R1CBU X6200 GUI Notes

v 0.1.1 Georgy Dyuldin

Original author: Oleg – written for the Xiegu X6100

Ported at https://github.com/gdyuldin/x6200_gui for the X6200 by Georgy Dyuldin

What is the R1CBU/Dyuldin X6200 Software

The R1CBU X6200 software is a port of Oleg's X6100 version by Georgy Dyuldin. It works as a plug-in (MicroSD Card loaded) alternate to the original Xiegu microprocessor (Linux) software platform and serves as the user interface for the operator to control the microcontroller run X6200 hardware platform.

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If you use this software and it fits your purposes successfully please buy the developer a beer or their favourite drink.

Installing

Open the releases page (https://github.com/gdyuldin/x6200_gui/releases) and download the zipped sdcard.img file (in the Assets section of the version chosen – these notes are based on v 0.1.1). Use the *balenaEtcher* or *Rufus* program to burn the image file you extracted from the ZIP file to a suitably sized (4GB or larger) microSD card. Insert the prepared card into the X6200 transceiver and boot the radio.

IMPORTANT: This GUI runs from the SDCard. It does not update the stock X6200 system. It talks to the microcontroller while running on the microprocessor within the X6200. Remove the SDCard and restart the radio to return to your normal X6200 configuration.

Control Functions:

The buttons on the top of the X6200 operate in the same way as they are described in the original manual. Please consult that manual for their functions.

R1CBU/gdyuldin Menu System Version 0.1.1 Controls

The features of the software are controlled via a menu system using the available knobs and buttons (the LCD screen is not touch sensitive). The menu system is accessed via the upper rotary encoder labelled VOL SQL RFG, the lower rotary encoder labelled MFK, the six buttons between the two encoders and the five buttons that run along the bottom of the LCD screen.

Looking at the two rotary encoders on the left-hand side of the radio's front panel.

The encoder on the top left labelled VOL, SQL and RFG *(referred to below as the VOL encoder knob)* allows the operator to control multiple functions.

Push the button in, wait until the displayed text flashes, release the button and turn it to scroll through the choice of settable parameters. When the desired parameter is highlighted push the button in and out and then turn it to set the desired value. (dimmed function text means you are scrolling through parameters, when it is highlighted you can change its value). The parameters are as follows (the first four parameters are displayed across the bottom of the LCD screen).

- Audio Volume
- RF Gain
- Filter Low (controls the lower frequency of the receive filter)

- Filter High (controls the upper frequency of the receive filter)
- RF Power
- H Mic Gain (Hand Microphone Gain)

The encoder on the bottom left labelled MFK allows the operator to control multiple other functions but the process for this knob is different. Simply turn the inside of this dual knob until the parameter you wish to change appears, now change the outer part of the MFK knob to change the parameter's value. The changeable parameters are as follows:

- Spectrum Beta
- FFT Width
- Peak Speed
- Peak Hold – this controls the time the peak value of the spectrum is shown

Looking at the block of 6 keys between the two knobs on the left-hand side of the radio's front panel.

The buttons under the LCD screen work when selected by pressing one of the 6 keys (GEN, APP, KEY, DFN or DFL) as described below. Their values are changed using the VOL rotary encoder (GEN) or the lower MFK rotary encoder (other buttons), to select the required setting and then pressing the rotary encoder saves the value on the label at the bottom of the LCD screen.

GEN Button

Pressing the button labelled GEN brings the general radio control menu for the five buttons below the LCD screen into play. The label above each of these buttons displays the function of the button. The first button in the row indicates which of 3 menu rows you are using and pressing it in moves to the next set of allocated functions. Values of the displayed button are displayed/changed by pressing the button and then rotating the top knob (the VOL encoder).

The first level menu (VOL1:3) provides control of these functions:

- Button Two, Audio Volume
- Button Three, SQL - set the signal level squelch is activated at
- Button Four, RFG - RF gain setting
- Button Five, TX Power - transmission power (up to 5W on Battery, 8W on external power)

Press LCD button one to get to the second level (VOL2:3) provides control of these functions:

- Button Two, Mic Select – Select Internal or Hand Microphone to be used
- Button Three, H-Mic Gain - Set the gain of the hand microphone
- Button Four, I-MIC Gain - Set the gain of the internal microphone
- Button Five – Monitor level (set to zero unless using headphones)

Press LCD button one to get to the third level (VOL3:3) provides control of these functions:

- Button Two, Voice
- Button Three, Voice Rate
- Button Four, Voice Pitch
- Button Five, Voice Volume

Pressing LCD button one again takes us to the next set of parameters – Note in this section the lower knob (MFK) is used to change the values:

The first level (MFK 1:4) provides control of these functions:

- Button Two, AGC – Auto, Fast, Slow or Off (adjust with MFK)
- Button Three, ATT – Off or On – change by pressing button under label in LCD
- Button Four, PRE – Off or On – change by pressing button under label in LCD

