PRORADAR® SERIES

STEALTH SCAN

3D GROUND MONITORING®

SOFTWARE MANUAL
Dear Customer; we would like to thank you for preferring the **DRS Electronics ProRadar Series products**. We strongly recommend you to read this user manual carefully in order to understand how the products operate and to test them in order to gain experience. This is a scientific and electronic device and the user must comply with all instructions in the user manual.

We would like to wish you best for your search.

**CAUTION! PLEASE READ THIS MANUAL BEFORE USING THE PRODUCTS.**

The information herein can be changed at any time without prior notice.

This user manual cannot be duplicated, distributed and copied without prior consent of DRS Electronics.

**General Information**

**DRS Electronics** products must be used carefully as all other electronic devices. Attention must be paid on scanning heads, main unit and scan sensor, they must be protected against impacts and tough objects and no excessive power must be applied to connectors.

**Injury**

If **DRS Electronics** products are operated properly, they don’t cause any injury and health problem. **DRS Electronics** products do not cause any threat to the human body. As in all other electronic devices, **DRS Electronics** products must be kept away from children too. Please pay attention that resistivity scanning probes do not contact with your body during the scan as they may contain high voltage.

Ensure that all precautions are taken against any risk. Do not use your device during the rain or when the ground is extremely wet.

Open your device after being sure that probes are fixed to the ground and cable clips are installed properly. Probes must never touch each other and must not be touched when the device is open. More than half length of the probes must be driven to the ground.

Be sure that main unit battery of the device is fully charged before the scan. Insufficient battery may cause you to be mistaken. Probes should be cleaned with a damp cloth at the end of scan.

**CAUTION! SCANNING PROBES HAVE 110 V POWER. DON’T TOUCH SCANNING PROBES DURING THE SCAN AND WHILE CABLES ARE CONNECTED.**

**Repairing**

All repairs arising out of parts defects are free of charge for a period of two (2) years as of the date you purchased the product. Tear and wear from use and malfunctions caused from using unauthorized chargers/probes/cables are exempted from the said warranty. Please consult to your vendor for service requests or questions about the product. The unit is examined and, if necessary, repaired by a qualified technician. All repairs after two years are done for a fee.

**In case you damage the product or open its box, the warranty shall be void.**

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1 - ASSEMBLY
Please be sure that the battery pack is fully charged using the provided charger. Please use the original charger as it may void the warranty to use 3rd party chargers.

Connect the battery pack to the controller (Picture-1) and Turn On the controller (Picture-2). The red power LED should be turned on. If not, please charge the battery pack.

![Picture-1](image1)
![Picture-2](image2)

You will use the remote controller to operate the Stealth Scan (Picture-3).

![Picture-3](image3)

2 - PREPARATION OF PC SOFTWARE FOR RECEIVING THE DATA
Please open 3D GROUND MONITORING software, installed in your Tablet PC. You should Turn On the controller BEFORE launching 3D Ground Monitoring Software to allow Bluetooth connection to set.

Please click Program Connection Settings button.

You will be asked to enter information about the area to be scanned on the displayed window.
On the Area to be Scanned:

**Scanning Order** = You must enter the number of lines to be scanned.

**No. of Hits** = Please enter the number of sampling (no. of steps on the device screen). You must enter the number, based on the size of area to be scanned.

**Port Setting** = Select the port to be connected with the device via Bluetooth.

**Operation Mode** = You can make selection among 3D Ground Scan, Horizontal Live Scan, Vertical Live Scan and Resistivity options.

**No. of Sensors** = You must make selection according to the sensor you use as Scanning Sensor.

- ProRadar X1 & X1 Pro: No.of sensors should be 1
- ProRadar X5: No.of sensors should be 1. The system adopts itself automatically to the antenna used.
- Resistivity: The distance of the A line should be selected (ie. The distance of two probes)

**Scanning Direction** = Select the scanning direction as PARALLEL or ZIGZAG at your discretion.

Click CONNECT option after making all selections. The screen on the left will appear when device is connected. Program will wait as ready for scanning.

