NA-T20D Series

Digital Radio

OWNER'S MANUAL

English

Preface

To help you ward off bodily injury or property loss that may arise from improper operation, please read all the information carefully before using our products.

Intended Use

Our products are designed to provide reliable wireless communication services for users across many industry sectors. In order to use the products safely and to achieve the best performance, they must be used as intended. The operator of the product is responsible for damage to the product or damage caused by the product if the product was used beyond the intended use instructions.

Intended use includes that:

- The product is used by users who have full knowledge of its RF exposure and can exercise control over their RF exposure to meet the occupational limits in FCC/ICNIRP and international standards.
- All the security instructions set forth in this document are always heeded.
- The general, national and in-house safety regulations are heeded.
- The product is exclusively used with the frequencies licensed by the respective authority.
- The product is configured appropriately by the dealer.

Besides, intended use also requires the product operator to be well-trained and to be familiar with the applicable standards, regulations and provisions.

RF Radiation Information

Compliance with RF Exposure Standards

The radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR § 1.1307, 1.1310 and 2.1093
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1:2005;

● Institute of Electrical and Electronic Engineers (IEEE) C95.1:2005 Edition

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environmental exposure limits, always adhere to the
following procedures.
Guidelines:
● Do not remove the RF Exposure Label from the device.
● User awareness instructions should accompany device when transferred to other users.
● Do not use this device if the operational requirements described herein are not met.
Operating Instructions:
● Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), press the Push-to-Talk (PTT) key. To receive calls,
   release the PTT key. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy only when
   transmitting (in terms of measuring for standards compliance).
● Keep the radio unit at least 2.5 cm away from the face. Keeping the radio at the proper distance is important as RF exposure decreases with distance from the antenna. The antenna should be kept away from the face and eyes.
● When worn on the body, always place the radio in an approved holder, holster, case, or body harness or by use of the correct clip for this product. Use of non-approved accessories may result in exposure levels which exceed the FCC's occupational/controlled environmental RF exposure limits.
● Use of non-approved antennas, batteries, and accessories causes the radio to exceed the FCC RF exposure guidelines.
● Contact your local dealer for the product's optional accessories.

FCC Regulations

Federal Communication Commission (FCC) requires that all radio communication products should meet the requirements set forth in the above standards before they can be marketed in the U.S, and the manufacturer shall post a RF label on the product to inform users of operational instructions, so as to enhance their occupational health against exposure to RF energy.

FCC Statement

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

● Connect the equipment into an outlet on a different circuit to that of the receiver's outlet.

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

Operation is subject to the following two conditions:

● This device may not cause harmful interference.

● This device must accept any interference received, including interference that may cause undesired operation.

Note: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

SAR tests are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest highest certified power level in all tested frequency bands, although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value.

Before a new model device is a available for sale to the public, it must be tested and certified to the FCC that it does not exceed the exposure limit established by the FCC, Tests for each device are performed in positions and locations (e.g. at the ear and worn on the body)as required by the FCC.

This radio complies with IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% and is authorized by the FCC for occupational use only.

EU Regulatory Conformance

As certified by the qualified laboratory, the product is in compliance with the essential requirements and other relevant provisions of the Directive 2014/53/EU. All applicable EU regulations are regarded (2006/66/EC , 2011/65/EU , 2012/19/EU).Please note that the above information is applicable to EU countries only.

Precautions for Portable Terminals

Operating Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not operate the product in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials. In such location, only an approved Ex-protection model is allowed for use, but any attempt to assemble or disassemble it is strictly prohibited.

2. Do not operate the product near or in any blasting area.
3. Do not operate the product near any medical or electronic equipment that is vulnerable to RF signals.
4. Do not hold the product while driving.
5. Do not operate the product in any area where use of wireless communication equipment is completely prohibited.

■ Important Tips

To help you make better use of the product, be sure to observe the following instructions:
1. Do not use any unauthorized or damaged accessory.
2. Keep the product at least 2.5 centimeters away from your body during transmission.
3. Do not keep the product receiving at high volume for a long time.
4. For vehicles with an air bag, do not place the product in the area over the air bag or in the air bag deployment area.
5. Keep the product and its accessories out of reach of children and pets.
6. Please operate the product within the specified temperature range.
7. Continuous transmission for a long time may lead to heat accumulation within the product. In this case, please keep it at a proper location for cooling.
8. Handle the product with care.
9. Do not disassemble, modify or repair the product and its accessories without authorization.

