Hauppauge!®

HP Islandia Specification

PCI bus ATSC, Multi-Standard Analog TV Receiver w/FM Radio

Engineering Name: Islandia	**Part Number: 74xxx**

Revisions

REV	Date	Description
Rel 1.0	8/31/06	-
Rel 1.1	9/5/2006	Added power consumption data

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1 Overview:

The Islandia Combo (ATSC and NTSC) TV tuner board is a 32-bit / 33 MHz PCI card. The design incorporates two independent processing chains that allow receiving and processing both digital (ATSC) and analog/FM streams simultaneously (as oppose to Hybrid boards which allows receiving only one or the other).

Components on the Islandia have been selected and placed to optimize video performance by reducing cross-talk and conducted noise.

1.1 Hardware / Software features overview:

- PCI-Card Form Factor
- 32Bit/33MHz Bus Interface
- Tuner #1: Multi-standard Analog TV & FM Radio receiver
- Tuner #2: Digital Terrestrial receiver (ATSC)
- High quality software MPEG-2 encoding of analog TV Signal
- Worldwide broadcast stereo audio support.
- Microsoft Windows Vista Premium Logo.
- Compatible with CyberLink PowerCinema and most PC-TV applications.
- Microsoft Windows Hardware Quality Labs (WHQL) Certified Device Drivers.
- Microsoft WDM/BDA Compliant Drivers

1.2 Audio/Video connections overview:

- Rear Panel
    - F-Connector: FM Radio Tuner # 1a
    - F-Connector: Analog Tuner # 1b
    - F-Connector: ATSC Tuner # 2
    - S-Video Input: 4 pin DIN
    - RCA Phono Jack: Audio Input Left
    - RCA Phono Jack: Audio Input Right
- Remote Front Panel Audio/Video Breakout Header (10 pin)

1.3 Digital TV Terrestrial section overview:

- RF band: Lower VHF, Upper VHF, UHF
- ATSC 8-VSB and 64/256 QAM demodulation

1.4 Analog TV section overview:

- NTSC tuner
- Stereo audio broadcast decoder with BTSC stereo.

1.5 Minimum System Requirements

- PCI 2.2 Compliant Slot
- XP SP2

1.6 Block Diagram

Figure 1 below illustrates the block diagram of the board. There are two independent processing chains to this TV tuner board: digital, and Analog.

Digital processing chain: A MaxLinear MX5005 tuner is used to receive terrestrial ATSC signals. IF signal from the tuner is fed to a CX24227 demodulator, which generates an MPEG transport stream (TS). The MPEG TS is sent to the MPEG data port of a CX23418 bus interface chip. Using DMA, the MPEG transport streams are sent to the host for recording to a hard disk drive or for software based decompression into video and audio. Displaying the compressed video on the PC screen requires software MPEG decoder with AC3 audio support.

Analog processing chain: A Philips MK2/3 tuner (or equivalent) is used to receive the Analog TV and FM radio. The basic function of this processing chain is to take audio/video source material either from the on board TV tuner or one of the external analog A/V sources decode (CX23418) and encode them into a MPEG-1/2 compliant streams using the built in hardware encoder (CX23418). The data streams are sent over the PCI bus in the compressed form using an internal DMA engine. Displaying the compressed video on the PC screen requires software MPEG decoder.

