Private mobile radio (PMR) with twin charger # Terrain 850

USER GUIDE

Antenna

LCD Screen
- Displays the current channel selection and other radio symbols.

PTT (PUSH to TALK) button
- Press and hold to transmit.

CALL button
- Press to send ringing tone to other PMR units.

MENU button
- Press to change to switch between modes.

UP/Down buttons
- Press to change channels, volume and to select settings during programming.

PWR (POWER) button
- Press and hold to turn the unit ON or OFF.

Power charge socket (⌒) & Headset socket ( )
- micro-USB socket for charging installed batteries
- 2.5mm headset socket

MIC (Microphone)

Speaker

1. LCD Screen

8	Channel Number. Changes from 1 to 8 as selected by the user.
88	CTCSS (01-38) or DCS (01-83) Codes, as selected by the user.
⊞	Indicates the Battery charge level. (Recharge when bars turn off).

188	Displays Channel Number, or FM frequency.
TX	Displays when transmitting a signal.
RX	Displays when receiving a signal.
DCM	Displays when the Dual Watch function is turned On.
DCS	Displays when the Digital Code System is turned On.
CTCSS	Displays when a CTCSS sub-channel is set.
VOX	Displays when the VOX feature is enabled.
SC	Displays when the PMR is scanning all channels.
⊙━	Displays when the Key Lock feature is activated.

..III	Indicates the current Speaker volume level.
FM	Displays with the frequency when the FM radio is activated.
RM	Displays when the Room Monitor is activated.

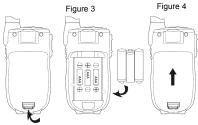## 2. Installation

2.1 Removing the Belt Clip
  a. Pull the Belt Clip latch forward
     (away from the Terrain 850)
  b. While pulling the Belt clip
     latch, push up the Belt clip
     as shown in Figure1.

2.2 Installing the Belt Clip
  a. Slide the Belt clip into the
     slot as shown in Figure2.
     A "click" indicates the Belt
     clip is locked into position.

Belt Clip latch

Figure 1   Figure 2

2.3 Installing the Batteries

Figure 3   Figure 4

Caution: *Observe the proper battery polarity orientation when installing batteries. Incorrect positioning can damage both the batteries and the unit.*

  a. Unclip the Battery compartment cover.
  b. Install the rechargeable batteries by following the orientation as
     shown in Figure 3.
  c. Replace the Battery compartment cover. See Figure 4.

Important

Read these Safety Warnings before you charge the batteries.
When placing the Terrain 850 in the charger, use only
the power supply type supplied with the Terrain 850.
Don't try to recharge non-rechargeable batteries.
Make sure the battery compartment cover is securely locked in place
when you are charging the batteries.
Dispose of used batteries safely and in a way that will not harm the
environment, never try to burn them or put them anywhere
they could get burnt or punctured.
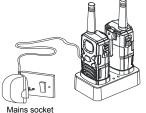Don't leave dead batteries in your Terrain 850 units - they may leak.

2.4 Charging the batteries - in the charge cradle
a. Insert the micro-USB plug on the end of the mains adaptor into the
    Power-in Connection socket in the back of the desktop charger.
b. Plug the mains adaptor into a 230-240V AC, 50Hz mains socket
    with the switch on the socket set to OFF.
c. Switch ON the mains socket.

The Terrain 850 must be charged using the mains adaptor provided.
Using any other adaptor will result in non-compliance with
EN60950-1 and will invalidate any approvals & warranty.

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d. Place the Terrain 850 units in the charge cradle in an upright position and facing outward. **The Charge LED indicators will light up.**

e. It takes about 10 hours to fully recharge the batteries if they are completely run down. **New batteries take up to 14 hours to fully charge.**

Important:
Always turn off the PMR units when charging. This will shorten the charging time.

Mains socket

2.5 Charging the batteries - directly from the adapter

a. Lift the charge socket cover located on the upper side of the handset.

b. Insert the connector of the 5.0V DC/ 400mA mains adapter into the power-in micro-USB socket in the side of the Terrain 850.

c. Plug the mains adaptor into a 230-240VAC,50Hz, mains socket with the switch on the socket set to OFF. Use only the power supply type provided with the Terrain 850.

d. Then switch ON the mains socket.

Battery meter

The battery meter is located in the left corner of the LCD Screen. It appears like a battery with three bars inside. These indicate the amount of power available. When the battery level is low, it will emit a "beep" sound every 10 seconds in normal mode. When the battery level reaches its minimum level in Terrain 850 on mode, the unit will emit two beep tones and automatically turn off the power.

