

FlexRadio

September 2021

Michael Walker VA3MW
Customer Training and Marketing

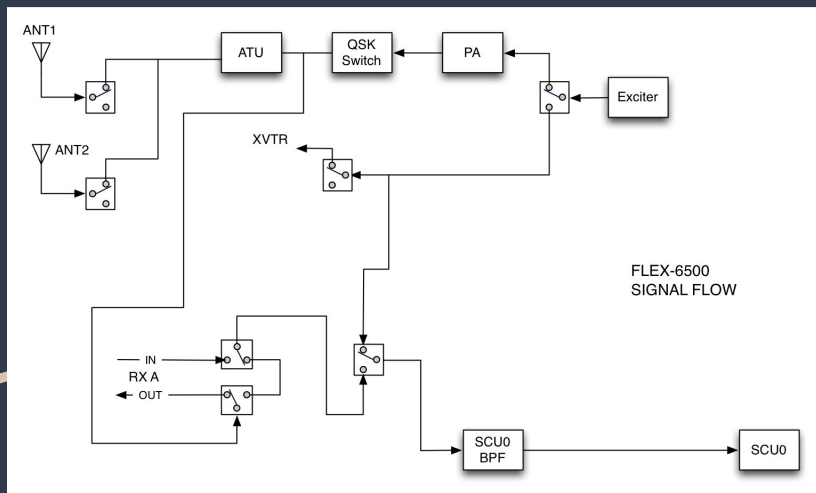


FlexRadio

Agenda

- Overview: what is an SDR?
- New Radio Terms
- FlexRadio Products
- Product Overview
- Product Support





- It is a radio.
- Replaces traditional stages (Oscillators, Mixers, RF filters and more) with digital software constructs
- It is a quieter radio
- It can support many modulation schemes (Waveforms)
- The SDR term describes more of the manufacturing technique

Your Cell Phone is an SDR radio

FlexRadio Talking Points



- The radio is future proof due to its ability to easily accept software updates - mostly free
- Direct sampling radio is significantly quieter as RF mixers are noisier
- Multiple RF receivers (not sub-receivers). We call them Slices and each Slice can access the entire HF spectrum independent of other slices
- You have a shared full function Transmitter
 - This is different than an HF radio with a Sub
- RS232/CAT/Serial ports are not limited to just 1 port
 - you can have an unlimited number
- DAX - Digital Audio eXchange is included
 - Easy Digital mode setup

FlexRadio Strengths



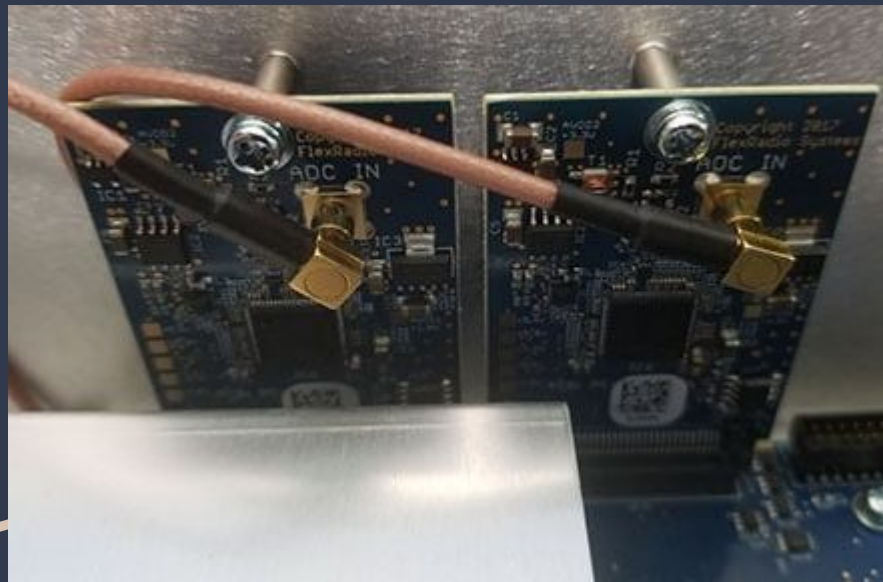
- Engineered, manufactured and shipped from Austin Texas (not overseas)
- FRS has a staff approaching 50 people
- Designed by Hams for Hams
- Software Alpha Test team of ~50 members
- Post Sales Technical Support is US based by paid staff (not crowd sourced)
- Hardware support in Austin TX
- Germany based repair center for EU
- Hardware Repair turnaround time ~5-6 days
- Direct factory contact available (something you can't do with Icom, Kenwood and Yaesu)
- Features and functions are designed into the radio by active North American Hams
- We answer the phone
- 2 year warranty
- 30 day return for refund (in US)

FlexRadio SDR

Misconceptions?

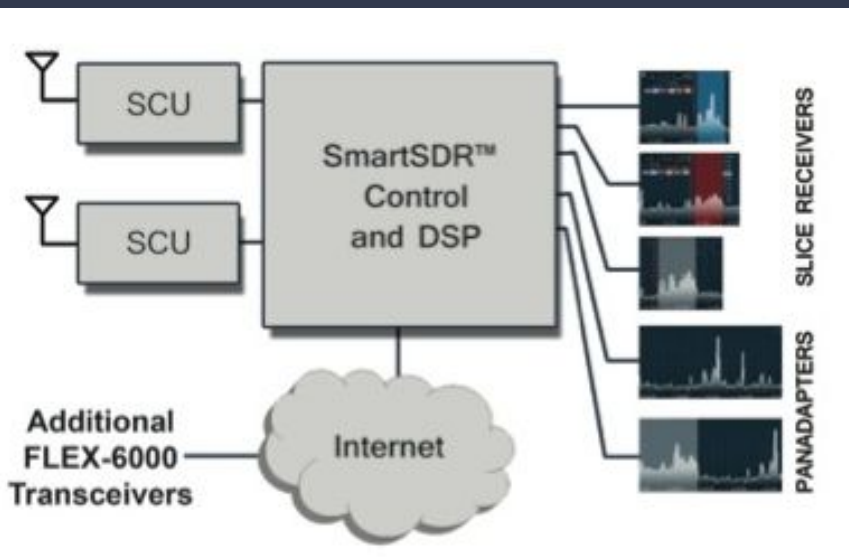
- Our equipment is made off shore
- You do not have to be a computer Guru to own or operator one
- You do not need a computer for Voice or CW modes, just a Maestro or an 'M' model
- You do not need a powerful computer - your iPhone is powerful enough
- It isn't complicated - no different than changing from one manufacturer to another
- Software licenses don't expire
- There is no annual license
- There is no RF overload
- You can do CW and Digital Remotely

