

V1.0

LCD TV CONTROL BOARD SPECIFICATION

MODEL: T.MS6M48.6X(Asia-Single)

Part Number: MST-10072714

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REVISION HISTORY

VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V1.0	2010.07.27	T.MS6M48.6A 10283	All	First issued	Fanny

1. GENERAL DESCRIPTION

T.MS6M48.6X is a multi-purpose LCD TV control board which can support LCD panel with dual/single LVDS interface. It supports LCD panel more than 26" which resolution is up to 1920×1080.

T.MS6M48.6X supports Teletext, NICAM/A2, USB, 3×HDMI, PC-RGB, 2×AV, 2×YPBPR and ATV. It includes an audio power amplifier which can support 2X9W (8Ω) output.

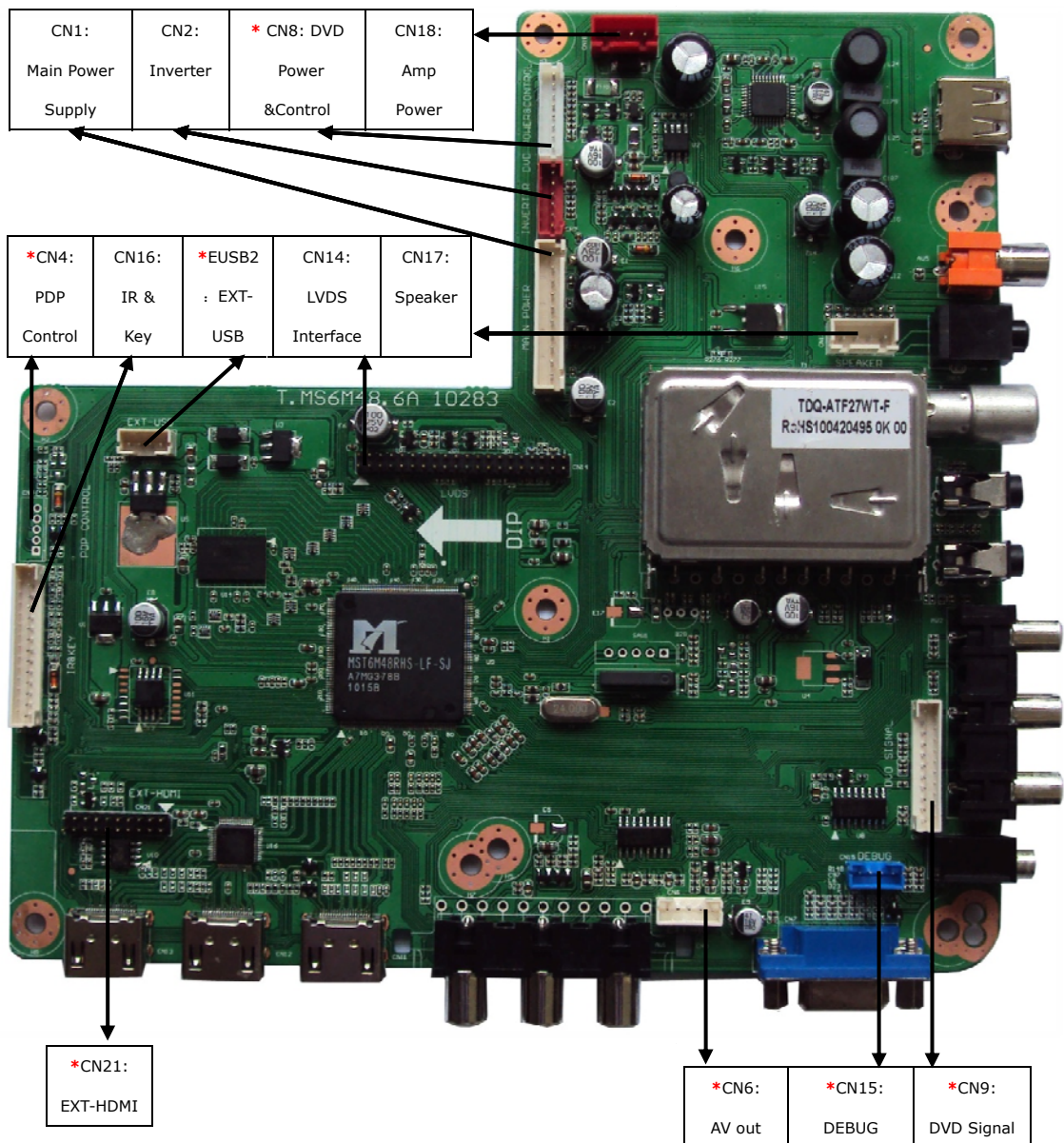
T.MS6M48.6X can connect with accessory modules to support extended functions such as built-in DVD and external HDMI. Its USB slot can be used for software upgrade and multimedia playback.

