

REV: V1.0

# LCD TV CONTROL BOARD SPECIFICATION

MODEL : CV181H-X-40C

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## 1. CHANGE THE LIST OF UPGRADES

Version	Description	Page	redaction	Checked	Date
V1.0	First Release	ALL	YJ_hao		oct.08, 2011

## 2. GENERAL DESCRIPTION

That product is analogue TV board, can receive the PAL+SECAM/ PAL+NTSC/ NTSC analogue television. Support multimedia play .It can connect with accessory modules to support extended functions such as SCART/AV/YPBPR.

- Support USB 2.0 multimedia play, support audio and video play; support txt and picture browse.
- Support USB update.
- Analogue and digital HD port input signal largest support 1080P.
- Support resolution up to HDTV(1080i,720p) and SDTV
- The largest support various TFT-LCD 1920x1080 resolutions module.
- The HDMI support 1.3, the HDCP support 1.1.
- The 3-D video decoding and Chroma separation.
- 3-D motion adaptive video de-interlaces with edge-oriented adaptive algorithm for smooth low-angle edges.
- 3-D video noise reduction.
- Support analogue 1000 Pages Teletext.
- Max storage 200 channels.
- Supports A2/NICAM/B/G/D/K/I/L/L'/M/N demodulation in PAL/SECAM/NTSC.
- Automatic 3:2 pull-down & 2:2 pull-down detection and recovery.
- MStar 3rd Generation Advanced Color Engine (MStarACE-3) automatic picture enhancement.
- Reliable EMC and ESD handle.
- Standby<0.5W (depend on AC power supply), economize energy.
- True color OSD, humanized operation menu, supports Channel List, channel edit and other deluxe function.
- **ITU-T H.264, ISO/IEC 14496-10 (main and high profile up to level 4.1) video decoding. (onely MST6M182VG/MST6E182VG support)**
- **Supports maximum resolution up to 1080p@30fps(onely MST6M182VG/MST6E182VG support)**

### 3. FEATURES

<b>PANEL</b>	Type Resolution Interface Voltage	TFT-LCD Max. 1920X1080 Single/ Double LVDS 5V, 12V
<b>RGB</b>	Sync Signal MODE	H: 30-75KHz V: 56-75Hz 0.7Vp-p@75ohm Max 1920×1200@60Hz
<b>ATV</b>	Receiving Input	44.25MHz – 863.25MHz 75Ω
	Video System	PAL,SECAM,NTSC
	Sound System	BG, DK, I,MN
		NICAM/A2
<b>SVIDEO</b>	Video Audio	S-Y:0.714Vp-p@75ohm,S-C:0.286Vp-p@75ohm 500mVrms
<b>AV</b>	Color system Video Audio	PAL/SECAM/NTSC 1Vp-p@75ohm 500mVrms
<b>YPbPr</b>	Video Audio Format	Y:1Vp-p@75ohm,PbPr:0.7Vp-p@75ohm 500mVrms 480i, 480p, 576i, 576p, 720p, 1080i, 1080p Max. 1080P
<b>HDMI</b>	Video Format	Standard TMDS 480i, 480p, 576i, 576p, 720p, 1080i, 1080p Max. 1080P
<b>SCART</b>	Video output/input	CVBS&RGB input, CVBS output RBG: 0.7Vp-p@75ohm CVBS: 1Vp-p@75ohm
	Audio output/input	500mVrms
<b>Keyboard</b>		EXIT/POWER/RIGHT/LEFT/INPUT/UP/DOWN//MENU
<b>OSD</b>		Channel/Picture/Sound/Time/Option/LOCK
<b>OSD Language</b>		English, Chinese
<b>Amplifier</b>	Class D	2 X8W @ 8ohm THD<10%
<b>Power input</b>		5Vstb/1A , 5V/3A, 12V/1A,
<b>Standby</b>		< 0.3W(Main Board Only)

## 4. PRESET MODE FOR USB, VGA, HDMI

### VGA FORMAT MODE

Resolution	Refresh	Rate
1920 X1200	60HZ	74KHZ
	60HZ	74.6KHZ
1680X1050	60HZ	64.7KHZ
	60HZ	65.3KHZ
1440X900	60HZ	55.5KHZ
	60HZ	59.9KHZ
1280X1024	60HZ	63.5KHZ
1024X768	60HZ	48.4KHZ
	70HZ	56.5KHZ
	75HZ	60.0KHZ
800X600	60HZ	37.9KHZ
	70HZ	47.2KHZ
	75HZ	46.9KHZ
640X480	60HZ	31.5KHZ
	70HZ	37.9KHZ
	75HZ	37.5KHZ
720X400	70HZ	31.5KHZ

### HDMI FORMAT MODE

Format	Resolution	Hor.Freq(KHz)	Vert.Freq(HZ)
480i	480	15.734	60
480p	480	31.465	59.94
		31.500	60
576i	576	15.625	50
		15.734	
576p	576	31.250	50
720p	720	44.955	60
1080i	1080	28.125	50
		33.750	60
1080p	1080	56.250	50
		67.500	60

