

G1FTU CW

Produced for PAUL

By :

A handwritten signature in black ink, appearing to read "John Pearson". The signature is written in a cursive style with a large, prominent initial "J" and "P".

G1FTU CW INSTRUCTIONS

Welcome to the G1FTU CW program. This program is the successor to G1FTU RTTY, and you should notice the similarity of operation between the two. However, an improvement has been made - in that you can now change many of the operating parameters of the program (speed, tone, etc.) directly from transmit or receive modes - i.e. without having to revert to the menu each time.

Where possible, a system has been employed of CAPS shift or SYMBOL shift plus the initial letter of the facility required. Therefore it shouldn't take too long to memorise the required key presses but, at first, you will need to refer to the lookup table given later.

SETTING UP

The program should be loaded into the computer using load "" and please do not stop the tape until the command menu appears on the screen.

In order to use G1FTU CW, the computer should be connected to the transceiver (or receiver) in the normal manner. If you have not previously used this technique for the direct transmission/reception of data, programs or RTTY, then please refer to the "connections" section of these instructions.

You should now have the command menu on the screen. This gives a choice of ten separate actions - the titles of which are fairly self-explanatory.

CUSTOMISING G1FTU CW

As everyone has their own preference for PAPER, INK, BORDER colours, you may change these colours directly from transmit or receive mode. Try going into receive mode (press '2' on the menu). Now type in a few characters on the lower screen - just to give yourself some ink to change. The PAPER, INK, BORDER colours may now be set by using CAPS shift P, I or B. If you want the screen to be bright, use SYMB shift B. (Be careful not to have INK and PAPER the same!)

Each press of the key gives a new colour and, if you hold the key down, you will notice that it auto-repeats.

These colours will be saved when you save the memories on cassette - so the next time you load in G1FTU CW and the memories, the program will automatically set itself to your favourite colours.

SELECT/BREAK OUT OF FACILITIES

As mentioned earlier, many of the facilities of G1FTU CW are available directly from transmit and receive modes. There is a status display at the bottom of the screen which informs you of the selected facility. Please note that the selection of those facilities which require changes in the status display may cause a slight disturbance to the character being handled at the time - so choose your time carefully.

In the majority of cases, once you have selected a particular facility, you may exit it again by :-

- i) A repeat press of the calling key. (useful for just a quick glance at the status panel).
- ii) Pressing one of the standard breakout keys - ENTER, BREAK (CAPS SPACE) or SYMB SPACE (G1FTU RTTY users note !)

Note that transmit mode has a special automatic break-out technique, which is described in the 'TRANSMIT' section, later.

RECEIVE MODE

Receive and receive only modes are very similar - but whereas 'receive only' mode uses the full screen display, 'receive' mode has the standard split-screen display so that you can type in your reply message.

Both modes employ special software filtering techniques which means that the gaps between the dots and dashes do not have to be fully quiet - provided that the interference is outside the software bandpass. Tuning the filters should be practised to obtain best results but, at first, the initial setting will suffice. See the 'RECEIVE FILTERS' section for more details.

Your main tuning indication is the 'LED' built into the upper border of the screen. You should tune in the distant station as you watch the LED. Use your receiver tuning to achieve the strongest on/off flash of the LED in sympathy with the incoming morse. It is important not to have the signal too loud, especially if there is lots of noise around.

After practice, you will find that if you keep one eye on the LED, the other on the received text, and a third on the speed display, then all will be well !

Note that the screens scroll in G1FTU CW (as opposed to the overwriting technique used in G1FTU RTTY). This scrolling always takes place during a space - so that there is no disturbance to the received characters. This also applies to the clearing of the

upper and lower screens(CAPS X,V). The program will register your request for a screen clear, but it will wait until the next space to carry out the clear operation - so don't worry, you don't have to hold the keys down !

You can use CAPS Z (copy key) at any time to print out the receive screen on a Sinclair-type printer.

RECEIVE SPEED TRACKING

You are provided with a speed readout in the status panel which gives you an approximate indication of the incoming morse speed. (words per minute)

This display is actually independent of the auto speed tracking of the program, and is updated once per received space. Therefore, if the incoming speed suddenly increases dramatically, it may take the speed display a few seconds to 'catch up' - but don't worry, the tracking system will be homing in on the new speed during this time.

