# ARrayVue® Lite User's Guide

*Version 3.3.6*

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# 1. Introduction

## Overview

ARrayVue® Lite uses augmented reality (AR) and GPS to lay out and measure points on the ground. It provides four tools:

- **G-Compass** — a compass, overlaid on the camera, that reads your heading from the AR-to-GPS calibration rather than the phone's magnetometer.
- **Two Point Measurement** — measure the compass direction (azimuth) and distance between two points.
- **Two Point Layout** — place a point at a specified direction and distance from a chosen reference point.
- **Rectangle Layout** — lay out the four corners of a rectangle with a chosen orientation and dimensions, and record each corner's elevation to reveal the site's slopes.

All four tools begin with a one-time calibration of AR to GPS. Once calibrated within a camera session, you can move between tools without recalibrating.

## Intended Uses

ARrayVue® Lite is primarily intended for site analysis, layout, and field verification work — including solar, civil, and general construction use.

## System Requirements

- iPhone or iPad
- iOS 17.6 or later
- For best results, an iPhone Pro or iPad Pro, which have LiDAR (Light Detection and Ranging) capability.
- GPS features require a device with GPS hardware. All iPhones and cellular-capable iPads include GPS. **Wi-Fi-only iPads do not have GPS** and cannot perform the AR-to-GPS calibration.

## Glossary

Augmented Reality (AR) is a technology that overlays digital content—such as images, 3D models, or information—onto the real world in real time, enhancing the user's perception of their environment through devices like smartphones, tablets, or AR glasses.

Global Navigation Satellite System (GNSS) is a system of satellite constellations used for positioning and navigation. Constellations are supported by several nations, including the United

States, the European Union, Russia, China, and regionally by India and Japan. Global Positioning System (GPS) refers to the constellation of satellites maintained by the United States.

Azimuth is a compass direction measured in degrees clockwise from true north: 0° is north, 90° is east, 180° is south, and 270° is west.

## 2. Safe Use

ARrayVue® Lite requires walking on or around a project site while looking at the device's screen. Use the app only when it is safe to do so. The app does not detect traffic, ground hazards, equipment, or other people on site — you are responsible for your own safety and for the safety of those around you. Audible and vibrating cues (such as the phone-angle reminder) are aids to using the app; they are not safety devices.

### Stay aware of your surroundings

Stop before you read the screen. When checking prompts, distance readouts, or AR markers, come to a complete stop. Do not read the screen and walk at the same time.

### Active vehicle areas

Do not use the app while crossing roadways, driveways, or any active vehicle path. Set marks from a safe stationary position. Do not use the app while operating a vehicle.

### Active construction sites

Job-site safety rules and personal protective equipment (PPE) requirements always take precedence over any step in this guide. If a calibration walk would take you near energized equipment, moving machinery, open trenches, suspended loads, or restricted zones, choose different calibration points or wait for a clear period. Coordinate with site supervision when in doubt.

### Ground hazards

Tall grass and uneven terrain can hide ditches, drainage grates, well covers, rebar, root holes, and other obstacles. Walk routes you have inspected or know to be clear. Watch for water, ice, mud, and unstable footing.

### Visibility and weather

Bright sunlight, screen glare, rain, snow, or condensation reduce screen readability. If you cannot read the screen at a glance, stop, shade or wipe the device, and resume from a stationary position. Do not squint at the screen while moving.

### Battery and session continuity

A dying battery interrupts the AR session and forces a re-calibration. Bring a fresh battery or charging accessory for long sessions, and do not compromise safety by rushing through walks because the battery is low.

### When in doubt, stop

If a step in this guide would require you to act in a way you consider unsafe, stop using the app and re-plan with site supervision. ARrayVue® Lite is a layout and measurement tool — it is not a substitute for site judgment, training, or PPE.

## 3. Installation & Setup

### Download & Installation

ARrayVue® Lite is available on the Apple App Store.

### Required Permissions

- **Camera** — required to support augmented reality within the app.
- **Location Services** — required because GNSS data is used for determining orientations.
- **Photos (Add Only)** — required to save screenshots and exported images to your photo library.

