GENERAL LASER

GLidar

Manual

Firmware version 1.0

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1 Introduction

GLidar is a mobile handheld Lidar scanner. Its key features are:

- Delivers instant results
- Real time data processing
- 3D model generation and visualization
- Modular design, removable handle and battery
- Samples up to 5.2 million points per second
- Filter for horizontal field of view, min/max distance, reflectivity, intensity & sampling mode
- Output in 6 file formats: .laz .e57 .las .pcd .ply .xyz
- Made in Austria

1.1 Specifications

Lidar Sensor Type	Ouster OS0 REV7 Ultra-wide view	Ouster OS1 REV7 Mid-range view	Ouster OS2 REV7 Long-range view
Vertical resolution (channels)	64 or 128	64 or 128	64 or 128
Maximum represent-able range	~100 m	~200 m	~400 m
Range (10% reflective target at 90% detection probability)	35 m	90 m	200 m
Minimum range [1]	0.5 m	0.5 m	0.8 m

Precision [2]	± 0.5 cm to ± 5 cm	± 0.5 cm to ± 5 cm	± 2 cm to ± 8 cm
Vertical field of view	90°	45°	22.5°
Vertical angular resolution	1.4° (64 channels) 0.7° (128 channels)	0.7° (64 channels) 0.35° (128 channels)	0.35° (64 channels) 0.18° (128 channels)
Horizontal resolution	512, 1024 or 2048	512, 1024 or 2048	512, 1024 or 2048
Horizontal field of view	360°	360°	360°
Horizontal angular resolution	Up to 0.18°	0.18°	0.18°
Points per second	Up to 5,242,880	Up to 5,242,880	Up to 2,621,440
Frame rate	10 or 20 Hz	10 or 20 Hz	10 or 20 Hz
Number of returns	2 (strongest-weakest, first-last)	2 (strongest-weakest, first-last)	2 (strongest-weakest, first-last)
Operating voltage	18 V	18 V	18 V
Operating temper-ature [3]	-40 to +70° C	-40 to +70° C	-20 to +65° C
Beam configura-tion options	Only for 64 channels: Uniform or Gradient	Only for 64 channels: Uniform or Gradient	Only for 64 channels: Uniform or Gradient

[1] Blockage detection binary flag between 0 m and

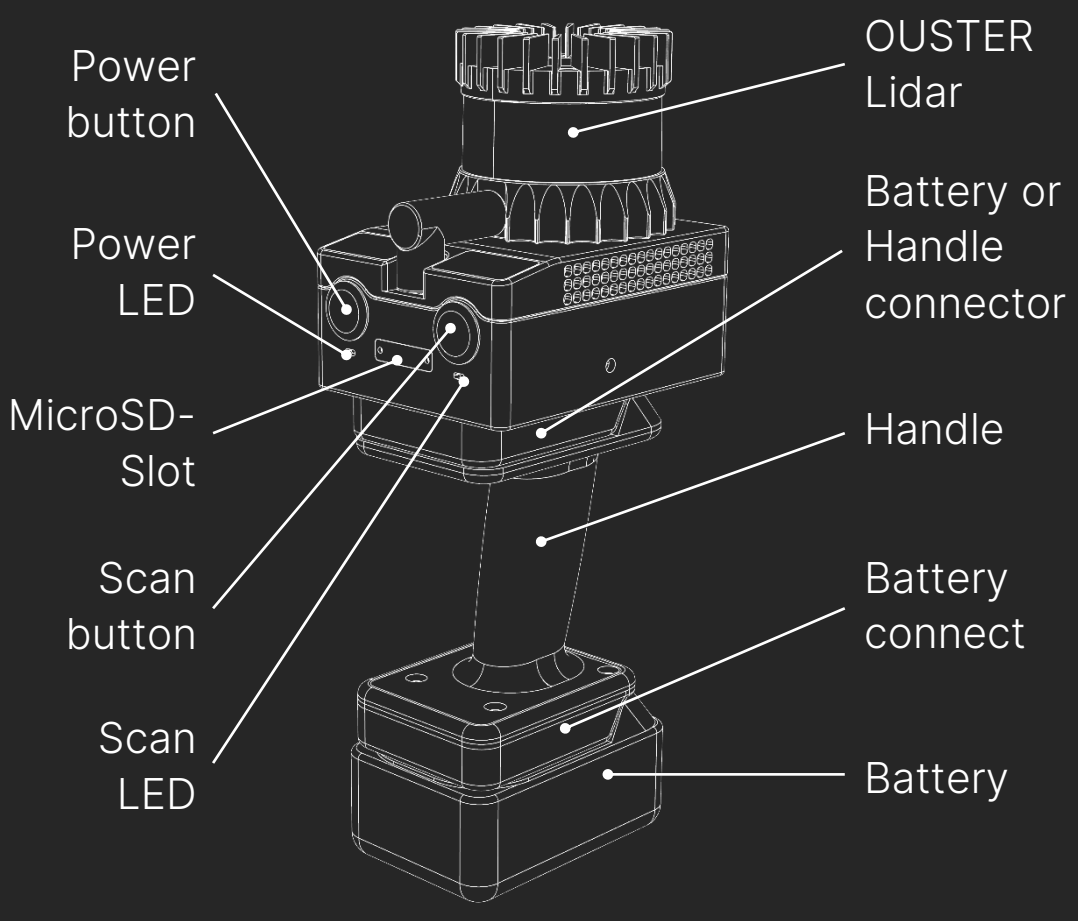
the minimum range (v2.0 beta feature)
[2] 10% Lambertian reflectivity, 1 standard deviation, OS0 operating in 1024 at 10 Hz mode
[3] Between +53 °C to +60 °C, sensor automatically reduces range (max 20% range reduction)

1.2 Dimensions and Weight

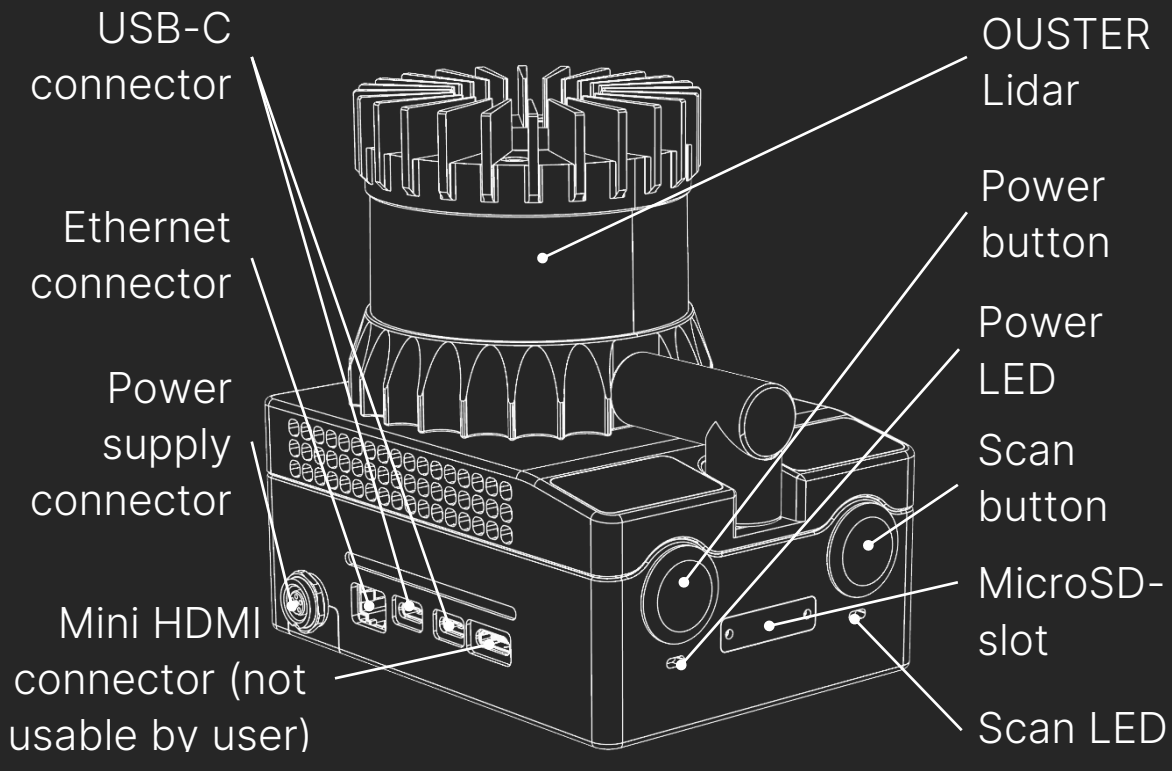
Configura-tion	Length × Width × Height	Weight (OS0 or OS1 Lidar sensor)	Weight (OS2 Lidar Sensor)
Scanner without battery and handle	130 × 97 × 130 mm	1585 g	2238 g
Scanner with battery without handle	130 × 97 × 200 mm	2228 g	2881 g
Scanner with battery and handle	130 × 97 × 320 mm	2437 g	3090 g

1.3 Overview

There are two models available for GLidar:



GLidar with battery connector



GLidar without battery connector

2 Safety

Before operating the system for the first time, please read this manual in full.

GLidar should only be used by trained operators who are familiar with its functions and safety guideline. Always follow basic safety precautions when operating with GLidar to reduce the risk of personal injury and to prevent damage to property or the GLidar equipment. Handle GLidar with care. Avoid dropping, impacting, or exposing the equipment to vibrations or harsh environments as this may damage sensitive internal components.

Do not operate the equipment with suspected defects or obvious mechanical damage. Please refer all servicing of the equipment to qualified service personnel for General Laser GmbH.

Only use the components and accessories supplied with your system or other accessories recommended by General Laser GmbH. The equipment contains sensitive electrical and mechanical parts and thus requires appropriate handling. Never push objects of any kind into the connectors or sockets. Keep the equipment out of the reach of children.

Under no circumstances should any modifications be made to GLidar without prior written permission from General Laser GmbH. Unauthorized alterations may compromise safety and invalidate warranties.

This equipment generates, uses and can radiate radio frequency energy. The radio frequency energy is limited to provide reasonable protection against harmful interference when the equipment is

operated in a commercial environment. If not installed and used in accordance with this user manual this may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause interference.

2.1 Laser Safety

GLidar has an Ouster Lidar integrated. Ouster Lidar devices (OS0, OS1 and OS2) have been evaluated to be Class 1 Laser Products in accordance with IEC60825-1: 2014 (Ed. 3) Equipment classification and requirements. Class 1 Laser Products are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intra-beam viewing.

2.2 Battery Safety

Do not short circuit the battery. Only use an 18 Volt CE certified battery or a CE certified power supply providing 18 Volt to power GLidar. External short-circuit, deformation by crush, high temperature (over 100°C) exposure of GLidar and/or the battery may cause generation of heat and ignition. Always store GLidar and the battery in a cold dry place. Do not leave GLidar and/or the battery in the sun or in a hot vehicle for a long period. Refer to the safety sheet of the respective battery/power supply manufacturer for detailed safety instructions.

2.3 Legal Disclaimer

General Laser GmbH assumes no liability for any damages or injuries resulting from the misuse, mishandling, or improper operation of GLidar. The

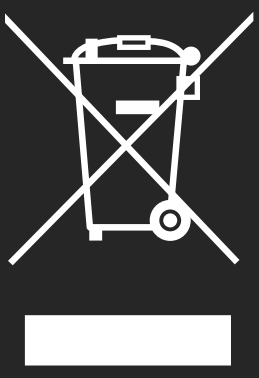
user is responsible for operating the equipment in accordance with the instructions and guidelines set forth in this manual. Users must ensure that they operate GLidar in compliance with local laws and regulations, particularly those related to data protection, privacy, and safety standards. General Laser GmbH will not be held responsible for:

- Any violations of local laws caused by the improper use of the equipment.
- Any damage resulting from dropping, improper transportation, or careless handling of the equipment.
- Any consequences, including damage to the device or injury, caused by unauthorized modifications or repairs.
- Any malfunction or damage caused by the use of non-approved accessories, batteries, or other components not supplied or authorized by General Laser GmbH.
- Damage to the GLidar due to operation or storage in unsuitable environmental conditions, including extreme temperatures, humidity, or exposure to corrosive materials.

2.4 Intellectual Property

All intellectual property rights, including patents, trademarks, copyrights, and trade secrets, of GLidar and its accompanying software, remain the property of General Laser GmbH or its licensors. Unauthorized reproduction, distribution, or reverse engineering of the equipment or software is strictly prohibited and may result in legal action.

2.5 System Disposal



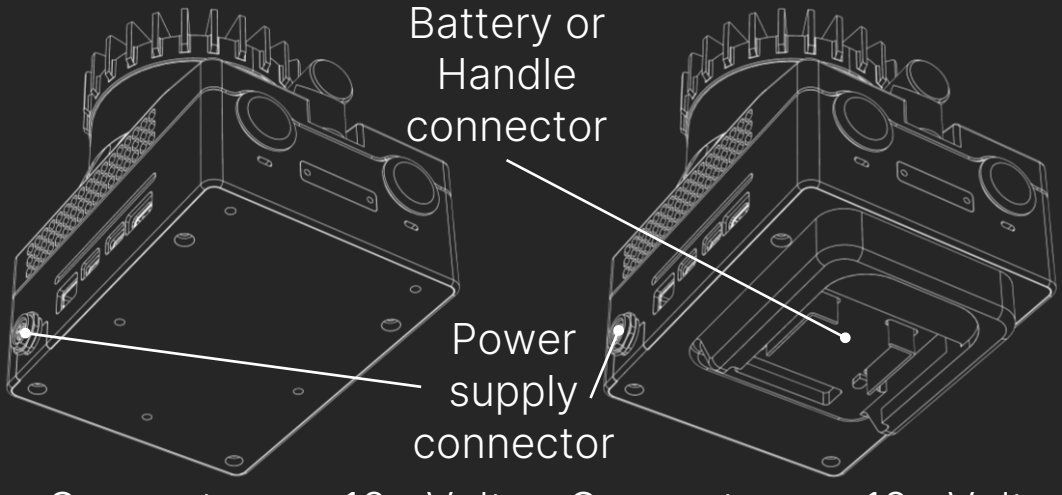
When your GLidar reaches the end of its life-cycle, dispose the equipment in accordance with local environmental regulations and Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). General Laser GmbH is prepared to take back the waste equipment and accessories free of charge at the companies headquarter (Wallgasse 25/8, A-1060 Vienna, Austria) for proper disposal in accordance with the objectives of the WEEE.

3 Before you start

GLidar has 2 buttons – Power button and Scan button – and 2 LEDs – Power LED and Scan LED.
The Power button is used to turn on and off GLidar, while the Scan button can be used to directly start a scan with default settings. The Power LED indicates the operating mode (see section 3.1), while the Scan LED indicates that the Scan button was used to directly start a scan.

3.1 Power supply

To power GLidar an 18 Volt power supply is needed. Depending on the model of GLidar you own, there are one (left model) or two (right model) different ways to power GLidar:



- Connect an 18 Volt power supply via a power cable to the *power supply connector* on the side of GLidar.
- Connect an 18 Volt battery by sliding it either directly to the *battery connector* of GLidar or by sliding it to the *battery connector* of the supplied handle and the handle to the *handle connector* of GLidar. It is

recommended to use an 18 Volt, 5 Ah Li-ion battery from Makita.

- Connect an 18 Volt power supply via a power cable to the *power supply connector* on the side of GLidar.

Changing Power Supply

Make sure that GLidar is turned off before removing the power supply. If you were using a battery, disconnect the discharged battery by pressing the white switch of the battery down and carefully sliding the battery out of the battery connector. Then replace it with a charged 18 Volt Li-ion battery by sliding it in the battery connector. You may charge the discharged battery with a suitable battery charger and use this battery again once its fully charged.

If you were using a power cable to deliver power, unplug the cable, replace the power supply and then connect it again with the power cable.

Operating Mode

You can check the operating state of the GLidar by watching the Power LED. Possible statuses of the Power LED are the following:

Off	GLidar is turned off or out of power.
Solid white	GLidar is operating.

3.2 Connecting to GLidar

GLidar is managed via a Web-Application accessed in a browser of your choice on your phone, tablet, laptop or computer.

Powering on GLidar

Press the Power button on the back of your GLidar once to power on your GLidar. The Power LED will turn on. If the Power LED does not turn on, check your battery's charging level and try pressing the Power button for at least one second.

