FUTURE 2003-4

Instructions

NOTE

Any information contained in these operating instructions may be changed without prior notice.

OKM does not make any warranty for these documents. This also applies without limitation to implied assurances of merchantability and fitness for a specific purpose.

OKM does not assume any responsibility for errors in this manual or for any incidental or consequential damage or loss associated with the delivery, exploitation or usage of these documents.

CAUTION, please read this before starting to use !

Please read these operating instructions carefully and closely before using FUTURE 2003-4 and its accessories.

These instructions give information on how to use the device. They also point out potential sources of danger.

No warranty is made and no responsibility is taken for any damage resulting from a failure to observe the operating instructions or from improper usage!

Any claims under guarantee will become null and void if repairs or work are performed by persons who have not been authorized by us to do so or if supplementary or accessory parts are added to our devices which have not been matched for them.

FUTURE 2003 will get destroyed if the device is opened improperly.

Avoid strong magnetic fields, which may occur in places such as near machines or loudspeakers, and avoid using a detector within a radius of 50 meters.

FUTURE 2003-4 and its accessories serve to detect objects deposited and changes performed in the ground. These changes and deposited objects are registered using the modules which have been supplied or which are additionally available.

The registered data on the ground structure are transmitted by a radio link to a PC for display using the components we offer. Any additional notes relating to this must be observed.

General Notes

Being an electronic device, FUTURE 2003-4 must be treated with the caution and care necessary when such devices are used. FUTURE 2003-4 comprises (Option #1) of a magnetometer (which works similarly to a hand held security wand) and underground radar within one device. Any failure to observe the safety precautions given or any use for purposes other than the ones it is conceived for may result in a damage to or destruction of the FUTURE's processing unit and connected components.

Potential Health Hazards

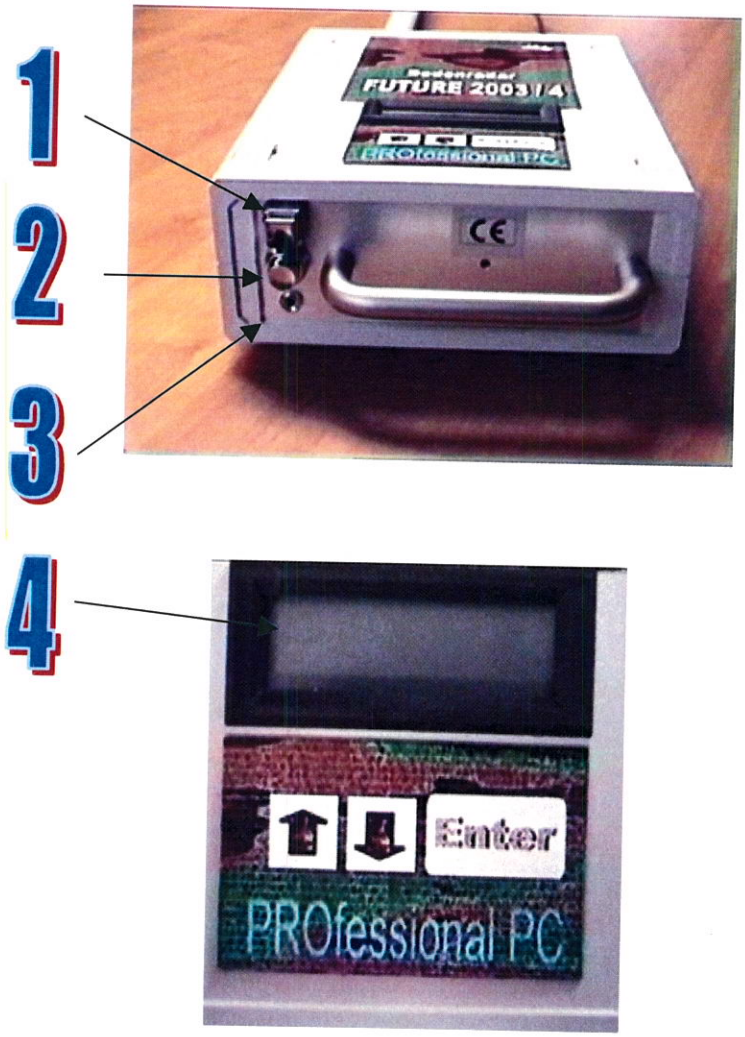
FUTURE 2003-4 normally does not pose any health hazards if used properly. According to current scientific knowledge, the high-frequency signals are not harmful to the human body on account of their low power. As an electric device, FUTURE 2003-4 must be kept away from children!

Surrounding Area

Having been transferred from a cold to a warmer place, FUTURE 2003-4 must not be operated immediately afterwards. Any condensation, which may have formed, might cause the device to get destroyed.
Avoid strong magnetic fields, which may occur in places such as near machines or loudspeakers, and avoid using a detector within a radius of 50 meters.

1. Operation

1 - Power ON / OFF
2 - Start
3 - Manual Pulse Trigger Plug (joystick)
4 - Display



Distribution Voltage

The distribution voltage must not exceed and must not fall significantly below the range of 8 - 12 volts. Use only regular or rechargeable (9v) batteries for power supply.

