



PVRC Newsletter

June 2021

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 – Dan K2YWE

I thought I would restate the PVRC position on the resumption of in-person meetings since it has come up in several recent chapter meetings. It is the same position that was discussed in the PVRC-wide leadership meeting held at the end of March.

Long standing PVRC policy requires that official chapter business, including new member introductions and vote-ins, be conducted at in-person meetings. That policy was temporarily suspended to permit online and OTA meetings to serve for official purposes over the period when pandemic health measures preclude in-person gatherings.

It is my intention to keep the temporary policy suspension in place through the end of 2021. Lifting it will be reviewed at that time and again monthly thereafter if necessary. Thus, there will continue to be no compulsion on the part of PVRC to conduct in-person meetings for any reason until the suspension is lifted.

The matter of when to actually resume in-person chapter meetings is left to the individual chapters to decide, consistent with government regulations and their own judgment. Ultimately, the responsibility for an individual to participate in a PVRC in-person event or other gathering or to continue to participate in such an event or gathering is theirs alone.

PVRC Officers:

President: K2YWE Dan Zeitlin
 Vice President: N4GU Mike Barts
 Vice President: AA3S Doug Hart
 Secretary: N3QE Tim Shoppa
 Treasurer: W3MMM Jay Horman

Trustees:

K3MM, N3OC, K2AV, K7SV, W3LPL, N3KN, N4ZR, W2RU, W3LL

PVRC Charter Members (all SK):

W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT

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Annual W3LPL Open House, Saturday June 19 – Frank W3LPL

The Annual W3LPL Open House will take place as usual on Saturday June 19th at noon, rain or shine. NCDXA and PVRC members and their guests are welcome. However, Phyllis and I respectfully request that anyone who is not fully vaccinated not attend this year's event, for our protection and the protection of all of our guests.

Please email me at donovanf@erols.com if you plan to attend. **IMPORTANT:** In your email please indicate if you plan to purchase food from CJ's BBQ who will be on site from noon to 2 p.m. as usual.

NSS Armed Forces Crossband Test Friday Setup – Alan WA3EKL

It was a warm, almost hot, Friday afternoon, before the rain started as we began setting up for the 2021 NSS operation across from the Naval Academy on the grassy field. As the temperature rose more water was consumed until we ran out and it was then that Frank W3LPL and Rol K3RA decided to drill for water as seen in the photo on the left.



After 15 minutes of much effort, very little progress was made. Careful observation from afar was being carried out by Dan K2YWE, who joined the group to lend his vast knowledge and physical support as seen in photo on the right.

After another 15 minutes of little progress Dan suddenly left the group and began wandering the field only to return with a “Y” shaped stick. In a few minutes Dan announced “You’re digging in the wrong place, the water is over here” as seen in the photo on the next page.



I find that the photos, strangely enough, greatly resemble mature Ham Radio Operators attempting to insert “screw-in” earth anchors, the type that hold up AB577 portable towers in soft soil. However, this soil appears to be more like sand, stone, and concrete!

(Dan K2YWE notes that the NSS team made 930 QSOs)



PVRC Wins California QSO Party 2020 – Dan K2YWE

PVRC took first place in the 2020 California QSO Party club competition thanks to the contributions of 27 members lead by N8II's 82.8K points. Jeff has been chosen as the recipient of the 2020 CQP Club Competition plaque in recognition of his contribution. N8II finished 2nd in the Single-Op category as well. Congratulations Jeff!

It is notable that the top scores in MD, NC, VA, and WV were all submitted by PVRC members (no scores were submitted in DC, DE, or PA). Congratulations to all members that participated in the CQP and contributed to the win. Wins in contests like this that are not on the 5M calendar help add to the reputation of PVRC as a premier contest club. Well done all.



Go PVRC!

QSO Today Podcast with Tree N6TR

EPISODE 350 - LARRY TYREE - N6TR



Larry Tyree, or "Tree", as he is known in amateur radio circles, loves to operate contests, work DX on 160 meters, from his 28 hilltop acres in the Oregon forest, near Portland. Tree is a serious CW operator, where good antenna design, focus, skill, and patience bring the amateur radio rewards. Tree tells his ham radio story in this QSO Today.

We are spoiled here in PVRC-land, regularly getting insight from Frank W3LPL, Fred K3ZO and others. Larry (Tree) N6TR is one of the CW operators I've always learned from, especially early on when I fell in love with the CW [Sprints](#).

Eric 4Z1UG interviews Tree on the QSO Today podcast [here](#).