Spectral Capture Unit (SCU)



- Your radio has either 1 Spectral Capture Unit or 2 Spectral Capture Units
- Your SCU is the actual receiver
 - 1 SCU = 6300, 6400, 6500
 - 2 SCU's = 6600, 6600M, 6700
- An SCU is the part you connect to the antenna.
- With 1 SCU, you can only use 1 antenna port at a time (RX = all bands)
- With 2 SCU's, you can use 2 antenna ports at the same time (RX = all bands on both)

Radio Terms



FPGA - Field Programmable Gate Array. The brains.

Client - The user interface. The part you and I use to control the radio

CAT - CAT radio control. Used by Logging programs, WSJT and more

DAX - Digital Audio Exchange - Used to send Audio to and from the Radio

FPGA Field Programmable Gate Array



- The FPGA is the heart of your radio
- It receives the data from the SCU in a digital format and then does all the math that gives the audio we hear
- It is easily programmable allowing us (FRS) to provide new features and functionality

Your brain is an FPGA!

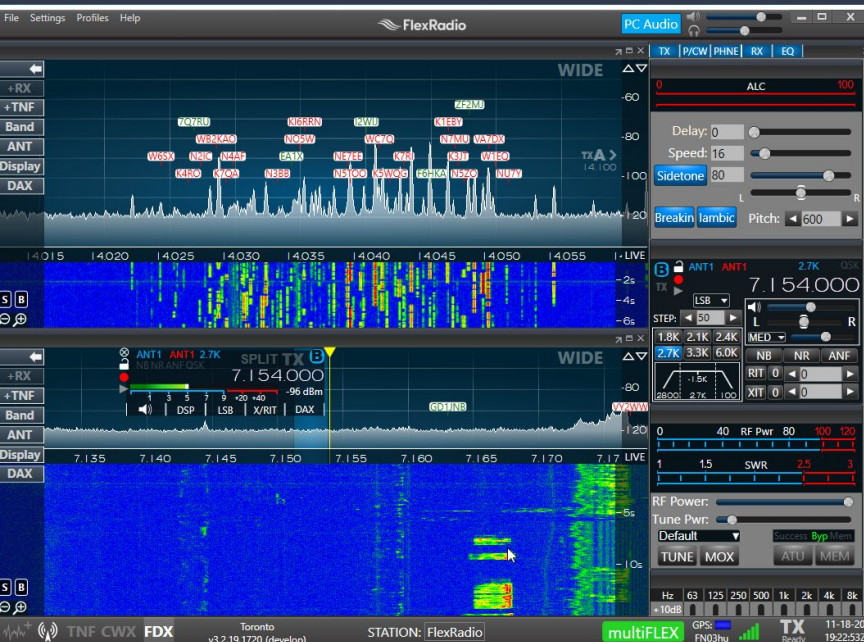
Receiver Slice

FlexRadio 6000 series have 2, 4 or 8 Slices depending on the model

A Slice has the ability to receive anywhere from 30 khz to 54 Mhz (6700 adds 2M coverage).

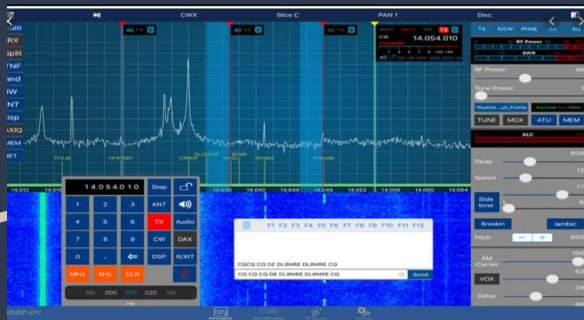
Additional slices have access to the same spectrum at the same time.

You are not limited to additional receivers being on the same band



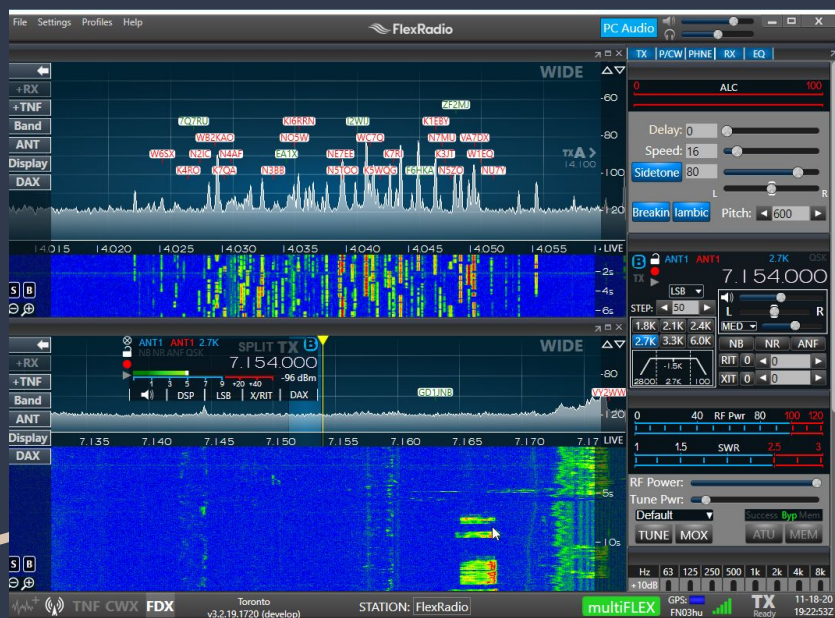
Radio Clients

A client is the user interface, also known as the GUI (Graphical User Interface).