The receive tracking may be in either FAST,SLOW or LOCK states - selectable by pressing CAPS L. You will be able to select the best state after a little practice, but as a general guide :-

FAST mode responds quickly to a speed change (and recovers more quickly from false tracking) but is more prone to being fooled by spurious crashes and bangs.

SLOW mode gives good general purpose tracking under normal conditions where some speed variation is likely.

LOCK mode is used to fix the tracking at its present value. It is always a good idea to lock the tracking when the program has obviously tracked to the correct speed. This will eliminate any further disturbance in speed due to QRM,QRN,Woodpeckers etc.

The receive speed can be set manually by using CAPS S. Then use the up and down cursor keys to change the speed, then return to receive mode.

RECEIVE FILTERS

G1FTU CW has a built-in software bandpass filter which is capable of ignoring tones and noise which fall outside its passband. This means that the gaps between the dots and dashes don't have to be perfectly quiet - provided that the interfering signal falls outside the passband. From either receive or receive only modes, press CAPS F to reveal the filter display in the status panel. The scale shown refers to Hz x 100 and is there to serve as a guide to the predicted performance of the filter. The passband is given by the illuminated bar under the scale. To obtain the best performance from the program, you should match the

filter setting to the tone of the CW produced by your receiver at peak signal. For most rigs this tone is in the 500-1000 Hz range, and the program is optimised for use in this range. You should tune around to find a 'clean' station at first, then adjust the filter for best decoding of that signal. Use the left and right cursor keys to move the bandpass left and right on the display, and the up and down cursor keys to raise or lower the bandwidth. I would recommend a bandwidth of about 400 Hz to start off with - though as you become accustomed to the program you will, no doubt, find your own preferred settings.

General hints are that if you have the filter too narrow, then a distorted signal may not pass through, and you will have trouble if you are listening to two stations on slightly different frequencies. If you set the filter too wide, then interfering stations may corrupt the Morse that you want to decode. (If you set it very wide, then you will reduce the performance almost down to that of a 'tone independent' Morse reader.)

Once you have set up the filter, then it is possible to virtually forget about it if you have a tunable CW or SSB rig. FM users will probably find that more adjustments are necessary - due to the range of tones likely to be encountered - but, then again, FM tends to be quieter than the other modes, so the filter could be set wider to start off with ...

Note that the filter has a 'high' range which spreads the coverage up to 3000Hz. Use CAPS H to switch the high range on and off.

CALLSIGN MEMORY

The program has a 12 character memory which may be edited (using CAPS E) actually whilst receiving Morse.

The idea is that you enter your contacts callsign as you receive it - and from then on the callsign may be placed in the transmit buffer by using CAPS C. Of course, you don't have to use the memory for a callsign. You could, for instance, use it for your contacts name. The CAPS C character may be placed in any of the main memories of the program, so that when you change the callsign memory, the contents of the main memory is automatically customised to that particular person...

TRANSMIT MODE

As soon as transmit mode is entered, any characters which have previously been typed into the transmit buffer (i.e. via the lower screen), will now be sent. Therefore it is important to be sure that you are ready when you select this mode.

Note that it is possible to enter transmit mode directly from receive mode by using CAPS T - so that the menu stage is

eliminated. You may continue to type in your transmit message, even if the computer can't keep up with you. The lower screen contains the characters typed in, and the screen may be cleared or allowed to scroll up without the loss of characters from the transmit buffer. The upper screen shows you just what has been sent so far.

Note that the status panel is displaying three items of information. Firstly you are given the contents of the QSO counter. Secondly, you have a speed display (words per minute) and thirdly an indication of the length of inter-word pause used at present.

The transmit speed (CAPS S) and transmit tone (CAPS T) may be manually set from transmit mode. On entry of either CAPS S or CAPS T, the status panel will give a readout of the current value. Modify the value using the up or down cursor (arrow) keys. Due to the calculations required to change these parameters, the transmission of characters is suspended. Transmission resumes as soon as you return to transmit mode by using ENTER.BREAK, or CAPS S/T.