■ Protect your hearing

1. When using the radio without a headset or earpiece, do not place the radio's speaker directly against your ear.
2. Use the lowest volume necessary to do your job.
3. Turn up the volume only if you are in noisy surroundings.
4. Turn down the volume before adding headset or earpiece.
5. Limit the amount of time you use headsets or earpieces at high volume.
6. Use careful with the earphone maybe possible excessive sound pressure from earphones and headphones can cause hearing loss

Precautions for Batteries

■ Charging Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not charge or replace your battery in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials.
2. Do not charge your battery that is wet. Please dry it with a soft and clean cloth prior to charge.
3. Do not charge your battery suffering deformation, leakage and overheat.
4. Do not charge your battery with an unauthorized charger.
5. Do not charge your battery in a location where strong radiation is present.
6. Overcharge shall always be prohibited for it may shorten the life of your battery.

■ Maintenance Instructions

To help your battery work normally or prolong its life, be sure to observe the following instructions:

1. Accumulated dust on charging connector may affect normal charging. Please use a clean and dry cloth to wipe it on a regular basis.
2. It is recommended to charge the battery under 5℃~40℃. Violation of the said limit may cause battery life reduction or even battery leakage.
3. To charge a battery attached to the product, turn it off to ensure a full charge.
4. Do not remove the battery or unplug the power cord during charging to ensure a smooth charging process.
5. Do not dispose of the battery in fire.
6. Do not expose the battery to direct sunlight for a long time nor place it close to other heating sources.
7. Do not squeeze and penetrate the battery, nor remove its housing.

■ Transportation Instructions

Damaged batteries must not be transported.

1. To avoid short circuit, separate the battery from metal pars or from each other if two or more batteries are transported in one packaging.
2. The radio must be switched off and secured against switch-on, if the battery is attached.

The content of the shipment must be declared in the shipping documents and by a Battery Shipping Label on the packaging. Contact your hauler for the local regulations and further information.

Precautions for Disposal

Once the service life of our products (including but not limited to radios and batteries) has ended , they shall not be disposed as household garbage. Their recycling and disposal shall satisfy your local regulations.

Content of the packaging

• 1	Radio	• 1	Li-Ion battery pack
• 1	Adapter (with Type-C cable)	• 1	Belt clip
		• 1	Wrist strap
• 1	Owner's Manual	• 1	Headset

If any item is missing, please verify with your dealer.

Main characteristics

• Encrypted calls (up to 32 key configurations), making calls more confidential
• Speech noise reduction to significantly improve call quality in noisy environments
• Support non-standard sub tone and frequency hopping functions, Enhance signal concealment and anti-interference ability
• One-touch frequency matching and quick group formation, Simplify CPS programming operations, quickly match and connect specified channels with just one click, allowing users to quickly create or join groups
• UHF410-469MHz Transceiver
• Output power: Max 2W
• Channel spacing: 12.5 KHz
• Analog/ Encrypted channel Scan
• Vocal tuning
• Battery save
• Channel Monitor
• Analog Squelch
• 51 CTCSS tones and 210 DCS codes
• TOT (Time out timer)
• 2pin Kenwood accessory jack
• Type-C charge

Main controls and parts of the radio

1. Antenna
2. PTT: push this key to transmit, release it to receive.
3. SK1: +/Channel UP Key (SK1)
4. SK2: -/Channel Down Key (SK2)
5. Power switch/ Volume control
6. Led indicator: RED: TX; GREEN: RX.
7. Speaker
8. Microphone
9. External Speaker/Mic Jack- allows the connection
   with external devices such as headsets, microphones.
10. Type-C USB Charging Port

LED Status Indications
The top LED will help you to identify the current radio status.

