管的直径为 11.2mm Whether add heat shrink sleeve on RF head depends on the actual demand. Diameter of RF head with shrink sleeve is 11.8mm, diameter of RF head without shrink sleeve is 11.2mm
FRONT VIEW	

标准配置二	南美，1 路 HDMI，1 路 AV IN，1 路 USB
FUNCTIONS	【03_A10】VGA,HDMI,CVBS/AUDIO IN,PC AUDIO IN,EARPHONE OUT,USB,ATV
Notes	--
FRONT VIEW	

OPTIONAL FUNCTION	--

备注：如以上表格不包含您需要的配置，请单独向我司销售人员进行申请。

Note: If the configurations above can't meet your demand, please apply to our sales stuff.

2. BOARD PICTURE（板卡外观图）

Pictures are for reference only, specific to prevail in kind.
The optional connectors and functions are marked with "*".
以下图片仅供参考，请以【结构图】或【实物】为准。
可选的接口或者功能都以"*"标示。

尺寸：188.5mm(L)*42mm(W)*1.2mm(H)（H 为 PCB 厚度）

No.	Position	Description
1	CN4	MAIN POWER
2	CN2	INVERTER
3	CNK1	IR&KEY
4	CN12	LVDS
5	*CN5	EXT-IIC
6	CNA4	SPEAKER

3. FEATURES（特性说明）

MAIN CHIPSET 主芯片	TSUMV56RUU-Z1		
OPTIONAL CHIPSET 可选主芯片	TSUMV56RUE-Z1,TSUMV56RUU,TSUMV56RUE,TSUMV56RUU-0068, TSUMV56RUU-SJ,TSUMV56RUE-0068,TSUMV56RUE-SJ		
OSD LANGUAGE OSD 语言	Asia	English,Chinese	
	South America	English, French, Spanish	
PANEL 面板	Panel Type	TFT LCD	
	Interface	Single/Dual LVDS	
	Max Resolution	1920*1080	
VIDEO INPUT 视频输入	TV(Details in 3.1)	ATV(PAL,NTSC)	
	PC-RGB	Format	Up to 1920×1080@60Hz
	CVBS	Video System	PAL/NTSC
		Video level	1.0 Vp-p±10%
	HDMI	480i, 480p, 720p, 1080i, 1080p	
		*CEC, *ARC	
		HDCP Version	1.4
AUDIO INPUT 音频输入	PC Audio	Earphone Input	0.2 ~ 2.0 V_{RMS}
	CVBS	L/R RCA input	0.2 – 2.0V_{RMS}
	Component		
AUDIO OUTPUT 音频输出	Frequency response	100Hz-15KHz @±3dB(1KHz 0dB reference signal)	

	Max Output power	2×3W(4Ω) THD+N<10%@1KHz (Power Supply:12V,Audio Input: 0.5V_{RMS})
POWER TO PANEL **驱屏电压**	3.3V, 5V, 12V	
Management **电源管理**	Standby Power Consumption < 0.2W(Board Only) 待机功耗< 0.2W（仅主板）	
USB FUNCTION **USB 功能**	software upgrade, multimedia play 软件升级，多媒体播放	
Button Types **按键类型**	Ground Key Interface 对地按键接口	

Note: 1. Licenses involved in specifications above are supposed to be obtained by customers themselves.

2. When 3.3V panel Irush≥2000mA, Inormal≥600mA,please contact CVTE engineers to confirm 3.3V panel power supply component selection.