- [SmartSDR for Windows](#)
- Maestro - stand alone control head
- 6400M or 6600M front panel - stand alone
- [SmartSDR for iOS](#) - paid
- [SmartSDR for MAC](#) - paid
- [DogParkSDR for MAC](#) - paid

SmartSDR Windows Client



- SmartSDR is the client that was originally shipped with the first radios
- It runs on Windows
 - (Windows 10 Pro preferred but not required)
- It works with all 6000 series radios
- Most computers purchased in the last 3 years are more than powerful enough
- The addition of Digital decoding programs (FT8, PSK31, SSTV, RTTY, etc) may require a more powerful computer

FlexRadio 6000 Series

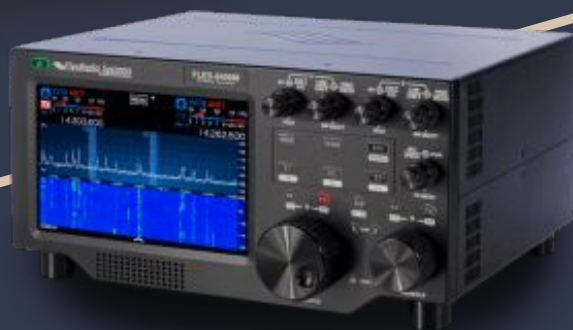


All 6400, 6600 and 6700 models:

- Contest grade receivers
- SmartLink included (remoteable)
- Version 3 software included (free)
- All client types can connect
- MultiFlex included
- Controlled Envelope SSB included
- Band Pass Filters included
- 6300 and 6500 available as PreOwned purchases

Flex 6400

Flex 6400M



FlexRadio 6400

- **Single SCU Radio**
- Can only use 1 Antenna at a time
- Entry level
- Very popular seller
- Contest grade receiver
- 2 Slices
- 30db band pass filters
- 1 Transverter Port
- <https://www.flexradio.com/products/flex-6400-signature-series-sdr-transceiver/>

FlexRadio 6400M

- Same as 6400
- Adds Front Panel display
- <https://www.flexradio.com/products/flex-6400m-signature-series-sdr-transceiver/>

Flex 6600

Flex 6600M



FlexRadio 6600

- **Dual SCU Radio**
- Can only use 2 Antennas at a time
- SO2R ready - OTRSP included
- Contest grade receiver
- 4 Slices
- 55db+ band pass filters
- 2 Transverter Ports
- <https://www.flexradio.com/products/flex-6600-signature-series-sdr-transceiver/>

FlexRadio 6600M

- Same as 6600
- Adds Front Panel display
- HDMI monitor connection 1920x1080
- <https://www.flexradio.com/products/flex-6600m-signature-series-sdr-transceiver/>

Flex 6700



FlexRadio 6700

- Dual SCU Radio
- Can use 2 Antennas at a time
- S02R ready - OTRSP included
- Contest grade receiver
- 8 Slices
- 30db band pass filters
- 1 Transverter Port

<https://www.flexradio.com/products/flex-6700-signature-series-sdr-transceiver/>



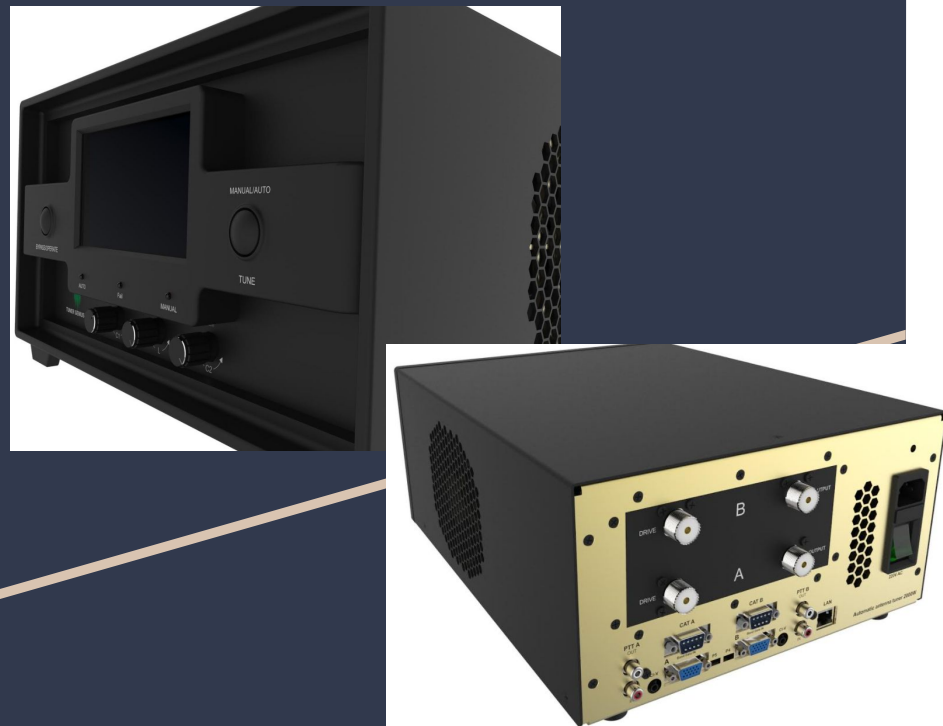
FlexRadio Maestro

“Control Head” for all Flex 6000 series radios



- SmartSDR Client
- No additional Software required
- Runs 2 slices
- 8" screen
- Take your station with you
- Can be used remotely with SmartLink (included)
- 2.4 and 5Ghz WiFi
- Lan connection
- Headphones - #10
- CW Paddle input - #7
- Mic connection x 2 - #13 and #14
- PTT connection - #11
- Powered Speakers connection - #8
- Line out - #9
- Line in - #13

FlexRadio Tuner Genius XL



- 1.8Mhz to 54Mhz coverage
- Legal Limit output - up to 2000 watts
- Integrates with any transceiver (RS232, CI-V, Pin to Band)
- SO2R or 1x3 output
- Low drive, Frequency Out of Range, Wrong band, and High power warning alarms
- Designed to complement FLEX-6000 series transceivers and the Power Genius XL™ amplifier
- Seamless SmartSDR™ software integration
- Complete control and monitoring (over LAN) from an intuitive Windows™ application
- Contest ready - the ONLY single-radio SO2R solution in amateur radio
- Fast tuning (2-12 sec) with memories (20ms)
- High accuracy SWR and power meter measures in bypass mode.... and much more.
- Works with all types of HF Radio - Flex and OEM
- 100% ICAS Duty Cycle

There is no other tuner on the market like this one!

