# VHF/PTT TH-680

**Dual Mode IP/Analog Radio
VHF / PTT (POC)
Communication**

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# Communication

| TYPE | PARAMETERS | SPECIFICATIONS | |
|---|---|---|---|
| Mechanical Properties | Model No. | TH-680 | |
| | Dimension | 38 ( H )  x 58 ( W )  x 135 ( L )  mm | |
| | Weight | 320g | |
| | Working Temperature | -30°( to +75°( | |
| Basic Parameter | Working Voltage | 6.4V--8.4V (Standard 7.6V) | |
| | Working Current | 31 0mA @ UTMS 2100/900 280mA @ GSM 900 | |
| | Peak Current | 1.8A | |
| RF  Parameter | LTE FDD | 81 : 2100MHz      83:  1800MHz 87: 2600MHz      88:  900MHz 820  :800MHz | |
| | WCDMA | Band1 : 2100M    OR   Band2 : 1900M Band8: 900M                Band5: 850M | |
| | GSM | GSM/GPRS : 900 / 1800 MHz | |
| | Maximum Output power | WCDMA 900 /  21OOM : Power Class3 (+24d8m +2.5d8m/-1.5d8m); GSM /  GPRS 850 / 900M : Power Class4 (+33d8m +2.5d8m/ -0.5d8m); GSM /  GPRS 1800 I 1900M : Power Class1 (+30d8m +2.5 dBm/ -0.5d8m); | |
| | Receiving Sensitivi1y | WCDMA 900: <  -108 dBm; WCDMA 2100: <-109d8m; GSM 900/1800 :  <  -106 dBm | |
| GPS | GPS | GPS Positioning, 1.57542GHz; | |
| | Sensitivity | Catch -144dBm, Track -159dBm; | |
| Technology Standard | Data Speed Rate | GSM CS : UL 9.6kpbs /  DL 9.6kpbs GPRS : Multi-slot Class 10 EDGE: Multi-slot Class 12 WCDMA CS : UL 64kpbs /  DL 64kpbs WCDMA PS : UL 384kpbs /  DL 384kpbs | |
| | Protocol | HSDPA /  WCDMA /  EDGE/ GPRS /  GSM | |
| Analog Parameter | GENERAL | | |
| | Frequency Range | UHF : 400-480MHz  OR VHF : **136-174MHz** or 240-260MHz | |
| | Channel Number | 199 | |
| | Channel Space | 25/12.5KHz | |
| | Frequency Stability | ±2.5 ppm | |
| | TRANSMITTER | | |
| | | Wide band | Narrow band |
| | Power Output | 5W | |
| | Modulation | 16K<l>F3E | 11K<l>F3E |
| | Spurious Emission | -36dBm | -36dBm |
| | Adjacent Channel Power | 70dB | 60dB |
| | RECEIVE | | |
| | RF Sensitivity  (12db SINAD) | 0.20 μV | 0.20 μV |
| | Adiacent Channel Selectivity | 60dB | 55dB |
| | Intermodulation Rejection | 65dB | 60d8 |
| | Spurious Response | 65dB | 65dB |

