

# ***QUANSHENG QUIRKS & PROGRAMMING TIPS.***

De VK7MX

Issue 3.1

A collection of FAQs, tips and pointers for, and features of, the Quansheng TG-25AT and TG-45AT handheld transceivers.

## ***Prologue***

This information sheet is not intended to replace the Quansheng owner's manual. Its aim is to supplement that publication and hopefully ease your transition into successful Quansheng ownership, or at least your translation of the curious "Chinglish" in which the manual is written. It reflects experience gained from testing more than 60 of these little 5 watt UHF or VHF rigs.

## ***What are the differences between the TG-25AT and the TG-45AT?***

From an operator's viewpoint, the only essential difference is the band in which they operate. All controls and the software operate in an identical fashion. In the interests of keeping these pages to a manageable number, Quirks will therefore generally provide only one example to illustrate the point being made. As the example might not relate specifically to your radio, you will need to distil the principle involved and apply the equivalent steps to your rig.

## ***Modes of Operation.***

Like most modern, synthesised and computer controlled radios, the Quansheng's operate in 2 basic modes;

**VFO mode**, where the desired frequency is entered via the keyboard, along with any desired repeater offset, access tone etc.

**Memory Channel mode**, where the frequency, repeater offset and access tones have been previously entered in VFO mode but then stored in memory and are recalled for use. Quansheng gives you **99** memory channels to play with.

You switch between the **VFO** mode and the **Memory Channel** mode by using **Function (F)** and **1**. Note, you also get a third choice, **Frequency Display and Channel** but you are really just looking at what is stored in that Memory Channel. For our purposes, let's just think of there being just two choices, VFO or Memory Channel.

**A cautionary note at this point.**

I have found that sometimes, **Function** and **1** will fail to toggle you through the choice of VFO, Memory Channel, or Frequency and Memory Channel. I suspect this occurs when you do not yet have any memory channels programmed. If this happens, use **Function** and **6** and repeat this as necessary until you reach VFO mode. Minnie, the female voice prompt, is very handy to guide you through this early stage.

While not a specific memory channel, the radio uses flash memory which will store the VFO frequency or Memory Channel last used before the rig was powered down. It will return to that setting on being powered up again.

***Enough of this, let's get started!***

Because you can't program the memory channels any other way than by using the VFO mode, let us start with that.

***Initial Programming***

I have tuned your new radio to a repeater here in the North, in order to test it. You will no doubt want to retune it, either immediately or in the near future, so I have set out the steps I took, so that you can at least get back to where you started?

***In order to first tune and test your new handheld, you need to ensure that you are in the VFO mode.*** Use **Function (F)** and **1** to get into VFO mode (remember, the choices are VFO, memory Channel or CH, Frequency display and CH, then back to VFO. You want VFO.

The manual then misses out a vital step:

***Ensure that the Quiet-Talk (QT) feature is turned off:***

Quiet –talk (QT) is Quansheng speak for ‘CTCSS enabled’. I think of it as ‘Queer-Tones’. We don’t need them for this simple procedure, so turn them off.

Press Function (F) key, then 2

Repeat this as necessary to turn ‘QT’ off – it will disappear from the screen.

***Then set the repeater off set***

Press Function (F) then 7

Then enter the offset from the keypad, e.g. for 600 kHz, key in 00600

***Then select offset up or down***

Press Function (F) then 6

Then select up or down, using the A or B keys

*Next set the receive frequency*

You are still in VFO mode, so simply key in the receive frequency desired, e.g. 147000

Test by pushing PTT, while watching the display. You may find that the incorrect offset direction has been applied, e.g. a positive shift whereas you set a negative shift. Don't ask me why, it just seems to do that occasionally. Fix is to simply repeat the Function and 6 key step and retest. I find it always works on the second attempt.

*Then make a test transmission.*

All should be well. Enjoy the experience, in the knowledge that your transmitted audio is of excellent quality and that when you release the PTT, the receiver is fairly sensitive, unbelievably so for the price.

*Power off and then power on again, just to make sure it all registered.*

I'm sure it did and your settings were all retained in flash memory.

***But I have done all that and I seem to have the offset correct as the displays shows it transmitting on the split frequency but I still can't raise the repeater. What's wrong here?***

Assuming the repeater is within range, double-check that the off-set has been locked in the correct direction – see the earlier note about the occasional need to do this step twice or more.

Still not working? Does the repeater require sub-audible tone access? If so you will need to set that up in order to open the repeater. Check the Callbook or ask another local amateur for the CTCSS tone frequency required and then set that up in your radio.

