

# Some Digital Ham Radio Resources

## 1. Basic Information

### ARRL Books:

*ARRL's HF Digital Handbook*, by Steve Ford, WB8IMY, 2008

*ARRL's VHF Digital Handbook*, by Steve Ford, WB8IMY, 2008

Note: Both are a bit dated now and don't cover some recent developments, but they're still a good resource and overview of the technology.

## 2. Software

**FLDIGI** — offers a wide range of digital modes and lots of flexibility

**FLMSG** — use along with FLDIGI if you want to be able to transmit and receive forms such as ARRL radiograms and Incident Command System (ICS) forms for EmComm work

Note: These programs are no longer available from the website of the developer, David Freese, Jr., [www.w1hkj.com/](http://www.w1hkj.com/)

Instead, download Windows version 4.0.1 from SourceForge:

<https://sourceforge.net/projects/fldigi/files/>

Be sure to download both programs if you want to send and receive formatted forms.

Linux versions are available but may not be the most recent update.

**HRD** — Ham Radio Deluxe

**Others** — Plenty to choose from, including some specializing in the transmission of images. Many include RTTY and CW along with more contemporary digital modes. Names include DigiPan, HamPAL, MixW, MultiPSK and many more.

## 3. Hardware

### Computer

Practically any desktop or laptop running Windows up through version 10 will work

Or a Linux machine, including a Raspberry Pi or a “doctored” Google Chromebook

**Transceiver** — HF or VHF; 5 watts is adequate, 20 watts is common on HF, more is not necessary

**Isolation Device** — to couple the sound card in your computer to the audio input and output of your radio. Provides electrical isolation and often includes some degree of control.

**Highly Popular: Signalink USB** produced and sold by TigerTronics. Connects to USB port of computer rather than mic and speaker jacks. Feeds into the data connector on the radio. Easier to set up than using the soundcard built into computer. Available through HRO and other dealers.

Produced and sold by TigerTronics. <http://www.tigertronics.com/slusbmain.htm>

## 4. Getting Set Up

Once equipment is connected and software is loaded, the software must be configured to work properly with your system. An excellent guide for FLDIGI with lots of screenshots is:

“Getting Started with FLDIGI,” by Jeffrey Kopcak, K8JTK available at:

<https://www.jeffreykopcak.com/2015/04/16/getting-started-with-fldigi-including-flmsg-and-flwrap/>

“Beginner’s Guide to FLDIGI,” by the developer of the program, W1HKJ, has a less wonderful set of instructions for beginners but includes thorough documentation of every program feature:

<http://www.w1hkj.com/beginners.html>

“Advanced NBEMS,” by Harry Bloomberg, W3YJ, focuses on the sending and receiving of messages using FLDIGI as a tool in NBEMS, the Narrow Band Emergency Messaging Software system.

There are also some helpful videos that can be found by searching **YouTube**.

## 5. Digital Modes

Dozens of digital modes have been developed incorporating a variety of features to meet differing objectives. There is always a trade-off between accuracy, speed, and bandwidth.

### Some favorites:

**PSK-31**— Narrow bandwidth (31 Hz), slow, very popular for keyboard-to-keyboard QSOs

**PSK-125** — Faster, but uses greater bandwidth

**Olivia (various speeds)** — Very effective in weak-signal, high-noise conditions

**MT63-2000L** — Fast and accurate but gobbles bandwidth (2 kHz). Suitable for VHF use but eats up too much space on the HF bands,

**Opinions About the Best Mode:** Everybody has one!

### How to Recognize the Mode Being Used:

**By RxID** — This feature in FLDIGI when turned on may identify the mode being received and set your operating mode to be the same, especially if you can catch the beginning of the transmission.

**By How It Sounds and Looks** — This sometimes works. For example, PSK-31 is pretty recognizable by sound and appearance on the waterfall. W1HKJ has assembled a fascinating collection of images and sounds for many different digital modes. It's fun to see and listen to:

<http://www.w1hkj.com/FldigiHelp-3.21/Modes/>

For fun, select Olivia in the left column and click on 32/1000.

## 6. Operating Frequencies

**HF Bands:** Hams operating on the traditional modes (CW and voice) do not enjoy having a “noisy” digital signal dropped on or near their QSO. For that reason, by general agreement digital operators tend to congregate in a small area in the CW/Data portion of each band. It also makes it easier for them to find each other. Here are some popular HF digital frequencies:

<u>Band</u>	<u>Frequencies (Mhz)</u>
10 m	28.070 – 28.130
12 m	24.920 – 24.930
15 m	21.060 – 21.099
17 m	18.100 – 18.110
20 m	14.060 – 14.099 (The most active digital band.)
30 m	10.120 – 10.150
40 m	7.060 – 7.099 (Some hams in other countries have phone privileges in this band.)
80 m	3.580 – 3.640

**VHF/UHF:** Digital communications can be conducted at greater speeds and accuracy on the VHF and UHF bands because of the greater bandwidth available. However, it is recommended to operate simplex and avoid the use of repeaters except for repeaters that are little used or in situations where advance arrangements have been made with the repeater owner.