

# WF-101 III

## Groundwater detector



User guide for WF 101 III, the latest device for detecting underground Water.

**SHOP DETECTORS**

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## SAFTY INFORMATION



The operating in high voltage areas would limit the results and performance



It's better to turn off mobile while using the device.



Don't operate two devices with same method of search at the same place



Don't store in high temperature or high humidity



Disconnect the batteries before long time storage



The operator Must remove any metals that might affect the opeartin eg: Rings, watch, belt....



Any attempt to tamper the device or unapproved maintenance would void the warranty



For best power endurance and reliability. use heavy duty and high quality batteries thats for the devices which work on removable batteries



- ❖ The user must practice before starting the detecting operations and discoveries
- ❖ Store in Cool and dry place 15-40 C 5%-75% humidity



Read & Understand  
The User's manual  
before using this device

Search System :	Multisystem: 1.Long Range Locating System 2.Geophysical Search System
Search Principle:	1. Processing digital frequency signals to receive the energy of the targets' electrostatic fields . 2. Sensing the energy of the magnetic and ionic fields of the targets. 3. Survey the earth's layers and identify resistance electrical levels of the earth, and processing the values and analyzing them to reveal the targets.
Operating Processor:	MICROCONTLLER PIC18 & ARM 7
Operating Frequency:	1.From 1 KHz To 30 KHz 2.Special frequencies for measurement and verification 3.Measurement of electrical resistance Ohm
Power:	Two cells of Li-ion 3.7 volts ,2000 mA
Power Consumption:	Maximum of consumption 200 mA
Battery Life:	6 work hours
Charger:	5,1 volt 2,1 Amp/2 hours charging
Display Type:	TFT Color Monitor 3.2 " , 65.536 Color, 48Mhz , CDMA GPU
Specialized to detects:	Natural water - Salty water - Mineral water - All types of water .
Targets Discrimination:	Yes
Target Selection system:	Yes, can choose the target type before start search from the list of targets.

## TECHNICAL SPECIFICATIONS

DEPTH SEARCH::	800M, With the ability to control the level of search depth through the depth control interface.
DISTANCE SEARCH:	2500 M, With the ability to control the levels of the search distance through the distance control interface.
RESULTS FEEDBACK:	Through orientation toward target location accompanied by sound + graphical and vibration alerts..
BLUETOOTH:	Yes
WIRELESS:	Yes
AUTOMATIC SMART GUIDANCE SYSTEM:	Yes, by graphical interface to locate the path and direction of the target, and Acoustic commands
VOICE ALERTS:	Yes
VIBRATING ALERT:	Yes
OPERATING TEMPERATURE:	From -15° C to 60° C
STORAGE TEMPERATURE:	From -15° C to 40° C
HUMIDITY:	It can be stored and work in the degree rate of air humidity at level 90%
WEIGHT:	Compound: 1 kg - disjointed in the bag: 3 kg
DIMENSIONS:	18.9x10.4x5.8 cm
BAG DIMENSIONS:	18.9x10.4x5.8 cm



### The Main Control Unit

The main control unit of the device, through which the search criteria and settings for the device are determined, and it is communicated with the attached search units via wireless connection.



### USB Charger

An electric charger to recharge the device's battery

Values: Input: 100 - 240V AC / 50 - 60Hz / 0.5A

Output: 5V Continuous / 2A / 10W.

Designed with a MICRO USB charging port to match the universal charger system, making it easy to use any charger available.



### Geophysical Unit

This unit works to measure the intensity of the electrical resistance of the soil and the underground materials and determine its identity, and its mission is to detect and prospect for gold, minerals and underground voids with the characteristic of accurate discrimination between targets. This unit works through two scanning sensors only, which allows the system to work with ease and comfort.



### Probes and Wires

Made of the best types of stainless steel, a strong conductor of energy and stainless, it is inserted into the soil and connected by power wires to deliver the measurement waves sent from the device to the soil, to complete the measurement process in the search area, between the two probes..



### Transceiver antennas

Two radio transmitting antennas. And two radio antennas to receive the waves back from the target as a result of the transmitted waves.



### Ground Reinforcement Unit

Equipped with a built-in transmitter that works on two systems, a signal filtering system to confirm the location of the target, and a system equipped with ground waves with a system for accurate transmission and enhancement of the signal, this transmitter works with a bluetooth system to communicate with the main unit through a special control interface to operate and close these systems through the system interface



### Sound Unit

This unit works to receive the sound alert system from the main unit wirelessly and connects it to the headphone to enjoy the feature of the voice alert through the headphone. So we can use it in both long range and hybrid search systems. We can control the volume or even mute the volume through the volume control switch located at the top of the unit.



