

# CT2000

DUAL BAND VHF / UHF MOBILE TRANSCEIVER

› INSTRUCTION GUIDE



## SPECIAL FEATURES



25W

Output  
Power



IP54

Certified



3W

Extra loud  
speaker

**MIDLAND**<sup>®</sup>  
PUT YOURSELF IN ACTION

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## What's in the box

- 1 CT2000 transceiver;
- 1 microphone with keypad;
- 1 mounting bracket;
- 1 power supply cable;
- Fixing screws;
- Mike holder
- 1 protection fuse

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

## Maintenance

CT2000 is an electronic product of exact design and should be treated with care. The suggestions here below will help you to fulfill any warranty obligations and to enjoy this product for many years.

- Do not attempt to open the radio for any reason! The radio's precision mechanics and electronics require experience and specialized equipment; for the same reason, the radio should under no circumstances be realigned as it has been calibrated for maximum performance. Unauthorized opening of the transceiver will void the warranty.
- Do not store the Radio under the sunshine or in hot areas. High temperatures can shorten the life of electronic devices, and warp or melt certain plastics.
- Do not store the radio in dusty and dirty areas.
- Keep the Radio dry. Rainwater or damp will corrode electronic circuits.
- If it appears that the Radio diffuses peculiar smell or smoke, please shut off its power immediately.
- Do not transmit without antenna.
- Do not attempt to configure the transceiver while driving; it is very dangerous.

## Main features

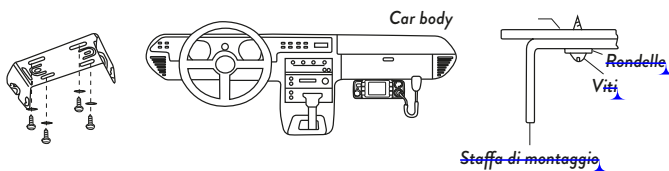
- VHF and UHF bands and channel name displayed
- Frequency bands (they will be set according to the country where you operate): 144-146 MHz & 430-440MHz (Rx / Tx).
- Operating modes: UHF-VHF, VHF-VHF or UHF-UHF
- 203 memory channels
- Multi-color graphic display
- 1750/2100/1000/1450Hz repeater access tones
- 104 + 104 DCS codes + 51 CTCSS tones
- Bandwidth selectable in 3 different levels 25 kHz/20 kHz/12,5 kHz
- Channel number or channel number + frequency displayed
- Frequency inversion
- Scan
- Frequency step: : 2,5 kHz - 5 KHz - 6,25 kHz - 7,5 KHz - 8,33 kHz - 10 kHz - 12,5 kHz - 15 kHz - 20 kHz - 25 kHz - 30 kHz - 50 kHz.
- Selectable output power: high (25W) middle (10W) or high (5W)
- Frequency offset and offset direction selection
- Tx power level shown in the display
- TOT (time out timer)
- Keypad lock
- IP54 protection grade, water and dust proof
- USB programmable thanks to the optional programming kit PRG510

# Installing the radio

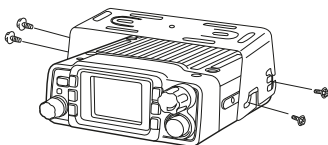
## Installation

Safety and convenience are the primary considerations for mounting any piece of mobile equipment. All controls must be readily available to the operator without interfering with the movements necessary for safe operation of the vehicle. To install the transceiver select a location that will minimize danger to your passengers and yourself while the vehicle is in motion; the location should be well-ventilated and shielded from direct sunlight.

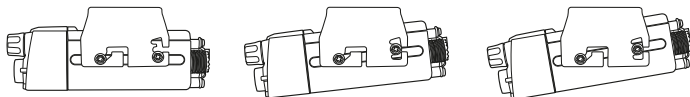
1. Install the mounting bracket in the vehicle using the supplied self-tapping screws and flat washers.



2. Install the bracket into the vehicle using the supplied self-tapping screws and washers.



3. Set an appropriate angle for the unit, using the 3 slots on the rear edge of the bracket.



## Power supply

Be sure the transceiver is off.

On the rear of the radio you will see a bi-color power supply cable with a fuse holder on the red cable.

This cable is supplied with a connector suitable for the connection to the radio and vehicle's battery.

In the direct-voltage power supply, it is very important to observe the polarity even if the unit is protected against the accidental inversion.

Red = positive pole (+)

Black = negative pole (-)

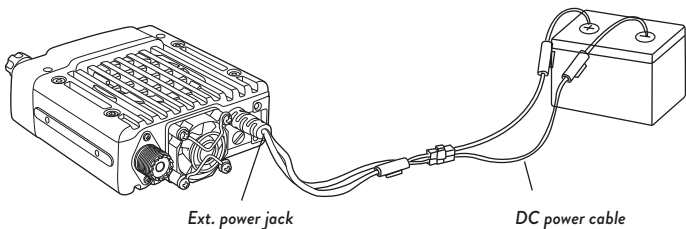
The same colors are present on the battery and in the fuse box of the car. Correctly connect the cable terminal to the battery.

Be sure to use a 12V vehicle battery that has sufficient current capacity. Never connect the transceiver to a 24V battery.

Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct.

Connect the DC power cable to the transceiver.

**Attention: To obtain best performances we recommend installing the radio in a position with a good air circulation.**





## Replacing fuses

If the fuse blows, try to find a cause before replacing it. If necessary, contact a service center for assistance.

