K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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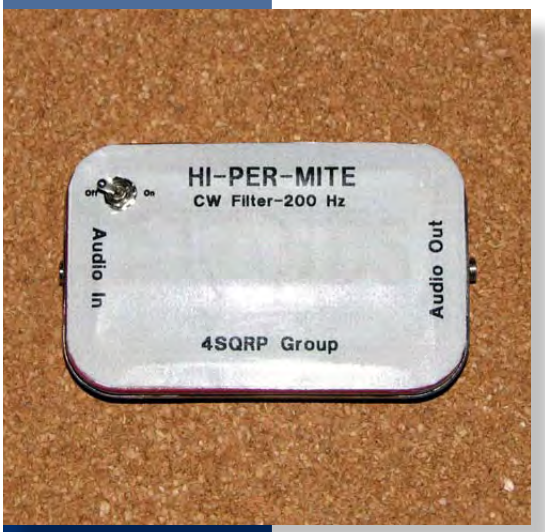

HI-PER-MITE

Audio Filter Kit by NMØS & 4SQRP

Philip Cala-Lazar, K9PL

Here's a neat little CW filter and audio amplifier kit, the Hi-Per-Mite from the 4SQRP Group. It's an inexpensive and quick-to-build station accessory that can pay big dividends in your operating efficiency and pleasure.

The "HIgh-PERformance SMALL audio filter" is another innovative design by David Cripe, NMØS, and can be built in to an existing rig or shared among rigs when housed as a separate unit. The Hi-Per-Mite is an improved version of David's original Hi-Per Audio Filter design published in the May 1994 issue of *73 Amateur Radio Today* magazine.

"…your operating efficiency and pleasure."

The Kit

My kit arrived with all components listed in the bill of materials; including sockets for the kit's two ICs and the resistors needed to configure the builder's choice of amplifier gain options. There are no toroids to wind and the club Website notes the kit can be assembled in 60 minutes—or less. That's right on the money—60 pleasant minutes at ARS K9PL. Prepping the enclosure including drilling, mounting, wiring and labeling occupied another 90 minutes or so.

Specifications from the 4SQRP Group Website

- Center Frequency: 700 Hz
- 3 dB Bandwidth: 200 Hz
- Signal Gain: 0 dB to 50 dB, user selectable
- DC Power: 5 to 13 VDC, <15 mA
- Audio Power: 500 mW into 8 ohms, from 9v supply

I chose an Altoids® tin to house my Hi-Per-Mite. Within the *Curiously Strong*™ mints container there's a 9-volt battery, power switch and two 1/8" stereo headphone jacks (Radio Shack® #274-0249). Now it can be shared by any of my several QRP rigs. The tin's inside bottom surface was insulated with clear 3M™ packing tape and the PCB secured with three strips of 3M™ double-coated foam tape.

From the assembly manual's configuration chart I chose amplifier gain option two, 20 dB, simply a matter of resistor(s) installed, or not. That boost is needed for my PFR-3; the Hendricks rig has been a great performer for me since 2008, in all but audio output. The Hi-Per-Mite now solves the low audio on that rig and others in the shack.

At this point I've foregone installing an audio bypass switch, but did include a SPST switch to conserve the 9-volt battery as I plan to use the filter as a semi-permanent attachment to whichever rig it's patched; primarily the PFR-3. The switch's terminals were insulated with shrink tubing to prevent shorts in the tin's tight quarters.

The Hi-Per-Mite enclosure label was created using the free software application Front Design . It is available for Windows, Mac OSX and Linux operating systems. Front Design is rather intuitive and 30 minutes spent investigating its menus are well invested. Two labels were printed, one to use as a drilling template for the power

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Inside This Issue...

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The fourth part is the "meat and potatoes" part of the control program. Here is the basic polling loop, which generates dots and dashes to control the transmitter. If you look in my previous article, all that is essentially added is an "if" statement to sense which "mode" the program is in, and execute the proper "dash" code. At any time, pressing the "mode" button puts you into the other mode. I have configured the program so that it starts in "normal" keyer mode.

I had to "debounce" the mode switch with a small capacitor, or I would get erratic operation. The key contacts aren't an issue, due to the timing, as the dot or dash will "complete" before the key is interrogated at the top of the main loop. I might have problems if I went to higher keying speeds.

Next idea is to add a "menu" of items–use the "mode" to put you in menu mode–select keying speed, keying mode, then set you back to keyer/bug. Something for the future… ■

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Ham Parodies DICK SYLVAN, W9CBT

MERCEDES-COLLINS GULL-WING SPECIAL

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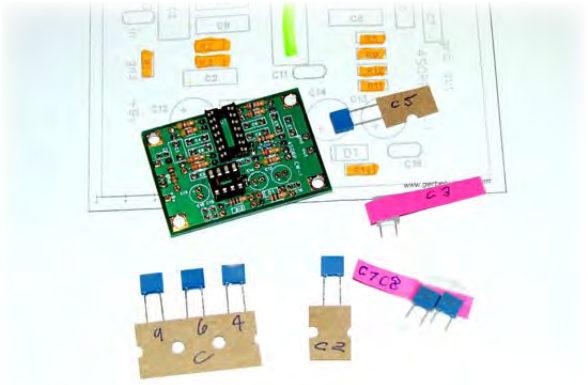
switch and the second laminated with Avery™ film and mounted on the tin's lid with 3M Photo Mount™.



The filter draws 8.4 mA idling current and, at moderate listening levels, I saw 24 to 28 mA peaks on my DVM. That 's a rough gauge; the meter certainly doesn't refresh quickly enough to make more accurate measurements, but does indicate the filter is no battery hog.

On the Air

The Hi-Per-Mite works, its advertised 200 Hz bandwidth does a fine job of separating signals on the crowded low end of the nighttime 40-meter band. No ringing, as advertised, was noted.

Not expected, but much appreciated, the filter's noise reduction properties make listening more pleasant on everything from my Hendricks DC40A to, rather surprisingly, my shack's dreadnought Yaesu FT-1000MP. It simply performs a great job at subduing the harshness ever-present on the HF bands and listening fatigue, if not banished, is greatly diminished.

Thanks again to David, NMØS, and the 4SQRP Group for another worthy addition to their growing list of useful, economical and fun to build kits. ■

Video of Hi-Per-Mite in operation by BX2ABT:

https://www.youtube.com/watch?feature=player_embedded&v=Pk_GFJsux24#

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