



CRT® 4CF

HANDHELD TRANSCEIVER

DUAL BAND VHF-UHF

VHF 144-146 MHz (TX-RX)

UHF 430-440 MHz (TX-RX)

FM 64-108 MHz (RX)

AM 118-136 MHz (AIR BAND RX)

SW 2.3-29.99 MHz (RX)

LW 0.52-1.71 MHz (RX)

USER MANUAL

FC CE 0700!



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English owner's manual Copyright CRT France 2014

SYMBOLS DESCRIPTION

Please carefully read the instructions



Information on recycling, not throwing your material in the trash at the end of life,
Bring it to special area to be recycling



DC using



Keep dry



Shield symbol



CE conformity symbol



Alert symbol indicating an incomplete harmonization of the frequency band
which will result in restrictions on the use of the equipment concerned.



Warning



STORAGE , TRANSPORT, USING

Storage : Classe 1 -30/85% (° Humidity)

Transport :- 30/85% (° Humidity)

operating temperature -30 à + 50°

Using cycle TX 10%/RX 90%

SAFETY INFORMATION FOR USER

CRT transceiver is excellently designed with advanced technology. Please observe the following precautions to perform your obligation, prevent personal injury and ensure the safety of transceiver usage.

1. Keep the transceiver and accessories away from children.
2. Please do not try to open or modify the transceiver without permission, non-professionals process may also cause damage.
3. Please use assorted battery and charger to avoid damage.
4. Please use assorted antenna to ensure the communication distance.
5. Please do not expose the transceiver to long period of direct sunlight, nor place it close to heat appliances.
6. Please do not put the transceiver in excessively dusty or humid areas.
7. Do not use harsh chemicals, cleaning solvents to clean the transceiver.
8. Do not transmit without antenna.
9. When using this transceiver, we recommend transmitting for 1 minute then receiving for 4 minutes. Continuous transmitting for long time or working in high power will heat the back of the transceiver. Do not place the transceiver's hot back close to any surface of plastic.
10. If any abnormal odor or smoke detected coming from the transceiver, turn off the power and take off the battery pack and its case. Then contact local **CRT** dealers.

NOTICE

All tips as above also apply to the standard parts of **CRT** transceiver. If any spare parts fail to work, please contact local **CRT** dealers in time. If users use spare parts from other suppliers instead of **CRT**, the safety and performance of the transceiver can't be guaranteed.

THANK YOU FOR YOUR PURCHASE!

Features include 199 memory channels, memory banks, UV-VV-UU modes, dual PTT(programmable), 51 groups CTCSS encode/decode, 1 group user-defined CTCSS encode/decode, 1024 groups DCS encode/decode, plus 2Tone, 5Tone and DTMF encode/decode.

Unique features include the ability to adjust squelch level on-the-fly, display both channel mode and frequency mode at the same time, skip interfering channels while scanning and choose single or dual PTT buttons. The frequency of named channels can be easily displayed and the scanning rate of channels is adjustable via software. Dual standby, dual display, dual receive channel, cross-band repeater functions, frequency hopping functions(FHSS).

◦ TABLE OF CONTENTS

CONTENS	01
Contents	01
STANDARD ACCESSORIES/ADDITIONAL ACCESSORIES	04
Standard Accessories	04
Additional Accessories	04
OPERATION MODE	05
BATTERY INFORMATION	06
How to Charge	06
Charging Prompt	07
GETTING ACQUAINTED	08
LCD Display	08
BASIC OPERATIONS	10
Switch between Main band and Sub band	10
Switch between Channel mode and VFO mode	10
Channel Adjusting	10
Frequency Adjusting	10
Frequency Input by Keypad	11
Channel Input by Keypad	11
Squelch Off Momentary / Squelch Off	11
Receiving	12
Transmitting	12
Emergency Alarm	13
Side Key [PF1] function instruction	13
Side key [PF2] function instruction	14
Edit channel	14

◦ TABLE OF CONTENTS

Delete channel	14
Programming scan	15
SHORTCUT OPERATIONS	16
Turn On/ Off FM Radio	16
Add/Cancel Optional signal decode function	16
CTCSS/DCS Scan	17
Offset Frequency Direction Setup	17
Frequency/Channel Scan	18
Channel Scan Skip	18
Frequency Reverse	19
TX Power selection	19
Talk Around function	19
DTMF code Transmit and Enquiry	20
Keypad lock	20
Single-band Switching	21
CTCSS/DCS Encode and Decode	21
Cross-Band Repeater	21
Function Menu Setup	22
Senior Function Operations	29
Display Mode Setup	29
Resume Factory Default	29
Cloning Cable	30
Memory Bank (Version D)	32
Memory Bank Switch	32
Memory Bank Exit	32
Bank Linking	33

◦ TABLE OF CONTENTS

Programming software starting (Takes Windows XP system for example)	34
TECHNICAL SPECIFICATION	35
ATTACHED CHART	37
CTCSS Frequency Chart.....	37
DCS Frequency Chart	38

◦ STANDARD ACCESSORIES/ADDITIONAL ACCESSORIES

(((Standard Accessories



Antenna



Li-ion Battery



Battery Charger



AC Adaptor



Belt Clip

(((Additional Accessories



USB Programming
Cable



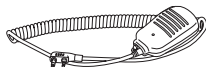
Earphone



Car
Charger



Clone cable



Handheld
Microphone



Battery Pack
for Car Charger

○ OPERATION MODE

1. How to choose a operation Mode:

- A. **By programming software:** In PC software's "General Setting" menu to choose "Display Mode", channel mode works as Professional transceiver, other two modes as Amateur transceiver.
- B. **By manual setup:** Please refer to "Display Mode" .

2. Amateur Mode:

Under this mode, press  key can switch between Channel mode and VFO mode.

A. Frequency + Channel mode:

When set display as "FREQ", the radio enters Frequency +Channel mode, new setting of channel operation and shortcut operation can be temporarily used by user. Once the radio is turned off or switched to another channel, the temporary setting will be erased and back to initial settings

B. Channel+Name Tag Mode:

When set display as "NAME", it enters Channel+Name Tag Mode.
the LCD will display corresponding channel name when the current channel is edited with name. Otherwise, it will display frequency + channel.

