



PVRC Newsletter

November 2018

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Website: <http://www.pvrc.org>

Meeting Info: <http://www.pvrc.org/chapters.htm>

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President's Letter – Bud W3LL

Hello, PVRC – We're now again in the heart of contest season. We're also in the midst of PVRC election season. The nomination period ended with the start of the election process on 01 November.

As I listen to members and trustees from around the circle I'm hearing more and more the importance for inclusiveness within PVRC. To that end I'm really excited about this year's election. For the first time in a very long time we'll have a contested election for both officers and trustees. As of now the offices of president, secretary and treasurer are not contested, meaning it's a rubber stamp vote. However, the office of VP now has three outstanding candidates for two positions, meaning that two of the three leading vote getters must also secure a 51 percent majority vote. Please carefully read the supplied biographies on the ballot prior to voting.

It's the trustee vote that I'm also excited about and where we have a chance to improve inclusiveness. This year for the first time we give the trustee vote back to our members by providing the opportunity to make individual choices rather than up or down slate votes. The ballot will list trustee nominees.

There will be a place to fill in the circle adjacent to each callsign. It'll be possible to vote individually for three or more trustees, or all trustees by filling in the appropriate circles. The ballot will also have a location to place your callsign, including signature or initials.

Those nominees achieving 51 percent of votes from all members casting ballots will become PVRC trustees. I have no preconceived notion what the results will be. That's what makes this exciting. Our members by their vote will determine how many trustees we'll have and from what regions. I would suggest when voting you think of those on the ballot from small, remote and underrepresented chapters, not just your chapter.

It may take a change to the bylaws to truly level the playing field. I'm sure the next administration will come up with some creative ideas to level the election playing field. I look forward to taking a back seat come January while watching what plan emerges.

Back to contesting:

SMC mustered an exceptional turnout for NAQP SSB. That momentum is likely to carry forward to November's SS SSB contest. With PVRC having won this event for eleven consecutive years it's only logical that SMC would like to end that streak. More importantly, they proved that they can do it if we don't get a fire burning in the pit of our stomach. With our significant membership advantage, it's only ours to lose by not helping our club. As an added incentive, for the last time ever, we're granting **double points** for both CW and SSB modes.

One of the perks of my job is to present PVRC President's Leadership Award plaques. It gives me an opportunity to visit our chapters bringing presents and this month was no exception. This year's President's Leadership Awards and recipients are all for Outstanding Support and Service to PVRC:

President's Leadership Awards		
Name	Call	Citation
Doug Hart	AA3S	Assuming the PVRC Laurel Chapter Chairmanship and leading the chapter back to a prominent position
Ulis Fleming	K3LU	Supporting the PVRC 70th Anniversary On Air Event as QSL Manager
Jay Horman	W3MMM	Creating and managing the PVRC 70th Anniversary On Air Event
Tom Valenti	K3AJ	Creating and managing the annual PVRC Olympic Awards
Tim Shoppa	N3QE	Verifying and submitting PVRC circle eligible members to the ARRL Contest Branch
Dan Zeitlin	K2YWE	Establishing and managing PVRC logo apparel availability to the membership

Over the past three years I've been fortunate to have outstanding support from the Officer Corps: VP's Dan K2YWE and Jay W3MMM along with secretary Tim N3QE and treasurer Tom K3AJ and including past treasurer Bill N3RR. As I exit on 31 December after three years of service as president it's time to recognize those supporting accomplishments. They don't make plaques large enough to recognize all the achievements by our officer staff.

It's now time to read the Sports Page.

Sports Pages 11/18

CQ WW RTTY saw a big PVRC turnout with good conditions and lots of activity. We topped our winning club score from 2017. The number of active RTTY contesters in PVRC continues to grow. There were some strong multiops PVRC entries. NR4M took the top US spot in M/M with 3123 QSO/3.8M, even though Murphy brought his whole family to visit. Steve said, "I've never had so much stuff go wrong in any one contest." Team W4AAW doing their usual remote thing put up 2400/2.7M. Recent station upgrades are paying off, but inter-station interference is still a problem. Team K000 at N3DBP played in M/2. There seems to have been a trend with the multiops, as they had problems, too – blowing up two amplifiers.

“Ironman” N3QE finished #3 in the very competitive SO(A) HP with 2008/2M with just his single wire. NN3W reports his “First time doing a major RYTTY DX test” and new PVRC member AC3BU did his first ever RTTY contest making a very good showing with 489/261K – just missing a top 10 finish! W3FA tried SO2R, but he said, “Murphy was my other op.” N4CF bested his 2017 score by 46% with only 10% more BIC time. Think that running HP vs. LP makes a big difference? N4YDU and N3HEE both took advantage of the excellent Flex 6600 radios capabilities for working and monitoring more than one band at a time. N3VOP, with his very limited station broke the 100K level in this contest for the first time, but Mike wisely took time off for his XYL’s birthday celebration. W4GO, W4PK and N4CW all made the top 10 US in SOAB HP. Other PVRC members braking the 500K level included W4JAM (1042/982K), W4TTY, NA3M, K2WK, NR4O, (and W2CDO just missed that level).

There were no other 5M contests in October (too soon to report on CQ WW SSB), so PVRC members kept themselves occupied in other ways. There was a pretty good turnout for the CA QSO Party with 19 PVRC scores reported to 3830. In HP, N3UA had the top PVRC score at 77K, followed by N3QE with 59K and K3AJ at 43K. In LP, K7SV topped LP state QSO party maven N8II by just a bit. K7SV scored 61K and N8II 60K. The PA QSO party saw a lesser turnout, buy K7SV put up the top PVRC score (in SOCW LP) at 16K, with N3KN posting the #2 score at almost 14K.

