

PAARAgraphs



The Official Newsletter of the
Palo Alto Amateur Radio Association, Inc.

The Friendliest Club Around

Celebrating 87 years as an *active* amateur radio club—Since 1937

<http://www.paara.org/>



Nodes -

Internet-Mediated Gateways

What are they?

Do I need one?

Leigh Ann Weiland, K6WXO

My interest in Amateur Radio began in my youth on St. Simon's Island, Georgia. I would spend hours at a neighbor's station watching with fascination as the operator made contact with people around the world.

Undergrad work in Philosophy and Electrical Engineering/Computer Science, then grad school & law school – then family and work became the focus of my life. Yet, that Ham Radio itch still needed to be scratched.

Finally, in 2020 I had the time to attend to personal interests long put aside and again explore Amateur Radio. I marched through the Tech and General licenses, finally obtaining my Amateur Extra License in July 2021 under the call sign KN6KIB. In memory of my friend, Tim, WA0WXO, now a SK, I changed my call sign to K6WXO in August of 2021.

I can regularly be heard on the N6NFI ("Stanford Dish") and the N6ZX ("Kings Mountain") repeaters. I enjoy participating in local POTA and SOTA activations as well as meeting other Hams in a number of Santa Clara Valley amateur radio clubs.

**This meeting will be a
Hybrid Meeting
Zoom and In Person**

Time: Oct 2, 2024 07:00 PM Pacific Time
Please check <https://www.paara.org> for
Zoom Details

Upcoming Events

<ul style="list-style-type: none"> Aug 2*** Sept 6 Oct 4 	PAARA General Meeting, 7:00 PM *** Zoom and In Person Meeting 
<ul style="list-style-type: none"> Aug 21 Sept 18 Oct 16 	Board Meeting, 7:00 PM. Everyone welcome! Zoom Meeting, eMail President for details!

President's Corner

August 2024

A big thanks go to Rob for running the July meeting for me. I didn't give him much notice of my absence thus his stepping in was doubly appreciated. I understand Rob did a stellar job and Andres's presentation was enjoyed by everyone.



If you have not heard, I filed the FD report with the ARRL before leaving on a short trip. Last year we scored 3,110 points, and this year we claimed 6,238!! Even though we had fewer bonus points this year, the biggest difference was in the GOTA station and the ARRL change in point scoring. Until this year, each

(Pres — Continued on page 3)

Question of the Month

- What is the fundamental purpose of a diode in an electrical circuit?
- What are the different purposes for a Zener diode and a Schottky Diode?

PAARA Field Day 2024: Station B

Station B this year operated 15 and 40 meters. Because we used multiplexing filters, we were able to operate 20 meters (Station A) and 15 meters (Station B) on the same antenna, at the same time.

My first task as station captain (after wrangling antennas through Friday afternoon) was to set up the rig and computer. We used my FTDX-3000 and a KPA-500 generously loaned by Marty, W6NEV.

The setup was not without minor glitches: I did not have current information on connecting the linear to the transceiver, but Darryl KC6TYD jumped in to furnish the details. Then, we came up short by one line cord. Chuck, N6VFH, on his way to the station, turned around and brought one to us. Next, the club laptop refused to connect to the transceiver: Which meant that logging was manual, and the computer keyer was nonfunctional.

With all of that, the station proved effective for the contest. The station captain operates whenever another member (or guest!) is not available. So, I got plenty of air time through the night, and early morning Sunday. I have to admit, we were QRT for about three hours starting at 3:30 AM.

Notable operators included Kristen K6WX, and Jim Johnson, W6SC, both solid CW ops.

By all accounts, this was a great club activity! I enjoyed every minute, putting up antennas, operating, chatting with members, and taking down the site. FD is one of my very favorite ham radio weekends!

73
 Ric Hulett N6AJS

PAARA Field Day 2024: GOTA station report

Ben Glick KN6UBF

Field day was an absolute blast this year. The stars seemed to align: we had perfect weather for both days, the 10/15/20m bands were all alive and well, despite recent geomagnetic scares, and we had excellent turnout to the PAARA site. It was great to be representing PAARA in the event, and as always, a lot was

learned by everyone who made it out. I would like to thank Doug KG6LWE for thinking of me when Christopher AI6KG was unfortunately unable to serve as the GOTA station captain for this year. Christopher does such a great job operating the GOTA station every year. I hope I was able to replicate “The AI6KG Experience” at least in part.

