

USER MANUAL

METAL DETECTOR

PCE-MTD 400



ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

PREFACE

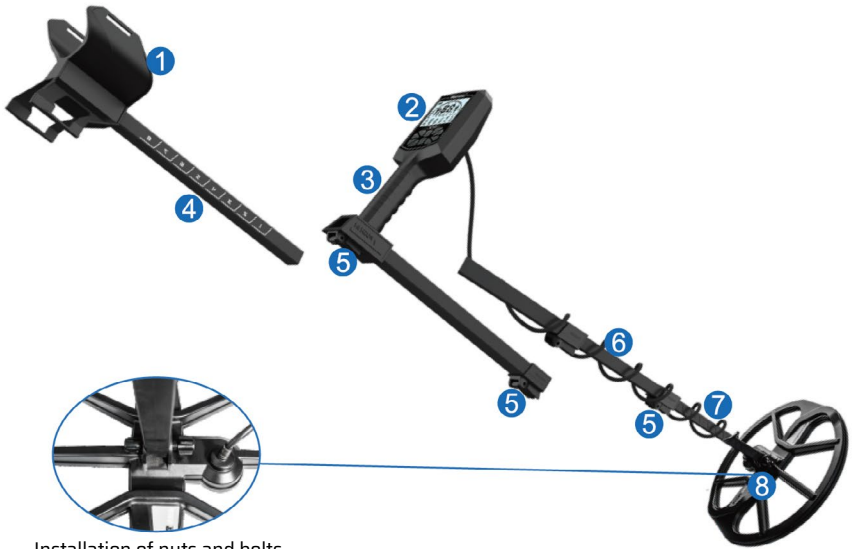
The purpose of this section is to ensure that the user is able to use the product correctly through this manual, in order to avoid improper use in operation and affect the product experience. Before using this product, please read the product manual carefully and keep it for future reference.

NOTES

Metal detectors are complex and sophisticated professional instruments that are often exposed to harmful factors such as sun, wind and rain, dust and moisture when working in the field. Therefore, correct use and proper maintenance are of great significance to ensure the accuracy of the instrument and extend its service life.

- » During the assembly and use of the equipment, it must strictly abide by the national or regional electrical safety regulations.
- » If the device is not working properly, please contact the dealer who purchased the device and do not disassemble or modify the device in any way. (The Company shall not be liable for any problems caused by unauthorized modifications or repairs).
- » When using the device, please try to keep it as stable as possible, and do not drop objects on the device or vibrate the device vigorously.
- » Do not use hard objects to touch the detector to avoid false alarms.
- » Do not expose this product to extreme environments such as humidity, high temperature, high heat and sun exposure.
- » The installation of charging power supply and socket should comply with safety regulations.
- » When not used for a long time, it should be stored after full charge, and it should be replenished once after storage for 2 ... 3 months.
- » If there is dirt, gently scrub with a cloth dipped in water or alcohol.

ASSEMBLY



Installation of nuts and bolts

- 1 - Armrest
- 2 - Control Box
- 3 - Handle Grip
- 4 - Upper Stem

- 5 - Locking Assembly (Locking Components)
- 6 - Middle Stem
- 7 - Lower Stem
- 8 - Search Coil

Wind the cable around the shaft and connect it to the control housing.

Note: There is an alignment pin in the housing for the cable connector. Do not force the cable into the connector. When you wrap the cable around the shaft, pay attention to not make it too tight so that the cable is pulled from the coil when it is moved.

Metal Detector Interface

- 1 - Search coil socket
- 2 - Headphone Jack



LCD SCREEN AND KEY FUNCTION

- 1 - Headphones and speakers
- 2 - Increase volume
- 3 - Ground balance / Adjust the working frequency
- 4 - Decrease volume
- 5 - Add / Switch
- 6 - Reduce / Switch
- 7 - Back button
- 8 - Pinpoint / Adjusting the working frequency
- 9 - Menu function selection
- 10 - Power switch

- A - Battery
- B - Shielding range
- C - Depth display
- D - Target ID
- E - Fe304 Bar graph
- F - Coil overload prompt
- G - Ground balance reminder
- H - Function status
- I - Target recognition degree
- J - All metal mode
- K - Discrimination mode
- L - Static / Dynamic all-metal
- M - Sensitivity
- N - Threshold
- O - Continuity shielding
- P - Audio Pitch
- Q - Selective shielding
- R - Sensitivity
- S - Tone selection
- T - Manual Ground balance
- U - Scene mode switching



Factory reset

In the state when the metal detector is off, holding **9** and **3** press **10**, the metal detector restart, release the buttons, and the metal detector factory reset is complete.

