

StructureScanTM Mini HR

Quick Start Guide

A Fast Check List For Field Operation



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MN70-635 Rev-

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- FCC Notice for U.S. Customer
- Canadian Requirements for RSS-220
- Declaration of CE Conformance

Laser Cautions and Warnings

Please see Appendix D for important laser cautions and warnings.

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Avis

La mise en œuvre est soumise aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un fonctionnement non désiré de l'appareil.

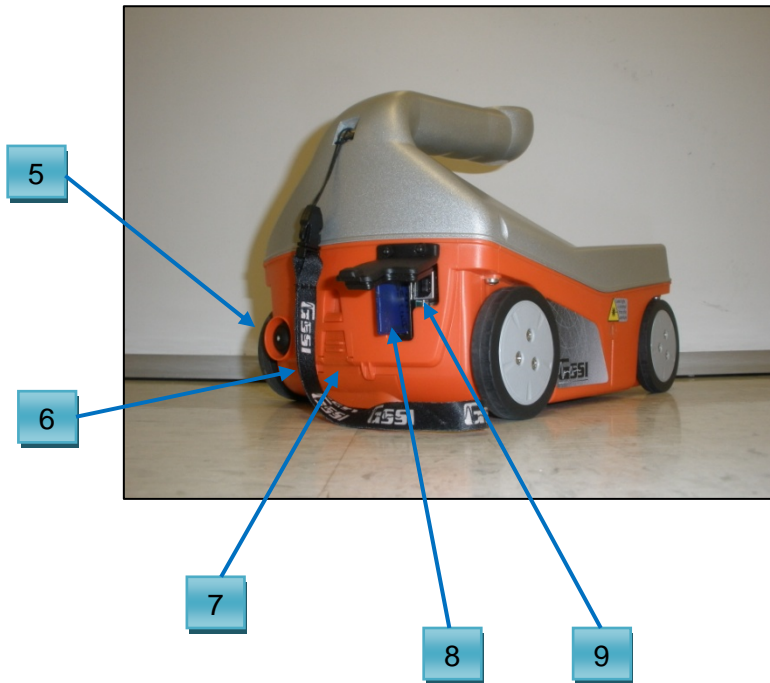
StructureScan Mini HR

Front/Top View



- 1 Ergonomic handle and controls
- 2 Easy to use operator interface with color display screen
- 3 Survey wheel encoder
- 4 Guiding laser for locating

Back View



- 5** Power Button
- 6** Wrist strap
- 7** Battery
- 8** SDR Card/Slot
- 9** USB-B Port

Section 1: Getting Started

1 Preparing the StructureScan Mini HR.

- Remove the protective plastic cover.
- Remove the blue tape from the wheels.
- Attach the wrist strap to the back of the Mini HR. The wrist strap should go around your wrist to prevent the Mini from being dropped.



- Attach the lanyard to the back of the MiniHR. The battery lanyard will attach to this lanyard to prevent the battery from falling out.



- Insert the battery into the battery slot in back of the Mini HR. Lift the tab upward and “snap” the tab into



place.

- Attach the battery lanyard to the lanyard on the Mini HR.



2 Powering up the StructureScan Mini HR.

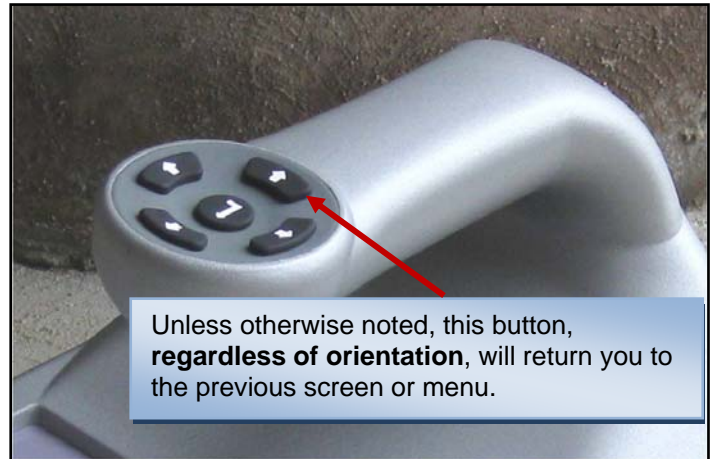
- Press the power button. A green light will illuminate on the power button.



- After a few seconds, the system will boot up and the splash screen (Main Menu) is displayed.
- The Green/Gray bar that is displayed on the lower left hand corner is a battery life indicator. This will display how much battery time is remaining.
- The current time (as stored in the Mini HR) is displayed at the bottom of the screen.
- How much storage you have left (the distance you have left to scan) is displayed on the lower right hand corner.



- 3 To power off the Mini HR, simply press and hold the power button for approximately 2 seconds. Then you may remove the battery by pressing down on the tab of the battery and pulling down.
- 4 Note the buttons on the handle of the Mini HR. They will be referred as Left Arrow ←, Right Arrow →, Up Arrow ↑, Down Arrow ↓, and the Enter ↵ buttons relative to the screen.
- 5 Depending upon the orientation of the screen on the Mini HR (Left or Right depending upon which hand you use), the Left, Right, Up, and Down buttons are switched. However, you will still be pressing ← →, ↑, and ↓ buttons, regardless of the orientation of the screen. The Enter button (↵) is located in the center of the keypad. button
 - At any time and unless otherwise noted, you may press the Arrow button closest to the rear of the Mini HR to return to the previous screen or menu. This will be known as the “Back” button.



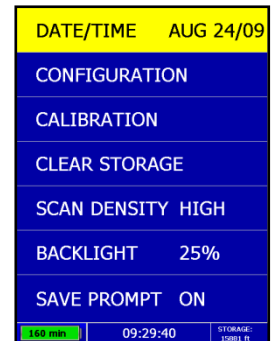
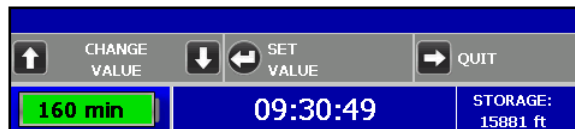
Section 2: Configuring the Structure Scan Mini HR

Before collecting any data, configure your Mini HR for 2D or 3D data collection by pressing System Menu Options

- 1 From the Main Menu, select System by pressing **↑**.
- 2 Use **↑** and **↓** buttons to highlight the appropriate options under the System Menu.

Date/Time: Configuring Date and Time

- 1 Highlight Date/Time and then press **↵**.
- 2 Highlight any of the options you wish to change and then press **↵**. The following options will appear at the bottom of the screen:
 - Change Value – Use **↑** and **↓** to change the value.
 - Set Value – Press **↵** to accept your change.
 - Quit – Press **→** to quit WITHOUT saving the changes.
- 3 Press **→** to return to the previous menu.



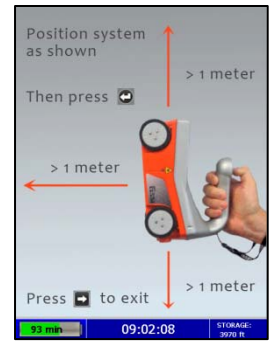
Configuration: Configuring Orientation, Language, Units, Laser, and Sound

- 1 Highlight Configuration and then press **↵**.
- 2 Press **↑** **↓** to select the appropriate options:
 - Orientation – Press **↵** to toggle between Right or Left. This will flip the screen to allow for either right or left handed operation.
 - Language – Press **↵** to select your language preference.
 - Units – Press **↵** to toggle between English or Metric.
 - Laser – Press **↵** to toggle laser On or Off. If configured On, the laser will light up in the Collect Menu only. Note: The laser will blink (whether configured On or Off) when battery life is low (10%). **Caution:** Do not stare into beam.
 - Sound – Press **↵** to toggle between High, Medium, Low, or Off.
 - Version(s) – Press **↵** to display the version number of the software. Please visit GSSI's web site for updates to the firmware.
- 3 Press **→** to return to the previous menu.

