

# Boulder Amateur Television Club TV Repeater's REPEATER

April, 2022  
issue #99

BATVC web site: [www.kh6htv.com](http://www.kh6htv.com)

ATN web site: [www.atn-tv.com](http://www.atn-tv.com)

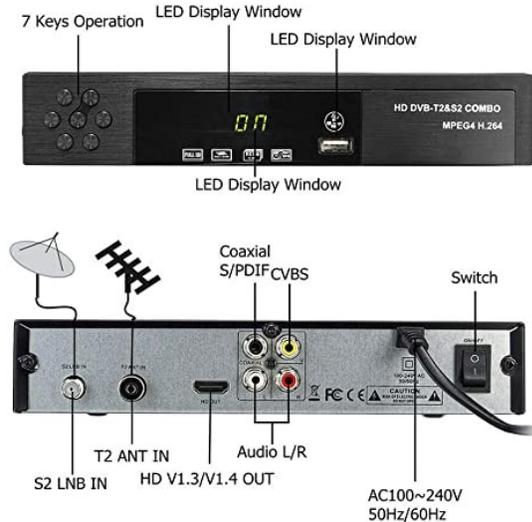
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**Hi-Des HV-110 Receiver Supply Issues:** The HV-110 has disappeared from the Hi-Des, E-Bay web store listing. Folks have reported being unable to purchase them. Dave, AH2AR, reports that Mel, KOPFX, has recently spoken to Calvin at Hi-Des and Calvin said they will have another run of HV-110s available in the May time frame.

**ANOTHER SOURCE of DVB-T RECEIVERS:** Because I was unable to purchase an HV-110 for a customer of mine, I went searching again on the internet for any consumer grade DVB-T receiver that might possibly work on the ham 70cm band. I did find one on Amazon from China whose photo looked like the same one we had been buying several years ago. They were called Combo DVB-T & DVB-S receivers. We had given up on this particular receiver because the firmware had been changed and they no longer would work on the amateur 70cm band. Well in desperation, I opted to gamble and try the "combo" again in the hopes that it's firmware would again work. I lucked out this time. This time, it did work on 70cm band. No manual came with it, but they usually are worthless anyway. After messing around with the menu structure, I was finally able to figure out how to program it for the normal, 70 cm, 6 MHz, ATV channels. Unlike some of these receivers, it would not work on the 33 cm, 900 MHz ham band. Reminder: these consumer grade receivers only work on 6, 7 or 8 MHz bandwidths. Not usable for any narrower bandwidths.

So, being successful with buying one unit, I decided I should lay in a stock of these. Unfortunately in today's dynamic, on-line environment, a great item might appear suddenly on the inter-net and then disappear a week later. I have purchased ten more of these "combo boxes". I have programmed them for the normal 70cm, 6 MHz, ATV channels of 423, 429, 435, 441 & 447 MHz. Users can also add other frequencies as desired later. The receiver also features a separate +12Vdc power input, not shown in the photo.



I am willing to resell them to other ATV hams for \$60 each, plus shipping via USPS priority mail. I am including PAL/F and PAL/SMA adapters along with a European to USA ac adapter ( kh6htv@arrl.net ).

73 de Jim, KH6HTV, Boulder, Colorado

## SOURCES for PCB Boards

We hams like to home-brew our own equipment. Often times, this means we would like to do it on a printed circuit board (PCB). But where can we get a board made without needing to do the messy chemical etching in Momma's kitchen. Well, following advice a long time ago from Tommy, W0IVJ, -- I have been using Express PCB as my supplier of boards for my ATV products. They provide free of charge some very nice software for either your windows or apple PC to do schematic drawings and also PCB layout. With your up-loaded order to Express PCB, they will then supply you with the Gerber files, upon request. They offer very prompt service. ( [www.expresspcb.com](http://www.expresspcb.com) )



**Digi-Key** **DKRed™ PCBs** • 4 Copies • 10 Day Turn  
 Your Design, Your Board • Free Shipping\*  
 \$1.50/sq in. per board **DK RED** **LEARN MORE**

Today, when I logged onto QRZ.com, an advertisement popped up from Digi-Key. It looks like they now are also offering a low cost service to build pc boards. They would be worth checking out also. ( [www.digikey.com](http://www.digikey.com) )

I have also heard from some hams that they have found sources in China to get low cost, low quantity PCBs. If any of our readers have other favorite places to get PCBs made, let us know and we will pass the info on to your fellow hams in a future newsletter.

