

XIEGU

HF/50MHZ Portable Short-wave Transceiver



X5105

Operation Manual

For Firmware V3.0 Edited by KE4RG
December 17, 2020

Based upon original manual by
Chongqing Xiegu Technology Co., Ltd

Why This Manual?

I was frustrated with errors and omissions of the existing manuals.

TAP means press and release.

HOLD means press for 2-seconds and release.

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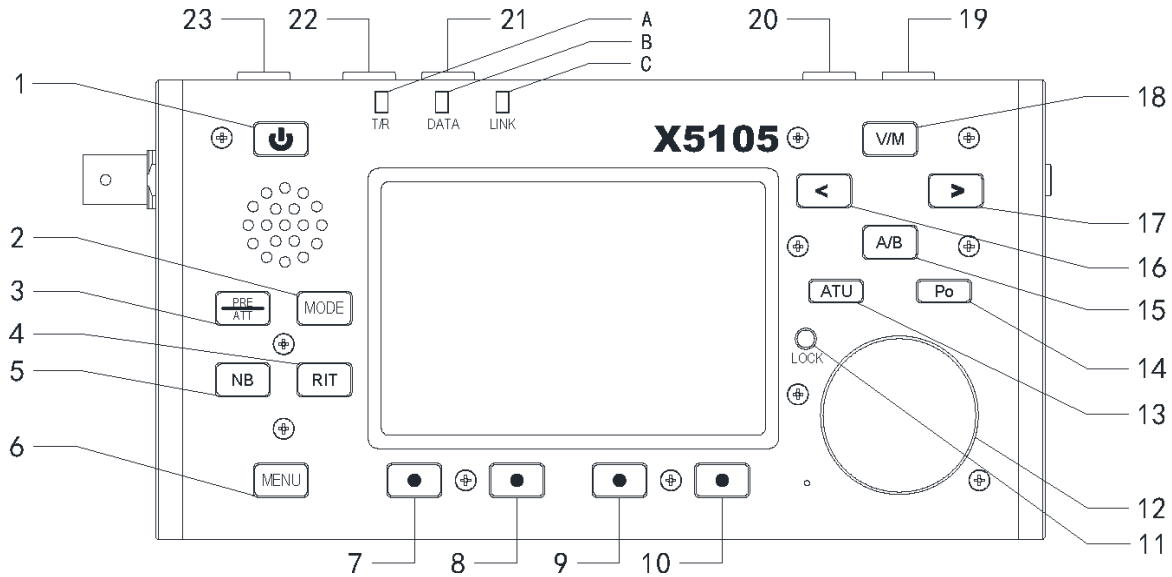
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X5105 Features

The X5105 is an ultra-portable short-wave full-mode transceiver that integrates all functions required for amateur radio operations.

- HF+50 MHz, all-mode
- Variable power output of .1W to 5W
- General Coverage Receiver
- Available Modes are A1A(CW), A3E(AM), J3E(USB/LSB), F3E(FM)
- Two VFOs, independently configurable frequency, mode, filter, preamp/attenuator, ATU
- Small size 6-5/8" wide x 3-5/8" high x 1-7/8" deep (about 168mm*93mm*47mm)
- Weighs 2.1 pounds with battery
- Built-in microphone and PTT switch for handy-talkie operation
- High-Visibility 3.6-Inch back-lit LCD Screen
- Speech Compressor
- Built-in 3800-mAh high-capacity lithium battery for 6 to 8 hours of operation
- Memory Keyer with Code Practice Oscillator (CPO)
- Split operation and Receive Incremental Tuning (RIT)
- Built-in Pre-Amp, Attenuator, and Noise Blanker
- Adjustable AGC-Rate
- Built-in SWR Bridge and Antenna Matching Unit
- 1st-IF Output (70.455 MHz) supports external Spectrum Display
- Built-in digital baseband processing, enabling:
 - Digital noise reduction, digital NOTCH filter
 - Digital receive audio equalizer
 - Variable bandwidth digital filter
 - Direct-decoding amateur radio common data modes
 - Computer Aided Transmission (CAT), audio, and line level interfaces
 - CW, PSK, RTTY automatic decoding/preset message transmitting
- Built-in high-stability TCXO
- Multi-function electret Keypad Microphone
- Built in high output speaker (0.6W (8Ω, ≤10% THD))
- Built-in Desktop Stand
- Upgradable via Firmware Download
- Straight key or paddle input to electronic keyer
- Wide operating voltage range (9.0 to 15.0 VDC)
- FCC Registered and CE Marked

Front Panel Functions



1 [Power]

HOLD to turn the radio ON or OFF.

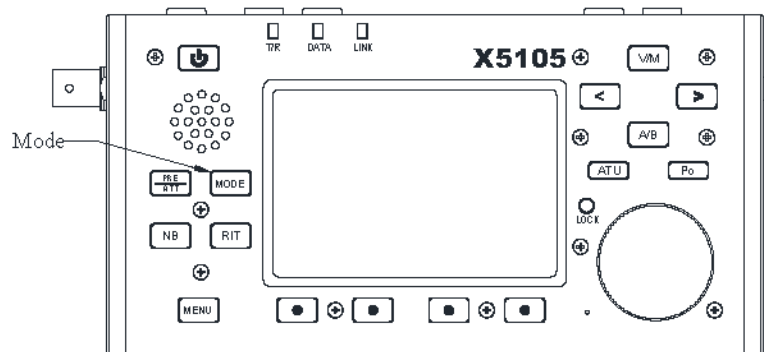
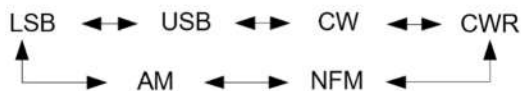
When radio is OFF, TAP to display charging voltage and battery voltage.

