How to Read a DJI Terra Quality Report

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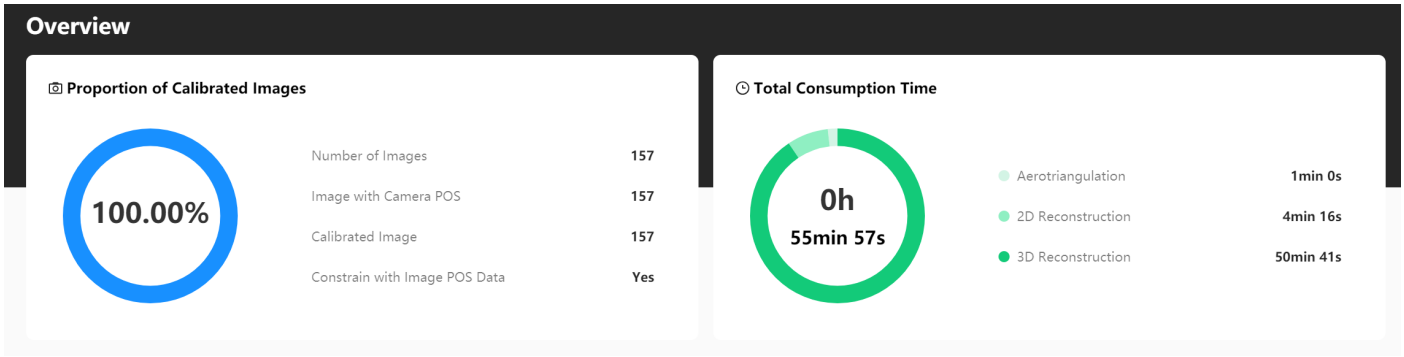
Overview



Proportion of Calibrated Images: the proportion of calibrated images used for aerotriangulation among the total number of imported images.

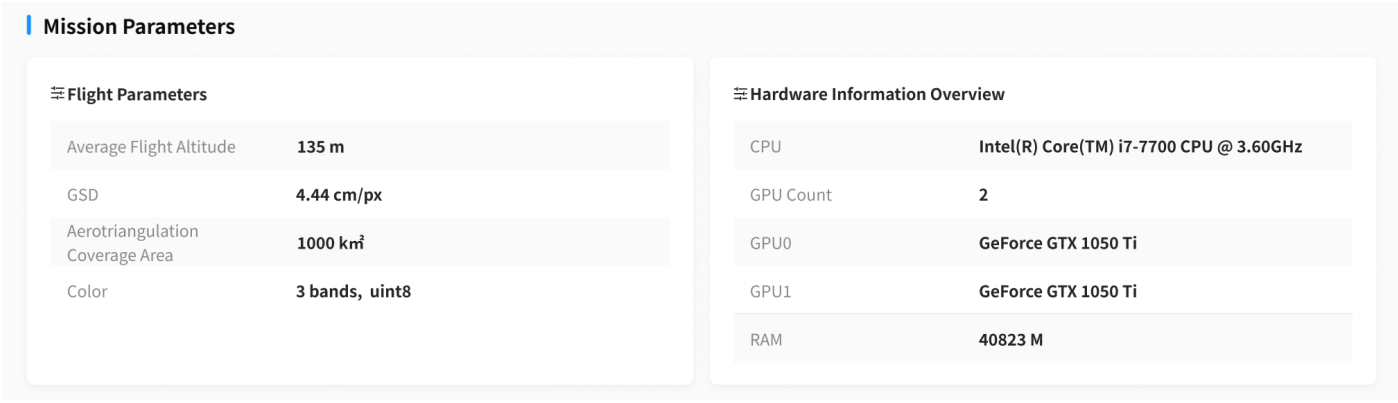
Number of Images: the total number of images given as input.

Image with Camera POS**:** the number of images with GPS or RTK information.

Calibrated Images: the number of reconstructed images.

Constrain with Image POS Data: whether the aerotriangulation process uses the position information in the image as a constraint. If the control point belongs to a known coordinate system, enabling this constraint can greatly reduce the dependence on the number of control points. If the control point belongs to a local coordinate system and the reconstruction output accuracy cannot meet the requirement, the user can disable the constraint. When this constraint is disabled, more control points are needed to ensure the reconstruction accuracy.

Total Consumption Time: the total time consumed by Aerotriangulation SFM (aerotriangulation consumption), 2D Reconstruction, and 3D Reconstruction.



Average Flight Altitude: the aircraft flight altitude relative to the ground of the mapping area.

GSD: Ground Sample Distance (GSD) is the distance between adjacent pixel centers measured on the ground.

Aerotriangulation Coverage Area: the mapping coverage area calculated by aerotriangulation.

Color: image channels, value type.

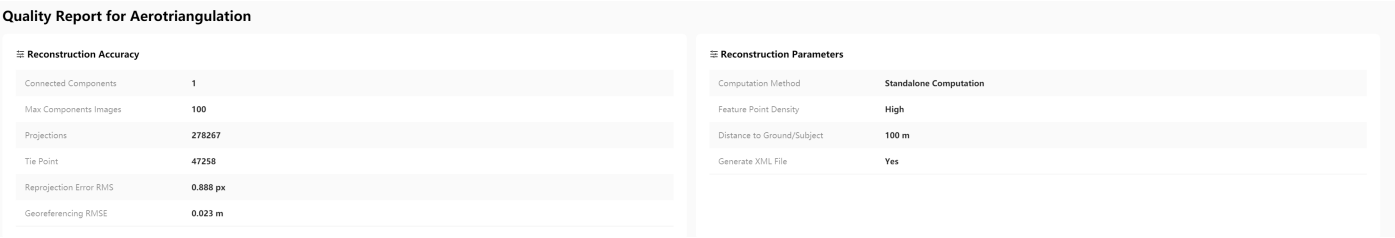
CPU: Central Processing Unit model.

GPU Count: graphics card quantity.

GPU: graphics card model.

RAM: RAM size.

Quality Report for Aerotriangulation



Quality Report for Aerotriangulation

Reconstruction Accuracy

Connected Components	1
Max Components Images	100
Projections	278267
Tie Point	47258
Reprojection Error RMS	0.888 px
Georeferencing RMSE	0.023 m

Reconstruction Parameters

Computation Method	Standalone Computation
Feature Point Density	High
Distance to Ground/Subject	100 m
Generate XML File	Yes

Connected Components: the aerotriangulation output is divided into several independent components. Ideally, the number of connected components should be 1. If there are multiple connected components, it means the image overlap rate in some areas is not enough, or the difference between flights is too large. Take additional photos in areas with insufficient image overlap or collect data at times when lighting conditions are similar.

Max Component Images: the number of images in the maximum component area.

Projections: the total projection number of sparse point clouds of aerotriangulation. In general, the larger the number of projections, the stronger the connection between the photos and the better the accuracy of the aerotriangulation output. More projections require more aerotriangulation time and memory.

Tie Points: the number of sparse points in aerotriangulation. Areas with rich textures have more tie points. In general, the more tie points, the stronger the connection between photos and the better the accuracy of the aerotriangulation output. More tie points require more aerotriangulation time and memory.

Reprojection Error RMS: an indicator to evaluate precision for aerotriangulation. It is a necessary condition for evaluating the accuracy and precision of the final output, which is usually less than 1 pixel.

Georeferencing RMSE: the root mean square error (RMSE) between reconstructed image position and image GPS position.

Computation Method: whether cluster computation or standalone computation is used.

Feature Point Density: the number of feature points extracted. High/Low.

Distance to Ground/Subject: the distance from the camera to the ground or subject when collecting data.

Generate XML File: generate XML file or not. Yes/No.

GCP Error

Control Point

Parameters	dx(m)	dy(m)	dz(m)	3D Error (m)	Vertical Error (m)	Horizontal Error (m)
Root Mean Square	**0.011**	**0.01**	**0.011**	**0.018**	**0.011**	**0.015**
Median	**0.006**	**0.004**	**-0.008**	**0.02**	**0.008**	**0.017**

Check Point

Parameters	dx(m)	dy(m)	dz(m)	3D Error (m)	Vertical Error (m)	Horizontal Error (m)
Root Mean Square	**0.017**	**0.01**	**0.021**	**0.029**	**0.021**	**0.02**
Median	**-0.003**	**-0.009**	**0.02**	**0.025**	**0.02**	**0.021**

Root Mean Square: Georeferencing Root Mean Square Error between the computed image location and the location recorded in the image.

Median: Median error between the computed image location and the location recorded in the image.

3D Error: the distance between the given point location and the estimated 3D location.

Horizontal Error: the horizontal distance between the given 3D location and the estimated 3D location.

Vertical Error: the vertical distance between the given 3D location and estimated 3D location.