73 de Jim, KH6HTV

## How to Watch Boulder County ATV

**Jim Andrews, KH6HTV**

Boulder County has a Digital ATV repeater, W0BTV. It covers most of the eastern half of Boulder County and beyond out onto the eastern prairie. Due to its location (same as the Boulder Amateur Radio Club's 146.70 repeater) it does not penetrate into the mountainous western part of the county. We presently have one active ATVer up in Johnstown, Bob, WB0NRV, 29 air miles from the repeater. This map shows our coverage area.

The repeater has an active group of ATVers, who are also BARC members. They hold a weekly ATV net on Thursday afternoons. The net starts at 3 pm and runs for 1 to 1 1/2 hours. The repeater's transmitter is typically turned on 1/2 to 1 hour prior to the net with either a test pattern or with a DVD playing a vacation travelogue. During the net each participant gets a chance to turn on his TV transmitter and chat on the air with the other net participants. Each TV transmission lasts for typically about 10 minutes. Many different topics are discussed on the various nets. Some are ham radio technical, some are slide shows of walks around town or travels, etc. We

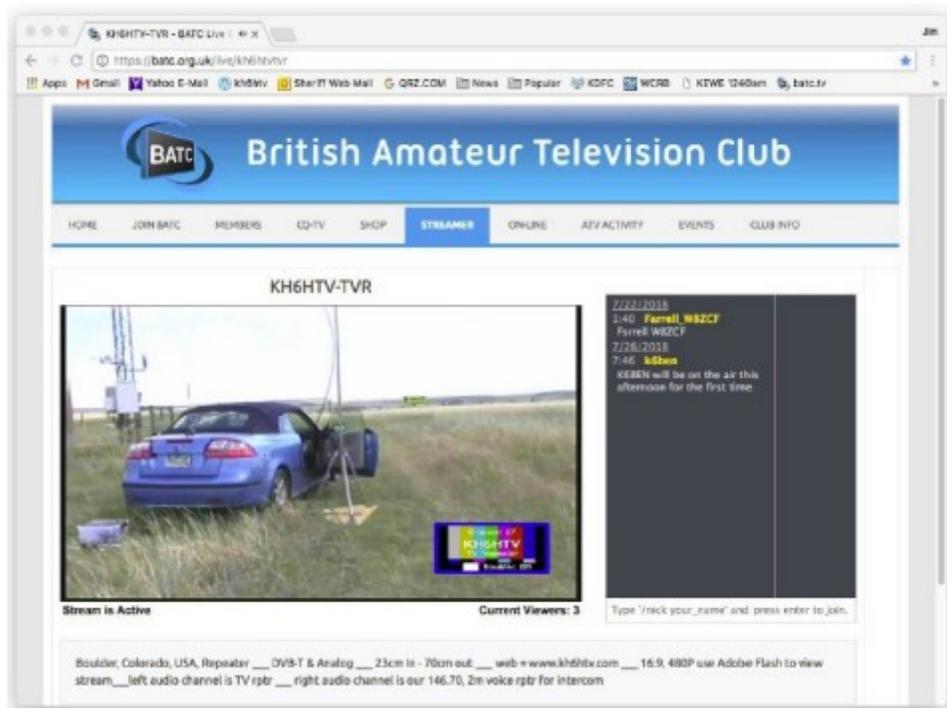




Some of the W0BTV active ATVers -- actual off the air photos

also have some viewers without TV transmitters who join in and add their comments. We use the BCARES, 2 meter FM voice repeater on 146.76 MHz for net control and our intercom. If you only listen to 76 you might wonder why the conversation is one sided? It is because the other person is on TV and talking on the TV channel. Thus a full duplex conversation is actually in progress.

So how can you join in and watch the ATV net? You can watch it on your computer being streamed over the internet. But being hams we really like to do things using antennas over the air. Here is what it takes to do either.



