XIEGU G90

QUICK REFERENCE & OPERATING CHEAT SHEET

Firmware 1.81 (BASE + APP)

Purpose. A practical, quick-look companion to the G90 Version 5 operation manual. This revision uses the KE8WO V1.79b03 cheat sheet as its starting point, with updated button functions and firmware 1.80/1.81 notes.

Firmware check: Hold **FUNC** for 1–2 seconds to open the System Menu. Go to item 10, **Version**. Confirm both **BASE** (main body) and **APP** (head unit) show 1.81. The version screen may omit suffix letters.

What actually changed in 1.81? The official release notes list four practical points: head-unit fix for a small black box on the TX ERROR screen; fix for ATU occasionally becoming stuck in SLPT; main-unit fix restoring NFM receive audio; and a revised ALC display from 0–100. For digital operation, Xiegu specifies keeping ALC at or below 50 for best linearity.

Front-panel controls at a glance

Control	Short press / normal use	FUNC + / long press
VOL knob	Rotate: speaker/headphone volume. Press: switch speaker ↔ headphones.	FUNC + press: VOX menu (ON/OFF, gain, anti-VOX, delay).
MFK (lower-left knob)	Press: enter filter adjustment; rotate to adjust selected filter parameter.	Long press: choose its assigned function (100 kHz tune, SQL, PO level, key speed, FFT scale).
Main tuning knob	Rotate: frequency. Press: change tuning step / accept a setting.	Long press: RIT setup (per V5 manual's operation flow).
MODE / BAND (top)	MODE cycles LSB, L-D, USB, U-D, CW, CWR, NFM, AM. BAND steps bands.	Used for navigation in some menus.
FUNC	Arms secondary functions; amber F indicator lights.	Hold 1–2 sec: System Menu.
MW/MC	Write current VFO to a memory channel.	FUNC + MW/MC: clear selected memory.
A/B • A>B	Switch VFO-A / VFO-B.	FUNC + A/B: copy VFO-A frequency to VFO-B.
TUNE	Toggle internal ATU in/out of circuit.	Hold >2 sec: start antenna matching cycle.
POW	Set RF output power; also set SWR protection threshold.	FUNC + POW: MIC GAIN and audio INPUT source.
KEY	Step through CW keyer parameters.	FUNC + KEY: CW sidetone volume/tone and filter options; long press: CW decoder.
LOCK	Lock controls / screen brightness function (depending on press sequence).	FUNC + LOCK: spectrum SCALE and FFT averaging (AVE 1–10).
PRE/ATT	Cycle preamp → attenuator → normal.	No assigned second function in V5 table.
CMP/F-L	Toggle speech compression.	FUNC + CMP: set filter low-pass edge (F-L). Long press resets filter.
NB/F-H	Noise blanker on / level / width.	FUNC + NB: set filter high-pass edge (F-H). Long press resets filter.
AGC/SPL	Cycle AGC Fast / Slow / Auto / Off.	FUNC + AGC: split operation. Long press AGC: RF gain.
VM	Switch VFO/frequency mode ↔ memory/channel mode.	Long press: callsign editor.

Button labels are shown as printed on the radio. The display's soft-key labels may not line up perfectly with the physical buttons beneath them.

Everyday operating shortcuts

Task	Steps / notes
Power on / off	Hold the power button to turn the radio on or off. A brief press blanks the display while the radio continues running; press again or touch a control to restore it.
Change bands	Use the BAND left/right buttons on top of the head unit. System Menu item 8 selects HAM Band (amateur bands only) or FULL Band (also includes shortwave broadcast bands for receive).
Change mode	Use MODE left/right: LSB → L-D → USB → U-D → CW → CWR → NFM → AM. L-D and U-D are data modes added in firmware 1.79b02.
Tune frequency	Rotate the main dial. Momentarily press it to cycle the tuning step. The selected digit/step is highlighted. For direct entry, press F-INP ENT on the hand mic, enter the digits, then press F-INP ENT again.
Fast tune	The MFK defaults to 100 kHz frequency steps. Long-press MFK, select Freq 100k, then press MFK to return to operation. Rotate MFK to move quickly across a band.
RIT	Long-press the main tuning knob to enter RIT adjustment; rotate to set the offset and press the knob to accept. Watch for the RIT offset indicator on screen.
Set RF gain	Long-press AGC, rotate main tuning dial to adjust RF gain, then press the main dial to finish. Reduce RF gain if strong signals or band noise are degrading reception.
Set squelch	Long-press MFK, select SQL Level, press MFK, adjust the level, then press MFK to store. Squelch is most useful on AM/NFM; normally leave it off for weak-signal HF work.
AGC	Press AGC repeatedly: FAST for rapidly changing signals, SLOW for steadier signals, AUTO for radio-selected response, or OFF. Start with AUTO or SLOW for SSB.
Preamp / attenuator	Press PRE/ATT to cycle PRE → ATT → neither. Use ATT when very strong signals overload the receiver. Preamp is generally most useful above 20 m; try it rather than leaving it on by default.
Noise blanker	Press NB to cycle through NB switch, level and width; adjust with main dial. Use only for pulse noise (e.g., ignition noise). Excessive NB can damage wanted-signal audio.
Speech compressor	Press CMP to toggle compression. Useful when signal strength is marginal; leave off when conditions are good for cleaner audio.
Split operation	Set VFO-A and VFO-B to the required receive/transmit frequencies; use A/B to select and configure each VFO. Press FUNC then AGC/SPL to enable split. Confirm the TX frequency before transmitting.
Memory channels	Press MW/MC, select channel with the main dial, press MW/MC again to store. Use VM to enter/leave memory mode. FUNC + MW/MC clears a selected memory. Memory channels are 00–63.
Callsign on startup	Long-press VM. Select characters with the main dial and press the dial to enter each. PRE = save, NB = backspace, VM = quit.