Error Details

Control Point Error

ID	Marked Photos	Visible Photos	Reprojection Error RMS (px)	Forward Intersection Error (m)	Horizontal Error (m)	Vertical Error (m)	3D Error (m)	dx(m)	dy(m)	dz(m)
CT1	**10**	**19**	**0.62**	**0.017**	**0.017**	**0.008**	**0.018**	**0.008**	**0.015**	**-0.008**
CT3	**7**	**8**	**0.411**	**0.013**	**0.008**	**0.02**	**0.021**	**-0.005**	**-0.007**	**-0.02**
CT5	**10**	**16**	**0.584**	**0.017**	**0.017**	**0.01**	**0.02**	**-0.015**	**-0.009**	**-0.01**
CT7	**10**	**15**	**0.712**	**0.019**	**0.02**	**0.005**	**0.021**	**0.016**	**0.012**	**-0.005**
CT9	**10**	**15**	**0.268**	**0.007**	**0.007**	**0.003**	**0.008**	**0.006**	**0.004**	**0.003**

Check Point Error

ID	Marked Photos	Visible Photos	Reprojection Error RMS (px)	Forward Intersection Error (m)	Horizontal Error (m)	Vertical Error (m)	3D Error (m)	dx(m)	dy(m)	dz(m)
CT2	**10**	**16**	**0.745**	**0.021**	**0.021**	**0.012**	**0.024**	**0.021**	**0.004**	**-0.012**
CT6	**10**	**16**	**0.657**	**0.016**	**0.015**	**0.02**	**0.025**	**-0.003**	**-0.015**	**0.02**
CT8	**10**	**11**	**0.805**	**0.022**	**0.023**	**0.027**	**0.036**	**-0.022**	**-0.009**	**0.027**

GCP: GCP (Groun1d Control Point) is a control point or check point used for map projection or aerial photography and surveying. The GCP is a pixel point with a known location on the ground and can be identified and measured in an image.

Control Point: the control point is a point with known coordinates. When constructing a 3D model, the control point provides constraints to optimize the aerotriangulation, which can improve the output

precision and accuracy.

Check Point: the check point does not provide constraints to optimize the aerotriangulation. The check point can be used to evaluate the output precision and accuracy.

Marked Photos: the number of marked photos when marking a control point or check point.

Visible Photos: the total number of photos that the control point or check point can be projected to. Invisible photos are excluded when the subject is blocked.

Reprojection Error RMS: the reprojection Root Mean Square Error in pixels. The smaller the value, the higher the precision of the control point or check point. This value is usually less than 1 pixel. If the value is greater than 1 pixel, it is recommended to check whether points are correctly marked, if necessary, adjust the location of marks.

Forward Intersection Error: Each mark of the same GCP will generate a ray in space. Ideally, the rays of these points will be strictly intersected at the position of the GCP in space, but due to the error of the marks, the accuracy of the position, and the attitude of the camera, these points cannot be perfectly intersected in the same position. The best point of intersection is to make the distances between the point and the above-mentioned rays the shortest. Forward Intersection Error is the RMS of the distances to rays, which is an indicator to evaluate the accuracy of the marks, camera position, and attitude.

Horizontal Error: the horizontal distance between the given 3D location and the estimated 3D location.

Vertical Error: the vertical distance between the given 3D location and the estimated 3D location.

dx, dy, dz: t1he Root Mean Square Error for X/Y/Z axis.

RTK Status

Status	Number of Images
Fix	**100**
Floating	**0**
Single	**0**
Other	**0**

Fix: positioning is within centimeter-level accuracy.

Floating: positioning is within decimeter-level accuracy.

Single: positioning is within meter-level accuracy.

Other: positioning is within meter-level accuracy.

Image Residuals for Camera

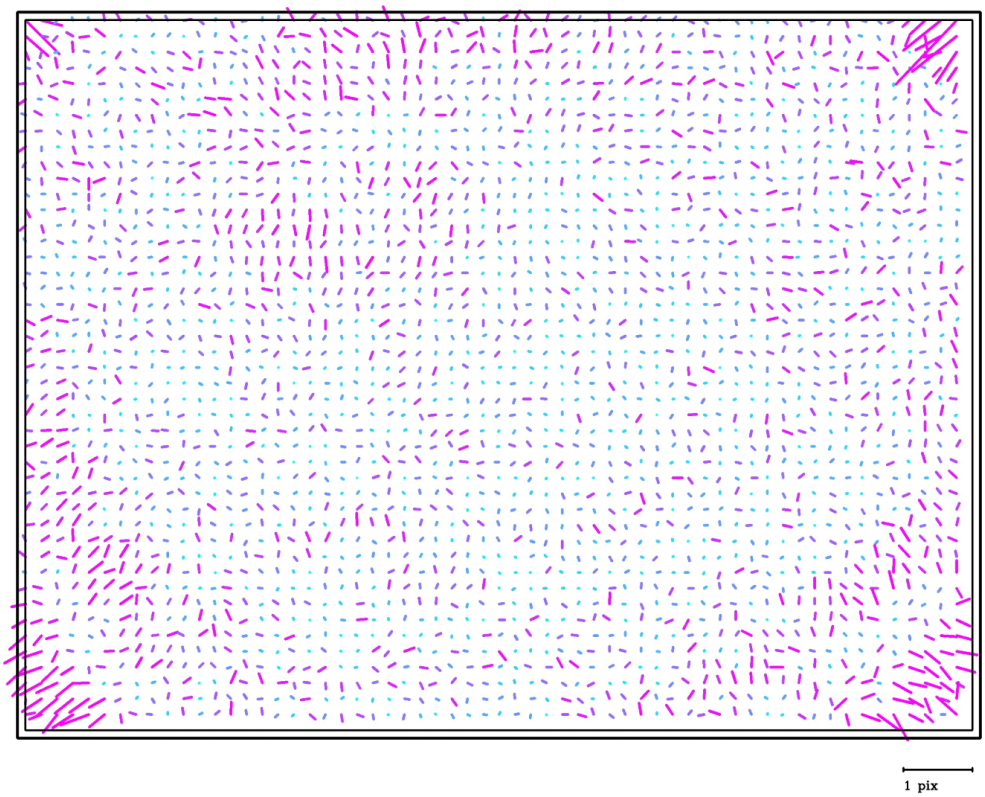


Image Residuals for Camera: Indicates the residual of the back-projection of tie points of aerotriangulation to each position of the camera sensor. In general, the smaller the image residual, the

better the calibration accuracy. For an ideal camera auto-calibration result, the line segments in image residuals are randomly directed and equally distributed, which does not have a strong directional, systematic, or obvious trend.

Camera Info

Camera Model	**FC6310R**
Camera SN	**16909bb8225a618457d1b63cca4d5098**
Camera Type	**Standard**
Fix Camera Parameters	**Not Fix**
Photo Resolution	**4864*3648**
Pre-calibration	**No**
Number of Photos	**100**

Camera Model: the model of the camera.

Camera SN: the serial number of the camera.

Lens SN: the serial number of the camera lens.

Camera Type: cameras can be divided into standard cameras and fisheye cameras based on the FOV. A fisheye camera is recommended when FOV is greater than 120° .

Fix Camera Parameters: In general, the camera will be automatically calibrated during the process of aerotriangulation to obtain more accurate auto-calibration results, certain requirements for the flight route need to be met. For example, Oblique Photography can be used to obtain optimal height accuracy. When there are calibration parameters of high accuracy, camera parameters can be fixed to reduce the requirements for flight routes. In this way, better reconstruction accuracy can be obtained, and the aerotriangulation speed and stability will also be improved to a certain extent. Note that if Fix Camera Parameters is applied, the accuracy of the given camera parameters needs to be very accurate. Otherwise, reconstruction errors such as poor reconstruction output accuracy or loss of images during

aerotriangulation will occur.

Photo Resolution: Photo resolution usually refers to the number of pixels a photo contains. The photo resolution is usually represented by two numbers, such as 4000 x 3000, indicating that the photo contains 4000 rows of pixels and 3000 columns of pixels, with a total of 12 million pixels.

Pre-calibration: whether the camera has completed precalibration before use. Yes/No.

Number of Photos: number of photos of the camera.

