

TL-45

LUTHOR[®]
TECHNOLOGIES

DUAL BAND VHF/UHF
TRANSCEIVER

VHF/UHF
144/430 MHz

USER'S MANUAL

CE 0700!




We want to appreciate the confidence shown by purchasing this dual band transceiver **LUTHOR TECHNOLOGIES model TL-45**. This transceiver offers an innovative design in terms of technology and multi-functionality. Its high quality and extensive features make it one of the best equipments in its field, we trust in your total satisfaction with your expectations and communication needs.

In the design of **TL-45** every effort, excitement and professionalism has been made to finally reach the obtained result, an **EASY HANDLING DUAL BAND** VHF/UHF transceiver with a **RELIABILITY** only reachable by the best worldwide manufacturers.

An important sector's professional team has taken part in its development, even though maybe the newest aspect has been joining forces with different user profiles to capture the needs of many groups. Besides the transceiver's **QUALITY** and **RELIABILITY**, the main concern was to get an equipment than can be used both by experienced users in this kind of devices, and by beginners with any kind of experience, for that reason the **TL-45 EASY HANDLING** is brilliantly distinguished.

Please read carefully the following manual before using the transceiver in order to guarantee the equipment's maximum performances.

The use of the symbol  shows that this equipment it's under use restrictions in certain countries.

Countries where the use of this equipment is permitted, without prejudice that in any of them their administration request a licence, an authorisation or indicates some restrictions. In case of doubt we recommend you to request the competent authority of the country where you intend to use this equipment.

| | | | | | | | | | | |
|----|----|----|----|----|----|----|-----------------|----|----|----|
| AT | BE | DK | FI | FR | DE | GR | IS | LT | MT | PL |
| IE | IT | LI | LU | NL | NO | PT | ES [*] | SK | SI | |
| SE | CH | GB | CY | CZ | EE | HU | LV | BG | RO | |

*ES: for using this transceiver, the user must have a **personal** amateur radio **licence**.

The use of amateur radio transceivers is allowed within the frequencies assigned for an amateur use: that is 144-146 MHz on VHF, 430-440 MHz on UHF and both on dual band transceivers.

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Cautions and practical advices

△ Both the transceiver and the elements supplied with it are not toys, and as you can see later on this text of compulsory reading for the user, prior to unpacking the equipment and its accessories detailed below, you should consequently keep them out of: children's, persons with reduced cognitive capacity, and domestic or wild animals reach.

△ Any repair must be made only for qualified personal, in case of any problem in the equipment or any of its components you must contact your dealer or a professional and qualified technical service.

△ Under no circumstances disassemble, modify or manipulate the transceiver, the battery or the charging elements. Apart from the physical hazard that this implies for the user, the equipment and the accessories would lose their warranty.

△ The inappropriate handling of the transceiver or its accessories, could make change any of the technical features of them, in such a way that might affect their operation, the equipment's security, the user's physical integrity or the technical parameters, which may affect the features as designed, manufactured and marketed. In those cases the user shall be solely responsible for all the disadvantages and liquidated damages that might result of this action, both the manufacturer and the dealer shall be relieved of such liability.

△ Do not use the transceiver for any purpose other than it was designed for.

△ Do not use the transceiver if you see deterioration or breakage in any of its parts. Do not hit the equipment or the battery and by all means avoid the risk of falling that may damage it.

△ Do not expose the product to extremely high temperatures up to 45° or temperatures below 0°. That could significantly affect its operation and the battery could even ignite or explode (read carefully the cautions and practical advices for batteries described in detail below in this manual).

△ Do not place the transceiver or the battery above heating sources such as radiators, heaters, etc. that might seriously damage the equipment or the battery with the consequent risk of malfunctioning or overheating of them causing a burn down or an explode.

△ Do not use or charge both the transceiver and the battery if they are wet. Make sure that

they are completely dry before using it or charging the battery. Neither use the equipment with your hands wet.

△ Do not supply the equipment with a different tension than the one indicated by the manufacturer. Neither use a different battery than the one supplied by the manufacturer for this equipment. It might cause a burn down or an explode. Do not following this advice will carry an important risk for both the equipment and the user.

△ Do not use the transceiver during a thunderstorm (lightning storm), you would be expose yourself to a potential risk and danger of serious injuries or even the death.

△ For cleaning the transceiver and its accessories make sure is turned off, use a damp cloth (not wet). Do not use liquids, detergents nor any other chemical substance. Do not clean with a dry cloth in order to avoid the creation of static electricity.

△ Do not use the transmission button PTT if is not necessary.

△ An extended transmission could lead to transceiver's or battery's overheating, causing a transceiver's failure, burns or even the battery's explosion. Take care specially if you change the battery, it is not recommended until the temperature has significantly reduced.

△ Do not use the transceiver in any susceptible of flammable or potentially explosive environment. Do not use the device specially on petrol stations, chemical industries, explosives factories, ammunition warehouses, close to combustibles, chemical products, storage silos, tank lorries with dangerous goods, in presence of gas, nor in demolition areas. For most of those scenes are some specially designed and authorised transceivers that can be used without any risk, consult your dealer.

△ Do not use the transceiver in hospitals nor close to medical equipments that can suffer interferences caused by radio frequencies. If you use medical equipments, get in contact with the manufacturer to ensure that the equipments are protected from the radio frequencies.

△ Do not use the transceiver close to a pacemaker. Do not use the device in a distance less than 30 centimetres from a pacemaker, since the device can interfere with it and result in a serious accident. To minimise the possible interference with a pacemaker, use the device on the opposite side of the body from the pacemaker location.

