Thank you!

Thank you for choosing us for your Two-Way 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. 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.
General Information

- 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 and remove the battery pack. Please contact an authorised service center.
- Please do not dispose off used battery with common garbage. Please use the dedicated disposal containers.

User Information

in accordance with art. 13 of the Legislative Decree of 25th July 2005, no. 15 “Implementation of Directives 2002/95/EC, 2002/95/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 wastes, 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. 221/1997 (article 50 and following of the legislative decree no. 221/1997).

General Information

User Safety, Training, and General Information

READ THIS IMPORTANT INFORMATION ON SAFE AND EFFICIENT OPERATION BEFORE USING YOUR PORTABLE TWO-WAY RADIO.

Operational Instructions and Training Guidelines

To ensure optimal performance and compliance with the occupational/controlled environment RF energy exposure limits in the above standards and guidelines users should transmit no more than 50% of the time and always adhere to the following procedures:

Transmit and Receive

To transmit (talk), push the Push-To-Talk (PTT) button; to receive, release the PTT button.

Hand-held Radio Operation

Hold the radio in a vertical position with the microphone 5 cm away from the lips and let the antenna farther away from your head.

NOTE

➢ The approved batteries supplied with this radio are rated for a 5-5-90 duty cycle.

(5% talk, 5% listen, 90% stand-by).

CONTENTS

UNPACKING AND CHECKING EQUIPMENT .......................... 1
SUPPLIED ACCESSORIES .............................................. 1
CHARGING THE BATTERY ............................................... 2-3
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UNPACKING AND CHECKING EQUIPMENT

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

SUPPLIED ACCESSORIES

- Radio
- Antenna
- Li-ion battery
- Power Adapter
- Desktop charger
- Wrist strap
- Belt clip
- User’s manual

CHARGING THE BATTERY PACK

NOTE: The battery pack is not charged at the factory; charge it before use.

ATTENTION!

- DO NOT DISASSEMBLE
- DO NOT DISPOSE OF IN FIRE
- DO NOT SHORT-CIRCUIT THE TERMINALS
- DO NOT CHANGE BATTERY IN HAZARDOUS LOCATION
- CHARGING TEMPERATURE RANGE +5°C to -40°C. CHARGING OUTSIDE THIS RANGE MAY NOT FULLY CHARGE THE BATTERY.
- THE BATTERY PACK LIFE IS OVER WHEN ITS OPERATING TIME DECREASES EVEN THOUGH IT IS FULLY AND CORRECTLY CHARGED. REPLACE THE BATTERY PACK.
- ALWAYS SWITCH OFF A TRANSCEIVER EQUIPPED WITH A BATTERY PACK BEFORE INSERTING THE TRANSCEIVER INTO THE CHARGER.
- DO NOT CUT OFF THE POWER SUPPLY OR REMOVE THE BATTERY WHEN CHARGING A BATTERY.

CHARGING OPERATION

When the radio show , it means there is no power.
Please use the battery charger to charge the battery:

<table>
<thead>
<tr>
<th>LED Indicator</th>
<th>Charger Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights Red</td>
<td>In Charging</td>
</tr>
<tr>
<td>Lights Green</td>
<td>Full Charged</td>
</tr>
</tbody>
</table>

CHARGING THE BATTERY PACK

Please follow below steps to charge the battery:

1. Plug the AC adapter cable into the jack located on the rear of the charger.
2. Plug the AC adapter into an AC outlet.
3. Slide a battery pack or a transceiver equipped with a battery pack into the charging slot of the charger.
   - Make sure the metal contacts of the battery pack mate securely with the charger terminals.
   - The indicator lights red and charging begins.
4. When charging is completed, the indicator lights green. Remove the battery pack or the transceiver from the charging slot of the charger.
   - It takes approximately 5 hours to charge the battery pack.
   - When the charger will not be used for a long time, unplug the AC adapter from the AC outlet.
FEATURES

1. 99 Channels
2. Busy Channel Lock-Out (BCLO)
3. English Voice Guide
4. Low Power Alert & Power Saving
5. FM Radio (76-108MHz, RX ONLY)
6. High/Low Power Selectable (5W/1W)
7. Multi-function Scan
8. VOX (Handsfree Operation)
9. Programmable by Computer
10. CTCSS (50 Groups), DCS (107 groups)
11. Wide/Narrow Bandwidth Selection
   (25KHz / 12.5KHz)
12. Offset Frequency Setting (0-69.950MHz)
13. Frequency Shift Direction Setting
14. Multi-Display Function (Channel Number/
    Frequency/Channel Name Modes)
15. Keypad Lock
16. Adding Scanning Channel
17. Wire Clone Function
18. Frequency Steps Selectable
19. Bright LED Flashlight
20. Squelch Level selection (1-9)
21. Time-Out Timer (TOT)
22. Monitor

GETTING STARTED

Power switch / Volume control
LED Flashlight
Antenna

Speaker
LED Display
Function Key/Enter Key
Numeric Keypad
Up/Down menu selector
Lock Key

PTT
Press to Transmit.
Release to Receive.