Camera Parameters (Block 0)

Camera Intrinsics

Parameters	Focal Length	Cx	Cy	K1	K2	K3	P1	P2
Initial	**3661.394**	**2421.066**	**1837.21**	**-0.267700974**	**0.109176141**	**-0.030773673**	**0.000452463**	**-0.00025342**
Optimized	**3652.085**	**2420.879**	**1837.179**	**-0.266653586**	**0.108652349**	**-0.030650142**	**0.00044965**	**-0.000252266**
Difference Value	**-9.309**	**-0.187**	**-0.032**	**0.001047388**	**-0.000523792**	**0.00012353**	**-0.000002813**	**0.000001155**

Covariance Matrix

	Error	Focal Length	Cx	Cy	K1	K2	K3	P1	P2
Focal Length	**0.074**	**1**	**-0.011**	**0.012**	**-0.408**	**0.289**	**-0.248**	**0.006**	**-0.014**
Cx	**0.061**	**-0.011**	**1**	**-0.051**	**-0.006**	**0.007**	**-0.008**	**-0.004**	**-0.001**
Cy	**0.054**	**0.012**	**-0.051**	**1**	**0.005**	**-0.004**	**0.004**	**-0.13**	**-0.032**
K1	**0.00005362**	**-0.408**	**-0.006**	**0.005**	**1**	**-0.963**	**0.906**	**0.007**	**-0.005**
K2	**0.000126428**	**0.289**	**0.007**	**-0.004**	**-0.963**	**1**	**-0.983**	**-0.01**	**0.009**
K3	**0.00008661**	**-0.248**	**-0.008**	**0.004**	**0.906**	**-0.983**	**1**	**0.016**	**-0.011**
P1	**0.000002148**	**0.006**	**-0.004**	**-0.13**	**0.007**	**-0.01**	**0.016**	**1**	**0.027**
P2	**0.000002206**	**-0.014**	**-0.001**	**-0.032**	**-0.005**	**0.009**	**-0.011**	**0.027**	**1**

Camera Parameters (Block 0): block count starts from 0. Camera Parameters of the camera intrinsics and Covariance Matrix data below are calculated based on the first block.

Camera Intrinsics: Camera intrinsic parameters describe the optical characteristics of the camera, such as focal length, principal point coordinates, and lens distortion.

Covariance Matrix: Coefficient and Correlation Matrix (Matrix for measuring the coefficients and correlation of camera intrinsic parameters).

F: Camera Focal Length.

Cx, Cy: Principal Point Coordinates. Cx is the X coordinate of the image center. Cy is the Y coordinate

of the image center. Point (0,0) is in the upper left corner of the image.

K1, K2, K3: camera radial distortion parameters.

P1, P2: camera tangential distortion parameters.

Initial: initial camera intrinsic parameters.

Optimized: optimized camera intrinsic parameters.

Difference Value: difference value between initial camera intrinsic parameters and optimized camera intrinsic parameters.

Quality Report for 2D Reconstruction

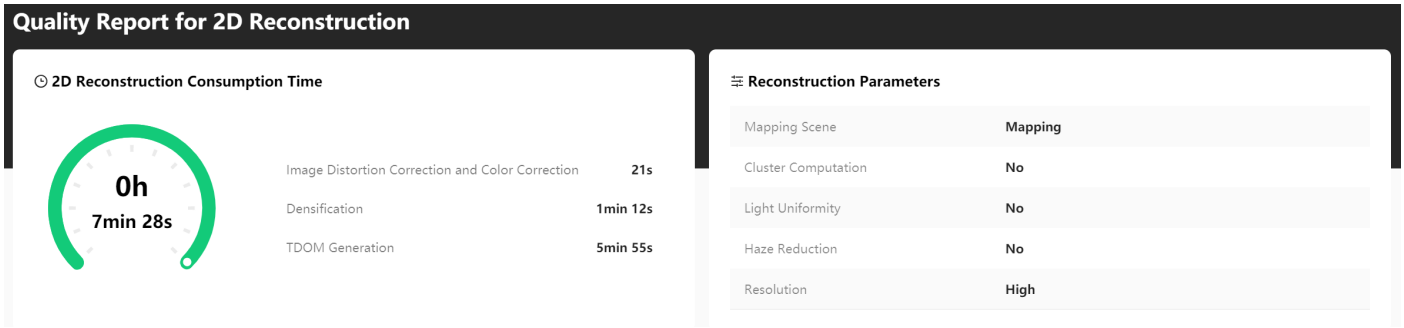


Image Distortion Correction and Color Correction: time consumed by image distortion correction and color correction.

Densification: densification time.

TDOM Generation: the time when TDOM is generated.

Mapping Scene: reconstruction scenarios set in DJI Terra. Mapping-Field-Fruit Tree.

Cluster Computation: whether cluster computation is enabled in DJI Terra. Yes/No.

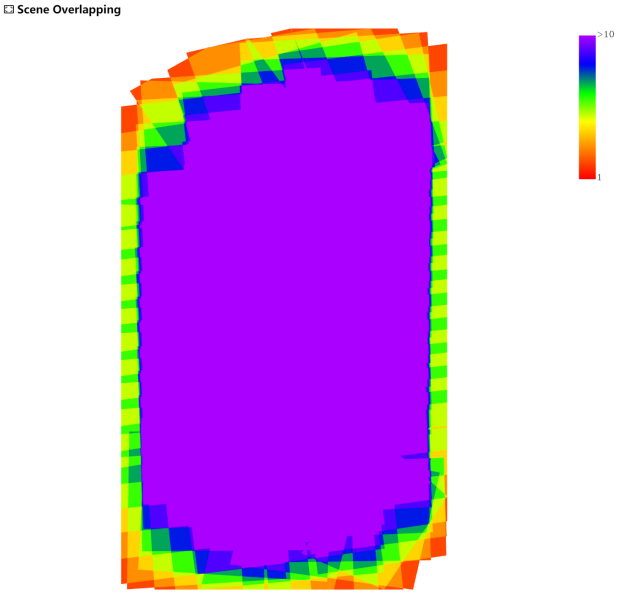
Light Uniformity: whether this feature is enabled in DJI Terra. Enabling this feature will improve reconstruction effects under a strong light environment of agricultural scenarios. Yes/No.

Haze Reduction: whether this feature is enabled in DJI Terra. Enabling this feature will improve reconstruction effects for the hazy scenes. Yes/No.

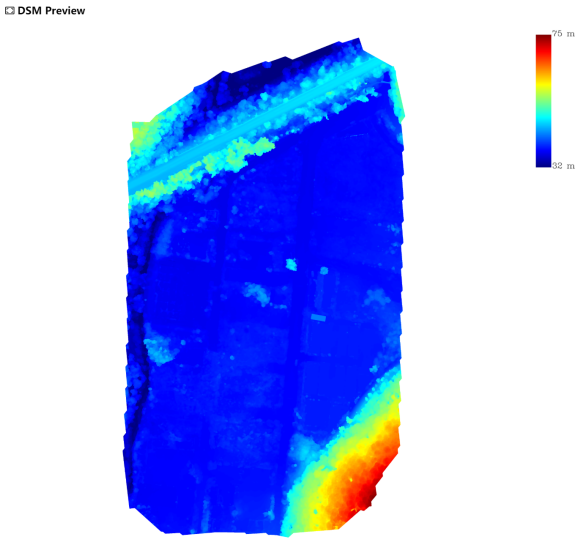
Resolution: image resolution used for reconstruction. High refers to the original resolution, Medium refers to 1/2 of the original resolution, and Low refers to 1/4 of the original resolution.

TDOM GSD: the distance between adjacent pixel centers in TDOM measured on the ground (in meters).

TDOM Mapping Coverage: coverage area (in square kilometers).

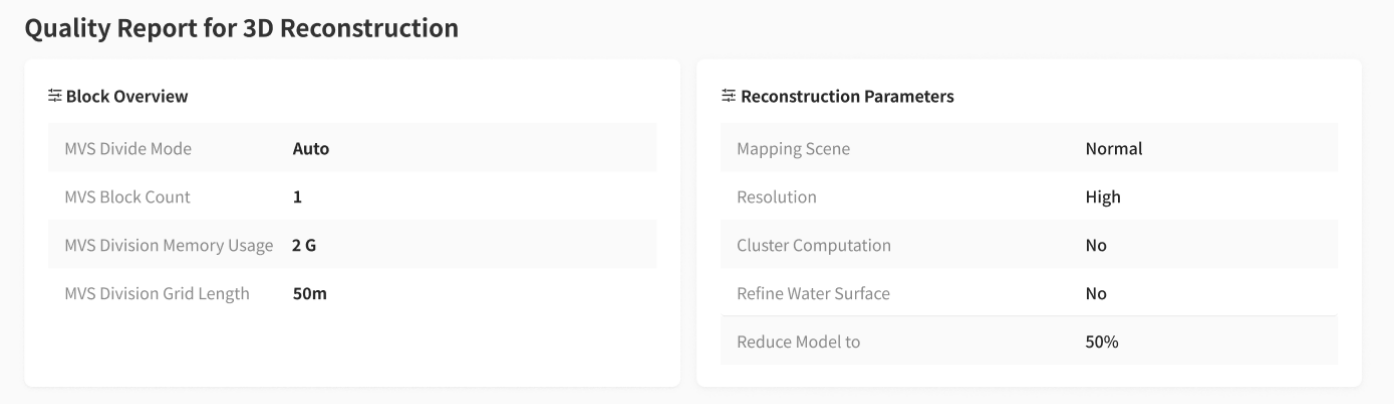


Scene Overlapping: image overlap coverage of an area, which means how many images are captured in different zones of an area. Different colors indicate different image overlap rates.



DSM: Digital Surface Model is obtained by calculating the differences between the high-resolution DEM (Digital Elevation Model) based on remote sensing or photogrammetry technology and the height of different objects.