Once again GOTA station used Doug’s Buddipole hex-beam. What an antenna! We used all of the 10, 15, and 20m bands, and we measured an SWR of below 1.3 on all of them. No tuner was required. We used Bob (KN6YGN) IC-7300 after having some trouble with the club’s K3S (the K3S is currently undergoing debugging on my bench at home). I cannot say thank you enough to Bob for filling in on extremely short notice. We kept the station online (mostly uninterrupted) from about 11:30 on Saturday (the delay was due to some Tx issues with the club K3S) until 2:30 AM Sunday, when George (KN6YGW) realized that we were working the same few stations over and over. We took a quick rest for a couple of hours, and by 6:00 AM Sunday, we were back on the air to start making some Qs with the East Coast again.

Our propagation was excellent. Using 100W “Natural Power” for the IC-7300 along with the hex beam, we hit Puerto Rico, Nova Scotia, Hawaii, and Alaska, getting reports of S9 plus from all corners of the Field Day event. For most of the event, we were working really well to the southeast, hearing lots from XX4XX callsigns, but into the night we started hearing more northern stations as well. We also worked B.C. several times off the deepest null in our directional antenna. Early on Sunday morning, we were able to work Japan off the back of our antenna (although they were of course not participating in the Field Day event). It’s always nice when equipment, conditions, and operators are all able to come together on the air. Throughout our time on the air, we made 572 QSOs originating from 12 operators, for most of whom it was their first time on HF. We also had a number of visitors who observed and/or helped log rather than operate themselves.

(GOTA Station — Continued on page 3)

(GOTA Station — Continued from page 2)

Much more important than the points we made off of the GOTA station was the learning that happened and the experience that hams new to HF were able to gain. We had four operators “max out” at 100 Qs: Perry KI6OPZ, Alan AK6AD, Sorin KN6YUH, and Lydia (no call). Leo (no call), George KN6YGW, and Bertrand KN6YUY also get honorable mentions for making over 20 Qs. By their last contact, each of them sounded like total contest naturals: efficient contacts, minimal wasted words, and a great job managing pileups. I think our Field Day GOTA setup is a great place to learn since we have a great location for both Rx and Tx. You can hear everyone, so “hunting and pecking” is easy, and everyone can hear you, so creating pileups is almost inevitable. Our situation also helps teach that great reception is sometimes a double-edged sword: yes, you can hear everyone trying to contact you, but at the same time, finding empty air on field day is not trivial! Over the event, we had lots of great conversations about when to use which radio features, how to try and adjust both settings and behavior to break through a pileup, and how to discern voices from very noisy bands. It was great to see everyone’s passion and excitement come through.

For me, Field Day is really about learning, and I hope that this year’s GOTA station was able to offer some fun and accessible experiences to everyone who stopped by.

(Pres — Continued from page 1)

GOTA contact scored 2 points and you could earn an additional 20 points for operators that made more than 20 contacts, up to 100 points. This year, GOTA contacts were worth 5 points each and counted in the overall contacts made by the club, thus gaining you 6 points per contact! Not only did we have a record number of GOTA contacts of 572, but they scored more points than in the past giving us 3,432 total points! Way to go BEN! The other big difference; this was the first time we had a meaningful number of FT8/4 contacts at 164. At 2 points each, that gave us 328 points we usually don't have. My records show the only year we operated digital was in 2019 making

only 31 contacts. As far as total points for contacts, last year we had 1,530 points, and this year we had 2,288 points! Overall, we made a few more CW contacts than last year, a few less SSB contacts than last year, and more FT4/8 contacts.

In summary, GREAT JOB everyone. I hope everyone who came to FD had a wonderful experience. A special shout-out goes to the station captains who made my job compiling the score a little easier! This year we concentrated on just having fun however, in the process we managed to double our score from last year!!

The next PAARA event is the trip to the Computer History Museum in Mountain View. If you haven’t been there before, it’s very educational. For those of us who have been here to witness computer history firsthand, it provides a detailed reflection of how Silicone Valley has come to be recognized as a leader in many computer-related things. For those who haven’t been in the area or are not vintage enough to know, it’s a great place to learn about the evolution of modern electronics and computers. Check our website, www.PAARA.org, for details about this trip.

