LEICA ICON ICS50 · GENERAL GUIDE

iCS50 General Guide

Templating with the iCS50, VPen and iCON trades, from first setup to a clean DXF.



SPEEDtemplate

GENERAL GUIDE

EDITION 1.0 · OCTOBER 2026

BEFORE YOU START

The most advanced measuring tool in the trade.

The iCS50 is a robotic instrument that locks on to a pen and follows it, levels itself, and draws while the crew measures. Tape, sticks and hand sketches can't do what it does. Learning it takes some practice, and every page of this guide is here to make that practice pay off.

What you'll be able to do

01

Template a whole room in one visit

Walls, cabinets, windows, outlets and plumbing, plane by plane, in one drawing.

02

Capture curves exactly

Trace a radius corner or a curved edge with the VPen instead of guessing at it.

03

Send drafting a clean DXF the same day

No typing numbers off a sketch. The office opens a drawing, not a puzzle.

04

Catch problems before install

Check cabinets for high and low spots before the top goes on.

05

Reach what a tape can't

Soffits, ceilings, black and glass finishes, and the next room over.

06

Stop going back to re-measure

Photos and the drawing live on the job, so the answer is already there.

The tool is only half of it.

The crews who get the most out of the iCS50 aren't always the most technical. They're the ones who commit: they run the practice drill, take the first few jobs slow, and ask questions early.

The first job will feel slower than the old way. That's normal. Stick with it for a handful of real jobs and the old way stops making sense. The person who learns this tool becomes the person the shop counts on for the hard jobs.

You don't have to learn it all at once. Page 4 shows which book does what. The Industry Workbook takes it one lesson at a time.

WELCOME

Welcome to the iCS50.

Everything a crew needs to go from setup to a clean DXF. Read it before onboarding, then keep it in the case as the field reference.

1
Read and prep
Sections 1 and 3, and the Start pages of the Industry Guide. Ask drafting what the office needs.

2
Unbox
The tablet comes with iCON trades and SPEEDfolder installed. Everything ships fully charged.

3
Onboarding
An iCS50 Onboarding Specialist takes the crew through setup and a practice room.

4
Workbook and real jobs
Industry Workbook Lessons 1 to 5 and three real jobs. Support reviews the first export.

5
Certified
A final project in the shop's trade, reviewed by SPEEDtemplate.

Before onboarding

- [ ] Everything ships fully charged. Top up the iCS50, tablet and remote the night before onboarding.
- [ ] Ask drafting three questions: 2D, 3D or CNC DXF? Points on or off? Which layer names and colors?
- [ ] Pick a practice room with a table, a whiteboard or window, and a clear wall (Section 13).
- [ ] Have a sample drawing from a recent job ready so onboarding matches how the shop works.

About this guide

Every job is different. Treat these steps as guidelines, and adapt them to the site, the materials and what the drafting department needs.

iCON trades updates regularly, and buttons sometimes move. If a button isn't where this guide says, look nearby or call support.



How the iCS50 works

The iCS50 finds the VPen with its camera, locks on, and the robotic head turns to follow it. Touch the pen tip to a corner, an edge or a cutout, press Measure, and the point appears in the drawing on the tablet. Section 0 lists everything in the case.

Welcome aboard,

The SPEEDtemplate team

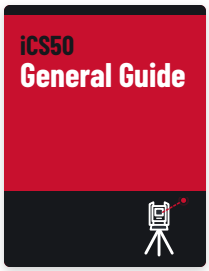
speedtemplate.com

HOW THE BOOKS WORK

Three books. Each has one job.

The **General Guide** says how. The **Industry Guide** says what. The **Industry Workbook** makes it stick.

THIS BOOK



How the iCS50 works

For every crew in every trade: setup, measuring, planes, moving the iCS50, editing, layers and export.

USE IT
Read Sections 1 and 3 before onboarding. After that, look things up when you need them.

KEEP IT
In the iCS50 case. One per shop.

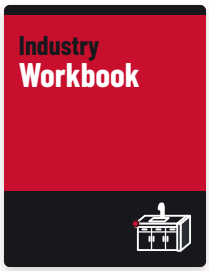


What to capture in the industry

What changes on a kitchen, a cabinet room, a millwork floor, a stair or a boat: what to capture, where to set up, the exact taps, the checks and the hand-off.

USE IT
Before the first job, then on every job, next to the General Guide.

KEEP IT
In the case, with the General Guide. One per shop, per industry.



Learn it by doing it

A self-paced course in the industry: six lessons with the real iCS50, three real jobs, a final project and SPEEDtemplate certification.

USE IT
After onboarding. Once, in order. Write in it.

KEEP IT
With the operator. One per operator.

Which book do I open?

THE QUESTION	OPEN
How do I set up, measure, move the iCS50 or export a DXF?	General Guide
What do I capture on this job, and what does the shop need back?	Industry Guide
I am new, or I want to get certified.	Industry Workbook
Something is not working.	General Guide, Troubleshooting. Then call 919-676-2244.

NOTE When the General Guide and an Industry Guide say different things, the Industry Guide wins for that industry. The website always has the latest version of every book.

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THE SIX RULES

1. Tripod legs **fully extended** and locked.
2. Curved piece? Switch to **3D** in Planes.
3. Start points in **Point mode**.
4. Keep **2 ft** from the iCS50.
5. Include the **apex** on curves.
6. **Point Labels off** before export.

SETUP

Quick start

Every iCS50 job follows the same loop. The rest of this guide expands each box.

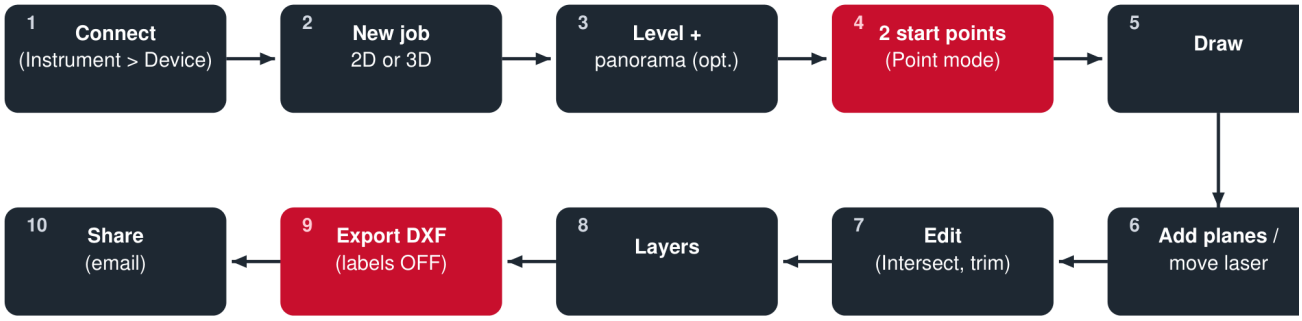


Figure 1. The templating workflow, start to finish. Red steps cause the most problems when skipped.

STEP	WHAT TO DO	SECTION
1 Set up	Tripod legs **fully extended** and locked, iCS50 on. Device Manager › connect over Wi-Fi.	2
2 New job	Quick Start / New Job. Pick 2D Horizontal, Vertical, Sloped, or 3D. Choose 3D if anything curved might come up.	1, 3
3 Level	Let the iCS50 level. Panorama is optional.	3
4 Start points	Remote in **Point mode**. Take two points on any surface (on the wall itself for a vertical plane).	3
5 Draw	Pick a measuring method (VPen / Laser / Crosshair) and a tool (Point / Line / Polyline / Trace).	4, 5
6 Planes / move	Planes › New 2D plane for each surface. V-Targets › New Setup › V-Targets to relocate the iCS50.	7, 8
7 Edit	Wrench › Edit › Intersect / Trim / Fillet. Delete stray start points.	9
8 Layers	Assign objects to layers from the job template.	10
9 Export	Job › Export › folder › format. CAD options: **Point Labels OFF**.	12
10 Share	Share › Gmail. Sends the next time the tablet is online.	12

0 What's in the kit

Check the case against this list before heading to site.



Know the iCS50

- **Auto-leveling** within ±3°, with a **movement alert** if the iCS50 gets bumped.
- **Cameras:** a fisheye for the panorama, two telescope cameras for precise aiming, plus a spotlight.
- **Wi-Fi** to the tablet (USB optional), and a **snap-on tripod mount**.
- **Full-day battery:** 70% in 1 hour, 100% in 2. The iCS50 can also charge the remote or tablet.
- **IP54** for indoor and outdoor work, a Kensington lock slot, and over-the-air updates.

ITEM	WHAT IT DOES	NOTES
iCS50	Robotic instrument. Locks on to and follows the VPen, measures with its laser, and levels itself at the start of each setup.	Held magnetically on its mount, so it can be turned by hand to aim.
Tablet (iCON trades)	Runs the software; shows the drawing; has its own Measure button.	Can build job templates without the iCS50 connected.
Remote	Measure button plus hotkeys for Point, Line and Polyline.	The mode the remote is in when you take start points matters (Section 3).
VPen	Touch probe the iCS50 locks on to and follows. The most precise way to get corners.	Works on black, shiny and clear glass surfaces.
Extension rod COMING SOON	Holds the VPen for high ceilings and hard-to-reach spots.	Pairs with the VPen for ceiling lines (Section 6).
Sky Reach pole	Holds the VPen for overhead points: soffits, bulkheads and ceiling lines.	Trace overhead points from the pole, not handheld (Section 6).
Tablet holder	Clamps the tablet to a tripod leg.	Frees both hands for the VPen and the remote (Setup).
V-Targets	QR-code metal plates used to relocate the iCS50 mid-job.	Magnetic stands and legs, plus adhesive stickers for multi-day jobs.
Chargers	Tablet and iCS50.	iCS50 charges 70% in 1 hour. Keep chargers in the kit so nothing runs flat mid-job.

TIP Add a roll of painter's tape to the case for hanging the adhesive V-Targets (Section 8).

SETUP

Set up the iCS50

Every job starts the same way: tripod out, legs **fully** extended, iCS50 on.



WATCH: SETTING UP

Leica setup sequence. Unfold (1), open and lock the legs (2a), extend every leg section (2b), mount the iCS50 (3 to 5), power on (6).

FULLY EXTEND **Fully extend every leg section, every time.** Pull each leg out to its full length and lock every section. A tripod that isn't fully extended is one of the most common setup problems SPEEDtemplate support sees.

1. Unfold the legs of the tripod.
2. Open the legs and lock them in position, then **extend every leg section all the way and lock each one**.
3. Open the latch on the quick mount on the base of the iCS50.
4. Place the iCS50 on the tripod.
5. Close the latch on the quick mount. Give the iCS50 a gentle tug to confirm it's locked.
6. Press the power button to turn the iCS50 on.
7. **Tablet holder** (in the kit): attach the cradle to a tripod leg and the holder to the clamp. Release the clamping lever, press the tablet down until it clicks, then tighten the lever. Or just work with the tablet in hand.

Where to set up

- Pick a spot with a clear view of everything to measure.
- Stay more than 2 ft from the surfaces you'll measure; closer is the dead zone (Section 6).
- Firm, level floor. Keep the legs out of walkways so nobody bumps the setup.
- Then connect: open iCON trades, tap **Device Manager** and connect the iCS50 over Wi-Fi (Section 2).
- **On a boat?** The iCS50 skips leveling in Moving Platform Mode. See the Marine Guide.

iCS50 status lights

The lights on the iCS50 show connection, level and battery at a glance. Check them before taking the start points.

READY TO MEASURE Connection **solid blue** + Level **solid green**

Connection light

LIGHT	MEANING
Solid red	Not connected
Flashing blue	Connecting over Wi-Fi
Solid blue	Connected to the tablet (Wi-Fi or USB)

Level light

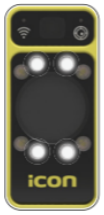
LIGHT	MEANING
Flashing green	Leveling in progress
Solid green	Leveled and ready
Flashing red	Movement detected; the level is no longer valid
Solid red	Movement alert switched off
Flashing orange	Firmware update in progress. Let the update finish.

BUMPED **Flashing red means the iCS50 moved.** Something bumped the iCS50 or the tripod. Re-level (**Instrument › Repeat leveling**), then run **New Setup › V-Targets** with the V-Targets (Section 8) before measuring again.

Battery while charging

LIGHTS	CHARGE
	25 to 50%
	50 to 75%
	75 to 100%
	Fully charged

Spotlight

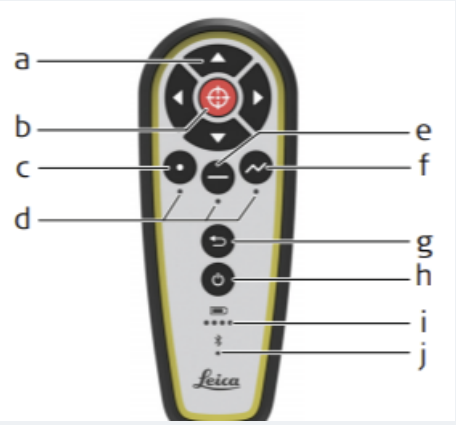


All four lights around the lens **solid white** means the spotlight is on.

SETUP

The remote

The RC10 remote takes the measurements and picks the tool. The remote connects to the tablet over Bluetooth and charges by USB-C from the iCS50 or the tablet.



	KEY	WHAT IT DOES
a	**Navigation arrows**	Single press: select a feature on the map. Press and hold: turn the iCS50 head to a new spot.
b	**Measure**	Take a measurement.
c	**Point**	Select the Point tool. Use Point for the two start points.
e	**Line**	Select the Line tool.
f	**Polyline**	Select the Polyline tool. Press again to start a new polyline.
g	**Undo**	Undo the last action in the app.
h	**On / Off**	Hold 0.5 s to turn on, 2 s to turn off.

TIP The green light under each tool key (d) shows the active tool. Before the two start points, check that the light under **Point** is green.

Battery (i)

LIGHTS	CHARGE
○○○○	10% or less: charge now
●○○○	25% or less
●●○○	25 to 50%
●●●○	50 to 75%
●●●●	75 to 100%

Bluetooth (j)

LIGHT	MEANING
Flashing blue	Trying to connect. Always flashes at start-up.
Solid blue	Connected

NOTE Holding On / Off for more than 7.5 s erases the remote's Bluetooth pairing. Only do that if SPEEDtemplate support asks.