△ Turn off the transceiver when you board an aeroplane. The use of electronic devices on

board of an aeroplane is restricted and subjected to the rules applied to those devices. It can interfere with the navigation electronic instruments of the aeroplane. In case of doubt ask the crew members about the possible restrictions of using the transceiver also in other kind of public transports like trains, ships, etc.

△ Do not use the transceiver if you are driving any kind of vehicle. Concentrate yourself exclusively on driving. In addition to infringe traffic laws, you could put passengers, street users and your security, at serious risk.

△ In case of leaving the transceiver, leave it on a stable location. Giving a special attention on vehicles so that the device do not slow down the driving. Never place the transceiver in the operating range or on the inflatable protection systems (Airbag), because in case of a protection system activation, the transceiver will be throw out with at high speed and strength and could hit the driver or passengers with serious or lethal results.

△ On vehicles, it is possible that the transceiver could interfere or be interfered due to radio frequencies. That could cause the wrong operation of vehicle's electronic equipments or otherwise, the transceiver could be the interfered one. In this case, keep in contact with your dealer, technical service or manufacturer to report this abnormality. Keep special attention in case of electric or hybrid vehicles and prior of using the transceiver ask the manufacturer of this kind of vehicles.

△ When walking or moving, use the transceiver with caution to avoid physical risks of yourself and other people around.

△ To guarantee a greater performance of the transceiver's microphone and that the sound clearly arrives to your interlocutor, when you talk, make it keeping the transceiver between 5 and 10 centimetres from your mouth.

△ For connecting accessories like earphones, speakers, programming cables, etc. always turn off the transceiver previously. Once installed the accessory turn it on again. Use the manufacturer recommended accessories.

△ Prior to using earphones or micro-earphones, check the transceiver's volume, a high volume level will damage the ear. A prolonged use of those accessories could cause audition's harm: auditive capacity degradation, vertigo, dizziness, etc. that's why it is recommended to use a suitable volume and not extending its use for a long time, taking breaks and alternating the ear.

⚠ Please pay special attention to the use of transceiver's external accessories like earphones or micro-earphones, etc. The cable used for those accessories could get caught up on machinery, vehicles, etc. causing the consequent transceiver's or accessory material risk or even pose a danger the user's physical integrity. This applies also to cases for protecting the transceiver or the transceiver itself when using the belt clip.

⚠ While using the transceiver avoid the contact of the antenna with your eyes, your face or other parts of your body. Keep the antenna in a vertical position and far from your body during transmission, so the transceiver will give its maximum performance in addition to your physical integrity.

⚠ Do not take nor grab your transceiver through the antenna, making that can cause damages both to the antenna and the transceiver. Besides the bad operation of the equipment can cause physical damages to the user or to others.

⚠ Do not use the transceiver if the covering from the antenna is damaged, immediately replace the antenna if is a removable one or contact your authorised technical service if is a fixed antenna. Do not taking this advice into account can cause burns for radio frequency to the user.

⚠ The cards and documents with a magnetic band, as credit, telephone or medical cards, savings books, etc. can be damaged due to the transceiver's radio frequency. Likewise, take care with information's storage or memory devices, those could be damaged by the transceiver's radio frequency.

⚠ When using the transceiver in public places try not to disturb the people around you.

Cautions and practical advices for the battery and the charger

- △ This transceiver is supplied with a Lithium-Ion (Li-Ion) battery.
- △ The excessive battery's overheating can cause the battery to ignite or explode with the resulting risk of serious physical damages or even the death. Avoid exposing it to temperatures up to 45°.
- △ Be careful with the equipment and specially with the battery. A hit could damage the equipment or the battery and if the worst comes to the worst the explosion or burn of the battery.
- △ If you see a deterioration, a hit or a crack on the battery cover do not use it and replace it immediately. If you do not make it the battery could cause damages to the equipment or the user because of ignite or explode. Be particularly careful if from inside the battery leaks out any kind of liquid or another material, that could cause chemical burns on your skin or your eyes, in that case contact a doctor immediately for advice on how to proceed and go to the nearest emergency unit.
- △ **SERIOUS DANGER:** under no circumstances short-circuit or short across the battery terminals, that could irreversibly damage the battery and if the worst comes to the worst the explosion or burn of the battery with the possible physical damages for the user, that could be extremely serious injuries or even the death. Consequently you must:
 - Transport the equipment properly so that the terminals can not short-circuit accidentally.
 - Do not carry it in your pocket with metallic objects like keys, coins, etc.
 - Do not place the equipment with its terminals making contact on a metallic, wet or conductive surface, that will cause a short-circuit of the terminals.
 - Avoid the contact of the equipment and the battery with water or conductive liquids.
 - Do not lick, bite or touch with your wet hands the battery terminals.
- △ Do not use the supplied battery by the manufacturer for another transceiver than the one

supplied. Do not following this advice implies an important risk of ignite or explode, and could seriously damage both the equipment and other people around.

⚠ Do not apply a soldering iron on the battery terminals, could cause the battery overheating with the consequent risk of suffering a serious accident.

⚠ Remember that inside a vehicle could reach extreme heat or cold temperatures, in one of those situations the battery could ignite or explode.

⚠ Never charge the battery with another charger than the one original supplied by the manufacturer. The charger is specific for the battery's technology. Using another charger will damage the battery and could cause the battery to ignite or explode with the consequent risk of suffering a serious accident.

⚠ Both the battery and charger contacts must be at all times clean. A bad maintenance of those elements and its deterioration could cause a bad operation, overheat, ignite or explode from the equipment.

⚠ Do not leave the transceiver or the battery close to magnetic fields. It is possible that this cause the bad operation of the transceiver or the battery. It is also possible the battery's discharge due to the action of this magnetic fields.

