Golden Mask
HF1000

User Guide

Golden Mask HF1000 User Guide - ver. 1.0 (last updated: 15.12.2023)

Introduction

Golden Mask HF1000 (Hoard Finder) is a Pulse Induction (PI) metal detector with great performace. It is the result of years of collaboration between the best Bulgarian electronic engineers and top treasure hunters worldwide. Our goal was to create an easy-to-use pulse induction metal detector with better parameters (depth and stability) than models costing several thousand dollars. Hundreds of hours of testing were conducted on a specially designed test site with deep targets, as well as in real-life conditions, to ensure that this detector surpasses our expectations.

The Golden Mask HF1000 was developed to provide a range of features, including high sensitivity and stability, along with easy operation. The number of controls was reduced, and the detector was calibrated to our factory settings to guarantee the best results in the field. The Golden Mask HF1000 was designed for professional search and locating applications. The performance of this electronic device is almost unaffected by saltwater, most types of magnetic soils, or temperature changes.

The Golden Mask HF1000 does not feature iron discrimination because this feature would decrease its depth of detection. Users can determine whether the target is on the surface or buried deeply based on the strength and length of the audio signal. In antiquity, iron objects (weapons, parts of chariots, plowshares, etc.) were as valuable as those made of precious metals. Therefore, every deeply buried item is interesting and potentially valuable, even if it is made of iron.

Key Features

- **True All-Metal mode**: Detects all types of metal, providing the greatest possible detection depth and sensitivity.
- **Stable operation on mineralized ground or salty sands**: Automatic Ground Balance System continually measures ground mineralization and ground conductivity, and adjusts for optimum performance.
- **Reliable/simple operation**: Few controls ensure user-friendly experience.
- **Exact pinpointing with large coils**: Facilitates precise target location.
- **Easy and effective detection of large areas**: Streamlines search process.
- **Rugged mechanical construction**: Dust-protected electronics unit and first-class materials enhance durability.
- **Variety of search coils**: 3 coil options available for different detection purposes.
- **Automatic adaptation of coil sizes and designs to the electronics**: Optimizes performance and ensures problem-free operation.
- **Fast audio response speed**: Offers real-time audio response.
- **Precisely adjustable audio-threshold**: Tailors audio response to particular search conditions and user preferences.
- **Waterproof search coils**: Enhances versatility.
- **Rechargeable low self-discharge LI-ion batteries**: Support worldwide operation.
- **EMI interference reduction**: Minimizes electromagnetic interference.
- **Extreme detection depths**: Achievable with the 2-Box coil system for very large metal objects, perfect depth reach with the single search coils.
- **Low frequency interference elimination circuitry**: Reduces low-frequency interference and ameliorates the overal performance.
- **Enlarged dynamic range**: Facilitates target pinpointing and detection of extreme depth targets.
- **Low battery indicator**: Provides approximately 30 minutes of operation after LED flashing.

Controls

Threshold

The Threshold control dictates the level at which the background audio tone is audible. For optimal performance, set the threshold to a low but clearly audible level, as faint target signals are more discernible under these conditions. A higher threshold may lead to audio fatigue. Conversely, a threshold set too low requires a stronger target signal for an audible response. It is recommended to determine the threshold at a low gain setting, minimizing background noise or chatter.

Sensitivity/Gain

The Sensitivity control adjusts the amplification of the received signal, influencing the detector's depth capability. While higher gain amplifies target signals, it also enhances ground signals and electromagnetic interference (EMI). Contrary to common belief, higher gain does not always result in superior depth, as ground conditions, specifically mineralization, play a crucial role. Adjust the gain with the coil on the ground until the detector exhibits minimal chatter, and fine-tune for a steady threshold tone. The interference control aids in managing EMI-related chatter.

Interference

This control modulates the transmitter pulse rate to counteract interference from external electromagnetic sources like radio stations, microwaves, electric fences, power lines, lightning, storms, or nearby metal detectors. Recognized by a warbling or repetitive pulsing of the audio threshold, interference can mask target signals. If interference occurs, use the Frequency control to minimize chatter. Adjust in small increments, allowing time between adjustments. If interference persists, consider reducing Sensitivity/Gain or Threshold settings for a stable operation.