Connecting to GLidar

To connect your device to your GLidar and operate it through the Web-Application, follow the steps below:

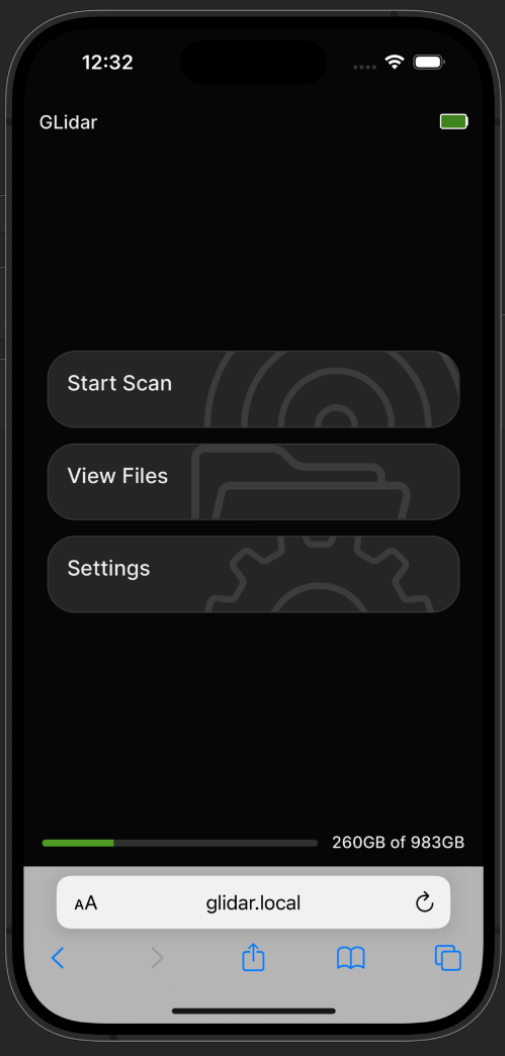
1. Go to your Wi-Fi settings on your device.
2. Enable Wi-Fi.
3. Find the Wi-Fi network called "GLidarHotspot" (or the custom hotspot name set by you) and connect to it by using the initial password "*GLidarPassword*" (or the custom hotspot password set by you). You may change the credentials in the settings later as described in section 7.2.
4. Once your device is connected to the Wi-Fi network, open a new tab in a browser of your choice.
5. Search for "glidar.local" in the URL search bar of your device.
6. You now should be able to see the home screen of the Web-Application of your GLidar on your device.

Troubleshooting:

If you are experiencing problems to connect your device to your GLidar, consider the following:

- If the Wi-Fi network “GLidarHotspot” is not listed as an available Wi-Fi network, try to rescan for networks. Consider that it takes up to two minutes after you power on your GLidar before the Wi-Fi network is available. If “GLidarHotspot” is still not shown, turn off GLidar by pressing the Power Button for five seconds and then wait for a few seconds before powering on your GLidar and searching for the Wi-Fi again.
- If the website “glidar.local” cannot be reached, try refreshing the browser tab. If it still cannot be reached, try to search for “10.42.0.1” in the URL search bar instead.

4 Navigating in the Web-Application

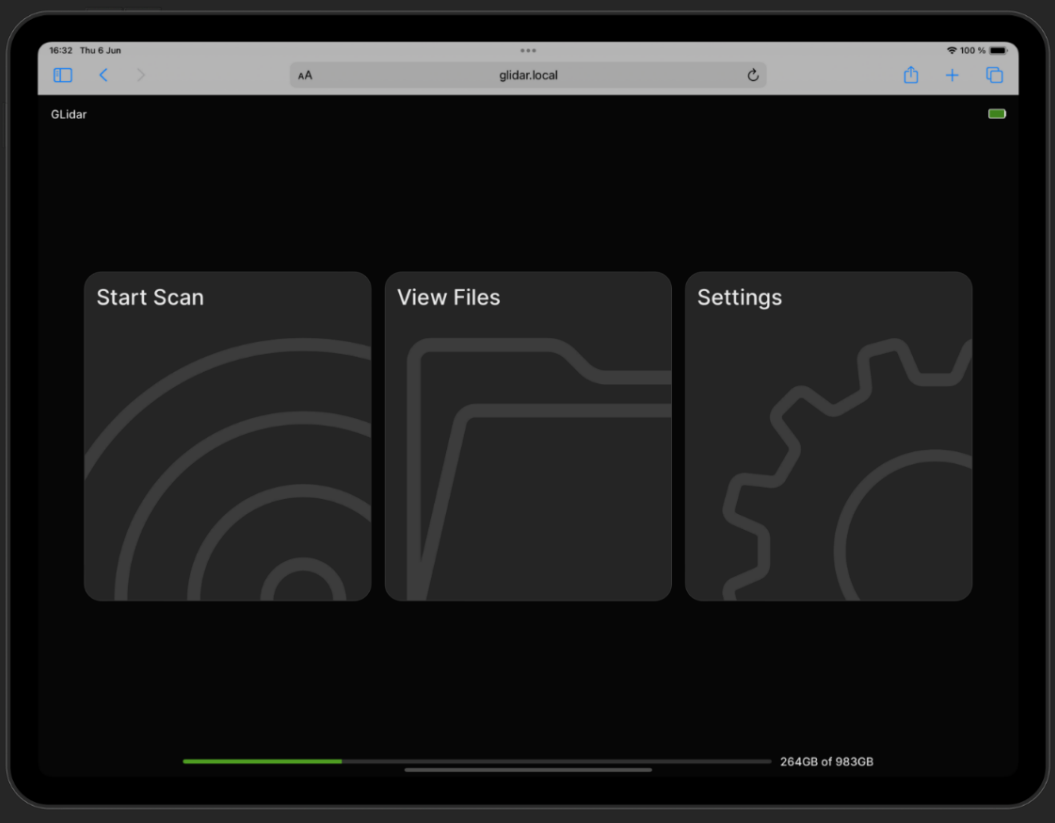


There are three main sections:

- **Starting a new Scan**: create projects, start new scans, manage saved presets
- **Viewing and Managing Scans**: view past scans, re-run past scans, change project appear-ances, modify project/scan/ results names, delete projects/scans/results, export and download results, convert results
- **Settings**: manage power mode, manage connected Wi-Fi network, modify Hotspot creden-tials, download updates

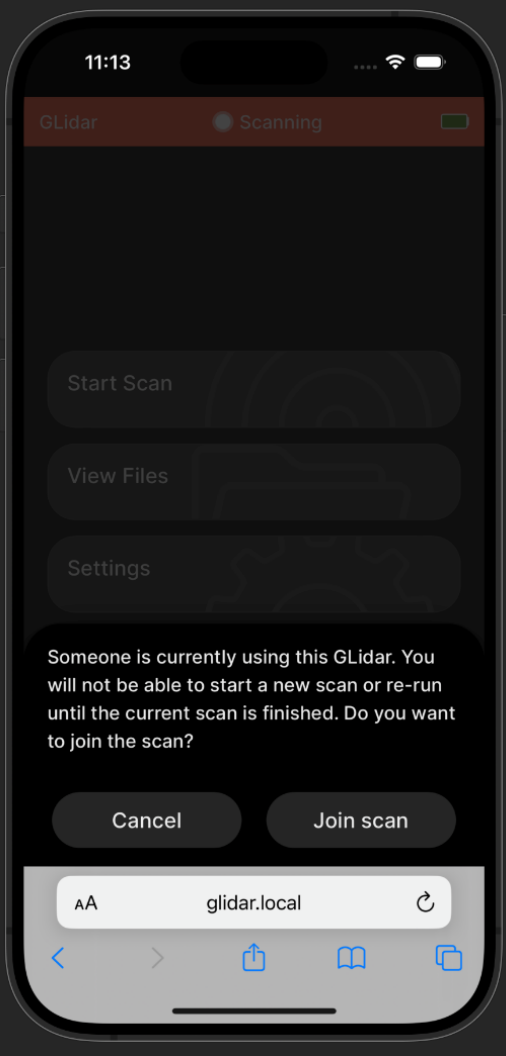
You can navigate in the Web-Application by clicking the elements with your left mouse button or with your finger or by using *Tab* ⇥ and pressing *Enter* ↵ on your keyboard.

There is a design, that is optimized for devices with small screen widths like phones and there is another design that relies on greater screen widths like tablets, laptops or computers.



In the top right corner of each page, you see the battery level. With an 18 Volt, 5 Ah Li-ion battery from Makita, GLidar can be used for around one hour. You may use GLidar for longer periods of time but be aware of the battery level. If the battery level is low, a warning will pop up to remind you to finish your current scan/re-run and to exchange the battery soon.

On the bottom of the main page, there is a bar that shows capacity of the internal storage and how much of it is used.



If someone is currently scanning or doing a re-run with the GLidar, the top region of the screen is red and a corresponding text (“Scanning” or “Re-running”) is displayed. Click on the red top region of the screen to open the pop-up menu shown on the right. You may join the scan/re-run to see the live stream on your device.

To go back to the main home screen, press the ⊗ button in the bottom right corner of a page. You may have to end your scan/re-run/view first.

To go back to the previous screen, press the ⊖ button in the bottom left corner of a page. You may have to end your scan/re-run/view first.

5 Starting a new Scan with GLidar

5.1 Directly started scan with the Scan button

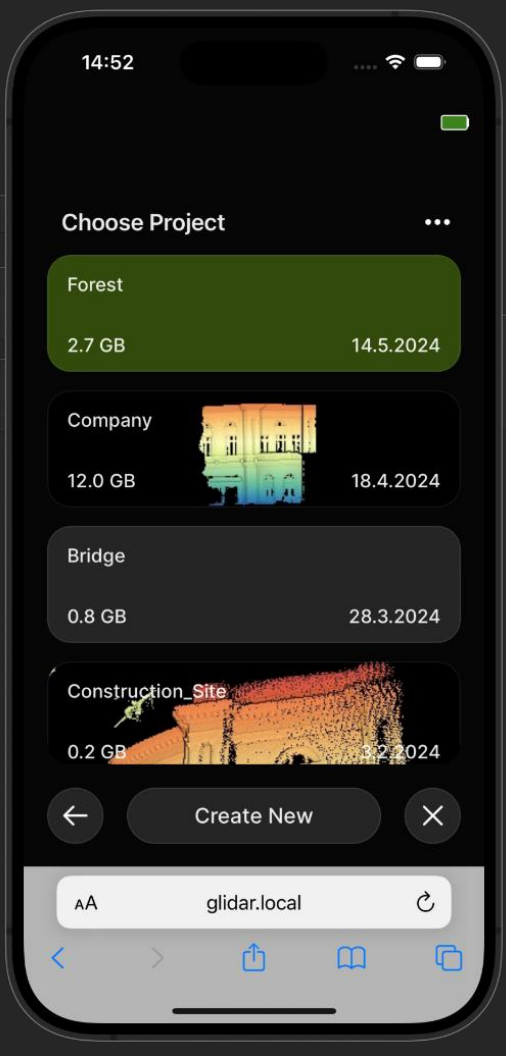
Note: This feature is not available yet. It will be added soon with GLidar firmware version 2.0.

GLidar can start a scan directly by pressing the Scan button. This only works if GLidar is turned on and the software is running. By pressing the Scan button, a new scan is immediately starting with the default settings shown below.

Environment	Indoor
Resolution	Medium
Range	1.00 – 40.00 Meter
Field of View	240° at 0°
Point Reduction Method	Deterministic
Reflections Filter	Last Reflection
Intensity	5 – 95 %
Save Raw Data	Off

Once you are finished with scanning your surroundings, end the scan by pressing the Scan button again. The scan is saved in the project “Direct Scans” with the current date and time and is stored on the internal storage of your GLidar.

5.2 Start a new scan in the Web-Application

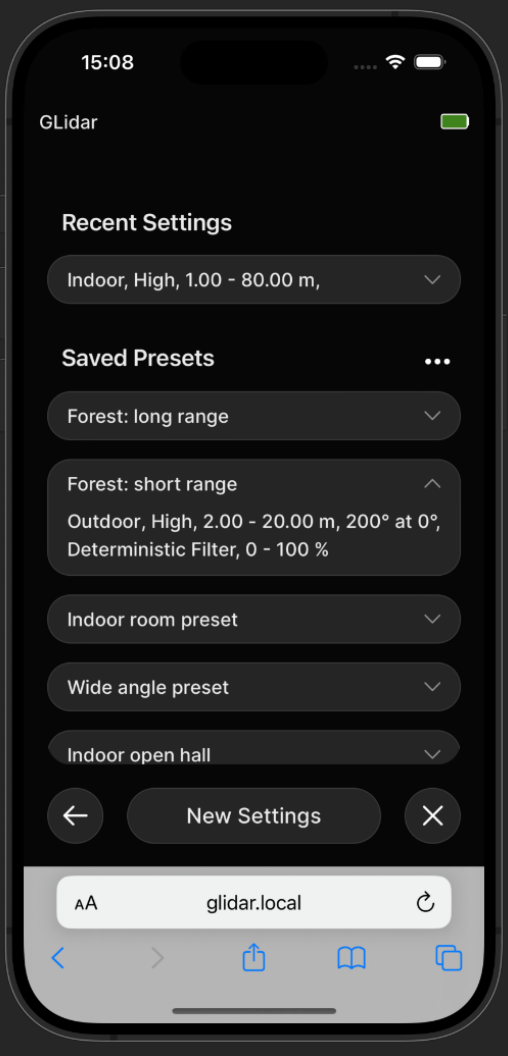


To start a new scan with custom settings in the Web-Application, follow these steps in the Web-Application on your device:

1. If you are not on the home screen, click on the ⊗ button in the bottom right corner of your current screen or search for “glidar.local” in the URL search bar. If you are having a scan/re-run/view currently running you may want to end this first.
2. Click on the “Start Scan” button.
3. Choose a project from the list by clicking on the project or create a new project by pressing the “Create New” button.

Preset select:

You may choose a preset or the most recently used settings to load these settings. To show the details of a preset, click the arrow on the right side of a preset to expand the information about this preset. You can create new settings by pressing the “New Settings” button at the bottom. Note, that this screen does not appear if there was never done a scan with this GLidar before.

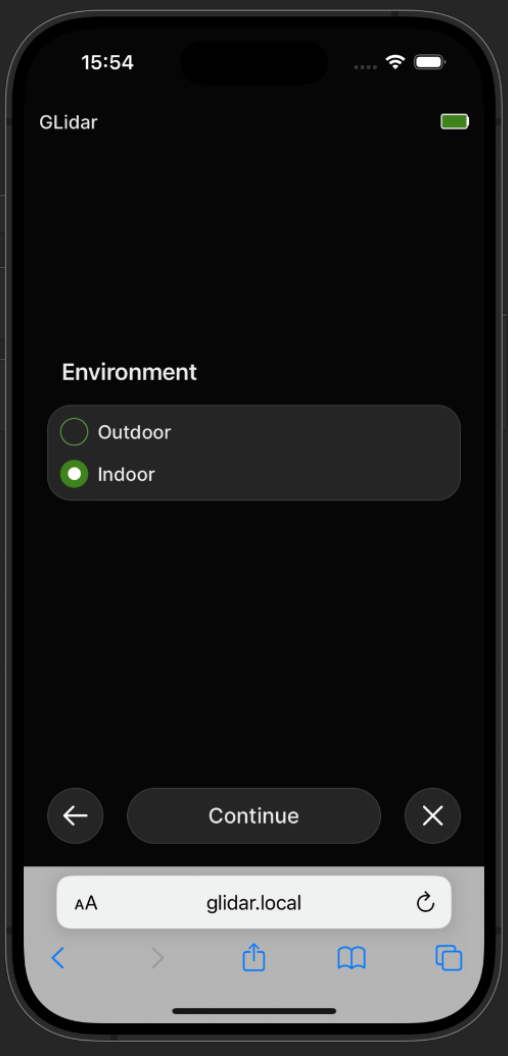


New Settings:

If you choose to create a new setting or if it is this is the first scan of your GLidar, you will choose customized settings for your following scan. The scan will be started with these settings afterwards, but you may change the settings live while scanning as described later in this chapter.

Set Environment:

Choose the appropriate environment setting for your scan. “Outside” should be used for scans in sparse surroundings like fields or forests, while “Inside” should be used for scans in dense surroundings like the inside of buildings or facilities.



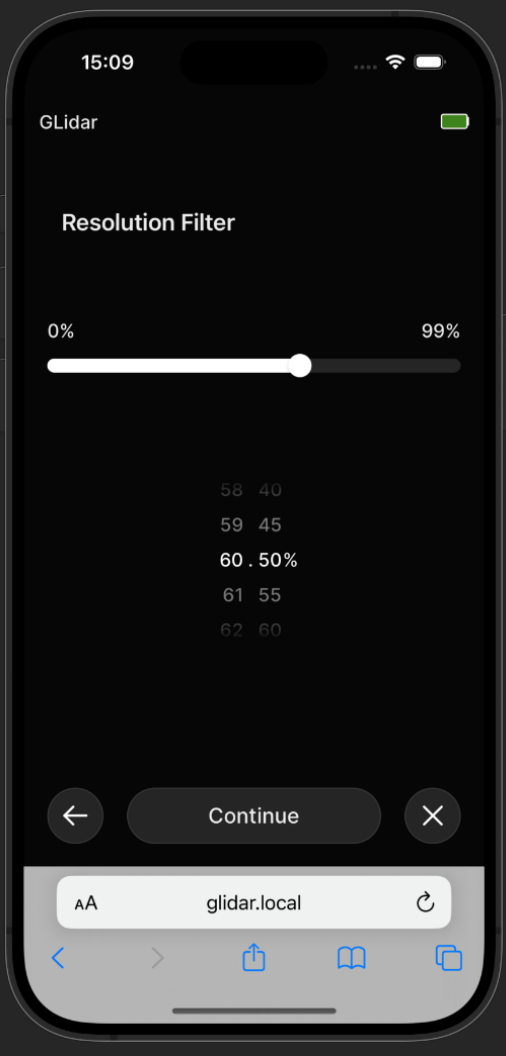
To select your desired environment, either click on the environment name or the checkbox next to it.

