

# FLDigi Resources

---

Western Kern County ARES and radio operators of the Salvation Army (SATERN) held a joint training session introducing the digital radio software FLDigi in February 2020. The resulting 2-meter FLDigi net is now being conducted on the first Monday of the month immediately following the WKCARES voice net. Questions regarding the frequency and other details can be answered by emailing WKCARES@gmail, or immediately at the conclusion of the WKCARES voice net.

The minimum to get started requires only a radio and computer to decode the transmissions. A simple Android phone or tablet can replace the computer. While no cable is required between devices, it is highly recommended to make or purchase one to increase efficiency. A good place to start is reading the software creators Beginners' Guide to Fldigi at <http://www.w1hkj.com/beginners.html>. There are many resources online to help newcomers.

FLDigi is a free program and you will also need to download FLmsg and FLamp to fully participate in passing messages during the net. For HF use, FLRig allows for full radio control using the software. Reading below to the second article details how valuable using Android devices can become in a mobile environment. Windows users will need to install the ".exe" versions of the software. Operators using other operating system platforms likely know their software versions. The software is available here: <http://www.w1hkj.com/>

## **Getting Started with FLDigi, Chris Meagher, VK2ACD**

(<http://sarc.org.au/wp-content/uploads/2014/07/sarc-web-digi-001.pdf>)

FLDigi is a free program. With a suitable computer to transceiver interface, you can operate a wide variety of digital modes. The things you need to do are:

1. Download and install the program. To begin with, you only need the basic FLDigi program. The extras, such as the very useful FLmsg, can be investigated later on.
2. Buy / build / borrow a suitable interface. I use a Tigertronics Signalink unit. It can be ordered with a cable made specifically for your model of transceiver. Very simple to set up, and since it has its own sound card, you can leave your computer's built-in sound card alone to do its usual job. Some

newer transceivers have the sound card interface built in. Otherwise, just Google 'digital interface ham radio' and you'll get a lot of ideas.

To begin: with Fldigi running, go to the top menu bar: Configure -Sound Card and check that you have selected the correct card. With an external sound card, it should show as "USB Codec". With interface connected, tune and adjust your rig to clearly hear background noise.

If your interface has level controls, set them about mid-way. On the computer, having selected the correct sound card, initially use maximum settings for both input and output. The method for this will depend on your operating system. With Windows, use the sound part of Control Panel. I found that the PTT function would not operate unless I put the sound output at maximum. Important controls that you should check status of, on the main window:

Top-right -RSID buttons for TX and RX. On is green. RSID stands for 'Reed-Solomon Identifier'. It transmits a code which precedes the body of your transmission, which tells the receiving station what mode you are using and the frequency offset relative to you. You don't have to use the ID, but it has the big advantage in that FLDigi will automatically jump to the received mode if it decodes the ID. And of course, it works for the person at the other end if you transmit your ID. However, sometimes the program will pick up spurious ID's, and once established on a mode it may be a good idea to turn off the RX ID.

Bottom right -Squelch -the button is yellow for on. To start with, drop the squelch slider (far bottom right) to zero, until the waterfall has been set up. Don't forget if using SSB to make sure you are on USB -this is the digi convention that most use on all bands. (technically it doesn't matter as long as both stations are on the same sideband.)

The Waterfall -Refer to the second lowest control bar. Set the first button to WF, showing the waterfall. Moving to the right, you can adjust the upper signal level and the signal range. Adjust these until the general background shows as a darkish blue, and good signals show as a bright yellow. Very strong signals or overload should make it red. I mostly use settings around minus 8 and 60. Having set this up, you can raise the squelch slider to stop random text being generated by the background noise, but conversely, this may also squash a very weak signal at or below the noise that might still have been decoded. The best setting will depend on who you want to contact and what mode you are using.

Choose x1 for waterfall magnification, until you need more accuracy, e.g. to tune in a PSK signal, where x4 is helpful. NORM is usually the best waterfall speed to set.

The cursor frequency sets your basic tone offset. I find that 1500 is good as it fits in the middle of the passband of an SSB transceiver.

The LK button will lock your TX frequency offset, but allows you to shift your RX. Very handy if other stations are tending to drag you off frequency.