You can also print out the upper screen at any time (for log records, etc.) using CAPS Z. (Sinclair type printers only)

Actions which may be carried out without interrupting the transmission are :-

- i) Paper, ink and border colour changes (CAPS P.I.B and SYMB B for bright).
- ii) Pause length (CAPS M - pause key). Each press of this key changes the inter-word pause length from normal through x2, x4 and x8. This facility is very useful if you are using the program for training purposes - where a higher speed than normal can be selected, but with a longer pause to let each word pattern "sink-in" to your brain !
- iii) Auto Speed (CAPS A). When automatic speed is selected, then, whenever you go into transmit mode from receive mode, the program will automatically transmit at the receive speed. You may cancel the 'auto' facility by changing the transmit speed manually.
- iv) QSO counter. You can increment the QSO counter (for contest work) at any time with SYMB I. You can clear the counter using SYMB X (clear key), and CAPS Q will enter the contents of the QSO counter into the transmit buffer. (Note that the QSO counter value is saved when you save the memories on cassette.)

BREAK OUT OF TRANSMIT MODE

Transmit mode can only be terminated when the program encounters one of the characters BK,VA,KN or K (SYMB 5.6.7.8) in the transmit buffer. If the character is VA,KN or K then the program first transmits "DE 'your callsign'", followed by AR, followed by the selected terminating character. This is standard procedure for CW, and will save you a lot of typing! The program then automatically exits transmit mode, and wipes the transmit buffer ready for your new message. Presuming that transmit mode was called from receive mode, then an instant return to receive mode will be carried out.

BK is handled separately, as this is usually used when just a quick break is required, mid-transmission, for the distant station to give a quick reply to a question asked. You may continue to type your message after the BK character, as the transmit buffer will not be wiped. On encountering the BK character, the program automatically swaps back to receive mode to receive the reply. You may then continue with your transmission in the usual way, using CAPS T.

SPECIAL CHARACTERS

The program can transmit the special characters: 'break', AR,AS,CT,BK,VA,KN,K, and these are available along the top row of keys when combined with SYMB shift. You should copy, or cut out, the key diagram supplied, and attach it above the top row of keys as a reminder.

Other special characters which may be entered into the transmit buffer are: CAPS 1-9 (for the memories) CAPS D (for your own callsign taken from the 'DE' memory) CAPS C for your contacts callsign (taken from the callsign memory) and CAPS R to re-transmit the receive buffer contents. This last facility is very useful for training purposes. If you are looking round the bands for practice material, you no longer have to find a station transmitting at just the right speed. Simply decode his CW anyway, at whatever speed, then you can 're-play' the CW to yourself at whichever speed you desire!

KEYER OPERATION

If you would like to add the personal touch to your transmissions, or would just like to practise your manual keying abilities, then you should enter 'keyer' mode from transmit mode. (CAPS K for keyboard or a keyboard-type joystick interface, and CAPS J for a Kempston joystick interface.)

You can use the keyboard directly to work the internal dot and dash oscillators, or you can connect up a morse key to the computer via a standard joystick interface. Many of the keyboard

keys activate the dot,dash and continuous tone functions - so you should find a key or pair of keys which you find most comfortable. With practice, it is possible to achieve quite good iambic operation on the keyboard !

In order to connect up your key (which can be a two-terminal straight or electronic bug key, or a three-terminal paddle or iambic key) you will need a joystick interface and a 9-way D-type joystick connector from your local electronics shop, and a length of appropriate screened cable.

EDIT MEMORIES

When you select this option on the main menu, you will be prompted for the memory number. Enter a number 1-9, and the contents of the appropriate memory will be displayed. You may add to the contents of the memory, or delete from it, or clear it altogether with CAPS V. When you are satisfied with the contents, press ENTER or BREAK to return to the menu. Note that a repeat press of the ENTER key repeats the last major menu request - so it is quite easy to check through all of the memories. All standard, special and termination characters may be placed in the memories - memories may even call each other, but (as with GIFTU RTTY) you should avoid cyclic loops with empty memories.

SAVE MEMORIES

Selecting this option will produce a "START TAPE..." message, which replaces the standard "start tape and press any key" prompt.

When you press a key, a single block of code is saved out (it takes about 15 seconds) which has the contents of of the nine memories and the QSD counter, along with the present values for PAPER,INK and BORDER colours.

After saving, the program automatically goes into verify mode - press BREAK to bypass this stage if not required.

LOAD MEMORIES

Use this facility to re-load the previously saved memories. If an error occurs during loading, a "TAPE ERROR" message will appear. However, the program will do its best to load in your memories, despite any corruptions. Any faulty characters detected will be changed to 'space' characters.