- The fuse on the rear of the radio has a current rating of 15A
- The fuse on the power supply cable has a current rating of 15A

## Installing an antenna

- Place the antenna as high as possible
- The longer is the antenna, the better will be the performance
- If possible, mount the antenna in the centre of the surface
- Keep the antenna cable away from noise sources, such as the ignition switch, gauges, etc
- Make sure you have a solid metal-to-metal ground connection
- Prevent cable damage during antenna installation

**Attention:** To prevent damage, never operate your radio without connecting a proper antenna. A periodical control of the cable and of the S.W.R. is recommended.

## External speakers

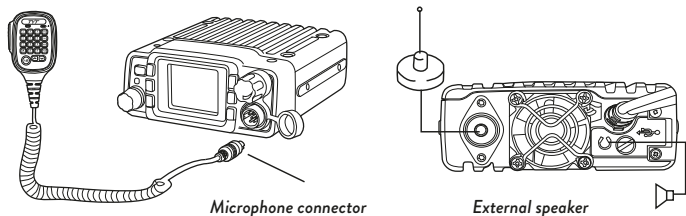
If you use external speakers, the impedance must be  $8\ \Omega$ . The external speaker jack accepts a 3.5mm mono plug.

Make sure the speaker does not have a direct-to-ground connection.

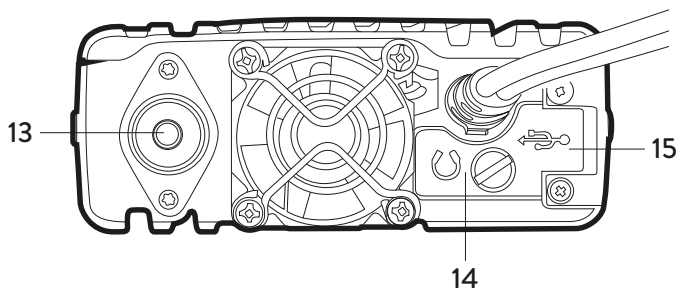
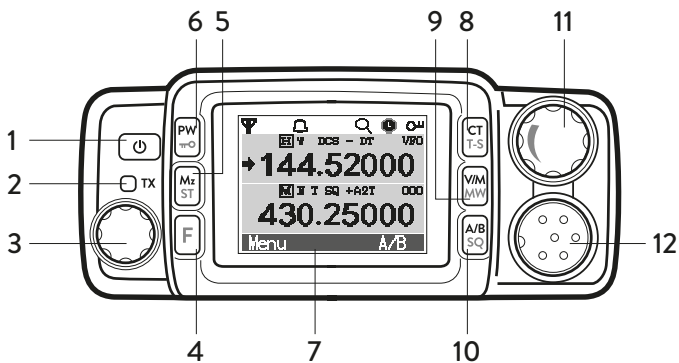
## Microphone

Plug-in the supplied microphone to the proper connector on the front panel of the radio.

The microphone can be also hung up thanks to its holder supplied in the package.









## Controls and display description



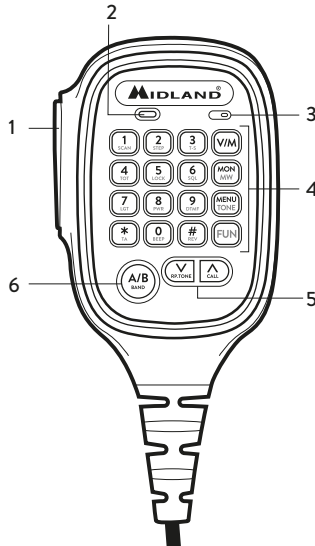
1. **Power ON/OFF control.** Keep pressed to turn on/off the unit.
2. **TX LED:** transmission led; it lights up red while the radio is transmitting
3. **Main knob:** it allows to select many settings. Rotate it to look through the menu, change frequency, channel, scan direction, etc
4. **F key: function key.** By pressing this button you will activate the secondary functions shown on the front keys of the radio.
5. **Mz (ST):** shortly press to change the frequency band of 1MHz in **VFO** mode or to skip 10 channels forwards or backwards. Keep pressed to adjust the frequency of 10MHz. Rotate the main knob to select the desired option and confirm by pushing **Mz** again.
6. **PW/⊖:** shortly push to change the level of the output power (high: 25W/middle: 10W/low: 5W). **Long press:** you will enter the frequency offset setting; push the button again to enable you to change the offset direction; rotate the knob to set the desired level and confirm your selection by pushing **PW** again. **⊖:** Press **F** and then **PW** to lock the keypad.
7. **Multicolor graphic display.**
8. **CT/T-S:** push this button to enable the CTCSS/DCS tones in tx and rx. **T-S:** push **F** and then **CT** to select the desired tone.
9. **V/M -MW. Short press:** to switch from frequency to channel mode. **Long press:** channel storage. **MW:** press **F** followed by **V/M** for a quick storage of the first channel available.
10. **A/B -SQ:** shortly press to switch from the main display to the secondary one. **SQ:** push **F** and then **A/B** to change the squelch level.
11. **VOL:** volume knob. Rotate the knob to select the desired volume level.
12. **MIC:** microphone connector. Plug-in the microphone into this jack.