C. VFO Mode(Frequency mode):

This mode shows only frequency on the display. Shortcut operation and Channel setting will be changed and stored as the latest value permanently. Once the radio is turned off or changed to new VFO frequency, the value is remained until next change.

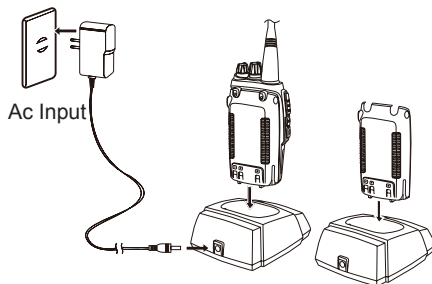
3. Professional Mode:

when set as CH mode, all radio functions shall be set by PC software, besides scan, DTMF encode, keypad lock. In CH mode, users can't return to amateur mode by menu function.

◦ BATTERY INFORMATION

(((How to Charge

1. Plug the AC adaptor into the AC outlet, then plug the cable of AC adaptor into the DC jack, the indicator lights orange for 1s and turns into GREEN---waits to charge.
2. Slide the battery or transceiver with battery into the charger; make sure the battery terminals are in contact with the charging terminals. LED turns into twinkling RED---pre-charging begins.
3. Pre-charging for about 5 minutes, LED twinkles stop then charging begins.
4. It takes about 5.5 hours to fully charge the battery, when LED turns into GREEN— full charged.
5. Charging Process:



Status	LED
Standby (self-examine orange lights 1second when power on)	 Green light
Pre-charging (pre-charging stage)	 Red light twinkles for about 5 minutes
Charging (charge in constant currency)	 RED light lightens for about 5.5 hours
Full charged (charge in constant voltage)	 Green light

◦ BATTERY INFORMATION

6. LED Indicator:

STATUS	self-examine when power on	(No battery)	Pre-charging	Charge normally	Full Charged	Trouble
LED	Orange (for 1 second)	Green	Red light twinkles for 5 minutes	Red	Green	Red twinkles for a long time

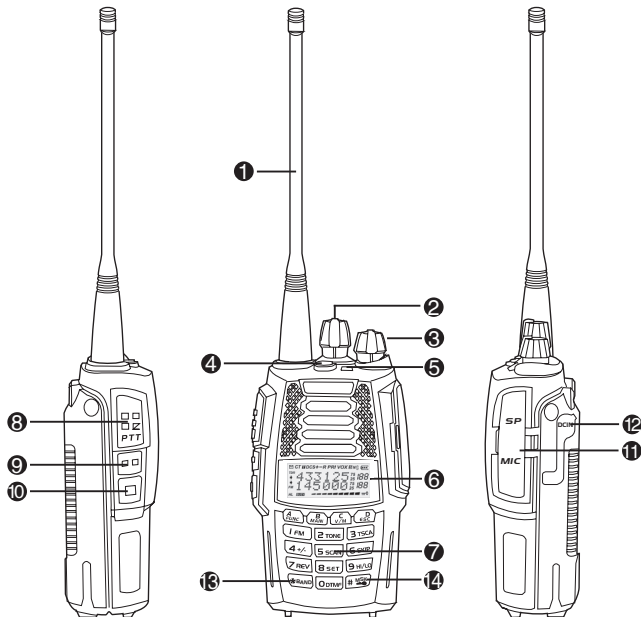
NOTE: Trouble means battery heating, battery short-circuit or charger short-circuit.

(((Charging Prompt

1. Self- examination: When charging, ORANGE light twinkles for 1 second and goes out. That means the charger has passed its self-examination and it can charge the battery normally. If the light remains orange or the red light twinkles, it means the charger can not pass its self-examination or charge the battery.
2. Trickle pre-charging: When the battery has been inserted into the charger and red light twinkles, which means the remnant voltage is low, the charger trickle charges the battery (pre-charging status), until the battery reaches a certain electric quantity, then the charger automatically turns to normal charging. If the red light stops twinkling, it means the remnant voltage meets a certain electric quantity, and the charger will charge the battery normally.

NOTE:The time for Trickle pre-charging should not exceed 30 min. If after 30 min, the red indicator is still twinkling, it means it is unable to charge battery. Please kindly check battery and charger.

◦ GETTING ACQUAINTED



- ① Antenna
- ② Selector Knob
- ③ Power/Volume switch
- ④ Emergency Alarm
- ⑤ TX/RX indicator
- ⑥ LCD display
- ⑦ Keypad
- ⑧ PTT key
- ⑨ PF1 key
- ⑩ PF2 key
- ⑪ SP/MIC Jack
- ⑫ Car charging port
- ⑬ Single-band Switching
- ⑭ Memory Bank

◦ BASIC OPERATIONS

《《 Switch between Main band and Sub band

Under standby state, press  key to switch between Main band and Sub band.
Arrow indicates the Main band.

461.725 
+ 155.000
" 2

《《 Switch between Channel mode and VFO mode

Under standby state, press  key to set main band as Channel mode or frequency mode (VFO).

+ 156.000 
155.000
"

《《 Channel Adjusting

With transceiver in Channel mode or FM radio channel mode, rotate channel switch to adjust channel. Rotate channel switch clockwise to increase channel number, anticlockwise to decrease channel number.

NOTE: In transceiver mode, arrow directs the main band channel.

Rotating channel switch will step through only programmed (saved) channels. Unsaved channels will be skipped.

《《 Frequency Adjusting

With transceiver in VFO mode or FM radio frequency mode, rotate channel switch to adjust frequency. Rotate channel switch clockwise to increase frequency, anticlockwise to decrease frequency. Frequency change depends on chosen frequency step.

◦ BASIC OPERATIONS

NOTE: Channel step: 2.5K, 5K, 6.25K, 10K, 12.5K, 20K, 25K, 30K and 50KHz in total 9 for optional. FM radio step frequency is 50K.

