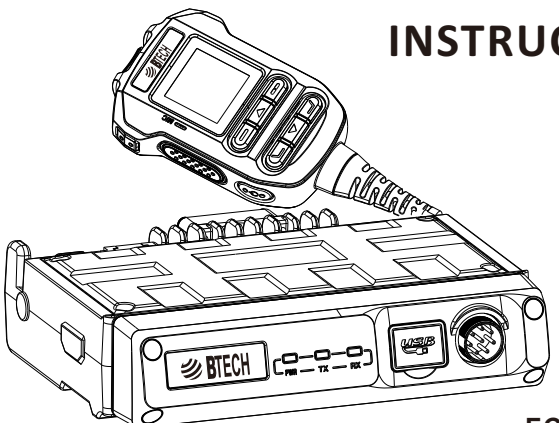
BTECH UV-50PRO

INSTRUCTION MANUAL



FCC ID:2AGND-UV-50PRO

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1. INSTALLATION

This chapter describes how to install the transceiver in a typical amateur-radio setup. It assumes you have the technical knowledge expected of a licensed amateur operator. Please review and follow the safety and technical guidance below carefully.

PRELIMINARY INSPECTION

- Inspect the radio immediately after opening the carton. Verify that all controls move freely and the cabinet shows no damage.
- Gently shake the radio to confirm that no internal parts are loose.
- If you find any damage, document it and contact the shipper or your local dealer for instructions.
- Keep the shipping carton and packing material, especially if there are punctures or damage. If the unit must be returned for service, use the original packaging and place it inside a second outer box.

INSTALLATION TIPS

- Provide adequate ventilation around the radio. Do **NOT** install the radio on top of other heat-generating equipment (e.g., power supplies, amplifiers).
- Avoid dusty or high-humidity locations, heating vents, and **direct sunlight**—

especially in hot climates.

- Do not use the radio where ambient temperature exceeds **+140 °F (+60 °C)**.

POWER & ANTENNA SAFETY

⚠ **Power Source**: The UV-50PRO is designed for **13.8 V DC** systems. Use only a **12 V** battery (negative ground). Do **NOT** connect to 24 V systems. Insufficient current capacity may darken the display or reduce transmit power and may also cause erratic radio operation.

⚠ **Battery Drain**: Extended operation with the engine off may discharge the vehicle battery.

⚠ **Antenna Required**: Never transmit without a properly matched antenna or load connected. Transmitting into an open or mismatched load can damage the radio.

GENERAL RF SAFETY

⚠ Keep children away from radio and antenna installations.

⚠ Insulate any wire splices to prevent shorts.

⚠ Do not route cables through pinch points (e.g., door jambs).

⚠ Do not stand in front of a directional antenna while transmitting.

⚠ Mount mobile antennas on the vehicle roof when possible; the vehicle body acts as a counterpoise and elevates the main lobe away from passengers.

⚠ When parked near people, reduce power.

⚠ Do not wear dual-ear headphones while driving. Pull over before placing DTMF/phone-patch calls.

⚠ High RF voltage is present in the TX section while transmitting. Do not touch internal RF circuitry during transmission.

Note on Accessories: For best performance and safety, use accessories designed for the UV-50PRO. Third-party accessories may not meet safety or performance requirements.

2. UNPACKING

Notice:

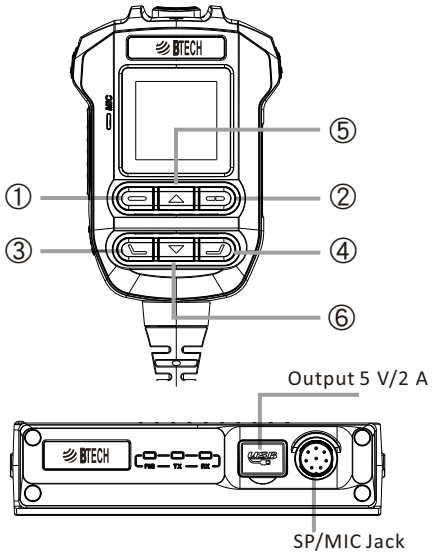
Carefully remove the radio from its packaging. Before discarding any materials, verify that all standard accessories are present. If anything is missing or damaged, contact your dealer.