Important: Charge the unit for 10-14 hours.

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Battery life
The Terrain 850 has a built in power saver to make the batteries last longer. But when you are not using the units, turn them OFF to conserve battery power.

3. Operation
3.1 Transmitting range
The talk range depends on the environment and terrain. It will reach up to about 8km in wide open spaces, without obstructions such as hills, trees or buildings. Don't try to use two PMR units which are less than 1.5m (5 feet) apart. If you do, you may experience interference.

Important safety warning:

To reduce radio frequency exposure when you are using your Terrain 850, hold the unit at least 5cm (2 inches) away from your face.

Never use your Terrain 850 outdoors during a thunderstorm.

Don't use the Terrain 850 in the rain.

If your Terrain 850 gets wet, turn it off and remove the batteries. Dry the battery compartment and leave the cover off for a few hours. Don't use the unit until it is completely dry.

Keep the Terrain 850 out of reach babies and young children.

3.2 Turning the Unit ON/OFF

To Turn ON;
a. Press and hold the **POWER** button until the LCD screen turns ON and displays the current channel.

To Switch OFF;
b. Press and hold the **POWER** button until the LCD screen turns blank.

You can hear beep tones each time to confirm.

3.3 Adjusting the Speaker volume

The volume level is shown by vertical bars on the LCD screen.

You can change the volume while using your Terrain 850, or while the unit is idle (switched on but not in use).
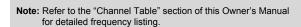
Press the **UP** button to increase, or **DOWN** button to decrease the speaker volume.

3.4 Changing Channels

The Terrain 850 has 8 available channels, and to communicate with other PMR users within range, you must all have your PMR tuned to the same channel.

a. Press the **MENU** button once, the current channel number flashes on the LCD screen.
b. Press the **UP** or **DOWN** button to select the desired channel. The channel changes from 1 to 8, or vice versa.
c. Press the **PTT** button to confirm the channel setting.

Note: Refer to the "Channel Table" section of this Owner's Manual for detailed frequency listing.

3.4.1 Setting the CTCSS sub-channel

Each channel also has 38 sub-channels to let you set up a group of users within the same channel for more private communication. If you have set a sub-channel, you can only communicate fully with other PMR users tuned to the same channel and sub-channel, although PMR users just on the same channel and with no sub-channel set, will be able to hear you.

To turn the sub-channel function off, simply set the sub-channel to 0 (zero). You can communicate with any PMR user set to the same channel who also turns off the sub-channel operation (or whose PMR unit does not have this feature).

a. Press the **MENU** button twice, the current CTCSS sub-channel number flashes on the LCD screen.
b. Press the **UP** or **DOWN** button to select one of the 38 CTCSS sub-channels.
c. Press the **PTT** button to confirm the sub-channel setting.

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3.4.2 Setting the DCS advanced digital code

Each channel also has 83 digital codes to let you set up a group of users for more secured private communication.

a. Press the **MENU** button 3 times. The current DCS code flashes on the LCD screen.

b. Press the **UP** or **DOWN** button to select the desired DCS code.

c. Press the **PTT** button to confirm the DCS channel setting.

Transmitting and Receiving

! The Terrain 850 transmission is "one way-at-a-time." While you are speaking, you can not receive a transmission.

! The Terrain 850 is an open-license band. Always identify yourself when transmitting on the same channel.

3.4.3 Receiving (listening to speech)

The unit is continuously in the Receive mode when the unit is turned ON and not transmitting. When a signal is received on the current channel, "**RX**" icon will be displayed on the LCD screen.

3.4.4 Transmitting (sending speech)

a. Press and hold the **PTT** (push to talk) button to transmit your voice. "**TX**" icon will be displayed on the LCD screen.

b. Hold the unit with the MIC (Microphone) about 5 cm away from the mouth. While pressing the **PTT** button, speak into the **MIC** (microphone) in a normal tone of voice.
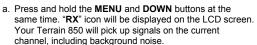
c. Release the **PTT** button when you want to finish transmitting.

3.4.5 Monitor

You can use the Monitor feature to check for weak signals on the current channel.

a. Press and hold the **MENU** and **DOWN** buttons at the same time. "**RX**" icon will be displayed on the LCD screen. Your Terrain 850 will pick up signals on the current channel, including background noise.

b. Press the **MENU** button to stop the channel monitoring.

3.5 Setting the VOX (Voice Activated) Sensitivity

In VOX mode, the Terrain 850 will transmit a signal only when it is activated by your voice or other sounds around you. The unit will transmit for a further 2 seconds after you stop talking.