## Checking Equipment

Carefully unpack the radio.
We recommend that you identify the items listed in the following table before discarding the packing material.
If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.
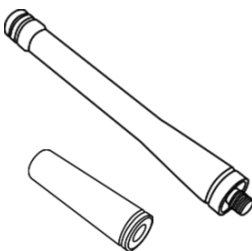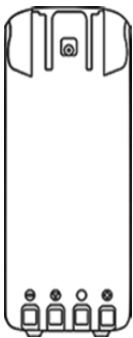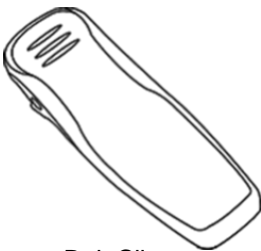
IP & Analog
Antennas
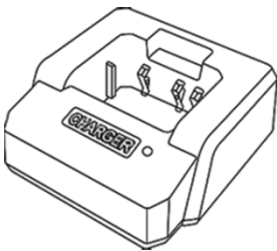
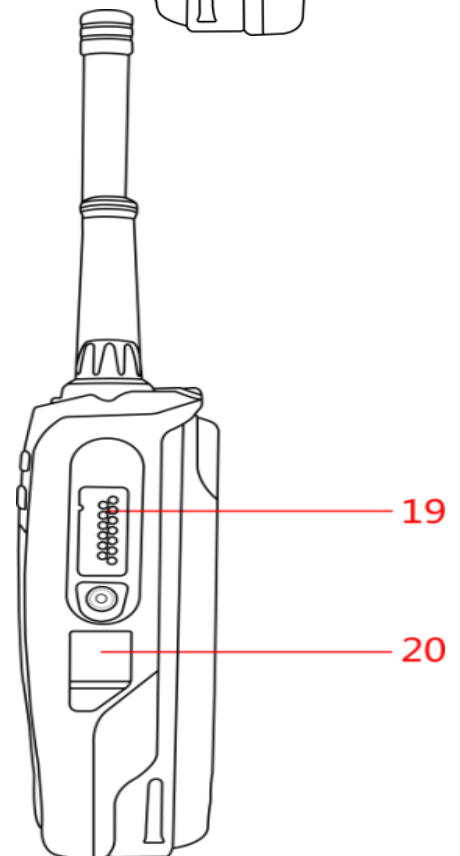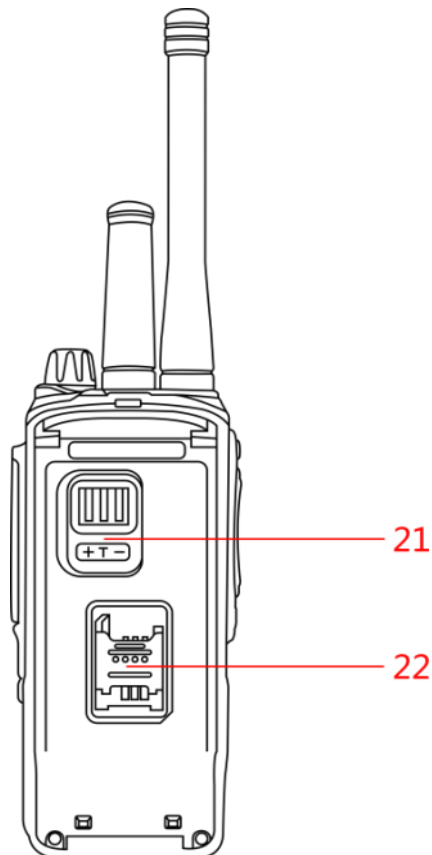Adapter

Charger Cradle

Battery

Belt Clip

| ITEM | QUANTITY |
|---|---|
| IP Antenna | 1 |
| Analog Antenna | 1 |
| Charger Cradle | 1 |
| Adapter | 1 |
| Battery | 1 |
| Belt Clip | 1 |
| User's Manual | 1 |
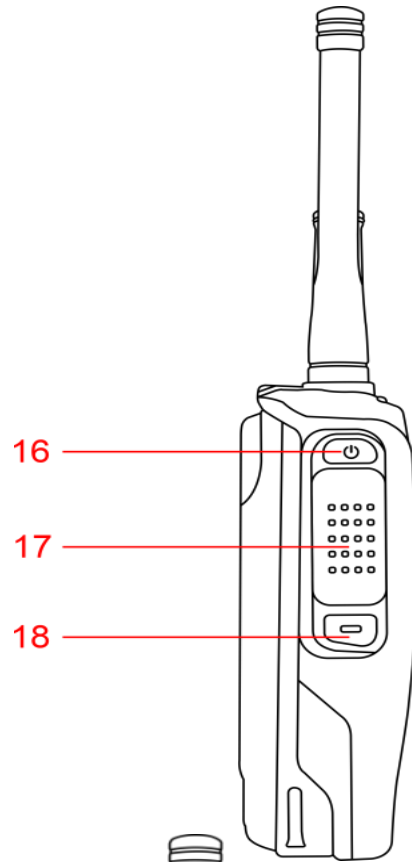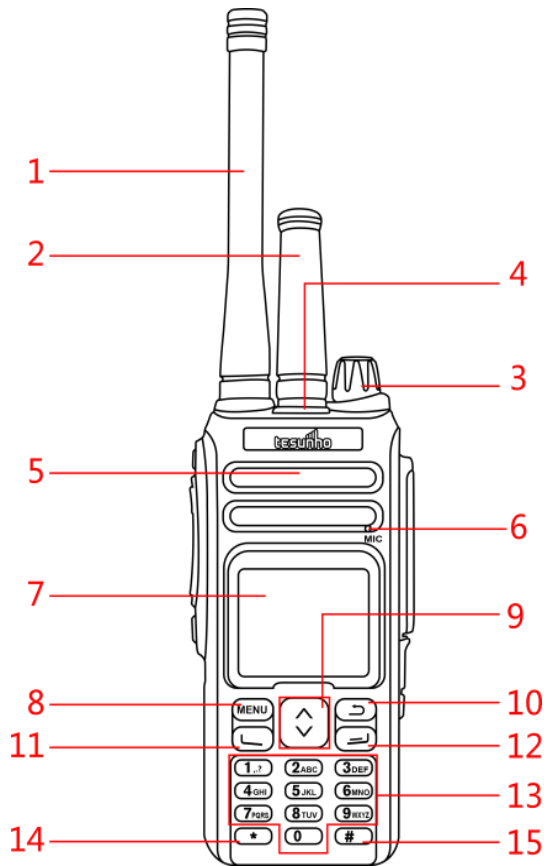
Communicate between two or more devices at just the push of a button