(((Frequency Input by Keypad

Under frequency mode or FM radio frequency mode, you can directly enter frequency through keypad.

1. When your transceiver is under Channel mode, press  key to switch into VFO.

NOTE: When the transceiver is under Channel mode, it shows current channel number on the right of main frequency.

• 45358 
155.000
"

2. Enter the desired frequency by keypad.

NOTE: The frequency input of main channel or FM radio is relevant to the stepping and transceiver frequency range. If frequency setup is beyond range or not matching with step size, the input is unavailable. Under the FM radio mode, the frequency step size input by numeric keys is 100k.

(((Channel Input by Keypad

Under channel mode of transceiver or FM radio, you can switch to desired channel by entering three numbers (000-199). If the entered channel is not a saved channel, the transceiver will emit beep to prompt wrong input and return to current channel.

• CH 02 
155.000
"

For example, entering 001 is channel 1, 030 is channel 30, 125 is channel 125.

(((Squelch Off Momentary / Squelch Off

Side key [PF2] can be setup for Squelch off Momentary or Squelch off function by programming software.

◦ BASIC OPERATIONS

1. Squelch off: Press [PF2] key, squelch circuit is not mute, back-ground noise can be heard. Press [PF2] key again, squelch circuit is mute.
2. Squelch off Momentary: Press and hold [PF2] key, squelch circuit is not mute, back-ground noise can be heard. Release [PF2] key, squelch circuit is mute.

NOTE: The above functions are only available after [PF2] key setup in programming software.
When in channel mode, opening squelch will show the frequency of the channel.

(((Receiving

When your transceiver is called by other party, green or blue LED light will be on, LCD backlight will be on at the same time, and the arrow icon will flash, you can hear the calling.

NOTE: You may not receive the calling when your transceiver is set at high squelch level. If current channel is programmed with decode signal, only the same signaling call can be heard.

(((Transmitting

According to [PF2] key setup in programming software, hold [PF2] key to monitor the channel to ensure it is not busy, press PTT key and talk to speaker.

Please keep the distance between mouth and speaker to be 2.5-5CM, speak in normal tone to get the best acoustic fidelity.

NOTE: When press and hold PTT key, transceiver is transmitting if the red LED light is on, release PTT key to receive calls.

◦ BASIC OPERATIONS

(((Emergency Alarm

Under standby state, press and hold [PF1] key (when programmed for ALARM function) or press the Emergency Alarm key until LCD displays "**ALARM**", Emergency alarm function is started. This transceiver has 4 Alarm modes that can be setup in programming software. Power off transceiver to exit Alarm.

(((Side Key [PF1] function instruction

[PF1] key can be setup in for below functions:

1. **VOLT:** Battery capacity inquiry: Under standby, press [PF1] key, LCD displays current battery capacity, press this key again to exit.
2. **CALL:** Transmit the prestored DTMF/5TONE Encode signal in channel.
3. **FHSS(Version D):** Frequency hopping function. Press [PF1] key, turn on frequency hopping function, LCD display "**FHSS**", transceiver will communicate in pre-set hopping frequency range.
Note: Receiver and Sender must have same hopping frequency, and must setup MSK decode signalling.
4. **ALARM:** Long pressing [PF1] key, LCD display "**ALARM**", transceiver will enable the preset alarm function.
5. **SUBPTT:** Press [PF1] key, transceiver will transmit on sub-band frequency.
6. **Transmit tone pulse frequency:** Press and hold PTT key, then press [PF1] key to transmit selected tone pulse frequency.

NOTE: The tone pulse frequency can be set to 1750Hz, 1450Hz, 1000Hz or 2100Hz in programming software.

◦ BASIC OPERATIONS

⌂ Side key [PF2] function instruction

1. Squelch off: Press [PF2] key, squelch circuit is not mute, back-ground noise can be heard. Press [PF2] key again, squelch circuit is mute.
2. Squelch off Momentary: Press and hold [PF2] key, squelch circuit is not mute, back-ground noise can be heard. Release [PF2] key, squelch circuit is mute.
3. Transmit DTMF/5TONE/2TONE signaling: Press and hold [PTT] key, then press [PF2] key to transmit selected DTMF/5TONE/2TONE signaling.
4. Press and hold [PF2] key to turn on transceiver, until transceiver emits "DU" beep, transceiver enter into general functions setup.

⌂ Edit channel

1. Under frequency mode (VFO), enter desired frequency and settings, press A_{FUNC} key, the top left corner of LCD displays "✉" icon, press $\text{C}_{\text{V/M}}$ key to switch into channel mode, channel number flashes.
2. Rotate channel switch to select desired editing channel number.
3. Press A_{FUNC} key, the top left corner of LCD displays "✉" icon, press and hold $\text{C}_{\text{V/M}}$ key until transceiver emits "DUDU" beep, channel is stored successfully.

⌂ Delete channel

1. Under standby state, press A_{FUNC} key, the top left corner of LCD displays "✉" icon, press $\text{C}_{\text{V/M}}$ key to switch into channel mode, channel number flashes.

◦ BASIC OPERATIONS

2. Rotate channel switch to select desired deleting channel number.
3. Press **(A FUNC)** key, the top left corner of LCD displays "✉" icon, press and hold **(B MAIN)** key until transceiver emits "DUDU" beep and clear up frequency information of current channel, deletion is successful.

NOTE: This process can be applied for deleting FM radio channels.

⦿ Programming scan

Setup the frequency of L1 channel, U1 channel, L2 channel and U2 channel will realize VFO frequency scanning border limited. L1 & L2 is starting frequency, U1 & U2 is end frequency. When VFO frequency between L1 ~ U1 or L2 ~ U2, transceiver will scan frequencies between L1 ~ U1 or L2 ~ U2. When VFO frequency is lower than L1 or L2, transceiver will scan frequencies higher than L1 or L2. When VFO frequency is higher than U1 or U2, transceiver will scan frequencies higher than U1 or U2.