The level of VOX sensitivity is shown by a number on the LCD screen. At the highest level, the units will pickup softer noise (including background noise); at the lowest level, it will pick up only quite loud noise.

a. Press the **MENU** button 4 times, "**VOX**" icon will be displayed and "**OF**" flashes on the LCD Screen.

b. Press the **UP** button to set the VOX sensitivity up to the maximum level (the maximum level is "3".)
To deactivate the VOX function, press the **DOWN** button until "**OF**" appears on the LCD screen.

c. Press the **PTT** button to confirm your setting. "**VOX**" will appear steady on the LCD screen when the VOX feature is activated.

VOX operation is not recommended if the Terrain 850 will be used in a noisy or windy environment.

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3.6 Activating the auto Channel Scan

Channel scan searches for active signals in an endless loop for all 8 channels, 38 CTCSS codes and 83 DCS codes.

a. Press the **MENU** button 5 times, and the "**SC**" icon will flash on the LCD screen.

b. Press the **UP** or **DOWN** button to begin scanning channels, and when an active signal is detected, the channel scan pauses on the active channel.

c. Press the **MENU** button six times, and the "**CTCSS**" icon flashes on the LCD screen. Press the **UP** or **DOWN** button to begin scanning the CTCSS from 1-38.

d. Press the **MENU** button seven times, and the "**DCS**" icon flashes on the LCD screen. Press the **UP** or **DOWN** button to begin scanning DCS codes 1-83.

e. Press the **PTT** button to stop the Channel Scanning.

3.7 Call-Ring tone

You can send a Call-ring tone to other PMR users to give an alert that you want to communicate with them.
Press the CALL button
You will hear a ring tone for about two seconds; "**TX**" icon appears on the LCD screen. Any other units within the transmitting range and tuned to the same channel and sub-channel (if applicable) will hear the Call-ring tone.

3.8 Selecting a Call- Ring tone

The Terrain 850 is equipped with 15 different types of Call-Ring tones.

a. Press the **MENU** button 8 times, and **CA** will display with the current Call-Ring Tone number flashing on the LCD screen.

b. Press the **UP** or **DOWN** button to select the desired Call-ring tone, with each playing as it is selected.

c. Press the **PTT** button to confirm your setting.

3.9 Setting the Roger Beep

The Roger Beep is a tone which is automatically transmitted whenever the **PTT** button is released. This alerts the receiving party that you have intentionally ended the transmission, and you are now in receive mode.

a. Press the **MENU** button 9 times, and **r0** will be displayed with **OF** or **ON** blinking on the LCD screen.

b. Press the **UP** or **DOWN** button to select the Roger beep On/Off.

c. Press the **PTT** button to confirm your setting.

3.10 Setting the Key Tone ON or OFF

This feature allows the Terrain 850 to emit a confirmation tone after pressing each button.

a. Press the **MENU** button 10 times, and **t0** will be displayed with **OF** or **ON** blinking on the LCD screen.

b. Press the **UP** or **DOWN** button to select the Key tone On/Off.

c. Press the **PTT** button to confirm your setting.

3.11 Setting the Dual Channel Mode (DCM)

Your Terrain 850 is capable of monitoring two channels, the current and another (dual watch) channel. If the unit detects a signal on either channel, it will stop and receive the signal.

a. Press the **MENU** button 11 times, and the "**DCM**" icon and "**OF**" flash on the LCD screen.

b. Press the **UP** or **DOWN** button to select the Dual Watch channel (1-8, except the current channel).

c. If a channel is selected, press the **MENU** button to give the option to select the CTCSS code.

d. Press the **UP** or **DOWN** button to select the desired CTCSS code (1-38).

e. After selecting the CTCSS, press the **MENU** button to give the option to select the DCS code (01-83) using the **UP** or **DOWN** buttons.

f. Press the **PTT** button to confirm your setting.

3.12 Setting the Room monitor

Your Terrain 850 is capable of monitoring what's happening in a room. This could be used for baby room monitoring, and operates using a VOX function.

WARNING: The monitor will transmit any detected sound over the selected channel, which could be heard by any other PMR user on the same channel.

WARNING: When the Room Monitor mode is set, the Terrain 850 will not receive sound or calls, and the PTT button does not function.

a. Press the **MENU** button 12 times, and the "**RM**" icon and "**OF**" flash on the LCD screen.

b. Press the **UP** or **DOWN** button to select the Room monitor to on (**ON**) or off (**OF**).
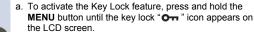
c. Press the **PTT** button to confirm your setting.