**USB FORMAT MODE**

<b>MOVIE</b>	AVI	MJPEG	MP3, WMA, AAC MP2, PCM	The Max Resolution And Frame Rate:720p@30fps Max Data Rate: 10 Mbps
		MPEG-4		The Max Resolution And Frame Rate:720p@30fps Max Data Rate: 20 Mbps
		MPEG-2		
		XVID		
	MP4	MPEG-2		
		MPEG-4		
	TS/TRP	MPEG-2		
	MPG	MPEG-1		
		MPEG-2		
DAT	MPEG-1	MP2	The MaxResolution:352×288 Max Data Rate: 20 Mbps	
VOB	MPEG-2		The MaxResolution:720×576 Max Data Rate: 20 Mbps	
RM/RMVB	RV8,RV9, RV10	COOK	The Max Resolution And Frame Rate:720p@30fps Max Data Rate: 10 Mbps	
<b>PHOTO</b>	JPG	Progressive JPEG	Max Resolution: 1024×768	
	JPEG	Baseline JPEG	Max Resolution: 15360×8640	
	BMP	----	Max Resolution: 9600×6400 Pixel Depth: 1/4/8/16/24/32 bpp	
		PNG	Non-Interlaced	Max Resolution: 9600×6400
	Interlaced		Max Resolution: 1200×800	
<b>MUSIC</b>	MP3	---	MP3	Sample Rate: 32K~48KHz Bit Rate: 32K~320Kbps
	WMA	---	WMA	Channel: Mono/Stereo
	MP4A/AAC	----	AAC	Sample Rate: 8K~48KHz Bit Rate: 24K~384Kbps Channel: Mono/Stereo
<b>Special Note:</b>				
1) Support hard disk, the maximum storage capacity is <b>400G</b>				
2) Folder in support of the greatest depth is <b>30</b>				
3) Each folder in support of the largest number of documents is a <b>5000</b>				
4) Only support single audio channel audio format and dual-audio channel audio format				

**Operation Instructions**

**PS:** Hi Speed FS, FAT32, FAT16, NTFS(NTFS compressed file is not supported)

## 5. ENVIRONMENTAL CONDITION

### Input Electrical Characteristics

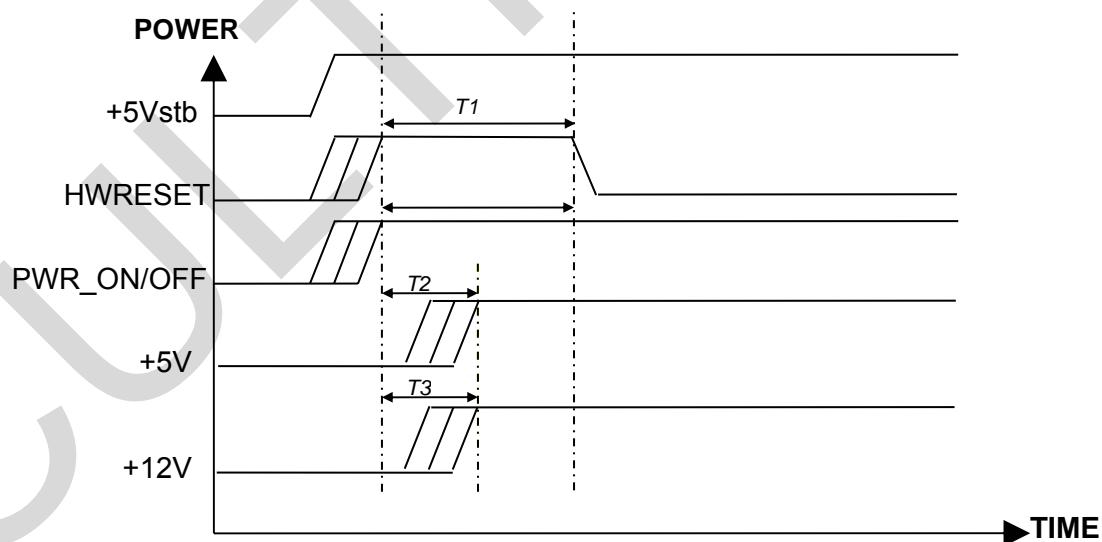
Power	Symbol	Range	Max Current	Ripple
VCC_+5V	+5V	+5.0V--+5.2V	4A	50mV
VCC_+5VSTB	+5VSTB	+5.0 V --+5.2V	1A	50mV
VCC_+12V	+12V	+12V--+12.5V	1.5A	100mV
AMP_Power	+12V	+12V--+12.5V	2A	100mV

### Substitutable Primary Materials

The table is for reference only, the actual item is the standard

Name	Main Type	Brand	BackupType	Brand	Location
FLASH	W25Q32 SOP8	WINBOND	EN25Q32B-104H IP SOP8	EON	U6
ECAP	/	SANMEI	/	XUNDA	/
LDO	AS7805D-E1 TO-252	BM	AZ7805AD-E1	BCD	U5
LDO	BM1117-2.5	BM	BL1117-2.5	BL	U7
LDO	BM1117-3.3	BM	BL1117-3.3	BL	U1,U10,U4
PCB	CV181H-X-40C	KEXIANG	CV181H-X-40C	XINGDA	/

