



PVRC Newsletter

September 2018

Newsletter Editor: John K3TN jpescatore@aol.com

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

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

Facebook: <https://www.facebook.com/groups/PotomacValleyRadioClub/>

President's Letter – Bud W3LL

Hello, PVRC - September means the start of the PVRC election process.

I'll be retiring as PVRC president at the end of this year after having served for three years. It's the responsibility of the president to provide for a smooth outgoing transition. To that end the plan is as follows, predicated on election results:

I've chosen Tom K3AJ to assume the presidency. Tom accepted the offer.

Dan K2YWE accepted the offer to shift from VP to Treasurer. He'll be under the tutelage of Treasurer Tom for the next three months. Dan retains management of PVRC logo items.

VP Jay W3MMM will remain in place but with added responsibility for managing the Olympics Program and PVRC award plaque process under Tom's tutelage. Also, Jay will be managing Cheerleaders and a future triple award program. Additionally, Jay, as a contingency measure, will continue under the tutelage of Secretary Tim to understand and be able to execute core PVRC services. A full plate and great learning experience for Jay.

This frees up Tom K3AJ from treasurer, Olympic program awards and 5M plaque duties to be responsive to the many day to day issues that present themselves in addition to overall management of the leadership team.

Secretary Tim N3QE will continue in his secretary position, executing an overwhelming myriad of responsibilities. This will leave us with a new VP to remain flexible as a Special Projects Officer, as both Dan K2YWE and Jay W3MMM did when coming aboard. Although the by-laws allow for one VP, we are in the process of recruiting a VP, preferably from an outlying region of the PVRC circle.

Standby for the formal announcement of PVRC's two-month long nomination period beginning on 01 September.

I am nominating on 01 September:

President K3AJ Tom
VP W3MMM Jay
Secretary N3QE Tim
Treasurer K2YWE Dan

The specifics of the 2019 election process will be the same as this year and in all previous annual election years.

1. Chapter chairmen will ask for nominations at both their September and October meetings.
2. Chairmen will forward nomination results via email to the PVRC secretary not later than 31 October.
3. PVRC Secretary Tim, N3QE will receive via email the September and October nominations from your chapter chairmen.
4. A list of all nominees received by Tim from all chapter chairmen will be sent to each chapter chairman via email on 01 November.
5. Chapter chairmen will hold elections at their November and December chapter meetings.
6. Chairmen will forward election results via the automated PVRC Meeting Attendance Report not later than 15 December.
7. Secretary Tim N3QE will post election results to the PVRC reflector not later than 31 December.

The PVRC by-laws Section 2 stipulate the following process: *“The President shall call for the nomination of officers and the Board of Trustees in September. The floor shall remain open for additional nominations until October 31. The Officers and Trustees shall be elected by a majority vote of active, voting members. Election results will be announced by December 31.”*

Speaking of voting, the Roanoke Division Director race is an all PVRC event. Bud W2RU is chairman of our Roanoke-Blacksburg chapter and John Humphrey, W4IM is a member of PVRC Rappahannock chapter.

From the ARRL Letter: *“In the Roanoke Division, the incumbent Director and Vice Director face challengers. Director James Boehner, N2ZZ, is being opposed for re-election by George Hippisley, W2RU, while incumbent Vice Director Bill Morine, N2COP, will be facing off against John Humphrey, W4IM, to retain his seat.”*

Please remember to vote: Ballots will be mailed from ARRL HQ to all voting members of the League in the Roanoke Division (WV, VA, NC, SC) shortly **before October 1st**. Those ballots must be returned to League HQ by the third Friday in November. I can't emphasize enough to please vote!!!

In case you haven't noticed, the Fowlfest date moved to 15 September from its typical end of August date. Unfortunately, that's also the date for the circle-wide PVRC PigFest at Steve's NR4M fabulous station.

NCDXA/PVRC Fowlfest – Saturday September 15

FOWLFEST 2018 will be held on Saturday, September 15, in the Bobwhite Pavilion in Seneca Creek State Park in Gaithersburg, MD from 11:30 am to 3:00 pm – rain or shine! This is the same location as last year.