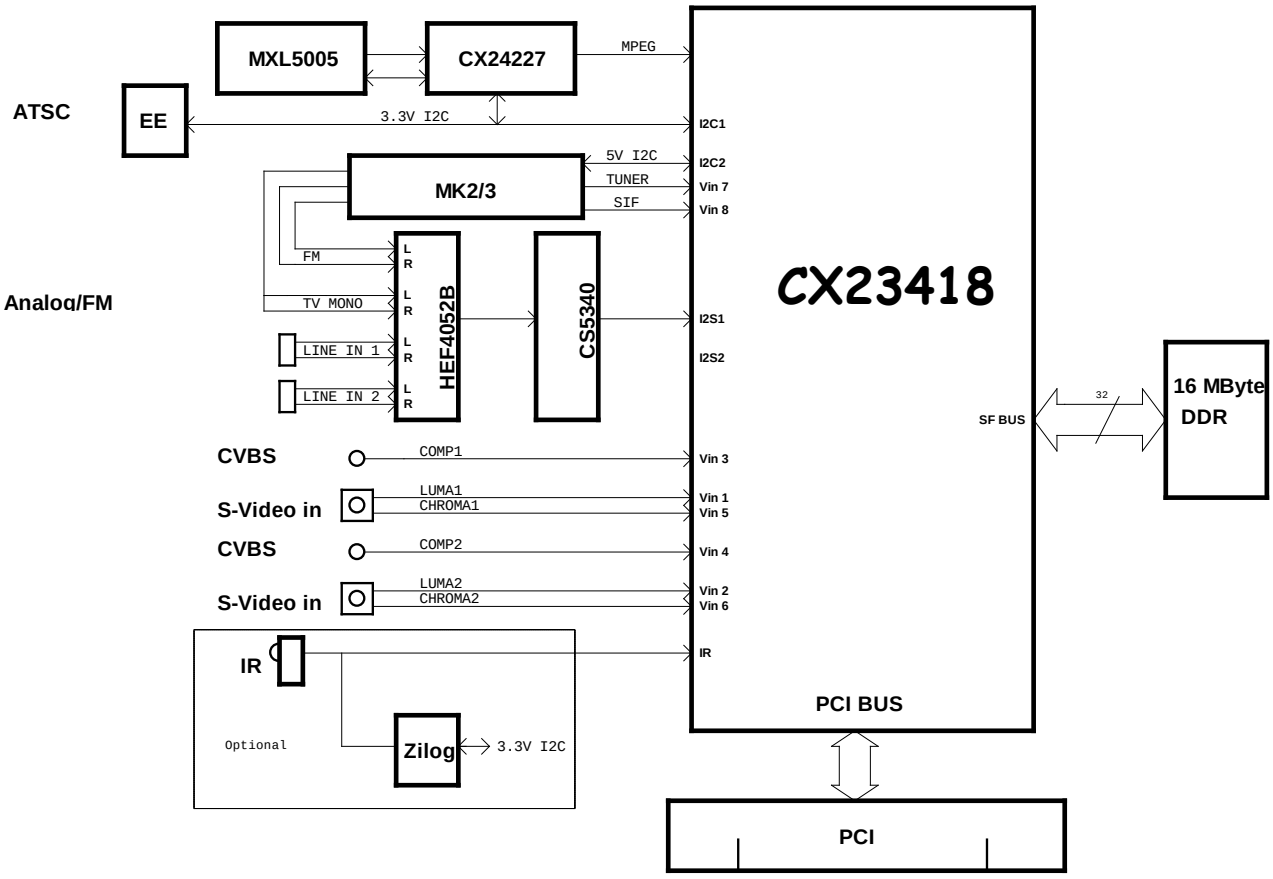


Figure 1: System Block Diagram

1.7 Key Components

- Analog
  - NTSC Tuner: Can Tuner (Philips, or TCL)
  - A/V Decoder: Conexant Cx23418
- Digital
  - ATSC Tuner: Si, MaxLinear -5005
  - ATSC LNA: Switchable LNA (Gain-TBD, NF-TBD)
  - ATSC Demodulator: Conexant Cx24227
- Bus Interface: integrated into CX23418)
  - MPEG2 Hardware Encoder: (integrated into CX23418)

1.8 Board Layout/Dimensions

The Islandia PCB is full-height PCI. The overall board dimensions are 6.25”(L) x 4.2”(H). The board layout is shown in Figure 2

