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Video-Lynx Z70A
70cm Mini Video/Audio Transmitter

Only to be used by a licensed radio amateur

High performance Mini 70cm, frequency agile Video-Audio ATV Transmitter

Applications
* R/C Video-links
* Airborne video
* Balloons/ Blimps
* Point to point video
* Robots
* Hat-cams
* Public service events etc

Overview: The **Videolynx Z70A** is a high quality 4 channel PLL synthesized mini (3.5 oz.) ATV transmitter. The Z70A is capable of transmitting on 4 different 70 cm ATV frequencies. Three of the frequencies coincide with the cable TV channels 58, 59 and 60. An audio sub-carrier generator is built in. All that is required is an audio source to transmit sound. No external tuning is required since the Z70A uses a PLL synthesizer. Up to 16 Custom frequencies within the allocated 70 cm ATV band can be provided.

A internal video test signal and an audio 1 kHz tone is built in for quick alignment of a receiver.
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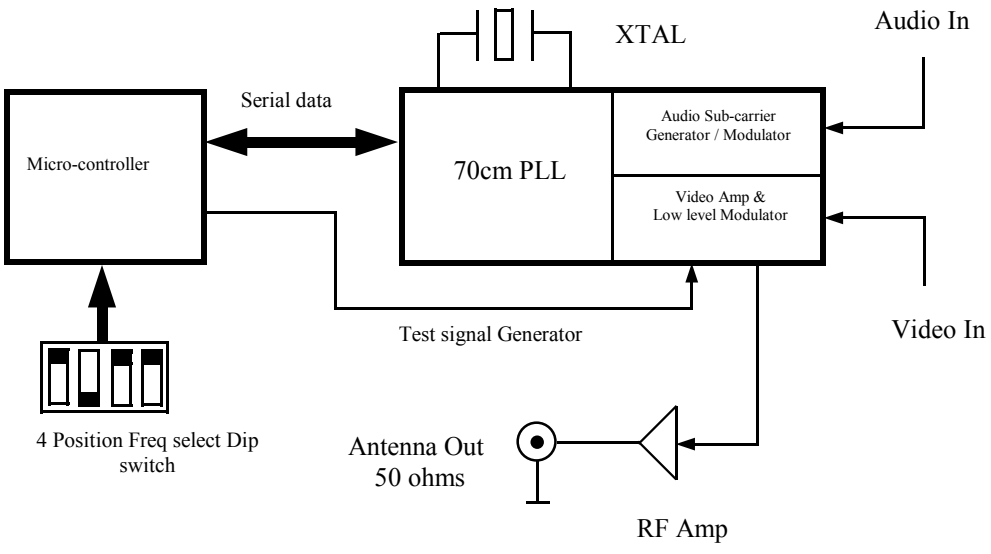
Internal Block Diagram



Z70A User Interface

Frequency Select Dip switches

There are 4 dip switches located on the Z70A that provide frequency selection..

Dip Switch → 1	2	3	4	
0	0	0	1	**426.25MHz** *Normal Operation*
0	0	1	0	**427.25MHz** *Normal Operation* **(Cable CH58)**
0	1	0	0	**434.00MHz** *Normal Operation* **(Cable CH59)**
1	0	0	0	**439.25MHz** *Normal Operation* **(Cable CH60)**
1	1	1	0	*Test signal on* **426.25MHz**
1	1	0	1	*Test signal on* **427.25MHz (Cable CH58)**
1	0	1	1	*Test signal on* **433.25MHz (Cable CH59)**
0	1	1	1	*Test signal on* **439.25MHz (Cable CH60)**

All other combinations of dip switch settings will turn off the RF carrier !

While the Videolynx Z70A is capable of operating on a total of 16 different pre programmable frequencies, stock models only provide the 4 standard USA AM ATV frequencies. If you are a foreign licensed ham and or have different band plans, Videolynx will be glad to provide you with a custom programmed Z70A. Please note that we will **ONLY** provide you with custom frequencies that are within allocated ATV ham bands.

