

IOWA QRP JOURNAL

NEWSLETTER OF THE IOWA QRP CLUB

Welcome to the third issue of our newsletter! We will now follow the direction other clubs have taken with their newsletter and have four issues: Winter, Spring, Summer, and Fall. That way the editor won't be locked into a specific month to publish an issue. In other words, the newsletter can be fashionably late while still being on time.

By now, most of you are involved with winter building projects or spending the chilly nights chasing Foxes (or even DX as the bands are heating up quite nicely). For those of you who have not experienced peak sunspot periods, you are in for a huge treat! QRP operations will provide you with many nice 'across the pond' ragchews and the higher bands will be open to all parts of the world. Don't be afraid to enter the pileup and grab a rare DX treat!

The soldering irons were quite busy over the past few months. There were many outstanding entries into the building contest. It was so enjoyable that the club has decided to do it again. So keep the irons warm and start planning for next year's contest.

As I write this article, my NorCal NC20 is in the mail. There are several members who purchased the kit and I can't wait to see everyone's final result. Be sure and jot down your experiences for one of our newsletters. Even if you didn't get the NC20, please document all your other building projects or operating experiences to share with the others. I

finished my AADE LCIIB meter during January (see the kit review in this issue) and am currently working on an Emtech ZM-1 tuner. The tuner will wait if the NC20 arrives before it is finished (hi).

There are also several contests and events to operate and have some fun. Mark (KQ0I) is compiling a list of operating scores, so please remember to send him a copy of your log(s). I've enjoyed the Spartan Sprints and the weekly foxhunts but there are many others you can choose from. Take a few hours to sample a contest or sprint and enjoy the fun!

As the temperatures begin to rise I can't help but think that spring is on its way (or is it just wishful thinking). As with each spring, the seeds are sown into the fields in anticipation of a bountiful crop. The same applies to our wonderful hobby and I challenge each of you to plant a seed for QRP sometime this year. There are many ways to accomplish this! Introduce a ham to the joys of low power operating or become an Elmer to a new ham. Help them build a kit, raise an antenna, or demonstrate that the power level adjusts down just as easily as it did up (hi). Invite them over to operate in one of the sprints or foxhunts. Bring along a guest and visit at one of the club's QRP tables at a hamfest. The Iowa QRP Challenge: Plant the seeds of QRP! Let's see what kind of crop we harvest at the end of this year!

**Working the South Pacific on
3535 kHz QRP with my Sting-Ray
Antenna**

By John Stanford NN0F

I worked the recent ZL7DK DXpedition to Chatham Island (near New Zealand), Feb/Mar 1998 on 24893 kHz, me QRP. I was very happy to do so because lots of others were calling him. A few days later I also worked him on 15 m and I was also QRP. I was feeling very pleased with myself.

But hold on to your hats: A few days later I was feeling the need of a relaxing moment before work and got on the air about sunrise. There was ZL7DK on 3505 kHz! Furthermore, he stated he was listening on 3535 kHz. I called him using 80 watts and he came back to me! Amazing, I thought to myself. Then as I listened further, he called CQ again and again with hardly any takers. His signal was by this time peaking 579. So, says I, 3535 is the QRP frequency, right? So I cranked down the Omni Six to 5 watts and... he came right back to me: "NN0F QRP FB 559"! It was due of course to my mighty Sting-Ray DX antenna, my old faithful 120-ft dipole fed with open wire line, 30 ft high.

A few minutes later I again worked ZL7DK using QRP on 7026 kHz. Then again a few minutes later QRP on 14025 kHz. All told, I worked ZL7DK five times using 5 W and my 120-ft cf zepp. The 80 m, 40 m and 20 m contacts were 15 min, 35 min, and 45 min after sunrise time at my QTH. Interestingly, there didn't seem to be many other stations calling him, in contrast to later in the day when tons of stations were calling him.

Times around sunrise/set have always been wonderful DX opportunities for me. At such times the ionospheric path appears to be "chordal", such that the signal may never return to the ground except at the locations of the stations on each end of the contact, leading to exceptionally low attenuation. Often it seems that the ionosphere focuses on different locations as the sunrise line sweeps across the earth and stations near the terminator have great advantage from the anomalously low attenuation. My experience is that only one station need be near the terminator for anomalous propagation. If both stations are, then the signals are usually really good! The signal enhancements on such paths can far exceed any antenna gain or amplifier. Near sunrise/set even my cf zepp at low height can be a winner. And the fun can be spectacular.

De John NN0F

The Iowa QRP CW net is being moved to Saturday mornings at 7:45 am (13:45 UTC) on 3.715 Mhz.

For those of you awake in the early morning, please join us. This was the best time slot with propagation we could find that provided coverage across the state.

For those of you who are not members, you are also welcome to join us on the net and check in. Net control will be WB0T (Jerry).

Please join us if you can!

A Part Time FOX TTL Meets A Tick2b

By James Covington AAOXJ



Quite a nice job was done in the November 1998 issue of "73" by Dave Pelaez AH2AR/8, about the Fox TTL transmitter. I ordered a parts kit and circuit board as soon as I finished reading the article, and soon I had a nice unique signal on a Fox for use in RDF with our Cub Scouts and Boy Scouts. The low power of the transmitter makes it ideal for doing RDF demos in schools, meeting rooms, parking lots, etc. It will get used at Pack and Troop meetings over this winter several times.

Having done lots of T-Hunts with scouts at JOTA activities using equipment borrowed from some members of the Collins ARC, I realized that the Fox need not transmit all of the time. A simple timer on the power leads could handle the Fox's 35mA draw and extend the battery life. I used a circuit found in the 1995 ARRL Handbook and some resistors, capacitors, and a 555 timer IC from my junk box to make the Fox have a cycle of 120 seconds on and 75 seconds off. Any combination could possibly be attained with some

calculations and/or trial and error work, but this combo suited me fine and so I'll use it. I built the timing circuit on the bottom of an 8 pin dip socket (no circuit board). When it was done there is only three connections to make: Pwr in; Pwr out; and Grnd. To keep this little glob of parts from touching and shorting anything out, I slipped a piece of shrink tubing over the whole thing and heated it up.