## Display

<b>430.25000</b>	Main display
<b>144.52000</b>	Secondary display
	Keypad beep activated
	SCAN function activated
	Auto power-off
	Selected output power. H: high, M: middle, L: low
<b>W M N</b>	Selected bandwidth. W: wide, M: middle, N: narrow
<b>DCS</b>	DCS tone activated
<b>-</b>	Offset activated with negative direction
<b>DT 2T 5T</b>	Selective call with DTMF code activated
<b>VFO</b>	Frequency mode
<b>000</b>	Memory channel
<b>A</b>	Talk Around function activated
<b>+</b>	Offset activated with positive direction
<b>SQ</b>	Activated CTCSS tones in rx
<b>T</b>	Activated CTCSS tones in tx
	The icon indicates the display you are operating on
	Keypad lock activated

## Rear panel

13. **ANT:** SO239 antenna connector.
14. **EXT SPK:** external speaker.
15. **DATA:** USB port for the connection to a PC



## Microphone

1. **PTT:** push to transmit
2. **Led:** It turns red, while the radio is transmitting. In rx mode it is white
3. **MIC:** microphone location
4. **Numeric keypad:** edit the desired frequency, channel number or the DTMF code
5. **UP/DOWN:** push to increase/decrease the volume or to look through the settings
6. **A/B-BAND:** press to switch from the main display to the secondary one

# Main operations

## Turning on and off

Push **⏻** key for 1 second to switch on the radio. Push it again for 2 seconds to turn it off.

## Volume adjustment

Rotate the **VOL** knob clockwise to increase the volume and counter-clockwise to reduce it.

Note: if you receive no signal, you can press the **MON** button on the microphone to close the squelch and enable the audio. Then, rotate the **VOL** knob to adjust the volume to a comfortable level.

**Note:** it is possible to adjust the volume also with the **UP/DOWN** controls on the microphone.

## Squelch adjustment

Squelch is used to mute the speaker when no signals are present. With the squelch level set correctly, you will hear sound only while actually receiving a signal. The higher the squelch level selected, the stronger must be the signals in order to hear them.

Squelch can be adjusted either on the mike keypad or on the front panel of the radio.

To adjust the squelch from the keypad of the microphone, press the **F** button and then **[6]**. Select the desired level with the **UP/DOWN** keys and push **PTT** for confirmation.

While to do it from the radio, press the **F** button and then **A/B**. Select the desired level by rotating the tuning knob.

## Selecting a band

The LCD display shows two frequencies; the one at the bottom is the main band (A), while the one in the upper part is the sub-band (B).

Press **A/B** (on the mike or on the radio) to select the desired band, A or B. Everytime you press **A/B**, you will see **➡** close to the band you selected.

## Selecting the VHF or UHF band

In frequency mode it is possible to choose the operating band.

Keep pressed the **A/B** button to switch from VHF to UHF band and viceversa.

## Switching from frequency to channel mode

When the transceiver is in stand-by mode, push **V/M** on the radio or on the mike to switch from frequency to channel mode. The mode will be changed on the frequency in use (A or B).

In frequency mode “**VFO**” will appear on the display, while in channel mode you will see the channel number.

It is possible to use the frequency mode in band A and channel mode in band B or viceversa.

## Frequency/channel adjustment

In frequency mode you can change the frequency number with the main knob: clockwise to increase the value and counter-clockwise to reduce it.

Each “clik” you hear from the knob corresponds to an increase or decrease of the frequency (it is the same as the set step).

If the desired frequency is far from the one in use, the quickest way is the MHz tuning. To activate it press **Mz** on the front panel of the radio. With a short press you will change the frequency of 1 MHz step, while a long press (2 seconds) it will change of 10 MHz steps.

Or you can manually edit the desired frequency thanks to numeric keypad on the microphone. If the frequency does not match with the current frequency step, it will be automatically selected the nearest available frequency.

In channel mode it is possible to change the channel by turning the main knob. Note: it is possible to adjust the frequency or the channel through the **UP/DOWN** keys on the microphone. This can be done only if you enable **UP/DOWN** to this feature: press **[#]**.

## Frequency step selection

The correct frequency step allows you to select the exact rx frequency through the main knob or the **UP/DOWN** buttons.

The following frequency steps can be selected: 2,5 kHz - 5 KHz - 6,25 kHz - 7,5 KHz - 8,33 kHz - 10 kHz - 12,5 kHz - 15 kHz - 20 kHz - 25 kHz - 30 kHz - 50 kHz.

To set the desired frequency step press **FUN** + **[2]**. Select the step by turning the main knob or the **UP/DOWN** controls.

To confirm push **PTT** or wait for 5 seconds.

## Receiving

When the radio receives a signal the display will show “RX” and the signal strength. In case you won't hear the incoming signal, you may need to set the CTCSS or DCS tones in rx.

## Transmitting

Before transmitting on the frequency or channel you have set, please check they are not busy.

Press **PTT** and speak towards the microphone.

While you are transmitting, the led on the front panel will turn red and the display will show output power signal strength. Release the **PTT** to receive.

## Output power selection

You can set three different output power levels: high (25W), middle (10W), low (5W).

Press **Pw** on the front panel of the radio. Everytime **Pw** is pressed, the output power indicator in the display will change: “H” (high), “M” (middle) e“L” (low).

The output power can be selected also with the microphone: press **FUN** followed by **[8]**.

**Note: you can set different output powers for the two bands A and B.**



## Menu settings

You can access the menu either by the radio or by the mike keypad. The menu allows you to set/customise the functions of the radio.

### Menu access

1. Push the **F** button on the front panel for 2 seconds or the **MENU** control on the microphone;
2. To select the desired function rotate the main knob or use the **UP/DOWN** of the microphone;
3. Press **F** or **MENU** or **PTT** on the mike to enter the option of the selected function;
4. Rotate the main knob or press **UP/DOWN** on the mike to select the desired option;
5. Confirm by pushing **F / MENU** or **PTT** on the microphone.
6. To return back to the previous menu level press **A/B** on the radio or **V/M** on the mike.
7. Push **FUN** on the microphone to exit the menu and to return to stand-by condition.

