

GPR Quick guide

The guide below provides the basic information to assemble the GPR system, and collect the GPR data, taken from the [PulseEKKO GPR user manual](#) and a reconnaissance trip on 4+5 March, 2023 by Stefan Nielsen, Jenny Jenkins and Jeroen van Hunen.

ASSEMBLY



1. Transmitter (T)
2. Receiver (R)
3. Power cables
4. DVL battery
5. T/R Batteries
6. 200-Mhz antennas
7. Fibre-optics cables
8. DVL
9. Adjustable handles

1) Layout of the GPR equipment in the two storage boxes



2) Place the transmitter and receiver electronic boxes each onto the black mounting blocks in the middle of an antenna, ensuring the brass sockets connect to the brass pins in the antenna. Connect the electronics boxes to the mounting block using the two plastic draw latch connectors.

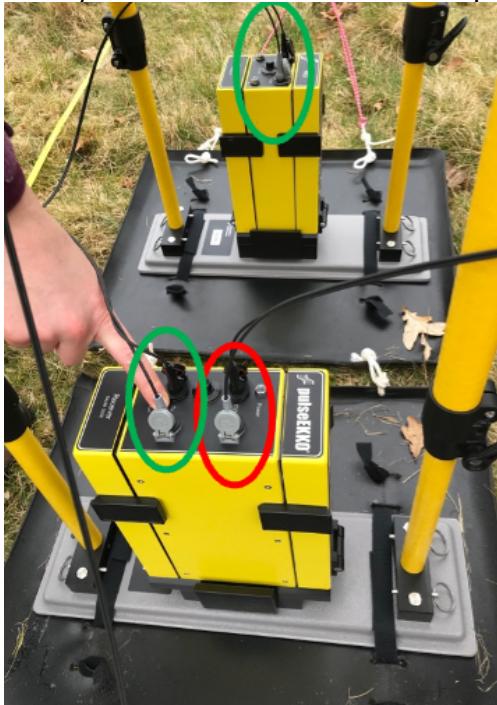


3) Place one battery on each side of each of the electronics boxes. Make sure the positive (+) terminal faces inward toward the electronics. NOTE: The battery is “keyed” with a notch in one side so it only fits properly in this orientation. Close and latch the battery covers.

To attach the adjustable handle to the antenna, place the handle blocks over the 4 posts on the

antenna and insert the pins to secure. Adjust the handle height by loosening the two black levers hand. Move the handle to the desired height and then retighten the levers. Once the handles are adjusted, lock them by tightening the levers until they click into place.

5) Attach antennas to the skid plates with Velcro ties.



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on to indicate the unit is
nd receiver batteries

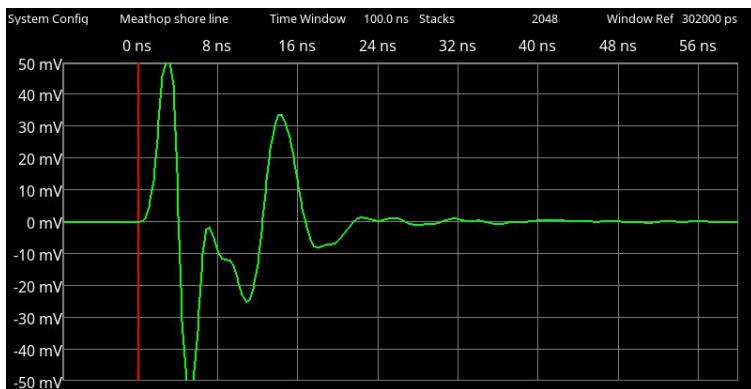
anel will light up red.
0%) to orange to red

Item	Description
Menu Buttons 	The yellow buttons labelled 1 to 8 correspond to menu choices that appear on the screen.
4-way directional keypad 	Controls Up/Down/Left/Right operations in certain menus.
Camera 	Saves an image of what is displayed on the screen.
Asterisk / Special Function 	Used for adding Flags during data acquisition.