3. Max current of USB2.0: 500mA. Large impact current of USB device(exceeds 500mA) may lead to board abnormal work;

4. The normal operating current of 5V panel ≤ 1500mA.

注意：1. 以上规格涉及 License 部分需要客户自己获取；

2. 当 3.3V 屏冲击电流大于 2000mA，正常电流大于 600mA，请联系 CVTE 工程师确认 3.3V 屏供电器件选型；

3. USB2.0 最大电流：500mA，如果 USB 设备冲击电流过大（超过 500mA）将可能导致板卡工作异常；

4. 5V 屏正常工作电流小于 1200mA。

3.1 TV SYSTEM（TV 制式）

亚太:

ATV	Reception Range （接收范围）	48.25MHz ~ 863.25MHz
	Input impedance （输入抗阻）	75Ω
	Video System （视频制式）	PAL,NTSC,SECAM
	Sound System （声音制式）	BG, DK, I,M
	Max Storage Channels （最大存台数）	199CH

南美:

ATV	Reception Range （接收范围）	48.25MHz ~ 863.25MHz
	Input impedance （输入抗阻）	75Ω
	Video System （视频制式）	PAL,NTSC
	Sound System （声音制式）	M, N
	Max Storage Channels （最大存台数）	193CH (Air:68 Cable:125)

3.2 CRITICAL MATERIALS of TV Part（TV 部分关键物料清单）

The table is for reference only, specific to prevail in kind. 此表仅供参考，请以实物为准。

NAME 物料名称		TYPE 型号	BRAND 品牌	BACKUP 备用型号	BACKUP 备用品牌
TUNER		R842	Rafael	--	--
AMPLIFIER		YD1517P(F)	YD	CD1517CP	HRXW
FLASH	**32M bit**	KH25L3296FM2I-08G	KH	--	--
SPXO	**MAIN CHIP**	SPXO,24MHz,±20PPM,20pF,HC-49SMD,SMD,49SMD 24.000MHz	JWT	--	--

3.3 MULTIMEDIA PLAYBACK FORMAT（USB 多媒体格式播放列表）

Media （媒体）	File Ext. （扩展名）	Codec（编码解码器）		Remark（备注）
		Video（视频）	Audio（音频）	
MOVIE	.mpg	MPEG-1, MPEG-2	MP3, WMA*,AAC*, AC3*,PCM	**Max Solution:** 1920×1080 **Max Data Rate:** 40 Mbps
	.avi	DivX*, Xvid,MJPEG		**Max Solution:** 1920×1080 **Max Data Rate:** 20 Mbps
		MPEG-4 SP/ASP, H.264		
	.ts	MPEG-2, H.264, AVS*,AVS+*		
	.mov .mkv	MPEG-4 SP/ASP, H.263/H.264, HEVC		
	.dat	MPEG-1		
	.mp4	MPEG-4 SP/ASP, H.263/H.264,HEVC		
		MPEG-1, MPEG-2		**Max Solution:** 720×576
	.vob	MPEG-2		**Max Data Rate:** 40 Mbps
	.rm*/.rmvb*	RV30/RV40	COOK, MP2	Max Solution: 1920×1080
MUSIC	.mp3	--	MP3	**Sample Rate:** 8K~48KHz

				Bit Rate: 32K~320Kbps
	.wma*	--	WMA*	Channel: Mono/Stereo
	.m4a/.aac*	--	AAC*	**Sample Rate:** 16K~48KHz
				Bit Rate: 32K~442Kbps
				Channel: Mono/Stereo
PHOTO	.jpg/	Progressive JPEG		**Max Resolution:** 1024×768
	.jpeg	Baseline JPEG		**Max Resolution:** 15360×8640
	.bmp	BMP		**Max Resolution:** 9600×6400
				Pixel Depth: 1/4/8/16/24/32 bpp
	.png	Non-Interlaced		**Max Resolution:** 9600×6400
		Interlaced		**Max Resolution:** 1280×800
Text	.txt	ANSI/UNICODE GB/UTF8		File Size: Max 1MB

File system: NTFS compressed file is not supported.

The different chip suffix will support different codec.

Notes: Licenses involved in specifications above are supposed to be obtained by customers themselves.

*Need the specific chip and Hash Key to support.