### Headphone

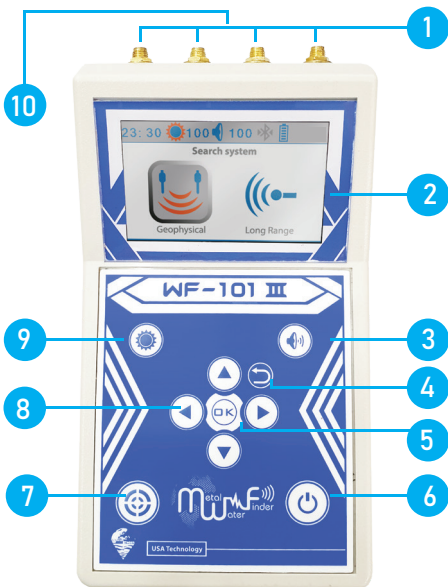
Connect via the headphone jack located on the top of the audio unit to hear audio alerts wirelessly..



### Grip

It is installed on the back of the main unit and is carried through it as it allows a 360-degree circular movement, freely and smoothly

## FRONT INTERFACE



**1** Sockets for connecting the transmitter and receiver antennas

**2** Display screen

**3** Volume control key

**4** Back key

**5** Enter key

**6** Power and lock switch

**7** The key to tracking and focusing on goals

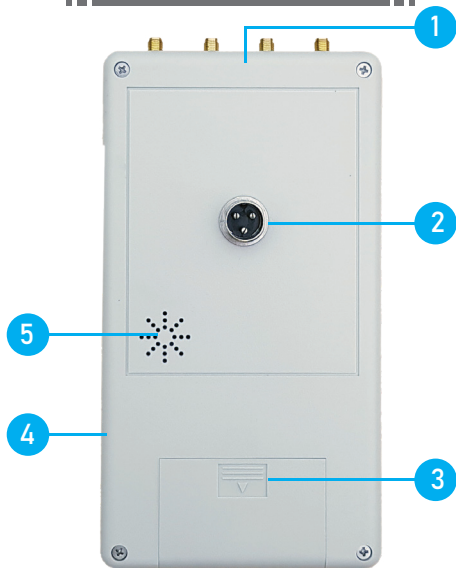
**8** The keys move up, down, right, and left

**9** Screen brightness control switch

**10** Hybrid sensor connection socket




## BACKGROUND



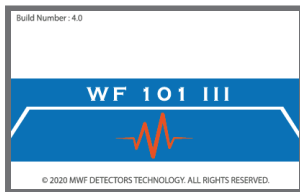
- 1 Laser indicator light
- 2 Installation of hand grip socket
- 3 The battery compartment

- 4 Charging socket
- 5 Audio output

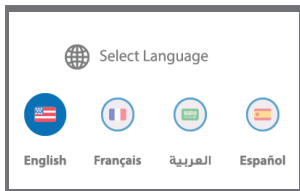
- ❖ Turn on the device by pressing and holding (  ) on the front of the device for three seconds.



- ❖ The device will show the loading screen and then go to the main menu of search systems.

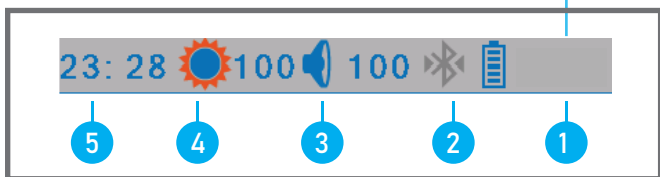
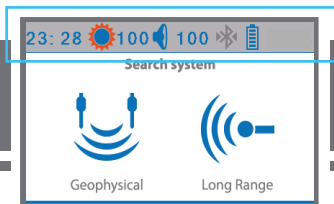


- ❖ **Note :** When the device is turned on for the first time, the device will display a screen that enables you to choose the system language



### ❖ Explanation of the information bar at the top of the screen of the main unit of the device

The information bar facilitates and helps to quickly read the device settings and know its status from the battery level and brightness of the screen and know the time during the search process.



- |   |                                  |
|---|----------------------------------|
| <b>1</b> Battery charge level                                 | <b>4</b> Screen brightness level |
| <b>2</b> Bluetooth system status icon<br>(activated / locked) | <b>5</b> Clock /Timing indicator |
| <b>3</b> Volume level   |                                  |

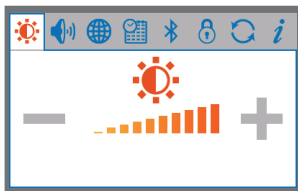
- ❖ Use the buttons (▲) (▶) (▼) (◀) to move between the menu options on the screen, then press the button (OK) to confirm the selection and to return to any position, press the button (⏪)

### ❖ Settings menu

To enter the settings menu, press the button (▲) from the main menu to move between the settings menu windows, and then press (OK) to enter the selected settings window, and you will find there are several options for tuning.

To exit the selected settings window, press the button (▲) to move again between the configuration windows.

To control the brightness of the screen, go to the brightness adjustment window, then press the (OK) button, then change the brightness level from 10% to 100%.