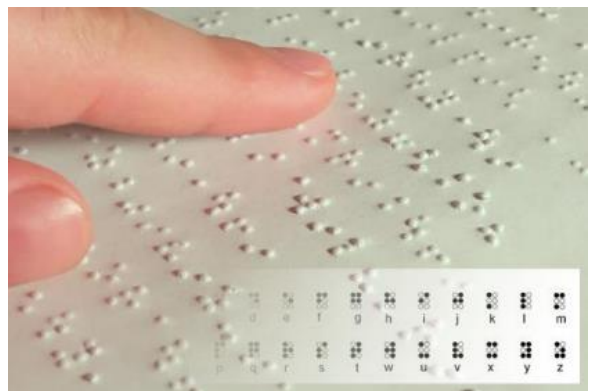


Meet the Braille Team – Mike K5XU via CW Ops Solid Copy

(Editor's note –this feature's PVRC's own Lloyd W3IUU. Reprinted from [Solid Copy](#) with permission of the author.)

A few years ago, Lloyd Rasmussen, W3IUU, a very active ham who is also blind, began using Braille as his name for the [North American QSO Party](#). Because several other members of the blind hams email reflector also participate in the NAQP, his use of the alias generated some discussion and additional interest in the contest. It ultimately led to the formation of The Braille Team, which took to the air for the first time in January, 2017, just a few days after the birthday of its namesake, [Louis Braille](#), who was born near Paris on January 4, 1809.

The first Braille Team consisted of Lloyd, Tom Behler KB8TYJ, Steve Forst KW3A, Fred Olver N9BSO, and Mike Duke K5XU. Since then, at least one Braille Team has participated in each CW and SSB NAQP. When there are enough operators for a second team, the original corps is divided among the two teams so that both teams have a balance of new and experienced ops. A very gifted and experienced operator, Summer Hartsfel VE5SDH (SK) also joined the Braille Team for one CW session.



Now, meet a few members of the team that fills the NAQP exchange with extra dots and dashes, and keeps VE2FK busy updating the call history file.

Lloyd Rasmussen, W3IUU

Lloyd, of Kensington, Maryland, earned his Novice license in 1955 at the age of 8 in his home state of Iowa. His first callsign was KN0DDA, and he was known as K0DDA until 1977. Since he was attending the Iowa Braille and Sight-Saving School in Vinton, 150 miles away from his home, his father and brother also decided to become licensed.

Lloyd received an electronics engineering degree from Iowa State University in 1969, and then worked for Collins radio company for a while doing receiver front end design. For the past 45 years he has worked at the National Library Service for the Blind and Print Disabled, a branch of the Library of Congress, developing braille and talking book equipment, software file formats and other things.

Lloyd said that in 1955 the only ham radio study material he could find in braille was a license manual from about 1940. Later, two ARRL publications, the 1952 edition of *How to Become a Radio Amateur* and the *ARRL License Manual*, were produced in braille.

Another significant contribution to electronics literacy for blind people was the *Braille Technical Press*, which was published by Bob Gunderson, W2JIO, from 1950 to 1973. These resources were studied for many years by future blind hams, this author included.

When asked about his use of Braille as his name in the NAQP, Lloyd said: "I have always found braille to be very valuable especially in taking my own notes and reading them back accurately and quickly. I figured that if other people could use all sorts of handles in the NAQP, I could use Braille as my name to emphasize that we are blind people who use the medium, and that it is quite important to us. "Besides," he added, "Braille is a six-dot digital code which you read with your digits."

Lloyd also participates in other contests, is active in his radio club, and conducts The Cross Country Blind Hams Net, which meets most Sundays at 4 PM eastern time on 14.258. For logging, he uses the N1MM software. Off the air, he participates in his community, church, and the [National Federation of the Blind](#).

Fred Olver, N9BSO

A Retired Rehabilitation Teacher from St. Louis, Fred has been a ham for over 40 years. His first experience with contesting was the Novice Round-up in the mid-1970s. Like anyone else involved in contesting at that time, he quickly discovered the challenges of keeping accurate contest logs.

"When I reviewed my log after that contest, I discovered I had failed to record band changes, he said. "Although I couldn't submit my logs, that first contest taught me a lot."

In the early 2000s, Fred began keeping his logs in text files by using a Braille terminal. "I thought it was cool," he said, "but again, there was no specific way to make sure the information appeared in the proper order. There was also no easy or automatic way to check for dupes."

Fred became an early user of the Amateur Contact Log software that was developed by Scott Davis, N3FJP. "Thanks to this software," he said, "I can participate in most contests including the state QSO parties and be on a level playing field with the other participants."

Last year he racked up over 400 contacts in the Missouri QSO party, and made 300 contacts as a member of The Braille Team in the most recent CW portion of the NAQP.