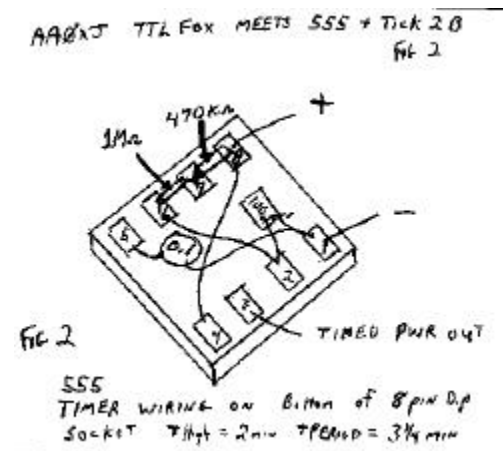


Figure 2.

Parts: 0.1 uf capacitor, 100 uf capacitor, 470k resistor, 1 M resistor, and a 8 pin socket.

My son Zach, KC0ALB, asked me why this Fox didn't ID like the ones we had used at camp. We decided that the Fox would be a good place to embed a Tick2B memory keyer. The Tick2B has a beacon mode built in so once it is programmed it will ID at intervals of about 30 seconds. I thought this would be really easy but the keying circuit on the Fox is completely floating and the keyline out on the Tick uses ground path to operate. If I grounded either side of the Fox's keying circuit the Fox would go dead. I thought of using some kind of relay or optoisolator chip, but instead I just isolated the whole Tick

away from the Fox and mounted it on a piece of plastic and put in a separate battery for it's power. The Tick kit comes with a piezo element to hear what you are programming in and to hear the morse commands the Tick issues when in program mode. This needs to have a switch installed to cut the power to the element so that people don't just find it by listening closely. The Tick2B sends the message that is entered into it by yourself using paddles. If you want to teach people to read the code, put in clues as to where the Fox is!

I had a lot of fun building and modifying the Fox TTL. I don't work in electronics; I'm not an electronics technician or engineer, but I really like to tinker with things. This is easy to build and it works really slick. To simplify things in the future (like when we decide we need multiple Foxes), I don't think I'd bother with the printed circuit board for the Fox, Perfboard or just point to point wiring would probably work just as well and would probably be smaller too. The potentiometer on the Fox isn't really needed either, any background tone would do with the Tick bringing up the tone for IDing. I haven't potted the circuit yet as I may want to modify it some more and still stuff it into it's 2x2x4 inch enclosure. A power amp that can be switched in would be nice and a memory backup for the Tick would be great.

I want to thank Explorer Post 1085 and members of the Cedar Valley ARC and Collins ARC for their questions, guidance, and elmering (not necessarily in that order)!

Sources: 73 Magazine, ARRL Handbook, Dave Pelaez AH2AR, Embedded Research, Far Circuits, and Midwest Surplus Electronics.

De Jim AA0XJ

**QRP: An Exciting Introduction
to Ham Radio**

by Daniel Case, KBØJUL

Since being licensed as an amateur radio operator in middle school, HF has always been a favorite mode of operation. My elmers (WBØRMT and WBØRAT, both of Conrad), insisted that I learn the code and enter the hobby as a novice (versus as a no-code tech) so that I could explore the shortwave HF bands.

Once I passed the novice test and received my ticket, I was very anxious to get on the air and start working stations from home. After observing WBØRAT work DX stations on 15 meters, I couldn't wait to get a rig of my own and start the adventure. As most students in junior high, I was strapped for cash and needed to borrow a radio to get started with. WBØRMT was very gracious and loaned me a radio. It wasn't a 100-watt transceiver loaded with bells and whistles and everything needed to make contacts without effort. Nope, it was a Heathkit HW-8 three watt QRP rig!

Admittedly, I was somewhat pessimistic about the likelihood of working anything with two or three watts. If I was lucky, maybe I could work some stations in Iowa or Illinois, but that would probably be about it (so I thought, anyway!)

After I managed to construct a 40 meter dipole, the day had come to give it a try. I tuned around the novice band and found

a clear frequency. I called CQ for the first time. I remember thinking to myself, while sending that first group of characters, "this will never work!"

Boy, was I sure in for a surprise. After letting up on the key, I heard my call coming back to me. "No way," I thought to myself, "I must be dreaming!". Sure enough, it was a station answering me -- not in Iowa or Illinois - but in Florida! I could hardly believe it. Though shaky and still rusty on my code, I enthusiastically worked my way through the QSO. It was the beginning of what continues to be a very exciting mode of operation for me - QRP. I proceeded to work several other stations throughout the first several months of being licensed, putting my small town of Beaman "on the map", as I like to say. I soon realized how easy it was to work HF on 2 watts.

When time came for college, I knew that it would be difficult to operate HF from such restricted living quarters. Because of restrictions on antennas and radio transmissions (only VHF/UHF allowed in the dorms), I did not have the opportunity to work very much HF the first couple of years from my college QTH at Iowa State. Finally, this past summer I managed to move off campus to a small apartment.

With a desire to operate HF from my new QTH, I recently tackled establishing a QRP station from my apartment. Again, I am limited by antenna restrictions, so I resorted to operating 20 meters with a dipole that I can hang inside.

Twenty meters was selected, since the length of a half wave dipole would fit inside better than a 40 meter wire. I built the dipole and strung it around the room, attaching it to the wall just below the ceiling. My rig of choice is an A & A Engineering QRP CW transceiver that I picked up at a hamfest in Amana a couple of years ago. This radio puts out a healthy 4 or 5 watts when operated off of a power supply. When run through a tuner and wattmeter, this setup loads up quite well.

Though limited by time thanks to studies, work, etc, I have still managed to work a number of stations on the general portion of 20 meters with this setup. I am still fascinated by the fact that I can work stations across the country with a flea power rig and an indoor antenna! This proves to me the versatility of QRP operation. Even in a restricted environment, HF operation can be enjoyed with a minimal setup and some ingenuity.

For more information on operating from restricted areas (in particular, college), check out my article in the September 1998 issue of QST, under the "New Ham Companion" section.

De Dan KBØJUL

A Complete Homebuilt Station
By Larry Stambaugh WBØRMT

(Editors note: Larry has built an entire operating station consisting of the NW40, tuner, power supply, and NorCal paddles. He did an excellent job on building all four pieces of equipment and even won a prize at the building contest for the paddles. Instead of splitting up the articles into

separate pieces, they will be presented together).

