

AmQRP.ORG HOMEBREWER

The journal of the American QRP Club ... for builders, experimenters, ham radio operators and low power enthusiasts everywhere.

Welcome to issue #6!

We have another incredibly exciting issue of Homebrewer Magazine, containing thirty-two unique homebrew construction projects and even more great material in the form of reviews, contesting results and contributions from our regular columnists. All of this is provided in more than 400 full-color, high-resolution pages!

The contributing authors have once again overwhelmed us with great material which has allowed us to produce a terrific issue. Contained in more than 500 pages of full color, high resolution graphics, we have a mixture of easy and complex, quick and extended, antennas and radios, digital and analog ... something for everyone to build, and educational for everyone even if you don't build up a given project.

We highlight in this issue a technology called Software Defined Radio (SDR). A great deal of excitement in the QRP community occurred during August-September, caused by a small and inexpensive SDR receiver called the **SoftRock-40 Receiver**. This easy-to-build board works together with a powerful PC software program called "PowerSDR" to provide a 40-meter receiver with absolutely stunning performance. We feature the SoftRock-40 receiver, plus we include an audio interview with the designers KB9YIG and KD5TFD. We added a piece from N1RX, an intrepid homebrewer who already modified for use on 30 meters. And then to touch all bases for SDR coverage, we included a reprint of our original review of the FlexRadio Systems SDR-1000 transceiver, a recent review of the SDR-1000 by QST, and a technical review of the SDR technology from one of the FlexRadio designers, N4HY. Software Defined Radio is certainly here to stay and we have it covered from the homebrew perspective!



Project contributions from the international scene are also notable this time, with **OH2NLT** and **OH7SV** overviewing their "JUMA-RX1", a 0-8 MHz DDS-based QSD receiver with some really nice features. **UA9LAQ** contributed two projects: a 20m receiver and an

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KB9YIG
KD5TFD **SoftRock-40 Receiver**



Inexpensive & easy "software defined radio" with stunning performance!

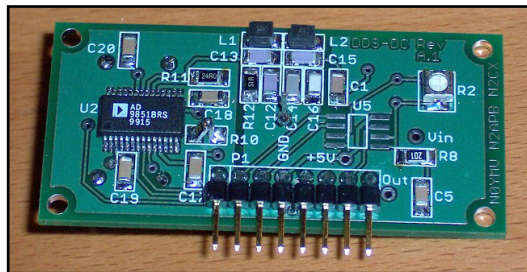
Feature Projects ...

SoftRock-40 SDR Receiver	JUMA-RX1 Receiver
KK7P Dual DDS Card	Octalooop Antenna
Micro908 Technical Video	LPF Design
TC908 Temp Controller	PIC-EL
PIC-WX Article Series (all)	HamCalc 78
60 MHz DDS Daughtercard	Also included ...
Power Meter Cookbook	QRP Operating
NA5N Handyman Series	Tuning Up
K7QO Code Course	QRP Contesting
	Test Topics & More

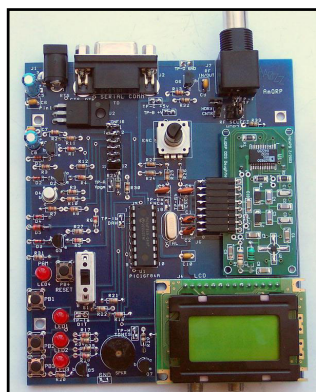
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experimental 2m antenna – and in his own unique style provides us with some of his wonderfully-stated designer wisdom.

DDS technology is hot and still growing in the homebrewer community. **N2APB**, **N0YMV** and **N2CX** review a design upgrade of the hugely popular DDS Daughtercard which allows the “DDS-60” to reach up to 60 MHz, including a built-in wideband amplifier and an onboard, computer-controlled level control circuit. And two DDS chips have got to be better than one, right? **KK7P** thinks so, and he provided an article describing his DDS2 dual chip design that forms a building block for a software defined radio clock generation circuit. **KK7P** then goes on to overview Digital Building blocks for Analog Radios.



Antennas are always popular with Homebrewer readers, and **VE3ERP** worked with **W2AHW** to produce a design of a miniature magnetic loop called the **Octalooop**. Imagine having an Small Transmitting Loop (STL) antenna for 80m that is only 52” in diameter! By the way, Murph also includes support for the Octalooop in an update to his famous **HAMCALC** program, also included on the CD-ROM.



