INTEK®

# HR-2040

**AMATEUR RADIO**
**DUAL BAND MOBILE TRANSCEIVER**
**144-146 MHz VHF FM 50W**
**430-440 MHz UHF FM 40W**
**PC PROGRAMMABLE**

**OWNER'S MANUAL**

# *Notice*

## NOTICE !

**It is recommended to carefully read this owner's manual before using the product. This will also help the user to prevent using the radio in violation of the regulations valid in the country where the product is used, as well as to avoid any possible interferences with other services.**

## NOTICE !

This transceiver has been factory programmed, in order to use the product immediately after purchase. The programming includes the activation of channels/frequencies in the VHF and UHF FM Amateur Bands, according to the technical rules in force for the use of this bands.

## NOTICE !

This transceiver is programmable via PC, using the dedicated software (**free download at www.intek-radios.com**) and the PC interface cable (optional item). Any programming or modification of the original default setting must be made by a specialised technician or by an authorised service centre. Some functions of this transceiver might be programmed in violation of the technical rules in force for the use of the VHF and UHF FM bands. It is the user's responsibility to check that any modification to the programming will be done in compliance with the current regulations. Any modification to the product, alteration of the internal circuit, of the external structure of the radio or any programming in violation of the current regulations will automatically void the product certification and your right to use the product. INTEK S.R.L. declines any responsibility concerning any modification of the product, made by the user or by a third party, after delivery of the product.

CE 0700   RoHS 2002/95/EC

# *General Information*

## Thank you !

Thank you for choosing INTEK for your amateur radio applications. This user friendly transceiver will provide you with clear and reliable communications and will keep your professional activities at peak efficiency. This transceiver incorporates the latest and most advanced technology, so you will be pleased with its quality and its technical features.

## Important notice !

The use of VHF and UHF FM transceivers is subject to the regulations applied in the country where the product has to be used. As regulations are usually subject to possible modifications, please check the current regulations in your country with your dealer or local supplier. INTEK does not take any responsibility for illegal use and operation of this product not in accordance with the regulation of the country where the product is used.

## Safety notice

The user must know and understand the common risks related to the use of transceivers. Do not use the transceiver in environments at risk of explosion (where there are gas, dusts, smokes, etc.). Do not use the transceiver in service areas or fuel stations, on board aircrafts, etc.

## Cautions

Please observe the following precautions, in order to avoid causing fire, personal injuries or damage to the radio:

- It is suggested that each transmitted message lasts a few minutes only, since very long transmissions at the maximum transmitter RF output power may overheat the transmitter.
- Do not alter or modify in any way your transceiver.
- Do not expose the transceiver for a long time to direct sunlight and do not place it close to heat sources.
- Do not expose the transceiver to excessively dusty or damp places, do not place it on unstable surfaces.
- In case of anomalous smell or smoke that leaks out from the transceiver, turn it off immediately. Please contact an authorised service center.

# *General Information*

- Please observe the following precautions to prevent fire, personal injury, or transceiver damage:
- Do not attempt to configure your transceiver while driving,it is dangerous.
- This transceiver is designed for a 13.8V DC power supply. Don't use a 24V battery to power on the transceiver.
- Do not place the transceiver in excessively dusty, humid or wet areas, nor unstable surfaces.
- Please keep it away from interferential devices (such as TV, generator etc.)
- Do not expose the transceiver to long periods of direct sunlight nor place it close to heating appliances.
- If an abnormal odor or smoke is detected coming from the transceiver, turn OFF the power immediately. Contact a service station or your dealer.
- Do not transmit with high output power for extended periods; the transceiver may overheat

**Important notice !**

The use of VHF and UHF FM transceivers is subject to the regulations applied in the country where the product has to be used. As regulations are usually subject to possible modifications, please check the current regulations in your country with your dealer or local supplier. INTEK does not take any responsibility for illegal use and operation of this product not in accordance with the regulation of the country where the product is used.

**User Information**

in accordance with art. 13 of the Legislative Decree of 25th July 2005, no. 15 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, relative to reduction of the use of hazardous substances in electrical and electronic equipment, in addition to waste disposal".

The crossed bin symbol shown on the equipment indicates that at the end of its working life the product must be collected separately from other waste.
The user must therefore take the above equipment to the appropriate differentiated collection centres for electronic and electro technical waste, or return it to the dealer when purchasing a new appliance of equivalent type, in a ratio of one to one.

Appropriate differentiated waste collection for subsequent recycling, treatment and environment-friendly disposal of the discarded equipment helps to prevent possible negative environmental and health effects and encourages recycling of the component materials of the equipment.

Illegal disposal of the product by the user will be punished by application of the administrative fines provided for by the legislative decree no. 22/1997 (article 50 and following of the legislative decree no. 22/1997).

# CONTENTS

# CONTENTS

HR-2040 Mobile Radio has nice housing, stoutness & stability, advanced and reliable functions, perfect & valuable. This amateur mobile radio especially designs for drivers and it pursues company philosophy of innovation and practicality. More functions as follows:

- 758 memory channels, full duplex operation with independent volume and squelch controls.
- 50 Watts of power output on the VHF band and 40 Watts on the UHF band with cross band repeater function.
- Four independent receiving bands, consist of UU, UV,VU,VV for dual receive and dual output, plus receiving for AM/FM signal of air band, Marine band, PMR, etc; able to receive FM/TV radio and analogue TV signal.
- Display on a large LCD with adjustable brightness, convenient for nighttime use. There are Amateur operation mode and Professional operation mode for option.
- Distribute buttons reasonably, convenient for operation. Adopt superior quality material, better technology and direct-flow heat sink to ensure stable and durable operation.
- 758 programmable memory channels, identified by editing name.
- Programming different CTCSS, DCS, 2-Tone, 5-Tone in per channel, rejecting extra calling from other radios.
- Various scan functions including CTCSS/DCS Scan function.
- Using 5-Tone to send Message, Emergency alarm, Call all, ANI, Remotely kill, Remotely Waken, etc.
- Automatic calling Identification function by DTMF--ANI or 5-Tone--ANI.
- Multi groups of fix scrambling and 2 groups of self define scrambling.
- Compander function for decrease the background noise and enhance audio clarity, it can set compander ON/OFF per channel.
- Different band width per channel, 25K for wide band, 20K for middle band ,or 12.5K for narrow band.
- Theft alarm provides extra safety.



## Frequency Range (*)

RX: 108-180 MHz (AM/FM)
220-260 MHz
350-399.995 MHz
400-490 MHz

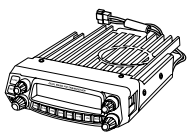
TX: 136-174 MHz
400-490 MHz

# 2 Supplied Accessories / Optional Accessories

## ■ SUPPLIED ACCESSORIES

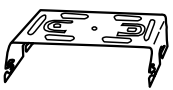
After carefully unpacking the transceiver, identify the items listed in the table below. We suggest you keep the box and packaging.

- Transceiver



- Microphone (QHM-05) (with DTMF keyboard)

- Mobile Mounting Bracket



- DC Power Cable with Fuse Holder

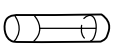
- Hardware Kit for Bracket

Black screws (M4X8mm) 4PS

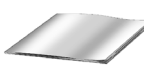
Tapping screws (M5X8mm) 4PS

S-Washer

- Spare Fuses



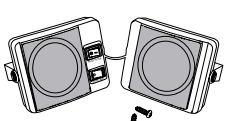
- User Manual



## ■ OPTIONAL ACCESSORIES

- USB Programming Cable (D-2040)

- External Speaker (SP-02)



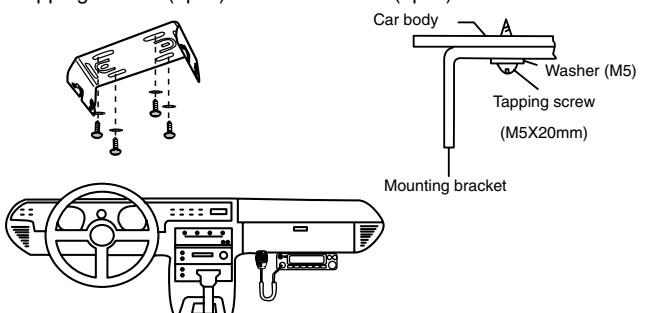
- External Speaker (FSP-10 / FSP-20 / FSP-30 / FSP-50)

- Regulated Power supply (SPA-8230)

## MOBILE INSTALLATION

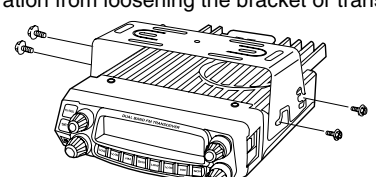
To install the transceiver, select a safe, convenient location inside your vehicle that minimizes danger to your passengers and yourself while the vehicle is in motion. Consider installing the unit at an appropriate position so that knees or legs will not strike it during sudden braking of your vehicle. Try to pick a well ventilated location that is shielded from direct sunlight.

1. Install the mounting bracket in the vehicle using the supplied self-tapping screws (4pcs) and flat washers (4pcs)

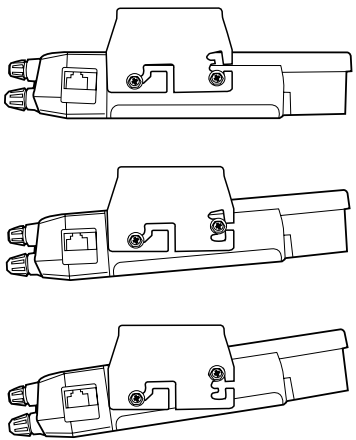



2. Position the transceiver, then insert and tighten the supplied hexagon SEMS screws.

   Double check that all screws are tightened to prevent vehiclevibration from loosening the bracket or transceiver.



Determine the appropriate angle of the transceiver, using the 3 screw hole positions on the side of the mounting bracket.



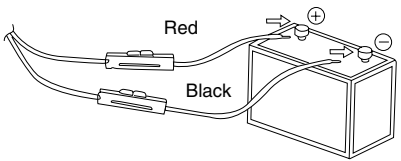
## DC POWER CABLE CONNECTION

NOTE Locate the power input connector as close to the transceiver as possible.

### MOBILE OPERATION

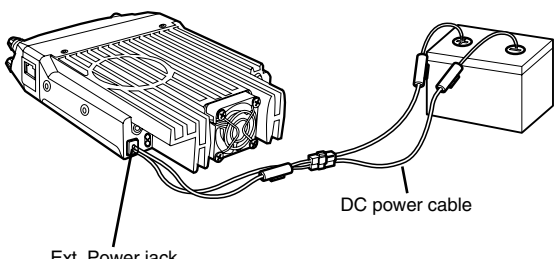
The vehicle battery must have a nominal rating of 12V. Never connect the transceiver to a 24V battery. Be sure to use a 12V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmitting output power may drop excessively.