Never connect device to household electricity!

Data integrity

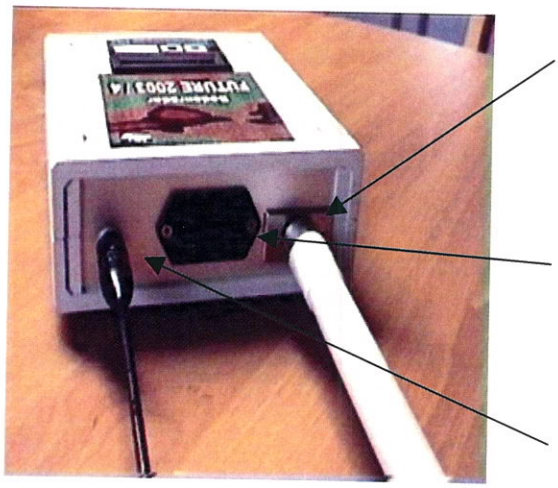
Reasons for a faulty transmission of data may include exceeding the range of the transmitting module, insufficient power supply of devices, use of connecting cables which are too long, other electric devices causing interference, or atmospheric disturbances (e.g. during thunderstorms). The transmission frequency during radio transmission is within CB range. As a consequence, failure of reception may occur even within the usable range if another transmitter is used within the same range. Thus, no guarantee for the integrity of data transmission can be made.

Repairs performed by OKM customer service

Please contact your dealer if the FUTURE 2003/4 is in need of repair or in case of inquiries or problems.

A qualified technician will examine the problem and initiate any repair work necessary. This service is free of charge within the regular warranty period one year.

After the expiration of the warranty period, you will receive an estimate of repair costs.



Installing the FUTURE 2003-4 system software

1 Set the color depth of your computer to 16 bit.

2 Insert the CD into the CD ROM drive of your computer.
The CD will start by itself. - If not, please go on to point 4.

3 If you do not have a CD ROM drive, please contact our telephone service.

4 Click "Run" in the Start menu. In the MS-DOS command line, type the following: ***D:\Setup.exe*** and press the Enter key.

If another letter than "D" was assigned to the drive, type this letter instead.

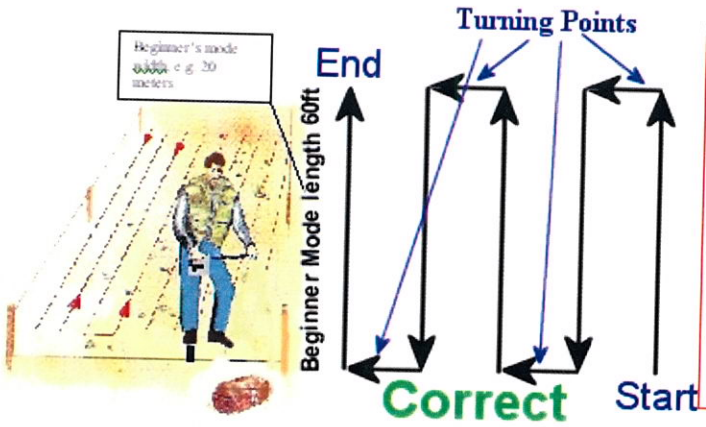
5 Follow the instructions on the monitor.

Note

Repeat the installation if a message indicating that it was not completed successfully appears.

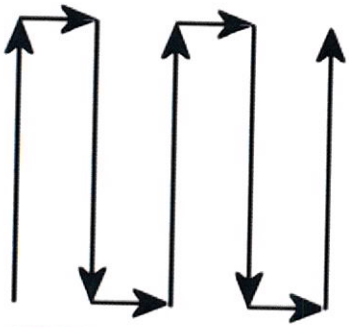
Please contact our telephone service if the second attempt also fails or if the software is faulty or missing.

SEARCHED AREA

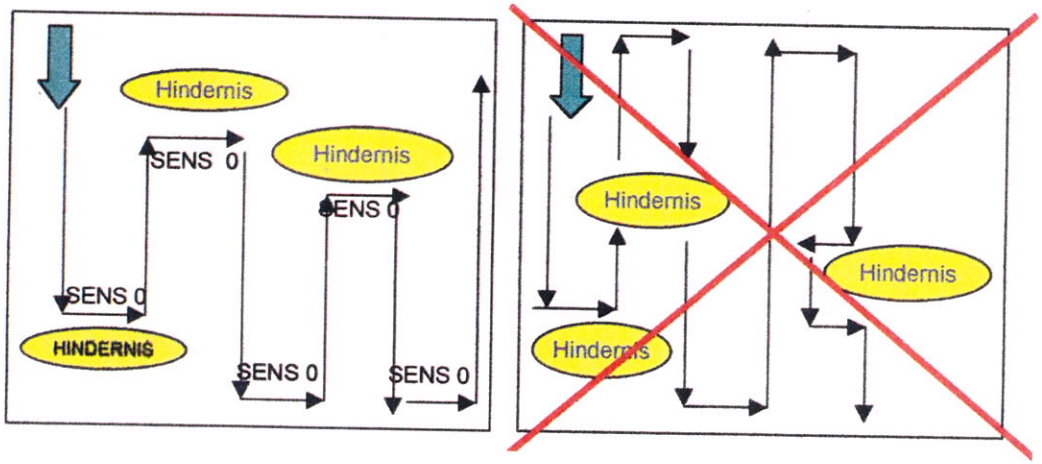


It is very important that the unit not turn. It must always face the same direction. For Example if the smaller antenna is pointing towards the front on the first leg then it must always stay pointing in the same direction regardless if you are going up a survey line or back down a survey line.