Quality Report for 3D Reconstruction



MVS: Multi-View Stereo Reconstruction technology, which can restore 3D geometric information from images taken from multiple perspectives. MVS is a major step for the 3D Reconstruction of DJI Terra.

MVS Divide Mode: blocking splitting modes. Auto-Custom Size-Custom Side Length.

MVS Division Memory Usage: customize memory usage.

MVS Division Grid Length: customize grid length.

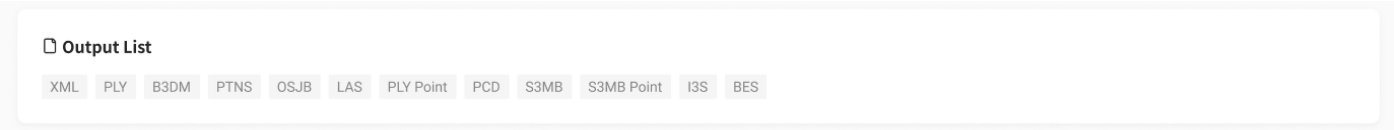
MVS Block Count: block count in 3D Reconstruction.

Mapping Scene: reconstruction scenarios set in DJI Terra. Normal/Circle/Power Lines

Resolution: Image resolution for reconstruction. High refers to the original resolution, Medium refers to 1/2 of the original resolution, and Low refers to 1/4 of the original resolution.

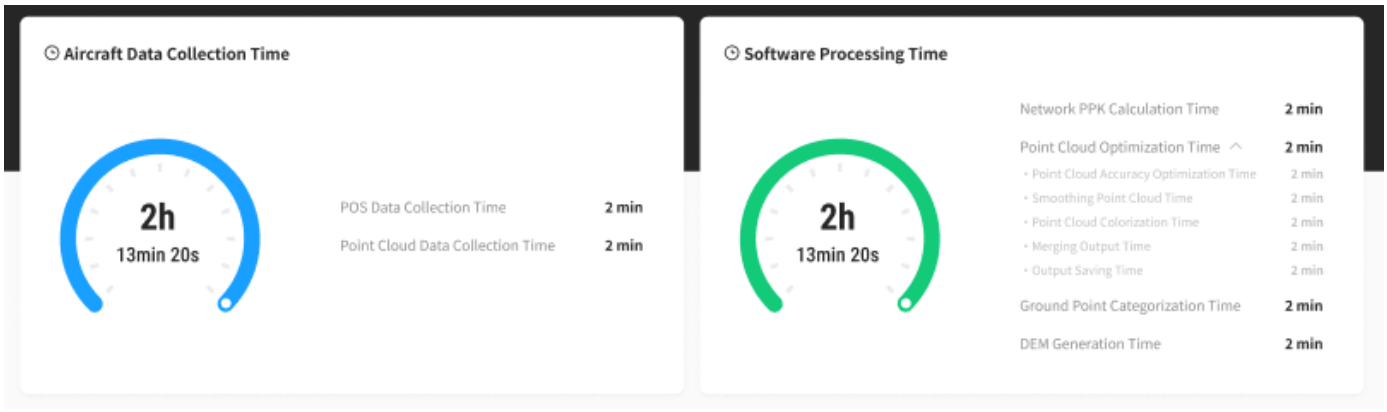
Cluster Computation: whether cluster computation is enabled in DJI Terra. Yes/No.

Refine Water Surface: whether Refine Water Surface is enabled in DJI Terra. Enabling this feature will refine water surfaces. Yes/No.



Output List: output formats generated by 3D Reconstruction.

DJI Terra Quality Report for LiDAR Point Cloud Processing



Aircraft Data Collection Time: Time consumed by collecting data (such as aircraft attitude data, LiDAR point cloud data) of all flights (Notes: Attitude data and LiDAR point cloud data are collected at the same time, so aircraft data collection time is not the sum of POS Data Collection Time and Point Cloud Data Collection Time).

POS Data Collection Time: Time consumed by collecting aircraft attitude data of all flights.

Point Cloud Data Collection Time: Time consumed by collecting LiDAR point cloud data of all flights.

Software Processing Time: Time consumed by performing reconstruction on DJI Terra.

Network PPK Calculation Time: Time consumed by network PPK calculation. This parameter will not be displayed if the PPK calculation function is disabled.

Point Cloud Optimization Time: Time consumed by point cloud optimization.

Point Cloud Accuracy Optimization Time: Time consumed by optimizing point cloud accuracy. This parameter will not be displayed if the point cloud accuracy optimization function is disabled.

Smoothing Point Cloud Time: Time consumed by smoothing point cloud. This parameter will not be displayed if the smoothing point cloud function is disabled.

Point Cloud Colorization Time: Time consumed by RGB colorization for LiDAR point cloud.

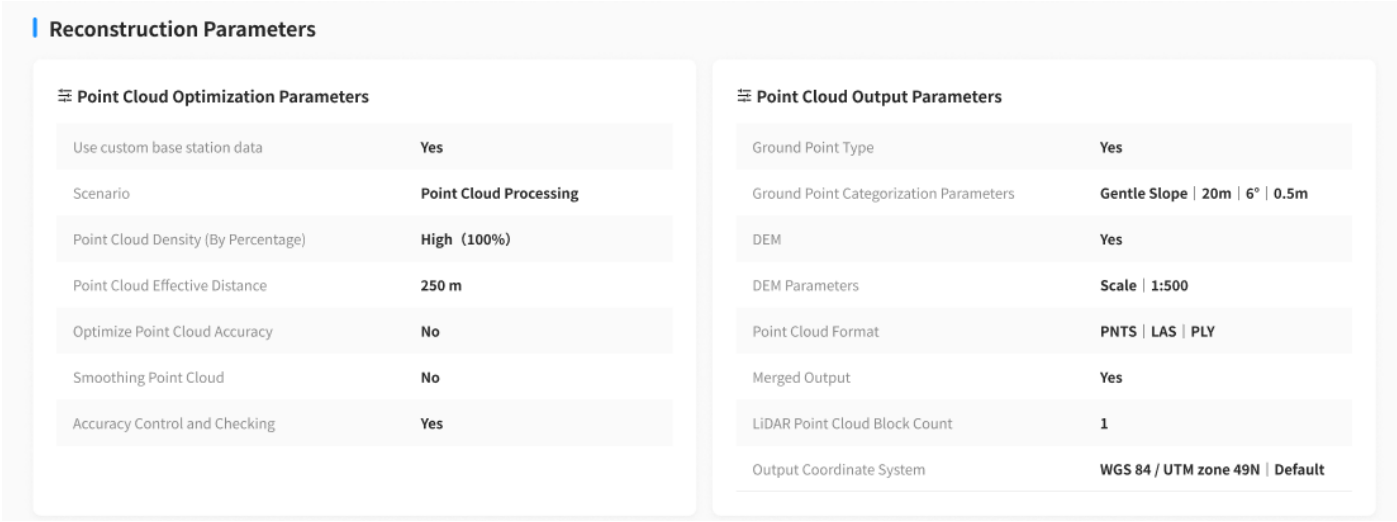
Merging Output Time: Time consumed by merging point clouds. This parameter will not be displayed if the merging point cloud function is disabled.

Output Saving Time: Time consumed by saving point cloud output (in PNTS, LAS, PLY, PCD, S3MB formats).

BEAM

Point Categorization Time: Time consumed by categorizing ground points. This parameter will not be displayed if the ground point categorization function is disabled.

DEM Generation Time: Time consumed by generating DEM. This parameter will not be displayed if the DEM function is disabled.



Use Custom Base Station Data: Whether custom base station data is used during the reconstruction process.

Scenario: Usage scenario specified before reconstruction, including point cloud processing and LiDAR calibration.

Point Cloud Density (By Percentage): Specified point cloud density during LiDAR point cloud processing before reconstruction. High: 100% of point clouds are used. Medium: 25% of point clouds are used. Low: 6.25% of point clouds are used.

Point Cloud Effective Distance: Point cloud effective distance specified before reconstruction. Point clouds beyond this distance will be filtered during post-processing. Default value is 300 meters.

Optimize Point Cloud Accuracy: Whether point cloud accuracy is optimized during the reconstruction process.

Smooth Point Cloud: Whether point clouds are smoothed during the reconstruction process.

Accuracy Control and Check: Whether check points are used to check the accuracy of reconstructed point clouds.

Ground Point Type: Whether ground points or non-ground points are categorized during the reconstruction process.

Ground Point Categorization Parameters: Specified parameters for ground point categorization. Parameters are empty if the ground point categorization function is disabled.

Ground Type: Ground type of the data used for reconstruction (e.g. gentle slope).

Building Max Diagonal: The diagonal of the biggest building in the scenario (e.g. 20 m).

Iteration Angle: Iteration angle during ground point categorization process (e.g. 6°).

