QRO

THE PALOS VERDES AMATEUR RADIO CLUB NEWSLETTER APRIL 2023

Inside this month's QRO…

All **QRO** monthly issues since 2007 are on the PVARC website at www.k6pv.org under the "Newsletter" tab.

Additional club news appears in the PVARC Weekly Bulletin sent by email to members.

Seeking the Optimum Magnetic Loop Antenna

John Portune, W6NBC

Thursday, April 6, 2023

PVARC monthly meeting "in-person" at Hesse Park and virtually via Webex

6:30 pm: Hesse Park room opens
7:10 pm: Webex online room opens
7:30-9:15 pm: Meeting

Guests welcome. Email ai6df@arrl.net for the Webex meeting link.

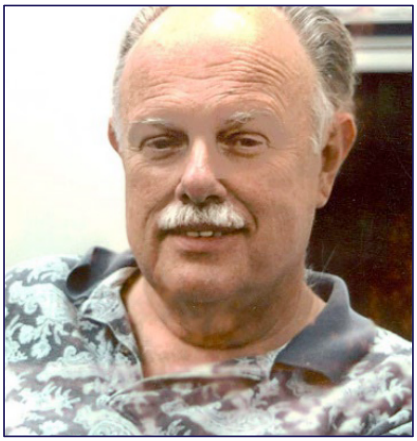
Also this month:

PVARC HF Enthusiasts Group meeting Saturday, April 8, 10:00 am-Noon at Palos Verdes Library Purcell Room (no Webex)

PVARC EmComm Interest Group meeting Saturday, April 15, 10:00-11:00 am via Webex

PVARC upcoming monthly meeting

PVARC's **April 6, 2023,** hybrid in-person/Webex meeting features John Portune, W6NBC, presenting **"Seeking the Optimum Magnetic Loop Antenna."** He'll be discussing how you can build your own magnetic loop for a reasonable cost…and benefit from these antennas at electrically-noisy locations.



John Portune, W6NBC

A Los Angeles native, John was first licensed in 1965 and earned his Extra Class license in 1972. He also was a 10-year U.K. resident with the call MØGCK. John is a retired TV broadcast television engineer/ instructor at KNBC Channel 4 Los Angeles, previously worked at Sony Broadcast Electronics in San Jose as a technical instructor/writer, is a prolific ham author with over 25 articles published in ARRL's **QST** magazine, and frequent speaker at ham conventions/hamfests. He resides in Santa Maria, CA, and will speak to us from there via Webex.

Note: This month's in-person meeting site is in Hesse Park's Activity Room…and we should try speaking a bit softer while there.

Next to the Activity Room during 6:00-8:30 pm on April 6 the Rancho Palos Verdes City Council is holding its 2024 city budget workshop as a public meeting. City staff will present the Fiscal Year 2022-23 year-end estimates of revenues and expenditures, assumptions used to prepare the FY 2023-24 proposed city budget, and fund balances. Curious PVARC members are welcome there too.■

Avoiding the King's or Queen's Ransom for a magnetic loop antenna

The small number of ready-made magnetic loop antennas for amateur radio seemingly fall into four types: 1) receive-only magnetic loops; 2) a few QRP (5 or 10-watt TX) models; 3) one maker of 100-watt SSB/50-watt CW/10-watt digital magnetic loops for around $500; and 4) the high-wattage made-in- Italy "King, Queen, and Prince" of magnetic loops for $2480, $2098, and $1800, respectively.

Shown below is Ciro Mazzoni's $2098 BABY magnetic loop (39.8" diameter, 450 watts on 40-15m, 1kW on 12-10m). Partially seen on the left is CM's $2480 MIDI magnetic loop with its massive 78.8" diameter to cover 80-20 meters allowing 300 watts on 80/40m, 800 watts on 30/20m.

Our speaker at PVARC's April 6 meeting will provide useful information to avoid a royal ransom in making your magnetic loop. We hope you can attend to learn more.

PHOTO: FRAME FROM AI6DF VIDEO OF 2017 DAYTON HAMVENTION IN XENIA, OH.