ORIENTATION RIGHT	
LANGUAGE	ENGLISH
UNITS	ENGLISH
LASER	ON
SOUND	HIGH
VERSION(s)	1.0.1.9
19:52:07	
STORAGE: 2007 B	

Calibration: Auto Calibrations for Surface and Brightness

- 1 Highlight Calibration and press **↵**
 - a) Hold the Mini HR upside down about 1 meter (3 ft) from any surface.
 - b) Press **↵**. The Auto-Calibration will take several seconds.
- 2 Press **→** to return to the previous menu.



The Mini HR will then shut down after calibration and will require a re-start

Clearing Storage: Deleting Saved Data

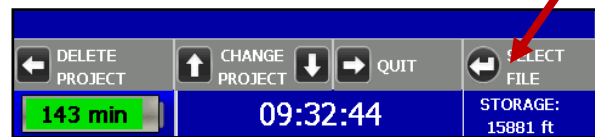
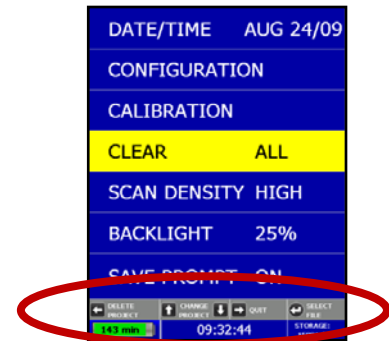
A project is a folder which holds individual files.

- 1 Highlight Clear Storage and press **↵**
- 2 At the bottom of the screen, a new set of options is displayed.

Deleting All Projects or Deleting Specific Projects

All Projects: If you wish to delete ALL of your projects and all the files associated with each project:

- 1 Press **←** when Clear All is displayed.
- 2 Press **↑** to confirm, **↓** to cancel the deletion.



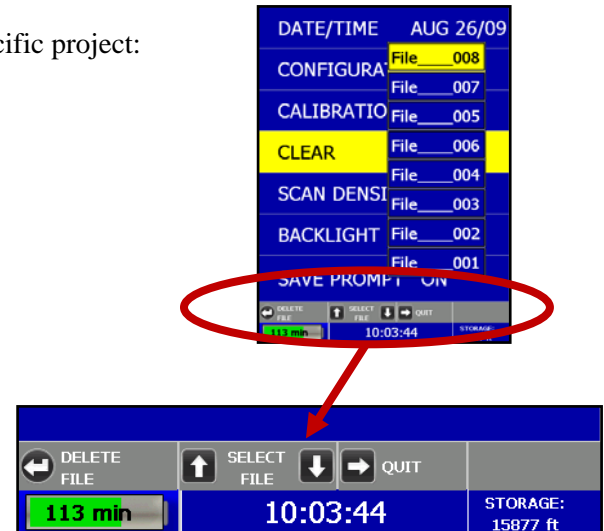
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Specific Projects: If you wish to delete a specific project or specific files within a project:

- 1 Press **↑** **↓** to select the specific project.
- 2 Press **←** to delete that entire project (and all the files associated with that project).
- 3 Press **↑** to confirm, **↓** to cancel.
- 4 At any time, you may press **→** to quit.

Specific Files in a Specific Projects: Deleting specific files within a specific project:

- 1 Press **↑** **↓** to select a specific project.
- 2 Press **↵** to select that project.
- 3 Press **↑** **↓** to select a specific file.
- 4 Press **↵** button to delete the selected file.
- 5 Press **↑** to confirm, **↓** to cancel.
- 6 At any time, you may press **→** to quit.



Scan Density: Selecting the Scan Density

- 1 Highlight Scan Density.
- 2 Press **↵** to toggle between High and Normal.
 - **High** – The Mini HR will scan at 8 scans/cm (approximately 240 scans/ft). Use this is when you are looking for very small objects.
 - **Normal** – The Mini HR will scan at 4 scans/cm (approximately 120 scans/ft). Use this is when you are looking for normal size objects.

Note: Disabled in 3D data collection mode

Backlight: Setting the Brightness of the Mini HR Backlight

- 1 Highlight Backlight.
- 2 Press **↵** to toggle between 25%, 50%, 75%, or 100%.

Save Prompt: Whenever Saving, Have the System Prompt You to Save or Save Automatically

- 1 Highlight the Save Prompt.
- 2 Press **↵** to toggle between On or Off.
 - **On** – The system will prompt you to save a file after you choose to save a file.
 - **Off** – The system will save the file automatically after you choose to save a file.


Section 3: Collecting Data

After the configuration is complete, you are now ready to collect data.

Important Note: To assure consistency of StructureScan Mini HR's naming of the files collected and saved, it is highly recommended that the SD card be inserted prior to any data collection.

Collect Menu Options

- 1 From the Main Menu, select Collect by pressing ←.
- 2 Use ↑ ↓ buttons to highlight the appropriate options under the Collect Menu.
Before you begin to collect data you may want to configure the Mini HR for a particular scan/project.

START COLLECT	
PROJECT	Proj_1
DEPTH	20 cm
DIELECTRIC	8.0
AUTOTARGET	ON
DISPLAY	B
COLOR	
145 min	15:44:40
	STORAGE: 4812.00

Project: Saving Files to a Specific Project

- 1 Highlight Project and press ↵
- 2 Highlight a Project number and press ↵. All files that you save during collection will be saved under this project. (Note: you may want to take field notes to document what files were saved in which project).

Depth: Selecting the Depth Where You are Scanning

- 1 Highlight Depth.
- 2 Press ↵ to toggle between 8, 12, and 16 inches (20, 30, and 40 cm).

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Dielectric: Selecting the Approximate Dielectric of the Area You are Scanning

- 1 Highlight Dielectric and press **↵**. Change the Dielectric value by:
 - Press **←** to change the number after the decimal point.
 - Press **↑↓** to change the number before the decimal point.
 - Press **→** to quit WITHOUT saving the new value.
 - Press **↵** to set your new value.

Having the correct value will improve your depth accuracy. A higher value is necessary for young concrete or concrete that is under water.

- Less than 2 months/outside in wet environment, use 9+
- Younger than 12 months/outside, use 7-8
- Older than 12 months/indoor/dry, use 5-6

For more detailed information on concrete dielectric values, refer to the GSSI Handbook for RADAR Inspection of Concrete that came with your system on the documentation CD.

START COLLECT	
PROJECT	Proj_1
DEPTH	8 in
DIELECTRIC	4.6
AUTO TARGET	OFF
DISPLAY	B
COLOR	
11 min	19:41:21
STORAGE: 15757 ft	

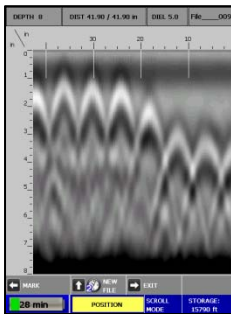
CHANGE FRACTION	CHANGE VALUE	QUIT	SET VALUE
			
140 min	19:48:03	STORAGE: 15757 ft	

Auto target: Allowing the Mini HR to Automatically Pick Your Targets

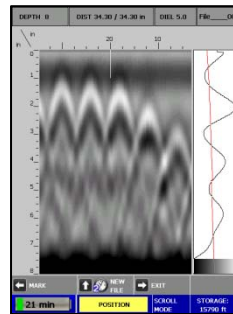
- 1 Highlight Auto Target.
- 2 Press **↵** to toggle between On and Off.
 - On – The Mini HR will place dots on what it interprets as targets as you collect data, and when pulling the Mini straight back.
 - Off – No dots and no interpretation will be done by the Mini HR

Display: While Collecting Data, Display Data Only or Data + O-Scope

- 1 Highlight Display.
- 2 Press **↵** to toggle between B (data only) and A+B (data + o-scope).