NW 40 Project

Since I was a teenager I have wanted to build my own amateur radio equipment myself, but have never done a whole station (even from a kit). Having been around the stuff and repairing and modifying gear for over 20 years, I decided to build my own rig as a "fun" project. I saw an ad for a NW superhet parts kit from Dan's small parts around October in 1997. Wow, a QRP cw superhet transceiver parts kit for a special price of \$50! I told my wife that was what I wanted for Christmas. On Christmas day there it was as I opened the box. I examined it and discovered the toriodal coils needed to be wound and decided that when things quieted down I would start on it.

On New Year's Day of 1998 things were quiet enough to start on it and I could not put the thing down. I had a bit of trouble with some vfo caps, but found some in my junk box and got the vfo going (and about 1/2 to 3/4 of the rig built the first day I worked on it).

Instructions for winding the coils were clear and I made no mistakes with them. With a bit of looking at the schematic and the board layout I found a jumper that needed to be put in that was not documented. That got the rig working fairly easily.

There was a layout for a front panel included and I used it to put the rig in the recommended Radio Shack cabinet. Everything went well with the cabinet installation and I now had a usable rig with no dial for frequency readout. I used a grommet and a piece of wire to

make a pointer and drew a scale arc with a compass on a stick on mailing label. I manually drew marks for frequency and labeled numbers by hand. I now had a fully deluxe cw rig and could go on the air.

Using it on the air I found a few things that I wanted to do with the rig to improve it. It needed a center detent R.I.T. control. I wanted a narrower I.F. passband in the receiver. A built in keyer would be a nice feature. Plus some kind of improved frequency readout would fluff it up a bit, but I could live without it.

The R.I.T. pot was available from Mouser at a reasonable cost and was put in easily but required a trimmer pot be put in to set the center of the R.I.T. right in the detent. That was expected, as there was no adjustment on the board as laid out.

The I.F. was narrowed easily by changing C5,C6,and C7 from 330 pf to 680 pf. This made the passband noticeably narrower and suited my tastes. If I had wanted to buy some varicap diodes of the same capacitance and build a variable bias voltage circuit with a potentiometer in it, I could have had variable bandwidth like an OHR and some of the other rigs.

I decided to build a TiCK keyer into the rig and ordered a TiCK1 board kit from Embedded research. It is a very simple kit to build and has very few parts. I built the board with a trimmer pot to set the sidetone output level on the board and to replace the off the air sidetone on the NW with the TiCK generated sidetone. There is an option to use a peizo speaker that is included with the kit,

but I wanted the menu tones that are used for the programming of the keyer to be through the rig's speaker and headphone jack. I cut R8 (the resistor that lets off the air signal come through a muting FET Q1). That ended off the air sidetone. This was the point that I injected the TiCk sidetone. Everything worked so well that I eventually bought a TiCk 3B super TiCk that has memory and beacon modes. You upgrade by removing one chip and putting in the other. All versions are pin for pin compatible.

Small Wonder Labs make a very affordable frequency readout device that gives you morse characters for the 100khz 10khz and 1khz digits. There is a dip pin header you can program for different I.F.'s and an option for additive or subtractive mixing. The board went together in less than an hour and worked perfectly. A 20 pf cap connected at Q3's drain gave me the signal from the vfo required to operate the freq-mite. I used a peizo speaker left over from the TiCk keyer kit to provide the audio. I did not want it from the speaker.

QRP Mini-Tuner

The Qrp-Mini Tuner kit from Dan's small parts comes with 2 150pf variable caps, a 36 pf 500v silver mica cap, a 12 position rotary switch, 2 toroidal cores, wire, 2 slide switches, and 2 PL259s.

To match the NW-40 cw rig I already had, the tuner was built in a matching Radio Shack cabinet. All assembly was pretty much point to point wiring and not complicated. However winding the toroids and mounting them on the 12 position switch was a tedious and time consuming task. The variable caps required

mounting them in TO-3 transistor mounting hardware to keep them insulated from ground. Also a toggle switch was used to switch in the fixed capacitor and no bypass switch was incorporated. With the tuner completed something was needed to indicate the tuner was adjusted for 50 ohms output to the rig. A conventional swr/watt meter setup could have been used, but I wanted this to be easy and simple. Also some QRP rigs tend to blow the finals if they are not terminated in something close to a 50 ohm load.

I decided to use a resistive bridge circuit that I remembered seeing in 'Solid State Design For The Radio Amateur'. My 1977 edition by Wes Hayward and Doug Demaw has it on page 153 figure 32. Using 1/2 watt carbon film resistors, a meter and potentiometer from the junk box I built a bridge circuit that was switched in and out with a toggle switch. This will keep the SWR to less than 1.5 to 1 at all times you are tuning up! The second benefit is that over 12 db of attenuation is applied to what goes to the antenna. What a good way to minimize tune up qrm! You tune for minimum on the meter and then flip the switch to operate (connect directly without the bridge to the antenna).

The tuner tunes my 40 meter dipole flat and matches my homemade QRP rig. You cannot get it any better than that for a tuner that cost less than \$40 total.

Matching Power Supply

A good source for power supplies and other accessories for the ham shack has always been tailgaters at the Hamfests. I got a Radio shack 2.5 amp power supply from a tailgater for \$5

and was not suprized it was not exactly in working condition. A Radio Shack cabinet was obtained that matched the rig and antenna tuner I had already built. After verifying that the transformer and rectifier were good I remounted them in the new cabinet. The old pass transistor was shorted as was its mate that was darlington connected to it. A much simpler regulation circuit using a darlington transistor, a resistor, and a zener diode was substituted for the original.

A working 13.8 volt regulated power supply that matched my QRP equipment was made from junk and Radio Shack parts for less than \$20.

NorCal Paddle Kit

The Norcal Paddle Kit arrives as a set of fully machined brass, steel and Plexiglas parts that with some work make a very nice keyer paddle set. It is too bad these are not available anymore from NorCal and someone in the commercial sector did not continue with the product.

The major work involved is the finishing of all the machined parts. All the parts except the screws are left as machined and require some shaping, filing and polishing. The steel base requires paint or plating for a finish. My base is flat black, which covers a multitude of file marks and imperfections.