Target ID

When using the metal detector, different metal objects display different Target ID. However, depending on the shape of the target metal, metal content, degree of oxidation, detection distance, the number will change until the identity of the target metal is determined. After confirmation, the number will be fixed. It is generally displayed as follows:

01 ... 15	Most ferrous metals
16 ... 25	Tin foil, cigarette box
26 ... 35	Nickel alloy
36 ... 55	Copper coins, aluminum products
56 ... 65	Copper coins, gold rings
65 ... 99	Silver products, silver dollars, aluminum alloys

Depth indicator

The depth display indicates the relative distance of the detected object from the search coil. Single cell display, from top to bottom, indicating near, middle and far.

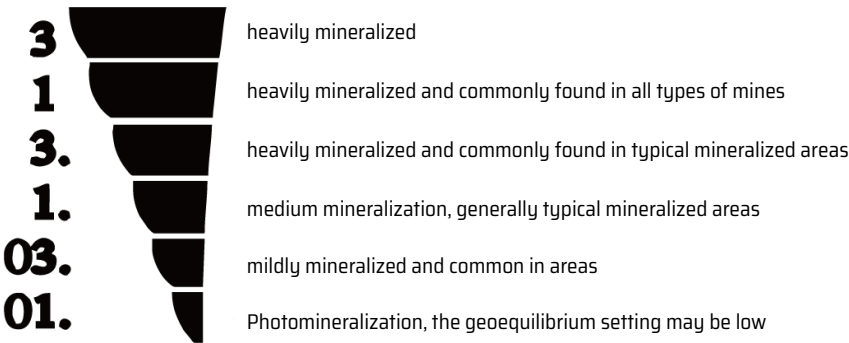
The degree of target recognition

this indicator bar provides a reference to the degree of recognition of the target. when searching, the black indicator bar extends from bottom to top, the more it is displayed, the higher the degree of confirmation of the target, the more stable the target id displayed on the screen.

Battery indicator

- » The icon shows the remaining charge of the battery.
- » More then 50% power, 3-bars display
- » 50% ... 10% power, 2-bars display
- » Less 10% of the battery, 1-bar display

Fe304 Chart



This Fe304 chart shows the magentic mineralization factor or magnetic susceptibility of the soil. The more black bars are displayed, the more mineralized the target area is.

Search coil overload indicator

When the search coil is too close to a metal object, the metal detector emits a rapid overload tone, and  appears on the screen. At this point, the search coil should be moved away from the overload source.

Ground balancing indication

When operating automatic ground balancing, press button 3 (Ground balance / Adjust the working frequency), the screen to display  , the user to move the search coil up and down.

When the metal detector cannot complete the automatic ground balancing, the screen to display  .

Multi-frequency adjustment

When the PCE-MTD 400 is operating, it may be subject to electromagnetic interference from external sources of electromagnetic interference (EMI) or other working metal detectors. Adjusting the operating frequency of the metal detector can avoid interference.

PCE-MTD 400 provides F1 ... F7 a total of 7 Multi-frequencies, the following is the operation to change the operating frequency.

The operating frequency is incrementing / decreasing, that is, F1 to F7 or F7 to F1.

When the detector is active, holding button 3 (Ground balance / Adjust the working frequency) or button 8 (Pinpoint / Adjusting the working frequency), and press button 9 (Menu function selection). The screen will show the frequency changed. To change the operating frequency again, wait 3 seconds for the frequency indication to disappear and press button 9 (Menu function selection) again.

Return key

PCE-MTD 400 in use, there will be a lot of functions involved. Each function corresponds to a different icon on the screen. The system sets a dwell time of 7 seconds for the icon, after which the icon will disappear. If we need to activate this function again or query the function that is currently in use, just press the RETURN key.