Data only display during collection




Data + O-Scope display during collection

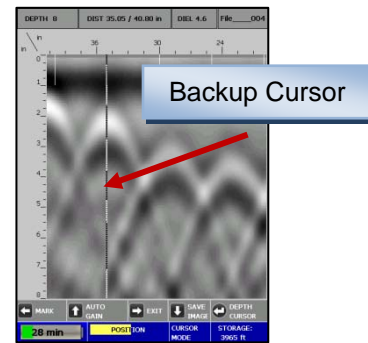
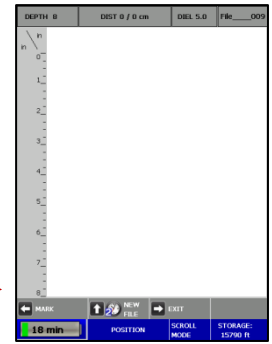
Color: Choosing the Colors You Want Displayed During Data Collection

- 1 Highlight Color.
- 2 Press **←** to toggle between five the different color schemes available for data display during collection.

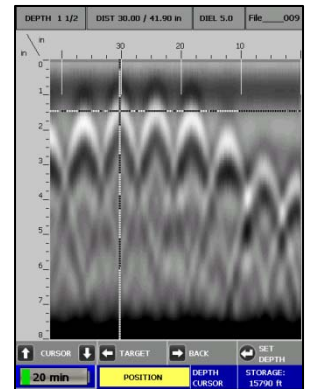
Collecting Data and Marking Your Targets

- 1 Highlight Start Collect and press **←**. This screen is displayed. 
- 2 Note the information at the top of the screen:
 - Depth – The depth you have chosen for this scan.
 - Dist. – The distance you have scanned.
 - Diel. – The dielectric you have chosen for this scan.
 - “File____XXX” – The filename of this scan if you choose to save this file.
- 3 Move your cart forward. Data only gets collected when you move the cart forward.
- 4 Once you start seeing hyperbolas on the screen, pull the system straight back along your survey line. You will see a vertical line (the backup cursor) scroll along your data. When that vertical line is right over the apex of the hyperbola, the center of the antenna is over that target.

Note: When you pull the Mini HR straight back, and if you configured Auto Target On, the Mini will interpret target locations by placing yellow dots on the targets.



- 5 The center of the antenna is directly under the Mini HR. After marking the location of the target on the ground using the laser (if configured On) at each side of your cart as a guide (or the groove on each side of the cart as a guide if the laser is configured Off). Push the cart straight forward or move the cart to do another line scan. No data will be collected until you have passed the spot where you started to reverse.
- 6 If you wish, you may calibrate depth (optional). Match the target location in the data to its location in your survey area. Drill down to that target and measure the depth.
 - a) Backup the Mini HR and press **←** “Depth Cursor” to display crosshairs and set them over the target in the data.
 - b) Press **↑ ↓** to line up the horizontal line in the middle of first dominant color of that target.
 - c) Press **←** to Set Depth.
 - d) Press **↑ ↓** until the Depth in the upper left hand corner matches the measured depth.
 - e) Press **←** to Set Depth. The vertical scale will adjust and the dielectric will be updated. Please note that this is only an approximation of the true depth because the dielectric value or constant can change with depth and across the site.
 - f) Press **→** to continue scanning.



7 Auto Gain Feature

At times, while collecting data, the screen may be over or under gained. To correct this, backup the Mini HR and press **↑** Auto Gain. This will correct the gain without changing the dielectric. Continue forward to collect data with the new gain setting.

8 Save Image

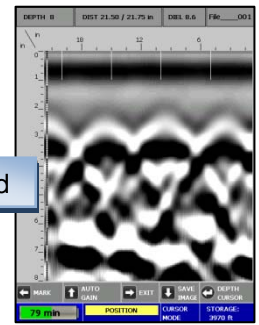
To save an image of the data that was collected, backup the Mini HR and press **↓** Save Image. The file will save as a Bitmap file.

9 Other Options

- While collecting data (with no backup cursor on the screen), press and **HOLD ↑** (New File) to save your current file. If you have configured Save Prompt On, you will be prompted to confirm the save. Press **↑** to save, **↓** to not save the data. If you have configured Save Prompt Off, it will save automatically.
- Press **←** to place a user mark in your data.
- Press **→** to exit. If you have configured Save Prompt On, you will be prompted to confirm the save. Press **↑** to save, **↓** to not save the data. If you have configured Save Prompt Off, it will save automatically.

Helpful Hint: Make a sketch map of your survey area with immovable objects as reference points. Sketch in your survey files, note the start and stop points, direction of travel, and file name on the map. This will make it much easier to relocate your targets after the survey.

Helpful Hint: The top of a target is generally the middle of the first positive peak for metal targets (rebar, tensioned cable, wires in PVC, conduit). If you are working in a grayscale color table, the positives are white. If the utility is air or gas filled (empty PVC, voids) the top of the target is the middle of the first negative peak (black). Please refer to Appendix C for examples of the different types of data.



Section 4: Data Playback and Review

The Playback menu provides tools to help you interpret your data. None of these functions are required to get interpretable data. They are simply meant to help you in the interpretation of the data. These functions do not permanently change your data or affect your saved data in any way. More intensive processing can be done in the RADAN processing program (sold separately).


Playback Menu Options

- 1 From the Main Menu, select Playback by pressing →.
- 2 Use ↑ ↓ to highlight the appropriate options under the Playback Menu.

Before you begin to playback data (Playback), you may want to configure the Mini HR to give you some helpful tools in the interpretation of the data.

Project: Selecting a Specific Project to Select a Specific File to Playback

- 1 Highlight Project.
- 2 Highlight and press ←↵ to select the project where the file you want to play back is located.
- 3 Use ↑ ↓ to scroll down or up.
- 4 Highlight and press ←↵ to select the specific file you want to play back.

PLAYBACK	File____003
PROJECT	Proj_1
AUTO DEPTH	OFF
AUTO TARGET	OFF
AUTO GAIN	OFF
DISPLAY	B
COLOR	
74 min	09:20:54
	STORAGE: 9965 ft

Auto Depth: Automatically Adjusting Depth Scale

- 1 Highlight Auto Depth.
- 2 Press **↵** to toggle between Auto and Orig.
 - Auto – The Mini HR will estimate the depth of targets and automatically adjust the Depth Scale.
 - Orig – The Mini HR will use the original value set during collection.

Auto Target: Allowing the Mini HR to Automatically Pick Your Targets

- 1 Highlight Auto Target.
- 2 Press **↵** to toggle between On and Off.
 - On – The Mini HR will place dots on what it interprets as targets.
 - Off – No dots and no interpretation will be done by the Mini HR.

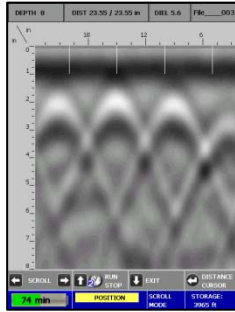
Note: Auto Target is for information purposes only and you should carefully examine your data to ensure that the Mini HR has correctly located objects.

Auto Gain: Allowing the Mini HR to Automatically Configure the Gain

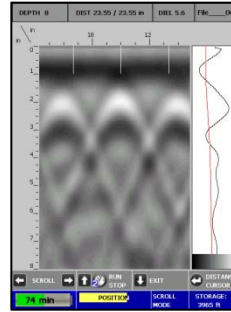
- 1 Highlight Auto Gain.
- 2 Press **↵** to toggle between On and Off.
 - On – The Mini HR will reconfigure the gain.
 - Off – The Mini HR will use the gain used during data collection.