Field Day is June 24-25 and PVARC is planning for it

We look forward to this year's ARRL Field Day on June 24-25 at Soleado Elementary School in Rancho Palos Verdes. It's a fabulous location at 1,000 feet above sea level overlooking the Los Angeles Basin with an outstanding take-off to almost all United States and Canadian points.

We operated Field Days in 2017, 2018, and 2019 from Soleado's soccer field after holding FD at Ridgecrest Intermediate School during 2012-2016 and Peninsula High School for many years through 2011.

As this year marks PVARC's first traditional Field Day since June 2019 we now need to assess how many members might participate at Soleado. Many PVARC members operated from home stations in 2020-2022 after ARRL modified some Field Day rules during the pandemic.

In 2023 Class 1-D home stations on commercial AC mains power may still contact all FD stations for credit. Maximum home station transmit power remains limited to 100 watts. One major change to FD rules in 2023 is allowing up to 500 watts PEP transmit power at portable non-battery stations (i.e., Class A for three or more operators, Class B for one or two operators, and Class C mobile stations). This exception was created because some clubs/groups across the U.S. must operate Field Day from a valley or other "non-optimal" location. Most ham clubs in the Los Angeles area do not need the 500-watt max, but one that might is the Rio Hondo ARC. They operate Field Day from the front courtyard of Whittier City Hall.

We'll be taking an informal poll of Field Day interest in the weeks ahead.■

Signal Adapter Construction on a Large Scale

Part 1. Requirement

By Jerry Kendrick, NG6R

Recently a challenge was presented that required creating multiple hardware copies of a particular signal adapter. Thirty-three 15-pin to 8-pin adapters are required for a large ham radio organization. This article (Part 1) describes the basis for this requirement. Due to the length of the article for **QRO**, next month's issue will have Part 2, describing the interesting and frustrating twists and turns that occurred while meeting this challenge.

Adapters are often a necessity in modern ham radio and frequently when digital signals are involved. For example, signals may be available at an external connector port on one piece of equipment but these signals (or maybe just a subset of them) need to be transferred to a different piece of equipment within the same ham radio station. Sometimes, if we're fortunate, someone has already anticipated that eventuality and has conceived, designed, constructed and marketed exactly what you need—an adapter that pulls out just the signals you require—and if you're lucky, it's not terribly expensive to purchase. But, that's often the exception rather than the rule.

In the Los Angeles County sheriff's department Disaster Communications Service (DCS), a ham radio station is set up inside each sheriff station in the county. Ham volunteers operate these stations, which can be especially valuable during times of emergencies or widespread disasters. While voice FM operation is still the backbone comm mode, digital modes are becoming increasingly relied upon because of their ability to communicate a great deal of detailed information both quickly and accurately. At the heart of these digital communication modes, which will be transmitted over the air using ham radio (usually FM) transceivers, is the need to have some type of sound modem that will translate digital signals (strings of 1's and 0's) into sounds that can be sent over the air using an FM transceiver. A popular sound modem, and the one used at each of the DCS stations, is the SignaLink USB Sound Card device by Tigertronics. Front and rear views of this sound modem are shown in Figure 1.

Figure 1. SignaLink USB integrated USB sound card by Tigertronics, front and rear views

Note that the connector labeled "RADIO" on the rear of this unit is an 8-pin RJ45 jack. So, that's the main pathway for communication between this sound card and whatever radio is being employed. Now since digital data is best manipulated by computers, we need a way to both get digital data from and send digital data to a computer. The universal serial bus (USB) type B connector, also on the rear of the unit, is the way that the computer digital data pathway is implemented.

The functionality of this SignaLink USB Sound Card is quite simple: it takes received sound from the transceiver (that might otherwise have gone to the speaker as analog audio), demodulates it to recover digital data and routes that data to the computer where it is processed and displayed using a software program, e.g., FLDIGI; conversely, it takes digital data generated by the computer, modulates it onto an analog sound signal and routes it to the transceiver's microphone input so that it can be transmitted as audio by the radio. Both digital signals (data out and data in) are referenced to a common ground. The only remaining interface requirement is a push-to-talk (PTT) signal, ►

Signal Adapter Construction on a Large Scale

Part 1. Requirement

► created by the computer and referenced to that same ground, which tells the radio when to transmit the outgoing data. Summarizing, only four wires are needed between the SignaLink USB unit and the radio: received data (DATA OUT of the radio, or speaker, or SPK); transmit data (DATA IN to the radio, or microphone, or MIC); PTT; and ground. Again, please note that only four wires will carry all the information needed to interface the radio to the sound card. Yet, we saw earlier that the main interface connection (RJ45) has the ability to carry signals on 8 wires simultaneously. What happens on those other four wires? We'll come back to that question shortly.