To force a reset of the MCU, press and hold [Power] for 10 seconds.

NOTE: Always use [Power] to turn the X5105 on or off. This will ensure that the transceiver configuration is saved. NEVER switch off by removing an external power supply.

2 [MODE]

TAP to select next operating mode in sequence:



HOLD [MODE] to toggle between Split ON and Split OFF. In Split operation VFOA is used for receiving, VFOB is used for transmitting. When in Split operation, the split icon is visible beside the VFOB frequency.

3 [PRE/ATT]

TAP to engage the RF preamplifier, attenuator, or neither in sequence: PREAMP-ATTENUATOR-OFF

4 [RIT]

TAP to toggle RIT function ON or OFF.

When ON, set Rx offset (± 1.5 kHz) by rotating [KNOB]

HOLD RIT to zero the RIT setting.

5 [NB]

TAP to toggle the Noise Blanker ON or OFF.

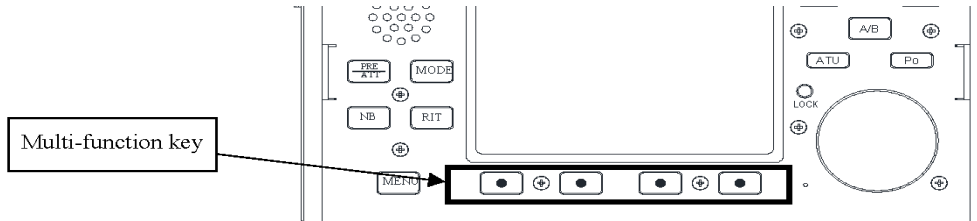
HOLD to toggle between the battery level icon and voltage display.

6 [MENU]

TAP to select the next [Multi-Function Menu](#) [1 to 6]. See below.

7-10 Multi-Function Menu Softkeys

TAP one of the Softkeys to select a function displayed in menu area of LCD.

**11 [LOCK]**

TAP to select next backlight brightness level.

HOLD to toggle the user interface LOCK. When enabled, the LOCK icon will be displayed and the user interface is disabled.

12 [KNOB]

While in **VFO Mode**, rotate to increase/decrease frequency.

While in **Memory Mode**, rotate to increase/decrease memory channel.

While in a **sub-menu**, rotate to select certain parameters.

13 [ATU]

TAP [ATU] to enable/disable **Antenna Matching Unit**.

HOLD [ATU] to start the matching operation

14 [Po]

TAP [Po] to display and adjust transmitting power from 0.1W to 5W using the [KNOB].

HOLD [Po] to display and adjust SWR protection threshold from 1:2 to 1:3 using the [KNOB].

TAP [Po] to return to normal operation.

15 [A/B]

In addition to frequency, each VFO retains its own MODE, ATTENUATOR/RF-AMPLIFIER, ATU, FILTER, and RF-POWER settings! The VFO in use is the one displayed at the top of the display.

TAP [A/B] to swap the positions of VFOA and VFOB.

HOLD [A/B] to copy the VFO in use (top) to the other (below).

16 [<]

In **VFO Mode**, TAP [<] to move the cursor left to the next higher digit, increasing the tuning rate.

In **Memory Mode**, TAP [<] to tune to next lower memory channel.

17 [>]

In **VFO Mode**, TAP [>] to move the cursor right to the next lower digit, decreasing the tuning rate.

In **Memory Mode**, TAP [>] to tune to next higher memory channel.

18 [V/M]

TAP [V/M] to switch between **VFO Mode** and **Memory Mode**.

In **Memory Mode**, rotate [KNOB] to select the channel by tag or number.

In **Memory Mode**, HOLD [V/M] to transfer displayed configuration into the rig and switch to **VFO Mode**.

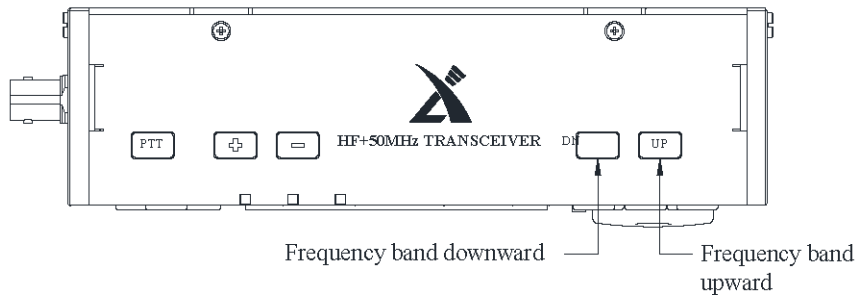
Top Panel Functions

19 [UP]

TAP [UP] to tune to the next higher band.

20 [DN]

TAP [DN] to tune to the next lower band.

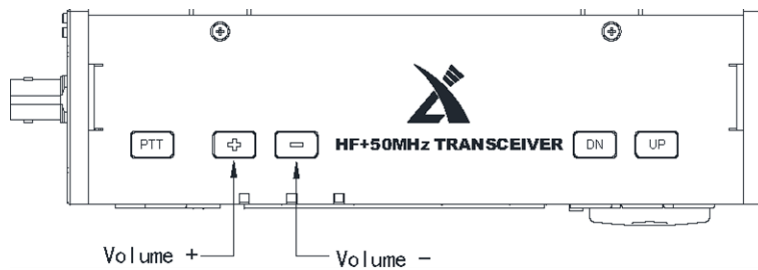


21 [VOL -]

TAP [VOL -] to reduce the volume. HOLD to reduce volume rapidly.

22 [VOL +]

TAP [VOL +] to increase the volume. HOLD to increase volume rapidly.