The squares on this screen are prepared according to the number of hits and scans that you selected. Each square is equal to a signal.

**3- 3D MANUAL GROUND SCAN**

You must make PC connection settings and connect PC with your device before each scan.

Press START button on wireless connector.

When you press START button, automatic data transfer screen will appear and data transfer will begin.

Data transfer will manually begin. You must press START button for every transmission of signal. When the number of signals (steps) that you selected is reached, the device will stop and ask you to press START button again. You must do this every time the number of signals is reached.

The data will be retrieved as grids as shown below. Data retrieval will stop when the number of lines and hits that you have already entered is reached and all squares are filled with graphics. Then our program will automatically convert them to 3D.

Graphics will initially be retrieved in grid format.
When data transfer is completed, the software will convert graphics to 3D automatically. Please see the following picture for details.

You can examine the data in 3D when you stop data transfer.

### 4-3D GROUND MONITORING SOFTWARE - OVERVIEW

Minimum system requirements needed to install 3D Ground Monitoring software to your computer are displayed in the following table:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Minimum Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System</strong></td>
<td>Windows Xp, Windows 7, Windows 8, Windows 10</td>
</tr>
<tr>
<td><strong>Memory (RAM)</strong></td>
<td>Min. 512 MB</td>
</tr>
<tr>
<td><strong>Graphic Card</strong></td>
<td>Min. 256 MB (OpenGL Compatible)</td>
</tr>
<tr>
<td><strong>Disk Space</strong></td>
<td>Min. 300 MB</td>
</tr>
<tr>
<td><strong>Data Transfer (Interface)</strong></td>
<td>USB, RS232, BLUETOOTH</td>
</tr>
</tbody>
</table>

### 4.1 MENUS AND BUTTONS

**File Menu.** You can access New Connection, File Opening, Saving, Program Language Changing, Software Background Color Changing features from this menu.

You can set different graphic color tons, graphic perspective, Difference Graphic Options, such as Grid and Raw Data Graphics, and expansion settings of filters from Graphic Settings menu.

Buttons that you can use to change graphic perspectives:
The button used to undo the changes to graphics.

The button used to blur the graphic and removes the problems between data.

The button used to sharpen the graphic and removes the problems between data.

Buttons used to expand and narrow the graphics.

The button used to examine the graphic in the form of a cage and grid.

The button that removes Gap, Soil and Metal data in order to allow you to examine single data.

Buttons used to maximize and minimize graphics and return them to their real sizes.

Soil menu to select the type of soil.

Buttons that you can use to increase and decrease ton of color in metal data.

Buttons that you can use to increase and decrease ton of color in gap data.

Buttons that you can use to move the line of depth up and down.

Interpolation button

Virtual keyboard button

Button to read digital values.

Right color bar ensures that you view the values in terms of percentages. It represents the percentages of metal, mineral, soil, hard soil and gap from top to bottom.
4.2 EVALUATION OF MEASUREMENTS
Meanings of Graphic Colors When Standard Colors are Used

Red; Metal
Blue; Gap
Green; Soil
Orange and Yellow; Mineral

These details are different in case different color options are used. It might be difficult to differentiate metal and mineral at first look. Sometimes you may see reddish colors for minerals too. But there are some differences between metal and mineral and they can be displayed with analysis. Some of these differences:

If graphic represent a special shape, this means metal data (such as square, rectangular, circle, etc.). If orange and yellow tones around the object in the graphic are too much, it is possibly mineral data.

If the object is at a depth, such as 10 cm, 30 cm, there is a high probability that it is a mineral.

You must have and confirm that you have the same data in controlling measurements. Images of metal and mineral are given in the below graphic sample.

Differences between metal, gap and mineral are described in the below table. The features of this table are described with examples on graphics. Please examine it carefully.