Important. The travel of the 2003/4 may only go to the left. You must follow pattern as above, or the software will not work correctly.

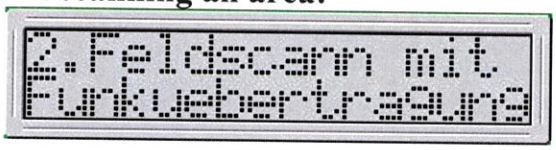


When you go up a survey line and go to the right the software will give you a false reading. Making it nearly impossible to accurately locate a target.

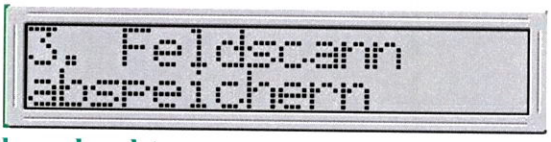


Rule No. 1
The more precise the scanning of an area, the more exact the analysis and graphic representation will be.

The FUTURE 2003-4 offers two ways of scanning an area:



1. Automatic
In this menu option, the pulse rate is determined by the processor and sent at clock pulse every second.



Option 2 – scan directly to PC
Option 3 – save to memory for later download to pc.

This means that you need to move at a constant rhythm of 1.0 meter per second in order to obtain a precise image.

2. Manual
This menu option lets you determine when a pulse is triggered by using the joystick, allowing you to obtain a high-resolution image of the area.

Option 4 - Data is stored into the memory for later download into the PC.
For example, the distance between points of measurement could be 5 cm (2"), 10 cm (4"), 20 cm (8") or 50 cm (20").

It is essential to mark the points of measurement in the area precisely beforehand. The more exact the marking, the more exact the graphic representation.

During operation, the receiving module should be kept as close to the ground as possible.

The device should point towards the same direction during the entire scanning process.

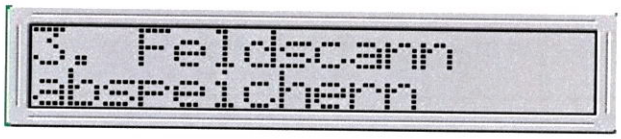
A. Beginner's mode (automatic pulses)

Internal storage ("Speichern - int.") and subsequent transmission to PC

In the beginner's mode, you need to memorize the exact number of signal pulses in the first field length (e.g. 10) of the area to be searched, so you can enter it in the program (under field length - "Feldlänge") later.

1. Switch FUTURE 2003-4 on.

2. Press the button ↓↑ until you have reached the following menu:
Display during pulse transmission



After pressing button Start, cover the area by walking in the rhythm of the signal tone according to the pattern specified.

Important: 1 signal corresponds to one meter or one point of measurement, respectively.

Follow the menu's instructions or simply switch FUTURE 2003-4 off when you have completed your search.

The stored data will be preserved even after a removal of the batteries.

Transmission of stored data to a PC

A. Beginner's mode

Start your computer with the receiving unit (radio data receiver) connected and run the program "FUTURE 2003-4".

Select the item "New" and specify the interface to which the receiving module is connected and the length of the scanned area.

Confirm this information by clicking "OK".

Now the software is ready to receive data from FUTURE 2003.

Start FUTURE 2003-4 and select

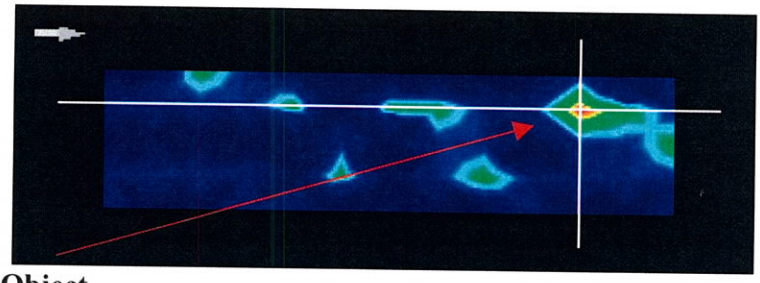
Menu option:

Now press button Start = Speicher an PC übertragen in order to transmit the stored data to your PC then push enter and wait for the unit to give you a tone and display "Programm Ende".

You will now see the area on your PC.

After image appears on screen push "Stopp"
Turn off receiver and turn off 2003/4

Monitor image after scanning



Object

Radio data transmission - live

Start the program "Future 2003-4" on your PC.

Select the item "NEW" and specify to the software which interface and mode you are using to scan the area.