1. Route the DC power cable supplied with the transceiver directly to the vehicle's battery terminals using the shortest path from the transceiver.
   - We recommend you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop.
   - The entire length of the cable must be dressed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system/ cables.
2. After installing cable, in order to avoid the risk of damp, please use heat-resistant tap to tie together with fuse box. Don't forget to reinforce whole cable.
3. In order to avoid the risk of short circuit, please cut down connection with negative (-) of battery, then connect with radio.
4. Conf rm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and black connects to the negative (-) terminal.
   - Use the full length of the cable without cutting off excess even if the cable is longer than required. In particular, never remove the fuse holders from the cable.
5. Reconnect any wiring removed from the negative terminal.




6. Connect the DC power cable to the transceiver's power supplyconnector.

   Press the connectors firmly together until the locking tab clics.



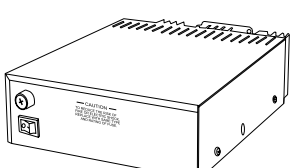
## FIXED STATION OPERATION

In order to use this transceiver for fixed station operation, you will need a separate 13.8V DC power supply (not included), power supply (SPA-8230) as optional accessories. Please contact local dealer to require.

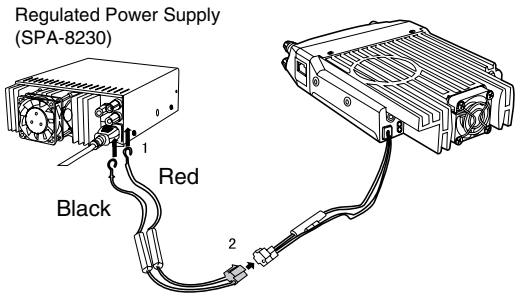
The recommended current capacity of your power supply is 12A.

1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct.
   (Red: positive, Black: Negative).

- Do not directly connect the transceiver to an AC outlet.
- Use the supplied DC power cable to connect the transceiver to a regulated power supply.
- Do not substitute a cable with smaller gauge wires.



Regulated power supply (SPA-8230)




DC power cable with fuse holder

2. Connect the transceiver's DC power connector to the connector on the DC power cable.
   - Press the connectors firmly together until the locking tab clicks.

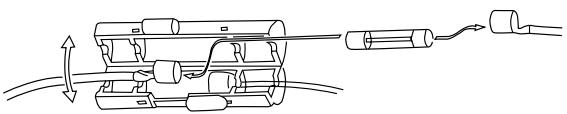
NOTE

Before connecting the DC power to the transceiver, be sure to switch OFF the transceiver and the DC power supply.

Do not plug the DC power supply into an AC outlet until you make all connections.

### REPLACING FUSES

If the fuse blows, determine the cause, then correct the problem. After the problem is resolved, replace the fuse. If newly installed fuses continue to blow, disconnect the power cable and contact your authorized dealer or an authorized service center for assistance.



| Fuse Location | Fuse Current Rating |
|---|---|
| Transceiver | 15A |
| Supplied Accessory DC power cable | 20A |

Only use fuses of the specified type and rating, otherwise the transceiver could be damaged.

NOTE

If you use the transceiver for a long period when the vehicle battery is not fully charged, or when the engine is OFF, the battery may become discharged, and will not have sufficient reserves to start the vehicle. Avoid using the transceiver in these conditions.

## ANTENNA CONNECTION

Before operating, install an efficient, well-tuned antenna. The success of your installation will depend largely on the type of antenna and its correct installation. The transceiver can give excellent results if the antenna system and its installation are given careful attention.

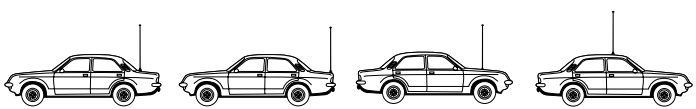
Use a 50Ω impedance antenna and low-loss coaxial feed-line that has a characteristic impedance of 50Ω , to match the transceiver input impedance. Coupling the antenna to the transceiver via feed-lines having an impedance other than 50Ω reduces the efficiency of the antenna system and can cause interference to nearby broadcast television receivers, radio receivers, and other electronic equipment.

NOTE

Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.

All f xed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage

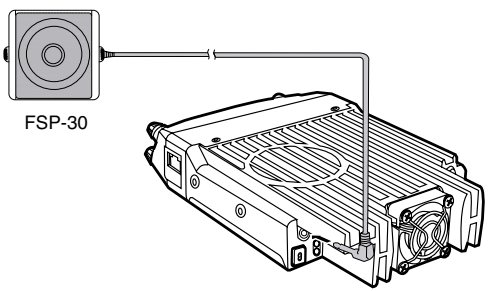
The possible locations of antenna on a car are shown as following:



## ■ ACCESSORIES CONNECTIONS

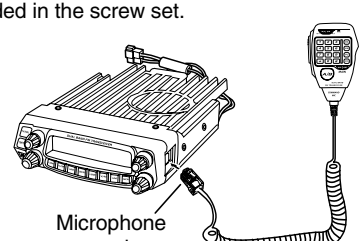
### ⌧ EXTERNAL SPEAKER

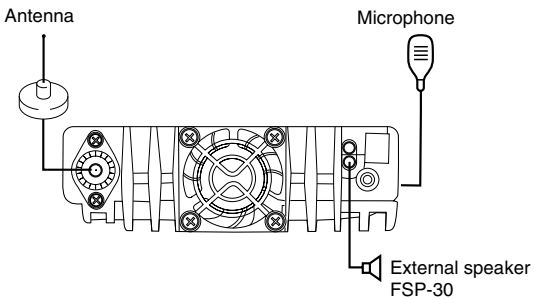
If you plan to use an external speaker, choose a speaker with an impedance of 8Ω . The external speaker jack accepts a 3.5 mm mono (2-conductor) plug.




### ⌧ MICROPHONE

For voice communications, connect a microphone equipped with an 8-pin modular plug into the modular socket on the front of the main unit. Press firmly on the plug until the locking tab clicks. Attach the supplied microphone hanger in an appropriate location using the screws included in the screw set.




### ⌧ PC CONNECTING

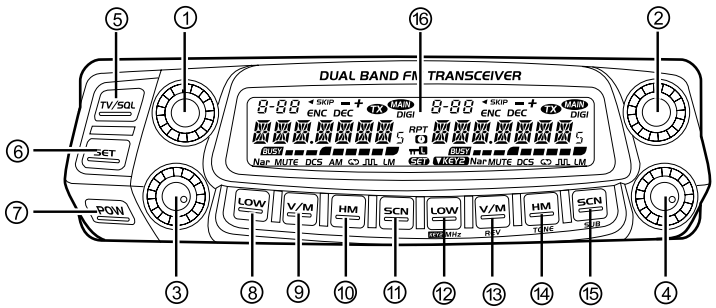
To use the dedicated software, you must first connect the transceiver to your PC then using the optional programming cable D-2040 (via Data socket ).

Please use the free software for programming. Free download at :

http://www.intek-radios.com

NOTE Ask your dealer about purchasing the optional Programming Cable.

## ■ FRONT PANEL

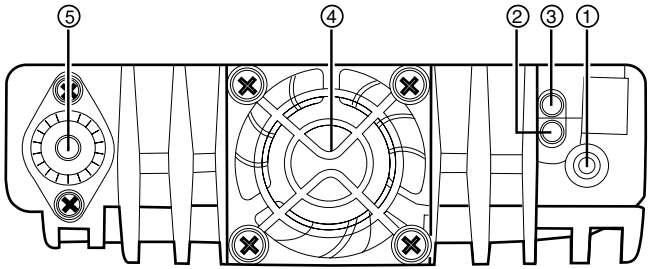





### • Basic Functions

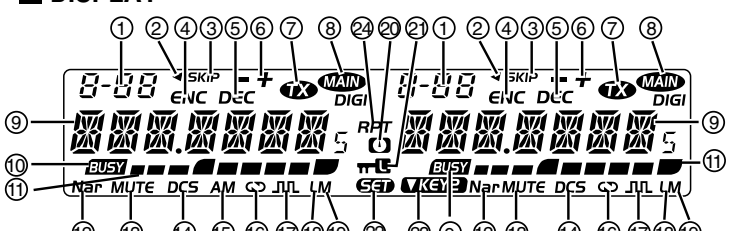
| NO. | KEY | FUNCTION |
|---|---|---|
| 1 | Left Dial Knob | Rotate it to choose frequency /channel. Press it to set the left band as "Main Band"; In VFO mode, press it to choose the frequency band; In function setup as confirm key; in scan mode, rotate it to change scan direction |
| 2 | Right Dial Knob | Rotate it to choose frequency /channel. Press it to set the right band as "Main Band"; In VFO mode, press it to choose the frequency band; In function setup as confirm key; in scan mode, rotate it to change scan direction |
| 3 | Left Volume Knob | Adjust left band volume level. |
| 4 | Right Volume Knob | Adjust right band volume level. |
| 5 | [TV/SQL] | In standby. press this key to turn On/Off TV function. Hold this key to cancel squelch |
| 6 | Function set Key | In standby , press this key to enter function menu |
| 7 | Power | Press it to power On /Off the transceiver |
| 8 | Left [LOW] Key | In standby press it to change H/L power on selected channel. Long press it to turn ON/OFF Frequency Reverse function. |
| 9 | Left [V/M] Key | In standby, press to switch between channel mode and VFO mode. Long press it to set Wide/ Narrow band. |
| 10 | Left [HM] Key | In standby, press to switch between HOME channel and normal channel. Long press it to enter dual watch of VFO channel and current channel. |
| 11 | Left [SCAN] Key | In standby, press to start channel or frequency scan.In channel mode, hold it to set current channel scan skip. |
| 12 | Right [LOW] Key | In standby press it to change H/L power on selected channel. Long press it to turn ON/OFF Frequency Reverse function. |
| 13 | Right [V/M] Key | In standby, press to switch between channel mode and VFO mode. Long press it to set Wide/ Narrow band. |
| 14 | Right [HM] Key | In standby, press to switch between HOME channel and normal channel. Long press it to enter dual watch of VFO channel and current channel. |
| 15 | Right [SCAN] Key | In standby, press to start channel or frequency scan.In channel mode, hold it to set current channel scan skip. |
| 16 | LCD | For display of channel, frequency and function setup. |