LED Indication	Radio Status
Constant Red	Transmitting
Constant Green	Analog Receiving
Flashes Green	Analog Scan
Constant Yellow	Encryption Receiving
Flashes Yellow	encryption Scan

Programmed Key

Short press the [**+ / SK1**] keys to adjust the channel. You can set different functions for long pressing the [SK1/+] key.
Option:

·Long press Monitor

·Power

·Emergency Alarm

Battery recharge

To charge batteries in radio:

1. Insert the random original adapter into the AC socket, and then insert the adapter cable into the C-shaped socket on the right side of the radio (open the protective cover).

2. Ensure that the Type-C socket on the right side of the radio is in good contact with the charging terminal of the cable. The indicator light on the top of the radio turns orange and charging begins.

3. It takes approximately 2-5 hours to fully charge the battery. The indicator light on the top of the radio is off - charging is complete.

When the indicator light on the top of the radio goes out, it indicates that the charging is complete. Remove the cable from the C-shaped port on the right side of the radio and cover it with a protective cover.

Baofeng recommends your radio is turned off while being charged.

Operations

Power on/off and volume adjustment

Rotate the **[Power/Volume]** knob clockwise to turn the radio on. Rotate the control clockwise /counter-clockwise to adjust the volume level as you prefer.

Rotate the **[Power/Volume]** knob to adjust the volume. Turn clockwise to increase the volume and counterclockwise to decrease the volume.

·To turn the radio off, rotate the control counter-clockwise till hearing a mechanical "click".
·If voice prompts are enabled, they will be accompanied by "Power on and channel number".

Select a Channel

NA-T20D can store up to 30 channels, and the channel type allows programming to analog or/and encrypted.
In standby mode, Press the **+ (SK1)/ - (SK2)** keys to step down or down to select the channel. When the voice prompt function is turned on, the corresponding channel is broadcast by voice.
·If the channel is encrypted, it will be accompanied by "Encryption and channel number".
Attention: It is necessary to set the members of the group on the same channel in order to communicate through radios.

Making a Call

To communicate, all radios in your group must be set to the same channel.
Press and hold the **+ (SK1)** key to enable the Monitor feature in order to make sure that the frequency is not busy, and then press and hold the [PTT] key. Release the [PTT] key to receive. Only one user at a time can talk during radio communications. Therefore, it is important not to transmit when you are receiving a communication and use the transmission mode sparingly to allow other users to talk. Transmission consumes a significant amount of energy and should therefore be used sparingly to prolong the battery life. If you are unable to contact a station that you have no problems in receiving, the station may be using CTCSS tones or DCS codes.

Making a Encryption Call

·Select an encryption channel, Press and hold **[PTT]** key, the radios is in the transmitting state, and the red indicator light is constantly on. Then speak in a normal tone into the microphone.
·After releasing the **[PTT]** key, the yellow light briefly flashes once, and the radio is in an acceptable state. When receiving a call, the yellow indicator light remains on.
Note: Set the group members on the same channel and encryption sequence (0-31) to achieve interconnection.

Monitor

Before using the monitor function, please confirm whether the side key function is defined as "**Long Press Monitor**".

The Monitor feature is for opening the Squelch, in order to monitor to signals that are too weak to keep the Squelch permanently opened. Press and hold the **+ (SK1)** key to enable such function.

Channel Scan

This function can be activated only by means of the optional programming software. Program at least two scanning channels for the radio before using the scanning function.

• **Analog scanning**

1) On **16th** channel, Press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and enter the analog scan. The scan starts from the current channel, and the signal light is flashing "green". Press and hold the **+ (SK1)** key again to exit the scan.

2) Lights green when scanning pauses on a channel. Press and hold the [PTT] key will make a callback on the stay channel.

3) At any time during scanning, simply press the **+ (SK1)** key to pause the radio scanning. The radio returns to the channel of the last received signal for transmission. If no valid signal is received during the scanning period, then return to the scanning start channel for transmission.

4) Scanning method: In carrier scanning mode, scanning stops when a signal is detected, and scanning continues after 5 seconds of carrier signal loss. After scanning the signal, the voice prompts the channel number scanned.

• **Encryption scanning**

1) On **14th** channel, Press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio, and enter the encryption scan. The scan starts from the current channel, and the signal light is flashing yellow. Press and hold the **+ (SK1)** key again to exit the scan.