Display: While Viewing Data, Display Data Only or Data + O-Scope

- 1 Highlight Display.
- 2 Press **←** to toggle between B (data only) and A+B (data + O-scope).



Data only display during collection



Data + O-Scope display during collection

Color: Choosing the Colors to Display during Data Collection

- 1 Highlight Color.
- 2 Press **←** to toggle between five different color schemes to be displayed during collection.

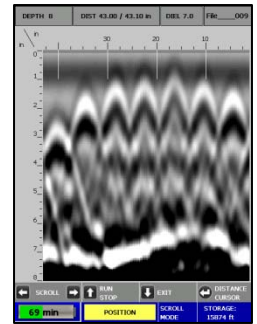
Playing Back the Selected File

- 1 Highlight Playback.
- 2 Press **↵** to play back the selected file.

Note at the top of the screen the following information:

- Depth
- Distance
- Dielectric
- File name

Data with Auto Target OFF



While in Playback, you will have an option to toggle between four different modes by simply pressing the Enter button. The mode you are in will be displayed at the bottom of the screen.

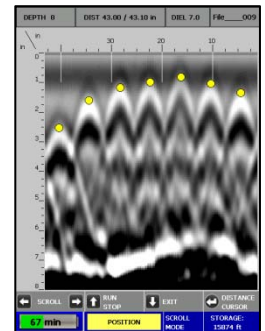
Scroll Mode – Allows you to scroll your data left and right

Distance Cursor Mode – Allows you to move a vertical line left and right on your data

Depth Cursor Mode – Allows you to move a horizontal line up and down on your data.

Set Depth Mode – Allows you to set a known depth to your targets.

Data with Auto Target ON



Scroll Mode

← → – Scroll through your data.

↑ – Run Stop, while your data is scrolling, press Up Arrow to stop and start the scrolling. Hold this button for 2 seconds will load the next file in the project.

↓ – Exit back to the Playback menu. If you added or deleted any targets, the system will prompt you to save your targets. Press ↑ for Yes, ↓ for No.

↶ – Switch to Distance Cursor Mode.



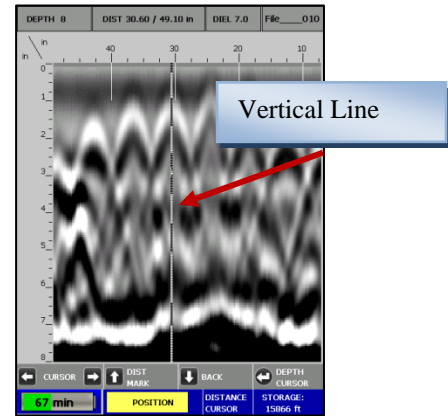
Distance Cursor Mode

← → – Move the vertical line left and right.

↑ – Place a user mark at the location of the vertical line.

↓ – Return to Scroll Mode.

↶ – Switch to Depth Cursor Mode.



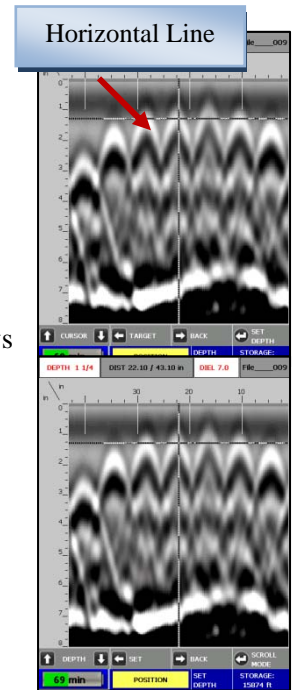
Depth Cursor Mode

- ↑ ↓ – Move the horizontal line up and down.
- ← – Toggles between placing and deleting a dot to mark a target where the cross hairs are.
- – Return to Distance Cursor Mode.
- ↶ – Switch to Set Depth Mode.



Set Depth Mode

- ↑ ↓ – Entering a known depth for the target in the crosshairs. The upper left hand corner displays the depth
- ← – Once the correct depth is displayed, set the depth. Note: If the depth of a target changes, this will automatically change the dielectric.
- – Return to Depth Cursor Mode.
- ↶ – Switch to Scroll Mode.



Section 5: Reset to Factory Settings

This will reset the Mini HR to the factory settings. This will NOT delete the data you have saved.

Simply press the Down Arrow from the Main Menu.

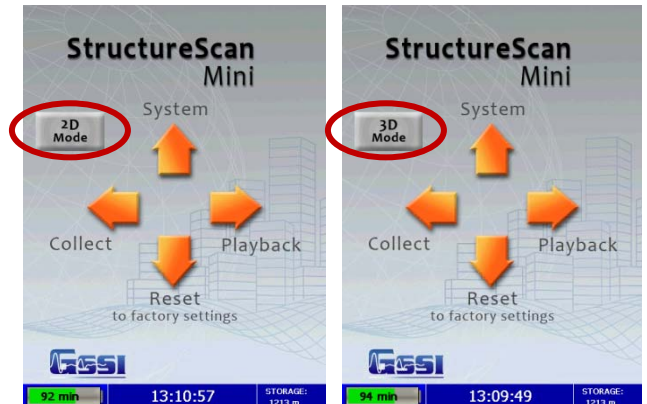
↑ to Confirm.

↓ to Cancel.

Section 6: StructureScan Mini HR 3D - Collecting and Processing 3D Data

The StructureScan Mini HR comes with 3D collecting and processing if you have purchased this feature. You may also upgrade to this feature with your current StructureScan Mini HR if you did not originally purchase this feature. Contact your GSSI sales representative for upgrade information.

If you have the 3D feature, there will be a new option on the screen upon booting your StructureScan Mini HR. There will be a button that allows you to toggle between 2D and 3D mode. Simply press the Enter Key ↵ to toggle between 2D and 3D mode.



Configuring the StructureScan Mini HR for 3D Collection

- 1 From the Main Menu, select System by pressing **↑**.
- 2 Use **↑** and **↓** buttons to highlight the appropriate options under the System Menu.

Date/Time: Configuring Date and Time

- 1 Highlight Date/Time and press **↵**.
- 2 Highlight any of the options you wish to change and press **↵**. The following options will appear at the bottom of the screen:
 - Change Value – Use **↑** and **↓** to change the value.
 - Set Value – Press the Enter button to accept your change.
 - Quit – Use **→** to quit **WITHOUT** saving the changes.



- 3 Press **→** to return to the previous menu.

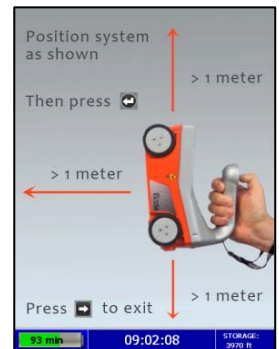
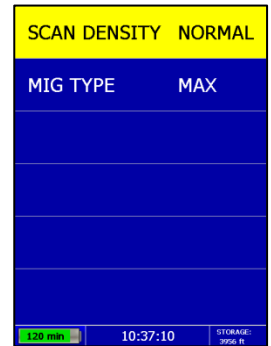
Configuration: Configuring Orientation, Language, Units, Laser, and Sound

- 1 Highlight Configuration and press **↵**.