1. In VFO mode, enter desired frequency and relative setup, press **(A FUNC)** key, the top left corner of LCD displays "✉" icon, then press **(C V/M)** key switch into channel mode, channel number flashes
2. Rotate channel switch to choose desired channel number.
3. Press **(A FUNC)** key, the top left corner of LCD displays "✉" icon, then press **(C V/M)** key until transceiver emits "DUDU" beep, channels are saved successfully.

NOTE: To make this setup, L1 and U1 must in same frequency band. L2 and U2 must in same band.

◦ SHORTCUT OPERATIONS

(((Turn On/ Off FM Radio

This radio has FM/AM/SW/LW total 4 FM radio bands. Press **[A FUNC]** key then press **[1 FM]** key to turn on FM radio, later press **[A FUNC]** key then press **[* BAND]** key to switch between FM/AM/SW/LW band, press **[B MAIN]** key will mute /un-mute FM radio.

FM: 64~108MHz(RX) (100 memory channels CH00~CH99)

AM: 118~136MHz(RX) (100 memory channels CH00~CH99)

SW: 2.3~29.99MHz(RX)

LW: 0.52~1.71MHz(RX)

Note: AM/SW/LW require special antenna. When AM is on, the downside RX channel is occupied.

(((Add/Cancel Optional signal decode function

Under standby state, press **[A FUNC]** key, the top left corner of LCD displays "✉" icon, press **[2 TONE]** key.

1. LCD display "DTMF" and "DT" icon, DTMF signal add in current channel.
2. Repeat above operation, LCD display "5TONE" and "DT" icon, 5TONE signal add in current channel.
3. Repeat above operation, LCD display "2TONE" and "DT" icon, 2TONE signal add in current channel.
4. Repeat above operation, LCD display "MSK" and "DT" icon, MSK signal add in current channel.
5. Repeat above operation, LCD display "OFF", the "DT" icon disappear, no optional signal in current channel.

NOTE: When this function is on, user must setup No.7 menu to be TONE option, then DTMF/5TONE/2TONE/MSK can be used.

◦ SHORTCUT OPERATIONS

(((CTCSS/DCS Scan

Press  key, the top left corner of LCD displays "  " icon, press  key to enter into CTCSS/DCS scan. Under this state, rotate channel switch to change scan direction. When scan the matching CTCSS/DCS signaling, it will stay 5seconds and then go on scanning. Press any other keys except  ,  ,  key to exit.

NOTE: This function is invalid when transceiver works in professional mode or the arrow directed channel no setting CTCSS/DCS signaling.

In current channel, if signaling set as CTCSS, it will scan CTCSS, if sets as DCS, it will scan DCS.

(((Offset Frequency Direction Setup

Under standby state, press  key, the top left corner of LCD displays "  " icon, press  key to choose offset frequency direction. There are 3 options, Positive offset, Minus offset, shut off offset.

1. **(+) Positive offset:** Indicates TX frequency is higher than RX frequency. When enable reverse function, the RX frequency is higher than TX frequency.
2. **(-) Minus offset:** Indicates TX frequency is lower than RX frequency. When enable reverse function, the RX frequency is lower than TX frequency.
3. **None:** Indicates shut offset off.

Under frequency mode (VFO) or channel mode, press  key then press  key to choose positive offset direction(+), minus offset direction (-) , shut offset off one by one (Please refer to offset frequency setup).

NOTE: This function is unavailable in professional transceiver mode.

◦ SHORTCUT OPERATIONS

Frequency/Channel Scan

Under corresponding mode, press **(A FUNC)** key, the top left corner of LCD displays "✉" icon, then press **(5 SCAN)** key to start frequency scan or channel scan.

1. Frequency Scan

Under VFO mode, frequency scan is available. This function is used for monitoring signal of various communication frequency by transceiver 'step' setup, press numeric key or **(D ESC)** key to exit.

2. Channel Scan

Under channel mode, this function is used for monitoring signal of each channel in this mode. Press numeric key or **(D ESC)** key to exit.

NOTE:

- ▼ Frequency scan is of all bands scan, it scans upwards as your STEPPING setting.
 - ▼ In channel scan, the skipped channel is not in the line of scanning. Scan upwards as per channel no. (please refer to channel scan skip).
 - ▼ Frequency/channel scan can change scan direction by rotating channel switch, when find a matching carrier wave and signaling, the transceiver will stay 5 seconds then go on scanning. (Please refer to scan setup)
- If turn off radio in scan mode, when re-power on, radio will resume scanning automatically.

Channel Scan Skip

Under channel mode, press **(A FUNC)** key, the top left corner of LCD displays "✉" icon, then press **(6 SKIP)** key to set current arrow directed channel as Channel scan skip. Repeat above operation to cancel channel scan skip.

1. LCD displayed "**S**" means the current channel will not be scanned.
2. "**S**" icon disappeared means the current channel will be scanned.

◦ SHORTCUT OPERATIONS

(((Frequency Reverse

Under standby state, press **[A/FUNC]** key, the top left corner of LCD displays "☒" icon, then press **[7/REV]** key to set arrow directed channel as frequency reverse, repeat above operation to turn off frequency reverse.

1. When LCD displays "R" icon, it means current arrow directed channel open the frequency reverse function, the TX frequency and RX frequency is interchanged, if CTCSS/DCS signaling is set, it will also interchange.
2. When "R" icon disappears, it means reverse function is close.

(((TX Power selection

Under standby state, press **[A/FUNC]** key, the top left corner of LCD displays "☒" icon, then press **[9/HI/LO]** key to choose High/Low power for current arrow directed channel.

1. When LCD displays "L" icon, it means low power is chosen.
2. When LCD displays "H" icon, it means high power is chosen.

(((Talk Around function

Under standby state, press **[A/FUNC]** key, the top left corner of LCD displays "☒" icon, then press **[*/BAND]**, the arrow directed channel will enable talk around, repeat the above operation to close talk around.

1. **TX=RX:** Enable talk around, current channel transmit at RX frequency, if CTCSS/DCS signaling is set, it will interchange decoding CTCSS/DCS as encoding.
2. **OFF:** Close talk around.