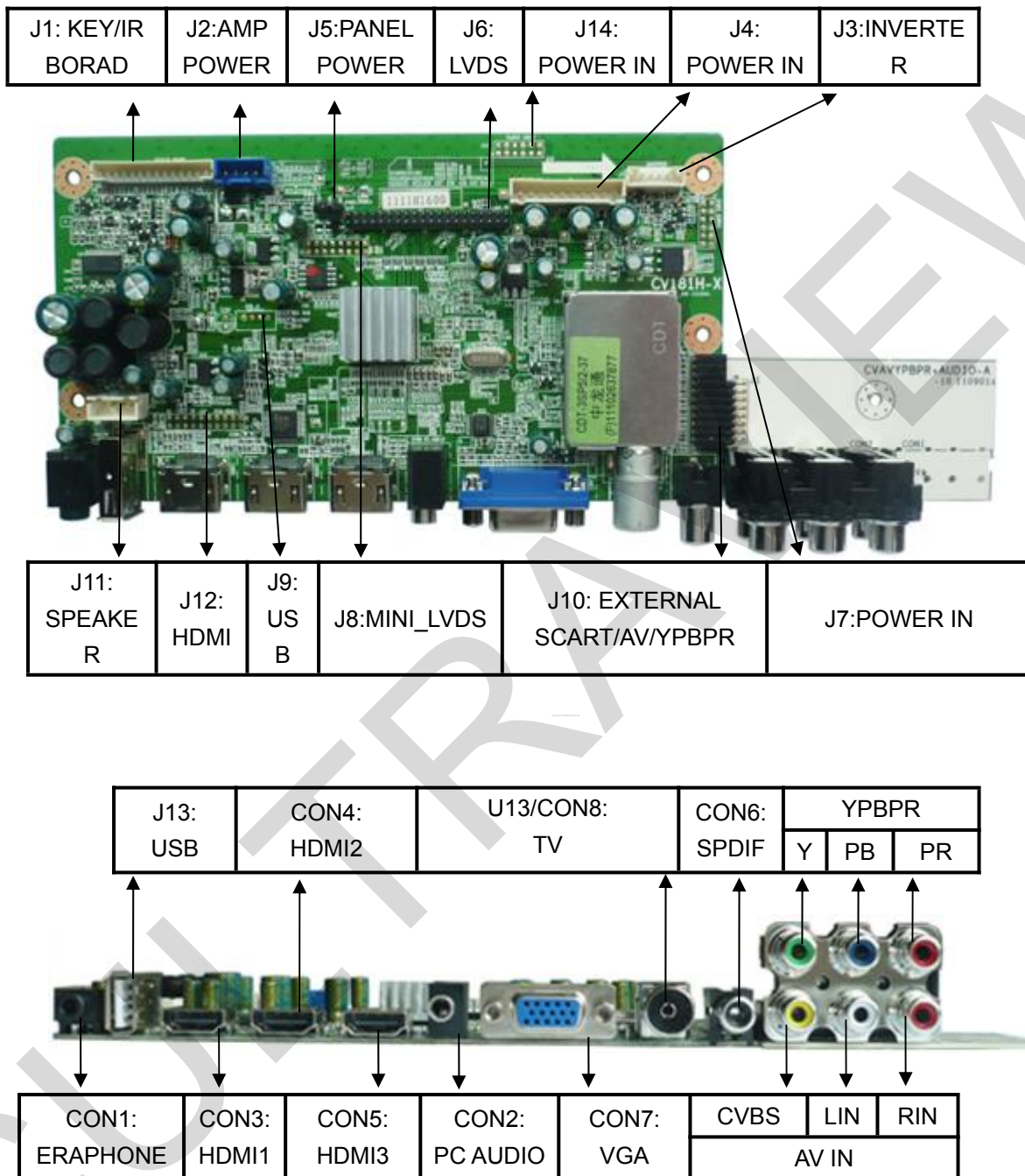
### Power Up Timing

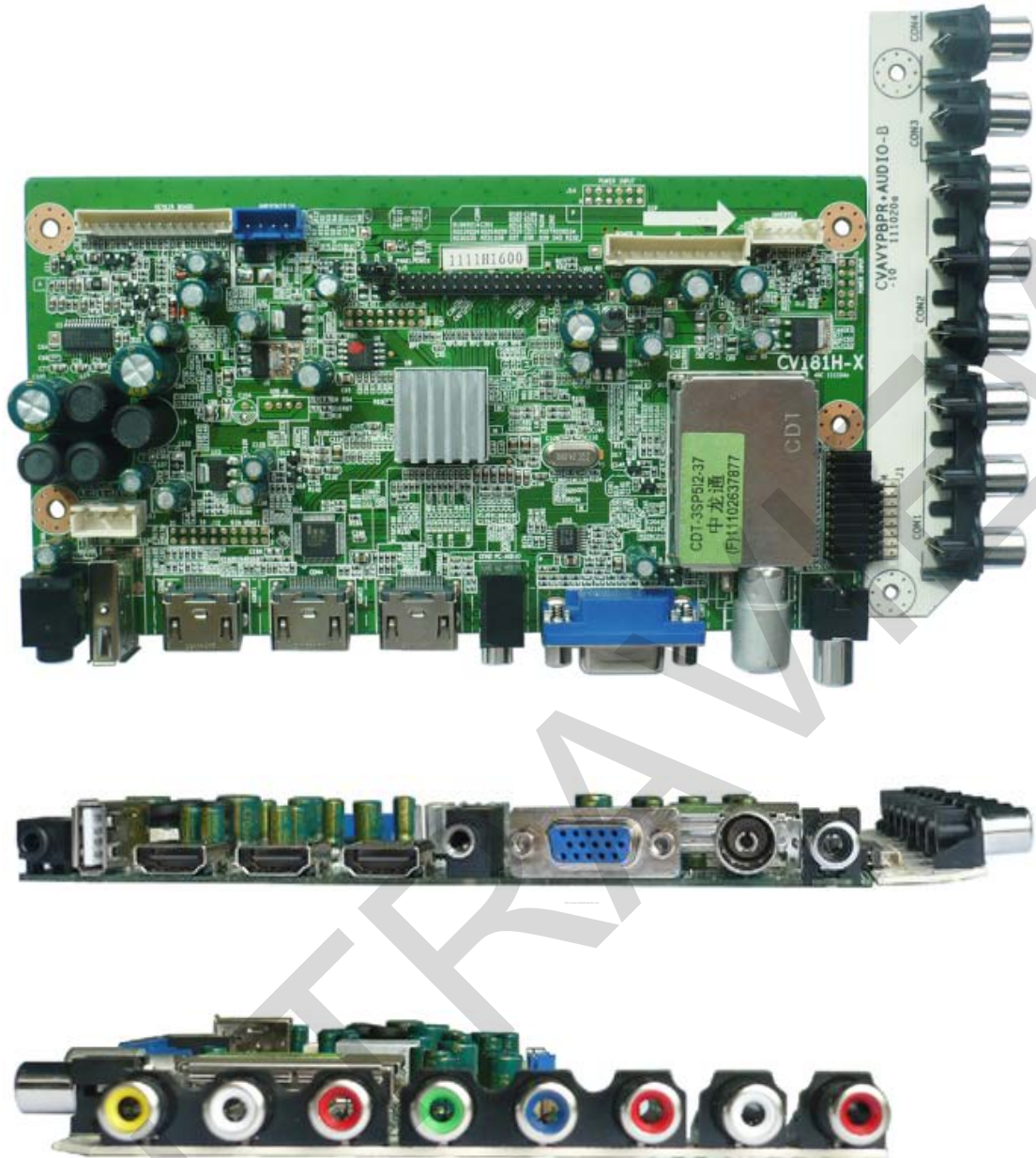


alternation	DESCRIPTION	Min	Type	Max	Unit
T1	Hardware Reste Width	10	200	/	ms
T2	Pwr_on/off t <sub>setup</sub> TO +5V t <sub>setup</sub>	/	/	190	ms