Small files and fine emery cloth or sandpaper with some WD-40 on it will give a fairly good finish to the brass, steel, and Plexiglas. However a step that would give a much better look would be buffing with polishing rouge. A buffing wheel that fits in an electric drill can be found easily at stores like Menards. My buffer is unused and

my paddles unbuffed. I decided to use them and do that later. The instructions and pictures from NorCal were good and no trouble was had in assembly of the kit. Some fitting of the bushings had to be done as explained in the instructions. Operation of the paddles is smooth and crisp.

The NorCal paddles are a fine set at a small fraction of the cost of commercial ones. They make a fine homebrew addition to your homebrew rig.

De Larry WB0RMT

IOWA QRP WEB UPDATE by Daniel Case, KB0JUL

As many members have noticed, I have been making an attempt to improve the looks of the Iowa QRP website.

In addition to altering the layout, I have been doing my best to add new links, include upcoming operating events, and make other improvements. Though sometimes slow about it, I do manage to work on the web page when I have the opportunity.

If you have any suggestions or comments about the structure, content, or setup of the Iowa QRP web page, please let me know. If you have a link to your personal web page, I would be happy to add that as well.

Also, if you would rather not have your name, e-mail address, etc. listed in the members' list for privacy reasons, I am happy to fulfill that request.

I can be reached via e-mail at drcase@iastate.edu, or packet at KB0JUL@KI0Q.#CIA.IA.USA.NA. The Iowa QRP web page is located at:

<http://www1.iastate.edu/~drcase/iowaqrp.html>.

De Dan KBØJUL

Source for SD-20 Poles

For those of you looking for a SD-20 fishing pole for those St. Louis vertical projects, you may find them at:

National Sports

Email: natlspts@execpc.com

phone: 1-877-ICE-FISH (toll free)

Price: \$21.99 plus about \$4.00 for shipping to Iowa (may be more to your location). For multiple poles, the shipping will vary.

Iowa QRP Group Buy With Paul Washa Books

By John Burnley NU0V

The Iowa QRP Club is pleased to announce a group buy from Paul Washa Books (W0TOK). Paul has several titles and options available. Just remember to specify the Iowa QRP Club group purchase when contacting Paul. These prices reflect stateside shipping. Any DX orders should contact Paul first to see if he can accommodate them.

Here are the details:

ARRL 1999 Handbook without software \$27.00 delivered

ARRL Radio Designer Software \$135.00 delivered

Shipping charges apply to the following books and are calculated based on the order total. The order total will

NOT include the 1999 handbook or Radio Designer Software as those are delivered (to you) prices.

ARRL Antenna Compendium 1
\$8.00 plus shipping

ARRL Antenna Compendium 2
\$11.00 plus shipping

ARRL Antenna Compendium 3
\$11.00 plus shipping

ARRL Antenna Compendium 4
\$16.00 plus shipping

ARRL Antenna Compendium 5
\$16.00 plus shipping

ARRL QRP Notebook (W1FB)
\$8.00 plus shipping

ARRL QRP Power
\$10.00 plus shipping

QRP Now!
\$14.00 plus shipping

ARRL Solid State Design
\$12.00 plus shipping

ARRL Intro To RF Design with software \$23.00 plus shipping

ARRL Antenna Handbook with software \$22.00 plus shipping

Shipping charges (remember to exclude the 1999 handbook or the Radio Designer Software if ordered when calculating the order total).

\$1-19.99 order	\$4.00 shipping
\$20-29.99 order	\$5.00 shipping
\$30-39.99 order	\$6.00 shipping
\$40-49.99 order	\$7.00 shipping
\$50-59.99 order	\$8.00 shipping
\$60 plus order	\$10.00 shipping

How to order: You must contact Paul and specifically mention the Iowa QRP group purchase. You may contact Paul

at: w0tok@email.msn.com or
phone (612) 472-8991. His
address is:
Paul Washa (W0TOK)
4916 Three Points Boulevard
Mound, MN 55364-1245

He will accept checks or money
orders (but no credit cards).
This group buy will run 60 days.

The usual disclaimers apply. I
have no financial interest in
Paul's business and am not
receiving anything in return for
getting this deal together.

De John NU0V

New Club Call

The Iowa QRP Club now has
a new club call. KQORP is now
our official club call!
Please look for KQORP in
upcoming events!

Many thanks to Mark Milburn KQ0I
who worked very hard to secure
the call for the club! Mark
even arranged to get an ARCI
number for the club station!

Also thanks to Bob Gobrick N0EB
of QRP ARCI for providing the
club with sample bylaws. We
borrowed heavily from the sample
when creating ours.

Be listening for us as KQORP!

160 Meters With City Living!

By Jerry Huldeen WB0T

Here is a simple antenna to use
for several bands that is
unobtrusive and is fairly cheap
to build. I wanted to be able
to work 160 meters, and live on
a small city lot that does not
permit a half wave dipole at
that frequency.

Materials used are a roll of
insulated electrical wire, and
an MFJ 930 artificial ground.
The wire is #18 bought at
Menards, and I bought the
artificial ground used on the
internet.

The antenna is approximately 150
feet long, and goes from my
basement shack up to the top of
a 48 foot tower and then to a
tree on the border of the lot.
This is connected to a regular
MFJ antenna tuner on a single
binding post, and then to the
rig with a short piece of coax.
(Just like any antenna tuner).
Connect the ground post of the
antenna tuner to the MFJ
artificial ground. Then connect
a counterpoise to the artificial
ground. The counterpoise wire
should be a quarter wavelength
or less for the band being used.
BE SURE NOT TO REVERSE THESE
CONNECTIONS!

You can run the counterpoise
along the floor, or outside of
the house, but not on the earth.
I stapled mine directly under a
piece of siding for 160. I need
to add others for higher bands,
as some of the frequencies cause
the voltage point to move too
close to the tuner. Be sure to
tape the end of the
counterpoise, as it is "hot"
with rf when transmitting. This
will protect kids and pets.

To operate, tune the xmitter
with the antenna, using low
power. Then, adjust the
inductance and capacitor knobs
on the artificial ground for
maximum current (shown on the
ammeter built into the
artificial ground).

This antenna works well, and I
get good reports with it on 160.
Many of the persons in this
roundtable are running a kw and
I use 50 - 100 watts while in

this group. I have many QRP cw contacts as well.