1 Key concepts: 2D planes vs. 3D

Everything you draw lives either on a flat **construction plane** (2D) or freely in space (3D). Picture a whiteboard:

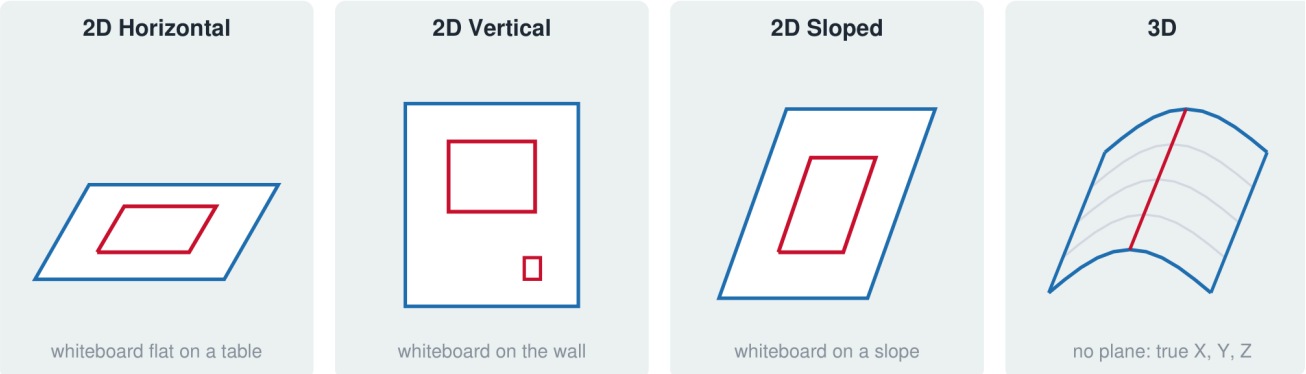


Figure 2. The four job and plane types. Red lines show drawing that sits on (or, in 3D, follows) the surface.

PLANE TYPE	WHAT IT IS	USE IT FOR
2D Horizontal	The whiteboard laid flat on a table	Floor plans, countertops, tabletops
2D Vertical	The whiteboard stuck on the wall	Wall elevations: perimeter, windows, doors, outlets, switches
2D Sloped	The whiteboard tilted to a slope	Vaulted ceilings or any sloped flat surface
3D	No plane; every point keeps its true X, Y and Z	Curved or bowed pieces where the surface comes toward you and goes away

SWITCH ANY TIME Every job can switch to 3D, even one started as 2D Horizontal or 2D Vertical: tap **Planes** and pick **Unprojected 3D**. A 3D job can take 2D planes too. A sloped plane is **not** 3D: everything drawn on a sloped plane is still flat to that slope.

IF THE JOB HAS...	START AS
Only flat walls, floors, counters	2D (Horizontal for a floor plan, Vertical for elevations)
A vaulted or sloped ceiling but nothing curved	2D, then add a Sloped plane
Any curved, bowed or radius piece needed in true shape	2D or 3D. Switch to 3D for the curved piece; flat surfaces stay on 2D planes
Not sure yet	Either. Any job can switch to 3D later.

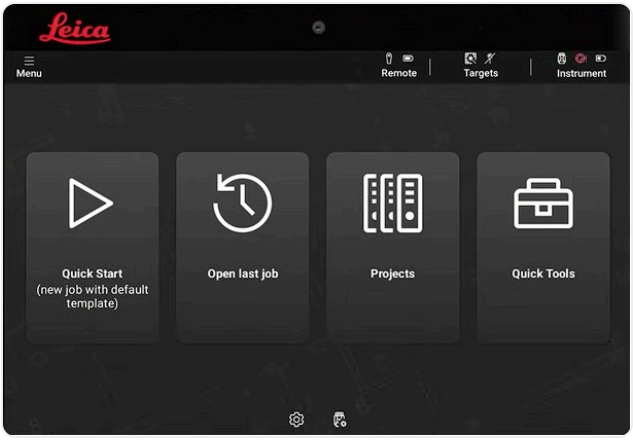
SETUP

2 The home screen

When iCON trades launches, the first screen is the home screen (not the connection page). The four main options:

- **Quick Start / New Job** starts a new template.
- **Open Last Job** reopens the job in progress, for example after the tablet or iCS50 died and had to recharge.
- **Projects** recalls any job templated before.
- **Quick tools** use the laser to mark points and lines in the room, such as a plumb line (see **Finding plumb**). Nothing is saved to a drawing.

To connect to the iCS50, tap **Device Manager** and connect over Wi-Fi.



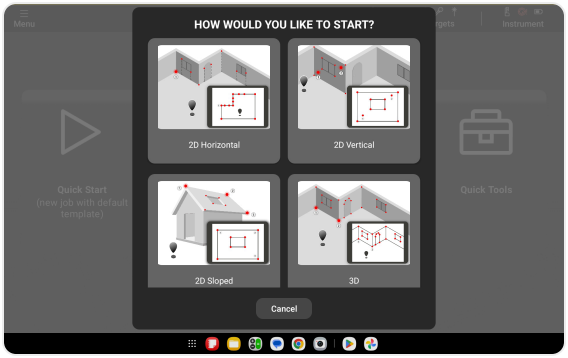
The iCON trades home screen.



NOTE The tablet ships with iCON trades and SPEEDfolder installed. iCON trades updates regularly, so a button may sit in a slightly different spot than shown here.

3 Starting a job

1. From the home screen choose **Quick Start / New Job**, name it, and tap Next / Start.
2. Pick the job type: 2D Horizontal, 2D Vertical, 2D Sloped, or 3D (Section 1).
3. Optionally fill in plane details. Only the name matters; thickness and similar fields are annotations and do not create an offset.
4. Let the iCS50 level itself.
5. When asked to capture a panorama, choose yes or no. The panorama is optional.
6. Set the remote to **Point (dot) mode**.
7. Take the **two initial points** when prompted ("Measure first point" / "Measure second point"). Every job and every new plane needs them. They act like a datum so the system knows where it is.
8. Start drawing.



Choosing the job type.

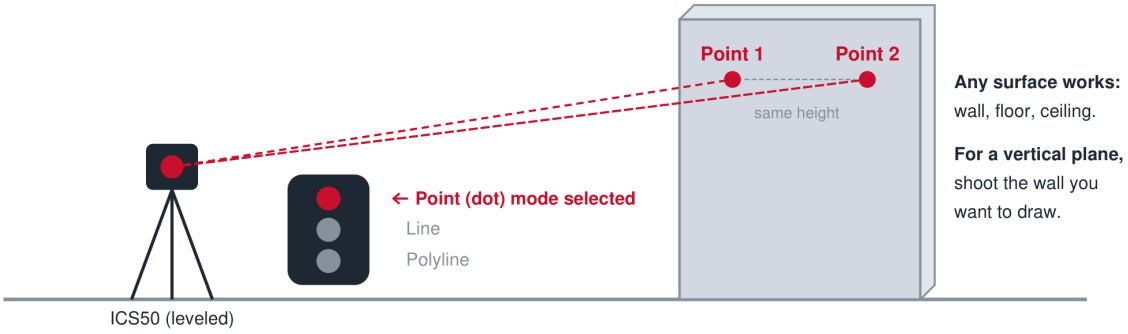


Figure 3. Taking the two initial points with the remote in Point mode.

IMPORTANT Always take the two initial points in **Point mode**. Whatever mode the remote is in becomes the type of object those points create. In Polyline, the two start points become the start of a polyline and the next drawing gets joined to them. A common result: a tabletop outline that connects back to the wall where the start points were taken.

Where to take them

For a 2D horizontal plane the two start points can be on a wall, floor, ceiling, or really any surface. For a vertical plane, take them on the wall you want to draw.

Cleaning them up

The start points show up in the model. Touch one and tap Delete if you don't want it, or move it to its own layer.

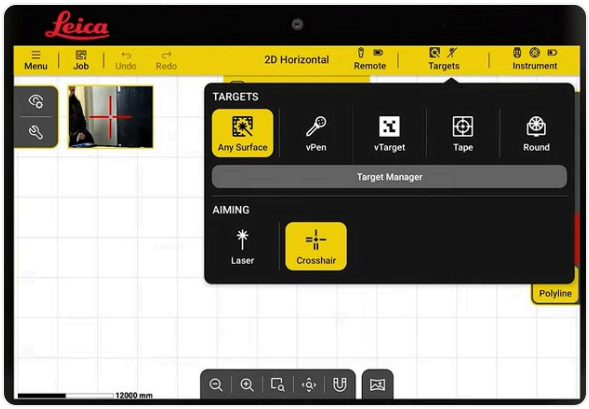
4 Choosing how you measure

Tap the **Targets** icon to choose a measuring method. Methods can be hot-swapped while drawing the same object, for example switching to Any Surface: Laser when a forklift is parked in the way of the pen.

METHOD	HOW IT WORKS	BEST FOR
VPen	Touch the pen tip to the surface and press measure. The iCS50 locks on to the pen and follows it.	Most work. Precise corners, dark or black finishes, reflective surfaces, even clear glass
Any Surface: Laser	Visible red dot. Turn the head by hand to put the red dot on the point, then press measure.	Quick shots at distance, areas you can't reach
Any Surface: Crosshair	No visible beam; aim using the tablet camera view.	When you'd rather aim on screen
V-Target	Measures the QR-style targets.	Only for moving the iCS50 (Section 8)

Aiming in Laser or Crosshair mode

1. Pick the tool first: **Point**, **Line** or **Polyline**.
2. **Targets** on the top bar switches between **Laser** and **Crosshair**. In Laser mode a rough aiming area shows on the live view.
3. Aim roughly: turn the head by hand, tap once on the live image, or tap a spot on the **panorama** for a fast, big move.
4. Fine-tune: swipe the live image to turn the iCS50. Use **–/+** or **Max**/**Min** to zoom.
5. When the crosshair **stops blinking**, press Measure.



The Targets menu: VPen, Any Surface, V-Target.

- **View menu:** 50/50, full Live view or full Drawing view, plus point labels and the drawing grid.
- Tap the small view in the corner to swap Live and Drawing. Live view needs the iCS50 connected.

- The **Measure** button on the tablet does the same thing as the one on the remote.
- The head is held magnetically, so turning it by hand is fine. Just don't fight it while it's locked onto the pen; it swings back.
- Can't see the red dot? It's probably on Crosshair. Switch to Laser in Targets.

WATCH: AIMING

5 Drawing tools

Point, **Line** and **Polyline** are hotkeyed on the remote. More tools (circle, arc and others) live under the wrench (top left) › **Create**.

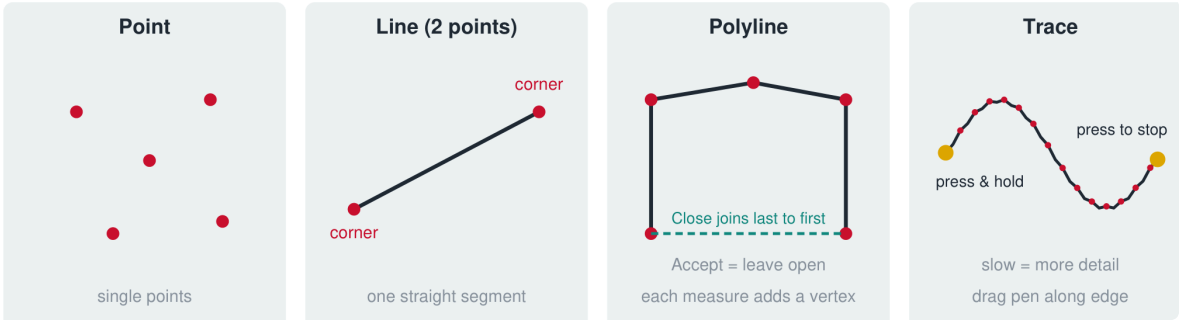
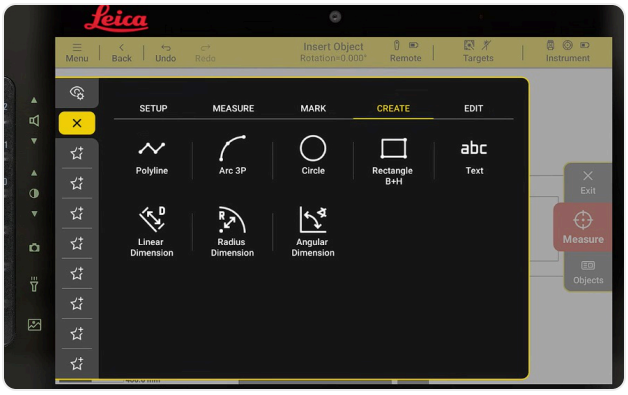


Figure 4. The four ways to capture geometry.

TOOL	HOW TO USE IT	WHEN TO USE IT
Point (dot)	Each measure places a single point.	Initial start points; grids of points on a panel
Line	Two points make one straight segment (one on each corner).	Straight edges; basic wall outline. For a window in Line mode, take two points per side
Polyline	Each measure adds a vertex. Finish with **Accept** (leave open) or **Close** (join last point to first), bottom right of the tablet.	Walls you want detail on (dips, bellies, wavy ceilings), window and door corners, curves
Trace	Put the pen on the edge, press and hold measure until trace activates, let go, then drag the pen along the edge. The system beeps as it records. Press once more to stop.	Curved edges in 2D, such as the radius of a wall or a curved tabletop
Circle / Arc	Wrench › Create. A 3-point arc is made by touching the start, middle and end.	Clean geometry over a traced shape





Wrench › Create: polyline, arc, circle, rectangle, text and dimensions.