Volume

The Volume control regulates the overall audio output for both the built-in speaker and wired (or wireless) headphones.

VCO (Voltage Controlled Oscillator)

Adjusts tones for shallowly and deeply buried targets. Low tones for shallow, high tones for deep burial. The VCO could mprove the detection of deep targets. The value is selected individually according to the user's preferences and ability to hear low/high tones. Most detectorist prefer to set the VCO knob at far left position and this is OK. Customize tones by turning the potentiometer for a comfortable audio experience.

Dealing with Noise

PI detectors, with wideband receivers, are more susceptible to noise and interference. The Interference control (Frequency Offset) minimizes pulse rate variation. Incrementally adjust it with Threshold and Gain set for mild chatter to reduce interference. Identify and disable non-electronically addressable noise sources. In challenging indoor testing conditions, adjust Gain or Threshold if Frequency control alone is insufficient. Balancing sensitivity and audio quality is crucial to avoid masking targets and prevent audio fatigue.

Search Coils

40x28 cm | 15x11" OO Coil

The 16x11" search coil is designed for single-person operation using the Golden Mask carbon fiber telescopic handle. It excels in detecting medium-sized objects (3-20cm) or larger items buried >20cm deep in the ground. Impressively, it achieves depth ranges exceeding 1.2m for a metal object the size of a 0.5L soft drink can and over 4.2m for a stainless steel Barrel 55 gal (208 liters). Adjusting the coil-to-ground distance effectively eliminates smaller items. Notably, the 40x28 cm 00 coil is not recommended for searching small single coins.

45 cm | 18" OO Coil

Similarly, the 18" search coil, compatible with the Golden Mask carbon fiber telescopic handle, offers exceptional depth ranges for medium-sized objects (5-20cm) or larger items buried >20cm deep. Achieving depths of over 1.4m for a metal object the size of a 0.5L soft drink can and exceeding 5m for a stainless steel Barrel 55 gal (208 liters), this coil makes 2-Box search coils unnecessary in some cases. Adjusting the coil-to-ground distance eliminates small items, though the 45 cm 00 coil is not advised for searching small single coins.

2-Box Dual Coil System

The 2-Box dual coil system, operated by a single person with the Golden Mask carbon fiber 2-Box handle, offers reduced sensitivity to small metal pieces like single coins or nails. In some cases, these items may be entirely eliminated from detection, streamlining work progress by minimizing unnecessary excavations. This is particularly advantageous when searching for larger, deeply buried metal objects, disregarding smaller surface-level metal pieces. Adjusting the coil-to-ground distance and focusing on metal objects with a surface of at least 10cm x 10cm yield optimal results. The dual coil system excels in extreme depth ranges for larger objects (>20cm) buried deep in the ground, reaching depths of over 1.3m for a metal object the size of a 0.5L soft drink can and more than 6m for a stainless steel Barrel 55 gal (208 liters).

WARNING!

It is not recommended to use self-made coils or other models similar to the original ones. Doing so poses a real risk of damage not covered by the warranty.

Keep in mind that the depth of detection in the ground with this pulse induction metal detector is 20-30% greater than in the air and, in some conditions, even up to 50%.

How to use Golden Mask HF1000:

You should keep in mind that Golden Mask HF1000 is an extremely powerful and sensitive device. When operating the device, make sure that your clothing and shoes do not have any metal elements. Even the smallest metal objects such as rivets on your jeans, metal shoe eyelets, or belt buckles will be detected by the detector and make the search task difficult or even impossible. This is particularly true for the 2Box system, as working with it requires the detector to be held very close to the detectorist.

HF1000 is a Motion Type detector. This means that the search coil or the 2Box system of 2 coils must move relative to the metal object to detect it. The movement is performed similar to the movement when searching with a VLF detector but MUCH SLOWER. The search coil must move close to the ground surface but without touching it.

You can easily distinguish a deep from a shallow-buried object in two ways:

- The deep object has a much larger area than the shallow one – its signal is detected over a larger area. Conversely, the shallow signal is much shorter.

