Instruction manual (6)

QRSS modes

DFCW (Dual Frequency CW)

In DFCW mode all morse elements are of the **same length**. To distinguish DAHs from DITs, DAHs are shifted a few Hz upwards whereby DITs are assigned to the lower and DAHs to the higher frequency. Consecutive equal items are separated by small pauses of **1/4 dot length**. To produce this shift an external circuit is needed which is described later in this manual. The DFCW mode is switched on or off by the command **^D**, provided that a QRSS mode has been set before with **^S**.

FSKCW (Frequency Shift Keying CW)

The PTT line is keyed permanently as long as the FSKCW transmission lasts. **During pauses** between dots, dashes or characters the **frequency is shifted downwards**. Whilst the upper trace shown on the screen contains the morse information the lower trace is drawn during signal pauses. The advantage of this mode is its redundance. If, for instance, a dash is falling into pieces caused by QRM there's still a chance to determine subsequently by checking the lower trace if the signal really had contained that dash or rather several dots. Similar to DFCW the FSKCW shift is switched ON/OFF by the command **^C** with the same external circuit applicable here. An example for the commands **^C and ^D** is explained in the chapter QRSS programming examples of this manual.

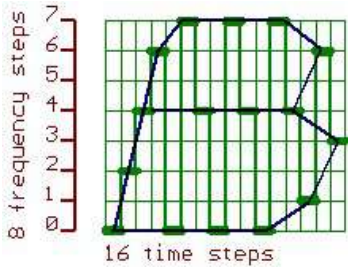
SLOW HELL

The Hellschreiber mode invented by Dr Rudolf Hell in 1930 applied a **7 column x 7 row pixels matrix**, whereby the pixels are twice as high as they are wide. In transmission the 'dots' or pixels are sent by scanning columns from bottom to top and from left to right at 122.5 Baud (2,5 letters per second).

I've left this original Feldhell font as is but it was more favourable for programming to change the rectangle into square pixels which resulted in a **7 columns x 14 rows matrix with 98 (half)pixels of 0.2, 0.3, 0.4 or 0.5 seconds** (4 different speeds). Every pixel row corresponds to a distinct frequency. A 5-bit D/A converter is used to generate the FSK modulation whereby only 14 of the 32 steps are needed.

SQUELL (squarewave HELL)

The original HELL font consists of many, very short pixels, which is unfavourable for the spectrum analyzer program at the receiving end as there is too less time to detect such short items. Hence a new font with a few 1 sec. long horizontal elements was born. The graphic diagram shown below illustrates the principle of character coding.



SLANT

In SLANT mode CW elements are coded by slowly **rising (DITs) and falling (DAHs) ramps**.

TRIANGLE

This quite experimental mode is carrying the CW information in the **directed triangles** pointing upwards (DITs) or downwards (DAHs). The triangles are formed by square waves which are continuously rising and falling in frequency shift, respectively.

FAT CW

The dots and dashes of FATCW (fixed element length) are formed by square waves of a very **small FM deviation** (1 DAC step) to let items appear fatter on screen.

Other graphical wave forms

The commands **^F and ^B** output falling and rising ramps while the **^J** command sets the binary counter controlling the D/A converter to a specified value. In combination with **^P and ^T** arbitrary signal shapes can be generated.