FACTORY PRESET

PCE-MTD 400 has three different detection modes:

- » Identify the detection mode
- » Static all-metal mode
- » Dynamic all-metal mode

Press the power button to turn on the power, wait 5 seconds, the screen shows LE, the detector enters the working state, and the factory preset mode is the recognition detection mode. If there is no interference from the external environment, when no metal target is detected, there is no reading on the screen and the metal detector is silent.

- » After entering the preset identification detection mode, you can switch between the required functions by button 9 (Menu function selection). At the same time, the adjustment, can be selection by + or -
- » When the selection function stays in AM or DM, switch the all-metal detection mode or the recognition detection mode through + or -
- » When the selection function stays on  or  , switch the dynamic mode or static mode through + or -

Notes: Outdoors, stay away from sources of electromagnetic interference (EMI) before turning on the metal detector. Many metal objects in the room, such as iron nails under the floor stells bars in the walls, televisions and other household appliances can cause electronic overload of the metal detector. In these environments, detector performance can be out of step and send many false signals. If the metal detector emits an overload tone, move the search coil away from the overload source when displayed on the LCD.

Digital Shielding Technology (DST)

The PCE-MTD 400's unique Digital Shielding Technology (DST) helps users maintain minimal background sound when using maximum sensitivity, thereby reducing user fatigue. In the probe, the user can choose whether to configure a 9.0 system with DST or a 9.1 system without DST.

- » Turn off the detector
- » Press and holding the button 9 (Menu function selection) and button 3 (Ground balance / Adjust the working frequency) at the same time, and then press button 10 (Power switch), the screen will show when current system number
- » Press + or - to switch the 9.1 or 9.0 system
- » Release the button 9 (Menu function selection) and button 3 (Ground balance / Adjust the working frequency), the metal detector enters the detection state

Notes: Do not release the button 9 (Menu function selection) and button 3 (Ground balance / Adjust the working frequency) during the switch to 9.1 or 9.0 system.

GROUND BALANCING

The PCE-MTD 400 provides users with 2 ground balancing settings: automatic ground balancing and manual ground balancing.

Automatic ground balancing

- » Find a piece of ground without metal underground, and keep the search coil about 25cm from the ground height
- » Press and holding button 3 (Ground balance / Adjust the working frequency), the screen will display , and at the same time display the currently set ground balance number
- » Lower the search coil about 3cm from the ground, and then raise the search coil about 15cm from the ground. Keep 1 ... 2 rounds per second. Repeatedly lift and lower the search coil several times until a stable 2-digit number appears on the display, indicating that the automatic ground balancing operation is successful
- » If the detector cannot complete the automatic ground balancing, the screen will display , at this time you need to return to step 1 to find a new ground to do automatic ground balancing, or operate manual ground balancing.

Manual ground balancing

For manual ground balancing operations, the detector must be in all-metal mode.

- » Find a piece of ground without metal underground, adjust the detector to all-metal mode, and select the  manual balancing function. At this time, the current setting ground balance number and the corresponding Fe3O4 icon will also be displayed on the screen
- » Lower the search coil about 3cm from the ground, and then raise the search coil about 15cm from the ground. Keep 1 ... 2 rounds per second. If the sound becomes louder when you raise the search coil, increase the ground balance setting;
- » If the sound becomes louder when you lower the search coil, decrease the ground balance setting.
- » Until the search coil moves up and down with no sound or only a faint background sound, it indicates that the manual balancing operation is successful.



Manual ground balancing operations can only be performed in all-metal mode, but the setting can be carried over to recognition mode



Manual ground balancing in dynamic mode will be more accurate than static mode



Before performing manual ground balancing, it is recommended to operate automatic ground balancing

DYNAMIC FULL METAL DETECTION MODE

Compared with the recognition mode, in the dynamic all-metal detection mode, PCE-MTD 400 can provide users with higher sensitivity and better detection experience.

When the PCE-MTD 400 is in dynamic mode, press and holding button 9 (Menu function selection), the selected cycles through the icons shown in the image below. After the selected function is selected, adjust the selected function by + or -

In the dynamic mode, keeping the search coil in constant motion, the detector will detect all metals present on the ground. This is a single search mode and all metals will be detected.



In this process the user can get a better detection experience by adjusting the threshold, pitch, sensitivity and manual balance.