Almost all modern ham radio FM transceivers have an accessory jack on the rear of the radio that carries a number of often externally needed signals, including the four signals mentioned above: DATA OUT, DATA IN, PTT and Ground. All of the different radio transceiver models that operate at DCS stations countywide have a rear accessory jack feature.

Now, the SignaLink creator Tigertronics realizes that its sound card modem may interface with a wide variety of ham radios. So, it set up a product line of moderately expensive interface cables that go from the transceiver's rear accessory jack to the RJ45 connector on the rear of the SignaLink. Tigertronics made a business decision many years ago that it would construct and market interface cables that would not necessarily place these four essential signals on the same incoming RJ45 pins. (Remember that there are 8 pins on the RJ45 to choose from, so in theory it could always designate the same four pins to carry those signals, like pins 2, 4, 6 and 8 or pins 1, 2, 3 and 5 as examples; then, it could design, build and sell the interface cable that would go from any given radio rear accessory jack and always place these appropriate four signals on the designated pins—2, 4, 6 and 8 or 1, 2, 3 and 5 in our examples.) Instead of this approach, Tigertronics chose to allow a lot of variability in which RJ45 pins to use for various radio models. But, since the SignaLink still needs to access those specific four essential signals—and they might enter on any four of the eight pins available—how is that connectivity enabled and controlled? The answer is that inside the SignaLink there is a small 16-pin board that can be configured by the user to place the essential four signals onto the proper four inputs that the SignaLink demands, regardless of which RJ45 pins they came in on. That small board, a companion product to the radio-specific interface cable and, as such, a potential source of additional revenue for Tigertronics, is sometimes called a jumper board or jumper module. Figure 2 shows jumper module examples, including the first example of simply placing wires between the incoming RJ45 pins and the internally required four signals, thus eliminating the need for a separate plug-in board altogether.

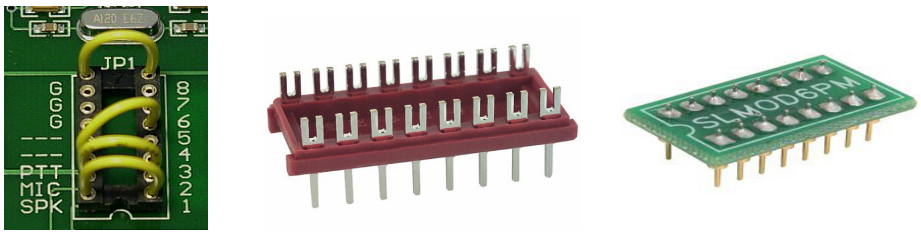


Figure 2. Internal jumper module options for SignaLink USB; rightmost photo is a sample of a prewired PCB that can be ordered for a specific transceiver (along with a specified companion cable) ►

33 new radios were purchased for sheriff station radio rooms and will be rolled out over the next few months, the Bridgecom BCM-220, a 220 MHz FM transceiver. It has a 15-pin accessory jack on the rear of the radio that carries, among several other signals, the four signals we need for the SignaLink sound card. Without unnecessary detail, we know that the four signals needed for the SignaLink interface reside on pins **5** (data in), **8** (PTT), **9** (data out) and **15** (ground) on this rear 15-pin HD15 female accessory connector jack. ►

Signal Adapter Construction on a Large Scale

Part 1. Requirement

► Now, each DCS radio room has (or will have soon) a SignaLink USB sound card modem. Since this SignaLink modem needs to accommodate several different radio models, it was agreed that a particular jumper board configuration would be chosen and would not be changed when a different radio was switched in to carry digital traffic. Two of the four radio models employed by DCS countywide happen to use the same jumper module configuration. So, that jumper module became the default standard, against which the other two radio models have to comply. Going back to our discussion of which four of the eight RJ45 pins to designate for the four essential signals, the selected (default) jumper module expects to see those four signals on pins 1, 2, 3 and 5, the same four pins as we selected as one of our earlier examples. Summarizing, we need to synthesize a cable that will take the four signals from the rear HD15 accessory jack and place those signals appropriately onto incoming SignaLink RJ45 pins 1, 2, 3 and 5. This pin connectivity is summarized in Figure 3 along with the associated functions.