FlexRadio Power Genius XL



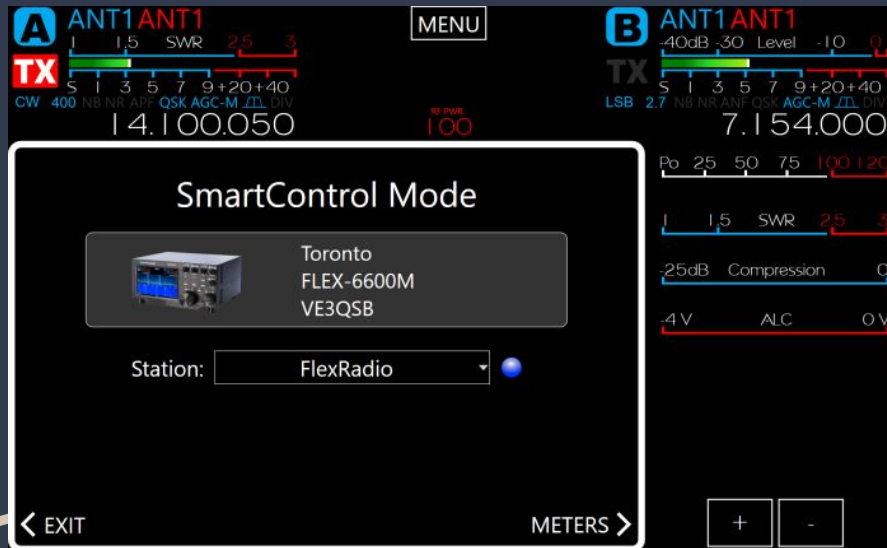
- 1.8Mhz to 54Mhz coverage
- Legal Limit output
- First ever MEffA™ system (Maximum Efficiency Algorithm) control efficiency as a function of output power (*no other amp does this*)
- Harmonic Load Isolation (*no other amp does this*)
- Only SO2R amp on the market
 - Reduced station costs
 - Band Pass Filters included
- UltraFast SWR Protection
- Simple FlexRadio setup
- Remote Control
- SO2R ready (*no other amp does this*)
- Support for OEM radios
- Support for 2 Exciters at the same time

<https://www.flexradio.com/products/powergenius-xl/>

FlexRadio SmartControl

- SmartControl is part of the Maestro, 6400M and the 6600M
- It provides a nice VFO knob (and other features) for SmartSDR on Windows
- Similar to Flex Control Knob

Video: <https://youtu.be/64GvtLSF9Ik>



FlexControl Knob



The FlexControl knob gives you VFO control of your Active Slice on your desk.

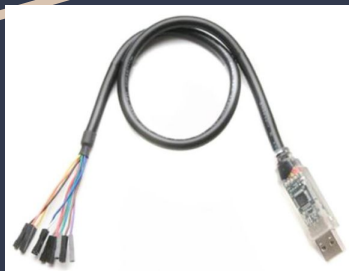
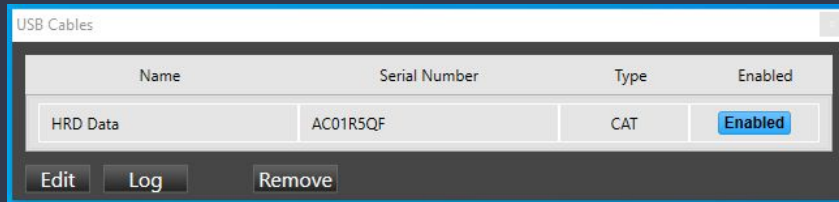
It has the feel of a well designed VFO knob

Customizable feature buttons

It works with SmartSDR and is plugged into your PC

<https://www.flexradio.com/products/flexcontrol-usb-controlled-tuning-knob/>

USB Device Cables for External Devices



USB Device cables connect to the back of your radio USB port (not the PC)

- Can drive band pass filters
- Amplifiers
- Steppir
- RS232, BIT and BCD formats (parallel and serial)
- Multiple devices can be connected at the same time
- Must be an FTDI Chipset

Guide:

<https://www.flexradio.com/documentation/usb-cable-interface-guide-pdf/>

What is SO2R?

Single Operator 2 Radio

What do I need to buy?

- 2 HF Radios
- 2 Amplifiers
- 2 Tuners
- 2 or more band pass filters
- Station controllers
- Antenna switches
- LOTS of customized cables