## ■ REAR PANEL



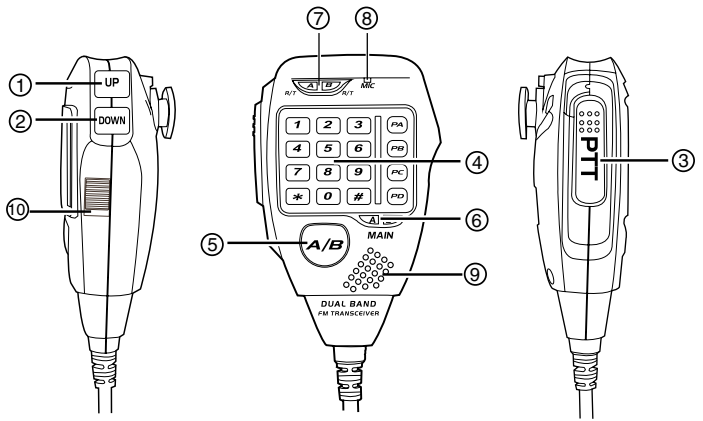

| NO. | KEY | FUNCTION |
|---|---|---|
| 1 | Ext. Power Jack | Terminal for connecting optional cable for use with ignition key On/Off function.The radio will auto power on when car is driving. The radio will auto power off when car stops. |
| 2 | Ext.Speaker Terminal | Terminal for optional external speaker. |
| 3 | TV/AV port | Connect to television TV/AV port. |
| 4 | Heat -sink fan | Runs Automatically when radio temperature rise up. |
| 5 | Antenna Connector | Connect a 50Ω antenna. |

## ■ DISPLAY



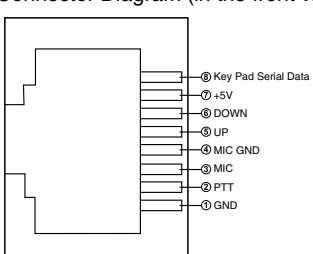

| NO. | INDICATOR | FUNCTION |
|---|---|---|
| 1 | 8-88 | Displays the channel number and Menu number. |
| 2 | ◄ | Appears when current channel priority channel |
| 3 | SKIP | Appears when current channel is set Scan Skip |
| 4 | ENC | Appears when current channel has CTCSS Encode |
| 5 | DEC | Appears when current channel has CTCSS Decode |
| 6 | − + | Appears when the Offset function is ON |
| 7 | TX | Appears while transmitting. |
| 8 | MAIN | Displays the Main channel. |
| 9 | | Displays the operating frequency,channel name |
| 10 | BUSY | Displays when receiving a signal or Monitor is ON |
| 11 | | Signal strength for receiving and power level for transmitting |
| 12 | Nar | Appears while in Narrow band. |
| 13 | MUTE | Appears when mute has been turned ON. |
| 14 | DCS | Appears when the DCS function is ON. |
| 15 | AM | Appears while in AM mode |
| 16 | | Appears when the Scrambler function is ON |
| 17 | | Appears when the Compander function is ON. |
| 18 | L | Appears while using Low output power |
| 19 | M | Appears while using Middle output power |
| 20 | | Appears while Auto power off function is ON. |
| 21 | | Appears when the Key Lock function is ON. |
| 22 | SET | Appears when press SET key. |
| 23 | KEY2 | Appears when choose KEY2 mode. |
| 24 | RPT | Appears when corss band repeat function is ON |

## MICROPHONE




| NO. | KEY | FUNCTION |
|---|---|---|
| 1 | UP | Increase frequency ,channel number or setting value. |
| 2 | DOWN | Decrease frequency, channel number or setting value. |
| 3 | PTT | Press PTT (Push-To-Talk) key to transmit. |
| 4 | Number Key | Input VFO frequency or DTMF dial out etc. |
| 5 | A/B band | Choose left band or right band as Main band |
| 6 | Band indicator | The indicator light on for Main band. |
| 7 | TX/RX indicator | Light green while receiving, Light red while transmitting. |
| 8 | MIC | Speak here during transmission. |
| 9 | Speaker | When shut the speaker in the base, you can hear the calling by this speaker. |
| 10 | Lock UP/DOWN | When this key is in UP position, it unlocks UP/DOWN key, when this key is in DOWN poisition, UP/DOWN key will be locked. |

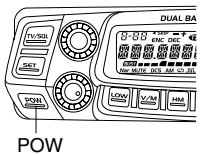
MIC Connector Diagram (in the front view of connector)



## SWITCHING THE POWER ON/OFF

### POWER ON

Press [POW] key to switch the transceiver ON, the LCD displays "**WELCOME INTEK** ", then display current frequency or channel.

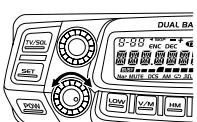



### POWER OFF

Press [POW] key for over 0.5 Second to switch the transceiver OFF.

## ADJUSTING THE VOLUME

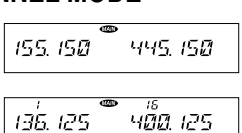
Rotate the [VOLUME] knob of selected band clockwise to increase the volume, counterclockwise to decrease the volume.




NOTE: Hold [TV/SQL], keep press Monitor the background noise after the transceiver emits a DU beep, meanwhile adjust the [VOLUME] knob. During communication, volume can be adjusted more accurate.

## SWITCH BETWEEN VFO AND CHANNEL MODE

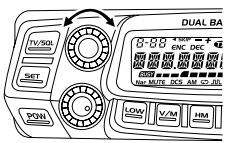
In standby, press correspondent [V/M] key to switch between Frequency and channel mode, when the transceiver is in channel mode, the LCD will displays current channel.




## ADJUSTING FREQUENCY

### ADJUSTING FREQUENCY THROUGH SELECTOR KNOB

In frequency (VFO) mode, turn the selector knob clockwise to increase frequency; counterclock-wise to decrease frequency. Every gear will increase or decrease frequency by one step. To adjust the Main band frequency, press corre-spondent selector knob, the left side of decimal point will flash In this status, turn the selector knob will increase or decrease frequency quickly by 1MHz step



NOTE: The microphone [ UP/DOWN ] key also able to adjust frequency. Press [ UP/DOWN ] key will increase(decrease) the frequency by one step size. Hold [ UP/DOWN ] key will adjust the frequency continuously.

### IINPUT FREQUENCY THROUGH MICROPHONE NUMBER KEY

In VFO mode, you can input the frequency by the microphone numeric key. It is invalid to input frequency out of the frequency band.

For example:

to input 150.125Mhz, press 1, 5, 0, 1, 2, 5 continuously.

to input 152 MHz, press1, 5, 2, [#] continuously.

NOTE: When the Band lockout function is on, the input or adjusting of frequency band. The right band only limited in 144-146 MHz and 430-440 MHz.

## ADJUSTING CHANNEL

### ADJUSTING CHANNEL THROUGH SELECTOR KNOB

In the channel mode, you can adjust the channel directly by the channel knob.Turn clockwise to increase one channel; turn counterclockwise to decrease one channel.To adjust the Main band channel, press

correspondent selector knob, the channel number flashes in this situation, the channel number will increase 10 channels by each gear of selector knob. Press microphone [ UP/DOWN ] key also able to adjust the channel.

NOTE If there is any empty channel, the adjustment will ignore it and jump to next channel.

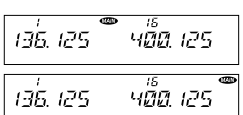
### INPUT CHANNEL THROUGH MICROPHONE NUMBER KEY

In channel mode, you can switch to desired channel by press 3 of the microphone numeric key (001-758). For example input 001 get channel 1; input 030 is channel 30; input 512 is channel 512. If the input channel is not programmed with frequency, the transceiver will emit a warning beep and return to last channel.

## SWITCH BETWEEN MAIN BAND AND SUB BAND

12

This transceiver is default on dual receive, a "MAIN" icon will displays in the top right of the working frequency. The transmitting is only on the Main band. When the left Band is Main band, press the right selector knob will switch the right Band to Main band. Then press the left selector knob will switch the left Band to Main band.



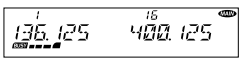

## SELECTING THE FREQUENCY BAND

1. Choose for Left band: press the left side [V/M] key to switch it to VFO mode, press the left selector knob over 1 second then repeat the same operation to switch the left band between 118-180 MHz (RX: 118-174 MHz, TX: 136-174 MHz), 220-260 MHz (RX only), 350-299 MHz (RX only) or 400-490 MHz (*)
2. Choose for Right band: press the right side [V/M] key to switch it to VFO mode, press the right selector knob over 1 second then repeat the same operation to switch the right band between 136-174 MHz and 400-490 MHz (*).

NOTE This transceiver can be set working on 2 UHF bands or 2 VHF bands.

## RECEIVING

In standby, both left and right bands are able t o receive. When they receive any signal, the BUSY icon and signal strength icon will appear in the correspondent area of the LCD. And you can hear the calling




NOTE If the transceiver has set at higher squelch level, it may fail to hear the calling. If the Busy and signal strength icon display in left band or right band, but can not hear the calling, means the signal is with matching carrier but dis-matching signaling.

## SQUELCH OFF/SQUELCH OFF MOMENTARY

Long press of [TV/SQL] key can be programmed as Squelch Off or Squelch Off Momentary to monitor the weak signal.

1. Squelch Off: Hold [TV/SQL] key until hear "Du" beep, the squelch is off, repeat the above operation to resume squelch.
2. Squelch Off Momentary: Keep hold [TV/SQL] key to disable squelch, Release the key to resume squelch.

NOTE In standby, press the microphone [*] to cancel squelch, press it again to turn on the squelch.

## TRANSMITTING

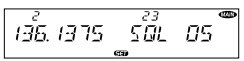
Hold PTT key, the transceiver change to transmitting. Please hold the microphone approximately 2.5-5.0 cm from your mouth, and then speak into the microphone in your normal voice to get best timbre.

NOTE The transmitting only available on Main band, the TX icon will display in the top right corner of the Main band frequen

## SQUELCH LEVEL SETUP

This function is used to setup the strength of receiving signal, when the strength reach a certain level, the calling can be heard, otherwise, the transceiver will keep mute.

In standby, press and hold [TV/SQL] key, meanwhile switch the selector knob to adjust the squelch level of Main band.




**1-20:** Total 20 squelch levels available.

**OFF:** turn off squelch. The background noise always on.

NOTE The squelch level shall setup separately for right band and left band.

## TRANSMIT DTMF/2-TONE/5-TONE SIGNALING

If the current channel is with DTMF/2-TONE/5-TONE signaling, holt PTT, and [ UP ] key will transmit selected Pre-programmed signaling.

## HIGH/MID/LOW RF POWER SWITCH

In standby, repeat press [LOW] key to choose power levels as following:

When LCD displays HIGH, the power on current channel is high.

When LCD displays MID1, the power on current channel is middle 1.

When LCD displays MID2, the power on current channel is middle 2.

When LCD displays LOW, the power on current channel is low.