If you are using a phone, after selecting the environment, the “Continue” button will appear. Click on this button to get to the next setting.

If you are using a tablet or computer, after selecting the environment, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Resolution:

Choose the appropriate resolution setting for your scan. Using a high percentage value for the resolution, increases the level of detail of the scan but the files size will be greater and you may experience some delays while scanning.

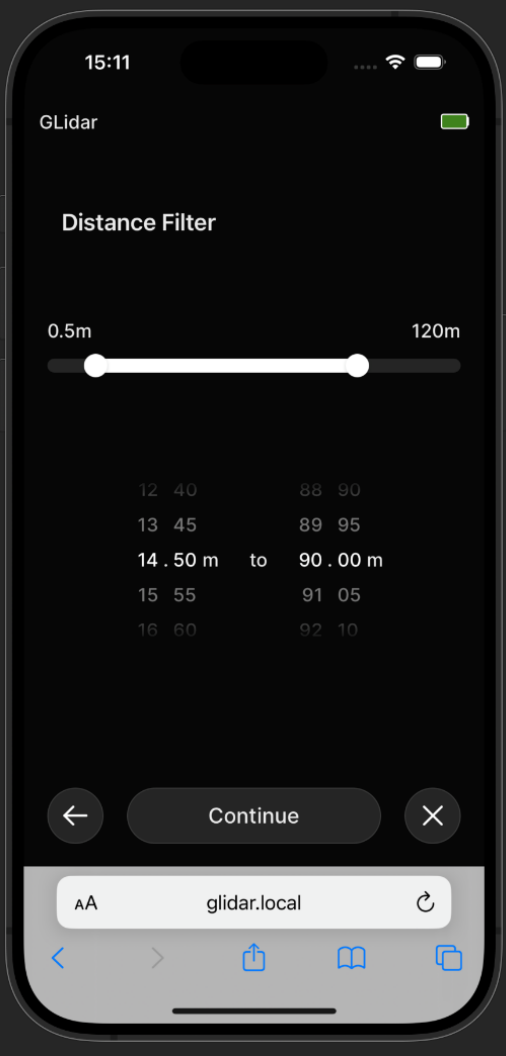


To select your desired resolution, either use the wheel picker by scrolling or swiping it or drag the end of the bar on the upper half to the desired value.

If you are using a phone, after selecting the resolution, click on the “Continue” button to get to the next setting.

If you are using a tablet or computer, after selecting the resolution, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Range:



Choose the appropriate range setting for your scan. The left value specifies the minimum range and the right value specifies the maximum range. Points which are not within the specified range will not be part of the pointcloud. The range is limited by the Lidar your GLidar is equipped with. For details see section 1.1.

To select your desired range, either use the wheel picker by scrolling or swiping it or drag the ends of the bar on the upper half to the desired value.

If you are using a phone, after selecting the range, click on the “Continue” button to get to the next setting.

If you are using a tablet or computer, after selecting the range, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Field of View:

Choose the appropriate field of view for your scan. The left value specifies the size of the circle sector, while the right value specifies center of orientation of the sector. The “0°” mark at the top corresponds to the front of GLidar, meaning the part which is looking away from you. 180° would correspond to the part of the GLidar above the *Power* and *Scan Buttons* at the back of GLidar. Points which are not within the specified white circle sector will not be part of the pointcloud. The minimum size of the circle sector is 140° to ensure stable scans.

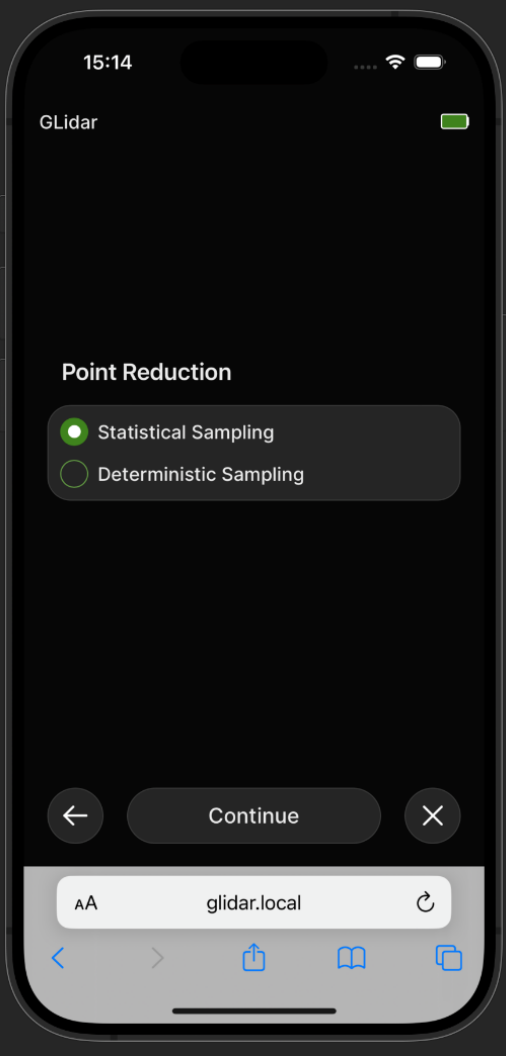
To select your desired field of view, either use the wheel picker by scrolling or swiping it or drag the end of the left bar for the size or the right bar for the orientation to the desired value.

If you are using a phone, after selecting the field of view, click on the “Continue” button to get to the next setting.

If you are using a tablet or computer, after selecting the field of view, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Point Reduction:

Choose the appropriate point reduction method for your scan. “Statistical Sampling” decides by a certain probability if a point is added to the pointcloud, while “Deterministic Sampling” adds points in a specific pattern to the pointcloud. If you are doing a re-run of your scan and select “Deterministic Sampling” again, you will receive the same pointcloud, while the pointcloud will differ if you are using “Statistical Sampling” in your scan and re-run.



To select your desired point reduction, either click on the method name or the checkbox next to it.

If you are using a phone, after selecting the point reduction method, the “Continue” button will appear. Click on this button to get to the next setting.

If you are using a tablet or computer, after selecting the point reduction method, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Reflections Filter:
Choose the appropriate reflection for your scan. Every object has multiple reflections. Choose “Last Reflection” to add the last reflection received by the reflection of an object. This option is recommended in forests where a lot of leaves are disturbing the scan. Choose “Strongest Reflection” to get the best details out of an object. Choose “Both Reflections” to add the last reflection as well as the strongest reflection to the pointcloud.

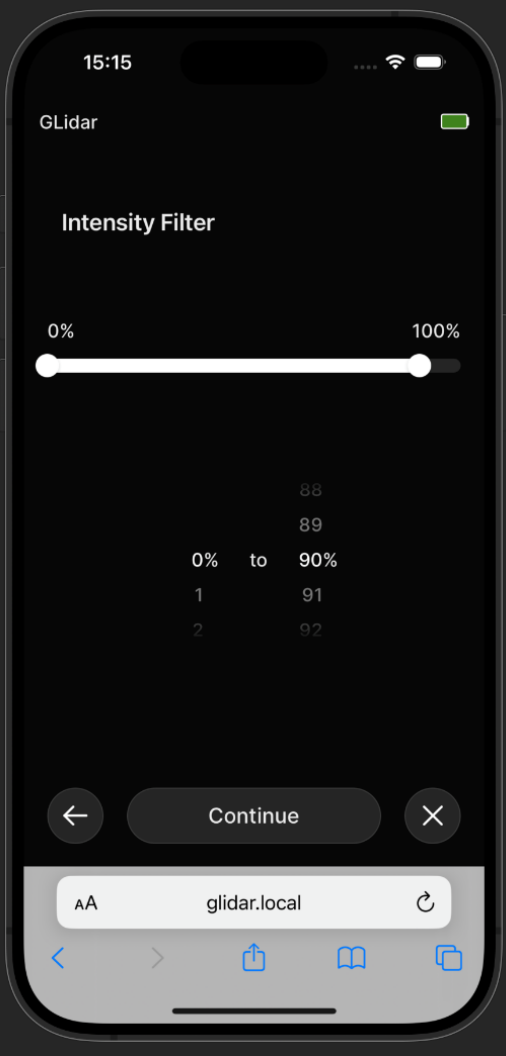
To select your desired reflection, either click on the reflection’s name or the checkbox next to it.

If you are using a phone, after selecting the reflection, the “Continue” button will appear. Click on this button to get to the next setting.

If you are using a tablet or computer, after selecting the reflection, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Set Intensity:

Choose the appropriate intensity range for your scan. The left value specifies the minimum intensity, while the right value specifies the maximum intensity. Points whose intensity value are not within the specified range will not be part of the pointcloud.

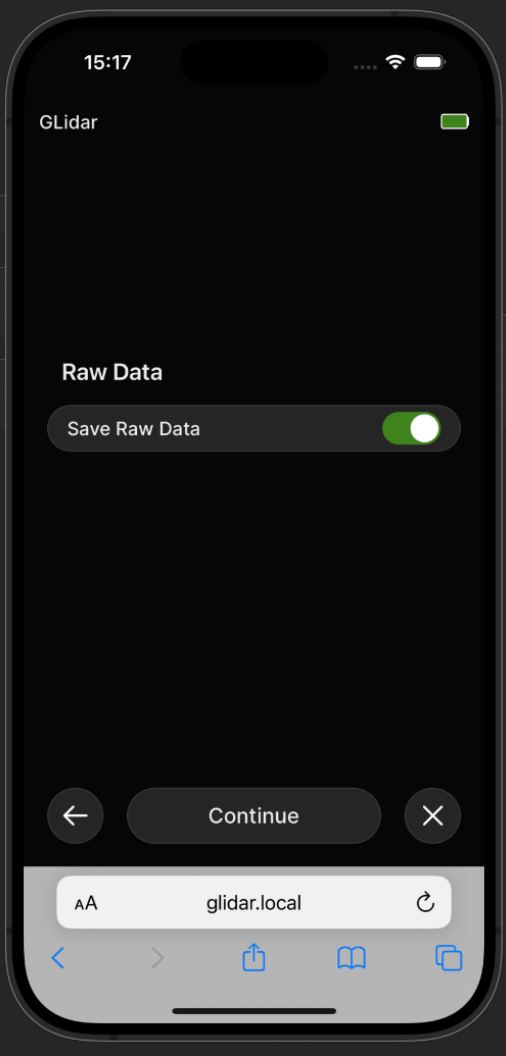


To select your desired intensity, either use the wheel picker by scrolling or swiping it or drag the ends of the bar on the upper half to the desired value.

If you are using a phone, after selecting the intensity, click on the “Continue” button to get to the next setting.

If you are using a tablet or computer, after selecting the intensity, scroll down with your mouse wheel or swipe to the left to get to the next setting.

Save Raw Data:



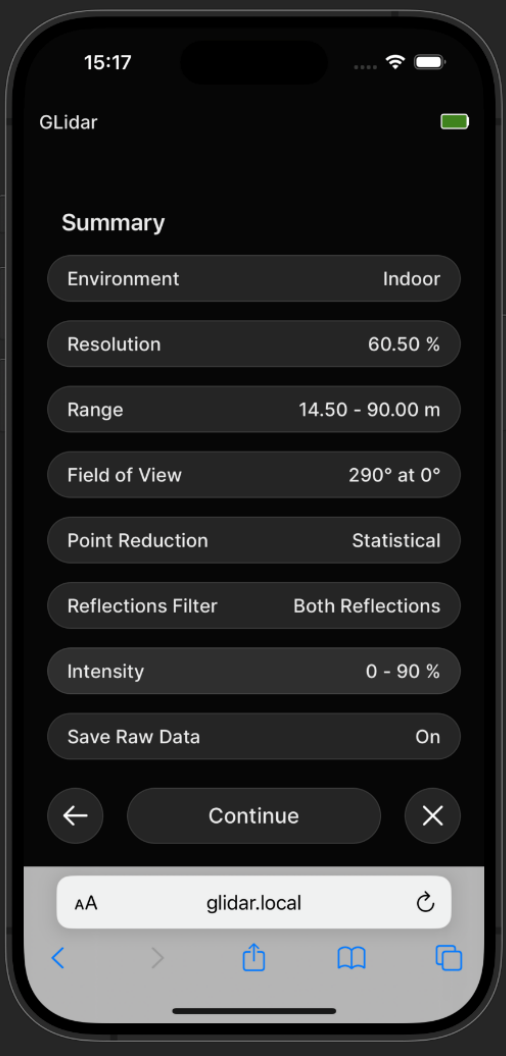
If you choose to save the raw data of a scan, every point (also the ones which are discarded for the current pointcloud because of range, intensity, etc. settings) is stored in separate .bag files in addition to your pointcloud file. If you save raw data of a scan, you may re-run it afterwards using this data to generate a new pointcloud using different settings, as described in section 6.1. Note that storing raw data generates large amount of data, so make sure you have enough available storage left on your storage device before starting your scan.

To select your desired option, either click on “Save Raw Data” or the switch on the right side to toggle the option. If the switch is set to the right and green, raw data will be saved. If the switch is set to the left and grey, raw data will not be saved.

If you are using a phone, after selecting the desired option, click on the “Continue” button to get to the settings summary.

If you are using a tablet or computer, after selecting the desired option, scroll down with your mouse wheel or swipe to the left to get to the settings summary.

Settings Summary: Modify Settings



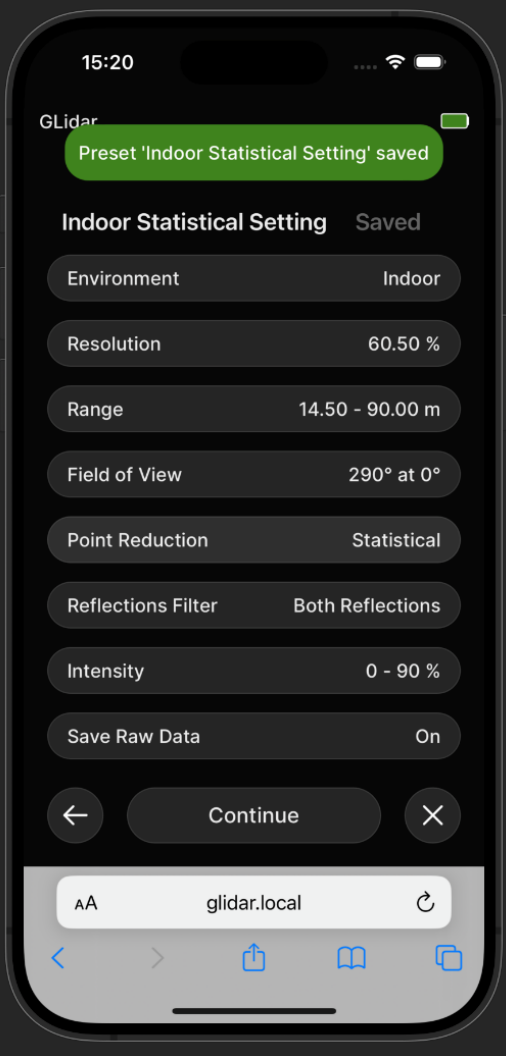
The summary page lists the current settings. If you selected a preset from the preset list before, you will see the name of the preset and its settings. Otherwise, it will say “Summary” and list the chosen settings.

If you selected a preset from the preset list, click on the ⓘ button to get back to the preset list.

If you want to modify a setting, click on the desired setting. Change the settings as described above. Confirm the changes for this setting by clicking the “Continue” button or discard the changes by clicking the ← button. After you are taken back to the summary, you may change another setting.

If you want to save the current settings, continue at the next paragraph below. If you do not want to save the settings, click on the “Continue” button to get to the storage selector once you are satisfied with the current settings.

Settings Summary: Save Preset



If you modified a preset or created new settings and want to save the current settings for future scans, scroll or swipe down on the summary list and click on “Save Preset”. In the pop-up menu, enter a unique name for the new preset in the text box and click on “Save” to save it. If there are no name collisions, a success pop-up will appear and name of the preset will be displayed instead of “Summary”.