2. FUNCTION LAYOUT

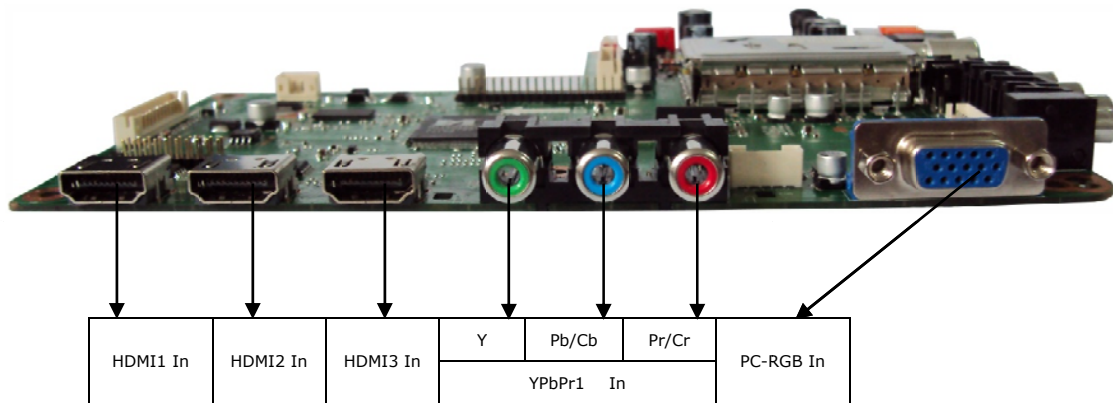
The picture is for a reference only, the actual item is the standard.

The optional connectors and terminals are marked with "*".

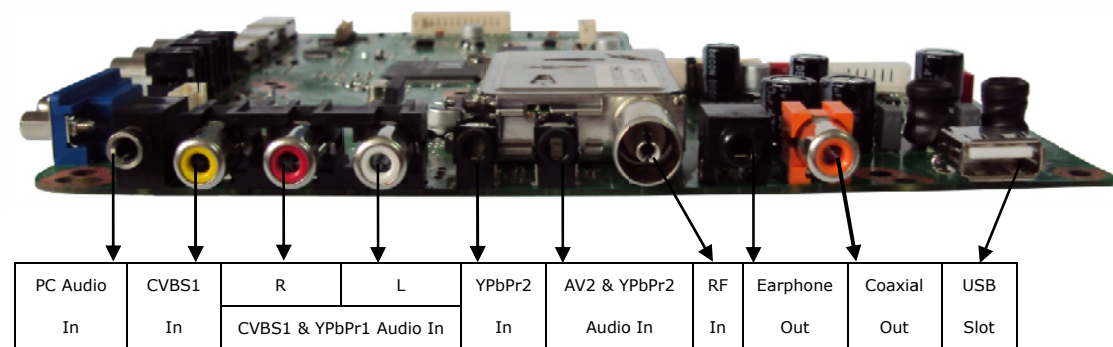
TOP VIEW OF T.MS6M48.6X



FRONT VIEW OF T.MS6M48.6X



SIDE VIEW OF T.MS6M48.6X



REQUIREMENT OF WIRE HARNESS

AV In



YPbPr In



3. FEATURES

CHIPSET	MST6M48RHS	
MARKET AREA	Asia-Pacific, Middle-East	
OSD LANGUAGE	Chinese, English	
PANEL	Panel Type	LCD/LED