◦ SHORTCUT OPERATIONS

(((DTMF code Transmit and Enquiry

1. Press  key, the LCD displays "✉" icon, then press  key, the LCD displays DTMF data and group number (total 16groups) of current group.
2. Rotate channel switch to choose desired group and DTMF data, press PTT key to transmit selected DTMF signaling. If current group not edit DTMF data, LCD displays "EMPTY".
3. When current group displays "EMPTY", press  key, the top left corner of LCD displays "✉" icon, press and hold  key until transceiver emits "DU" beep, transceiver enters into DTMF edit state, LCD displays "_____", now you can enter desired DTMF data by keypad.
4. When finished editing, press side key [PF2] to save DTMF signaling.

(((Keypad lock

Keypad lock operation can be done by software programming or radio keypad.

1) Radio keypad operation

Press  key, the top left corner of LCD displays "✉" icon, then press and hold  key until transceiver emits "DU" beep, LCD displays "🔒" icon, keypad is locked. Repeat above operation, "🔒" icon disappears, keypad is unlocked.

2) Software Programming

ON: Keypad lock option tick on. **OFF:** Keypad lock option tick off.

Note: When keypad lock is turned on by software programming, the keypad lock operation is invalid.

◦ SHORTCUT OPERATIONS

(((Single-band Switching

To reduce interference from the sub-band when only the main-band is needed. You can use the single-band switching function to turn off the sub-band quickly.

Continuous pressing of ***BAND** will cycle LCD display to show Main + Sub-Band / Sub-Band Only / Main-Band Only.

(((CTCSS/DCS encode and decode

1. Press **A**_{FUNC} key then press [PF2] to enter into setup.
2. Press [PF2] key to choose CTCSS, DCS or OFF, when choose DCS, press ***BAND** key to select positive or negative code.
3. Rotate Channel selector to choose desired CTCSS/DCS encode and decode.
4. Press **D**_{ESC} key or **#**_{MSK} key to confirm and exit.

(((Cross-Band Repeater

Set main-band and sub-band to desired VHF & UHF frequencies, then open cross band repeater function.

1. In power off radio, press [PF1] and then press **B**_{MAIN} to enter into function menu together and power on radio until LCD shows "RPT ON". LCD shows "☑" in LCD top left corner.
2. Repeat above operation, "RPT OFF" is turn off cross band repeater function.

◦ FUNCTION MENU SETUP

Menu 1-17 of this transceiver are channel operations. Channel operations temporarily changed the functions of current channel. When power off or channel has been changed, the relevant setup will be erased. Only under VFO mode, the channel operations will be saved until next change.

Menu 18-50 are background operations (menu 20-29 are memory bank setup), it is valid for all channels, the relevant setup will be saved until next change.

The operating methods are as follows:

1. Press **[A FUNC]** key, the top left corner of LCD displays " **✉** " icon, then press **[8 SET]** key to ente menu.
2. Press **[B MAIN]** / **[C V/M]** key to choose desired function.
3. Rotate channel switch to choose desired setting.
4. Press **[D ESC]** key or **[# MSK]** key to confirm and exit.

Note: When setup CTCSS/DCS encode and decode, press **[1 FM]** key to choose CTCSS, DCS or off, when choose DCS, press **[* BAND]** key to switch positive and negative code. When edit the name, press **[1 FM]** key to shift the cursor down, press **[4 +/-]** key to shift the cursor up.

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
1	T-CDC	CTCSS/DCS Encode	OFF	No CTCSS/DCS Encode
			62.5HZ-254.1Hz+Self defined	51 groups fixed CTCSS encode+1 group selfdefined encode
			000N-777I	1024 groups DCS Encode
2	R-CDC	CTCSS/DCS Decode	OFF	No CTCSS/DCS Decode
			62.5HZ-254.1Hz+Self defined	51 groups fixed CTCSS decode+1 group selfdefined decode
			000N-777I	1024 groups DCS decode
3	RT-CDC	CTCSS/DCS Encode/Decode Synchronous	OFF	No CTCSS/DCS encode/decode
			62.5HZ-254.1Hz+Self defined	51 groups fixed CTCSS encode/decode + 1 group self-defined CTCSS encode/decode
			000N-777I	1024 group DCS encode/decode
4	2T-ENC	2TONE Encode list	CALL00-31	32 groups 2Tone encode list
5	5T-ENC	5TONE Encode list	CALL00-31	32 groups 5Tone encode list
6	2T-DEC	2TONE Decode list	DEC 00-31	32 groups 2Tone decode list
7	MSKENC	MSK Encode list	CALL00-31	32 groups MSK encode list
8	TONDEC	Optional signaling setup	DTMF/5TONE/2TONE/MSK	Current optional signal is DTMF/5TONE/2TONE/MSK

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
9	SIGNAL	Squelch mode setup	SQ	When current channel received matching RF signals, transceiver can hear the talking from the other party.
			CTCSS/DCS	When current channel received matching RF signals and matching CTCSS/DCS signaling, transceiver can hear the talking from the other party.
			TONE	When current channel received matching RF signals and matching optional signaling, transceiver can hear the talking from the other party.
			CT&TO	When current channel received matching RF signals + matching optional signaling + matching CTCSS/DCS signaling, transceiver can hear the talking from the other party.
			CT/TO	When current channel received matching RF signals, or matching optional signaling, or matching CTCSS/DCS signaling, transceiver can hear the talking from the other party.
10	STEP	Frequency step size setup	2.5K-50K	9 options in total
11	W/N	Wide / Narrow Band Setup	25K/12.5K	Wide band/Narrow band
12	REV	Frequency Reverse	ON	Turn on Frequency reverse function, TX and RX frequency of current channel will be interchanged.
			OFF	Close Frequency reverse function.