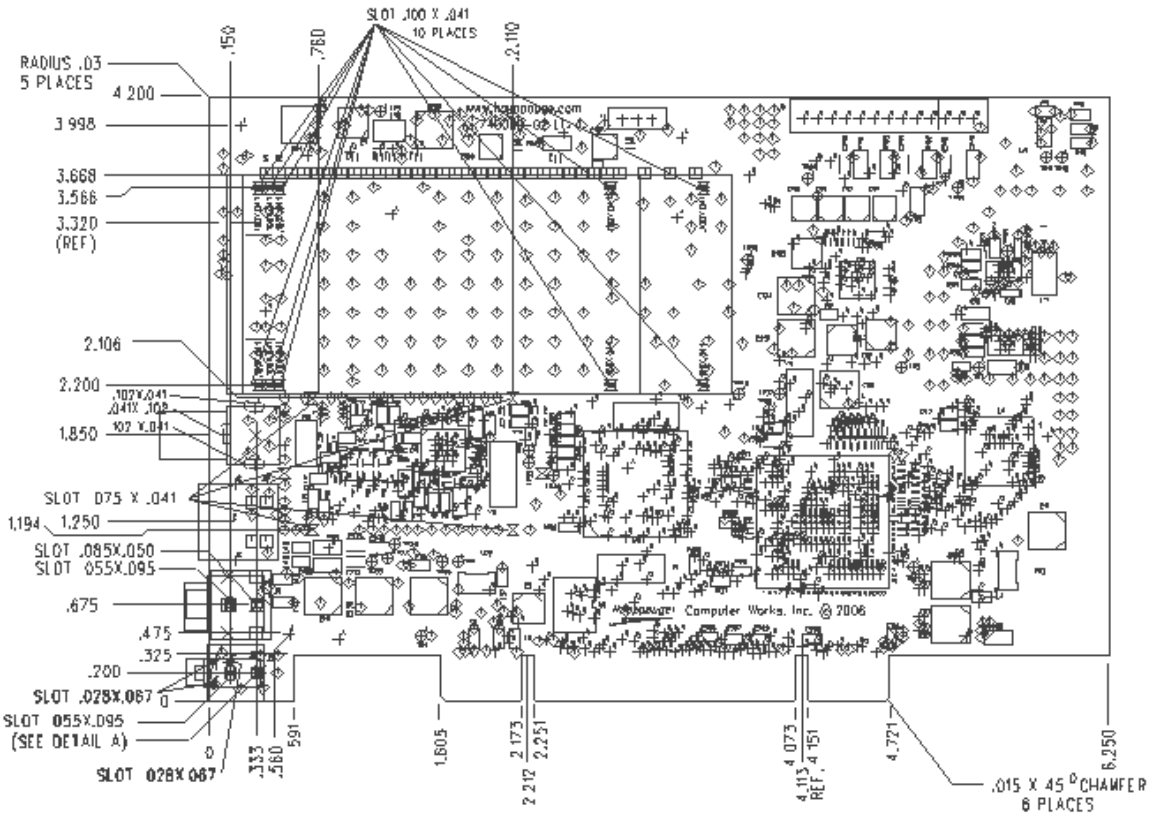


Figure 2 PCB Layout & Dimensions

1.9 Power Analysis

Power is drawn from the PCI bus +12v +5v and 3.3v sources. The total power drawn from the PCI (max worst case) is 10.32 W.

Power breakdown:

- PCI +12V @ 330mA ➔ 3.96 Watts
- PCI +5V @ 506mA ➔ 2.53 Watts
- PCI + 3.3V @ 1170mA ➔ 3.87 Watts

1.10 Audio / Video Breakout Header:

The onboard A/V header is designed to extend support for analog audio/video input to the analog section of the Islandia board and optional IR receiver. The header can be connected to an A/V panel with one set of audio/video/IR inputs. The onboard header supports audio and video inputs, which can be used as auxiliary A/V sources. Sources for a mating connector include the JST model 10NR-E series or the JST model XHP-10.

J9 - 2.5mm locking header		
RETAIL	**OEM**	
J9-13	J9-10	Audio shield
J9-12	J9-9	Line In 2 Right
J9-11	J9-8	Line In 2 Left
J9-10	J9-7	Audio Shield
J9-9	J9-6	Composite 2
J9-8	J9-5	Composite 2 shield
J9-7	J9-4	Chroma 2
J9-6	J9-3	Chroma 2 shield
J9-5	J9-2	Luma 2 shield
J9-4	J9-1	Luma 2
J9-3	n/c	*IR return
J9-2	n/c	*IR Signal
J9-1	n/c	*IR VCC