T3	Pwr_on/off t <sub>setup</sub> TO +12V t <sub>setup</sub>	/	/	190	ms



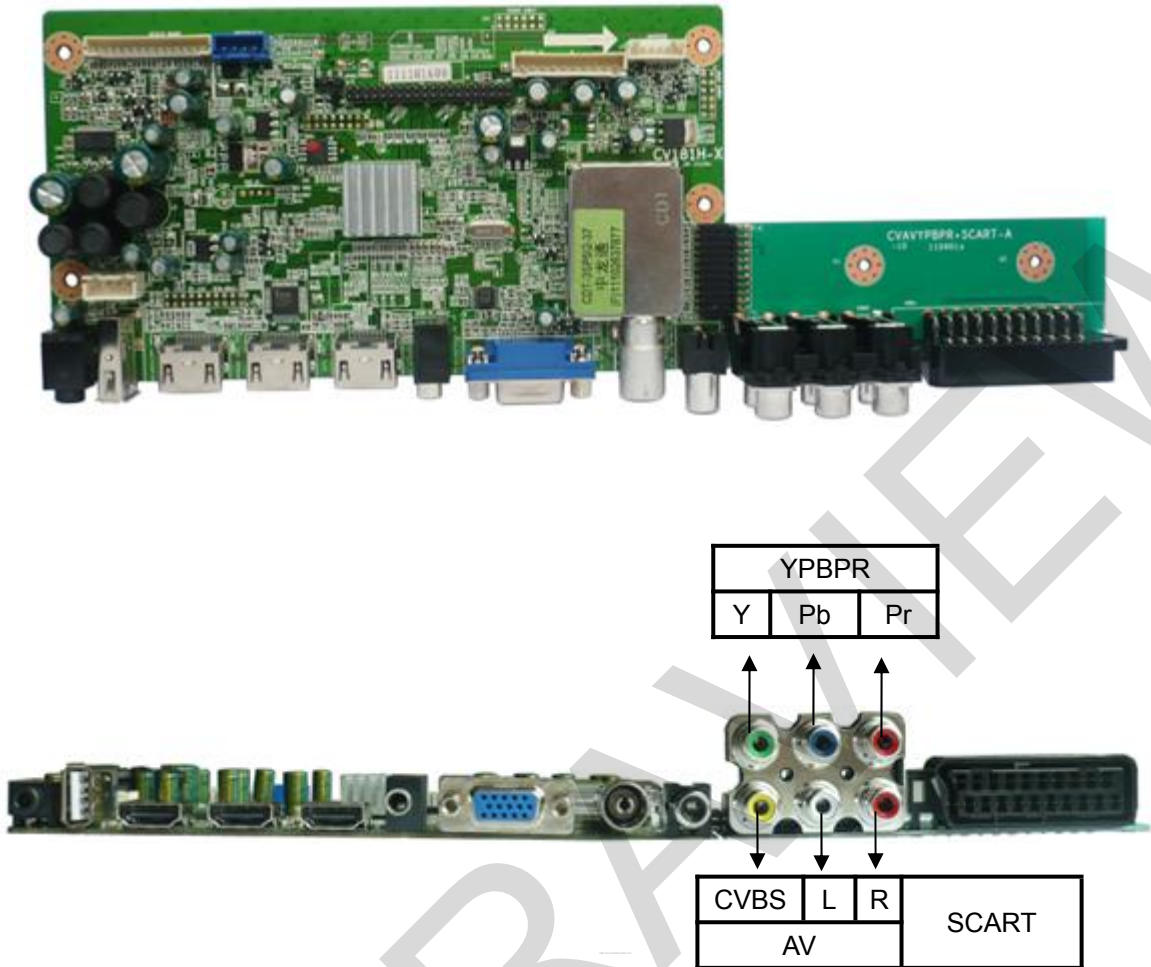
## 6. PICTURE











## 7. INTERFACE DEFINITION

All jack recognize the square pad as first pin.