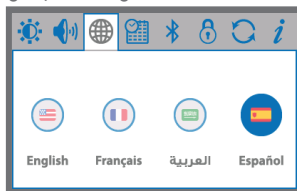


## ❖ Settings menu

- To set the values of the sound alerts, scroll down and press the (OK) button, then control the volume by going to the subwoofer icon, or you can hide the sound completely. You can activate or cancel the vibration option and play the sound of clicking the keys of the main unit, in addition to activating and deactivating the headphones option.



- To change the system language, go to the language setting window, then press the (OK) button, then select the desired language and confirm. WF 101 III is multi-lingual, including Arabic.

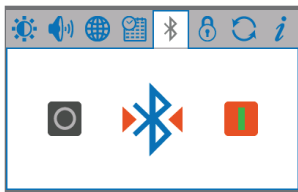


- To set the hour value, go to the clock setting window, then press the (OK) button then set the time and confirm. The timekeeping watch facilitates clear viewing and viewing of time.

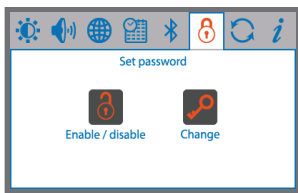


## ❖ Settings menu

- To set the bluetooth system, go to the bluetooth settings window, then press the button (OK), then we turn on or off bluetooth through (◀ ▶).

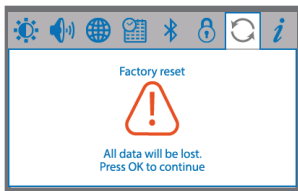


- To set the password, go to the password setting window and then press the button (OK). You can activate or deactivate the password by going to the (disable / Enable) icons and pressing the (OK) button, and then enter the preset password. You can also change the password by choosing the (Change) Then enter the old password and then enter the new password, bearing in mind that the password must consist of four digits of numbers.



**Note:** In the absence of a preset password from the user, the default password from the factory is four zeros (0000)

To reset the factory, go to the factory reset window, then press the button (🔄)  
The confirmation window appears. Select to confirm.



## ❖ Settings menu

- Verify device-product information (downloaded software version-device model-manufacturer information-build number-serial number of device -QRCODE image that enables you to go directly to the MWF website using the camera of any mobile “smart phone” device).

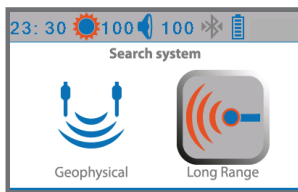


❖ Press the button (🏠) to exit the settings menu and return to the main menu

### ❖ Start Search

- To start the search process, select the desired search system icon from the main menu to enter the search systems.

The available search systems will appear on the screen, which are: the long-range detection system, the hybrid search system, or the geophysical detection system. We will explain in detail the entry of the section (Starting work) about the interfaces of each of the systems attached to the device.





# LONG RANGE LOCATOR (LRL)

## System features

- Many new technologies added to our long-range locator system, exclusive technology is unprecedented, this system works to detect and locate targets from far distance it directs the user and his leadership to the target location directly  
Embedded system for sensing and detection, where the device can detect the target through heading towards target and is accompanied by acoustic alarm indicator towards the target accurately.
- Automatic smart guidance system, to locate the path and direction of the target, through a special graphics interface, where this system gives the user automatically identify and vision about the direction and location of the target  
Smart control interface to adjust the levels, search capabilities, and the type of target you want to search for, too.
- Targets List, composed of all kind of water you can choose any target from this list to search for it separately, and targets is: All types of water- Natural water-Mineral water - Salt water  
Interface of accurate setting for search parameters, Multilevel to pre-control levels of depth and distance of the search.  
Depth up to 800 meters with a control property in the signal level of the searching depths, through depths options list, and starting from up to the selected depth: 50m – 100m – 200m – 300m – 400m – 500m – 600m – 700m – 800m.
- Distance search up to 2500m, with a control property in the level of front broadcast wave, through distance options list and starting from 100m up to the selected distance: 100m – 250m – 500m – 750m – 1000m – 1250m – 1500m – 2000m – 2500m
- The guided laser function is can be switched on or off from the system interface  
Equipped with built-broadcast device works on two systems, signal filter system to confirm target site, and ground transmitter system to strengthen of the signal.

