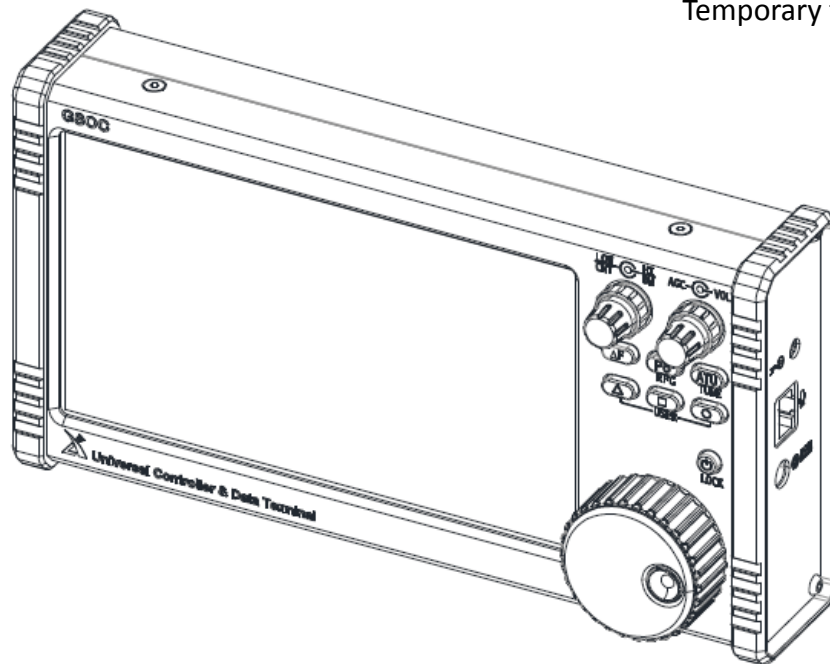


# XIEGU

## GSOC Universal Control/Data Terminal

Operation Manual

Temporary file: 1.1



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## Introduction

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GSOC universal controller is a terminal product used for external extension control of X5105 and G90/G90S. It can be used for radio host control. More importantly, it can be extended into many advanced functions and usages, improving the device maneuverability and playability.

GSOC consists of a baseband processing unit and an SDR receiving unit, which is capable of receiving and processing IF signals and IQ signals and finally displaying relevant contents (such as frequency spectrum, waterfall plot and demodulation information) after 24bit-ADC sampling and processing. GSOC is featured by diversified external interfaces and strong extended functions, which is capable of satisfying the present demands for network operation and Bluetooth control. Certainly, you can also operate all radio functions directly through the operating mode of touch control. GSOC allows you the experience of large screen and wide frequency spectrum and to keep everything under control!

- **Extension of spectrum and waterfall functions**
- **Common advanced function extension, such as digital noise reduction, digital filter, etc.**
- **7" color touch LCD display**
- **Automatic voice call and preset message storage & sending**
- **Support keyboard and mouse control**
- **Support external Bluetooth WIFI adapter**
- **Dual-core application processor, large memory**
- **Support full functional control of X5105, G90 and G90S**

**Please read this manual carefully for a better experience and full understanding on operation of the GSOC.**

## Specification Parameter

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### Parameter Specification

Applicable model:	X5105、G90、G90S
Operating temperature scope:	0°C ~ +50°C
Frequency stability:	±1.5ppm in the 10~60min after startup @25°C: 1ppm/hour
Supply voltage:	10.5~16.5VDC, negative electrode grounding
Current consumption:	600mA @ Max
Display screen resolution:	1024*600
Touch screen type:	Capacitive
Spectral sensitivity:	-120dBm ± 3dB
Audio output:	0.5W (8Ω, ≤10%THD)
Earphone output impedance:	16~32Ω
Frame size:	225*123*45mm (excluding projection)
Quality of the complete machine:	About 1.2kg (only host)

◆ Above specifications may be changed without notice.

## Packing List

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### **Packing List:**

GSOC host : 1 pc.

Power line : 1 pc.

Stereo antithetical connection : 1 pc.  
wire

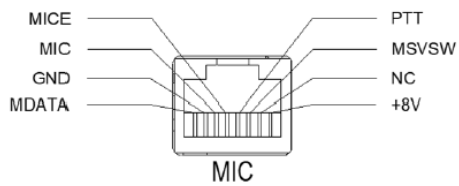
Warranty card : 1 pc.

Certificate of conformity : 1 pc.

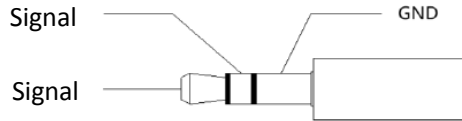
Quick operation manual : 1 pc.