# TH680
## VHF/PTT DEVICE

1. Antenna (Analog)
2. Antenna (IP)
3. Power Switch and Volume Control
4. Indicator Lamp
5. Light Red: Transmitting
6. Light Blue: Receiving
7. Speaker
8. MIC
9. LCD Screen
10. Menu Key
11. Enter the submenu or confirm/save the selection
12. UP Key / DOWN Key
13. Back Key / Delete Key
14. Back to the previous menu or delete input
15. Call Key
16. Answering/Making phone call or get user/friend APRS information
17. Exit Key
18. Exit to the home screen or hang up phone call
19. Numeric Keypad
20. "*" Key
21. Standby Mode:
22. Long press - Scanning the ☆marked channels/ frequencies *(main at Analog mode)*
23. "#" Key
24. Standby Mode:
25. Short press - Switch between Analog frequency mode & Analog channel mode
    Long press - Reverse frequency (shows R after reversed )
26. PF2 Key
27. Squelch Key (Analog) / SOS Key (IP) Short press - Open/Close squelch Long press - Send/Cancel SOS
28. PTT (Push To Talk)
29. PF1 Key
30. Short press - Switch between IP & Analog modes
31. Long press - Lock/Unlock Keypad 19.Speaker/Microphone Jack 20.Micro USB Jack
32. Radio can be charged via a standard micro USB cable
33. Battery Contactor
34. SIM Card Slot

| Icon | Definition |
|------|-----------|
| 🔋 | Battery Power |
| 🔋 | Battery Charging |
| 📶 | Signal Strength |
| SOS | SOS |
| GPS | **Red GPS:** GPS enabled, no GPS positioning<br>**Green GPS**: GPS enabled, GPS positioning acquired |
| ⇅ | Repeater |
| 📞 | Phone Call |
| 🔒 | Keypad Locked |
| ✉ | Dispatcher MSG |
| MAIN | Current Working Mode |
| S | Power Save Mode |
| L | Low-power |
| H | High-power |
| CTS | CTCSS Enabled |
| DCS | Digital Coded Squelch Enabled |
| N | Narrow Band (12.5KHz) |
| 🔇 | Waiting To Receive |
| R | Frequency Reversed |
| 🔊 | Receiving |
| ★ | Added To Scan List |

**Please check the following two items before using**

A. Please make sure the SIM card has been activated and has start the data service.

B. Please make sure the radio has been programmed with the activated platform account and the correct APN information.

If not, please contact local dealer for assistance.

**1. Power On**

Turn the volume control clockwise to power on.
IP part once logged in, LCD will display user name/group information.

**2. Power Off**

Turn the volume control anticlockwise to power off.

NOTE: Can not remove battery directly to power off, otherwise it will lead to the data loss and the radio damages.

**3. Transmitting**

Press PTT to transmit ( LED indicator lights red), keep away from microphone 2.5cm-5cm.

**Exception & Talking Priority:** If there is an advanced user starts to talk when you're transmitting, you will be forced to exit the transmitting mode.

**4. Receiving**

**IP:** The LED indicator lights blue, LCD screen displays transmitter's name and "speaker" icon 🔊 when receiving.

**Analog:** The LED indicator lights blue, LCD screen displays "speaker" icon 🔊 when receiving.

**Three Working Modes**

Enter MENU-ADV Settings to set working mode.

**IP Only:** Only can receive signal from IP radio.
**Analog Only:** Only can receive signal from Analog radio.
**Dual Mode:** Can receive signal form both IP radio & Analog radio.
Automatic switching working mode according to the signal it received.

### Switch Working Modes

In standby mode, short press PF1 Key (Side Third Key) to switch between IP & Analog modes. In standby mode, short press "#" Key to switch between Analog Frequency Mode and Analog Channel Mode.