⚠ In case of not using the transceiver during a long period of time of weeks or months, it is strongly recommended to take off the Li-Ion battery and store it on a cool and dry place, without direct sun light and with a temperature between 5 and 25 degrees. Never store the battery completely discharged or with only a low load, that could cause an irreparable damage to the battery to the point of becoming unusable. It is also inadvisable to store the battery for a long period of time with 100% of the load, the ideal is store it with a 40% of the load, this will extend the battery's working life.

⚠ After a long period of time without being used, the Li-Ion batteries gradually lose its load. Whereby try to use it and charge it with a certain frequency in order to extend the battery's working life.

⚠ Do not use the charger/feeder if the cables or plugs are damaged. That could cause electrical shocks, ignites and explodes. Dispose the product and buy a new one from your dealer.

⚠ Do not use the charger/feeder if the socket outlet is damaged or loose. That could cause

electrical shocks, ignites and explodes. In that case, call a professional electrician to solve the problem.

△ During the charging process do not touch none of its components nor the battery. That could cause electrical shocks with serious security risk or even the death.

△ Do not touch the charger, any of its components nor the battery with wet hands nor your bare feet. That could cause electrical shocks with serious security risk or even the death.

△ Do not short-circuit the charger/feeder terminals. That could seriously damage the system and void it or even catch on fire with a serious risk for the security of the people and facilities where the equipment is located.

△ The Li-Ion batteries have a circuit available that cuts the energy supply once the charge is completed. Usually the charger shows this situation through a LED indicator. But facing the possibility of an error or an overheating both on the charger and on the battery, is appropriate not to let the charger permanently connected to the wall outlet and even less with the battery installed. Once the charge is completed it is strongly recommended to quit the battery from the charger and disconnect it from the electricity supplies.

△ During the charging process, if any of its components: transceiver, battery, cables, charger, wall feeder, etc. will give off smoke or a strange smell, with great caution disconnect the charger from the wall outlet and remove the transceiver or the battery in case is being charged alone. If the battery is installed on the transceiver remove it immediately and do not use the equipment. Get immediately in contact with your dealer or technical service.

△ Do not cover nor put any kind of objects over the transceiver, the battery, the charger, the feeder or the cables. That could cause an overheating or damages on the elements with the consequent risk of burn or explosion.

Main features

- Dual band, dual display and dual standby
- Compact and easy to use
- Channel's name editor
- Dual watch, VOX and CTCSS/DCS tone search functions
- Wide/Narrow band selection
- Tone 1750Hz
- Battery capacity management
- Power supply protection function
- Programmable multi-function key
- FM Radio function with 25 memories
- Programming and battery charging via PC



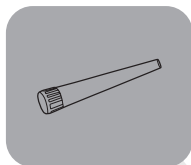
Unpackaging of the equipment and content

Unpack carefully the content of your transceiver's box. We recommend you to verify the elements listed in the following table before discarding the package. If some element is missing or it had been damaged due to the shipping, please contact your **LUTHOR TECHNOLOGIES** dealer as soon as possible.