T.MS6M48.6X(Asia-Single)-SPECIFICATION

	Interface	Single/Dual LVDS Interface	
	Max Resolution	1920×1080	
VIDEO INPUT	TV	Receiving Range	49MHz – 863MHz
		Input impedance	75Ω
		Video System	PAL/SECAM
		Sound System	B/G,D/K,I,M
			NICAM/A2
		Max storage Channels	200CH
	Teletext	1000Pages	
	PC-RGB	Format	Up to SXGA@75Hz
	CVBS	Video System	PAL/NTSC/SECAM
		Video level	1.0 V _{p-p} ±5%
YPbPr	480i, 480p, 576i, 576p, 720p, 1080i, 1080p		
HDMI	480i, 480p, 576i, 576p, 720p, 1080i, 1080p		
AUDIO INPUT	PC Audio	Earphone Input	0.2 ~ 2.0 V _{RMS}
	CVBS2 Audio	L/R RCA Input	0.2 ~ 2.0 V _{RMS}
	CVBS1 Audio	L/R RCA Input	
	YPbPr Audio		
AUDIO OUTPUT	Frequency Response	100Hz~15KHz @±3dB (500mV reference signal)	
	Max Output power	2×9W(8Ω) THD+N<10%@1KHz (Power Supply: 24V, Audio Input: 0.5V _{RMS})	
POWER	Requirement	24V/12V/5V/5VSB	
	To Panel	5V, 12V	
	Management	Standby Power Consumption < 0.5W(Board Only)	
COMB FILTER	3D		
DEINTERLACE	3D		
WEAK SIGNAL ENHANCEMENT	YES		
NOISE REDUCTION	YES		
USB FUNCTION	Multimedia, Software upgrade		
KEY FUNCTION	MENU, CH+, CH-, VOL+, VOL-, INPUT, POWER		
EXPANDABLE FUNCTION	DVD, External USB, External HDMI		
TERMINALS	INPUT	TV	1 IEC-Connector 75Ω
		USB	1 USB Slot(horizontal)
		HDMI	3×HDMI terminals(horizontal)
		PC-RGB	1 D-SUB terminal(blue,15 pin)
		PC Audio	1 Earphone terminal(black)
		YPbPr1	3 RCA terminals(green, blue, red)
		YPbPr2	1 Earphone terminals(black)
		CVBS1	1 RCA terminal(yellow)

T.MS6M48.6X(Asia-Single)-SPECIFICATION

		CVBS1 & YPbPr1 Audio	2 RCA terminal(red, white)
		CVBS2	1 Earphone terminals(black)
		CVBS2 & YPbPr2 Audio	
	OUTPUT	Earphone	1 Earphone terminal(black)
		Coaxial (option)	1 RCA terminal(orange)

ELECTRICAL CHARACTERISTICS & REQUIREMENTS

Power Supply Mode	Symbol	Voltage Range	Max Current	Ripple Voltage @25℃	Startup Time	Rise Time
24V/12V/ 5V/5VSB (Built-In)	24V	22V~25V	1000mA	240mV _{p-p}	≤100ms	≤50ms
	12V	12V±10% (Refer to inverter spec)	300mA	120mV _{p-p}	≤100ms	≤50ms
	5V	5V~5.25V (Refer to inverter spec)	1000mA	50mV _{p-p}	≤100ms	≤50ms
	5VSB	5V~5.25V	100 mA	50mV _{p-p}	--	≤50ms

Note: The current of panel, inverter and extension modules are not included in max current.