MONI/Side A
Press this key to deactivate
the squelch, allowing you
to hear very weak signals
so close to the background
noise.

Side B
Press to turn on/off
the flashlight.
Press for 3 seconds
to turn on/off the FM Radio.

Speaker/Microphone Connector
This connector allows
connecting external
accessories such as:
earphone, microphone,
external speaker,
programming cable, etc.
GETTING STARTED

LCD display
There are various indicators displaying on the screen when powering on. Please refer to the below table to learn what the indicators stand for accordingly.

KEYPAD INSTRUCTION & SHORTCUT OPERATION

1. Speed Search
Press [ | ] or [ | ] key to set each Function or Parameter, it can search quickly.

2. Keyboard Lock Function
Press [lock] for 2 seconds to lock / unlock the keyboard.

3. VFO & Channel Mode Switch
Press and hold [vfo] key, meanwhile TURN ON the radio to select VFO Mode or Channel Mode.
NOTE: ONLY when there’s at least one memory channel memorized.

4. Monitor Function
Press [Side A] key and adjust your desired volume by PWR/VOL knob, radio keeps monitoring automatically.

5. LED Flashlight
Press [Side B] key to turn on/off the LED flashlight on top of the radio.

6. FM Radio
Press [Side B] key for 3 seconds to turn on/off the FM Radio (RX ONLY: 76-108MHz).

7. SCAN functions:
Press [lock] + [ | ] to activate Scan Function.

8. Channel Lock function
Press [lock] + [lock] to lock / unlock the current channel.
The setting of the locked channels can be not changed.

MENU OPERATION

Menu’s operation
1. In the standby mode, press [ | ] to enter into the menu, the display will show “F”.
2. Press [ | ] or [ | ] to select the wished menu’s number. Or press the number keys 0-9 directly.
3. Press [ | ] to enter and then press [ | ] or [ | ] to select the wished adjustment.
4. Press [ | ] to confirm; Press side key to leave the menu and return to standby mode.

<table>
<thead>
<tr>
<th>No.</th>
<th>LCD Display</th>
<th>Select. Parameters</th>
<th>Function’s description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LAN. 1 ?</td>
<td>CHINESE/ENGLISH/ OFF</td>
<td>Turn on/off the English voice guide.</td>
</tr>
<tr>
<td>2</td>
<td>POW. 2 ?</td>
<td>LOW / HIGH</td>
<td>High or Low transmission power selection.</td>
</tr>
<tr>
<td>3</td>
<td>SQL. 3 ?</td>
<td>OFF/1 ~ 9</td>
<td>Squelch sensitivity level.</td>
</tr>
<tr>
<td>4</td>
<td>VOX. 4 ?</td>
<td>OFF/1 ~ 9</td>
<td>VOX (hands free) sensitivity level. Level 9 is the most sensitive level.</td>
</tr>
<tr>
<td>5</td>
<td>BEEP. 5 ?</td>
<td>OFF / OFF</td>
<td>Turn on/off keyboard sound.</td>
</tr>
<tr>
<td>6</td>
<td>SAV. 6 ?</td>
<td>OFF / ON</td>
<td>Turn on/off reception’s energy save.</td>
</tr>
<tr>
<td>7</td>
<td>TOT. 7 ?</td>
<td>OFF / 50 / 120 / 180(s)</td>
<td>Transmission timeout timer setting.</td>
</tr>
<tr>
<td>8</td>
<td>SCAN. 8 ?</td>
<td>TO/CO/SE</td>
<td>SCAN Modes selection. (see details at page 11)</td>
</tr>
</tbody>
</table>
### MENU OPERATION