YEAR	2009
MONTH	AUGUST
DAY	24
HOUR	9
MINUTE	30
TIME ZONE	GMT - 5
160 min	09:30:08
STORAGE: 15881 ft	

ORIENTATION	RIGHT
LANGUAGE	ENGLISH
UNITS	ENGLISH
LASER	ON
SOUND	HIGH
VERSION(s)	1.1.1.5mn
OPTIONS	
120 min	10:36:38
STORAGE: 7956 ft	

- 2 Press **↑** **↓** to select the appropriate options:
- Orientation – Press **←** to toggle between Right or Left. This will flip the screen to allow for either right or left handed operation..
 - Language – Press **←** to select your language preference.
 - Units – Press **←** to toggle between English or Metric.
 - Laser – Press **←** to toggle laser On or Off. If configured On, the laser will light up in the Collect Menu only. Note: The laser will blink (whether configured On or Off) when battery life is low (10%).
Caution: Do not stare into beam.
 - Sound – Press **←** to toggle between High, Medium, Low, or Off.
 - Version(s) – Press **←** to display the version number of the software. Please visit GSSI's web site for updates to the firmware.
 - Options – Press **←** to configure Scan Density and Migration Type.
 - Scan Density – Press **←** to toggle between Normal and Low.
 - Normal – The Mini HR will scan at 8 scans/cm (approximately 240 scans/ft).
 - Low – The Mini HR will scan at 4 scans/cm (approximately 120 scans/ft).
 - Mig Type – When Migrating the data, whether to use the full samples or half samples.
 - Max – Full number of samples (slower processing, but clearer picture).
 - Half – Every other sample (faster processing, but not as clear picture).
 - Press **→** to return to the previous menu.



- 3 Press → to return to the previous menu.

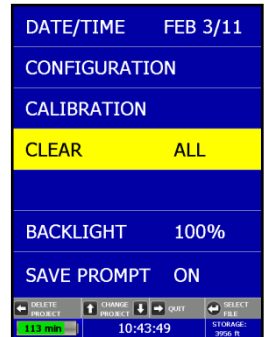
Calibration: Auto Calibrations for Surface and Brightness

- 1 Highlight Calibration and press ↵.
 - a) Hold the Mini HR upside down about 1 meter (3 ft) from any surface.
 - b) Press ↵. The Auto-Calibration will take several seconds.
- 2 Press → to return to the previous menu.

Clear Storage: Deleting Saved Data

A project is a folder which holds individual files.

- 1 Highlight Clear Storage and press ↵.
- 2 At the bottom of the screen, a new set of options is displayed.



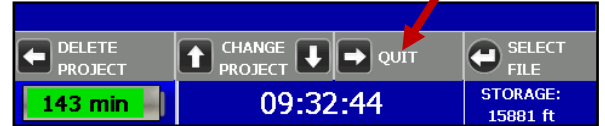
Deleting All Projects or Deleting Specific Projects

All Projects: If you wish to delete **ALL** of your projects and all the files associated with each project:

- 1 Press ← when Clear All is displayed.
- 2 Press ↑ to confirm, ↓ to cancel the deletion.

Specific Projects: If you wish to delete a specific project or specific files within a project:

- 1 Press ↑ ↓ to select the specific project.
- 2 Press ← to delete that entire project (and all the files associated with that project).
- 3 Press ↑ to confirm, ↓ to cancel.
- 4 At any time, you may press → to quit.



Specific Files in a Specific Projects: Deleting specific files within a specific project:

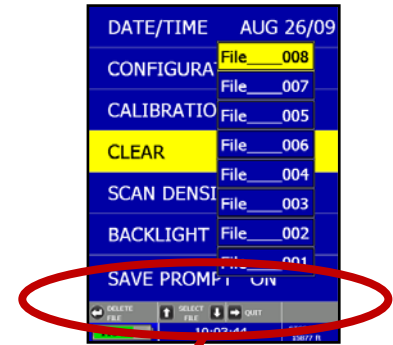
- 1 Press **↑** **↓** to select a specific project.
- 2 Press **←** to select that project.
- 3 Press **↑** **↓** to select a specific file.
- 4 Press **→** to delete the selected file.
- 5 Press **↑** to confirm, **↓** to cancel.
- 6 At any time, you may press **→** to quit.

Backlight: Setting the Brightness of the Mini HR Backlight

- 1 Highlight Backlight.
- 2 Press **←** to toggle between 25%, 50%, 75%, or 100%.

Save Prompt: Whenever Saving, Have the System Prompt You to Save or Save Automatically

- 1 Highlight Save Prompt.
- 2 Press **←** to toggle between On or Off.
 - On – The system will prompt you to save a file after you choose to save a file.
 - Off – The system will save the file automatically after you choose to save a file.



Collecting 3D Data

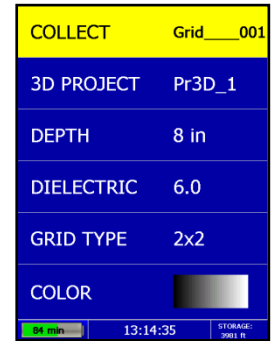
After your configuration is complete, you are now ready to 3D collect data.

Important Note: To assure consistency of StructureScan Mini HR's naming of the files collected and saved, it is highly recommended that the SD card is inserted prior to any data collection.

Collect Menu Options

- 1 From the Main Menu, select Collect by pressing ←.
- 2 Use ↑ ↓ buttons to highlight the appropriate options under the Collect Menu.

Before you begin to collect data (Collect), you may want to configure the Mini HR for a particular project.



3D Project: Saving Files to a Specific Project

- 1 Highlight Project and press ↵
- 2 Highlight a Project number and press ↵ All files that you save during collection will be saved under this project. (Note: you may want to take field notes to document what files went under which project).

Depth: Selecting the Depth Where You are Scanning

- 1 Highlight Depth.
- 2 Press ↵ to toggle between 8, 12, and 16 inches (20, 30, and 40 cm).

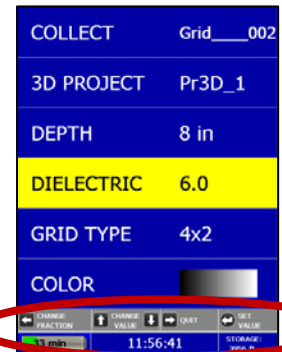
Dielectric: Selecting the Approximate Dielectric of the Area You are Scanning

- 1 Highlight Dielectric and press **↵** Change the Dielectric value by:
- **←** to change the number after the decimal point.
 - **↑ ↓** to change the number before the decimal point.
 - **→** to quit WITHOUT saving the new value.
 - Press **↵** to set your new value.

Having the correct value will improve your depth accuracy. A higher value is necessary for young concrete or concrete that is under water.

- Less than 2 months/outside in wet environment, use 9+
- Younger than 12 months/outside, use 7-8
- Older than 12 months/indoor/dry, use 5-6

For more detailed information on concrete dielectric values, refer to the GSSI Handbook for RADAR Inspection of Concrete that came with your system on the documentation CD.



Grid Type: Toggle to Select Grid Size


- 1 Highlight Grid Type.
- 2 Press **←** to toggle between 1 x 1, 2 x 2, or 4 x 2 (30 x 30, 100 x 100, 60 x 60, 120 x 60 cm)






Color: Choosing the Colors You Want Displayed During Data Collection

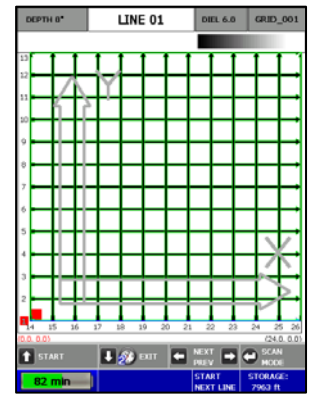
- 1 Highlight Color.
- 2 Press **←** to toggle between five different color schemes to be displayed during collection.