23 [PTT]

In PTT Normal Mode, depress [PTT] to transmit, release to receive.

In PTT Triggering Mode, TAP [PTT] to toggle between receiving and transmitting.

If Digital MODEM is ON, TAP [PTT] to transmit current message (MSG01 to MSG10) in current mode.

Front Panel LEDs

A [T/R] LED

[T/R] LED is green when receiving.

[T/R] LED is red when transmitting.

[T/R] LED is red when transceiver is OFF and charging.

[T/R] LED is green when OFF and charging is complete.

B [DATA] LED

[DATA] LED will blink during data communications.

C [LINK] LED

[LINK] LED will illuminate when transceiver is connected to peripherals.

Left Panel Functions

24 Antenna

BNC-Female antenna port with impedance of 50 ohms.

25 IF Out

MCX-Female 1st-IF Output (70.455 MHz).

26 Left Tilt Bracket

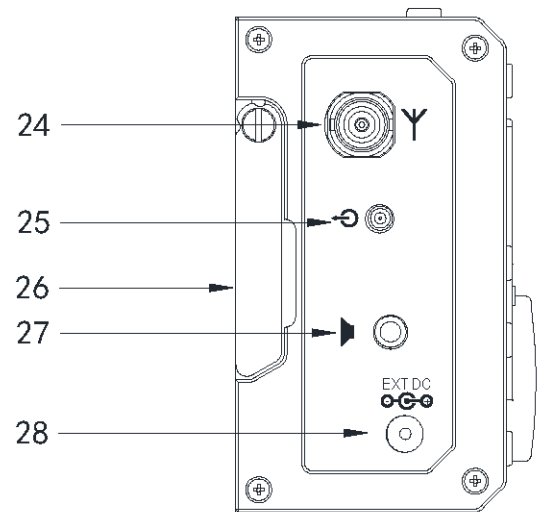
Fold it outward to use

27 Earphone

This 3.5mm TRS jack is used to connect earphone.

28 EXT DC

This 5.5mm X 2.1mm coaxial power jack, (+) center, is used to connect external DC power. To fully charge the internal battery, must be capable of supplying of 13.8VDC at 3A. See [Maintenance of Internal Battery](#) for precautions.



Right Panel Functions

29 ACC

Accessory interface. This 8-pin mini-DIN connector can be used for external PTT input, current band identification, and line level input/output audio for data communications.

30 KEY

This 3.5mm TRS jack is used to connect a manual or paddle telegraph key. **For a manual key, dit and dah (tip and ring) must be connected.**

31 ATU

This 3.5mm TRS jack provides voltage levels to control an external band switch. [Band Voltage Data Table](#) below

32 COM

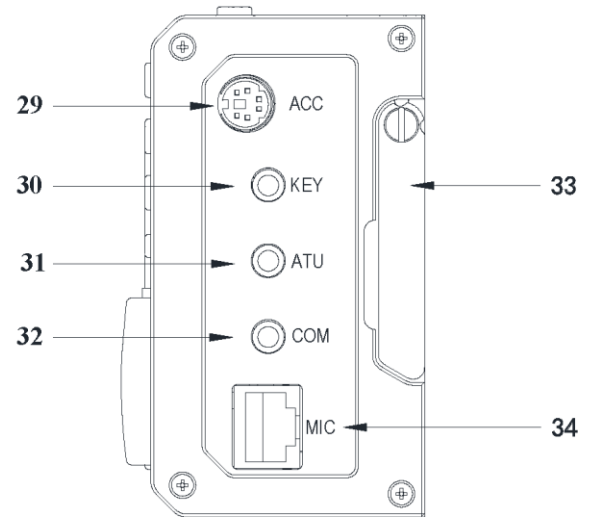
This 3.5mm stereo jack implements the computer aided (CAT) interface and supports firmware updates. NOTE: The CAT interface is a partial implementation of the IC7000 CIV protocol (19200 baud, no parity, 8-bits, 1 stop bit, ID 70 hex).

33 Right Tilt Bracket

Fold it outward to use.

34 MIC

The RJ-45 external multi-function microphone connector.



Handheld Microphone Function

[1 LOCK]

HOLD to disable buttons on panel and keypad.

[2 PTT]

Push-to-Talk key - Depress to transmit, release to receive.

This PTT switch does NOT initiate trigger mode or digital messages.

[3 Up/Down]

VFO Mode - TAP to increase/decrease frequency. HOLD to increase/decrease frequency rapidly.

Memory Mode - TAP to increase/decrease memory channel

[4 LED]

GREEN when PTT released.

RED when PTT depressed.

[5 Numeric Pad]

0 to 9 - TAP to switch to labeled band. After **F-IN/ENT**, TAP to enter frequency in MHz.

F-IN/ENT - TAP followed by **0 to 9** and **F-IN/ENT** again to enter frequency in MHz.

[6 FIL]

Filter - No function

[7 MODE]

TAP to select next operating mode in sequence: [LSB-USB-CW-CWR-NFM-AM]

[8 LED]

Flashes when a button is depressed.

[9 F-1/F-2]

TAP to perform function selected by the user in [System Settings Menu](#), 12 and 13.

[10 MW]

No Function.

[11 V/M]

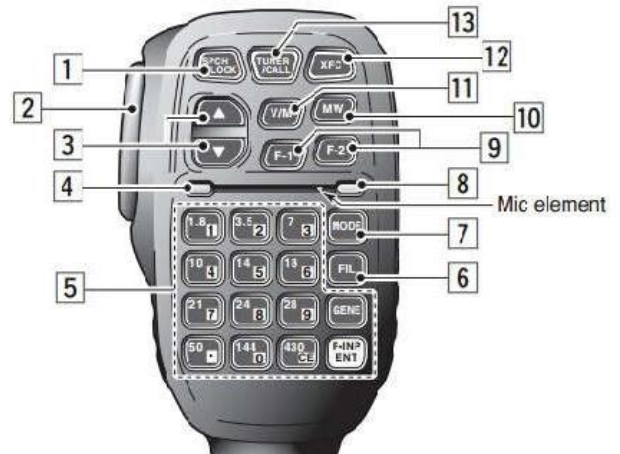
VFO/Memory - TAP to toggle between **VFO Mode** and **Memory Mode**.