## The parts for Long Range System (LRL)



1



2



3

- 1 Main Unit
- 2 Transceiver Antennas
- 3 Carrying handle




1 Connect the antennas to the designated place on the front of the unit .

2 Place the handle at the bottom of the unit .

**Note:**

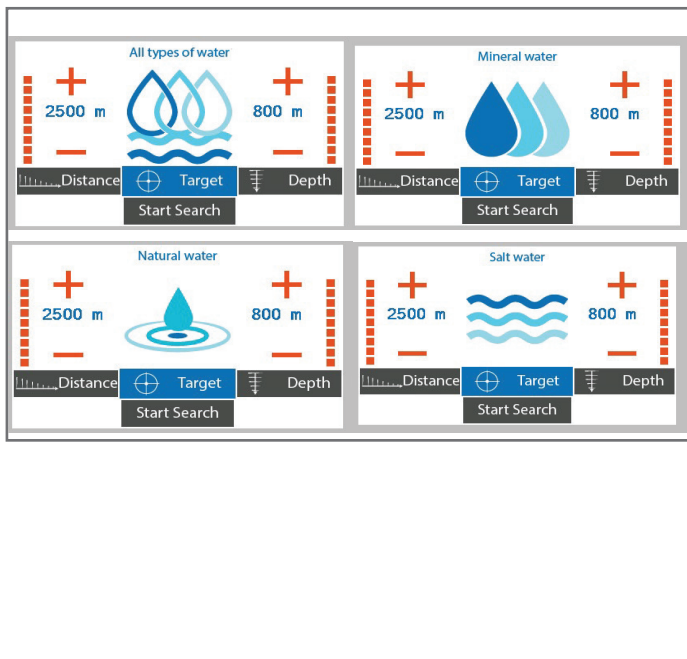
Do not forget to remove the batteries from the unit before storage to ensure they are working properly .

## ❖ Start Searching

- Select Long Range Locator system by choosing LRL icon then press  button .



After entering the long-range Locator system, the options for determining distance - target - and depth will appear on the screen

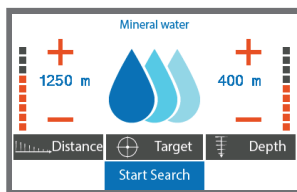
We start by specifying either by searching for all types of water or specifying the type of water to be searched for: natural water - mineral water - salt water .




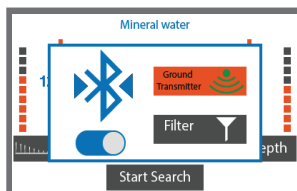
## ❖ Start Searching

## Long Range Locator interface

- To move between Target, Distance and Depth use these buttons 
- To select the target and the search parameters use these buttons 



- After selecting the search options, go to the search option to start searching then press the button  Where we have an interface to choose between ground transmitter and filter.



## ❖ Note

Make sure that the bluetooth system is activated from the bluetooth configuration option or you can activate it directly when you enter the start search window


### ❖ Start Searching

- Before selecting the ground transmitter or filter .
- Turn on the soil support unit .
- Initially we equip the ground support unit with the appropriate battery(1 \* 9 V)
- Then we press the (ON / OFF) button to turn on the unit and then wait for some time for the soil support unit to connect to the bluetooth system, as we notice the disappearance of the blue light for the bluetooth symbol in the soil support unit and its blinking slowly, and the two arrows surrounding the bluetooth symbol in the main unit are also activated (❖) In both the working system interface in the soil support unit and the status bar of the main unit, the link between the unit is thus made

Then we screw the ground support unit well into the ground after making sure that it is turned on and connected to the main unit via bluetooth.



Then we move to the main unit and choose the ground transmitter

Note: We can also select the TRANSMITTER option by pressing  button from the soil support unit.

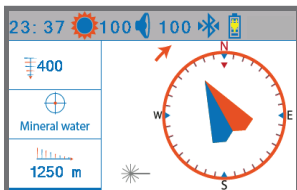
## ❖ Start Searching

- The ground transmitter system offers a ground wave search system supported by the fine-tuned transmission and enhancement system, and by the automatic tuning system ATS.
- The automatic tuning system (ATS) is a special and new invention registered for the MWF group, this system provides accurate and sure results in all types of soils and terrain, as this system automatically identifies the soil and gives the search automatic tuning commensurate with the type of soil and its properties, while eliminating any radioactive interference Resulting from the effects of rocky and mountainous lands, which may affect many devices, but this system and its intelligence can sort, analyze and provide the necessary levels of the frequency signal, the voltage and the wavelength of the signal, which gives results free from any errors.

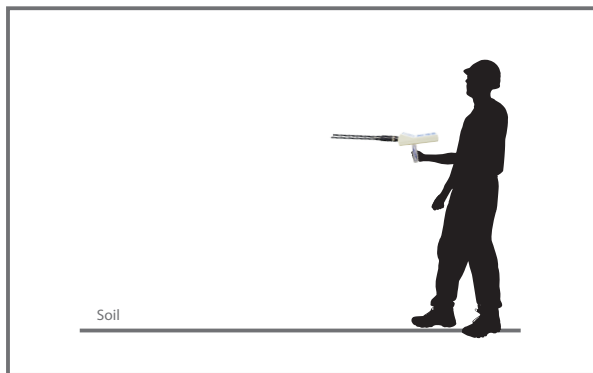


## ❖ Start Searching

In the next step, the system search window appears, which shows the target direction compass and the search criteria from a distance and depth, as well as the laser light icon, which helps to easily identify the target point and the drilling point accurately in various circumstances day and night



