



American QRP Club
2419 Feather Mae Ct.
Forest Hill, MD 21050
April 4, 2004

Dear Micro908 Homebrewer –

This note is going to all those who reserved a Micro908 Kit from the AmQRP Club, informing you of:

- 1) The official pricing for the kit and available options;
- 2) We're now ready to start accepting orders; and
- 3) We expect to begin shipping in May.

First, thank you all for your patience with us as the project has been evolving; and for your patience with me as we've been stating "it's almost ready, it's almost ready". All the standard reasons apply – job, family, many QRP projects in progress – but the good news is that we're ready to get the project across the last 5 yards to the goal line.

We have a number of exciting things to tell you about as we prepare to get Micro908 Kits into your hands. So sit back in your easy chair and grab a pencil to take notes ...

Customer Group #1

You are part of the first group of homebrewers who will receive the Micro908 Kit when it starts shipping next month. We felt it important to limit the size of this first round to 300 in order to give appropriate attention to those who were first to sign onto the project, to answer the kit and operational questions in a timely manner, and to properly set up the product infrastructure to have it be a winning experience for everyone.

Nobody other than this group is able to participate in the first deployment. That was the reason for your reserving a place in the queue – you guys had the confidence and patience to work with us through the initial kit preparations, and we appreciate that.

The Micro908 is truly the "First of its Kind"

You might believe the Micro908 is "only an antenna analyzer", but actually it's much more than just that single, albeit important first application. Almost every kit or project that has come to market in this price class has been a dedicated purpose appliance that performs only its intended function.

The Micro908, on the other hand, is a very flexible, re-usable and customizable "open architecture" project. This means several things ...

- 1) If you build the kit "stock", or as-is from the manual, you will be able to download many free software programs from the Micro908 web page and load them into your kit to have it perform in numerous different ways.
- 2) If you wish to modify the software of any program we provide to better suite your own needs, you are easily able to do this with the source code we provide on the Micro908 web page. All our software is freely available under the GPL (GNU Public License), which means that it's available for your use as long as you just contribute any changes back to the group so others can take advantage of it too.

- 3) If you wish to develop your own software programs to run on the Micro908, you are welcomed and encouraged to do this using a full suite of development tools available for the 68HC908 microcontroller by its manufacturer Motorola (and affiliates). This device is the most popular and proliferate 8-bit controller in the world and it has an astounding number of software libraries, application notes and other examples that may be used in your custom project.
- 4) If you wish to develop additional hardware modules for the Micro908, replacing any of the daughtercards or other hard-wired functions in the platform, you are fully able to do so because of the "open" nature of the hardware design. Nothing is hidden from you or kept back because of "intellectual property".

This modular, open architecture vision of the Micro908 has been planned from the start (2-3 years ago) to be a long-term platform upon which we will be providing many software programs, add-on accessories, etc. The vision was to provide a packaged, flexible and general purpose computing platform for amateur radio use that would serve numerous needs going forward. Otherwise everyone would keep building their own PIC, Scenix, ATmel, BASIC Stamp, project and guys like us would never get a leg up on a re-usable, multi-function platform. Others will continue building separate, low-cost, dedicated solutions, but those who get the Micro908 along the way will have tremendous re-use capability, as well as a platform that they can learn microcontroller programming and experiments on themselves.

The Micro908 "Platform"

In a nutshell ... The Micro908 is a "device", "appliance" or "hardware-software platform" that allows many different software applications to run on it. One application is the "Antenna Analyzer" program, which makes the appliance work as an antenna analyzer. Another software program that will run on it is the "Portable PSK" program which will control the Micro908 to perform as a digital modem for PSK31, RTTY, AMTOR and other digital modes. Other software applications for the Micro908 will allow it to serve as a memory keyer, audio filter, Morse keyboard, baseband transmitter, and more.