[12 XFC]

When the digital MODEM is enabled ([Menu5](#)), TAP to transmit current message in the current digital mode.

[13 TUNER/CALL]

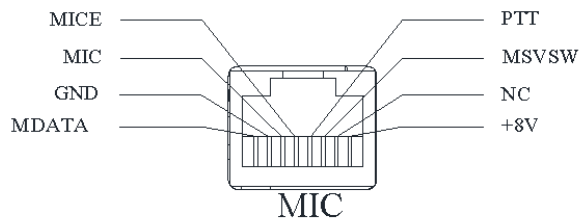
TAP to enable/disable Antenna Matching Unit. HOLD to start the matching operation



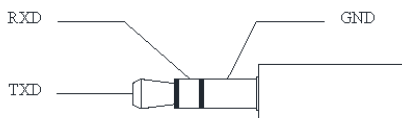
External Interfaces

Microphone (RJ-45)

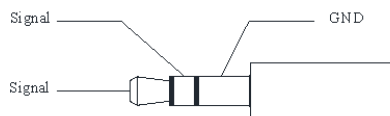
MSVSW should probably be 'M8V SW'.
MICE is probably MIC Earth (Ground).



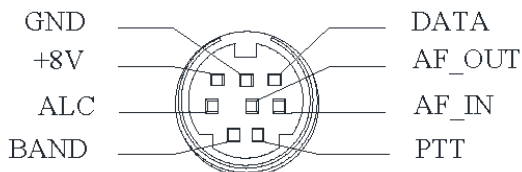
CIV Interface (3.5mm TRS jack)



Earphone (3.5mm TRS jack)

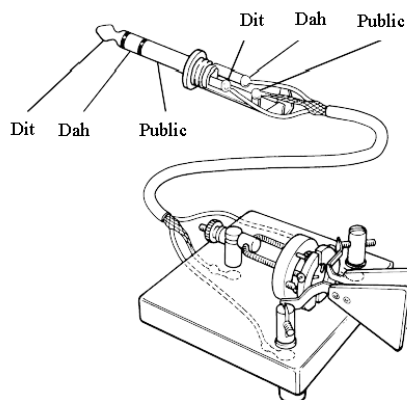


Accessory (8-pin MINI-DIN)



Telegraph Key (1/8-inch TRS)

For a manual key, dit and dah (tip and ring) must be connected



NOTE: The TRS jacks require a matching plug with a narrow shaft to allow complete insertion.



Maintenance of Internal Battery

The X5105 has a built-in 3800mAh lithium polymer battery pack. When there is no external power connected, the battery pack will power the radio.

Charge the battery fully before long-term storage.

When operating from battery, when the voltage drops near 10VDC, the battery icon at top right of display will indicate that external power should be connected.

Charging:

1. Navigate to [System Menu #9 Charger](#).
2. Rotate **[KNOB]** to select ON, enabling the charging function. (Select OFF to disable charging function.)
3. HOLD **[Power]** to turn OFF the X5105.
4. Set voltage of external power supply between 13.8VDC and 15.0VDC
5. Insert the barrel plug into the power supply jack on the Left Panel.
6. **With the X5105 power OFF, the T/R LED will be red when charging. The T/R indicator light will be green when charging is finished.**
7. **You may operate the transceiver in RECEIVE mode while charging.**
8. **To avoid damage DO NOT TRANSMIT WHILE CHARGING!**
9. **Do not insert or remove the external power cable while the transceiver is ON!**
10. The charging time may vary from 2 hours to a maximum of 10 to 12 hours. Charging will automatically stop when battery is fully charged. The screen will display **Vext** and **Vbat**. Voltage of a fully charged battery is between 12.1VDC and 12.5VDC.
11. It is normal for transceiver to become warm when charging.

If a high temperature is observed on the back of the X5105, disconnect power and move the transceiver to a safe, well ventilated area!

External Power Supplies:

The external DC power supply must be fused and provide minimum 3A at 13.8VDC. A choke can be placed on the power cord to prevent RF noise from entering or radiating from the radio. External power exceeding 15.0VDC may cause irreversible damage. Polarity of power lines must be carefully observed to avoid reverse polarity and damage! Limited warranty does not include damages caused by incorrect connection of external power supply or abnormal voltage.

Multi-Function Menu Description

The X5105 uses a multi-function menu to enable, disable or configure various options. Menus are arranged in six pages, and each menu page has up to four options that can be selected using the SoftKeys. TAP **[MENU]** repeatedly to scroll through the six available pages (**Menu1** to **Menu6**).

Most parameters of the multi-function menu are changed using the **[KNOB]**.

- TAP **[MENU]** repeatedly to select the menu of interest.
- If necessary, **HOLD** the multi-function key of the secondary menu item.
- Adjust the parameter by rotating **[KNOB]**.
- TAP **[MENU]** to exit the secondary menu.