Filter adjustment (DSP)

A short press of the MFK enters filter adjustment. The two filter edges are adjusted separately: press MFK to select the next edge, then rotate the MFK to move that edge. The displayed passband is the combined (composite) filter. Press/hold as prompted by the display to exit or accept. For a quick reset, hold CMP/F-L or NB/F-H (the filter reset function).

Spectrum / waterfall

FUNC + LOCK opens spectrum options. SCALE sets the spectrum reference level; AVE sets FFT averaging from 1 to 10. Higher averaging smooths the display but makes it respond more slowly. The FFT scale/automatic scaling behavior may vary by firmware; use the on-screen choices.

Transmit, antenna tuning & CW

SSB voice operation

Setting	How to set it / practical note
Mode	Select LSB or USB. Do not select L-D/U-D for microphone voice.
Audio source	FUNC + POW → INPUT. Select MIC for hand microphone operation; LINE IN for audio from the ACC input.
Mic gain	FUNC + POW → MICGAIN. Start near the default / around 10, then adjust while monitoring the transmitted spectrum and ALC.
RF power	Press POW, adjust POWER with main dial, press dial to accept. Range is 1–20 W.
SWR threshold	Press POW again to set SWR THR. Default is 3:1. If measured SWR exceeds the threshold, the radio reduces output power to protect itself.
ALC display (FW 1.81)	ALC is shown on a 0–100 scale and represents MIC or LINE IN audio level. Higher = stronger input. Do not use the old V1.79b03 advice as a universal target; firmware 1.81 specifically says DIGI mode should be adjusted to ALC ≤50 for optimal linearity.

Antenna tuner (ATU)

Short press TUNE: puts the internal tuner in or out of the RF path (antenna icon indicates it is in circuit). This does **not** start a new tuning cycle. **Hold TUNE for more than 2 seconds:** starts the matching cycle. Leave the ATU enabled after a successful match if you want it in line during operation.

Important: The internal ATU matches the impedance presented to the radio; it does not physically retune an antenna or make a poor antenna system efficient. Check coax, connectors, counterpoise/ground and antenna condition if SWR remains high. Firmware 1.81 fixes an issue where automatic tuning could become stuck in SLPT.

SWR scan

Long-press POW to open the SWR scanner. The scan plots SWR versus frequency with the tuner out of circuit. Press VM to stop the scan. PRE can change the scan step size (1–5 kHz). This is useful for seeing the antenna's natural resonant region before the tuner is used.

CW operation

Control	Function
KEY short presses	Step through SPEED, M/L/R, MODE (iambic A/B), QSK on/off, QSK time and dot/dash ratio. Adjust with main dial; press the relevant control to accept.
FUNC + KEY	CW sidetone volume and tone; the manual also lists B500 CW receive bandwidth.
KEY long press	Turns the CW decoder on/off. Fine-tune until the A indicator flashes in time with the received code. A 300 Hz receive filter is recommended for decoding.
Practice	For sidetone practice without transmitting, disable QSK.

VOX

Press FUNC, then press the VOL knob. Rotate the main dial to change VOX ON/OFF, VOX GAIN, ANTI-VOX and VOX DLY; press VOL to step through the parameters. VOX can key from microphone audio or ACC line input. Start with gain/anti-vox around 50 and adjust to avoid false triggering.

Digital modes, audio & system menu

Digital modes (FT8, JS8Call, etc.)

Item	Practical setup
Mode	Select U-D or L-D (USB-Data / LSB-Data). Use the mode appropriate to the software and band plan.
Audio input	Set FUNC + POW → INPUT to LINE IN. Connect the PC/interface audio output to the G90 ACC AF-IN path (via a suitable interface such as DE-19/CE-19 or a correctly wired cable).
Audio output	Take AF-OUT from ACC to the PC/interface audio input. The AUX OUT level is controlled in System Menu item 6.
ALC (FW 1.81)	Set PC audio output / G90 AUX IN level so the ALC indication stays at or below 50. The ALC display represents input audio level; higher means stronger audio.
RF power / duty cycle	Start around 5–10 W, not maximum power. Digital modes can transmit continuously and heat the radio. Reduce power or duty cycle if the case gets hot.
AGC	For many digital-mode setups, AGC OFF and reduced RF gain can help avoid audio-level pumping. Adjust receive audio so the computer is not overloaded.
CAT control	The COMM port uses a serial connection. The V5 manual specifies 19,200 bps, 8 data bits, no parity, 1 stop bit for USB-serial CAT.