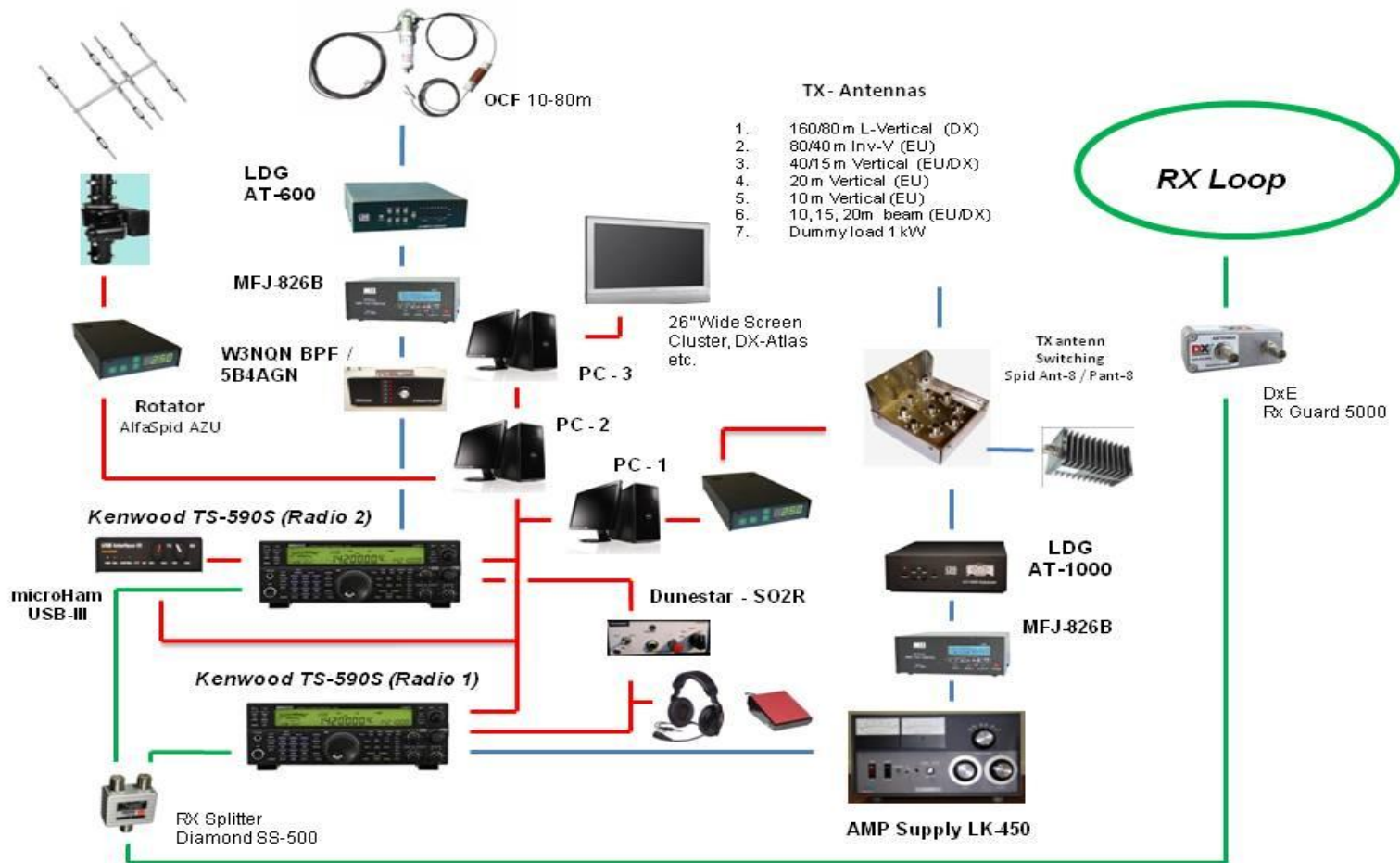
And more!

FlexRadio Infrastructure

Just how hard is it to connect all this stuff together??

Easy!!

- All Flex hardware communicates via your computer LAN / Network
- 403A Antenna devices work together with FlexRadio in harmony
- It actually isn't complicated
- Less cables mean less RFI issues
- You don't need to be a computer engineer
- You don't need a degree in computer engineering
- No special cables to be made or ordered



Complete SO2R HF Station



Flex 6600M 100 watt HF
with band pass filters

2 RF Cables



PGXL Amplifier
with band pass
filters



up to 8 antennas

2 RF Cables



TGXL Tuner 10:1
with band pass filters

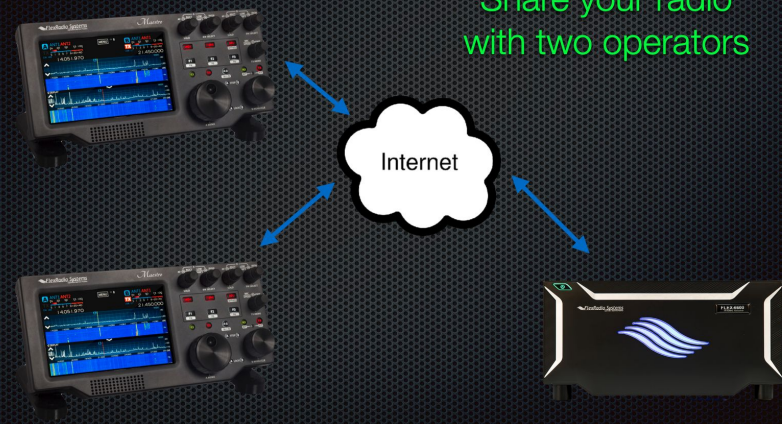
2 RF Cables

FlexRadio MultiFlex

SmartSDR v3.0

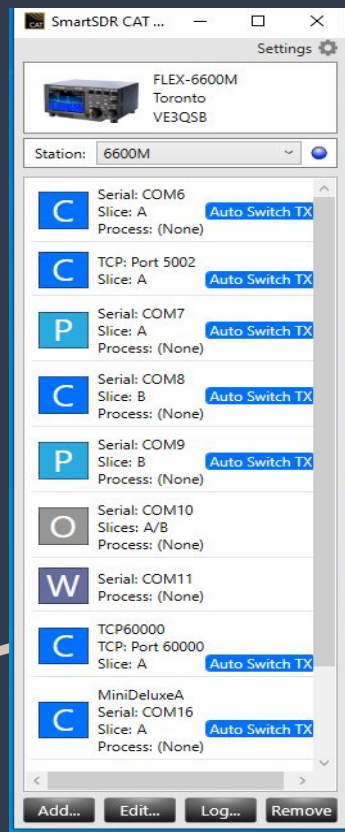
multiFLEX™

Share your radio
with two operators



- MultiFlex allows 2 clients to use the same radio at the same time.
- The clients can be in your home shack network
- Or, 1 can be remote using SmartLink
- Clients can be a mix of client types.
- Part of SmartSDR 3.x

SmartSDR CAT RS232 Interfacing



Unlike other HF radios today, your Flex radio has the ability to share itself with many things at the same time thanks to CAT. Others can only do 1 thing. SmartSDR CAT is included for free.