Multi-Function Menu Map

Menu	Functions			
1	AGC	RF-GAIN	SQL	COMP
	AGC speed	RF Gain Adjust	Squelch	compression
2	DSP-FLT	NR	NOTCH	EQ
	DSP options	Noise Reduction	NOTCH options	Equalizer
3	MEMO	MSG	CALLSIGN	/
	VFO Memories	Digital Messages	CALLSIGN	/
4	KEY	TONE	QSKTIME	QSK
	Telegraph Key	Sidetone settings	QSK timeout	QSK on/off
5	(BELOW)	DIGI	SRM	SWR
	-	Digital MODEM	Rx Scan	SWR Scan
	RTTY	AFC	CAR	MSG
	PSK31	AFC	CAR	MSG
	PSK63	AFC	CAR	MSG
	PSK125	AFC	CAR	MSG
6	MIC/VOX	S/P	LIN/OUT	PTT
	Microphone	speaker/earphone	Line IN/OUT	PTT Latch

NOTE: In **Menu5** the first Softkey is blank when the RF MODEM is OFF. TAP **DIGI** to turn the RF MODEM ON. When the RF MODEM is ON, the first Softkey will display the current digital mode (RTTY, PSK31, PSK63, PSK125, or CWDEM). TAP the first Softkey to advance to the next mode in the list. TAP **[MENU]** to toggle the RF MODEM OFF. See below for more information.

Multi-Function Menu Operation

Menu1 Rx/Tx Audio Configuration

AGC - TAP repeatedly to scroll through values **OFF**, **SLOW**, **FAST**, and **AUTO**.

RF-GAIN - TAP to edit using [**KNOB**] (10 to 100).

TAP **RF-GAIN** again to exit editing.

HOLD **RF-GAIN** to restore default value (80).

SQL - TAP to edit using [**KNOB**], (OFF to S9).

TAP **SQL** again to exit editing.

COMP - TAP to toggle **Compression** ON or OFF.

HOLD **COMP** to display **Compression Parameters**.

COMP - TAP to toggle **Compression** ON or OFF

HOLD **COMP** to return to **Menu1**.

LEVEL – TAP to edit **Compression Level** using [**KNOB**].

TAP **LEVEL** again to exit editing.

HOLD **LEVEL** to restore default value (1:2).

Menu2 DSP

DSP-FLT - TAP to toggle DSP Filter ON or OFF.

HOLD to display **L-CUT** and **H-CUT** menus.

DSP-FLT - TAP to toggle DSP Filter ON or OFF.

HOLD **DSP-FLT** to return to **Menu2**

L_CUT – TAP to edit Low Cutoff using [**KNOB**].

TAP **L_CUT** to exit editing.

HOLD **L_CUT** to restore default (300 SSB, 550 CW, 100 AM/FM).

H_CUT – TAP to edit High Cutoff using [**KNOB**].

TAP **H_CUT** to exit editing.

HOLD **H_CUT** to restore default (2700 SSB, 1050 CW, 3000 AM/FM).

NR - TAP to toggle Noise Reduction ON or OFF.

HOLD to display **NR LEVEL** menu.

NR - TAP to toggle DSP Filter ON or OFF.

HOLD **NR** to exit to **Menu2**

LEVEL - Tap to edit **Noise Reduction Level** using [**KNOB**].

Tap **LEVEL** again to exit editing.

HOLD **LEVEL** to restore default value (10).

NOTCH TAP to toggle Notch Filter ON or OFF.

HOLD to display **Notch Filter Parameter** menu.

NOTCH - TAP to toggle Notch Filter ON or OFF.

HOLD **NOTCH** to return to Menu2

CNT - TAP to edit **Center Frequency** using [**KNOB**] (250 Hz to 3000 Hz).

Tap **CNT** again to exit editing.

HOLD **CNT** to restore default value (1000).

BW – TAP to edit **Notch Width** using [**KNOB**] (50 Hz to 250 Hz).

Tap **BW** again to exit editing.

HOLD **BW** to restore default value (100).

EQ TAP to toggle **Audio Equalizer** ON or OFF.

HOLD **EQ** to display **Equalizer Settings**.

BASS - TAP to edit **Bass Level** using **[KNOB]**.(-12dB to 12dB)

Tap **Bass** again to exit editing.

HOLD **BASS** to restore default value (0dB).

MEDI - TAP to edit **Medium Level** using **[KNOB]**.(-12dB to 12dB)

Tap **MEDI** again to exit editing.

HOLD **MEDI** to restore default value (0dB).

TREB - TAP to edit **Treble Level** using **[KNOB]**.(-12dB to 12dB)

Tap **TREB** again to exit editing.

HOLD **TREB** to restore default value (0dB).

EQ - TAP to toggle **Audio Equalizer** ON or OFF.

Tap **EQ** again to exit editing.

HOLD **EQ** to return to **Menu2**

Menu3 Memories

MEMO - TAP to enter **VFO Channel Editor** sub-menu.

TAP **MENU** at any time to discard changes and return to **Menu3**.

Rotate **[KNOB]** to select channel (CH01 to CH99).

SEL - TAP to toggle between **Edit CHxx** (channel info) and **Edit TAG**.

INS – When Channel CHxx is selected, no action.

When Edit TAG is selected TAP to erase last character.

BACK - When Channel CHxx is selected, TAP to delete this channel information.

When Edit TAG is selected TAP to erase last character.

SAVE - TAP to save settings and return to **Menu3**.

MSG – TAP to enter **Digital Message Editor**.

Rotate **[KNOB]** to select message MSG01 to MSG10.

TAP **[MENU]** at any time to discard changes and return to **Menu3**.

QUIT - TAP (or TAP **[MENU]**) to return to **Menu3**.

EDIT - TAP to edit selected MSGxx.

SPACE - TAP to insert a space character.

Rotate **[KNOB]** to select next character.

INS - TAP to insert selected character.

BACK - TAP to erase last character.

SAVE - TAP to save edits and return to **Digital Message Editor**.

TAP **MENU** to discard changes and return to Message List.