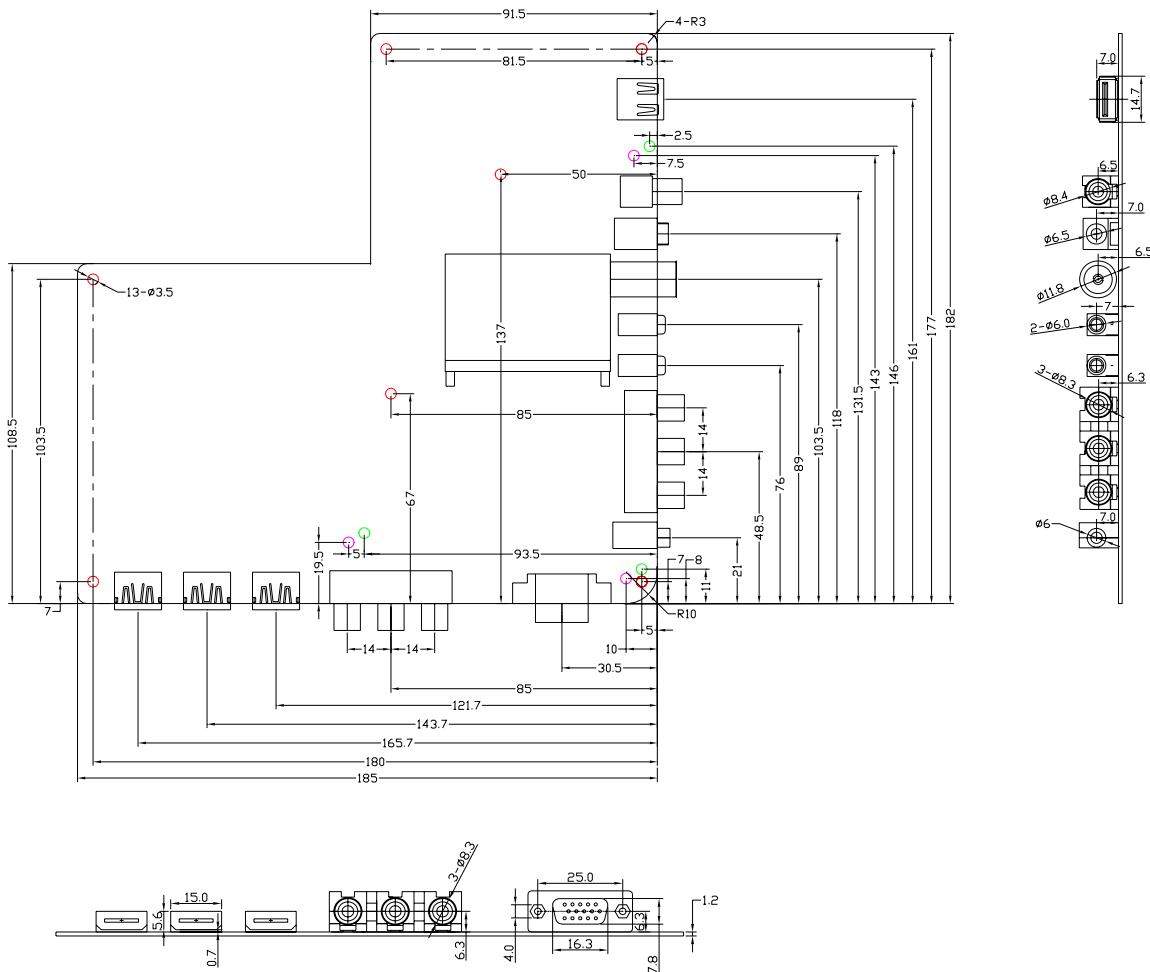
USB MULTIMEDIA PLAYBACK FORMAT

Media	File Ext.	Codec		Remark
		Video	Audio	
Movie	.avi	MJPEG	MP3, WMA, AAC MP2, PCM	Max Resolution And Frame Rate: 640×480@30fps Max Data Rate: 10 Mbps
		Xvid, MPEG-2, MPEG-4, H.264		
	.mp4	MPEG-2, MPEG-4, H.264		Max Resolution And Frame Rate: 1920×1080@30fps Max Data Rate: 20 Mbps
	.ts/ .trp	MPEG-2, H.264		
	.mkv/ .mov	MPEG-4, H.264		
	.mpg	MPEG-1, MPEG-2		
	.dat	MPEG-1		MP2
.vob	MPEG-2	Max Resolution: 720×576 Max Data Rate: 20 Mbps		
	.rm/ .rmvb	RV8, RV9, RV10	COOK	Max Resolution And Frame Rate: 1280×720@30fps Max Data Rate: 10 Mbps