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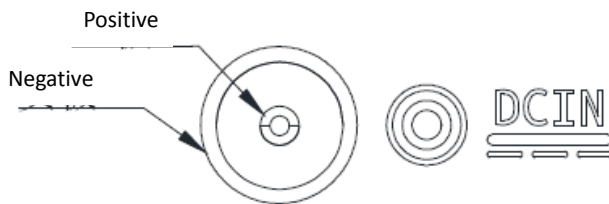
## Definition of Microphone Interface



## Wiring Diagram of Earphone/Speaker Plug



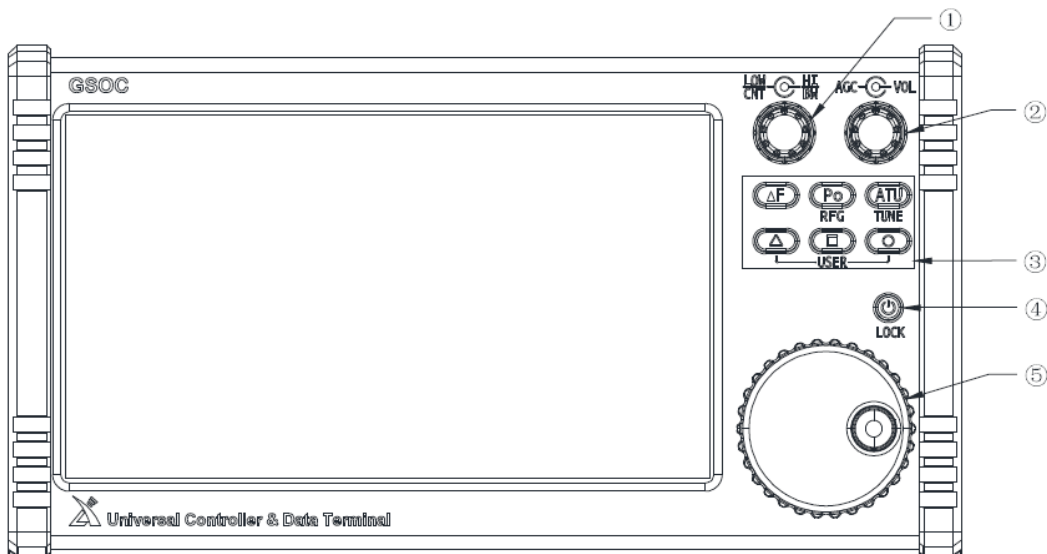
## Polarity Definition of Power Interface



### Note:

- ◆ The plug in the external speaker/earphone is a 2-core monophonic connector, which will cause a short circuit of the audio signal, resulting in silence.
- ◆ Direct use of the 2-core to 3-core connector can also cause short-circuit of the audio signal, resulting in silence.

## Panel Keys



### ① Digital filter adjusting knob

- Inner ring: bandwidth mode filter adjustment
- Outer ring: central mode filter adjustment

### ② Volume/squelch adjustment knob

- Inner ring: volume adjustment
- Outer ring: squelch adjustment

### ③ Key area

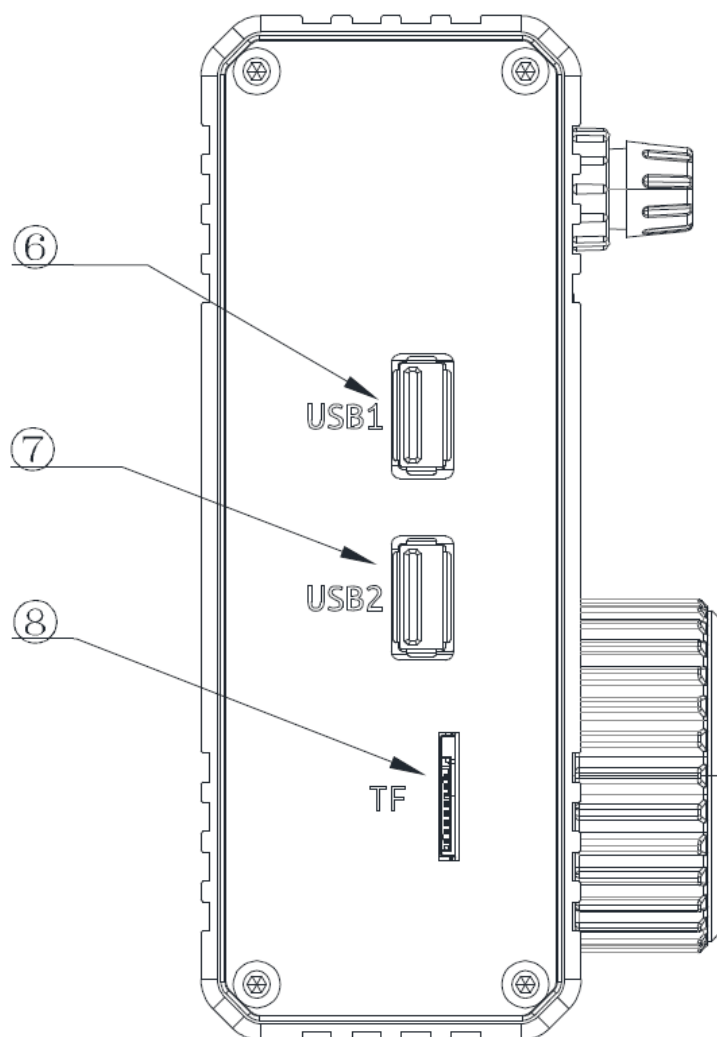
- ΔF: press for RIT adjustment, and long press for XIT adjustment.
- Po: press for transmitting power adjustment, and long press for RF GAIN adjustment.
- ATU: press for turning on/off AH, and long press for starting the turning.
- Δ, □, ○: custom function keys (*not open yet*)

### ④ Power key

Long press for startup & Shutdown, and press for locking the key.