Hopefully, everyone has marked your calendars for the next PAARA in the Park event on Saturday, September 28th in Cupertino’s Memorial Park. The event will be another gathering of hams and visitors wanting to learn about the hobby. There will be at least one if not more stations to get on the air. It’s a great place to make HF contacts, test out new equipment, ask questions, and have lunch. There is a rumor that Kristen, K6WX, is taking an antenna out of her bag of tricks for the antenna build project. More information regarding the build project will be forthcoming.

I look forward to seeing all the smiling faces at the August 2nd meeting. The meeting will be both an IRL and Zoom meeting.

73, Jim K6SV

Get on the air to keep the airwaves alive!

July 2024 Board Meeting Minutes

Present were President Jim Thielemann K6SV, Vice President Rob Fenn KC6TYD, Secretary Ric Hulett N6AJS, Treasurer Margaret Cooper K6WEK, Directors Doug Teter KG6LWE, Darryl Presley KI6LDM, Walt Gyger K6WGY, Bob Ridenour KN6YGN. Also attending was Clark Martin KK6ISP, ASVARO rep.

A quorum was present. The meeting was called to order at 7:03 pm

- President's Report — Thanks to Rob KC6TYD for his effective handling of the July PAARA meeting. A job well done! Ron Chester commented on how well the meeting was run. It was great to see several of the 'old guard' members in attendance. N6NU's presentation was well received.
- Secretary's Report — May and June PayPal reports have been furnished to the Treasurer. Ric and Shri KA6Q still need to resolve some paypal charge issues around badges.
Bob KN6YGN has graciously offered to fill in on PAARAgaphs mailing this month.
- Treasurer's Report — Records are up to date. A discussion about finances is reported later in the notes.
- VP/Program Chair Report — Our next speaker is Leigh Ann, K6WXO. Her topic is: Hotspots (portable WiFi internet nodes).

Old Business

- Members: This is the monthly reminder that PAARAgaphs needs member content! Think about your ham radio activities and experiences. Pick one of interest, write it up and send to our editor-in-chief Jim K6SV. You can be PAARAgaphs famous!
 - ◆ Education Committee -- August question of the month: What is the purpose of a diode in an electronic circuit? Look for an interesting discussion in this month's meeting. Think about your answer!
- New ham invites: We sent fifty invitation postcards to new area hams this week.
- Radio sales: Rob KC6TYD reports significant sales of SK donations at recent meet-

(Minutes — Continued on page 6)

The Field Day I almost missed.

The Calaveras Amateur Radio Society, <https://calaverasars.org/Web/> was planning to have a 2A station setup at Avery in the Sierra foothill forest, call sign N6FRG and SJV section. We typically start at 11 am until about 4 pm on Saturday, the contacts are usually up and down the West Coast with inverted V antennas driven with 100W.

This was all well and good until I got a text Saturday at noon from the station captain Mark Godbout, N6IV, asking if I would join them as promised. Dumbfounded, I was about to reply that Field Day is always on the last full weekend in June as I marked it on my calendar. Doubts nagging, I went to the ARRL website, and sure enough Field Day was set for the 22/23 June weekend.

Well, I packed my stuff and drove up the hill, still wondering what went wrong. The answer became clear when we read the ARRL rules more closely to find out that Field Day is always on the 4th full weekend in June and this year June is sponsoring 5 full weekends, now I know.

We made about 150 contacts with both stations throughout California, New Mexico, Washington, and Oregon, the bands where not particularly good plus we dealt with QRM from our Honda generator. Tired and exhausted in 99-degree heat we stopped around 4 pm and packed up. All 6 of us had a good time though, albeit in challenging conditions, the friendly comradery made this a great event.

73's

Cheers,
Walt, K6WGY



Calaveras Amateur Radio Society Field Day in the Sierra Foothills



(Minutes — Continued from page 4)

ings, and the Electronic Flea Market. Many thanks to Rob for his work on this.

- PAARAgaphs advertising: A check was received from Ham Radio Outlet. Rescue Tape has requested a new invoice for their ad.
- PAARA repeater site cleanup: Still need to set up a work day for this.
- Past meeting presentation videos: Rob KC6TYD and Ben KN6UBF have a scheme to link YouTube videos to the 'past meetings' page. They are still working on some issues.
- Remember that the PAARA field trip to the Computer History museum is scheduled for August 24. A signup sheet is coming for this. Watch the PAARA.org website for updates.
- Conversion of the club laptops to N1MM+ logging software: Darryl KI6LDM will install on club computers. After networking is worked out, we will do a live test at Pacificon. Darryl will find out the cost of a networked GPS based time source to keep the laptops synchronized.
- Dream to Reality raffle: NO NEW NEWS
- ARRL Field day was June 22nd ~ 23rd: Great Job everyone! It was a very successful event no matter how you measure it.
- The next PAARA in the Park will be on 9/28. Time to start getting the word out. The planned educational activity will be construction of a J-pole antenna. Kristen K6WX

is assisting with this.