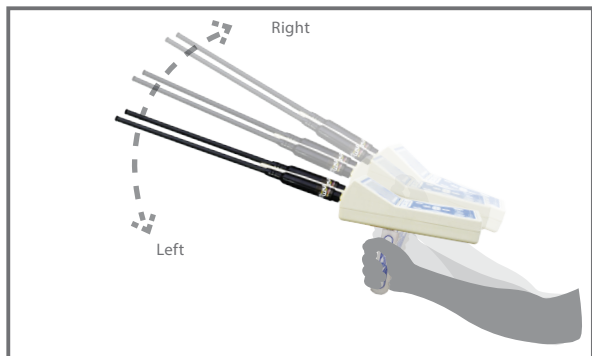
- ❖ The user must carry the device through the carrying handle horizontal with the ground and slightly tilted towards the soil, as shown in the drawing





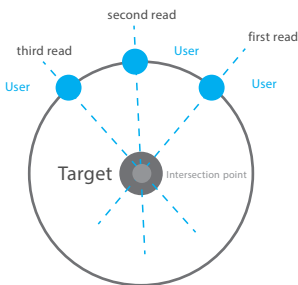
## ❖ Start Searching

- ❖ First, we infuse the waves and fields coming out of the device, where we move the device by hand to the right, then left slowly, and then the hand that holds the device is steady .



### ❖ Start Searching

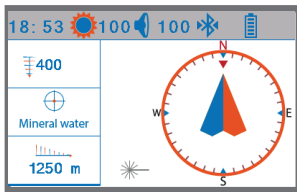
If the target is found, the device will receive a read and signal by automatically changing the device from the normal path to which the target was located. This direction is the direction of the target's location, and then the device is installed in the same direction. Scan the target location and install it by pressing again on the (Move) key to note that the device starts to sound an alarm towards the target location, then we completely circumvent the direction to which the device is directed to, to the opposite parking point to notice the change of the device again and direction To the target location and trigger the alarm Constantly, then we move away from the first reading point to stand in another location away from the first point (10 meters) sideways, and we do the process of stimulation of the waves of the device again and install the device and wait for reading, in case the target is sure will go again to the same site and be We have confirmed the existence of the target, and it is possible to do this method more than once in order to make sure the direction of the target is correct, by taking more than one reading from the device from different points, and if we notice theoretically that all the readings that we made.



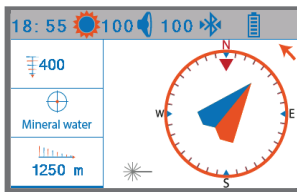
❖ It is preferable to walk in a winding path while searching for the target and changing direction of travel every five meters.

## Start Searching

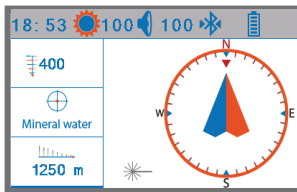
After confirming the target path, we press the button ( ) to ensure accurate tracking of the target path and avoid the trouble of drilling at the wrong point



Indication of left deviation in the direction of the specified target path with the change of the alert



Indication of right deviation in the direction of the specified target path with the change of the alert

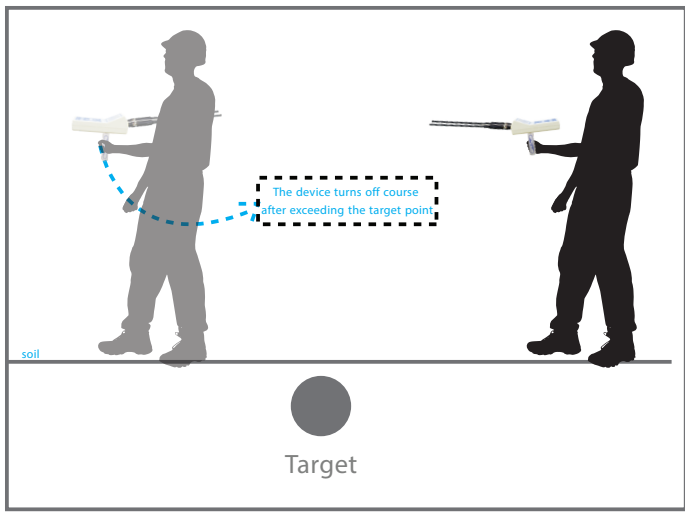


Indication that you are on the right track for the specified target with an alert

