

X6100, an ultra-portable short-wave transceiver that adopts high-performing radio platform architecture, powerful baseband and RF units, receiving structure and 24bit sampling and large dynamic RF front-end unit, can obtain extremely high radio receiving indicators.

The whole device integrates rich and varied operation functions and desktop-like functions, such as recording call, variable bandwidth digital filter, digital noise reduction and so on, which brings you a new cognition and experience on amateur radio. With its compact structure and appearance, you can immediately set forth on a journey with it, get close to nature, and enjoy the fun of outdoor communication.

- HF/50MHZ full mode (supporting data communication)
- 4-cun high-resolution color screen (800*480)
- Built-in large capacity lithium battery pack (3000mAh, 12V)
- Built-in efficient automatic antenna tuner
- Integrated standing wave scanner and voice pager
- Integrated modem, preset message, CW automatic call
- which can realize wireless audio, keyboard and mouse operation
- Integrated USB line control/transmission, supporting USBHOST.
- Standard high-stability TCX0 internal clock source

We strongly recommend you to read through this Manual to rapidly keep abreast of the operation & control method of the X6100 before using it.

Safety Precautions



That changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. WARNING:



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:



Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

In case of smoke or peculiar smell, cut off the power supply immediately, remove the power cable and then contact the supplier.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.



Do not use this device in lightning weather. *Disconnect the power supply and antenna*

advance.



in

Do not touch the antenna during the transmission of the device.



Do not apply AC power to the DC interface on the side panel of transceiver. Otherwise it may cause fire or damages to the device.



Do not apply more than 15VDC voltage to the DC interface on the side panel of transceiver. Otherwise it may cause fire or damages to the device.

















Do not reverse the polarity of the power cable. Otherwise it may cause fire or damages to the device.



Do not operate or touch the device with wet hands. Otherwise it may cause electric shock or damages to the device.



In case of smoke or peculiar smell, cut off the power supply immediately, remove the power cable, and then contact the supplier.

-  Do not apply impact force on the device. Otherwise it may cause fire or damages to the device.
-  Do not place the device in the area with temperature range beyond $-10^{\circ}\text{C}\sim+55^{\circ}\text{C}$.
-  Do not place the device in the area with temperature range beyond $-10^{\circ}\text{C}\sim+55^{\circ}\text{C}$.
-  Do not use the device in areas, vehicles or aircraft where it is prohibited.
-  Do not use this device while driving or operating engineering equipment.
-  Do not use the device in petrol stations, gas stations or the place with combustible gas around.
-  Do not use the device in hospitals or in an environment where people wear medical devices.
-  Do not expose the device to rain, snow or any liquid. Otherwise it may cause damages to the device.
-  Do not use headphones at high volume.
-  Do not disassemble or modify the device.
-  Do not place the device near the heat source or in direct sunlight.
-  Do not place the device in a dusty or damp place.
-  Do not place the device in a poorly ventilated place and do not block any radiator on the device. Otherwise, the device may be damaged due to overheating.
-  Do not wipe the device with organic solvents, such as benzene or alcohol. This may damage the surface of the equipment.

Battery Precautions

This device contains lithium-ion battery components, so improper use may result in dangers such as smoke, fire or battery rupture.

- The battery pack is installed inside the backplane of the equipment. Do not hit the backplane of the device.
- Do not place the device in a place where the temperature is higher than 60°C; otherwise, the battery pack may rupture or catch fire.
- Do not place the back of the device near heat sources, such as stove fire or direct sunlight.
- Do not weld, disassemble or modify battery components by your won. This can lead to protection failure and battery damage, which can further lead to fire and other hazards.
- In case of obvious deformation, seepage or peculiar smell at the installation place of the battery pack, the device shall not be further used, and distributor shall be contacted immediately for assistance.
- Do not use the device beyond its temperature range; otherwise, the service life of the device and battery pack may be reduced or damaged.
- Do not leave the battery pack in fully charged or fully discharged state for a long time. Otherwise, the service life of battery pack will be shortened. Please maintain the electric quantity of battery pack within 40%~50% if the device is to be left unused for a long time, and then keep it properly.
- The service life of the built-in battery pack is about 3~4 years generally. Please replace the battery pack once its service life reaches this period. Even if the battery still works, its performance will be significantly reduced and service time will be greatly shortened. The battery pack can be generally charged and discharged for 300~500 times. This depends on specific usage conditions.
- Do not charge the device with other non-compliant chargers.
- Pay attention to the condition of the device when charging. Stop charging immediately in case of any abnormality.
- Do not charge the device in vehicles under direct sunlight.