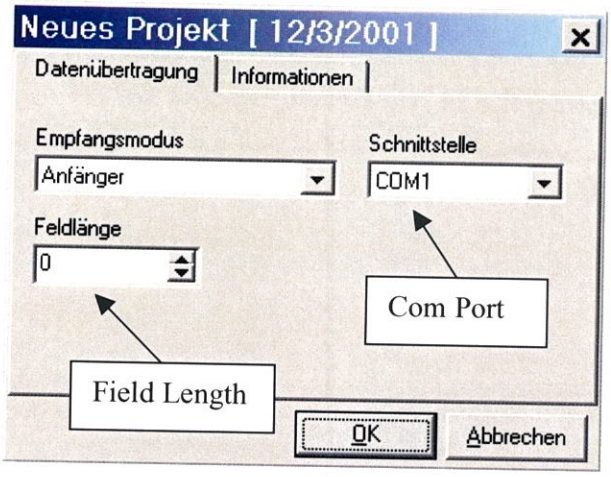
After you have confirmed your selection by clicking "OK", the program will be ready for data transmission from Future 2003-4.

The following option is available for live transmission:

1. Menu option 2 Using this option, you may work in the beginner's and in the expert mode. In this case, the device will provide the default clock pulse: 1 signal = 1 meter or 1 point of measurement, respectively.

Quick Start Guide

1. **Make sure that your batteries are fully charged.**
2. **Start Software**
3. **Select New (Neu)**
4. **Choose Com Port 1**
5. **Select Field Length (Feldlänge). This is the number of pulses in one direction. For example if the 2003/4 pulses (beeps) 5 times in the first leg of the grid then you go down the survey line for another 5 pulses you will set the field length to 5.**
6. **Push OK**
7. **Turn on receiver.**
8. **Turn on 2003/4**
9. **Scroll down arrow and select option 2 Field Scan with Live Transmission (Feldscann mit funkübertragung) for direct transmission to PC.**
10. **Press Enter**
11. **Wait for tone and display to read „Bitte Start Drücken“ then push start button and take reading.**
12. **Once completed with reading then turn off the power to the 2003/4.**
13. **Push stop „Stopp“ on software.**
14. **Turn off receiver.**



Now you should be viewing a screen with an image on it. Go to Page 13 for screen breakdown and Page 14 for Software usage.

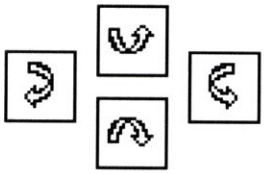
Screen Breakdown

Stopp	Stop
Neu	New
Öffnen	Open
Speichern	Save
Drucken	Print
Beenden	Exit

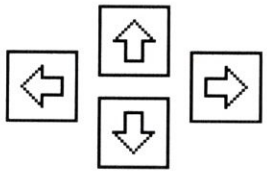
0 1 2 3 4  Scan Metal

Above 0-4 are quality Levels

Change color scheme



Rotate In direction of arrow



Move in direction of arrow

2003/4 Keyboard Shortcuts
Help Files Translation

F1 Key HELP Key
F2 Key = Show and blend depth
F3 Key = View as wire frame
F4 Key = Define depth layer (topographical view)
F5 Key = Bring lower colors up
F6 Key = Bring lower colors down
F7 Key = Bring upper colors up
F8 Key = Bring upper colors down
F9 Key = Notes on image
F10 Key = Show metal or solid objects
F12 Key = Set height (manually)

Zoom In

Zoom Out

Increase Depth

Decrease Depth

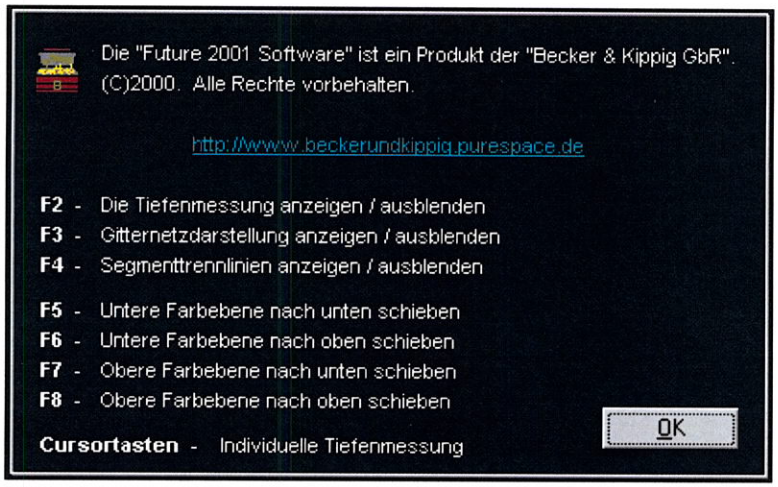
Move up Line of Depth

Move down Line of Depth

Depth of Target in Meters

One Meter = 3'3"