Use up/down key to choose needed frequency/channel, or input needed frequency/channel number by numeric keypad, then short press MENU Key to confirm the input frequency/channel

### Menu Operation

• Press **MENU** Key to enter menu/submenu
• Press "▲" or "▼" Key to choose menu item
• Press **MENU** Key to confirm/save the selection
• Press ⟵ Key to return to the previous menu

| Menu | Submenu | Settings | Function Instruction |
|------|---------|----------|----------------------|
| Choose Group | Group List | ----- | Choose a group, then you can transmit and receive message within the group |
| Friends List | Friends List | ----- | Enter to make private call to the friend(s) that added on platform |
| User List | User List | ----- | Enter to make private call to the group member(s) |
| ADV Settings | Working Mode | IP Only | Only IP Mode is available |
| | | Analog Only | Only Analog Mode is available |
| | | Dual Mode | Both IP & Analog are available |
| | Repeater Mode | Analog To IP | Transform Analog signal to IP |
| | | IP To Analog | Transform IP signal to Analog |
| | | Auto | Can transform IP and Analog signal automatically |
| | | OFF | ----- |
| | TX. Selection | Auto | Automatically select TX. Mode according to the last received signal |
| | | Manual | Select TX. mode manually |
| | RX. Priority | Sequence | Different signals will be received in sequence |
| | | IP | IP signal will be received first |
| | | Analog | Analog signal will be received first |
| | | Dual | IP and Analog signals will be received at the same time |
| | Network Mode | 4G Only, 2G/3G, Auto, 2G Only, 3G Only | ----- |
| | SPK Level | Standard / +1/+2/-2/-1 | Adjust speaker gain according to the environment |
| | MIC Level | Standard / +1/+2/-2/-1 | Adjust MIC gain according to the environment |
| | Sound Quality | STD Mode | 4K Standard Voice Quality |
| | | HQ Mode | 8K High Voice Quality |
| | Record Control | ON / OFF | Open / Close TX. & RX. Recording function |
| | PoC Update | ----- | Enter to upgrade PoC version |

| Menu | Submenu | Settings | Function Instruction |
|---|---|---|---|
| Analog Settings | Storage Channel | | Under Frequency Mode, input desired channel number to store frequency in the corresponding channel number |
| | Delete Channel | | Enter to delete needless channel |
| | TX. Power | High | Hight output power |
| | | Low | Low output power |
| | RX. CDC Short press "*" key to switch CTCSS/DCS /OFF | 67.0～254.1 | Receiving CTCSS setting |
| | | D023N～ D754N, D023I ～D754I | Receiving DCS setting |
| | setting modes | | Short press "#" key to select normal / reversed DCS |
| | | OFF | ----- |
| | TX. CDC Short press "*" key to switch CTCSS/DCS | 67.0～254.1 | Transmitting CTCSS setting |
| | /OFF | D023N～ D754N, D023I ～D754I | Transmitting DCS setting |
| | setting modes | | Short press "#" key to select normal/ reversed DCS |
| | | OFF | |
| | W/N | Narrow | 12.5 KHz |
| | | Wide | 25 KHZ |
| | BCLO | Carrier | Can't transmit when receiving |
| | | QTDQT | Can't transmit if CTCSS/DCS tone |
| | | | among radios are different |
| | | OFF | ----- |
| | TOT | OFF/30/60…/270 | When transmitter time out timer, it will not stop warning until release PTT |
| | TX Roger | ON/OFF | Beep alarm when press/release PTT |
| | SQL | 0-9 | Squelch Level is an analog reference level number that the transceiver's CPU uses to set the internal squelch threshold Range: 0(Open) to 9(Tight) Default: Level 4 |
| | Step | 2.5KHz -100KHz | Setting of frequency step |
| | Power Save Mode | ON/OFF | Save battery consumption when it is on |
| | Scan. Mode | Time | Radio will stop if sense a signal, and waiting 5 seconds Re-scanning if no PTT is pressed during this period |
| | | Carrier | Radio will stop if sense a signal, staying in this channel till signal is interrupted, and then re-scanning |
| | | Search | Radio will stop if sense a signal |
| | Scan. Add (Only can use under Channel Mode) | Add | Add the current channel to scan list; the "☆" icon displays |
| | | Del | Remove the current channel from scan list |
| | Channel Display | Frequency | Display transmitting/receiving frequency and channel number |
| | | Channel | Only display channel number "CH-XXX" |
| | | Name | Display channel name and number If did not set channel name, then display channel number "CH-XXX" only |
| | Channel Edit | | Edit channel name under channel mode. Press "#" key to switch inputting mode, "Back" key to delete, "*" key for character table |

