Brief Description of Circuit Functions

Circuitry Description

TV Box

Tuner convert RF signal to CVBS and 2nd IF, the CVBS is given to video decoder SAA7118 and 2nd IF is given to audio decoder MSP34X0G.
video/audio connecters (YPbPr & SVHS & AV input & AV output) except PC audio are placed in this box, YPbPr own its audio input , SVHS and AV input share one audio input. The video signals are given to video decoder SAA7118 in main board and the audio Signals are given to audio decoder MSP34X0G via s multiplex. The output of MSP34x0G is sent to audio amplifier TPA3004D2 .
All the sound effect ,volume/bass/treble/delta/etc , are made by MSP34x0G.
This board connects to Main board with 30 pins connector .

Audio Board

Audio amp TPA3004D2 is used, it provide 10Wx2 audio power to speaker box , the earphone and line out jack are put at the edge of the board, speaker will be mute when earphone or line out is plugged in ,this board is connected to main BD with 10 pins connector.

Key Control Board

6 push keys & power switch & infrared receiver are here, the keys signals and IR signal are sent to Painter I (uP) for decoding. the power switch is to control the Vcc of the painter I uP

Main Board

Video

Video decoder SAA7118 convert analog video signal to 656/8 bit to video converter FLI2300 , the FLI2300 provide the function of video de-interlacing , LTI & CTI, noise reduction, color suppression with 2D comb filter , true color enhancement and film 3:2/2:2 pull down, it is scaling the video to 1280x768 output, FLI2300 need a extra SDRAM for the memory of de-interlacing

HD YPbPr input

The TDA9883 convert analog HD signal YPbPr input to 24 bits digital output , then send this 24 bits data to FLI2300 , and the sync out from TDA9883 will be given to scaler JagASM for mode detection , the YPbPr is also sent to SAA7118 for decoding , the uP will know what kind of video is inputted.
TDA9883 will be working for progressive YPbPr and SAA7118 will be working for interlace YPbPr.

PC graphic & DVI

135MHz ADC had built inside the JagASM scaler, so PC signal directly sent to JagASM analog port ,It scales all modes to 1280x768 output.
The Sil151 will convert PC DVI digital input to 24 bit then send to digital port of JagASM scaler. It scales all modes to 1280x768 output
There are two DDC EEPROM ,one for analog PC D-sub input, the other one is for PC DVI digital input.

PIP

The JagASM need 32 bit SDRAM to memory the video signal when PIP mode is enabled, the down Scaled video is made by FLI2300 and mix the video into PC graphic and PC DVI Digital in JagASM.

OSD

The OSD is created in JagASM scaler and mixed in JagASM.

uP

There are 2 uPs are designed in

Painter

It provide TxT & CC & V Chip library, and it also used for power saving detection and user key detection. It control the video decoder SAA7118 & Audio decoder MSP34X0G & Tuner via IIC

MX10E8050

It is responsible for the scaling part & HDTV part ,it control scaler JagASM & AD9883 via IIC, and it control the scaler JagASM via the memory mapping method.

The two uPs is communicated each other via a independent IIC

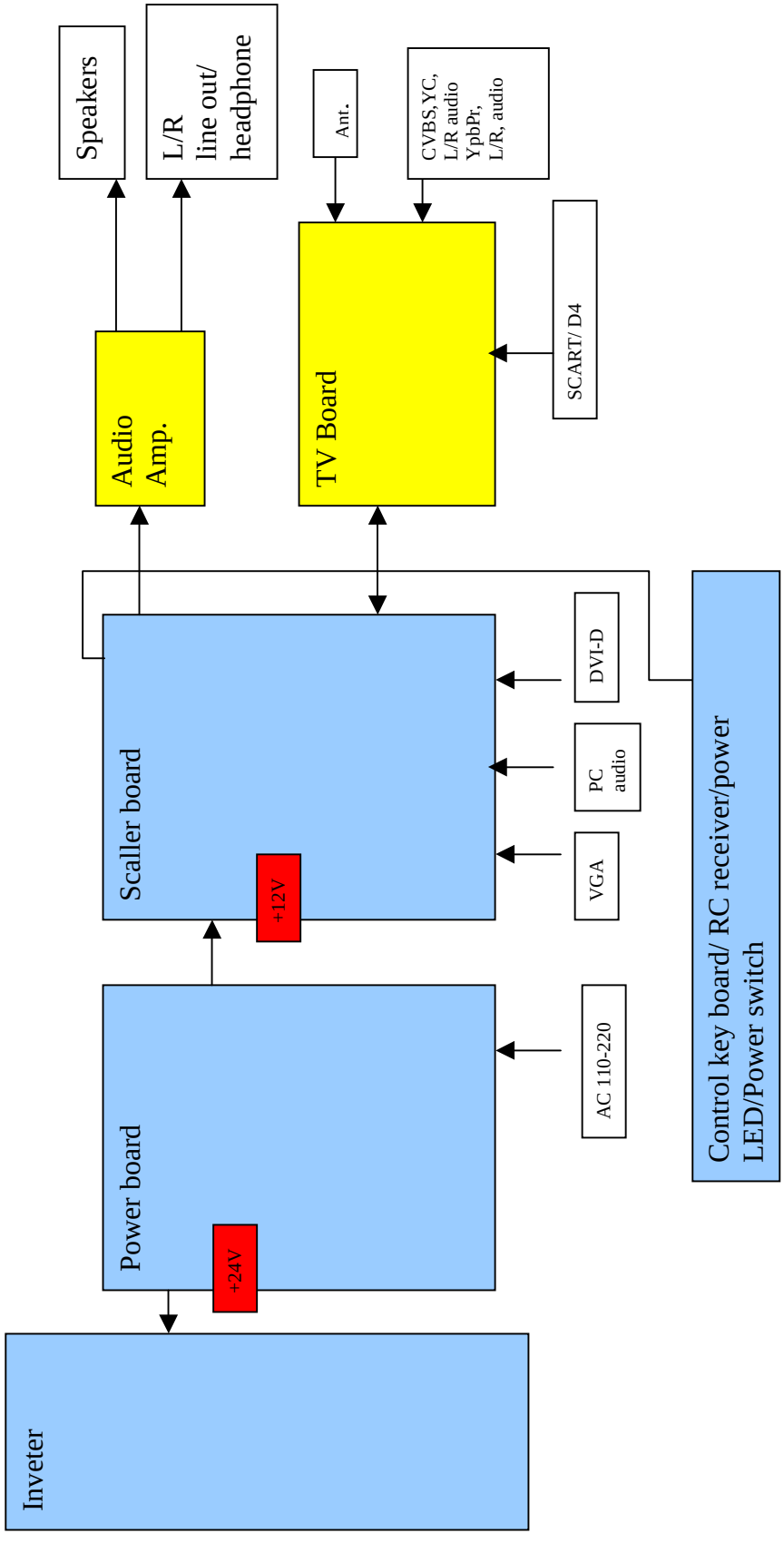
Power

Internal power board is used , supply 24VDC for Inverter and 16VDC for scaler board power and Audio amplifier, DC-DC converter are used to convert 16V to 12V for panel T-cone driver , and convert 16V to 5V/3.3V/2.5V/1.8V for chips and tuner ,a 3V3 switching power is used for painter uP for power saving purpose .

Exhibit 5

Dell W2300 LCD TV-Monitor

System Functional Block



Scaler board Functional Block