OUTPUT POWER FOR EACH LEVEL :

| | | | |
|---|---|---|---|
| HIGH | MID1 | MID2 | LOW |
| VHF 50W | VHF 20W | VHF 10W | VHF 5W |
| UHF 40W | UHF 20W | UHF 10W | UHF 5W |

NOTE In channel mode, this operation is for temporary use only

## FREQUENCY REVERSE

In standby, hold [LOW] key for over 0.5 seconds to turn On/Off frequency reverse function. When reverse function is on, the TX frequency will change to RX frequency and RX frequency change to TX frequency.

The signaling will also be reversed if CTCSS/DCS signaling existed in this channel.

NOTE This function is valid only when current channel setup with offset frequency and offset direction

## BAND-WIDTH SELECTION

This transceiver has 3 band widths, select suitable band width in accordance with different local conditions.

In standby, hold [V/M] key for over 0.5 second to choose the 3 band widths

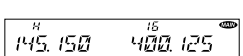
When LCD displays **WIDE**, current channel is work on wide band 25KHz

When LCD displays **MIDDLE**,current channel is work on middle band 20KHz

When LCD displays **NARROW**, current channel is work on narrow band 12.5KHz.

## HOME CHANNEL

In standby, press [HM] key to switch to HOME channel, and commnicatte on HOME channel. repeat press it to return to last channel.




## HYPER MEMORY CHANNEL

In standby, press the left or right volume knob to switch the radio on Hyper Channel 1 or Hyper Channel 2.

## DUAL WATCH

In standby, hold [HM] key for over 0.5 second to enter Dual Watch mode. The radio will scan the channel in every 5 seconds. When the radio receives match signal, it pause scanning until the signaling disappear. Repeat above operation to exit Dual Watch.

## EMERGENCY ALARM

To start emergency alarm, hold the right volume knob until the radio displays **ALARM** and emit alarm. Re-power ON the transceiver to exit the alarm mode.This transceiver has 4 kind of alarm which can be setup by programming software.

## CHANNEL/FREQUENCY SCAN

### FREQUENCY SCAN

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In VFO mode, this function is designed to monitor signal of every communicative frequency point of "step size" you have set.

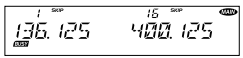
1. In VFO mode, press the Main Band [SCN] key to enter channel scan.
2. During the scanning adjust the Main band selector knob or press microphone [ UP/DOWN ] key will change the scan direction.
3. Press [SCN] key to exit scan.

### CHANNEL SCAN

1. In channel mode, press the Main Band [SCN] key to enter channel scan.
2. During the scanning, adjust the Main band selector knob or press microphone [ UP/DOWN ] key will change the scan direction.
3. Press [SCN] key to exit scan.

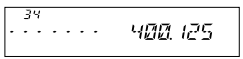
## CHANNEL SCAN

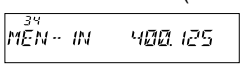
In channel mode, switch selector knob to choose the channel, then hold [SCN] for over 0.5 second, the radio prompts "DU DU", and LCD displays "**SKIP**", and now the current channel is Scan Skip.




## CHANNEL EDIT

1. In VFO mode, turn selector knob to select the desired frequency or input frequency by MIC's numeric keys.
2. Hold [SET] key until the transceiver prompt DU and the display of channel number flashes
3. Turn selector knob to select the channel number to store. (If the storage has data , the LCD will display the frequency, otherwise will display----------)
4. Press [SET] key, the LCD display **MEN- IN**, the channel edit completed.

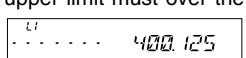


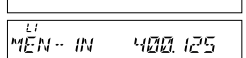




## SCAN RANGE LIMIT

You can set the VFO scan frequency range by this function:

1. Choose upper limit and lower limit frequency, there are L1/U1- L5/U5, five couple of limit frequency for selection. L stands for lower limit and U stands for the upper limit. The upper limit must over the lower limit frequency. Please refer the Channel Edit to setup the limit frequency.
2. In VFO mode, set the VFO frequency in the range between upper and lower limit.
3. Press [SCN] key to start scan in lmited range.




## CHANNEL COPY

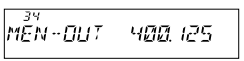
1. In channel mode, turn the selector knob to choose the channel.
2. Hold [SET] key until the transceiver prompt a Du and channel number display flashes
3. Turn selector knob to choose channel number for storage. (If the

storage has data , the LCD will display the frequency, otherwise will display----------)

4. Press SET key, the LCD displays **MEN-IN**, channel copy completed.

## ■ CHANNEL DELETE

1. In standby, hold SET key until the transceiver prompt DU, and channel number flashes.




2. Turn selector knob to choose channel number for delete. (If the storage has data, the LCD will display the frequency, otherwise will display----------)
3. Hold Main band volume knob, until the transceiver emit DU DU prompt and LCD displays **MEN-OUT**, the channel delete is completed.

# 7 General Setting

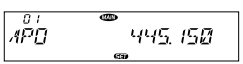
**Operating steps of Function Menu.**

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose wanted function.
3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
5. Press the Main band selector knob to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

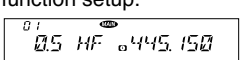
## APO (AUTOMATIC POWER OFF)

Once APO is activated, the transceiver will be automatically switched off when the pre-set timer running out.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 01 menu. the LCD displays "**APO**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.Available Values: 0.5-12 hours, OFF



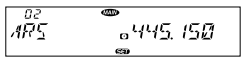

5. Press the Main band selector knob or SET key to store value and back to function menu.

   Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## AUTOMATIC OFFSET

This transceiver has automatic offset function. When this function is on, the transceiver will automatically transmitting with RX frequency ± offset frequency. The operation as following:

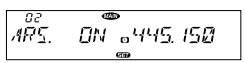
1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 02 menu; the LCD displays "**ARS**".




3. Press the Main band selector knob to enter function setup
4. Switch the Main band selector knob to choose wanted value.

   **ON:** Auto Offset function is turned on.

   **OFF** Auto Offset function is turned off.




5. Press the Main band selector knob or SET key to store value and back to function menu.

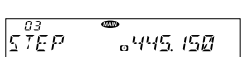
   Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE When the Automatic offset is ON, the default offset for 136-174 MHz is at 0.6 MHz, and for 400-490 MHz is at 5 MHz. (*)

## FREQUENCY CHANNEL STEP SETUP

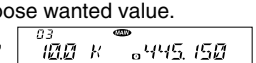
Only in frequency (VFO) mode, this function is valid. Turn selector knob to to select frequency or frequency scanning which is restricted by frequency step size.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 03 menu. the LCD displays "**STEP**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   Available Values: 2.5K, 5K, 6.25K, 10K, 12.K, 15K, 20K, 25K, 30K,50K.




5. Press the Main band selector knob or SET key to store value and back to function menu.

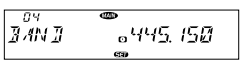
   Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE This function is auto-hidden in channel mode

## ■ VFO BAND LOCKOUT

In VFO mode, when this function is on, the scanning or input of frequency will restricted within the current VFO frequency band.

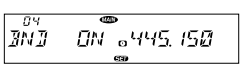
1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No. 04 menu. the LCD displays "**BAND**".




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   **ON:** Turn on VFO band lockout function

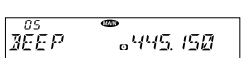
   **OFF:** Turn off VFO band lockout function




5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## ■ BEEP FUNCTION

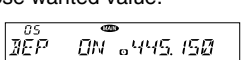
1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No. 05 menu. the LCD displays "**BEEP**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   ON: Turn on Beep function.

   OFF: Turn off Beep function

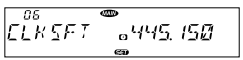



5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

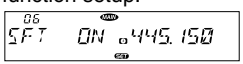
## ■ CPU CLOCK FREQUENCY CHANGE

When any harmonic or image frequency in the CPU clock disturbs the working frequency, turn on this function to cut the disturbing.

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No. 06 menu. the LCD displays "**CLK.SFT**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.



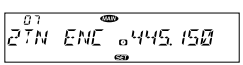

   **ON:** Turn on CPU Clock frequency Change

   **OFF:** Turn off CPU Clock frequency Change

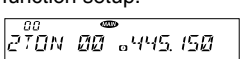
5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## ■ 2-TONE ENCODE SELECT

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No. 07 menu. the LCD displays "**2TN ENC**".




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.




   Available Values: **0-23**, total 24 groups.

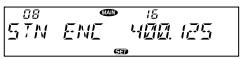
NOTE if the 2-TONE encode are programmed with name, the LCD will display correspondent name.

5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

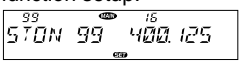
NOTE After choose the 2-TONE encode group, press PTT key to transmit the selected code.

## 5-TONE ENCODE SELECT

1. Press (SET) key to enter function menu.
2. Turn the Main band selector knob to choose No. 08 menu. the LCD displays "**5TN ENC**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   Available Values: 0-99, total 100 groups.




NOTE If the 5-TONE encode are programmed with name, the LCD will display correspondent name.

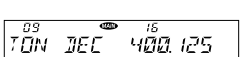
5. Press the Main band selector knob or (SET) key to store value and back to function menu. Press (TV/SQL) key or hold selector knob for over 0.5 second to store setup and exit.

NOTE After choose the 5-TONE encode group, press PTT key to transmit the selected code.

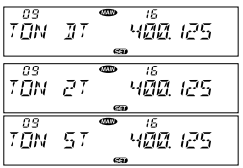
## ADD OPTIONAL SIGNALING

This transceiver has 3 optional signaling: DTMF/5-Tone and 2-Tone. These functions are similar to CTCSS/DCS signaling. When the receiver adds an optional signaling, the caller shall transmit matching signaling. DTMF and 5Tone signaling can be applied for other advanced features such as ANI, PTT ID, group call, select call, remotely stun, remotely kill waken, etc.

1. Press (SET) key to enter function menu.
2. Turn the Main band selector knob to choose No. 09 menu. the LCD displays "**TON DEC**".




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   **DTMF:** means DTMF signaling is added.
   **2TONE:** means DTMF signaling is added.
   **5TONE:** means DTMF signaling is added.
   **OFF:** Turn off optional signaling

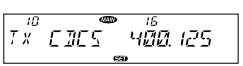



5. Press the Main band selector knob or (SET) key to store value and back to function menu.Press (TV/SQL) key or hold selector knob for over 0.5 second to store setup and exit.

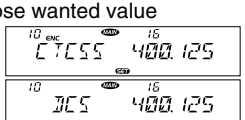
NOTE The working of optional signaling shall be work associated with the squelch mode setup. (Refer to Squelch Mode setup at page 20).