### ⑤ Large knob

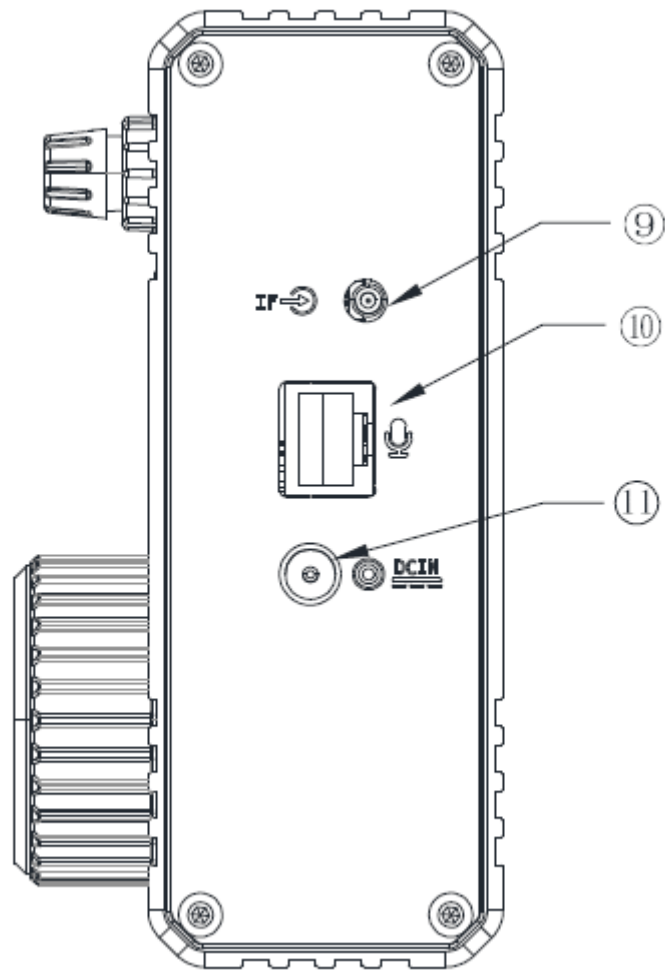
Adjust the frequency and set parameters.



- ⑥ USB1 port
- ⑦ USB2 port
- ⑧ TF card slot

## Machine Interface

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- ⑨ Intermediate frequency signal input port
- ⑩ Hand microphone interface
- ⑪ External power input

Connector type: 5525, the inner core is positive and the outer ring is negative.

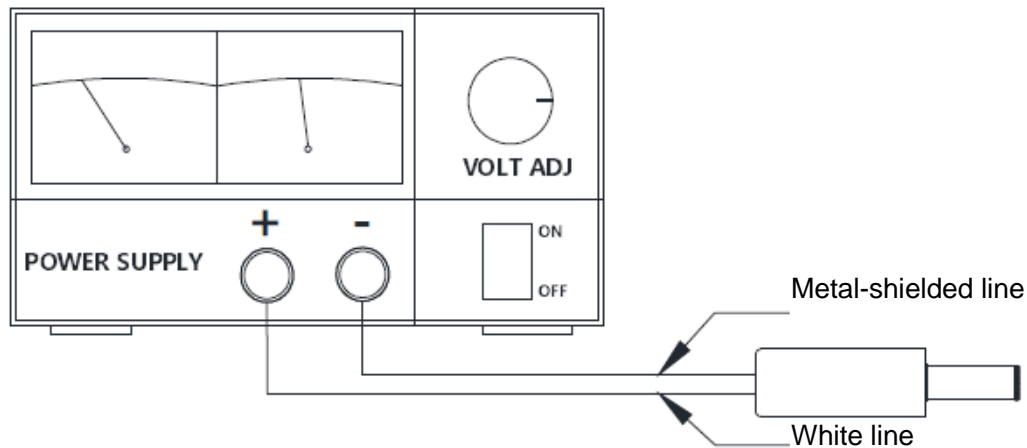


## Power Supply Wiring

13.8V external DC power supply is available for GSOC controller. Attached power lines can be used to connect to equipment and DC power supply.

DC power supply shall be connected in strict accordance with following figure to avoid reverse polarity connection.

**White line shall be connected with the positive pole of power supply and metal-shielded line shall be connected with negative pole of power supply.**



- EMC magnet ring can be applied on power lines to prevent external disturbance from entering the controller via power lines and radio-frequency interference in the equipment from radiating externally via power lines when external power supply is adopted. Magnet ring shall be installed at the side closing to the controller.
- ◆ Polarity of power lines shall be carefully inspected to avoid reverse polarity connection when external power supply is adopted.
- ◆ Reverse connection of power may cause severe damage to the controller.