Of course, if you need DTMF to access the repeater you are not going to be able to do that with the Quansheng at this time, at least not by itself. You will need an external DTMF encoder or perhaps your mobile phone, held near the microphone while you enter the code and hold down the PTT. I would have thought that difficult until I watched a youngster text-messaging recently.

***OK, checked that and yes, I need to use CTCSS tones. How do I do that?***

Use a memory channel to hold all the codes and frequencies required. I'm indebted to Dave, VK7DC, who sat down and worked through the manual to arrive at the following example, VK7RMD the Mt. Duncan 70cm repeater, which requires separate CTCSS tones for Rx and TX.. Remember though, this is a specific example. You will need to enter the frequencies and codes that apply to your repeater.

***First, make sure your radio is in VFO mode.***

**Func 1** toggles between **VFO**, **CH**, **Freq Display + CH** and finally back to **VFO** again. You need to be in **VFO**.

Sometimes though, Func 1 just seems to bring a repeat "Display Memory Channel", rather than VFO response. If that happens, swap over to **Func 6** and run through its options to bring up the VFO Mode. I'm not sure why this happens but I suspect that it may occur when there is no memory channel already programmed. Millie, the onboard voice prompter is handy for this process, as she will tell you the current choice. Anyway, whether or not you need to use Func 6 to select VFO mode, you will need to use it for the next step

***Make sure there is no + or – displayed on the screen. Repeater off-set must not be used for this procedure.***

**Func 6** toggles the repeater off-set on and off. Turn it **off**.

*Enter the desired Rx frequency 438.600 and make sure **QT** is showing on the lower part of the display.*

**Func 2** toggles QT on and off. You need it on.

*Now we need the Rx tone.*

*Press Func 3 and then select **94.8** by using either the **A** or **B** key until that tone frequency appears on the screen. Then press # before the tone frequency display ends.*

*Then select the memory channel you want, by using either the **A** or **B** key, until you see it flashing in the top right of screen, then lock it in by pressing the **C** key.*

Your receive frequency is now saved in the chosen channel. If you haven't turned her off, Minnie will have already told you that she has "saved receive frequency channel."

*Now enter your desired transmit frequency 433.600 and then again ensure that **QT** is showing on the lower portion of the display.*

Remember, **Func 2** toggles QT on and off. You want it on.

*Now for the TX tone.*

*Press **Func 3** then select **141.3** by using either the **A** or **B** key until that tone frequency is displayed. Then while the tone frequency is still on the screen, press #.*

*Finally, store all that in the same memory channel as the receive frequency, which you should see flashing in the top right of the screen, by pressing **D**.*

Your transmit frequency should now be stored and again, if you let her, Minnie will have told you she was saving the transmit frequency.

***Remember though, to use your freshly stored memory channel you will need to leave VFO mode.***

*Return to either the memory channel **CH** mode or the **Freq + CH** mode by using the **Func 1** command.*

Why not do that now to confirm that all that is working. If so, either of these memory modes is likely to become your normal mode of operation, as having mastered the first memory storage you will likely move on to store all the other channels you regularly use.

***But that doesn't apply to me. I don't need CTCSS tones but I would like to set up various repeater channels in memory. How do I do that?***

Well, David has provided the clue to what I think is the easiest method in his CTCSS description. Just follow that procedure but omit the CTCSS selection steps. For example, to program VK7RBH into memory 2:

*First ensure you are in **VFO** mode by selecting that with **Func 1**.*

*You don't want CTCSS tones, so make sure **QT** is turned **off** by selecting that state using **Func 2**.*

*Don't select any repeater off-set. Turn it off by ensuring neither + or – appears on the screen by using **Func 6***

*Punch in the receive frequency of **439.050***

*Start the storage process by pressing #*

*Select your desired channel by using either **A** or **B** until it appears flashing in the top right hand corner of the display*

*Then, while it is still flashing, press **C***

Your receive frequency has been stored and Minnie will tell you just that, if you let her.

Now punch in the transmit frequency, **433.050**

*Start to store that by pressing #*

*While the desired channel number is flashing in the top right hand corner, press **D**.*

And that should also now be stored and confirmed by Minnie, if she hasn't yet worn out her welcome.

***That's fine but what if I need CTCSS for transmit but not receive, or vice versa?***



Well, just use the relevant part of either Dave's approach or the non-CTCSS process that is applicable. If you need CTCSS for transmit, apply Dave's transmit set-up and my receive set up, or vice versa, as your need requires.