"Being a blind ham makes participation in the hobby a bit more challenging, but it doesn't keep me or anyone else who wants to participate from doing so," Fred said.

Steve Forst KW3A

Steve, of Springfield, Pennsylvania, was legally blind when he became licensed in 1987. He has now been totally blind for 20 years.

Steve's main interests in the hobby are DXing and contesting. His station is a Kenwood TS-890S with Elecraft KPA500 amp, along with a Hexbeam and dipoles. For logging, he uses Writelog.

Steve is active in his church and community, and sometimes has to divide his time accordingly during a contest weekend.

"I always enjoy the NAQP," Steve said. "It is competitive, but not as cutthroat as some of the big DX contests." He added, "I usually operate all 3 modes of the NAQP and have been using the name Braille across the board for several years, even in RTTY, where there is no Braille team yet."

Tom Behler, PH.D KB8TYJ

Tom is a retired college Sociology instructor who lives in Grandville, Michigan. He taught for 26 years at Ferris State University in central Michigan before retiring in 2016. In 2009, he took a one-year leave of absence to coordinate a program called Weather And Society Integrated Studies at the National Center for Atmospheric Research in Boulder, Colorado.



Tom obtained his first amateur radio license, WN3MQR, as a teenager living in central Pennsylvania in 1969. "As a Novice, I greatly enjoyed CW and became an incurable CW Op," he said.

After leaving the hobby for over 20 years, Tom returned to it in full force in 1994. He went through the upgrade process and obtained his Amateur Extra Class license (including the 20wpm code certification) in 1997.

"Through the years, my favorite operating mode has remained CW. This is why activities like the NAQP CW contest are so much fun for me," Tom said. "Being part of the Braille team has added a special significance to the endeavor, and I try to participate whenever the opportunity arises. It is fun to be recognized as part of a well-known operating team when I work the NAQP CW contest, and I look forward to many more Braille team outings."

Tom serves as Net Operations Director and board member for an area-wide repeater association, as the SKYWARN Team Leader for his county, and operates the CW station for his radio club during Field Day. He now uses his teaching skills to conduct in-person and online classes for the HandiHams organization.

Mike Duke, K5XU

I, Mike Duke, K5XU, of Jackson, Mississippi, have been a licensed and active amateur since 1969. A radio announcer and production person professionally, I have been employed at MS Public Broadcasting for 34 years.



During the summer between 7th and 8th grades, when I was 12 years old, I learned CW by listening to a set of records that I had received the previous Christmas. I would type the practice exercises on a typewriter, and my mother would check my work against the text that was supplied with the records. She would send me back to the typewriter for numerous repeats until I achieved the suggested score for each lesson.

By the end of that summer, I was copying Novice band QSOs in my head. I don't remember who sent it, but I remember the first sentence I copied over the air. It was, "The mosquitos are awful." From then on, I would listen to CW for at least a few minutes every day, even from my dormitory room at the MS School for the Blind.

When I was 14 years old, I passed the Novice exam and became WN5ADC in October 1969. The General class license came the following summer, and the Advanced license just before enrolling at Mississippi State University two years later. I passed the Amateur Extra Class license during one of the first Volunteer Exam sessions conducted by the Meridian, MS Amateur Radio club in 1986.

Larry Anderson NN5O nominated me for CWOps membership in 2015. He was also the person who introduced me to Field Day in 1973. Since the logs were all on paper back then, someone had to log for me whenever I was operating. Today, thanks to the logging software from N3FJP, I can log for myself or for others at Field Day, and independently participate in contests.

In addition to CW, I enjoy providing public service communications, serving as net control for local nets, and casual operating. I also participate in the [American Council of the Blind](#), and in its affiliate organization, [American Council of Blind Radio Amateurs](#)—W3ACB, and serve as secretary for my local radio club.

The primary thing I enjoy about this hobby is talking with other people. Some of those people I have known since high school, others I eventually met in person after talking with them on the air. But the majority are people I am not likely to meet, such as hams from other countries.

Any member of the Braille team will tell you that Amateur Radio is a great hobby. It allows us to interact with an amazing variety of individuals who we would have never encountered without that common interest. Most of these people do not know we are blind until we meet them in person, or until they become suspicious after working us during the NAQP. By that time the barriers are down and blindness doesn't matter.