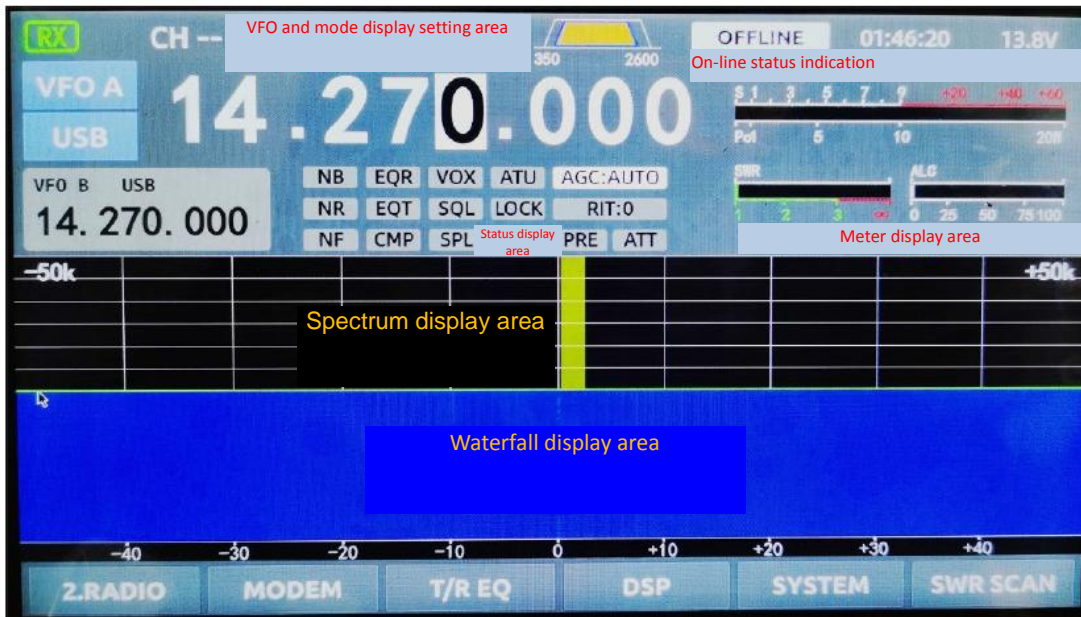
## Menu Function Tree

Menu Page	Primary Menu	Secondary Menu	Tertiary Menu	
Scope	SPAN: spectrum bandwidth selection	/	/	
	LEVEL: spectrum reference level regulation	/	/	
	DISP: display color setting	/	/	
Radio	MODEM: modem interface	/	/	
	T/REQ: transfer and receive EQ settings	/	/	
	DSP: digital function menu	COMP: voice compression	/	/
		NR: digital noise reduction	ON/OFF: switch	Level: depth adjustment
			ON/OFF: switch	Level: depth adjustment
		NB: pulse depression	ON/OFF: switch	Level: depth adjustment
			ON/OFF: switch	Width: pulse width adjustment
			ON/OFF: switch	Center: centering adjustment
		NF digital NOTCH (not open yet)	ON/OFF: switch	Center: centering adjustment
			ON/OFF: switch	Width: width adjustment
			ON/OFF: switch	Width: width adjustment
		VOX: voice control	ON/OFF: switch	GAIN: voice control gain adjustment
	ON/OFF: switch		Anti-Gain: echo suppression setting	
	ON/OFF: switch		Delay: time delay adjustment	
	ON/OFF: switch		Delay: time delay adjustment	
	SYSTEM: systematic setting menu	CW: telegram setting	ON/OFF: switch	Tone freq: side tone frequency
			ON/OFF: switch	Tone volum: side tone volume
			ON/OFF: switch	QSK time: insertion time setting
			ON/OFF: switch	QSK time: insertion time setting
		KEYER: key setting	Speed: rate setting	Mode: selection of manual/automatic key
Speed: rate setting			lambic: mode AB setting	
Speed: rate setting			Ratio: dot-and-dash interval proportion setting	
MIC GAIN: hand microphone gain setting		/	/	
Input SEL: input selection		/	/	
LINEIN: line input gain setting		/	/	
LINE OUT: line output gain setting	/	/		
IF Input: intermediate frequency signal input switch	/	/		
AUDIO OUT: audio output	/	/		

		selection	
		BACKLIGHT: screen backlight brightness adjustment	/
	SWR SCAN: standing-wave scanner	/	/