Tracing with the VPen

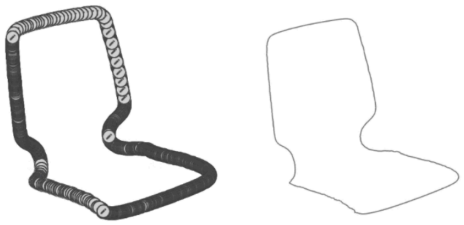
The fastest way to capture curves. Run the VPen tip continuously along an edge, in 2D or 3D, and iCON trades records the shape as a polyline. Ideal for radius corners, curved edges and odd shapes in stone, glass, metal and marine work, with the VPen accurate to 1 mm (about 1/32 in) within 33 ft (10 m).

How to trace

1. Put the VPen tip on the edge.
2. Press and hold **Measure** on the remote until trace activates, then let go.
3. Drag the pen tip along the edge. The system beeps as it records.
4. Press **Measure** once more to stop.

- Trace is always a polyline, whatever mode the remote is in.
- Go slower for more detail. Keep the tip on the edge and the pen steady.
- Do an edge in segments if needed. Mix methods: trace the curved ends of a table, Line across the straight edge.
- In 3D every wobble shows up in height, so trace slowly. For a large curved panel, the polyline wireframe in Section 11 is still the most reliable.





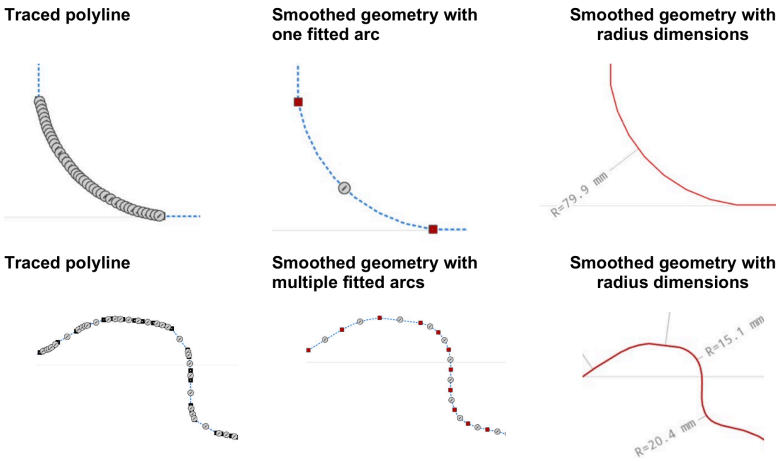
3D trace of a chair frame: raw trace (left) and result (right).

Smooth: turn a trace into lines and arcs

Edit › Smooth › Lines & Arcs refines a traced 2D shape into clean lines and fitted arcs, ready for CNC. Radius dimensions can be added to the arcs right on the tablet, so drafting has far less cleanup to do.

NOTE Smooth Lines & Arcs needs a Templating licence and works on 2D traces.

WATCH: TRACING



Raw trace, smoothed with fitted arcs, then dimensioned.

Which tool for walls?

For just the outline of a wall, line segments are enough. If what's happening along the ceiling or floor matters, use a polyline with several points along each adjacent surface to show dips or bellies. When measuring off the floor, around 6 inches up is a reasonable height.

> **TIP** On windows and doors with the polyline method, use the **VPen**. The VPen gets exact corners much more reliably than Laser mode. In Line mode, the pen and Laser mode give the same result.

Line Scan: let the iCS50 take the points

1. **Tools › Measure › Line Scan**. Pick **Horizontal**, **Vertical** or **Sloped**, then a full **360°** scan or **between two points**.
2. Set the interval between points and, if wanted, automatic corners. Confirm.
3. Measure the start point, then the end point (skip this for 360°). Tap **Start**.
4. The iCS50 aims back to the start and scans clockwise. **Pause** any time; short or long press **Skip** to skip one or several points.
5. **Accept** saves the points to the active layer.

SCAN	USE IT FOR
Horizontal	Wall, floor or ceiling lines. The first point sets the height; **Offset** moves it up or down.
Vertical 360°	A cut up a wall, always square to it.
Vertical point to point	Through two measured points, square or not.
Sloped	Stair runs, even spiral stairs.

WATCH: LINE SCAN

CAPTURE

6 Measuring tips and limits

2 ft
Dead zone around the iCS50

160 ft
Laser mode range

33 ft
VPen range (82 ft with the range update)

- **Dead zone:** the closer the pen gets to the iCS50, the less likely the iCS50 is to see the pen. An error beep or "Measure failed: out of measuring range" usually means too close. Lean the pen away (tip stays on the point), or move the iCS50 (Section 8).
- **People walking past are fine:** the head picks the pen back up. Keep the line clear while taking a point.
- **High ceilings:** put the VPen in the extension rod.
- **Soffits and overhead points:** trace them with the VPen on the **Sky Reach pole** (optional accessory), not handheld from the floor.
- **"Measurement failed, target moved":** the point didn't register (something got bumped). Take it again.
- **Surface finishes:** black, reflective or clear glass surfaces are no problem with the VPen.

Corners

- **In Laser mode:** don't aim straight into a corner. Take points on each adjacent surface and let them project to the corner, then close it with Intersect (Figure 5).
- **With the pen:** place the tip right in the corner for a precise point. A textured tip can be squared against a surface.
- **Pen angle:** the pen can't be angled, so in a tight inside corner the ball may hit before the tip reaches. Use the adjacent-surfaces method instead.



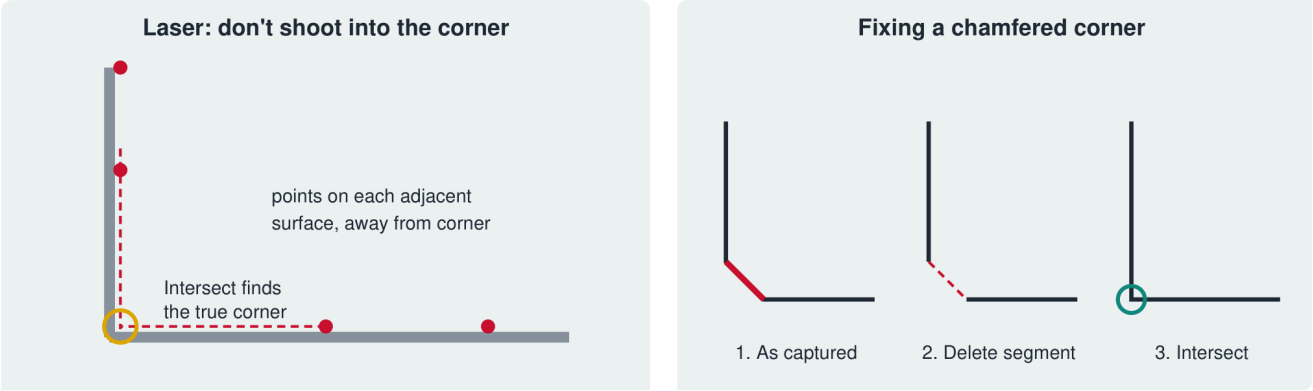
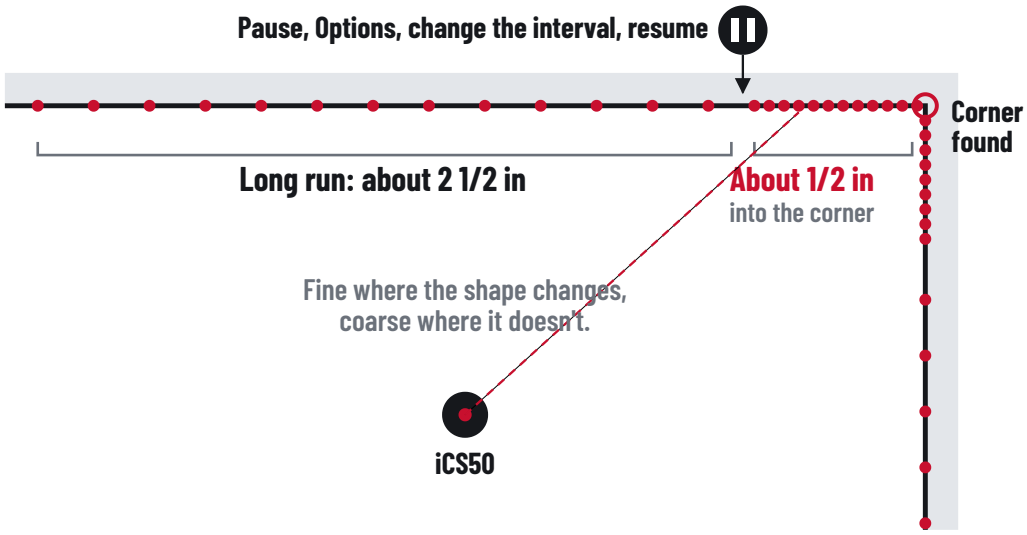


Figure 5. Left: in Laser mode, shoot the adjacent surfaces and let Intersect find the corner. Right: cleaning up a chamfered corner from a continuous polyline.

Line Scan in practice

The interval doesn't have to stay the same for the whole scan. Fine where the shape changes, coarse where it doesn't.



A countertop wall, from above. Points about every 2 1/2 in along the run, every 1/2 in into the corner.

Change the interval mid-scan

1. Start the scan at the coarse interval for the long run.
2. Coming up to a corner, a bump or a mud joint: tap **Pause**.
3. Tap **Options**, set the finer interval and confirm.
4. Tap **Resume**. Pause again past the corner and go back to the coarse interval.

Starting points

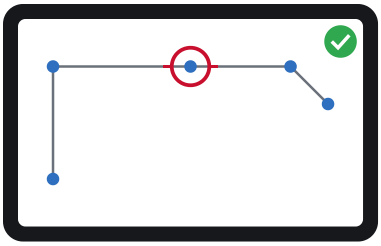
WHERE	INTERVAL
Into a corner	About 1/2 in
Long straight run	About 2 1/2 in
Quick check of a long wall	About 6 in

- **Skip:** a short press skips one point, a long press skips several.
- Automatic corners finds the corner as the scan turns it.

Quick checks while measuring

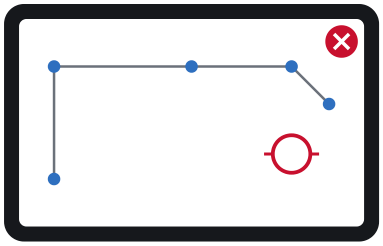
Small habits that save a trip back to the site.

Not sure a point was taken?



On a point: taken.

● Points in the drawing



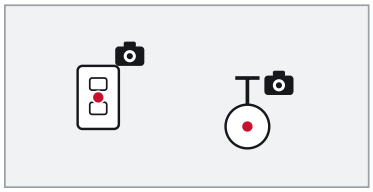
On nothing: take it.

○ The pen, live

Hold the pen on the spot and look at the tablet. The pen shows live in the drawing, against the points already taken.

- On a point: taken. Move on.
- On nothing: take it now.
- Handy on stairs and long runs, where it is easy to lose count.

A photo with every point?



On: fittings and details
A photo with each point

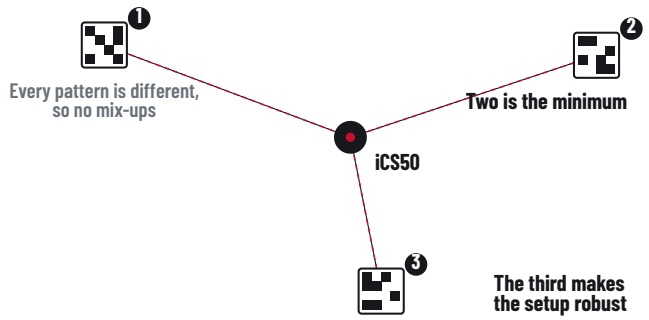


Off: plain walls
Every point goes faster

Capture photo in the measuring settings takes a photo with every point, and each point takes a little longer.

- On for outlets, valves, fittings and anything drafting will ask about.
- Off for plain walls and long runs.
- One photo for one point: tap the point, then **Add photo**.

V-Targets: why three?



Every V-Target has its own pattern, so the iCS50 never mixes them up. Two targets are enough for a New Setup.

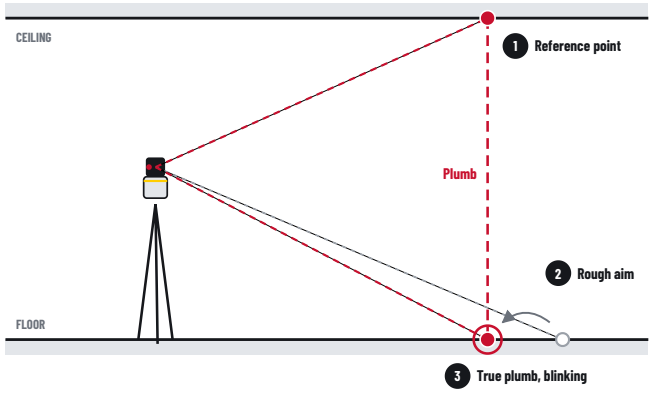
- A third makes the setup more robust and covers a target that gets bumped or blocked.
- Spread them in different directions, at about the iCS50's height (Section 8).

Finding plumb with the Plumb Line

Transfer a point straight down or straight up: ceiling to floor, or floor to ceiling. The iCS50 finds true plumb and marks it with the laser.

How to do it

1. **Open Quick Tools.** From the home screen, tap the Quick tools tile. In a job, open the menu at the top left and pick Quick Tools.
2. **Select Plumb Line** from the list.
3. **Shoot the reference point** with the laser: the point on the ceiling (or floor) to transfer.
4. **Aim roughly** where plumb should land on the opposite surface.
5. **The iCS50 corrects itself** and points the laser at true plumb. The dot blinks.
6. **Mark the spot** on the floor or ceiling.



Side view, not to scale. 1 shoot the reference point. 2 aim roughly below it. 3 the iCS50 moves to true plumb and blinks.