Music	.mp3	--	MP3	Sample Rate: 8K~48KHz Bit Rate: 16K~320Kbps Channel: Mono/Stereo
	.wma	--	WMA	

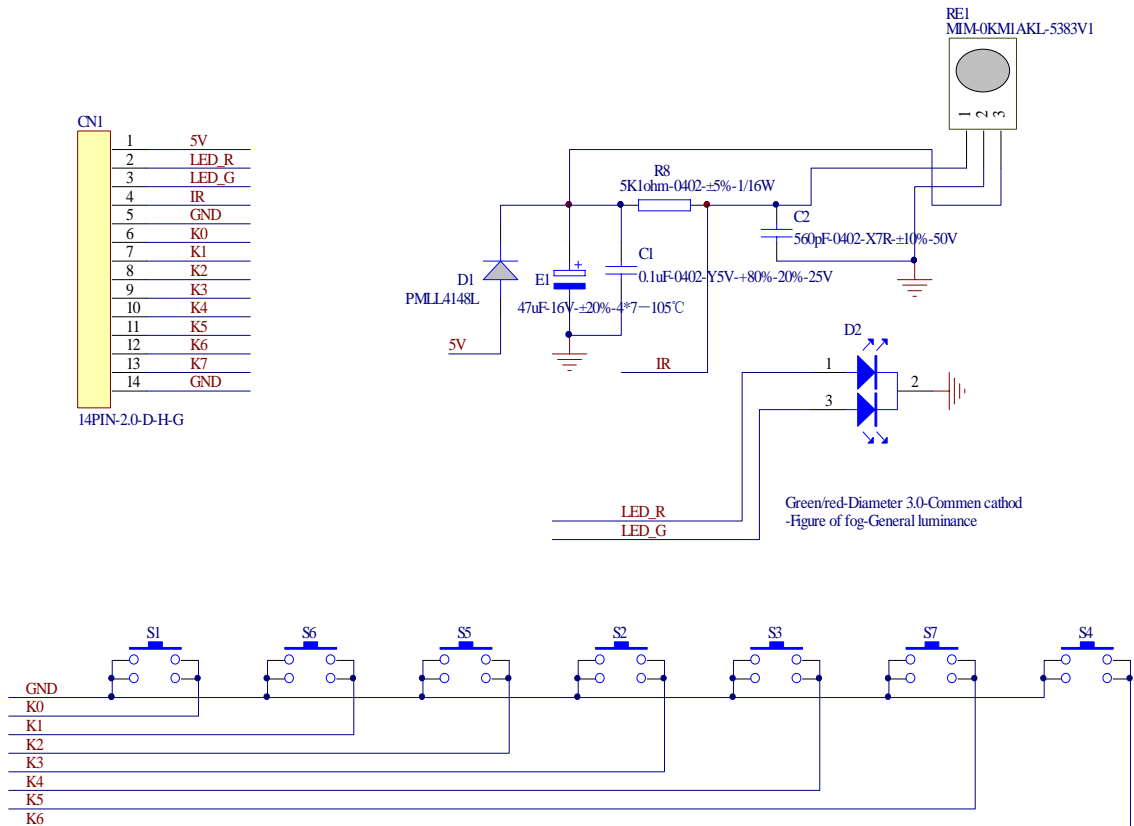
Media	File Ext.	Codec		Remark
		Video	Audio	
	.m4a/ .aac	--	AAC	Sample Rate: 16K~48KHz Bit Rate: 32K~442Kbps Channel: Mono/Stereo
Photo	.jpg/ .jpeg	Progressive JPEG		Max Resolution: 8195×8195
	.jpeg	Baseline JPEG		Max Resolution: 15360×8640
	.bmp	--		Max Resolution: 9600×6400 Pixel Depth: 1/4/8/16/24/32 bpp
	.png	Non-Interlaced		Max Resolution: 9600×6400
		Interlaced		Max Resolution: 1800×1800
File system: FAT32, FAT16, NTFS(NTFS compressed file is not supported).				