The Makrothren RTTY contest is getting more and more participation each year. There were 15 PVRC scores reported. Top score was by N3QE with 2.5N. There were three other scores north of 1M: NR4O (1.8M), K2WK (1.2M), KS4Q (1.2M). Kudos to W3IDT who played in his first ever RTTY contest in this one, proving out his RTTY set up. N4AF, W2CDO, N3JT, NR3X (N4YDU), K3OQ (@W3RFC) and W3MMM all played in the WAG. N4AF had the top score followed by W2CDO and NR3X. 16 PVRC scores were reported in the Pre-Stew (Stew Perry Top Band Distance Challenge). K7SV had a top 10 finish in SO LP. Other PVRC scores above 500 were put up by NA3M, N3JT (top PVRC score at 939), K2AV, N3QE, N3HEE. KK4R broke the 400 level in SO LP for a notable result. There must have been a lot of activity in the JARTS RTTY contest, as there were some pretty big QSO totals by PVRC members. K000 (at N3DBP) in a mutliop effort put up the top PVRC score with 763 QSO/385K. Everyone else who played put up good numbers: K2WK (660/263K), W4PK (460/150K), KS4Q (339/95K), AC3BU (294/77K in LP), K4GM (162/31K) and K4GMH (238/25K).

73, Bud W3LL

PVRC Officers:			Trustees:
President:	W3LL	Bud Governale	K3MM, N3OC, WX3B, W4ZYT, N4NW, K2AV, K4ZA, W3TB, K3ZO,
Vice President:	K2YWE	Dan Zeitlin	K2PLF, W3LPL, N4MM, N4ZR, W3MSH, N4NQY, W2RU, K3WRY
Vice President:	W3MMM	Jay Horman	
Secretary:	N3QE	Tim Shoppa	PVRC Charter Members (all SK):
Treasurer:	K3AJ	Tom Valenti	W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT
<p>Newsletter Editor: John K3TN jpescatore@aol.com PVRC Website: http://www.pvrc.org PVRC Meeting Info: http://www.pvrc.org/chapters.htm</p>			

Elecraft K3 Roofing Filters – Alan WA3EKL

I would like to share with the K3 owners what I have found out about the K3 roofing filters. I have more than one K3 since we are a multi two station and I have been able to duplicate on all my K3s these findings. This discussion will be on SSB reception, RTTY and CW. If you are a CW op don't just jump to end and try the suggested changes. Please read the whole discussion so you will understand why I came to these conclusions and why you might want to try these settings.

First, in the K3 we have the Crystal roofing filter bandwidths which are fixed and we cannot control. Then we have the DSP filter bandwidth which we have complete control over with the SHIFT, LO—CUT—HI, and WIDTH control knobs just above the SPEED/MIC and CMP/PWR controls knobs. Between all of my K3's at least one of these filters are installed somewhere which has given me the opportunity to experiment with all of them.

- 2.8 KHz SSB filter
- 2.7 KHz standard SSB filter
- 2.1 KHz SSB filter
- 1.8 KHz SSB filter
- 1000 Hz RTTY/digital filter
- 500 Hz CW filter
- 400 HZ CW filter
- 250 Hz CW filter
- 200 Hz CW filter

After spending many days searching the internet I found little useful information on all these filters and only suggestions of what filter to buy for what mode but with no decent explanation.

Experimenting through contesting and DXing with my own rigs I found the 2.8 KHZ filter definitely has steeper sides and does a better job of eliminating adjacent channel interference than the 2.7 KHz filter. Even if you reduce the DSP filter down to say 2.2 KHz the rig with the 2.8 KHz filter gets rid of the adjacent channel interference better because more of the interference is being taken out before the DSP filter has to deal with it.

The next important piece of information about the K3 is that the signals going through the crystal roofing filters are still analog RF type signals. Once the analog signal gets through the crystal filters then it goes to an A to D converter (analog to digital) and the signal out of the A/D converter at that point is now nothing more than ones and zeros!! The DSP Filter is nothing more than a computer algorithm modifying a continuously changing data bank of ones and zeros. So, why have I given you this information?

As you narrow down the DSP filter width with either the WIDTH control or the LO HI controls the crystal filters will automatically kick in provided you have them installed in descending order. What is extremely important is that you “can” control when those Crystal filters kick in and at what frequency they kick in at.

Most of you have probably noticed that as you reduce the bandwidth to reduce interference on an SSB signal you begin to lose intelligibility of that voice signal. In order to get back some of the intelligibility you must shift the whole band pass lower in frequency which reduces the highs. For us older men that is a problem because men usually lose the upper end of our hearing range first. There is a cure. You can boost the upper end highs a **little** with the last three eq bands of the K3's 8 band equalizer. I will write another article on how to optimize those equalizers for your ears and our microphones soon.