3.4 ELECTRICAL CHARACTERISTICS & REQUIREMENTS

（电气特性和要求）

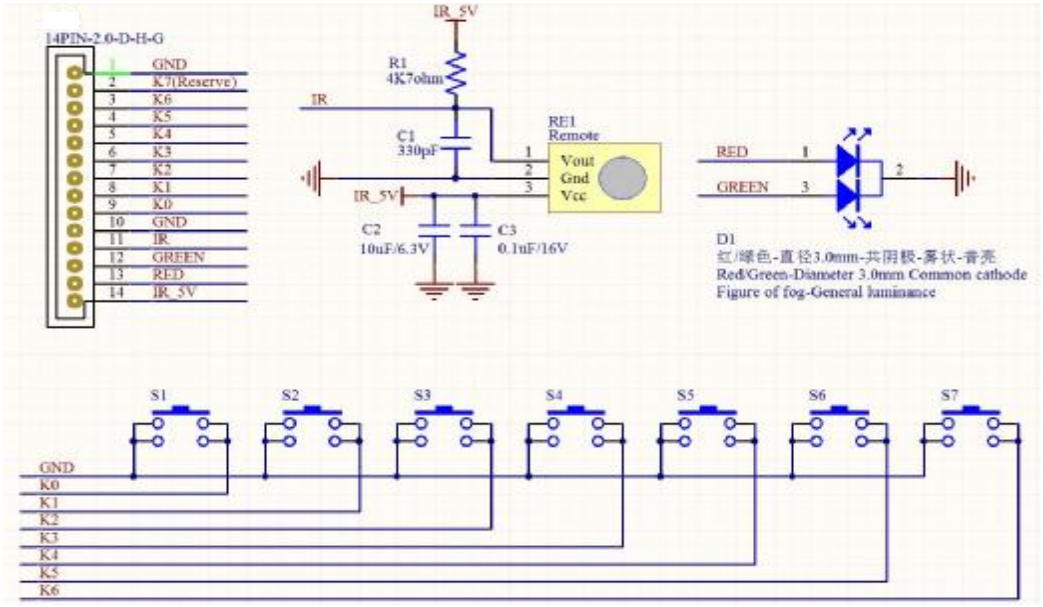
Symbol	Voltage Range			Ripple	Total current	MAX. current(mA) of Individual part					
	MIN	TYP	MAX	Voltage		Mainboard	AMP	USB	MHL	Panel	DVD
12V	11	12	13	300 mV_{P-P}	Ct1②	-		-	-	-	-
5V	4.9	5	5.3①	120 mV_{P-P}	Ct2②			-	-		
5VSB	4.9	5	5.3①	120mV_{P-P}	Ct3②		-				
3V3_STB	3.1	3.3	3.6	70mV_{P-P}			-	-	-	-	-
1.8V_DDR	1.7	1.8	1.9	70mV_{P-P}							
1.15V_STB	1.1	1.15	1.2	70mV_{P-P}							

Note①: Don't exceed 5.25V when make the certification practice test.

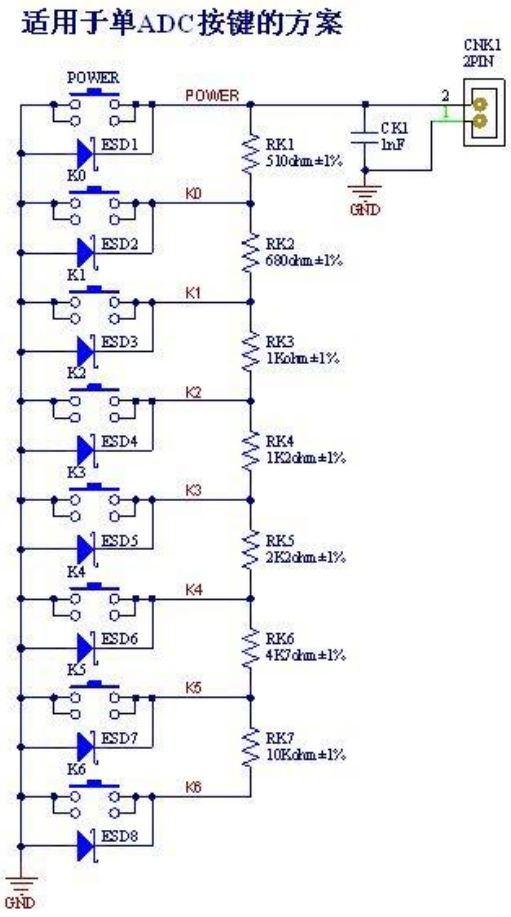
Note②: CtN = The sum of MAX. current(mA) of individual part.

