

A Guide to Operating the G1M G-CORE QRP Radio Set



by

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Warning:

**Before attempting to operate your G1M G-CORE radio set on air,
read through the entire manual!**

Foreword from the author:

These are the new "golden years" of ham radio, with newly licensed operators swelling the ranks daily. One thing I have noticed is that a significant number of these new hams have no background in radio/electronics. Thanks to the Internet and many sites that provide a focus on passing the Amateur Radio Service FCC tests, these new hams have a license but no *real* knowledge of how the technology works.

This situation is a common issue with many radios imported to North America. Operation of the unit becomes problematic for a new or inexperienced operator as there are no or very little in the way of Operating Instruction and even experienced hams need at least some worthwhile instructions. To say the manual released with this radio is wholly inadequate is an understatement.

I wrote this manual with the view of the new ham trying to operate a radio with a confusing menu system and transliterated 'technical terms'. I explain in plain English the features, or lack thereof and offer what workarounds that are possible.

I hope you enjoy this Guide and welcome any suggestions to improve this Guide.

I want to thank ***EuGene Smith, KA5NLY*** for the loan of his brand spanking new G1M G-CORE radio to fully dig into the rig. What a nice guy and the reason I'm writing this manual.

October 26, 2020

Don//KL7KN

Anchorage, Alaska.

About the Author:

Mr. Koehler first tested for and received his FCC Commercial Radiotelephone license with a RADAR endorsement in 1977. He received his Amateur Radio Service license on the next test cycle. This was back when FCC employees had to give the test.

After spending 22+ years in the US Air Force as a Master Technician working on radio/electronics, maintaining a wide variety of communications equipment to the component level, Mr. Koehler retired from the military. He then went on to spend another 10 years working with telecommunication equipment as a technician, technical writer, quality manager and finally, a supervising manager.

He now works part-time as a technical writer for a local Corporation in the IT field. His published works include many articles in "73" Magazine, Site (later, Above Ground Level) Magazine and multiple other industry periodicals. He was also a Contributing Editor for Mobile Radio Technology magazine for a number of years.

He has authored technical manuals for the MFJ-9200 (HS-1A) and the SW-3B QRP radio sets.

He has a Bachelor of Science degree from the University of the State of New York, with multiple Associate degrees, to include an Associate of Science in Communications Technology.

In addition to HAM radio, he enjoys shortwave listening, sailing, hiking, camping and just being outdoors in Alaska. A prolific fiction writer, he has multiple full length novels currently on the market under a pseudonym. (see www.worldofthechernyi.com)

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Table of Contents

About this manual.

Colored text indicates a link to additional information.

The information in this guide was obtained by direct observation and measurements on a working G1M G-CORE unit with Ver 1.06 firmware. The radio was loaned to me by another ham, EuGene KA5NLY. Due to this, I was most careful not to do anything that might have damaged the rig.

EuGene indicated in our correspondence that he was interested in CW/SSB operations only. That mirrors my operations as well, with the exception of PSK-31. So, NO digital mode tests or settings were explored.

This radio may be remotely controlled via the COM port and appropriate software. I did not check this functionally. There is some data on the web if this mode of operation is of interest to you. This aspect of the radio is outside of the scope of this manual.

The G1M .IO group has chatter on digimode operation if that is of interest to you.

CAUTION – This radio set has **no** power level settings. Digimode operation(s) are typically a 100% duty cycle. Extended use may damage this radio set. YMMV.

The rig was powered by a fully charged (12.6 VDC) battery.

All transmitter tests were into a dummy load. All receiver test results were obtained while fed by a trapped vertical antenna. A top-loaded, 18-foot vertical antenna feed was used for other tests.

Transmitter 'quality' was checked by listening to a FT-990 transceiver calibrated against WWV. This is typical of the radio used at a distant station, so was used here.

This IS NOT intended to be a technical manual, but an Operations manual. The Vendor has released *zero technical information*, so attempting to check/compare this single radio against any "factory specification" is, frankly, less than helpful. There are few, if any User Servable parts inside. See the images of the boards at the end of this manual.