Every time a scan or re-run is started, the current settings are saved automatically and you may select them as “Recent Settings” in the preset list as described above.

Once you are satisfied with the summary of the settings, click on the “Continue” button to get to the storage selector.

Choose Output Storage:
The currently connected storage devices are shown. For each device, its name, its total capacity and its used storage is shown.

If you want to store the output on an external device, connect it to GLidar using one of the *USB-C Connectors*. Click on the "Rescan for storage devices" button to search for newly connected devices. If your device does not show up after a few attempts, try using another storage device.

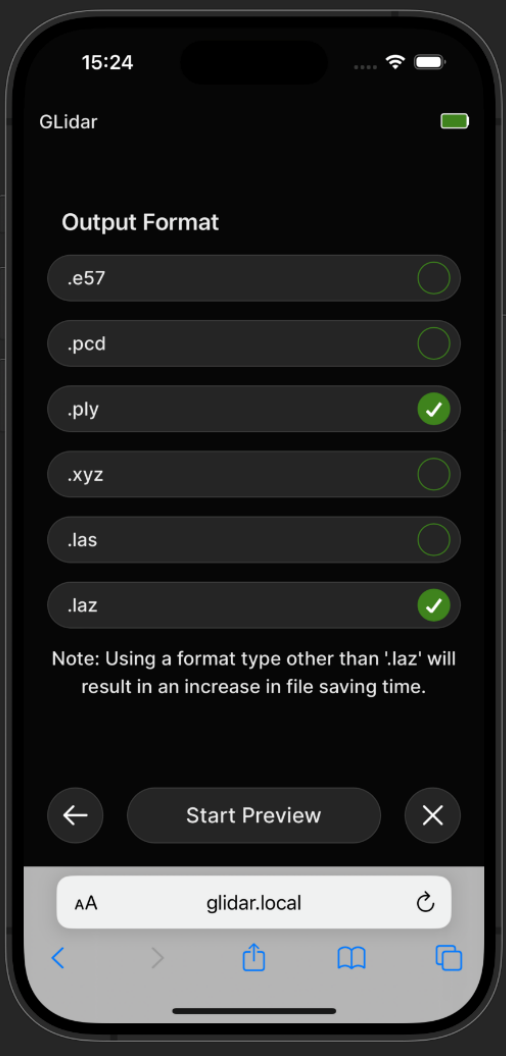
It is recommended to use a device with at least 1 GB of storage left to ensure that your pointcloud can be stored successfully. If you are saving raw data as well, make sure to have at least a few GB available.

Select your desired storage device by either clicking on its name or on the checkbox next to it.

If you chose "Internal Storage", ".laz" is automatically selected as file format as it consumes the least disk space. If there is currently a scan/re-run in progress, you may join by clicking "Join Scan" or "Join Re-Run". **Put your GLidar on an even surface before clicking on the "Start Preview" button!**

If you chose an external storage device, click on the "Continue" button to select the desired file formats.

Choose File Format:
Select your desired file formats to receive pointclouds in the specified file formats. You may select multiple file formats but note that this will extend the file saving time and will consume more storage space.



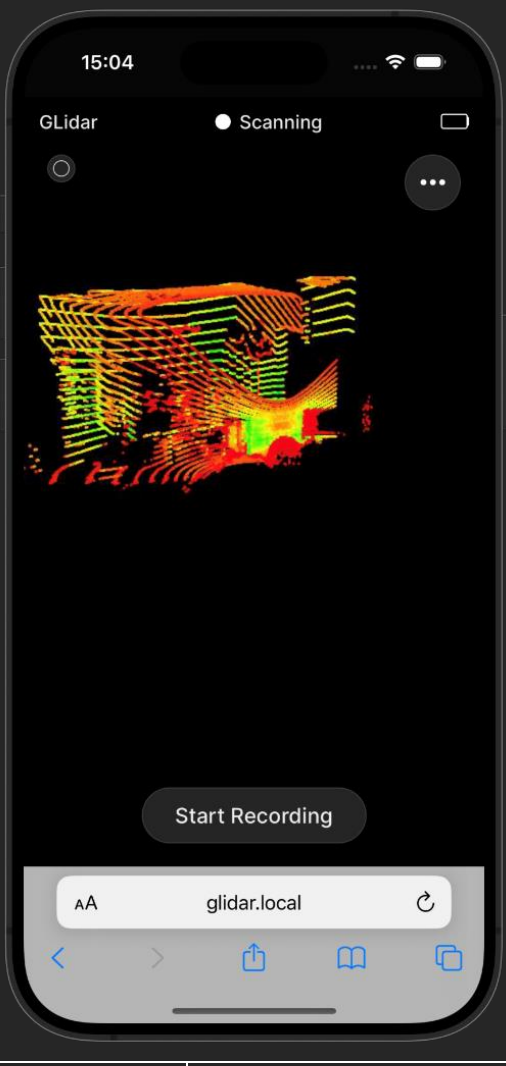
Select a desired file format by either clicking on its name or on the checkbox next to it.

If there is currently a scan or re-run in progress, you may join by clicking “Join Scan” or “Join Re-Run”.

After selecting the file formats, put your GLidar on an even surface before clicking on the “Start Preview” button!

Preview: Check Settings

Wait until the stream started and is visible. If problems occur, check out section 8.1.



You may pick up your GLidar and check the current stream in the Web-Application on your device. No points are recorded in this stage of the scan. If you want to change a setting before starting the recording, follow the instructions below.

You may interact with the stream:

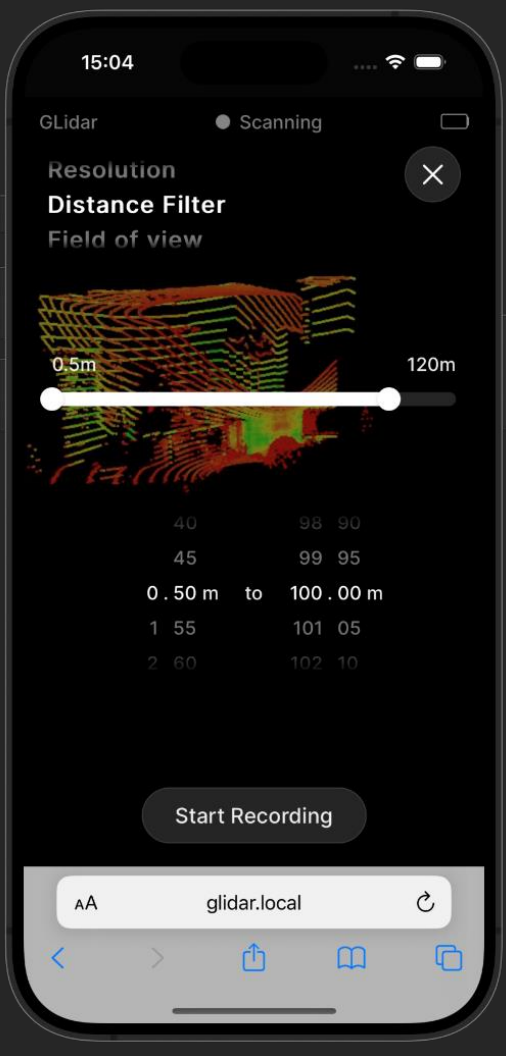
Function	Devices with touch input	Devices with mouse input
Turn around	One finger input	Left mouse button
Zooming	Two finger input	Mouse wheel scrolling
Panning	Three finger input	Right mouse button

Once you are satisfied with the current settings, click on the “Start Recording” button to start the recording of points.

If you want to abort the current scan and discard it, click on the ◎ icon in the top left corner and confirm that you want to abort the current scan.

Change Live Settings:

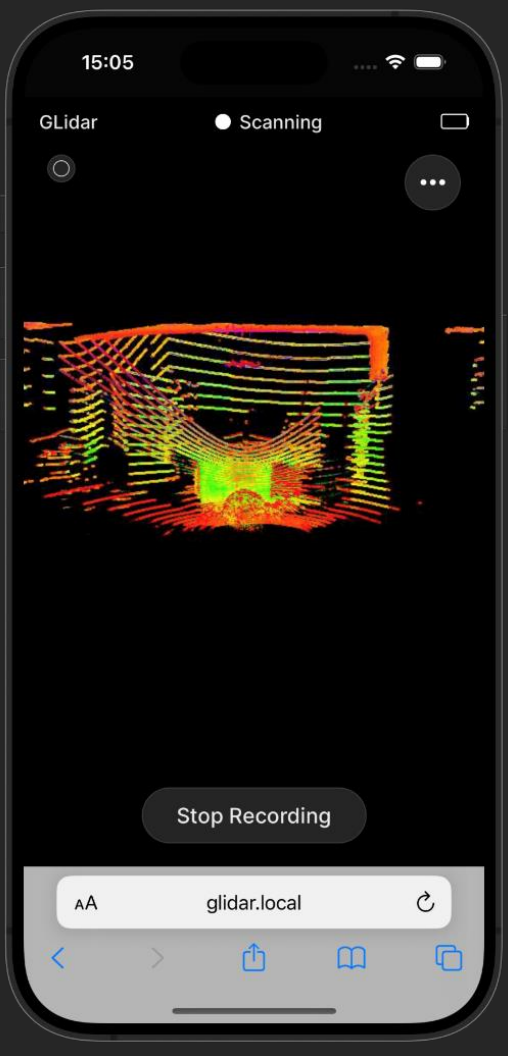
If you want to change a setting before starting the recording or while scanning, click on the ⋯ icon in the top right corner.



Select your desired setting by scrolling or swiping to the desired setting on the wheel picker in the top left corner. Change your setting according to your desires. The changes are applied immediately and you see the changes after a one second processing period in the stream in the background.

Close the Live Settings menu by pressing the ⊗ button in the top right corner or by pressing the status button on the bottom the get to the next stage of scanning.

Record Surroundings:

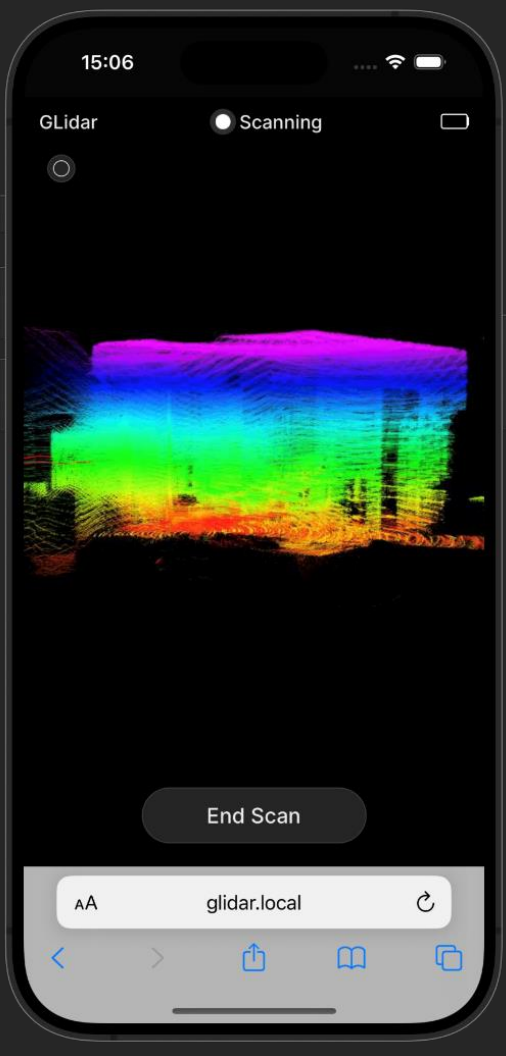


After clicking “Start Recording”, points are now recorded in compliance with your selected settings. Move around to gather the data. You will see a live image of the scanned points on your device. The brighter part represents the current view of the Lidar while the darker points represent the already processed points. Note that not all points are displayed at once and points which were recorded more than 3 minutes ago are not shown in the stream to increase the performance. However, of course, all points will be part of the finished pointcloud.

You may change a setting anytime by clicking the ⋯ button in the top right corner as described above.

Once you have gathered all points of interest, click on the “Stop Recording” button to end the recording and start the saving process. Confirm in the pop-up menu, that you want to stop the recording.

Overview of Finished Scan:



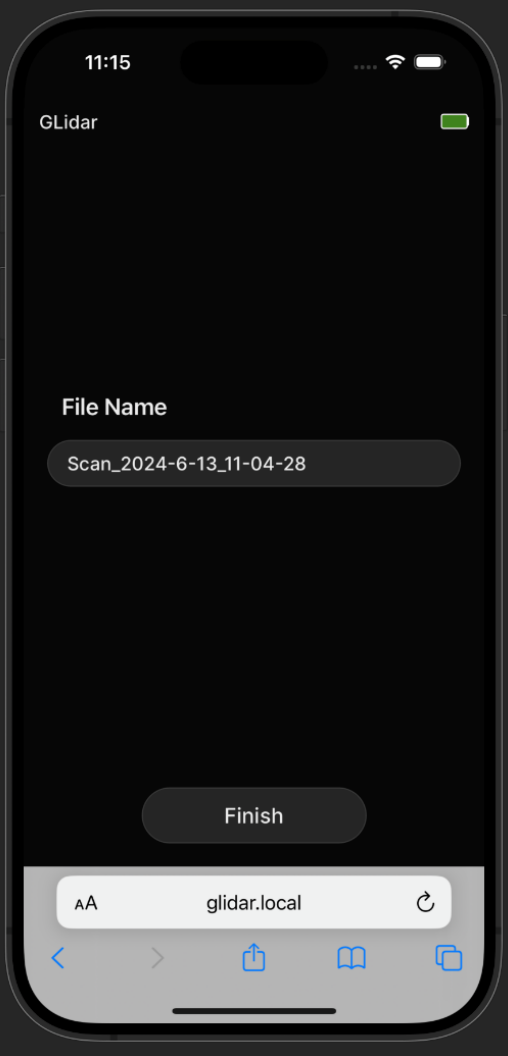
After stopping the recording, the generated pointcloud is saved on your selected storage device. During the saving process, the status button will show “Saving Scan...”. This process will take from a few seconds up to a few minutes, depending on the size and file format of your pointcloud. If you select multiple output file formats, the saving will take longer.

Once the saving is finished, the button will say “End Scan” and you may view the finished scan. Note that not all points are displayed at once and points which were recorded more than 3 minutes ago are not shown in the stream to increase the performance. However, of course, all points will be part of the finished pointcloud.

To end the scan and choose a name for it, click on the “End Scan” button.

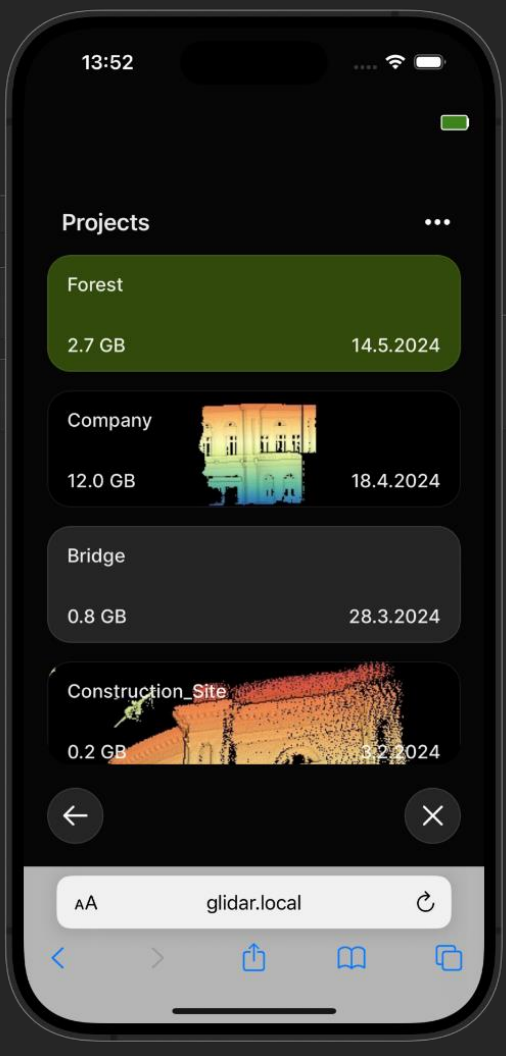
Choose Scan Name:

The scan has a default name corresponding to its starting time. For example, a scan the was started on 13th of June, 2024 at 11:04:28 will be named “Scan_2024-6-13_11-04-28”. You may rename the scan by clicking on the scan name and modify the name.



Click on the “Finish Scan” button to finish the scan with the name in the text field. You will be taken back to the main page. To view, re-run or export the scan, follow the instructions in section 6.