4. SCHEMATICS OF IR & KEY BOARD（遥控按键原理图）

对地按键接口：



模拟按键接口：



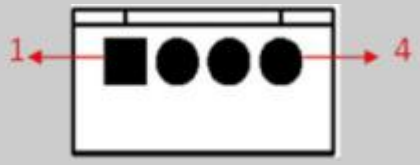
KEY FUNCTION: TV/AV, MENU, VOL+, VOL-, CH+, CH-, POWER

Note: The dividing resistor which is corresponding to the power key must be zero(equivalent to the voltage is zero). Otherwise, the board will not work. K6 is default power.

5. INTERFACE DEFINITION（接口定义）

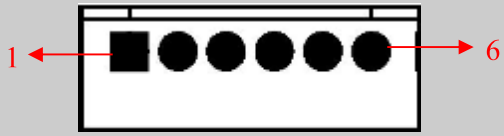
The optional connectors and terminals are marked with "*".标 "*" 的为可选。

◆ CN4(4PIN/2.0): MAIN POWER CONNECTOR （主供电接口）



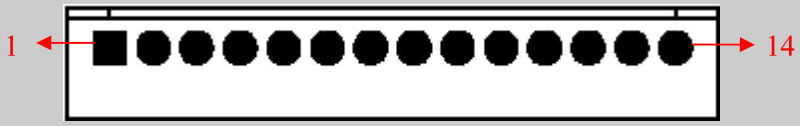
NO.	SYMBOL	DESCRIPTION
1	12V	+12V Power Supply.
2	12V	+12V Power Supply.
3	GND	Ground
4	GND	Ground

◆ CN2(6PIN/2.0): INVERTER CONNECTOR（INVERTER 接口）



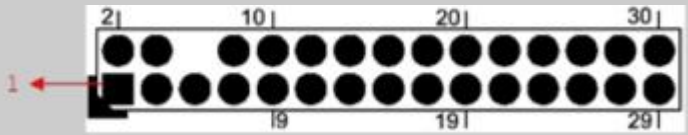
NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	
3	ADJ	Brightness Adjustment for Panel VOH≥4.8V (IOHMAX: 1mA), VOL≤0.8V (IOLMAX: 1mA)
4	BLO	Back-Light ON/OFF Control for Panel VOH≥4.8V (IOHMAX: 1mA), VOL≤0.8V (IOLMAX: 1mA)
5	12V	+12V DC Power Supply
6	12V	

◆ CNK1(14PIN/2.0): IR & KEY CONNECTOR (遥控和按键控制接口)



NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	K7	Key7(Reserved)
3	K6	Key6
4	K5	Key5
5	K4	Key4
6	K3	Key3
7	K2	Key2
8	K1	Key1
9	K0	Key0
10	GND	Ground
11	IR	IR Receiver $V_{OH}\geqslant 3V$ (I_{OHMAX}: 2mA), $V_{OL}\leqslant 0.8V$ (I_{OLMAX}: 0mA)
12	GRN/BLU	Green Indicator
13	RED	Red Indicator
14	5V	+5V DC Power Supply

◆ CN12(2×15PIN/2.0): LVDS INTERFACE CONNECTOR (LVDS 接口)