I have found that I like the 2.1 KHz SSB filter the best for SSB contesting. But I found a way to like it even better recently because of a website I came across with some detailed information on the Crystal Roofing filters. I also found that I can now use the 1.8 KHz SSB filter when the band gets really crowded and still hear quite well. However, in order to get maximum intelligibility out of the 1.8 KHz filter you have to have the 8 band equalizer set for your ears. At my station I have set the equalizers so that each op only has to adjust the SHIFT control as he or she narrows the bandwidth to gain maximum intelligibility for their ears. The following data is what I found on that web site:

Filter marketing names vs. actual bandwidth:

- 200 is 205
- 250 is 370
- 400 is 435
- 500 is 525
- 1000 is 1100
- 1800 is 1900

Cascade effect when crystal and DSP filters are near same bandwidth

2700 or 2800 crystal filter must be used for transmit in CW, RTTY and SSB modes

K3 Filter Bandwidths (Crystal Filters)

- 5 -pole crystal filters by Elecraft: 200, 500, 2700
- 8 -pole crystal filters by INRAD: 250, 400, 500, 1500, 1800, 2100, 2800, 6000, 13000

Taking the above information, I said to myself why not kick in the Crystal Roofing filters closer to their actual filter widths? The results were quite satisfying. The last few SSB and RTTY contests I could hear more and better. Here is what I did:

Using the Elecraft utility. I set the filter kick in points as follows.:

- 2.8 KHz in at 2.8
- 2.7 KHz in at 2.7
- 2.1 KHz in at 2.2
- 1.8 KHz in at 1.9
- 1000 Hz in at 1.1
- 500 Hz in at .55
- 400 Hz in at .45
- 250 Hz in at .35
- 200 Hz in at .25

One of the K3's has the following filter set up. 2.8, 2.1, 1.8, 500, 200. When I listened to noise on a band where there was not a signal I got the following results. After I set the new filter parameters I began to adjust the DSP filter width. When I got to 2.3 KHz of DSP filtering the 2.8 filter was still doing the front-end work and I could hear adjacent channel noise. When I adjusted to 2.2 on the DSP filter the 2.1 filter kicked in and I could hear a definite adjacent channel noise reduction but when listening to an SSB signal and switching to the 2.2 position there was very little signal intelligibility degradation.

Turning the DSP now to 2.1 I could hear another noise reduction and when listening to an SSB signal a very little intelligibility loss. Turning the DSP to 2.0 gave more adjacent channel noise loss and less interference. Then turning the DSP to 1.9 kicked in the 1.8 Filter and a whole lot more adjacent channel interference was gone. Going farther to 1.8 on the DSP reduced the noise more but just like going from 2.2 to 2.1 very little intelligibility is lost. It was like adding a bunch of extra filters. When you are trying to get that weak one out or the one being interfered with all these extra filter widths are now available to you by just carefully turning one knob. That is a very valuable tool to have. The settings of 2.2 and the 1.9 seem to yield the best overall intelligibility reception especially during contests.

As far as CW goes some of my contest ops have been very happy with these settings using the 400 or 500 filters only during the CW contests.

Give these setting a try if you have any of these filters and see if you like how your radio sounds. You can always reset them back to whatever you had before.

PVRC Olympics 2019 and Sweepstakes – Tom K3AJ

Just a friendly reminder: while almost all the qualifications in the PVRC Olympics don't have a time constraint (other than being accomplished within the 5M year of July1 – June 30) there is one that is time constrained. **Because Sweepstakes is a core competitive priority of PVRC, qualifying for a medal in the PVRC Olympics requires participation in Sweepstakes.** The levels defined for Olympics 2019 are based on your total contribution to the club's combined score across both modes.

The requirements are:

- **Gold** – Submit logs in one or both modes of Sweepstakes, totaling at least 400 QSOs.
- **Silver** – Submit logs in one or both modes of Sweepstakes, totaling at least 300 QSOs.
- **Bronze** – Submit logs in one or both modes of Sweepstakes, totaling at least 200 QSOs.

If you aspire to earning a medal in the PVRC Olympics 2019, make sure you operate in Sweepstakes and submit your logs for PVRC! If you snooze, you lose!

CW SWEEPSTAKES NOV 3RD! PHONE SS NOV 17TH!!

Jim and Nina Go Sicilian – Jim N3JT

In my international travels I always try to meet hams I know from on-air QSOs. If it's a guided tour, though, the windows of opportunity are limited, but there's always a way to arrange at least one evening for eyeball meetings. We did that in Japan (Tokyo and Osaka), meeting a group of CW guys at a sushi restaurant, and now in Sicily we had the honor of meeting CWops members IT9VDQ (Giu) and IT9MUO (Alf), and IT9BLB (Joe).

You might think that two weeks for an island tour would be too long but in fact it was not long enough! We used a tour company called Overseas Adventure Travel (OAT) that we had used for our Japan tour a few years ago. They really do live up to their mantra of adventure, discovery and learning with visits to private houses, using a variety of conveyances, and seeing unusual sites that help make the trip memorable and educational. We were there from September 11 through September 24, 2018.

With our tour itinerary, the only time available for meeting hams was on the very day we arrived in Palermo, September 11. We got to our downtown hotel by about noon, and within a very short period we were welcomed by Giu and Alf, who presented us with a beautiful commemorative plate – which I am pleased to report arrived home in perfect shape, thanks to multiple layers of bubble-wrap. You can see it below with its thoughtful inscription.

The central figure on the plate carries great significance and dates back to ancient times. Sicily was called Triquetra or Trinacria, with a symbol of a female head having three bent legs bent (trisele). The head features the gorgons of Greek mythology, with golden wings, bronze-clawed hands, boar tusks and snakes instead of hair. As I5ECW has clarified for me, the figure represents Eurial (sexual perversion), Steno (moral perversion), and Medusa (the mortal monster and guardian of the underworld). Today, that figure is linked to Sicily and appears everywhere. We were also told that the 3 legs represent the 3 points of Sicily's geographical shape.

Giu and Alf speak quite good English so we had no trouble chatting as we made our way around the city and to the top of Mount Pellegrino, where the club station IB9T is located. IT9BLB, Joe, is the station manager and he met us there. It is no accident that when Giu uses the club station in CWT sessions his signal is quite commanding. The site along the mountain ridge is shared by a number of communications facilities for good reason, as you can see from the photo below.