Given the history of radio manufacture in China, newer or older radio sets may or may not act like this one as the actual system makeup/software/firmware can vary between each production run.

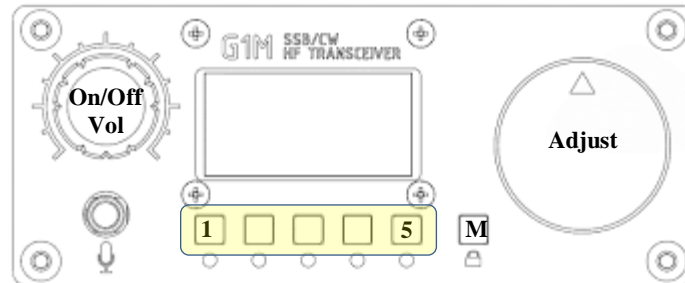
As the G1M 'community' grows, I can only hope this manual was of use. This Manual is copyrighted to protect against Commercial use. For the Amateur Service community, feel free to copy, share and use as a base to add information as you see fit.

Don//KL7KN

Please read the entire manual before you do anything else. OK?

Controls and display overview:

G1M – G-CORE front panel



Multi-function Buttons 1 to 5

Display:



Display information "NORMAL"

Line 1 – [Rx or Tx] indicator [USB/LSB/AM/CW] [P]reampfier on/off [QSK] active/off

Line 2 – Active VFO [A or B] [Active frequency]

Line 3 – Inactive VFO [off line VFO frequency] Memory number in use when active [1 -49]

Line 4 – Receive S meter indicator [S0 to S9 - bargraph]

Line 5 – (Normal) Bandscope display (Menu selection //Button function hidden).

Display information "Menu 1"

Line 1 – as above

Line 2 – as above

Line 3 – as above

Line 4 – N/A

Line 5 – Menu 1.

These Menu items correspond with the 5 function buttons – 1 to 5, Left to right. More detail on the specific Menu items starts on [page 9](#).

G1M G-CORE QRP HF radio set system:

Overview:

The G1M G-CORE is a product-improved version of the older G1M, itself an outgrowth of the even older X1M (released 2013) radio set from Xiegu Technology. To say this is an on-going work-in-progress using the ham community as a set of Beta testers is not too far from what we see today. (X1M > X1M Platinum > G1M > G1M G-CORE)

While the feature set, build Quality and performance has varied wildly from set to set, the current iteration, the G1M G-CORE (released 2020) has obviously benefited from a long line of owner feedback, frankly harsh reviews and warranty returns. This is to say, this little rig has improved quite a bit from the initial offering. It also has some more distance to travel IMO.

It is small and lightweight, there is no argument here on the size/weight of the rig. The SDR Rx also provides extraordinary range for the SWL fan as well. The supplied Operations manuals could be best described as "sparse" and in the early versions only available in Chinese. The current manual offers some English and the illustrations are a mix of both Chinese and English language notes.

Reliability:

There are multiple reports of radios arriving DOA and a high level of infant mortality found on the web. There are reports some of the radios running hot and other reports that the connectors have been described as 'fragile'. To say there are still some serious QC issues is apparent.

No technical data of any kind has been released to my knowledge. The Company website (<https://xiegu.eu/downloads/>) offers nothing in the way of support to the owner for this radio set.

The manufacture offers firmware downloads for its other offerings (G-90/X51045) but *nothing* is offered for the G1M. Sadly, instructions on how to back up the rig firmware are also lacking on the company website. However, there is still data out on the web.

Software Updates and How To:

A dealer offers this <https://www.radioddity.com/pages/xiegu-download> with software for Ver 1.07 for the G1M (G1M_ZIF_FW_V 1.07) the latest version of the firmware.