- Pacificon is October 18 to 20. Time for PAARA members to make their plans including hotel reservations. Again this year, we plan to host W1AW/6 station activity: Mikko AB6RF is in charge.

New Business

- PAARA checking account: Margaret K6WEK has investigated ways to gain some interest income on PAARA's cash reserves. After discussion, the board voted to have the Treasurer open a 6-month CD account with reserve funds. This will yield in excess of 4% interest.
- We discussed the free membership for new hams: We decided by consensus, that a 'new ham' received their first ham license two years ago or less. We will put a mention of this program on the PAARA.org website.
- K3 repairs: The club's K3 failed during the Field Day event. Ben and Christopher AI6KG have volunteered to do some troubleshooting.
- We had a discussion about possible improvements to the club meeting format, as we have received some suggestions.
- An important feature of the meetings is for the members to seek out and greet visitors and new club members. This is for all of us!

The meeting was adjourned at 8:49 pm

Respectfully Submitted,

Ric Hulett N6AJS
 PAARA Secretary.

Long time Field Day coordinator Gerry, N6NV, and his daughter continued his tradition of bringing Sunday morning doughnuts to Field Day.

Left to Right: Paula-Marie (KG7YHR), Doug (KG6LWE), Darryl (KI6LDM), Gerry (N6BV), Jim (K6SV)



Palo Alto Amateur Radio Association, Inc.

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 Technical Tips..... Ric Hulett, N6AJS
 Photographer *Position Vacant*

VE Exams

De Anza Park, Sunnyvale, 2nd Saturday 10:30 am each month except November and December. See website for details and exceptions: <http://amateur-radio.org>

Electronics Flea Market (EFM)

Sponsorship: Association of Silicon Valley Amateur Radio Organizations (ASVARO). The Electronics Flea Market is held at West Valley College, 14000 Fruitvale Ave, Saratoga.
 Website: <http://www.electronicfleamarket.com/>

PAARA — Palo Alto Amateur Radio Association

Meets 1st Friday 7:00pm each month at Room H-6, Cubberley Community Center; Net 145.230 - PL 100Hz Mondays at 8:30. See website at <http://www.paara.org>. For more information. contact: Joel Wilhite KD6W, KD6W@ARRL.NET, 650-325-8239

FARS — Foothills Amateur Radio Society

Meets 4th Friday each month at 7:00pm at Covington School, Los Altos.
 Website: <http://www.fars.k6va.org>

NCDXC — Northern California DX Club

Meets 3rd Thursday 7:00pm each month,
 Repeater for member info 147.360. Contact president@ncdxc.org. Website: <http://ncdxc.org>. YouTube content: "The Northern California DX Club Official Channel". Cohost of the International DX Convention.

The 50MHz & Up Group of Northern California

This organization specializes in vhf + wak signal and microwave activities. Meetings are held on the first Tuesday of each month. Time is usually 5pm for in person meetings, and 7pm for Zoom only meetings. In person meetings are held Sports Basement, 1177 Kern Ave, Sunnyvale. Always check the website, <http://50MhzandUp.org>, for correct information. Zoom information is also there.

San Mateo Radio Club W6UQ.ORG

Meets, 3rd Friday, January through November.
 Tuesdays & Thursdays, [Directed] Net, 7pm, N6ZX 145.370Hz, -600KHz, PL107.2Hz
 Contact: SanMateoRadioClub@gmail.com, Website: <http://W6UQ.org/calendar>

SPECS

Southern Peninsula Emergency Communication System users Group

Meets each Monday 7:30pm and 8:00pm.
 See: <https://specsnet.org/monday-night-net> for more info.
 Contact: <https://www.specsnet.org/contact> or board@specsnet.org