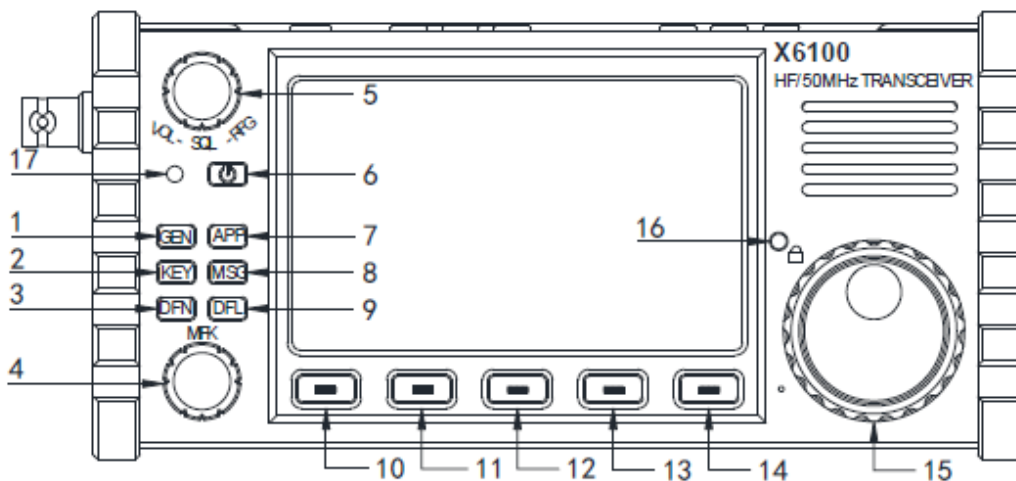
Important Note

- Make sure you have had relevant operating certificates or permissions before making a call on the frequency band of amateur radio.

- Make sure the antenna feed system meets the transmitting requirements before actual transmitting.
- The device may be hot after continuous and long-term transmitting (such as FT8 operation). Please appropriately extend transmitting interval and strengthen external heat dissipation.
- Please place the device in a safe and reliable place and keep it away from children or unauthorized persons.

I. Panel Instructions

Front panel



1 GEN button

9 DFL button

Press it to bring up the general settings menu.

Press it to bring up digital filter settings interface

2 KEY button

10~14 Multi-function button

Press it to bring up taper settings menu.

Press it to execute functions displayed on screen.

3 DFN button

15 Main knob

Press it to bring up the menu of digital functions.

Rotate it to adjust frequency.

4 MFK multi-function knob

16 Lock button

Default: Long press for 1s to lock the keys operation on panel.

Customize: Long press for 1s again to unlock.

5 VOL/SQL/RFG knob 17 Power supply/TR indication

Default: volume control. The indicator light is green after startup.

Press the knob to adjust SQL muting depth.

Press the knob again to adjust RFG gain.

6 Power button

Press and hold it to turn on the power supply of transceiver.

Press and hold it for 1s to turn off the power supply of transceiver.

7 APP button

Press it to bring up function menu.

8 MSG button

Press it to bring up information editing and storage interface.

Left plate

18 ANT

BNC interface, 50Ω, for antenna connection.

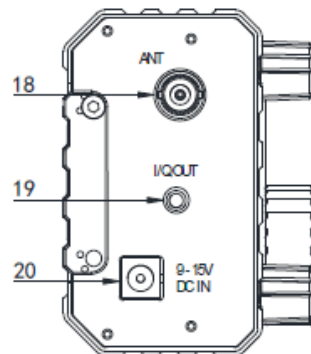
19 I/Q OUT

IQ signal output port 3.5mm stereo socket.

20 DC IN

External power input port, 5525 type.

Note: input voltage shall not be higher than 15V DC.



Right plate

21 CARD

microSD memory card slot

22 DEV

USB port. Slave interface

23 HOST

USB port. Host interface.

24 S/P

External speaker/headphone interface, with speaker or headphone output can be set via menu. It is a 3.5mm stereo interface achieving stereo output.

Note: short circuit or silence will be caused if plugging the single track plug externally.