Affected by the external environment, after the metal detector is turned on, it will make noise, and at the same time a jumping digital information appears on the screen. Please don't worry, the noise and meaningless signals will disappear after the metal detector is adjusted.

Threshold

The threshold tone is the background sound emitted by the metal detector while it is working, and can be adjusted between -9 and +9.

In order to eliminate external interference and maximize the hearing of the weakest signal, the user needs to adjust the threshold to reach a high enough threshold that the metal detector can hardly hear when operating.



The adjustment of the threshold will affect the detection performance.

Pitch

Adjust the pitch to change the frequency at which the detector emits sound. The higher the pitch value, the higher the frequency of the sound emitted by the detector and vice versa. The pitch value can be adjusted from -9 to +9 and defaults to 0. Any change in pitch will carry over to static mode and recognition mode.

Sensitivity

The sensitivity controls the signal gain and can be adjusted from 1 ... 99. However, due to the influence of electromagnetic sources and ground mineralization, if the sensitivity is set too high, the operating environment will usually be too noisy, and the signal and sound will be very unstable. At settings above 90, noise from the machine's internal circuitry may be heard. Set the sensitivity reasonably to get the best detection experience.

PCE-MTD 400 is divided into low gain sensitivity (1 ... 29) and high gain sensitivity (30 ... 99) in sensitivity settings. When the detector switches between low gain sensitivity and high gain sensitivity, the machine's performance changes significantly.



The sensitivity of the PCE-MTD 400 will differ significantly between low gain and high gain. But at the same gain, the difference is not much. Therefore, in actual use, we do not recommend setting the sensitivity very high.

In general, low gain sensitivity (20 ... 29) is recommended in areas with severe disturbance, such as heavily mineralized mountainous areas or saline soils with complex conditions.

If the environment is suitable, high gain sensitivity (55 ... 75) is recommended.

STATIC ALL-METAL DETECTION MODE

In static all-metal detection mode, there will be a good performance for targets larger than coins and a depth of more than 30cm.

In the same way as dynamic mode works, in static mode, the metal detector provides pitch, sensitivity, manual balancing capabilities. The adjustment is the same as in dynamic mode, and we will not repeat it here. However, it should be noted that in static mode, the threshold is fixed and cannot be adjusted by the user. In static mode, the metal detector provides a function similar to PinPoint. When the search coil is close to the ground, the audio signal becomes stronger. Unlike in other modes, if you stop moving the search coil, the detection sound will disappear.



PCE-MTD 400 has a memory function, after the static all-metal detection mode is turned off and turned in again, there may be a long beep phenomenon, you need to press the button 8 (Pinpoint / Adjusting the working frequency) to eliminate the long sound before use.

DM RECOGNITION MODE

The recognition mode is used to eliminate junk metal objects such as iron nails, aluminum foil when searching.

In recognition mode, the search coil must be in motion to detect metal objects. However, the recognition function causes the metal detector to be less sensitive to small or deep objects when operating.

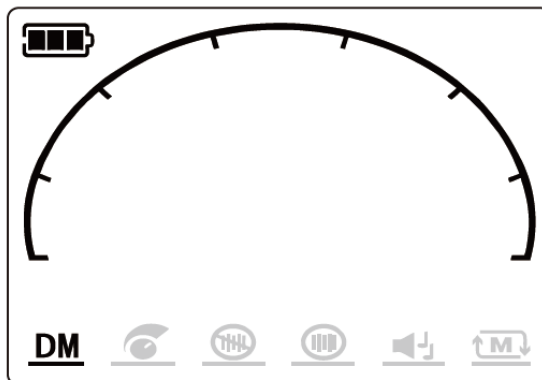
In recognition mode, the detector provides 5 functions (in order from left to right):

- » Sensitivity
- » Continuity
- » Masking
- » Selective masking
- » Tone
- » Scene mode

With button 9 (Menu function selection), the selected cycles through the icons shown in the image below. After you select a feature, you can adjust it by + or -

The PCE-MTD 400 in the default scene mode. Scene mode provides users with several different ways to identify audio to suit a variety of search conditions and personal preferences.

When using these different modes, the metal detector response may differ from the recognized digital signal based on the influence of certain complex geographical environments, such as severe mineralization disturbances.