Antenna out

A BNC female connector provides RF output at 50 ohms exact. Make sure that the antenna is properly matched to 50 Ohms. You should also use the best possible grade and shortest length coax to minimize loss. ***DO NOT OPERATE WITHOUT A LOAD!***

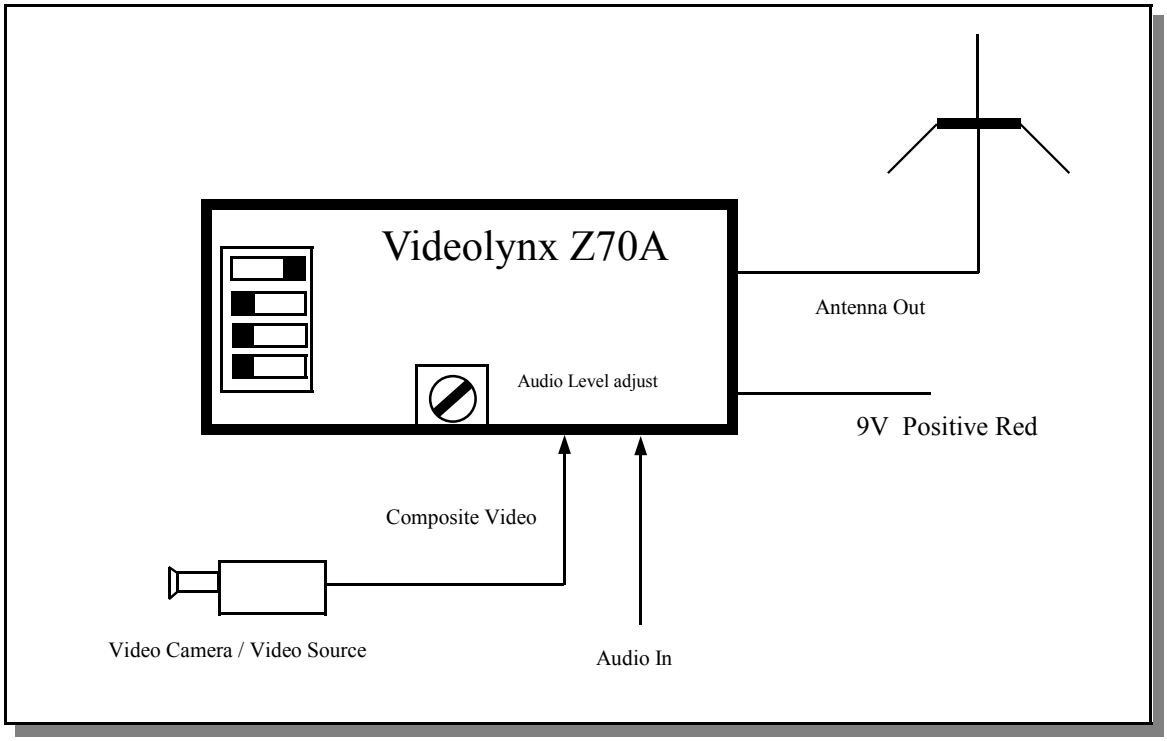
DC Power In

Supply voltage is **9V**. The **Red power lead is Positive (+)** and the **Black lead is Negative (-).** The Z70A draws about 250mA of current. If you plan to use 9V batteries it is best to use two to three 9V batteries in parallel. You may certainly use a regulated external power supply with the Z70A.

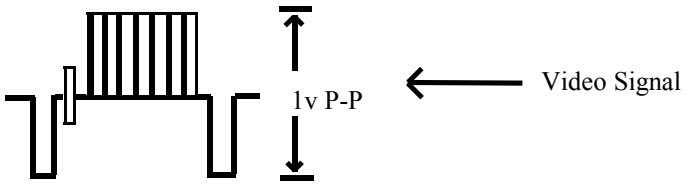
Audio and Video Inputs

The Z70A accepts NTSC or PAL composite video at 1V P-P. Audio is standard line level and a small potentiometer provides audio input level control.

Operation and Setup



The diagram above shows the how the **Z70A** needs to be connected to a video and audio source. Make sure that you have SMPTE standard video at 1 V P-P. Most consumer and commercial camera's and camcorders deliver SMPTE standard video, at the "**Video Out**" connector. If you are not sure if the camera is delivering SMPTE standard video, you can confirm this by looking at the video signal on a oscilloscope.
Audio is "Line Level". Line level audio is what you would get out of a CD player or VCR audio output connector. *Note: Line level is not the same as microphone level.*