At the bottom is the AFC button, which will track and lock onto the other stations offset. Next to the AFC is the TX level attenuator. You can use this to fine tune your TX output. I leave it on -3dB. If using VHF/UHF FM, turn the rig squelch up just enough to cut out the noise, and the waterfall should now go black. You may wish to open the rig squelch in order to copy very weak stations that are at or below the noise.

An important note for TX - turn off any compression or audio filtering, as this may upset the relative levels of digital tones on your transmission.

Useful hint for RX -use width and shift controls on your rig, to narrow the bandwidth to accommodate the digi signal with some room to spare -this can greatly improve the RX signal to noise ration. The use of CW narrow filters is similarly effective, especially for modes like PSK31.

About some of the modes At first, there seems to be an overwhelming choice of modes to use. Depending on your needs, you will probably only need a few favorite modes.

The FLDigi manual gives a very good run down on how to set up each mode. Olivia is a good mode for HF which has a lot of error-correction (signal path errors -not your keyboard errors!).Olivia 8-500 is a good starting point (8 = the number of "modulation channels", 500 is the offset bandwidth.in Hertz. This is a great mode for difficult propagation conditions, eg static. However, it is slow, which is good for slow typists, however you must be patient, as there is a noticeable delay in encoding and decoding.

Thor 16 is an excellent mode for faster messages and is also robust through noise.

PSK (phase shift keying) is the mode of choice for serious digi DX. Contacts can be made with low power where phone just can't do it. It is narrow band and so requires accurate tuning and no TX/RX drift.

Go to the fl-digi VIEW menu and enable the signal browser. An extra window appears in which the program can decode multiple PSK signals within your RX passband.

Via the menu, you can hide the modes that you don't use from the drop-down list.

For all the answers, download the complete FLDigi manual.

### **All the Best, 73, John (VK2ETA)**

(<https://sourceforge.net/projects/fldigi/files/AndFlmsg/>)

**AndFlmsg** is a combination of Fldigi and Flmsg for portable devices running Android.

The main objective of this development is to provide a low power highly-portable, as in mobile or backpack, Flmsg/Fldigi solution.

Rigs like the Yaesu's FT-817, Icom's 703 and Elecraft's KX3 would be the typical companions of the Android phone or tablet running AndFlmsg, thereby providing a low weight, low energy requirement, access to most Flmsg services.

The integration of Internet sharing/forwarding makes this solution attractive as a relay option, possibly a mobile or portable station in a pertinent geographical location.

The inclusion of modes like MT-63 and long interleave MFSK modes allows audio coupling to be used effectively without the need for an audio interface.

The addition of images and GPS data inclusion opens the usage to practical field reporting too.

In a more developed configuration, for example with a 10" tablet connected to a Bluetooth or USB keyboard plus mouse, and maybe also with an audio interface, the operation we get, including data input, nears the performance and practicality of a laptop configuration but without the power consumption and cost of the later.

Also, the data entry forms can be re-modeled independently of the display forms in order to match the screen real-estate of the target devices.

What does it do?

Basically most of what the fully featured version on the PC does.

- Receive Flmsg formatted messages (any Form).

- Forward any form message as-is over the radio in Flmsg format OR over the internet via email, instant messaging (Facebook, Tweeter, ...) or cloud services (Dropbox, Google drive...), print services (E.g. Google Cloud Print).
- Copy and edit received messages for replying or further forwarding (all custom forms plus the following hard coded forms: Blank form, Radiogram, IARU message, Plaintext, CSV, all ICS and HICS forms at present, plus the Picture Form).
- Create new messages using any custom forms or the current set of hard coded forms.
- Send created messages over the radio or internet.
- Define and save templates for facilitating the creation of new messages.
- Consult the activity log and the messages as-sent.
- The implemented modems are the FLMSG modems (including extra modes), that is all PSK/PSKR modes, including multi-carrier modes, some of the 8PSK modes, THOR, MFSK, OLIVIA, MT-63 and Domino-Ex modes. The performance is good as the modems now coded in native C++ code for performance and is heavily based on the Fldigi modems code.