SUPPLIED ACCESSORIES

Carefully remove the radio from its packaging. Before discarding any packaging materials, please verify that all items listed in the following table are present. Should any components be missing or damaged during unpacking, please contact your authorized dealer immediately.

Standard Accessories	Optional Accessories
Radio Body	Wireless Speaker Microphone (BS-22)
Speaker Microphone	Wireless Speaker Microphone with LCD(BS-50)
DC Power Cable with Fuse	Wireless PTT (BS-PTT)
Mounting Bracket	Speaker Microphone Extension Cable(5m)
Screws & Spare Fuse	
App Quick-start Guide	
User Manual	

3. PRODUCT OVERVIEW



Note: Please connect the hand microphone before powering on the device.

Button Definitions

① **Menu / Confirm Button**;

② **Standby Screen**, Switch display pages/Return to the previous menu;

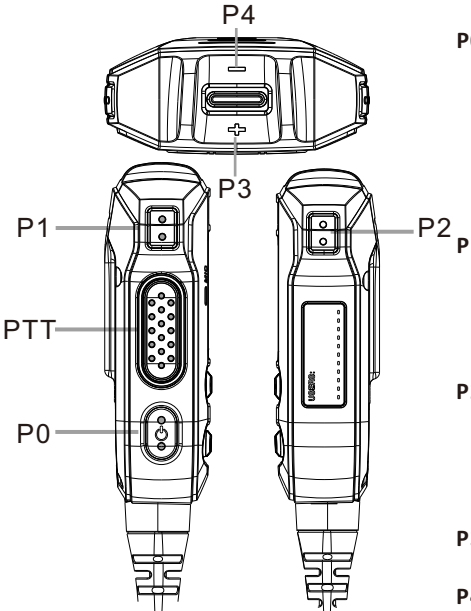
③ **Short press**: Enter channel edit mode.
Long press: Switch groups
Double press: Toggle between VFO mode and Channel mode ;

④**Short press** (inside menu): Return to standby screen
Long press: Lock/unlock the keypad;

⑤**Up Button**: Scroll to the previous channel or decrease frequency;

⑥**Down Button**: Scroll to the next channel or increase frequency。

MICROPHONE & FRONT-PANEL KEYS (DEFAULT BEHAVIOR)



P0 Key (Non-programmable)
- **Single Press:** Voice announcement of current channel
- **Double Press:** Enter Bluetooth pairing mode
- **Long Press:** Power on/off

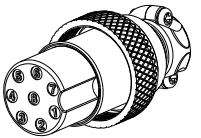
P1 Key
- **Single Press:** Volume – (decrease)
- **Double Press:** Toggle mute on/off
- **Long Press:** Switch A/B (main/sub) channel

P2 Key
- **Single Press:** Volume + (increase)
- **Double Press:** (No function)
- **Long Press:** Talk-around (simplex/repeater)

P3 Key **Single Press:** Next channel

P4 Key **Single Press:** Previous Channel

Speaker Microphone Status Indicator



1:AF OUT	2:MIC-AN
3:MIC-AP	4:GND
5:+5V	6:RXD
7:TXD	8:RST

Status LED (Speaker Microphone)

Red on: Transmitting

Green on: Receiving

Red/Green alternating: Bluetooth pairing

Green breathing: Muted

Restore Factory Settings

Factory Reset: Press and hold P0 + P1 to restore factory defaults.

⚠ This erases all user data.

4. PROGRAMMABLE BUTTONS

P1–P4 can be assigned via the app. Some functions are mutually exclusive; verify all desired functions after programming.