This event, co-sponsored by PVRC and NCDXA, is made possible by the unselfish generosity of Fred Laun, K3ZO, longtime PVRC and NCDXA member and current NCDXA President. Joel Knoblock, W3RFC of The RF Connection has graciously made a donation to cover the cost of the pavilion rental and alcohol permit. Our Chicken Chef Extraordinaire, Todd WB2ZAB will be preparing the chicken as only he can. Go [here](#) to obtain a copy of the complete announcement, RSVP instructions and detailed directions to the event. Looking forward to seeing all of you at FOWLFEST on 9/15.

NR4M - Saturday September 15

Open house and cookout for PVRC members, and contesters. Sponsored by: NR4M and the Goat Farm Gang (PVRC Rappahannock chapter):

Location: NR4M QTH Locust Grove, VA

Date: Saturday, Sept 30 @ 12 noon

Lunch to include: Barbequed pork ribs, pulled pork, burgers and brats, soft drinks, water and assorted beer. Although not required, bring a side dish to share, if possible.

Nominal cost of \$5.00, paid in advance. This guarantees a 'head count' for purposes of food purchase. You will get your \$\$'s worth.

Bring a lawn chair. Little shade outside, but plenty of A/C inside large garage.

RSVP and your \$5 to Dan, W0CN. Email for PayPal payments: dan.w0cn@gmail.com (Please choose PayPal's 'friends and family') If you prefer to pay by check, 1807 Mason Hill Dr., Alexandria, VA 22307, - Payable to Dan Hausauer.

Questions or special dietary needs, contact NR4M. steve@nr4m.com

Olympics Award 2018 Results – See Tom's K3AJ article elsewhere in this issue.

Another triple header award is in the making from the creative mind of Jay W3MMM. Standby for more on this exciting competitive award.

NAQP SSB - We just finished NAQP SSB. That's the last of a six-inning game for this year's NAQP Cup Challenge. We now await the results pending 'Preliminary Scores' being posted to the NCJ website. Will we get to keep the cup for another year? I don't know but I do know it's a close game.

Speaking of games here's a perfect segue into the game of contesting. So, let's get to the Sports Pages. Yes, pages with a plural since this also includes both July and the hiatus month of August.

Sports Pages 9/18

Although not a 5M contest, the IARU HF World Championship generates a lot of PVRC action. This year, with WRTC 2018 being conducted during the IARU (not to mention the PVRC competitors part of WRTC 2018), the PVRC turnout was especially big. In 2018, 62 PVRC'ers reported IARU scores on 3830scores.com vs. 44 in 2017. A lot of those playing reported having a lot of fun chasing down the "Y8" WRTC stations. The K000 team at WA3EKL did their usual multiop thing as the only PVRC multiop in this one. In SOAB (A) CW HP N2YO (at NR4M) made the top 10 US with a score of 1.2M. This was Chip's first ever SO2R. N4ZR played in this category as well in his first "semiserious" effort from his new QTH coming in just under 500K. NA3M, W2CDO, W4MYA and KE4S all made north of 500 QSO in this category as well.

In SOAB (A) Mixed HP, N3QE (at N3HBX) appears to have the #3 US score with a score of 1.9M. K3AJ made just under 1,000 QSO for 532K in this category for the next highest PVRC score. W3LL looks to have taken the #1 US spot in SOAB (A) SSB HP with 1,461 QSO for 651K. In SOAB CW HP N4AF (operating as NY4A) has the #3 US reported score with 2,516 QSO and almost 1.9M. In that category, WJ9B and WA2BCK made over 1,000 QSO and N4CW, K2WK, WA4JUK and K0ZR all made over 500 QSO. K7SV appears to be #1 USA in SOAB CW LP with 1,203 QSO for 726K. K4ORD is also in the top 10 US with 377/146K. LP specialist N8II is sitting in #2 US in SOAB Mixed LP with 875 QSO/483K.

The first 5M contest of the new season was the CQ WW VHF. It had to compete for time and attention with the NAQP RTTY. Conditions weren't great, but there were nice 6M openings on Sunday morning and a few EU QSO's were also workable Sunday afternoon on FT8. 2M wasn't real productive. Most of those who tried using FT8 reported that the frustration and confusion caused by the co-existence of two incompatible modes (standard and NA contest) in WSJT – let's hope this gets resolved soon.

