# Blue Ridge Amateur Radio Society

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Getting Started In Fldigi

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Fldigi is a popular program for HF Digital. It runs on all major Windows, Linux, and Mac platforms. It runs with minimal system resources. I have used it on a computer running with Windows XP, a sound chipset, a 1.2 Ghz single core processor, and 512 MB of RAM.

Fldigi is very easy to set up and use, but it is also quite flexible. You can just use the bare minimum of functions, or you can highly customize it. You get out of it what you put into it.

This is what Fldigi normally looks like during a PSK31 QSO.
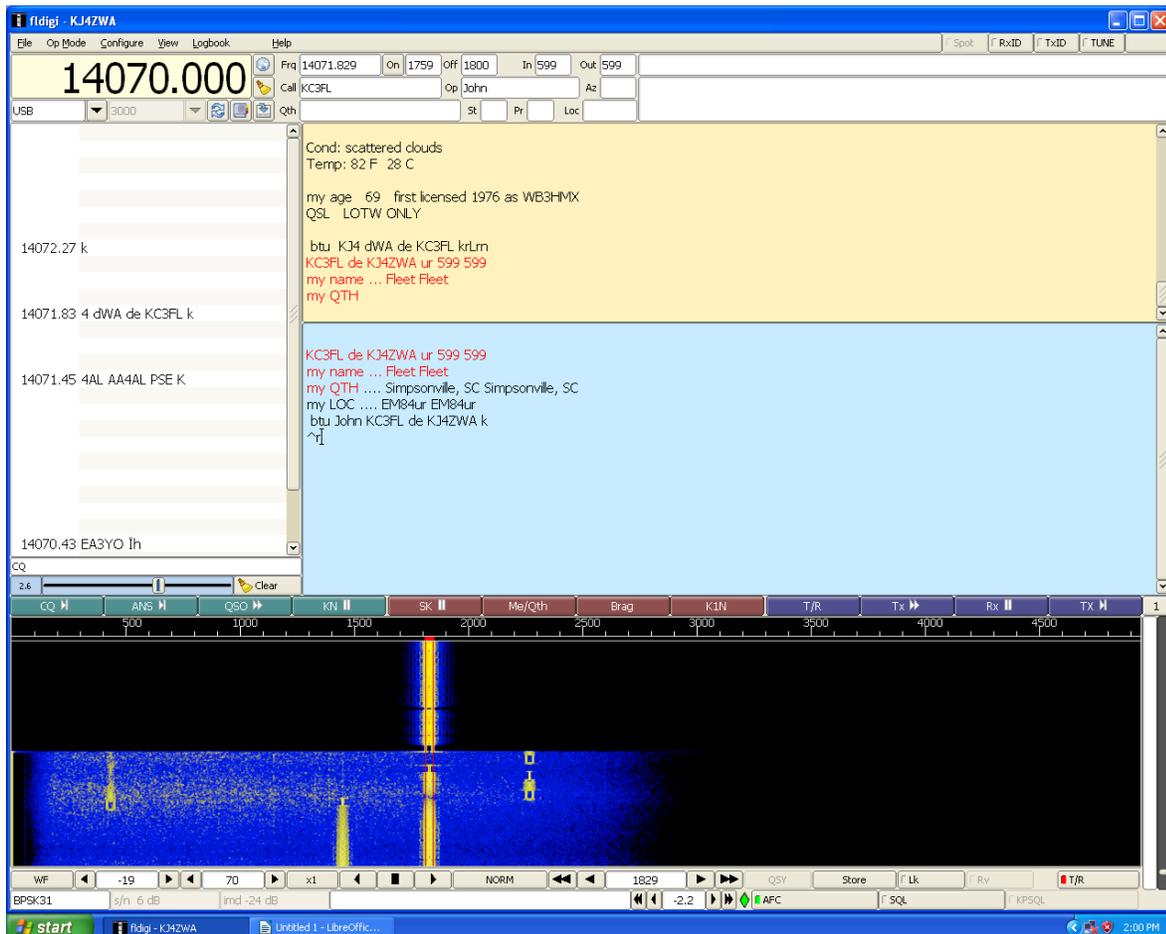
Why Digital modes?

Digital modes utilize your computer's soundcard to "hear" extremely weak signals and provide communication with poor conditions and low power. Digital modes enable people to get on HF from antenna restricted areas, where large antennas and high power are not an option.

What Can Fldigi Do?

- CW

- 15 digital modes, and 130 submodes.

- Photo and file transfers

- ADIF logging software built in

- Fldigi can receive WEFAX, NAVTEX, and SITORB

Some of the modes even have the option to make custom submodes. The possibilities are endless!!!

Picture and document transfers are useful in emergency communications.

What Can Fldigi **NOT** do?

- JT65 and JT9

If you want to do those modes, you may want to look into JT65HF.