ASSIGNABLE FUNCTIONS (EXAMPLES)

Disable	No function
Alarm	Local tone + TX on preset frequency
Alarm &Mute	Transmit alarm without local speaker audio
Mute Switch	Toggle on/off
Send Location	Single APRS position report
Toggle Scan	Toggle on/off
Toggle Dual CH	Toggle on/off
Main Channel Switch	A/B Band
Toggle Talk Around	Toggle (simplex/repeater)
Toggle radio tx enable	On/off

Transmit Power Switch	Power level (H/M/L)
Radio switch	FM Radio on/off
Toggle Monitor	On/off
Toggle VOX	On/off
Toggle KISS	Toggle on/off
Prev /Next Channel	Previous channel/ Next channel
Prev/Next Group	Previous/Next group
Volume -/+	Volume – / Volume +
T-CALL	1750Hz burst
Main /Sub PTT	Main PTT / Sub PTT
Pairing	Bluetooth pairing
Freq Sync Rapid Scan	Freq Sync Rapid Scan

5. INSTALL THE APP & BLUETOOTH PAIRING

Get the App

Android: Open Google Play  and search for "**BTECH UV Programmer**".

iOS: Open the App Store  and search for "**BTECH UV Programmer**".

Always pair through the **App**, not through the phone's system Bluetooth menu.

Pairing Method 1: Automatic

1. Open the app.
2. On the radio, double-press **P0** or select **Pairing** in the radio menu.
3. When the app prompts "Detected new device **BTECH UV-50PRO**. Link now?", tap **Yes**.
4. Approve the Bluetooth pairing prompt. When connected, the device is ready.

Pairing Method 2: Manual

1. In the app, tap Bind new device.
2. Put the radio in pairing mode (LED alternates red/green).
3. Choose the device type (radio, wireless PTT, etc.).
4. Approve the system pairing prompt to complete.

Troubleshooting – No Prompt Appears

Open your phone's notification window and approve the pending Bluetooth pairing request.

Other Peripherals

- BS-22 & BS-50 Wireless speaker mic: Double-press Pair or double-press Power.
- BS-PTT Wireless PTT: Hold the PTT until LEDs flash red/green (~5 s).
- Third-party accessories: See the accessory's manual.

If Pairing Fails

- After a factory reset, the Bluetooth ID changes. Remove the old pairing and re-pair via the app.
- iOS: Settings → Bluetooth → (i) → Forget This Device; then pair via the app.
- Android: Remove the old pairing; then pair via the app.
- If needed, clear old Bluetooth devices or reset the phone's network settings.

6. RADIO OPERATION

6.1 Power On/Off

On: With the radio off, hold **P0** for ~3 seconds until the startup screen and tone appear.

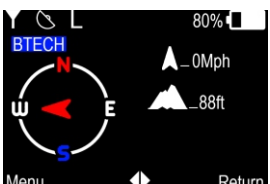
Off: With the radio on, hold **P0** for ~3 seconds until "Power Off" appears.

6.2 Standby Screens

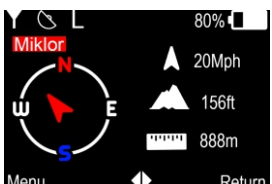
Press the **screen toggle key** to cycle through three standby screens:

1. **User Info:** Owner registration and device status.
2. **Call Log:** Recent callers with location and distance.
3. **Messages:** Up to 30 recent text messages with location data. (Cleared on power-off.)

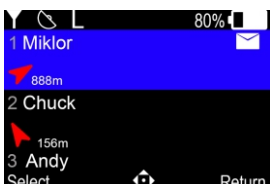
Press the **back** key to return to the main standby screen.



(Figure 3)



(Figure 4)



(Figure 5)

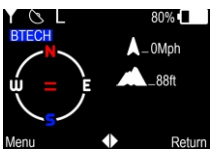
6.3 Electronic Compass Calibration

Two on-screen icons indicate interference:

- **"=" icon:**
  Place the mic flat (screen up) → Menu Compass → press OK to calibrate.
- **"∞" icon:**
  Menu Compass → follow prompt to move the mic in a firm figure-8 pattern (1–8 cycles in ~2 seconds), holding the mic facing forward.

When to Calibrate

- If the compass becomes sluggish or after exposure to strong magnetic fields.
- Keep away from magnets, electronics, and metal structures during calibration.



(Figure 6)

(Figure 7)

(Figure 8)

6.4 Main/Sub Channel Switching

In standby, hold **P1** to switch between Main and Sub channels. The active (main) channel is shown in larger type.

