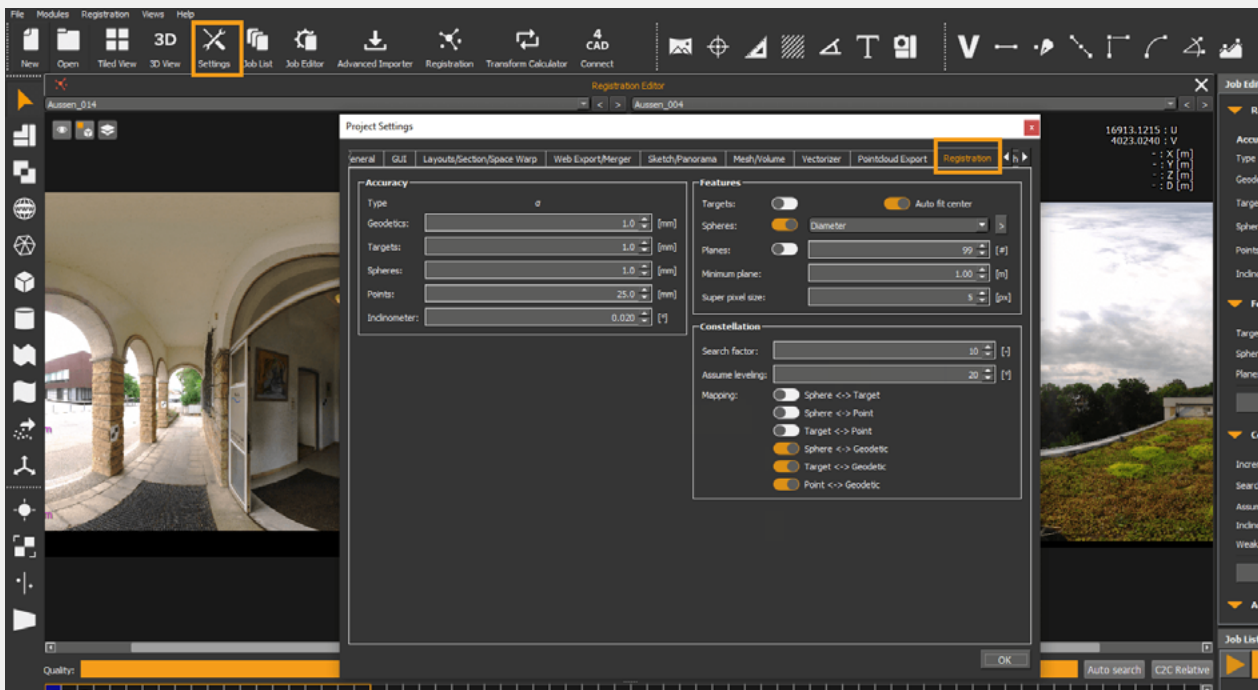


PointCab TUTORIALS

Registration Tab

This guide shows the possible settings of the registration parameters. There are many ways to achieve your goal, different approaches and selectable options. This guide will help you to process your project quickly, easily and according to your wishes. However, if any of your questions remain unanswered, do not hesitate to contact us. Our support team will be happy to help you at any time.

The following options can be found in the settings, in the „Registration“ tab:



1. Accuracy

Type	σ
Geodetics:	1.0 [mm]
Targets:	1.0 [mm]
Spheres:	1.0 [mm]
Points:	25.0 [mm]
Inclinometer:	0.020 [°]

Geodetic Points

If the some features were measured with a total station or with GPS, you will get a certain accuracy from this network of points, which can be entered here.

Targets

How precise the checkerboard targets are found in the automatic feature search.

Spheres

How precise the spheres are found in the automatic feature search.