25 KEY

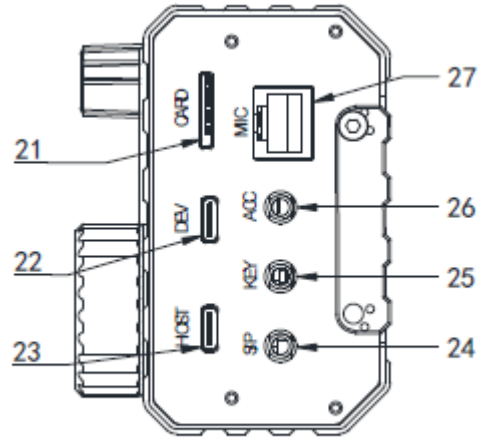
It is a 3.5mm stereo interface used to connect manual/auto tapper. See page 8 for connection.

26 ACC

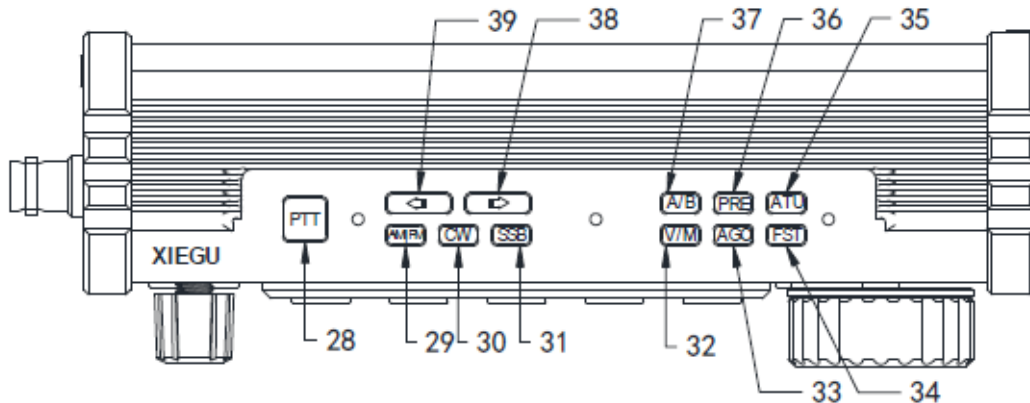
It is a 3.5mm stereo interface. See page 8 for interface definitions.

27 MIC

Hand microphone interface. The interface is of type RJ45.



Top button



28 PTT

PTT button on device body.

29 AM|FM

AM/FM mode switch button.