Important distinction: The G90's rear-panel I/Q output is separate from CAT and from the ACC audio connections. A CAT cable alone controls frequency/mode but does not carry the spectrum/waterfall. To display the G90's I/Q spectrum on a PC, use the stereo I/Q output and a true two-channel stereo line-level input/interface; a mono input or ordinary stereo DAC output will not do the job.

System Menu (hold FUNC 1–2 seconds)

# / Menu item	Purpose / notes
1 – Handle up/down	Assign microphone ▲/▼ to frequency/channel, band, or volume.
2 – Handle F1	Assign F1 to PRE/ATT, SPLT, NB, COMP or AGC.
3 – Handle F2	Assign F2 to PRE/ATT, SPLT, NB, COMP or AGC.
4 – LCD BL	Display backlight brightness, 10–100%.
5 – AUX IN Volum	ACC line input level, 0–15. Set conservatively for digital audio; then adjust PC output and watch ALC.
6 – AUX OUT Volum	ACC audio output level, 0–15. Adjust to avoid overdriving the PC sound input.
7 – RCLK Tune	Reference clock calibration, −1000 to +1000 Hz. Leave at 0 unless you have a reliable frequency reference and know the measured offset.
8 – Band Stack Mode	HAM Band or FULL Band (includes shortwave broadcast bands in band stepping; those remain receive-only).
9 – ON/OFF Beep	Enable or disable startup/shutdown beep.
10 – Version	Shows BASE = main body firmware and APP = head-unit firmware.

Menu navigation: use NEXT/PREV soft keys to move between items, main dial to change values, SAVE to save and exit, EXIT to leave without saving. Soft-key labels can be slightly offset from the physical buttons.

Firmware 1.79 → 1.80 → 1.81: what to remember

Version	Changes relevant to operating the radio
1.79b02 / 1.79b03	Added L-D and U-D data modes; updated DSP filter behavior and other operating changes. The KE8WO sheet is dated 28 Oct 2022 and documents this generation.
1.80	Main/body and head-unit releases followed separately. Version 5 manual (June 2025) is written for BASE 1.80b1 / APP 1.80, so it is the best available operating reference for the 1.81 interface.
1.81 – Head unit	Fixes small black box on TX ERROR prompt; fixes automatic ATU tuning getting stuck in SLPT.
1.81 – Main unit	Restores NFM receive audio; changes ALC indication to 0–100, representing MIC/LINE IN audio level. For DIGI, set input so ALC ≤50 for best linearity.

Fast troubleshooting

Symptom	First things to check
No NFM receive audio	Firmware 1.81 includes the fix. Verify BASE is actually 1.81; check volume, squelch and antenna.
ATU will not complete / SLPT	Firmware 1.81 includes a fix. Verify both firmware components, check antenna/coax and try tuning at a suitable frequency with low RF power.
High SWR after tuning	Confirm ATU icon is on; ensure the tuner is in line; inspect antenna feed line and connections. ATU cannot correct every antenna mismatch.
Distorted digital transmission	In U-D/L-D, verify INPUT = LINE IN; reduce PC output/AUX IN until ALC ≤50; use moderate RF power and watch temperature.
No waterfall on PC	CAT is not I/Q. Connect the rear I/Q port to a two-channel stereo input/interface and configure HDSDR/SDR software for the correct sound device and sample rate.
No transmit / power reduced	Check SWR and SWR threshold, antenna connection, selected mode/frequency, power setting and any active split/VFO configuration.

Reference documents

1. Xiegu G90 Operation Manual, Version 5, June 2025 (BASE 1.80b1 / APP 1.80):
https://radioddity.s3.amazonaws.com/Radioddity_G90_User_Manual_V5_June_2025.pdf

2. Official Xiegu G90 firmware 1.81 release notes (25 Aug 2025):
https://xiegu.eu/sdm_downloads/xiegu-g90-firmware-v1-81-25-08-25/

3. KE8WO original G90 Cheat Sheet, V1.79b03 (28 Oct 2022):
https://xiegu.eu/?download_id=1537&sdm;_process_download=1

Revision note: This is an independently prepared quick-reference update based on the cited KE8WO sheet, the Version 5 manual and the official 1.81 release notes. It is not an official Xiegu publication and is not a line-by-line reproduction of the KE8WO document. When a control's behavior differs between firmware/manual revisions, follow the radio's on-screen labels and the official manual.