



SASTAR

# What are all those Buttons and Knobs on an HF radio?

# A Basic Introduction to HF radio functionality


- Please stay muted to avoid interruptions unless you have a question
- Feel free to ASK questions at any time using the Chat tool or voice!
- We will cover several popular current and used radio models
- Not going to get into stuff hidden deep in menu's
- But again, ASK if you have questions about things I'm not covering
- Will do about 45 minutes on this topic, then a Q & A session
- Then a 5 minute break & on to Choosing a first HF rig. New or Used?

# Heathkit SB-104A

# Icom IC-751A


VOX
COMP
NB WIDE
GAIN—VOX—DELAY
NB LEVEL
OFF
KEY SPEED
FULL
OFF
TRANSMIT
RECEIVE
NARROW
AM
14.391.6
A/B
A=B
SPLIT
VFO/M
WRITE
M►VFO
MEMORY CLEAR
ICOM
HF TRANSCEIVER IC-751A
POWER
AGC
METER
OFF FAST SLOW
ALC COMP Ic
Po Vc
SWR
TRANSMIT
RECEIVE
GENERAL COVERAGE
FUNCTION
AM FM
CW NAR
SSB REV
RTTY NAR
HAM/GENE
SPEECH
MODE-S
SCAN
MICROPHONE
PHONES
AF GAIN RF GAIN
SQUELCH TONE
MIC GAIN RF PWR
RIT/ΔTX
RIT
ΔTX
CL
PBT NOTCH
FILTER
NOTCH
TS
DFS
BAND

# Kenwood TS-450

# Yaesu FT-990


POWER
RX ANT
MOX
VOX
ATT
TRANSMIT
BUSY
VFO-A
14.145.00
0.00
50CH
HI SWR
WAIT
TUNER
START
M SCAN
CLAR
RX
TX
CLEAR
YAESU
HF TRANSCEIVER FT-990
PHONES
METER
COMP
PO
SWR
ALC
IC
VCC
AGC
OFF
FAST
SLOW
AUTO
PROC
KEYER
KEY
MIC
RF PWR
SQL
NB
AF
RF
LSB
USB
CW
AM
FM
RTTY
PKT
FAST
LOCK
BANDWIDTH
250
500
2.0K
2.4K
BAND
1.5
1
3.5
2
7
3
10
4
14
5
18
6
21
7
24.5
8
28
9
GEN
CE
29
0
ENT
CLAR
NOTCH
SHIFT
MEM
DOWN
UP
DIGITAL FIL
LOW
HIGH
LOW CUT
HIGH CUT
RF FSP
KEYER
BK-IN
NB
A/B
A=B
SPLIT
M▶VFO
RPT
M CK
DOWN
UP
VFO▶M
VFO/M
SPOT
NOTCH
DIGITAL FIL

# Yaesu FT-950


YAESU
HF/50MHz TRANSCEIVER FT-950
ON/OFF
ANT 1-2
MOX
TUNE
VOX
MODE
SSB
AM /FM
CW
RTTY /PKT
MONI
PROC
SPOT
BK-IN
KEYER
AGC
SHIFT
WIDTH
CONT
NOTCH
μ-TUNE
CLEAR
SELECT
PHONES
METER
MIC GAIN
SPEED
DMIC
KEY
MONI
SQL
STO
RCL
NAR
SPLIT
TXW
C.S
MENU
FAST
LOCK
A►B
A⇆B
V/M
M►A
A►M
ATT
IPO
R.FLT
N B
AF GAIN
RF GAIN
RX CLAR
TX CLAR
CLEAR
RX CLAR/VFO-B
TX
BAND
GRP
MHz
MCH
www.rigpix.com

# Kenwood TS-480

# Kenwood TS-590sg

# Icom IC-7610


www.rigpix.com

# Some Common Terms and Acronyms Used

- VFO — Variable Frequency Oscillator – or the main tuning dial.
- AF Gain — Audio Frequency gain – this is simply Rx audio volume
- RF Gain — Radio Frequency gain - RF “front end” receive amplifier level control
- VOX — Voice Operated Transmission - with VOX Delay, VOX Gain, Anti VOX
- Delay — In voice mode used for VOX. In CW mode, sets how fast radio switches back to receive
- AGC — Automatic Gain Control - minimizes volume changes with signal level changes
- AGC fast/slow — Fast or even Off used for CW, slow typically for SSB and AM
- NB — Noise Blanker - reduces repetitive noises eg engine ignition
- ALC — Automatic Level Control - helps limit transmit level
- S Meter — Signal strength meter – Displays in “S” units up to 9, then dB above that
- dB — Decibels – logarithmic measurement eg 3 dB gain is double power
- Comp — Compressor – either audio level or RF level circuit to increase average Tx audio level
- SWR — Standing Wave Ratio – a measurement of antenna system match to transmitter (50 ohm)
- SSB Rev — Reverse or opposite sideband from the sideband traditionally used eg LSB on 40m
- Ham/Gene — Switches between Rx of ham bands only and Rx of ALL shortwave (general coverage)
- Narrow — Refers to switching to a filter with narrower bandwidth for reducing noise/interference
- Tuner — Or AT. Enables built-in antenna tuner. May be a separate TUNE button to force tuning.