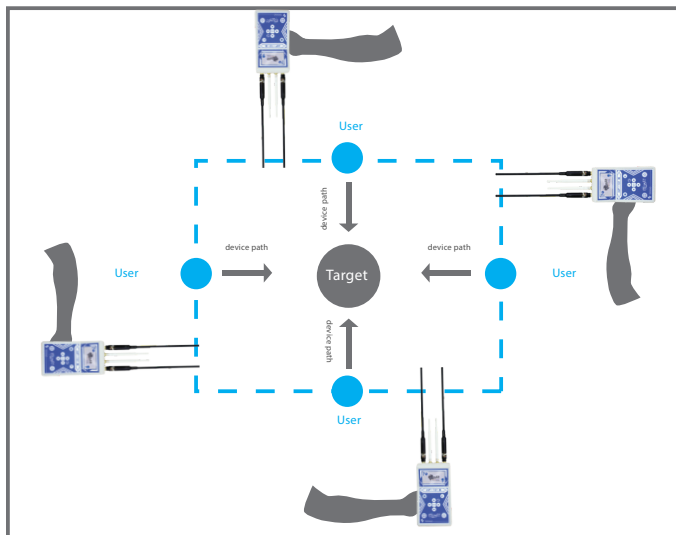
## ❖ Start Searching

## How to locate the target

- ❖ After confirming more than one reading of the direction of the presence of target we press the move button to install the target path and we walk in the same direction and normal to carry the device. Note during which the device issued alerts to indicate that walking is in the right track towards the indicator. It is an arrow indicating the direction of the convolution to return to the right path, until we reach the point where we bypass the water site and we will notice that the device has automatically changed direction from its natural path to turn back to the location and the point of the target, here we also rotate with the device to the location of the target. Hey and we walk slowly and when we are directly above the target site we will notice the device will start to turn left and right and this indicates that we have identified the point of target.

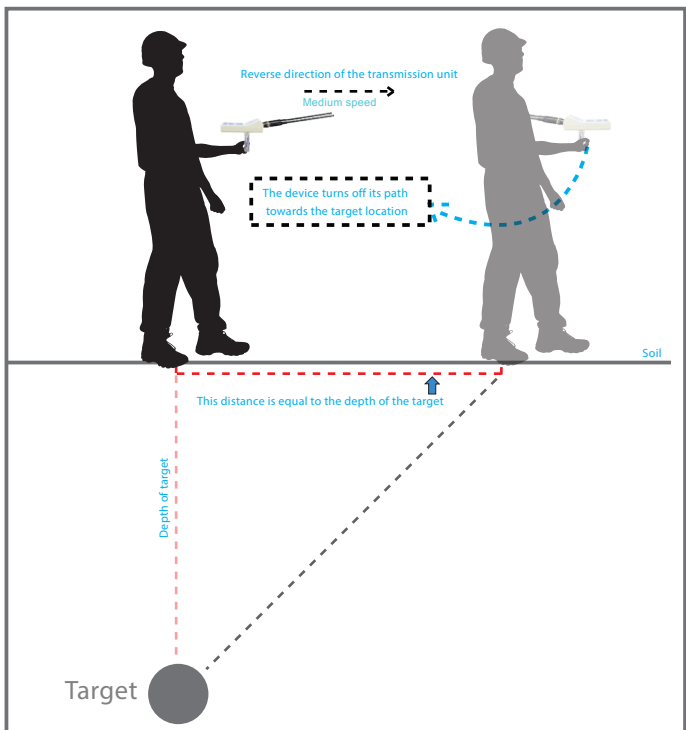


- ❖ There is another way for us to more accurately determine where the target is located. We are the process of squaring the target site by taking four readings of the target, point from four angles. Square three meters from the target site, we will notice the intersection point of the four readings. Theoretically it will be the midpoint of the target.



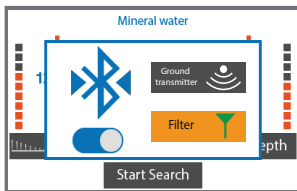
The user can know the approximate depth of the target by returning to the main menu and setting the search settings again and change the depth level through the depth list, ie for 5 meters we reduce the level of depth to 3 example if the depth that was first selected meters and 20 meters and we enter the information, and away About the target location hold the device and wait for reading the target location, if there is a reading of the target meters, and we do this process to reduce 3 site here know that the depth may be between the level of depth until we know the approximate depth of the target

## How to detect the target depth

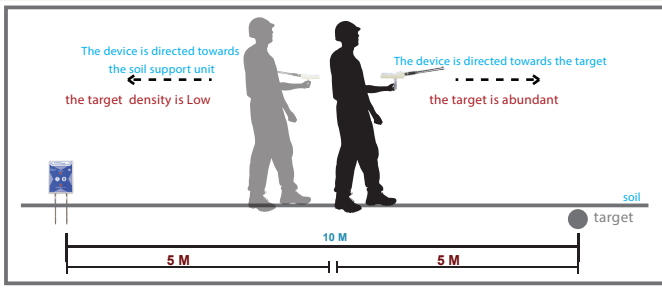


## ❖ Start Searching

- ❖ Now to make sure Whether the water source is abundant by using the Filter system we have to repeat the searching process by choosing the Filter



Then we implant the soil support unit in the ground well, about **10 meters** from the target and stand in the middle between the soil support unit and the target holding the device, waiting for the reading. If the device is directed towards the target, this indicates that the target is abundant, but if the device is directed towards the soil support unit, this means that the target density is Low.