<table>
<thead>
<tr>
<th>No.</th>
<th>LCD Display</th>
<th>Select. Parameters</th>
<th>Function’s description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>KY. 9 ?</td>
<td>MAN/AUT</td>
<td>Keyboard Lock Mode: MAN: Manually lock the keyboard; AUT: Automatically lock the keyboard.</td>
</tr>
<tr>
<td>10</td>
<td>APO. 10 ?</td>
<td>OFF/30/60/120/240 (Minutes)</td>
<td>Automatic Power Off time setting</td>
</tr>
<tr>
<td>11</td>
<td>LED. 11 ?</td>
<td>OFF / ON / AUT</td>
<td>LCD Backlight setting: OFF: Turn off the LCD backlight; ON: Turn on the LCD backlight; AUT: Automatic LCD backlight.</td>
</tr>
<tr>
<td>12</td>
<td>BCL. 12 ?</td>
<td>OFF / ON</td>
<td>Turn on/off Busy channel lock.</td>
</tr>
<tr>
<td>14</td>
<td>SFT. 14 ?</td>
<td>OFF/H+</td>
<td>Offset Shift Direction: Only available in Frequency Mode.</td>
</tr>
<tr>
<td>15</td>
<td>OFF. 15 ?</td>
<td>input with number keys</td>
<td>Offset Frequency setting: Only available in Frequency Mode.</td>
</tr>
<tr>
<td>16</td>
<td>RC. 16 ?</td>
<td>OFF / 67.9 ... / 254.1</td>
<td>CTcss/DCS tones in RX.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[D023N ... / D754]</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>TC. 17 ?</td>
<td>OFF / 67.9 ... / 254.1</td>
<td>CTcss/DCS tones in TX.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[D023N ... / D754]</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>STP. 18 ?</td>
<td>0 / 10 / 12.5 / 20 / 25 / 30 / 50kHz</td>
<td>Selection of frequency steps.</td>
</tr>
</tbody>
</table>

### ADVANCED OPERATION

**Shortcut to the desired Channel/Frequency**

1. Under CH mode, press 1~3 number to change current channel. If frequency is stored in the channel, transceiver will turn to the channel. If not, transceiver will keep its original channel.

   For example: CH 1: (press 001)  
   CH 98: (press 098 or 98)  
   CH 123: (press 123)

2. Under FR mode, press numbers to change current frequency. After six numbers enter, if the frequency is effective, transceiver will switch to the frequency. If it is out of range, it will return to original frequency.

### SCAN MODES

There are three scan options available.

TO: in this mode, the search will stop in the signal found, and will stay in this signal for a while.

If you dont make any action to cancel the search during this period of time, the search will restart although the signal is still active.

CO: in this mode, the search will stop in the signal found, and will stay in this signal until it ends.

Once the signal ends, the search will restart.

SE: in this mode, the search will stop in the signal found, and will not restart automatically, you will have to restart the search if you want it to continue.

### ADVANCED OPERATION

**Store new channel**

1. (1). Radio should be in the whole frequency mode (VFO) in order to reserve channel operation.
2. (2). Press [FREQ] and [VFO] keys, enter the channel store operation, channel number flashing.
3. (3). Press [△] or [□] key to select the channel number you want.
   
   Or input the channel number by keyboard directly.

**Reset or Delete channels**

1. (1). Radio should be in CHANNEL MODE and should be in the channel you want to delete.
2. (2). Press and hold [FREQ] key, meanwhile TURN ON the radio.
3. (3). Press [△] or [□] key to select the [RESET] or [DEL CH] (see NOTE below.)

**Transmit and Receive CTcss/DCS setting**

1. (1). Press [FREQ] key to enter the Function Menu.
2. (2). Press [△] or [□] key to find Function No.16 [ RC. 16 ? ]
4. (4). Press [△] or [□] key to select the desired CTcss/DCS code.
5. (5). Press [FREQ] key to switch DCS code direction, for example: [D023N] - [D023I]

**NOTE:** Under CH XXX Mode, CTcss/DCS codes CAN NOT be programmed.
TROUBLE SHOOTING

Please check carefully if your transceiver has problems by following this chart. If you maintain to have trouble you can reset your transceiver and very often this will eliminate your problem.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot power on, no power</td>
<td>1. The battery may exhausted, pls change the new battery or re-charge.</td>
</tr>
<tr>
<td></td>
<td>2. The battery install incorrect, pls take out the battery and re-install.</td>
</tr>
<tr>
<td>Battery life not long</td>
<td>1. The battery life is over, pls change a new battery.</td>
</tr>
<tr>
<td></td>
<td>2. Not charging completely, be make sure fully charged before take out.</td>
</tr>
<tr>
<td>Receive light turn on but no sounds</td>
<td>1. Make sure the volume is highest</td>
</tr>
<tr>
<td></td>
<td>2. Make sure the CTCSS/DCS code is the same with other members.</td>
</tr>
<tr>
<td>Keypad do not work</td>
<td>1. Make sure the keypad is locked or not.</td>
</tr>
<tr>
<td></td>
<td>2. Make sure any other key stuck.</td>
</tr>
<tr>
<td>In standby, it will auto-transmit without pressing PTT</td>
<td>Make sure VOX function is ON or not, and its level is set too low or nlo.</td>
</tr>
</tbody>
</table>

TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some functions can not be stored</td>
<td>Make sure work in Channel mode. Some functions can be set only via programming software in Channel mode.</td>
</tr>
<tr>
<td>Receive other groups signal while communicating</td>
<td>Pls change another CTCSS/DCS code of your group.</td>
</tr>
</tbody>
</table>