You will need Tera Term, a secure shell (ssh) communication program. This can be found at the www.Radioddity.com site under the G90 support section

See also https://groups.io/g/XIEGU-G1M/topic/upgrade_to_firmware_1_07/76487478?p=

To join, go to <https://groups.io/g/XIEGU-G1M>

I *strongly recommend* that new owners obtain and store on their PC, a copy of the 1.07 software and the Instructions on how to load this software. Since there have been updates, I expect more will be released at some point in the future, so best to be ready for that happy occurrence.

In reading many of the posts on-line it became apparent that something better had to be written for the G1M. The sister radio to this – the G-90 has a large community and they, not the vendor, have written the English manual for that rig. Since the G1M is new, it hasn't had a chance to grow much of a support community; I hope this manual will help others who decide to buy this rig.

Warning:

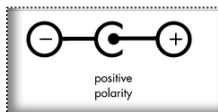
**Before attempting to operate your G1M G-CORE radio set on air,
read through the entire manual.**

Failing to adhere to prescribed setup and operating recommendations could result in permanent damage to your radio!

Per Vendor specification, the radio set will only operate from 12 to 15 VDC. The supply must provide up to 3 amps.

This radio set is NOT protected from reverse polarity power!

Ensure you have connected the battery/power supply correctly to the supplied power cable. Damage from reverse power application is specifically **excluded** from the Warranty coverage. Use a meter to confirm proper power polarity. Use a polarized battery connector, if possible.



White wire - positive//Shield wire - Negative

Initial power up

After connecting a known good antenna or dummy load, headphones and then the power supply, turn the radio on. After the initial splash screen shows the Xiegu logo, the OLED screen will display:

System status (Rx or Tx)

Operating Mode (CW/USB/LSB)

Preamplifier status –(on or off)

QSK status (On or off)

Active VFO (A or B) Frequency in use

Off line VFO (A or B) and Frequency set

Memory location number (if active)

Signal strength meter (sliding bar)

VFO Tuning Steps:

The VFO tuning steps are set by pressing Button **M** momentarily to display **MENU 1**.

- Next, press Button 4 *momentarily* to select the digit to change. (Observe location of highlighted digit, this will move right to left with each press).
 - Pressing M1/B4 for *more* than 1 second will move the highlight to the right.
- Use the **Adjust knob** to set the desired digit (0-9)
- Using the adjust knob will change the frequency (up/down), but this can be quite slow.

External Power Supply

Any 12 to 15 VDC power supply or battery may be connected to the radios coaxial power jack, The ferrite bean on the power cable is intended to reduce digital hash generated by the internal system. If using an AC main powered DC supply, ensured it is regulated and well filtered.

Remember, NO reverse-polarity protection is provided at the main DC input. *No* internal battery is possible owing to the size of the unit.

Antenna

Any well-matched (50 Ohm) antenna may be connected to the ANT jack BNC connector. An external antenna tuner *is required* for antennas which are not resonant at the selected frequency. The radio does **not** provide for any adjustments other than audio volume and VFO. High SWR *will* damage the radio. Use care when tuning any antenna.

Headphones

An internal speaker is supplied. A stereo headset can be connected to the rear SPK jack. Impedance should be 8-32 Ohms. A *stereo* connector **must** be used. A MONO headphone plug will **SHORT** the output! Alternatively, you may use a mini stereo amplified speaker. While 8-32 ohms is recommended, a 4 ohm stereo speaker will work – just barely. These connector are considered somewhat *fragile*. Use care in inserting the headphone plug.

Key/Paddle

If using a stereo plug for a **straight key**, either Tip or Ring and Sleeve must be connected for use. A monaural plug may not be used with a straight key. If a monaural plug is inserted, the radio will begin transmitting on power up.



TIP. Connects to DOT paddle or straight key

RING. Connects to DASH paddle or straight key

SLEEVE. Connects to paddle or straight key ground

3.5mm stereo plug

Key Operation (use defaults)

You will need to set the Keyer speed, the Keyer character ratio and select Iambic A, Iambic B or Manual for a straight key. See the [MENU choice section](#) for these specifics.

VFO A/B Button (M1/B5)

Pressing this button alternates the display between VFO A and B. Note that setting (preamp, QSK etc) *may* change when the VFOs are switched.