Meet the PVRcer – Bryan N3FZ

Your Call: N3FZ

First Year Licensed: 2017

Previous Calls: KC3JGG

QTH and PVR Chapter: Finksburg, Maryland and Northwest Chapter

Favorite Contest and Why: I am split between the CQ WPX and the CW WAE Contest. I enjoy the WPX contest because even stations like mine can run a

frequency and rack up a lot of points. Last year, with 100 W and a wire I was able to have fairly sustained runs, which was a ton of fun. I have done some major upgrades to the station so this year should be even more fun. On the other hand, I really like the CW WAE test because of the opportunities for working EU stations all over the bands plus the QTC element is really fun. I would like, one day, to work WAE in Europe so that I could try being on the other end of the QTCs.

Least Favorite Contest and Why: I would say that my least favorite contests are VHF contests. I am no pro, but my experience has been that a lot of contacts are FT-8. I like FT-8 for learning about propagation and occasionally snagging a DXCC if I can't get it on CW or SSB.

Favorite part of Ham Radio other than contesting: Ham radio has so many opportunities. I got my license in 2017 so that I could participate in emergency communication activities. I figured that this would be a good fit with my fire and rescue background, but I learned that it didn't really keep my attention. I turned to HF communications but was very limited because, being in between houses, I lived in an apartment and could only sneak an MFJ-1786 magnetic loop antenna on my balcony.

The magnetic loop was fun but I had a lot of trouble getting a decent SSB signal out so I figured I would try CW. I ended up taking the CW Academy series and found that I really enjoyed it. I've worked on different elements of CW since then. Right now, I have discovered that moderate to high-speed CW rag chews are a ton of fun.



I also enjoy trying to work new DX stations for various ARRL awards. Although certainly not impressive against my PVRC friends, I am proud to boast that I have worked 150 different DX entities since getting my license in 2017. My current mission is to finish SSB DXCC and then 80M DXCC this fall/winter.

Favorite thing to do other than Ham Radio: I enjoy many outdoor activities. I'm an avid golfer, although terrible. I also enjoy hiking and hunting. I own a Labrador Retriever named Bruichladdich (Brook-laddy) and we are expecting a second Labrador Retriever whose name will be Biggie. I'm looking forward to getting out with Laddie and Biggie to do some goose hunting this coming year.

Anything else you'd like to say? I have enjoyed the camaraderie of PVRC. I have always been warmly welcomed at Northwest meetings. Members have been willing to help me fix problems and get on the air. I look forward to more contesting and meeting more of you.

PVRC 2021 Reunion June 4th/5th – Tim N3QE



PLEASE JOIN US on the air for the 2021 PVRC Reunion

The PVRC 2021 Reunion will be in two two-hour sessions with activity centered "on the 47's" to celebrate the founding of PVRC in 1947. PVRC's motto of "Once a member, always a member" shines through and this is an excellent opportunity to meet and greet on the air with members who are now living out of circle.

Times and Dates

This year there are TWO two-hour sessions throughout the weekend:

- **Friday June 4, 8PM-10PM EDT (that's June 5 0000Z-0159Z)**
- **Saturday June 5, 8PM-10PM EDT (that's June 6 0000Z-0159Z)**

Details [here](#).

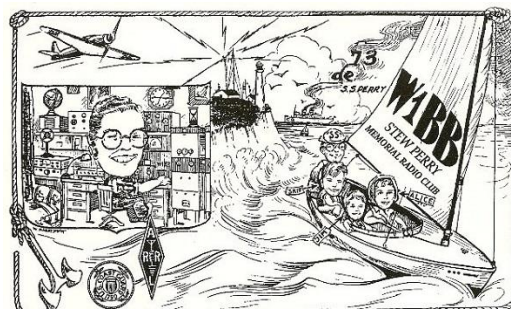
Certificates are being emailed to the 43 PVRCers who sent in log summaries for the 2020 PVRC Reunion:

N3QE (W3GRF)	K3MM	K3EW	EA5DFV
W4VIC (W4KFC)	WH7W	K4NTO	W3TAS
W4IPC	AA3S	K4HQQ	WR3R
K3WA	W3WHK	N0YY	KB3VQC@WA3EKL
KE4S	W3YY	W3TB	K1BZ
W3MAM	N4MM	K7SV	K3ZO
N4CF	K3RV	W4AGI	N4RA
WA3AER	N3CW	W4YE	K2PS
N3RC	K3AJ	K4XL	W3PJ
K5VIP	N1WR	N4CW	
K2YWE	N4AF	W4EE	

PVRC 160 Meter DXCC Standings – Frank W3LPL

Below are the 160M DXCC totals for PVRC members, transcribed from the ARRL [DXCC data](#) as of the 20th of each month or so. Thanks to Frank for the data each month to make this a regular feature. Please report any omissions or errors to [Frank](#).

