

Introduction:

The ER-500A is a ground penetrating radar unit that has the ability to see reflections up to 12 feet in depth. Depth is limited by the type of soil it is used in. Dry sand being the best and wet clay being the worst, as clay attenuates the reflection. I use the term reflection as that is what you are seeing on the screen. When there is a large difference in material this interface produces more energy to be reflected back to the receiver. The radar is transmitting thousands of pulses each second and then receiving the reflected energy.

Frequency of the unit is important because as frequency increases the resolution will increase, so you are able to make out smaller objects. This comes at a price as the depth of penetration decreases with the higher frequency. Inversely if we go lower in frequency, we can now see deeper but the objects must be larger.

GPR can see reflections from non metallic materials and metallic items. The reflections seen from metal give a much stronger signal and can actually overwhelm the receiver. This produces a signal that looks like it spans a large depth but in fact is just metal close to the surface.

Loading Windows 10 Driver

If you already have the program running or preloaded from the factory you can skip this.

Download the file "Windows Driver" from my website under resources/downloads. Put this file CP210x..... on your hard drive and unzip (extract all). Open the file CP210xVCPInstaller_x64.exe then simply follow instructions to install.

REFER TO FIGURE 1 "EASYRADAR USA SCREEN SHOT"

A This is the RUN/PAUSE button and clicking on it will cause the radar to either free run (collect data all the time) or use the encoder wheel when the Encoder icon # is turned on (blue in color). Free run mode may be useful when surveying large areas and higher travel speed is needed. When a target is acquired it will be necessary to turn the wheel icon ON and then by moving backwards a pinpoint white line will be displayed. IMPORTANT NOTE: Unit must be paused before you can change between free run and encoder wheel mode.

B This is the button when enabled will activate a background removal filter. Basically anything that shows no change will be eliminated. This helps when looking for small changes and eliminates a lot of noise.

C This box should always be set to **50ns**, which stands for 50 nano seconds. This is the proper time scale for the ER-500A if you set it to 100ns the vertical scale will double in depth but the signal will become compressed as you still can only see approximately 12 feet maximum.

D The Gear icon when clicked will bring up a separate window that allows the com port , the type of soil you are in, the type of radar unit and a few other windows that are not currently in use. If you purchased the ER-500A and the tablet as a package your com port has already been set. If you can not connect please go to the “setting up com port section”.

E This is the unit type and is set with the Gear Icon

F The large DOT Icon is to record a video of the screen capture. Toggling from Green to Red starts the recording function, Red to Green stops the recording. The recording is saved as an .SGY file and one must use the separate viewer program to watch the video. The video is stored at C:/EASY RADAR/Windows Software/video.sgy (with time and date). One can go back and edit the names of these files as the software does not allow entering of names. Best way to do this is keep a note on your phone of the time and a video name and then go back and edit.

G This button will clear the screen and start an entirely new image

H The Camera icon when clicked will store an image of the screen in an .bmp format that can be viewed by just about any photo viewer software. The location of this file is stored under C:/EASY RADAR/Windows Software/image (with time and date). One can go back and edit the names of these files as the software does not allow entering of names. Best way to do this is keep a note on your phone of the time and an image name and then go back and edit.

J This is the color palette box and clicking on it will toggle you through different color schemes. The far outside colors represent the highest amplitude signal is detected. This is mainly a personal preference selection as true GPR purerists will use one of the gray scale palettes. Using a palette that abruptly changes color at different return signal levels helps one to pick out smaller changes. The hardware gain and software gain can be used to move a slight amplitude change to another color.

K This box will set the hardware gain, 1 being the lowest 5 being the highest. Always use as little gain as possible so that the return signal does not clip. I almost always leave this on 1 or 2. If your ground is very wet or contains a great amount of clay you may need to increase this setting.

L & M These are software gain settings and simply will stretch out the signal, the top one in a linear fashion and the bottom one in a logarithmic fashion. To bring out a target better when using a color palette you can adjust these to change the point were the color changes. Please be very careful with these as they are very sensitive. They have five steps and I usually leave them both on the lowest setting.

GPR Display