30 CW

CW mode switch button

31 SSB

34 FST

Fast step selection button

35 ATU

Built-in antenna tuner access/tuning button

36 PRE

Pre-amplifier/pre-attenuator switch

37 A/B

SSB mode switch button

VF0A-VF0B switch button

32 V/M

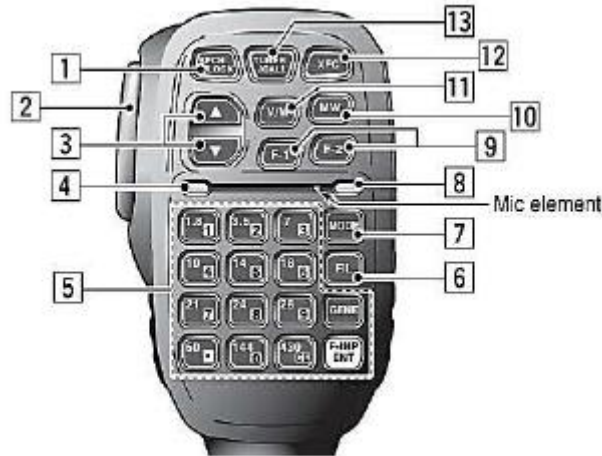
38~39 Left and right switch

VF0/MEM0 status switch

33 AGC

AGC switch/speed selection button

Hand microphone button



1. LOCK button

Lock button

2. PTT button

Transmitting control button

3. Up/down
detailed in system menu 1)

4. Transceiver indicator light

Hand microphone operation indicator light

5. Figure button area

Figure keyboard area

6. FIL button

Filter selection

7. MODE button

Selection of working mode of host

8. Functional indicator light

No

9. Function button
2&3)

F1/F2 key (user-defined, detailed in system menu

10. MW button

Memory operation

11. V/M button

12. XFC button

No function temporarily

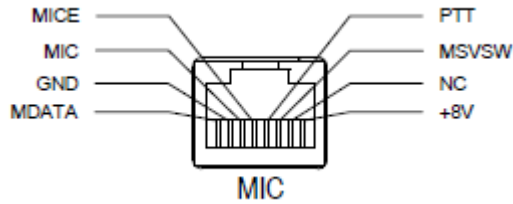
13. TUNER button

Long press to start antenna automatic tuning

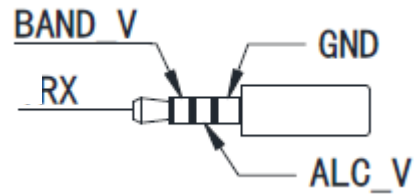
Interface Definition

Microphone port

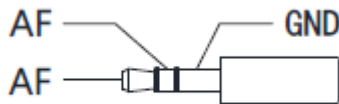
Definition of ACC interface



Connection of S/P Port



Definition of I/Q OUT interface



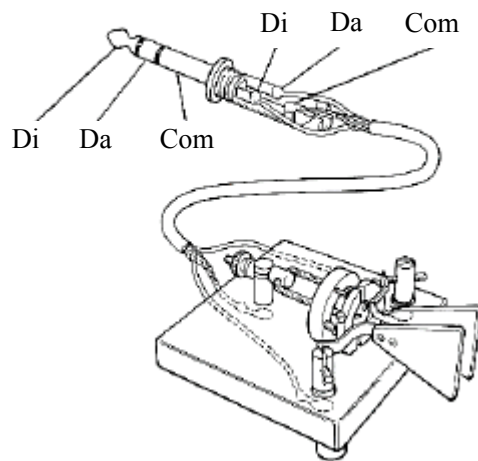
Connection of KEY Port



Connect manual/automatic tapper according to the schematic diagram shown in the right figure.

Note :

- If the connector of the manual tapper is a 6.5mm 2-core plug, please change it to a 3-core 3.5mm stereo plug according to the wiring method shown in the right figure, and connect the trigger end of the electric key to the "Di" or "Da" terminal.
- **Take care that direct use of the 2-core to 3-core adapter or incorrect wiring may result the radio in CW transmission status all the time.**

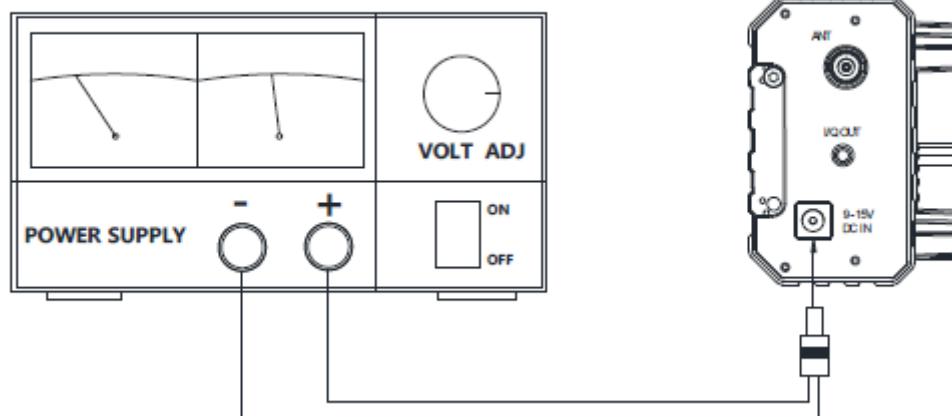


- Using plugs of other specifications may damage the socket.
- X6100 may switch to transmitting mode if plugging in or unplugging the tapper plug when it is working.
- Please cut off the power supply of X6100 before connecting or disconnecting the tapper.

Power source wiring

13.8V external DC power supply can be used for X6100. The current load capacity of DC power supply shall be at least 3.5A. Attached power lines can be used to connect to radio and DC power supply.

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



- EMC magnet ring can be applied on power lines to prevent external disturbance from entering radio via power lines and radio-frequency interference in radio from radiating externally via power lines when external power supply is adopted for X6100. Magnet ring shall be installed at the side closing to radio to greatest extent.

Charging

The X6100 radio shall be charged by the attached charging adapter. The radio can be charged by connecting the AC end of charging adapter with electric supply and inserting the output end into the DC interface at the left of X6100.

The host will automatically stop charging once the charge is completed.