DEL - TAP to delete selected MSGxx.

CALLSIGN - TAP to enter **Callsign Editor**.

TAP **[MENU]** at any time to discard changes and return to **Menu3**.

SPACE - TAP to insert a space character.

Rotate **[KNOB]** to select next character.

INS - TAP to insert selected character.

BACK - TAP to erase last character.

SAVE - TAP to save edits and return to **Menu3**.

Menu4 Keyer and CW Parameters

Key - TAP to scroll through:

MAN - Select to disable keyer and select manual or straight key.

AUTO-L - Select to enable keyer and select paddle for left hand.

AUTO-R - Select to enable keyer and select paddle for right hand.

TONE – TAP to set sidetone (transmit offset) using **[KNOB]** (425Hz to 1200Hz).

TAP **TONE** to save and exit.

QSKTIME – TAP to set CW break in delay time using **[KNOB]** (0nSec to 1000nSec).

TAP **QSKTIME** to save and exit.

HOLD **QSKTIME** to restore default value (100nS).

NOTE: The X5105 uses a relay to switch Tx/Rx. Full break-in is not possible. Set this value high enough to prevent switching during your normal inter-character time.

QSK - TAP to toggle **CW Transmit Enable** ON or OFF

NOTE: Set QSK OFF to disable the transmitter and enable **Code Practice Oscillator (CPO)**.

Menu5 MODEM and Scanning

DIGI - TAP to turn on the digital MODEM and display current digital mode in **Softkey1**.

TAP **[MENU]** at any time to turn the MODEM off and return to **Menu5**

TAP **[PTT]** or **XFC** to send the current digital message in the current digital mode.

TAP **Softkey1** repeatedly to scroll and select the desired digital mode:

RTTY MODEM

AFC -.has no function.

CAR -.has no function.

MSG - TAP repeatedly to select message MSG01 to MSG10.

TAP **PTT** or **XFC** to send.

PSK31 MODEM

AFC - TAP to view **AFC State**.

While **AFC State** is displayed, TAP **AFC** to toggle between ON and OFF.

Display of **AFC State** will close after 5-seconds.

CAR - TAP and rotate **[KNOB]** to select carrier from 300Hz and up.

(Carrier or phase frequency correction is an alternative to AFC).

MSG - TAP repeatedly to scroll to message MSG01 to MSG10.

TAP **PTT** or **XFC** to send.

PSK63 MODEM

AFC - TAP to view **AFC State**.

While **AFC State** is displayed, TAP **AFC** to toggle between ON and OFF.

Display of **AFC State** will close after 5-seconds.

CAR - TAP and rotate **[KNOB]** to select carrier from 300Hz and up.

(Carrier or phase frequency correction is an alternative to AFC)

MSG - TAP repeatedly to scroll to message MSG01 to MSG10.

TAP **PTT** or **XFC** to send.

PSK125 MODEM

AFC - TAP to view **AFC State**

TAP **AFC** to toggle between ON and OFF.

Display of **AFC State** will close after 5-seconds.

CAR - TAP and rotate **[KNOB]** to select carrier from 300Hz and up.

(Carrier or phase frequency correction is an alternative to AFC).

MSG - TAP to select message MSG01 to MSG10.

TAP **PTT** or **XFC** to send.

CWDEM CW MODEM

THRE - TAP and rotate [**KNOB**] to select threshold from 1 to 100.

TAP **THRE** to save and exit editor.

TONE - TAP and rotate [**KNOB**] to set sidetone 425Hz to 1200Hz.

TAP **TONE** to save and exit editor.

MSG - TAP repeatedly to scroll to message MSG01 to MSG10.

TAP **PTT** or **XFC** to send.

SRM Scanning Receiver

TAP **SRM** to begin continuous scan centered on the current frequency.

BW - TAP to select value from table below.

STOP - TAP to toggle stop or resume the scan.

QUIT - TAP to return to **Menu5**.

In v3 firmware, BW is NOT bandwidth! This table shows scanning span for each value of BW:

Setting of BW	+kHz around center	Span in kHz
0.5k	50	100
1k	100	200
2k	200	400
5k	500	1000
10k	1000	2000

SWR Scanner

TAP **SWR** to display the SWR graph and begin scanning.

QUIT - TAP to return to **Menu5**.

BW - TAP to select bandwidth and step.

MODE - TAP to select SINGLE or CONTINUOUS scan.

SPEED - TAP to toggle between SLOW (25ms per step) and FAST (12ms per step) scan rate.

Menu6 Interface Options

TAP [**MENU**] at any time to return to **Menu6**

MIC/VOX - TAP to select **INT** (internal), **EXT** (external), or **AUTO** (automatic) microphone.

NOTE: VOX delay is set at 100ms.

S/P - TAP to select **SPEAKER** or **PHONE**.

LIN/OUT - TAP to configure line level audio on **ACC**, the 8-pin mini-DIN connector.

LIN TAP to toggle line-in ON or OFF.

When LINE-IN is enabled, internal AND external microphones are disabled.

G-LIN TAP and rotate [**KNOB**] to set line-in gain.

TAP **G-LIN** to save and exit editor.

HOLD **G-LIN** to restore default value.

LOUT TAP to toggle line-out ON or OFF

G-LOUT TAP and rotate [**KNOB**] to set line-out gain.

TAP **G-LOUT** to save and exit editor.

HOLD **G-LOUT** to restore default value.

NOTE: In early releases, LINE-OUT switch and LINE-OUT gain have no effect. The LINE OUT pin of ACC connector is always on with output level relative to receiving volume.

PTT - TAP to change **PTT Mode** between **NORMAL** and **TOGGLE**.

NORMAL mode - the transmitter is keyed while PTT is depressed.