**Internet:** Boulder's W0BTV ATV is streamed live over the internet. We use the services of the British Amateur Television Club (BATC) for streaming. The URL link to the BATC server in the U.K. is: <https://batc.org.uk/live/> This takes you to the BATC page for streaming. There are over 60 ATV repeaters around the world listed on this page, plus many more individual ATV hams. Those that have active streams are listed as On-Line. Not all of those on-line will have actual live hams chatting, but might be in a

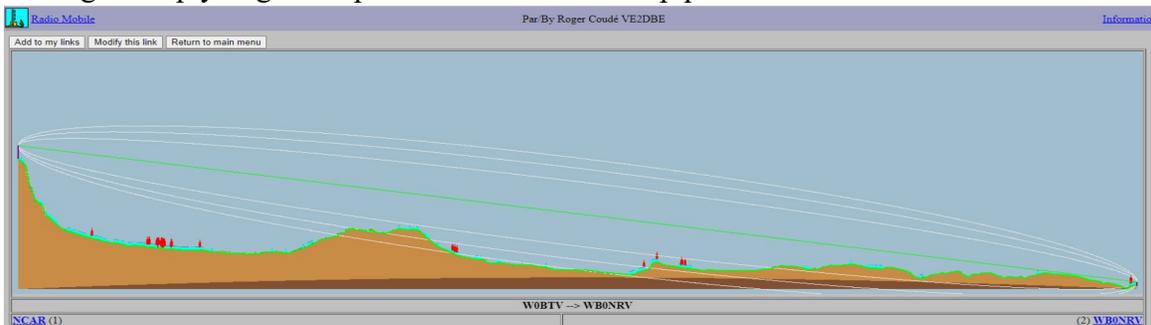
stand-by mode playing a test pattern. The Boulder ATV repeater is accessed by clicking on either N0YE, AB0MY or KH6HTV-TV.R.

We only stream to the BATC when our weekly net is in progress, or there is a special event in progress, such as a BCARES operation. An example was the Cal-Wood forest fire in the fall of 2020 when we had live video coverage 24/7 for several days. We use both stereo audio channels. We put the ATV repeater's audio on the the left channel and the 146.76 audio on the right channel. Please note that the stream from the BATC has about a 20 second delay from the live video. Thus it can be confusing if you are also listening to 146.76 live.



**FOREST FIRE IN BOULDER COUNTY!**

**Over the Air:** If you want to actually watch the ATV repeater over the air, we are willing to help you get setup. It will be a multi-step process.



RF path profile from W0BTU ATV repeater in Boulder to WB0NRV in Johnstown

**Step 1** -- We will first determine if a viable RF path exists from the repeater to your QTH. We use the free, on-line, computer program called *Radio Mobile* to perform an rf path prediction. We have found *Radio Mobile* to be very accurate. If it says no path exists, we will drop it there. The above plot shows an example of one path which works to Bob, 47km to the north-east.

**Step 2** -- If *Radio Mobile* says there is a workable path, then we are willing to loan you on a short term basis a digital TV set-top box receiver. It is similar to the set-top box provided by the cable TV company. Our repeater's output is on the 70cm band on channel 57 at 423 MHz. You can not receive this signal directly on your home TV receiver. The set-top box must be used. The HDMI output from the set-top box goes to your home TV receiver, the same as if you were plugging in a DVD player, etc.

We are using vertical polarization. If you already have a vertically polarized, 70cm antenna at your QTH, then great. You will simply connect it to the set-top box.

**Step 3** -- Once you have this setup at your QTH, you then give us a phone call and ask us to turn on the ATV repeater with a test signal. If you still have trouble receiving the signal, we are also willing to do a doctor's house call for de-bugging.

**Step 4** -- After you have achieved reception at your QTH, the next step is for you to purchase your own digital TV set-top box. Be careful, as some of them will not tune the amateur 70cm band. Unfortunately, these come "dumb" and will not automatically work to receive the TV repeater's



signal. To get around these problems, we offer to purchase a suitable receiver for you, program it to receive all of the amateur 70cm ATV channels and then re-sell it to you. The cost is typically about \$40 to \$60, although we sometimes have been able to find receivers for as low as \$15 to \$25. Being inter-net sales from ?? suppliers, they come and go quickly. Interested in our offer? --- Then contact me at [kh6htv@arrl.net](mailto:kh6htv@arrl.net)

73 de Jim, KH6HTV, Boulder, Colorado

**CQ-TV:** The Spring 2022 issue of the British Amateur Television Club (BATC) electronic magazine, CQ-TV has just come out. It has several interesting articles in it. There are articles on ATV repeater controllers, 23cm flat plate antenna, etc. Brian, G8GQS, continues his series on BBC broadcast history and their restoring an old outside broadcast van. Jim, G6NTG, has an article on how to modify a Nokia 2.1 GHz, 100 Watt pallet amplifier for service on the 2.4 GHz band.