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
13	TALKAR	Talk Around	TX=RX	Turn on Talk Around function, current channel will transmit at RX frequency, if CTCSS/DCS signaling is set, it will interchange decoding CTCSS/DCS as encoding.
			OFF	Close Talk Around function.
14	OFFSET	Offset Frequency setup	0-70MHz	Note: It is available to setup in Programming software. RX:UHF, TX:VHF or RX:VHF, TX:UHF
15	NAME	Editing Channel name	a-Z, 0-9	In channel name display mode, will display the edited channel name.
16	RPLOCK	Busy Channel Lockout	BUSY	Carrier wave lock, transmitting is prohibited when received matching carrier wave.
			REPEAT	Signaling lock, transmitting is prohibited when received matching carrier but with mismatching CTCSS/DCS.
			OFF	Close BCLO function.
17	TX	TX OFF	ON/OFF	TX function is enabled in current channel.
18	BAK --	Group Selection	0-9	Display current working group
19	BALK	Group linking	OFF	Turn off group linking, menu 20-29 is hide.
			ON	Turn on group linking, menu 20-29 display.
20	BLK 1	Link Group 1	OFF/ON	Add or remove the group 1 in group linking
21	BLK 2	Link Group 2	OFF/ON	Add or remove the group 2 in group linking
22	BLK 3	Link Group 3	OFF/ON	Add or remove the group 3 in group linking
23	BLK 4	Link Group 4	OFF/ON	Add or remove the group 4 in group linking

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
24	BLK 5	Link Group 5	OFF/ON	Add or remove the group 5 in group linking
25	BLK 6	Link Group 6	OFF/ON	Add or remove the group 6 in group linking
26	BLK 7	Link Group 7	OFF/ON	Add or remove the group 7 in group linking
27	BLK 8	Link Group 8	OFF/ON	Add or remove the group 8 in group linking
28	BLK 9	Link Group 9	OFF/ON	Add or remove the group 9 in group linking
29	BLK 0	Link Group 0	OFF/ON	Add or remove the group 0 in group linking
30	PF1	Self define PF1 key function	VOLT	Displays current battery capacity.
			CALL	Call function
			FHSS	Frequency hopping
			ALARM	Emergency alarm function
			SUBPTT	Sub band PTT
			OFF	No function
31	BAND	VFO band limit	ON/OFF	Turn on/off band limit function
32	DSPSUB	Sub band display setup	FREQ	Display sub band frequency or channel
			VOLT	Display current battery voltage
			OFF	Sub band display is disabled
33	BEEP	Keypad Voice prompt setup	ON/OFF	Turn on/off keypad voice prompt function
34	TOT	Time-Out-Timer	OFF	Turn off time-out timer
			10-270S	Total 27 levels for optional, each level step 10seconds.

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
35	VOX	Voice Operated Transmission (VOX) Setup	OFF	Turn off VOX function
			1--10	Total 10 VOX levels for optional
36	VDELAY	VOX Delay Setup	0.5S-3S	Total 27 levels for optional, each interval is 0.1S
37	APO	Automatic Power Off Setup	OFF	Disable the Automatic power off function
			30MIN-2HOUR	30minutes ~ 2hours: Total 3 levels for optional.
38	DTMF	DTMF Transmitting Time	50MS-500MS	Total 5 kinds of DTMF transmitting time for optional.
39	SQL	Squelch level Setup	00-09	10 levels of squelch in total for optional, "00" is minimum setup value (normally open)
40	SCAN	Scan Dwell Time Setup	5ST-15ST	When scanning matched signal, transceiver will stop scanning for 5-15seconds then resume.
			2SP	When scanning matched signal, transceiver will stop scanning, 2seconds after signal disappeared, then resume.
41	SPEED	Scan Speed Setup	QUICK	Fast scan speed
			NORMAL	Normal scan speed
42	FTIME	Function Icon Stay Time	FUNCT	When finished function setting or enter into function menu, icon disappeared.
			1SEC-3SEC	When finished function setting or enter into function menu, icon stay 1-3seconds then disappeared.
			ALWAYS	Function icon is always display, only when pressing function key again, the icon will disappear.

○ FUNCTION MENU SETUP

Menu No.	LCD Display	Function	Options	Description
43	LIGHT	LCD Backlight	ON/OFF	Always on/off
			AUTO	Backlight will automatic closed after a period
44	COLOR	LCD Backlight Color	BLUE/ORG/PUR	Blue/Orange/Purple
45	ID	Self ID inquiry	001/12345	LCD displays radio self ID, DTMF ID is 3 digits, 5TONE ID is 5 digits.
46	TBST	Tone Pulse Frequency Selection	1750Hz/2100Hz /1450Hz/1000Hz	Tone plus frequency is 1750Hz/2100Hz/1450Hz/1000Hz
47	SAVE	Battery Save Setup	OFF	Turn off battery save function
			1:2-1:8	Battery save time is 1:2-1:8
			AUTO	Battery save ratio is adjusting automatically.
48	RADIO	FM radio	ON/OFF	Allow/Prohibit using FM radio.
49	SUBVOL	Sub-Radio Volume Setting	1--8	Adjust main band receive, at the same time Sub band output volume
50	MUTE	RPT mute setup	ON	In UV or VU mode, mute the RX sub band when main band is TX.
			OFF	Sub band is not mute when main band is TX.

◦ SENIOR FUNCTION OPERATIONS

(((Display Mode Setup

There are three kinds of display modes for optional.

1. Press [PF2] key to turn on radio, hold [PF2] key until transceiver emits beep.
2. Press $\left(\frac{B}{MAIN}\right)$ / $\left(\frac{C}{V/M}\right)$ key to choose No.01 function item, it shows "DSP" on LCD.
3. Rotate channel switch to choose desired setup.

FREQ: Frequency+Channel mode, transceiver displays current channel name + frequency, press $\left(\frac{C}{V/M}\right)$ key to switch into VFO mode.

CH: Channel mode, 1~24 items of function menu will hide automatically, user can only operate some functions. It is unable to switch into VFO by pressing $\left(\frac{C}{V/M}\right)$ key. This model can be used for Amateur mode.

NAME: Channel+Name Tag mode, transceiver displays current channel number +channel name, press $\left(\frac{C}{V/M}\right)$ key to switch into VFO mode.