6 View and Manage Scans



To view your pointcloud results, manage your scans and export your results, follow these steps in the Web-Application on your device:

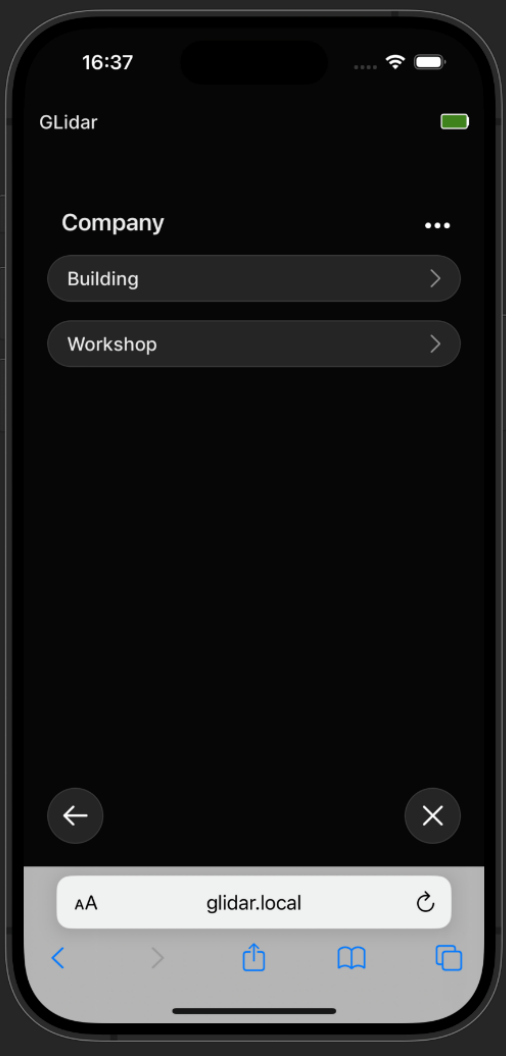
1. If you are not on the home screen, click on the ⊗ button in the bottom right corner of your current screen or search for “glidar.local” in the URL search bar. If you are having a scan/re-run/view currently running you may want to end this first.
2. Click on the “View Files” button.

The projects are listed. You may need to scroll or swipe down to see your desired project.

If you want to search for a specific project, to delete one or multiple projects or to sort the projects by date, alphabetically or by descending size, click on the ••• icon in the top right corner and select your desired option in the pop-up menu.

To select a project to view its scans or change its name or appearance, click on the desired project.

Project Overview:



If you are using a phone, after selecting a project, you will see a screen showing your project name and list of all scans from this project. If you want to search for a specific scan, delete one or multiple scans or sort the scans by date, alphabetically or by descending size, click on the ••• icon in the top right corner and select your desired option in the pop-up menu. In this menu, there are also options to delete the current project, to rename it or to change the project appearance.

If you are using a tablet or computer, after selecting a project, the project will be opened as an overlay and the project information will be displayed in the first container, while the scans are listed in the second container right next to it. To delete the current project, rename it or change the project appearance, click on the ••• icon in the top right corner of the left container and select your desired option in the pop-up menu. If you want to search for a specific scan, delete scans or sort the scans by date, alphabetically or by descending size, click on the ••• icon of the right container and select your desired option in the pop-up menu.

For details on how to change the project appearance, see the explanation below.

To select a scan to view its pointcloud results or change its name, click on the desired scan.

Change Project Appearance:

After selecting the “Change Appearance” option in the pop-up menu, 16 different color options are offered. You may choose one of the color options to modify the project background to this new color. Note that once you click on a color option, the setting is saved and applied once you go back to the project list.

Press the ⓘ icon in the bottom left corner to go back after selecting the project background.

If you want to take a screenshot from a pointcloud of this project and use this as background, click on the “Select Appearance from Scan” button. Next, pick a scan from the scan list. Then, pick a pointcloud result from the listed pointclouds and continue with the next step below.

Set Appearance from Pointcloud in Viewer:
After choosing a pointcloud result to set your appearance, the pointcloud is loaded in the viewer. For a detailed explanation on how the viewer works, see section 6.2.

Wait until the pointcloud is loaded, then set the desired settings and choose the desired perspective for the background.

The clipped area is highlighted with a white rectangle which will later be the background of the project. Make sure that the content inside the white rectangle is your desired perspective before pressing the “Set Background” button to set the current content as the background.

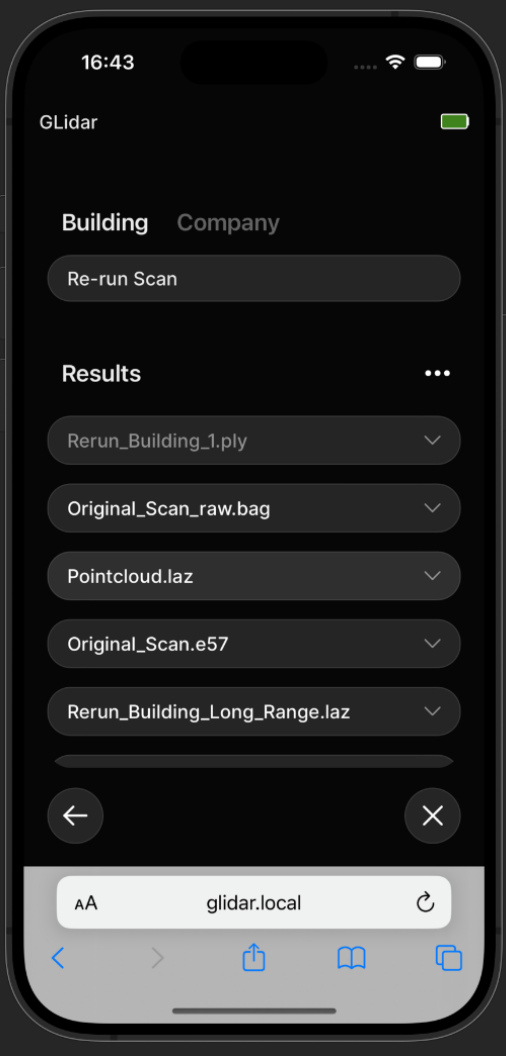
Note that setting the background only works when the side menu is closed.

Note that the background image looks different on a tablet or computer than it does on a phone because the project container has a different size.

You may abort the background selection by clicking on the ⊗ icon in the bottom right corner.

Scan Overview:

After selecting a scan, the pointcloud results of this scan are listed.



If you were recording raw data when doing the scan, there is a button to “Re-run Scan”. Click on this button to select the settings for a re-run of the initial scan. See section 6.1 for a detailed explanation on how to do a re-run after clicking the “Re-run Scan” button.

To sort, export or delete results, click on the ••• icon in the top right corner of the result list and select the corresponding option. You also find options to rename or delete the current scan here.

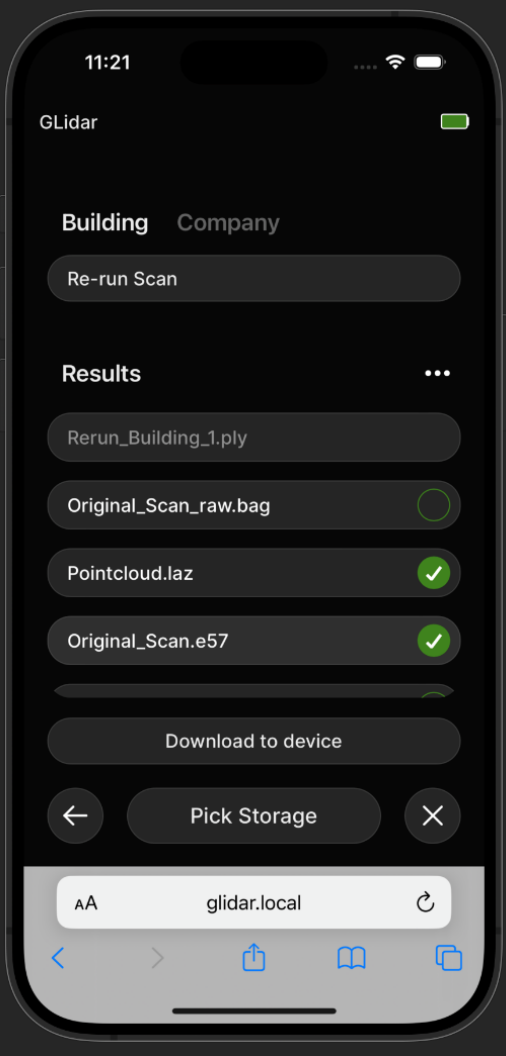
To show the settings and storage device of a result, click the arrow on the right side of a result to expand the information about this result.

To interact with a result, click on this result and select the desired option in the pop-up menu. The option “View Result” starts the viewer with the selected result (For details see section 6.2).
Note that results, which are stored on an external storage that is currently not connected to GLidar, are shown in grey and are not interactable.

Further information about the option “Export Result(s)” is described below.

Export Pointclouds:

After selecting an export option, the Web-Application switches into the export mode. You may select all results that you want to download or export by either clicking on the results name or the checkbox next to it.



To download the results in their current file format directly to your device (e.g. your phone/tablet/laptop), click on the “Download to device” button. The download may take a while.

To export the selected results:

- If you are using a phone, after selecting the results, click on the “Pick Storage” button to get to the storage selector.
- If you are using a tablet or computer, after selecting the results, scroll down with your mouse wheel or swipe to the left to get to the storage selector.

Cancel the export mode either by clicking on the ••• icon in the top right corner and select “Cancel Export” in the pop-up menu or by deselecting all results and click on the “Cancel Export” button in the bottom of the page.

Choose Export Storage:
After selecting the desired results you want to export, select the output storage where you want to store the exported results.

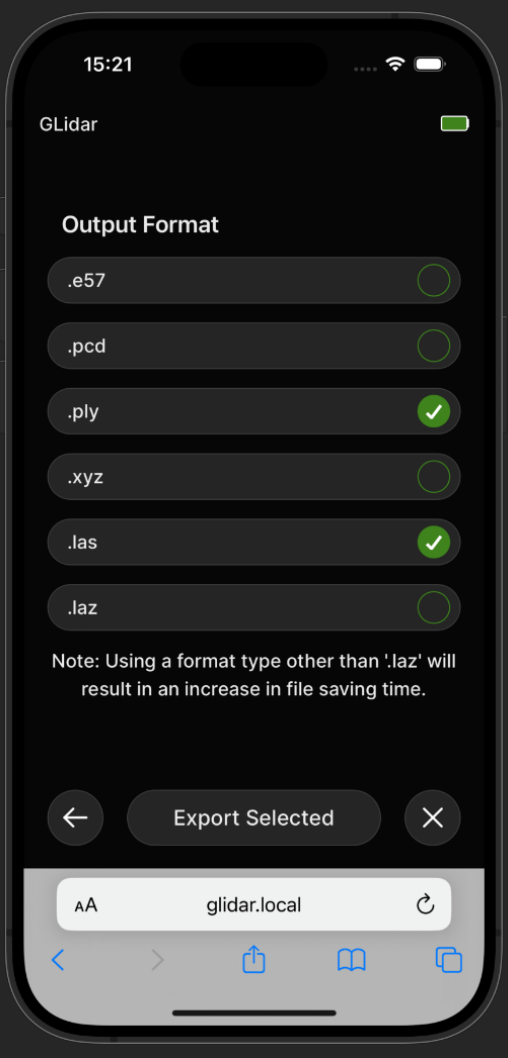
If you want to store the output on an external device, connect it to GLidar using one of the *USB-C Connectors*. Click on the “Rescan for storage devices” button to search for newly connected devices. If your device does not show up after a few attempts, try using another storage device.

It is recommended to use a device with at least 1 GB of storage left to ensure, your pointclouds can be exported successfully.

Select your desired storage device by either clicking on its name or on the checkbox next to it.

Continue to the file format selector by clicking on the “Continue” button on a phone or by scrolling/swiping to the left on a tablet/computer.

Choose Export File Formats:

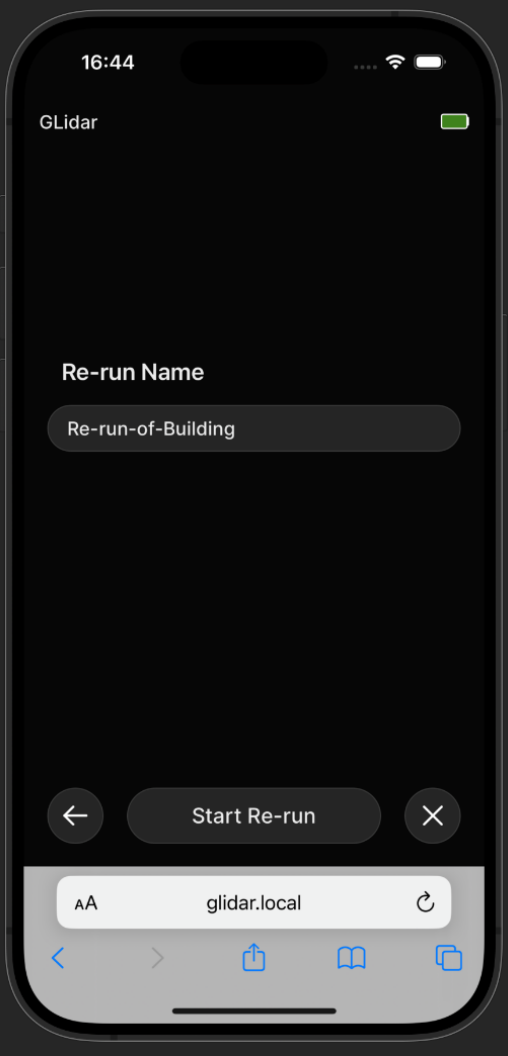


After selecting the output storage, select all desired file formats. The Web-Application will export every result into every file format and store it on the selected output storage. Note that there will be no conversion for results to a file format, if there already exists a result in this specific file format on the selected storage device to prevent duplicated files.

Click on the “Export Selected” option to start the exporting process. The top region of the Web-Application will turn green and show “Exporting”. The export process will take some time, depending on how many results and which file formats you chose.

After the conversion is finished, the top region will show a “Export Finished!” message and you will see the exported results in the result list. You may now disconnect your external storage device if you were using one.

6.1 Re-running a Scan



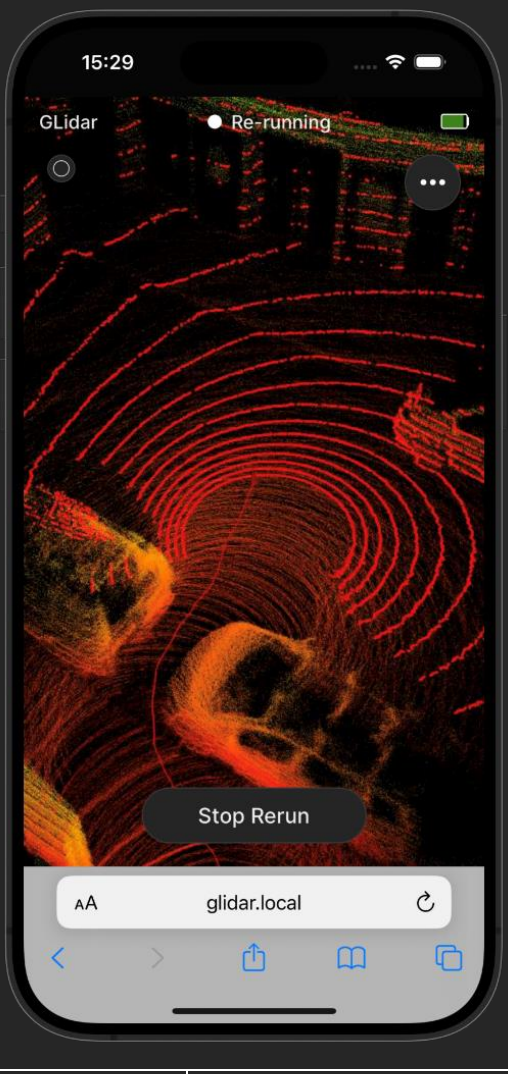
After clicking on “Re-run Scan”, the procedure is similar to starting a new scan as described in section 5.2.
First you either select a preset from the preset list or create a new setting. The difference is that there is no switch to toggle raw data recording as the raw data was already recorded. Next, you choose the output storage and the output file formats. If “Internal Storage” is selected as storage, there is no file format selection as the pointcloud will be saved in the “.laz” file format.
As a last step, choose your pointcloud name. By default, the results name will be “Re-run of *Scanname*”. To change this name, click on the text field and modify it.

Once you are done with the name selection, click on the “Start Re-run” button on the bottom of the page. Note that if the chosen name already exists in this scan, you have to choose another one.

If there is currently a scan or re-run in progress, you may join by clicking “Join Scan” or “Join Re-Run”.

Generate re-run:

Wait until the stream started and is visible. If problems occur, check out section 8.1.



The re-run uses the raw data as an input and generates a new point-cloud with the specified settings. You can see the live progress of the re-run in the stream. While doing a re-run, you may put your GLidar on a desk as there is no need to move it.