We recommend our readers check out the BATC web site ( [www.batc.org.uk](http://www.batc.org.uk) ) You might also consider joining the BATC. Their annual dues are quite reasonable. The BATC also has an on-line store selling to members some of the ATV products they have developed. Thus includes their Portsdown DATV transmitter and their MiniTiouner, Knucker & Ryde DATV receivers.

**Steve, WA0TQG, the Author:** The March-April 2022 issue of The Communicator has reprinted Steve's article on "Circuit Simulation Software". It first appeared here in our ATV newsletter in Oct. 2021 (#90). He discussed in detail the programs LTspice and QucsStudio. The Communicator is published by the Surrey, British Columbia Amateur Radio Communications Society. It is a great, electronic, ham radio magazine with a lot more meat in it than QST. Check it out at: <https://ve7sar.blogspot.com/>

**ATV Public Relations** On Wed. March 16th, Jim, KH6HTV, gave a talk about ATV to the Denver, Colorado amateur radio club (DRC). It was an on-line, zoom meeting. DRC has over 300 members. There were about 35 members watching the on-line presentation. The talk was basically the same one Jim has given several times to other ham clubs. This included the 9 May 2020, Micro-Hams Digital Conference, Seattle, Washington. That talk can still be viewed on You Tube (

<https://www.youtube.com/watch?v=wgh2ZWabdKE> ) That talk was also recorded on DVD. Thanks to Bob, NW3M, who has given me a replacement copy of the DVD, we once again are able to furnish free copies of the DVD upon request to: [kh6htv@arrl.net](mailto:kh6htv@arrl.net) A .pdf copy of the power-point slides is also available.

**More Free DVDs:** Thanks to Jack, K0HEH, he has replaced several of my lost DVDs. A couple of these might be of interest to other ATVers. I will also make them available free of charge. Send your requests to: [kh6htv@arrl.net](mailto:kh6htv@arrl.net)

**NTSC Test Signals – DVD** If you do not have a signal generator for NTSC test patterns, this is a great substitute. Play the DVD in a DVD player with a composite analog (RCA Yellow) output to have a selection of NTSC test signals. The DVD runs for 5 ½ minutes and is auto-repeat. If you only want one single signal, simply push the “Pause” button on your remote control. The signals available include: Color Bars with and without IWQ, Staircase, Cross-Bar, Dots, and Multi-Burst (up to 4.2 MHz). Also included are single color screens of various colors.

**Colorado Model Railroad Museum - DVD** There is a fantastic HO model railroad in Greeley, CO. ( [www.cmr.org](http://www.cmr.org) ) It occupies an entire building with a 5,500 sq. ft. operating layout with 80 scale miles of railroad track. Multiple, remote control trains are running simultaneously on this layout. It also has a dispatcher with ATC. In 2017, I visited the museum and shot a 35 minute video of the entire operation. This video has been an all time favorite to be replayed many times on our Boulder ATV repeater. Other ATV repeaters might also be interested in airing the video.



Finished Hex Beam Antenna --- assembled at ground level. Mounted on 3 ft. pipe in tripod. Worked Hawaii on 17m as is !!!

## **FREE is a Magic Word !**

If you really want to get rid of something quick, use the magic word **Free**. We are cleaning the ash and debris from our burned out home in preparation to sell the vacant property. Included in the items to be removed was my 50 ft. antenna tower. The company doing the clean-up used a cherry-picker, bucket truck and was able to salvage some of the antennas from the tower. The tower was only 2 ft. away from my house, but apparently the 100 mph winds kept the flames from the burning house away from many of the antennas. The coax cables on the lower portion of the tower were destroyed. I kept the 70 cm, 33 cm & 23 cm antennas. But I also had on top of the tower a great DX Engineering HF Hex Beam antenna (20m thru 10m) plus a Yaesu antenna rotator. Both survived the fire undamaged. I am unable to reuse the hex beam at my new QTH in a CC&R controlled community.