- In VFO Mode, the Adjust knob is used to change the frequency with the use of the step setting (M1/B4).

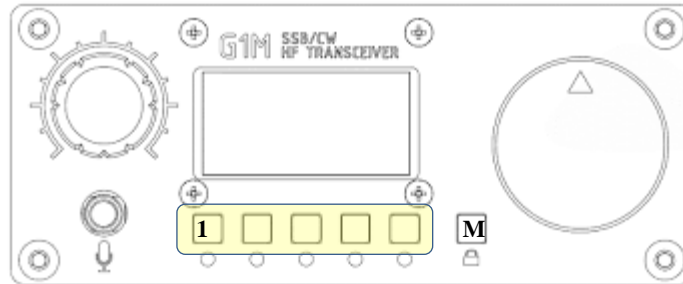
The last used VFO frequency will display on powering up the radio set.

This should be enough for you to see if the radio is operational out of the box.

Continue for more detail

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The operation of this radio is mostly software defined. To change setting requires accessing the system menus and then making specific choices. I'll list these with some discussion of the features selected by the specific function Button.



The Button labeled **M**:

Press and hold for 1 second+ (Press Long or PL) will lock or unlock the system.

Press momentarily (PM) and it scrolls through the menus. Three menus are provided:

- Menu 1 leads with MD at Button 1
- Menu 2 leads with KS at Button 1
- Menu 3 leads with SCL at Button 1.

I use this convention to save time. Button 1, press momentarily = B1/PM . It follows that with Menu 1, to change MODE, you would use M1/B1/PM.

Features and discussion

MENU 1

MODE (M1/B1/PM) this will cycle CW/AM/LSB/USB with each stroke of B1/PM. (Mode)

- (M1/B1/PL) – this will turn on/off the PREAMP. The indicator is the Highlighted P. When **P** displays, the PREAMP is ON.

NOTE/COMMENTS:

AM MODE is receive only.

This radio set **does not** have an RF gain / attenuator control. The RF PREAMP provides additional gain to the receiver chain while active. While this may help with some weak signals, remember that it is also quite broadband, thus adds noise to the signals as well.

If you have a strong/very strong signal, switch OFF the preamp to reduce this gain and the background noise levels.

This space intentionally left blank

BAND₋ (M1/B2/PM) this will change the band for the active VFO. Each press decrements the displayed frequency (lowers the band). This is dependent on the initial VFO setting.

- (M1/B2/PL) this will activate the Memory WRITE function. This also evokes a SAVE and QUIT choice.
 - Pressing SAVE will transfer all active VFO data/settings to the selected memory location (00 to 49) .
 - Press QUIT to leave this function.
 - Use the **Adjust knob** to change the Memory location (1 – 49)

NOTES/COMMENTS:

While this is a four-band radio set, this function will actually drop the displayed VFO frequency to the next lower band (40 to 80 M) or the next lower MHz setting.

If you are going to use the Memory Write function – set the ACTIVE VFO for all desired parameters (desired frequency, mode, QSK on/off, Preamplifier on/off, Keyer speed, etc). **prior** to invoking the Memory Write function. Once the Memory Write function is active, you will **only** be able to change the Memory location via the Adjust knob.

Once the Memory Write function is activated, the active VFO (A or B as you have selected) and related setting will continue to display.

- Press SAVE to load the displayed data/settings into the listed Memory location.
If there is already data in that location, *pressing SAVE will overwrite the existing data.*
- Press QUIT to exit this function.

This may be of use for SWL fans to load a favorite station (VOA, HCJB, etc) or to pull up WWV (2.5, 5, 10, 15 MHz) to quickly check band conditions. For folks that monitor beacons, this may be of use as well.