SCARES

South County Amateur Radio Emergency Service

Meets 3rd Thursday 7:30pm each month, Belmont EOC, Belmont City Hall, One Twin Pines Lane, Belmont CA 94002. Net is on 146.445 [PL 114.8] & 444.50 (PL-100) 7:30 Monday evenings. Contact: President Gary D. Aden, K6GDA 650-743-1265 (D), 650- 595-5590 (N)
 Web: <http://k6mpn.org> E-mail: pres@k6mpn.org

SCCARA

Santa Clara County Amateur Radio Association

Operates W6UU & W6UU/R, repeater 146.985-pl
 Nets: 2m, 7:30pm Mon; 70cm, 10M (28.385) 8PM Thur.
 Meets 2nd Mon each month @ 7:30 PM.
 ARRL/VEC license testing contact 408-507-4698

SVECS — Silicon Valley Emergency Communications

Operates AA6BT repeater (146.115 MHz+)
 Website: <http://www.svecs.net> or contact: Lou Stierer WA6QYS 408 241 7999

WVARA — West Valley Amateur Radio Association

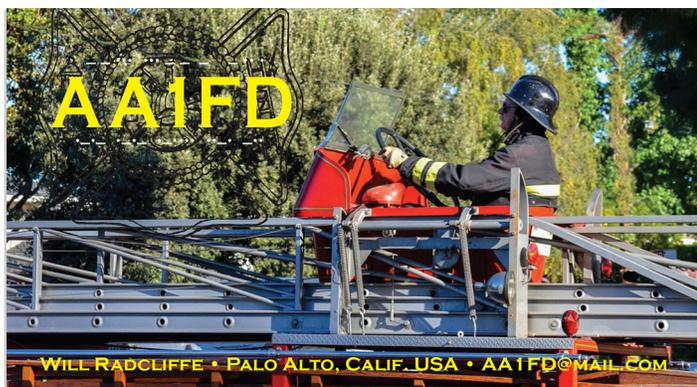
W6PIY six-meter repeater on 52.58MHz. Normally, six-meters is linked with 147 and 223, while 441 and 1286 repeaters are linked.

VHF: 52.58 (-500) 151.4 ctcss UHF: 441.35 (+5.0) 88.5 ctcss
 147.39 (+600) 151.4 ctcss 223.96 (+1.6) 156.7 ctcss 1286.20 (-12m) 100.0 ctcss

Meetings are 2nd Wednesday of every month except July, August and December.

Website: <http://wvara.org>. Contact: info@wvara.org

(Please send changes to PAARagraphs editor)



PAARA Weekly Radio Net

Info and Swap Session
 every Monday evening at 8:30pm
 on the N6NFI 145.230 MHz repeater

Week Control Operator

1 st	Doug - KG6LWE
2 nd	Doug - KG6LWE
3 rd	Ric - N6AJS
4 th	Rob - KC6TYD
5 th	Rob - KC6TYD

If you're interested in trying out at Net Control, Contact Doug, KG6LWE. It's good practice, and lots o' fun! Give it a try.

Electronics Give Away

Over the many years I've been a ham, I've collected a lot of equipment. Most of it is still in good working order. A few items may need repair, such as a new filter capacitor... nothing serious.

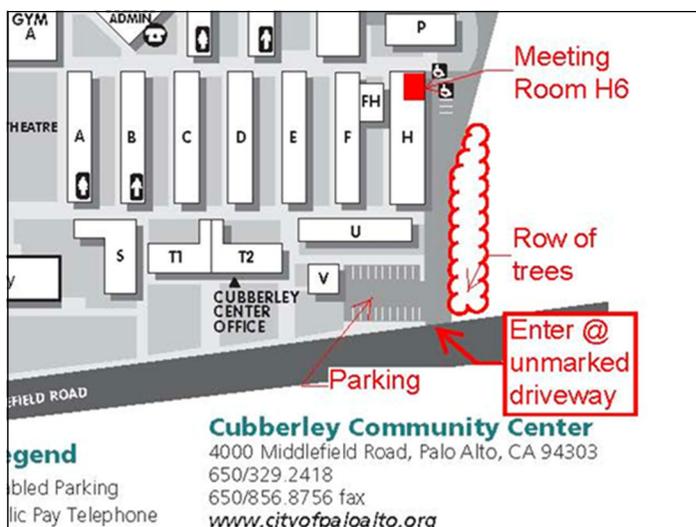
Given my advancing age, I'd like to get this equipment into the hands of younger hams who can use it. The list of gear is too long to list here, but includes signal generators, power supplies, amplifiers, test equipment, etc.