- Signal filtering system to confirm target location and abundance of water, and the system equipped with ground waves with the system for accurate transmission and enhancement of the signal, this transmitter works with a bluetooth system to communicate with the main unit through a special control interface to operate and close these systems through the system interface
- It provides a signal filtering system, to avoid any interference caused by any radio or frequency waves present in the air.





# Geophysical Search System

## System advantages

- This system works on measuring the intensity of the soil electrical resistance and to identify substances found underground and identification, and its mission to detect and exploration for underground water with a property of accurate discrimination between all types of water.
  - Special display interface of this system gives the user an integrated information about the search process and search steps are automatically.
  - This system scans and detect the soil automatically and shows complete results about the discovered targets directly on the screen
  - Feature of automatic help messages, which appear on the screen for the user to alerting on a particular command or guidance to execute a specific command.
  - The system works by two electro-rod scanning only, allowing to work in this system with ease and comfortable.
  - Property of determine the target depth and accurately, through a special system to identify and measure the depth of discovered target.
- Advanced Search and identification techniques, working on functions smart detection, which works on the smart systems of detection and analysis for the target location.
- Multiplier check scanning system and at the immediate time for the location, which gives the user, gives credible and proven results
  - Accurate discrimination between the target's types, and to clarify the target, type, size and name in the screen directly.
  - Smart verification system of connecting the electrodes in the soil and by wire or non-connected and clarified it on the screen through the alerts messages.

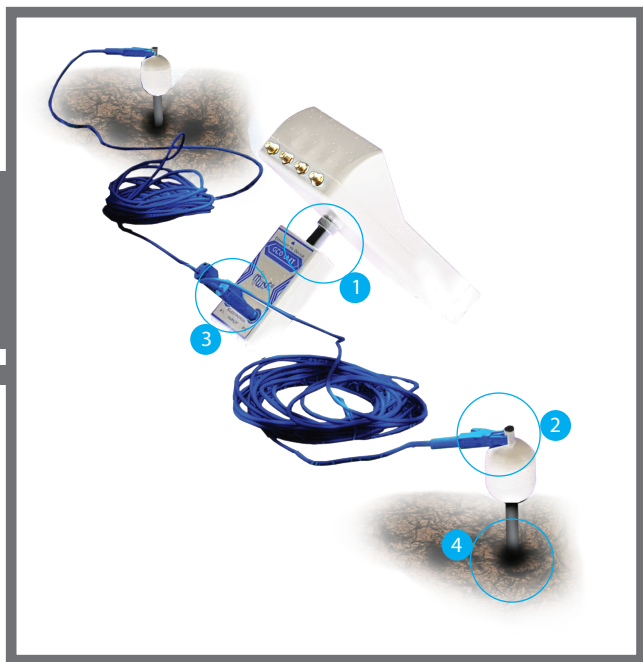
## Components of a geophysical search system



- 1 The Main Unit
- 2 Geophysical Unit

- 3 Ground Probes
- 4 Connection Wires

## Installation of the geophysical search system



- 1 Connect the geophysical unit with the main unit
- 2 Connect the wires to the probes
- 3 Connect the wires to the geophysical unit
- 4 Dip the probes well into the soil

One of the great advantages of the geophysical system in the WF 101 III is that it works with only two scanning sensors, which allows for easy, comfortable and fast work.

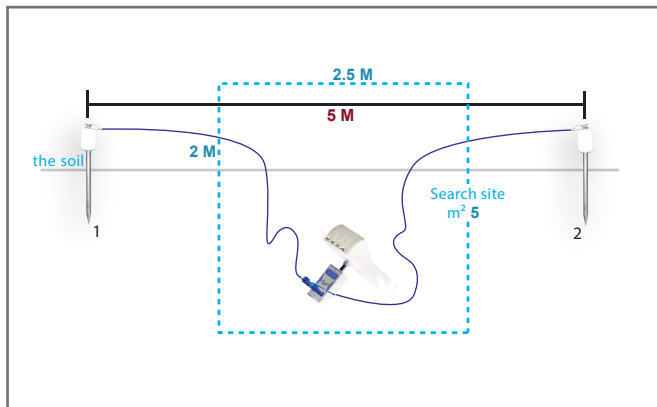
**Note:** Make sure that the wires are connected well, noting that when it is not connected well and the probes are connected to the geophysical unit when starting the search, the developed geophysical system provides you with a smart system for verifying the conductivity of the electrodes in the soil and the wires or not connecting them and explaining this on the screen through warning messages.