TOGGLE mode - PTT functions as a latching transmit-receive switch. TAP **PTT** to toggle between transmit and receive states.

System Settings Menu

System parameters may be changed to suit your operating preferences.

1. HOLD **[MENU]** to enter System Settings Menu.
2. TAP **[<]** or **[>]** Softkey to display the menu items you want to adjust.
3. Rotate **[[KNOB]]** to set parameter value.
4. TAP **[SAVE]** to save current settings and exit menu mode.
5. TAP **[QUIT]** at any time to exit menu mode without saving.

Descriptions of System Menu

Items	Number	Description	Range	Default
LCD Backlight	#1	Displayer backlight brightness	OFF to LEVEL5	LEVEL5
LCD Contrast	#2	Displayer contrast ratio	0 to 30	30
BEEP Volume	#3	System prompt volume	0 to 100	50
Side Tone Volume	#4	Side Tone Volume Level	0 to 100	50
Key BEEP	#5	Key BEEP OFF/ON	OFF/ON	ON
AM Mod Level	#6	AM Modulation Level	0 to 63	60
Band Stack Mode	#7	Band Up/Dn step mode	Ham/Full	Ham
MIC Bias	#8	MIC Bias OFF/ON	OFF/ON	ON
Charger	#9	Charger OFF/ON	OFF/ON	ON
IF Output	#10	IF Output OFF/ON	OFF/ON	OFF
RSSI Scale	#11	S Meter Calibration	-100 to +100	0
User Key F1	#12	Hand Microphone F1 key	LEFT	LEFT
User Key F2	#13	Hand Microphone F2 key	RIGHT	RIGHT

Band Voltage Data

The ACC accessory interface (8-pin DIN) of the X5105 provides a voltage unique to each band. The pin is labeled BAND and the voltage can be used to control peripheral equipment.

Band	Volts
1.8MHz	230mV
7MHz	920mV
18MHz	1610mV
28MHz	2300mV
3.5MHz	460mV
10MHz	1150mV
21MHz	1840mV
50MHz	2530mV
5.0MHz	690mV
14MHz	1380mV
24MHz	2070mV

60M OPERATION

Operation on the 60 Meter band is channelized. The operator is responsible for tuning to one of five frequencies. The channels can be programmed into memory.

USB	CW/DATA
5330.5	5332.0
5346.5	5348.0
5357.0	5358.5
5371.5	5373.0
5403.5	5405.0

Multi-Function Menu Initial Settings

Menu	Functions			
1	AGC	RF-GAIN	SQL	COMP
	OFF	80	OFF	OFF
2	DSP-FLT	NR	NOTCH	EQ
	ON	OFF	OFF	OFF
3	MEMO	MSG	CALLSIGN	
			<your call>	
4	KEY	TONE	QSKTIME	QSK
	Telegraph Key	800	500ms	ON
5		DIGI	SRM	SWR
6	MIC/VOX	S/P	LIN/OUT	PTT
	AUTO	SPEAKER	OFF/OFF	NORMAL

Common Tasks

Task	Instructions
Initial Setup	<ol style="list-style-type: none"> 1. If battery is not charged, follow Charging to bring battery voltage above 11.0 volts. Alternatively, connect external power (2.5 Amps at 9 to 15 VDC). Ensure that battery charger is turned OFF (Systems Setting Menu #9). DO NOT TRANSMIT WHILE BATTERY CHARGER IS OPERATING! 2. Connect an antenna appropriate for the band. 3. For CW, connect a straight key (1/8-inch TRS plug, tip and ring shorted) or paddle (1/8-inch TRS plug, sleeve common). 4. For SSB, AM, or FM connect the multi-function microphone. 5. HOLD [Power] to turn transceiver ON. 6. Follow the manual instructions to save your callsign. 7. Tune to the band using [KNOB] or multi-function microphone. Alternately, TAP [V/M] to switch to Memory Mode and recall target channel. See Recall VFO Channel for more info. 8. Refer to the Band Plan, tune to a free frequency. 9. TAP [MODE] repeatedly to set mode of operation. 10. Ensure the RIT is OFF using [RIT]. 11. Follow manual instructions to set [PRE/ATT], [NB], [VOL +] / [VOL -] to comfortable levels. 12. Refer to Multi-Function Menu Initial Settings and verify the settings of Menu1 to Menu6. IF NO AUDIO IS HEARD ensure that RF-Gain, SQL, and S/P are set correctly. 13. TAP [Po] and set POWER LEVEL . 14. HOLD [Po] and set SWR THR protection level (1:2, 1:2.5, 1:3). Power output will reduce to minimum if SWR exceeds this level. 15. If your antenna is NOT resonant, TAP [ATU] to engage the antenna matching unit (ATU). HOLD [ATU] to initiate operation of the antenna matching unit. 16. Enjoy!
Switch battery display between icon and VDC	HOLD [NB] Noise Blanker
Calibrate S-meter	<ol style="list-style-type: none"> 1. Power on the rig. 2. Disconnect the antenna. 3. HOLD [MENU] to open System Level Menu. 4. TAP < or > Softkey repeatedly until #11:RSSI Scale is displayed. 5. Rotate [KNOB] until indicated level bounces SLIGHTLY. 6. TAP Softkey SAVE to save and exit. 7. TAP Softkey QUIT to exit without saving and exit.
Toggle split and normal operation	1. HOLD [MODE] button
Enable CPO (Code Practice Oscillator)	<ol style="list-style-type: none"> 1. TAP [MENU] repeatedly until Multi-Function Menu4 is displayed. 2. TAP Softkey QSK to toggle ON (transmitter enabled, CPO OFF) and OFF (transmitter disabled, CPO ON)