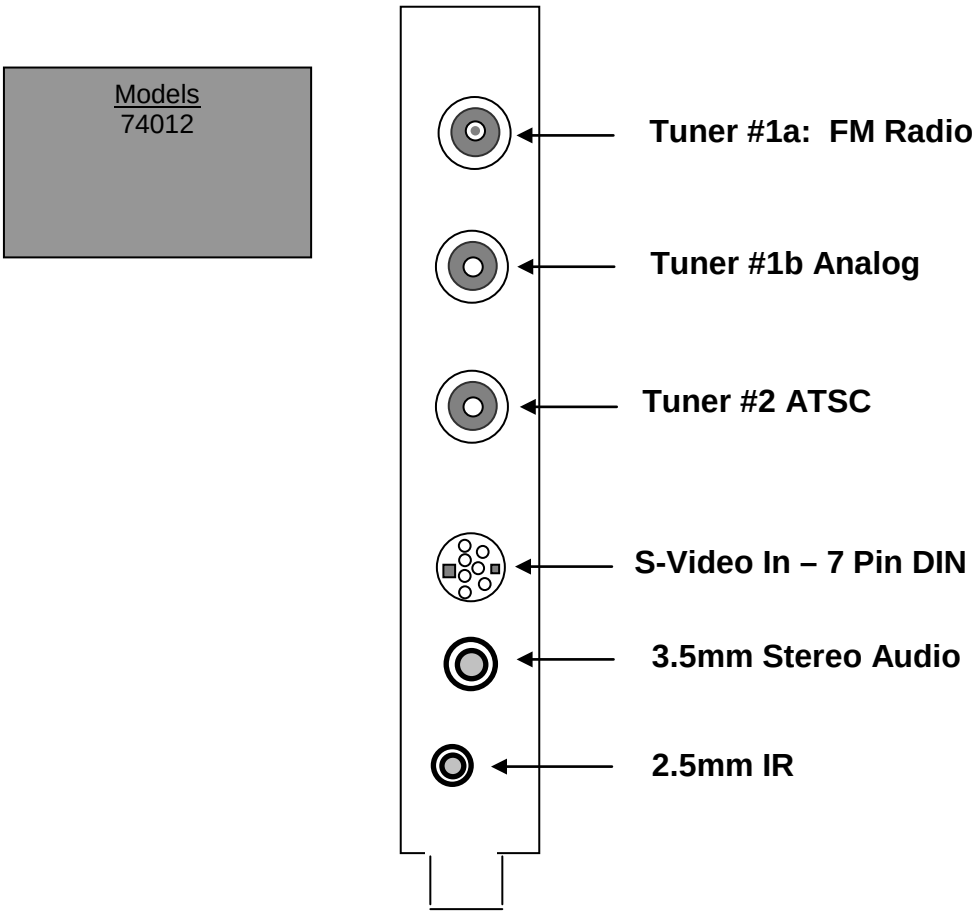
Table 1: A/V Front Panel Breakout Header Connector (*IR is optional)