The Fldigi website is: http://www.w1hkj.com/

You can download the program and help files from: https://sourceforge.net/projects/fldigi/files/

What do I need to run digital?

There are three main components to a digital station:

- Transceiver

- Interface

- Computer

WHY AN INTERFACE?

An interface is required between the radio and computer, to make it possible to use them together, and provide audio isolation. If you just plugged cables between your rig and computer, you could damage your radio or computer, or have a bad hum because of a ground loop.

Some interfaces have just the capability to switch your radio from receive to transmit; others are very complex, with built in sound cards and ports for multiple radios. What one you get depends on your personal preference, and your budget.

If you are an avid DIYer, you can find schematics and information on how to build an interface online, and in the *ARRL Handbook*.

Here is a partial list of interface manufacturers:

- **microHAM**-$160 and up http://www.microham-usa.com/
- **MFJ**-$60 and up http://www.mfjenterprises.com/Categories.php?sub=0&ref=47
- **Tigertronics**-$120 http://shop.tigertronics.com/SignaLink-USB_c2.htm
- **West Mountain Radio**-$55 and up http://www.westmountainradio.com/rigblaster.php
- **RigExpert**-$100 and up http://www.rigexpert.net/main_a.html

An audio link is another option: just hold your computer microphone to the radio's speaker, and hold the radio's microphone by the computer's speaker. This isn't optimal, and will NOT work in a noisy room, but will be a quick fix in an emergency.

 Besides being used on HF, Fldigi and the digital modes can be used on VHF/UHF FM as well. With most mobile radios, you will have to use an audio link for an interface, although some manufacturers have optional cables for interfacing your radio to your computer.

Connections

Connect audio out, audio in, and PTT on the radio side of the interface. On the computer side, plug into the line out and line in jacks. Also plug in either the RS-232 port, or the USB connector. You want the audio coming from the radio to go into the computer, and the audio from the computer to go to the radio.

When you first start the program after installing it, it will ask for some basic information, such as your callsign, grid, state, country, etc. Go ahead and fill in this information now, it will make it much easier to work with the macros if you already have the information plugged in.

To set the program to recognize the PTT part of the interface, click on the **CONFIGURE** menu, and select **RIG CONTROL**. This will open a dialogue box, Check the boxes labeled **RTS** and **DTR**. Select a **COM** port from the drop down box (should be something like COM 1), then click **INITIALIZE**. If the radio doesn't click into transmit, and quickly back to receive, then you have the wrong COM port. When the radio does do the TX/RX switch, click **SAVE**, and then click **CLOSE**.

If you make your own interface, you can skip making a PTT interface, and just put your transceiver on VOX.

Make sure that the radio is in the USB mode. Digital is done on USB, regardless of what band you are transmitting on. Turn all filters and processors off. Turn the power down to 50 watts or less. If you use too much power, you will block out all of the signals on the band for everyone else. I typically run close to 35 or 40 watts. Less power is better, especially if you are using an antenna that has high gain.

THE CONTACT

We will use BPSK31 for our example mode in Fldigi. BPSK31 is commonly referred to as PSK31, and is the most common freehand mode used on HF.

Where is PSK found?

160 METERS	1.838-1.840 MHz	17 METERS	18.100 MHz
80 METERS	3.580 MHz	15 METERS	21.070 MHz
40 METERS	7.035, 7.070 MHz	12 METERS	24.920 MHz
30 METERS	10.140 MHz	10 METERS	28.120 MHz
20 METERS	14.070 MHz	6 METERS	50.29 MHZ

Even if you don't have a General or Extra class license, you can still do HF digital on 28.120 MHZ.

Macros:

To execute any macro, left click on it. If you want to edit the macro, right click on it.

- **CQ**   This macro has the command to switch the radio into transmit, and transmit something like:
  CQ CQ CQ de <MYCALL> <MYCALL> <MYCALL>
  CQ CQ CQ de <MYCALL> <MYCALL> <MYCALL> pse K
  it will then put the radio into receive, and listen for a response.
- **QSO** This macro will put the radio into transmit and send
  <Their call> de <MYCALL>
- **INFO** This macro will normally send a signal report, your name, and your city/state/and grid.
- **KN** This macro is for ending a transmission. After you have sent all of your macros/freehand text that you want to, this macro will send:
  <Their call> de <MYCALL> kn
  It will then put the radio back into receive.

- **BRAG** This macro will usually contain information about your radio, antenna, computer, when you got your license etc. That is why it is labeled **BRAG**. A good brag macro can get some interesting conversations started.
- **ANS** This macro is for when you are answering someone else's CQ. It will put your radio into transmit, and send:
  <Their call> de <MYCALL> <MYCALL> <MYCALL> kn
  It will then put the radio back into receive.
- **73** The macro for ending a conversation will typically include QSL information, as well as a polite 73. After it sends the QSL information and the callsigns, it will transmit SK, and put the radio back into receive. End of contact!

