

# Getting Started on Data Modes

G3LDI & G3PDH

HELLSCHREIBER

QPSK

RTTY

MFSK

SSTV

How to put a 'Data'  
station together and  
establish some QSO's

PSK31

AMTOR

THROB

OLIVIA

CLOVER

PACTOR

# Data Modes

- Many Data modes over the years
- RTTY was the first and still popular today
- Main current systems
  - RTTY
  - PSK31
  - Olivia

# Data Modes



**Then....when?**

**1950's**

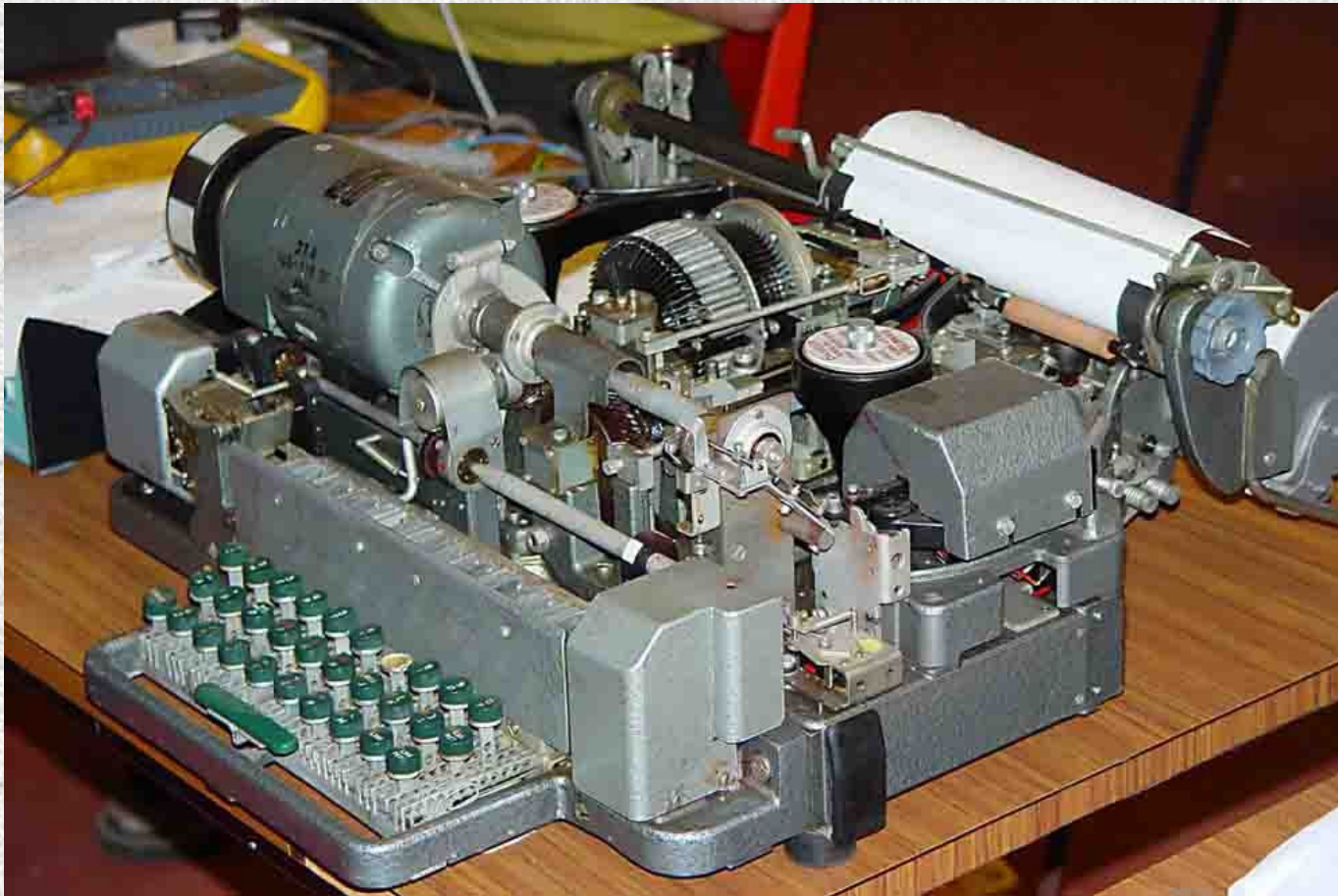


**Now**



# Data Modes

Creed 7B Teleprinter



*They don't build em like that anymore!*

# Data Modes

Up market version - Creed 444





# Data Modes

## Why Data modes?

- Like CW, narrow band mode which results in a high system gain.
- **Hones the skills and operating dexterity**
- **Makes a change from shouting down a microphone**
- Can be done in a quiet manner without disturbing the household!