## MENU

### Signal

DTMF List  
2Tone List  
5Tone List

### Scan

### Utilities

Radio Setting  
Signal Select  
Sql model  
Power level  
Bandwith  
CTC/DCS

### Busy Lock

DTMF ID  
5Tone ID  
TOT  
Auto Power off  
DTMF Send Time  
SQL Level  
Scan mode  
Display Mode  
Repeater Tone  
Password lock  
Back light

### Step

Sub screen  
Key fun Pw  
Key fun Mz  
Key fun CT  
Key fun V/M  
Key fun A/B  
Instr Screen  
TX Channel  
TX inh  
Reset  
Sub ring

### Radio Info

## List of the menu functions

On the display	Menu Function N.	Selectable options
<b>DTMF List</b>	1 Selection of the DTMF code to send with the CALL button	DTMF-01, DTMF-02, DTMF-03*
<b>2Tone List</b>	2 Selection of the 2-tone DTMF code to send with the CALL button	2Tone-01*
<b>5Tone List</b>	3 Selection of the 5-tone DTMF code to send with the CALL button	5Tone-01, 5Tone-02, 5Tone-03*
<b>Signal Select</b>	1 Selection of the operating mode in rx	OFF,DTMF,2Tone,5Tone
<b>Sql model</b>	2 Squelch mode	SQL, Sig, CTC, Sig Or Ctc, Sig and Ctc
<b>Power level</b>	3 Output power level	High Power, Mid Power, Low Power
<b>Bandwidth</b>	4 Band narrow width	Width, Middle, Narrow
<b>CTC/DCS</b>	5 Selection of the CTCSS and DCS codes in tx and rx	Ctc Encode, Ctc Decode, Dcs Encode, Dcs Decode
<b>Busy Lock</b>	6 Tx lock on busy channels/frequencies	OFF, CTC/DCS, Carrier
<b>DTMF ID</b>	7 DTMF code displayed on the radio	001
<b>5Tone ID</b>	8 5-tone DTMF code displayed on the radio	12345
<b>TOT</b>	9 Time out Timer in tx	Infinite, 1, 2, ..., 30 Minutes
<b>Auto Power off</b>	10 Setting the automatic power off	OFF, 30, 60, 120 Minutes
<b>DTMF Send Time</b>	11 Time for sending DTMF codes	50, 100, 200, 300, 500 ms
<b>SQL Level</b>	12 Squelch level	OFF, LEV 1, ..., LEV 9

<b>Scan mode</b>	13	Scan mode	TO, CO, SE
<b>Display Mode</b>	14	Selection amongst: frequency mode, channel mode and memory mode	Vfo Mode, CH Display Mode, MR Display Mode
<b>Repeater Tone</b>	15	Selection of the repeater access tone	1750Hz, 2100Hz, 1000Hz, 1450Hz
<b>Password lock</b>	16	Lock with password	OFF, ON
<b>Back Light</b>	17	Backlight on interval	On, 5s, 10s
<b>Step</b>	18	Frequency step selection	2,5 - 5 - 6,25 - 7,5 - 8,33 - 10 - 12,5 - 15 - 20 - 25 - 30 - 50 kHz
<b>Sub screen</b>	19	Selection of the function in the upper part of the screen	OFF, Frequency, Voltage
<b>Key fun PW</b>	20	Selection of the function of the PW control	A/B, LOW, MONI, SCAN, TONE, M/V, MHZ, MUTE
<b>Key fun Mz</b>	21	Selection of the function of the Mz control	A/B, LOW, MONI, SCAN, TONE, M/V, MHZ, MUTE
<b>Key fun CT</b>	22	Selection of the function of the CT control	A/B, LOW, MONI, SCAN, TONE, M/V, MHZ, MUTE
<b>Key fun V/M</b>	23	Selection of the function of the V/M control	A/B, LOW, MONI, SCAN, TONE, M/V, MHZ, MUTE
<b>Key fun A/B</b>	24	Selection of the function of the A/B control	A/B, LOW, MONI, SCAN, TONE, M/V, MHZ, MUTE
<b>Instr Screen</b>	25	Welcome message	OFF, Char String, Picture
<b>TX Channel</b>	26	Selection of the tx mode between selected channel/VFO and last received channel/VFO.	Last Received, Select
<b>TX inh</b>	27	Enabling of the tx lock	Tx Enable, Tx Inhibit
<b>Reset</b>	28	Reset	Factory, Setup
<b>Sub ring</b>	29	Rx beep sound in the sub-VFO	OFF, ON

\* the option list may vary in case some DTMF settings have been modified with the optional programming kit.

## Operating with repeaters and setting of CTCSS or DCS tones

### Setting the frequency offset and its direction

- Select the rx frequency on the A or B band.
- Set the offset direction:
- Press the **Pw** button for 3 seconds. Select the desired offset by turning the knob or by the **UP/DOWN** controls on the microphone. The offset set by default is 0,6 MHz.
- Press **Pw** for 3 seconds. The display will show -: this means that an offset with negative direction has been set, therefore the tx frequency will be lower than the rx frequency. If you want to set an offset with positive direction, press **Pw** again for 3 seconds. Now + will appear on the display and the tx frequency will be higher than the rx one.
- For confirmation press **Pw** again.

### Setting the CTCSS and DCS tones

- Setting a CTCSS or DCS tone in tx
- Push **MENU** on the mike and keep pressed **F** on the front panel to access the radio menu;
- Select option no.3 **“Utilities”**;
- Select **“Radio Setting”**, then **“CTC/DCS”**;
- Select **“CTC Encode”** or no.3 **“DCS Encode”**;
- Set the desired CTCSS tone or DCS code with the main knob or with the **UP/DOWN** keys on the microphone
- To confirm push **PTT** on the mike
- Press **FUN** to exit the menu and return to standby condition.