CALL	DXCC	CALL	DXCC	CALL	DXCC	CALL	DXCC
W8LRL	344	W3LL	218	N3RC	146	K5RJ	114
W4ZV	338	W0VTT	217	N3KK	144	N3MN	114
W4DR	336	W4NL	214	N4GG	144	N4DJ	113
W3UR	321	W3YY	213	K3TN	143	K1KO	112
W3LPL	316	N4MM	212	WA2BCK	143	N4TL	112
K4CIA	306	AB3CV	211	W3BW	141	W3MR	111
K4ZW	302	K3WA	209	W2YE	138	KA4RRU	110
W4PK	287	W3GG	200	W4YV	138	N3HBX	110
K3SX	285	K5RT	197	W4VIC	137	NA1DX	110
N2QT	283	K3JT	193	N3OC	135	K1BZ	108
K4SO	275	N4DB	192	N4PY	135	W3KB	107
KG4W	269	K4FJ	191	AA4NC	132	W4ZYT	107
K5VRX	256	K1GG	181	N3KS	129	K3WC	106
W3DF	253	K2PLF	174	N3RR	129	W2GPS	106
N3NT	250	W4FQT	172	K3XA	128	N4NW	105
WB3AVN	245	N4XX	169	K5VIP	128	W3NRJ	105
WX4G	239	K3KY	166	W0YVA	127	W3TMZ	104
KG7H	237	K3AJ	165	KM3V	123	W3EKT	102
K1HTV	236	K4XD	165	N3MK	122	W4JVN	102
K3SWZ	233	N4QQ	163	W2GG	121	KE4S	101
K4XL	232	NR4M	155	K2BA	120	K3TZV	100
W3KX	227	N8II	153	W4PRO	120	KC4D	100
WS6X	221	W2RS	152	W4HZ	119	N3AF	100
K1AR	219	N3QE	150	N3UA	118	W4NF	100
K5EK	219	N5JB	149	N3ND	117		
N1LN	219	K4RG	147	K3OSX	114		



Membership News – Tim N3QE

PVRC added several members recently, please welcome:

- In the Virginia Metro chapter, Bill W2WCM
- In the Downtown DC Metro chapter, Don AC5XK

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

Upcoming Contests – from [WA7BNM](#)

June 2021

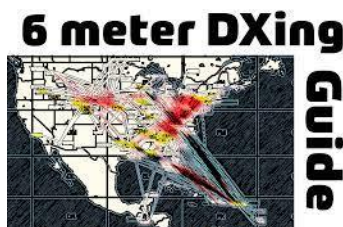
+ PVRC Reunion	0000Z-0200Z, Jun 5 and 0000Z-0200Z, Jun 6
+ ARRL June VHF Contest	1800Z, Jun 12 to 0259Z, Jun 14
+ All Asian DX Contest, CW	0000Z, Jun 19 to 2400Z, Jun 20
+ Stew Perry Topband Challenge	1500Z, Jun 19 to 1500Z, Jun 20
+ His Maj. King of Spain Contest, SSB	1200Z, Jun 26 to 1200Z, Jun 27
+ ARRL Field Day	1800Z, Jun 26 to 2100Z, Jun 27

Editor’s Last Word – John K3TN

Thanks to Bryan N3FZ, Alan WA3EKL and Frank W3LPL for contributions to this issue of the PVRC newsletter.

Time to switch the coax from the 160M T to the 6m 4 element yagi (Armstrong rotation) I have on a 20 foot high pole – K1HTV has already started reporting working buckets o’ European stations. The June VHF contest is in just a few weeks, seems like 6 often knows when that weekend is and the propagation goes on its own vacations for a few days...

The quality and usefulness of the PVRC newsletter depends on contributions from members. If you have photos from club meetings, screen shots of new contest software, or brief writeups on station improvements or contest war stories, send them in any format to [jpescatore at aol dot com](mailto:jpescatore@aol.com).



From the PVRC Treasurer – Jay W3MMM

PVRC has chosen not to implement an annual dues requirement. We depend on the generosity of all 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.

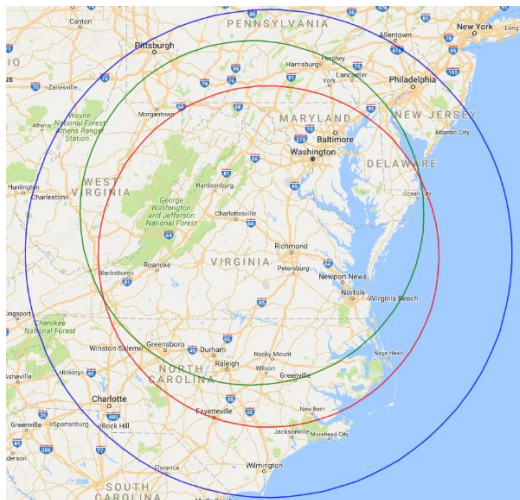
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



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
175 mile radius
Around 37.43168N,
77.858482W

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



Now a Word From Our Sponsors

PVRC doesn't ask for dues, but the Club does have expenses. You can also support the Club by buying from the firms listed who advertise in the newsletter!