### J1 : KEY&IR BOARD CONNECTOR(14PIN/2.0)

NO	Definition	Description
1	GND	Ground
2	K7	POWER key
3	K6	(Reserved)
4	K5	RIGHT key
5	K4	LEFT key
6	K3	SOURCE key
7	K2	UP key
8	K1	DOWEN key
9	K0	MENU key
10	GND	Ground
11	IR	Remote receive
12	LED_G	Green indicator
13	LED_R	Red indicator
14	LED_5V	+5V power

### J2: AMPLIFIER POWER SUPPLY CONNECTOR(4PIN/2.54)

NO	Definition	Description
1	GND	Ground
2	GND	Ground
3	+24V	AMP +24V DC Power Supply
4	+24V	AMP +24V DC Power Supply

### J3: INVERTER CONNECTOR(6PIN/2.0)

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	
3	ADJ	Brightness Adjustment for Panel(Volts DC Output)
4	ON/OFF	Back-Light ON/OFF Control for Panel (1: ON/0: OFF)
5	+12V	INVERTER +12V DC Power Supply
6	+12V	

### J4: BUILT-IN POWER SUPPLY CONNECTOR(10PIN/2.54)

NO.	SYMBOL	DESCRIPTION
1	12V	+12V DC Power Supply
2	GND	Ground
3	5V	Main +5V Power Supply

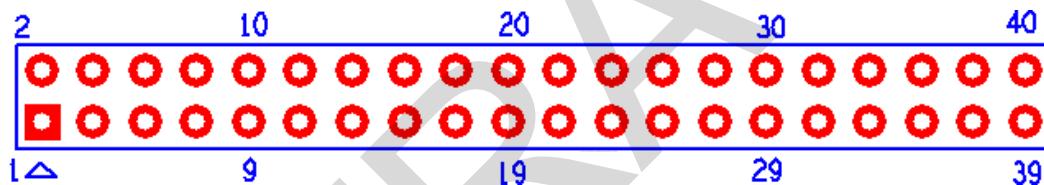
4	5V	
5	VCC_PANEL	Panel Power Supply
6	VCC_PANEL	
7	GND	Ground
8	GND	
9	ON/OFF	Power On/Off
10	5VSTB	+5V DC Power Supply when Standby

**J5 : PANEL POWER SUPPLY(3PIN/2.0)**



NO	Definition	Description
1	+5V	+5V panel voltage
2	VCC_PANEL	Panel Power In
3	+12V	+12V panel voltage

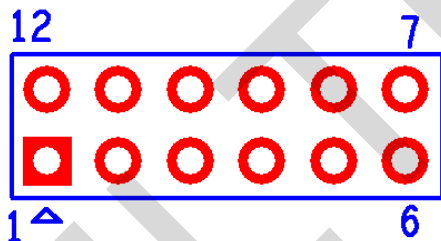
**J6 : LVDS INTERFACE(2×20PIN/2.0)**



NO	Definition	Description
1	VCC	Panel power
2	VCC	Panel power
3	VCC	Panel power
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	RX00-	RX00-
8	RX00+	RX00+
9	RX01-	RX01-
10	RX01+	RX01+
11	RX02-	RX02-
12	RX02+	RX02+
13	GND	Ground
14	GND	Ground
15	RXOC-	RXOC-
16	RXOC+	RXOC+
17	RX03-	RX03-
18	RX03+	RX03+

19	RXE0-	RXE0-
20	RXE0+	RXE0+
21	RXE1-	RXE1-
22	RXE1+	RXE1+
23	RXE2-	RXE2-
24	RXE2+	RXE2+
25	GND	Ground
26	GND	Ground
27	RXEC-	RXEC-
28	RXEC+	RXEC+
29	RXE3-	RXE3-
30	RXE3+	RXE3+
31	GND	Ground
32	GND	Ground
33	BL_ON	I/O for Back-Light ON/OFF Control
34	PANEL_ON	I/O for panel power control
35	SCL	Main I2C SCL
36	SDA	Main I2C SCL
37	RXO4-	RXO4-
38	RXO4+	RXO4+
39	EXE4-	EXE4-
40	RXE4+	RXE4+

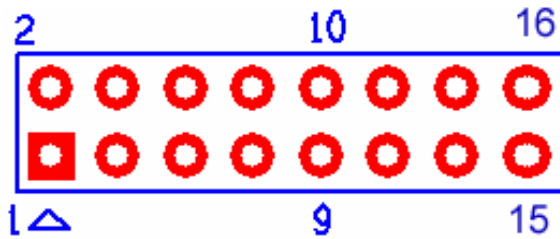
**J7 : BUILT-IN POWER SUPPLY CONNECTOR (2×6PIN/2.0)**



NO.	SYMBOL	DESCRIPTION
1	BL-ON/OFF	Back-Light ON/OFF Control for Panel (1: ON/0: OFF)
2	GND	Ground
3	+12V	+12V DC Power Supply
4	GND	Ground
5	POWER_ON /OFF	Power On/Off
6	+5V_STB	+5V DC Power Supply when Standby
7	+5V_STB	+5V DC Power Supply when Standby
8	GND	Ground
9	GND	Ground
10	+12V	+12V DC Power Supply
11	GND	Ground

12	ADJ	Brightness Adjustment for Panel(PWM Output)
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**J8: MINI LVDS INTERFACE(2×8PIN/2.0)**

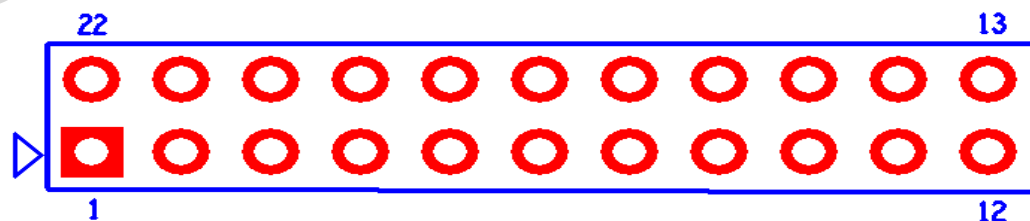


NO	Definition	Description
1	GND	Ground
2	GND	Ground
3	POL	POL
4	GCLK2	GCLK2
5	VST	VST
6	SOE	SOE
7	FCLK3	FCLK3
8	GCLK1	GCLK1
9	GCLK3	GCLK3
10	PT_EN	PT_EN
11	GND	Ground
12	RLV1P	RLV1P
13	RLV0P	RLV0P
14	RLV1N	RLV1N
15	RLV0N	RLV0N
16	GND	Ground