### Setting a sub-audio tone in rx

- Push **MENU** on the mike and keep pressed **F** on the front panel to enter the radio menu;
- Select option no.3 **“Utilities”**;
- Select **“Radio Setting”**, then **“CTC/DCS”**;
- Select **“CTC Decode”** or **“DCS Decode”**;
- Set the desired sub-audio CTCSS tone or DCS code with the knob or with **UP/DOWN** control of the mike
- Confirm your selection by pushing **PTT** on the mike
- Press **FUN** to exit the menu and return to standby condition.

## Quick setting of CTCSS and DCS tones

It is possible to activate the CTCSS or DCS tones in tx and rx with a quick setting on the keypad.

- Press **FUN** and then **MENU**. The display will show T to indicate that a CTCSS tone in tx is active.
- Press **F + MENU** again to activate the CTCSS tones in rx. **TSQ** will appear on the display of the radio.
- To change the tone press **FUN** and then **[3]**. With the **UP/DOWN** keys on the microphone select the desired CTCSS tone in tx. Press **FUN** again to change the CTCSS tone in rx. Select the desired tone with the **UP/DOWN** keys on the microphone.
- To activate a DCS code in tx push **FUN + MENU** twice, till the display shows DCS: it indicates that a DCS code in tx and rx is active.
- To change a DCS code press **F** and then **[3]**. You can select the desired code with **UP/DOWN** keys.

## Transmitting a repeater access tone

- Press **PTT** and **DOWN** at the same time to transmit a repeater access tone. The tone set by default is 1750 Hz.
- If you want to change the tone frequency follow these steps:
- Press **MENU** on the mike or keep pressed **F** on the front panel to enter the radio menu;
- Select option no. 3 **“Utilities”**;
- Select **“Radio Setting”** and then **“Repeater Tone”**;
- Now you can choose amongst these options:

<b>1750 Hz</b>	<b>1000 Hz</b>
<b>2100 Hz</b>	<b>1450 Hz</b>
- Push **PTT** on the mike to confirm your selection;
- Press **FUN** to exit the menu and return to standby condition.

## Activating the frequency inversion

The frequency inversion can be activated only if a frequency offset (positive or negative) is enabled.

- To activate the inversion press **FUN** followed by **[#]**.
- The icons **+** or **-** start blinking on the display.
- When this function is activated, the frequency offset will be disabled and the radio will receive on the same tx frequency.

## “Talk around” function

This function can be activated only if a frequency offset (positive or negative) is enabled.

- To activate the “talk around” push **FUN** and then [\*].
- The icon **A** will be shown on the display.
- Now you can communicate with the other users without using a repeater.
- When the Talk Around function is activated, the frequency offset will be disabled and the radio will transmit on the rx frequency.

## Memory channels

CT2000 allows you to store up to 203 channels.

The channels let you store the frequency and data. So that you don't have to re-program the same data repeatedly and you can immediately tune on the desired channels.

### Storing a channel

- Make sure the radio is in frequency mode. You can use the **V/M** control on the microphone or on the front panel of the radio to switch from channel to frequency mode.
- Set all the desired parameters to the channel you want to store (frequency, tones, offset, etc).
- Keep pressed **V/M** for 3 seconds, the icon showing the channel number will start blinking on the display. Select the desired channel by rotating the knob or using the **UP/DOWN** keys on the microphone.
- Press the **F** button on the radio or **FUN** on the microphone to store the channel. To delete the memory press **MENU** on the mike.

~~**Note:** for a quick storage of the first channel available keep pressed the **V/M** control on the radio. The icon indicating the channel number will start blinking and the radio will tune on the first channel available. Shortly press **V/M** to store the channel.~~

### Quick storage of a memory channel

It is possible to quickly store the VFO settings of the first memory channel available.

- In frequency mode press **FUN** + **MON**. The VFO settings will be stored on the first memory channel available.

**Note:** In channel mode this function copies the channel in use on the first channel available.

### To recall a channel

- Make sure the radio is in frequency mode. You can use the **V/M** control on the microphone or of the front panel to switch from channel to frequency mode.
- To select the channel number to recall, you can edit the number on the keypad, rotate the knob or use the **UP/DOWN** keys on the microphone.

**Note:** In case you use the keypad you have to edit all 3 digits: for example, channel 1, you will edit "0", "0", "1".

## Deleting a channel

- Be sure the radio is in channel mode. You can use the [VFO] control of the mike or of the radio to switch from frequency to channel mode.
- Select the channel to delete;
- Press **FUN + V/M**: the channel will be cancelled.

## Scan function

CT2000 has 3 types of scanning:

- **TO- Time-Operated scan**: everytime a signal is detected, the radio will stop scanning for a few seconds, then it will start scanning again on the other frequencies even though the signal is still present.
- **CO – Carrier-Operated scan**: whenever a signal is detected, the radio will stop scanning and will resume only after the signal disappears.
- **SE – Search scan**: the radio will stop scanning once a signal is picked up.

To select the desired type of scan, access the radio menu and follow these steps: **MENU→Utilities→Radio Setting→Scan Mode**.

- Select the desired parameter.
- To start scanning press the **F** button on the mike and then [**1**].
- To change the scan direction use the **UP/DOWN** keys on the microphone.
- To stop scanning press **FUN**.
- When the **PTT** is pressed the scan and the transmission on the frequency where the scan picked up a signal, will stop.