We had a grand time together, sharing pizza at a lovely restaurant not far from our hotel. But by the end of our dinner we had been up for over 36 hours and the adrenalin of enthusiasm meeting our ham friends began to dissipate so we headed back to the hotel and bid our hosts a fond goodbye. The next morning our 2-week tour of Sicily and its wonderful sites and cuisine began.

Sicily has a remarkable history with architecture and cuisine that is matched nowhere else. Its towns are in many cases perched precariously on mountain sides, its roads a challenging mix of tight city lanes and intercity highways.



L-R: IT9VDQ (Giu), KE4PSV (Nina), N3JT (Jim), IT9MUO (Alf), atop Mt Pellegrino. Commemorative plate is from Giu, Alf – and Joe, IT9BLB.



The commemorative plate designed by the IB9T crew (IT9BLB, IT9MUO, IT9VDQ).



IT9BLB, IT9MUO, IT9/N3JT, IT9VDQ



This is the view from the ridge along Mount Pellegrino, where IB9T is located.



The IB9T station atop Mount Pellegrino, overlooking Palermo on the northwest coast of Sicily.



IT9/N3JT made a dozen or so QSOs, several with North America, but there was a solar flare that day! A solar flare was fine when we visited Iceland a few years ago because it provided us with a huge show of the Northern Lights, but it was not helpful here!



Multiple beams for HF at IB9T. There is also a 4-square for 40m, and other LF antennas.

Our tour through Sicily was even more fascinating and compelling than we had anticipated. For history, there is the Greek Theater at Syracuse, the Valley of the Temples at Agrigento, the ancient theater overlooking Mount Etna at Taormina – and the Roman Villa del Casale near Piazza Armarena with its amazingly well-preserved mosaics. And then there is the cuisine! I gained 5 pounds (2 kilos) of body weight enjoying the amazing gelato (favorite flavor: pistachio), meals in lovely local restaurants, and of course the occasional pizza (available in a zillion styles). In Ragusa, Nina and I ate at a Michelin-rated restaurant - a memorable experience in itself. Below are a few photos to whet your appetite, for the sites and cuisine!



KE4SPV (Nina) and N3JT in Palermo

If you have an interest in travel, Google "OAT Sicily itinerary" for a better idea of the range of sites and experiences Sicily offers. Should you decide to try an OAT tour, be sure to mention my name so I can collect on the cannolo (plural: cannoli) OAT offers for referrals!!

PVRCer Ted N9NB Awarded 2018 RCA Armstrong Award – via Tom K3TW

From the [ARRL](#): The Radio Club of America (RCA) has named well-known academic, entrepreneur, contester, and DXer Theodore "Ted" Rappaport, N9NB, as the recipient of the 2018 Armstrong Medal. The Armstrong Medal is the RCA's most prestigious honor. Rappaport is being honored for "outstanding achievements and lasting contributions to the radio arts and sciences and wireless communications." When the RCA began its recognition of outstanding achievement, its first award was presented to Major Edward H. Armstrong for his invention of circuits that make AM and FM radio possible, and for his lifetime of championing work that established the foundation for modern radio technology.

Press release [here](#).

Annapolis Chapter Crab Bash Award Presentations – Dan K2YWE



Ulis K3LU receives award from Bud W3LL



Rick W2GPS receives medal from Dan K2YWE



Bill K3WI receives medal from K2YWE



K2YWE awards medal to Mark KD4D



Tom W3TOM, Dave K4EET and Fred K3ZO at the feast

Supporting Young Hams Getting Into Contesting: “Team Exuberance”

A GoFundMe campaign has been set up to fund young hams interested in contesting to travel to the K3LR multi for the 2019 CQ WPX SSB. Many PVRcers know Violetta KM4ATT and Mason KM4SII of “Team Exuberance.”

From the [GoFundMe page](#):

"Old age and treachery will always win over youth and exuberance." But is that true? Team Exuberance is out to prove that statement wrong. They are a team of 6 kids, Violetta (KM4ATT), Mason (KM4SII), Bryant (KG5HVO), David (VE7DZO), Chris (KD8YVJ), and Dhruv (KC9ZJX) who are planning to operate from the K3LR superstation for the CQ WW WPX SSB contest under multi-2. March 30-31, 2019, they will be traveling from their home QTH and meeting at the home of K3LR. Their expense goal is \$ 5,000, and they are hoping to reach it by January 1, 2019. Any and all donations are appreciated.

Donate [here](#).

Membership News – Tim N3QE

Since October 2018, PVRC has added 1 new member. Please welcome:

- Ray W3BFC in the Annapolis chapter.

Chapter leaders please remember to complete the [Meeting Attendance Report](#). Members can check and update their roster details via the [Roster Lookup](#).

Upcoming Contests and Log Due Dates

Contests This Month

- **Nov 3 – CW Sweepstakes!**
- Nov 10 – WAE RTTY
- Nov 10 – OK/OM CW
- Nov 17 – LZ DX
- **Nov 17 – SSB Sweepstakes!**
- **Nov 24 – CQ WW CW**
- Nov 30 – ARRL 160

Logs Due This Month

- **Nov 2 – CQ WW SSB**
- Nov 5 – UBA ON
- **Nov 12th – CW SS**
- **Nov 26th – SSB SS**
-

See WA7BNM’s [Contest Calendar](#) for more detail and the latest information.

From the PVRC Treasurer – Tom K3AJ

PVRC has chosen not to implement an annual Dues requirement. We depend on the generosity of all of our club members to finance our annual budget. In addition, active PVRC members are expected to participate and submit logs for at least two PVRC Club Competition contests per year.