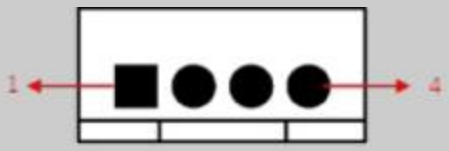
NO.	SYMBOL	DESCRIPTION
1	VSEL	Power Supply for Panel
2	VSEL	
3	VSEL	
4	GND	Ground
5	GND	
6	NC	No Connection
7	TXO0-	LVDS ODD 0- Signal
8	TXO0+	LVDS ODD 0+ Signal
9	TXO1-	LVDS ODD 1- Signal
10	TXO1+	LVDS ODD 1+ Signal
11	TXO2-	LVDS ODD 2- Signal
12	TXO2+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	Ground

15	TXEC-	LVDS EVEN Clock- Signal
16	TXEC+	LVDS EVEN Clock+ Signal
17	TXO3-	LVDS ODD 3- Signal
18	TXO3+	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	TXE3+	LVDS EVEN 3+ Signal

◆ ***CN5(4PIN/2.0): EXTERNAL I2C CONNECTOR (外挂 I2C 接口)**

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply
2	SCL	External I^2C SCL
3	SDA	External I^2C SDA
4	GND	Ground

◆ **CN10(4PIN/2.0): SPEAKER CONNECTOR (喇叭接口)**



NO.	SYMBOL	DESCRIPTION
1	LO	Audio Left Channel Output
2	GND	Ground
3	GND	
4	RO	Audio Right Channel Output

NOTE：

(1) 参数说明

V_{OH}：高电平输出电压；I_{OHMAX}：高电平输出驱动电流；V_{OL}：低电平输出电压；I_{OLMAX}：低电平输出驱动电流；

V_{IH}：高电平输入电压；V_{IL}：低电平输入电压；I_{ILmin} ：低电平最小输入电流；I_{IHmin} :高电平最小输入电流；

(2) 在匹配应用时，各控制和通讯口以及供电须在本规格书中描述的电气特性范围内，若有特殊需求，请与我司硬件工程师联系确认。

6. CONFIGURATION & GENERAL PRECAUTIONS

（使用注意事项）

- Relative humidity: ≤ 80%.
- 相对湿度： ≤ 80%。
- Storage temperature: -10~60°C.
- 存储温度： -10~60°C。
- Operation temperature: 0~40°C.
- 使用温度：0~40°C。
- Protect the board from static electricity in case of damage to the IC.
- 请使板卡远离静电。
- Keep the board away from conductor when it is working.
- 请确保板卡工作时远离导体。
- Don’t push or pull the connectors when the board is working.
- 板卡工作时请勿拆解。
- Don’t press, distort or disassemble the board.
- 勿受重压及弯折变形。
- Clean the board with soft dry cloth when it’s dirty.
- 如果板卡上有灰尘，请用干布擦拭。
- Don’t power on before panel is correctly connected.
- 正确接好驱屏线前请勿接通电源。
- The whole machine certification performance will be subject to the impact of the whole machine, must use the whole machine to test and confirm.
- 整机认证性能会受整机匹配的影响，必须使用整机进行测试确认。
- When using the I2C interface to communicate with the outside, please confirm the matching of the pull up resistance and the series resistance with CVTE hardware engineer.
- 使用 I2C 接口跟外部通信时，需与我司硬件工程师确认上拉电阻以及串接电阻的匹配性
- To ensure communicating properly between the mainboard and external expansion modules, it's recommend that test related control and communication signals and power supply voltage waveform after installing prototype to confirm whether to meet the relevant requirements.
- 为保障 TV 主板与外部扩展模块间能正常通讯控制，建议装样机后对相关控制和通讯信号以及供电等的电压波形进行测试，确认是否满足相关要求。