4. Auxiliary Features

4.1 Key Lock

The Key Lock feature allows the user to disable the **UP**, **DOWN** and **MENU** buttons so that the Terrain 850 settings could not be changed accidentally.

a. To activate the Key Lock feature, press and hold the **MENU** button until the key lock "🔒" icon appears on the LCD screen.

b. To deactivate the key Lock feature, press and hold the **MENU** button until the key lock "🔒" icon disappears from the LCD screen.

NOTE: The **PTT**, **CALL** and **POWER** buttons will remain functional even if the Key Lock feature is activated.

4.2 LCD Screen Back Light

Every time a button is pressed (except PTT and CALL button), the LCD screen back light will illuminate for about 10 seconds.

4.3 Microphone/Earphone/Charge Jack

The Terrain 850 is equipped with sockets for a microphone/earphone (2.5mm) and for charging (micro-USB), located under a rubber cover on the upper right side of the unit.

4.4 FM Radio function

While in standby mode, press and release the power button. The FM Frequency will display in the LCD screen. Press the **UP** or **DOWN** button to adjust the FM frequency channel. You can still transmit (**TX**) and receive (**RX**) calls on your current channel, with the FM radio being interrupted during calls. Press and release the Power button to go back to PMR frequency mode.

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5. Specifications

Channels Available	968 Combinations Channels
Main Channels	8 Channels
CTCSS Sub-channels	38 for each Channel
Digital Code channels	83 for each Channel
Output Power (TX)	0.5 W
Range	Up to 8 Kms.

NOTE:

There are 38 CTCSS sub codes and 83 DCS codes available.
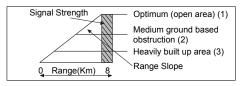Therefore,you can have:

1. Combination of 8 mains channel and 38 CTCSS sub codes – 304 combinations.
2. Combination of 8 mains channel and 83 DCS sub codes – 664 combinations.

Channel Frequency Table

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	446.00625	5	446.05625
2	446.01875	6	446.06875
3	446.03125	7	446.08125
4	446.04375	8	446.09375

Effective Range

The Transmission range of the product is dependent on the environment
terrain where it is being used, the following diagram attempts to guide the user
on the sort of performance to expect for everyday use.

Range Check

The Transmission range will be affected as shown in the above diagram.
The transmitting range typical values for different environment conditions
will be (1) 8 km (2) 4 km (3) 2 km. It should be remembered that these
are only guide values as actual achieved distances will be dependent on
the environment and terrain.

6. Safety

⚠ CAUTION
Damaged Antenna

Do not use any Terrain 850 that has a damaged antenna. If a damaged antenna comes in contact with the skin, a minor burn may result.

Batteries

All batteries can cause property damage and/or bodily injury such as burns if conductive material such as jewelery, keys, or beaded chains touch the exposed terminals. The material may complete an electrical circuit (short circuit) and become quite hot. Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or other container with metal objects.

⚠ WARNING
For Vehicles with an Air Bag

Do not place your Terrain 850 in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If a Terrain 850 is placed in the air bag deployment area and the air bag inflates, the Terrain 850 may be propelled with great force and cause serious injury to the occupants of the vehicle.

Potentially Explosive Atmospheres

Turn your Terrain 850 OFF when in any area with a potentially explosive atmosphere, unless it is a type especially qualified for such use (for example, Factory Mutual Approved). Sparks in such areas could cause an explosion or fire resulting in injury or even death.

Batteries

Do not replace or charge batteries in a potentially explosive atmosphere. Contact sparking may occur while installing or removing batteries and cause an explosion.

Blasting Caps and Areas

To avoid possible interference with blasting operations, turn your Terrain 850 OFF near electrical blasting caps or in a "blasting area" or in areas posted: "Turn off the two way radio." Obey all signs and instructions.

NOTE: *Areas with potentially explosive atmospheres are often, but not always clearly marked. They include fueling areas such as below deck on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.*

7. Cleaning and Care
To clean your Terrain 850, use a soft cloth dampened with water. Do not use cleaners or solvent, which may cause damage that may not be covered by guarantee.

8. Guarantee

The Binatone Terrain 850 is fully guaranteed for 12 months from the date of purchase shown on your sales receipt. The guarantee does not cover damage by misuse or negligence, or by excessive voltage.

Please keep your sales (till) receipt - this is your guarantee. You should also keep the original packaging materials.

When unpacking your Binatone Terrain 850, check for visible damage. If you see any damage, do not use the PMR - return the whole unit to where you bought it.