At the same time you can:

- Logbooks such as HRD, Log4OM, N3FJP and others
- Contest Loggers such as N1MM
- WSJTx
- FLDigi
- And more

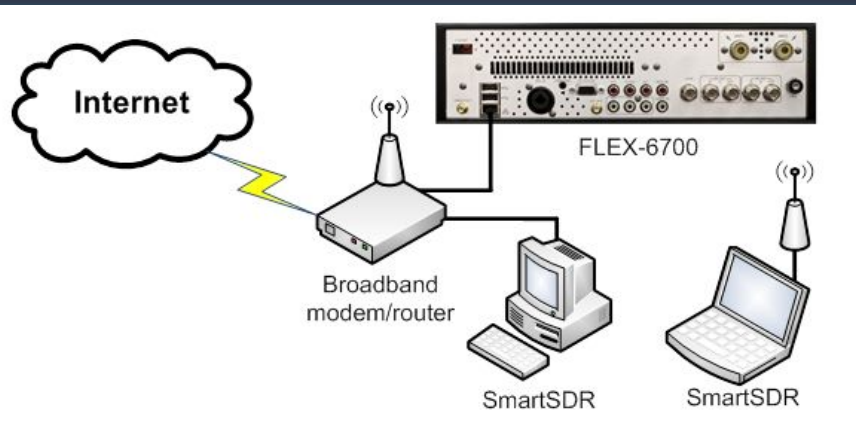
SmartSDR DAX

Audio for digital programs



- DAX - Digital Audio Exchange
- Included with SmartSDR
- DAX interfaces the audio between the radio and the computer for Digital programs
- Connects to the radio via your home LAN network
- Allows for seamless integration
- No RFI issues due that you would have with external sound cards

How all the hardware talks to each other



Your Shack network should be a Star design with all devices connected to your network switch or router.

- Radio connected to Switch
- Computer connected to Switch
- WiFi connected to switch
- Internet connected to switch

This allows for all devices to communicate with each other.

Pretty simple, eh?

<https://helpdesk.flexradio.com/hc/en-us/articles/202118558-How-to-Connect-your-FLEX-6000-to-a-LAN>

SDR RF Overload Not happening!



AGC-T is one of the most power tools on your FlexRadio.

- It is like an 'RF-Gain' but used differently
- To tune the AGC-T your start at Zero (left) on a clear spot on the band and slide it to the right until you noise just increases.
- You will now hear both weak and strong signals equally well.

<https://helpdesk.flexradio.com/hc/en-us/articles/360029494371-How-does-the-Automatic-Gain-Control-AGC-work-in-SmartSDR>

What to watch for in the Video

This can make or break your customers experience

Here are some key points to watch
for on the Video

- Antenna selection
- Mode selection
- **AGC-T and how to set it**
- Microphone adjustments
- Additional mic setup detail:
<https://youtu.be/GdFeTzPo14w>

Wide Noise Blanker

Power line noise

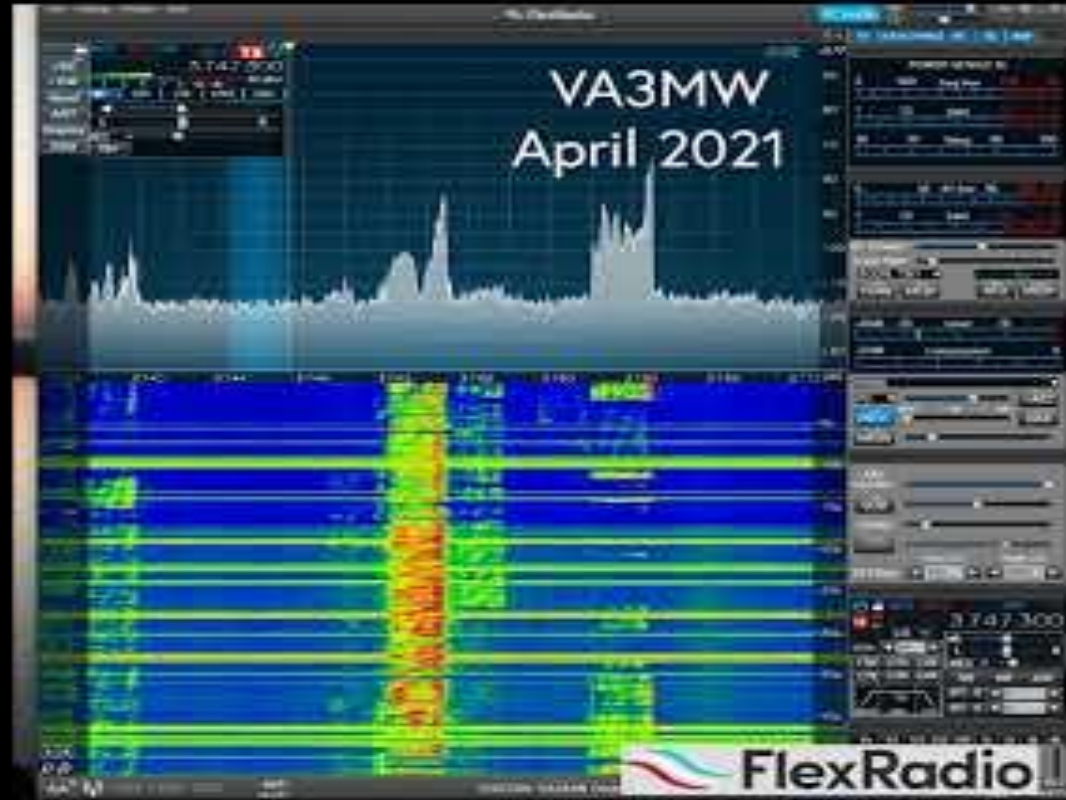
Listen



How does it
sound?

We have
replaced RF
Gain with
AGC-T

Listen

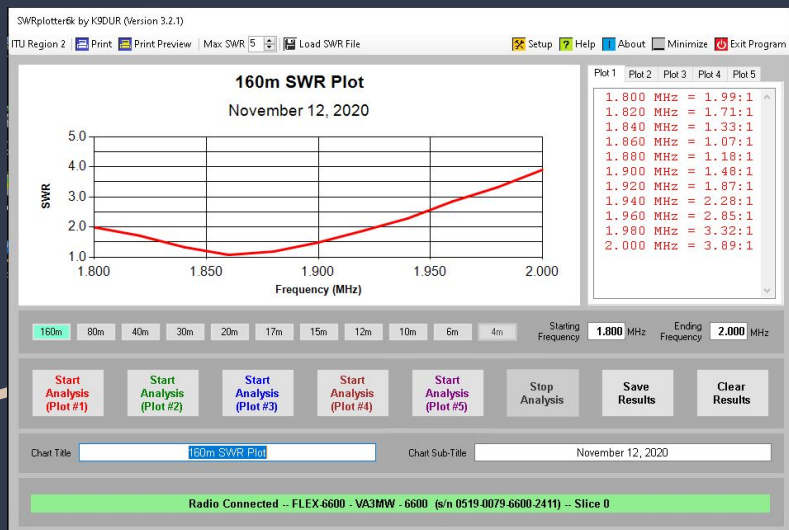


Software that works with FlexRadio

Cool add on programs that really expand the power of you FlexRadio experience - no other radio does this.