### Before you calibrate

In normal outdoor field use, turn Wi-Fi off before calibrating. iOS uses Wi-Fi to assist GPS positioning, which can degrade calibration accuracy, so ARrayVue® Lite requires Wi-Fi to be off to calibrate and reminds you if it is on. (If you need Wi-Fi for other reasons, you can instead disable just its location contribution in Settings → Privacy & Security → Location Services → System Services → Networking & Wireless.)

In Indoor Training, calibration does not use GPS, so Wi-Fi does not affect it and does not need to be off.

## 4. Core Features & Functionality

ARrayVue® Lite uses Augmented Reality (AR) to place virtual marks in the camera view and Global Positioning System (GPS) to establish or measure the real-world orientation and position of those marks. All four tools share a common calibration step; once calibrated within a camera session, you can move between tools without recalibrating. See Appendix I for detailed steps.

### Calibration

Every tool begins by calibrating AR to GPS. You mark two calibration points — ideally about 150 to 200 feet apart, with a clear view of the sky — and perform a short “star walk” (four short walk-outs and returns) at each point. This aligns GPS readings with the AR scene. When calibration finishes, ARrayVue® Lite reports a **Bearing Precision** value and a confidence level (see Section 9). Full steps are in Appendix I.

## G-Compass

A compass overlaid on the camera view, referenced to your calibration (so it is generally more reliable than the phone's magnetometer). Because it is tied to the calibration, its headings are **true-north** bearings — labeled "True" on screen. Unlike a magnetic compass, there is **no magnetic declination to add or subtract**; the reading is already true north, use it as shown. It has two views, chosen automatically by how you hold the phone:

- **Held flat / pointed down** — a traditional rotating compass rose; read your heading under the green index line at the top, with the degrees shown in the center. North is marked by a white **N** and a small red triangle.
- **Raised to face forward** — a horizontal heading scale with a yellow aiming crosshair for lining up a stake or object.

Your current latitude, longitude, and elevation, plus the distance back to the second calibration point, are shown near the bottom of the screen. Turn in place to read any direction. Don't walk while the phone is raised to face forward, as it can disturb the calibration.

## Two Point Measurement

Measure the compass direction and distance between two points.

1. Calibrate AR to GPS.
2. Set the two points.

The results show the azimuth and distance between the points. You can drag either point to fine-tune it, save a photo of the scene, or export the point data.

## Two Point Layout

Place a point at a specified direction and distance from a chosen reference point.

1. Calibrate AR to GPS.
2. Enter the direction and distance from the reference point to the second point.
3. Set the reference point; the second point appears at the chosen direction and distance.

You can record each point's elevation and export the results.

## Rectangle Layout

Lay out the four corners of a rectangle with a chosen orientation and dimensions.

1. Calibrate AR to GPS.
2. Enter the rectangle's orientation and dimensions.
3. Choose and set the starting corner; all four corners appear.

4. Walk to each of the other three corners and record its elevation — the starting corner's elevation is taken automatically from where you placed it.

A **Site Data** summary then shows the corner elevations and the slope of each edge, which you can export as a data log or a sketch.

### Saving and sharing results

- **Camera Mode** — on a tool's review screen, Camera Mode opens a clean view of the AR scene (the live camera with your marks) so you can frame and save or share a photo (**Export Photo**) without the app's controls in the shot. The exported photo is stamped in the lower-left with your **location**, the **date and time**, and the **direction the camera is facing**. You can rotate the device to landscape in Camera Mode if the scene frames better that way.

- **Screen Image** — the screenshot control in the bottom status row saves a full-screen image (including the app's controls) to your Photos, on any screen.

- **Data exports** — Two Point Measurement and Two Point Layout export the points' data (coordinates, bearing, distance, elevation). Rectangle Layout exports a **Data Log** (a spreadsheet-ready file) and a **Sketch** (an image of the Site Data diagram).