**J9: EXTERNAL USB CONNECTOR(4PIN/2.0)**

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	DP	USB Data+
3	DM	USB Data-
4	+5V	+5V Power Supply for USB

**J10 : EXTERNAL SCART/AV/YPBPR INPUT CONNECTOR (2×11PIN/2.0)**



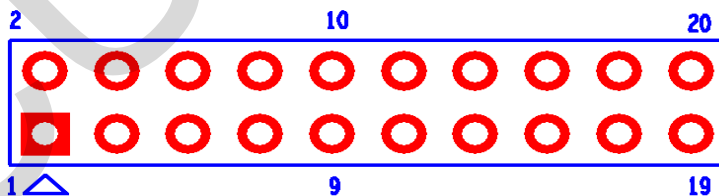


NO	Definition	Description
1	GND	Ground
2	SC_FS	SCART Function select
3	SC_RIN	SCART Red input
4	AU_ROUT	SCART Audio R channel output
5	AU_LIN	SCART Audio L channel input
6	AU_LOUT	SCART Audio L channel output
7	YPBPR_PR	YPBPR_PR IN
8	AV1_R	AV Audio R channel input
9	YPBPR_PB	YPBPR_PB IN
10	AV1_L	AV Audio L channel input
11	YPBPR_Y	YPBPR_Y IN
12	AV1_CVBS	AV CVBS IN
13	GND	Ground
14	SC_FB	SCART RGB switching control
15	SC_CVBS IN	SCART CVBS IN
16	CVBS_OUT	SCART CVBS OUT
17	GND	Ground
18	GND	Ground
19	AU_RIN	SCART Audio R channel input
20	SC_GIN	SCART Green input
21	SC_BIN	SCART Blue input
22	GND	Ground

**J11 : SPEAKER CONNECTOR(4PIN/2.54)**

NO.	SYMBOL	DESCRIPTION
1	ROUT+	Audio R+ Channel Output
2	ROUT-	Audio R- Channel Output
3	LOUT-	Audio L+ Channel Output
4	LOUT+	Audio L- Channel Output

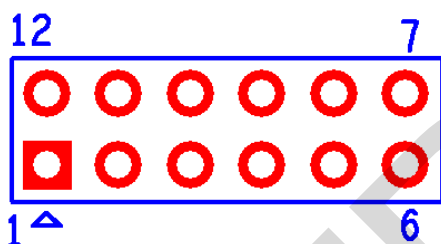
**J12: Expand HDMI PORT(2\*10pin/2.0 )**



NO	Definition	Description
1	DA2+	TMDS Data2+
2	DA1+	TMDS Data1+
3	DA0+	TMDS Data0+
4	CLKA+	TMDS Clock+

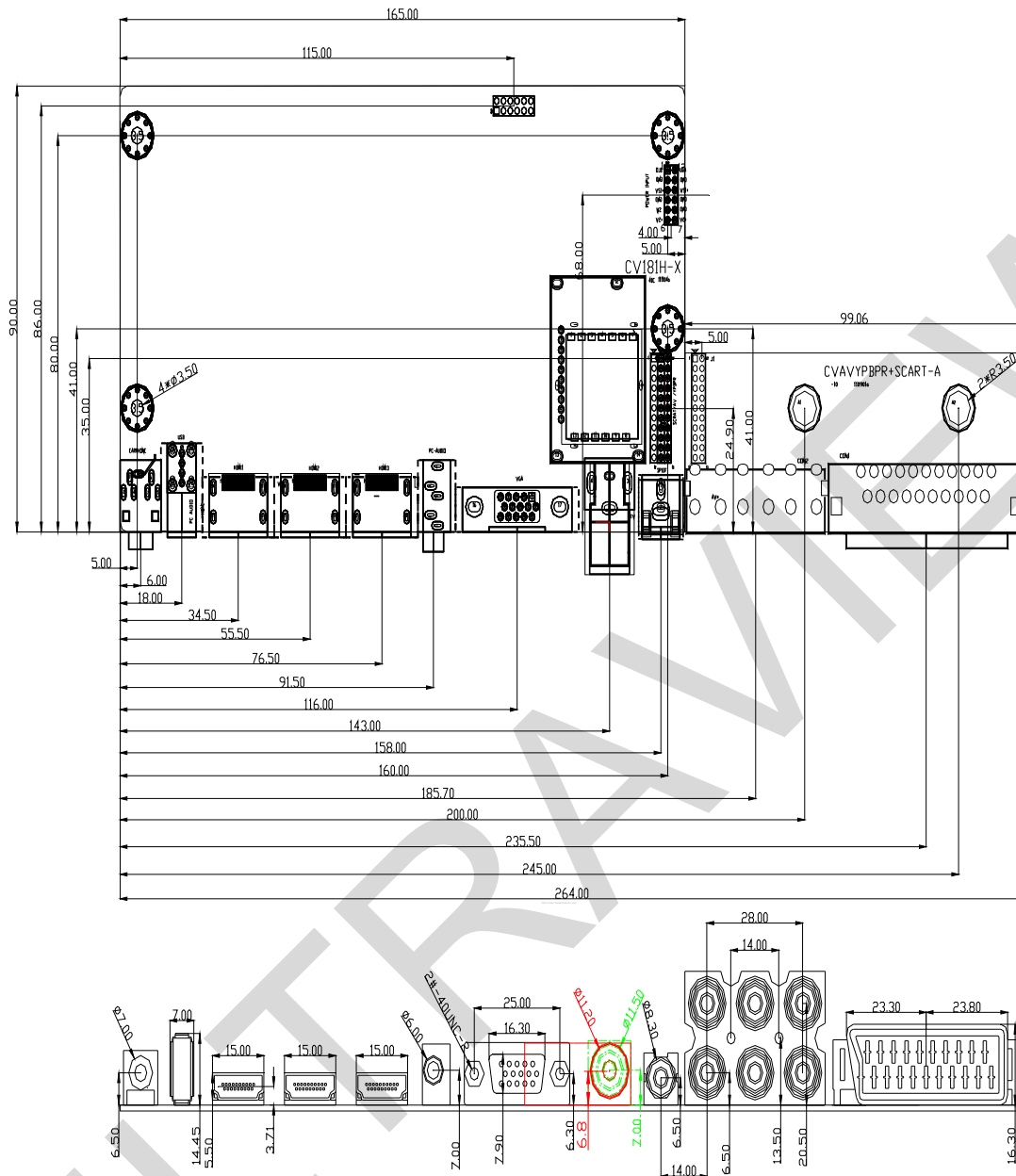
5	DDCA_SCL	DDC_SCL
6	GND	Ground
7	HDMIA_5V	HDMI+5V power
8	GND	Ground
9	CEC	CEC Signal
10	SCL	Main I2C Clock
11	SDA	Main I2C Data
12	+5VA	+5V power
13	GND	Ground
14	HPD1	Hot plug
15	GND	Ground
16	DDCA_SDA	DDC_SDA
17	CLKA-	TMDS Clock-
18	DA0-	TMDS Data0-
19	DA1-	TMDS Data1-
20	DA2-	TMDS Data2-