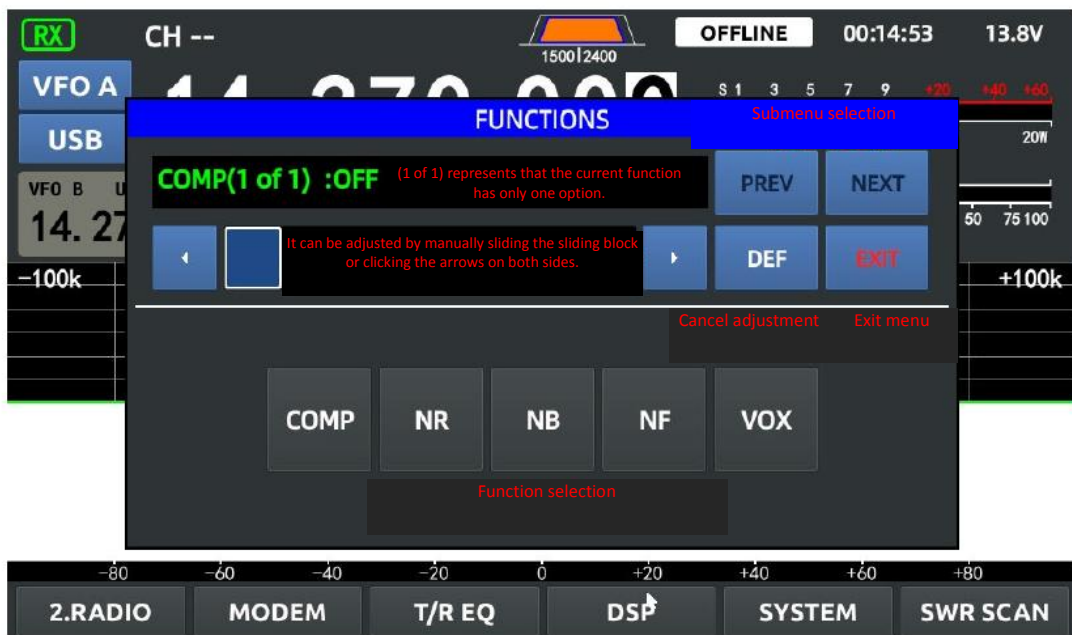
**Menu operation method:**

1. By direct touch operation, touch the corresponding display area to enter the menu.
2. By external mouse operation, click the corresponding display area to enter the menu.



### Screen Display Description

When the menu operation is selected, click a certain function and a corresponding window will pop up for operation, as shown in the figure below:



### Schematic Diagram of Pop-up Window

### Basic Operation Method

#### Frequency/Frequency Band Setting

1. Touch 100K~1Hz bits and the current bit will be selected. At this moment, turning the big knob or scroll the mouse wheel can adjust the frequency value.
2. When MHz bit is touched or clicked with the mouse, a frequency band switching/input frequency window will pop up, as shown in the figure below:



Band Selection/Frequency Input Pop-up Window

- 1) ▲BAND, ▼BAND: shortcut buttons of band sequence switching
- 2) It can also directly press the button of the corresponding band to switch to the band.
- 3) Direct input frequency method:
  - Click the input frequency button on the screen to enter the VFO Frequency Editor interface;
  - Input the required frequency values, including the decimal point, in turn according to the megahertz representation. For example, if you want to switch to 7.068MHz, input 7.0, 6 and 8 in turn, then click OK button, and the input is finished;
  - Press the exit window button to exit the current pop-up window.
- 4) VM: VFO and MEMO status switching

MEMO Editor: channel storage editor

SPLT: split frequency receiving & transmitting function switch

MODE: mode switching button

A/P: PRE, ATT switches

AGC: AGC function button

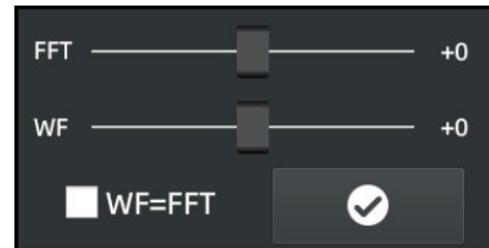
## Spectrum/Waterfall Reference Level Adjustment

Click LEVEL menu, and the level adjustment window will pop up:

FFT: spectrum reference level

WF: waterfall reference level

The default parameter is 0. The smaller the value (negative), the higher the sensitivity. The higher the value, the lower the sensitivity.



- Reasonable selection of this parameter will get better results. Sometimes, sensitive display is not always good.

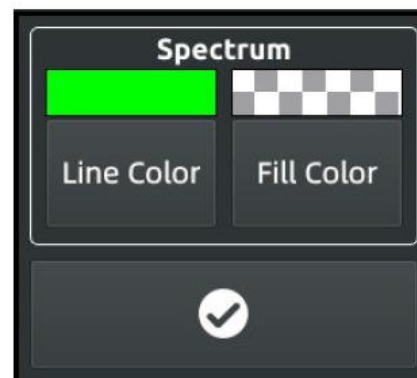
## Spectrum Display Color/Filling Setting

Click DISP to pop up this window.