## CTCSS/DCS ENCODE SETUP

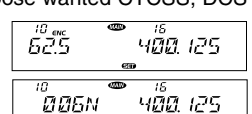
1. Press (SET) key to enter function menu.
2. Switch the Main band selector knob to choose No 10 menu, the LCD displays "**TX CDCS**".




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value
   **OFF:** Turn off CTCSS/DCS encode.
   **CTCSS:** Choose CTCSS encode.
   **DCS:** Choose DCS encode.



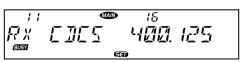

5. Press the Main band selector knob to enter the menu.
6. Switch the Main band selector knob to choose wanted CTCSS, DCS code.
   **CTCSS:** 62-254.1Hz, and one self-defin group, total 52 groups
   **DCS:** 000N-777I, total 1024 groups



7. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

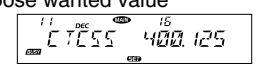
## CTCSS/DCS DECODE SETUP

1. Press SET key to enter function menu.
2. Switch the Main band selector knob to choose No 11 menu, the LCD displays "**RX CDCS**"




3. Press the Main band selector knob to enter function setup
4. Switch the Main band selector knob to choose wanted value

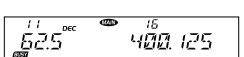
**OFF:** Turn off CTCSS/DCS decode.
**CTCSS:** Choose CTCSS decode.
**DCS:** Choose DCS decode.

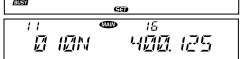




5. Press the Main band selector knob to enter the menu.
6. Switch the Main band selector knob to choose wanted CTCSS, DCS code.

**CTCSS:** 62-254.1Hz, and one self-defin group, total 52 groups
**DCS:** 000N-777I, total 1024 groups



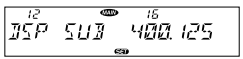




7. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE The working of CTCSS/DCS decode shall be work associated with the squelch mode setup. (Refer to Squelch Mode setup at page 20)

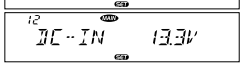
## SUB BAND DISPLAY SETUP

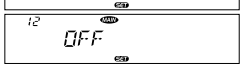
1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 12 menu. the LCD displays "**DSP SUB**"




3. Press the Main band selector knob to enter function setup
4. Switch the Main band selector knob to choose wanted value.

**FREQ:** display sub band frequency,
**DC-IN:** display sub band voltage.
**OFF:** turn off display for sub band

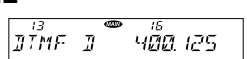




5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

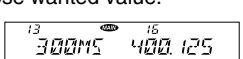
## DTMF ENCODE PRE-LOADING TIME

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 13 menu. the LCD displays "**DTMF D**"




3. Press the Main band selector knob to enter function setup
4. Switch the Main band selector knob to choose wanted value.

**100MS:** The Pre-Loading time is 100MS
**300MS:** The Pre-Loading time is 300MS
**600MS:** The Pre-Loading time is 500MS
**800MS:** The Pre-Loading time is 800MS
**1000MS:** The Pre-Loading time is 1000MS




5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## DTMF ENCODE TRANSMITTING TIME

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 14 menu. The LCD displays "**DTMF S**"

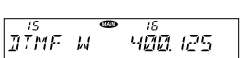

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   **30MS:** The time for transmit a single DTMF encode and the interval is 30MS,
   **50MS:** The time for transmit a single DTMF encode and the interval is 50MS,
   **80MS:** The time for transmit a single DTMF encode and the interval is 80MS,
   **100MS:** The time for transmit a single DTMF encode and the interval is 100MS,
   **150MS:** The time for transmit a single DTMF encode and the interval is 150MS,
   **200MS:** The time for transmit a single DTMF encode and the interval is200MS,
   **250MS:** The time for transmit a single DTMF encode and the interval is 250MS,

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

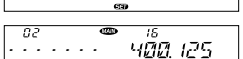

## DTMF ENCODE SETUP

1. Press SET to enter function menu
2. Switch the Main band selector knob to choose No 15 menu, the LCD displays **DTMF W**

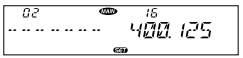



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose DTMF group. Then press SET key back to DTMF menu. Press PTT will transmit with selected DTMF code.

   **06-16:** total 16 group of DTMF code.


5. When the selected group is empty, the LCD displays "------"

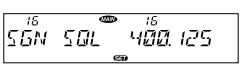



6. Press the selector knob to enter the DTMF signaling edit. The LCD display "-- -- -- -- -- --", the last character flashes
7. Switch the selector knob to choose wanted character. Press the selector knob to confirm selected value and start edit for next character.
8. Press SET key to store value and exit code editing. Press SET key again to store setup and exit. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## SQUELCH MODE SETUP

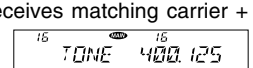
This transceiver has 5 squelch modes available. Squelch function is used for increase the level of filtering unwanted signal, and free from disturb.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 16 menu. The LCD displays "**SGN SQL**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value

   **SQ:** You can hear the calling once receives matching carrier.
   **CTSS/DCS:** You can hear the calling when receives matching carrier and CTCSS/DCS code.
   **CT*TO:** You can hear the calling when receives matching carrier + optional signaling.
   **TONE:** You can hear the calling when receives matching carrier + CTCSS/DCS + optional signaling.
   **CT/TO:** You can hear the calling when receives any matching carrier or CTCSS/DCS or optional signaling.



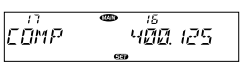
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE Only when the transceiver is set with CTCSS/DCS or optional DTMF/5-TONE/2-TONE signaling, the values will be available.

## ■ COMPANDER

Compander function will decrease the background noise and enhance audio clarity, especially in long range communication.

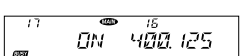
1. Press SET key to enter function menu
2. Turn the Main band selector knob to choose No 17 menu. The LCD displays "**COMP**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   **ON:** Compander function is turn on

   **OFF:** Compander function is turn off




5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE When using compander, to avoid distortion during communications, both radios need turn ON this function.

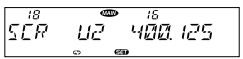
## ■ SCRAMBLER SETUP

This special audio process can offer a more confidential communication;other radio with at same frequency will receive only disordered noises.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 18 menu. The LCD displays "**SCR**"


3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted group

   **1-9** (9 fix groups)**U1,U2** (2 self defined scrambler groups)



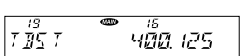

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE To enable commutation with Scrambler, transceivers must be set with same group.

## ■ TONE BUST (PILOT FREQUENCY)

This function is used to start repeater.It needs certain intensity Pilot Frequency to start a dormant repeater. As usual, no need to send pilot frequency again once repeater started.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 19 menu. The LCD displays "**TBST**"



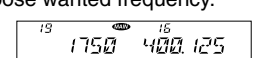

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted frequency.

   **1000:** Pilot Frequency is 1000Hz.

   **1450:** Pilot Frequency is 1450Hz.

   **1750:** Pilot Frequency is 1750Hz.

   **2100:** Pilot Frequency is 2100Hz.

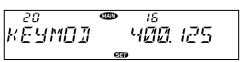


5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

NOTE After the above setup, hold microphone PTT key and [ DOWN ] key, the radio will transmit selected tone.

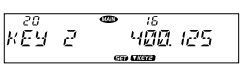
## ■ KEYPAD MODE SETUP

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 20 menu. The LCD displays "**KEYMOD**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted mode.

**KEY1**: key 1 mode, Normal mode : the 4 keys to the left have same functions as 4 keys to the right.




**KEY2:** the 4 keys to the left will be shared by both bands. The 4 keys to the right will be re-defined.

5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

**Notice: Definition of Keypad in KEY2 mode**

1. Left [LOW] short press: In VFO mode, short press this key, the frequency step size changes to 1 MHz, in channel mode, adjust selector knob will jump 10 channels.
2. Right [LOW] long press: In standby, long press this key to add/delete optional signaling. Repeat the long press to set optional signaling DTMF,5-TONE or 2-TONE. When the LCD displays DT means DTMF, displays 5T means 5-TONE, displays 2T means 2-TONE.
3. Right band [V/M] long press: Talk Around. When this function is activated, transceiver can not communicate with repeater. The transceiver will transmit by RX frequency with its CTCSS/DCS signaling. Repeat the operation to turn OFF Talk Around function.
4. Right [V/M] short press: Frequency Reverse function. When current channel is setup with offset direction and offset frequency, press this key to turn ON Frequency Reverse function. When frequency reverse function is ON, TX frequency turns to RX frequency & RX frequency changes to TX frequency. The signaling will also be reversed if CTCSS/ DCS signaling existed in this channel. Repeat the short press to turn OFF Frequency Reverse function.
5. Right [V/M] long press: In stand by, hold this key until the LCD displays ⎍⎍, means the Compander function is ON. Repeat the above operation to turn OFF Compander function.
6. Right [HM] short press: In standby, press this key to set the CTCSS/DCS code for current channel.

   When the LCD displays ENC, the current channel is with CTCSS encode function.

   When the LCD displays ENC and DEC, the current channel is with CTCSS /DCS code function.

   When the LCD displays DCS and DCS icon, the current channel is with CTCSS code function.

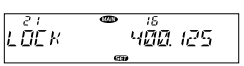
   When the LCD displays OFF, the current channel is without CTCSS /DCS function.
7. Right [HM] long press: In standby, long press this key to enter CTCSS/DCS scan; when find matching CTCSS/DCS signal, the scan will pause in the way following Scan Dwell

time. SCAN direction can be changed by corresponding channel selector knob. Note:To enable this function, the channel shall be programmed with CTCSS/DCS decode.

8. Right [SCN] short press. The Sub-Band will show the indication MAIN and start flashing. In this case is possible to setup the sub band without switching between Main band and Sub band.
9. Right [SCN] long press to select Scrambler group for Main Band. In standby, hold this key; LCD will show **SCR X** and ⟲ icons. X stands for the group number. Repeat the above operation to select wanted group.

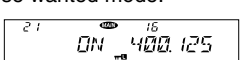
## KEYPAD LOCKOUT

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 21 menu. The LCD displays "**LOCK**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted mode.

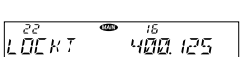
   **ON:** The keypad lockout function is turn on all keys beside [SET] and band switch knob is valid.




   **OFF:** The keypad lockout function is turn off.
5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## TX OFF (PTT LOCKOUT)

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 22 menu. The LCD displays "**LOCKT**"

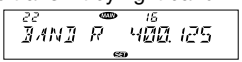



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted mode.

   **BAND R**, lock the right band PTT. Only able to transmit by left band.

   **BAND L**, lock the left band PTT. Only able to transmit by right band.

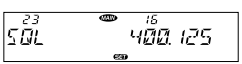
   **BAND BOTH**, lock both band PTT. Not able to transmit by any side.