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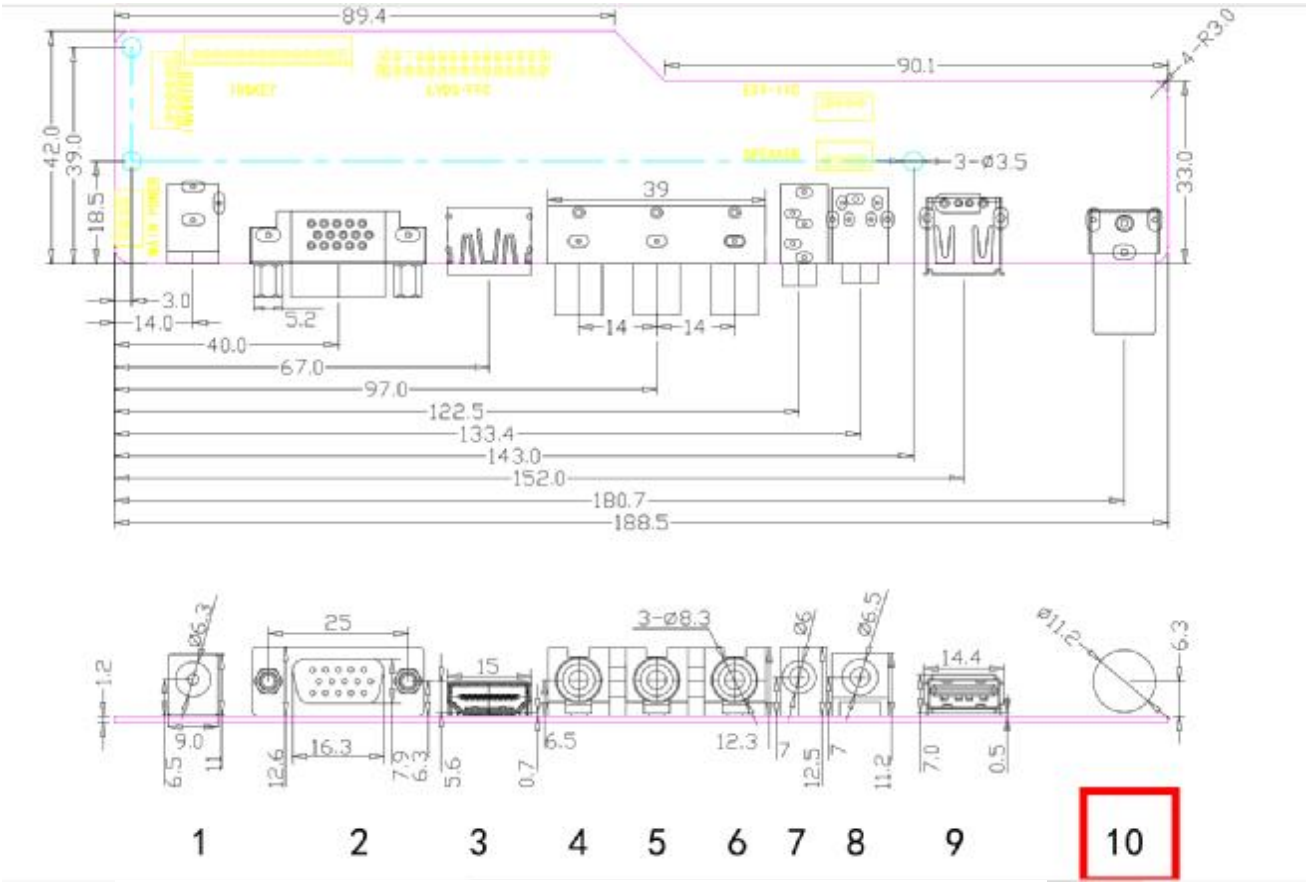

配置1【03_A10】	
Ver.	A0
NO.	Description
1	DC IN
2	VGA IN
3	HDMI IN
4	CVBS IN
5	CVBS LIN
6	CVBS RIN
7	PC AUDIO IN
8	EARPHONE OUT
9	USB IN
10	RF IN

PCB Tolerance			Connector Tolerance
PCB size	±0.15mm		(Unless Otherwise Stated)
PCB thickness	≤1.0mm	±0.1mm	±0.3mm
	>1.0mm	±10%	