The PCE-MTD 400 allows for independence through audio and LCD screen, allowing each system to do its best. Audio is optimized for fast response and object sensing, while the LCD screen provides the best digital signal for the target metal.

The icon consists of the letters 'F' and 'R' in a stylized, bold, black font, set against a light blue square background.

Quick Search mode

This process is applicable to landfills. Each target responds with a faster (shorter) audio duration, improving target separation.

The icon consists of the letters 'd' and 'E' in a stylized, bold, black font, set against a light blue square background.

Default mode

System default, the best mode for most scenarios.

The icon consists of the letters 'J' and 'E' in a stylized, bold, black font, set against a light blue square background.

Jewelry mode

The detector is more sensitive to small, low-conductivity metals such as jewelry, but it is noisier when operating in trash areas.

The icon consists of the letters 'b' and 'c' in a stylized, bold, black font, set against a light blue square background.

Bottle cap mode

The response is modified so that steel bottle caps typically produce inconsistent or non-repeatable tones and crushind sounds. The ability to sepearate adjacent targets may be slightly reduced. Use this mode in areas with a high concentration of cylinder caps.

The icon consists of the letters 'P' and 'F' in a stylized, bold, black font, set against a light blue square background.

Cultivated land model

Used for searching irregular ground, such as plowed farmland.

The icon consists of the letters 'b' and 'P' in a stylized, bold, black font, set against a light blue square background.

Enhanced mode

The enhanced version of dE mode provides greater detection depth, especially when searching for deep targets in non-trash or vegetation areas. At the same time, it has excellent performance on trash sites, but that need to slow down the coil scanning speed.

The icon consists of the letters 'C' and 'L' in a stylized, bold, black font, set against a light blue square background.

Cellar PinPoint mode

Provides higher sensitivity and detection depth than bP mode. Mainly used to explore relatively large metal objects at large depths. During operation, it is necessary to slow down the scanning peed of the coil. In most cases you may prefer to choose CL mode to work.



When using recognition mode, continuous maskind and selective masking are first set to establish the object signal to be detected or eliminated; The sensitivity is then adjust to reduce interference, or if desired, to increase the sensitivity to work in lower noise.

PINPOINT FUNCTION

When detecting metal, we can usually only determine the approximate location. At this time, it is necessary to use the pinpoint function to further determine the exact position of the target metal to minimize digging.

Before doing Pinpoint function, it is necessary to do a ground balancing operation to eliminate the influence of the ground.

» Manual or automatic balancing

- » Press and hold button 8 (Pinpoint / Adjusting the working frequency) and do not release, the metal detector triggers the pinpoint function, and moves the search coil left and right or up and down at the same time. Within the target range, the metal detector emits a sound from weak to strong to weak
- » Move the search coil repeatedly, when the metal detector always makes the loudest sound and the highest audio tone in a certain location, it means that the target metal is directly below the search coil. If the sound is loud over a large area, it means that the buried object is large;
- » Often for pinpoint function, the detection range needs to be reduced several times for effective excavation. To further narrow the detection area, place the search coil near the center of the target area. Release button 8 (Pinpoint / Adjusting the working frequency), and then press and holding button 8 (Pinpoint / Adjusting the working frequency) again. You will now hear a response only if the search coil is exactly on top of the target. Repeat this process to further narrow the area. Each time the process is repeated, the detection range is further reduced.

WIRELESS BLUETOOTH HEADSET

Using a Bluetooth headset when detecting blocks out external noise, such as wind and vehicle noise, so you can hear your target signal more clearly. The headset also attenuates interference from others in the detection area, extending battery life. The PCE-MTD 400 saves speaker threshold and headset threshold settings and switches between the two automatically once the headset is connected.

Connection of bluetooth headset:

- » Long press  , the red and blue indicators of the earphones flash alternately
- » Press  , the blue indicator above it begins to flash, and the headset enters pairing with the host
- » When the indicator is constantly on, it means that the bluetooth headset is successfully paired with the host

Turn off bluetooth headset:

- » Press 
- » Long press  to turn off the bluetooth headset.
- » After the headset is successfully paired, PCE-MTD 400 will be connected first in use. To change this setting, press and holding  for 5 seconds and bluetooth will be factory reset.

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

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