Iteration Distance: Iteration distance during ground point categorization process (e.g. 0.5 m).

DEM(Digital Elevation Model): Whether DEM is generated during reconstruction.

DEM Parameters: DEM parameters specified during the reconstruction process. This parameter is empty if the DEM is disabled.

By Scale: Specified scale for the generated DEM (e.g. 1:500).

By GSD: Specified resolution for the generated DEM (e.g. 0.5 m)

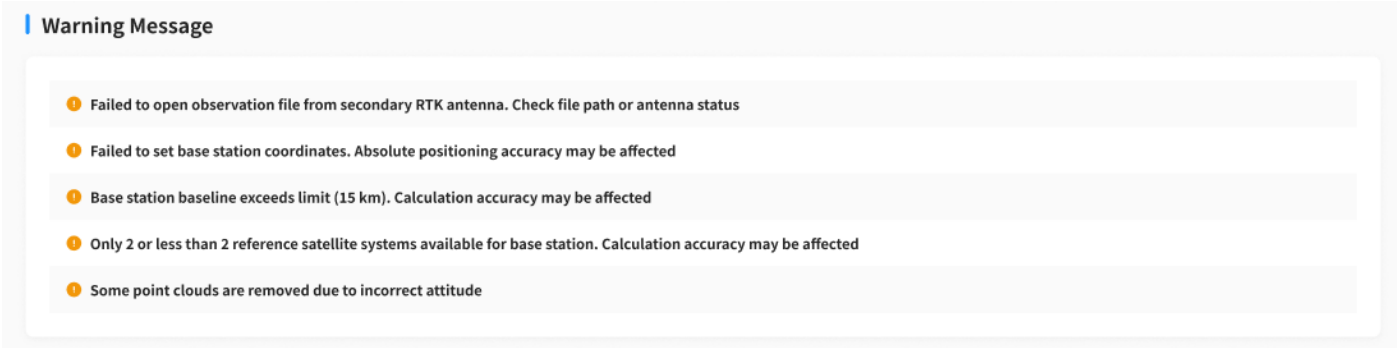
Point Cloud Format: Specified file type of point clouds generated during reconstruction.

Merged Output: Whether point cloud results for different regions are merged during reconstruction.

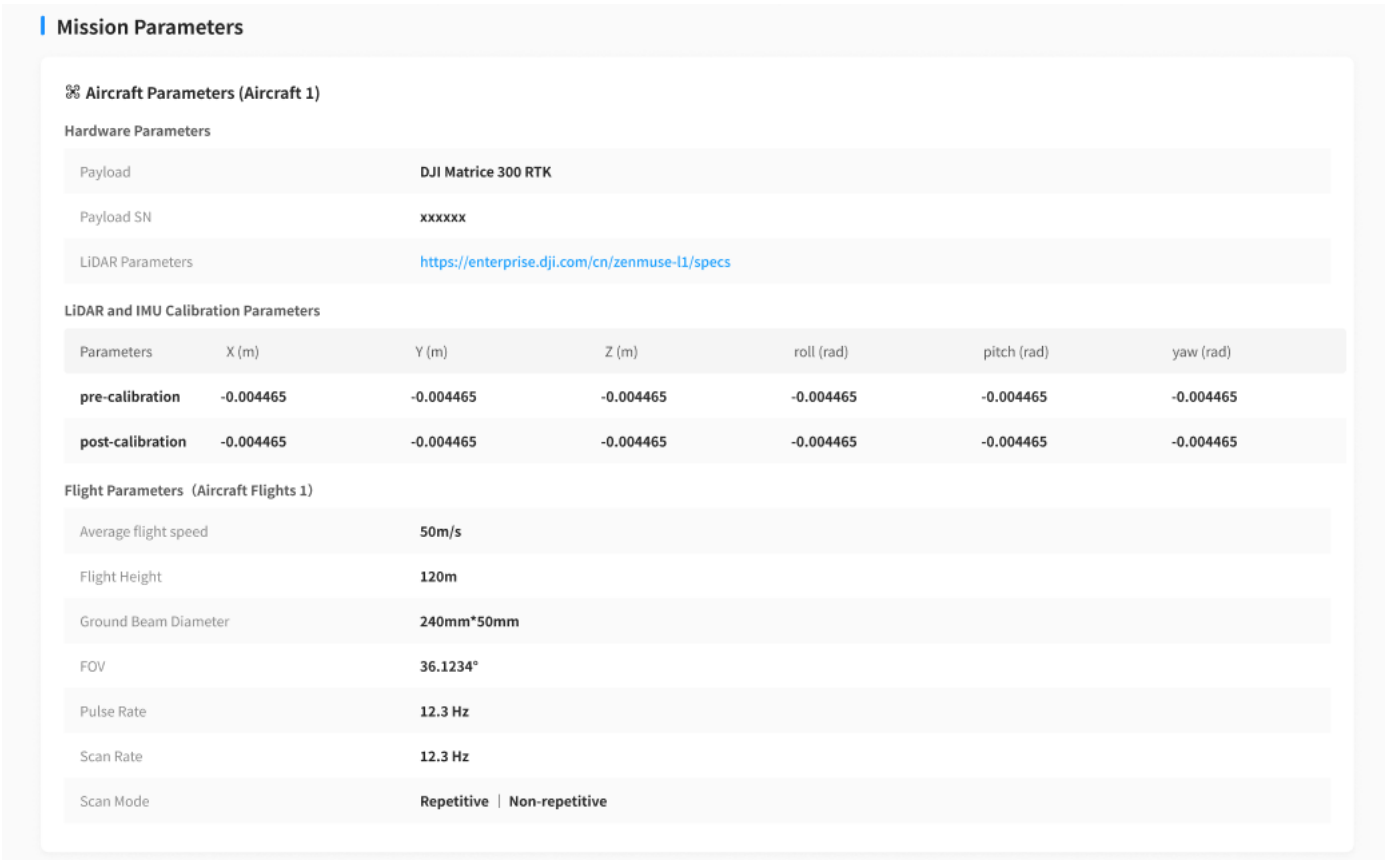
LiDAR Point Cloud Block Count: Specified block count of point cloud results after reconstruction.

Output Coordinate System: Specified output coordinate system of point cloud results after

reconstruction.



Warning Message: Warning messages generated during point cloud reconstruction. They are used to indicate the reasons that may lead to low accuracy of point cloud output or loss of point clouds. Warning message will not appear if data is processed normally.



Mission Parameters: Hardware parameters, LiDAR and IMU calibration parameters, and flight parameters displayed based on each flight.

Payload: LiDAR payload name of this flight.

Payload SN: LiDAR payload SN of this flight.

LiDAR Parameters: Open provided website to check LiDAR payload information of this flight.

LiDAR and IMU Calibration Parameters: The relative three-axis distance and angle between the LiDAR payload position and the IMU position. When LiDAR calibration is enabled, users can compare parameter values before and after the calibration.

Before Calibration: Parameter values for LiDAR and IMU before calibration.

After Calibration: Parameter values for LiDAR and IMU after calibration.

Average Flight Speed: Average flight speed during the data collection process of this flight.

Flight Height: The height relative to the take-off point when this flight starts to collect point cloud data.

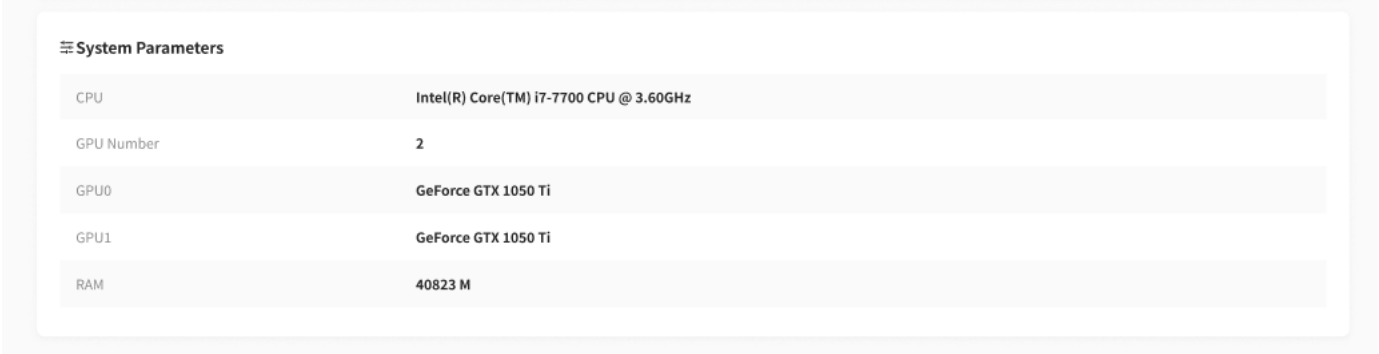
Ground Beam Diameter: Size of the radar spot projected onto the ground during data collection process of this flight.

FOV: Scanning FOV of LiDAR during data collection process of this flight.