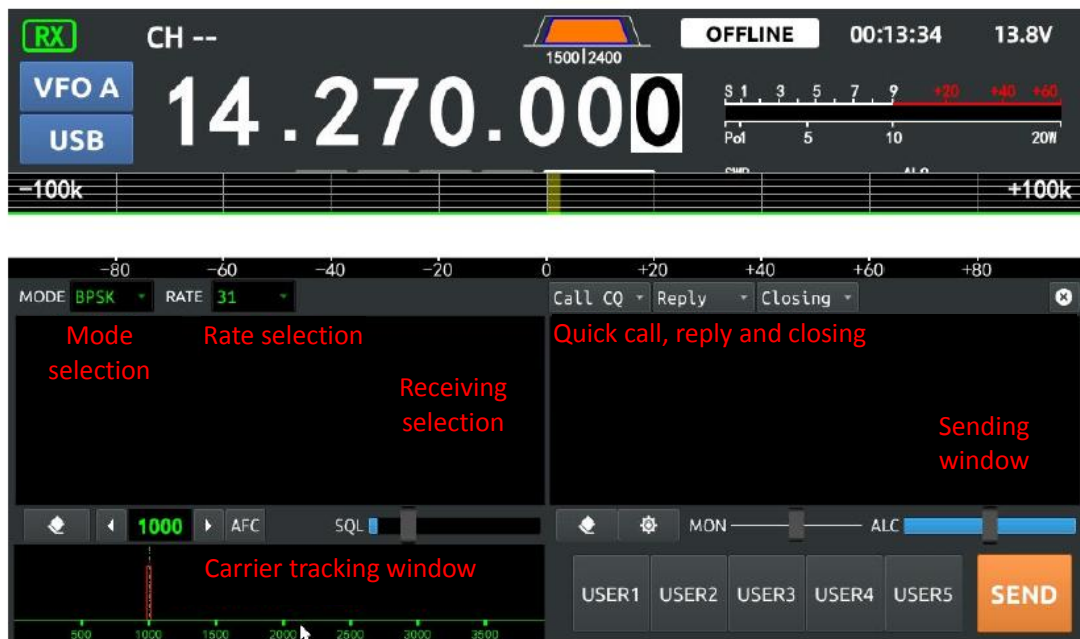
Line Color: spectrum curve color setting

Fill Color: spectrum filling color setting

After entering, you can adjust the ratio of R\G\B primary colors to set your favorite color scheme.



## MODEM Interface

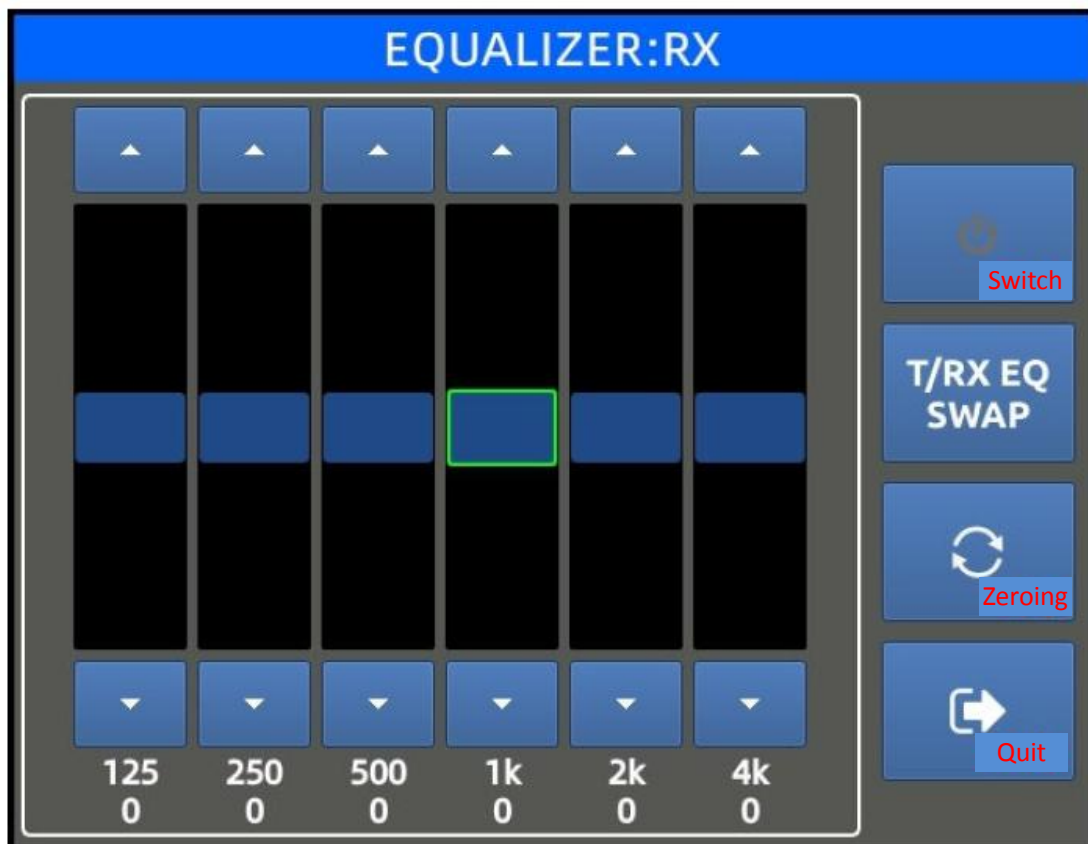


### MODEM Interface Description

- 1) After the keyboard is connected, it can enter the corresponding information in the sending window on the right.
- 2) Click the setting button on the right to set the related information of this machine for a quick call.
- 3) USER1~USER5 is the shortcut information button, you can enter the corresponding information in advance in the settings.
- 4) Click SEND button to send the current information.