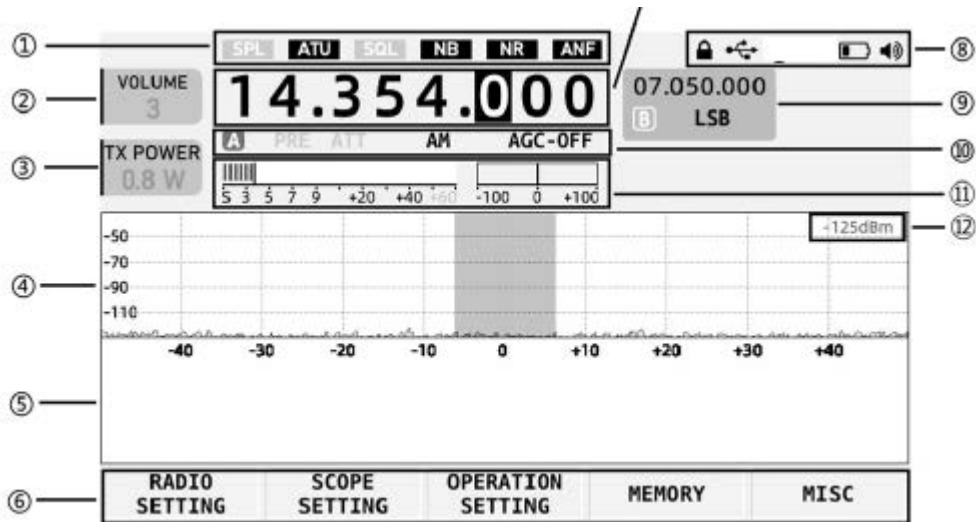
Note :

- 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 radio.
- Do not charge the radio with any other charger that does not meet the specifications. Otherwise, the device may be damaged

Caution!

1. The charging adapter can only charge the X6100 and cannot be used for transmitting as there is a risk of damaging the device.
2. Under no circumstances shall the DC port on the left of the X6100 be connected to a voltage higher than 15VDC. Otherwise, serious device damage may occur.

II. Screen Display Interface



① Status display area 1

This area displays SPL, ATU, SQL, NB, NR and ANF switch status.

② Volume tag

Display volume/noise level/RF gain adjustment. Short press the volume knob to switch the above three status.

③ Multi-function tag

The figure shows the transmitting power adjustment tag. Items of the tag displayed can be rapidly set via menu.

④ Spectrum display area

It displays the signal strength of about -122dBm at minimum

⑤ Waterfall plot display area

⑥ Multi-function menu area

Short press the corresponding button at the bottom of the screen to operate corresponding functions.

⑦ Main VFO frequency display area

Basic Operation

Turn on/off radio

⑧ Status display area 2

This area displays the status including lock/USB port/battery/volume.

⑨ VFOB display area

⑩ Status display area 3

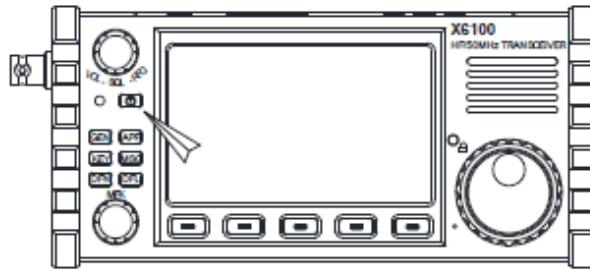
This area displays PRE/ATT/mode /AGC status

□ Table header area

This area displays S table and CW frequency aligned windows

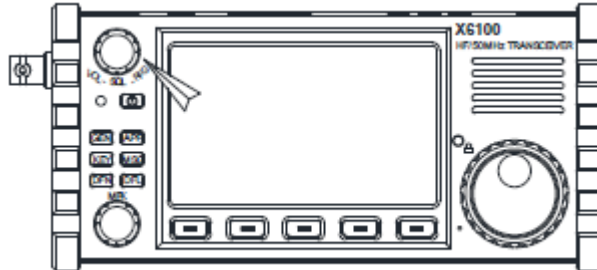
▣ Signal strength dBm display

1. Press the on-off button for 1s to turn on the radio.
2. Press the on-off button for 1s again to turn off the radio.



Adjust audio volume

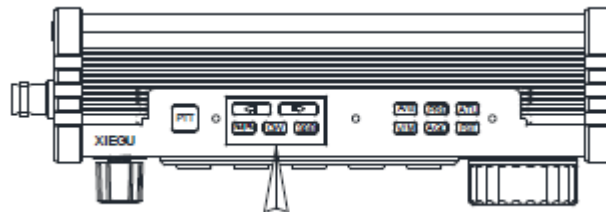
1. Turn the volume knob to the left or right to adjust the output volume.
2. Short press the volume knob to switch volume/muting depth/RF gain adjustment.



Operating frequency band and mode selection

Follow the instructions below to select the amateur band and set mode.

- Frequencies beyond the amateur band can only be received while cannot be transmitted.