Use it for

- A seam on a floor-to-ceiling slab wall or fireplace
- Soffit and bulkhead edges transferred to the floor
- Post, column and rail locations, ceiling to floor
- Pendant, hood and fixture centers marked on the floor or counter

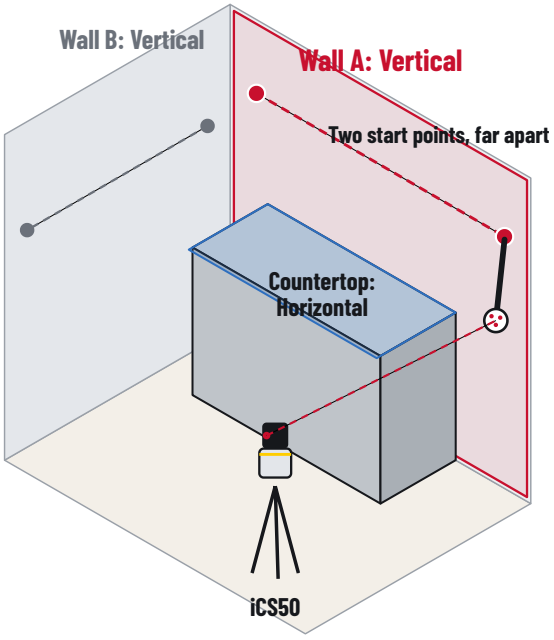
NOTE Plumb Line is a laser tool. Nothing is saved to the drawing: the result is the mark in the room.

TIP A level line along a wall follows the wall. If the wall is out of plumb, a vertical scan up the wall shows the wall, not plumb. For true plumb, use Plumb Line.

7 Adding more planes

1. Tap the **Planes** button.
2. Tap **New 2D plane** and choose Horizontal, Vertical or Sloped. **Name the plane** (Wall A, Backsplash). Material and thickness are optional.
3. Take two start points (in Point mode) on the plane to capture, **as far apart as possible**. "New plane defined" confirms it.
4. Draw the perimeter and any details: windows, doors, switches, outlets.
5. Repeat for each wall or surface.

- A wall already shot for the first job setup can be reused. The system links planes together using each new pair of start points, which is why that first data matters so much.
- Switching to a new plane hides the previous plane's drawing on screen. The drawing isn't gone.
- To return to an earlier plane: exit any active tool (X on the right side), tap Planes, and choose the existing plane.
- In a 3D job, go back into Planes and pick the 3D plane any time to draw freely in 3D again.
- Sloped planes work the same way: choose Sloped, put the two points on the slope, draw.



Each surface is its own plane. Wall A is active: two start points, far apart, define the plane. Wall B was done earlier.

WATCH: MEASURING WITH PLANES

WORKFLOW CHOICE Finishing and editing each plane before adding the next makes sure nothing gets forgotten. Some crews template everything first and edit later. Either works.

8 Moving the iCS50 with V-Targets

Can't reach something (too close, blocked, or in another room)? Move the iCS50 mid-job without losing the drawing.

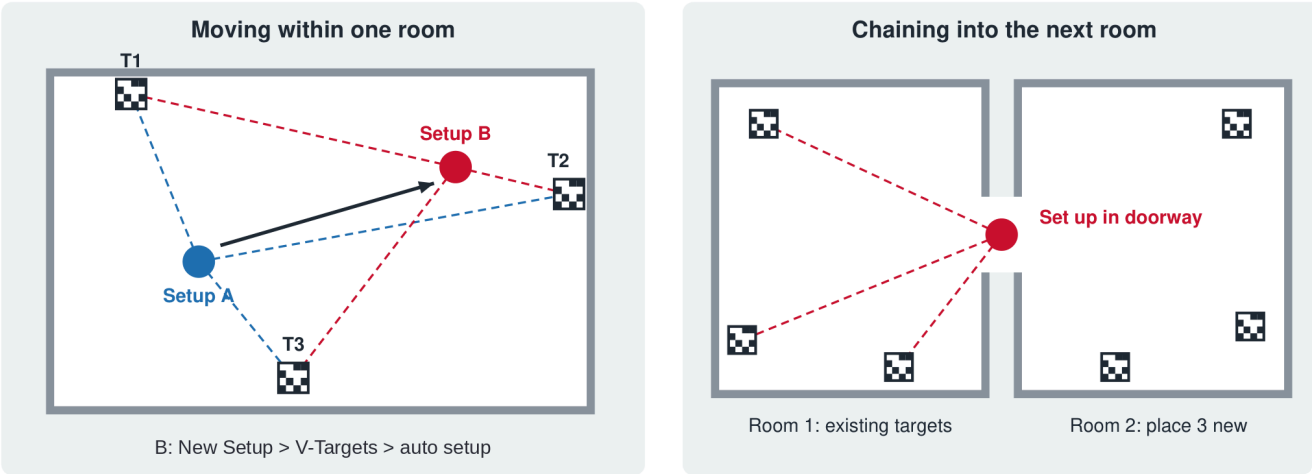
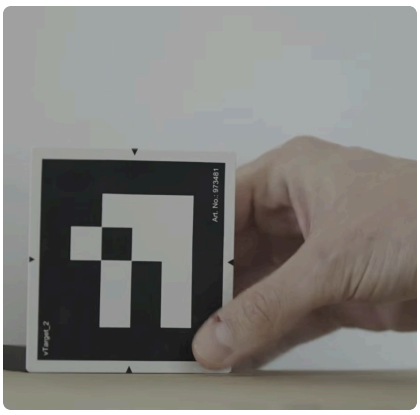


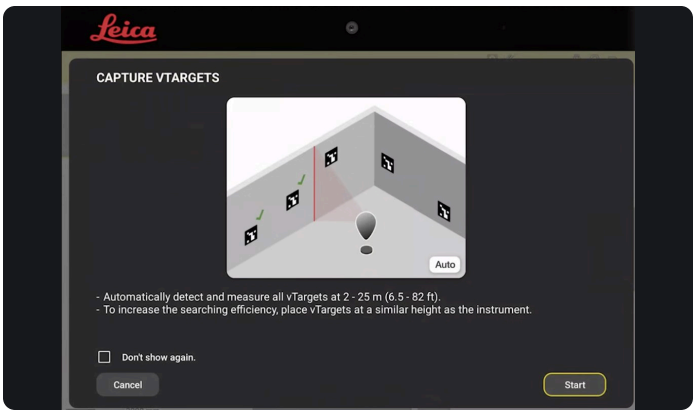
Figure 6. Left: relocating inside one room from the same three targets. Right: setting up in a doorway to carry the job into the next room.

Place the targets (once)

1. Place three **V-Targets** (the metal QR-code plates) around the iCS50 in different directions, roughly at the iCS50's height if you can.
2. **Face each target toward the iCS50.** Square on is best; no more than 30° of tilt.
3. Tap **Tools › Setup › Capture vTargets**. The iCS50 finds and measures every V-Target between 2 and 25 m (6.5 to 82 ft) on its own.
4. Measured targets turn **yellow** on the drawing. Finish the scan once all three are in, then **Accept**.
5. One target at a time instead: **Targets › V-Target**, aim roughly so the target is inside the red frame, and press **Measure**. The iCS50 centers on it. Works from 1.2 to 40 m (4 to 130 ft).
6. The targets are now control points in the job.



A V-Target, standing square to the iCS50.



Capture vTargets: place them at about the iCS50's height for a faster search.

WATCH: MOVING THE ICS50

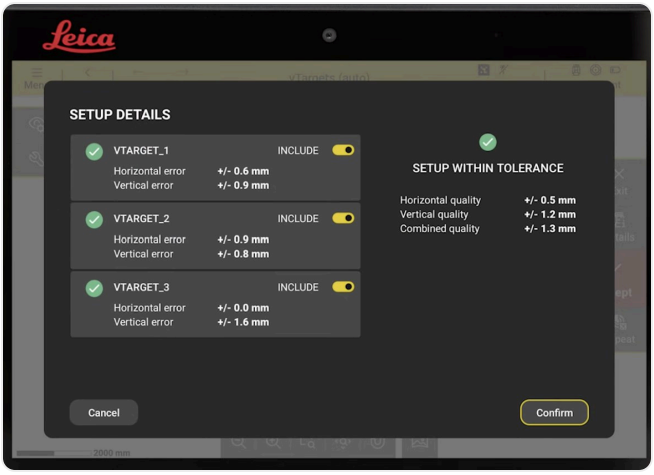
Move the iCS50

1. Pick up the iCS50 and put it where you want it, with a clear view of the targets. The movement alert is expected.
2. In the dialog, tap **New Setup** and set up based on **V-Targets**.
3. The iCS50 levels itself. Take the panorama or skip it.
4. The auto setup runs on its own: two targets fix the position, then a third, picked to balance the geometry, makes the setup more robust.
5. Check the color: **green** is within tolerance, **red** is out. Tap **Info** on the right for the details. Red? Check the targets haven't moved and run it again.
6. **Accept**, switch back to the VPen (**Targets › VPen**) and keep drawing.

QUICKER Taking the targets manually (**New Setup › Known points**, aim near each, press **Measure**) is much faster than letting the auto scan run.



Moving the iCS50 to the next spot. The targets stay where they are.



Setup details: every target's error and the overall quality. Green check: within tolerance.

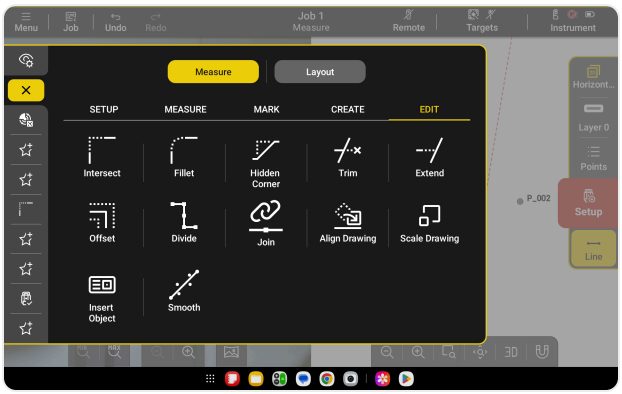
Target tips

- Once set, the targets can be reused an unlimited number of times in that job, even across multiple days, as long as they haven't moved.
- For multi-day jobs, use the **adhesive** targets rather than magnetic ones. A bump or vibration from a nearby compressor can shift a magnetic target and cost accuracy.
- **Painter's tape trick:** tape the adhesive targets up instead of peeling the backing, and reuse them indefinitely.
- **Going into another room:** set up in the doorway with a view of the existing targets, then place three more in the next room. Keep chaining to do a whole floor plan in one drawing, and still come back to the first room.
- Within the same drawing, don't pick up targets and reuse them in a new room; use new ones. If the next room is a separate job, recycle the same targets.

9 Editing your drawing

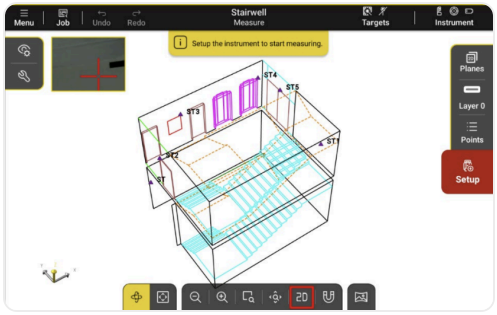
1. Tap the **wrench** (top left) › **Edit**.
2. Choose a tool: **Intersect** (touch one line, then the other, and they extend or trim to meet), **Trim**, **Fillet**.
3. Use the **Exit** button on the right side to leave a tool.

Intersect also clears the extra in-between points from the resulting polyline, leaving a clean shape that dimensions in one tap.

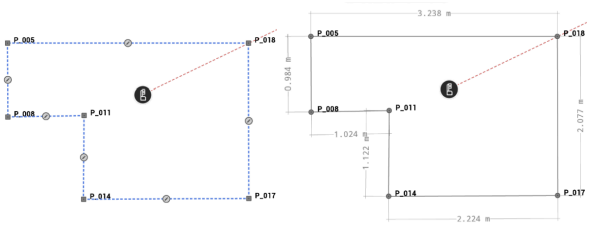


Wrench › Edit tools.

- **Delete:** exit any active tool, touch the object, and choose Delete.
- **Chamfered corners:** carrying one polyline from ceiling down a wall cuts the corner. Delete that short segment and use Intersect, or intersect first and delete after (Page 18, Figure 5). **Hidden Corner** (Edit tools) also turns a diagonal segment into a 90° corner and shows both options to pick from.
- **Open vs. closed:** if a shape didn't close because the last side was out of reach, fix it here with Intersect or add the missing line with your preferred templating method.
- **2D/3D view toggle:** one tap on the **2D** button in the bottom toolbar. Use 3D to see how all planes relate and rotate the model; switch back to 2D to edit a plane.
- Keep new geometry (a clean arc drawn over a trace, say) on its own layer, so the layer can be hidden and the trace underneath deleted.
- **Radial walls:** trace to capture the real, imperfect shape, then let CAD fit the correct arc over it. On a simple table, drawing the arc on the tablet may be enough.



The 2D button in the bottom toolbar switches between 2D and 3D.



Intersect: before (left) and after (right). The in-between points are gone, ready to dimension.

WATCH: EDITING A DRAWING

Finishing tools on the tablet

Clean the drawing before leaving the site. These six tools do most of the work.

Offset
Edit › Offset



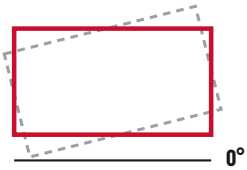
Fillet
Edit › Fillet, with the radius



Intersect
Edit › Intersect: tap both lines



Align Drawing
Edit › Align Drawing: tap a line



Dimensions
Create › Linear, By points, Radius



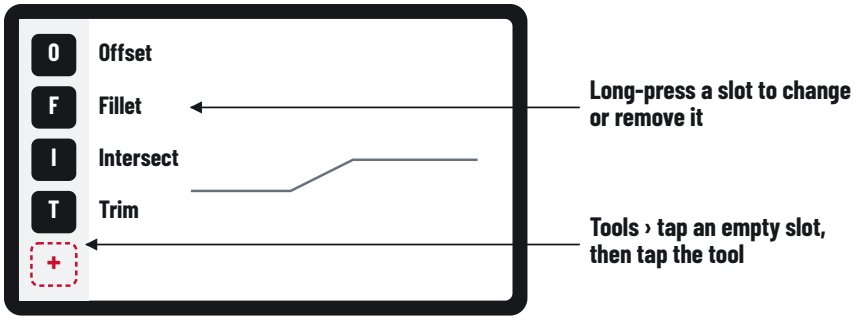
Swap flips the side

Text
Create › Text



Long-press to move it

Favorites: one tap per tool



Good habits

- Put the tools used on every job (Offset, Fillet, Intersect, Trim) in the favorite slots down the left side.
- **Offset** by a distance or through a guide point. Keep or remove the original.
- **Fillet:** set the radius first, then tap the two lines.
- **Intersect** needs two lines that aren't parallel.
- **Align Drawing** turns the whole drawing to 0, 90, 180 or 270 degrees from one line.
- Check the result in **3D** before export.