Some projects just never lose their appeal over time, and we’re happy to present an encore presentation of several because of current popularity. We have the PIC-EL controller board from **AA0ZZ** (including some fresh material), the full set of seven PIC-WX weather station articles from **NK0E**, and the **K8IQY** pair of projects dealing with crystal measurement and use: Precision VXO and the Crystal Measurement Fixture.

Our regular columns are anything but regular – they’re superb! **NA5N** presents another installment of his Handyman series, and his treatise on Manhattan homebrewing techniques is really outstanding.

N2CX gives us some real tangible homebrewing projects with this installment of his Power Meter Cookbook, as well as some Test Topics & More guidance in the use of 75-ohm attenuators in a 50-ohm world. We also get exposed to the experience, wit and storytelling grace of **KI6SN** for some Field Day experiences and **K7SZ** describes for us how Digital Dickey was converted from an analog world. QRP Contest guru **N2CQ** gives us a 3-month forecast of events and an added treat of the full 5-year set of results from the Homebrewer Sprint event that he runs.



Frequent contributors to Homebrewer Mag once again grace our pages. **WA2DJN** describes how to build a real useful signal injector; **WB7AEI** provides us with some useful tools, simple equations and practical examples in the use of low pass filters; and **N1NB** designed an easy interface in order to use his Micro908 to control his Crystalizer, using some clever software that ultimately won him first prize at Atlanticon. Oh yes, **K7SBK** tells us about the raft of feature additions he made to his AA-908 Plot Gen program that further increase the usefulness of the tool.

THREE SPECIAL FEATURES!

We are very proud to present a first-of-its-kind (to the best of our knowledge) in our QRP publishing world by producing, editing and publishing an **instructional video** within the “pages” of Homebrewer Magazine. N2CX and N2APB collaborated to present a 45-minute video overviewing the technical aspects of the **Micro908 design**. This WMV video file is able to be viewed in the standard Windows Media Player (or equivalent) on most computer systems, and we think you’ll enjoy actually seeing the designers describing their project



There is another great bonus feature in Homebrewer this time that you can’t find anywhere else. We had an opportunity **to interview the designers of the SoftRock-40** (Tony Parks and Bill Tracey) and we provided this hour-long **audio file** on the Homebrewer CD for your listening pleasure. So not only can you read about this popular little rig, but you can hear from the designers in their own words about the project, the process they followed in developing it, and some of the future directions they’ll next be taking the SoftRock. Be sure to listen in on this interview!

We are very thankful to Chuck Adams, **K7QO** for allowing us to include his comprehensive **Morse Code Training Course** in this issue of Homebrewer Magazine. Chuck is actively involved in training ham clubs in the proper learning and use of Morse code, and he is quite an accomplished in this communications mode. The K7QO Code Course consists of 149 MP3 files located on this CD, plus some expert guidance provided by Chuck and several related reference articles.

SOFTWARE on CD

There is a ton of software programs, source code, and other files relating to the articles and projects presented in this issue of Homebrewer. The best way to see and use these files is to use your file browser to navigate to the CD drive, and then into the Software folder. You will either see a folder with the name of the individual software program, or a zip file that contains a compressed file of all the related files for that named topic. These files will best operate when copied to your computer’s hard drive. (Also, you should not attempt to run a program while it is still contained in the compressed zip file container – you will get unexpected results.)

Notable programs and files included in the Software folder this time include: HAMCALC 78, PIC-EL design and software files, GCGC (Great Circle), WA0SVL Conversion utilities, AA-908 Plot Gen, source code from all the PIC-WX articles, Serial DDS source code, Link908 source files, SoftRock-40 and PowerSDR source and installation files, software files for the JUMA-RX1 Receiver controller, TC908 Temperature Controller software, ... and more. This folder is a software homebrewer’s treasure trove!

Also, the **Why QRP?** presentation is included for your use at local club meetings. Lastly, as before, we have included the detailed Kits folders including all manuals, schematics, software, pcb layouts, etc., for current and popular QRP kits that have been produced over the years. This is a great reference bank of technical homebrewing information!

So sit back in your computer chair and enjoy digging through Homebrewer #6. Print out selected articles for use in the “reading room” or put the files on your PDA for remote study, as N2CX does. We believe Homebrewer CD Magazine is a unique and valuable contribution to our hobby and all of us writers and editors are very proud to produce it for you. We hope you enjoy it.