4. PCB DIMENSION

The overall height of T.MS6M48.6X is 18 mm.



5. SCHEMATICS OF IR BOARD & KEY BOARD



6. INTERFACE DEFINITION

The optional connectors are marked with “*”.

◆ CN1(10PIN/2.54): BUILT-IN POWER SUPPLY CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	5VSB	Power Supply Standby
2	PWON	Power Supply Standby Control
3	GND	Ground
4	GND	
5	P5V	+5V Power Supply for Panel
6	P5V	
7	5V	Main +5V Power Supply
8	5V	
9	GND	Ground
10	12V	+12V DC Power Supply

◆ CN2 (6PIN/2.0): INVERTER CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	12V	+12V DC Power Supply

2	12V	+12V DC Power Supply
3	BLO	Back-Light ON/OFF Control for Panel
4	ADJ	Brightness Adjustment for Panel
5	GND	Ground
6	GND	

◆ ***CN4(5PIN/2.0): PDP Control CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	DIS	Reserved IO
2	RLY	RLY Control for PDP
3	LG	VS-ON Control for LG PDP
4	SS	VS-ON Control for Samsung PDP
5	GND	Ground

◆ ***CN6(5PIN/2.0): AV OUT CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	CVBS	CVBS Signal Output
2	GND	Ground
3	AVL	CVBS Audio Left Channel Output
4	GND	Ground
5	AVR	CVBS Audio Right Channel Output

◆ ***CN8(8PIN/2.0): DVD POWER & CONTROL CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	D5V	+5V DC Power Supply for DVD
2	D5V	
3	GND	Ground
4	GND	
5	D12	+12V DC Power Supply for DVD
6	DIR	IR Data Transfer to DVD
7	DAT/RX	Data Receiver/Serial Data Receiver
8	STB/TX	DVD Standby Control/Serial Data Transmitter

◆ ***CN9(11PIN/2.0): DVD SIGNAL INPUT CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	NC	No Connection
2	GND	Ground
3	DRI	DVD Audio Right Channel Input
4	GND	Ground
5	DLI	DVD Audio Left Channel Input
6	DPB	DVD YPbPr-Pb Input
7	GND	Ground
8	DPR	DVD YPbPr-Pr Input
9	GND	Ground
10	DY	DVD YPbPr-Y Input

NO.	SYMBOL	DESCRIPTION
11	GND	Ground

◆ **CN14(2×20PIN/2.0): LVDS INTERFACE**

NOTE: PIN31~40 are optional. The connector or each PIN can refer to the panel specification.