- Button Five, COMP – Off or On – change by pressing button under label in LCD

Press LCD button one again to get to the second level (MFK 2:4) which provides control of these functions (adjust all with MFK key):

- Button Two, Min Level – Set the Minimum amplitude of the spectrum and waterfall displays
- Button Three, Max Level - Set the Maximum amplitude of the spectrum and waterfall display
- Button Four, Spectrum Zoom – Control the frequency width of the spectrum / waterfall display
- Button Five, Spectrum Beta

Press LCD button one again to get to the second level (MFK 3:4) which provides control of these functions (adjust all with MFK key):

- Button Two, Spectrum Scope Fill colour – Select required backdrop colour.
- Button Three, Peak - Sets the maximum level of displayed peaks
- Button Four, Peak Hold - Sets the time the peak value of the spectrum scope is shown
- Button Five, Peak Speed – Set the speed of display of the peaks crossing the display

Press LCD button one again to get to the second level (MFK 4:4) which provides control of these functions (adjust all with MFK key):

- Button Two, Charger – Select the state (on, off, shadow) of the battery charger
- Button Three, Antenna – Has value from 1 to 5 but as the radio only has one antenna socket??
- Button Four, RIT - Receiver incremental tuning -1500 to +1500 Hz.
- Button Five, XIT - Transmitter incremental tuning -1500 to + 1500 Hz

Another LCD button one push, will bring you to the Memories menu. There two levels (Mem 1:1 and Mem 2:1). Each menu page has four (4) memory locations for storing frequency and mode settings. A quick push on the memory location key will load the selected frequency/mode settings on to the radio. A long push of the memory location key will store the current frequency/mode setting of the radio into the memory location. NOTE: the stored frequency is NOT shown on the key – its label stays as “Set 1” “Set 2” etc.

APP (Applications) Button

This has an upper level (APP 1:1) that triggers sub menus

- Button Two, RTTY, starts the RTTY mode receive decoder
- Button Three, FT8 starts the FT8 mode receive decoder
- Button Four, SWR Scan allows you to performs a VSWR scan of your antenna varying scale and span if needed
- Button Five, GPS – as the X6200 does not have GPS, this panel returns no information (perhaps an external unit is supported?).

Pressing APP 1:1-button 2 starts the RTTY decoder and parameters menu levels (RTTY 1:1)

- Button Two, Rate – Set the data rate (normally 45.5 Baud) – adjust using MFK knob
- Button Three, Shift – Set freq diff between tones (normally 170Hz) – adjust with outer MFK knob
- Button Four, Centre – RTTY Centre frequency (normally 800) adjust with outer MFK knob
- Button Five, Reverse – swap tones around – normally off adjust with outer MFK knob

Pressing APP 1:1-button 3 starts the FT8 decoder and parameters menu levels (PAGE 1:2 and Page 2:2) – first Page 1:2:

- Button Two, Show - All or CQ – display all/just CQ messages, change by pressing button
- Button Three, Mode – Can be FT8 or FT4 (normally FT8), change by pressing button.

- Button Four, TX CQ – enabled or disabled (Call sign & Loc needs to be entered before it can be enabled) – change by pressing button.
- Button Five, TX Call – enabled or disabled – change by pressing button.

Pressing LCD button one again takes us to menu level (PAGE 2:2)

- Button Two, Hold Frequency – Enabled or Disabled. Change by pressing button.
- Button Three, Auto – Enabled or Disabled. Change by pressing button.
- Button Four, CQ Modifier – press button to bring up on-screen keyboard to enter your modifier.
- Button Five, Time Sync – press to correct time (requires WiFi operational)

Back to the APP menu – Press the APP button until you get to (APP2:3)

- Button Two, Recorder – is a simple audio recorder to record from the receiver.
- Button Three, QTH – this is where you enter your Maidenhead locator for FT8 The on-screen keyboard is displayed when you press the button. Don't forget to select the tick key when finished.
- Button Four, CallSign – this is where you enter your Call Sign locator for FT8 The on-screen keyboard is displayed when you press the button. Don't forget to select the tick key when finished.
- Button Five, Settings – various system settings, when complete press the APP button again and you will be taken to menu (APP 3:3)

This menu (APP3:3) has only one used LCD button

- Button Two, WiFi – press this button to be taken into the WiFi connectivity screen to configure your WiFi connection using the onscreen keyboard.

KEY (CW functions) Button

The first level (KEY 1:2) menu provides control of these functions:

- Button Two, Speed, the rate (WPM) of the internal CW keyer (default 15 – change value with outer rig of MFK knob)
- Button Three, Volume of the side tone to monitor CW transmission (default 10 – change value with outer rig of MFK knob)
- Button Four, Train, this allows one practice sending CW without transmitting- press button to turn on or off
- Button Five, Tone, sets the frequency of side tone to to monitor CW transmission (default 700 – change value with outer rig of MFK knob)

Press the first button to move to (KEY 2:2) which provides control of these functions:

- Button Two, Key Mode, manual, auto-L or auto-R – changed with outer ring of MFK knob
- Button Three, Iambic Mode A or B – press button to change
- Button Four, QSK Time (default 100ms – change value with outer rig of MFK knob)
- Button Five, Ratio controls the ration of a dit to a dah time (default 3.0 – change value with outer rig of MFK knob)

Pressing the LCD menu selection Button 1 again from the Key menu will show the **(CW 1:2) decoder** menu.