Team W3SO has the #2 reported US score in Multiop HP with 58K. Team WA3EKL devoted some time to this one while working NAQP RTTY with good results. W3RFC did a similar time sharing multiop effort. The top PVRC HP SOAB was by W3IP with 26K, closely followed by N3MK with 25K and then K3ZO (19K). Next scores in this category of note were by N3XF (8.9K) and WA3EKT (8.8K). N3ALN is in the top 10 reported scores in SOAB LP with 5.8K. N4MM broke 5K in SOSB/6 HP.

NAQP RTTY saw a good PVRC turnout, and those who showed up in the afternoon enjoyed some darn good e-skip yielding many QSO on 15 and 10. Storms in the evening made 80 a lot less productive than usual. The ionosphere giveth, and the ionosphere taketh away. PVRC'ers keep coming up with new and different ways to use the M/2 category in NAQP to maximize scores.

12 of the 27 M/2 scores reported on 3830scores.com are from PVRC. Only one, N3DPB (at WA3EKL) really involved more than one operator (they made 489 QSO for 72K). Most are SO with assistance, putting them into M/2. W3LL was the top score using that method, with 583/100K. W4MYA and W4JAM broke 40K with that strategy. The redoubtable N3QE managed to do a one-person "real" M/2 with two signals on the air at a time by using the multiop capability at N3HBX. He sits with the #3 top recorded M/2 score right now with 897 QSO/172K. In the "classic" SOLP category, top PVRC scores were by K7SV (using SO2R for 105K), K4GMH (using SO2R for 97K) who fought off the

mental fog brought about by rushing back from the beach, K3AJ (65K), and W4GO (64K). We don't often see QRP entries in this contest but let the record show that K000 operated W3RFC in that category, and N4NQY also gave it a shot with QRP.

NAQP CW is a PVRC favorite. A big turnout with decent conditions considering the season and the sunspot cycle. Although 15 and 10 were pretty dead, 20 and 40 were good and 80 and 160 were excellent. As K4FTO put it: "160 sounded like it does during 160 only tests." N4FX commented, "First time ever had more Q's on 160 than 80." Although it never helps to operate the low bands from a noisy city location, leading KE3X to offer a one words summary: "Yuck." Scores were hampered somewhat by the lack of high-band mults, but many reported making plenty of QSO. Perusing 3830scores.com just confirms an ever-growing trend in NAQP: single ops entering as M/2 to use spots. It looks like there were 22 PVRC entries like that. The NC4KW "real" M./2 at N1LN appears to be in the #1 spot with 1,679 QSO for 386K – despite computer woes (causing N4YDU to use paddle, paper and pencil for a while). W3UL put in a QRP remote M/2 from SOCAL. NG3K (at N3DPB) was another nice "real" M/2 for 788/119K. Scores north of 100K in SO M/2 were posted by N3QE, W3LL (ND3D), N3HEE and W2CDO. The top SO LP score in PVRC was by K7SV ("More Q's but fewer mults") with 190K. N8II was close behind at 188K. N9NB was next with 158K followed by KE3X (DC mult!) at 131K. Others posting scores north of 100K were K3AJ, N3UA and K3AU (K2YWE). And let the record show, with great sadness, that this appears to have been W4MYA's final contest score. Bob the Dude ran 'em for 8 hours for 451 QSO and 65K.

The NAQP SSB finished out the NAQP summer trifecta. It was truly painful with both space and atmospheric weather making this a most difficult contest. There was an epic PVRC turnout, but alas the QSO's and scores were down. Congrats to Team WX3B who is showing a slight lead on 3830scores.com over N5ZO for the #1 M/2 spot with 1324/205K. It just shows how truly awful conditions were if you compare the WX3B M/2 score with the NC4KW M/2 winning score in NAQP CW at 386K! NN3W (at N3HBX) was the ONLY PVRC SO (including SO M/2's) to break 100K. A great effort from Rich, still sitting at #1 on 3830scores with 1062/163K. W3LL M/2 but one radio (with W3LL and N4ZR) came close with 99K. N3QE, WB2ZAB, K4XL and KU1CW (@W4AAW) managed to make more than 500 QSO. WB2ZAB "owned" 20M early on with his high 4-el antenna. Congrats to new member WA3MJZ for putting up his first ever contest score and KT3RR for his first from a new QTH. Ditto for AB3CV. It was tough duty even being a sure mult – as VP5/K4QPL can attest. This being the first contest following the passing of W4MYA, many PVRC and other ops across the country honored him by sending "Bob" or "Dude" as their name, and a warm shout out to our friends and competitors at SMC who fielded "W4MYA Memorial" Teams.