Software

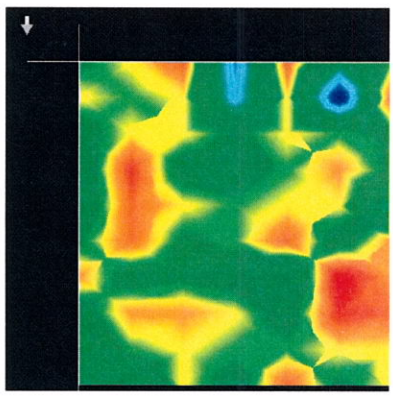


2003/4 Keyboard Shortcuts
Help Files English Translation

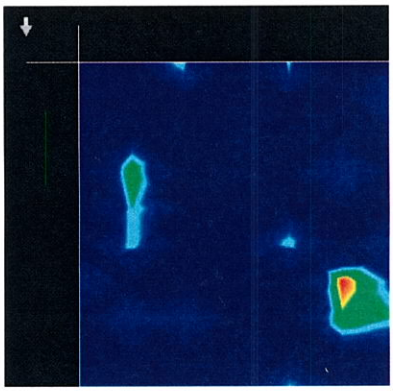
F1 Key HELP Key
F2 Key = Show and blend depth
F3 Key = View as wire frame
F4 Key = Define depth layer (topographical view)
F5 Key = Bring lower colors up
F6 Key = Bring lower colors down
F7 Key = Bring upper colors up
F8 Key = Bring upper colors down
F9 Key = Notes on image
F10 Key = Show metal or solid objects
F12 Key = Set height (manually)

Rough measurement

Mode: Beginner's 10 points of measurement

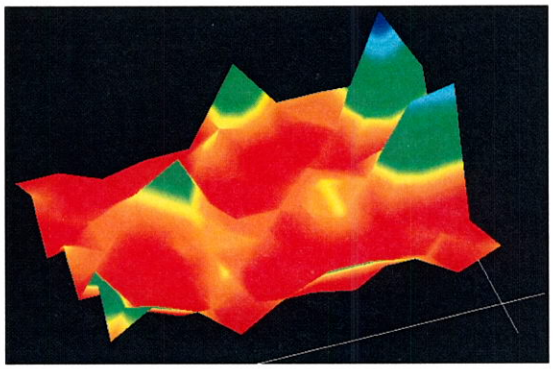


!! Apply a blue color to the image by pressing the F6 key of your PC



Now add a little more color again by pressing the F5 key of your PC, and structures or hidden objects will stand out clearly.

Now rotate the scanned image using (on screen) arrows and view the representation from below. Using your PC's F5 key, add more color again.



Now, changes performed in the ground and objects lying at greater depths are visible. Rotate the image and pay attention to compact forms. Such places should be gone over again using a fine measurement!

General Notes

FUTURE 2003-4 may be used to select and document hidden foundations and objects without the need to perform any excavations.

This method has several advantages over geo-electrical, seismic or magnetic methods, particularly in areas close to the surface and up to a depth of 18.7m (61'), for example by offering quick results, which are easy to reproduce.

Therefore, FUTURE 2003-4 should be regarded as an appropriate supplement to those well-established methods.

The growing demand for non-destructive and cost-cutting measuring methods for analyzing various structures and objects, and a constant awareness of environmental protection matters require a constant

development of new technology for application and technical know-how, which is continuously being developed further by our specialists.

Civil engineers, architects, municipalities, geo-physicists, archaeologists, the police and a number of other persons and institutions involved in solving various tasks and problems require information on the structure of objects to be examined.

This is where FUTURE 2003-4 represents an appropriate supplement to other methods.

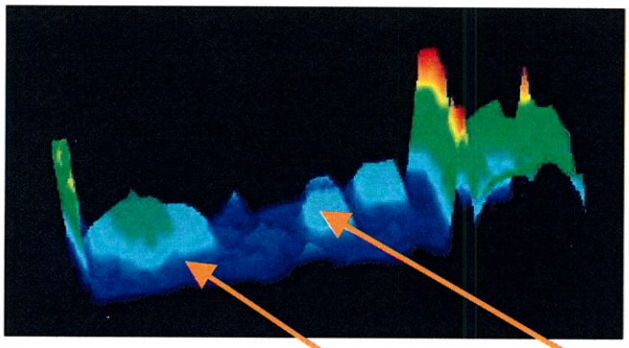
FUTURE 2003-4 is based on an electromagnetic pulse method which can be used to select an anomaly in the target area, e.g. natural features such as a formation of strata, hollow spaces, level groundwater, but also buried objects such as pipes, tanks, boxes, etc.

Thus it is possible to recognize various structures.

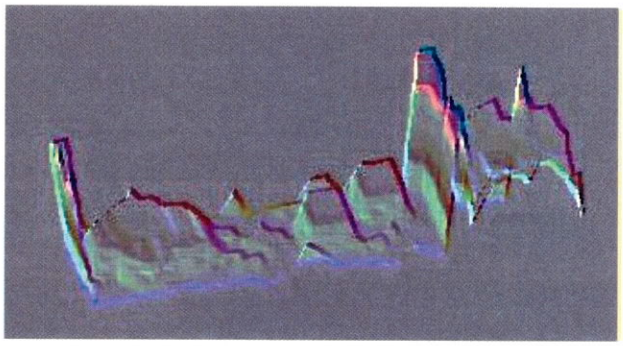
The depth of intrusion depends on several factors, e.g. relative permittivity or highly mineralized ground.