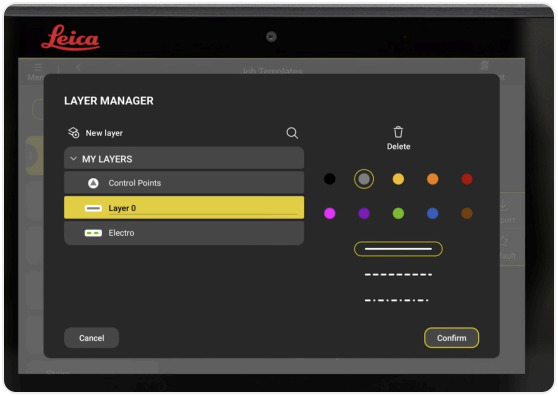
10 Layers and job templates

Using layers in a job

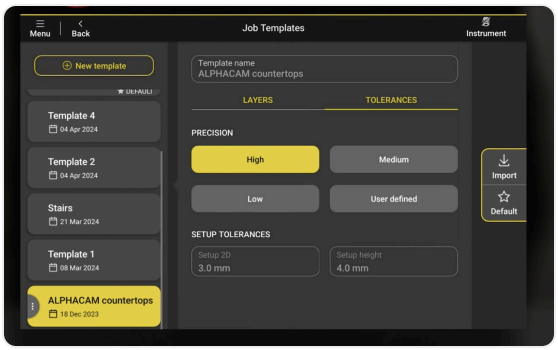
- Touch one or more objects, tap **Layer**, and choose a layer (raw edge, beveled edge). The objects take that layer's color and line style.
- Tap the **eyeball** next to a layer to hide or show everything on it.

Creating a permanent job template

1. **Menu › Job Templates › New Template**. Name it and accept. No job or iCS50 connection needed.
2. **Layers** tab › **Edit layers** opens the Layer Manager. **New layer**: name, color and line style (solid, dash, dash-dot). Long-press to select several layers at once. **Confirm**.
3. Or **Import** the layers from a DXF, DWG or PDF, an existing job or another template. Only the layer names and styles come in, no drawing.
4. **Tolerances** tab: **High**, **Medium**, **Low** or **User defined**. These setup tolerances apply to every new job from the template.
5. Tap **Default** so every new job starts from this template. Delete one with the three dots beside its name.



Layer Manager: name, color and line style.



Tolerances. ALPHACAM countertops template set to High.

- Templates only apply to jobs created **after** the template is made, not to jobs already open.
- Match the drafting department's CAD layer names and colors (or import them from one of drafting's DXFs), and check drafting's background color so the colors stay readable.
- With the **Templating licence**, a ready-made **ALPHACAM countertops** template is in the list. Countertop shops can start from it.

TIP Build the template **before the first real job**, on the crew's own time. Use the worksheet on the next page with drafting.

Starter layer plan

Fill this in with the drafting department. Colors and line types should come from drafting's standards. Then build the job template (Section 10).

LAYER	COLOR	LINE TYPE	USED FOR
Window			Window openings
Door			Door openings
Switch			Light switches
Outlet			Outlets (single-gang, etc.)
Plumbing			Supply and drain locations
Raw edge			Unfinished edges
Finished edge			Finished edges
Beveled edge			Beveled edges
Seam / joint			Seams and joints
Pocket / drill			Machining notes

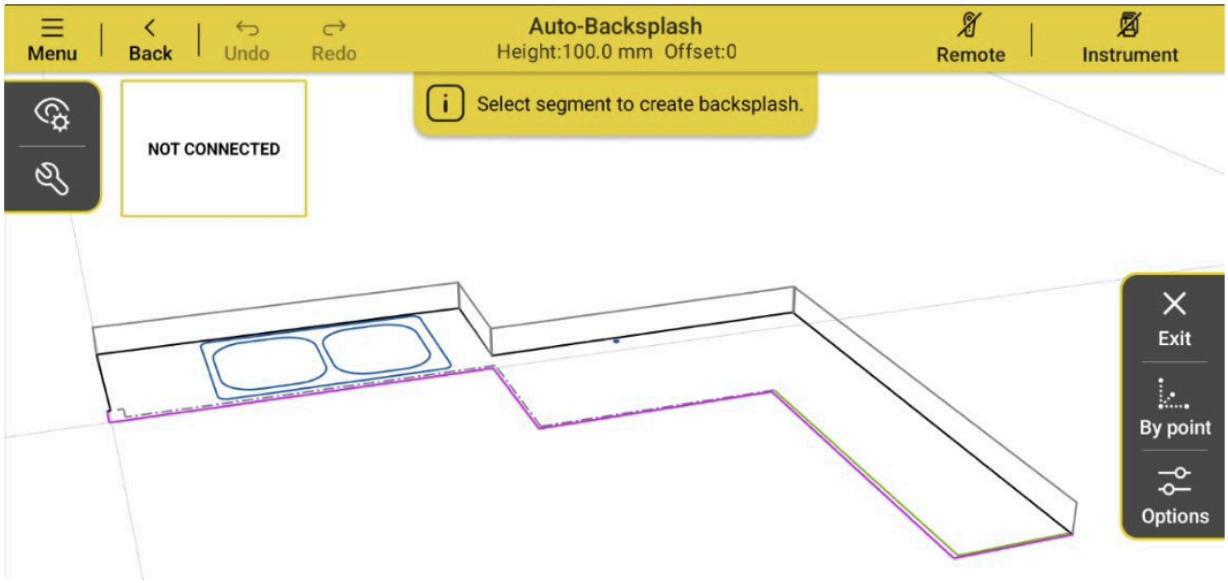
Template name _____

Drafting background color _____

Agreed with (drafting) _____

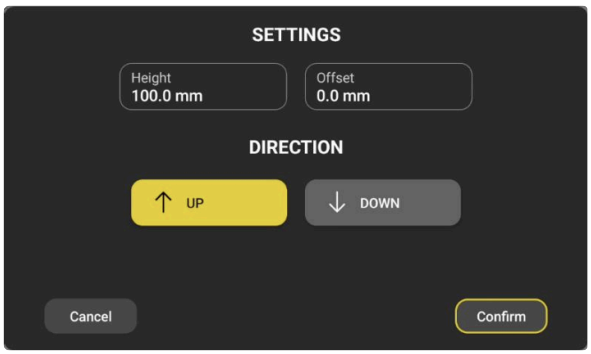
Countertop tools: Auto-Backsplash

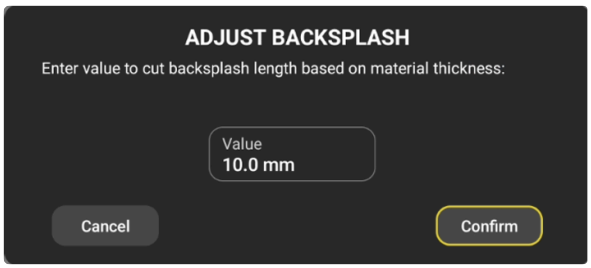
iCON trades builds backsplash and waterfall pieces from the countertop already measured or drawn, then trims the pieces for material thickness. Less drawing by hand, fewer steps for drafting.



Auto-Backsplash adds the backsplash along the selected countertop segments.

1. Open **Create › Auto Backsplash**.
2. In **Settings**, set the **Height**, an **Offset** if needed, and the **Direction**: **Up** for a backsplash, **Down** for a waterfall.
3. Tap each countertop segment that gets a backsplash ("Select segment to create backsplash"), or use **By points** to set the backsplash between two points.
4. Use **Cut edge** (Adjust Backsplash) and type the material thickness so the backsplash length is cut to fit.
5. Check the result in the 3D view, then export as usual (Section 11).





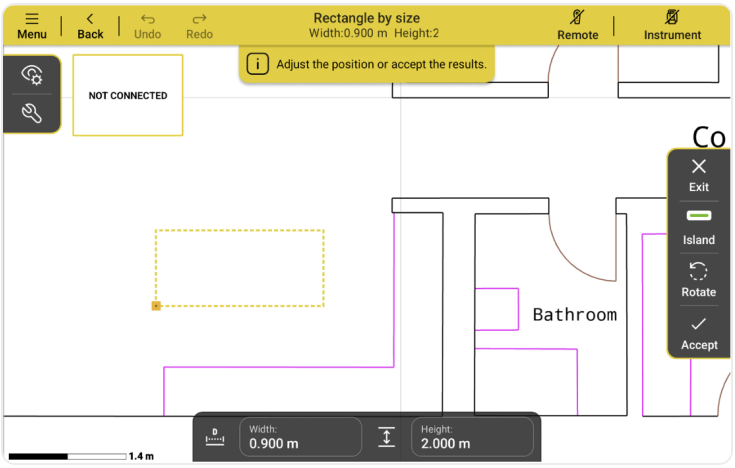
Settings, then trim for material thickness.

Countertop tools: islands and cabinet checks

Rectangle by size, for islands

Create › Rectangle B+H draws a rectangle from a set width and height. Type the size, tap anywhere in the drawing to place the rectangle, **Rotate** if needed, then **Accept**.

Handy for islands and freestanding pieces that aren't connected to a wall.

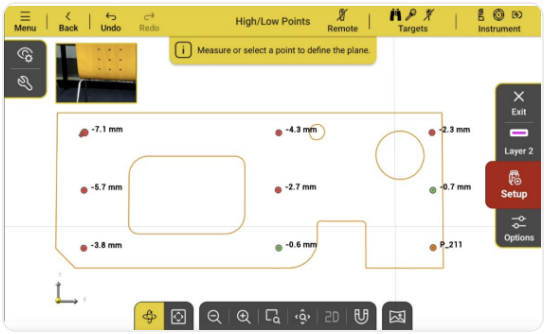


Rectangle by size, placed as an island.

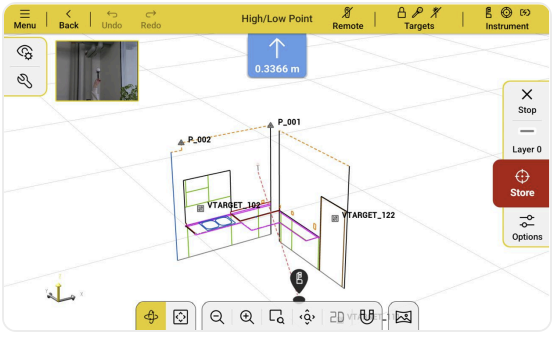
High/Low Point: check the cabinets before install

The High/Low Point tool compares measured points with a horizontal, vertical or sloped reference plane and colors each point by how far it sits from that plane. Shoot the tops of the cabinets before the countertop goes on and see at a glance which boxes are high or low. Open **Measure › High/Low Points**, pick or define the reference plane, add at least two points, set the tolerance under **Options**, then **Accept**.

- **Blue** points sit above the plane, **red** points below, and points inside the set tolerance show **green**.
- Arrows mark the highest and lowest points.
- Set **Measuring type** to **Continuous** under Targets to watch the deviation live while moving the VPen or hovering the red laser dot.
- Point labels can show each point's High/Low distance. The CSV and DXF exports can carry the distances and colors, so the office gets the check too.
- Also works for floor and wall flatness, using surface or line scans.



Each point labeled with its distance from the reference plane.



Continuous mode: live distance from the plane.

11 Capturing curved and 3D pieces

Typical example: a bowed panel (a 4x8 sheet, say) that needs to be reproduced on the CNC.

Recommended: manual wireframe with the VPen

1. Start a new job as **3D**, or in any job tap **Planes** and pick **Unprojected 3D**.
2. Level, then take two start points in Point mode anywhere, just like a 2D job. The piece can be on a table, standing up, or on a wall.
3. Use **Line** for the straight edges: one point on each corner.
4. Switch to **Polyline** for each curved edge: start at a corner and take several points along the curve (about 5 on a small piece, about 8 on a 4x8). **Always include the apex** (the highest point of the curve), or the arc comes out flatter than it is. Tap Accept.
5. Do the opposite curved edge with the **same number of points**.
6. Add polylines down the face: one down the middle, or three dividing it into thirds. Add "ribs" across it too (3 points across, every 6 inches). Ribs give texture to the middle and do the same job as a scan, without misses.
7. Rotate the 3D view to check the curvature, then export and let drafting clean it up.

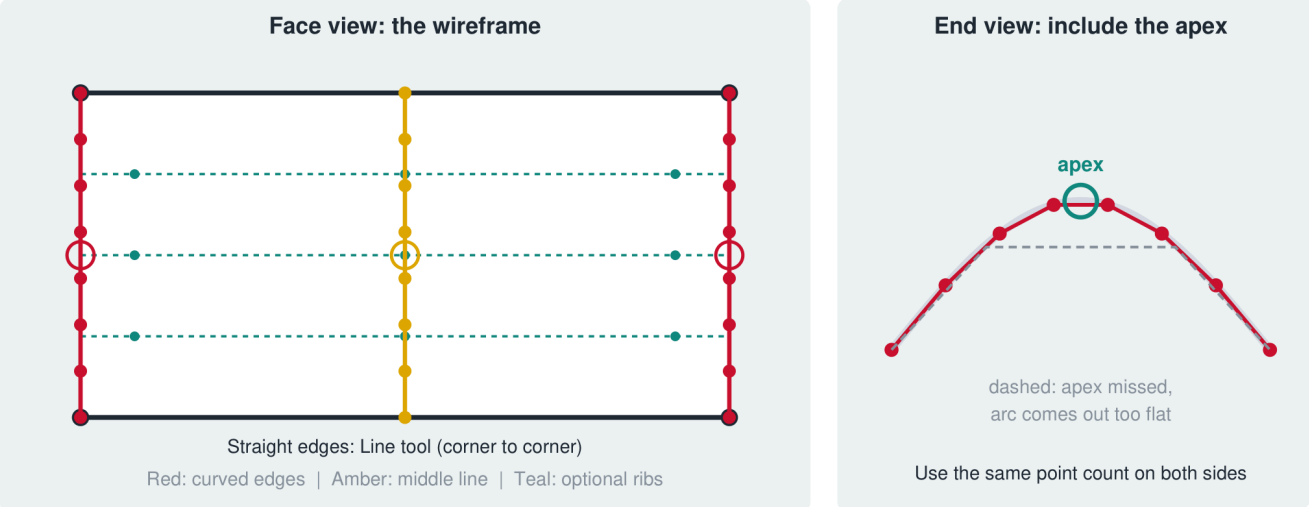


Figure 10. Left: a complete wireframe (straight edges, curved edges, middle line, optional ribs). Right: why the apex point matters.