- By the change in the sound of the VCO. Shallow signals have a lower tone, while deep ones have a higher tone.

Over time, passioned detectorists learn to extract a lot of information from the sound itself – about the depth, size, type, and even the shape of the buried object. Of course, achieving this requires a lot of practice.

Connecting the coil(s)

The coils for the HF1000 have two connection wires. In fact, the single coils consist of two independent coils inside it - one trasmitting (TX) and one receiving (RX) coil. On the back of the electronics block there are two connectors, where you should plug the coil connectors. The connectors are different - the first is with 4 pins and the second is with 5 pins. You cannot plug the cables the wrong way, because the connectors are different.

When you use the **2-Box set**, it is very important how you attach the coils to the supporting shaft! The transmitting (TX) coil must be always at the side of your front and the receiving (RX) coil must be at the side of your back. The labels of the coils (where you see the RX and the TX markup) must be at the outer side of the set as shown on the photo.

Using wireless headphones (Optional)

Your Golden Mask HF1000 could be ordered with optional low-latency wireless headphones. The wireless transmitter is integrated in the battery compartment of the detector. At the backside of the battery compartment you will find a small switch that routes the sound signal to the speaker or to the wireless transmitter.

To use the wireless headphones, you just switch to WS position and the sound goes to the wireless transmitter. Now you have to switch-on the headphones by pressing and holding for 3 seconds the on/off button. When the headphones are ready to work, a blue light will start to blink.

The WS headphones are operated by the three buttons on the right earphone: on/off, volume+ and volume-. The three other buttons on the left earphone are not used.

Pairing WS headphones with the detector

The newest WS headphones are paired automatically with the detector transmitter when the headphones and the detector are switched-on and you place the headphones close to the transmitter (the battery box) - the so-called “proximity pairing”.

Charging the headphones battery

The wireless headphones are powered by an internal irreplaceable battery. The headphones are charged through an USB cable (supplied within the package) by connecting it to a wall socket USB charger, to an USB adapter or by connecting it to the USB port of your computer. A cellphone charger could be used as well. The charging process is indicated by a blue light on the headphones. When the light turns off, the charging is complete and you can disconnect the USB cable and start using the headphones.

Using wired headphones

The detector has a standard 6.35 mm | 1/4” headphones jack to plug-in wired headphones. The sound module of the detector is engineered to use a large gamut of contemporary **STEREO headphones with impedance of 50Ω or higher**. We recommend using metal detecting dedicated headphones, they are preferred because of their built quality, they are usually of high impedance, so will work properly on your Golden Mask.

WARNING!

Never use headphones with MONO jack! Never use non-standard headphones, for example military equipment - this could damage the sound module of the detector.

Using headphones with 3.5 mm jack + adapter is not recommended - most adapters are junk and may cause malfunctions on your detector. Some adapters may cause short circuit on the sound output module and damage the detector sound amplifier.

Charging the detector battery

When you receive your detector, the battery is charged at around 20% of it’s normal capacity. Before using the detetor, you should first charge the battery as described below.

The HF1000 is delivered with a pre-installed 3500 mAh Li-Ion battery. The battery provides enough power for a minimum of 6 hours continous workd. Have in mind that at low temperatures (below 0°C) the actual capacity of the battery is lowered and the working time will be reduced. When the temperature is rising, the battery returns to its normal capacity.

You should charge your detector after you have using it for more than 2-3 hours to be sure you will have enough power for your next outing. The Li-Ion battery do not have the so-called “memory effect”, so you can recharge it at any time and any discharge level.

You should charge the battery when the battery icon on the top-right corner of the screen shows an empty battery. When the LED start to flash, you have remaining power for around 30 minutes of operation.

To charge the detector battery, connect the dedicated Smart charger jack to the charging port of the detector on the backside of the battery box and plug the charger to the wall socket. A red light will be lit on the charger. After the charging is complete, the light will turn to green colour. You can now disconnect the charger and start using the detector.

Do not turn on the detector until the charging process is finished and the charger is disconnected! Otherwise the detector electronics may be damaged!

WARNING!