2 Build Matrix

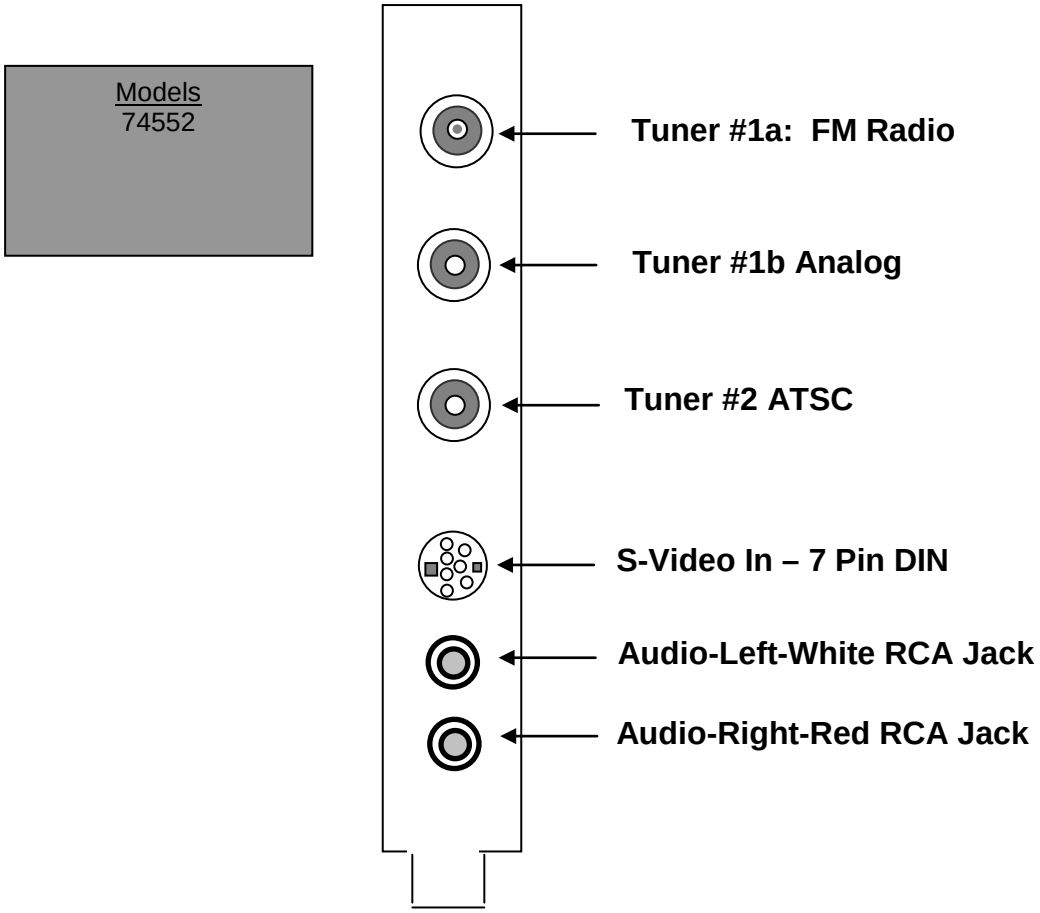
MODEL#	*VERSION HCW 193#*	*Target*	*FM*	*ATSC*	*S-VID IN J6*	*AUD IN 3.5 MM J5*	*AUD IN RCA J3/J4*	*IR BLAST J2*	*OEM CONN J9*	*SUB DEVICE ID*
74000	*NTSC-J 19310???*	*PROTO*	*YES*	*YES*	*YES*	*YES*	*NO*	*YES*	*13 PIN BOTH*	*TBD RETAIL*
74012	*NTSC-J*	*Retail*	*NO*	*NO*	*YES*	*YES*	*NO*	*YES*	*13 PIN BOTH*	*TBD RETAIL*
74022	*NTSC-J*	*Retail*	*NO*	*YES*	*YES*	*YES*	*NO*	*YES*	*13 PIN BOTH*	*TBD RETAIL*
74552	*NTSC-J 19310???*	*OEM*	*YES*	*YES*	*YES*	*NO*	*YES*	*NO*	*10 PIN BOTH*	*TBD OEM*
74582	*NTSC-J 19310???*	*OEM*	*NO*	*YES*	*YES*	*NO*	*YES*	*NO*	*10 PIN BOTH*	*TBD OEM*