The hardware platform of the Micro908 appliance consists of a base motherboard that has three "daughter cards" plug into it to provide the needed functions:

- 1) The first plug-in card is the **HC908 Daughtercard**, which is the microcontroller "brains" for the appliance. Each of the software applications (i.e., programs) actually runs on this daughtercard.
- 2) The second plug-in card is the **DDS Daughtercard**, which provides the RF generation capability for the appliance. This is the same DDS Daughtercard as has been available for several years from the NJQRP and AmQRP clubs. If you already have one of the DDS 'cards and wish to use it on the Micro908 motherboard, it'll work just fine. In this way you can save a few dollars by re-using a module we previously created while laying the framework for the Micro908.
- 3) The third plug-in card is the **DSP Daughtercard**, which provides additional, high-speed computing power required for audio filtering and digital modem functionality. This is the same modular card that Lyle Johnson, KK7P developed for the TAPR group. It's the same 'card that works in the TAPR DSP-10 project and in the Elecraft K2 as a DSP audio filter. In fact, the very same filter algorithms will be available, plus others, when the AF908 software application becomes available downstream.

The HC908 Daughtercard is always needed, as all software runs on that card, but the DDS and DSP plug-in cards are optionally required based on the software application that will be running. For example, the Antenna Analyzer software application requires the DDS card for RF generation, but not the DSP card since that extra computing horsepower is not required for an antenna analyzer function.

Alternately, the DSP card would be needed, not the DDS card, for the audio filter application software (AF908) or the PSK31 software program (Portable PSK).

The daughtercard-based design approach was taken because the system was designed to be modular, allowing the greatest flexibility and lowest cost for the homebrewer. Further, when other/better modules become available, they could be used in place of those first available, thus allowing you to maximize your investment by re-using the motherboard and enclosure. For example, in the future there may be a different "CPU card" that would replace the HC908 Daughtercard to give more horsepower, more memory, or lower power operation.

Micro908 Mail List

We are in the process of setting up a mail list for this group (only) in order for us to more easily communicate status, have Q&A dialog and to let you know immediately when things are happening. You will be automatically subscribed (i.e., we will do it), so when your first email arrives with the [**Micro908**] indicator in the subject line, you'll know the ball is rolling.

Micro908 Project Web Page

We will establish and maintain a private Micro908 project web page available only to this group, on which we'll post the latest versions of software, an online technical reference manual, schematics, board layouts, construction tips, and other information that will make your assembly and use of the instrument a pleasurable experience. The URL for the project web page is www.amqrp.org/kits/micro908/project. It's not yet activated but will soon be – we'll post to the Micro908 Mail List when it is. Bookmark this address in your browser, as you'll be visiting it often.

Ordering Details

Okay, it's now time to select your options and send in your payment. We set up a private Micro908 Order web page at [www.amqrp.org/kits/micro908/orderingoptions\(reserved\).html](http://www.amqrp.org/kits/micro908/orderingoptions(reserved).html) that is intended only for the use of this group. PayPal buttons are now active and working properly to allow you to easily select items for purchase. For your easy reference, we've included the order form on the last page of this document. You can submit payment though the US Mail by following the directions at the bottom of that page.

Recall that you already submitted \$10 to reserve the kit? (We knew you did ☺.) Well, the prices for the Full Kit and the Basic Kit have been adjusted to account for this fact that each of you already has \$10 in your account with us. When it comes time for general kit sales, the price for these two items will be higher than what is offered to you in this first round, as indicated in the public Micro908 page on the AmQRP web site.

If you are located in Maryland, you'll note that sales tax is automatically added to your PayPal order. And if you order manually through PayPal (i.e., not by using the buttons) or order by sending us a check by mail, you'll need to manually add 5% sales tax. Often this goes by

unnoticed for smaller kit orders, but with this larger one you will notice it. Sorry, this is mandated by our status as an incorporated non-profit club.

You have until the ship date to actually place your order and we will hold a Basic or Full kit for you until then. But if you do wait that long to order, some of the options might not be available when you want them and some delays might be experienced. So, as is the rule of thumb when ordering any club-related kit, “strike while the iron is hot” and while the kits are stocked!

Money-Back Guarantee

As is the case with any of our AmQRP Club projects, you may opt out of the program and get a complete refund at any time before actually getting your kit. If the pressure of waiting becomes too strong, or if your job status suddenly takes a turn for the worse, or if you just decide to move on to a different project – whatever! – just let us know and we’ll immediately refund your investment. We’re obviously not in this to become rich or to scam anyone out of a life’s savings, so all you need to do is let us know.