Adjustment of RF gain and muting level

Proper RF gain can facilitate to improve the quality of signal received. In general, appropriately reducing the RF gain value at some low-frequency ranges with strong interference can significantly improve the hearing.

Adjustment methods of RF gain:

1. Short press the volume knob to bring up the RF GAIN setting items. The tag on the left side of the screen will display RF GAIN.
2. Rotate the volume knob to adjust the RF gain value.

SQL setting

When muting is necessary for signals or noise less than a certain amplitudes, appropriate muting level can be set to disable the audio switch without signal so that the speaker can be muted.

Operation methods:

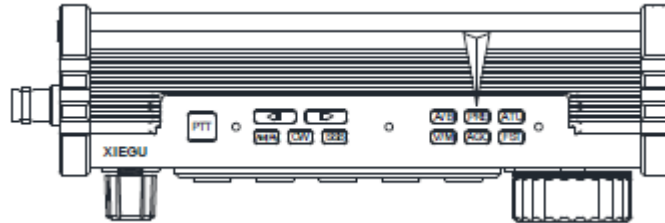
1. Short press the volume knob to bring up the RFGAIN setting items. The tag on the left side of the screen will display SQLLevel.
2. Rotate the volume knob to set the muting level. At the same time, the muting grade will display on the screen.

- The muting grade gradually strengthens from S1 ~S9, corresponding to strength. For example, when the muting grade is set to be S3, it indicates that the speaker will sound when the signal strength is more than S3. Otherwise, the speaker will in the silent mode.

Pre-amplifier/pre-attenuator

The pre-amplifier can improve the receiving effect of some weak signals of high frequency range and the sensitivity of the receiver.

Pre-attenuator can improve barrage jamming caused by strong signals and the performance of receiver.



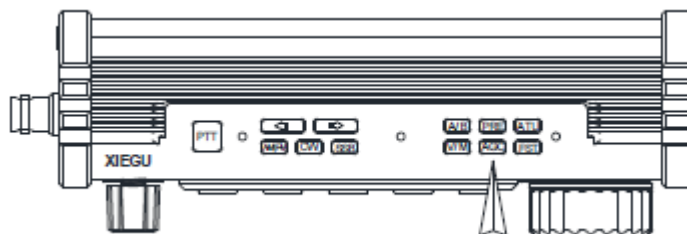
1. Short press the [PRE] button at the top of the radio, and the character PRE appears at the top of the screen, indicating that the pre-amplifier has been turned on.
2. Short press [PRE] button again and the character ATT will appear on the top of the screen, indicating that the pre-attenuator has been turned on.
3. Short press [PRE] button again and no character will appear on the top of the screen, indicating that the current state is shoot-through state.

- Before they are used in frequency range less than 14MHz, disabling the pre-amplifier is recommended so that the radio can be in the shoot-through state, which is conducive to strengthen the front-end performance of the receiver and reduce the influence of interference signals.

- When the level displays that the received signals exceed -40dBm, turning on the pre-attenuator is recommended to avoid the decreasing of the dynamics of the receiver due to strong signals.

Automatic gain control (AGC)

Select appropriate AGC control parameters in different work modes to achieve a good receiving effect.



1. Press [AGC] key at the bottom of the screen in a short time, enable/ disable or select different AGC modes and circulate them in the following order:

AGC-S—►AGC-F—►AGC-A—►AGC OFF

AGC-S: slow AGC control

AGC-F: fast AGC control

Recommended settings: AM mode: AGC-S
SSB/CW mode: AGC-F

AGC-A: automatic AGC control

AGC--: AGC off



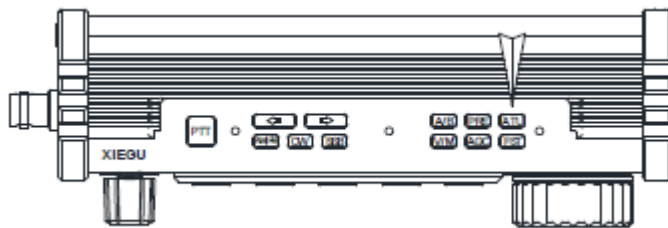
2. When the AGC-A mode is selected, the radio will automatically select the appropriate AGC control parameter according to the current work mode.

■ After AGC is disabled, the receiver will be in the maximum gain state and noise received will be significantly increased. It is recommended to turn on AGC, which will not affect the reception performance of the radio.

● Disable the QSK function in menu. There will be only CW sidetone of transceiver after pressing tapper under such conditions, but signals will not be transmitted externally.