# Data Modes

- They are all variations on a theme of transmitting 1's and 0's.
- RTTY uses 5 bit Baudot code
- PSK31 uses variable length code.....
- Olivia uses multiple tones frequency diversity.

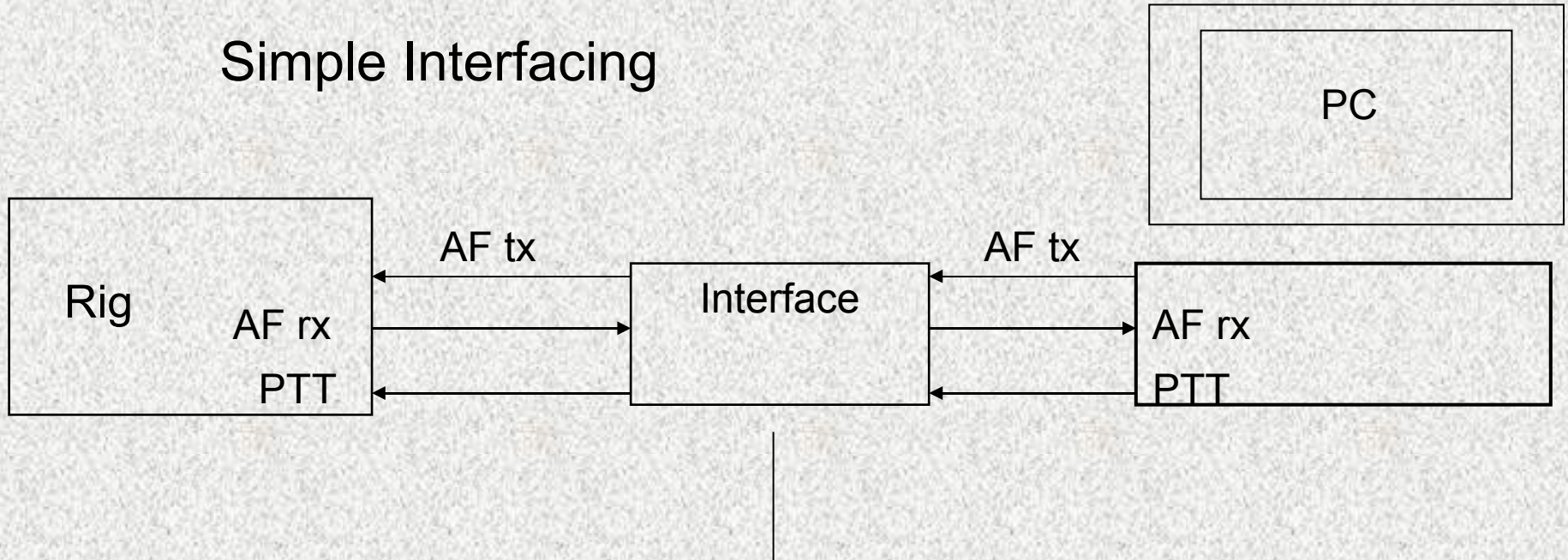
# Data Modes

- What equipment is needed?
- They all use same principle of sending and receiving data by sound, therefore same set up will do all modes.
- Essentials
  - HF Rig and antenna
  - Computer + Software
  - Basic Interfacing
  - + a basic understanding



# Data Modes

## Simple Interfacing



Interface needed for some basic functions ie  
Controlling in/out Audio gain, optional circuit isolation,  
Control of PTT on rig using single transistor switch,  
FSK switching transistor