Task	Instructions
Store Message	<ol style="list-style-type: none"> 1. TAP [MENU] repeatedly until Multi-Function Menu3 is displayed. 2. TAP Softkey MSG to display current presets (MSG01 to MSG10). 3. Rotate [KNOB] to select the preset. 4. TAP Softkey EDIT to edit or QUIT to exit. 5. Use Softkeys SPACE, INS, and BACK to edit the text, or TAP DEL to delete the message 6. TAP Softkey SAVE to save or [MENU] to exit.
Transmit Message	<ol style="list-style-type: none"> 1. TAP [MENU] repeatedly until Multi-Function Menu5 is displayed. 2. TAP the left-most Softkey until the desired digital mode is displayed (CWDEM, RTTY, PSK31, PSK63, PSK125) 3. TAP Softkey MSG repeatedly until desired message (MSG01 to MSG10) is displayed 4. TAP PTT on rig or XFC on microphone to transmit the message.
Reset	<ol style="list-style-type: none"> 1. Press and hold [POWER] for 10-seconds.
Enter Frequency using microphone keypad	<ol style="list-style-type: none"> 1. TAP F-INP/ENT to clear display, TAP again to cancel change. 2. Using numeric pad, type new frequency: <ol style="list-style-type: none"> a. In decimal MHz (trailing zeroes optional) b. In Hz (7 or 8 digits, no decimal) 3. TAP F-ENT/ENT to accept
Store Callsign	<ol style="list-style-type: none"> 1. TAP [MENU] repeatedly until Multi-Function Menu3 is displayed. 2. TAP Softkey CALLSIGN to edit. 3. Use Softkeys SPACE, INS, and BACK to edit the callsign. 4. TAP Softkey SAVE to save or [MENU] to exit.
Store VFO	<ol style="list-style-type: none"> 1. Configure both VFOs (frequency, MODE, pre-amp/attenuator, ATU, and filter). 2. TAP [MENU] repeatedly until Multi-Function Menu3 is displayed. 3. TAP Softkey MEMO to display current channel (CH01 to CH99). 4. Rotate [KNOB] to select channel to edit. Now, store current VFO data, empty this memory, or edit the TAG. 5. TAP SEL to move the carat (>) between VFO data (CHxx) and TAG. 6. To empty the channel, with carat on CHxx, TAP BACK. 7. To edit the TAG, with carat on TAG, use Softkeys INS, and BACK to edit the TAG (max 9 characters). 8. TAP Softkey SAVE to save or TAP [MENU] to exit without saving.
Recall VFO	<ol style="list-style-type: none"> 1. TAP [V/M] to switch to Memory Mode. 2. Rotate [KNOB] to display channel of choice. 3. Channel parameters may be changed in Memory Mode, but changes WILL NOT be retained! 4. HOLD [V/M] to transfer channel data to rig and exit to VFO Mode.

SPECIFICATIONS

Receiving Frequency range	0.5MHz to 30MHz 50MHz to 54MHz			
Transmitting Frequency range	1.8 to 2.0MHz 3.5 to 3.9MHz 5.3515 to 5.3665MHz 7.0 to 7.2MHz 10.1 to 10.15MHz 14.0 to 14.35MHz 18.068 to 18.168MHz 21.0 to 21.45MHz 24.89 to 24.99MHz 28.0 to 29.7MHz 50 to 54MHz			
Transmitting modes	A1A(CW) A3E(AM) J3E(USB/LSB) F3E(FM)			
Minimum step	1Hz			
Antenna impedance	50Ω			
Working temperature range	-10°C to +50°C			
Frequency stability	±4ppm @25C° within 1-60min after startup: 1ppm/h			
Power supply voltage	9.0 to 15.0VDC			
Current consumption	Receiving: 600mA@ Max Transmitting: 2.5A@ Max			
Battery capacity	3800mAh @12VDC			
Dimensions	168X93X47mm (excluding protrusions)			
Weight	About 0.94kg (without accessories)			
RF output	5W (SSB/CW/FM) 1.5W (AM carrier) @ 13.8VDC			
SSB	Balanced modulation			
AM	Low level amplitude modulation			
FM	Variable reactance frequency modulation			
SSB Carrier suppression	>40dB			
SSB frequency response	400Hz-2800Hz (-6dB)			
Microphone impedance	200-10k (600Ω in general)			
Receiver type	Double conversion superheterodyne + audio DSP			
IF FM	1 st 70.455 MHz, 2 nd 10.695 MHz, 3 rd 455 KHz			
IF AM/SSB/CW	1 st 70.455 MHz, 2 nd 10.695 MHz			
Stray radiation	-55dB			
FM maximum deviation	±5kHz			
Image rejection ratio	-70dB			
Selectivity	SSB: -6dB:2.4kHz/-60dB:4.6kHz CW: -6dB:500Hz/-60dB:2000Hz AM: -6dB:6.0kHz/-60dB:25.0kHz FM: -6dB:12.0kHz/-60dB:25.0kHz			
SSB Frequency Response	400Hz-2800Hz (-6dB)			
Microphone Impedance	200 to 10kΩ (600Ω nominal)			
Audio output	0.6W (8Ω, ≤10% THD)			
Audio output impedance	4 to 16Ω			
Sensitivity		<u>SSB/CW</u>	<u>AM</u>	<u>FM</u>
PRE=on, ATT=off	≤ 1.8MHz	0.6uV	10uV	
NB=off, NR=off	1.8MHz-28MHz	0.25uV	2uV	
SSB/CW/AM = 10dB S/N	28MHz-30MHz	0.25uV	2uV	0.35uV
FM = 12dB SINAD	50MHz-54MHz	0.25uV	2uV	0.35uV

Specifications vary significantly by HW and SW version.