### ***So I don't have to use the repeater split to set-up a repeater in memory?***

Well, you could. Page 10 of the owner's manual seems to tell you how but you don't have to. I think direct storage of receive and transmit frequency, as outlined in these notes is easier, and of course it gives you the quick choice of any frequency pair, rather than requiring the extra step of invoking **Func 7** and then **Func 6**. I leave that process for working in VFO mode but I suspect that will only last until I punch all my likely-use channels into memory. Hell, with 99 channels available, I could also store each repeater's reverse pair, so I could listen on the input frequency and still have storage left over after that, I suspect the little rig would very seldom venture into VFO mode.

### ***How about setting up a simplex frequency in memory?***

Simple, just follow the basic steps outlined but punch in the same frequency for both receive and transmit. You can even assign a CTCSS code to it if you like. Might be one way to gain some peace and quiet, unless you tell others what your CTCSS code is?

### ***What if I make an error and can't seem to get things back on track?***

Power off, and while holding down the **Escape** key, **power on** again. The manual says this step clears the 99 memory locations but I have found it clears everything, including the repeater offsets, frequency steps etc. In fact it clears everything except the band limits.

I call this the cold boot procedure and have used it to clear a variety of apparent software faults, such as a non-operative squelch and an episode of unintended laryngitis suffered by Minnie. Just make sure though that you hold the **Esc** key down

after powering on long enough to get the **CLA** message on the screen. I stress the need to continue pressing the **ESC** button after turning Power On. I have had one report of this step failing to reset all settings but I have not been able to duplicate that finding, including on the actual radio in question.

By the way, removing the battery while the rig is still turned on is unlikely to produce a desired reset. The radio uses flash memory to store its settings and of course, flash memory does not need back-battery support. I bet it will retain its memory longer than you or I can.

### ***Frequency Steps***

These radios offer a range of frequency steps, so odd things might happen in VFO mode as you push the frequency up/down keys, unless you set the frequency stepping to the Australian standard spacing of 25 kHz, common to both our 2 metre and 70 cm bands.

### ***Does it scan?***

Yes, it will scan in both VFO and Memory channel modes. Regardless of which mode you are in, just push **Function** and **C** to scan up or **Function** and **D** to scan down. Note that scanning will stop once any button is pressed and you will need to restart it but using the **Function** and **C** or **D** button.

Scanning will also stop if the rig detects a signal big enough to open the squelch. In this case though, scanning will resume after 8 seconds if no further signal is detected.

Having said all that, I suggest that scanning in VFO mode is not likely to be particularly useful. It will scan but only in the frequency steps you set using **Function** and **4** and it will only start at the frequency on the display when scanning is initiated and continues on to the band edge. There is no means of limiting the frequency span you wish to scan while in VFO mode. Moreover, it will apply any offset or CTCSS codes that applied to the setting when scanning commenced.

Memory channel scanning is likely to be of more use to you. In this mode it will scan only the memory channels in which you have frequencies stored and it will apply the offset or CTCSS codes associated with each channel. Therefore, if you want to scan particular frequencies, I suggest you set them up in memory first.

### ***I don't want to transmit at 5 watts. How do I reduce power?***

**Function** and **0** will toggle between high power (4-5 watts depending where you are in the band) and 1 watt.

### ***Hey, where's the squelch?***

So, you have just noticed that there is only one knob on top of the rig? In keeping with many modern handheld designs, the Icom T-90A for example, the squelch level is pre-set. However, you can fully open it by depressing the curiously labelled Monitor or 'M' button. This can be handy for checking for the presence of an extremely weak signal but is really only for an occasional or momentary check, unless your fingers are much stronger than mine. For some reason, the manual only refers to the use of the M button in relation to checking the amount of audio gain you have wound on with the volume control.

Like most radios, a squelch that stays open without your driving the 'M' button indicates an impending flat battery. Of course, Minnie will have already told you that, unless you have already turned her off.

### ***Programming from a P.C.?***

It isn't a publicised feature and no specific software is advertised for the Quansheng. I would have to say that it is unlikely. The rigs seem to be clones of the Kenwood THK-2AT and its relatives, and use the same Kenwood standard microphone and speaker plug/socket sockets and plugs. Not all the plug/socket segments are required for their basic speaker and mic functions. However, on physical examination of the pcbs and the circuit diagrams, it is clear these spare segments are not connected to the

on-board CPU programming inputs. PC programming would therefore require access to the cpu or at least its EPROM, not an operation for the faint hearted or probably anybody on what we know at this point. Nonetheless, it continues to exercise clever minds.....?

### ***Speaker Mic Pinouts***

#### ***How do I plug an external antenna into this thing?***

By using the SMA to BNC adaptor available from Quansheng or by using a standard SMA female to BNC adaptor. Either works but be advised that the Quansheng item has a machined skirt, not found on the standard part, that nicely covers the antenna socket on the rig. The standard item sits proud of the socket and while it works equally well in a RF sense, it doesn't look as good.