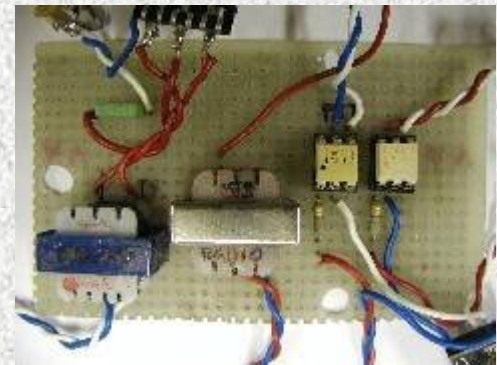
# Data Modes

Expensive or simple

All singing & dancing



Simple home made  
interface pcb



# Data Modes

## The not so simple issues

Serial Port or USB? – Depends on computer.

**Modern PC's only have USB ports!**

FSK or AFSK on RTTY? Depends on rig.

**FSK Preferred if available.**

Build or buy? Large variety of commercial interfaces available but need to assess above in detail before purchasing. (G4ZLP is one popular supplier)



# Data Modes

**FSK** (*Freq Shift keying*)

versus

**AFSK** (*Audio Frequency Shift keying*)  
for RTTY

**FSK** - Varies the radio CW carrier frequency by the 'mark'/'space' shift. Clean and easy to set up.

**AFSK** – Creates tone frequencies from soundcard and modulates radio in SSB mode. More set up involvement and can be less clean.

# Data Modes

## Which Software to use?

- Many FREE or cheap software packages available, downloadable off Internet.

## Recommend

**MixW** for All Modes. Purchase \$40?

MMTTY for RTTY Free

MMVARI for PSK31 Free

It all looks daunting at first but help is at hand

# Data Modes

## Where to find Data modes

- Essentially at the Top End of CW sector.

PSK31 - 3.580, 7.034, 14.070 and upwards

Set these spot frequencies, then tune by clicking on stations in waterfall display in software

RTTY – 3.585 – 3.599, 7.035,

14.080 – 14.099 and same on higher bands

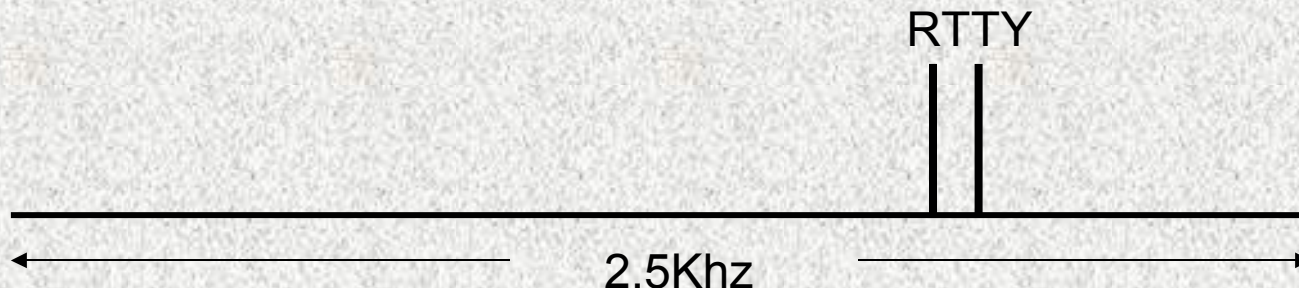


# Data Modes

- Modes and Filters

- PSK31 generally does not require any special filters on rig. Uses full 2.5kHz audio output.
- RTTY ideally requires a filter at the Mark Tone frequencies ie 2.125/2.295Khz. (*FSK mode*)

Some radios have an SSB (Data) mode with filters, MMTTY software also has a good software Band Pass filter.



# Data Modes

## Rig set up

- All Data Modes - 100% Duty Cycle therefore TX power output reduced to 40/50w, check manual.
- If using AFSK modulation monitor power at lower/higher frequencies from pc soundcard  
Turn power control to max and bring power level up to 40w using AF level or mic gain controls

**For RTTY FSK mode set power with normal power control**

# Data Modes

## Operating Techniques

- Need to familiarise with software.
- Set up and use Macros for standard exchanges to save amount of typing.
- Monitor QSO's to see what goes on.
- Take the plunge and learn as you go

*(We all make mistakes to start with!)*