**J14 : BUILT-IN POWER SUPPLY CONNECTOR (2×6PIN/2.0)**



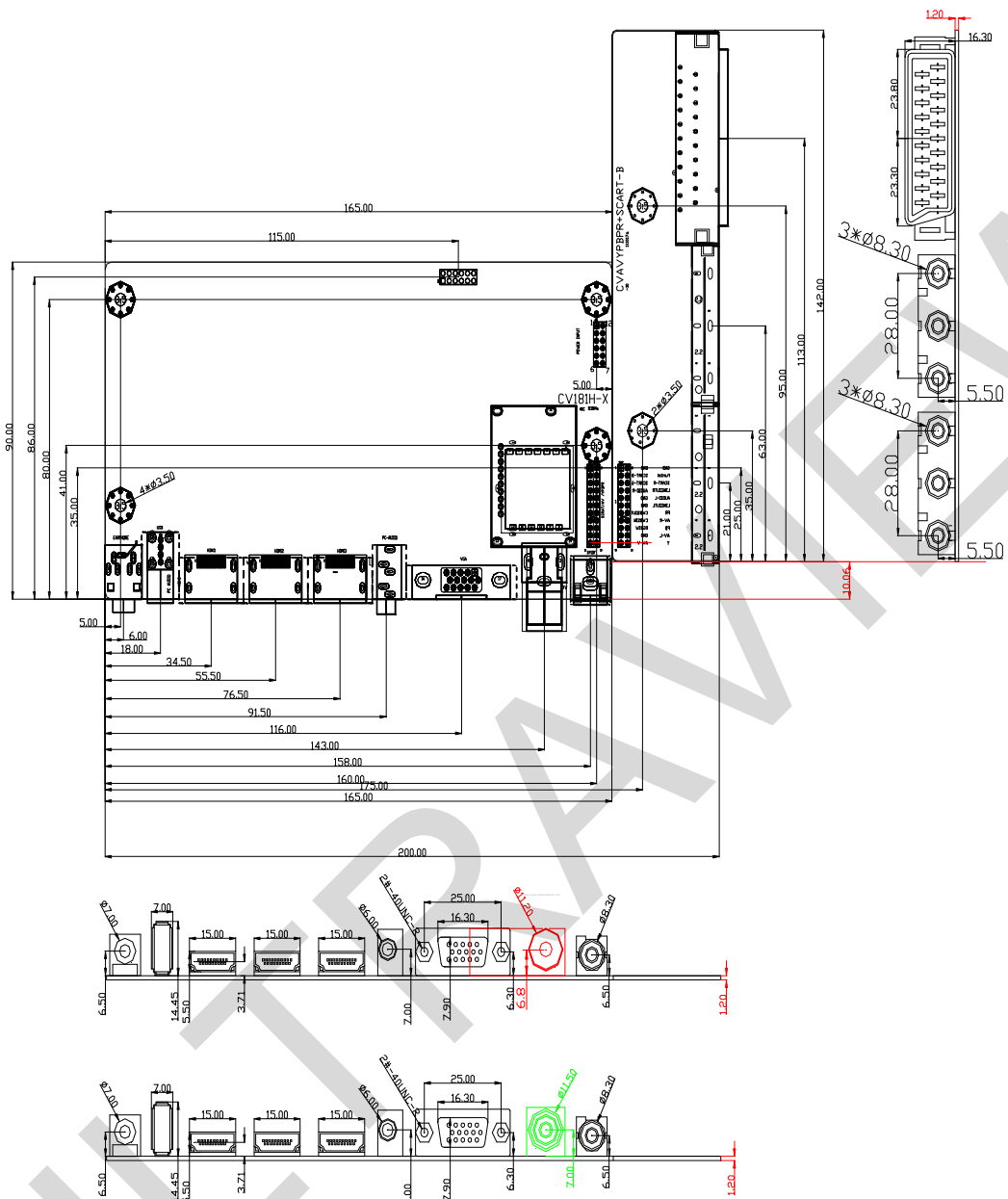
NO.	SYMBOL	DESCRIPTION
1	BL-ON/OFF	Back-Light ON/OFF Control for Panel (1: ON/0: OFF)
2	GND	Ground
3	+12V	+12V DC Power Supply
4	GND	Ground
5	POWER_ON /OFF	Power On/Off
6	+5V_STB	+5V DC Power Supply when Standby
7	+5V_STB	+5V DC Power Supply when Standby
8	GND	Ground
9	GND	Ground
10	+12V	+12V DC Power Supply
11	GND	Ground
12	ADJ	Brightness Adjustment for Panel(PWM Output)