   **OFF:** PTT no lock.
5. Press the Main band selector knob or [SET] key to store value and back to function menu.Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## SQUELCH LEVEL SETUP

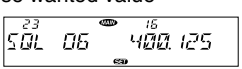
1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 23 menu. The LCD displays "**SQL**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value

   **1-20:** total 20 squelch levels

   **OFF:** Turn of squelch function, the background noise keep on.

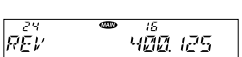



5. Press the Main band selector knob or [SET] key to store value and . Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## FREQUENCY REVERSE

With this function on, the transceiver will able to communicate with a trans ceiver in same network without through a repeater.

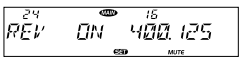
1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 24 menu. The LCD displays "**REV**"




3. Press the Main band selector knob to enter function setup.

4. Switch the Main band selector knob to choose wanted value.

   **ON:** Function enabled. TX and RX frequencies will be exchanged; CTSS and DCS signaling will be exchanged if existed in current channel.

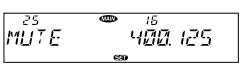
   **OFF:** Disable Frequency Reverse function.

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## SUB BAND MUTE SETUP

To avoid the receiving of sub band disturbing the communication of the main band, you can turn on this function. The RX of the sub band will be mute during the RX or TX of the main band.

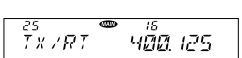
1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 25 menu. The LCD displays "**MUTE**"

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   **TX:** When the Main band is transmitting, the sub band receiving will be mute.

   **RX:** When the Main band is receiving, the sub band receiving will be mute.

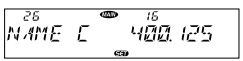
   **RX/TX:** the sub band receiving always mute.

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

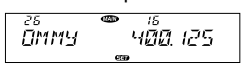
## EDIT CHANNEL NAME

After edit a name for a channel, if the display mode is "channel name", the LCD displays the name edited in this menu. Otherwise it will display the selected frequency.

1. Press SET key to enter function menu.

2. Switch the selector knob to choose NO 26 function menu, the LCD displays "**NAME C**".
3. Press the Main band selector knob to enter function setup.
4. Switch the selector knob to choose wanted character.

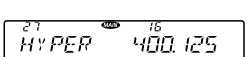
   
   

5. Press the selector knob to confirm current character and start edit next character, after editing all 7 characters, press the selector knob to edit and back to function menu.
6. If editing not reach 7 characters, press SET key to return to function menu, then press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

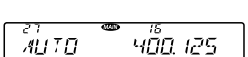
## CHANNEL FUNCTION AUTO STORAGE SETUP

This function is used to store latest setup for each single channel. When this function is enabled, all the latest temporary operation on selected channel will be stored. When this function is disabled, the temporary setup will not be stored; all channel informations will be resumed to the last stored values.

1. Press SET to enter function menu

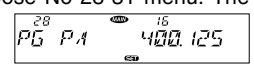
2. Turn the Main band selector knob to choose No 27 menu. The LCD will show the **"HYPER"** indication.
3. Press the Main band selector knob to enter function setup.

4. Switch the Main Band selector knob to choose wanted value.
   **MANUAL:** Auto Storage function is enabled.
   **AUTO:** Auto Storage function is disabled.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to sore setup and exit.

## MICROPHONE PA, PB, PC, PD KEY SETUP

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 28-31 menu. The LCD displays "**PG PA" PG PB, PG PC, PG PD**.



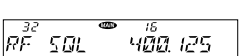

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
5. Press the Main band selector knob or SET key to store value and TV/SQL back to function menu. Press key or hold selector knob for over 0.5 second to store setup and exit.

NOTE For Menu details, please refer to "Microphone Operation" at pages 31-32.

## RF SQUELCH LEVEL SETUP

When squelch level function is on, you can cancel squelch only when the signal strength reach the level setup by users.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 32 menu. The LCD displays "**RF SQL**".

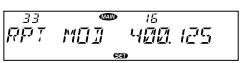



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   **S-2:** Able to hear the calling when the power meter reach 1 bar.
   **S-5:** Able to hear the calling when the power meter reach 4 bar.

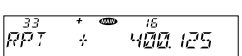

   **S-9:** Able to hear the calling when the power meter reach 8 bar.
   **S-FULL:** Able to hear the calling when the power meter reach full bar.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## OFFSET DIRECTION SETUP

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to



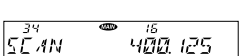

   choose No 33 menu. The LCD displays "**RPT MOD**".
3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted Offset direction.
   **-** : Minus offset, means transmitting frequency lower than receiving frequency.
   **+**: Plus offset, means transmitting frequency higher than receiving frequency.




   **OFF:** OFFSET is turn off. Transmitting frequency is same as receiving frequency.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

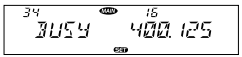
## SCAN DWELL TIME SETUP

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 34 menu. The LCD displays "**SCAN**".




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

**TIME:** it pauses 5s once scanning a matching signal, then resume scan.




**BUSY**: it pauses once scanning a matching signal, then resume scan after the signal disappeared for 2 seconds.

**SECEDE:** It Stops once scanning a matching signal, and exit scan.

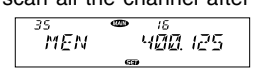
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## PRIORITY CHANNEL SCAN

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 35 menu. The LCD displays "**SCAN M**"


3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

**MEN:** Channel Scan, the transceiver will scan all the channel after enter channel scan.



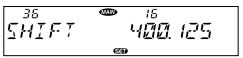

**MSN:** Priority Channel Scan.
Transceiver will only scan the priority channel after enter channel scan.

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE Before using Priority channel scan function, the edited channel must be programmed as P SCAN. Add or delete a channel to the PSCAN list by using the programming software.

## OFFSET FREQUENCY SETUP

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 36 menu. The LCD displays "**SHIFT**".



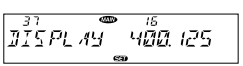

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

Available Offset frequency for this transceiver is **0-100MHz.**

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

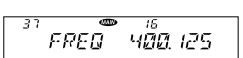
## DISPLAY MODE SETUP

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 37 menu. The LCD shows "**DISPLAY**" indication.

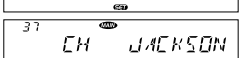



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

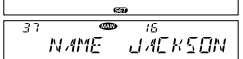
**FREQ:** LCD displays channel number and the selected frequency (in Channel Mode). Press V/M key to change to VFO mode.




**CH:** Displays channel number only.



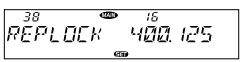

**NAME**: In Channe Mode LCD displays the channel number and channel name (if it has been edited). Otherwise LCD displays channel number and the selected frequency. Press V/M key to change to VFO mode.



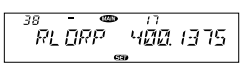

5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## ■ BUSY CHANNEL LOCKOUT

When this function is enabled, the transmission is not possible on a busy channel, to avoid disturbing other transceiver using same frequency. Once the channel is busy and you press PTT, the transceiver will beep as warning and return to receiving.



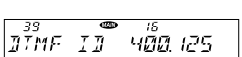

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 38 menu. The LCD displays "**REPLOCK**"
3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   **RLORP**: Signaling busy channel lockout. Transmitting is inhibited when current channel receives a matching carrier but dis-matching CTCSS/DCS.
   **RLOBU**: Channel busy channel lockout. TX is inhibited when current channel receives a matching carrier.



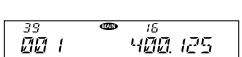


   **OFF:** Busy channel lockout is disabled. Transmitting is allowed in any receiving status.
5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## ■ RADIO'S DTMF SELF ID ENQUIRY

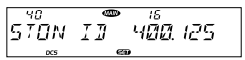


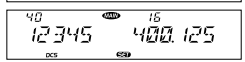

1. Press [SET] key to enter function menu.
2. Switch the selector knob to choose No 39 function. The LCD displays "**DTMF ID**"
3. Press the Main band selector knob to enter function setup. The LCD will show the DTMF self ID.




4. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## ■ 5-TONE SELF ID ENQUIRY



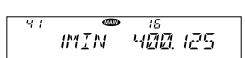

1. Press [SET] key to enter function menu.
2. Switch the selector knob to choose No 40 function. The LCD displays "**5TONE ID**"
3. Press the Main band selector knob to enter function setup. The LCD will show the DTMF self ID.
4. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## ■ TOT (TIME-OUT-TIMER)

The time-out timer limits the amount of continuous transmitting time.

When the transmitting reaches the programmed time limit, transmission will be cut off and radio emits a warning beep.


1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 41 menu. The LCD displays "**TOT**"
3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   **1-30 MIN**, total 30 levels.
   **OFF**: TOT function is disabled.

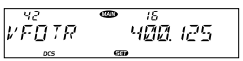



5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## VFO FREQUENCY LINKAGE

When this function is enable, any adjustment of VFO frequency, will bring same frequency change to both bands. Adjust one gear, the frequency for both band will increase or decrease one step size value.

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No 42 menu. The LCD displays "**VFOTR**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

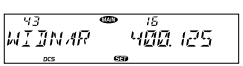
   Available Values: **ON**, **OFF**.


5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

NOTE This function can be enabled only when both bands work on VFO mode.

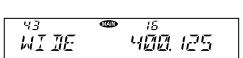
## WIDE/NARROW BANDWIDTH

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No43 menu. The LCD displays "**WIDNAR**"

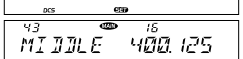



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

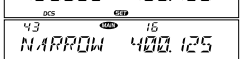
   **WIDE**: Wide band (25KHz)




   **MIDDLE**: Middle band (20KHz)




   **NARROW**: Narrow band (12.5KHz)




5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

## CROSS BAND REPEAT

Set the left band and right band as VHF 144-146 MHz (136-174 MHz) and UHF 430-430 MHz (400-470 MHz) (*) then turn ON this function to enable Cross Band repeater function.

1. Press [SET] key to enter function menu.
2. Switch the selector knob to choose No 44 function. The LCD displays "**X-RPT**"

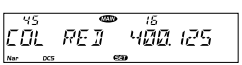

3. Press the Main band selector knob, the LCD displays "**XSTART**".


4. Press the Main band selector knob, the radio prompt "DU" and the LCD displays "RPT", then the corss band repeat function is enabled.

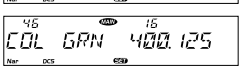
NOTE Press [SET] key to turn OFF Cross Band function.

## LCD BACKLIGHT

1. Press [SET] key to enter function menu.
2. Turn the Main band selector knob to choose No. 45-47 menu. The LCD displays "**COL RED**","**COL GRN**","**COL BLU**"
3. Press the Main band selector knob to enter function setup.