4. Press $\left(\frac{D}{ESC}\right)$ key or $\left[\frac{\#}{MSK-O}\right]$ key to confirm and exit.

The image shows three sequential LCD screen displays. Each display has 'CT# 01' at the top left and 'DI' in a box at the top right. The first display shows 'DSP' and 'FREQ' in the center. The second display shows 'DSP' and 'CH' in the center. The third display shows 'DSP' and 'NAME' in the center. There are small '+' and '-' symbols on the left side of each display, and a small 'H' symbol on the right side of each display.

(((Resume Factory Default

You can make all the settings of transceiver return to the factory default settings when transceiver can not work normally because of wrong operation or error setup.

1. Press [PF2] key to turn on radio, hold [PF2] key until transceiver emits beep.
2. Press $\left(\frac{B}{MAIN}\right)$ / $\left(\frac{C}{V/M}\right)$ key to choose No.02 function item, it shows "RESTOR" on LCD.
3. Rotate channel switch to choose desired setup.

◦ SENIOR FUNCTION OPERATIONS

OFF: No operations.

FACT: Resume all items to factory default, including channel and background settings.

INIT: Resume background settings to factory default, channel operations are keeping.

4. Press **[D ESC]** key to exit current selection.
5. Press **[# MSK]** key to confirm current selection.

```
CT# 02
* RESTOR OFF
H

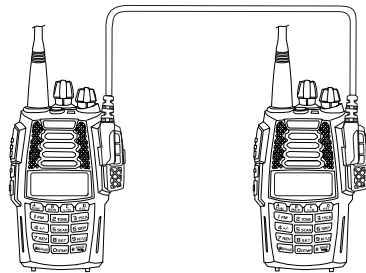
CT# 02
* RESTOR FACT?
H

CT# 02
* RESTOR INIT?
H
```

(((Cloning Cable

This feature will copy the programmed data and parameters from the master unit to slave units. It copies the parameters and memory program settings.

Connection: Use optional CP04 cloning cable, connect Read/write frequency port on both master and slave, setting and programming as the requirement below.



◦ SENIOR FUNCTION OPERATIONS

[Settings: Master side]

1. Press the [PF1] side key to Power on, the display shows "CLONE", the master unit enters into copy mode .
2. Press [PF1] key, the display appears "CLONE XX" XX stands for the data amount being cloned.
3. When the data transfer is completed, slave unit restarts, the master unit display appears "CLONE 04".
4. Master unit remain copy mode state to prepare for the next copy, if reboot the master means exit copy mode to return to normal mode.

CLONE

CLONE
A5

CLONE
04

[Settings: Slave side]

1. In the standby mode, when the slave receives the data, the display shows "**CLONE XX**" XX stands for the data being cloned.
2. When data reception is complete, the slave unit returns to normal mode and restart automatically.
3. Turn off the slave's power, remove the cable, insert another slave which you want to copy.

CLONE
A5

If the data is not successfully transmitted, turn off the master and slave, check if the cable connections are correct, and then repeat the whole process again.

◦ MEMORY BANK

10 memory banks 0-9 are available, bank 0 includes all edited channels. Bank 1-9 can be assigned maximum 32 channels, a channel can be assigned to more groups by software or keypad.

Assign channel to memory bank:

1. In Memory channel mode, choose a memory channel, press  key, bank number show in the channel number position as "-X" twinkling.
2. Turn Channel selector to choose desired memory bank, press  key, the memory channel will be assigned to the bank.
3. If the bank already has 32 channels, the new assigned channel will replace the last channel in bank.



(((Memory Bank Switch

In Channel mode, press  key twice to enter memory bank mode, press  key then press  key to enter into function menu.

1. Press  /  key to choose menu 18, LCD displays "BAK - -"
2. Turn Channel switch to choose bank 0-9, press  key confirm
3. Rotate the channel switch clockwise to enter into desired memory bank.



Note: When the bank linking is on, if no channel in the selected bank, radio will enter into the next linking bank. When the bank linking is off, if no channel in the selected bank, current channel will be assigned to this bank.

(((Memory Bank Exit

When transceiver in memory bank mode, press  key twice to exit and return to channel mode.

○ MEMORY BANK

(((Bank linking

1. In channel mode, press **#** ^{SMR} key twice to enter into memory bank mode, press **A** ^{FUNC} key then press **B** ^{SET} key to enter into function menu.

2. Press **B** ^{MAIN} / **C** ^{V/M} key to choose menu 19, LCD show "BALK".

ON: Turn on Bank linking.

The following menus allow adding or deleting banks.

Menu No.	LCD display	Funtion	Option
Menu20	BLK1	Link Group 1	OFF/ON
Menu21	BLK2	Link Group 2	OFF/ON
Menu22	BLK3	Link Group 3	OFF/ON
Menu23	BLK4	Link Group 4	OFF/ON
Menu24	BLK5	Link Group 5	OFF/ON
Menu25	BLK6	Link Group 6	OFF/ON
Menu26	BLK7	Link Group 7	OFF/ON
Menu27	BLK8	Link Group 8	OFF/ON
Menu28	BLK9	Link Group 9	OFF/ON
Menu29	BLK0	Link Group 10	OFF/ON

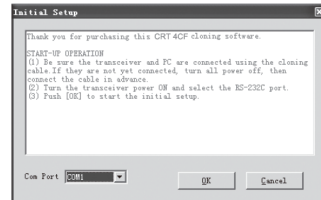


OFF: Turn off Bank linking, hide menu 20-29.

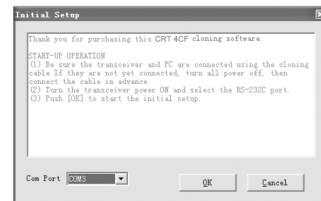
When bank linking is on, one or more banks can be added into scan list. In memory bank mode, enable the scanning function, transceiver will scan the channels in current bank. During scanning, long pressing key 0-9 will add or delete the corresponding memory bank.