Automatic Antenna Tuner

There is an efficient ATU integrated inside the X6100 radio to help you quickly erect and debug antenna.



1. Short press [ATU] button to connect with built-in antenna tuner. There will be an antenna icon at the top of screen.

2. In the case that the antenna tuner is accessed, long press the [ATU] key for 1s to start ATU automatic tuning functions. It will automatically return to receiving state after the tuning.

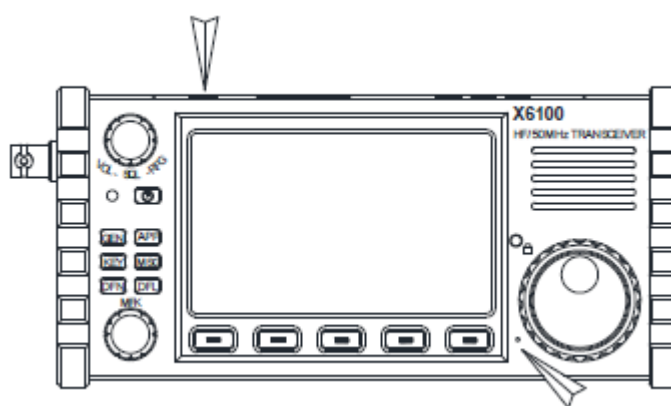
Note :

1. Short press [ATU] key, and there will be an ATU icon at the top of screen, indicating that antenna tuning functions are enabled. The functions are only enabled but not

working.

2. After the antenna tuner is tuned, the antenna tuner must remain to be open before the antenna tuner in the machine is used.
3. If "SWR" icon is displayed at the top of the screen and flashes once transmitting is enabled after the tuning, it indicates that standing-wave of current antenna is still large and tuning is required to be carried out again.
4. Antenna tuning shall be turned off once natural resonance of antenna reaches current frequency band.
5. When a whip antenna is used and the internal antenna tuning is started for tuning, strong radio frequency interference may be caused to the unit or electronic equipment.

The X6100 radio integrates PTT button and built-in microphone, which make it convenient when using the radio outdoors.



1. Press the PTT button on the top of the device and speak to the built-in microphone hole at the left of large knob to transmit voice.
2. Release the PTT button after transmitting to return to receiving status.

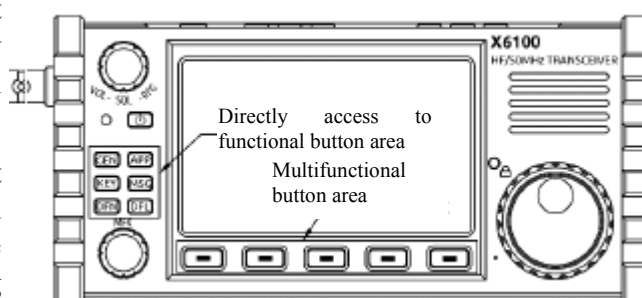
Note :

- Do not place the antenna very close to or near exposed parts of the body especially the face or eyes, when transmitting in hands.

Multifunctional operation

Operation methods:

1. Function buttons in the left area of the panel can directly access the common function operation menu.
2. After selecting a direct button, the corresponding menu will appear at the bottom of the screen. Press the corresponding button below to operate the function.



3. After selecting a function, rotate the large knob to adjust the corresponding parameter values. Adjustment parameters are displayed in the red character section in the function menu tag.

KEY function settings and operation

Short press [KEY] to enter the menu of KEY items. The KEY menu will appear at the bottom of the screen:

Page1:

KEY TYPE	KEY SPEED	IAMBIC	TONE	TONE LEVEL
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Page2:

QSK TIME	DI/DA RATIO	CW TRAINER		
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KEY TYPE: manual/automatic mode settings

KEY SPEED: automatic key bit rate settings

IAMBIC: Iambic A/B mode settings

TONE: sidetone frequency settings

TONE LEVEL: sidetone volume settings

QSK Time: QSK time setting

DI/DA RATIO: automatic key dot-and-dash interval proportion settings

CW TRAINER: CW learning mode switch

MSG function setting and operation

Short press [MSG] to enter the menu of MSG items. The KEY menu will appear at the bottom of the screen: Page1:

MGS 1	MGS 2	MGS 3	MGS 4	MGS 5
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This function aims to pre-store edited information and is used to automatic transmission function.