Table 2: A/V Front Panel Breakout Header Connector

Appendix A: Retail Product Back Panel



Appendix B: OEM Product Back Panel



Appendix C: Product Specification

1.0 System		
1.1	Bus	PCI 2.2
1.2	Mode	Combo (dual tuner) Analog/Digital
1.2.1	Simultaneous Streams	ATSC TS & NTSC MPEG2 Enc
1.3	Encoding	Hardware MPEG-2
1.4	Analog TV	NTSC / PAL
1.4.1	NTSC	NTSC-M/J
1.4.2	PAL	I, B/G, M, N, D, H
1.4.3	SECAM	L, L'
1.4.4	VBI	Complete VBI Svcs (CC, CGMS, teletext…)
1.5	Digital TV	ATSC A/53 Compliant
1.5.1	Bandwidth	Lower VHF, Upper VHF, UHF
1.5.2	Modulation	8-VSB
1.5.3	Saturation / Sensitivity (8 VSB)	> 20dBm to < -80dBm
1.5.4	Adjacent Channel Rejection	> 40dB (goal is across all channels)
1.5.5	QAM	ITU-T J.83 Annex B
1.5.6	QAM 256 Signal Range	-15 dBmv to + 15dBmv
1.6	IR (receive & blaster)	(Build Option)
1.7	Broadcast Audio	-
1.7.1	BTSC with SAP	Yes
1.7.2	EIAJ (single & dual language)	Yes
1.7.3	A2 (single & dual language)	Yes
1.7.4	NICAM (single & dual language)	Yes
1.7.5	FM Radio	Yes
1.7.6	AC3/Dolby Digital	Per A/52B
1.7.7	Multi-Standard Mono Support	Yes
1.8	Analog Copy Protection Support	Yes
1.8.1	Macrovision (type 0, 1, 2, 3) Detection	Yes, on any input source
1.8.2	Dynamic ACP Type Switching	Yes
1.8.3	CGMS-A Bits	Yes
1.9	OS / Driver Support	XP-SP2, MCE Emerald, VISTA
1.9.1	Vista 32/64 Bit Drivers	Yes
1.9.2	Logo	Vista Premium
1.9.3	WHQL	Yes
1.9.4	Driver Type	BDA/WDM - AV Stream
1.10	System Requirements / Performance	-
1.10.1	CPU Recommendation	> 1.8GHz
1.10.2	Graphics Card	TBD
1.10.2	Resume Time Impact	Goal: < 300 msecs
1.11	Diagnostics, Utilities	-
1.11.1	RF Signal Strength Indicator	3-level (low, med, high)
1.11.2	Customer Diagnostic	Yes, record to log file
1.11.3	Driver Postings	Windows Update
2.0 Mechanical & Conectors		
2.1	PCB Format	Full Height

2.2	Backplate/Brackets	Full Height
2.3	Front-Panel Connector	Build Option
2.3.1.	Option 1	10 Pin, in-line
2.4	NTSC RF	F type
2.4.1.	Label	"TV IN"
2.5	ATSC RF	F type
2.5.1.	Label	"ANT IN"
2.6	S-Video	4-Pin
2.6.1.	Label	"S-VID"
2.7	Audio	Left/Right RCA Phono Jacks
2.7.1.	Label	"AUDIO"
2.8	Optional IR	2.5mm
2.8.1.	Label	"IR"

3.0 Environmental & Regulatory & Manufacturing

3.1	Operating Temperature	10 to 50 degrees-C
3.2	Storage Temperature	-40 to 65c
3.4	MTBF	TBD
3.5	Lead Free & RoHS Compliant	Yes
3.6	Safety / Regulatory/ Eqpt Standards	-
3.6.1	European Union	-
3.6.2	China	-
3.6.3	Australia	-
3.6.4	US	FCC, EN60950-1
3.6.5	Japan	-
3.6.6	Korea	MIC
3.6.7	Canada	BETS-7
3.7	PAL/SECAM	-
3.8	NTSC	FCC Part 15, Class B
3.9	Select Test Procedures	-
3.9.1	Immunity	EN55020
3.9.2	Safety	EN60950-1 (Revision 1 & 2)
3.9.3	Radiated & Conducted For IT Equipment	TBD
3.9.4	Conducted Radiation	TBD
3.9.4	ESD	TBD

4.0 Key Components

4.1	Analog NTSC Tuner	Can Tuner (Philips, or TCL)
4.2	Digital ATSC Tuner	Si, MaxLinear -5005
4.3	ATSC LNA	Switchable LNA (Gain-TBD, NF-TBD)
4.4	A/V Decoder	Conexant Cx23418
4.5	ATSC Demodulator	Conexant Cx24227
4.6	Bus Interface	(integrated into CX23418)
4.7	MPEG2 Hardware Encoder	(integrated into CX23418)
4.8	FR4 PCB	4-Layer, Lead Free

5.0 Power Estimates

5.1	Total Power Consumption	10.32 W
5.1.1	PCI + 12v	3.96 W