The PCB board is thick :1.2mm  
 Component the tallest altitude:13mm  
 Install diameter inside the bore 3.5mm





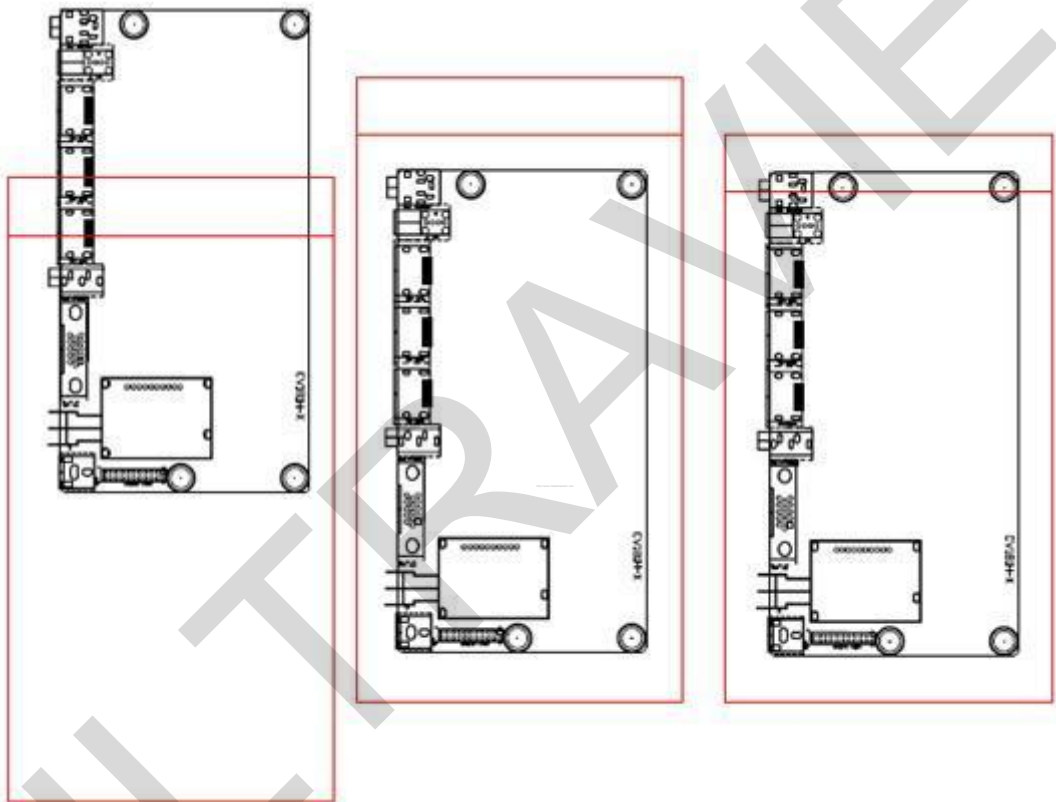
The PCB board is thick :1.2mm  
 Component the tallest altitude:13mm  
 Install diameter inside the bore 3.5mm

## 9. PACKAGING

### 9.1 PACKING SPECIFICATIONS

- (1) pcs/1box:THD
- (2) Box dimension: THD
- (3) Weight: THD

### 9.2 PACKING METHOD



## 10. APPLICATION REQUIREMENT

- Relative humidity  $\leq 80\%$
- Store temperature  $-10\sim+60\text{ }^{\circ}\text{C}$
- Use temperature  $0\sim+40\text{ }^{\circ}\text{C}$
- The procedure of the whole machine assembles and transports need to attend ESD transaction.
- When the whole set assemble, it can down pack or side pack, but don't make the board transform or distort, don't be subjected to heavy pressure.
- The hole of each port does not be opened too small, especially the HDMI port hole, avoid the whole set morphing to cause the extrusion of port when installing.
- The hole of RGB socket is recommended the situation of not using the screw stationary on the RGB socket to fix on the structure board.
- The connected wire which between the other boards and this board can't be leaded too long, or affect performance and image quality.
- The whole set inner wires matching reasonable, each connected wire try to not directly cross the PCB board, especially cross over from the main IC, avoid affect the whole set EMC performance.
- In order to obtain better EMC effect of the whole set, we suggest the LVDS twisted pair wire between the main board and panel must be tied up well and try to use shielding wire. If it's possible, try to put on the magnetic belt ring on the wire which near the board terminal.
- The HDMI and HDCP on the main board are all passed the related certifications, but we just provide testing certification of the inner usage standard. If you need to use legal HDMI and HDCP, please apply related association as formal member by yourself
- There is ROHS identification on the board and package, the board match ROHS standard.



## 11. EXCURSUS

### Keyboard and remote definition