#### ***It seems to have a DC voltage limit of 7.2 volts. Can't I run it from my car's battery?***

Sure you can, Quansheng even offer a special car charging unit that lets you both power the radio and simultaneously charge your spare battery ( you did buy a spare battery too, didn't you?) Now, the manual cites a "Rated Voltage" of 7.2 volts and the little rubber cover over the radio's power socket also indicates a requirement for 7.2 Volts DC, but nowhere does the paperwork specify a maximum input DC voltage. Somebody asked the obvious question, so I have just measured the output of the car charger's DC plug. Guess what, I found 11.8 volts, suggesting it is designed to produce 12 volts. I think we can therefore comfortably assume that the radio will run happily with 12 volts input?

**By the way, the external power plug is conventional, with the *centre positive*, the *shell negative*.**

***My drop-in charger's LED goes green as soon as the battery is placed in it to charge. Does this mean the battery is already charged?***

No, don't be fooled by the LED, it is not a charge indicator as such. Its job appears to be to tell you when the battery is correctly inserted for charging. Put it in, get a green light, wait the requisite 8 hours and then remove the battery from the charger. Remember, this is not a fast-charger and it is not a float or top-up type charger either. If you leave the battery in the charger for extended periods after it is fully charged, you **will drastically shorten its operating life.**

***My charger's power plug looks as if it has been roughly modified to suit the Australian power point?***

Guilty, as charged. They come from the factory set up for the domestic Chinese and Hong Kong market, where the supply is apparently 220-240 volt but using an American style two-prong plug. In order to test them, I have twisted the prongs from their vertical inclination to the Australian angled standard. It would be too much to expect the factory to install an Australian plug for the price. We need to remember too that the Australian market is tiny compared to the domestic Chinese market of 30,000 units a month. You can either live with my adaptation or cut off the plug and replace it with a kosher Australian standard plug.

## ***Function Keys***

Function then 1 Display Channels On/Off

Function then 2 Quiet-talk 'QT' On/Off

Function then 3 CTCSS Freq Display

Function then 4 Frequency Step Size

Function then 5 Voices Prompt On/Off

Function then 6 Offset +/-

Function then 7 Repeater Offset set

Function then 8 Display QT freq Rx

Function then 9 Display QT freq tx

Function then 0 Set Tx Power hi/lo

Function then A VFO/Memory Step Up

Function then B VFO/Memory Step Down

Function then C Scan Up

Function then D Scan Down

Function then \* Keylock On/Off

Function then # Save Channels

## ***Is this radio Type Approved?***

No, in Australia the radio is sold solely for use on the appropriate amateur band and is sold locked to that band. No type approval is necessary for amateur band use. Type approval is relatively expensive, something of the order of \$5k merely to undertake testing.

Before you ask, **NO.** ACMA has requested that the unlock code not be released and the Australian agent has agreed to comply with that request. I am obliged to do the same when delivering your radio. No doubt the information will appear on the web in time, as it has for virtually every other radio known to mankind?

***Hey, my Speaker/Mic seems to have a spare socket, covered by a protective bung!***

Mine does too, in fact they all do. It's another undocumented feature. If you plug a speaker or an earphone in there, you will get audio out. I must therefore presume that it is there so you can plug in an ear piece, yet still use the hand microphone while, say, operating mobile. I don't know whether the socket also carries connections for another microphone, as I don't have a headset with a stereo 3.5 mm plug with which to test it. I don't imagine it does but then again, I wouldn't have imagined a phone plug there either.

***The published specifications are fairly brief. Do we know anymore about the specs or the radio's design from a technical viewpoint?***

No. Fuller specifications would probably only flow from testing, say prior to a Type Approval process. That is unlikely to occur, at least in the near future, as it is not required for the domestic Chinese market. As matters stand, testing to establish performance parameters might have to be done by some well equipped amateur operator. However, I do have the circuit diagram and block diagram for the radio and can make that available on request but be warned, it's a collection of computer files more than 5 megabytes in size.

*OK, enough already! How do I turn off that .....?(Nice) girl's voice?*

I agree. Minnie does have a certain effect on the tolerance level, after a while. **Function** then **5** will bring instant relief, but I bet you turn her on again, from time to time, just to prove you can.

### *Epilogue*

More as it comes to hand. If you find something of possible interest to others, let me know and we can include it in future issues of this information sheet. I propose to make this a living document, added to or amended as experience grows. If you would like to join a mailing list for future issues, please let me know by e-mail or phone:

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Bill

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