6.5 VFO / Channel Mode

In standby, double-press the mode key  to toggle between VFO and Channel modes.

6.6 Group Selection

In standby, hold the group key  to open the group list, then select the desired group.

6.7 Channel Editing

1.Press the **edit key**  to enter edit mode.
2.Use **Up/Down** to select a channel; use the **toggle** key to switch Group A/B.
3.Edit values with **Up/Down** (current digit), **Next Digit**, and **Next Item**.
4.Press **Exit** to save and return.

6.8 Saving a Frequency

(VFO mode)

1. Enter the frequency (e.g., **438.500**).
2. Press **Exit** to confirm.
3. Choose **Save to Channel**.
4. Select an empty channel.

6.9 Saving a Frequency with Tone

(VFO mode)

1. Enter the frequency.
2. Press **Exit**.
3. Menu **Settings** → **TX Tone / RX Tone**; select tones as needed.
4. Choose **Save to Channel** and select an empty channel.

6.10 Saving a Frequency with Offset

(VFO mode)

1. Enter the frequency → **Exit**.
2. **Settings** → **Frequency Offset**.
3. Choose offset mode:

- **Auto +** (e.g., +0.6 MHz / +600 kHz, +5.0MHz)
- **Auto –** (e.g., –0.6 MHz / –600 kHz, -5.0MHz)
- **Custom**: User-defined shift 0.1–99.9 MHz

4. **Exit** to save offset settings.
5. **Save to Channel** → choose an empty channel.

6.11 Freq Sync Rapid Scan

1. **Start:** Select **Freq Sync Rapid Scan** from the function menu.
2. **Scan**: When a transmitter emits a signal; the screen shows dynamic scan (flashing frequencies).
3. **Lock**: When the frequency stops flashing, the radio locks on the found frequency and matching tone.
4. **Save**: Optionally save the result to any channel and **Confirm**.

Indicators

- Flashing frequency = scanning
- Steady frequency = sync complete

Keep an appropriate distance during sync; too close may affect accuracy.

6.12 Wireless Batch Programming

1. **Receivers**: Power on each target radio; set to **Receive Channel**.
2. **Transmitter**: Power on the master (pre-programmed) radio; set to **Send Channel**.
3. **Copy**: Data transmits automatically. Each target shows **Complete** when done.
4. **Notes**: Ensure radios are in range; do not power off any unit during copying. Perform in low-interference environments.

6.13 BTECH UV Programmer App: Batch Frequency Editing (CSV)

1. **Connect** the radio to the app.
2. **Export**: Channel & Group Management → **Import** → **From Device** → name a new group → **Save** (choose **No** when asked to sync now).
3. **Sync**: In the channel list, tap the **upload** icon to sync that group back to the radio.
4. **CSV Editing**: Export CSV to a computer, edit, save, then import back via **Import** → **File** and upload to the desired group.

You MUST follow the format of the exported CSV as shown below or the channel info will not be transfer to the radio.

CSV Field Requirements

- **TX/RX Freq**: 9 digits . Example: 438500000.
- **CTCSS Freq**: CTCSS × 100. Example: 88.5 Hz → 8850.
- **DCS Code**: Direct code (e.g., D047N → 47).
- **Modulation**: FM = 0; AM = 1.
- **Power**: H/M/L.
- **Bandwidth**: Narrow 12500 / Wide 25000.
- **Scan**: 1 (on) / 0 (off).

Advantages

- Fast bulk editing in the app.
- Easy sharing to groups and communities.
- Cross-group compatibility.

6.14 Group/Channel Sharing (Android)

1. **Create Share String**: App → **Group Management** → select a Group → **Share**.
2. **Import**: Recipient opens the app, pastes the string, optionally renames, then **Save**. Channels (tones, power, etc.) import intact.

Both users should run the same app version.

6.15 FM Radio

On: Menu **Radio** → FM turns on.

Scan: Use Up/Down to seek; valid stations auto-lock.

Off: Menu **Radio** → **Turn Off**.

6.16 Signaling Configuration

1.**General Settings** → **Signaling Settings**.

2.**Device ID**: Enter a recognizable ID (alphanumeric).