Collect: Collect 3D Grid



Highlight Collect and press enter to begin collecting 3D data

- 1 Begin by lining up the Mini HR with the appropriate pad. Using the lasers, line up the laser pointing forward with Line 1. Line up the side lasers with the start line of the pad.
- 2 Once you have lined up the Mini HR, Press the Start Button  and then roll the Mini HR to the other end of the grid. The Mini HR will automatically stop collecting once it reaches the end of the grid.




- 3 Return the Mini HR to the start of the grid and line up the lasers with the next line and repeat the process until all the lines needed are collected.
- 4 Note at the top of the screen. This displays which line number you should be collecting.
- 5 You may press the “Next\Prev” buttons, (Left\Right)  , to scan a specific line. This can be used if you do not collect a line correctly and need to redo a line.
- 6 Press  Scan Mode, to toggle the view of the scan.



7 During collection, you may:


- Press the Mark Button  to place a mark in the data as a reference point.
- Press the Stop Button  and hold for two seconds to stop collecting that particular line because of an obstacle.




8 When you are done collecting all the lines, press and hold the Exit Button  for two seconds. The Mini HR will save, process, and display the grid (See Playback section for processing saved data).


Playback: Processing and Drawing the 3D Grid

There are two ways to process and draw the 3D Grid.

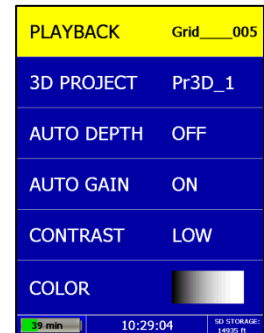
1 After you finished collecting the data by pressing and holding the Exit Button  for two seconds, The Mini HR will save, process, and display the grid.

OR


2 From the Main Menu,press  to select Playback

a) Highlight 3D Project and press  to select the appropriate project and then select the appropriate Grid.


b) Highlight Playback and press  to process and draw the grid.



Other Playback Menu Options


Auto Depth – Press  to toggle between On and Off.

- On – The Mini HR will estimate the depth of targets and automatically adjust the Depth Scale.
- Off – The Mini HR will use the original value set during collection.

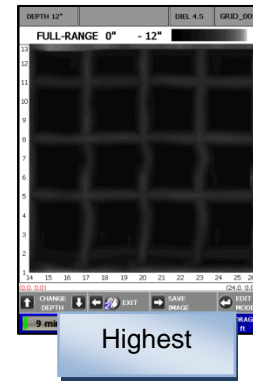
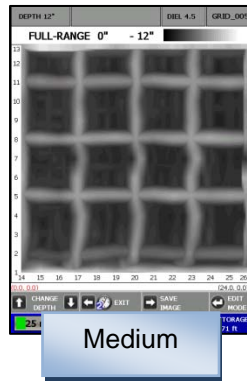
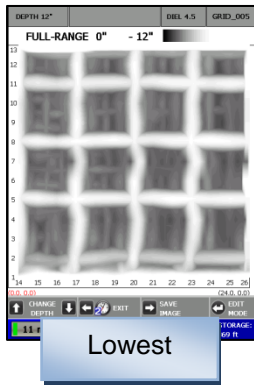
Auto Gain - Press  to toggle between On and Off.


- On – The Mini HR will reconfigure the gain.

- Off – The Mini HR will use the gain used during data collection.

Contrast - Press  to toggle between Lowest, Low, Medium, High, Highest.

- The lower the contrast, the more “positive” colors are displayed.
- The higher the contrast, the more “negative” colors are displayed.
- See the color scale below to see how much color is displayed as you toggle through these options. Low or Medium are good defaults.



Color – Press  to toggle between colors for display of the data.

Once the Mini HR has processed the data, it will display the grid. You will be in Depth Slice Mode as noted at the bottom of the screen.

Modes

You may press the Enter button \leftarrow to toggle between different modes for display and edit purposes. They are: Depth Slice Mode, Cursor Mode, Color Mode, and Select Profile Mode.

Depth Slice Mode

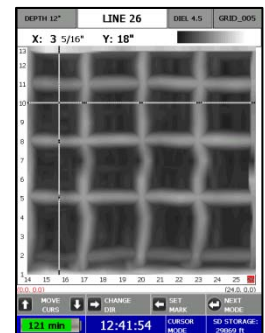
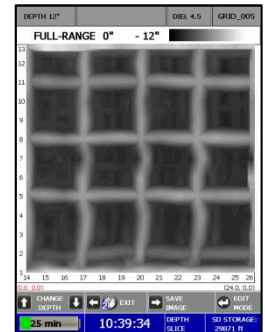
- 1 The initial display will be the Full Range of the grid. Pressing the \uparrow from the Full Range will decrease the range depth by $\frac{1}{2}$ inch (1.27 cm) increments. Pressing the \downarrow will slice down through the image in $\frac{1}{2}$ inch (1.27 cm) increments. Note the top of the screen. It will display the depth of the slice or the total depth of the slice.
- 2 Press \leftarrow and hold for two seconds to Exit.
- 3 Press \rightarrow to save the image as a .bmp file.
- 4 Press \leftarrow to toggle to Cursor Mode.

Cursor Mode

This will display crosshairs on the data so that X and Y coordinates located at the top of the screen may be noted as the location of a target.

- 1 Press \uparrow \downarrow buttons to move the crosshair in the Y Direction.
- 2 Press \rightarrow to change the menu to the X Direction Mode so that you may move the crosshair in the X Directions by pressing \uparrow \downarrow .
- 3 Note the X and Y coordinates at the top of the screen as you move the cross hairs.
- 4 Press \leftarrow to set a mark at the location of the crosshairs.

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- Press **↓** to place a dot at the location of the crosshairs.
- Press **←** to place a line following the vertical line of the crosshairs.
- Press **↵** to return back to Edit Mode View.

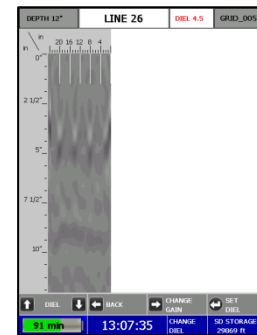
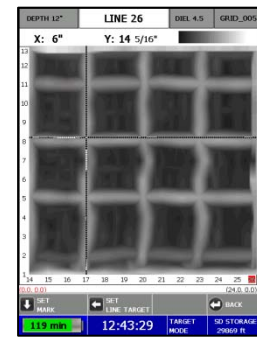
5 Press **↵** to toggle to Color Mode.

Color Mode: Allow to change data color and contrast

- 1 Press **←** to toggle between different colors.
- 2 Press **↑** **↓** to change the contrast of the screen.
- 3 Press **↵** to toggle to Select Profile Mode.

Select Profile Mode: Displays a specific 2D profile on the screen

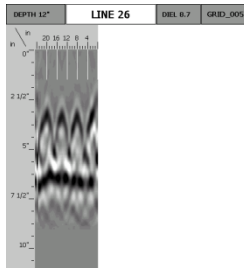
- 1 Press **←** **→** to select which profile to display.
- 2 Press **↓** to display the 2D profile.
 - Press **←** **→** to display previous or next 2D Profile
 - Press **↑** to turn Focus on or off
 - Press **↓** to return to Select Profile Mode
 - Press **↵** to change Dielectric.
 - Press **↑** **↓** to change the Dielectric Value
 - Press **←** to return to the previous screen



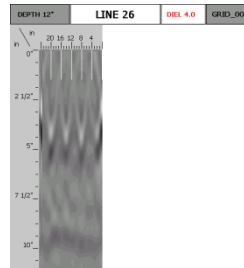
- Press → to change the gain
- Press ← to set the new Dielectric.

