



# Smoke Signals

## Newsletter of Fullerton Radio Club

May 2025

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### President's Column

May has been an eventful month.

On Saturday, May 10, we held our 28th annual spring event - Antennas in the Park. We had a turnout of almost 30 people. Joe Moell and Marvin Johnston staged an Amateur Radio Direction Finding event (see Joe's article on pages 2 and 3). Unfortunately, Marvin, who drove down from Santa Barbara, got stuck in traffic, which caused at least one potential antenna builder to cancel.

As usual, we served burgers and fixins'. We owe a huge thanks to Albert Solomon, who sat in the sun in 90° plus weather in front of a hot grill. Thank you (and sorry) Albert. Next year we need to create some shade over the grill.

There were radios **on** the air (Ray Rounds K6RAX and Dick Palmer WB6JDH) as well as drones **in** the air (Dan Slater AG6HF).

One of our longtime members recently had an unfortunate accident. On Mother's Day, Paul Broden K6MHD took a bad fall in a parking lot and sustained several serious injuries. As of this writing, Paul is recuperating at Terrace View Care Center in Fullerton. I had the opportunity to visit him there this week. He was in good spirits and said he is getting good care but can't wait to sleep in his own bed again. Paul, we wish you a speedy and complete recovery.

Larry McDavid recently took advantage of a Dayton Hamvention sale at HRO and purchased a new Kenwood TH-D75 handheld radio. Larry and I have exchanged quite a few emails and texts as Larry explores the extremely rich feature set of the radio. We now have three D75 owners as well as one D74 owner in the club. Sounds to me like a new Special Interest Group.

Looks like I'm out of room. 73!

### Fiber Optics for Data Comm PART TWO

by Larry McDavid

**See last month's issue for Part One**

### USING FIBER OPTICS TO EXTEND AN ETHERNET CONNECTION

Fiber optic cables use a glass fiber and Ethernet cables use copper wires. Optoelectronics are required to convert one to another. The key device is a Media Converter and features a fiber optic connector and an Ethernet RJ-45 connector. Fiber optic technology is capable of very high data rates so typical media converters are rated for up to Gigabit Ethernet. That's 1000 Mbps (Mega bits per second), faster than most ISP (Internet Service Providers) offer today. 10 Gbps and even 100 Gbps devices are available but not yet for typical home use.

The media converter is an electronic device so it needs power, typically supplied by a small modular plugin power supply. The converter typically has front panel indicator LEDs to show presence of data, speed of data and power; these LEDs are often grouped and labeled "FX" for Fiber Transmit and "TX" for Twisted Pair Transmit (that means Ethernet twisted pair copper cables, commonly known as CAT5 or CAT6 cables). There is a RJ-45 8-pin connector for an Ethernet cable.

There must also be a fiber optic connector in the media converter; different converters use different approaches for that fiber connector. The lowest-cost media converters have a built-in, integral fiber connector.

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## Hillcrest Park ARDF on 5/10/2025

by Joe Moell KØOV

So much for "May gray." This may have been the hottest Antennas In The Park (AITP) radio foxhunt to date. The temperature was 87 degrees when the transmitters went on the air at 11 AM and reached 98 degrees by the time lunch was over. But that didn't stop the intrepid on-foot transmitter hunters.

This was Fullerton Radio Club's 28th annual AITP, which began in Tri-City Park and has been in Hillcrest Park since 2015. It is also the 75th anniversary of the club's founding. Joining FRC members were some members of Western Amateur Radio Association as well as transmitter hunters from Long

Beach, Chatsworth, Santa Barbara and Winchester.

After fighting exceptionally heavy traffic, Marvin Johnston KE6HTS arrived from Santa Barbara with a box full of measuring-tape antenna and attenuator kits. As it turned out, all of the foxhunt participants had brought their own. My three talking two-meter practice transmitters, all on different frequencies, were quickly found by beginners and experts alike.

The advanced course featured five two-meter transmitters, transmitting one after another on the same frequency for sixty seconds each in numbered sequence and then repeating, per international rules. They awaited the hunters near the trails in the far reaches of the park. This year they all came on as expected and stayed in sync.

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**FRC May 7, 2025 Board Meeting Minutes**

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:33 pm on Wednesday, May 7, 2025. Board Members included Robert Gimbel KG6WTQ, Gene Thorpe KB6CMO, Ray Rounds K6RAX, and Larry McDavid W6FUB.

Board members absent: Walter Clark, Bart Pulverman WB6WUW, The April Board Meeting Minutes were reviewed and approved without amendment.

**Treasurer's Report:**

- Bank balance: \$5946.75 as of April 30 bank statement.
- New deposits: \$.02 (interest)
- New expenditures: None

New members: None

Bob's records show 24 paid members plus 1 life member as of 5/7/25.

**Old Business:**

- Bob swung by Paul's house and picked up archival copies of *Smoke Signals*.

**New Business:**

Antennas in the Park - This Saturday May 10

- WARA has been invited
- Food planning
- Lunch is free for paid FRC members. \$5 donation suggested for guests. Collection jar? tickets?
- ARDF
- Radio demonstrations

Meeting was adjourned at 6:00 PM

Submitted by Bob Houghton AD6QF, President

**What 3 Words Quiz**

**TWO-METER COURSE RESULTS -- 5 FOXES**

Name and call	Time H:MM:SS	Foxes
William Wright WB6CMD	0:32:05	5
Scott Moore KF6IKO	1:05:50	5
Michael Hart KC6MEH	1:09:45	5
Liam Van Citters KN6QXK	1:30:49	5
Tom Smith KB6A	DNF	

It takes dedicated volunteers to put on a successful AITP. Thanks to Ray Rounds K6RAX and Larry McDavid W6FUB for procuring the vittles (and lots of ice-cold bottled water), to our master cook Albert Solomon AG6OF, to April Moell WA6OPS for the traditional Foxhunting Weekend cake, and to Gene Thorpe KB6CMO for arranging access to the Izaak Walton League cabin for a welcome respite from the heat.