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Get Ready for Field Day—June 26-27!



Field Day Triplexer and Quadplexer Combos

We've made it easy to work the 20, 15 and 10 meter bands with three different radios, using just a single tri-band antenna! Our Field Day Triplexer Combo includes Low Band Systems' (LBS) innovative 200W Triplexer (LBS-PB-TP200), LBS 20/15/10M band-pass filters, and coaxial cable jumpers. The Quadplexer combo comes with 200W Quadplexer (LBS-PB-QP200), separate band-pass filters for 40/20/15/10M, and coax jumpers. Eliminate the need (and cost) for extra antennas while enjoying fast setup and worry-free operation without RF interference.



DXE-200FD-8X-P	Triplexer Combo with RG8X cables	\$678.68
DXE-200FD-P	Triplexer Combo with RG400 cables	\$833.93
DXE-200FD-8X-QP	Quadplexer Combo with RG8X cables	\$884.91
DXE-200FD-QP	Quadplexer Combo with RG400 cables	\$1,091.91

DX Engineering Coaxial Cable Tool Kits

Get everything you need to prep and install soldered, crimp-on or Universal Compression F-connectors on your coax. Complete kits include cable strippers, grippers, replacement blades, braid trimmer, cable shear and carrying case. Individual tools also sold separately. **Enter "Tool Kit" at DXEngineering.com.**



Coaxial Cable Assemblies

These low-loss cable assemblies are available in standard lengths with DX Engineering's revolutionary patented PL-259 connector. Use the online Custom Cable Builder at DXEngineering.com to build assemblies made to your exact specs. DX Engineering's coaxial cable is also available by the foot or in bulk spools.



Complete Telescopic Fiberglass Tubing and Cam Lock Clamp Kits

These kits make it easy to set up a reliable temporary antenna mast at home or in the field. They feature durable, smoothly telescoped fiberglass tubing collapsible to either 4 or 7.5 feet for convenient transport. Sections are secured in place with easily adjustable cam lock clamps. Available in heights of 15, 25, and 46 feet. **Enter "Cam Lock Kit" at DXEngineering.com. From \$85.98**

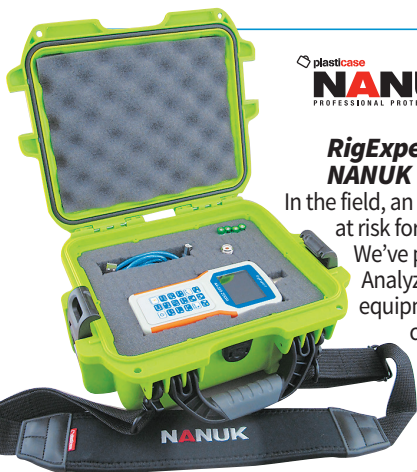


Multi-Band Dipole Antenna Kits

Ideal for easy setup on Field Day, these rugged yet lightweight 2,500W power rated antennas are usable to 30 MHz with a tuner balun (available separately). They feature strong and flexible 14 AWG stranded-copper, relaxed PVC-jacketed elements; 18 AWG 300-ohm ladder feedline; center-T support; and end mount brackets.



DXE-WA-070	Antenna, 70' Long for 40M and Up	\$64.99
DXE-WA-135	Antenna, 135' Long for 80M and Up	\$74.99
DXE-WA-260	Antenna, 260' Long for 160M and Up	\$92.99



RigExpert Analyzer and NANUK Case Combos

In the field, an antenna analyzer is especially at risk for weather and shock damage. We've paired select RigExpert Antenna Analyzers with perfectly sized NANUK equipment cases. Each case is filled with cubed, sectioned foam for custom configuration. Available separately or in combos. **Enter "Analyzer Combo" at DXEngineering.com.**



SWR/Wattmeters

Measure forward and reflected transmitter power with SWR/wattmeters from top brands, including Ameritron, Coaxial Dynamics, Daiwa, Diamond, Elecraft, and Palstar. Choose from models with true peak and average readings, 20/200/2,000-watt ranges, amplifier bypass for high SWR, high SWR audio alarms, remote sensors, and more. **Enter "Wattmeter" at DXEngineering.com.**