When contemplating your donation to PVRC, each member should consider the benefit you are receiving from PVRC and its many opportunities for your personal growth in our wonderful hobby, then donate accordingly.

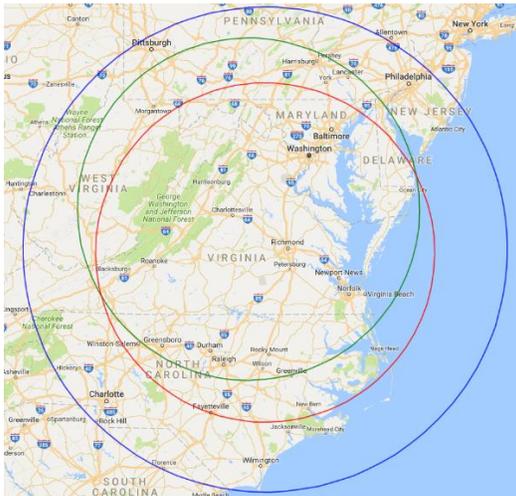
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



Donations to PVRC are not tax deductible

Eyeball QSO Directions

The latest info on local club meetings and get togethers will always be sent out on the [PVRC reflector](#) and posted on the PVRC [web site](#).



Green: ARRL VHF Circle
175 mile radius
Around 38.075N,
78.171W

Red: ARRL HF Circle
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77.858482W

Blue: CQ HF Circle
250 mile radius
Around 37.43168N,
77.858482W



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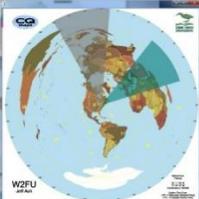
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The new RXSHARE Audio Switch gives two operators complete control of the specific audio they want fed to their stereo headphones while operating one or two shared radios. Each operator controls a three-position switch that allows them to listen to one, the other, or both channels of audio. For single-operator/two-radio contesting, the operator can listen to the same audio in both ears from a single radio, or hear the audio from each radio in one ear for simultaneous CQ-ing and tuning for new contacts. Get full details at DXEngineering.com.

DXE-RXSHARE... \$179.99



NCC-2 Receive Antenna Variable Phasing System

The NCC-2 combines and updates the NCC-1 Phase Controller and our RTR-2 Receive Antenna Interface technologies into one unit. It features enhanced balance functionality, expanding its ability to phase between two different types of antennas. For those with antenna space constraints, you can easily null out noise by phasing your transmit and receive antennas. Or use two active verticals or loops with built-in bias tee that operates from +13.8 up to 21 Vdc. We've also expanded the NCC-2's versatility with internal slots for the new plug-in versions of our Receiver Guard 5000HD and RPA-2 preamplifier.

DXE-NCC-2...\$749.99



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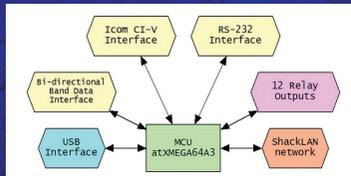
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The next generation of the popular BM-3 with direct USB support for FLEX Radios

NEW!



The BM-5 BandMaster V is a full featured unit that contains a universal band decoder and antenna switch controller. It features five communication channels. All channels are active simultaneously and provide data translation for your station accessories. In other words, if you are using an Icom radio on the CI/V interface the BandMaster V will output 4-bit band data as well as RS-232 data in Yaesu or Kenwood format. In reverse, when using a radio on the RS-232 interface the BandMaster V will output 4-bit band data as well as an Icom CI/V data stream. The USB interface may be connected to your PC for radio control. **The USB interface may be connected directly to a Flex SDR with no additional cables or interfaces required.**



RatPack Remote Antenna Switch

Six antenna remote switch with rotary switch controller. Push button controllers available. HF and 50 MHz. Power rating is 5 kW CW.



StackMatch

The original, not the imitations. For phasing 2, 3, 4 and even 6 antennas. Also it can be used to combine vertical and horizontal polarized antennas to diminish fading.



TwoPak

Two antenna switch, 12V DC via wires or optional via coax cable. DC to 150 MHz. HF 5 kW rating. Metal box.

Off-Center Fed Dipole Antenna

AS-OCF-2K, AS-OCF-5K Seven bands antenna (80 to 6 m). Heavy duty materials. 4:1 balun included. Ratings: 2 or 5 kW or higher available.



PowerMaster II



RF Power and SWR meter. Couplers for 3 kW, 10 kW or higher available for HF/6 m. VHF and UHF couplers for 1.5 kW. You can connect up to 5 couplers to the display to monitor RF power on different TX lines.



OM Power Amplifiers, The New RF Power Benchmark!



OM Power Amplifier Sales Program

Lower prices than the competition's equivalents, most modern design, and strongest warranty in the market!

OM4000HF	Manual 160-10 m 4 kW
OM4000A	Automatic 160-10 m 4 kW
OM2500HF	Manual 160-10 m 2.5 kW
OM2500A	Automatic 160-10 m 2.5 kW
OM2000+	Manual 160-6 m 2 kW
OM2000A+	Automatic 160-6 m 2 kW

OM Power was founded in 2004 as an initiative of two enthusiastic Slovak ham operators. Since that time OM Power has become a successful and well established company in the production of amplifiers. OM Power amplifiers can be found on all continents and in almost every country of the world. All of the amplifiers have state of the art design, and are solidly built.

The automatic amps can drive an antenna switch of up to 10 antennas and select up to ten bandpass filters applies to all automatic models

OM4000A - OM4000HF OM2500A - OM2500HF

The A-series are automatic band change amplifiers.