3.**Mode Display**:

BSS: Shows the set ID in transmissions.

APRS: Shows the verified callsign (this is the preferred mode for Amateur 'Ham' use).

4.**Options**: Enable/disable **Send ID**, **GPS (location sharing)**, **Allow Check** (permit remote location query), and **Preamble** (pre-tone for clarity). IDs must follow device rules. Location sharing requires a stable GPS fix.

6.17 Signaling Transmission

Message: Compose message → press **PTT** to send on current frequency.

DTMF: Enter sequence → **Confirm** to transmit.

Call: Enter target **Device ID** → **Confirm** to call (both the radio and the paired phone ring).

Check: Enter target **Device ID** → **Confirm** to request location (recipient must have **Allow Check** enabled).

Nearby (Group Broadcast): Sends a query; authorized devices reply with real-time locations.

Ensure the target ID is correct. Replies depend on the recipient's settings.

6.18 APRS Configuration

1. **Callsign**: Enter your registered callsign and the required verification code.
2. **Path**: Choose a preset (e.g., WIDE1-1, WIDE2-1) or define a custom path.
3. **Enable**: Digital Mode → **Enable** → select **APRS** in Format.
4. **Share Location**: Set an interval (e.g., every 10 min) or **Off**.
5. **Channel**: Assign a dedicated APRS channel.
6. **Digital Mute**: Optionally mute digital tones on APRS channels.

6.19 Smart Beacon Mode

When enabled, the radio adjusts location-reporting intervals based on speed/time/heading.

- **Triggers** (any of the following when time since last report ≥ Share-Location interval):
- Heading change > **30°**
- Speed change > **19 mph** sustained for **2 minutes**
- Time since last report > **30 min**
- **Limits**: Minimum interval is the Share-Location interval; maximum auto-extended interval is **30 min**.

Examples

- Stationary for 30 min → forced report.
- Stable highway driving, small heading change → no report.
- Turning in city streets → report.
- Sudden acceleration sustained ≥ 2 min → report.
- If minimum interval is 5 min and only 4 min have passed → no report yet.

6.20 GPS Positioning Notes

Positioning: Requires signals from at least **3 satellites**. If lock fails, move to an open area away from structures and where there is a clear view of the sky.

Errors: Environment can introduce errors of hundreds of meters, especially between tall buildings, indoors, under elevated roads or power lines, in

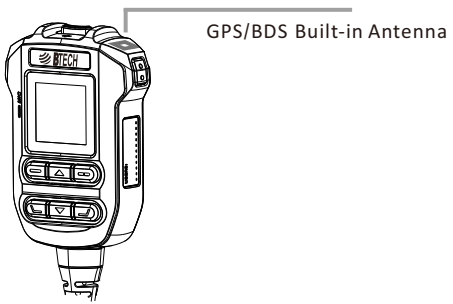
forests, tunnels, or near reflective glass/magnetic fields.

Cold Start: After purchase or long inactivity, initial acquisition may take several minutes.

Screen: Keep the screen **on** during satellite acquisition.

Antenna Orientation: Mount the microphone holder so the GPS antenna faces **upwards**. Avoid metal obstructions and tilt. Keep away from motors/power lines.

Compass: Do **not** use magnetic mounts on the speaker/ mic; strong magnets disturb the e-compass.



6.21 AI Noise Reduction

Applies to both transmit and receive audio.

- **TX**: Smart noise separation, dynamic suppression, wind-noise optimization.
- **RX**: Intelligent filtering, voice enhancement, adaptive cancellation.
- **Tip**: In very weak/fragmented signals, disable AI NR to avoid cutting off audio.

6.22 PTT Follow Mode

When enabled, the PTT automatically transmits on whichever band (A/B) last received a signal—if you press PTT within **3 seconds** of the end of reception.

- **Activation**: Menu → **PTT Follow**.

- Logic:

- If Band A was active, PTT TX = A.
- If Band B was active, PTT TX = B.
- If disabled, PTT TX = Band A.
- Notes: Ensure both bands' frequency/tone settings are correct. TX power follows the active band setting. The screen shows the current TX band.