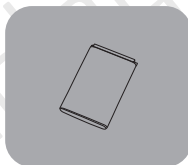
Supplied accessories



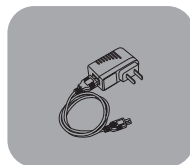
TL-45
Transceiver



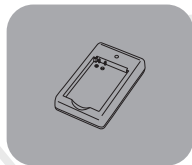
Antenna



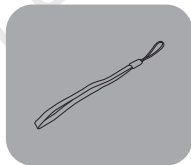
Li-Ion Battery
TLB-445



Charger adapter
TLC-345/1



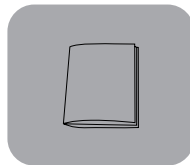
Desktop charger
TLC-345



Hand strap

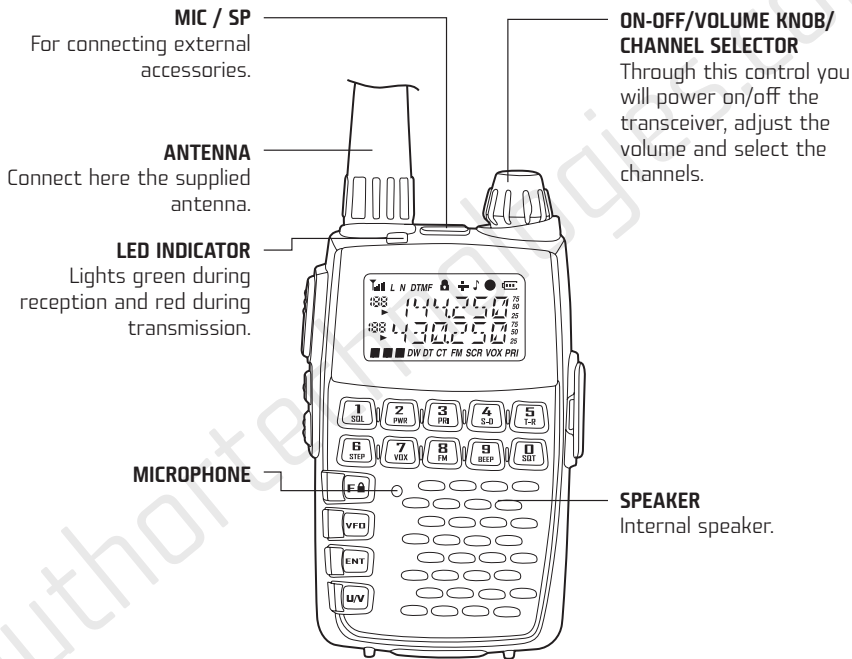


Belt-clip
TLP-145



User's manual

Transceiver's description



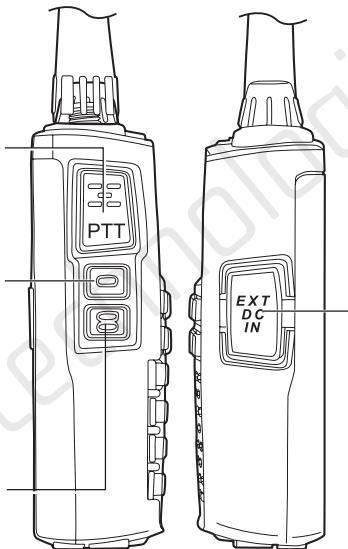
PTT
Press To Transmit and release to receive when your transmission is done.

MULTIFUNCTION KEY 1

- Press to disable squelch.
- Keep pressed and rotate volume knob to adjust volume.
- Default function: monitor.

MULTIFUNCTION KEY 2

- Battery voltage.
- Emergency call.
- Tone (1750Hz)

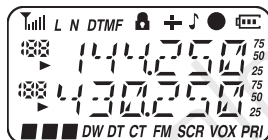


EXT DC IN

Allows connecting the charging adapter and the programming cable.

Introduction to display's icons

You can see different icons on the screen when the radio is turned on. The following table will help you to identify the meaning of screen's icons.



Displays operating frequency, channel number or menu function



Keyboard lock ON



Channel number on MR mode



Automatic power off ON



Key tone beep ON




Negative frequency shift indicator



Positive frequency shift indicator



Analogical CTCSS tone ON

| | |
|--|-----------------------------|
| <i>DT</i> | Digital DCS tone ON |
| F | MENU direct access function |
| DW | Dual watch/standby ON |
| LOW | Low power ON |
| SCR | Voice encryption ON |
| VOX | VOX function ON |
|  | Battery charge indicator |
| <i>FM</i> | FM radio ON |
| <i>PRI</i> | Priority channel ON |

Working modes

Frequency mode (VFO)

Working on this mode, you can use the volume knob to change the frequency or directly introduce the frequency through the numeric keyboard.

Frequency-channel mode (MR)

When there is at least one memory channel stored on Frequency mode (VFO), press the **VFO** key to enter the MR mode.

The frequency will be shown on the display and the channel number will be shown on the upper left corner. When the channel's name editor is enabled and the channel name edited, it will show the channel name. Please, refer to menu's descriptions.

Channel mode (CH)

When there is at least one memory channel stored, keeping pressed the **ENT** key power on the transceiver to enter the channel mode. The channel number will be shown on the display, and when the channel's name editor is enabled and the channel name edited, it will show the channel name. Please, refer to menu's descriptions.

FM Radio mode (FM)

The TL-45 has a FM Radio for the frequency range between 88.00 and 108.00 MHz. Search the frequency range and store your favourite FM Radio stations. Please, consult the "Keyboard functions" section.

Menu mode

Press the **F/B** + **ENT** keys to enter menu mode, there are 27 different menu operations. Please, consult the "Menu function list" section.

Basic operations

Transceiver's power on/off

1. Make sure the battery pack is installed and connect properly the antenna.
2. Keep pressed the volume knob during 3 seconds, you will hear a welcome message, the battery voltage will be shown on the display and then both the current frequency and several icons will be shown on the display.
3. To power off your TL-45, keep pressed the volume knob during 3 seconds.

Note: if you do not hear the welcome message when powering on the device, means the Beep function has been disabled through the menu.

Selecting a frequency

The TL-45 will operate in the VFO mode, a channel system that will allow the free tuning throughout the operating band.

Turning the channel selector you will be able to tune frequencies with the frequency step pre-selected in all the operating band. Turn the channel selector clockwise to increase the frequency and turn it counter-clockwise to decrease the frequency.

Transmitting

1. To transmit, keep the microphone at approximately 5 cm from your mouth, then keep pressed the PTT button and talk to the microphone with a normal tone of voice. During transmission, the led indicator will light in red colour. Release the PTT button to return to the reception mode.
2. During transmission, the power strength will be shown on the upper left corner of the display.

Keyboard lock function

To prevent an accidentally activation of a function, the TL-45 comes with a keyboard lock function, you can enable it manually or automatically. Please, refer to menu's descriptions.

1. Press the **F/L** + **ENT** keys to enter the menu mode.
2. Turn the channel selector to select menu number 22: KEY LK.
3. Press the **ENT** key allow setting this function.
4. Turn the channel selector to select between Manual or Auto.
5. Next press the **ENT** key to store the new setting and return to menu mode.

Notes:

- In this mode, if you turn the channel selector, you will set the volume.
- When you have selected the Manual lock, press the **F/L** key to lock the keyboard.
- When the keyboard is locked, the icon **🔒** will be shown on the upper side of the display.
- Keep pressed the **F/L** key during 3 seconds to unlock the keyboard.

Multifunction lateral keys (via software)

The TL-45 has two multifunction keys. Both of them have the same options. And you can set their functions according to your needs through the programming software. There are four different functions listed below:

- None.
- Monitor and volume setting (default: multifunction key 1).
When you have this function setted for a multifunction key, if you keep pressed the key, the transceiver will enter to Monitor function and the volume level will be shown on the display. Turn the channel selector to set it according to your needs.
- 1750Hz tone call (default: multifunction key 2).
If repeaters in your country require a 1750Hz tone call for accessing them, you can set the multifunction key for operating as a call key.
To access the repeater, keep pressed the key during the time specified by the repeater.
The transmitter will be automatically activated, and a 1750Hz tone call will be superimposed

to the call. Once the repeater accessing has been guaranteed, you will be able to release the key and use the PTT button to begin the transmission.