DFN function setting and operation

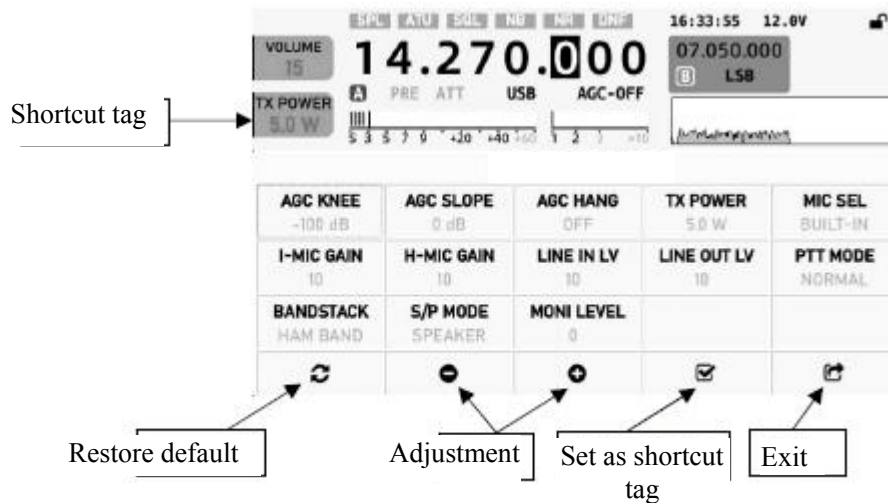
Short press [DFN] to enter the menu of DFN items. The KEY menu will appear at the bottom of the screen:

Page1:

NR	NR DEPTH	NB	NB WIDTH	NB LEVEL
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Page2:

DNF	DNF CENTER	DNF WIDTH		
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AGC KNEE: AGC control level

AGC SLOPE: AGC control slope

AGC HANG: AGC remaining settings

TX POWER: transmitting power setting s

MIC SEL: microphone selection (body/hand microphone)

I-MIC GAIN: Built-in microphone gain settings

H-MIN GAIN: hand microphone gain settings LINEINLV: line input signal level settings

LINE OUT LV: line output level settings

PTT MODE: PTT mode settings

BANDSTACK: band group display mode (amateur band/full band only)

S/PMODE: headphone port output selection (headphone/external loudspeaker)

MONI LEVEL: monitoring level settings

DISPLAY SETTINGS: display settings menu



RF FFT AVE: settings of displayed average of radio frequency spectrum

RF FFT REF: settings of displayed reference level of radio frequency spectrum

WF REF: waterfall plot reference offset level

AF FFT AVE: settings of displayed average of audio spectrum

AF FFT REF: settings of displayed reference level of audio spectrum

BL LEVEL: backlight brightness settings

MEMORY EDTT: channel memory editing menu



TAG: edit tag

MARK: star mark

ERASEMEMO: delete current channel memory

SAVEVFO: store current VFO settings into channels

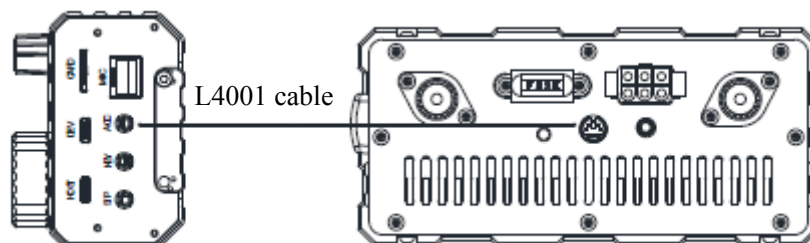
EXIT: exit

Note :

SAVEVFO button is invalid if current channel is not empty. Press ERASEMEMO button first to delete current memory before re-storage.

Appendix 1

Connection between X6100 and XPA125B (L4001 cable)



- XPA125B power amplifier and L4001 cable need to be separately ordered.

Parameter & specification

Frequency range: receiving: 0.5MHz~30MHz 50.00~53.99MHz

Audio output: 0.4W(8Ω, ≤10%THD)

Audio output impedance: 4~16Ω

Antenna tuner

Tuning range of antenna tuner VSWR: 1:5.0

First tuning time: ≤15s

Memory load tuning: ≤0.2s

○ Above specifications are typical values and subject to change without prior notice.

○ Working frequency range of transceiver varies from version of the equipment.
Ask local dealer for details.

Packing List

X6100 host: 1 pc.

Type-C cable: 1 pc.

Multifunction hand microphone: 1 pc.

Charger adapter: 1 pc.

Power cable: 1 pc.

Warranty card: 1 pc.

Manual: 1 pc.

Quality certificate: 1 pc.