Pulse Rate: LiDAR pulse rate during data collection process of this flight.

Scan Rate: Max dot frequency of LiDAR. Max dot frequency = Pulse rate × Times of returned light.

Scan Mode: Scan mode (Repetitive/Non-repetitive) of LiDAR during data collection process of this flight.



System Parameters: Hardware configuration parameters of computer used during the 3D reconstruction process.

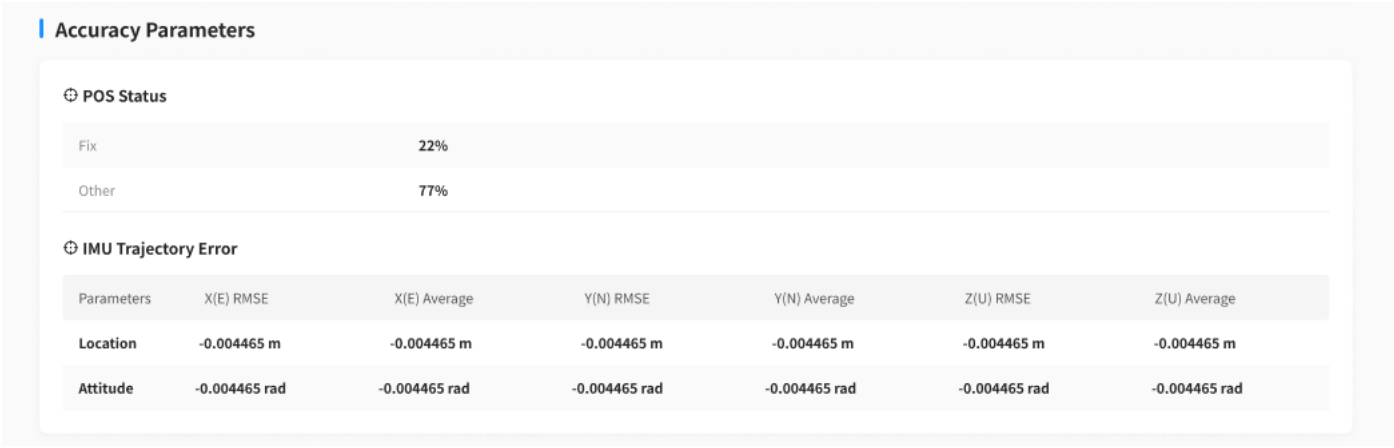
CPU: CPU model of computer.

GPU Count: GPU count of computer.

GPU0: Model of No.0 GPU.

GPU1: Model of the first GPU.

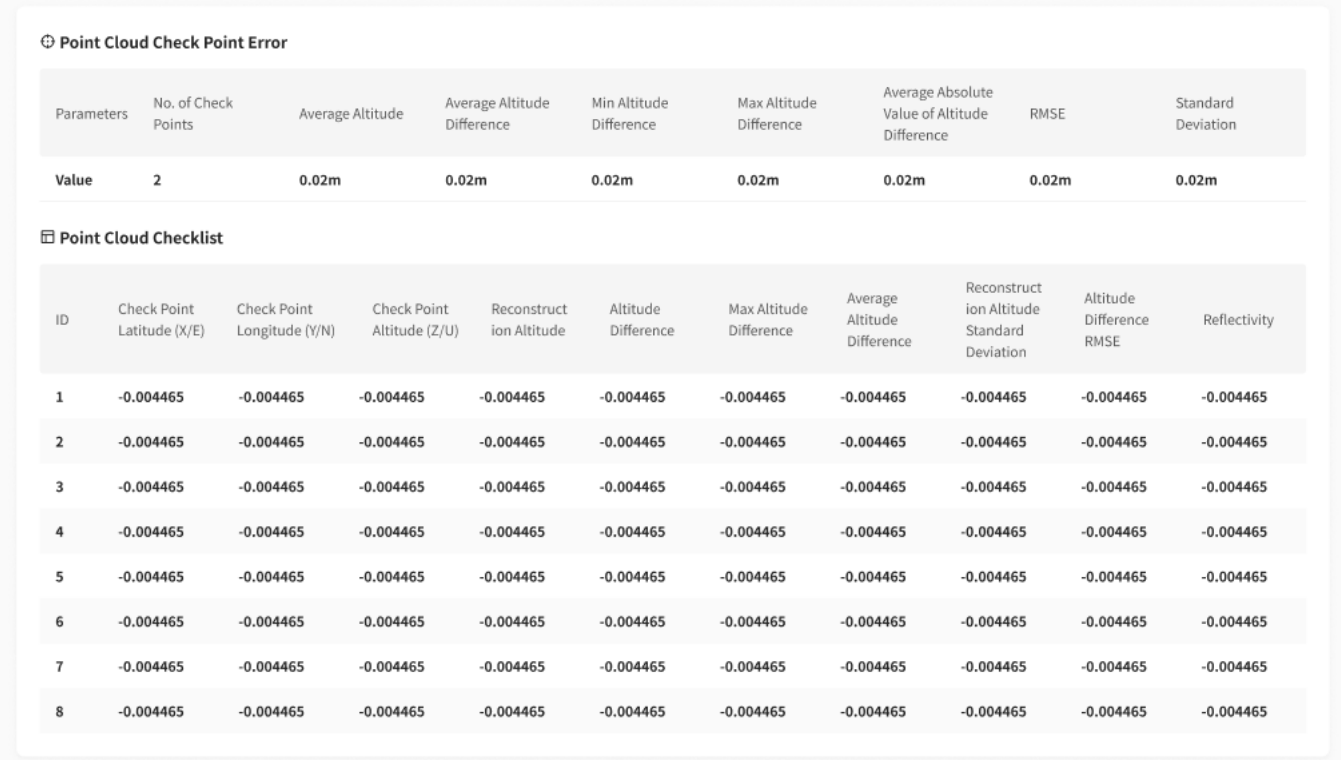
RAM: Running memory of computer.



POS Status: Positioning accuracy of the aircraft when collecting data. Fix means that positioning is within centimeter-level accuracy. Other positioning accuracy does not reach centimeter level and the accuracy is lower.

Fix: Percentage of the time when a fixed solution can be obtained to the total data collection time. The larger the value, the more accurate the positioning during the data collection process.

Other: Percentage of the time when a fixed solution cannot be obtained to the total data collection time.



Point Cloud Check Point Error

Parameters	No. of Check Points	Average Altitude	Average Altitude Difference	Min Altitude Difference	Max Altitude Difference	Average Absolute Value of Altitude Difference	RMSE	Standard Deviation
Value	**2**	**0.02m**	**0.02m**	**0.02m**	**0.02m**	**0.02m**	**0.02m**	**0.02m**

Point Cloud Checklist

ID	Check Point Latitude (X/E)	Check Point Longitude (Y/N)	Check Point Altitude (Z/U)	Reconstruction Altitude	Altitude Difference	Max Altitude Difference	Average Altitude Difference	Reconstruction Altitude Standard Deviation	Altitude Difference RMSE	Reflectivity
1	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
2	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
3	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
4	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
5	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
6	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
7	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
8	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465

Point Cloud Check Point Error: Shows the reconstruction error of all imported check points. Altitude difference = Reconstruction altitude − Check point altitude.

No. of Check Points: Imported number of check points.

Average Altitude: Average altitude of all imported check points.

Average Altitude Difference: Average altitude difference of all imported check points.

Min Altitude Difference: Minimum altitude difference of all imported check points.

Max Altitude Difference: Maximum altitude difference of all imported check points.

Average Absolute Altitude Difference: Average absolute altitude difference of all imported check points.

RMSE: RMSE of altitude differences of all imported check points.

Standard Deviation: Standard deviation of altitude differences of all imported check points.

Point Cloud Check Point List: Shows the reconstruction error of every imported check point. Parameter values of check points and reconstructed points will be used to calculate the accuracy

of items in the check point list.

ID: ID name of check point.

Check Point Latitude (X/E): Latitude of the check point.

Check Point Longitude (Y/N): Longitude of the check point.

Check Point Altitude (Z/U): Altitude of the check point.

Reconstruction Altitude: Reconstruction altitude of the check point. The average altitude of all reconstructed points within a specific region for the check point.

Altitude Difference: Difference between check point altitude and reconstructed altitude.