## T/R EQ Setting



Pop-up Window of EQ Setting

T/RX EQ SWAP: select RX and TX settings. The corresponding status will be displayed on the top of the pop-up window.

Zero setting: set all EQ settings to zero.

EQ switch: turn EQ on or off

EQ is set into 6 sections: 125Hz, 250Hz, 500Hz, 1kHz, 2kHz and 4kHz.

The frequency response of each frequency band can be set reasonably according to your preference.

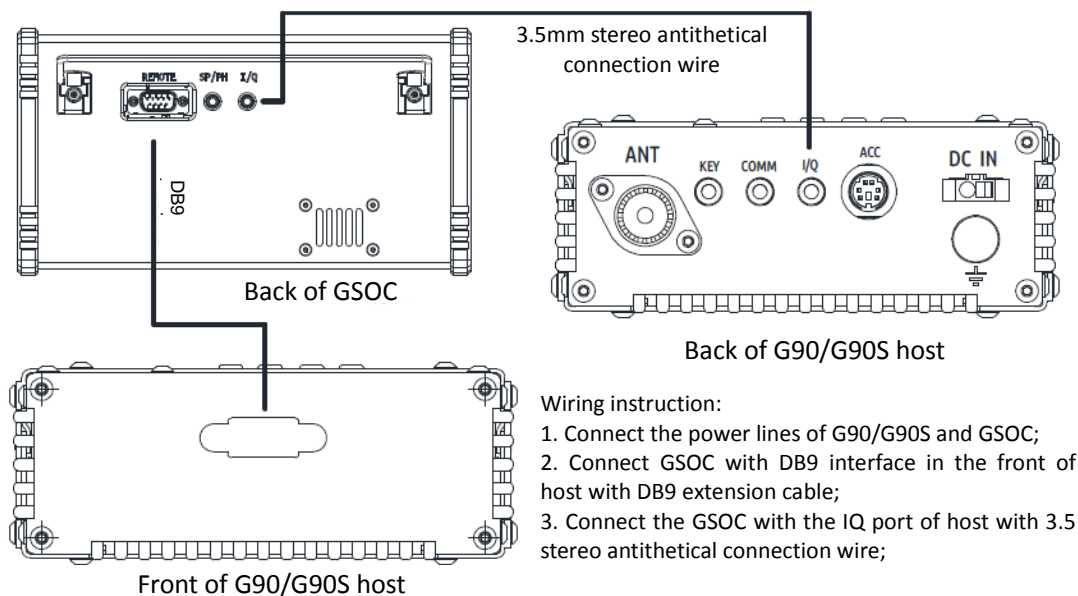
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### View of Firmware Version Number

You can view the current firmware version number on the top of the SYSTEM button pop-up window.

## Description of Connection to G90/G90S

Schematic diagram of wiring is as follows:



### Schematic Diagram of Wiring with G90/G90S

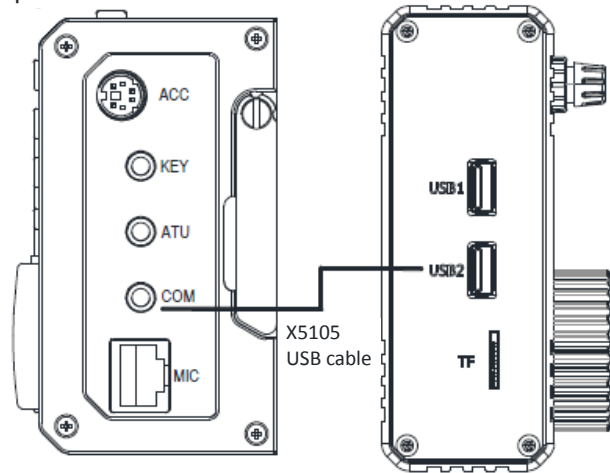
1. During voice communication, the hand microphone shall be inserted into the hand microphone interface on the right of the GSOC.
2. During CW communication, the keyboard shall be inserted into the KEY port on the tail of the G90/G90S host.

- Do not use unshielded 3.5mm stereo antithetical connection wire to replace the antithetical connection wire with the machine distribution line, otherwise it will introduce a strong interference signal.