| Menu | Submenu | Settings | Function Instruction |
|---|---|---|---|
| Dispatcher MSG | | | Enter to check the dispatcher message |
| Audio Records | | | Enter to check the PTT records |
| Contacts | | | Add the phone call contacts list by programming. |
| | | | Enter contacts list to choose a phone number to make phone call directly |
| Records | | | Enter to check the dialed, received, missed phone call records. Can choose a phone number to make phone call directly |
| GPS INF | | | Enter to check the local GPS information (Latitude and longitude) |
| Settings | SOS Mode | Normal | SOS alarm every 30 seconds and will stop after 3 cycles |
| | | HOT MIC | SOS alarm 30 seconds, auto open MIC 10 seconds, then close 20 seconds, and will stop after 3 cycles |
| | | OFF | Close SOS function |
| | Time Zone | -12~12 | Enter to choose the correct local time zone |
| | Backlit Mode | Auto | Backlight turns on automatically when operating on keys, transmitting/receiving Backlight off automatically after 30 seconds no operation |
| | | Key | Backlight turns on automatically when operating on keys Backlight off automatically after 30 seconds no operation |
| | | ON | Backlight keeps on |
| | Auto Lock | ON | Keypad locked automatically after 10 seconds no operation. Only can use PTT and side keys |
| | | OFF | Long press Side Third Key 3 seconds to lock/unlock keypad |
| | Beep | ON | A beep when operating on keys |
| | | OFF | No voice when operating on keys |
| | Roger Beep | ON/OFF | Beep alarm when press/release PTT |
| | Languages | English/CHS | ----- |
| | About | | Enter to check software version, network system and IMEI |

### 1. Phone Call

1) Make phone call through your Contacts list or Records list.

2) In standby mode, short press Call Key( ⌞ ) to enter dialing mode to make phone call.

3) Short press Menu Key or Call Key to answering /making phone call, short press Back Key or Exit Key ( ⌐ ) to hanging up.

NOTE: Before using, please make sure radio phone function has been enabled, and SIM card is allowed to make phone call. If not, please contact local dealer for assistance.
(You need to set the network mode to intelligent or 2G when you dial the number.)

### 2. Multi-members Selective Call

Enter friend or user list, short press "*"Key to select one or more (5 friends /users at most), press MENU Key to create temporary group, then press PTT for selective call.
Short press Exit Key ( ⌐ ) to exit.

### 3. Selective Call Alarm

After created temporary group with a friend/user, short press "*"Key to send call alarm if in need.

### 4. Quick Call

(a) Code Call

- Add three numbers in the front of user/friend name when creating users on platform.
- In standby mode, press the first three numbers of the one you want to call to quick searching the user/friend. Then press PTT to call.

(b) Quick Access Keys' Call

Enter choose group/ friend list/ user list, long press the number keys can store the current chosen group, friend or group members in the corresponding key.
In standby mode, long press of key will recall the group, friend or group members stored in the keys**.**

### 5. Quick Searching

Enter Choose Group/Friends List/User List, press the character(s) in group/friend/user name on keypad to quick search the group/friend/user, press MENU Key to confirm the selection.
**NOTE:** Short press "#" Key for the transform of letter and digital.

### 6. Monitor Group

Enter Choose Group, short press "#" Key to monitor other group(s),the selected group(s) color turn to red. Short press again to cancel.

### 7. APRS Information

Enter friend or user list, long press Call Key ( ⌞ ) for 3 seconds to get the online user's APRS information.

### 8. Repeater

Enter MENU-ADV Settings to choose repeater working mode. The repeater function help to realize the communication between IP and Analog radios.

**Auto:** Can transform IP and Analog signal automatically
**IP To Analog:** Transform IP signal to Analog
**Analog To IP:** Transform Analog signal to IP

### 9. TX Selection

Enter MENU-ADV Settings to set transmitting mode switch automatically or manually.

**Auto:** Automatically select TX. mode according to the last received signal
**Manual:** Select TX. mode manually

### 10. **RX Priority**

Enter MENU-ADV Settings to set receiving priority rights.

**IP:** IP signal will be received first
**Analog:** Analog signal will be received first
**Dual:** IP and Analog signals will be received at the same time
**Sequence:** Different signals will be received in sequence