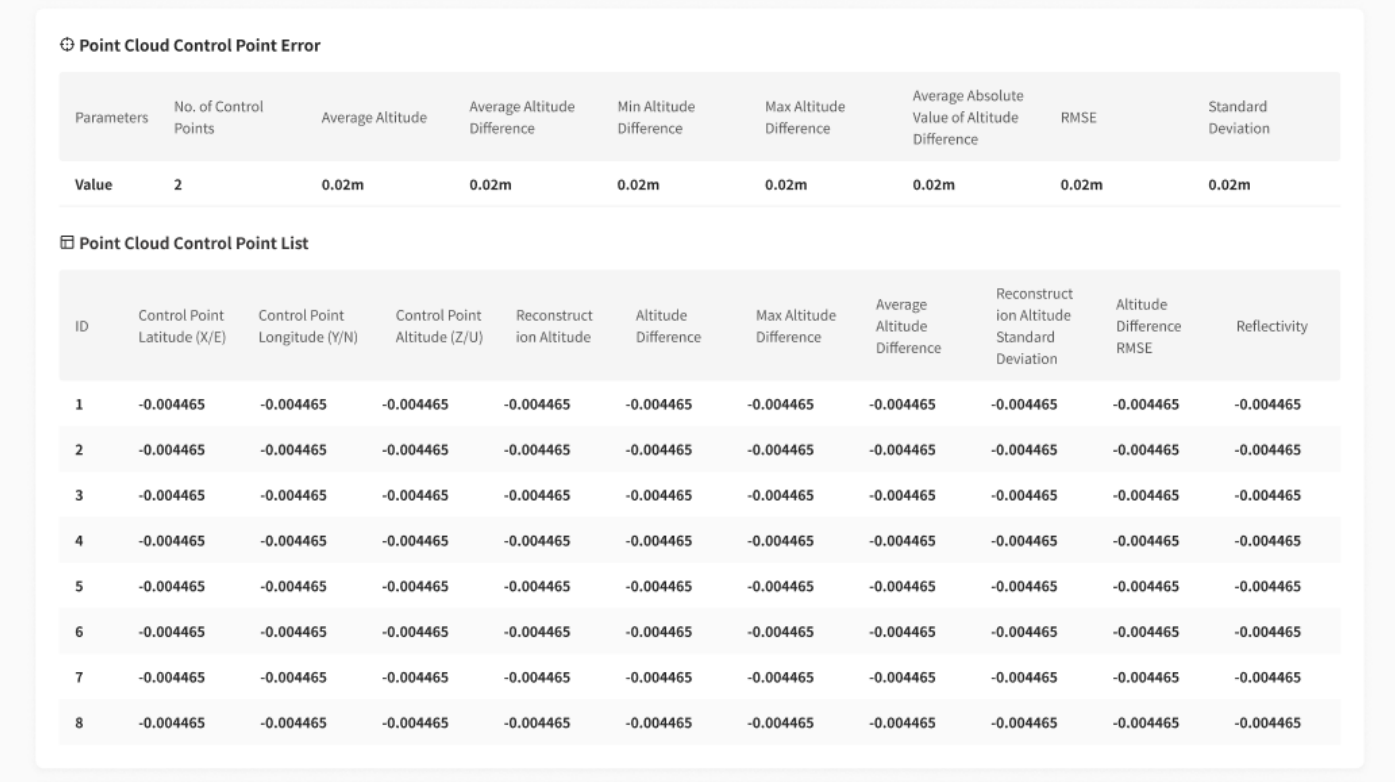
Max Altitude Difference: Maximum difference between check point altitude and altitudes of all reconstructed points within a specific region for the check point.

Average Altitude Difference: Average difference between check point altitude and altitudes of all reconstructed points within a specific region for the check point.

Reconstruction Altitude Standard Deviation: Standard deviation of altitudes of all reconstructed points within a specific region for the check point.

Altitude Difference RMSE: RMSE of altitude differences between check point altitude and altitudes of all reconstructed points within a specific region for the check point.

Reflectivity: Average reflectivity of all reconstructed points within a specific region for the check point.



Point Cloud Control Point Error

Parameters	No. of Control Points	Average Altitude	Average Altitude Difference	Min Altitude Difference	Max Altitude Difference	Average Absolute Value of Altitude Difference	RMSE	Standard Deviation
Value	2	0.02m	0.02m	0.02m	0.02m	0.02m	0.02m	0.02m

Point Cloud Control Point List

ID	Control Point Latitude (X/E)	Control Point Longitude (Y/N)	Control Point Altitude (Z/U)	Reconstruction Altitude	Altitude Difference	Max Altitude Difference	Average Altitude Difference	Reconstruction Altitude Standard Deviation	Altitude Difference RMSE	Reflectivity
1	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
2	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
3	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
4	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
5	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
6	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
7	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
8	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465

Point Cloud Control Point Error: Reconstruction error of all imported control points. Altitude difference = Reconstructed altitude − Control point altitude.

No. of Control Points: Number of imported control points.

Average Altitude: Average altitude of all imported control points.

Average Altitude Difference: Average altitude difference of all imported control points.

Min Altitude Difference: Minimum altitude difference of all imported control points.

Max Altitude Difference: Maximum altitude difference of all imported control points.

Average Absolute Value of Altitude Difference: Average absolute value of altitude difference of all imported control points.

RMSE: RMSE of altitude differences of all imported control points.

Standard Deviation: Standard deviation of altitude difference of all imported control points.

Point Cloud Control Point List: Shows the reconstruction error of every imported control point. Parameter values of control points and reconstructed points will be used to calculate the accuracy of items in the control point list.

ID: ID name of control point.

Control Point Latitude (X/E): Latitude of the control point.

Control Point Longitude (Y/N): Longitude of the control point.

Control Point Altitude (Z/U): Altitude of the control point.

Reconstruction Altitude: Reconstruction altitude of control point. Average altitude of all reconstructed points within a specific region for the control point.

Altitude Difference: Altitude difference between control point altitude and reconstructed altitude.

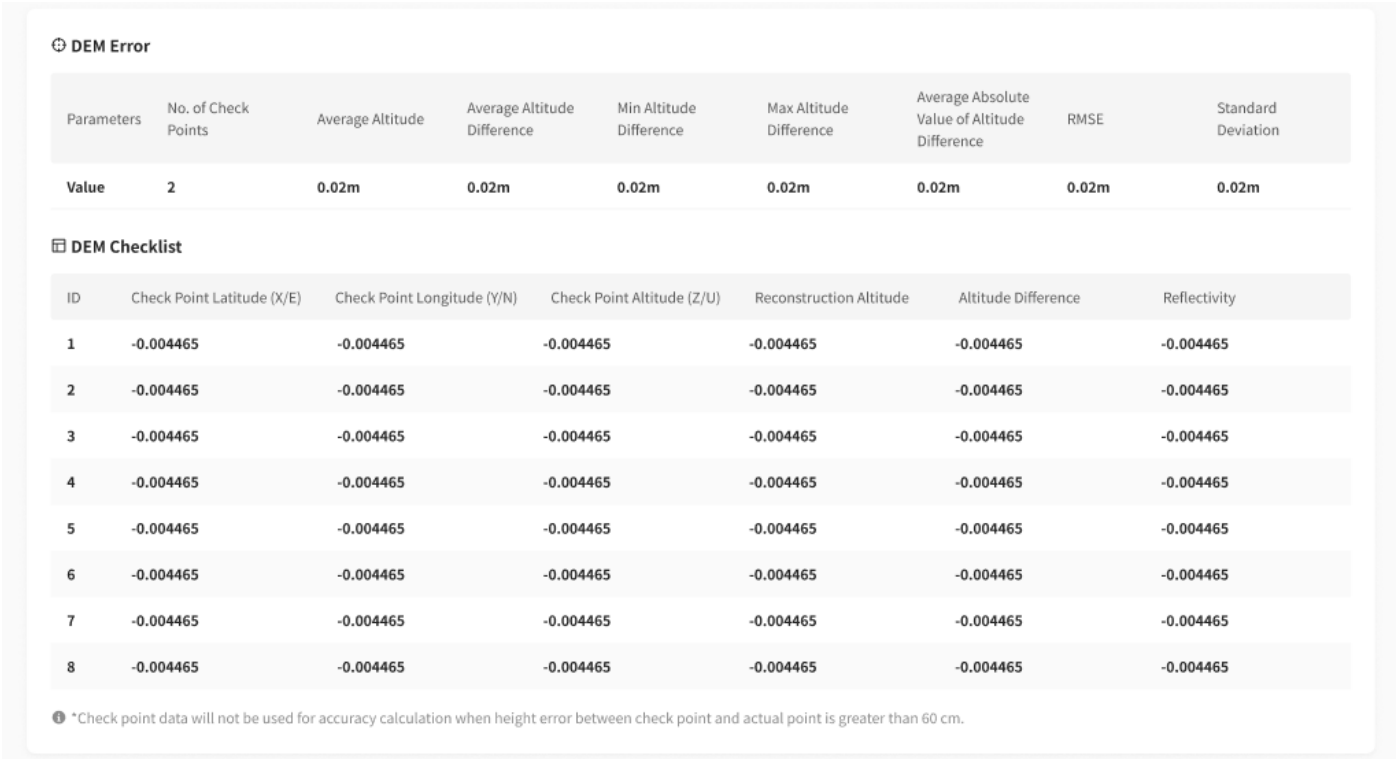
Max Altitude Difference: Maximum difference between control point altitude and altitudes of all reconstructed points within a specific region for the control point.