BAND₊ (M1/B3/PM) this will change the band in the active VFO. Each press increments the displayed frequency (raises the band). This is dependent on the initial VFO setting

- (M1/B3/PL) this will activate the Memory Clear function. Whatever data is stored in the numbered location (00 - 40) can be cleared.
 - This evokes a CLR and QUIT choice.
 - Pressing CLR will erase all data in selected memory location.
 - Press QUIT to leave this function.
 - Use the **Adjust knob** to change the Memory location (00 – 49)

NOTES/COMMENTS:

While this is a four-band radio set, this function will actually raise the displayed VFO frequency to the next higher band (80 to 40 M) or the next higher MHz setting.

continue

TS - Change VFO Steps (M1/B4/PM) - this will move the highlighted VFO digit one step to the LEFT.

- (M1/B4/PL) this will move the highlighted VFO digit one step to the RIGHT.

NOTE/COMMENTS

After you adjust the single digit, the VFO will continue as you would expect, the displayed frequency will go up or down as you continue to rotate the Adjust knob.

A/B – Swaps active/off-line VFOs. (M1/B5/PM) this swaps A and B VFOs.

Whichever one is active sits on 'top' (Line 2) and has the larger text on the display. The off-line VFO *only* shows frequency, is in smaller text and is under (Line 3) the active VFO.

- (M1/B5/PL) Evokes Memory location selection. The Adjust knob is used to select Memory location. No adjustment to the VFOs are possible while this function is active.
 - Press (B5/PL) again to exit the function.

NOTES/COMMENTS

Whichever VFO displays on 'top' (*active*) will also show all related data (Preamp/Lock/QSK on/off etc). This may be A or B, you make the selection.

The off-line VFO shows just the Frequency. Once the A/B button is pressed monetarily, the VFOs switch and now the formerly off-line VFO displays all settings in the large text format. Note the A or B next to the displayed line.

Memory location will select/display only those locations where data has been loaded. Empty locations will not display.

You CANNOT transfer the Memory location data to the VFO or swap VFOs.

You CAN change the MODE, turn on/off the PREAMP, Lock/Unlock, Trun on/off QSK, change Keyer speed – just about everything except for the VFO frequency. The VFO highlight can be changed, but the Adjust knob will only change the Memory location.

Since radio is also marketed as a "CB" radio, this might explain this odd memory channel behavior.

MENU 2

Keyer Speed (M1/B1/PM) **set** keyer speed with **Adjust knob**. Range 5 to 50 wpm @ 1 wpm increments.

- Press SAVE to set speed.
- Press QUIT to exit function.
- (M1/B1/PL) null value/no action

NOTES/COMMENTS:

Pretty straightforward. Press Button, use Adjust knob to set keyer speed. Press SAVE. Press QUIT. To adjust keyer speed during a QSO – a few button presses and done. One of the easier of the new rigs.

This space intentionally left blank

Key Manual – (M2/B2/PM) Chose between Manual/Auto-L/Auto-R.

- Press SAVE to set.

- Press QUIT to exit function.

This function allows you to reverse the 'sense' of the paddle for right or left handed folks.

NOTE – if set to **Manual**, either paddle will key the radio. Or attach straight / Cootie key to Tip and Sleeve OR Ring and Sleeve – either way will work. This also allows using your paddle as a Cootie key or a 'straight' key.

CAUTION – using a monoarual plug will cause the radio to transmit on power up.

- (M2/B2/PL) set CW sidetone – range 500Hz to 1000 Hz. Suggest ~750 or what pleases you. Does not affect the offset on TX.

NOTES/COMMENTS:

Tone is the sidetone on CW transmit.

IaMBic keying (M2/B3/PM) chose Mode A or Mode B. Use **Adjust knob** to select. Press SAVE or QUIT to exit function.

- (M2/B3/PL) set CW dot/dash spacing ratio - default 3.0. Please, unless you have a good reason to change this – *leave on default*. Thank you in advance for all the other CW ops.

NOTES/COMMENTS:

-In **mode A**, the keyer will finish with the last dit or dah that you were sending when the paddle is released.

-In **mode B**, if it was sending a dah when you release the paddles, it will add one more dit. If it was sending a dit, it will add one more dah. This is a preference item.

Spacing ratio is the length of the 'dash' in relation to the length of the 'dot'. 3 to 1 is pretty standard.