<table>
<thead>
<tr>
<th>METAL</th>
<th>GAP</th>
<th>MINERAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a clear shape</td>
<td>Has a clear shape</td>
<td>No shape and scattered around the graphic</td>
</tr>
<tr>
<td>The graphic has ceiling-floor structure</td>
<td>The graphic has ceiling-floor structure</td>
<td>No ceiling-floor structure</td>
</tr>
<tr>
<td>Its color is red in graphic</td>
<td>Its color is dark blue in graphic</td>
<td>Its color is orange in graphic</td>
</tr>
<tr>
<td>Graphic obviously goes down and becomes flat at the bottom</td>
<td>Graphic obviously goes down and becomes flat at the bottom</td>
<td>Graphic is generally superficial and does not create a plane</td>
</tr>
<tr>
<td>Graphic has BLUE reflections</td>
<td>Graphic has GREEN reflections</td>
<td>No reflection in the graphic</td>
</tr>
</tbody>
</table>

Metal data

Mineral data

4.2.1 METAL GRAPHIC
The sample graphic below is the data of precious metal, located within a gap, which is created by user for testing purposes. It gives information about the analysis of precious metals within a square metal box.

Real metal objects represent a clear shape, which distinctively separates metals from minerals. The adjacent graphic shows the metal within a gap and it has a square shape. There is a yellow thin layer around the square, which is displayed in red, and this must be available in all metal data. Yellow layer must have the same shape of the red object.
When metal is queried with F7 and gap is queried with F6 in the software, there must be a reflection in BLUE color, which represents a metal object (data is retrieved with north and south magnetic poles in the read values). There is no reflection in minerals.

**In order for you to separate precious and non-precious metals:** Precious and non-precious metals have same features in the graphic (reflection, becoming hollow, yellow thin layer, ceiling-floor structure). Precious metals keep their red color and additionally there is a yellow thin layer around them.

![Non-Precious Metal](image1.png)  ![Precious Metal](image2.png)

**4.2.2 GAP DATA GRAPHIC**

All features described until here are the features of metal data. Gap data do also have same features. They go downwards (becoming hollow) and there must be ceiling-floor structure. But the color of gaps (rooms, tombs, tunnels, etc) is **BLUE**. When the graphic is examined, there is a **LIGHT BLUE THIN LAYER** with same lines of BLUE color (similar to yellow thin layer in metals). Furthermore, the north-south magnetic pole (reflection) of the gap is **GREEN**.

There is an image in the adjacent graphic. There is a **LIGHT BLUE** thin layer, showing the lines of gap, as described above. **CEILING and FLOOR structure is created. Graphic continues to down (becoming hollow).**
There is also a gap view in this graphic. Green lines, the reflection of gap, are displayed on the left side.

Gap data are similar to the data of metal objects. They have the same features. While there is a yellow thin layer around the metal object, there is a light blue thin layer around gap data. While metal reflects in blue, gap data reflects in green. The gap can be defined (such as tomb, room, tunnel, etc.) by taking depth, width and length measurements. Since metal data are described in details and gap data has same features, no extra description is required. Please contact with our expert team for issues that you think insufficiently described.

4.2.3 MEASUREMENT OF DEPTH IN GRAPHICS

Data of the object that you search must be in the middle of the graphic in order to measure depth in graphic. If there are data on the edges, you must center them and perform another control scan. There is a small margin of error in depth measurements (such as 0.50 cm). You must know the type of soil being measured in order to minimize errors. You must select the type of soil from soil option menu of the software.

If you don’t exactly know the soil type of scanned area, you must calculate the depth before saving graphic data to the software. Stop retrieving data from your device and make necessary analyses. After analyses are completed change your view to bird’s-eye view. Move the depth measurement lines to the center of the displayed object by using right-left / up-down keys of the keyboard. You can see the depth in the depth bar indicator at the bottom.

Detailed Depth Measurement of Object

You must change to side view and use Move Downward button for the depth line in order to measure detailed depth of the object in the graphic. You can find total measurement between ceiling and floor of the object by using up-down depth button.

When you use Move Downward button for the depth line in the graphic, the depth line will move down. The depth is shown in meters on the bar, which indicates depth in the software. When you reach to the starting point of the object (red color starting point), you reach to the ceiling of buried object. As you move the depth line to the bottom of the object, you will learn total sizes of the object.