These are the functions for the (CW 1:2) menu.

- Button Two, CW Decoder LCD button turns on or off the CW decoder (default on)
- Button Three, Tuner LCD button turns on or off the decoder tuner (default off)
- Button Four, Decoding SNR (default 5.0 dB – change value with outer rig of MFK knob)
- Button Five, Not currently used

Pressing LCD button 1 again we get to the function covered by the (CW 2:2) menu.

- Button two, CW Peak Beta (default 0.10 – change value with outer rig of MFK knob)
- Button Three, CW Noise Beta (default 0.80 – change value with outer rig of MFK knob)
- Button Four, Not currently used
- Button Five, Not currently used

MSG (Messaging) Button

These are the functions for the (MSG 1:2) menu.

- Button Two, Send – press to send message
- Button Three, Beacon – send Beacon every 10s – press button again to stop
- Button Four, Beacon period – press button repeatedly to cycle through 10, 30, 60 and 120 seconds - default 10 seconds
- Button Five, Not currently used

Pressing LCD button 1 again we get to the function covered by the (MSG 2:2) menu.

- Button two, Rec – press button to start recording, again to stop
- Button Three, Rename – pressing this button brings up the onscreen keyboard with the name of the last recorded audio file to allow you to change the file name
- Button Four, Delete – deletes the file with no second chance
- Button Five, Play – plays the last recorded audio file

DFN (Digital Noise Filtering) Button

The first menu (DFN 1:3) provides control of these functions:

- Button Two, DNF controls the status of DNF either on or off
- Button Three, DNF Centre controls the centre frequency (default 1000 Hz – change value with outer rig of MFK knob)
- Button Four, DNF Width controls the width of the filter (default 50 Hz – change value with outer rig of MFK knob)
- Button Five, not currently used

Pressing the first button takes us to menu (DFN 2:3) which provides control of these functions:

- Button Two, NB controls the status of NB either on or off
- Button Three, NB Level sets the level for noise blanker (default 10 – change value with outer rig of MFK knob)
- Button Four, NB Width controls the width of the noise blanker (default 10Hz – change value with outer rig of MFK knob)
- Button Five, not currently used

Another push of the first LCD button takes us to menu (DFN 3:3) which provides control of these functions:

- Button Two, NR controls the status of noise reduction either on or off
- Button Three, NR Level - sets the level for noise reduction(default 0 range 0-100 – change value with outer rig of MFK knob)
- Button Four, not currently used
- Button Five, not currently used

DFL (Digital Filters) Button

This option works differently than the preceding menus.
There are four buttons in play and the first three interact with each other:

- Button One, Filter Low (Default 140Hz)
- Button Two, Filter High (Default 2700Hz)

- Button Three, Filter BW (Default 2560Hz)

Pressing any of these three LCD buttons and then turning the VOL encoder knob changes the setting of either one or both of the other values.

- Button Four, Eq – opens a new panel to set Rx Eq and Mic Eq values – press the DFL button to exit
- Button Five, not currently used

VOL/MFK Customisation

The functions of the VOL and MFK encoders can be changed. To do this, press and hold the button when in a "menu". The current function will be added to the encoder set if it was not there. Or removed from the set of functions if it was there.

Use of the onscreen keyboard (e.g. when setting WiFi password).

- Outside of MFK knob – move key to select horizontally.
- Inside of MFK knob – move key to select vertically.
- Press-in MFK knob – select the highlighted character

FT8 / FT4 operations:

As one of the main reasons to use this new GUI is it's ability to run FT8/FT4 (transmit and receive) from within the X6200 the following information on how to import or export logs to the software will be relevant to those users:

Importing ADI log
Application could mark already worked callsign in the UI. To load information about previous QSOs - copy your ADI log to the DATA partition and rename it to incoming_log.adi. Application will import records to own log on the next boot and will rename incoming_log.adi to incoming_log.adi.bak.
Note: DATA partition will be created after first launch transceiver with inserted SD card.

Exporting ADI log
Application stores FT8/FT4 QSOs to the ft_log.adi file on the DATA partition of SD card. This file might be used to load QSOs to online log.

What does not (currently) work (this is likely an incomplete list):

- Commands entered on the hand microphone.
- There is no Bluetooth support implemented.
- There is no Remote control possible via WFView as WFView is not running.
- CiV functions work however they reflect what an X6100 would respond not the X6200 – for example the scaling on output power value is for 10 watts, not 8 watts.

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