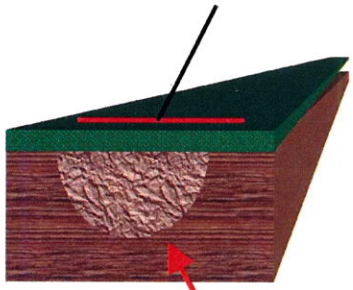
For example, the energy may be reduced to a level causing the depth range to be reduced significantly in very wet ground containing a lot of clay and sand with a high conductivity.

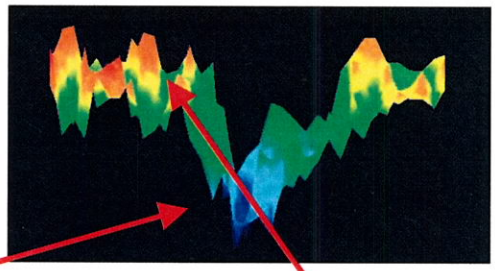
EXAMPLES



Chamber Relics

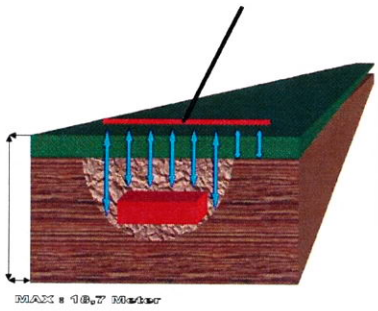




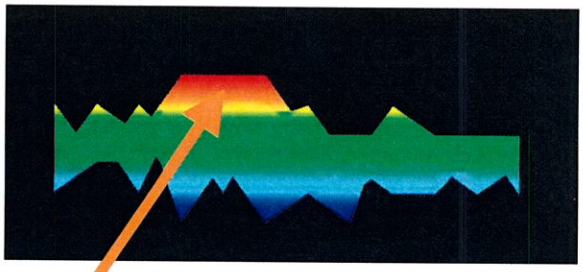


Mining - Tunnel

Mineral Deposit

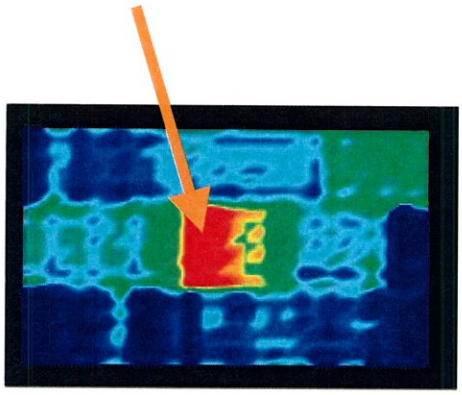


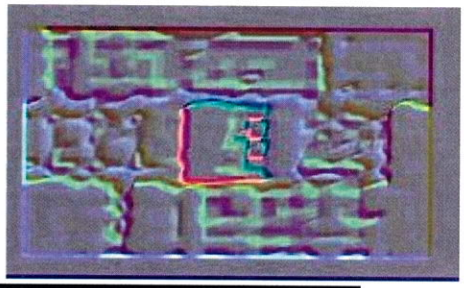
Max depth 18.7m (60')

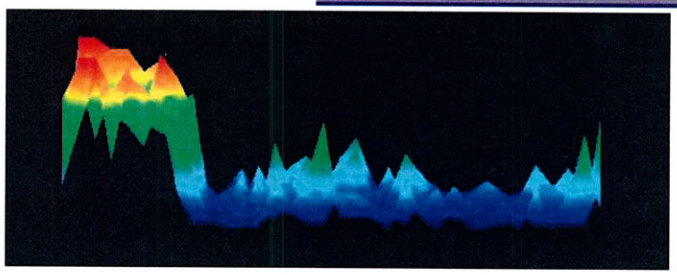


Metal detected is shown in red and should be rotated to the top position and side view for proper depth measurement.

Buried treasure found inside of a rock wall in Greece.



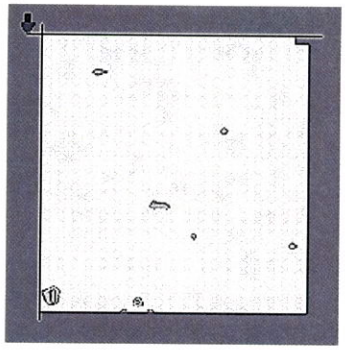




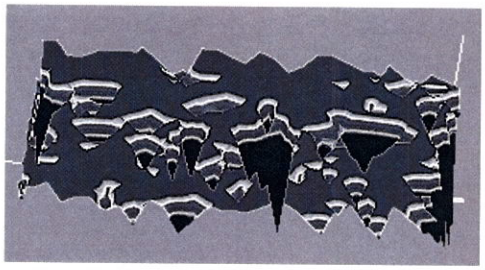
Caves and shelters are represented in Blue to Grey

Detailed analysis of the image

Example: Field length: 30 meters



1. Apply color to the image by pressing the PC's F6 key. Now add a little color again using the F5 key of your PC, and structures or hidden objects at the surface will stand out clearly. In order to determine the depth of these surface portions: Go on to point 4.