Oh, yes, between NAQP CW and NAQP SSB, there was another 5M contest. WAE CW in all its one-way QTC glory. Conditions were fair, all things considered. Teams NR4M and W3LL in M/S HP finished #2 and #3 respectively in the US. K000 (@N3DPB) also put up a nice M/S HP score of 287K. PVRC'ers took 3 of the top 10 US spots in SOHP with KD4D (@N3HBX) scoring 1.3M at #1, K11MI (N4CW) at #8 and N3QE at #10. K3RA didn't report to 3830, but he would have been well up in the top 10 US with his score of 608K. N1LN had a nice score in this category as well, with 401K. In SO LP K7SV is at #2 US with the top PVRC score of 347K, followed by W4AAW with 96K and W4EE with 60K.

That's it for another month. 73, Bud W3LL

Celebrating the Life of a Dude's Dude Bob W4MYA – via Bob W4DR



Bob W4MYA with Fred K3ZO, circa 2001 at K4JA (K4JA photo)

The Central Virginia Contest Club is hosting a Celebration of Life honoring Bob Morris, W4MYA on Saturday September 1 from 12-3 pm at St. Martin's Episcopal Church, 9000 St. Martin's Lane, Henrico, Va 23294. There will be a light lunch, projected pictures of Bob's long amateur career and a chance for you to share your memories.

If you plan to attend, please email Bob W4DR by clicking [here](#) so we know how many to plan for.

Editor's note – during the NAQP SSB it was great to be a Dude and work the flood of Dudes and Bobs that were honoring W4MYA.



PVRC Olympics Update – Tom K3AJ

60 members qualified for a Gold, Silver or Bronze medal in the PVRC Olympics 2018:

AA3S	GOLD
AB3CV	GOLD
K2YWE	GOLD
K3AJ	GOLD
K4XL	GOLD
K5VIP	GOLD
K7SV	GOLD
KB3VQC	GOLD
KD4D	GOLD
KE3X	GOLD
N3HEE	GOLD
N3QE	GOLD
N4CF	GOLD
NR4M	GOLD
W3GVX	GOLD
W3LL	GOLD
W3UL	GOLD
W4VIC	GOLD
WA3EKL	GOLD

K3KU	SILVER
K3WI	SILVER
K4QPL	SILVER
KG3V	SILVER
KK4R	SILVER
N3DPB	SILVER
N3KN	SILVER
N4MM	SILVER
N4YDU	SILVER
W2CDO	SILVER
W3LPL	SILVER
W3OU	SILVER
W3YOZ	SILVER
W4YE	SILVER
WA3AER	SILVER

AJ3M	BRONZE
K00O	BRONZE
K2AV	BRONZE
K3EW	BRONZE
K3NDM	BRONZE
K3TN	BRONZE
K4GMH	BRONZE
K4HQK	BRONZE
K4MI	BRONZE
K4ORD	BRONZE
N2YO	BRONZE
N3AM	BRONZE
N3JT	BRONZE
N3UM	BRONZE
N4TL	BRONZE
N6DW	BRONZE
N8II	BRONZE
NG3K	BRONZE
W1IE	BRONZE
W2GPS	BRONZE
W3GB	BRONZE
W3IDT	BRONZE
W4JAM	BRONZE
W4PK	BRONZE
WA4EUL	BRONZE
WR3R	BRONZE

And here are the medals which will be presented:



For 2019, the overall program will be very similar. Of course, the objective is the same: “The goal of the PVRC Olympics is to encourage, broaden, and reward participation in PVRC contests and other club activities.”