3 Press ← to return to Depth Slice Mode

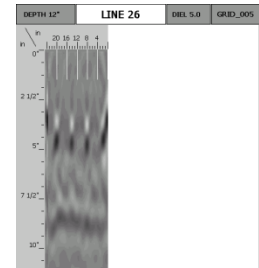
Note: When changing and setting the dielectric, the system will redisplay the data. The goal is to have “dots” instead of hyperbolas’.



Dielectric Too High,
Hyperbola tails point down.
Adjust Dielectric Down



Dielectric Too Low,
Hyperbola tails point up .
Adjust Dielectric Up



Dielectric about Right,
Displays Dots and no or
very little tails.

Appendix A: Inventory of Your System

- StructureScan Mini HR
- SD card (already inserted into the back of the Mini)
- Battery charger (2 slots)
- Battery charger adapter
- International plugs for the battery charger adapter (3)
- Quick Start Guide (this manual)
- USB cable
- Batteries (2)
- GSSI wrist strap
- Training DVD
- Resource CD
- Transit case

Note: If you wish to transfer any saved data to your PC, simply remove the card and transfer the data to your PC.

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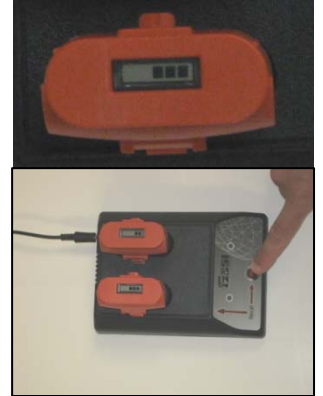


SD

Appendix B: Battery/Charger Information

Your system comes with a two-slotted battery charger and adapter. It also comes with three international interchangeable plugs.

- To charge your batteries, simply attach the adapter to the charger and plug in the adapter. Insert one or both batteries. The batteries will charge one at a time. The bars located at the top of the batteries will indicate how much charge is left in the battery.
- At times, you may wish to re-calibrate a battery. Simply insert a battery into the slot on the left and press the RECAL button
- **LED Lights** – As the batteries are charging, the LED lights for each slot will do different things.
 - No Lights – No Batteries
 - Green Flash – Fast Charging
 - Green Solid – Fully Charged
 - Yellow Flash – Recalibrating
 - Yellow/Green – Recalibrated
 - Yellow Solid – Standby
 - Red Flash – Error

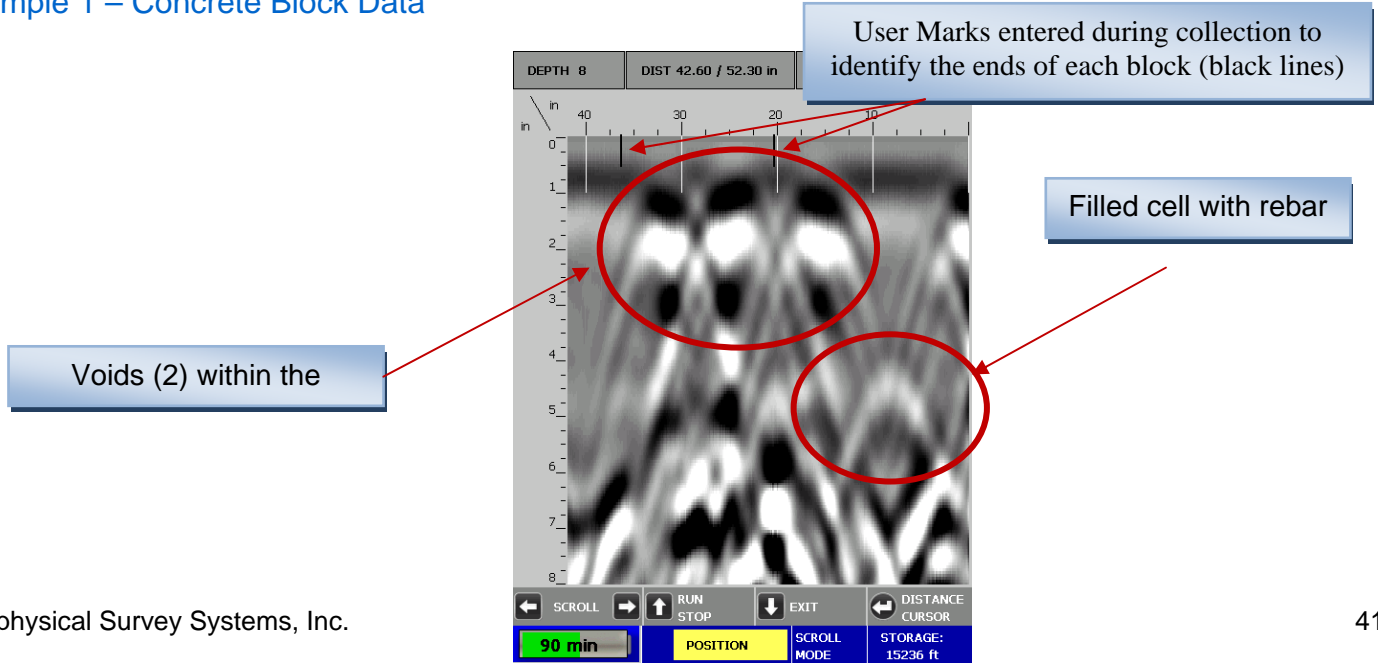


- If the charger remains plugged in and there are NO batteries in the charger, the charger will eventually begin to “beep.” Since this can be annoying, it is recommend that you unplug the charger when not in use.

Appendix C: Sample Data

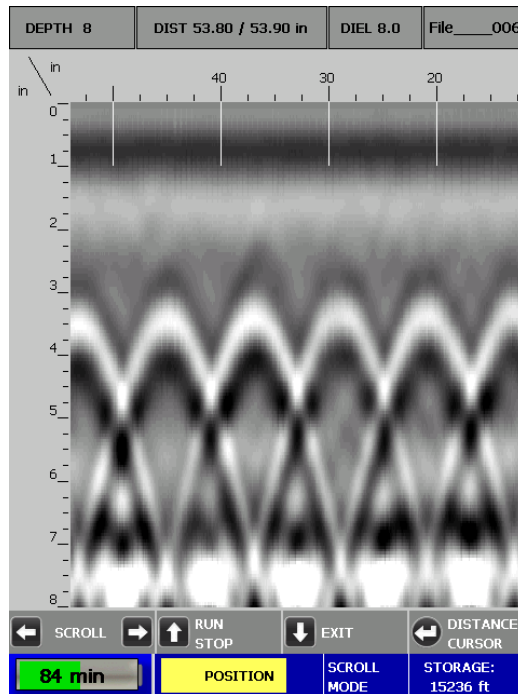
These examples are presented for informational use only. Conditions may be different at your site that may cause the images to look different from the data shown here.

Example 1 – Concrete Block Data



Example 2 – Rebar Data

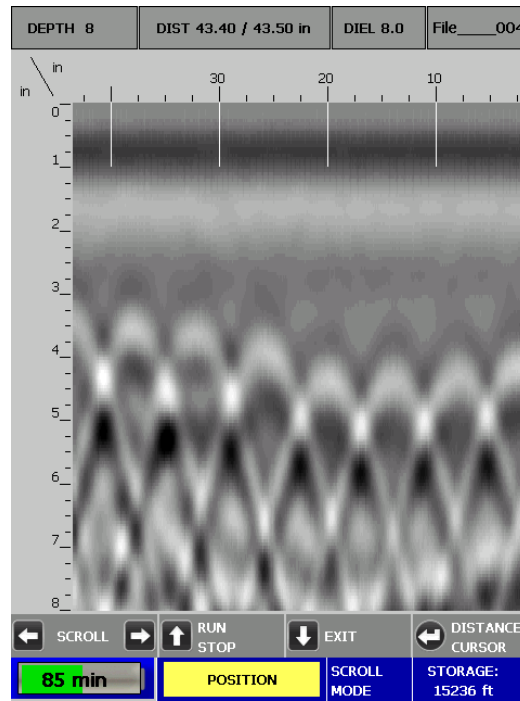
This is an example of rebar. Note the distance between the peaks here (as well as at the location if you marked the area) is approximately 8 inches. Also note the approximate depth, the brightness of the hyperbolas, and they tend to be at a constant depth over short distances.