### Indoor Training

Indoor Training lets you practice ARrayVue® Lite indoors without requiring GPS. Tap the satellite indicator at the bottom of the screen to toggle between GPS mode and Indoor Training; you can switch **before you mark the first calibration point** — once calibration is under way, the toggle is inactive. When Indoor Training is on, the indicator changes to an INDOOR icon and the status bar at the bottom of the screen is tinted pink. In Indoor Training, calibration uses shorter walk-out lines so the protocol fits comfortably in a typical room, and the direction from the first calibration point to the second is assumed to be 180° (due south). Toggle Indoor Training off before using the app in the field.

## 5. ARrayVue® Lite Use Cases

### G-Compass

Purpose: Read a heading that is referenced to your AR-to-GPS calibration rather than the phone's magnetometer.

When to use: Checking the orientation of a row, edge, or feature in the field, or sighting the bearing to a stake or object — without the magnetic interference that affects a phone compass near metal.

### Two Point Measurement

Purpose: Determine the compass direction and distance between two points.

When to use: Site analysis for assessing the orientation of existing structures, proposed arrays, or existing stakes.

### Two Point Layout

Purpose: Locate a point at a specified direction and distance from a chosen reference point.

When to use: Placing a second stake, landmark, or reference at a known offset and bearing from an established point.

### Rectangle Layout

Purpose: Lay out the four corners of a rectangle with a chosen orientation and dimensions, and capture the corner elevations.

When to use: Quickly staking a rectangular footprint — a pad, enclosure, or simple array outline — and getting a first read on the site's slopes, without the overhead of a full project.

## 6. Troubleshooting & FAQs

### Augmented Reality

**What can cause AR to be inaccurate?**

- Poor lighting — very dark or very bright environments can affect camera tracking and depth sensing.
- Reflective or transparent surfaces — glass, mirrors, or shiny floors can cause tracking errors due to poor depth perception.
- Low-texture environments — AR relies on feature points in the environment; uniform surfaces reduce accuracy.
- Fast or erratic camera movements — quick motions can cause motion blur and tracking drift.
- Steep camera angles while walking — holding the device so it aims well above the ground destabilizes tracking. Keep the camera aimed down as you walk (the app reminds you if the angle is too high).
- Camera quality and dirty lenses — smudges or scratches on the lens can reduce AR tracking precision.
- Low Battery Mode — reduces processing power, which can affect AR performance.

**What should I do if a virtual object is moving on the screen?**

Most likely the AR session has not fully initialized. Back up one step in the flow or start over, allowing time for the camera and AR to stabilize.

**The app blocked calibration and asked me to recalibrate. Why?**

ARrayVue® Lite compares the distance between your calibration points as measured by AR against the distance from GPS. If the two disagree by too much — a sign that AR tracking drifted during the walk — the app blocks the calibration and asks you to recalibrate. Move at a steady pace, keep the camera aimed at the ground, and avoid steep camera angles while walking.

**My device beeped and vibrated and showed "Phone angle too high."**

That is the phone-angle reminder. While walking during calibration, keep the camera aimed down (below about 45° from straight down). Holding the device too high starves AR tracking of the ground features it needs and can corrupt the calibration.

**How do I know if AR tracking has drifted?**

You usually can't see it directly, and the Bearing Precision reading won't show it. On a large site, check by measuring the same line from both ends — the bearings should differ by 180° (or measure a feature, walk away and back, and confirm you get the same bearing). If they disagree by more than a degree or two, AR has drifted; re-calibrate closer to where you're working.

## GPS

**How long does it take to acquire satellites?** Outdoors with a clear view of the sky, an iPhone is typically ready within about 30 seconds and an iPad within about 45 seconds — often sooner once GPS accuracy is good.

**Why does the app ask me to turn off Wi-Fi?** iOS uses nearby Wi-Fi networks to assist GPS positioning, which can bias the fix and degrade calibration accuracy. Turn Wi-Fi off (or disable its location contribution) before calibrating.

**What are the optimal conditions for GPS usage?**

- A clear view of the sky.
- Avoid reflections from large metal surfaces such as metal-sided buildings. Our data indicates this can become significant within roughly 20 feet of such a building.

**What can cause errors in GPS positioning?**

- Obstructions — buildings, trees, tunnels, and mountains can block satellite signals (urban canyon effect).
- Multipath interference — signals bouncing off surfaces like buildings or water cause delayed reception.
- Weather conditions — heavy rain, snow, or ionospheric disturbances can weaken GPS signals.