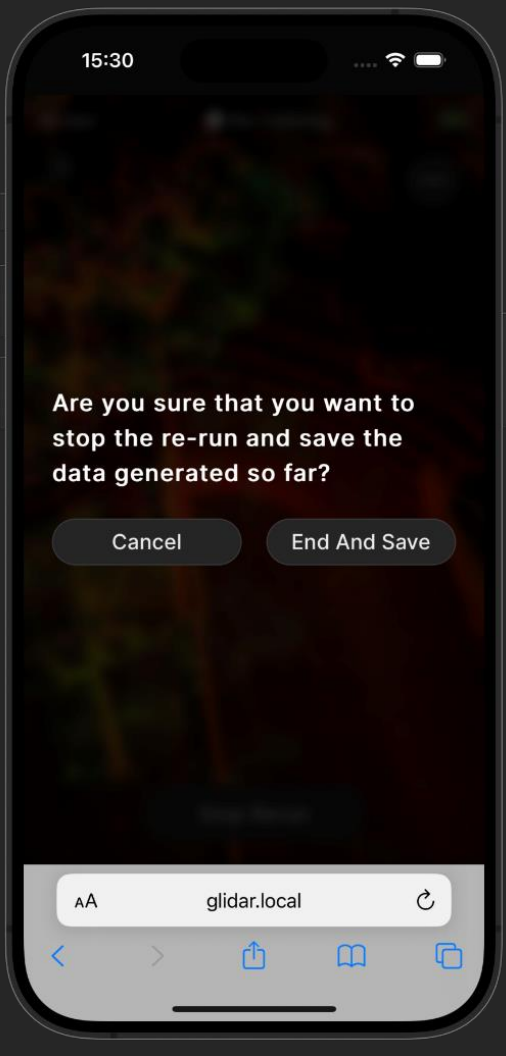
You may interact with the stream:

Function	Devices with touch input	Devices with mouse input
Turn around	One finger input	Left mouse button
Zooming	Two finger input	Mouse wheel scrolling
Panning	Three finger input	Right mouse button

The rerun will automatically start the recording of points.

If you want to change a setting, click on the ⋯ icon in the top right corner to change it in the pop-up (see section 5.2 for a detailed explanation on live settings).

If you want to abort the current re-run and discard it, click on the ◎ icon in the top left corner and confirm that you want to abort the current re-run.



Stopping Re-run:
The raw data contains all necessary data from the point where you pressed “Start Preview” to the point you pressed “End Recording” when doing the initial scan. Therefore, the preview of the scan is included and also displayed in the re-run to improve the stability of the re-run, but will not be part of the finished pointcloud of the re-run.

The re-run will start recording points automatically and will also finish it automatically, once the raw data is completely processed. Note that not all points are displayed at once and points which were recorded more than 3 minutes ago are not shown in the stream to increase the performance. However, of course, all points will be part of the finished pointcloud.

You may stop the re-run any time before the raw data is completed by clicking on the “Stop Rerun” button. A pop-up will open, as shown on the right, where you can stop and save the data generated so far.

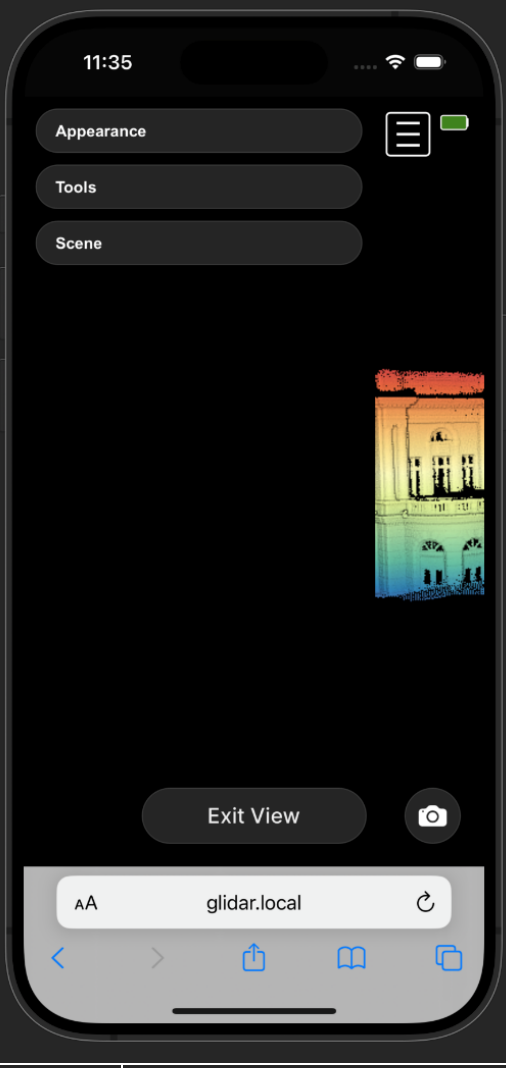
Overview of Finished Re-run

After stopping the recording or after the raw data is completely processed, the generated pointcloud is saved on your selected storage device. During the saving process, the status button will show “Saving Rerun...”. This process will take from a few seconds up to a few minutes, depending on the size and file format of your pointcloud. If you selected multiple output file formats, the saving will take longer.

Once the saving is finished, the button will say “End Rerun” and you may view the finished re-run. Note that not all points are displayed at once and points which were recorded more than 3 minutes ago are not shown in the stream to increase the performance. However, of course, all points will be part of the finished pointcloud.

To end the re-run, click on the “End Rerun” button.

6.2 Interact with the Pointcloud Viewer



Wait until the pointcloud is loaded. Toggle the viewer menu by clicking on the ☰ button in the top left corner.
In the viewer menu, you see three submenus:

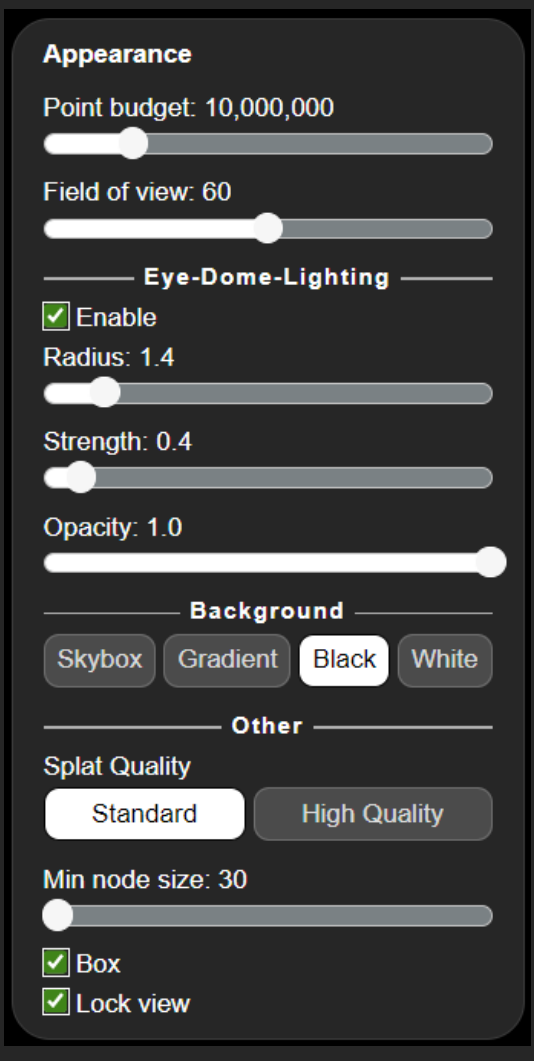
- Appearance
- Tools
- Scene

When viewing a point cloud, you may interact with the viewer:

Function	Devices with touch input	Devices with mouse input
Turn around	One finger input	Left mouse button
Zooming	Two finger input	Mouse wheel scrolling
Panning	Three finger input	Right mouse button

Click on the 📷 icon to take a screenshot of the current view. It will be saved directly to your device.
Exit the viewer by clicking “Exit View”. You will be asked in a pop-up menu if you want to save the current settings and measurements. If you choose to save them by clicking on “Save & Exit”, they will be loaded once you view this result again. If you do not want to save them, click on “Discard & Exit”.

Appearance



Point Budget: Maximum number of points loaded in the viewer. The general maximum is 25 million points, for iPhones it is 5 million points because of the limited cache size.

Field of view: Extent of the scene visible from the viewer's perspective. Optimal FOV is 60.

Eye-Dome-Lighting: When enabled, sharpens the contours of scanned surrounding. Note, that Eye-Dome-Lighting may not work on all devices.

Background: Select background of the viewer.

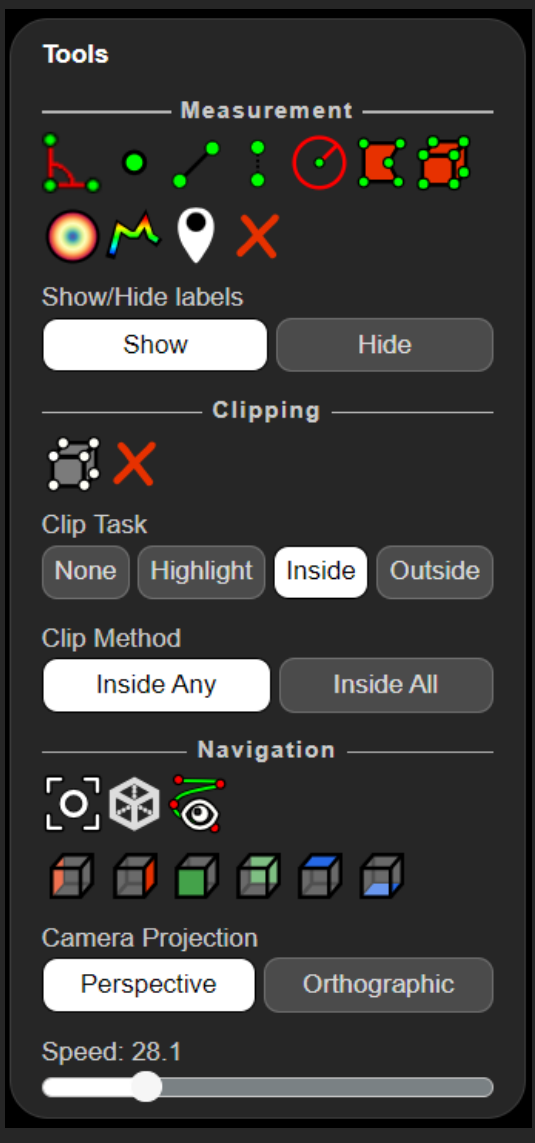
Splat Quality: Quality of the displayed points. Note, that “High Quality” may not work on all devices.

Min node size: Determine size of octree nodes. Smaller size improves details but reduces performance.

Box: Displays the octree cube structure when checked.

Lock view: Freezes the current node view, regardless of zooming or moving.

Tools



Measurement: Measure angles, distances, areas heights, or volumes. Add annotations and get point information. For further information on how to use these measurements, see section 6.3. Click on the × icon to delete all measurements and annotations.

Show/Hide labels: Shows/Hides the labels of any measurement.

Clipping: Create a volume to select a part of pointcloud. For further information on how to use this tool, see section 6.3. Click on the × icon to delete all clipped volumes.

Clip Task:
None: Does not do anything with the selected volume.
Highlight: Highlights the inner points of the selected volume.
Inside: Clips the inner points of the selected volume and discards the outer points.
Outside: Clips the outer points of the selected volume and discards the inner points.

Clip Method:
Inside Any: Clips points which are inside any volume.

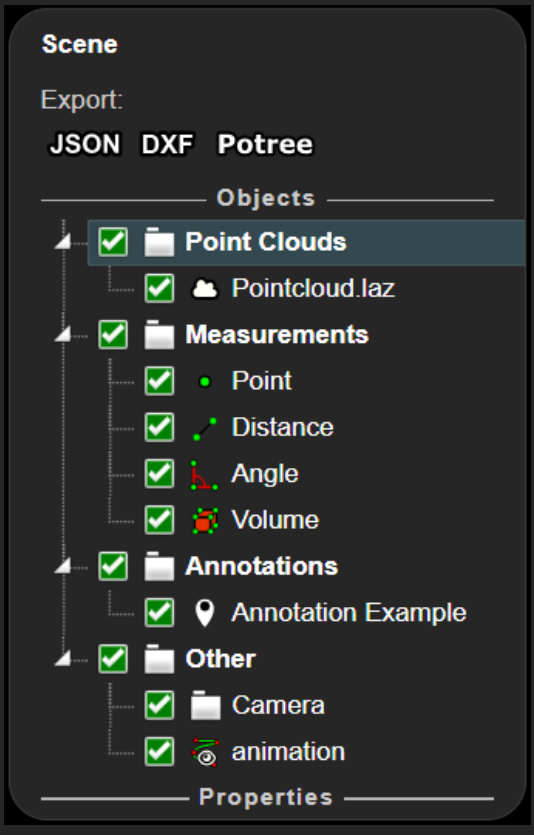
Inside All: Clips the subset of points which are inside all volumes.

Navigation: Set the perspective and the camera angle for the current view and create a camera animation for the pointcloud. For further information on how to use these tools, see section 6.3.

Camera Projection: Choose between *Perspective* and *Orthographic* camera projection.

Speed: Shows the current speed when zooming. Not changeable by user. If the zoom is slow, you may double-click a point to zoom in even further.

Scene



Export: Export the current measurements as JSON, DFX or Potree.

Objects: Scan objects are stored here. You may toggle the visibility of an object or category by clicking ☑ on the left of the name.

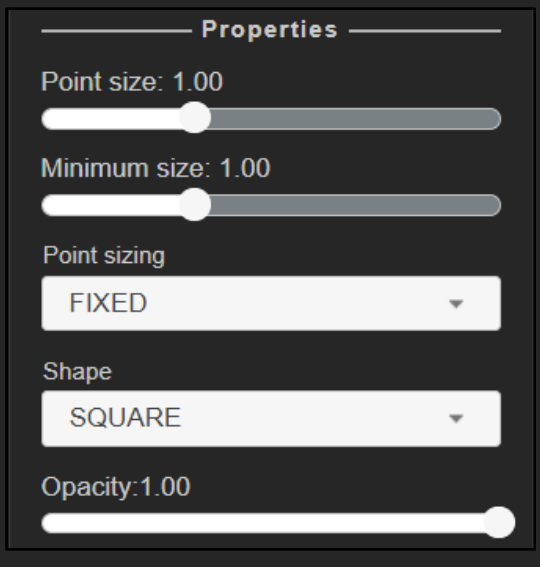
Point Clouds: Select your pointcloud to change the color scheme of it.

Measurements: Lists all measurements. You may click on a measurement to retrieve the data or to modify or delete the measurement.

Annotations: Lists all annotations. You may click on an annotation to modify the annotation title or description or to delete the annotation.

Other:
Camera: Gives Information about the current camera position and view.
Camera Animation: List of camera animations. You may click on an animation to modify, play or delete it.

Select your **pointcloud_name.fileformat** to modify the current pointcloud properties:



Point size: Click or drag to your preferred point size. Has no effect if it is smaller than minimum point size.

Minimum size: Points are at least of this size.

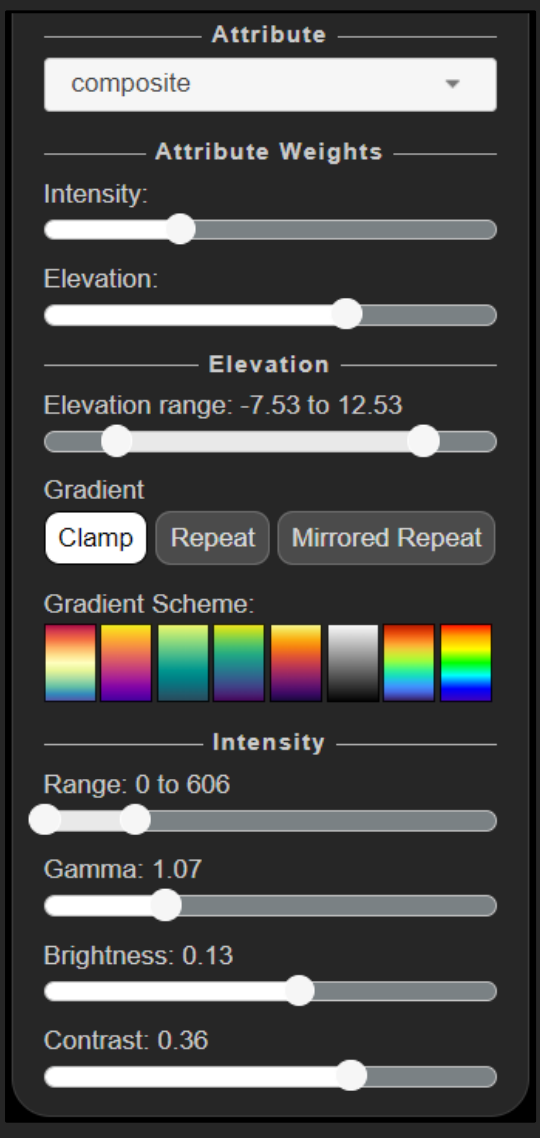
Point sizing:

- Fixed: Direct control by with Point size and Minimum size.
- Attenuated: Thinned out appearance controlled by Minimum size.
- Adaptive: Point size proportional to point density.