Use the W3W app to answer these questions. Bring your answers to Wednesday's net. (Can't participate in the net? Email your answers to AD6QF@arrl.)

#1 Location: FIXTURES.PADLOCK.LABEL

Question: What is the callsign?

# 2 Location: FLUORIDE.UNHELPFUL.DILUTE

Question: What is the location?

#3 Location: TILES.UNDULATION.DRIBBLE

Question: Tag this popular summer outdoor location?

#4 Location: BOTTOM.ELEVATOR.BUDDING

Question: What is the callsign?

#5 Location: UNIT.REGIME.HARSH

Question: What popular store used to be here?



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There is another standard commonly seen in larger data centers that provides the capability to change the type of connector used. In this case, an additional module plugs into the media converter and this module has the fiber connector. This approach uses SFP (Small Form-factor Pluggable) modules that fit into an opening in the media converter and allow one converter to be adapted to different kinds of connectors by changing the SFP module. Various fiber optic connectors and wired connectors are available in SFP modules.

## MEDIA CONVERTERS

Internal SC Connector



SFP Module LC Connector



Whether using media converters with internal, built-in fiber connectors or with interchangeable

SFP modules, the fiber connectors can be either SC or LC. If you buy media converters using SFP modules you could in the future change the type of fiber connector by replacing the SFP module without replacing the entire media converter or other data device. Both media converter types are readily available at on-line retail stores. Unless you anticipate the need to change connector type in the future, it is more economical to buy media converters with integral SC or LC connectors.

Remember that two media converters will be needed, one at each end of the fiber optic cable; media converters are typically sold in pairs for one combination price. You can also independently buy a variety of types of SFP modules to suit your needs. The SFP interface is standardized and is found on media converters, large data router/switches and other data center devices.

Typical pairs of both types of media converters are seen to the left. The type using SFP modules is shown with the SFP BiDi modules ready to insert into the converter front panel. Labels on each SFP module identify the transmit and receive wavelengths used. The SFP modules have a bail release to grab to ease their removal from the media converter; these bails are often colored to indicate the transmit light wavelength, usually BLUE for 1310 nm and YELLOW for 1550 nm. Yes, these are the same colors used to indicate UPC and APC ferrule-end polish but that is coincidental. Note that an Ethernet-to-fiber-to-Ethernet link using SFP modules will have one SFP of each transmit wavelength and bail color in the media converter at opposite ends of the link. Other wavelengths and other colors are common but there is no standard; you must use a SFP pair with matching wavelengths. Media converters with integral fiber connectors will have the wavelengths marked in labeling.

These options seem clear (and should be) but there is a problem. I have yet to find an advertised media converter or a SFP module that specifies the fiber optic connector ferrule-end polish. They all have fiber connectors, either SC or LC, but what polish does that connector use? Extensive on-line searching suggests that if the fiber connector ferrule-end polish is not specified, that polish is UPC, not APC. Why is this? The only justification for omitting this important detail I can imagine is that UPC polish is more common in data comm than is APC. In fact, I find one on-line comment stating, "APC polish is unheard of in data comm." I can't verify that statement but I find that lack of specificity of ferrule-end polish a poor practice. Interchanging APC and UPC may work ok for shorter distances and a few mate/demate cycles but it is poor practice at best.

I subsequently visited a local fiber optics manufacturer and fiber installer; staff there confirmed that LAN data comm installations use UPC polish connectors perhaps 99% of the time and that SFP modules offer only UPC polish connectors.

## FINAL CONSIDERATIONS

When running fiber optic cables through walls, between buildings or underground, it is convenient to protect even armored fiber cables within plastic conduit, especially if running the cable outdoors or underground. Some armored fiber cables are safe to direct-bury and all have a steel helical wrap under the outer jacket to inhibit chewing by burrowing animals. However, the jacket is usually black and might go unseen if digging. Orange corrugated HDPE (High Density Polyethylene) non-split loom tubing or conduit will make the fiber cable more visible and add some protection. A 1-inch inside diameter loom or conduit will make the armored cable with attached connector easy to pull

through. A rope or fish tape must be carefully attached when pulling to prevent bending the fiber cable or stressing the connector.

What about the price of fiber optics? The technology has matured and volumes are high so the prices have dropped. Surprisingly, fiber optic cables may actually cost less than Ethernet cables today. A 100 foot long, outdoor, steel-armored fiber optic cable pre-terminated with SC/UPC connectors costs about \$30. A pair of media converters with integral fiber optic connectors and power supplies costs about \$40. If you want future alternative interchangeable connectors provided by SFP modules, a pair of those media converters costs about \$65. The same hardware could easily expand the Ethernet extension length to thousands of feet at gigabit speed. I see this as a real bargain!

This should give you a working knowledge of fiber optics for data comm and the many acronyms widely used. You should now be able to select appropriate fiber optic parts and a media converter pair to allow you to extend a local Ethernet connection over long distances. Fiber optic components are surprisingly inexpensive today and buying pre-terminated fiber cables means no special tools are needed.



**No, not that kind of fiber!**

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**There is no TAG Report this month.**