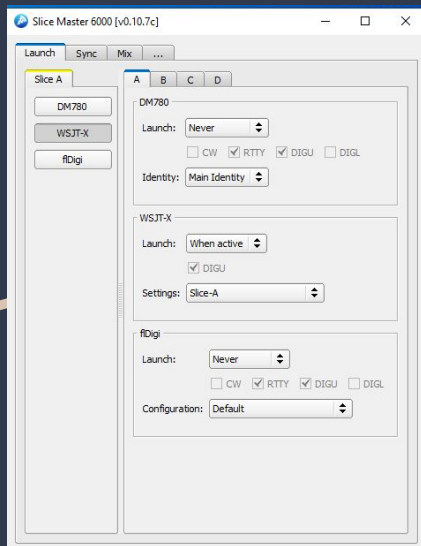
- [FRStack](#) - added control features
- [SliceMaster](#) - WSJTx setup
- [SWRPlotter6K](#) - swr plotting
- [FRlogger](#) - logbook
- And lots more!

Video: <https://youtu.be/I7StNI5Jqn4>



Digital Operation

No extra hardware required



SmartSDR CAT and DAX replace hardware devices

- Interface direct WSJTx, DM780, FLDigi and more
- SliceMaster helps with interfacing and decomplicates things

<https://github.com/K1DBO/slice-master-6000>

Video:

<https://youtu.be/ww8CcGNAzg>

FlexRadio Social Media Online



FlexRadio Enthusiasts

Public group · 3.7K members

- We are active on Facebook - FlexRadio Enthusiasts - 3700 members
- FlexRadio Community
<https://community.flexradio.com>
- HelpDesk - including white papers and how do
<https://helpdesk.flexradio.com>
- YouTube - FlexRadio channel (over 50 help videos)
<https://www.youtube.com/user/FlexRadioSystems/videos>
- Direct email - sales@flexradio.com or info@flexradio.com
- Direct number: 1-512-535-4713

Don't forget to ask for the coupon code and the end of the presentation!



FlexRadio

Michael Walker
Info
Sales

michael@flexradio.com
info@flexradio.com
sales@flexradio.com

www.flexradio.com

How well do FlexRadio radios sell?

This was Dec 8th, 2020 on Facebook

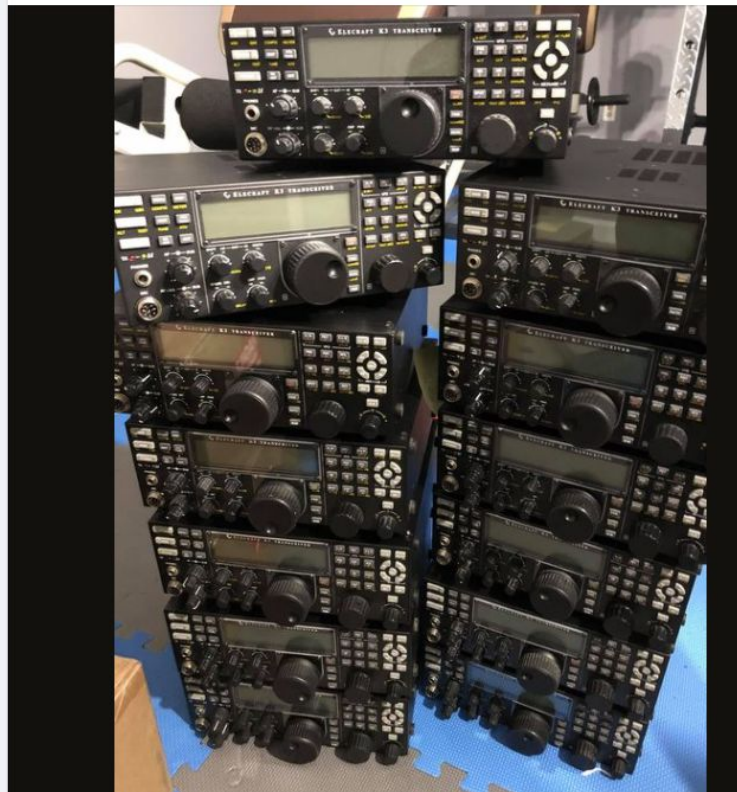
Posted in the Elecraft group



Ray Higgins

59m · 🌐

Wow! Found more K3's in another box. We will trade any K3 for Flex 6400,6600 or 6700 + cash. Let make a deal.