- Emergency alarm.

When is set with the emergency alarm function, short-press to start the emergency alarm, press the PTT button to transmit the alarm signal, and press any other key to finish. By keep pressing the key to start the emergency alarm and transmit the alarm signal, it will make to finish when releasing the key.

Volume control

Keep pressed the multifunction key 1 and next keep pressed and turn the volume knob.

Keyboard functions

You can quickly access the functions, which are detailed below, by pressing the **F/B** key followed by other keys:

1. Squelch setting

Press the **F/B** + **1SQL** keys to set the squelch level: from 0 to 9.
Turn the channel selector to set it.

2. Transmission power setting

Press the **F/B** + **2PWR** keys to set the transmission power between High or Low.
Turn the channel selector to set it, when you select Low power, the icon “Low” will be shown on the display.

3. Priority channel setting

Press the **F/B** + **3PR** keys to set the priority channel.
This function is only available on MR and CH modes.

4. Frequency shift setting

Press the **F/B** + **4SC** keys to set the frequency shift direction on mode VFO. Turn the channel selector to select between negative (-) or positive (+), and when you enable the frequency shift one of this icons will be shown on the upper side of the display.

5. Reverse frequency setting

Press the **F/B** + **5REV** keys to set the reverse frequency.
This function is only available on mode VFO.

6. Frequency steps setting

Press the **F/B** + **6STEP** keys to set the frequency steps. Turn the channel selector to select between: 5 / 6.25 / 10 / 12.5 / 25 / 37.5 / 50 / 100 KHz.

7. VOX activation

Press the **F/B** + **7VOX** keys to set the VOX function. Turn the channel selector to select between ON / OFF.

Regarding the VOX sensitivity level setting, please, consult the Menu number 23 on page 33.

8. FM Radio mode

Press the **F/A** + **8RM** keys to enter the FM Radio mode. The icon “FM” will be shown on the lower side of the display.

Turn the channel selector to select the FM frequency or introduce it directly through the keyboard.

The FM frequency range is 88.00 – 108.00 MHz. Press again the **F/A** + **8RM** keys to exit the FM Radio mode.

In FM Radio mode, the TL-45 can monitor the incoming signals. That is, when receiving a call, the TL-45 will temporally exit the FM Radio mode to hear the call. 5 seconds after the call is finished, it will automatically return to FM Radio mode.

9. Key operation confirmation sound setting

Press the **F/A** + **0REP** keys to set the key operation confirmation sound. Turn the channel selector to select between OFF/ TONE / VOICE.

10. CTCSS / DCS tones setting

Press the **F/A** + **0REP** keys to set the CTCSS / DCS tones.

Change between RX and TX by pressing the **F/A** key.

Change between CTCSS and DCS by pressing the **VFO** key.

OFF --> CTCSS --> DCS 1 --> DCS N --> OFF.

Turn the channel selector to select CTCSS / DCS.

Press the **ENT** key to confirm setting and **U/V** to exit.

11. Search function setting

Press the **F/A** + **VFO** keys to start the search. Turn the channel selector to change search direction. You can make a search on VFO, MR and CH modes to fit your needs.

12. Channels storing

Press the **F/A** + **U/V** keys to store the desired channels, and you can introduce the channel number directly with the keyboard. Turn the channel selector to select the channel number and press the **ENT** key to store it.

13. Menu mode

Press the **F/M** + **ENT** keys to enter the menu mode. Please, consult the “Menu operation” section.

Operation through numeric keys

On VFO mode, you can select the frequency directly with the keyboard.

If the introduced number is out of the operating band, “ERROR” will be shown on the display.

On channel mode, by pressing the numeric keys you will change the channel.

Menu function list

| N° | Display and function | Selectable parameters |
|----|-------------------------------------|-----------------------------|
| 1 | TX_SEL (priority channel selection) | BUSY / EDIT |
| 2 | APRO (voice mode) | OFF / COMP / SCRM |
| 3 | BCLO (busy channel lock out) | OFF / ON |
| 4 | W-N (bandwidth: Wide / Narrow) | WIDE / NARROW |
| 5 | TAIL (end of transmission tone) | OFF / ON |
| 6 | SCAN (add or remove from search) | ADD / DEL |
| 7 | OFFSET (frequency shift) | 0.000 - 99.995MHz |
| 8 | CH_NAM (channel name edition) | 0 - 9, A - Z, +, -, /, _ |
| 9 | NAM_SW (show channel name) | OFF / ON |
| 10 | OPENS (information when power on) | OFF / DC / MSG |
| 11 | MSG (message when power on) | 0 - 9, A - Z, +, -, /, _ |
| 12 | D_WAIT (dual watch) | OFF / ON |
| 13 | LAMP (display lightning mode) | OFF / ON / AUTO |
| 14 | DC (battery voltage display) | Current battery voltage |
| 15 | 1750_S (1750 transmission tone) | OFF / 1 - 15 s |
| 16 | TOT (time out timer) | OFF / 30 - 360 s |
| 17 | RX_SAV (battery save mode) | OFF / 1-1 / 1-2 / 1-3 / 1-4 |

| N° | Display and function | Selectable parameters |
|----|--------------------------------------|------------------------------|
| 18 | SCAN_S (signals search mode) | CO / TO / SE |
| 19 | SCAN_V (search speed) | 100 - 500 mS |
| 20 | APD_SW (automatic power off) | OFF / 30 - 180 s |
| 21 | RX_ALT (emergency alarm) | OFF / ON |
| 22 | KEY LK (keyboard lock) | AUTO / MANUAL |
| 23 | VOX LV (VOX level) | 1 - 9 |
| 24 | VOX DV (final VOX delay) | 0.5, 1.0, 2.0, 3.0 s |
| 25 | FM_STP (frequency steps on FM Radio) | 25 / 50 / 100 / 200KHz |
| 26 | SK_CTS (CTCSS tones search) | 67.0 - 250.3Hz |
| 27 | SK_DCS (DCS tones search) | D023N - D754N, D023I - D754I |