- Insufficient initialization — allow adequate open-sky time before use (see above).

**How accurate is the calibrated bearing?** See Section 9, *Understanding Bearing Precision & Confidence*.

**Do I need to apply magnetic declination?** No. ARrayVue Lite reports **true-north** bearings from your GPS calibration, not magnetic ones — so unlike a magnetic compass, you do **not** add or subtract declination. Use the reading as shown.

## 7. Tips & Best Practices

### General — manipulating points

- **Place a point:** line it up in the target and tap the button for that step (for example, Set First Point). Where prompted, drag the mark to fine-tune it, then tap **Accept point**.
- **Drag a point:** touch and drag it. In the layout tools, dragging one mark moves the whole set together, preserving the geometry between them.
- **Redo or start over:** use the on-screen controls — **Redo Point 2**, **Reset**, or **Start over** — described in Appendix I.
- On-screen indications appear when tap and drag actions are available.

### Calibrating AR to GPS

A calibration is only as reliable as the AR frame staying consistent from your two calibration points to where you measure — and AR tracking drifts slowly as you walk and over time. The two points do not have to be next to the area you will be measuring, but the camera session must be maintained while moving from the calibration to your measurements or layout. Follow these guidelines:

- Choose two points with a clear view of the sky, at least 150 feet apart (150 to 200 feet is a good target); greater separation gives a tighter bearing.
- Finish the calibration near where you'll work. Calibration ends at the second point, so make that the one nearer your work area and keep your measurements within roughly 300 feet of it. The more you walk after calibrating, the more the reading can drift — this matters most on iPad, which drifts faster than iPhone.
- Although the path between the two points does not have to be a straight line, walk as directly as practical between them; a longer, wandering walk lets AR drift.
- Wait for the GPS indicator to reach green before marking; if you mark while it's still yellow, the app warns you that accuracy improves if you wait.

- On a large site, calibrate separately for each work area rather than covering the whole site from one calibration.

These goals can compete — the best open-sky spot may not be near your work. When they do, favor keeping the second point near your work: the star-walk calibration averages out GPS noise and, with a 150 ft-plus baseline, tolerates a less-open second point well. Give the first point the open-sky location, even if it's a longer walk to reach.

**Stepping away from your work area.** Because calibration should finish where you'll work but you'll often start the app right there, ARrayVue® Lite begins by helping you step away. On the first screen, mark your work area and walk out until the on-screen distance reads 150 to 200 feet, then tap **Begin Calibration** — you'll mark point 1 out there and walk back toward the work area to mark point 2, so calibration finishes where you'll measure. If you're already 150 to 200 feet from where you'll work, tap **Skip**. (Once you're used to this, simply start the app away from the work area and Skip.)

While walking between points and during the star walks, keep the camera aimed down at the ground and hold the device steady. Steep camera angles or erratic motion destabilize AR tracking; the app will remind you if the angle gets too high. See Section 9 for how to read the resulting Bearing Precision and confidence level.

## Getting the best GPS results

- Allow time for initialization.
- Turn Wi-Fi off (or disable its location contribution) before calibrating.
- Use GPS features in an open area without obstructions.
- Avoid establishing reference points by walking toward or away from a reflective building (such as metal siding).

## Getting the best AR results

- AR can measure and lay out features in space quite accurately when used properly.
- Erratic motion of the camera can cause tracking errors. Hold the device in a nearly fixed orientation with a view of the ground while walking from one point to the next.
- When marking a point, follow the on-screen prompts regarding device orientation for the most precise results.
- AR tracking drifts gradually with distance and time, so a bearing taken far from where you calibrated — for example at the far end of a large site — can be a degree or two off. Re-calibrate when you move to a new area.
- On a large site, or whenever you've worked well away from where you calibrated, verify before trusting a bearing: measure the same line (or feature) from both ends and

confirm the two bearings differ by 180°. If they don't, AR has drifted — re-calibrate closer. You can't see AR drift directly and Bearing Precision won't flag it, so this quick self-check is how you catch it.