So, I sent out an advertising flyer to all of the members of our Boulder Amateur Radio Club (BARC) offering to give away **FREE** the hex beam, rotator and the tower. Mike, W3DIF, our BARC treasurer sent it out as an email using the newsletter distribution list. Within the next 24 hours, over a dozen BARC members contacted me either by email or telephone. The winner was the first to call me immediately on the telephone after the bulk emailing. He was Derek Brady, KE0RVP. He then showed up only 3 hours later with a truck and trailer to haul it all away. I apologize to all of the other unlucky hams, but it was just like playing the lottery. **FREE** definitely gets folks interest !

73 de Jim, KH6HTV

## **Do You Have Enough INSURANCE ?**

I encourage everyone of you home owners out there to immediately review your insurance for your house. With inflation ramping up, the cost of building materials is sky-rocketing plus the shortage of workers, the cost to rebuild your home if it burns down, is destroyed by a tornado, etc. will come as a big shock to you. I thought I was adequately insured, but was terribly wrong. I just lost my home to fire and I found my insurance would only cover about ½ of what it would cost to rebuild. Today, I am being quoted \$450 / sq.ft to rebuild. We wanted to rebuild, but find it now impossible. So, take my advice and review your insurance policy and boost it up as high as possible.

73 de Jim, KH6HTV

## **ATV HAM ADS**

***Free advertising space is offered here to ATV hams, ham clubs or ARES groups. List here amateur radio & TV gear For Sale - or - Want to Buy.***

**repeater WØATN**  
**maryland heights, mo**  
input 440 mhz output 426 mhz



**SLATS**  
St. Louis Amateur  
Television Society

**Digital Amateur TV**

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## MiniTiouner-Express Digital Amateur Television DVB-S/S2 Receiver / Analyzer



Available at [DATV-Express.com](http://DATV-Express.com)

- Operates with Windows PC using free MiniTioune software from Jean-Pierre F6DZP
- Smaller than a stack of 2 decks of cards (picture above is full size)
- Two independent simultaneous RF inputs with internal preamps
- High sensitivity -100dBm @1288MHz – at 1/2 FEC
- Fully assembled/tested in aluminum enclosure
- Covers 144-2420MHz (ideal for Space Station DATV reception)
- Symbol rates from 75 KSymb/s to >20 MSymbols/sec
- Uses external 8-24VDC supply or +5V from USB-3 port (with small modification)
- Real time signal modulation constellation & dBm signal strength display
- Price: US \$75 + shipping – order with PayPal

For details & ordering go to [www.DATV-Express.com](http://www.DATV-Express.com)

(MiniTioune display above is the ATCO 1268MHz DVB-S repeater signal at WA8RMC QTH 15 miles away).

**W0BTV Details:** **Inputs:** 439.25 MHz, analog NTSC, VUSB-TV; 441MHz/6MHz BW, DVB-T & 1243 MHz/6MHz BW, DVB-T  
**Outputs:** Channel 57 --- 423 MHz/6MHz BW, DVB-T, or optional 421.25 MHz, analog VUSB-TV. Also, secondary transmitter, FM-TV output on 5.905 GHz (24/7).  
**Operational details in AN-51a** **Technical details in AN-53a.** **Available at:**  
*<https://kh6htv.com/application-notes/>*

**W0BTV ATV Net:** We hold a social ATV net on Thursday afternoon at 3 pm local Mountain time (22:00 UTC). The net typically runs for 1 to 1 1/2 hours. A DVD ham travelogue is usually played for about one hour before and 1/2 hour after the formal net. ATV nets are streamed live using the British Amateur TV Club's server, via: *<https://batc.org.uk/live/kh6htvtvr>* or *n0ye*. We use the Boulder ARES (BCARES) 2 meter FM voice repeater for intercom. 146.760 MHz ( -600 kHz, 100 Hz PL tone required to access).

**Newsletter Details:** *This is a free newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to about 500. News and articles from other ATV groups are welcomed. Permission is granted to re-distribute it and also to re-print articles, as long as you acknowledge the source. All past issues are archived at: <https://kh6htv.com/newsletter/>*