We received feedback and suggestions from several members and have acted on them in tweaking the rules for 2019. Those rules are now posted on the PVRC Web Site. The changes from 2018 are as follows:

- More flexibility is allowed in meeting the Sweepstakes requirement. Last year, it was necessary to submit scores in both CW and SSB to qualify. If someone had an unavoidable family commitment, a travel commitment, or other obstacle to being on for both modes they were eliminated. This year, the same number of total QSO's are required as last year for each level, but they may be earned in one or both legs of Sweepstakes. This is consistent with the way Sweepstakes club competition occurs, as clubs compete based on the total points achieved across both modes.
- In the “Other” category (in which the criteria is to accomplish one, two or three of a number of possible activities) two changes were made:
 - “Enter at least one VHF 5M contest” was added as an option.
 - Differentiation between levels of financial contributions to PVRC was eliminated. The language “Make a financial contribution to PVRC” is the same at each level.
 - The remaining options in this category remain the same
- The language governing awarding credit for participation in multi-op or guest-op situations has been modified. In general, the simple method of dividing total QSO's by the number of operators remains in effect, but a provision for requesting recognition for the contribution of an operator who made more than that average number of QSO's as attested by the station owner/host has been added. A change ensuring that station owners/hosts are not penalized for having multiple operators by crediting them with the full number of QSOs made in each operation was also made.

Let the games begin!



Things Could Start Looking Up, At Least Not Further Down – from NASA

From NASA's Solar Dynamics Laboratory:

“Over a three-week period (July 3-24, 2018), the Sun produced just one small, short-lived sunspot - but it tells a big story. Up until July 22, the Sun had no sunspots for 23 consecutive days, the first time that has happened in nine years. The Sun is rapidly approaching solar minimum, a period of very low solar activity in its 11-year cycle - and doing so more rapidly than many scientists predicted.”



Then Again, Things Could Start Falling Down, Too...



An early August storm brought down the antennas at the SJ9WL-LG5LG memorial station on the border of Sweden and Norway – details [here](#).

CW Weekend Lunch – Jim N3JT



Clockwise from the left: K5VRX, W2YE, N4MM, N3JT, WA2BCK, K4HQK, K3GEN, K3SC, N4RA, K3XA (guest), K3ZO, W3YY, W4JVN and K6ETM

PVRCer Jamie Dupree Gets Back on the Air – via Eric W3DQ



Several stories aired about Jamie NS3T's battle with tongue protrusion dystonia – more details [here](#) and [here](#).

A Gaggle of Tango Novembers – Jim N3JT



John K3TN and Trung W6TN at N3JT QTH for CW Weekend 2018 – N3JT photo

Editor's note – next year, we hope to have Slavek OK1TN and Jim K1TN attend...

Cybersecurity Tip o' the Month



Editor's note – “Change Them Often” is outdated advice. You should only change a password if you have reason to believe it has been compromised

Some Useful Links – John K3TN

Defining “[coopetition](#),” Frank W3LPL is interviewed by Tim K3LR [here](#).

Jim K9YC put together a detailed comparison of bandpass filters usable for multi-op and SO2R stations – look [here](#).

Membership News – Tim N3QE

PVRC did not add any new members in the latest reporting period.

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

- Sept 1 – All Asian SSB
- Sept 9 – NA Sprint CW
- Sep 8 – WAE SSB
- Sept 16– NA Sprint RTTY
- Sept 15 – Scandinavian CW
- Sept 29 – CQ WW RTTY

Logs Due This Month

- Sept 12 – MDC QSO Party
- Sept 30 – Eclipse QSO Party

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

Editor's Last Word – John K3TN

Thanks to Eric W3DQ, Tom WA2BCK, Jim N3JT and Bob W4DR for posting or submitting items I've used in this month's newsletter. As always, the quality of the PVRC newsletter is completely dependent on submissions from PVRCers – send me whatever you have, doesn't need to be purty or elegant, or even eloquent. Email to [jpescatore at aol dot com](mailto:jpescatore@aol.com).

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>			

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.

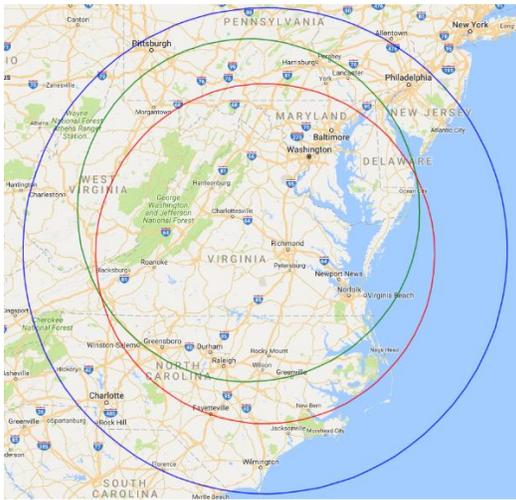
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