## 8. Reading the Screen, Help & Settings

### The status row

The row along the bottom of the AR screens holds four controls:

- **AR status** — a red / yellow / green indicator of AR tracking readiness.
- **GPS status** — a satellite indicator (red / yellow / green) of GPS readiness. It also toggles Indoor Training, before the first calibration point is marked.
- **Screen Image** — saves a full-screen screenshot to your Photos.
- **Help** — a green "?" that opens help for the current screen.

For the AR and GPS indicators: **red** means not ready, **yellow** means acquiring or still refining, and **green** means ready.

### Screen orientation

ARrayVue® Lite runs in portrait orientation. The one exception is **Camera Mode**, where you can rotate the device to landscape if the AR scene frames better that way; the app returns to portrait when you leave Camera Mode.

### Prompts and readouts

The instruction prompt can be expanded or minimized with the ∧ / ∨ control on it. Measured values (such as a distance to the next point) appear in small labeled bubbles just above the prompt. When you are walking to a target, a direction arrow points the way; it disappears once the target is on the screen.

### Help

Tap the green "?" on any screen for guidance specific to that screen. Every help window also has a **Settings** button.

### Settings

- **Show Calibration Help Automatically** — whether the calibration help appears on its own the first time you calibrate in a session.
- **Start Prompts Expanded** — whether on-screen prompts open showing their full text (the default) or start minimized to a single line. You can always expand or minimize an individual prompt with its ∧ / ∨ control.

## 9. Understanding Bearing Precision & Confidence

When calibration finishes, ARrayVue® Lite shows a **Bearing Precision** value in degrees and a **confidence level** — Excellent, Good, or Marginal.

**What Bearing Precision means.** It is an estimate of how *consistent* the calibrated bearing is — how tightly the GPS readings agreed when the app computed the direction between your two calibration points. A smaller number is better. Bearing Precision improves with (a) a clear, open view of the sky, (b) adequate satellite initialization time, and (c) greater separation between the two calibration points.

**Precision is not the same as absolute accuracy.** Bearing Precision reflects the *repeatability* of the GPS-derived bearing, not a guarantee of its true error. In poor GPS environments — especially near buildings or other large reflective surfaces — signals can be biased in a consistent way that a precision figure does not fully reveal. This is why calibrating in the open, away from structures, matters even when the precision reads well.

**Confidence level.** The Excellent / Good / Marginal label is a quick read of the Bearing Precision:

- **Excellent** — tightest agreement; ideal conditions.
- **Good** — a solid, typical field result.
- **Marginal** — looser agreement; consider re-calibrating in a more open location, with more initialization time, before relying on the result.

**Expected accuracy by separation.** In open-sky conditions with proper satellite initialization, the accuracy of the calibrated bearing depends on how far apart your two calibration points are — greater separation yields better accuracy:

| % of calibrations | 100 ft | 150 ft | 200 ft |
|---|---|---|---|
| 90% | 3.4° | 2.4° | 1.8° |
| 95% | 4.0° | 2.8° | 2.1° |
| 97% | 4.4° | 3.1° | 2.4° |
| 99% | 5.2° | 3.7° | 2.8° |

Read the table this way: in open-sky conditions at 150 ft separation, 90% of calibrations achieve bearing accuracy within about 2.4°, 95% within about 2.8°, and so on. Recent field testing at roughly 150 ft separation is consistent with these figures.[1]

[1] These figures come from ARrayVue® Lite characterization testing. The higher-probability rows (97% and 99%) are based on the broader study data set.

## 10. Contact & Support

Report bugs or request features: apple@solarfoundationsusa.com

### Data & Privacy

ARrayVue® Lite collects a small amount of anonymous usage data to help improve the app — for example, which tools you use and calibration quality measures such as bearing precision. This information cannot be used to identify you. Your location is never sent in a precise, identifiable form: only a coarse, general-area value is transmitted, deliberately structured so it cannot be traced back to where you are. For full details, see the Privacy Policy below.

### Links

Terms of Use: https://www.arrayvue.com/terms-of-service.php

Privacy Policy: https://www.arrayvue.com/g-compass-privacy-policy.php

Patent Pending.