The HF-series are manual band change and tuning amplifiers.

OM4000: 4 kW SSB and CW, 3 kW RTTY, AM and FM
OM2500: 2.5 kW SSB and CW, 2 kW RTTY, AM and FM

OM2000A+ - OM2000+

The **OM2000A+** is the lightest and smallest 2000 W fully automatic HF/6 m power amplifier in the market. Its manual tuning version, the **OM2000+**, is our affordable unmatched best-seller.

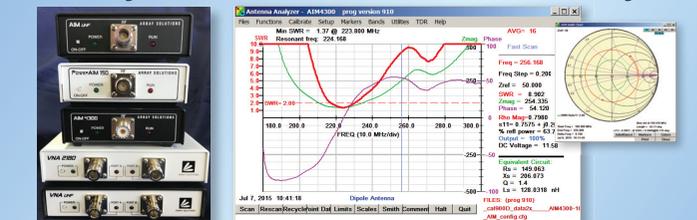


Frequency coverage:

Amateur bands 1.8 - 29.7 MHz including WARC + 50 MHz

Power output: 2000+ W in SSB/CW on HF bands, 1500 W in RTTY
1500 W CW/SSB on 50 MHz

Laboratory Grade Antenna and Vector Network Analyzers



One Port Analyzers and Two Port Vector Network Analyzers ranging from 5 kHz up to 1 GHz

AIM 4300	\$495
AIM UHF	\$695
VNA 2180	\$995
VNA UHF	\$1,295
PowerAim 150 Broadcasting Engineers Choice. 150 V peak RF capable	\$2,495

Surge Arrestors

AS-302, AS-303 Coaxial cable arrestors. DC to 500 MHz. N-type or SO-239 connectors. **AS-300SB** Stacking fixture available. **AS-309H**, ladder line arrestor. All have static bleed function. **AS-8SP, AS-12SP** and **AS-16SP** control cable arrestors. Protect your rotator's and other control cables.



Baluns & RF Transformers

Ratios 1:1, 1:2, 2:1, 4:1 and more. RF line isolators. Ratings 3, 5, 10 kW+. Get the most out of your antenna by stopping the coaxial cable from becoming part of it.



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Array Solutions' products are in use at top DX and Contest stations worldwide as well as commercial and governmental installations. We provide RF solutions to the DoD, FEMA, Emcomm, UN, WFO, FAA and the State Dept. for products and installation of antennas systems, antenna selection, filtering, switching and grounding. We also offer RF engineering and PE consulting services.

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IC-9100 | The All-Round Transceiver

- HF/50MHz 144/43vvv0 (440) MHz and 1200MHz*1 coverage
- 100W on HF/50/144MHz, 75W on 430 (440) MHz, 10W on 1200MHz*1 • Double superheterodyne with image rejection mixer



IC-7200 | HF Transceiver

- 160-10M • 100W • Simple & tough with IF DSP • AGC Loop Management • Digital IF Filter • Digital Twin PBT • Digital Noise Reduction • Digital Noise Blanker • USB Port for PC Control



IC-R8600 | Wideband Software Defined Receiver

- 10 kHz to 3 GHz Super Wideband Coverage • P25, NXDN™, dPMR™, D-STAR Mode • Large Dot Matrix LCD Display w/ Quick Spectrum Scope • SD Card Slot • Remote Control Function



IC-7851 | HF/50MHz Transceiver

- 1.2kHz "Optimum" roofing filter • New local oscillator design • Improved phase noise • Improved spectrum scope • Dual scope function • Enhanced mouse operation for spectrum scope



IC-7100 | All Mode Transceiver

- HF/50/144/430/440 MHz Multi-band, Multi-mode, IF DSP • D-STAR DV Mode (Digital Voice + Data) • Intuitive Touch Screen Interface • Built-in RTTY Functions



ID-5100A Deluxe

VHF/UHF Dual Band Digital Transceiver

- Analog FM/D-Star DV Mode • SD Card Slot for Voice & Data Storage • 50W Output on VHF/UHF Bands • Integrated GPS Receiver • AM Airband Dualwatch



IC-7700 | HF/50MHz Transceiver

- The Contester's Rig • HF + 6m operation • +40dBm ultra high intercept point • IF DSP, user defined filters • 200W output power full duty cycle • Digital voice recorder



IC-718 | HF Transceiver

- 160-10M** • 100W • 12V operation • Simple to use • CW Keyer Built-in • One touch band switching • Direct frequency input • VOX Built-in • Band stacking register • IF shift • 101 memories



ID-4100A | VHF/UHF Dual Band Digital Xcvr

- Compact, Detachable Controller for Flexible Installation • DV/FM Near Repeater Search Function • Apps for iOS™ and Android™ devices • Wireless Operation with VS-3 & UT-137 Bluetooth® Headset & Module • MicroSD Card Slot



IC-7610 | HF/50 MHz All Mode Transceiver

- Large 7-inch color display with high resolution real-time spectrum scope and waterfall • Independent direct sampling receivers capable of receiving two bands/two modes simultaneously



IC-2300H | VHF FM Transceiver

- 65W RF Output Power • 4.5W Audio Output • MIL-STD 810 G Specifications • 207 alphanumeric Memory Channels • Built-in CTCSS/DTCS Encode/Decode • DMS



IC-R30 | Digital/Analog Wideband Xcvr

- 100 kHz to 3.3 GHz Super Wideband Coverage • P25 (Phase 1), NXDN™, dPMR™, D-STAR Mode • 2.3" Large LCD Display & Intuitive User Interface • MicroSD Card Slot for Voice & Data Storage • USB Charging & PC Connection