Shape: Square, Circle or Paraboloid.

Opacity: Opacity of the pointcloud

Attribute:



- Elevation: Coloring based on the z-axis. Use Elevation range (below/above scan start point in meter) to modify applicable area for the color scheme. Gradient to select
  - Clamp: Color for area below/above Elevation range is the color of lower/upper end of the selected Gradient Scheme.
  - Repeat: Selected Gradient Scheme is repeated for area below/above Elevation range.
  - Mirrored Repeat: Selected Gradient Scheme is repeated reversed for area below/above Elevation range.
- Intensity: Black and white color scheme based on the intensity of the points. Select the Range to modify the applicable area for the intensity scheme. Gamma, Brightness and Contrast to modify the color intensity scheme.
- Intensity Gradient: Same as Intensity but intensity is shown in Gradient Scheme.

- Color: Select or input a RGB value to colorize the pointcloud with the given color.
- Indices: Color scheme with colored octree nodes.

Composite: Choose the Attribute Weights for Intensity and Elevation to apply both color schemes to the pointcloud.

6.3 Viewer: Use Measurements and Tools

While the viewer works on both touch and non-touch devices, some tools and measurements are easier to use with a mouse to have precise inputs and hovering available. This section contains an explanation of the tools and measurements mentioned above and how to use them with a mouse.

Measurements:

Angle Measurement: 

Click on the “Angle Measurement” icon and then with the left mouse button click on three points of the pointcloud to create a triangle. The values of the angles are displayed in the pointcloud. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Angle* in the measurements category to see the coordinates of the points relative to the scan starting point and the angle values. You may delete the angle measurement by clicking on the × icon.

Point Measurement: 

Click on the “Point Measurement” icon and then with the left mouse button click on a point of the pointcloud to see its details. The relative x-,y- and z-coordinates of the point are displayed in the pointcloud. To modify the point, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Point* in the measurements category to see the coordinates of the point relative to the scan starting point and its intensity, return value, etc. You may delete the point measurement by clicking on the × icon.

Distance Measurement: 

Click on the “Distance Measurement” icon and then with the left mouse button click on at least two points of the pointcloud to create a line between them. Add arbitrary many points with the left mouse button. Once you are satisfied with the distance measurements, click the right mouse button to exit the distance measurement tool. The distances between two points respectively are displayed in the pointcloud. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Distance* in the measurements category to see the coordinates of the points relative to the scan starting point and the distance values. You may delete the distance measurement by clicking on the × icon.

Height Measurement: 

Click on the “Height Measurement” icon and then with the left mouse button click on two points of the pointcloud to measure the height difference between them. The height difference between two points are displayed in the pointcloud. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Height* in the measurements category to see the coordinates of the points relative to the scan starting point and the height difference. You may delete the height measure- ment by clicking on the × icon.

Circle Measurement: 

Click on the “Circle Measurement” icon and then with the left mouse button click on three points of the pointcloud to create a circle. After selecting two of the three points, a circle is constructed to help you place the third point. The radius of the circle is displayed in the pointcloud. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Circle* in the measurements category to see the coordinates of the points relative to the scan starting point and the center, the radius and the circumference of the circle. You may delete the circle measurement by clicking on the × icon.

Area Measurement: 

Click on the “Area Measurement” icon and then with the left mouse button click on at least three points of the pointcloud to create an area between them. Add arbitrary many points with the left mouse button. Once you are satisfied with the area measurement, click the right mouse button to exit the area measurement tool. The size of the area in the x-y-Plane (looking at the pointcloud from above) is displayed in m^2 in the pointcloud. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Area* in the measurements category to see the coordinates of the points relative to the scan starting point and the size of the area. You may delete the area measurement by clicking on the × icon.

Cubic Volume Measurement and Clipping Cubic Volume Measurement

Click on the “Cubic Volume Measurement” icon and then with the left mouse button click on a point to set a center for the volume. The volume in m^3 is displayed in the pointcloud. To change the position of the volume, with the left mouse button held down drag the straight lines in the middle of the volume to the desired position. To change the size of the volume, with the left mouse button held down drag the circles at the desired side of the cuboid to the desired position. To change the orientation of the volume, with the left mouse button held down drag the bent lines around the desired axis.

In the *Scene* section of the viewer menu, click on *Volume* in the measurements category to see the coordinates of the center relative to the scan starting point, the rotation angles, the side lengths and the volume. Depending on if you selected the non-clipping or the clipping version of the measurement, the “make clip volume” checkbox is checked. You may toggle this checkbox. Click on the “reset orientation” button to orientate the volume the same as GLidar in its starting scan position. Click on the “make uniform” button to keep the current volume but make all side lengths equal. You may delete the volume by clicking on the × icon.

Spherical Volume Measurement

Click on the “Spherical Volume Measurement” icon and then with the left mouse button click on a point to set a center for the volume. The pointcloud inside of the volume is colored corresponding to the distance to the center of the volume. To change the position of the volume, with the left mouse button held down drag the straight lines in the middle of the volume to the desired position. To change the size of the volume, with the left mouse button held down drag the circles at the desired side of the cuboid to the desired position. To change the orientation of the volume, with the left mouse button held down drag the bent lines around the desired axis.

In the *Scene* section of the viewer menu, click on *Volume* in the measurements category to see the coordinates of the points relative to the scan starting point, the angles, the side lengths and the size of the volume. Click on the “reset orientation” button to have the volume orientated the same as GLidar in its starting scanning position. Click on the “make uniform” button to keep the current size of the volume but make all side length equal. You may delete the volume measurement by clicking on the × icon.

Profile Measurement:

Click on the “Profile Measurement” icon and then with the left mouse button click on at least two points of the pointcloud to create a line between them. Add arbitrary many points with the left mouse button. Once you are satisfied with the area measurement, click the right mouse button to exit the profile measurement tool. To modify one of the points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *Profile* in the measurements category to see the coordinates of the points relative to the scan starting point and to change the width of the profile in meters. Click on the “show 2d profile” button to generate a height profile and hover over the points in the height profile to get additional info. To modify the height profile, you click on the ↻↺ buttons to rotate the profile by the amount of degree that is specified next to it (e.g. 10°). Click on the ⇕ buttons to move the height profile perpendicular to the height profile. You may export the height profile in DFX, CSV or LAS format by clicking on the corresponding button. You may delete the profile measurement by clicking on the ✕ icon.

Annotation:

Click on the “Annotation” icon and then with the left mouse button click on a point to set a annotation. To cancel the placement an annotation, click the right mouse button. The default annotation title “Annotation Title” is displayed in the pointcloud. When hovering over the annotation with your mouse, the annotation description is shown.

In the *Scene* section of the viewer menu, click on *Annotation Title* in the annotations category to see the coordinates of the annotation relative to the scan starting point and to modify the annotation title and description by clicking on the text fields. You may delete the annotation by clicking on the ✕ icon.

Navigation:

Full extent:

Go to full extent of the pointcloud. Click on this icon to see the full pointcloud on your device.

Navigation cube:

Click on this icon to show the navigation cube in the top right corner of the screen. The navigation cube shows the current view orientation with respect to the scan starting orientation. You can easly change the view to *(F)ront, (B)ack, (U)p, (D)own, (R)ight or (L)eft* by clicking on the desired side of the navigation cube.

Change view:

Show pointcloud from the left side

Show pointcloud from the right side

Show pointcloud from the front

Show pointcloud from the back

Show pointcloud from above

Show pointcloud from underneath

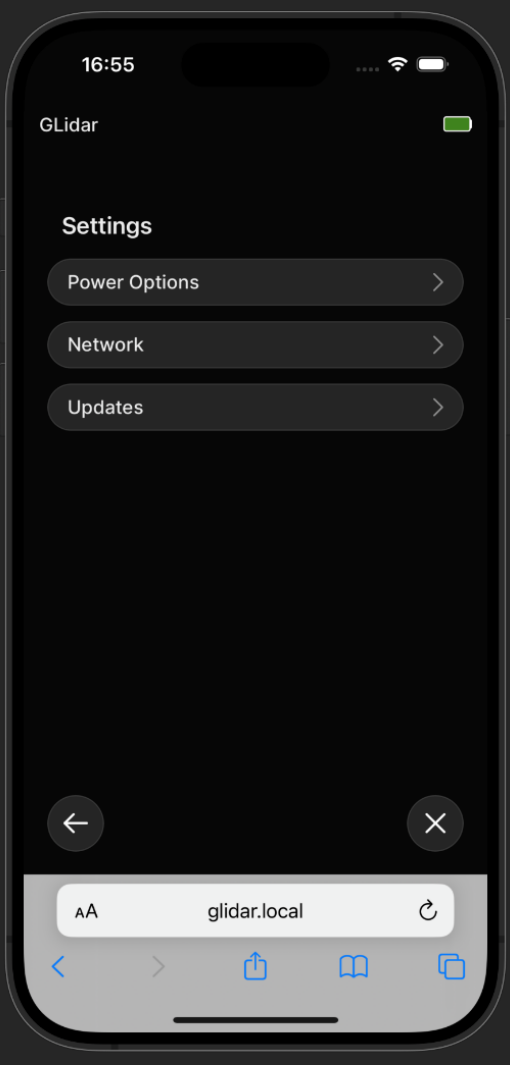
Camera Animation:

Click on the “Camera Animation” icon to create a default animation consisting of five control points. Camera Animations can be used to generate a short video animation of the scan to highlight the points of interest. A control point consists of an point that the camera will pass while playing the animation and a point which specifies the view point of the camera

when passing the control point. To modify one of these points, with the left mouse button held down drag the point to another spot.

In the *Scene* section of the viewer menu, click on *animation* in the *other* category to modify and play the camera animation.
Click on the “insert control point” button to add control points inbetween two control points. Click on the × icon next to a control point to delete it.
Modify the duration of the camera animation by clicking on the text field and change the duration in seconds or by using the arrows next to it. Drag the time slider to see the view of the animation at a specific time.
To play the camera animation, click on the “Play” button. To delete the camera animation, click on the × icon in the bottom of the animation. The animation is deleted automatically if there is only one control point left.

7 Settings, Updates and Power Management

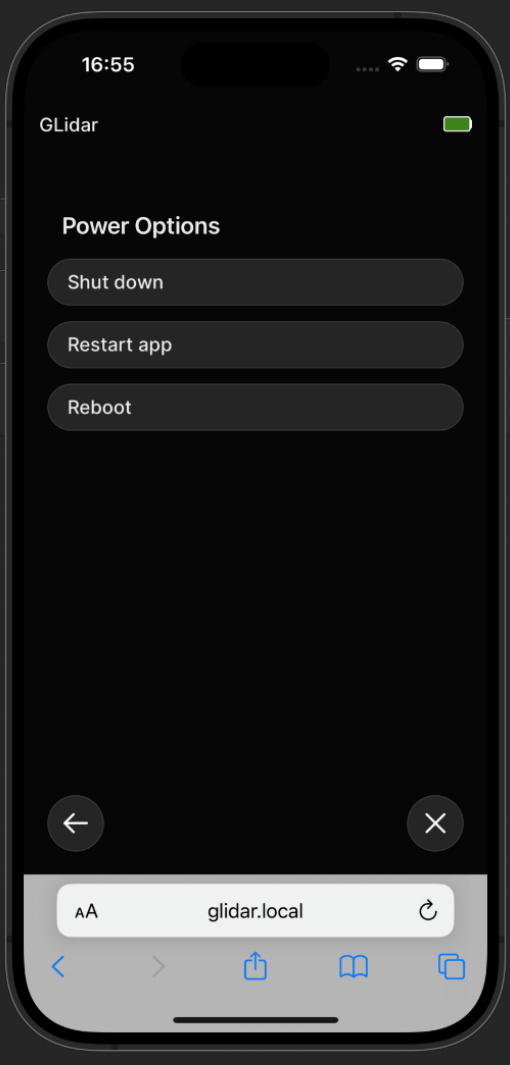


To manage the power mode of your GLidar, change your settings and install updates, follow these steps in the Web-Application on your device:

1. If you are not on the home screen, click on the ⊗ button in the bottom right corner of your current screen or search for “glidar.local” in the URL search bar. If you are having a scan/re-run/view currently running you may want to end this first.
2. Click on the “Settings” button.

Choose your desired option “Power Options”, “Network” or “Updates”.

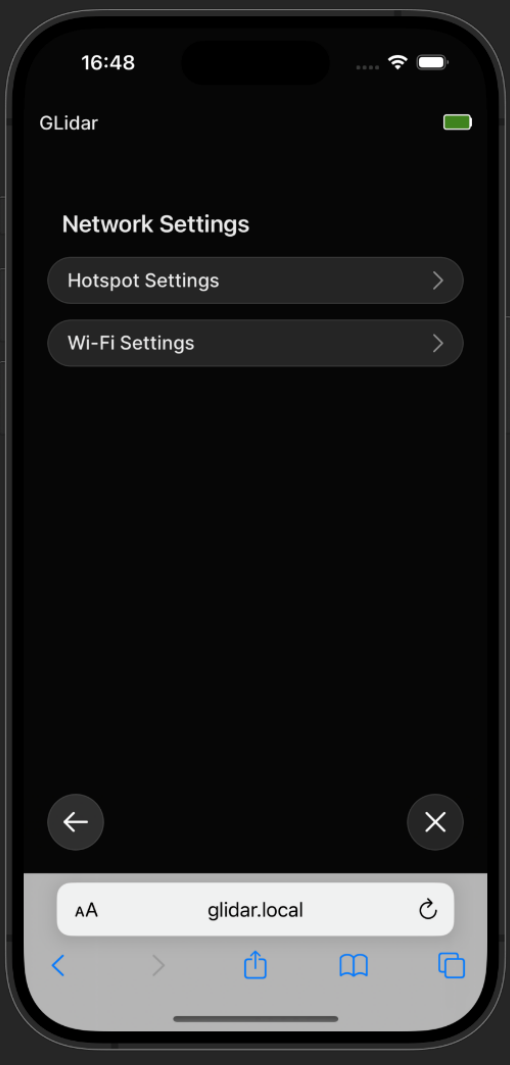
7.1 Power Options



Click on the desired option and confirm your choice in the pop-up:

- Shut down: Cancels a currently running scan/re-run/view without saving it and turns off the GLidar.
- Restart app: Cancels a currently running scan/re-run/view without saving it and restarts the software of GLidar. Try this option if you are having troubles with GLidar especially while scanning. If the problem persists, please contact the support.
- Reboot: Cancels a currently running scan/re-run/view without saving it and turns off the GLidar and immediately starts it again. It will take some time until the system is running again.

7.2 Network

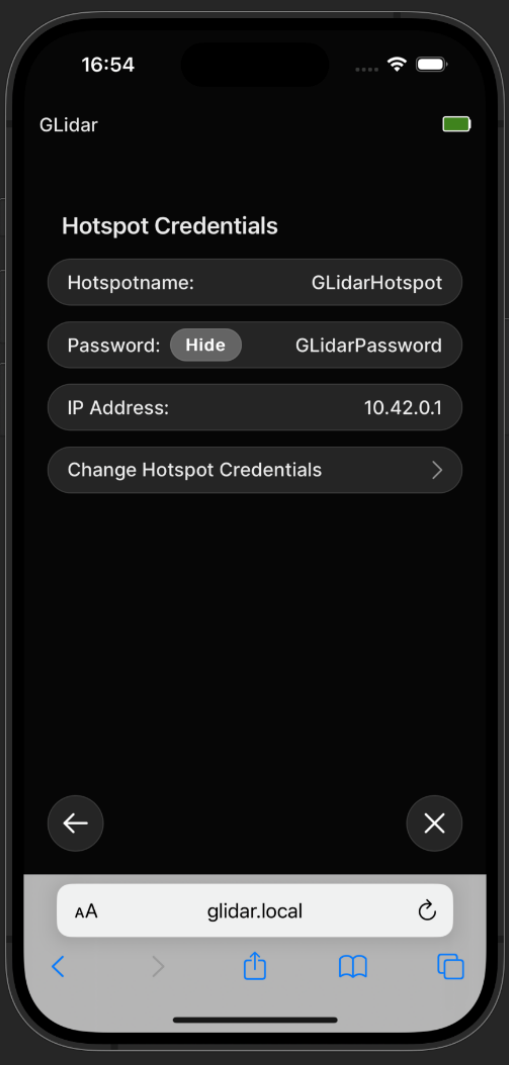


- Hotspot Settings: Click on this option if you want to check the current hotspot credentials, the IP-Address of GLidar or modify the hotspot credentials.
- Wi-Fi Settings: Click on this option if you want to check the name or IP-Address of the currently connected Wi-Fi or if you want to connect GLidar to a different Wi-Fi. You may connect your GLidar to a Wi-Fi of your choice. Select a Wi-Fi from the list, enter the password (if needed) and click on “Connect”. You may also enter the Wi-Fi credentials manually by clicking “Add Network Manually”, enter the credentials and click on “Connect”. Note that you have to change the Wi-Fi you are connected to on your device to the same Wi-Fi you connected your GLidar to, if you were connected to the GLidar using a shared Wi-Fi.