*Note: the scan can also be activated through the radio menu. To start scanning select: **MENU→Scan***

## Selective call

You may sometimes want to hear calls from only specific persons or groups. In this case, use the selective call function. This transceiver is equipped with CTCSS tones and DCS codes. These selective calls allow you to ignore (not hear) unwanted calls from other persons who are using the same frequency. The transceiver unmutes only when it receives the signal having the same CTCSS tone or DCS code.

CTCSS and DCS do not make your conversation private or scrambled. It only relieves you from listening to unwanted conversations.

## Setting CTCSS or DCS tones

Setting a CTCSS or DCS tone in tx.



- Press the **MENU** control on the microphone or keep pressed the **F** button on the front panel of the radio to enter the radio menu;
- Select “**Utilities**”, then “Radio Setting” and “**CTC/DCS**”;
- Now select the type of tone; you can choose between “**CTC Encode**” or “**DCS Encode**”;
- Set the desired CTCSS tone or the DCS code with the main knob or with the **UP/DOWN** keys on the microphone;
- Confirm by pushing **PTT**;
- Press **FUN** to exit the menu and return to stand-by mode.

### Setting a sub-audio tone in rx

- Access the radio menu by pushing [menu] on the microphone or by keeping pressed the **F** control on the front panel of the transceiver;
- Select “**Utilities**”, then “**Radio Setting**”;
- Select “**CTC/DCS**”;
- Now select the type of tone, you can choose between “**CTC Decode**” or “**DCS Decode**”;
- Set the desired CTCSS tone or DCS code with the main knob or with the **UP/DOWN** keys of the microphone;
- Push **PTT** for confirmation;
- Press **FUN** to exit the menu and return to stand-by condition.

### Shortcuts for activating CTCSS and DCS tones

The CTCSS or DCS tones in tx and rx can also be activated with shortcuts by keypad.

- Press **FUN** and then **MENU**. The display will show **T** to indicate that a CTCSS tone in tx is activated.
- Press **F** and **MENU** again to enable also the CTCSS tones in rx. **T SQ** will appear on the display.
- To change a tone press **FUN** and then [3]. With the **UP/DOWN** controls on the microphone select the desired CTCSS in tx.
- Now press **FUN** again to change the CTCSS tone in rx (of course, if it has been previously set). Select the desired tone through the **UP/DOWN** controls on the mike.
- To enable a DCS code in tx press **FUN + MENU** for 3 times while the radio is in stand-by mode, till the display shows DCS. DCS indicates that a DCS code in tx and rx is activated.

To change a DCS code press **F** and then [3]. Select the new code with **UP/DOWN** on the microphone.

## CTCSS tones chart

CTCSS tones				
62,5	94,8	136,5	177,3	218,1
67,0	97,4	141,3	179,9	225,7
69,3	100,0	146,2	183,5	229,1
71,9	103,5	151,4	186,2	233,6
74,4	107,2	156,7	189,9	241,8
77,0	110,9	159,8	192,8	250,3
79,7	114,8	162,2	196,6	254,1
82,5	118,8	165,5	199,5	
85,4	123,0	169,9	203,5	
88,5	127,3	171,3	206,5	
91,5	131,8	173,8	210,7	

## DCS codes chart

DCS codes – Normal and Inverted							
23	25	26	31	32	36	43	47
51	53	54	65	71	72	73	74
114	115	116	122	125	131	132	134
143	145	152	155	156	162	165	172
174	205	212	223	225	226	243	244
245	246	251	252	255	261	263	265
266	271	274	306	311	315	325	331
332	343	346	351	356	364	365	371
411	412	413	423	431	432	445	446
452	454	455	462	464	465	466	503
506	516	523	526	532	546	565	606
612	624	627	631	632	654	662	664
703	712	723	731	732	734	743	754

## DTMF functions

The microphone keypad includes 12 numeric buttons and other 4 controls (**V/M**, **MON**, **MENU**, **FUN**) suitable for operating in DTMF mode.

CT2000 can store up to:

- 16 customised DTMF codes (24 digits max),
- 16 2-tone DTMF codes,
- 16 5-tone DTMF codes.

CT2000 is supplied by default with ~~3 customised DTMF codes~~, 1 code with 2 tones and 3 codes with 5 tones.

The DTMF code memories can be changed by means of the optional programming software.

### Transmitting a DTMF code

- Keep pressed **PTT**.
- In tx mode press the controls corresponding to your DTMF code.
- You will hear the code from the speaker of the radio.

### Transmitting a memory DTMF code

- Select the desired customised DTMF code
- Access the radio menu and follow these steps:  
**MENU**→**Signal**→**DTMF List**
- Select the desired DTMF code and confirm by pushing **MENU** or **PTT**.
- Keep pressed **PTT**; while you are transmitting, press **UP**.

### Changing a memory DTMF code

- Select the desired customised DTMF code; you can choose amongst the list of codes available on the radio.
- Enter the radio menu and follow these steps: **MENU**→**Signal**→**DTMF List**
- Select a new customised DTMF code and confirm by pushing **MENU** or **PTT**
- Press **FUN + 9**.
- Enter the new DTMF code (max 24 digits).
- To confirm your selection press **A/B** on the front panel of the radio.

### Changing the transmission time of DTMF codes

- Access the radio menu and follow these steps:  
**MENU**→**Utilities**→**Radio Setting**→**DTMF Send Time**

- Select the desired delay time; you have the following options: 50 ms, 100 ms, 200 ms, 300 ms and 500 ms
- Confirm by pushing **MENU** .
- Press **FUN** to exit the menu and return in stand-by mode.