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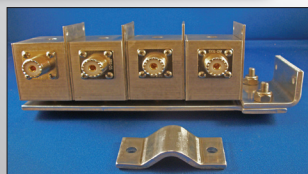
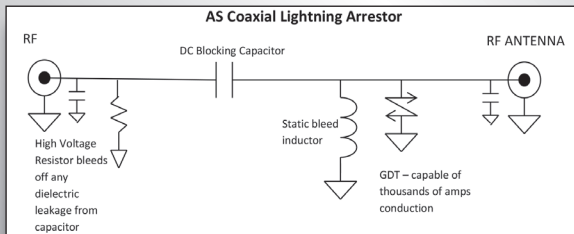
Array Solutions Lightning Arrestors Coaxial, Ladder Line, Single wire, Control Line protection for Rotators, Switches, and Antenna Motors

AS-300 Series arrestors are known for their reliability and performance. They feature easy mounting to plates, ground rods with our stacking bracket and also a convenient screw lug. The stacking bracket can be used on plates as well to save precious room in arrestor enclosures.

- Available in SO-239, Type-N, and 7/16 DIN connectors
- DC blocked, DC pass is available as a custom option
- Unique static bleed system with a UL approved Gas Discharge Tube, also ITU K 12 tested. This system usually prevents the GDT from ever firing unless a direct hit is taken. Saves your radio from static build up on large antennas.
- Models available for 3 kW, 5 kW, 10 kW and higher, details on website. Lower power available.
- FM low power broadcast model AS-303D FM
- Model AS-309H high-power single wire or ladder line arrestor, also DC block with static bleed
- Control line Arrestors for 8, 12, and 16 wires – 65V sparkover.
- Models for HF, VHF to UHF – Extremely low loss and Low VSWR



AS-303U



OM Power Amplifiers Sales and Service



Switches for Six Antennas



5kW - DC to 6m
RATPAK – 1x6

Choice of Multiple Controllers

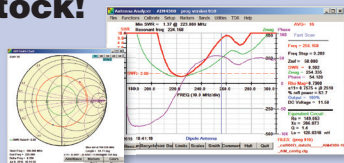
SIXPAK – 2x6



VNAuhf Back in Stock!

Vector Network Analyzer

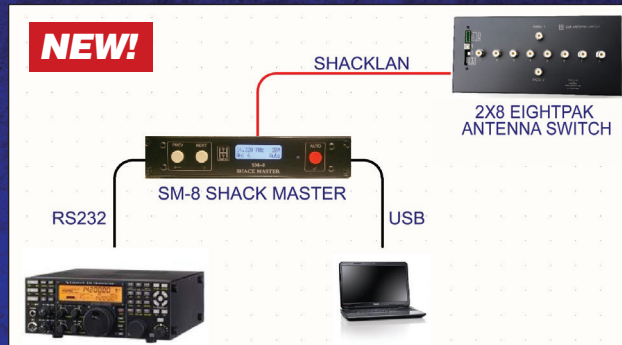
5 kHz - 1.3 GHz \$1295



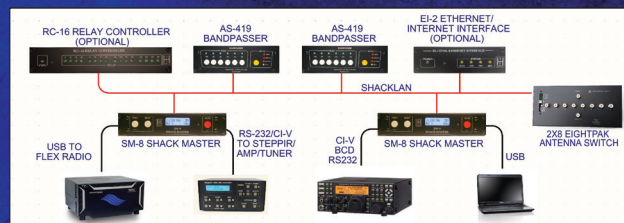
Hamation Station Automation

Hamation remote and Local Station Control products allow you to automatically or manually select antennas, bandpass filters, and control accessories. Accessories can be StackMatches, Antenna switches, antenna phasing systems, SteppiR controller, turning radios on and off, etc. All of this can be done directly from the Ethernet as well!

Wiring are simple phone cables that daisy chain to all the devices. Wireless control is also available to your tower-located switches. Call us to learn how to set up simple or complex systems. Below is a simple basic system that can switch antennas as you change bands. We can interface to any radio CAT port, not just RS232.

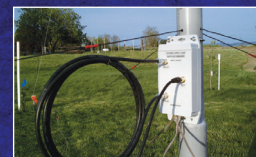


A more complex system could be a SO2R contest station as shown.



The Shared Apex Loop Array™!

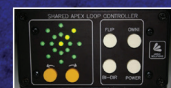
Capture the whole band or the whole HF spectrum at once with the Shared Apex Loop Array 2nd Generation. Can be remote controlled over the internet or in your station. 8 directions of directivity.



The Shared Apex Loop Array™ is a revolutionary receiving antenna that will change the way that you listen to the radio! The patented design provides performance in a size and over a wide range of frequencies that will please both the rag-chewer and DXer alike.