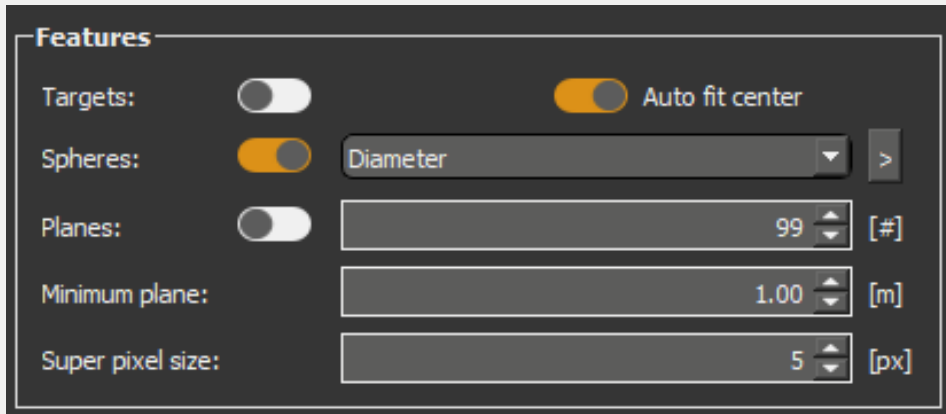
Points

Correspondence points/identical points in a pair of scans: if the user clicks on the points themselves, they are usually less accurate than if the algorithm searches for them automatically. Therefore the default setting has a higher value here.

Inclinometer

Until now, PointCab only reads the inclinometer data from FARO.

2. Features



Targets

Search for checkerboard targets.

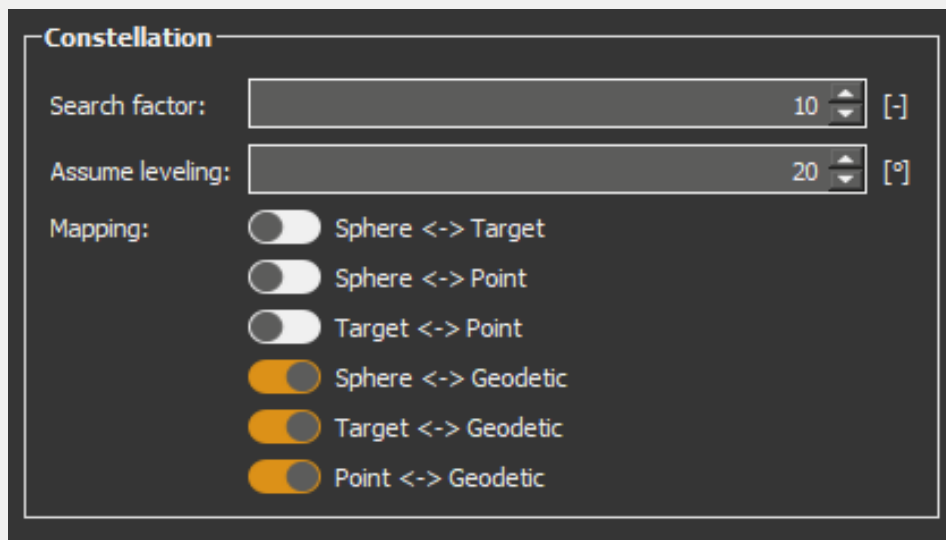
Auto fit center

Automatic search for the centre of each sphere or checkerboard target.

Spheres/Diameter

Search for spheres with a specific diameter. If the diameter of your spheres is not listed in the drop-down menu, the user can insert other diameters (click on the arrow and enter the value).

3. Constellation



Search Factor

Describes how far away the center of a target may be in two different scans before the automatic constellation search no longer recognizes these targets as identical.

For example: A sphere is positioned on the door. In the first scan, the sphere is in position A. Then we continue scanning and the door is moved a little. In the second scan, the sphere has the position B, a completely different position, although it is the same sphere. This sphere should not be recognized as identical to the sphere from the first scan, otherwise the adjustment will be calculated incorrectly. This is of course also a very good example of Dos and Don'ts in scanning. The search factor is set to 10 by default (which means about 2 cm). You can increase the factor, but it should not be higher than 20 either.