## Appendix I: Detailed Instructions for ARrayVue® Lite Functions

### Calibrate AR to GPS (Four-Point Protocol)

Each ARrayVue® Lite tool begins with this calibration. Calibration is performed first, from the home screen (**Start Calibration**); until it is complete the app does not offer the tools. Once calibrated within a camera session, you can switch between tools using the **Done** button, which returns you to the **Choose an Operation** screen, without recalibrating.

If your device is connected to Wi-Fi, ARrayVue® Lite will prompt you to turn it off first, because Wi-Fi assistance degrades GPS accuracy.

The satellite indicator at the bottom of the screen shows GPS readiness:

- **Red** — no satellite signal yet. The app prevents calibration in this state.
- **Yellow** — signal acquired but still refining. Calibration is allowed; the app will note that accuracy improves if you wait.
- **Green** — satellite fix is at its best. Preferred for calibration.

The indicator turns yellow soon after it begins acquiring signal, and reaches green within about 30 seconds on an iPhone or about 45 seconds on an iPad (often sooner in good open-sky conditions). A separate AR-status indicator (also red / yellow / green) shows AR tracking readiness.

Throughout the walks, keep the camera aimed down at the ground and move at a steady pace. If you raise the device too high while walking, the app plays the phone-angle reminder (a sound, a vibration, and a “Phone angle too high” banner).

### Stepping Away from the Work Area

Calibration should finish near where you'll work, so it starts by helping you get away from it:

1. If you're standing where you'll work, line that spot up in the target and tap **Mark Work Area**. (If you're already 150 to 200 feet away, tap **Skip** and go to the next step.)
2. Walk away from the work area. The distance from it updates on screen; the reading turns green at 150 to 200 feet.
3. Tap **Begin Calibration**. You'll mark point 1 here and later walk back toward the work area for point 2, so calibration finishes where you'll measure.

(This step is skipped automatically in indoor training mode.)

### First Calibration Point

1. Choose the first calibration point — a spot with a clear view of the sky. Line it up in the target and tap **Mark Calibration Point 1**. A cylinder appears marking the spot, and a line (about 8 feet long) appears on the ground showing the direction to walk.
2. Walk along the line until you reach its end. The line turns green when you are within range of the end.
3. Return to the calibration point and stand still. The distance back, in feet, is shown as you return.
4. Hold still while the device records a reading. A new line then appears 90° from the previous one.
5. Repeat the walk-out-and-return for each line until four readings have been recorded at this calibration point.

Tip: Use **Start over** (top right) at any time to restart the calibration.

### Second Calibration Point

1. Walk to the second calibration point. The distance from the first calibration point updates as you move. When practical, aim for about 150 to 200 feet of separation.
2. Line the second calibration point up in the target and tap **Mark Calibration Point 2**.
3. Complete the four walk-outs at this point just as you did at the first calibration point.

### Calibration Result

When the second point is complete, ARrayVue® Lite reports the **Bearing Precision** (in degrees) and a confidence level — Excellent, Good, or Marginal. See Section 9 for what these mean.

### If a “GPS Signal Quality” Warning Appears

The readings at one calibration point were spread across a large area — usually a sign of poor GPS conditions (obstructions, reflective surfaces, or insufficient initialization time). Tap **Redo Point** to redo that point, or **Accept** to continue with the calibration as-is. When you can, redo it with a clearer view of the sky and more initialization time.

### If Calibration Is Blocked

If the AR-measured distance between your calibration points disagrees too much with the GPS distance — a sign AR tracking drifted — the app blocks the calibration and offers **Recalibrate**. Recalibrate, keeping the camera aimed down and your motion steady.

### In Indoor Training

The walk-out lines are about 5 feet long so the protocol fits in a typical room. The direction from the first calibration point to the second is assumed to be due south (180°). All other steps are the same.

### Notes

- Dragging is disabled for calibration points, because a drag would move the mark in the AR view without a corresponding GPS change. To restart, use **Start over**.
- If AR tracking is interrupted (for example, the camera loses tracking), you may need to recalibrate.