RJ-45 pin	HD15 pin	Function
1	5	MIC (data in)
2	15	Ground
3	8	PTT
5	9	SPK (data out)

Figure 3. Pin to pin connectivity required between SignaLink RJ45 connector and Bridgecom BCM-220 rear HD15 accessory jack, along with associated signal functions

There is no commercially available adapter that can be purchased to enable this connectivity directly. However, there is a user-configurable HD15-to-RJ45 adapter that can be hand wired to meet these requirements—just push the right four pins (of 8 available) into the right four holes (of 15 available). Figure 4 shows such an adapter. Ten of these adapters were purchased several years ago by the author, but they can no longer be found for sale on any website, and contact with several eBay and Amazon vendors have not turned up any adapters of this type.

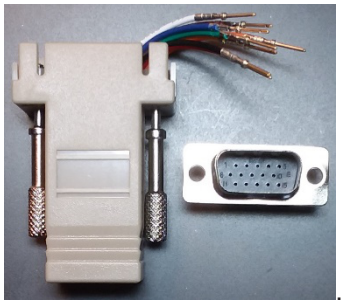


Figure 4. HD15-to-RJ45 user-configurable adapter once available on several websites including eBay and Amazon. However, it cannot be found for sale on any website at this time.

A significant challenge has been levied, a straightforward solution seems within our grasp, and yet the shortage of a key component needed to construct the required number of adapters seemingly prevents us from meeting our challenge. Part 2 of this story, continued in next month's **QRO** issue, will demonstrate how persistence, flexibility and attention to detail eventually prevail. Stay tuned to see how a mixture of surprises and mistakes was ultimately overcome and led us to meeting our challenge of delivering all 33 adapters to LA County Disaster Communications Service.■

More random accomplishments of PVARC members…in 35 words or less

Diana, AI6DF, operated at net control in Century City for the Los Angeles Marathon on March 19. Among gear brought was her solar generator that unexpectedly provided cell phone charging for security guards.

Thanks to PVARC member Steve, KI6GUY, for sending an IEEE article celebrating the transistor's 75th anniversary this June. Frequently regarded as the modern world's most important invention, transistors ultimately profoundly changed products, processes, and our lives.

www.spectrum.ieee.org/invention-of-the-transistor

QRO can use more random accomplishments from PVARC members. Let us know…you can tell this month was rather slow.

A non-PVARC accomplishment: April 2023 marks the 100th anniversary of leaded gasoline–one of history's worst inventions. Chemist Thomas Midgley Jr would also go on to develop the first chlorofluorocarbons that eventually worsened Earth's climate.

PVARC upcoming events

- **PVARC hybrid monthly meetings online via Webex and in-person as announced**

  1st Thursday each month, 7:30-9:15 pm, except in December *(no Hesse Park in-person option in August or December 2023)*

- **PVARC HF Enthusiasts Group meetings in-person at Palos Verdes Library main branch**

  2nd Saturday each month, 10:00 am-Noon

- **PVARC EmComm Interest Group online meetings via Webex**

  3rd Saturday each month, 10:00-11:00 am or 11:00-Noon (time depends on other radio events that day)

- **Walt Ordway K1DFO Technician and General amateur radio license classes at Hesse Park**

  April 29 and May 6, 2023 in Fireside Room

- **Volunteer Examiner license test session at Hesse Park**, May 13, 2023 (Fireside Room) 10:00 am

- **PVARC 2023 Holiday Dinner or virtual After-Dinner**, December 14

- **ARRL Field Day at Soleado Elementary School, Rancho Palos Verdes**, June 24-25

- **Public service event: Ridgecrest Intermediate School 5K,** Peninsula Center area, April 23

Non-PVARC Events of Note:

- **W6TRW Swap Meet,** last Saturday each month. 7:00-11:30 am. Northrop Grumman parking lots, Aviation Blvd./Marine Ave., North Redondo Beach. VE license testing in Building S-2 at 10:00 am.