3D notes

- Tracing works in 3D, but go slow: every wobble shows up in height. For large curved panels, the wireframe above is more reliable.
- Corners that look joined often aren't when zoomed in. Try wrench › Edit › Intersect. If the tablet says "elements already intersect" but the lines don't meet, that's because the tablet edits from a 2D perspective; let drafting close the corner in CAD.
- Small differences between passes can come from the panel shifting under pressure, or from viewing at an isometric angle. Drafting can check by switching to a straight-on view.
- Any job can mix 2D planes and 3D: flat surfaces on planes, curved pieces in Unprojected 3D. Switch back and forth whenever needed.
- The wireframe gives drafting everything needed: in AutoCAD, drafting can apply a grid, cross points, or hatch it.

Alternative: Surface Scan (laser only)

1. Hang or stand the piece so you're looking at it straight on.
2. Wrench › Measure › **Surface Scan** (Line Scan is also listed there).
3. Choose a boundary: Rectangular or Polygon.
4. Set the interval (2 inches, say).
5. Shoot the boundary points it asks for (left, bottom, right), keeping them slightly **inside** the edges of the piece. The iCS50 fills in the grid.

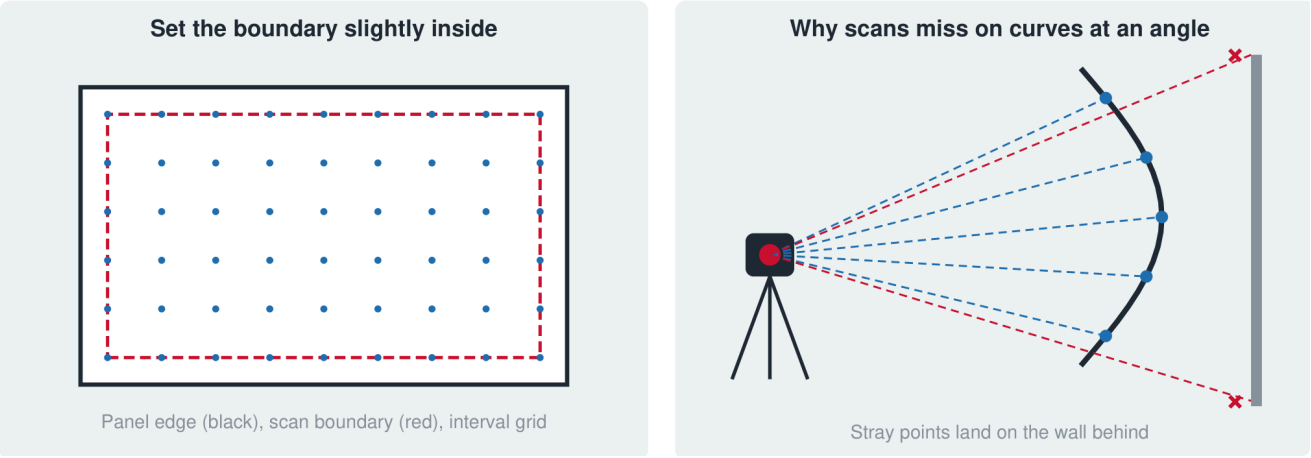


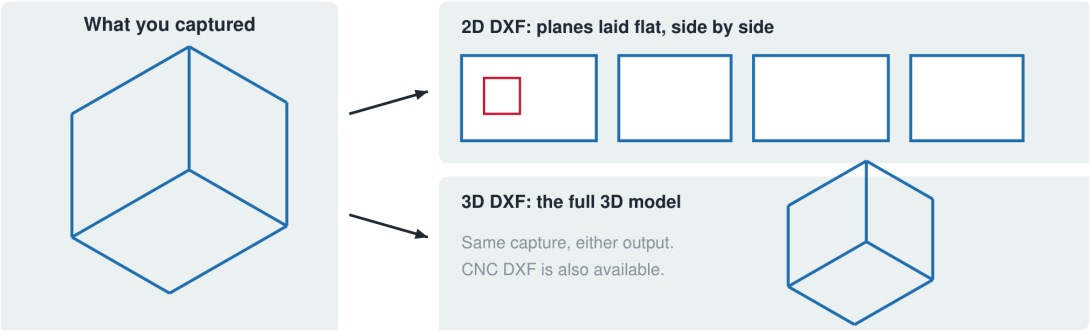
Figure 11. Left: keep the scan boundary inside the panel edge. Right: at an angle, some scan points miss the curve and hit the wall behind.

TIP Scans only make sense on large surfaces, whiteboard-size or bigger; a 4x8 panel is big enough. On small pieces many points hit the wall behind, and on curves viewed at an angle some points miss, so they have to be found, deleted and re-taken with the pen. Lowering the interval doesn't fix this on a small piece. Manual pen points are usually faster and more accurate.

12 Exporting to the drafting department

1. In the job, tap **Job**. A preview appears showing the current view (2D or 3D). The preview is only a picture; the export includes all planes regardless.
2. Tap **Export**. The tablet's file browser opens.
3. Tap **New Folder** and make a folder for exports (first time only). Select it and tap **Next**.
4. Choose the file type (figure and table below).
5. Tap **Options** to choose which planes to export, and under **CAD options** turn **Point Labels OFF**. Set Export Points to No if drafting doesn't want the raw points. **Only Single Points** exports just standalone points, leaving out points that belong to lines and polylines.
6. Tap **Export**. A warning like "1 file out of 10 was not exported" is usually harmless (often the labels turned off). Tap OK.
7. Tap **Share › Gmail** (or another app) to email the file. If the tablet is offline, the email sends the next time the tablet connects.

WHOLE PROJECT **Every room at once: Job › Export** sends only the open job. To send every job in a project, go to **Projects**, select the project and tap **Export**. All the jobs go out as one zip file.



WATCH: EXPORTING

Figure 8. One capture, two outputs: 2D DXF flattens every plane side by side; 3D DXF keeps the model. CNC DXF is also available.

FORMAT	WHAT YOU GET
2D DXF	Every wall or plane laid out flat side by side, "like on a conveyor belt." Good for flat CNC work.
3D DXF	The full 3D model of the room or piece.
CNC DXF	All planes combined, flat, for CNC. No points or dimensions. Drafting may instead create CNC files from the regular DXF.
ALPHACAM (IAZ)	Direct export to ALPHACAM for CNC programming.
Shop Sheet (PDF)	An overview of all planes, plus a dimensioned page for each plane. Handy for the shop floor.

Point Labels off. Every time.

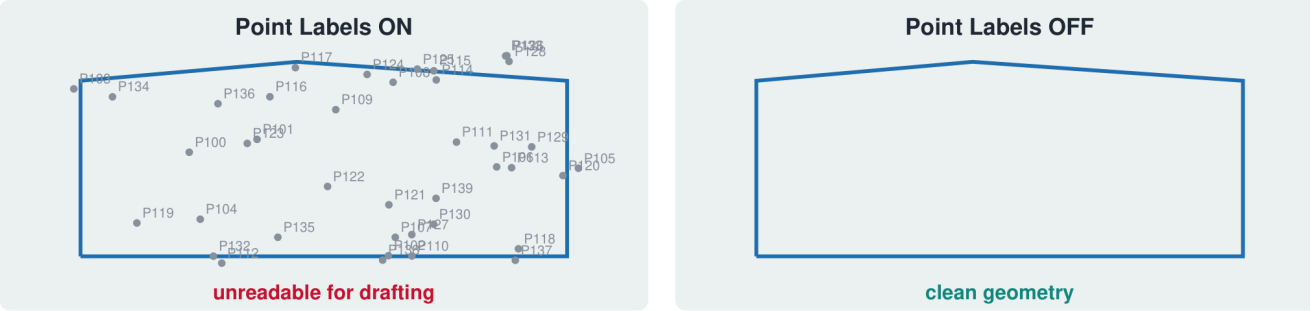
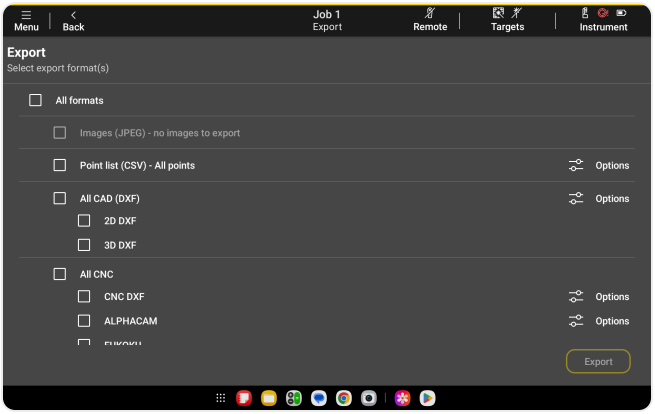
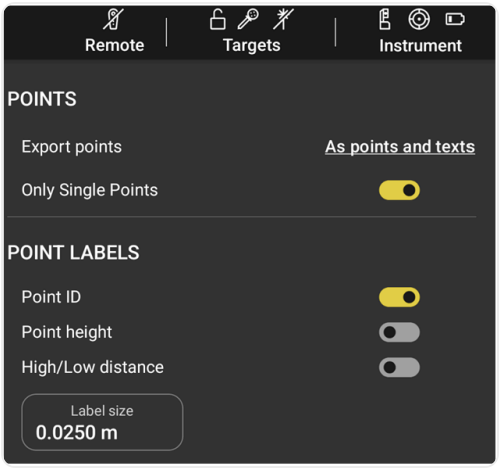


Figure 9. With Point Labels on, every point taken shows up with its tag.

IMPORTANT Turn off all three **Point Labels** toggles (Point ID, Point height, High/Low distance) before exporting. With point IDs on, the DXF shows every point ever taken with its tag, which makes the drawing unreadable. This is the most common reason drafting can't work with an exported file. For most CAD and CNC software (AutoCAD, Microvellum and others), a standard DXF is the usual choice.



Export: choose the file type.



CAD options. Point ID is still on in this example: switch it off before export.

Before every export

- ☐ Planes to export selected under Options
- ☐ CAD options: Point Labels **OFF**
- ☐ Export Points set the way drafting wants
- ☐ Correct format: 2D DXF, 3D DXF or CNC DXF

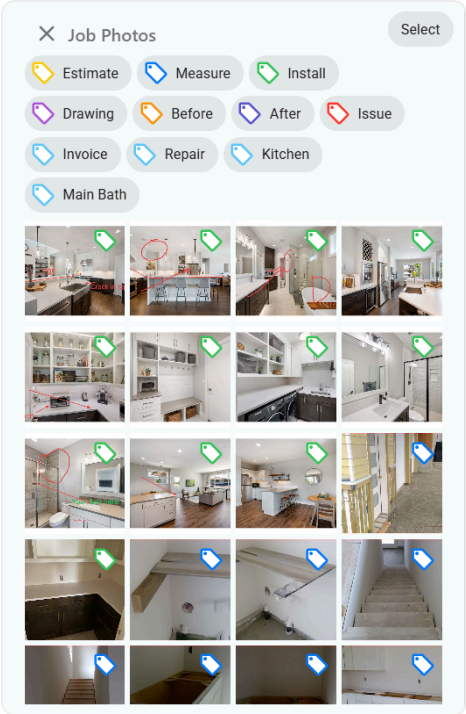
Save the job to SPEEDfolder

SPEEDfolder comes installed on the tablet and is included with the iCS50. The DXF goes to drafting. The photos, files and notes that explain the DXF go on the job in SPEEDfolder, where the office sees them as they're taken.

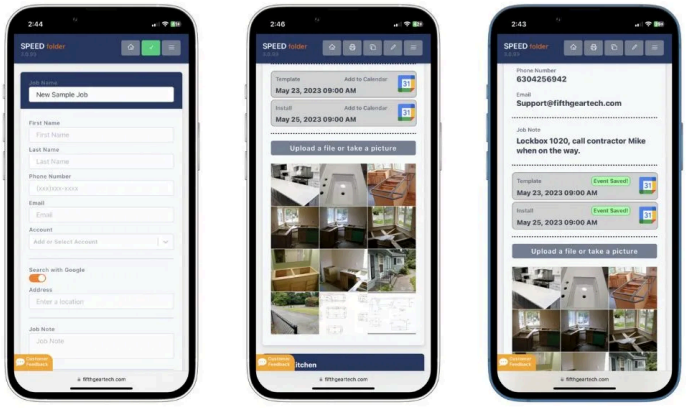
On every job

1. Open the job in SPEEDfolder, or tap **Create New Job**. A job name is all a new job needs.
2. Tap the blue **camera** button and shoot. Photos go straight onto the job, not the camera roll.
3. Annotate on site: pen, arrow, line, ruler and a caption. Mark what the drawing can't show.
4. Tag each photo: **Measure**, **Before**, **Issue**, or a room like **Kitchen**.
5. Send the export from iCON trades with **Share › SPEEDfolder** (next page), or add a file with **Upload a file or take a picture**.

TIP No signal on site? Upload the photos later. Just don't leave them in the camera roll; that's where photos get forgotten.



Job Photos: filter by tag, grouped by date. Initials show who took each photo.



SPEEDfolder on a phone or tablet: a new job, scheduled events, and **Upload a file or take a picture**.

Free
SPEEDfolder doesn't charge per user. Add the whole crew.

No app
A texted job link opens in any browser. No account, no password.