Problems or Questions?

Please let either of us know if you have anything on your mind – problems, questions, suggestions for improvement, ideas for design extension ... whatever! We’re usually responsive within 24 hours and we’ll provide an honest answer at all times.

Thank you for bearing with us on this adventure. We obviously have pretty demanding day jobs and families that require the normal attention, but we also enjoy working on this project too and will continue doing the very best we can.

So stay tuned for the soon-to-come Mail List and the Project page ... and send in your payment so we can get the bulk of the parts ordered and the kitting started!

73, *George N2APB n2apb@amsat.org*
& *Joe N2CX n2cx@amqrp.org*

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Reference Links:

(Private) Micro908 Order Page: [www.amqrp.org/kits/micro908/orderingoptions\(reserved\).html](http://www.amqrp.org/kits/micro908/orderingoptions(reserved).html)

(Private) Micro908 Project Page: www.amqrp.org/kits/micro908/project

Obviously, please help keep these private pages private. Word will eventually slip out, but the more we keep these pages available only within this group, the easier our job is in communicating only to you guys, our most important focus.

MICRO908 ORDERING

Full Kit \$180 (US & Canada), \$200 (DX)

Includes PC Board, all board mounted components, controls, connectors, LCD, HC908 Daughtercard, DDS Daughtercard and enclosure.

Basic Kit: PCB, components & connectors \$100 (US & Canada), \$120 (DX)

Includes PC Board, all board mounted components, controls, connectors and LCD. Does not include the HC908 Daughtercard, DDS Daughtercard or enclosure. The Basic Kit configuration is useful because many homebrewers already have HC908 and DDS daughtercards.

HC908 Daughtercard \$40

Available at this discounted price (10% off) only when purchased with the Basic Kit above. (Not needed if you have purchased the Full Kit. Also not needed if you already have an HC908 Daughtercard and wish to use it in the Micro908.)

DDS Daughtercard \$20

Available at this discounted price (10% off) only if purchased with the Basic Kit above. (Not needed if you have purchased the Full Kit. Also not needed if you already have a DDS Daughtercard and wish to use it in the Micro908.)

Analog Devices AD9850 DDS Chip \$20

This surface mount integrated circuit is available only if purchased with the Basic Kit and DDS Daughtercard above. This option is needed only if you are not able to get a free sample from Analog Devices. (See their [website](#) for ordering details.)

Enclosure \$26

Plastic enclosure, 6" x 9" x 1.5", pre-drilled to accept the Micro908 printed circuit assembly as shown in photos. A Labels overlay is provided. This option is available only if purchased with the Basic Kit above.

Accessory 1: KK7P DSPx Daughtercard \$75 (US & Canada), \$80 (DX)

This accessory is needed when the Micro908 hardware platform serves as a signal processing instrument such as an audio filter (running the AF908 software) or as a modem for the digital modes (running the Portable PSK software). Other signal processing applications are in development and will soon be freely available on the project web pages. This DSPx accessory is heavily discounted from the standard price of \$99 from TAPR and may only be purchased with either the Full Kit or the Basic Kit. This discount is presented to encourage DSP experimentation within the QRP and homebrewing community. Many thanks to designer Lyle Johnson, KK7P for his collaboration with the AmQRP on this project.

Accessory 2: Mini Keyboard \$30 (US & Canada), \$35 (DX)

This miniature (5"x7"x1") PS2-style keyboard is useful when the Micro908 hardware platform serves as a modem for the digital modes (e.g., when running Portable PSK and Portable RTTY software) or when running any software requiring text input. This small and light weight keyboard is especially convenient when operating in the field. Supplies are limited. This keyboard accessory may only be purchased with the Full Kit or the Basic Kit.

Ordering

You may submit your order electronically through PayPal by sending the payments to n2apb@amsat.org. You may also order by mail by submitting cash (US currency), personal checks, Money Orders or International Money Orders. Checks and Money Orders must be written to "George Heron, N2APB" and must be payable in US dollars and redeemable at a major US bank. Orders that deviate from these options will need to be returned to sender.

**George Heron, N2APB
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