IC-7300 | HF/50MHz Transceiver

- RF Direct Sampling System • New "IP+" Function • Class Leading RMDR and Phase Noise Characteristics • 15 Discrete Band-Pass Filters • Built-In Automatic Antenna Tuner



IC-2730A | VHF/UHF Dual Band Transceiver

- VHF/VHF, UHF/UHF simultaneous receive • 50 watts of output on VHF and UHF • Optional VS-3 Bluetooth® headset • Easy-to-See large white backlight LCD • Controller attachment to the main Unit

ID-51A PLUS2

VHF/UHF D-STAR Portable

- RS-MS1A, free download Android™ application
- New modes for extended D-STAR coverage • Terminal Mode & Access Point Mode allow D-STAR operation through Internet • DV & FM repeater search function • Dplus reflector link commands



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- Internal Power Supply • Two Totally Independent Receivers
- Super Sharp "Roofing" Filters • High Performance Yaesu Custom- designed 32-bit Floating Point DSP • True Analog Meter Precision



FTDX3000 | 100W HF + 6M Transceiver

- 100 Watt HF/6 Meters • Large and wide color LCD display • High Speed Spectrum Scope built-in • 32 bit high speed DSP /Down Conversion 1st IF



FT-991A | HF/VHF/UHF All Mode Transceiver

- Real-time Spectrum Scope with Automatic Scope Control • Multi-color waterfall display • State of the art 32-bit Digital Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 Inch Full Color TFT USB Capable • Internal Automatic Antenna Tuner • High Accuracy TCXO



FTDX1200 | 100W HF + 6M Transceiver

- Triple Conversion Receiver With 32-bit Floating Point DSP • 40 MHz 1st IF with selectable 3 kHz, 6kHz & 15 kHz Roofing Filters • Optional FFT-1 Supports AF-FFT Scope, RTTY/PSK31 Encode/Decode, CW Decode/Auto Zero-In • Full Color 4.3" TFT Display



FT-891 | HF+50 MHz All Mode Mobile Transceiver

- Rugged Construction in an Ultra Compact Body • Stable 100 Watt Output with Efficient Dual Internal Fans • 32-Bit IF DSP Provides Effective and Optimized QRM Rejection • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to a PC with a Single Cable • CAT Control, PTT/RTTY Control



FT-857D | Ultra Compact HF/VHF/UHF

- 100w HF/6M, 50W 2M, 20W UHF • DSP included • 32 color display • 200 mems • Detachable front panel (YSK-857 required)



FT-2980R | Heavy-Duty 80W 2M FM Transceiver

- Massive heatsink guarantees 80 watts of solid RF power • Loud 3 watts of audio output for noisy environments • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users



FTM-100DR | C4FM FDMA/FM 144/430 MHz Xcvr

- Power Packed System Fusion Transceiver • High Audio Output Power • Rugged Powerful Transmitter • Integrated 66ch High Sensitivity GPS • 1200/9600 APRS Data Communications



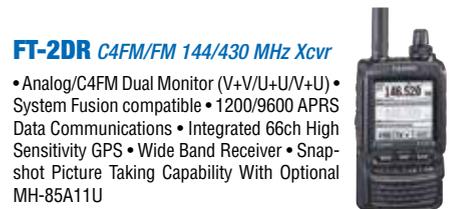
FTM-400XD | 2M/440 Mobile

- Color display-green, blue, orange, purple, gray • GPS/APRS • Packet 1200/9600 bd ready • Spectrum scope • Bluetooth • MicroSD slot • 500 memory per band



FT-70DR C4FM/FM 144/430MHz Xcvr

- System Fusion Compatible • Large Front Speaker delivers 700 mW of Loud Audio Output • Automatic Mode Select detects C4FM or Fm Analog and Switches Accordingly • Huge 1,105 Channel Memory Capacity • External DC Jack for DC Supply and Battery Charging



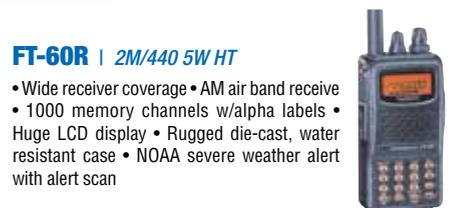
FT-2DR C4FM/FM 144/430 MHz Xcvr

- Analog/C4FM Dual Monitor (V+U/U+U+U) • System Fusion compatible • 1200/9600 APRS Data Communications • Integrated 66ch High Sensitivity GPS • Wide Band Receiver • Snapshot Picture Taking Capability With Optional MH-85A11U



FT-65R | 144/430 MHz Transceiver

- Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Clear Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flash-light, Alarm and Quick Home Channel Access



FT-60R | 2M/440 5W HT

- Wide receiver coverage • AM air band receive • 1000 memory channels w/alpha labels • Huge LCD display • Rugged die-cast, water resistant case • NOAA severe weather alert with alert scan



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TS-990S | 200W HF + 6M Transceiver

- World's first dual TFT display • 200W output on all bands
- ± 0.1 ppm TCXO ensures both high stability and reduced power consumption • Triple 32-bit DSP's dedicated to main/sub receivers and band scope • Main receiver employs full down conversion, new mixer & narrow band roofing filters • Third order intercept point (IP3) +40dBm for highest level of RX performance (main receiver)

Call For Special Price!