CTCSS TONE FREQUENCY CHART

Appendix 1

<table>
<thead>
<tr>
<th>CTCSS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>67.0</td>
<td>69.3</td>
<td>71.9</td>
<td>74.4</td>
<td>77.0</td>
<td>79.7</td>
<td>82.5</td>
<td>85.4</td>
<td>88.5</td>
<td>91.5</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>94.6</td>
<td>97.4</td>
<td>100.0</td>
<td>103.5</td>
<td>107.2</td>
<td>110.9</td>
<td>114.8</td>
<td>116.8</td>
<td>123.0</td>
<td>127.3</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>131.8</td>
<td>136.5</td>
<td>141.3</td>
<td>146.2</td>
<td>151.4</td>
<td>156.7</td>
<td>159.8</td>
<td>162.2</td>
<td>165.5</td>
<td>167.9</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>171.3</td>
<td>173.8</td>
<td>177.3</td>
<td>179.9</td>
<td>183.5</td>
<td>186.2</td>
<td>189.9</td>
<td>192.8</td>
<td>195.6</td>
<td>199.5</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>203.5</td>
<td>206.5</td>
<td>210.7</td>
<td>218.1</td>
<td>225.7</td>
<td>229.1</td>
<td>233.8</td>
<td>241.8</td>
<td>250.3</td>
<td>254.1</td>
</tr>
</tbody>
</table>
**Appendix 2**

### D.C.S

<table>
<thead>
<tr>
<th>D.C.S</th>
<th>D023N</th>
<th>D025N</th>
<th>D026N</th>
<th>D031N</th>
<th>D032N</th>
<th>D036N</th>
<th>D043N</th>
<th>D047N</th>
<th>D051N</th>
<th>D053N</th>
<th>D054N</th>
<th>D065N</th>
<th>D072N</th>
<th>D073N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>16</td>
<td>31</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>50</td>
<td>51</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>56</td>
<td>57</td>
<td>58</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>D261N</td>
<td>D263N</td>
<td>D265N</td>
<td>D266N</td>
<td>D271N</td>
<td>D223N</td>
<td>D225N</td>
<td>D226N</td>
<td>D243N</td>
<td>D244N</td>
<td>D245N</td>
<td>D246N</td>
<td>D245N</td>
<td>D255N</td>
</tr>
<tr>
<td>5</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
<td>65</td>
<td>68</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>56</td>
<td>57</td>
<td>59</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>76</td>
<td>77</td>
<td>78</td>
<td>79</td>
<td>80</td>
<td>83</td>
<td>67</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td>71</td>
<td>72</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td>9</td>
<td>91</td>
<td>92</td>
<td>93</td>
<td>94</td>
<td>95</td>
<td>98</td>
<td>82</td>
<td>83</td>
<td>84</td>
<td>85</td>
<td>86</td>
<td>87</td>
<td>88</td>
<td>89</td>
</tr>
</tbody>
</table>

### SPECIFICATION

#### GENERAL
- **Equipment’s reference**
- **Frequency range**: VHF135 - 174 MHz Dr. UHF400 - 470 MHz
- **Memory channels**: 99 memories / channels
- **Frequency stability**: ±2.5 ppm
- **Antenna**: High gain Antenna
- **Antenna impedance**: 50 Ω
- **Voltage**: DC 3.7V [rechargeable lithium battery]
- **Mode**: Simplex or semi-duplex
- **Dimensions**: 100mm H, (185mm w/antenna) x 59mm W, x 32mm L
- **Temperature range**: min -10°C / max 55°C

#### TRANSMITTER
- **Modulation mode (wide band / narrow band)**: 16K C F3E / 11K C F3E
- **Max deviation (wide band / narrow band)**: ±5 kHz / ±2.5 kHz

#### RECEPTOR
- **Spurious radiation**: ≤7 µW
- **Adjacent channel power (wide band / narrow band)**: ≤55 dB / ≤60 dB
- **Pre-emphasis characteristics**: 6 dB
- **Current**: ≤1.6 A (5 W)
- **CTCSS / DCS deviation (wide band / narrow band)**: 0.5 kHz ± 0.1 kHz / 0.4 kHz ± 0.1 kHz
- **Distortion**: < 5 %

#### ATTENTION: some of these specifications can be subject to modification without previous notice.
NOTICES TO THE USER

- Government law prohibits the operation of unlicensed radio transmitters within the territories under government control.
- Illegal operation is punishable by fine or imprisonment or both.
- Refer service to qualified technicians only.

Safety: It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.

WARNING ⚠

> EXPLOSIVE ATMOSPHERES (GASES, DUST, FUMES, etc.)
> Turn off your transceiver while taking on fuel, or while parked in gasoline service stations.