Three models to choose from:

- AS-SAL-30 - optimized for VLF, BCB, 1.8-10 MHz
- AS-SAL-20 - optimized for BCB, and 1.8-30 MHz
- AS-SAL-12 - optimized for 3-30 MHz



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.



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.



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Check our Website for more new products!

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-9700 | All Mode Tri-Band Transceiver

- VHF/UHF/1.2GHz • Direct Sampling Now Enters the VHF/UHF Arena • 4.3" Touch Screen Color TFT LCD • Real-Time, High-Speed Spectrum Scope & Waterfall Display • Smooth Satellite Operation



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-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-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-705 | HF/50/144/430 MHz All Mode Transceiver

- RF Direct Sampling • Real-Time Spectrum Scope and Waterfall Display • Large Color Touch Screen • Supports QRP/QRPP • Bluetooth® and Wireless LAN Built-in



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-R8600 | Wideband SDR Receiver

- 10 kHz to 3 GHz Super Wideband Coverage • Real-time Spectrum Scope w/Waterfall Function • Remote Control Function through IP Network or USB Cable • Decodes Digital Incl P25, NXDN™, D-STAR • SD Card Slot for Receiver Recorder



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-V86 | VHF 7W HT

- 7W Output Power Plus New Antenna Provides 1.5 Times More Coverage • More Audio, 1500 mW Audio Output • IP54 & MIL-STD 810G—Rugged Design Against Dust & Water • 19 Hours of Long Lasting Battery Life • 200 Memory Channels, 1 Call Channel & 6 Scan Edges



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-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-R30 | Digital/Analog Wideband Xcvr

- 100 kHz to 3.3 GHz Super Wideband Coverage • P25 (Phase 1), NXDN™, dPMRTM, 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-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

ID-52A | VHF/UHF D-STAR Portable

- Bluetooth® Communication • Simultaneous Reception in V/V, U/U, V/U and DV/DV • Enriched D-STAR® Features Including the Terminal Mode/Access Point Mode • UHF (225–374.995MHz) Air Band Reception

This device has not been approved by the F.C.C.



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NEW

FTDX101MP | 200W HF/50MHz Transceiver

- Hybrid SDR Configuration • Unparalleled 70 dB Max. Attenuation VC-Tune • New Generation Scope Display 3DSS • ABI (Active Band Indicator) & MPVD (Multi-Purpose VFO Outer Dial) • PC Remote Control Software to Expand the Operating Range • Includes External Power With Matching Front Speaker



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



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



NEW

FTDX10 | HF/50MHz 100 W SDR Transceiver

- Narrow Band and Direct Sampling SDR • Down Conversion, 9MHz IF Roofing Filters Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High Speed Auto Antenna Tuner • Microphone Amplifier w/3-Stage Parametric Equalizer • Remote Operation w/optional LAN Unit (SCU-LAN10) • **This device has not been approved by the FCC.**



NEW

FTM-300DR | C4FM/FM 144/430MHz Dual Band

- 50W Reliable Output Power • Real Dual Band Operation (V+V, U+U, V+U, U+V) • 2-inch High-Res Full Color TFT Display • Band Scope • Built-in Bluetooth • WiRES-X Portable Digital Node/Fixed Node with HRI-200



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



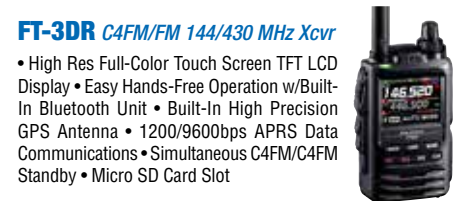
FT-991A | HF/VHF/UHF All Mode Transceiver

- 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



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



FT-3DR C4FM/FM 144/430 MHz Xcvr

- High Res Full-Color Touch Screen TFT LCD Display • Easy Hands-Free Operation w/Built-In Bluetooth Unit • Built-In High Precision GPS Antenna • 1200/9600bps APRS Data Communications • Simultaneous C4FM/C4FM Standby • Micro SD Card Slot



NEW

FTDX101D | HF + 6M Transceiver

- Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters Phenomenal Multi-Signal Receiving Characteristics • Unparalleled - 70dB Maximum Attenuation VC-Tune • 15 Separate (HAM 10 + GEN 5) Powerful Band Pass Filters • New Generation Scope Displays 3-Dimensional Spectrum Stream



FTM-7250DR | C4FM/FM 144/430MHz Dual Band

- 50 Watt Mobile • System Fusion-II Compatible • Operates Advanced C4FM Digital & Conventional FM Modes • 3 Watt Powerful & Clear Audio with Front Speaker



FT-65R | 144/430 MHz Transceiver

- Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Rugged Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, 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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