FlexRadio New Radio Terms

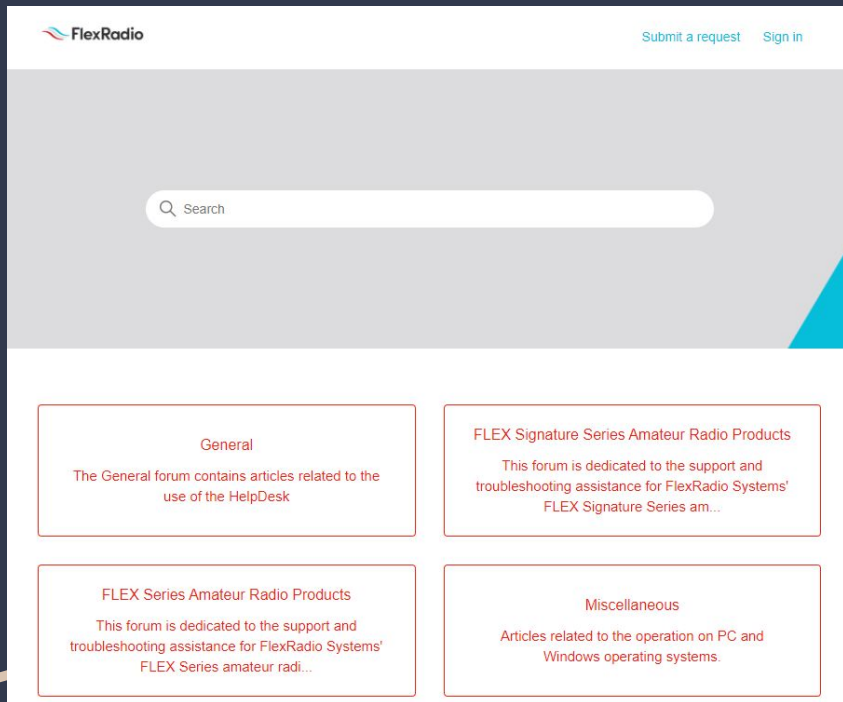


Slice - A 160-6M receiver. FlexRadios have 2, 4 or 8 depending on the model

SCU - Spectral Capture Unit. This is what the antenna connects to. FlexRadios have 1 or 2 SCUs. 2 SCUs operate like 2 unique radios

Your eyes are spectral capture units!

FlexRadio HelpDesk



The FlexRadio helpdesk is available to help with specific questions and problems with your FlexRadio.

- Tells us the story of your problem
- Email works as it allows us to track the history of the problem
- Phones don't since it interrupts the call they are already on
- Screen shots of SmartSDR help (or the problem)
- Videos of VERY helpful
- Not for configuration of other applications

<https://helpdesk.flexradio.com/hc/en-us>

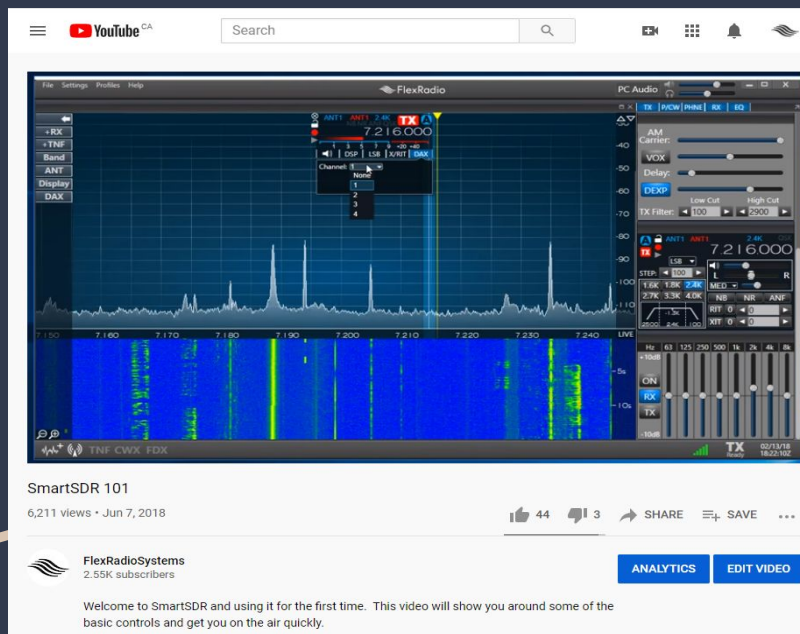
Introduction to SmartSDR

Printed Reference

- SmartSDR Users Guide
- <https://www.flexradio.com/documentation/smartsdr-software-user-guide-pdf/>

Video walk through

- YouTube video on SmartSDR 101
- <https://youtu.be/YJteC7p59ZU>



SmartSDR 101

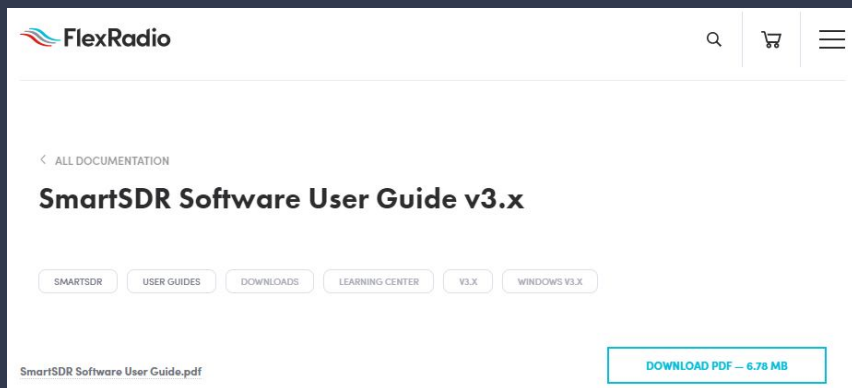
6,211 views · Jun 7, 2018

FlexRadioSystems
2.55K subscribers

Welcome to SmartSDR and using it for the first time. This video will show you around some of the basic controls and get you on the air quickly.

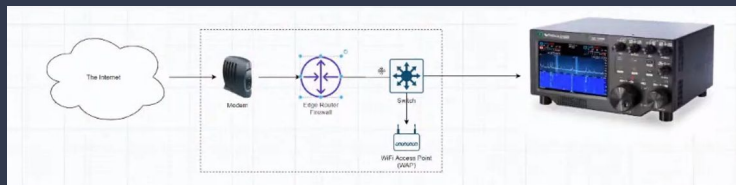
FlexRadio

Online Reference Material



- SmartSDR Users Guide
<https://www.flexradio.com/documentation/smartsdr-software-user-guide-pdf/>
- SmartSDR Hardware Reference Manual
<https://www.flexradio.com/documentation/flex-6000-hardware-reference-manual-pdf/>
- Maestro User Manual
<https://www.flexradio.com/documentation/maestro-user-guide-pdf/>
- 6400M & 6600M User Guide
<https://www.flexradio.com/documentation/flex-6400m-and-flex-6600m-user-guide-pdf/>

What about Wifi connections??



Your Maestro or Laptop can connect to your radio via WiFi in most homes.

However, you have some specialized devices on your LAN/WiFi you may have some difficulties.

- WiFi range extenders
- Mesh networks (Google WiFi, Eeros, TP-Link Mx, etc)

WiFi performance is questionable on a good day - sad but true

If you are not sure what works and what doesn't -- Ask us

Videos to watch: <https://youtu.be/tKfETuCBukQ>