Menu operation

Press the **F/A** key, the icon “F” will be shown on the lower left side of the display, next press the **ENT** key, “MENU” will be shown on the display. Turn the channel selector to select the different menu items, press the **ENT** key to enter on the desired menu.

Turn the channel selector to select the desired setting, next press the **ENT** key to confirm.

Once in a menu item, press the **U/V** key to exit and return to menu, press the **VFO** key to exit menu mode.

Function's detailed descriptions

1. **Priority channel selection (TX_SEL)**

Function: allows transmitting on a particular channel although you are operating on a different one.

Enter on menu number 1 to select the priority channel. Default: EDIT.

EDIT: it will transmit through priority channel.

BUSY: it will transmit through the last channel used for transmitting.

2. **Voice mode (APRO)**

There are two voice modes available.

OFF: normal.

COMP: voice compression.

SCRM: voice encryption.

3. **Busy channel lock out (BCLO)**

ON: enable the busy channel lock out.

OFF: disable the busy channel lock out.

4. **Bandwidth: Wide / Narrow (W-N)**

Press the **F1B**, next press the **ENT** key, turn the channel selector to select menu number 3, "W-N" will be shown on the display.

WIDE: wide band.

NARROW: narrow band.

5. **End of transmission tone (TAIL)**

You can remove the annoying end of transmission tone. The benefits of this function is particularly evident for those using an earphone.

Note: this function will be only operational when the equipment which you are communicating has also enabled this same function.

6. **Add or remove from search (SCAN)**

Press the **F/A** key, next press the **ENT** key, turn the channel selector to select menu number 6, "SCAN" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select between "ADD" or "DEL". Press the PTT button or the **ENT** key to confirm, then press the **U/V** key to exit. This function is only available on channel mode in order to add this channel to search function.

ADD: add to search.

DEL: remove from search.

7. **Frequency shift (OFFSET)**

Press the **F/A** key, next press the **ENT** key, turn the channel selector to select menu number 7, "OFFSET" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the frequency shift between 0.000 – 99.995 MHz.

Press the PTT button or the **ENT** key to confirm, then press the **U/V** key to exit.

8. **Channel name edition (CH_NAM)**

The name of the channels can be edited by the user, with a maximum of 6 letters or numbers, this function is available on CH and MR modes. Press the **F/A** key, next press the **ENT** key, turn the channel selector to select menu number 8, "NAME" will be shown on the display, press the **ENT** key to enter and the first character will flicker, turn the channel selector to select between 0 – 9, A – Z, +, -, /, _, . Press the **2nd** key to move forward to the next character, press the **1st** key to move backward to the previous character, press the **ENT** key to confirm the setting.

9. **Show channel name (NAM_SW)**

On CH and MR modes, turn the channel selector to select between "ON" or "OFF".

ON: shows the edited channel name.

OFF: shows the frequency.

10. **Information when power on (OPEN_S)**

When powering on the transceiver a start message is shown.

OFF: shows the frequency or channel number.

MSG: shows the message previously edited.

DC: shows the current battery voltage.

11. **Message when power on (MSG)**

Function: edit the start message.

Enter the menu number 10 to enable the MSG function. Default: OFF.

The start message can be edited by the user, with a maximum of 6 letters or numbers.

Press the **ENT** key, when the first character flicker, turn the channel selector to select between 0 – 9, A – Z, +, -, /, _ . Press the **2nd** key to move forward to the next character, press the **1st** key to move backward to the previous character, press the **0scr** key to clean the character. To finish, press the **ENT** key to confirm the setting.

12. **Dual watch (D_WAIT)**

OFF: dual watch function disabled, the radio will only receive signals on current channel..

ON: dual watch function enabled, the radio will receive signals on both channels.

13. **Display lightning mode (LAMP)**

Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 13, “LAMP” will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the desired setting, press the PTT button or the **ENT** key to confirm, then press the **UV** key to exit.

ON: the display lightning will be always on.

OFF: the display lightning will be always off.

AUTO: the display and keyboard lightning is turned on during 5 seconds. It will automatically turn off when no key is pressed.

14. **Battery voltage display (DC)**

Shows the current battery voltage.

15. **1750 transmission tone (1750_S)**

Press the PTT button to transmit the 1750Hz tone.

OFF: do not transmit the tone.

ON: for transmitting the tone, the transmission time can be set between 1 and 15 seconds.

16. Time out timer (TOT)

To prevent the transceiver from damaging due to a continuous transmission during a lot of time, the transceiver will alert you when a maximum limit transmission time is reached. The limit can be set between 30 and 360 seconds, or OFF.

Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 16, "TOT" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the desired setting, press the PTT button or the **ENT** key to confirm, then press the **UV** key to exit.

17. Battery save mode (RX_SAV)

Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 17, "RX_SAV" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the desired setting, press the PTT button or the **ENT** key to confirm, then press the **UV** key to exit.

OFF: desactivar la Funcion.

Levels: 1-1, 1-2, 1-3, 1-4; when larger the level is, the larger battery save will be.