7. TWO-WAY RADIO MENU LIST (SUMMARY)

First level menu	Second level menu	Third level menu
Channel	Edit	Use Up/Down to switch A/B; Left/Right to change channels; edit channel parameters.
Signaling	Send Message:	(text)
	Call:	(username/callsign)
	Check:	(username/callsign)
	Nearby People	（broadcast search; compatible devices reply with location）

Radio Settings	Dual Watch
	Scan
	Talk Around
	Power
	TX Subtone
	RX Subtone
	Offset
	Channel Group
	Squelch Level
	TX Time Limit
	Tail Elimination
	AI NR
	Digital Mute
	PTT Follow
	Enable VOX

General Settings	**Connection**： Pairing/Scanning/Paired Devices
	Signaling Settings： ID/Send ID/GPS/Allow Check/Preamble
	APRS Settings:Call Sign/Path/Enable Mic-E/Mic-E Type/Message/Send Power Voltage
	KISS TNC:Enable KISS TNC/Upload Sent Msg/TX Delay /TX Tail
	Digital Mode: Enable / Share Location / Smart Beacon / Digital Channel / Format
	Sound: Mid Gain / BT Mic Gain / Keep Connected / Tone
	Display: Language / Brightness / Screen Timeout / Time Zone / Imperial Units / Low Power Mode
	Lock Channel Data: Locks all editing (VFO, Rapid Scan, etc.). Disable via the app to edit again.
	Factory Reset / Reset Settings

GPS status	switch or turn off positioning
compass	Figure 8 calibration
Status	firmware, battery
Pairing	enter pairing mode
FM Radio	enter FM mode

TECHNICAL SPECIFICATIONS

General	
Frequency Ranges:	TX : 144–148 MHz; 430–449.995 MHz (Amateur bands) RX : 88-108 MHz (FM Radio) * 108-137 MHz (Air Band) * 136-174 MHz 174-225 MHz (GEN) * 300-400 MHz(AM&FM) * 400-520 MHz *(RX Only)
Channel Steps:	2.5/5/6.25 / 10/12.5 /25 /50 /100 KHz
Channel Bandwidth:	12.5/25 kHz
Emission Type:	F1, F2, F3
Frequency Stability:	±1.5ppm

Number Of Channels:	180 (6 groups × 30)
Antenna Impedance:	50 Ω
Supply Voltage:	Nominal: 13.8V DC, Negative Ground Operating: 11.7 -15.8V, Negative Ground
Current Consumption:	0.5A(Receive) 9A(TX,144 MHz 50W) 9A(TX,430 MHz 50W)
Operating Temperature:	-4° F to +140° F(-20° ℃ to +60° C)
Case Size	160(L) x135(W) x38(H)mm (with the fan)
Weight	1.2 kg Rear Chassis.
Transmitter	
RF output power	High 50 W / Mid 25 W / Low 8 W
Spurious Emission:	≤ −65 dBc
Modulation Type:	Variable Reactance F1, F2, F3
Maximum Deviation:	±5 kHz
Microphone Impedance:	2KΩ

Receiver	
Sensitivity:	88-108 MHz(WFM) 0.5 µV TYP for 12 dB SINAD 108-137 MHz(AM) 0.5µV TYP for 10 dB SNR 136-174 MHz (FM) 0.15 µV TYP for 12 dB SINAD 174-225MHz (FM) 0.25 µV TYP for 12 dB SINAD 300-400 MHz(AM) 0.7µV TYP for 10 dB SNR 300-400 MHz(FM) 0.2µV TYP for 12 dB SINAD 400-520 MHz(FM) 0.15 µV TYP for 12 dB SINAD
Squelch Sensitivity	0.13 µV (144 / 430 MHz Band)
Selectivity (NFM, AM):	12 kHz / 30 kHz (–6 dB / –60 dB)
AF Output:	2 W(4Ω for 10 % THD)- Internal Speaker 5 W(4Ω for 10 % THD(@ 13.8 V)- External Speaker
AF Output Impedance:	4-8Ω

Note: Specifications are subject to change without notice.

FOR SUPPORT, WARRANTY, AND ACCESSORIES - VISIT WWW.BAOFENGTECH.COM