

Supporting Amateur Radio in Essex

FT8 – The Basics Explained

In 2017, **FT8** started to become the most popular of the various data modes. At the time of writing (2018), it appears to be the most popular for a number of reasons:

- It's fairly simple to set up
- It's significantly faster than the similar JT-65
- It works very well even with a lot of noise
- It's popular, so there's lots of activity
- It's semi-automated, making for easy contacts
- It's a great way of racking up the countries you've worked, without too much hassle

As with modes such as JT65 and PSK31, you interface your HF rig to a computer, and send out text encoded by your computer over the amateur bands. With FT8, you're restricted to very small messages with a limit of 13 characters per message.

Here is a typical conversation over FT8:

"CQ M6PSK J001"	CQ call from M6PSK
"M6PSK G0QQQ I081"	G0QQQ replies with their location
"G0QQQ M6PSK -12"	M6PSK responds with a signal report
"M6PSK G0QQQ R-08"	G0QQQ confirms signal report & replies with his own report
"G0QQQ M6PSK RRR"	M6PSK says Reception Report Received
"M6PSK G0QQQ 73"	G0QQQ says Best regards
"G0QQQ M6PSK 73"	M6PSK says Best regards

Each message of up to 13 characters takes 13 seconds to send. There are 4 slots per minute, and you transmit for one 15 second block, then listen for replies for 15 seconds, and transmit again for 15 seconds. The exchange above would therefore take about 90 seconds (compared with seven minutes JT65).

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FT8 on 14.074MHz (WSJT-X)

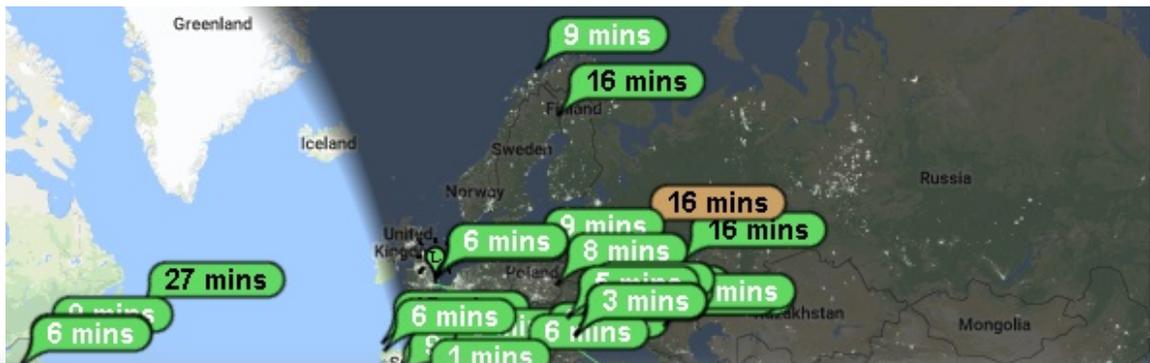
You'll see from the above "waterfall" screenshot that there are over a dozen QSOs visible – these are taking place on a single frequency of 14.074MHz

New "chunks" of messages arrive every 15 seconds, and are decoded by the WSJT-X software, which displays the messages like this:

Band Activity					
UTC	dB	DT	Freq	Message	
171345	-18	0.1	1705	~	IZ4TOA WA2HIP RRR
----- 20m					
171415	9	-1.0	899	~	CQ IT9RZR JM76
171415	-20	0.1	1001	~	W8TRN N8HMG +01
171415	-9	-1.2	1510	~	VE9FI SV1NZJ KM17
171415	-17	0.1	2583	~	CQ K3LU FM19
171415	-11	0.3	2692	~	XP3A WF7B FM16
171415	-18	0.4	2752	~	CQ W9KXQ EM58
171415	-9	0.0	871	~	KOKP SV5BYP RR73

FT8 decoded messages in WSJT-X

FT8 handles very weak signals very well, meaning that a Foundation licence holder with just 10 watts should be able to make some impressive contacts with a modest antenna – something not possible with voice or some other data modes. You can also use the excellent online [PSK Reporter website](#) to see where your FT8 CQ calls are reaching, as seen in this screenshot:



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Setting up for FT8

This isn't a full "how to" guide on setting up FT8, as there are plenty of those online already. This is just a summary of the basics, plus a few tips I've picked up along the way.

First off, you need to connect your PC to your HF rig. As with other data modes, you'll need some kind of interface box to sit between the rig and your computer. The interface will need to connect into the PC soundcard (for audio) and typically USB for controlling the radio. There are several types of interface available, depending on your rig.



Digimaster Pro CAT Interface box

Then, you'll need some software. Here's what I'm using:

- [WSJT-X](#) – This is written by the creator of JT65 and FT8, and does a solid job of handling both modes (Versions for Windows, Linux & Mac)
- [JT65 Alert](#) – A handy add-on application that helps with things like logging and alerts for wanted countries

As with all data modes software, setup requires some setting up, notably:

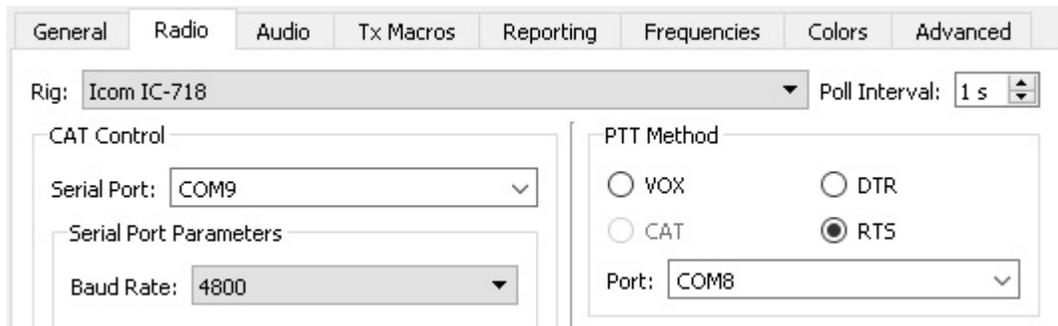
- Getting the audio connected. Typically means connecting leads to the soundcard, or using a soundcard built in to the interface – then setting up software to use the right speaker and mic settings for sending and receiving on the WSJT-X app

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- Connecting to the radio's CAT/DATA port for controlling the radio. Typically the interface will be as a COM port and WSJT-X will need to be set to the correct COM
- PTT – So that the PC can put the rig into Transmit, the software needs to know how to trigger Transmit. Often this will be a separate COM port that needs setting up in the software



WSJT-X Settings screen (radio / PTT)

Your computer's clock does have to be spot on with FT8. A computer's onboard clock can be notorious for drifting off, and FT8 needs to transmit at very specific times to work. That means that you need a clock to be accurate to the precise second. I use the [Dimension 4](#) for keeping my clock accurate. It runs in the background and keeps your clock in-sync by resetting the time to one of the online atom clock servers every 20 minutes. Very helpful.

That's the basics. If there's any interest, I'm happy to expand this article, but hopefully this tells you what FT8 is all about, and gives you enough to get started.

Related Pages:

- [The basics of PSK31](#)
- [JT-65 Data Mode -The Basics](#)
- [The basics of FT8](#)
- [How to get started in SSTV](#)
- [Troubleshooting Data Mode Problems](#)
- [SSTV \(Slow-scan TV\) – The Basics](#)
- [APRS in Essex](#)

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