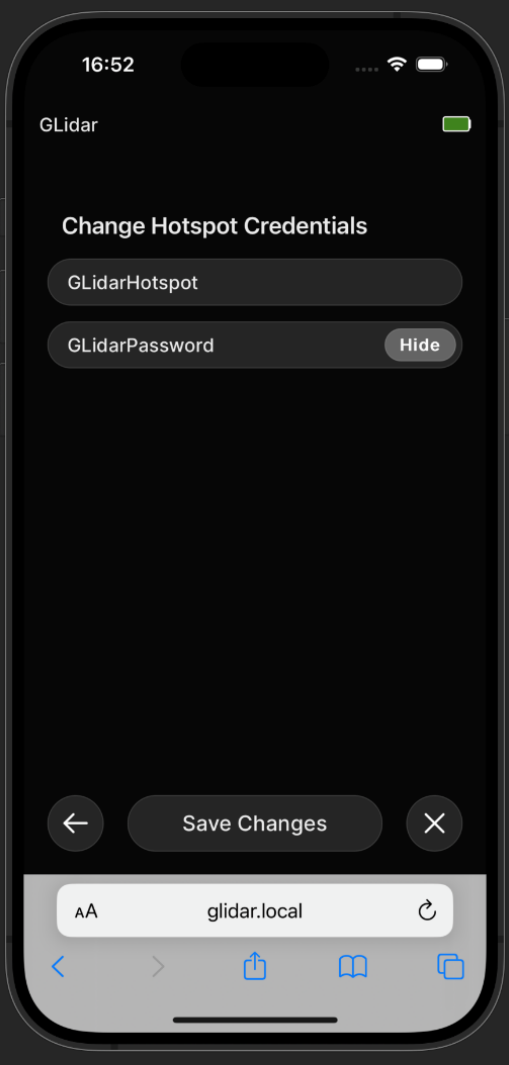
Hotspot Settings

The current hotspot name, the current hotspot password and the IP-Address of GLidar in the hotspot network are shown. To see the current hotspot password in plain text, click on “Show”. Afterwards you may click on “Hide” to hide the password again, but it will be hidden anyway once you leave this page.

You may modify the hotspot credentials by clicking “Change Hotspot Credentials”.



Change Hotspot Credentials



Modify the hotspot name and the hotspot password by clicking on the corresponding text boxes. To see the current hotspot password in plain text, click on “Show”. Afterwards you may click on “Hide” to hide the password again, but it will be hidden anyway once you leave this page.

Click on “Save Changes” to apply the changes. The current hotspot will be closed and a new hotspot with your newly set credentials will be created. This procedure may take a minute. Note that you will only get a response pop-up if your device and GLidar are connected to a shared Wi-Fi. If you were connected to the hotspot, you have to connect to the hotspot again in the Wi-Fi settings of your device with the new credentials, as described in section 3.2, and then reload the webpage.

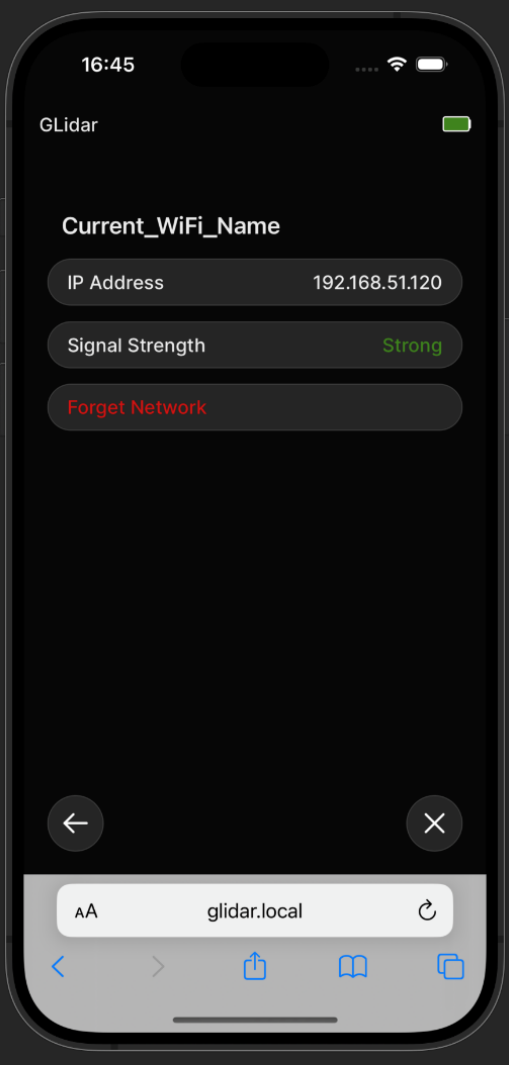
Wi-Fi Settings

After an initial scan for Wi-Fi networks, the currently connected Wi-Fi of GLidar and the available Wi-Fi networks are shown. If no networks were detected or an error occurred, a pop-up will appear and you may rescan by clicking “Try again”.

If GLidar is not connected to a Wi-Fi network, the connected Wi-Fi will show “Not connected”, otherwise you may click on the currently connected Wi-Fi name to show this network’s details.

To connect to another Wi-Fi, you may either connect to a Wi-Fi from the list or click on “Add Network Manually”. The available Wi-Fi list is scrollable, so you may need to scroll down the list to find the desired Wi-Fi.

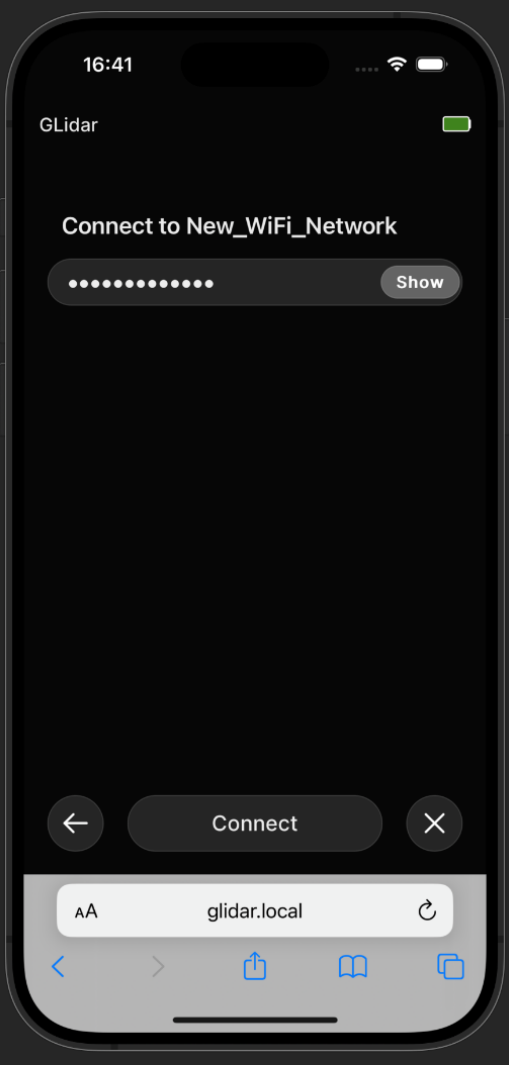
Currently connected Wi-Fi



After clicking on the currently connected Wi-Fi in the Wi-Fi settings, the *IP Address* and the *Signal Strength* of the connection to this Wi-Fi is loaded and displayed.

If you want to disconnect from the currently connected Wi-Fi, you can click on “Forget Network” to disconnect from this Wi-Fi and discard the saved credentials. If you are connecting to this Wi-Fi again at a later time, you need to enter in the password again.

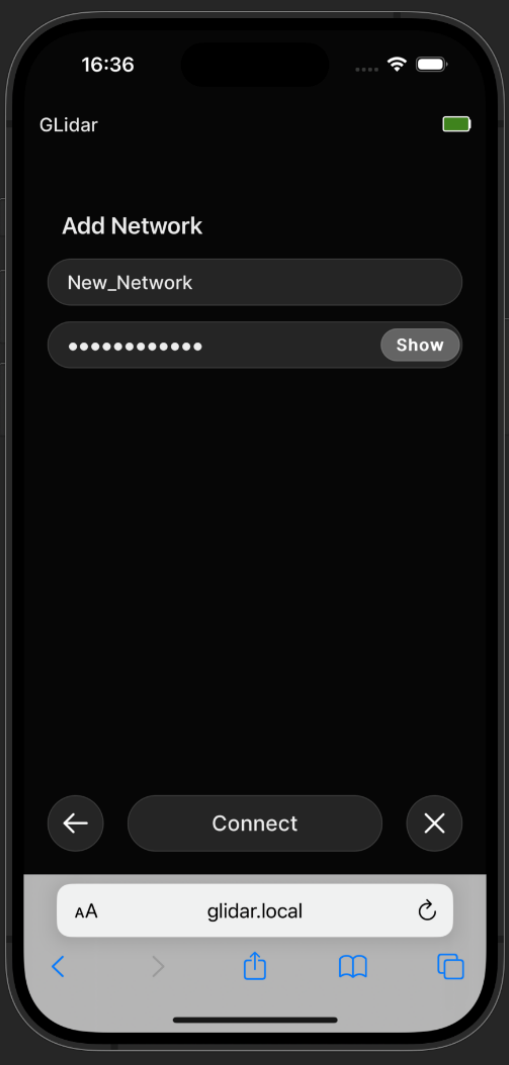
Connect to Wi-Fi



After selecting your Wi-Fi from the list, enter the Wi-Fi password in the text field or leave it blank if GLidar was already connected to this Wi-Fi before (password is stored) or if the Wi-Fi has no password set. You may display the password in plaintext by clicking on the “Show” button.

Click on “Connect” to try to establish a connection from GLidar to the specified Wi-Fi. This procedure may take up to a minute. Note that you will only get a response pop-up if your device is connected to GLidar’s hotspot. If you were connected to the old Wi-Fi, you have to connect to the new Wi-Fi in the Wi-Fi settings of your device and then reload the webpage.

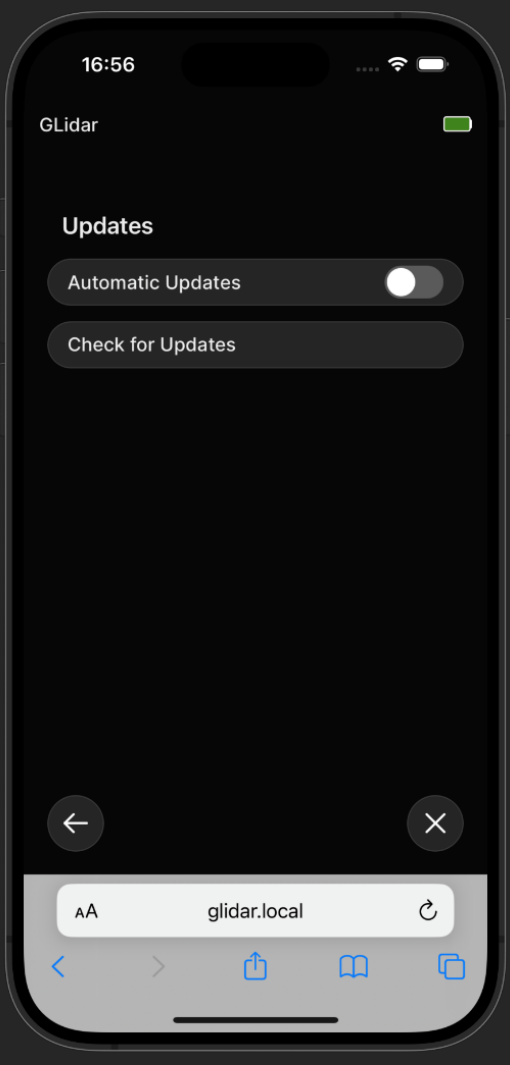
Add Network Manually



After you pressed the “Add Network Manually” Button in the Wi-Fi settings, enter the Wi-Fi name in the “Network Name” text field. Enter the Wi-Fi password in the text field or leave it blank if GLidar was already connected to this Wi-Fi before (password is stored) or if the Wi-Fi has no password set. You may display the password in plaintext by clicking on the “Show” button.

Click on “Connect” to try to establish a connection from GLidar to the specified Wi-Fi. This procedure may take a minute. Note that you will only get a response pop-up if your device is connected to GLidar’s hotspot. If you were connected to the old Wi-Fi, you have to connect to the new Wi-Fi in the Wi-Fi settings of your device and then reload the webpage.

7.3 Updates



By default, automatic updates are selected which are downloaded and installed after powering on GLidar. However, if you want to check if there is an update available, make sure that GLidar is connected to a Wi-Fi which has internet connection, click on the switch to disable “Automatic Updates” and then “Check for Updates”. If there is an update available, you may download it by clicking “Download Update”. GLidar will download and install the update and, if necessary, will do a reboot, which may take a while. You can use GLidar once the Web-Application is available again.

8 Support and Troubleshooting

If you are experiencing troubles with connecting to GLidar or the Web-application, consult the troubleshooting section in chapter 3.2 and follow the instructions there. If there is a problem while using the Web-Application, consult the specific sections below.

8.1 Problems while scanning/re-running

Scanning/Re-running stuck when starting, stopping, writing or finishing

If the Web-Application is stuck before the scan or re-run even started (e.g. if the spinner does not vanish after some time), something went wrong. Follow the instructions in section 7.1 to restart the app.

If the Web-Application is stuck after you pressed “Start Recording” or “Stop Recording”, try reloading the webpage.

If the Web-Application is stuck while the button says “Saving Scan...” or “Saving Rerun...”, make sure you wait for at least 5 minutes to make sure that the Web-Application not just takes a long time to save the pointcloud. If the saving takes longer than five minutes, you may abort the current scan/re-run by pressing the ◎ icon in the top left corner and confirm the abortion the pop-up. Be aware, that your scan or rerun is lost once you abort it.

Active Scan/Re-run is running in the background

It is only possible to do one scan or re-run at a time. That means the current scan/re-run has to end first before starting a new one. In general, a scan or re-

run can only be ended in the same tab in the same browser on the same device as it was started.

However, if you accidentally close this tab or if the device you used for starting the scan/re-run is out of power, you may take over control of the scan/re-run from a different tab or device:

In a new tab, connect to “glidar.local” and click on the top region of the home page. Click on “Join Scan/Re-run” and once you are connected to the stream, click on the ◎ icon in the top left corner. You will be asked if you want to take over the current scan or re-run. Click on “Request Take-over” to send a request to the tab that was used to start the current scan or re-run. If nobody is responding in this tab (e.g. because the tab is closed or the device is out of power), you will take-over the ownership of the scan/re-run after 15 seconds. You may continue with the scan/re-run as you normally would.

Stream image cannot be controlled by user input or turns black suddenly

Make sure, that you are still connected to the hotspot of your GLidar or to the shared Wi-Fi. Turn off the mobile data connection in the settings on your device if mobile data is turned on. After these steps, reload the webpage and wait to connect to the stream again. If you are still not able to see the stream, follow the instructions in section 7.1 to restart the app.

Stream not available

If you are not able to see a stream after starting a scan, your browser might not allow displaying the stream. To fix this issue in the Firefox browser, you may either use another browser and try again or follow the instructions below:

1. Search for “about:config” in the URL search bar in a new tab in the Firefox browser
2. Accept the risks and continue
3. Search and toggle the following to *true*:
   - *browser.opaqueResponseBlocking*
   - *browser.opaqueResponseBlocking.javascriptValidator*

8.2 Problems while viewing a result

If you are not able to see your pointcloud result after starting a view, your browser might not be able to create a WebGL context. To fix this issue in the Firefox browser, you may either use another browser and try again or follow the instructions below:

1. Search for “about:config” in the URL search bar in a new tab in the Firefox browser
2. Accept the risks and continue
3. Search and toggle the following to *true*:
   - *webgl.force-enabled*
   - *webgl.out-of-process.force*

8.3 General Troubleshooting

You may reload the webpage in your browser anytime if the Web-Application does not react as expected. As described in section 7.1, you may restart the software of the GLidar anytime by going to “Settings”, selecting “Power Options” and then clicking on “Restart app”.

If your problem persists or if you have any question regarding GLidar, consult the GLidar forum or contact the support:

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