I have a 135 foot window that I use on the higher bands, but this antenna can be used there as well, particularly if I add shorter counterpoise for the higher bands.

If you have a small lot, live in a mobile home court, or in an apartment, this antenna may be useful for you. I think that a 110 foot wire will work all bands for you. Throw it over a nearby tree limb and stretch to another tree. Lew McCoy once said an antenna needs to be long enough to get from the rig to a tie off point. So if you have to make it shorter or longer, go for it. It probably will work.

Good luck! Happy qrp'ing!

De Jerry WB0T

Kit Review: Almost All Digital Electronics L/C Meter IIB

By John Burnley NU0V



Looking for a "can't do without" accessory for your workbench? If so, then the Almost All Digital Electronics L/C Meter IIB may be for you!

For the past few years I have toyed with the idea of getting a L/C meter for my workbench.

These little goodies really come in handy when trying to identify junkbox capacitors or inductors. Since getting smitten with the QRP bug, I've discovered the joy of building and the great satisfaction you get from making contacts on a rig that you assembled! But I've also discovered that you cannot have joy without winding a few torrids here and there!

Wouldn't it be nice to know the torrid you've just wound is the correct value of inductance, instead of making the discovery later (after a few hours of debugging)? How about verifying component values where the markings are illegible? An L/C meter is worth its weight in gold if you do much building.

After deciding to make the investment in the meter, I had to choose between getting a commercial unit or building one. I posted a query to QRP-L for information about the AADE L/C IIB and was quickly rewarded with several responses about the unit. All the Emails were very positive and two of our members really gave me helpful information. Adam (AK0P) and Jim (AL7FS) sent a lot of very helpful information (I probably should have had them write the review...hi). Their comments swayed me to make the purchase.

I spoke with Marshall Emm the next day. Marshall owns Milestone Technologies and is one of the sources of the AADE L/C IIB. We had a nice chat about the unit and QRP. I placed the order and within a few days the kit arrived (joy). Marshall also threw in a disposable ground wrist strap to use when handling the IC's in the unit.

The kit arrived in excellent condition and after doing the parts inventory it was time to read the manual. Adam strongly suggested going through the manual once before beginning construction. It was a good idea and I'm glad I followed his advice. There are several helpful hints throughout the manual and diagrams that I may have discovered too late (hi).

The AADE L/C IIB measures inductance from 1 nHy to 100 mHy and capacitance from .010 pF to 1 uFd. It uses a PIC16C622 microcontroller to calculate values of the components. The builder has a choice between two display modes: micro mode (default) or nano mode (must short a jumper). These choices affect the presentation. For example, in nano mode 999 nHy would display as 999 nHy. In micro mode the same value would display as 0.999 uHy. The unit is designed to measure components out of circuit.

The manual was well written with various hints on building the kit. There was also a very good section on the theory of operation. Like Adam, I recommend reading the manual at least once before beginning construction. That includes reviewing all the diagrams. There are several construction tips (and requirements) in the parts layout diagram.

Construction was straightforward with no specific order in mounting the various components. The contrast control is mounted on the underneath side of the board to allow tweaking once the display LCD is mounted. The parts layout directs you to turn the contrast control fully clockwise after installing. I (of course) put this off until later.

Once assembled, it was time to apply power. A nine volt battery was installed and the power button depressed. Nothing! After the initial two minutes of panic and cursing, I went to the troubleshooting of the manual. Item #1 on a nonfunctional unit states: 'Blank display, contrast control not adjusted correctly. Start it fully clockwise'. Oh yes, that was the little item I put off until later.

I removed the PCB from the case and turned the contrast control clockwise. Power was again applied and the display came to life. For the next 30 minutes, I measured values for inductors and capacitors from the junkbox. The component markings and the L/C IIB agreed in all cases.

The AADE L/C Meter IIB is rated to 1% of the reading. It is manufactured by Almost All Digital Electronics, 1412 Elm St. S.E., Auburn, WA 98092. They have a website at: <http://www.aade.com>.

The kit may be purchased from Milestone Technologies, Inc., 3140 S. Peoria St., Unit K-156, Aurora, CO 80014-3155, (800) 238-8205 (Credit Card Orders) or (303) 752-3382 (information).

I highly recommend this kit to anyone who likes to build. Not only was it an enjoyable kit to assemble, but it is an extremely useful piece of test equipment. I have no financial interest in AADE or Milestone Technologies.

De John NU0V

**A LOW-PROFILE 30 M & 40 M DX
ANTENNA: ELEVATED GROUND-PLANE
VERTICAL**

By John Stanford NN0F

(Editors note: This is an updated version of an article published several years ago in 'The Five Watter', newsletter of the Michigan QRP Club.)

I generally use my 80 meter "cf zepp" (120-ft dipole center-fed with ladder line) on all bands. However, it's only 25-30 ft high and thus doesn't have much low angle radiation for DX contacts on lower HF bands.

A few years ago I read some articles about advantages of using elevated radials and decided to make an elevated vertical for 30 and 40 meters. The idea is that only a few elevated radials are required for good efficiency, whereas 50 or more radials at ground level are required.

My elevated ground plane (I'll call it EL GP for short) is supported by a maple tree in my back yard. The antenna is a vertical wire about 27 feet long, hanging from a tree limb, and fed at the lower end (8 feet off the ground) with one-inch ladder line. It's a simple hook up. One side of the ladder line goes to the vertical wire and the other side to four radials each about 30 feet long and located about 8 feet off the ground. That clears them from people. The radials are roughly horizontal and go out to various other tree limbs in approximately N,S,E,W directions. Two of the radials run through bushes and tree limbs.

The vertical wire is attached at the top to a nylon monofilament fish line a few feet long. (I used the fish line because I read a hint from a UK ham that wet nylon cord can cause RF loss near the high voltage regions of antennas.) The fishline is tied to a long nylon cord which I had

shot over a tall tree branch with a store-bought, hunter's sling shot. The bottom of the cord is wound around a brick lying on the ground. Simple, you say! Right! And convenient for experimenting and making changes. Furthermore, it's easy to adjust tension after high winds blow tree limbs around in a blizzard or thunderstorm. The radial ends are similarly tied by nylon fishline.