Live
The office sees photos in the home screen feed as they're taken.

Send the export straight to SPEEDfolder

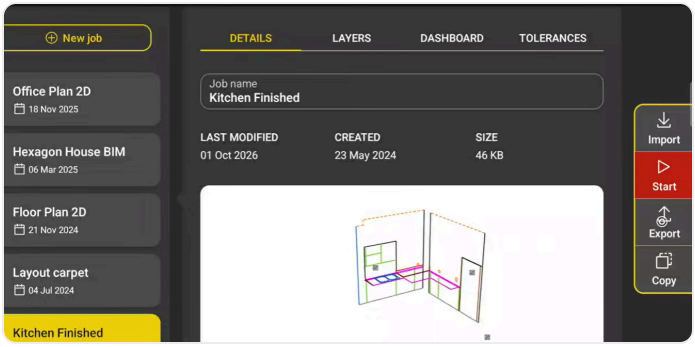
No email, no flash drive. iCON trades sends every exported file and photo to the job in SPEEDfolder, and the office opens them from any computer.

From the tablet

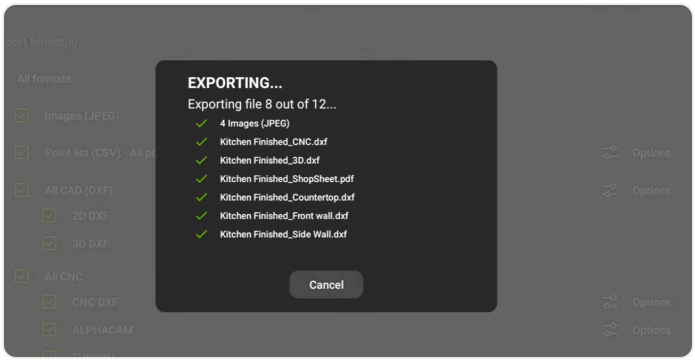
1. Open the job and tap **Export**.
2. Pick the formats: 2D and 3D DXF, CNC DXF, ALPHACAM, Shop Sheet, photos. Point Labels off (Section 12).
3. When the export finishes, tap **Share** and pick **SPEEDfolder**.
4. Choose the job, or create a new one with the job name.
5. Every file and photo uploads to the job. Done.

TIP Sign in to SPEEDfolder on the tablet once. After that, sharing is two taps.

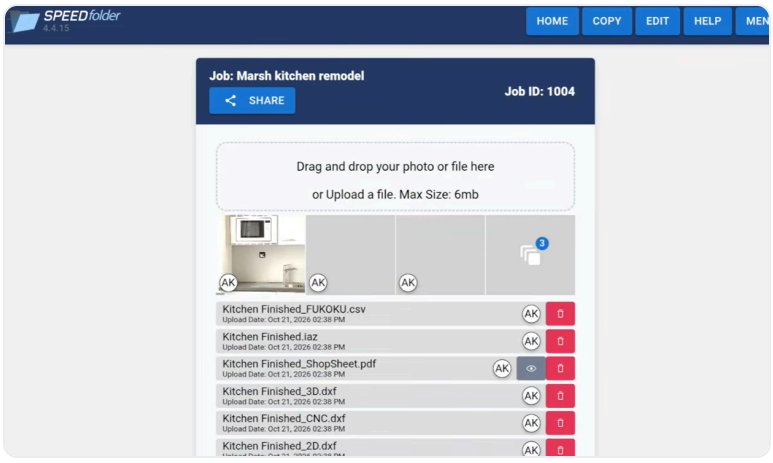
WATCH: EXPORT TO SPEEDFOLDER



1 The job in iCON trades, with **Export** on the right.



2 Every format exports in one pass.



3 On the job in SPEEDfolder: the DXFs, CNC file, ALPHACAM file, Shop Sheet and photos.

In the office

- Open the job from any browser and download what drafting needs.
- The Shop Sheet PDF opens right on the job.
- Share the job link with the shop, the installer or the customer.

Shoot more than you think.

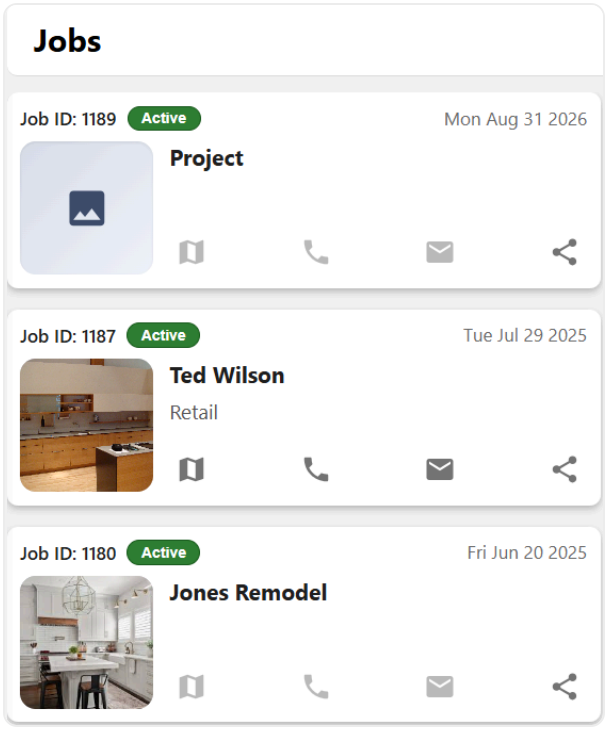
Photos don't replace the drawing or the paperwork. They ride alongside the DXF and carry the context a measurement can't. The most common miss is one photo per job. SPEEDfolder doesn't use film.

The shot list

- [ ] Outside of the house and the entry
- [ ] Hall and stair access, for the install crew
- [ ] The whole room, from each corner
- [ ] Details: outlets, plumbing, windows, out-of-square corners
- [ ] Anything damaged before work starts (tag **Before** or **Issue**)

Tags

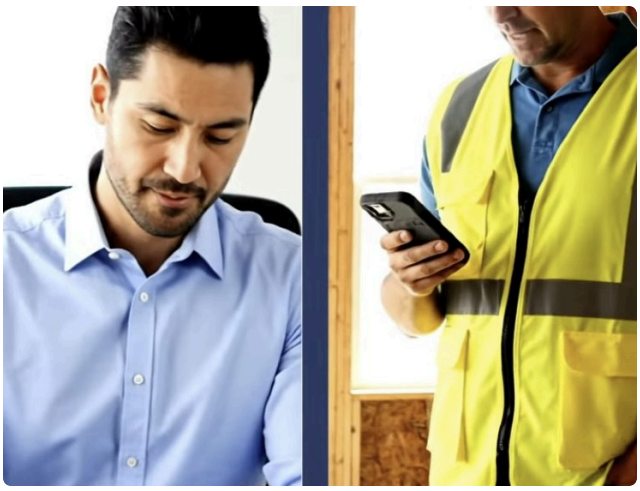
TAG	USE IT FOR
Measure	Templating day photos
Before / After	Condition at start and finish
Issue / Repair	Problems to flag to the office
Drawing	Sketches and marked-up photos
Kitchen, Main Bath	Custom room tags the shop adds



The Jobs list: status, latest photo, and one-tap map, call, email and share.

The rest of the crew doesn't need the app

- Text or email the job link. The link opens in any browser, with no app store, account or password.
- From the link, a crew member can upload photos, report an issue, and mark the job complete.
- **Share** builds a link for a customer or contractor. Choose what they see, or turn on **Allow photo uploads** so they can add photos too.
- The office should confirm receipt and give feedback, not just look.



Share jobs from the site with SPEEDfolder. The office sees each one as it happens.

13 Practice drill: templating a room

Run this drill in any room with a table and a whiteboard (or window) before the first real job. The drill exercises nearly every skill in this guide, including the common mistakes, so they're easy to recognize and fix.

#	DO THIS	WHAT YOU'LL LEARN	✓
1	New job, 2D Horizontal. Level, skip panorama.	Basic job setup.	☐
2	Take the two start points on a wall, in Point mode.	Forget Point mode and the next shape joins to these points. Delete and retake.	☐
3	Table: trace one curved end, Line across the straight edge, trace the other end.	Mixing tools; a steady, moderate trace speed.	☐
4	Try to reach a side that's close to the iCS50.	The dead zone: "Measure failed: out of measuring range."	☐
5	Place three V-Targets, move the iCS50, New Setup › V-Targets.	Relocating. Make sure nothing blocks a target.	☐
6	Switch back to VPen and finish the table in Line mode.	The method may default to crosshair after a new setup.	☐
7	Planes › New 2D plane › Vertical for the first wall.	The same wall as the original start points can be reused.	☐
8	Wall perimeter: polyline with several points along the ceiling and adjacent wall, carried down to the floor.	Extension rod for the ceiling; Accept to leave open.	☐
9	Edit › Intersect to close the wall; delete chamfer segments.	Editing; the Exit button on the right.	☐
10	Go back to the table plane and close the outline.	X, then Planes, then select the existing plane.	☐
11	Draw the whiteboard as a "window" with a VPen polyline; add a circle via Create.	Pen corners vs. laser corners; the Create tools.	☐
12	Add vertical planes for the remaining walls.	Try laser mode on one wall and the pen on another.	☐
13	Toggle 2D/3D to view the room model.	How planes relate in 3D.	☐
14	Create a job template with a layer.	Menu › Job Templates.	☐
15	Export 2D and 3D DXF with Point Labels off; share by email.	A "1 of 10 files not exported" warning is usually harmless.	☐

REFERENCE

14 Troubleshooting

PROBLEM	FIX
Start points got joined to the drawing	The remote was in Polyline when they were taken. Delete them, switch to Point mode, and retake.
"Measure failed: out of measuring range" / error beep	Too close to the iCS50 (about 2 ft dead zone). Lean the pen away, step back, or move the iCS50 with V-Targets.
"Measurement failed, target moved"	The point didn't register. Take it again.
Can't see the red laser beam	Probably on Crosshair. Toggle Any Surface off and back on to Laser.
Earlier drawing disappeared	The drawing is on another plane. Tap Planes and select it, or switch to the 3D view.
Can't find the 2D/3D toggle	The **2D** button in the bottom toolbar (older videos show the toggle under the eyeball).
Point hard to measure on black, shiny or glass finish	Switch to the VPen.
Drafting says the drawing is the wrong size	Check **Menu › Settings › Units** matches what drafting expects, then re-export.
Drafting says the DXF is a mess of points	Turn off Point Labels (and set Export Points to No) in CAD options, then re-export.
After a new setup the method changed to crosshair	Normal. Go to Targets and choose VPen again.
Pen tip can't reach into a tight corner	Take points on each adjacent surface and use Intersect, or use Laser mode on the adjacent surfaces.
After moving, the iCS50 can't see a target	Reposition until all three are in clear view, then New Setup › V-Targets.
"Elements already intersect" but lines don't look joined (3D)	The tablet edits from a 2D view. Leave the corner for drafting to close in CAD.
Traced line in 3D is squiggly	Slow down and keep the pen steady. On large curved panels, use a Polyline wireframe (Section 11).
"1 file out of 10 not exported"	Usually harmless (often the labels turned off). Tap OK.
Problems right after setup	Check the tripod first: every leg section fully extended and locked, quick mount latched.
Job template layers missing in the current job	Templates only apply to jobs created after the template.
Tablet or iCS50 behaving unexpectedly after an update or reset	Call SPEEDtemplate support to check the tablet's production / developer mode setting. SPEEDtemplate sets this once before shipping; it rarely needs changing.

REFERENCE

15 Checklists

Before leaving the shop

- [ ] iCS50, tablet and remote charged; chargers packed.
- [ ] VPen and extension rod (plus the Sky Reach pole if the job has soffits).
- [ ] Three or more V-Targets, magnetic legs, adhesive stickers, painter's tape.
- [ ] Default job template (layers) set on the tablet.
- [ ] Decided: which job type? Any job can switch to 3D later if a curve turns up.
- [ ] Drafting's needs confirmed (2D vs 3D DXF, CNC DXF, points on or off).

On site, starting a job

- [ ] Tripod legs fully extended and locked.
- [ ] Connected in Device Manager.
- [ ] Correct job type (2D Horizontal / Vertical / Sloped / 3D).
- [ ] iCS50 leveled; panorama taken or skipped.
- [ ] Remote in Point mode for the two start points.
- [ ] V-Targets placed early if the iCS50 will move (adhesive for multi-day jobs).

Before leaving the site

- [ ] Every plane checked: shapes closed, chamfers cleaned up, stray start points deleted.
- [ ] 3D view reviewed: all planes present and in the right relationship.
- [ ] Nothing forgotten: windows, doors, switches, outlets, plumbing on each wall.
- [ ] Photos taken, tagged and on the job in SPEEDfolder.
- [ ] Targets still in place if coming back tomorrow.

Before exporting

- [ ] Planes to export selected under Options.
- [ ] CAD options: Point Labels OFF; Export Points set per drafting's preference.
- [ ] Correct format (2D DXF / 3D DXF / CNC DXF).
- [ ] Units match drafting (Menu › Settings › Units).
- [ ] Saved into the job folder; shared to drafting.

REFERENCE

16 Getting help

SPEEDTEMPLATE SUPPORT

919-676-2244

support@fifthgeartech.com

Support hours: Monday to Friday, 8:30 am to 5:30 pm Eastern

In-house iCS50 lead

Drafting department contact

- Stuck on site? Call support. When calling, have the job open on the tablet and note any exact error messages. Support may ask for logs: **Menu › Settings › About › Generate logs**.
- **Help on the tablet: Menu › Help**, then tap any yellow marker to explain that button. The full Leica manual, with search, is under **Menu › Manual**.
- More training, or a large or unusual job coming up? Book a session; blueprints or photos help support prepare.

REFERENCE · FILL IN ONCE

Shop details

Fill this in once and keep it with the guide. Have the serial number ready when calling support.

iCS50 serial number

Date received

Tablet PIN

In-house iCS50 lead

Lead phone / email

DXF format drafting wants (2D / 3D / CNC)

Points on or off

Units (inches / mm)

Export folder name

SPEEDTEMPLATE SUPPORT

919-676-2244

support@fifthgeartech.com

Care, charging and safety

LASER SAFETY The iCS50 is a laser product. Never look into the beam or point the laser beam at anyone's eyes. Read the Leica safety manual in the case for the laser class and full safety and regulatory information.