**Note:** *the default delay time is 100 ms.*

## Selective calls with DTMF codes

CT2000 can answer selective calls and open the squelch only in case you received a call with your DTMF code (DTMF ID or 5 Tone ID).

To enable this function:

- Enter the radio menu and follow this procedure: **MENU**→**Utilities**→**Radio Setting**→**Signal Select**
- Select one of the following options:
  - **OFF:** CT2000 opens the squelch if a carrier is detected (or carrier + CTCSS/DCS tones if they are enabled).
  - **DTMF:** the radio opens the squelch if a carrier is detected preceded by a DTMF code corresponding to your DTMF ID. the display will show DT.
  - **2Tone:** CT2000 opens the squelch if a carrier is picked up preceded by a DTMF code corresponding to your 2tone ID. 2T will appear on the display.
  - **5Tone:** the radio opens the squelch if a carrier is picked up preceded by a DTMF code corresponding to your 5tone ID. 5T will appear on the display.
- Press **MENU** for confirmation.
- Press **FUN** to exit the menu and return to stand-by mode.

**Note:** *DTMF settings can be changed only thanks to the optional programming software.*

It is possible to display the ID codes of the radio with the following procedure:

- Enter the menu and select: **MENU**→**Utilities**→**Radio Setting**→**DTMF ID**
- The radio will show your DTMF ID.

Access the menu and select:


**MENU**→**Utilities**→**Radio Setting**→**5 Tone ID**

The radio will show your 5 Tone ID.

Press **FUN** to exit the menu and return in stand-by mode.

## Other functions

### Activating/deactivating the keypad tones

- Press **FUN** + **[0]** to enable/disable the keypad beep tones.
- When the keypad tones are activated, the display will show l'icone .

### Setting the Time Out Timer:

The time out timer (TOT) automatically switches the radio in reception if you talk for too long, after a pre-set time that can change from 1 minute up to 30 min. Before stopping the transmission, CT2000 emits an acoustic alarm to warn you. We suggest you keeping this function enabled.

**Note:** TOT can be adjusted also from the radio menu.

Access the radio menu and follow this procedure:

- **MENU**→**Utilities**→**Radio Setting**→**TOT**
- Set the desired time and confirm with **MENU** or **PTT** controls.
- Press **FUN** to exit the menu and return in stand-by mode.

### Activating/deactivating the keypad lock:

Press **FUN** + **[5]** to enable or disable the keypad lock.

Or you can also push **F** and then **Lo** on the front panel of the radio.

### Display backlight

The display backlight can be adjusted in 3 different levels:

- **ON**: backlight always on;
  - **5S**: backlight turns off after 5 seconds;
  - **10S**: backlight turns off after 10 seconds.
- Press **FUN** + **[7]**. Select the desired level. Press **PTT** for confirmation or wait for 5 seconds.
  - The backlight label can be adjusted also through the radio menu; follow this path: **MENU**→**Utilities**→**Radio Setting**→**Back Light**

### Auto power-off

You can set the automatic turning off for CT2000.

- Enter the radio menu and follow this procedure:  
**MENU**→**Utilities**→**Radio Setting**→**Auto Power Off**
- Set the desired level: **30/60/120** minutes and confirm by pushing **MENU** or **PTT**.
- Press **FUN** to exit the menu and return in stand-by mode.

## Squelch opening

CT2000 automatically sets the squelch opening rules, that ensure a proper working of the radio.

If you want to modify the squelch opening rules, follow this procedure:

- Enter the radio menu and follow these steps:  
**MENU**→**Utilities**→**Radio Setting**→**Sql Model**
- Set the desired value *Impostare il valore desiderato* and confirm by pushing **MENU** or **PTT**.
- Press **FUN** to exit the menu and return in stand-by mode.

## Selecting frequency mode, channel name mode, channel number mode

- Access the menu and follow these steps: **MENU**→**Utilities**→**Radio Setting**→**Display Mode**
- You can choose amongst the following options:
  - **Vfo Mode** (frequency mode)
  - **CH Display Mode** (channel mode. The channel *name* will be shown in the display)
  - **MR Display Mode** (channel mode. The channel *number* will appear in the display)

Set the desired mode and confirm your selection by pushing **MENU** or **PTT**.

Press **FUN** to exit the menu and return in stand-by mode.

## Setting a password

It is possible to set a password that will be required at the turning on of the radio.

- Access the menu and follow this path:  
**MENU**→**Utilities**→**Radio Setting**→**Password Lock**
- Now select the desired option:
  - **ON** (everytime the radio is turned on a password will be required)
  - **OFF** (no password required)
- Select the option and confirm with **MENU** or **PTT**.
- Press **FUN** to exit the menu and return in stand-by condition.

**Note:** *The password set by default is "000000". The password can be changed also through the optional programming software.*

## Secondary display

In CT2000 it is possible to use also the secondary display “VFO B” (upper part) for some functions:

- To display the frequency of the secondary VFO;
- To display the voltage
- You can disregard the secondary display and use only the main one.
  
- Enter the menu and follow these steps:  
**MENU**→**Utilities**→**Radio Setting**→**Sub Screen**
- Now choose amongst:
  - **OFF**
  - **Frequency**
  - **Voltage**
- Select the desired setting and confirm with **MENU** or **PTT**.
- Press **FUN** to exit the menu and return to stand-by condition.

## Buttons on the front panel of the radio

CT2000 allows to assign functions to the buttons on the front panel of the radio (**Pw**, **Mz**, **CT**, **V/M** e **A/B**).