Results: A tuner (in my case a link tuner built from the ARRL Handbook) loads the EL GP on 30 and 40 meters and the results are great! On 30 and 40 meters the lower angle of radiation of the EL GP made it superior to my 120-ft horizontal dipole at ranges in excess of about 600 miles. This is expected since the horizontal antenna is only a small fraction of a wavelength above earth on these bands, and thus has reduced low angle radiation (which of course is wanted for DX).

Note: The length of the vertical radiator (27 ft here) was a compromise for the bands I aimed at, 30 and 40 meters. Since I used a tuner and ladder line, the exact length didn't matter. Making it much longer than a half wavelength can give unwanted (for me) high angle radiation lobes while making it less than about 1/8 wavelength will make the radiation resistance low and potentially hard to load. For a single band, if the support is high enough, the best height would be 1/4 wavelength. The latter will allow good results with coax feed. Other lengths will not. But with ladder line and a tuner this is not a serious problem. I also tried the EL GP on 20 meters and it seemed to work ok. But later I realized that the radials are nearly half wavelength on this band. This

means they represent a high impedance at the vertical base and little current will flow in them. If I used the EL GP on 20 meters I would also use some quarter wave (about 16 ft) radials. Even so, my EL GP was definitely superior to my 120-ft horizontal dipole on 20 meters in some directions -- those where the 120-ft dipole has deep nulls on that band.

I still consider my 120-ft horizontal dipole a better overall performer for most bands (10-160 meters) and it's less noisy than the vertical. But for DX on 30 and 40 meters, the vertical is a good choice and doesn't require towers or other expensive support structures. It's also interesting to rapidly switch between the two antennas to learn about QSB due to polarization shifts, etc.

In conclusion, the EL GP is a good antenna for long haul contacts on lower HF bands. It can be especially useful for someone not having a forest of aluminum or who lives in a restricted location. The antenna is essentially invisible from neighbors' view. If you're looking for a good, low cost and inconspicuous 30 and 40 m performer you might want to give it a try.

De John NN0F

Iowa QRP Building Contest Results

By John Burnley NU0V

The Iowa QRP Club held it's January meeting on Saturday January 23, 1999, at the Public Library in Urbandale, IA.

During the meeting, the judging for the first annual building contest was held. There were

many outstanding entries, plus other goodies for show-n-tell. The following were just some of the projects brought by members:

FOX TTL transmitter interfaced with Tick Keyer chip, homebrew regen receiver, homebrew 15 mtr SST transceiver, Small Wonder Labs GM 17, LGD QRP autotuner, OHR WM-2 wattmeter, Wilderness NorCal 40 A, KnightSmite, Pixie 2, Ten-Tec 1054 receiver, homebrew active antenna, Dan's NW80/20, homebrew tuner, homebrew power supply, NorCal paddles, and a Slinky dipole.

Paul Sipes (KB0JIT) had the impossible task of judging the entries. I'm very pleased to announce the winners:

Grand Prize: Tick EMB keyer kit (donated by Embedded Research) to Mike (KI0AF) for the homebrew 15 meter SST. It was a work of art. Mike used the most beautiful 'ugly' construction I've ever seen. He used a hand punch to cut out small circular pads from circuit board material and glued them to another circuit board. The components were then soldered to these pads.

Class Prizes: Copies of the 'Antenna Experimenters Guide' by Peter Dodd. The books were donated by John (NU0V). One copy went to Larry (WB0RMT) for his NorCal paddles. He really did an outstanding job! The other copy of the book went to Alex (KC0EBK) for his Ten-Tec 1054 receiver. An FB job from a very young ham!

I would like to thank Gary and Brad from Embedded Research for donating the Tick EMB kit to the club. I would also like to thank Bill Kelsey of Kanga US for giving me a very favorable price on the Peter Dodd books.

Finally, a big round of thanks to Paul (KB0JIT) for judging the contest. The contest was a lot of fun and those attending the meeting decided to do it again next year!

De John NU0V

Iowa QRP is coming to a hamfest near you! Part of the fun has been attending hamfests with our QRP tables to spread the word about low power operating. Here is a list of hamfests we plan on attending. The scheduling was pulled from the ARRL website. April 1999 Des Moines; June 1999 Sioux City; August 1999 Amana. These are the only hamfests/swapmeets that information was available at the website. If you have scheduling information about any hamfests not on this list please forward the information to John (NU0V).

Send me your logs!
By Mark Milburn KQ0I

Hello Iowa QRPers! I hope you had a wonderful Christmas.

Don't forget to report your participation in any of the operating events to KQ0I@juno.com so we can have some records of club participation. I am going to run as much of the event as I can using the club call. Listen and give me a call.

De Mark KQ0I

New Club Email Address

Mark (KQ0I) has arranged an Email address for the Iowa QRP Club. We can use this address

for new membership requests, operating event log submissions, club correspondence, etc. The address is:

IowaQRPClub@juno.com

Officers will change, members will change internet service providers, etc.; but this will provide a stable and consistent method to communicate with the club.

Thanks to Mark for arranging for the new club Email address!

Yet Another Mount For The St. Louis Vertical
By John Burnley NU0V



Adam Kanis (AK0P) wrote an excellent article last issue on a mount for the St. Louis Vertical made from PVC tubing. It was a great idea and easier to use (especially during the winter months) than the original 'spike' mount. After reading his article, I remembered a weather vane mount I purchased at the annual Cabella's 'tent sale'.

For the past several years, Cabella's had a tent (clearance) sale for all the returned and discontinued merchandise. It is a miser's mecca and gives one a chance to hone their bargaining

skills. My XYL is from the Kearney, NE area where a Cabella's retail store is located. So each year we plan a pilgrimage to visit relatives and attend the sale.

At one of the sales, I found a returned weather vane mount (60357-401 or 61-0192). It is labeled an 'aluminum roof mount' and was intended for weather vanes (see photo). The mount has two pads (hinged) for support along with predrilled holes for mounting. When I first saw the item I thought it would be good for mounting a vertical antenna on my deck. I live in an area with covenants, so I must pay attention when designing antennas. I thought I would place the mount on my deck railing and use a St. Louis Vertical antenna during clandestine hours. I would also occasionally use the mount as a flag holder to satisfy neighborhood curiosity.