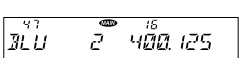



4. Switch the Main band selector knob to choose wanted value. Each color (Red, blue and Green) has 32 brightness levels available..





5. Press the Main band selector knob or [SET] key to store value and back to function menu. Press [TV/SQL] key or hold selector knob for over 0.5 second to store setup and exit.

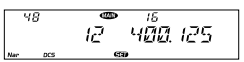


## KEYPAD BACKLIGHT BRIGHTNESS

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 48 menu. The LCD displays "**DIMMER**"


3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   Available value: 32 brightness levels.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.



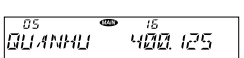

## CALLING RECORD

The transceiver offers enquiry of calling record.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 49 menu. The LCD displays "**NOTE**"

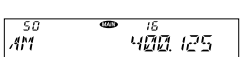

3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   This transceiver able to record 16 calling at most.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

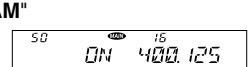



## AM FUNCTION

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 50 menu. The LCD displays "**AM**"




3. Press the Main band selector knob to enter function setup.




4. Switch the Main band selector knob to choose wanted value.

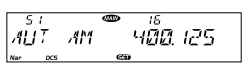
   **ON**: AM function is enabled. **OFF**: AM function is disabled.
5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE This function can be enabled only when main band is set to VHF 118-174 MHz (*). This function can not be enabled when right band is set to "Main Band".

## AUTOMATIC AM FUNCTION

If this funcion is enabled, radio automatically start AM function when the VHF frequency is under 136 MHz.

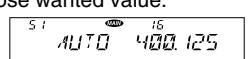
1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 51 menu. The LCD displays "**AUT AM**"




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.

   **ON**: The Auto-AM function is enabled.

   **OFF**: The Auto-AM function is disabled.

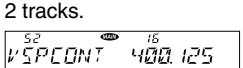



5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## VHF EXTERNAL SPEAKER PORT

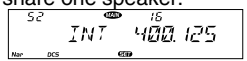
When the function setup as external (EXT), an external Dual Track speaker (SP-02) must be connected in order to hear the calling on VHF. The calling from VHF and UHF are separated in 2 tracks.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 52 menu. The LCD displays "**VSPCONT**"




3. Press the Main band selector knob to enter function setup.

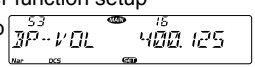
4. Switch the Main band selector knob to choose wanted value.
   **INT**: Internal speaker, VHF and UHF bands share one speaker.
   **EXT**: External speaker.
   Only VHF communications can be heard through the external speaker.

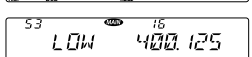



5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## BEEP VOLUME CONTROL

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 53 menu. The LCD displays "**BP-VOL**"
3. Press the Main band selector knob to enter function setup
4. Switch the Main band selector knob to choose wanted value.
   **LOW**: BEEP volume is low.
   **HIGH:** BEEP volume is high.



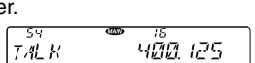



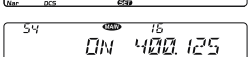

5. Press the Main band selector knob or SET key to store value and back to function menu.

## TALK AROUND

With this function on, the transceiver will not able to communicate with another transceiver through a repeater.

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to select No. 54 menu. The LCD display will show **"TALK"** indication.

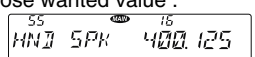


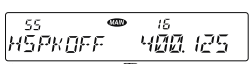




3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value
   **ON:** Function enabled **OFF:** function disabled
5. Press the Main band selector knob or SET key to store value and back to function menu.
   Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## MICROPHONE SPEAKER

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No 55 menu. The LCD displays **"HND SPK".**
3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value :
   **HSPKOFF**: Microphone Speaker disabled
   **HSPK ON**: Microphone Speaker enabled
   **MSPKOFF**: Main Speaker disabled

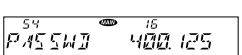


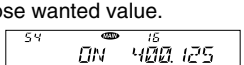

5. Press the Main band selector knob or SET key to store value and back to function menu.Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

## PASSWORD FUNCTION

1. Press SET key to enter function menu.
2. Turn the Main band selector knob to choose No. 56 menu. The LCD displays "**PASSWD**"

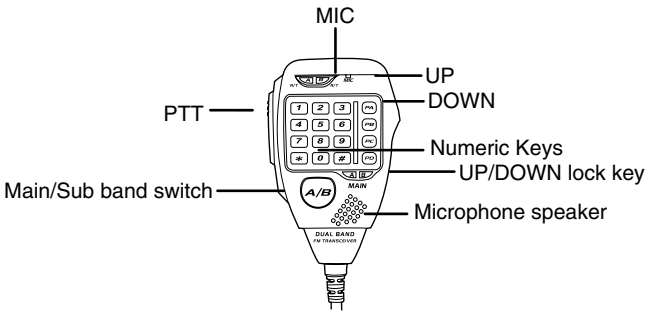



3. Press the Main band selector knob to enter function setup.
4. Switch the Main band selector knob to choose wanted value.
   **ON**: Turn on password function.
   **OFF**: Turn off password function.




5. Press the Main band selector knob or SET key to store value and back to function menu. Press TV/SQL key or hold selector knob for over 0.5 second to store setup and exit.

NOTE When this function is enabled, a correct password must be inserted after power ON radio. The password must be programmed before using this function.




You can operate the transceiver by keypad or input desired frequency and channel through the QHM-04 microphone.

## ■ SEND DTMF SIGNALING

Hold the PTT key; input the desired DTMF signaling by the numeric keys.

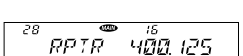
## ■ MAIN/SUB BAND SWITCHING

Radios is defaulted on Dual receive. In this status, a MAIN icon will be displayed in the top right corner of the Main frequency band.
Transmission is possible on Main Band only. In stand-by mode, you can switch Main Band and Sub band by using the A/B key.

## ■ FUNCTION OPERATION THROUGH PA-PD KEYS

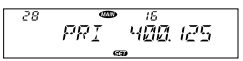
The PA,PB,PC,PD, keys are programmable, they can be endowed with the following functions.

**RPTR:** OFFSET direction setup, in standby, press the key programmed as RPTR function to change the offset direction. When LCD displays"+", means plus offset, when the LCD displays"-", means minus offset.

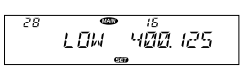



NOTE This function is valid only when current channel is set with offset frequency.

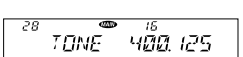
**PRI**: Add or delete priority channel: In channel mode, press the key programmed as PRI function to set priority channel; when the LCD displays ◀ the current channel is set as priority channel. Repeat above operation, the ◀ disappear, the curent channel is not set as priority channel.



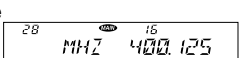

**LOW**: Output power setup, in standby, press the key programmed as as LOW function will change to lower level. When LCD displays HIGH, the transmitting power on current channel is high. When LCD displays MID1, the transmitting power on current channel is middle1, When LCD displays MID2, the transmitting power on current channel is middle 2. When LCD displays LOW, the transmitting power on current channel is low.




**TONE** : CTCSS/DCS code setup. In stand-by mode, press the key programmed as TONE function to enable the CTCSS/DCS code setup. When the LCD display shows the ENC, DEC and CTCSS tone indications, press the [UP/DOWN] keys on microphone to select CTCSS decode tone. When the LCD display shows the ENC and DCS tone indications, press the [UP/DOWN] keys on microphone to select the desired DCS tone.

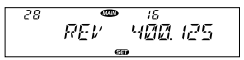



**MHZ**: In VFO mode, press the key programmed as MHZ function; the MHz digit will start flashing. Press [UP/DOWN] keys to adjust frequency by 1 MHz step. In channel mode, use MHz key; channel number will start flashing.

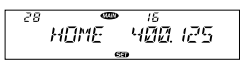


now adjust selector knob or microphone [ UP/DOWN ] key to select the desired channel.

**REV**: In standby, press the key programmed as "REV" function to turn ON/OFF the Frequency Reverse function.



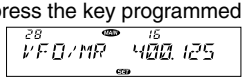

**HOME**: HOME channel switch. In standby press the key programmed as "HOME" function to switch between Home channel or current channel.



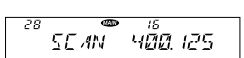

**MAIN**: Main band switch. In standby press the key programmed as "MAIN" function to choose left band or right band as Main band.



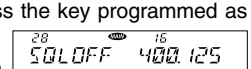

**VFO/MR**: Working mode switch. In standby, press the key programmed as "VFO/MR" function to switch between channel mode and frequency mode.



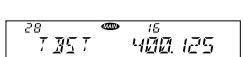

**SCAN**: scan function in standby. Press the key programmed as "SCAN" function to start channel scan or frequency scan.



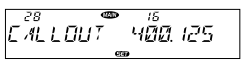

**SQL OFF**:Turn off Squelch. In standby, press the key programmed as "SQL OFF" function to turn off squelch; you can hear very weak signal. Repeat the above function to turn ON squelch.



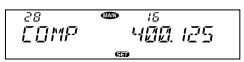

**TBST**: Transmit tone burst. In standby, press the key programmed as "TBST" function to transmit selected tone burst. This function is use to wake sleeping repeater.




**CALL OUT**: Calling, in standby, press the key programmed as "CALL OUT" function to transmit pre-programmed DTMF, 2-TONE or 5-TONE codes.



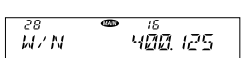

**COMP**: Compander function. In standby, press the key programmed as "COMP" to turn ON or OFF the Compander function.




**SCR**: Scrambler function. In standby, press the key programmed as "SCR" function to turn ON/OFF the Scrambler function. Select optional Scrambler groups (from 9 fixed groups and 2 self-defined groups).


**TONE DEC**: Add optional signaling. In stand-by press the key programmed as "TONE DEC" function to select DTMF (DT), 2-TONE (2T), 5-TONE (5T) or OFF (function disabled).


**W/N**: Wide narrow band setup. In standby, press the key programmed as "W/N" function to select Wide Band, Middle Band or Narrow Band.




**OFF**: No function.

## RESUME FACTORY DEFAULT

If your radio seems to be malfunctioning because of wrong operation or setup, this function will resume all setup and channel to factory default.

Hold the right band [SCN] while power ON the radio; all channnels and function setup will resume to factory default.

# 10 Programming Software Installing and Starting (in windows XP system)

Download the free programming software from **www.intek-radios.com**, double click the setup.exe then follow the installing instructions.