- Enter the menu and follow these steps:  
**MENU**→**Utilities**→**Radio Setting**→**KeyFun Pw** (or **KeyFun Mz**, **KeyFun CT**, **KeyFun V/M** o **KeyFun A/B**)
- Now choose amongst the following functions:

• A/B,	• TONE,
• LOW,	• M/V,
• MONI,	• MHz,
• SCAN,	• MUTE
- Set the desired option and confirm by pushing **MENU** or **PTT**.
- Press **FUN** to exit the menu and return to stand-by condition.

**Note:** *The default setting of these buttons is the following:*

- **Pw:** LOW, quick selection of the tx power;
- **Mz:** MHz, quick change of the frequency (MHz digit);
- **CT:** TONE, quick selection of the CTCSS/DCS tones in tx and/or rx;
- **V/M:** M/V, quick selection of the frequency and channel mode.
- **A/B:** A/B, quick selection of band A or B.

## Welcome message

It is possible to customise what CT2000 displays when you turn it on.

- Access the menu and follow this path:  
**MENU**→**Utilities**→**Radio Setting**→**Instr Screen**
- You can choose amongst the following options:
  - **OFF**: no welcome message;
  - **Char String**: welcome sentence split in two lines;
  - **Picture**: Midland logo;
- Set the desired mode and confirm with **MENU** or **PTT**.
- Press **FUN** to exit the menu and return to stand-by condition.

**Note:** *The default welcome message is set on “Picture”.*

Thanks to the optional programming software it is possible to customise the welcome sentence.

## Displaying the memory channel name or frequency

- Access the menu and follow this procedure:  
**MENU**→**Utilities**→**Radio Setting**→**Ch Display**
- Now you can choose between:
  - **Frequency**,
  - **Name**.
- Set the desired option and confirm by pushing **MENU** or **PTT**.
- Press **FUN** to exit the menu and return to stand-by condition.

**Note:** *this feature is displayed only when the radio is set in channel mode.*

## Selecting the transmission priorities

- Enter the radio menu and follow this path:  
**MENU**→**Utilities**→**Radio Setting**→**TX Channel**
- Select one of the following options:
  - **Last receive**: to transmit on the last VFO or on the channel that received a signal
  - **Select**, to transmit on VFO or selected channel.
- Set the desired option and confirm with **MENU** or **PTT**.
- Press **FUN** to exit the menu and return to stand-by mode.

## Inhibiting transmission

In CT2000 the transmission can be inhibited: when this function is enabled, the pressure of **PTT** won't have any effect.



- Enter the radio menu and follow this path:  
**MENU→Utilities→Radio Setting→TX Inh**
- Choose one of these options:
  - **Tx Enable:** to enable the transmission
  - **Tx Inhibit:** to disable the transmission.
- Select the desired mode and confirm with **MENU** or **PTT**.
- Exit the menu and return to stand-by mode by pressing **FUN**.

**Note:** *The selected option can differ from frequency to channel mode and from VFO A to VFO B.*

### Acoustic sound for the secondary frequency

If CT2000 is receiving a signal on the secondary frequency (sub-vfo) you will be warned by an acoustic sound. The main frequency (or channel) on which you are operating is indicated by AN arrow in the display.

On the secondary frequency or channel this icon does not appear.

- Enter the radio menu and follow this path:  
**MENU→Utilities→Radio Setting→Sub Ring**
- Now make your selection:
  - **OFF:** to disable the acoustic sound
  - **ON:** to enable the acoustic sound
- Select the desired setting and confirm with **MENU** or **PTT**.
- Exit the menu and return to stand-by mode by pressing **FUN**.

### Reset

- Access the radio menu and follow this path:  
**MENU→Utilities→Radio Setting→Reset**
- Now choose between:
  - **Factory:** to make a complete reset (settings and memories)
  - **Setup:** to reset the settings only.
- Set the desired option and confirm by pushing **MENU** or **PTT**.

# Troubleshooting

PROBLEM	SOLUTION
The radio does not turn on	Power supply cable disconnected or defective. Check its status. Fuse broken. Check the status of the fuses in the radio and in your vehicle.
The display shows RX but the radio does not receive	Verify the volume level is not too low! Check that you have set the same CTCSS tones and DCS codes of your group.
The keypad does not work	The keypad lock is activated
While you are communicating with your group, you receive interferences from other groups	Change the CTCSS tone or DCS code of your group

## Technical specifications

Frequency band	144-146MHz & 430-440MHz (Rx / Tx)
Memory channels	203
Power supply	12,6V DC $\pm$ 10%
Operating temperature	25°C to + 55°C
Operating mode	monoband/dualband
Selectable output power	25W/10W/5W
Modulation	F3E(FM)
Tones	51 CTCSS / 208 DCS
Duty cycle	TX 5% / RX 5% / Stand-by 90%
Max frequency deviation	$\leq$ $\pm$ 5KHz
Spurious emissions	< -13dBm
Frequency stability	$\pm$ 1.0 ppm
Rx sensitivity (@12dB SINAD)	< 0.3uV
Output power	$\geq$ 3W
Dimensions	115x43x125 (LxAxP)
Weight (mike included)	858g

Specifications are subject to change without notice.



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Imported by: **ALAN-NEVADA UK**

Unit 1 Fitzherbert Spur Farlington Portsmouth Hants. PO6 1TT - United Kingdom - [www.nevada.co.uk](http://www.nevada.co.uk)

The use of this transceiver can be subject to national restrictions.

Read the instructions carefully before installation and use.

Vertrieb durch: **ALAN ELECTRONICS GmbH**

Daimlerstraße 1K - D-63303 Dreieich Deutschland - [www.alan-electronics.de](http://www.alan-electronics.de)

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