- **International DX Convention,** April 21-23, 2023, Visalia Convention Center, Visalia, CA. Website: www.dxconvention.com

- **Dayton Hamvention**, May 19-21, 2023, Greene County Fairgrounds, Xenia, OH (largest ham convention in Western Hemisphere.) Website: https://hamvention.org/

Become an ARRL member: support amateur radio while increasing your learning

Consider joining the American Radio Relay League (ARRL) if not already a member. The ARRL is the only national organization representing amateur radio and has another significance for the PVARC: We receive benefits from being an ARRL-affiliated club, which requires that at least 51% of club members be ARRL members.

Annual ARRL membership costs $49 and includes your choice of the printed monthly **QST** magazine or the ARRL's new **On The Air** magazine for newer hams. Both are available electronically to all ARRL members plus free online access to ARRL's two other publications, **QEX** and **National Contest Journal**.

Additionally all ARRL members can access numerous web-based materials, ARRL staff, and assistance with ham radio issues. Visit: www.arrl.org/. ■

Need a PVARC badge?

If you wish to order a new or replacement engraved PVARC badge please contact Gary Lopes at wa6mem@cox.net and he will make arrangements for your payment and sending your new badge. Badges cost $13. ■

Embroidered PVARC patches still available

PVARC club patches are still available by special arrangement for $4 each. They may be sewn onto any cap, jacket, shirt, or bag.

During our period of virtual meetings if you would like a patch contact Diana, AI6DF, ai6df@arrl.net and we'll find a way to get your patch to you. ■

About Us…

Welcome to the Palos Verdes Amateur Radio Club, K6PV.

Founded in 1975, today our 150+ members hail from every city in Los Angeles County's South Bay region…and beyond.

Our club fosters diverse ham radio interests including public service, DXing, contesting, digital modes, and electronic experimentation.

We also teach license classes several times annually and gladly assist newer hams in understanding amateur radio technology or procedures.

Many PVARC members serve in the government-affiliated disaster amateur radio groups for the South Bay's cities and Los Angeles County. We also provide public service communication at no charge to sponsors of community and running events.

No matter where you are along your ham radio journey you are welcome as a PVARC member. ■

Palos Verdes Amateur Radio Club

An American Radio Relay League Affiliated Club

Board of Directors:

President	Diana Feinberg, AI6DF
Vice President	Ray Day, N6HE
Treasurer	Don Putnick, NA6Z
Secretary	Ron Wagner, AC6RW
Directors	Clay Davis, AB9A
	Gary Lopes, WA6MEM
Past Vice President	Bob Sylvest, AB6SY

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K6PV QSL Manager	Jeff Wolf, K6JW
K6PV Trustee	Mel Hughes, K6SY
LAACARC Delegate	Jeff Wolf, K6JW
VE Coordinator	Dave Scholler, KG6BPH
VE ARRL Liaison	Jerry Shaw, KI6RRD
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PO Box 2316
Palos Verdes Peninsula, CA 90274-8316

Repeaters (Open, though often listed as "Closed"):

PVARC: K6PV, 447.120 MHz
Analog FM: (-), PL 100.0, CTCSS
Digital DMR: 447.120 MHz (RX); 442.120 MHz (TX)
Talkgroup 31060, Color Code 1, Time Slot 2
"PV-West": W6MTA, 449.980 MHz (-), PL 173.8, CTCSS

Club badges: Gary Lopes, WA6MEM, wa6mem@cox.net
Club jackets or patches: Dave Scholler, KG6BPH, 310-373-8166

Front page photo — Pt. Vicente Lighthouse after sunset on April 5, 2019. PHOTO: DIANA FEINBERG, AI6DF