**We provide a quick set of tips to ensure the best results and avoid mistakes.**

### Quik Tips

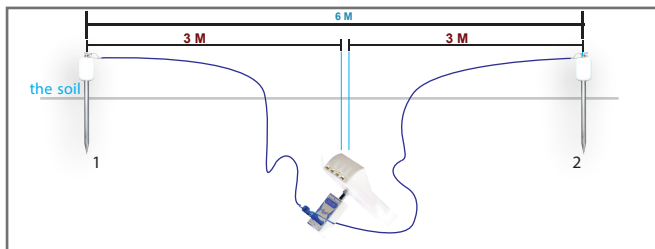
#### 1- Place the electrodes on the largest possible area:

This means that if the site to be searched is an area of  $5 \text{ m}^2$ , the poles must be placed on an area exceeding 5 square meters as shown in the drawing



**2- Ensure that the distance between the electrodes is equal:**

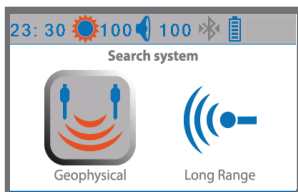
This means that if the distance is, for example, 6 meters, the distance between the first pole and the second pole must be equal to 3 m / 3 m



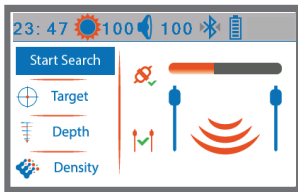
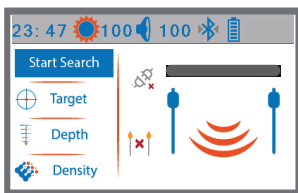
**Important note:** If the error signal persists for the non-wiring mode, this means that there is something wrong with the wires and it must be checked and the connections between the connecting tweezers, the wires and the probe are well also and if verified and this note continues, This means that the conductivity of the soil is very weak and the sensor site needs to be moistened with water more, and sometimes you may have to drill 10 to 15 cm at the site of the sensor site to obtain conductivity with the soil.

### ❖ Start Search

After completing the instructions and connecting the electrodes, we choose the geophysical search system from the main interface of the search systems



Then the main search interface of the system appears, which contains the option to start searching and the search progress indicator. And a graphic showing the status of the probes connection, where an error signal appears in the event that the correct connection is not attached to the sound alert. Or a correct signal indicates that the connection condition is sound and we can start searching



### ❖ Start Search

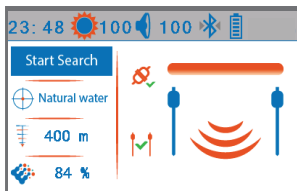
To start the search, the user must press the (OK) key to run the scanning process.

The color of the indicator for starting the search will change from blue to gray when turned on and when scanning is finished it will return to blue.



We wait for the search indicator to progress until the end of the reading of the area of the site confined between the probes embedded in the ground.

Upon completion of the reading, the target type and depth will be shown on the screen automatically.



The device scans between the two probes according to their distance from each other, the device measures the electrical energy levels of the soil to determine whether there are those targets that this system is looking for or not, and the measurement process depends on the sensing process and vertical induction to measure the levels of electrical resistance of the ground the device can distinguish between the identity and the electrical value of each target.

### ❖ Start Search

The WF101III's geophysical search system features a precise distinction between target types, with the target's name and type indicated on the system's search interface.

It is also characterized by the feature of accurately determining the depth of the target through a special system for determining and measuring the depth of the detected target. The value for measuring the depth is an approximate value and may vary according to the position of the target and the type of soil as well, but this feature enables you to know the approximate depth on which the target is located.

### Determine and locate the target:

The user must move the location of the sensors while maintaining a distance between them of at least 2.5 meters, and when leaving the target site and placing it outside the target area, you will notice that the device gives you a result (there is no target), this means that the target site has been skipped and the sensors have been placed outside the target site. Here, the sensors must be gradually returned to the first target area in order to determine the target location accurately, and when the first result is obtained, this means the beginning of the target site's existence.

The user has to perform this operation from two different sides in order to be able to determine the location of the target more accurately.

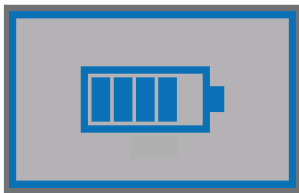


## ❖ Charging Information

You can continue charging the battery when the device is closed or switched on, knowing the added charge level All in real time with smart charging systems.

When the device is connected to the charger in the off state, the battery charge progress indicator will appear on the screen in percentage

As shown:



The device also offers the battery and smart charging feature, which gives the user an accurate tracking of the energy level, Accurate visual and audible notifications of battery level and alerts before the power runs out.



During work and when the battery level reaches **15%** We notice a change in the shape of the battery indicator to this state



While charging the device, we notice the change of the battery level indicator To this shape when the battery is **100%** full





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