While macros do not replace a ragchew, they do provide a framework for exchanging repetitive information. They eliminate a lot of extra typing!

Ready to give it a try?

- Look for someone calling CQ. The signal browser (see tips and tricks) is very helpful for this. When you find someone calling CQ, click on their callsign, then click on the **ANS** macro.
- If they answer you, then click on the **QSO** macro, then the **INFO** macro, and then the **KN** macro.
- After the other station sends you their info, you can click the macros **QSO**, **BRAG**, **KN**. Or, you can type freehand text. Or do both.
- After you have done your basic macro contact or ragchew, you can click the **73** macro to finish the contact.
- Either during the contact, or at the end you can fill in the log fields at the top of the screen. Make sure that the frequency counter is set for the frequency on your VFO, and then click the save contact button, and the clear log fields button.
- To export your log, click **LOGBOOK**, then **ADIF**, **EXPORT**. This will bring up a pop up window. Select the QSOs that you want to export. Click on what fields you want to export for those contacts, or click **CHECK ALL FIELDS**. Then click **OK**. This will bring up another window. Type in a filename, select a location to save it, and then click **SAVE**.

I will say it again: MACROS DO NOT TAKE THE PLACE OF A RAGCHEW!!!

Other Modes:

- **RTTY:** RTTY is a mode that is very popular in contesting, and is one of the oldest digital modes. RTTY 45 is the most common one that I have found, but there are other flavors of RTTY as well.

160 METERS	1.8-1.81 MHZ	17 METERS	18.1-18.11 MHZ
80 METERS	3.57-3.6 MHZ	15 METERS	21.07-21.11 MHZ
40 METERS	7.07-7.125 MHZ	12 METERS	24.92-24.93 MHZ
30 METERS	10.13-10.14 MHZ	10 METERS	28.07-28.12 MHZ
20 METERS	14.07-14.099 MHZ	6 METERS	50.7 MHZ

- **Olivia & Contestia:** These modes are generally a bit slower than PSK, but they will get through even when band conditions are poor. I have had contacts up and down the east coast using 100 milliwatts and an attic dipole, and still a perfect copy. The most common flavors of these modes are: 8/250, 16/500, and 32/1000. The first number is the number of tones, the second number is the bandwidth in hertz.
- **Hellschreiber:** Hellschreiber is a fuzzy mode. It sends the actual pixels that form the characters on your screen. The computer will display only what it gets. In this mode, your eyes are the decoder.
- **CW:** Fldigi can decode and transmit CW.

Tips and Tricks

In using Fldigi, as in any program, there are various things that I wish that I had known when starting to use it. There are many, but here are my top five:

- **What is that signal?** A helpful resource for finding out what you are seeing on the waterfall is: http://www.w1hkj.com/FldigiHelp-3.21/Modes/ There are other resources online as well, for finding out what those weird sounds are.
- **What is RSID?** RSID stands for Reed Solomon ID. It is a signal that is transmitted at the beginning of each transmission, if you click on the option to. It enables other people on the frequency to be able to know what mode you are using, and where you are transmitting. If you enable the receiver option, you will have a box pop up when you receive a signal that has the RSID as part of it's transmission, and the box will ask you if you want to go to that frequency and mode. RSID is very useful when you are using a mode different than PSK, especially when calling CQ.
- **Signal browser:** The signal browser makes it very easy to find a CQ, or a certain callsign or prefix. It displays every conversation in the bandwidth of audio that comes from your radio. You can access it by going to the top of the screen, clicking on VIEW, and then clicking on VIEW/HIDE CHANNELS

- **PSKreporter:** PSKreporter.info/pskmap.html is a good resource. It enables you to not only see where there are openings on the HF bands worldwide, it also shows where your signal has been heard. It is a good tool for evaluating how good your station is performing.
- **Contest sequential numbers:** This will fill in the automatically generated sequential numbers when you are contesting. Go to CONFIGURE, click on the tab labeled CONTEST, go to SERIAL NUMBER, click RESET, and click OK. This will enable the counter, and restart it from 001.

Online resources:

- PSKreporter.info/pskmap.html
- ARRL.org
- http://www.w1hkj.com/download.html
- http://www.w1hkj.com/FldigiHelp-3.21/Modes/
- http://www.qrz.com/gridfinder

Books:

- *Get on the Air with HF Digital*, by Steve Ford WB8IMY

- *ARRL Operating Manual*

- *ARRL Handbook*

Fleet Belknap, KJ4ZWA belongs to a family of hams; his parents and all four siblings are also licensed. He has been enjoying ham radio since he earned his ticket at the age of 13. After upgrading to general a year later, he started using Fldigi on HF, mostly PSK31. Since then he has had contacts with 46 states and 103 countries. His primary interests in ham radio are HF Digital, DXing, QRP, building antennas, and foxhunting.