# More Common Terms and Acronyms Used


- RIT — Or Clarifier. Receiver Incremental Tuning – tune Rx signal up or down from Tx frequency
- XIT — Transmit Incremental Tuning – tune Tx signal while leaving Rx frequency unchanged
- PBT — Or Width. Pass-Band Tuning – Reduces the Rx audio bandwidth to reduce interference
- IF Shift — Or Shift. Intermediate Frequency shift – Moves the Rx audio passband up or down
- Hi/Lo — Controls to individually adjust upper & lower Rx audio filter limits. Flexible vs PBT & IF Shift
- Split — Transmitting on one frequency and receiving on another – mostly for DX pileups
- Notch — A tuneable filter to block one offending signal eg a constant carrier
- MIC — Microphone level, adjustable for different mic's or quiet/loud talkers
- CAR — Carrier level – transmitted carrier signal level, CW and AM modes typically
- PWR — Transmit power level, used in any mode to set maximum output level
- ATT — Attenuator – reduces receive signal level by a preset amount when levels are very strong
- PRE — Receiver preamplifier – used on higher frequency bands (eg 15m and up) for weak signals
- AIP — Advanced Intercept Point – disables preamp when signals are strong (a reverse PRE control)
- V/M — Button to switch between VFO (variable freq mode) and memories (fixed freq's)
- A/B — Switch between two VFO's. Newer radios have two built-in. Older radios needed external "B".
- PF — Programmable function button. Some rigs have several, to avoid going into menu system
- Speed — Or Key. Adjustable CW (morse code) keyer speed

# Questions?  (Maybe some answers!)



SASTAR

# Should I buy a NEW or USED HF radio?

## Should I buy a NEW or USED HF radio ? Tough question!!

- Please stay muted to avoid interruptions unless you have a question
- Feel free to ASK questions at any time, using the Chat tool or voice!
- We will cover many aspects of this dilemma!
- But again, ASK if you have questions about anything I haven't covered
- Will do about 45 minutes on this topic, then a Q & A session
- Many things to consider, so let's get to it !

## Should I buy a NEW or USED HF radio ? How to Decide??

- Do you have a budget, or can you afford the “latest & greatest”?
- What will you use the radio for?
- How long do you typically keep a “gadget”?
- Do you need high reliability?
- Do you like to tinker with tech, or just use it ?
- What features do you want?
- What features do you NEED?

## Should I buy a NEW or USED HF radio ?

Do you have a budget, or can you afford the “latest & greatest”?

- Top-tier radios extend from about $6,000 to $18,000 + !!
- Like an audiophile stereo, harder to notice improvements as cost multiplies
- Or maybe you’re watching every dollar?
- A $200-$300 well-used radio could be the answer (if it’s reliable!)
- Chasing the “latest & greatest” can distract you from having a lot of FUN!!

# Should I buy a NEW or USED HF radio ?

What will you use the radio for?

- Serious contesting? You'll want a highly selective receiver, CW or voice memories, band-stacking registers etc
- Mobile operations? Small size, rugged, remotable front panel
- Emergency comms? Maybe low power consumption, compact & portable, rugged, easy to use
- Digital modes? Good frequency stability, straightforward audio & control interfaces (USB audio!)
- Casual rag-chewing? Just an easy-to-use rig with nice audio…

## Should I buy a NEW or USED HF radio ?

How long do you typically keep a “gadget”?

- Changing (phones/computers… radios!) every year or two?
  - Could bankrupt yourself with always new stuff !
  - Might want to try out several older rigs
- Or loyal to your gear, happy with what you’ve got ?
  - Maybe buy a really nice new rig and spread cost over several years
  - Or high-end older radio, all the “bells & whistles” of 10-15 years ago

## Should I buy a NEW or USED HF radio ?

Do you need high reliability?

- Might be using radio for Emergency Comms (ARES, “prepper”)
- Or it’s your only radio and you don’t want to be waiting for repair
- More likely a new radio for reliability (though even those can break…)

- Or maybe you like variety & will have several radios?
- Can take a chance on older gear

## Should I buy a NEW or USED HF radio ?

Do you like to tinker with tech, or just use it?

- Who wants to crack open their brand new (under warranty!) baby?
- If you're just into operating, maybe a newer (or new) radio

- For technically-minded hams, "tinkering" can be a big factor
- Want to learn about how your radios work?
- Maybe even do some of your own repairs?

## Should I buy a NEW or USED HF radio ?

What features do you want?

- Spectrum scope.  Front panel of rig, or displayed on PC?
- Touch screen – good or bad?
- Excellent receiver (selectivity/sensitivity/dynamic range)
- DSP (digital signal processing) or SDR (software-defined radio)
- Easy remote control (USB or serial)
- USB audio/control port – easy software interface
- VHF / UHF all-mode capability
- Antenna tuner built in (or external ?)
- Portability or mobile form factor

## Should I buy a NEW or USED HF radio ?

What features do you NEED?

- This is really up to you and what your current focus is
- Next year (week!) it could all change, but for now…
- RELIABILITY - radio is likely to be your first and only (for awhile)
- RECEIVER – reasonably sensitive & selective. Don't chase perfection
- PRICE – buy new if you can afford & want it, or watch for a good deal
- FEATURES – Many rigs in the 10-20 year range are loaded with them!
- Your ANTENNA will play a bigger role than radio features in how well your signal gets out. 100 watts and a decent antenna are a good start!

## Useful Websites:

- eHam.net/reviews
- RigPix.com
- QRZ.com
- Kwarc.org/swapshop
- Hamshack.ca
- Groups.io – many ham-related groups!
- Facebook groups eg “Canadian Amateur Radio Operators”
- Hfpack.com (& other specialty sites)
- Sherweng.com/table
- SASTAR !!  Check out the Resources & Links pages

# Questions?  (Maybe some answers!)