Power requirements

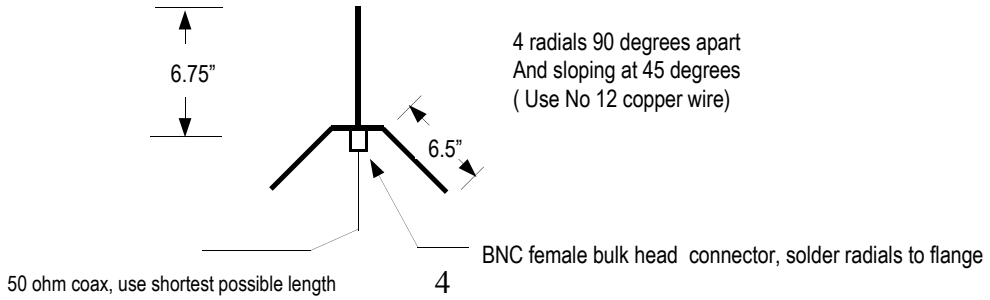
The Videolynx Z70A requires 9V DC and draws about 250mA of current. There is internal diode reverse polarity protection. You may use a 0.5A fuse inline to protect the Videolynx. If you plan to use 9V batteries, it is recommended to use two or three batteries in parallel to extend the transmission time. Of coarse you may use a regulated power supply or 12V battery with a power regulator that reduces the voltage to 9V. DO NOT supply more than 9V to the Videolynx. power output.

Antenna

The transmitting and receiving antenna are probably the most critical items for attaining best range. A small piece of 1/4 wave ground plane transmitting antenna in combination with a high gain receiving antenna will do for short range video transmission. **Best results are obtained while using both high gain transmitting and receiving antennas.**

Range testing was performed using the following antennas. The transmit antenna was a 14 element yagi, the receiving antenna was an 8 element yagi . At an approximate distant of 2.5 miles excellent picture quality was received. The receiver was a consumer grade Sony TV tuned to Cable CH 59. Please remember, that while a cable ready television would suffice as a good receiver, a sensitive ATV down-converter such as the P.C electronics TVC-4G far outperforms any cable ready television.
Using a 1/4 wave ground plane (shown below) as a transmitting antenna and using a 14 element yagi antenna for the receiving antenna, excellent picture quality at 1/2 mile was possible.

An experimental transmit /receive antenna you could build



Some antenna performance characteristics

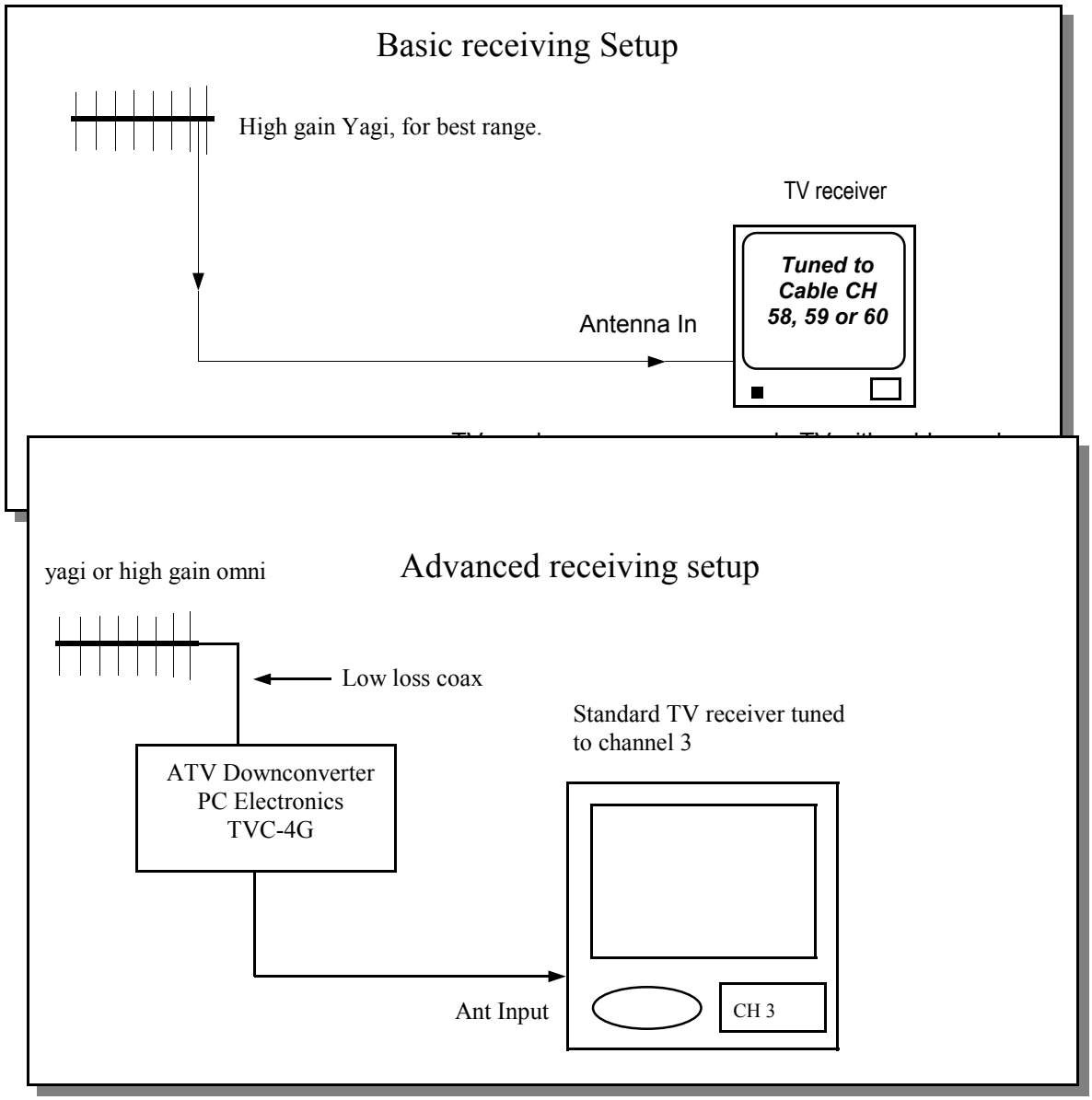
While some transmit-receive antennas combinations perform differently, the following chart depicts the theoretical system performance of the Videolynx Z70A using various combinations of antennas and an ATV down converter currently available through **PC Electronics. (626-447-4565)**