TM-D710G | 2M/440 Dualband

- V+V/V+U/U+U operation • Built-in GPS • Built-in TNC for APRS & DX-Cluster operation • 50W 2M & UHF • 1,000 memories • Dual receive • Green or amber backlight colors • Latest APRS firmware w/new features • Sky Command II remote functions

Call For Special Price!



TS-480SAT/HX | HF + 6M Transceiver

- 480HX 200W HF & 100W 6M (no tuner) • 480SAT 100W HF & 6M w/AT • Remotable w/front panel/speaker • DSP built-in

Call Now For Low Price!



TS-590SG | HF/50MHz Transceiver

- Equipped with 500 Hz/2.7 kHz roofing filter as standard • ALC derived from TS-990S eliminating spike issues • Antenna output function (shared with DRV connector) • CW - morse code decoder function • Improved 1st mixer • New PFB key with multi-function knob • New split function enabling quick setting • LED backlight with selectable color tone



TM-V71A | 2M/440 DualBand

- High RF output (50W) • Multiple Scan • Dual receive on same band (VxV, UxU) • Echolink® memory (auto dialer) • Echolink® Sysop mode for node terminal ops • Invertible front panel • Choice of green/amber for LCD panel • 104 code digital code squelch • "Five in One" programmable memory • 1000 multifunction memory

Call Now For Your Low Price!



TH-D72A

2M/440 HT w/extended RX

- 5W TX, RX 118-524 MHz, VxU, VxV, UxU
- APRS w/built-in 1200/9600 TNC • Built-in GPS, Built-in USB, digipeater • Echolink® compatible, • Mil-Spec STD810

Call For Special Low Price!



TS-2000/2000X | HF/VHF/UHF Transceiver

- 100W HF, 6M, 2M • 50W 70CM • TS-2000X 10W 1.2GHz
- Built-in TNC, DX packet cluster • IF Stage DSP • Backlit front key panel

Call For Special Price!



TM-281A | 2 Mtr Mobile

- 65 Watt • 200 Memories • CTCSS/DCS • Mil-Std specs • Hi-quality audio

Call For Special Low Price!

TH-D74A

2M/220/440 HT w/D-STAR!

- D-STAR compatible • APRS ready w/built in GPS • Color weather station information • Built-in KISS mode TNC • High-performance DSP voice processing • Standard compatibility for Bluetooth

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TH-K20A | 2M Handheld

- 2M 5.5W • VOX • CTCSS/DCS/1750 Burst built-in • Weather alert

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ACOM-1000

- HF and 6 Meter 1KW Amplifier • Match 3:1 SWR with No Tuner • User Friendly QSK Operation • LCD Message Display
- Single 4CX800a Tube • Vacuum Antenna Relays

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218XATC-PL-(length) RG8x (240UF) w/PL259 Connectors Each End. Weather-Proof Heat Shrink Tubing.

- Stranded Center Conductor.
- 95% TC Braid + bonded 100% Foil Shield.
- Very Flexible, Light Weight, and Smaller than RG8 sizes.
- Non-Contaminating-UV Resistant-Direct Burial-Black Jacket.



233/2-G4-(length).

- Unique design (Nickel Grommets 4" Spacing) allows for easy attachment to a vehicle's body or truck bed to create a "ground-plane".
- Good option as a "buss-bar" in the shack.
- 1/2" wide tinned copper 38x48x8/384 10ga 53 Amps.
- Stocked in 1.5', 3', 5', and 10' foot lengths.



The SDRplay RSP FAMILY

THE WORLD'S FAVORITE SDR RECEIVERS

- Continuous SDR coverage from 1kHz to 2GHz (NO GAPS!)
- Now includes the new RSPduo 14-bit Dual-Tuner SDR
- RSPduo can simultaneously receive on 2 totally independent 2MHz spectrum windows, anywhere between 1kHz & 2GHz
- All RSPs can receive, monitor and record up to 10MHz spectrum at a time
- Visualise all the signals in multiple bands simultaneously
- S/W pre-sets for all the bands from the new LF2200m to 23cm
- Excellent dynamic range for challenging reception conditions
- Built-in High performance Front-end Filters
- Use as a stand-alone general coverage receiver, or as a high resolution Panadapter
- SDRuno Windows SDR software provided free-of-charge
- Also works with other platforms and popular SDR Software
- The perfect gift for newcomers & returners to the radio hobby
- Calibrated S meter/RF power & SNR measurement with SDRuno
- Only needs a computer and an antenna
- Backed by the biggest and best SDR support community



TX-455

- 55' freestanding crank-up • Handles 18 sq. ft. @ 50 mph • No guying required • Extra-strength construction • Can add raising and motor drive accessory • Towers rated to EIA specifications • Other models available at great prices!



MA-40

- 40' Tubular Tower

Call For Latest Pricing!

MA-550

- 55' Tubular Tower • Handles 10 sq. ft. at 50 mph • Pleases neighbors with tubular streamlined look

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RRC-1258 MkII-S-Set

This set of interfaces allows remote control of your Amateur Radio Station via Internet in a user-friendly and cost effective way! RemoteRig gives you control of the radio coupled with crystal clear TX & RX audio and sending CW with your own Paddle!

New! Now Stereo Version for Dual Receiver radios.

Works with all Computer-controllable radios from: **Alinco - Elecraft - ICOM - Kenwood - Yaesu**

For radios with detachable front panels no PC is required for: TS-480HX/SAT; TS-2000 (RC-2000 req'd); IC-703/Plus; IC-706 series; DX-SR8T; IC-2820H; IC-R2500

Just simply insert your control box in place of your front panel interconnect cable, place the body of the radio on the remote end and you are on the air as if you are there! Extra Controller and Remote interface units sold individually for multiple sites/users.

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