18. Signals search mode (SCAN_S)

Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 18, "SCAN_S" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the desired setting, press the PTT button or the **ENT** key to confirm, then press the **UV** key to exit.

TO: Time-Operated mode.

The search will stop in the signal found, and will stay in this signal for about 5 seconds, it will resume although the signal is still active.

CO: Carrier-Operated mode.

The search will stop in the signal found, and will stay in this signal until it ends. Before the search will resume, you will have 15 seconds where you will be able to transmit and receive.

SE: Seek mode.

The search will stop in the signal found, and will remain in this same frequency without

resuming the search.

19. Search speed (SCAN_V)

You can set the time for the signal's search, the available values are: 100ms, 150ms, 200ms, 250ms, 300ms, 350ms, 400ms, 450ms and 500 ms.

20. Automatic power off (APO_SW)

Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 20, "APO_SW" will be shown on the display, press the **ENT** key to enter and turn the channel selector to select the desired setting, press the PTT button or the **ENT** key to confirm, then press the **U/V** para salir. Cuando la Function APO está activada, el equipo se apaga automáticamente cuando no se realiza ninguna operación durante el tiempo seleccionado.

OFF: the APO function is disabled.

30min, 60min, 90min, 120min, 150min, 180min: the equipment will be automatically powered off when no operation is made during this pre-set time.

21. Emergency alarm (RX_ALT)

OFF: the emergency alarm will not be received.

ON: the emergency alarm will be received.

22. Keyboard lock (KEY LK)

AUTO: the equipment will be automatically locked when no action is made during 15 seconds.

MANUAL: keep pressed during about 2 seconds the **F/A** key to lock it.

23. VOX level emergency (VOX LV)

The VOX sensitivity can be set through the VOX levels, the level 1 is the lower, therefore it need a louder voice to activate it.

24. Final VOX delay (VOX DV)

The equipment returns to reception mode right after transmitting, your voice could not be satisfactorily transmitted. To avoid this problem, you can set a final VOX delay before transmitting. The available values are: 0.5, 1.0, 2.0, 3.0 seconds.

25. Frequency steps on FM Radio (FM_STP)

To select the frequency steps on FM Radio, the available values are: 25 / 50 / 100 / 200 KHz.

26. CTCSS tones search (SK_CTS)

Press the **F/A** next press the **ENT** key, turn the channel selector to select menu number 26, "SK_CTS" will be shown on the display, press the **ENT** key to enter and turn the channel selector to start the search, press the PTT button or the **ENT** key to confirm, then press the **U/V** key to exit. The equipment will stop the search when receiving from another equipment the same CTCSS tone, the CTCSS tone will flicker.

Turn the channel selector to change search direction.

27. DCS tones search (SK_DCS)

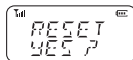
Press the **F/A**, next press the **ENT** key, turn the channel selector to select menu number 27, "SK_DCS" will be shown on the display, press the **ENT** key to enter and turn the channel selector to start the search, press the PTT button or the **ENT** key to confirm, then press the **U/V** key to exit. The equipment will stop the search when receiving from another equipment the same DCS tone, the DCS tone will flicker.

Turn the channel selector to change search direction.

Reset

Is used to delete all the settings.

Keep pressed the **F/A**, next power on the transceiver, "RESET YES?" will be shown on the display, press the **ENT** key to confirm, you will hear a first sound indicating the erasing has started and a second sound when the erasing is done, entering automatically on VFO mode.



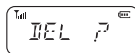
Storing and deleting memory channels

Storing memory channels

On VFO mode, introduce the desired frequency directly through the keyboard or select one turning the channel selector, then press the **F/A** + **U/V** keys, the digits showed on the upper left side of the display will flicker, press the numeric keys to introduce directly the channel number or turn the channel selector to choose one of them, finally press the **ENT** key to confirm.

Deleting memory channels.

1. On MR or CH modes, press the **U/V** key and power on the radio, "DEL ?" will be shown on the display and the channel number will flicker on the upper right side of the display.
2. Turn the channel selector or introduce directly the channel number you want to delete, then press the **ENT** key to confirm.
3. After deleting it will move to the next channel, if you want to delete it, repeat the instructions above.



Storing and deleting FM Radio memory channels

Storing FM Radio memory channels

On FM Radio mode, press the **F/A** + **U/V** keys, the channel number to store showed on the upper left side of the frequency will flicker.

Turn the channel selector or press the numeric keys to select the channel number desired, press the **ENT** key to confirm.

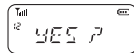
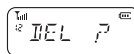
Selecting the mode

On FM Radio mode, press the **VFO** key to change between FM memory and FM frequency modes (this function is not available when there are no FM memory channels stored).

Deleting FM Radio memory channels

On FM memory mode, power off the equipment and, keep pressing the **U/V** key power on the transceiver, "DEL ?" will be shown on the display and the memory number will flicker.

Turn the channel selector to select the memory number you want to delete, then press the **ENT** key to confirm. Repeating this operation, you could delete other memories between the 25 available.