Charging

- **Ships fully charged.** Top up the night before the first job.
- Open the port cover on the base, plug in the charger, then plug the charger into a 100 to 240 V outlet.
- Charge between 32 and 104 °F. For the best charge, 50 to 68 °F. Not in a cold truck or a hot cab.
- The iCS50 charges to 70% in 1 hour and full in 2. Charge overnight before a site day.



Charging the iCS50: open the port cover (1), plug in the charger (2), plug into the outlet (3).



The remote charges by cable from the iCS50 (left) or the tablet (right).

Transport

- Pack the iCS50, VPen and targets in the case between sites.
- Move the iCS50 by hand between setups in the same job; expect the movement alert and re-shoot the V-Targets (Section 8).
- Keep chargers and cables in the case so nothing gets left behind.

Cleaning

- Wipe the camera windows with a soft, dry lens cloth.
- Keep the VPen ball clean and free of scratches.
- Store V-Targets flat so the plates and stickers stay true.

Updates

- Firmware and license updates arrive over the air.
- Let updates finish before heading to site, not in the driveway.
- iCON trades also updates on the tablet; buttons can move between versions.

DAMAGED OR NOT WORKING?

919-676-2244

Call SPEEDtemplate support first. Support will troubleshoot with you and take it from there.

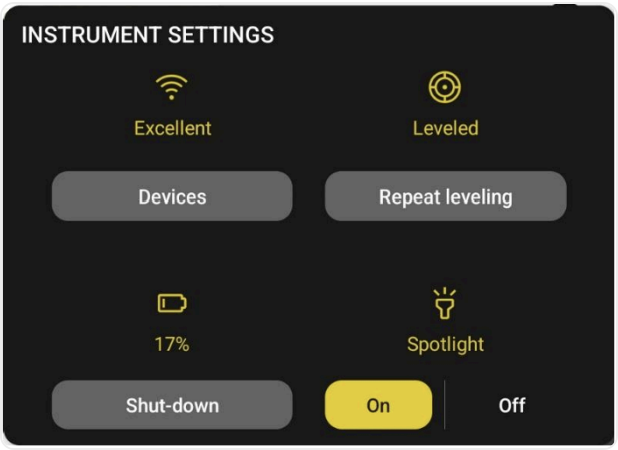
Keep the iCS50 accurate

Three settings that keep the measurements right, especially on long days.

Repeat leveling

Instrument › Repeat leveling re-levels the iCS50 at any time. Use Repeat leveling after a long measuring session, or whenever the setup may have moved. The same panel shows Wi-Fi strength, level status, battery, the spotlight switch and Shut-down.

Check Setup (Setup tools) checks the level and re-measures a known point to confirm the iCS50 hasn't moved. With a V-Target in the job, the check runs automatically.



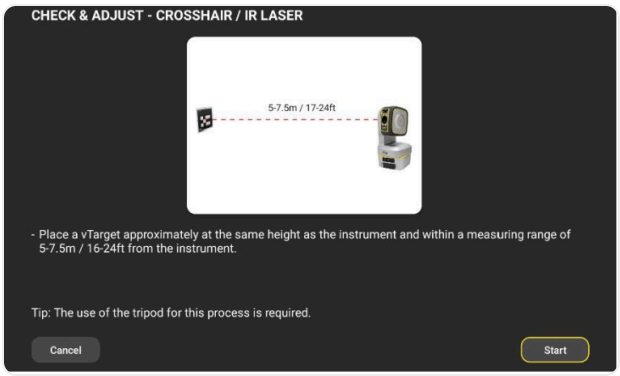
Instrument settings.

Check & Adjust

A built-in self-check of the crosshair and IR laser. Adjustments happen automatically.

1. Set the iCS50 up on the tripod. The tripod is required.
2. Place a V-Target at about the same height as the iCS50, 16 to 24 ft away.
3. Go to **Device Manager › Info › Check & Adjust** and tap **Start**.

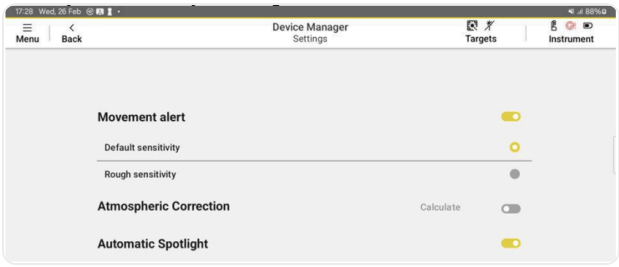
Run Check & Adjust if measurements seem off, or after the iCS50 takes a knock.



Check & Adjust: V-Target 16 to 24 ft from the iCS50.

Device Manager settings

- **Movement alert:** Default or Rough sensitivity. Leave the alert on; the alert is what catches a bumped setup.
- **Automatic Spotlight:** turns the spotlight on in low light when using the VPen, so the VPen works in complete darkness up to about 26 ft (8 m).

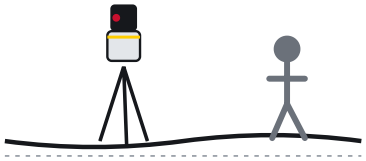


Device Manager › Settings.

REFERENCE

Tricky sites and updates

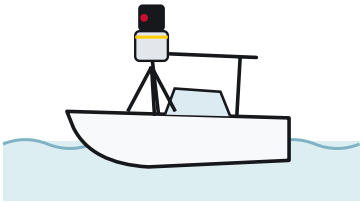
Three device settings for the jobs that don't behave, and where to check for updates.



A floor that flexes
Rough sensitivity, last resort



Head shakes up close
High-speed motor off



On a boat in the water
Moving Platform Mode

SITUATION	SETTING	WATCH OUT
A floor that flexes: a wood upper floor, trades working nearby	Movement alert: **Rough** sensitivity	Last resort. Rough can cost accuracy. Back to Default afterward
The head shakes while tracking the pen up close, or with the tripod set low	**High-speed motor** off	Raise the tripod and step back first. Tracking still keeps up
The iCS50 on a boat in the water	**Moving Platform Mode** on	Boats only. Off for everything else

All three are in **Device Manager › Settings**.

Updates: check two places

The app
iCON trades on the tablet
Menu › Settings › About

The iCS50
Firmware on the instrument
Instrument › Devices › Info

Check for updates in both places, on shop Wi-Fi, before the day of the job.

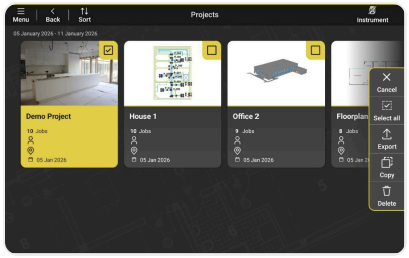
- Some device settings, like Moving Platform Mode, only work with current firmware.
- Let updates finish before heading to site, not in the driveway.
- Something not right after an update? Call SPEEDtemplate support.

More tools worth knowing

Not needed on day one. Worth learning once the basics are second nature.

Projects and jobs

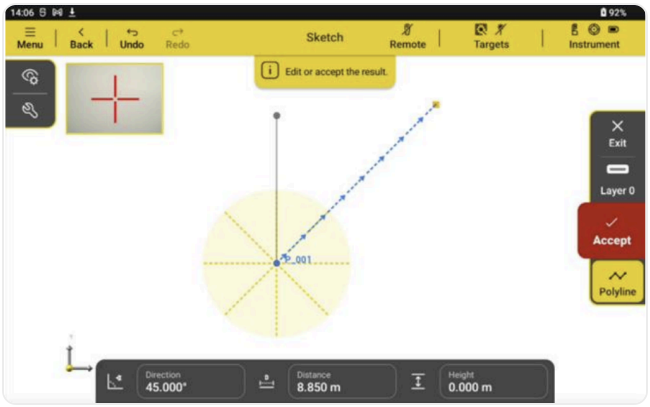
A project is the customer or site; each job in it is a room, a wall or a visit. **Projects › New**: use the same name as the SPEEDfolder job (customer and address), tag the site with the location icon, and add a photo. The first job is created automatically. On site, filter by **nearby** to find it. The DXF goes on that same SPEEDfolder job, with the photos. **Copy** reuses a job's structure on a similar one.



WATCH: PROJECTS AND JOBS

Sketch

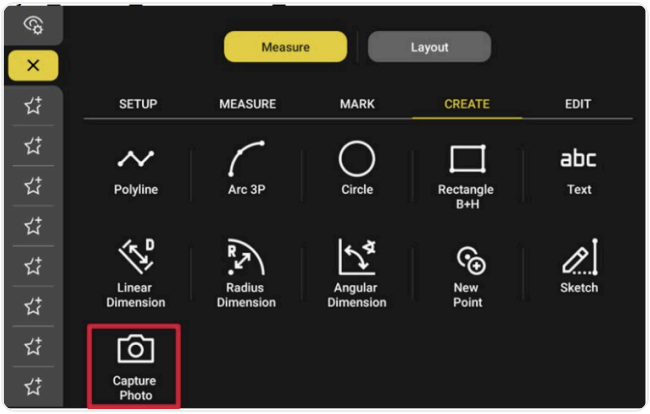
Create › Sketch adds points, lines and polylines by direction, distance and height from an existing point.



Photos in iCON trades

Create › Capture Photo takes a photo inside the job; photos go out with the Images (JPEG) export. A photo can also be added to a single point: tap the point, then **Add photo**.

For photos the office and installers need, use SPEEDfolder (Deliver section).



Show RAW data

View settings › Advanced › **Show RAW data** shows the original measured points as cross-marked points. Raw points stay put even after offsets or intersects, and go out with the 3D DXF.

Specialty setups

- **Moving Platform Mode** (Device Settings): tilted setups without leveling or movement alerts, for work on boats and other moving platforms.
- **Object reference points**: set up relative to an object, for prefab checks or tilted panels.
- **Layout from a drawing** (add-on Layout licence, not in the standard package): set up on two walls or grid lines, then the red dot marks each point from the drawing. See the Commercial Millwork and Glass and Railings Guides.

NOTE Call SPEEDtemplate support before using a specialty setup on a real job.

App. A Glossary

TERM	MEANING
Construction plane	A flat 2D surface (horizontal, vertical or sloped) that everything drawn on it is projected onto.
Start points / initial points	The two points taken at the start of every job and every new plane so the system can orient itself.
VPen	The handheld probe the iCS50 follows; touch the tip to what you're measuring.
Any Surface	Measuring directly with the laser beam, in Laser (visible dot) or Crosshair (camera aim) mode.
V-Target	QR-code plate used as a reference so the iCS50 can be moved without losing the drawing.
New Setup (V-Targets)	Relocating the iCS50 from V-Targets it already measured.
Polyline	A connected series of line segments; each measurement adds a vertex.
Trace	Continuous capture while dragging the pen along an edge.
Accept / Close	Finish a polyline open, or join its last point back to the first.
Intersect	Edit tool that extends or trims two lines so they meet.
Apex	The highest point of a curve; must be captured so arcs aren't flattened.
Sky Reach pole	Optional pole that holds the VPen for soffits and other overhead points.
Wireframe	A set of polylines across and along a curved piece that describes its 3D shape.
Surface scan	Automatic grid of laser points inside a boundary at a set interval.
Job template	Saved layer setup (names, colors, line types) applied to new jobs.
DXF	CAD exchange file format read by AutoCAD, Microvellum and most CNC software.
Point labels	Point ID tags that can be included in an export; turn them off for clean drawings.

Notes

APPENDIX B · KEEP IN THE CASE

Quick-reference card

iCS50

Connect iCS50	Device Manager, over Wi-Fi
Recall a job	Home › Projects (or Last job)
New job	Home › Quick Start / New Job › 2D H / 2D V / Sloped / 3D
Start points	Remote in **Point mode**, 2 points (on the wall itself for a vertical plane)
Change measuring method	Targets icon › VPen / Any Surface (Laser or Crosshair) / V-Target
Point / Line / Polyline	Hotkeys on the remote
Finish a polyline	Accept (open) or Close (last to first), bottom right
Trace	Press & hold measure, drag pen, press again to stop
Circle / arc	Wrench › Create
Surface / line scan	Wrench › Measure › Surface Scan / Line Scan
Intersect / trim / fillet	Wrench › Edit; Exit on the right
Delete	Exit tools, touch object, Delete
New plane	Planes › New 2D plane › H / V / Sloped › 2 points
Go to another plane	X (exit), Planes, select plane
2D / 3D view	2D button in the bottom toolbar
Place V-Targets	Tools › Setup › Capture vTargets › Accept
Move iCS50	Move › New Setup › V-Targets (or Known points: aim at each target) › green › Accept › back to VPen
Layers	Select objects › Layer; eyeball hides
Job templates	Menu › Job Templates › Edit layers; set default
Export	Job › Export › folder › Next › format › Options / CAD options (**labels OFF**). Whole project: Projects › Export
Email	Share › Gmail (sends when online)
Re-level	Instrument › Repeat leveling
Island or set size	Create › Rectangle B+H: type width and height, tap to place
Photos and files	SPEEDfolder › job › camera, or Upload a file or take a picture
Support	919-676-2244 · support@fifthgeartech.com

THE SIX RULES

1 Tripod legs **fully extended** and locked.

2 Curved piece? Switch to **3D** in Planes.

3 Start points in **Point mode**.

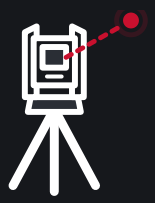
4 Keep **2 ft** from the iCS50.

5 Include the **apex** on curves.

6 **Point Labels off** before export.

SPEEDtemplate

GENERAL GUIDE



Need a hand?

919-676-2244

support@fifthgeartech.com

GENERAL GUIDE
How the iCS50 works

INDUSTRY GUIDE
What to capture in the industry

INDUSTRY WORKBOOK
Learn it by doing it

Leica GEOSYSTEMS

The Leica iCON iCS50, sold, set up and supported by SPEEDtemplate.

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