Use ONLY the supplied charger to charge your detector! The charger of the HF1000 is different from the charger of the VLF models and they cannot be swapped! HF1000 uses a 4S battery while the VLFs are using 3S batteries. Using a non-dedicated charger is dangerous for the battery and may cause fire!

Taking care of the detector battery

To keep the battery in good health, you should follow these simple rules:

• Do not charge the battery at low temperatures (below 5° C). After using the detector in cold weather, first keep it in a room for 3-6 hours to temperate and then charge it.

• Store the detector/battery at temperatures between 5 °C and 25 °C.

• Do not leave the detector battery unused for extended periods of time. If the detector has been unused for 6 months, check the charge status and charge it if needed. Charge or discharge the battery to approximately 50% of capacity before long term storage.

• Charge the battery to approximately 50% of capacity at least once every six months.

• Carefully monitor the battery that is approaching the end of its estimated life. The typical estimated life of a Li-Ion battery is about two to three years or 300 to 500 charge cycles.

• The battery is self-discharging during storage. Higher temperatures (above 20 °C or 68 °F) reduce the battery storage life.

Li-Ion battery safety rules

• Do not disassemble, crush, or puncture the battery.

• Do not short the external contacts on a battery.

• Do not dispose of a battery in fire or water.

• Do not expose a battery to temperatures above 60 °C (140 °F).

• Avoid exposing the battery to excessive shock or vibration.

• Do not use a damaged battery.

• If your detector is stored or unused for an extended period, be sure to follow the storage instructions in this manual. If you do not stictly follow the instructions, and the battery has no charge remaining when you check it, consider it to be damaged. Do not attempt to recharge it or to use it. Contact your dealer for instructions about how to replace the battery.

• Consider replacing the battery with a new one if you note the battery run time drops below 70% of the original run time at normal temperature or the battery charge time increases significantly.

• In case of eye contact with fluid leaking from battery, do not rub eyes. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the fluid remains. Seek medical attention.

• Always check all applicable local, national, and international regulations before transporting a Lithium-Ion battery.

• Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specifically limited or prohibited.

• Lithium-Ion batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery. Contact Rechargeable Battery Recycling Corporation (www.rbrc.org) for USA and Canada, or your local battery recycling organization.

Some advices

Do not try to test the detector at home - in every house or even far from a house there are always too many electromagnetic interference (EMI) fields that will disturb the detector and you may think something's wrong.

Try to swipe the coil near the ground, but without touching it. Do not move it too fast. With practice, you will find the appropriate speed.

Respect the private property. Do not search in private property without permission - this could lead to serious legal, financial or other type of punishment.

Respect the law in your country about the protection of historical heritage and archeological sites. In all countries in Europe it is strictly prohibited to do metal detecting on or nearby archeological sites.

Good Luck!

TECHNICAL SPECIFICATIONS	
Operating Principle	Pulse Induction, Motion type
Pulse Frequency ALL METAL MODE	262 Hz (- + 22Hz with Interference control)
Wireless headphones 2.4gHz	Real time audio (Low Latency 12ms)
Audio tones	Multitone
Audio output	6.3mm wired Headphones > 32 oHm
Search Coils	16x11'', 18'' , 25'' , 2 – Box 16x11''
Weight	1.9 kg with 15x11"
Length	adjustable
Batteries	Li-ION 16.8V / 3500 mAh
Battery Pack life	Approx. 6 Hours
Warranty	5 Year Warranty of electronics 2 Year Warranty of battery and coils
Charger	Golden Mask Smart charger 16.8V
Operating Temperature Range	-10°C to +40°C (+14°F to +104°F)

HF1000 test depth data*			
Targets	**Coils**		
	15x11"	18"	2Box (2 x 15x11")
0.5l Coke can	~1.2 m	~1.4 m	~1.3 m
208l stainless steel barrel	~4.2 m	~5.0 m	~6.0 m

*** DISCLAIMER**
The provided depth data are obtained on a test field with moderately mineralized soil, low ground moisture, lack of EMI and precise settings for the given conditions. The depth in your area may be very different, depending on the current search conditions and the operator skills.