Receiver: PC electronics ATV downconverter, Model TVC-4G
Transmitter: Videolynx Model Z70A, with a power output of 50mW
Carrier/Noise: 40 – 45 dB
Picture quality: Snow Free P5
Antenna: Ground plane, 5 element 5L-70cm beam (PC electronics), 25 element DSFO ATV-25

	Ground Plane	5L-70cm	DSFO-ATV25
Ground Plane	0.25 miles	0.6 miles	1.5 miles
5L-70cm	0.6 miles	1.3 miles	3.5 miles
DSFO-ATV25	1.5 miles	3.5 miles	8.0 miles

For more information on purchasing the above mentioned antennas, ATV down converters and other ATV equipment, Contact **PC Electonics, 626-447-4565 (Mon-Thur 8:00am – 5:30pm PST) or www.hamtv.com**

The two diagrams below show a basic and an advanced receiving setup. For most purposes a simple cable ready TV along with a good high gain antenna would suffice. For best DX performance, a sensitive ATV down-converter, out performs any standard TV. Remember to keep coax runs from the antenna to the receiver/down-converter as short as possible. For longer coax runs, an antenna mast mount LNA may be needed for optimum performance to compensate for coax line loss.



Technical Specification

RF System

Operational Frequency range: 421.25 MHz – 440.00 MHz

(Four programmable channels provided – 16 channels possible)

Spurious emissions	: < 35dBc
Frequency Control	: PLL (Digital Phase locked loop) with XTAL reference
Transmit power to	: 50-100mW
RF output connector	: BNC female

Video

Modulation	: AM (Amplitude modulation)
Video Input	: NTSC/PAL video 1V P-P into 75 ohms
Video input connector	: RCA Female

Audio

Audio Input (Line level)	: 0.01V to 2V p-p into 10k
Audio deviation	: 25 kHz adjustable (0.01V to 2V p-p into 10k)
Audio sub-carrier frequency	: 4.5 MHz
Audio Input connector	: RCA Female

DC power

Input voltage	: 9V at 260mA

Mechanical

Size	: 1.5”W x .75”H x 3.5”L
Weight	: 3.4 oz.

Notice:

The Videolynx Z70A is an Amateur Radio ATV transmitter. The transmitter can ONLY be operated by a Technician class or higher licensed Radio Amateur in the USA and for legal purposes per 47 CFR part 97 of the FCC Rules. 97.113 of the FCC Rules prohibits Amateur Radio frequencies to be used to further any business purpose whether profit or non-profit. With few exceptions per 97.111 all transmissions must be directed to at least one other licensed Radio Amateur. Amateur Radio is intended for personal or hobby non-commercial communications between licensed Radio Amateurs. With the exception of running less than 1 Watt for radio control purposes, Amateurs must identify with their call letters plainly seen in the video every 10 minutes for extended transmissions and at the end of every transmission per 97.119.