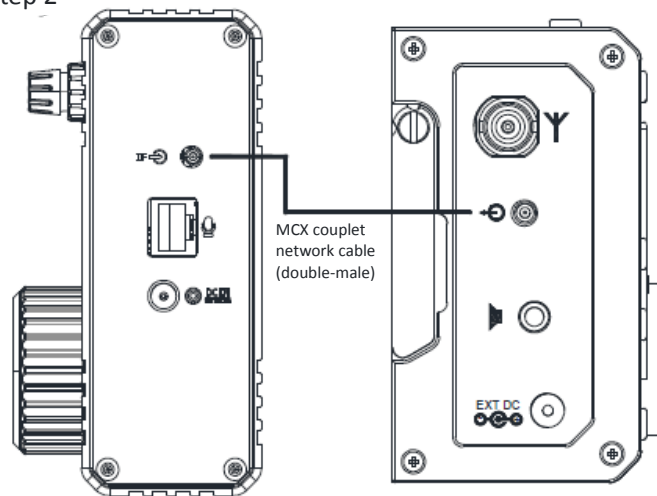
**Description of Connection to X5105**

**Schematic diagram of wiring is as follows:**

Step 1



Step 2



1. During voice communication, the hand microphone shall be inserted into the hand microphone interface on the right of the X5105.
2. After the MCX signal antithetical connection wire is connected, it needs to open IF Input option on the GSOC.
3. Once on-line, the keys on X5105 host will no longer control the host. All operations shall be performed on GSOC.

## Flash Mode

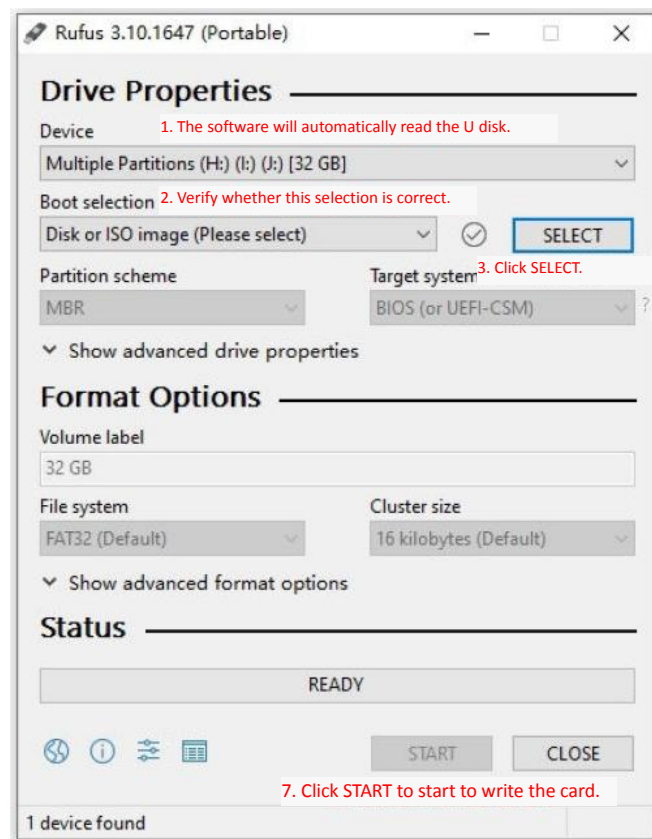
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The purpose of this tutorial is to guide the user to create and execute a micro SD card that can be used to update GSOC firmware, and perform flash.

Preparations:

1. Prepare a micro SD card with a capacity  $\geq 4$ GB.
2. Prepare a micro SD card reader.
3. Prepare a computer with Windows (7/10) operating system.

Process of making flash card:



Schematic Diagram of rufus Software Operation

Download the firmware update package sd\_image and unzip it to the appropriate location.

1. Run the rufus-3.10p.exe procedure in the sd\_tool folder, and click "Yes" if there is a prompt that the rights of administrators are needed.
2. On the software interface:
  - 2.1 Select the drive letter of card reader in the Device drop-down box (such as the H disk in Fig. 1 :);
  - 2.2 Select the Disk or ISO image in the Boot selection drop-down box;  
▲ Generally, it is unnecessary to operate the above two items, the software will identify the items automatically, and it just needs to make sure there is no error.
  - 2.3 Then click the SELECT button to select the sdcad.img file in the unzipped folder (in the root directory);
  - 2.4 Click the START button to start the operation. Click "OK" if any prompt box pops up.
  - 2.5 Click CLOSE to close the software if the progress is displayed in 100%. Pop up the card reader from the device manager and take out the prepared flash card. **Do not unplug the card reader directly to avoid damaging the file inside the card.**

### Update process of GSOC:

3. Insert the prepared flash card into the card slot on the left of GSOC when the GSOC is turned off (not connecting DB9 cable or USB cable). When the GSOC is turned on, text prompt will appear and the system will be automatically updated without manual operation. The update will be completed with about two minutes, and a shutdown countdown reminder will appear on the screen. Then the GSOC will automatically shut down for taking out the card. When the GSOC is turned on, the flash is completed.

**Note: after the flash is completed, the machine will shut down automatically. It shall be sure to take out the card first, then turn on the machine. Otherwise, the system will perform the flash operation again.**

Factory Reset

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**Factory Reset**

*Not open yet*

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