Assume leveling (vertical scans)

Means if the scans were standing vertically or if they were not aligned along the plumb line of the earth gravitation field. Ultimately, it is also possible to scan „overhead“, in which case the checkbox must not be ticked for vertical scans.

3.1 Mapping

Sphere – Target / Sphere – Point / Target – Point

Describes how to map the target marks

As a rule, no spheres are switched with targets, no targets with points or spheres with points. These 3 options are also unchecked by default in the settings.

Sphere – Geodetic / Target – Geodetic / Point – Geodetic

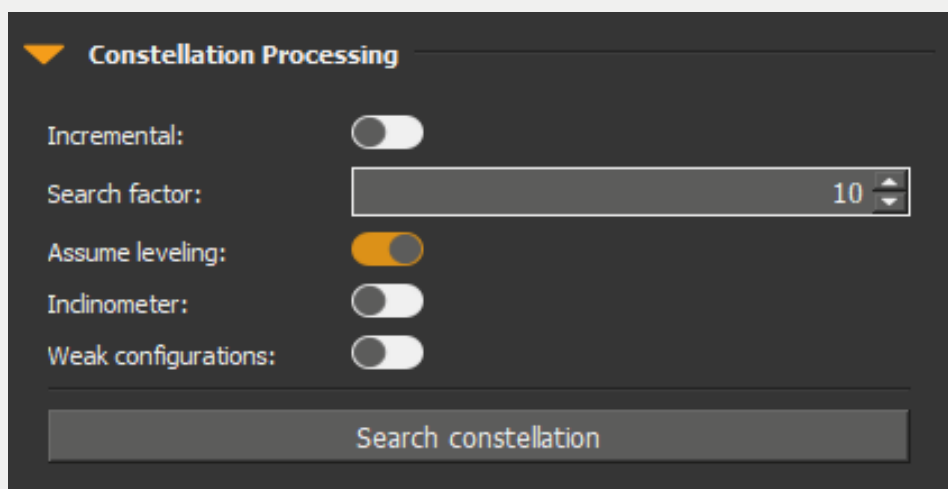
Describes how to map the target marks.

If geodetic points are measured for the project, they are measured on spheres or checkerboards or the user clicks a point where the geodetic point is located. The registration will take this mapping into account.

If there are no geodetic points for the project, these boxes can still be left checked. The mapping will be ignored.

Additional Settings in Job Editor

4. Constellation Processing



Incremental

Generally, this option should not be switched on. If there are a lot of scans in a cluster, the constellation search will be faster if it is turned on, but usually there are no more than 100 scans per cluster and the constellation search is still quite fast.

Weak configurations

If the targets have been positioned on a line or in a similar way to this -> Weak configurations of the targets should be switched on.

5. Adjustment

Variance components

With the variance component estimation PointCab tries to obtain a variance factor of 1 after registration. The variance factor is at the bottom of the network adjustment report. It is the ratio between the observed residual errors and the estimated session accuracies (baseline). Ideally, the variance factor should be 1.0. This indicates that the estimated errors correspond well to the observed errors. Standard deviations are pessimistic.

In most cases a value greater than 1.0 indicates that the observed errors are greater than the estimated accuracies (i.e. standard deviations are optimistic). Therefore low variance factors are usually desirable. To obtain a variance factor close to 1.0, the a priori accuracy of targets must be correctly estimated.

Single spheres and checkerboard targets should therefore be very accurate (normally they are accurate to 1-2 mm). If the user needs to click on identical points, they will be less accurate and the variance factor will not be close to 1.0. If the variance components box is ticked in the Job Editor, they will be written into the PDF file (registration report). This comparison is read as follows: the a priori accuracy of spheres was estimated at 1 mm, but in reality the accuracy was 0.93 mm (average accuracy for all observations).