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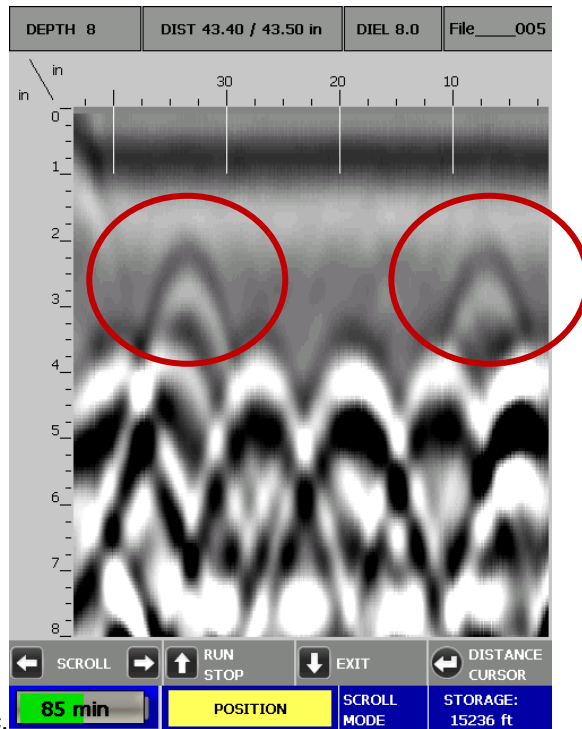
Example 3 – Mesh Data

This is an example of mesh. Note the distance between the peaks here (as well as at the location if you marked the area) is approximately 6 inches. Note the approximate depth and the brightness of the hyperbolas. Wire mesh depths may be more uneven than rebar.



Example 4 – PVC

This is an example of two PVC pipes. Note that they tend to be dimmer than rebar.



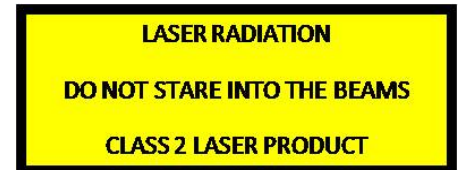
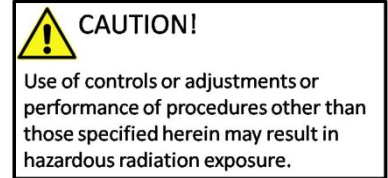
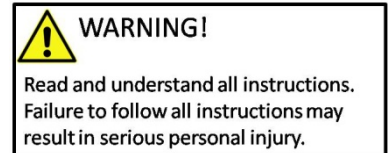
Appendix D: Laser Information


Laser Information: General

- Do not intentionally point the laser into your eye. Do not look directly into the laser light source.
- Do not place the laser in a position that may cause anyone to stare into the laser beam intentionally or unintentionally.
- Always power down the unit when not in use.
- Never view a laser through an optical device such as binoculars or a microscope.

Laser Information: Specific for the StructureScan Mini HR

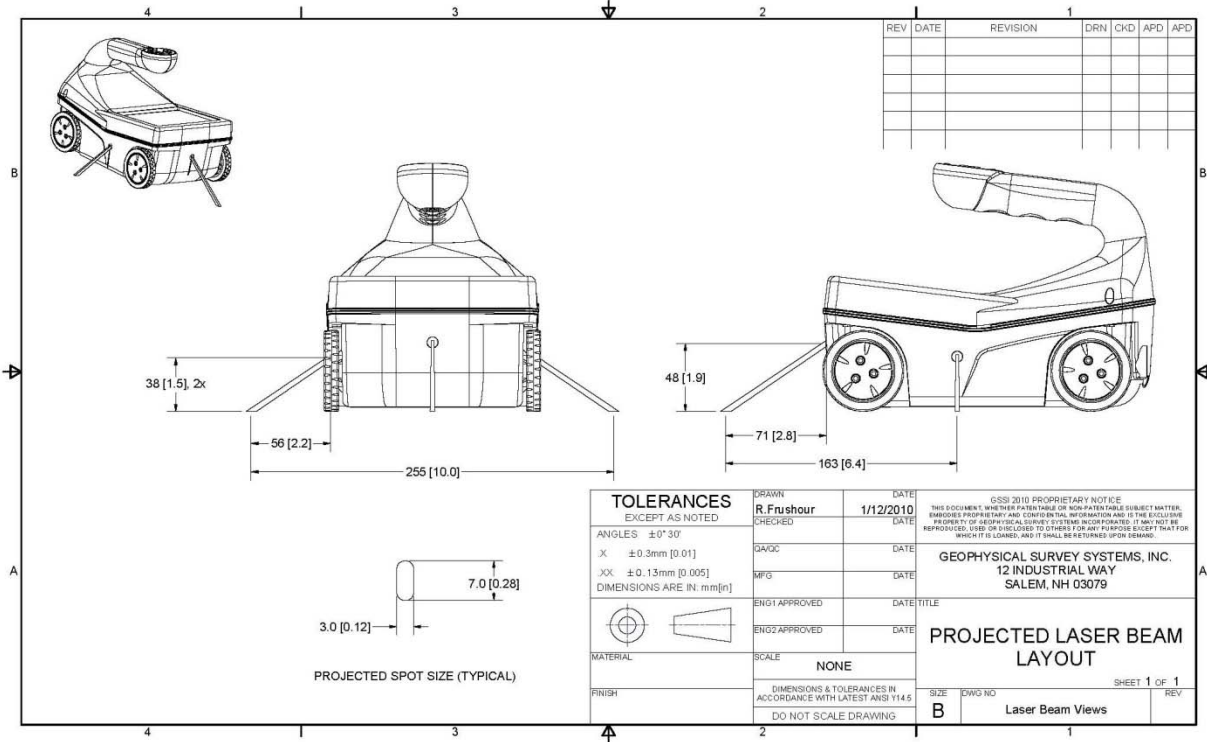
- Do not remove or deface any product labels.
- This product contains lasers used as guides. Do not stare into any of the beams.
- You may configure the lasers on or off. From the Main menu:
 - 1 Select **↑** Configure
 - 2 Press **↑↓** and highlight Configuration and press Enter.
 - 3 Press **↑↓** and highlight LASER



4 Press  to toggle the laser On or Off.

- This product is designed to be opened by Field Service Professionals employed and/or trained by Geophysical Survey Systems, Inc only. Do not open this product. Tampering with this product voids all warranties.
- The laser has no serviceable parts.
- The laser will flash several times during system boot up.
- The laser will blink (whether Laser is configured On or Off) when the battery life is low (10%)
- **Remove the battery whenever transporting the product.**
- **Remove the battery whenever doing any self maintenance to the product, such as cleaning the windows of the lasers.**
- If the lasers are configured On and the lasers are not working during collection of data, do not open the product. The product must be serviced by an authorized GSSI employee or representative only.
- If the lasers are configured On, they will work only while in the Collect Menu option.
- The lasers will remain on (if Laser is configured On) even if the unit goes into sleep mode.

Laser Information: Projected Laser Beam Layout



Laser Information: Label Placement Diagrams