PVARC Calendar of Events — April 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	**3**	**4** K6PV analog net, 7:30 pm	**5** K6PV DMR net, 7:30 pm Passover begins	**6** **PVARC hybrid monthly club meeting at Hesse Park and Webex: 7:30 pm**	**7** Good Friday	**8** PVARC HF Enthusiasts Group, 10:00 am. PV Library
9 Easter Sunday	**10**	**11** K6PV analog net, 7:30 pm	**12** K6PV DMR net, 7:30 pm	**13**	**14**	**15** PVARC EmComm Interest Group meeting, 10 am via Webex
16 Rookie Roundup Contest – SSB	**17**	**18** K6PV analog net, 7:30 pm World Amateur Radio Day	**19** K6PV DMR net, 7:30 pm	**20**	**21** Intl. DX Convention, Visalia, CA	**22** Intl. DX Convention, Visalia, CA
23 Intl. DX Convention, Visalia, CA Ridgecrest IS 5K, Peninsula Center	**24**	**25** K6PV analog net, 7:30 pm	**26** K6PV DMR net, 7:30 pm	**27** **Major ham radio contests shown in red**	**28**	**29** W6TRW Swap Meet, Northrop Grumman, N. Redondo Bch. 7:00-11:30 am PVARC ham classes, Hesse Park, 9:30 am Tech; 1:30 pm General
30						

Palos Verdes Amateur Radio Club
P.O. Box 2316
Palos Verdes Peninsula, CA 90274
http://www.k6pv.org

MEMBERSHIP FORM

New ○ Renew ○

Fillable PDF form is downloadable from PVARC website at: http://www.n6rpv.net/n6rpvpage/pvarc/membership_form.pdf

Date _____

Last Name _____ First _____ Spouse _____

Street Address _____

City _____ State _____ Zip _____

Home Phone _____ Work _____ Cell _____

Email address _____

(Unless otherwise noted, emails will be sent to the applying member only)

License Call _____ Class _____ ARRL Member? ☐

Other amateur radio groups you belong to _____

Additional Household and/or Family Members (if Applicable):

Last _____ First _____ Call _____ Class _____ ARRL? ☐

Last _____ First _____ Call _____ Class _____ ARRL? ☐

Last _____ First _____ Call _____ Class _____ ARRL? ☐

Membership ($20 Individual, $25 Family) $_____

(Optional) donation to support PVARC activities $_____

TOTAL $_____

Paypal to recipient PVARC90274@gmail.com Go to www.paypal.com ○

Cash ○

Check made payable to Palos Verdes Amateur Radio Club ○ Check # _____

Please email completed form to PVARC90274@gmail.com or print and mail to the address at top. Dues based on January 1st to December 31st year.
By submitting this application/renewal you agree to the Club's constitution and by-laws, available on-line at: http://www.n6rpv.net/n6rpvpage/pvarc/constitution.pdf.

PVARC Membership Form: 2-2023

Help spread the word…PVARC's next amateur radio license classes are in late-April/early May at Hesse Park

Two Free Amateur Radio Courses
The Hesse Park facility no longer requires a mask

FCC "Technician" course (entry level)
FCC "General" course (2nd level)
Each course is 2 sessions
The sessions will be on 29 April and 6 May 2023
Technician 9:30 AM to 1:15 PM both Saturdays (bring your lunch)
General 1:30 PM to 5:00 PM both Saturdays
The FCC tests will be 10:00 AM to noon on 13 May 2023

At the start of the 29 April Technician course, a member of the Palos Verdes Amateur Radio Club will give a 30-minute presentation on how to get further involved in amateur radio.

The class location is at Fred Hesse Community Park,
29301 Hawthorne Blvd., Rancho Palos Verdes, CA 90275

Confirm your attendance to Walt, K1DFO at wfordway@juno.com

I charge no fee for either course. Taking the FCC test is $15. After passing the Technician test the FCC will send you an e-mail for paying its $35 license fee and then they will post your call sign.

Optional Material (sold at cost)
Gordon West books with all the FCC test questions,
$30 for the Technician and $25 for the General
Paper copy of Walt's Power Point charts,
$28 for the Technician and $24 for the General

For courses sponsored by the Palos Verdes Amateur Radio Club, students thru grade 12 who pass their examination at a PVARC VE test session will, upon application to the Club, be eligible for reimbursement up to a maximum of $50 to cover the cost of materials and the examination fee.

Everyone who obtains their first ham radio license through a PVARC VE test session, regardless of age, will receive a free membership in the Palos Verdes Amateur Radio Club for the remainder of the current calendar year.