NO.	SYMBOL	DESCRIPTION
1	VSEL	Power Supply for Panel
2	VSEL	
3	VSEL	
4	GND	Ground
5	GND	
6	GND	
7	RX00-	LVDS ODD 0- Signal
8	RX00+	LVDS ODD 0+ Signal
9	RX01-	LVDS ODD 1- Signal
10	RX01+	LVDS ODD 1+ Signal
11	RX02-	LVDS ODD 2- Signal
12	RX02+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	RXOC-	LVDS ODD Clock- Signal
16	RXOC+	LVDS ODD Clock+ Signal
17	RX03-	LVDS ODD 3- Signal
18	RX03+	LVDS ODD 3+ Signal
19	RXE0-	LVDS EVEN 0- Signal
20	RXE0+	LVDS EVEN 0+ Signal
21	RXE1-	LVDS EVEN 1- Signal
22	RXE1+	LVDS EVEN 1+ Signal
23	RXE2-	LVDS EVEN 2- Signal
24	RXE2+	LVDS EVEN 2+ Signal
25	GND	Ground
26	GND	
27	RXEC-	LVDS EVEN Clock- Signal
28	RXEC+	LVDS EVEN Clock+ Signal
29	RXE3-	LVDS EVEN 3- Signal
30	RXE3+	LVDS EVEN 3+ Signal
*31	GND	Ground
*32	GND	
*33	CON1	Logic Level Control (Default For High Level)
*34	DISPLAY	PDP Display Enable
*35	VSEL1	Reserved Power or I ² C SCL
*36	VSEL2	Reserved Power or I ² C SDA
*37	RX04-	LVDS ODD4- Signal

*38	RX04+	LVDS ODD4+ Signal
*39	RXE4-	LVDS EVEN 4- Signal
*40	RXE4+	LVDS EVEN 4+ Signal

◆ ***CN15(4PIN/2.0): Debug Port CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	3V3	+3.3V DC Power Supply
2	RXD	Receive Data
3	TXD	Transfer Data
4	GND	Ground

◆ **CN16(14PIN/2.0): KEY & IR BOARD CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply
2	RED	Red Indicator
3	GRN	Green Indicator
4	IR	IR Receiver
5	GND	Ground
6	K0	K0
7	K1	K1
8	K2	K2
9	K3	K3
10	K4	K4
11	K5	K5
12	K6	K6
13	K7	K7
14	GND	Ground

◆ **CN17 (4PIN/2.54): SPEAKER CONNECTOR**

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

◆ **CN18(4PIN/2.54): AMPLIFIER POWER SUPPLY CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	24V	+24V DC Power Supply
2	24V	
3	GND	Ground
4	GND	Ground

◆ ***CN21(2x10PIN/2.0): EXTERNAL HDMI CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	HDMI_RX2+	HDMI 2+ Signal
2	HDMI_RX2-	HDMI 2- Signal

NO.	SYMBOL	DESCRIPTION
3	HDMI_RX1+	HDMI 1+ Signal
4	HDMI_RX1-	HDMI 1- Signal
5	HDMI_RX0+	HDMI 0+ Signal
6	HDMI_RX0-	HDMI 0- Signal
7	HDMI_RXC+	HDMI Clock+ Signal
8	HDMI_RXC-	HDMI Clock- Signal
9	HDMI_SCL	HDMI DDC I ² C SCL
10	HDMI_SDA	HDMI DDC I ² C SDA
11	GND	Ground
12	GND	
13	POW_SINK	HDMI 5V
14	HPD_CON	Hot Plug Detect
15	GND	Ground
16	GND	
17	CEC	CEC Signal
18	+5V	+5V DC Power Supply
19	M_SCL	Main I ² C SCL
20	M_SDA	Main I ² C SDA

◆ ***EUSB2(4PIN/2.0): EXTERNAL USB CONNECTOR**

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

7. CONFIGURATION & GENERAL PRECAUTIONS

- **Relative humidity: ≤ 80%.**
- **Storage temperature: -10~60°C.**
- **Operation temperature: 0~40°C.**
- **Protect the board from static electricity in case of damage to the IC.**
- **Keep the board away from conductor when it is working.**
- **Don't push or pull the connectors when the board is working.**
- **Don't press , distort or disassemble the board.**
- **Clean the board with soft dry cloth when it's dirty.**
- **Don't wire in the board to power supply before panel is correctly connected.**
- **High-speed USB devices with Hi Speed FS file system are recommended for multimedia and PVR application.**
- **The Connection wire of external USB and external HDMI is recommended to use twisted pair (Differential signal line twisted-pair).**