Average Altitude Difference: Average difference between control point altitude and altitudes of all reconstructed points within a specific region for the control point.

Reconstruction Altitude Standard Deviation: Standard deviation of altitudes of all reconstructed points within a specific region for the control point.

Altitude Difference RMSE: RMSE of altitude differences between control point altitude and altitudes of all reconstructed points within a specific region for the control point.

Reflectivity: Average reflectivity of all reconstructed points within a specific region for the control point.



DEM Error

Parameters	No. of Check Points	Average Altitude	Average Altitude Difference	Min Altitude Difference	Max Altitude Difference	Average Absolute Value of Altitude Difference	RMSE	Standard Deviation
Value	2	0.02m	0.02m	0.02m	0.02m	0.02m	0.02m	0.02m

DEM Checklist

ID	Check Point Latitude (X/E)	Check Point Longitude (Y/N)	Check Point Altitude (Z/U)	Reconstruction Altitude	Altitude Difference	Reflectivity
1	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
2	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
3	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
4	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
5	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
6	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
7	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465
8	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465	-0.004465

*Check point data will not be used for accuracy calculation when height error between check point and actual point is greater than 60 cm.

DEM Error: DEM reconstruction error of all imported check points. DEM altitude difference = DEM reconstruction altitude − Check point altitude.

No. of Check Points: Number of imported check points.

Average Altitude: Average altitude of all imported check points.

Average Altitude Difference: Average value of DEM altitude differences of all imported check points.

Min Altitude Difference: Minimum value of DEM altitude differences of all imported check points.

Max Altitude Difference: Maximum value of DEM altitude differences of all imported check points.

Average Absolute Value of Altitude Difference: Average absolute value of DEM altitude differences of all imported check points.

RMSE: RMSE of DEM altitude differences of all imported check points.

Standard Deviation: Standard deviation of DEM altitude differences of all imported check points.

DEM Checklist: Shows DEM reconstruction error of every imported check point. Parameter values of check points and DEM reconstruction will be used to calculate the accuracy of items in

the DEM checklist.

ID: ID name of the check point.

Check Point Latitude (X/E): Latitude of the check point.

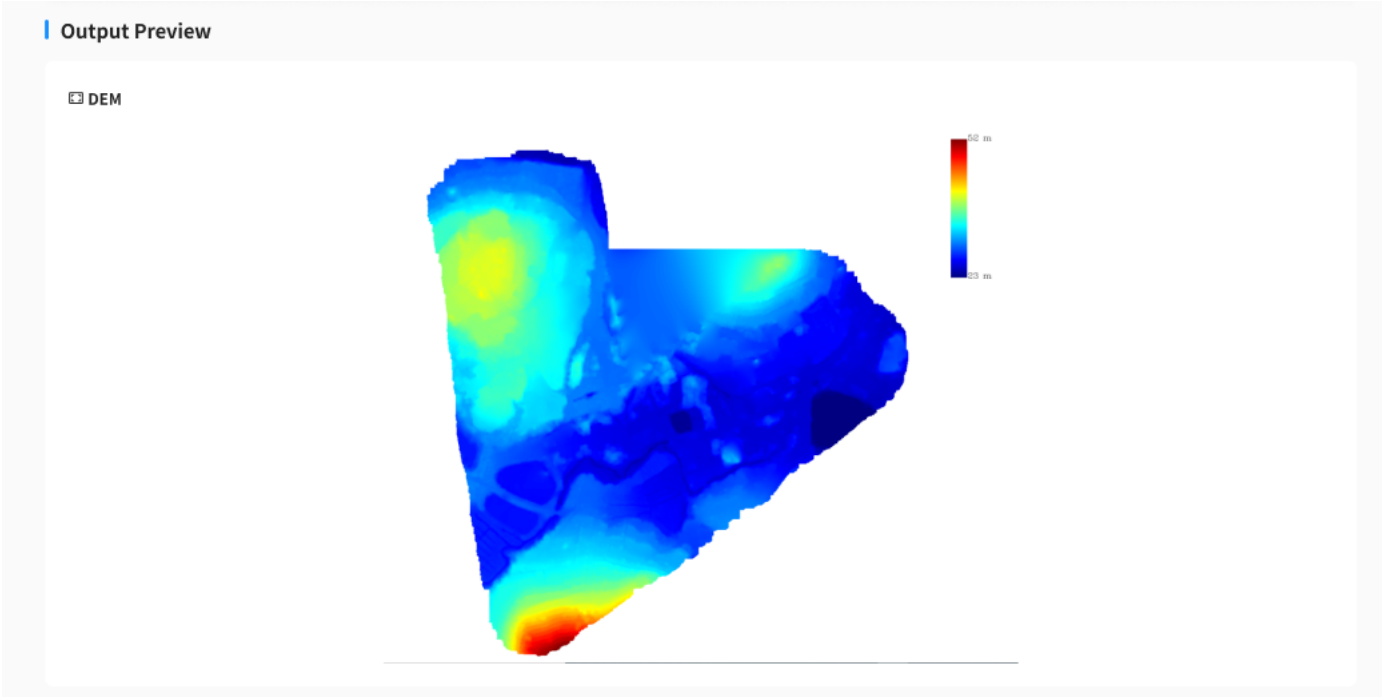
Check Point Longitude (Y/N): Longitude of the check point.

Check Point Altitude (Z/U): Altitude of the check point.

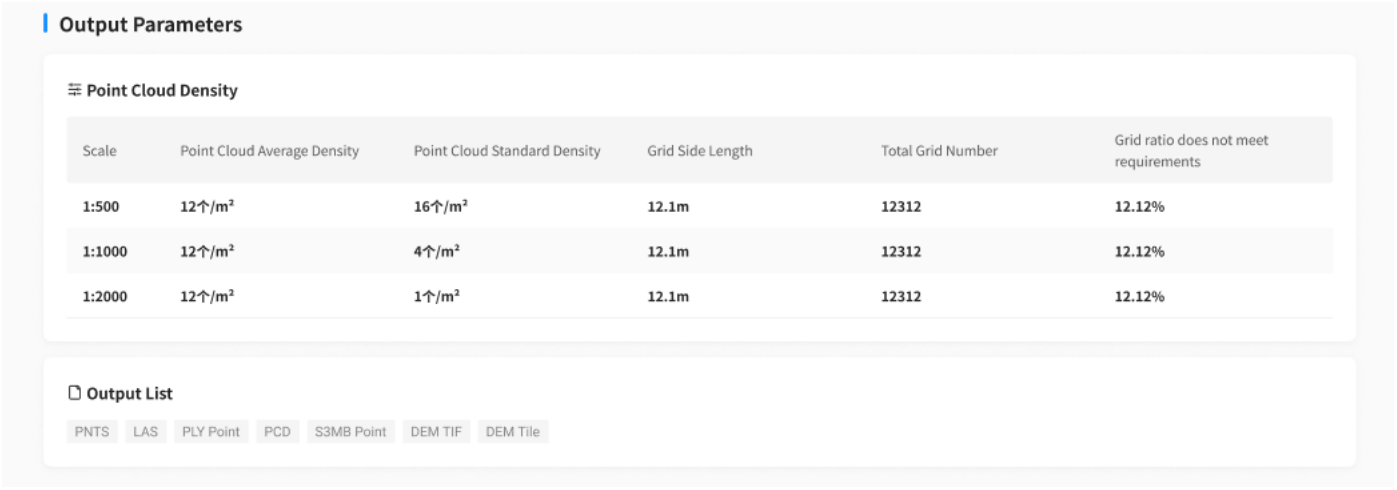
Reconstruction Altitude: DEM reconstruction altitude of the check point.

Altitude Difference: Difference between check point altitude and DEM reconstruction altitude.

Reflectivity: Average reflectivity of all reconstructed points within a specific region for the check point.



Digital Elevation Model (DEM): Thumbnail of the generated point cloud DEM.



Point Cloud Density: Density of the reconstructed point cloud.

Scale: Scale (1:500/1:1000/1:2000) applied for calculating point cloud density.

Point Cloud Average Density: The density of the reconstructed point cloud (Unit: number/m^2). Point cloud density = Total number of reconstructed point clouds/Total area of the reconstructed point cloud orthogonally projected onto the two-dimensional plane.

Point Cloud Standard Density: Standard density used to determine whether each grid meets density requirements. Refer to CH/T 8024-2011 Specifications for Data Acquisition of Airborne LiDAR for more details.

Grid Side Length: Grid size used to calculate point cloud density. Refer to CH/T 8024-2011 Specifications for Data Acquisition of Airborne LiDAR for more details.

Total Grid Number: Total grid number = Total area of the reconstructed point cloud orthogonally projected onto the two-dimensional plane/Grid size.

Non-conforming Grid Ratio: Ratio of grids that do not meet the requirements of point cloud density. Refer to CH/T 8024-2011 Specifications for Data Acquisition of Airborne LiDAR for more details.

Output List: File types of reconstruction output.