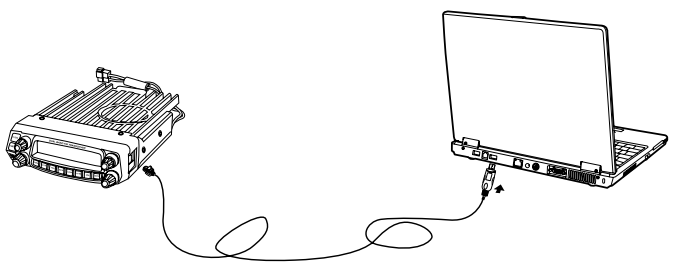
## INSTALL USB CABLE DRIVERS

1. Click "Start" menu on your PC then select "All Programs" menu and click the icon "USB To Com Port" in the related program folder.
2. Connect the optional PC programming cable to the PC USB port and to the radio (refer to pic 1).
3. Double click the program shortcut or the related icon in the index of "Start" menu and follow the installation wizard. Choose the correct communication port then click OK to start the programming software.

**NOTE**: Even in same PC computer, the selection of the COM port in the programming software is different when the programming cable is connected to different USB port.



You shall install software before connecting the USB cable line. Switch on transceiver before writing frequency.You had better not switch ON or OFF power supply of transceiver when it is connected to the computer, otherwise, it will make transceiver unable to read or write frequency. In this case, turn OFF programming software and disconnect PC cable. Reconnect USB cable and start software, then rechoose COM Port; it will turn into normal operation. Therefore, switch ON the radio and connect it to the computer. Don' t restart power supply when radio is connected to the computer.



pic 1

NOTE This software has product identify system, so when firstly installing the software, you have to connect the transceiver, otherwise you can not start the software.

## DEFAULT FACTORY RESUME

| | HR-2040 | |
|---|---|---|
| | Left band | Right band |
| VFO frequency | 145.15 MHz | 435.15 MHz |
| Memory channel 1-758 | CH1: 145.15 MHz<br>CH2: 235.15 MHz<br>CH3: 350.15 MHz<br>CH4: 435.15 MHz | CH1: 145.15 MHz<br>CH4: 435.15 MHz |
| Offset direction | -- | -- |
| Offset frequency | 600KHz | 5MHz |
| Step size | 10KHz | |
| CTCSS code | -- | |
| CTCSS frequency | 88.5Hz | |
| DCS code | -- | |
| DCS group | 017N | |
| Output power | HI | |
| Key Lockout | OFF | |
| TOT | 3 | |
| APO | OFF | |
| Squelch level | 4 | |

## TROUBLE SHOOTING

| Problem | Possible Causes and Potential Solutions |
|---|---|
| (a) Power is ON, nothing appears on Display. | + and - polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply. |
| (b) Fuse is blown. | Check and solve problem resulting in blown fuse and replace fuse with new fuse. |
| (c) Display is too dim. | Adjust the Dimmer to higher level. |
| (d) No sound comes from speaker. | • Squelch is muted. Decrease squelch level.<br>• Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off. |
| (e) Key and Dial do not function. | Key-lock function is activated. Cancel Key-lock function. |
| (f) Rotating Dial will not change memory channel. | Transceiver is in CALL mode or VFO mode. |
| (g) PTT key is pressed but transmission does not occur. | • Microphone connection is poor.Connect microphone properly.<br>• Antenna connection is poor. Connect antenna properly. |

## SPECIFICATIONS

### General

| | |
|---|---|
| Frequency | VHF 144-145.9975 MHz (136-174 MHz (*)) / UHF 430-439.9950 MHz (400-490 MHz (*))<br>118-136 MHz AM Air Band (RX only) |
| Channels | 758 |
| Channel spacing | 25 KHz (Wide) / 20 KHz (Middle) / 12.5 KHz (Narrow) |
| Frequency Step | 2.5 / 5 / 6.25 / 8.33 / 10 / 12.5 / 15 / 20 / 25 / 30 / 50 KHz |
| DC input voltage | 13.8 VDC +/- 15% |
| Frequency Stability | +/- 2.5 ppm |
| Current Drain | 15A max. |
| Operating temperature | -20/+60° |
| Dimensions | 139 (W) x 40 (H) x 212 (L) mm |
| Weight | 1.14 kg. |



### Receiver

| | |
|---|---|
| Sensitivity (12dB Sinad) | ≤ 0.25 µV (Wide) / ≤ 0.35 µV (Narrow) |
| Selectivity | 70 dB (Wide) / 60 dB (Narrow) |
| Intermodulation | >65dB (Wide) / >60dB (Narrow) |
| Audio output | 2W |

### Transmitter

| | |
|---|---|
| RF output power | 50W / 25W / 10W / 5W (VHF)<br>40W / 25W / 10W / 5W (UHF) |
| Modulation | FM |
| Spurious & Harmonics | in compliance with the R&TTE regulations |
| Distorsion | ≤ 5 % |

(*) HR-2040EX (INTERNATIONAL VERSION) 136-173.9975 MHz / 400-489.9950 MHz (not available for Europe)

## 51 GROUPS CTCSS TONE FREQUENCY (Hz)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 62.5 | 77.0 | 91.5 | 107.2 | 127.3 | 151.4 | 167.9 | 183.5 | 199.5 | 225.7 | 254.1 |
| 67.0 | 79.7 | 94.8 | 110.9 | 131.8 | 156.7 | 171.3 | 186.2 | 203.5 | 229.1 | Self Defined |
| 69.3 | 82.5 | 97.4 | 114.8 | 136.5 | 159.8 | 173.8 | 189.9 | 206.5 | 233.6 | |
| 71.9 | 85.4 | 100.0 | 118.8 | 141.3 | 162.2 | 177.3 | 192.8 | 210.7 | 241.8 | |
| 74.4 | 88.5 | 103.5 | 123.0 | 146.2 | 165.5 | 179.9 | 196.6 | 218.1 | 250.3 | |

The self defined CTCSS tone supports non standard codes. The frequency shall be pre-programmed

## 1024 GROUPS DCS CODE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 000 | 001 | 002 | 003 | 004 | 005 | 006 | 007 |
| 010 | 011 | 012 | 013 | 014 | 015 | 016 | 017 |
| 020 | 021 | 022 | 023 | 024 | 025 | 026 | 027 |
| 030 | 031 | 032 | 033 | 034 | 035 | 036 | 037 |
| 040 | 041 | 042 | 043 | 044 | 045 | 046 | 047 |
| 050 | 051 | 052 | 053 | 054 | 055 | 056 | 057 |
| 060 | 061 | 062 | 063 | 064 | 065 | 066 | 067 |
| 070 | 071 | 072 | 073 | 074 | 075 | 076 | 077 |
| 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
| 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 |
| 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 |
| 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 |
| 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 |
| 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 |
| 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 |
| 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 |
| 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 |
| 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 |
| 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 |
| 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 |
| 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 |
| 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 |
| 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 |
| 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 |
| 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 |
| 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 |
| 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 |
| 360 | 361 | 362 | 363 | 364 | 365 | 366 | 367 |
| 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 |
| 400 | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
| 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 |
| 420 | 421 | 422 | 423 | 424 | 425 | 426 | 427 |
| 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 |
| 440 | 441 | 442 | 443 | 444 | 445 | 446 | 447 |
| 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 |
| 460 | 461 | 462 | 463 | 464 | 465 | 466 | 467 |
| 470 | 471 | 472 | 473 | 474 | 475 | 476 | 477 |
| 500 | 501 | 502 | 503 | 504 | 505 | 506 | 507 |
| 510 | 511 | 512 | 513 | 514 | 515 | 516 | 517 |
| 520 | 521 | 522 | 523 | 524 | 525 | 526 | 527 |
| 530 | 531 | 532 | 533 | 534 | 535 | 536 | 537 |
| 540 | 541 | 542 | 543 | 544 | 545 | 546 | 547 |
| 550 | 551 | 552 | 553 | 554 | 555 | 556 | 557 |
| 560 | 561 | 562 | 563 | 564 | 565 | 566 | 567 |
| 570 | 571 | 572 | 573 | 574 | 575 | 576 | 577 |
| 600 | 601 | 602 | 603 | 604 | 605 | 606 | 607 |
| 610 | 611 | 612 | 613 | 614 | 615 | 616 | 617 |
| 620 | 621 | 622 | 623 | 624 | 625 | 626 | 627 |
| 630 | 631 | 632 | 633 | 634 | 635 | 636 | 637 |
| 640 | 641 | 642 | 643 | 644 | 645 | 646 | 347 |
| 650 | 651 | 652 | 653 | 654 | 655 | 656 | 657 |
| 660 | 661 | 662 | 663 | 664 | 665 | 666 | 667 |
| 670 | 671 | 672 | 673 | 674 | 675 | 676 | 677 |
| 700 | 701 | 702 | 703 | 704 | 705 | 706 | 707 |
| 710 | 711 | 712 | 713 | 714 | 715 | 716 | 717 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 720 | 721 | 722 | 723 | 724 | 725 | 726 | 727 |
| 730 | 731 | 732 | 733 | 734 | 735 | 736 | 737 |
| 740 | 741 | 742 | 743 | 744 | 745 | 746 | 747 |
| 750 | 751 | 752 | 753 | 754 | 755 | 756 | 757 |
| 760 | 761 | 762 | 763 | 764 | 765 | 766 | 767 |
| 770 | 771 | 772 | 773 | 774 | 775 | 776 | 777 |

EC Certificate of Conformity

(to EC Directive 2006/95, 2004/108, 1999/5)

## DECLARATION OF CONFORMITY

With the present declaration, we certify that the following products :

## INTEK HR-2040

comply with all the technical regulations applicable to the above mentioned products in accordance with the EC Directives 2006/95/EC, 2004/108/EC, 1999/5/EC.

| | |
|---|---|
| **Type of product :** | Amateur Radio Equipment VHF-UHF |
| **Details of applied standards :** | EN 301 783-1-2 V1.2.1<br>EN 301 489-1, EN 301 489-15<br>EN 60950-1, EN 62311 |
| **Manufacturer :** | **INTEK S.R.L.**<br>Via G. Marconi, 16<br>20090 Segrate, Italy<br>Tel. 39-02-26950451 / Fax. 39-02-26952185<br>E-mail : intek.com@intek-com.it |
| **Notified Body :** | PHOENIX TESTLAB GmbH<br>Königswinkel 10<br>D-32825 Blomberg, Germany<br>Identification Number : 0700 |
| **Contact Reference :** | Armando Zanni<br>Tel. 3902 2695 0451 / Fax. 3902 2695 2185<br>E-mail : info@intek-radios.com |
| Segrate, 06/12/2012 | dr. Vittorio Zanetti<br>(C.E.O.) |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