QSK (M2/B4/PM) - toggles QSK function ON/OFF.

-ON allows unit to transmit and allows setting TX hang time.

-With QSK set to OFF, you can still 'key' the radio to practice sending, but no RF goes out. I suggest you leave QSK set to OFF while working portable until you are certain the antenna is good and so on. Safety first....

- (M2/B4/PL) set QSk switching (hang) time (T/R delay) in milliseconds. Range 0 to 1000 mS. This is something you should set based on your style and operating speed. The faster you send, the shorter the time should be. This really comes into play when running SPLIT. .

NOTES/COMMENTS:

With QSK Off, the rig will not transmit.

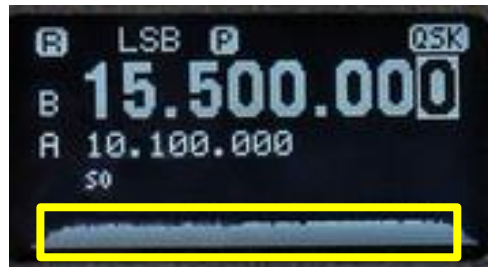
continue

CSN – (M2/B5/PM) Enter callsign. Use Adjust knob to scroll across the alphabet/numbers. Scroll to underline desired character, press SAVE. QUIT to exit function. BACK is a choice, I have no idea what this does.

- (M2/B5/PL) null

NOTES/COMMENTS

If the rig offers a CW ID or other similar function, I have been unable to call it. This is the only reason I can think of for loading your callsign into the memory.



"scope grass" @ no signal

MENU 3:

SCL – (M3/B1/PM) **Scope scale.** Range 1 – 10. Press SAVE or QUIT to exit.

At range 1, the display seems to be the most 'sensitive'. Set to 10 and only the strongest signals show up above the 'grass'. There is no setting to expand or reduce the SPAN (set of frequencies covered in RX) of the Scope function.

- (M3/B1/PL) null

NOTES/COMMENTS:

As you tune the VFO, a centerline displays – this is the active (displayed) VFO frequency. Set the active VFO to 10 or 15 MHz. Tune until you hear WWV. You should see a spike (the station) roll up to the centerline as you change VFO frequency.

If the spike is to the RIGHT of the centerline, you need to tune up (increase VFO) to hear the station. If the spike is to the LEFT, the station is below the VFO.

I called this rudimentary – for a reason. Fun addition. Value is up to you to decide.

DISPlay – (M3/B2/PM) chose between Scope, Big Scope or Scope +S.

Scope is default.

Big Scope drops VFO B and S-meter display for more scope 'space'

Scope+S shows S-meter with Scope sized spectrum display.

NOTE - Try Big Scope for SWL as the S-meter and VFO B are meaningless.

NOTES/COMMENTS:

The S-meter shows the relative strength of the tuned signal. As the signal increases in strength, the bar extends to the right.

continue

SPLit – (M3/B3/PM) toggles the split function ON/OFF. When ON, the SPL icon displays in Line 1.

In SPLIT mode, the active and off line VFOs *swap on transmit*. Lots of relay chatter here, not suggested for CW.

- (M3/B3/PL) null

NOTE and discussion:

This rig **does not** have Receiver Incremental Tuning (RIT) nor Transmitter Incremental Tuning (XIT) . If you use the active VFO to tweak the distant station for best clarity, you will both likely wind up walking each other up/down the band. As a *former* SWAN 350 owner, I know RIT is a must have in newer rigs.

My point?

Split offers a bad work-around. Set your transmit frequency on one VFO. Swap the VFOs. The active VFO is now your receiver control. In SPLIT mode, changing the active VFO has no effect, as when you transmit, the VFOs swap.

OTOH, this function will allow a legal SSB QSO (contact) on 40M between the L48 and Alaska.

BEEP (M3/B4/PM) toggles the beep on button press on/off.

- (M3/B4/PL) null

VERsion (M3/B5/PM) displays the firmware version installed.

- (M3/B5/PL) null