The original mount for the St. Louis Vertical uses a piece of dowel with a spike inserted (to support it in the ground). Depending on which telescoping fiberglass pole used (the SD-20 from South Bend or the Black Widow from Cabella's); the size of the dowel could vary. I first tried a 1 1/4 inch dowel, but sanding was required. I was not at all pleased with the result, so a 1 inch dowel was substituted. Electrical tape was used around the dowel to provide a tight fit and provide ample support for the Black Widow pole that I used.

The materials required to make this mount are: a 12 inch piece of 1 inch or 1 1/4 inch hardwood dowel (depending on the type pole being used); a 5 1/2 inch piece of 3/4 inch hardwood dowel; and 1 Cabella's aluminum

roof mount (60357-401 or 61-0192).

Construction:

First check the fit of the 12 inch piece of 1 or 1 1/4 inch dowel in the fishing pole. If it is too large, you must sand the dowel until it fits into bottom end (largest diameter) portion of the pole. If it is too small, then you must apply electrical tape (or equivalent). I recommend applying tape as the last step, but if sanding is required I recommend doing it first.

Drill a 3/4 inch hole (approximately 1 1/2 inches) into one end of the 12 inch piece of 1 inch (or 1 1/4 inch) dowel. I used a hand drill while securing the dowel into a Black and Decker Work Mate. I used a 3/4 inch wood bit. The depth does not have to be exact; just enough to securely hold the 3/4 inch dowel (my prototype left 4 3/16 inches of the 3/4 inch dowel exposed after inserting into the drilled hole). Apply glue to the 3/4 inch dowel (one end only and just cover the area to be inserted into the 12 inch larger dowel). Insert the end (with glue) into the larger dowel and allow the glue to dry overnight. Once dry, then apply the electrical tape if necessary on the end opposite the inserted 3/4 inch dowel to allow a secure fit into the fishing pole.

Choose an appropriate location and use the screws provided to secure the aluminum mount into place. Expand the telescoping pole and secure each section. Place the dowel (end opposite the 3/4 inch insertion) into the SD-20 or Black Widow pole. Place the pole into the aluminum mount by inserting the 3/4 inch section of dowel into the mount. Tighten the provided screws to

firmly hold the 3/4 inch section in place. You may now attach the radials to the antenna and the feedline. Smile, you are now ready to operate!

The aluminum roof mount is available from Cabella's for \$24.99 (I picked mine up for \$2.00 at the clearance sale). It's a bit pricey, so I recommend waiting for a sale or looking at the tent sale for a bargain.

Cabella's phone number is (800) 237-4444. The product code is 60357-401 or 61-0192 (both codes are for the same product). The usual disclaimers apply. I have no financial interest in Cabella's.

De John NU0V

Experimenters Wanted!

During 1998 I had a memorable QSO with an OM out west on 30 meters. He had a really great signal (not only strength but note quality). I commented on his signal and he told me his transmitter was homebrew. I ask to see a schematic for his creation and he gladly supplied one. I've been in contact (on and off again) with him for the past year and have had some good chats with him. At this time, he prefers to remain anonymous.

Since our initial QSO, he has improved his design a bit and has drawn us a conceptual schematic for experimentation (i.e., all parts are included on the schematic but values are up to the builder). At this time, he does not wish to publish his design because he would like some help from us. Any designers goal is to get a repeatable project with somewhat expected results.

Here is the pitch. I would like a limited number of volunteers to experiment with his circuit. It is a transmitter circuit capable of 2 watts output. We compare notes with the designer and help him to achieve a repeatable project. In return, we get a potential group project plus he has mentioned about a possible companion receiver design. Once he is satisfied with the results, then he may decide to publish (of course I'll push for the Iowa QRP Journal hi).

Sorry for the cloak-n-dagger approach, but at this time the designer doesn't want his name to be used. He is considering starting up a QRP related business so we could help him get the ball rolling while maintaining his confidentiality.

If you are interested, let me know. You must agree to keep the person's name and design to yourself and not make copies of the schematic or share any portions of the design with others. You may discuss improvements etc. with other members of the club participating in this event.

De John NU0V

The next meeting of the Iowa QRP Club will be Saturday, February 20, 1999 at around 1pm in Sioux City, Iowa. Jerry (WB0T) will be making arrangements for the meeting. As soon as he secures a meeting place, the information will be posted to the group. Mark it on your calendars, and I hope to see you in Sioux City on the 20th.

What A Great Day To Be A QRP'er

By John Burnley NU0V

(Editors note: The following was first posted to QRP-L and is reprinted with the author's permission).

Today was the Des Moines hamfest and the Iowa QRP Club had three tables (one for goodie show-n-tell, one for literature, catalogs, newsletters, and the last for member swap items). We also had some items for sale from ARCI. Paul Harden had sent us a copy of his book 'The Electronic Data Book for Homebrewers and QRPers' for a doorprize (again our thanks Paul!). Plus a few of Paul's Zombie badges were rumored to be awaiting new homes. Our club also participated in 'Experts Row' (which provided a central point for anyone to ask questions from representatives of different activities, i.e.. DX, QRP, building, etc.).

Traffic and interest was good during the first hour, and the time came to join 'Experts Row'. I left management of the Iowa QRP display in the capable hands of Larry (WBORMT) and his son Alex (KCOEBK).

After returning to the Iowa display, I noticed extra copies of 'The Joy of QRP' and the 'History of QRP'. "Hey, Larry", I questioned, "who brought the extra books?". Larry pointed across the table and there stood Ade Weiss (WORSP) with a grin. Ade had decided on the spur of the moment to drive down from SD to join us in our efforts to spread the good word and had brought a copy of his book 'The Joy of QRP' for us to use as a prize. Now we had two GREAT prizes! Top notch books from great QRPers would soon find their way to new homes!

I had the pleasure of meeting Ade at the Sioux City hamfest earlier this year. Ade presented an excellent forum there and had a table next to ours. It was great to see him again and talk about one of my favorite subjects (QRP!). He even forgave me for putting him on the spot for an interview (over the PA system) by the IAQRP's own Ray Dennis (WDOQ). He is a great sport and really helped us out in promoting low power operations. Thanks again Ade!