Please pass this on especially to hams under 21 who might be interested.

They can reach me at: 650-494-0128. If I'm not available to take your call, after the 4th ring, the phone will go to my answering machine and you can leave a message with your name, phone number, and when is a good time to reach you.

Alternately, they can send me an email at: W6APZ@comcast.net with the Subject: "Electronics Give Away" and I'll respond.

Rich, W6APZ



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Palo Alto Amateur Radio Association P.O. Box 911, Menlo Park California 94026-0911

Club meetings are on the first Friday of each month,
 7:00pm at the Room H-6, Cubberley Community Center.

Radio NET & Swap Session every Monday evening, at
 8:30pm, on the 145.230 –600 MHz repeater, PL 100Hz.

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Scroll to the bottom of the page and fill out the info. All badges will be mailed.

The cost for a badge is \$25.00.

PAARAgaphs Ad Rates

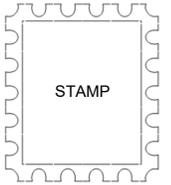
PAARAgaphs accepts paid advertisements from non-members. (short personal ads remain free for members in good standing). All ad rates listed are per issue.

- Not-for-profit ads by association members for ham-related items and wants. No cost for business card-size ads (additional space at \$2.50 per business card size per issue).
- For Profit organizations and/or individuals: \$5-business card size, \$14.00-quarter page, \$25-half page, \$50 full page or back cover per issue.

These fees may be reduced or waived in exchange for a valuable consideration that is given to the Association or its general membership. Such consideration must be in addition to any existing arrangements with the association. The PAARAgaphs editors reserve the right to reject any ad deemed to be not in the best interest of the Association.
 All fees payable in advance by the year with "scanner-ready" copy or text-only ads. Give payment and copy to Walt Gyger, K6WGY.

PAARAgaphs — August 2024

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Palo Alto Amateur Radio Association, Inc.
 PAARAgaphs Newsletter
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FT-710 Aesss | HF/50MHz 100W SDR Transceiver

- Unmatched SDR Receiving Performance • Band Pass Filters Dedicated for the Amateur Bands • High Res. 4.3-inch TFT Color Touch Display • AESS Acoustic Enhanced Speaker System with SP-40 For High-Fidelity Audio • Built-in High Speed Auto Antenna Tuner



FTM-500DR | C4FM/FTM 144/430MHz Dual Band Xcvr

- Front Firing Acoustically Enhanced Speaker System • True Dual Band Operation, C4FM/C4FM Digital D-D Dual Receive • 2.4" High-Resolution Full-Color Touch Panel Display • Built-in High Precision GPS Receiver • Wireless Operation Capability with Optional Bluetooth® Headset



FTDX101 | HF/50MHz 100 W SDR Transceiver

- Narrow Band and Direct Sampling SDR • Down Conversion, 9MHz IF Roofing Filters Produce Excellent Stepa 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 (SD-LAN10)



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

- Stable 100 Watt Output • 32-Bit DSP • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to PC with a Single Cable • CAT Control, FT11RTTY Control



FT-70DR C4FM/FTM 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 • Holds 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



FTM-3000DR | C4FM/FTM 144/430MHz Dual Band

- 50W Output Power • Real Dual Band Operation • Full Color TFT Display • Band Scope • Built-in Bluetooth • WIRESS X Portable Digital Mode/Fixed Mode with HR-200



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 With In a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, Alarm and Quick Home Channel Access



FDX101D | HF + GM 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-2000DR | C4FM/FTM 144/430MHz Dual Band

- 1200/9600bps APRS® Data Communications • 2" High-Res Full-Color TFT Display • High-Speed Band Scope • Advanced C4FM Digital Mode • Voice Recording Function for TXRX



FTM-6000R | 50W VHF/UHF Mobile Transceiver

- All New User Operating Interface-E20-III (Easy to Operate-III) • Robust Speaker Delivers 3W of Clear, Crisp Receive Audio • Detachable Front Panel Can be Mounted in Multiple Positions • Supports Optional Bluetooth® Wireless Operation Using the SSM-BT10 or a Commercially Available Bluetooth® Headset



- RETAIL LOCATIONS - Store hours 10:00AM - 5:30PM - Closed Sunday
- PHONE - Toll-free phone hours 9:30AM - 5:30PM
- ONLINE - WWW.HAMRADIO.COM
- FAX - All store locations
- MAIL - All store locations

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