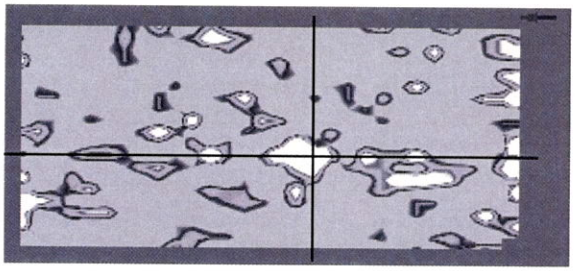


2. If very deep portions are contained in the image, you may reduce the size of the image by clicking the "Reduce depth" box. Now you can keep a better overview when rotating the image.

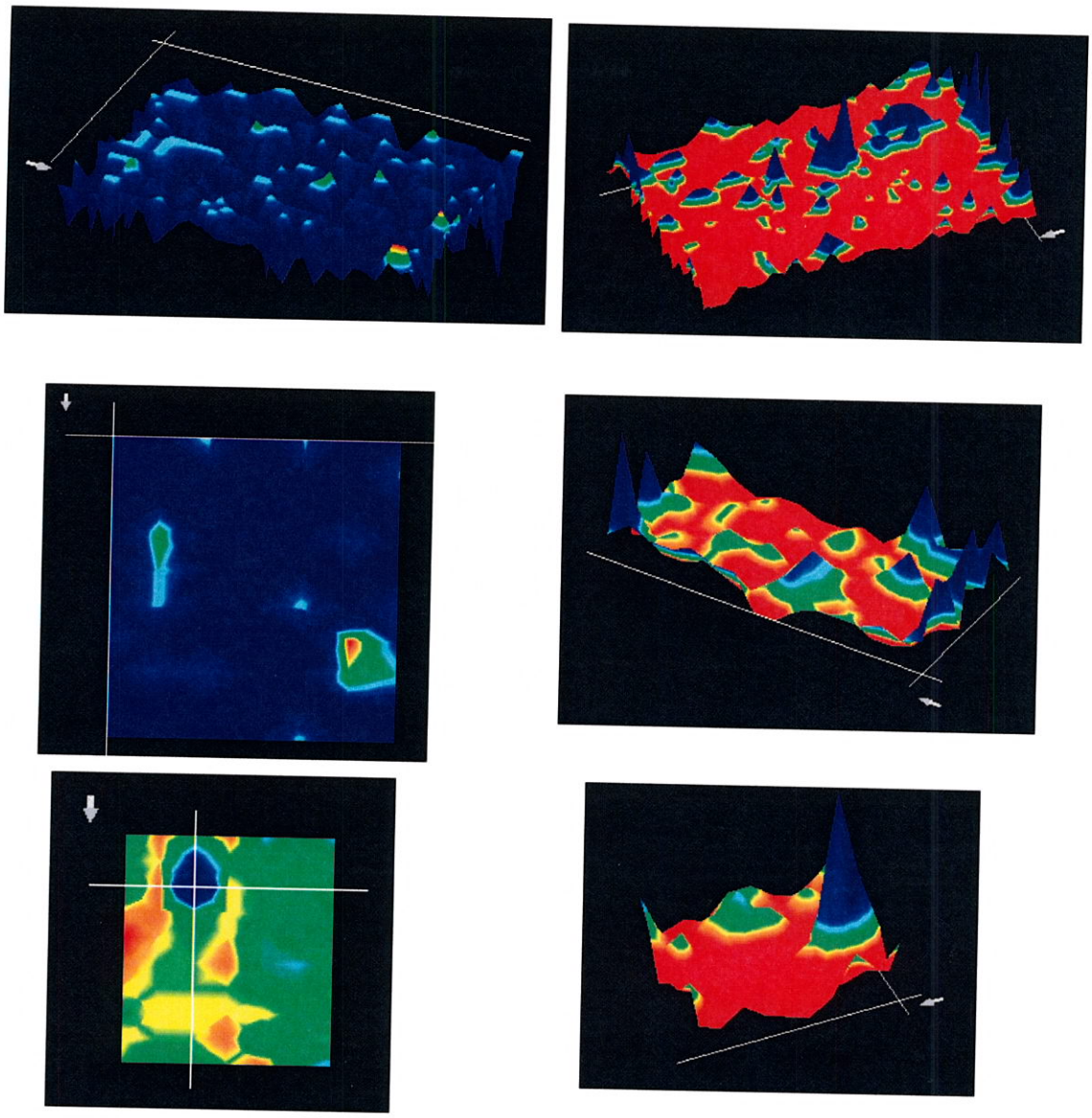
3. Now rotate the image and view the representation from below. Add color again by using the PC's F5 and F7 keys. Now, changes performed in the ground and objects lying at greater depths are visible. Rotate the image and pay attention to compact forms. Such places should be gone over again using a fine measurement!

4. Depth

Rotate the image so you can view it from above once more. Select compact formations using your PC's arrow keys (cross hairs). Now the depth and position of a formation appears at the bottom on the right.



(7 feet)



A view from above - Metal objects are visible at the surface here.

A view from below - Compact formations can be recognized in the center, where objects deposited in the ground are probably located.