System Configuration:		Meathop shore line	
GPR Parameters		Survey Parameters	
Frequency:	200 MHz	Survey Type:	Reflection
Time Window:	100 ns (4.6 m)	Start Offset:	0 m
Step Size:	0.250 m	GPR Trigger:	Manual (Keypad / Bluetooth)
Sampling Interval:	Normal (400 ps)	Bluetooth:	Not Connected
Stacks:	32768	Antenna Separation:	0.5 m
Transmitter:	pE PRO Auto	Antenna Polarization:	Broadside
Receiver:	pulseEKKO Ultra	Antenna Orientation:	Perpendicular
Velocity:	0.1 m/ns	GPS:	Internal

11) Choose System Configuration. This will show the screen on the left. Choose a survey name (white bar on top). Small antennas are for 200 MHz recordings (large ones are for 50 MHz). Nr of stacks is a multiple of two: 32768 doesn't

take too long to record (<1 sec) but gives high signal/noise results. The skid plates on the photo above are set up for a 0.5 m antenna separation and 'broadside' polarisation. Set the step size to the distance between subsequent measurements. Press 'back' to go back to the main menu.



increment). Once finished, press 'back'.

12) Choose 'scope mode': Scope Mode enables you to correctly set the First Break. The red line should be as indicated in the figure to the left. If not, adjusting can be done by the 'Auto Detect First Break' option, although this does not always work well for the high frequencies used in our setup. With the arrows you can adjust it manually (large arrows to start moving, press again to stop moving; small arrows move the red line by a small

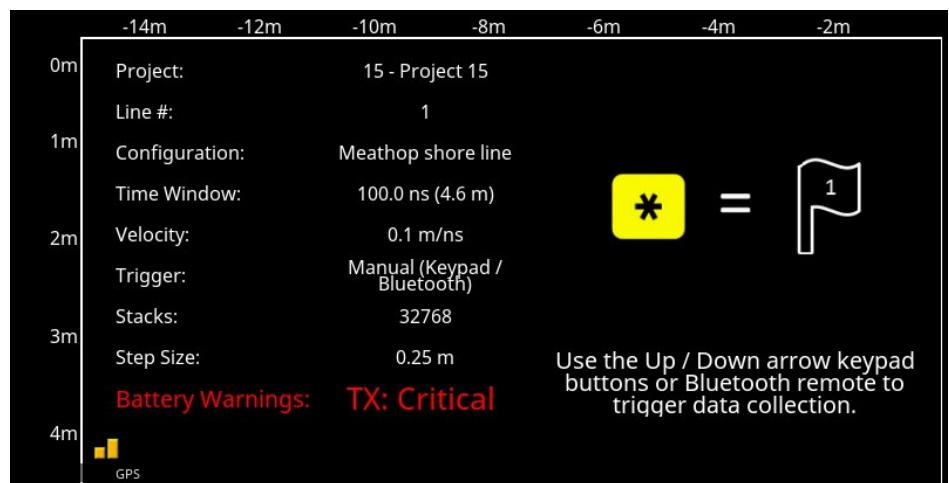
13) Choose 'run system' to select the name of the project. Then press 'back'.

Run System	
Project15 was last collected on March 5 2023	
Project Summary	
Name:	Project15
Lines:	0
Grids:	0
Screenshots:	5
System Configuration:	Meathop shore line

14) Choose 'line scan' to start the actual survey. Note 1: the system always seems to complain about low battery. Note 2: don't press the 'no save mode'. Note 3: try to keep electronics (such as the GPS system) away from the GPR during measurements.

Line Scan	
System Config:	Meathop shore line
Project:	15 - Project 15
Line:	1
Time Window:	100.0 ns (4.6 m)
Trigger Method:	Manual (Keypad / Bluetooth)
Velocity:	Moist Soil (0.1 m/ns)
GPS Status:	Internal GPS

15) Press 'start'. Then press the 'down' button to make a single measurement (a beep will sound during the measurement: don't move the device during this beep). Keep pressing the down button to make new measurements.



A display of results will slowly move in from the right of the screen. Once finished, press 'stop' and then 'back'.