○ Programming software starting (Takes Windows XP system for example)

1. Double Click "CRT 4CF setup.exe", then go on installing as computer command.
2. Click "START" menu of computer, choose " USB To COM " in CRT 4CF item and click it. Please install USB To Comport drive program as computer command.
3. Please plug PC03 programming cable into USB port of PC device, then connect to transceiver.
4. Double click "CRT 4CF" shortcut icon, or click CRT 4CF item in "START" menu to open programming software interface.
5. Choose "COM Port" as computer command, then click "OK" to start programming software.



(picture 1)



(picture 2)

NOTE: In same computer, if programming cable plugs into different USB port, the COM Port number is different.

Before programming, transceiver should be turned on firstly.

Not turn on or turn off transceiver when it is connecting with computer, otherwise it may cause transceiver not read or write data. If this situation is happened, please shut down programming software, remove programming cable from computer, then re-plug cable into computer and re-start programming software, re-choose COM Port, the programming will work normally.

NOTE:

The programming software is attached with product identifying system. In first time run, the transceiver should be connected to computer, otherwise the software can not run.

TECHNICAL SPECIFICATION

General	
Frequency Range	VHF:144~146MHz UHF:430~440MHz FM:64~108MHz(RX) AM: 118~136M Hz(RX) SW: 2.3~29.99MHz(RX) LW: 0.52~1.71MHz(RX)
Channel Capacity	199 channels
Channel Spacing	25KHz (wide band) 12.5KHz (narrow band)
Phase-locked Step	0.1KHz
Operation Voltage	7.4V DC $\pm 20\%$
Battery Life	More than 12 Hours(2200mAh), by 5-5-90 working cycle
Frequency Stability	$\pm 2.5\text{ppm}$
Operation Temperature	-20°C ~ +55°C
Size	112x61x35mm(with battery)
Weight	285g (with battery)

◦ TECHNICAL SPECIFICATION

Receiving Part		
	Wide band	Narrow band
Sensitivity (12dB SINAD)	$\leq 0.25\mu V$	$\leq 0.35\mu V$
Adjacent Channel Selectivity	$\geq 65\text{dB}$	$\geq 60\text{dB}$
Intermodulation	$\geq 60\text{dB}$	$\geq 60\text{dB}$
Spurious Rejection	$\geq 70\text{dB}$	$\geq 70\text{dB}$
Hum & Noise	$\geq 45\text{dB}$	$\geq 40\text{dB}$
Audio Distortion	$\leq 5\%$	
Audio Power Output	1000mW/10%	

Transmitting Part		
	Wide band	Narrow band
Power Output	VHF:6W/1W	UHF:5W/1W
Modulation	16K Φ F3E	11K Φ F3E
Adjacent Channel Power	$\geq 65\text{dB}$	$\geq 60\text{dB}$
Hum & Noise	$\geq 40\text{dB}$	$\geq 40\text{dB}$
Spurious Emission	$\leq -36\text{dB}$	$\leq -36\text{dB}$
Audio Distortion	$\leq 5\%$	

◦ ATTACHED CHART

(((CTCSS Frequency Chart

1	62.5	12	94.8	23	136.5	34	177.3	45	218.1
2	67.0	13	97.4	24	141.3	35	179.9	46	225.7
3	69.3	14	100.0	25	146.2	36	183.5	47	229.1
4	71.9	15	103.5	26	151.4	37	186.2	48	233.6
5	74.4	16	107.2	27	156.7	38	189.9	49	241.8
6	77.0	17	110.9	28	159.8	39	192.8	50	250.3
7	79.7	18	114.8	29	162.2	40	196.6	51	254.1
8	82.5	19	118.8	30	165.5	41	199.5	52	user-defined
9	85.4	20	123.0	31	167.9	42	203.5		
10	88.5	21	127.3	32	171.3	43	206.5		
11	91.5	22	131.8	33	173.8	44	210.7		

◦ ATTACHED CHART

(((1024 groups DCS frequency chart

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

◦ ATTACHED CHART

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

◦ ATTACHED CHART

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	647
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

NOTE: N stands for positive code. I stands for inverted code. 1024 groups of DCS in total.



DECLARATION OF CONFORMITY

CE0700

We hereby declare under our responsibility that the product :

Marque : CRT_Model :4CF

144-146 MHz/430-440 Mhz HAM Radio

Satisfies all the technical regulations applicable to the product within the scope of
directive R.TTE 1999/5/CE and European standards

EN 60950-1 :2006+A11 :2009+A1 :2010+A12 :2011

EN 301 489-1 V1.9.2

EN 301 489-15 V1.2.1

EN 301 783-1 V1.2.1

EN 301 783-2 V1.2.1

Notified Body : PHOENIX TESTLAB GmbH Germany

The was approved in the CEPT
countries and those non CEPT countries
that implement the CEPT regulation TR 61/01

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Capital de 762 500 euros

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Web site : www.crtfrance.com

Mr CELESTRANO PHILIPPE
GERANT

LE 15/12/2014



RECYCLABLE



RoHS
compliant

ISO9001
ISO14001

CONDITIONS OF GUARANTEE

This transceiver **CRT SUPERSTAR** is guaranteed on 2 years.

Any abnormality of functioning must be indicated to your retailer, who will intervene or will send it to our technical service for control

The spare parts of our devices are the object of no sending under guarantee

Are excluded of the guarantee :

- the damages caused by accidents, shocks, natural elements (lightning, thunderstorm, static electricity etc.)
- The transistors of power, the microphones, the fuses, the bad uses: badly adjusted antenna (too excessive), inversion of polarity, surge, bad connection etc. recognized by our technical service
- The interventions having modified the standards of approval of the device

PROCEDURE ON RETURNING TO THE AFTER-SALES SERVICE CRT

- If you send back a radio under guarantee for repair : you pay the freight costs to go. CRT will pay the freight costs return. If the radio is not under guarantee postal charges are at your expense.

- each device must be sent accompanied with a photocopy of the invoice as well as with a descriptive note of the noticed defect

If our AFTER-SALES SERVICE estimates the repair more expensive than the value of the device, this one will send you an estimate which must have returned to him accepted or refused. If the estimate is refused, the device will have carriage forward returned.