Once calibration is complete, ARrayVue® Lite shows the **Choose an Operation** screen. The four tools below are opened from there; you cannot open a tool until calibration is complete.

## G-Compass

1. From the **Choose an Operation** screen, tap **G-Compass**.
2. **Hold the phone flat**, pointed down, to see the rotating compass rose. Read your heading under the green index line at the top; the exact degrees appear in the center, labeled **True** as a reminder that the heading is referenced to true north. North is marked by a white **N** with a small red triangle pointing outward.
3. **Raise the phone to face forward** to switch to the heading tape. A yellow crosshair appears at the center of the camera view — line it up on a stake or object to read that object’s bearing.
4. The bottom of the screen shows your current **latitude**, **longitude**, and **elevation**, plus the horizontal **distance back to the second calibration point** (from AR) — useful for returning to a known point.
5. Turn in place to read any direction. Don’t change location while the phone is raised to face forward, as walking can disturb the calibration (the app will warn you if you do).

6. Tap **Done** to return to the Choose an Operation screen.

## Two Point Measurement

1. From the **Choose an Operation** screen, tap **Two Point Measurement**.
2. Go to the first point. Line it up in the target and tap **Set First Point**. Drag the mark to fine-tune it, then tap **Accept point**.
3. Go to the second point. Line it up in the target and tap **Set Second Point**. The **Bearing** (azimuth) and **Distance** between the two points are displayed. Either point can be dragged; the bearing and distance update continuously.
4. Optional actions: **Redo Point 2** to redo the second point; **Camera Mode** to save a photo of the scene; **Export Elevation Data** to share the points' data (coordinates, bearing, distance, and elevation).
5. **Done** returns you to the Choose an Operation screen.

## Two Point Layout

1. From the **Choose an Operation** screen, tap **Two Point Layout**.
2. Enter the desired azimuth (0° is north, 90° is east, 180° is south, 270° is west) and distance (in feet) from the reference point to the second point. Tap **Continue**.
3. Line the reference point up in the target and tap **Set First Point**. Drag to fine-tune, then tap **Accept point**. Both marks are displayed at the chosen direction and distance.
4. Walk to a point that still needs an elevation reading; a direction arrow points the way. When you are within range and aimed at the mark, tap **Record Elevation**.
5. Drag either mark to move both marks together; the direction and distance between them are preserved. (After a move, re-record the elevations.)
6. Optional actions: **Export Elevation Data**, **Camera Mode**, or **Edit Distance or Bearing** to re-enter the inputs.
7. **Done** returns you to the Choose an Operation screen.

## Rectangle Layout

1. From the **Choose an Operation** screen, tap **Rectangle Layout**.
2. Enter the **Azimuth** (the compass direction the south edge faces; 180° is south), the **South Edge Length** (feet), the **West Edge Length** (feet), and the **Reference Corner** (SW, SE, NE, or NW). Tap **Continue**.

3. Line the starting corner up in the target and tap **Set Starting Corner**. Drag to fine-tune, then tap **Accept point**. The four corners are displayed at the chosen orientation and dimensions. Because you placed the starting corner on the ground, its elevation is recorded automatically — it appears green, and you record only the other three corners.

4. Walk to each remaining corner and, when you are within about 4 feet and aimed at the corner mark, tap **Record Elevation**. Corners turn green as they are recorded. (If you drag the rectangle to reposition it before recording, the starting corner is re-measured along with the others.)

5. When all four corners are recorded, tap **View Summary** to see the **Site Data**: a plan-view diagram showing each corner's elevation, the slope (grade) of each edge, and a north arrow.

6. Export the results with **Export Data Log** (a spreadsheet-ready file) or **Export Sketch** (an image of the Site Data diagram). **Camera Mode** saves a photo of the AR scene with the corner posts.

7. To make changes: **Edit array** to re-enter the inputs, **Re-record Elevations** to redo the readings, or — before you record any of the other corners — drag any corner to move all four corners together (the orientation and dimensions are preserved).

## Switching Between Tools

After calibration is complete, the **Done** button returns you to the **Choose an Operation** screen. You can then select another tool and use it immediately without recalibrating, provided the camera session has not been interrupted.