Congratulations to WONKN who won Paul's 'Electronic Data Book'. BTW Paul, the book got a lot of ooh's and ahhhh's from hopeful new owners. Also congratulations to WDOGAT who won Ade's 'Joy of QRP'. Plus there are new certified (badge wearing) Zombies.

It was a fun day with the IAQRP club getting eight new members and spreading the good word!

de John NU0V

October Meeting Minutes

By Jerry Huldeen WB0T

Here are the minutes of the IAQRP meeting.

The meeting was called to order by John, NU0V at 3:30 pm in the meeting room of the Urbandale Library.

Present were: Todd NONCL, John NU0V, Mabel NOEUM, Jerry WB0T.

It was moved by Mabel NOEUM, seconded by Todd NONCL that bylaws be created for the club by the officers. Motion Passed.

Moved by Jerry WB0T, seconded by Todd NONCL to grant memberships to four individuals. Discussion

followed, with comments by John that these amateurs had been most generous in donation of materials and ideas to our club. Motion passed unanimously.

A logo was discussed for the club.

A need for two tables for Hamboree 21 to be held in Sioux City June 4 & 5, 1999, was discussed.

Also discussed was a Friday evening gathering, with perhaps a simple one evening kit to be assembled while enjoying pizza, etc. The object: to have fun and get to know each other, and to review basic kit building for those of us who are not experienced. Jerry WB0T will make arrangements.

Also discussed was the possibility of rooms in a block for the Club if enough members are interested.

We would like to make this an annual affair for IAQRP and have the full support of the 3900 club and Siouxland Amateur Radio Association (SARA) for this venture.

Mike Nicklaus, chairman of the Hamboree has agreed to prominently publicize IAQRP in mailings, and other publicity. Several of you have expressed having a good time this past spring at the Hamboree.

Four priorities were expressed by John NU0V.

1. A regular electronic newsletter
2. The building contest mentioned by John in other mailings.
3. Operating events.
4. A Club project.

NONCL moved to adjourn, seconded by NOEUM.

Upcoming Operating Events

By Mark Milburn KQ0I

Here are some QRP operating events that will be coming up. Turn your power down and join in; they are fun events and the people you meet will be some of the best hams on the air. Remember to report your participation to KQ0I for the club records. Good luck.
De Mark KQ0I

Vermont QSO Party

Feb 6 000Z Feb to 2400Z Feb 7
Stations may work any 24 hour period during the 48 hours. Down times must be a six hour minimum.

160, 80, 40, 20, 15 and 10 meters plus VHF/UHF.

Classes: Single op, multiop, club, QRP (5 w CW and 10W SSB), and mobile

Work stations once per band and mode (CW and RTTY/digital modes are separate.)

Vermont stations send RST and county/state - others send RST plus state/province/DXCC country.

Frequencies: CW = 40 kHz up from bottom of the band, 20 kHz up from the bottom of the Novice band. SSB in the first 25 kHz of the General portion of each band. VHF 50.200, 144.200, 146.49. No repeater contacts.

VT stations count one point per phone contact, two for CW, RTTY, or other digital modes.

A station may be worked up to four times per band (different modes). Multiply by number of

VT counties, states, provinces, countries, or W1BD. Multipliers count only once regardless of the number of bands they might be worked.

Other stations count one point per VT phone QSO, 2 per VT CW, RTTY, etc. Multiply by number of VT counties plus W1BD.

There will be two special stations worth 5,000 points each: W1OFW/M and W1B. A station may be worked up to 4 times per band. (different modes). Send logs postmarked by March 1 to: Central Vermont ARC/Vermont QSO Party, PO Box 674, Montpelier, VT 05601.

New Hampshire QSO Party

0000Z Feb 6 to 2400Z Feb 7. Operate any 24 hours. Off-times must be a minimum of 15 minutes. Work 160, 80, 40, 20, 15 and 10 meters plus VHF/UHF.

Classes: Single transmitter QRP (less than 10 watts), Low Power (150 watts or less) and High Power (more than 150 watts), Multi-transmitter QRP, Low Power, and High Power.

New Hampshire stations send REST, county and state. Others send RST and state/province/DXCC country.

Stations may be worked once per band per mode.

Count one point per phone QSO, two points per digital QSO, five points per phone QSO with a NH bonus station. 10 points per digital QSO with a NH bonus station (bonus stations W1FGM, W1BKE, W1FZ, W1WQM, N1FD, K1NCR).

Send logs by March 31 to NHARA, PO Box 119, Goffstown, NH 03045, For info on the web see <http://www.nh.arrl.org>

The 3rd Annual FYBO (Freeze Your B___ Off) Winter QRP Field Day Feb 7, 1999

Sponsored by the AZ ScQRPsions.

SAFETY FIRST! PLEASE RESPECT THE WX AND YOUR OWN LIMITATIONS!

1400Z Feb 6 to 0200Z Feb 7
(Operate all 12 hours).

QRP HF Only. CW (5W max). QRP calling freqs (no WARC bands).

Categories: Single Op, Multi Op, Novice/Tech+. Work stations once per band. Score 1 point per QSO.

Exchange RST,
State/Province/DXCC Country,
first name,
power out, and temperature
(Fahrenheit) at OPERATOR'S
POSITION. Indoor stations must
report INDOOR temperature.

Example: 579 AZ Joe 2W 40F

Multipliers:

SPCs (each counts only once overall), Field Location: x4 (Field per ARRL FD definition), Alternative Power: x2, QRPp (less than 1W): x2, Lowest Operating Temp (at OP'S POSITION):

65+ F = x1;
50-64 F = x2;
40-49 F = x3;
30-39 F = x4;
20-29 F = x5;
Below 20 F = x6.

Final Score: QSOs x SPCs x Temp Multi (x Field) (x Alt Pwr) (x QRPp).

Mail logs by March 7 to: Joe Gervais (AB7TT), PO Box 322, Peoria, AZ 85380. Include station description, category, op(s), and max power out. or call Juno at (800) 654-JUNO [654-5866]

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The Iowa QRP Club was formed to promote amateur radio low power operations, to hone operating skills, improve building skills, and introduce the hobby to perspective new amateurs.

Membership is limited to current Iowans, former Iowans, those with strong Iowa ties, border states (border counties), and in some cases by invitation. To join, email a request to:

IowaQRPClub@juno.com

or surface mail to:

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