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www.amgrp.org/homebrewer

Homebrewer Articles

Click the cover image below to enter the magazine.



[Homebrewer #6](#)

Micro908 Instructional Video

Click on our image to begin watching the 45-minute video overview of the Micro908 architecture and functional operation.

(If the link does not automatically start up the Windows Media Player (or equivalent), manually start your video player program and point it to the Video folder on the CD.)



Audio Interview with the SoftRock-40 Designers

Click [here](#) to begin listening to the 60-minute audio interview we conducted on August 4, 2005 with the designers of the SoftRock-40 Kit: Tony Parks, KB9YIG and Bill Tracey, KD5TFD.

(If your audio player does not automatically launch when clicking on the link to this MP3 file, manually start it and point to the Audio folder on the CD. If you do not have an MP3 player on your PC, you may use Windows Media Player (or equiv) to play the audio file.)

K7QO Code Course

Click [here](#) to read the manual for the K7QO Code Course. There are 149 MP3 sound files referenced in the manual, and these files are located in the MorseCourse folder on the CD. Use your File Explorer program (or equiv) to navigate to that folder and double-click on the MP3 file to begin playing that code segment.

(If your audio player does not automatically launch when clicking on an MP3 file, manually start the audio player and point it to the MorseCourse folder on the CD. If you do not have an MP3 player on your PC, you may use Windows Media Player (or equiv) to play the audio file.)

Atlanticon QRP Forums

[General information](#) concerning the upcoming Atlanticon QRP Forum, set for March 24-25, 2006 in Baltimore, Maryland.

Kits

[Micro908](#)	[HC908](#)	[DDS Daughtercard](#)	[QuickieLab](#)	[I/O Expander](#)	[Halfer Antenna](#)
[PIC-EL](#)	[ELSIE Meter](#)	[Badger SmartBadge](#)	[Tin Ear Rx](#)	[Sniffer FS Meter](#)	[Rainbow Tuner](#)
[MS-DDS VFO](#)	[Precision VXO](#)	[SoftRock-40](#)	[IQ-VFO](#)		

Why QRP?

A [presentation](#) on the joys of low power amateur radio. This is a series of about 50 slides in PDF format that may be used as the basis for a presentation at one's local ham club or hamfest describing what QRP is and the fun that can be had by all.

Software

The software presented in this folder will best operate when copied to your computer's hard drive. To do this, you could right-click on the link and "Save as ..." a file on your computer. Otherwise, for software programs with many associated files (like HamCalc), you could use your file browser (like Windows Explorer, etc.) to navigate to the Software folder on the CD-ROM and copy the whole folder containing the software you want to use and place it onto your computer's hard drive.

HamCalc 78... software utilities for Ham Radio, by George Murphy VE3ERP

GCGC "Great Circle" ... software utilities for computing great circle directions & distances (and more!), by Ron McConnell W2IOL

Conversion Utilities ... Visual BASIC programs by Doug Wilson WA0SVL: P-PVolts-Watts, SWRbyPWR2 and Xc_XI_Reso.

PC Signal Generator ... PC software application called "DDS Freq" controls the DDS Daughtercard over the parallel port, by Mike Hasenfratz, WA6FXT

PC DDS VFO ... PC software application to control the DDS Daughtercard over the parallel port, by Bob Hillard, WA6UFQ

CAPL ... software for the PIC-EL to measure capacitor values, by Ron Carr WA1VGB

Link908 ... software program for PC that collects Micro908 Antenna Analyst data files and plots the curves for SWR, R and X ... by Mike Hasenfratz, WA6FXT. **Source code** also provided.

AA908 Plotter ... Excel macro (and example data files) for taking Micro908 Antenna Analyst data files and plotting them in a colorfile chart format. (Result shown on cover of this issue.) ... by Al Gerbens, K7SBK

Palm-Link908 ... plink.prc is a program for the Palm PDA that collects Micro908 Antenna Analyst data files and plots the curves for SWR, R and X ... by Ron Pfeiffer, N1ZSW

PIC-WX... PIC software and source for all existing parts of the PIC-based APRS Weather Station article series ... by David Ek, NK0E.

Serial DDS ... PIC software and source to allow the PC to control a DDS Daughtercard, by N2APB, NK0E and AA0ZZ.

About ... Homebrewer Magazine

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