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
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Red: ARRL HF Circle
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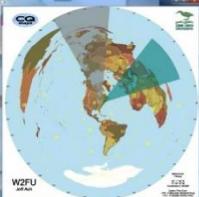
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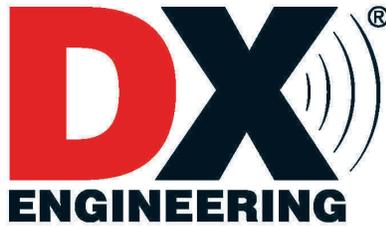


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Digital 4K UHD World Clock

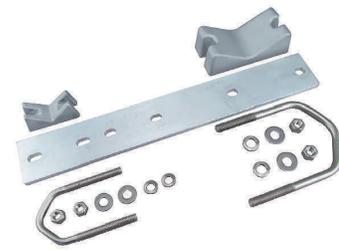
Enjoy all the functionality, Ham-friendly features and beauty of Geochron's World Clock for a fraction of the cost! DX Engineering is the only Amateur Radio retailer worldwide that sells the Digital 4K UHD. The device gives viewers magnificent displays of the Earth with the sunrise-sunset rendered in real time through a small computer that plugs directly into a 4K TV (not provided) via HDMI. The size of the display is only limited by the size of the TV. The Ham Radio mapset includes display of the "Gray Line" in real time; DX and international prefixes; equatorial, latitude & longitude, and tropic points of reference; and much more. Enter "4K" at DXEngineering.com for complete details.

GEO-4K-COMP Digital World Clock for 4K TV.....\$399.00



K7NV Heavy-Duty Rotator Mast Clamps

DX Engineering is pleased to announce that it is now a reseller of K7NV heavy-duty mast clamps for rotators. The precision-constructed clamps accommodate 2" diameter masts and replace stock units installed on the top of M2 Antennas OR-2800 positioner rotators and Yaesu G2800-DXA, G1000-DXA and G800-DXA rotators. These direct bolt-on replacements significantly improve the mast connection to the rotator and prevent mast slippage that can result with larger array setups. Galvanized Grade 8 mounting fasteners are available for either M2 or Yaesu rotators.



DX Engineering Mastlock Tower Accessory

Made exclusively for use with Rohn and Amerite towers, the Mastlock enables you to lock your tower mast in position and remove the rotor without having the mast slip downward. It's also perfect for keeping your antenna in place when performing maintenance. Use of two Mastlock assemblies is recommended to keep the mast centrally located. Comes with 6061-T6 aluminum anti-rotation bracket and stainless steel V-clamps and hardware.

DXE-MASTLOCK\$43.99

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High Quality HF Antennas for the Contester and DXER. We Focus on Quality and it Shows in Everything We Do. Call or email for antenna systems.



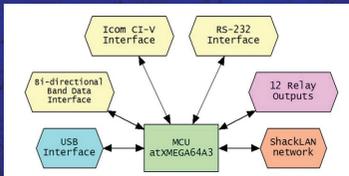
Announcing the new BM-5 BandMaster V

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.

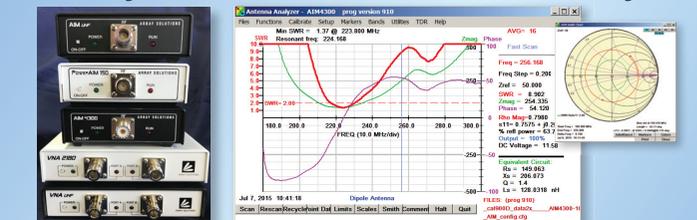
Frequency coverage:

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



IC-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



IC-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

IC-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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FTDX5000MP Limited | 200W HF + 6M Xcvr

- 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

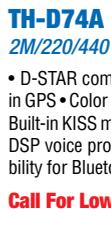
Call For Special Price!



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

Call For Low Price!



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

Call For Additional ACOM Products!



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



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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All US Towers shipped by truck; freight charges additional.

BUY FROM HRO. The World's Largest US Tower Dealer

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!



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.

REMOTE RIG



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.

Now includes 12V power supply, \$12.95 value!

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