After a correct load, the colours will be set automatically and the value of the QSD counter will be restored.

QSO REVIEW

Use this facility to look through the contents of the receive buffer. (That is, about the last 5000 characters received). Press any unshifted key (except ENTER or 6) to scroll the display up through the receive buffer, or use CAPS P to jump a page at a time.

At any time, CAPS Z will print the screen onto a Sinclair-type printer.

SENSITIVITY

In tests, it has been found that most Spectrums prefer to be left in 'hi' sensitivity mode (though some later machines were found to require a much lower input audio level for good operation). If you have one of the 'noisy' Spectrums - creating spurious characters with no input - then you may find 'lo' sensitivity an advantage.

GENERAL OPERATING HINTS

You will find that the speed display is a very useful device for getting the most out of the program, as it lets you know (more or less) what the computer is thinking. For instance, if you've been tuning around and lingered on a steady tone with the tracking unlocked, then the speed display lets you know if you will have to wait for the tracking to 'recover'. (Flip the tracking round to FAST for a quick recovery)

The speed display should be thought of as being similar to the speedometer of a car - under normal conditions it gives a reasonably accurate reading - but if conditions get bad and the wheels lose grip, then the speedo could read 50 when you are only doing 30. Similarly, if the program is struggling to lock onto a signal under difficult conditions, then the reading will increase in value. Therefore, a general rule is that the lowest reading for a given signal implies optimum tuning.

If you are decoding a station and the conditions worsen such that the speed reading rises significantly, then you shouldn't leave the tracking locked - SLOW mode would probably be better, as this will allow the program to continue to decode the signal. It is all a case of 'practice makes perfect'!

When listening to human operator on a 'straight' key, a common problem is when he or she uses over extended 'dashes'. The longer dashes make the program expect long gaps - which never arrive, so the decoding becomes erratic. Under these circumstances, it is best to take over from the automatic tracking by forcing the received speed to a higher value than is being indicated, by using CAPS S. This makes the program look for shorter gaps, and the

decoding will improve.

Note that the last major menu selection is repeated when you press the ENTER key. This is useful for editing several memories, repeated load attempts, returning to the start of the QSO review, etc.

To change the subject completely... If you have a friend who has his own copy of GIFTU CW, why not try some direct data transfer (instead of using CW). If you use the 'save memories' facility while still connected to the transceiver, and your friend uses 'load memories' facility, it is possible to transfer 2304 characters of message in just 15 seconds (A bit faster than CW...) and you get to change his screen colours by remote control !

CONNECTIONS

The output labelled 'MIC' on the back of the Spectrum should be connected to the audio input (or MIC) socket on the transceiver.

The input labelled 'EAR' on the Spectrum should be connected to the external speaker output of the transceiver. (Note that some equipment has an additional, low-level, output. This should not be used, as it may not have sufficient drive for the Spectrum input.)

On some transceivers the above connections can be achieved by using the Spectrum cassette leads but, in most cases, special leads will have to be made up. Use screened cable with the appropriate plugs.

If your transceiver is fitted with the VOX facility, then it may be possible to use that for the transmit-receive switching during a QSO. Otherwise the switching will have to be done manually. This can be done by keying the mike, but it would be better to wire a switch to the PTT input.

KEYBOARD FUNCTION TABLE

All keys listed below are CAPS shifted, unless stated otherwise.

<u>KEY</u>	<u>FUNCTION</u>
A	Auto speed (TX)
B	Border colour
SYMB B	Bright on-off
C	Callsign memory
D	Your callsign memory
E	Edit callsign memory
F	Filter display (RX)
H	High-range on-off (filter)
I	Ink colour
SYMB I	Increment OSO counter
J	Joystick keyer (TX)
K	Keyboard keyer (TX)
L	Change(lock) tracking (RX)
M	Return to menu (RX), Change pause (TX)
P	Paper colour (TX/RX),Page (OSO review)
Q	Qso counter
R	Receive buffer
S	Set Speed
T	Transmit mode (RX), Set tone (TX)
V	Clear lower screen (TX/RX), Clear memory
W	Wipe buffer
X	Clear upper screen
Z	Print upper screen
0	Delete
1-9	Memories 1-9
SYMB 1-8	Special characters

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SPECIAL CHARACTERS (SYMB. SHIFT 1-8)

brk	ar	ct	as	bk	va	kn	k
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