If your Binatone Terrain 850 develops a fault, refer to the "Troubleshooting Guide." section of this manual. If you can't solve the problem, return the whole unit as follows;

While the unit is under guarantee

1. Pack up all the parts of your Terrain 850, using the original packaging. Remember to include the mains adaptor.
2. Return the unit to the store where you bought it, and make sure you take your sales receipt as your proof of purchase.
3. In the unlikely event that you need to return your Terrain 850 to our Repair Centre while it is under Guarantee, please include the sales receipt. There may be a handling charge for the repair of your unit under Guarantee.

Repair after the Guarantee has expired

1. If the unit is no longer covered by the Guarantee, first follow step 1 as for repair under Guarantee, Then...
2. Call our service Department on 0844 557 9677 and ask for a quotation of the repair charge, and details of where to send your Terrain 850 for repair.
3. Return your Terrain 850 to the address given by the Service Department, making sure to include your name and address, and a cheque or postal order for the value of the repair charge.

This does not affect your statutory rights.

Binatone Telecom plc operates a policy of continuous product improvement, and so reserves the right to make changes to the product and functions without prior notice.

9. Troubleshooting Guide

Symptom	Solution
No power.	• Check if the batteries are installed properly. • The battery may be weak. • Recharge the batteries or replace the old batteries with new ones.
Reception is weak.	• Press the **UP** button to increase the receiver volume level. • The receiving signal may be weak and/or out of range. • If this happens, press the **MENU** and **DOWN** buttons at the same time to activate the Monitor function.
Cannot change CTCSS sub-channels.	• Key lock mode must be deactivated if the Key lock icon (⊶) is displayed on the LCD Screen. • To change CTCSS sub-channels, press the **MENU** button twice, the CTCSS sub-channel number flashes on the LCD Screen. Press the **UP** or **DOWN** button to change the CTCSS sub-channel. • Batteries may be weak - recharge/replace the batteries.
Range is limited.	• Batteries may be weak. • Recharge the batteries or replace the old batteries with new ones if the charge level indicator gets low. • See the "Effective Range" diagram. The maximum range will vary depending on terrain and environment. • Open fields provide the maximum range, while steel/concrete structures, heavy foliage, and use in buildings and in vehicles may limit the range significantly. • Wearing the radio close to the body, such as in a pocket or on a belt, will decrease range; change the location of the radio.
Sound distortion problems.	• If you are transmitting, speak in a normal tone of voice, 5 cm away from the **MIC** (microphone). • If you are receiving, lower the volume to a comfortable level. • Radios too close. Radios must be at least 2 metres apart; increase your distance. • Radios too far apart. Obstacles interfere with transmission. Talk range is up to 8 Kms. in clear unobstructed conditions.
No communication	• Check the Channel and the CTCSS or DCS code setting. Both the Transmitting and Receiving PMR units should be tuned to the same Channel and CTCSS or DCS code (if applicable).

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Binatone

EC Declaration of Conformity

We the manufacturer / Importer **:**   Binatone Telecom Plc
                                        1 Apsley Way London
                                        NW2 7HF, United Kingdom.

Declare under our sole responsibility that the following product

Type of equipment: Private Mobile Radio
Model Name: Terrain 850 Twin
Country of Origin: China
Brand: Binatone

complies with the essential protection requirements of R&TTE Directive 1999/5/EC on the approximation of the laws of the Member States relating to *Radio Spectrum Matters*, the EMC Directive (2014/30/EU) on the approximation of the laws of the Member States relating to *electromagnetic compatibility (EMC)* and Radio Equipment & Telecommunications Terminal Equipment Directive (1999/5/EC) - R&TTE, Article 3.1(a)
2014/35/EU relating to *Electrical Safety.*

RF Portion: EN 300 296-2 V1.4.1:2013

EMC: EN 301 489-5 V1.3.1:2002
                            EN 301 489-1 V1.9.2:2011
SAR Portion: EN 50566: 2013

Electrical Safety: EN 60950-1:2006/A2:2013

ErP Portion: EC 1275/2008

We hereby declare that [all essential radio test suites have been carried out and that] the above named product is in conformity to all the essential requirements of Directive 1999/5/EC.
The product is labelled with the European Approval Marking CE as show. Any Unauthorized modification of the product voids this Declaration.

Manufacturer / Importer
(signature of authorized person)

Waste electrical products must not be disposed of with household waste. This equipment should be taken to your local recycling centre for safe treatment.

Signature: (K.H.Mueller, CT0)

CE

London,

Signature: Place & Date: 29-Sep, 2016