2) When scanning pauses on a channel, the yellow light will light up.

3) At any time during scanning, simply press the **+ (SK1)** key to pause the radio scanning. The radio returns to the channel of the last received signal for transmission. If a valid signal is continuously received during the scanning period, it will return to the scanning start channel for transmission.

4) Scanning method: In carrier scanning mode, scanning stops when a signal is detected, and scanning continues after

5 seconds of carrier signal loss. After scanning the signal, the voice prompts the channel number scanned.

Prompt voice switch settings

On **10th** channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio, and turn on or off the voice prompt function.

Turn on the voice prompt function, which will be accompanied by voice prompts when turning on the radio or switching channel sequences. If the prompt voice function is turned off, there will only be a "beep" prompt when turning on the radio or switching channel sequences.

VOX

The VOX feature enables hands free conversations without using PTT: just speak in the direction of the microphone and the communication will be automatically activated. The VOX sensitivity can be adjusted in 5 different levels (1…5) through the programming software:

Level 2 is set by default and has the lowest VOX sensitivity, 5 is the lowest one.

With the programming software you can enable/disable the VOX feature and select the sensitivity levels.

NOTE: On **5th** channel, press and hold the **[PTT] and [+/SK1]** keys to turn on the radio, and prompt "VOX on, welcome 5" to turn on/off VOX feature.

Frequency scanning function

On channel 1, press and hold the [PTT] and [+/SK1] keys to turn on the radio. The voice will announce "Power On" to enter the sweep function and the green light will flash; Press and hold the [+/SK1] key to prompt a "beep" sound and the green light remains on, and start scanning. After scanning, it will be automatically stored and prompted with two beeps. (The green light remains on during scanning, and the green light flashes when scanning is stopped)

Short press the [+/SK1] key to switch to the next channel, then press and hold the [+/SK1] key to continue scanning. After scanning, it will be automatically stored and prompted with a "beep" sound, with the indicator light as described above;

Short press the [+/SK1] key to switch to the next channel, then press and hold the [+/SK1]key to continue scanning. After scanning, it will be automatically stored and prompted with a "beep" sound; Operate in sequence until the last

channel.

Complete the frequency sweep task, shut down and restart to exit the frequency sweep mode, and the frequency sweep task ends.

Quick group formation (Wireless clone)

On channel 2, press and hold the [PTT] and [+/SK1] keys to turn on both the transmitter and receiver. The receiver and transmitter prompt "beep" to enter wireless replication. When the transmitter presses the [PTT] key, the red light remains on, and the receiver green light automatically remains on. After copying all channel parameters of the transmitter, the receiver prompts "beep" twice. And automatically restart the radio.

Voice frequency hopping

Set frequency hopping on/off for each channel through CPS software. When the frequency hopping function is enabled, it cannot communicate with the regular settings.

Note: Channels with frequency hopping function must be synchronously set with CTCSS or DCS.

CTCSS/DCS tones

CTCSS and DCS tones are similar to access codes and enable the radio to communicate only with the users that are tuned on the same channel and have set the same code. For each channel, you can set up to 51 CTCSS tones and 210 DCS codes. The CTCSS/DCS tones are a sort of "access codes" and enable the radio to communicate only with the other users set on the same frequency and on the same CTCSS/DCS tone.   Undesired signals coming from other stations set on the same frequency but with different CTCSS/DCS tones won't be received.

Quick operation radio

Without CPS programming software, you can perform the following quick operations through the combination of **[PTT]** and **[+/SK1]**:

• On the 1th channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radios, and the green light flashes to perform frequency scanning.

• On the 2th channel, press and hold the **[PTT]** and **[+/SK1]** keys to open the radios, which can be wirelessly copied to

quickly group up.

- On the 5th channel,, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and turn the VOX function on or off. Accompanied by a voice prompt VOX On or VOX Off.
- On the 10th channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and turn on or off the prompt voice function.
- On the 15th channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and switch the prompt language between Chinese and English.
- On the 16th channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and turn on or off the analog channel scanning function
- On the 14th channel, press and hold the **[PTT]** and **[+/SK1]** keys to turn on the radio and turn on or off the encrypted channel scanning function