Troubleshooting guide

| Problem | Possible reason and possible solution |
|---|---|
| No reaction when power on. | The battery pack is exhausted. Please, charge it again or replace it for a new one. The battery pack could not be properly installed. Please, check it and install it again. |
| The operation time is very brief, even though the battery is charged. | Replace the battery pack for a new one. |
| You can not communicate with the members of your group. | Please, check if you are using the same CTCSS or DCS tones. The distance between you is out of range. |
| You receive calls from other persons out of your group. | Change the CTCSS tones of your group. |
| Other radios can not receive the transmission signals or receive the signals at low volume. | Turn the volume knob at maximum level. The microphone could be damaged, send it to your local dealer for checking. |
| You always hear noise. | The distance is out of range. Reduce the range or try it again. |

Technical specifications

General

| | |
|------------------------|--|
| Frequency range | VHF: 144 - 146 MHz UHF: 430 - 440 MHz |
| Memory channels | 128 |
| Antenna | High range antenna |
| Antenna impedance | 50Ω |
| Operating voltage | DC3.6V |
| Operating mode | Simplex |
| Dimensions (H x M x L) | 84mm x 48mm x 26mm |

Transmitter

| | |
|------------------------------|---------------------------------|
| Power output | ≤ 2.0W (High) ≤ 0.8W (Low) |
| Modulation | 16k € F3E / 11k € F3E |
| Maximum deviation | < 5kHz / < 2.5KHZ |
| Spurious radiation | < 7μW |
| Adjacent channel power | ≥ 65dB / ≥60dB |
| Pre-emphasis characteristics | 6dB |
| Current | ≤ 1.5A |
| CTCSS/DCS deviation | 0.5KHz ± 0.1kHz 0.7KHz ± 0.1kHz |
| Intermediation Sensitivity | 8 - 12mv |
| Audio distortion | < 5% |

WARNING: Some of these specifications can be subject to modification without previous notice.

Receiver

| | |
|------------------------------|-------------------------------------|
| Sensitivity (12 dB SINAD) | -122dbm |
| Audio power | > 0.5W |
| Audio distortion | < 5% |
| Intermodulation | $\geq 60\text{dB} \geq 55\text{dB}$ |
| Adjacent channel selectivity | $\geq 65\text{dB} \geq 60\text{dB}$ |
| Radiated spurious emissions | $\geq 65\text{dB}$ |
| Block | $\geq 85\text{dB}$ |

WARNING: Some of these specifications can be subject to modification without previous notice.

Warranty information

Period:

2 years from transceiver's date of purchase.

Note: keep your equipment's sales receipt. Is essential to give it for any complaint related to the equipment and for applying your warranty claim of it.

Warranty exclusions

The equipment will lose its warranty in the next cases:

- Do not give the sales receipt.
- The product has not the serial number or is totally or partially illegible.
- The serial number does not match with the one in sales receipt.
- The product has been manipulated by non authorised personal.
- If the product damage has been caused by using non official accessories.
- If the has been used for any other purpose different from communicating between users of the frequencies assigned for amateur use that are: 144-146 MHz in VHF, 430-440 MHz in UHF and both of them on dual band transceivers.
- Misuse, abuse, abnormal use or inadequate care by the user, both deliberately or accidentally.
- If any of the Cautions and practical advices (from pages 6 to 9) or the Cautions and practical advices for the battery and the charger (from pages 10 to 12) were reneged on.

We have done everything possible to obtain the maximum of detail in this manual, but we are not responsible for any possible omission as well as printing errors or translation. All the specifications are subject to change by **LUTHOR TECHNOLOGIES** without previous notice.

Total or partial reproduction of this manual contents without the express authorisation of **LUTHOR TECHNOLOGIES** is prohibited.

Note on environmental protection:



This symbol on the equipment or its packaging indicates that at the end of the useful life of this product the user is legally obligated to fulfil the European Directive 2012/19/EU, on 4 July 2012 (in the legislative Spanish system RD 110/2015 on 20 February 2015), on Waste Electrical and Electronic Equipment, which applies the following: the electrical and electronic equipment, as well as batteries and rechargeable batteries, can not be treated as normal household waste, but must be delivered to the corresponding collection point. By ensuring that this product is rejected correctly, you help with this action to prevent negative consequences for the environment and human health which could be caused by its inappropriate management. The recycling of materials helps to preserve natural resources.

To receive detailed information about the recycling of this product, please contact the city office, the most nearby waste disposal service or the establishment where you purchased the product.

Declaration of conformity

CE 0700 **The undersigned, in representation of:**

Company: GENEUREUS S.L.
Address: Industria 5, nave 8
08160 Montmeló – Barcelona (Spain)
Telephone number: (+34) 93 599 17 65
VAT number: B66339029
E-mail address: gestiontecnica@geneureus.com

We declare under our sole responsibility the conformity of the following product:

Type of equipment: Dual Band VHF/UHF in FM mobile transceiver for amateur
Brand name: LUTHOR TECHNOLOGIES
Model number: TL-45
Manufacturer: GENEUREUS S.L.
Manufacturing site: China

Which it refers this declaration, with the following rules or other policy documents:

| | |
|---|---|
| EN 60950-1:2006+A11:2009+A1:2010 +A12:2011 | Safety regarding information technology equipments. General requirements. |
| EN 301 489-1 V1.9.2 / EN 301 489-5 V 1.3.1 | Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Part 5: Specific conditions for Private land Mobile Radio (PMR) and ancillary equipment (speech and non-speech). |
| EN 300 086-1 V 1.4.1 / EN 300 086-2 V 1.3.1 | Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Technical features and testing conditions for Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive. |
| Directive RoHS: 2011/65/UE | About restrictions of the use of certain hazardous substances in electrical and electronic equipment (EEE). |

In accordance with the requirements of Directive 2014/53/UE, of the European Parliament and the 16th April 2014 Council, transposed into Spanish law by Royal Decree 188/2016 of 6th May 2016.

More additional information related with the equipment, accessories, images, updated management software, etc. are available on the official website: www.luthortechnologies.com



Josefa Paredes Martínez
Manager

Montmeló, 28th June 2016

Notes

“LIFE IS GOOD COMMUNICATION”

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