Problem - Radio transmission

In case of interference during radio data transmission, apply the following procedure: Store the search field in the internal memory of FUTURE 2003-4. Power ON Internal storage (automatic). Having performed the search, go to your PC and transmit the data.

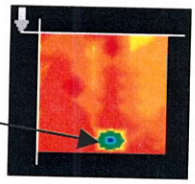
Faulty signals

Reasons for faulty signals during data transmission may include exceeding the range of the transmitting module, insufficient power supply of devices, use of connecting cables which are too long, other electric devices causing interference, or atmospheric disturbances (e.g. during thunderstorms). The transmission frequency during radio transmission of data is within CB range. As a consequence, a failure of reception may occur even within the utilizable range if another transmitter is used within the same range. Thus, no guarantee for the integrity of data transmission can be made.

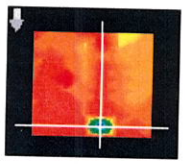
If faulty signals occur during data transmission, please apply the following procedure:

Indicator of faulty signals: Image turns completely red.

Faulty signal



Position the cross hairs over this faulty signal using your PC's arrow keys.

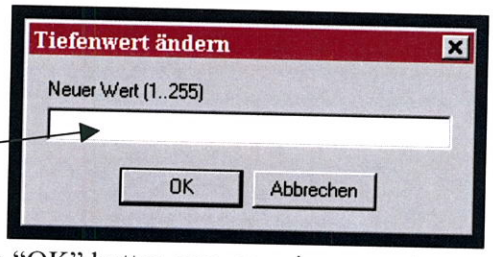


Now press the PC's keys:

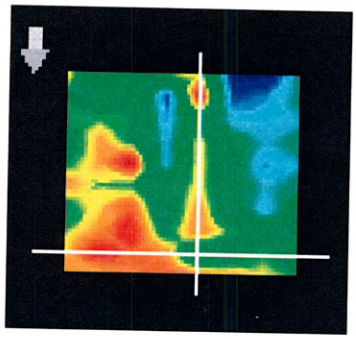
Alt and F12

A dialog box opens.

Now enter 170 in this box.



After confirming by clicking the "OK" button you can view your image without the faulty signal.



Questions relating to the 2003-4

- **What happens if the sensor dangles to and fro, does that have a negative impact on measuring ?**
- **No.**

- **How wide should (must) the rows be - or does this matter at all?**
- **It does not matter. The closer to one another the rows (or measured points) are positioned, the more precise the image will be.**

- **How wide is the signal from the sensor ?**
- **A pinpoint measurement.**

- **Expert mode: How close together may rows be positioned?**
- **During fine measurement: approx. 5 cm (2")**

- **Question pertaining to analysis: Do the green/yellow colors represent the objects when the blue color has been applied to the field?**
- **Yes. After the blue color has been applied completely to the field using the F6 function key, the color level can be reduced by pressing the F5 function key in order to make the objects visible.**

  Example: Function key F6: blue color is applied to the search field
  Now, the F5 function key makes the objects visible.

- **What is the size ratio to objects?**
- **Example:**
  - **Search using 1 pulse per meter: Analysis of measurement points in meters**
  - **Search using 1 pulse per ft.: Analysis of measurement points in ft.**
  - **Search using 1 pulse per cm: Analysis of measurement points in cm**

- **It would also be useful if the area was divided into rows on the monitor.**
- **Rows of the image can be viewed after pressing the F3 function key.**

- **FUTURE 2003-4 sometimes shows objects where there are none.**
- **Some external influences such as radio masts, high voltage lines, radio transmission at 430 - 450 MHz, but also greatly mineralized ground may be the reason for faulty signals and for objects "drifting away". Store your search field in the device and try once more at a later time. Any object shown by FUTURE 2003-4 does exist. However, due to external influences and a subsequent "drifting away", an object may actually be located 50 cm farther away than shown in the image.**

CAUTION: Danger of explosion during excavation

Unfortunately, the last two world wars also made the ground in many places of the world a potentially explosive scrap heap. A host of those lethal relics are still buried in the ground. Do not start digging and hacking for an object wildly when you receive a signal of a piece of metal from your FUTURE. Firstly, you might indeed cause irreparable damage to a truly rare find, and secondly, there is a chance that the object reacts in an insulted way and strikes back.

Note the color of the ground close to the surface. A red or reddish color of the ground is an indicator of rust traces. As regards the finds themselves, you should definitely pay attention to their shape. Curved or round objects should be a sign of alarm, especially if buttons, rings or little pegs can be identified or felt. The same applies to recognizable ammunition or bullets and shells. Leave that stuff where it is, do not touch anything and, most importantly, do not take any of it home with you. The killing machines of war made use of diabolical inventions such as rocker fuses, acid fuses and ball fuses. Those components have been rusting away in the course of time, and the slightest movement may cause parts of them to break and be triggered. Even seemingly harmless objects such as cartridges or large ammunition are anything but that. Explosives may have become crystalline over time, that is, sugar-like crystals have formed. Moving such an object may cause those crystals to produce friction, leading to an explosion.

If you come across such relics, mark the place and do not fail to report the find to the police. Such objects always pose a danger to the life of hikers, walkers, farmers or children.