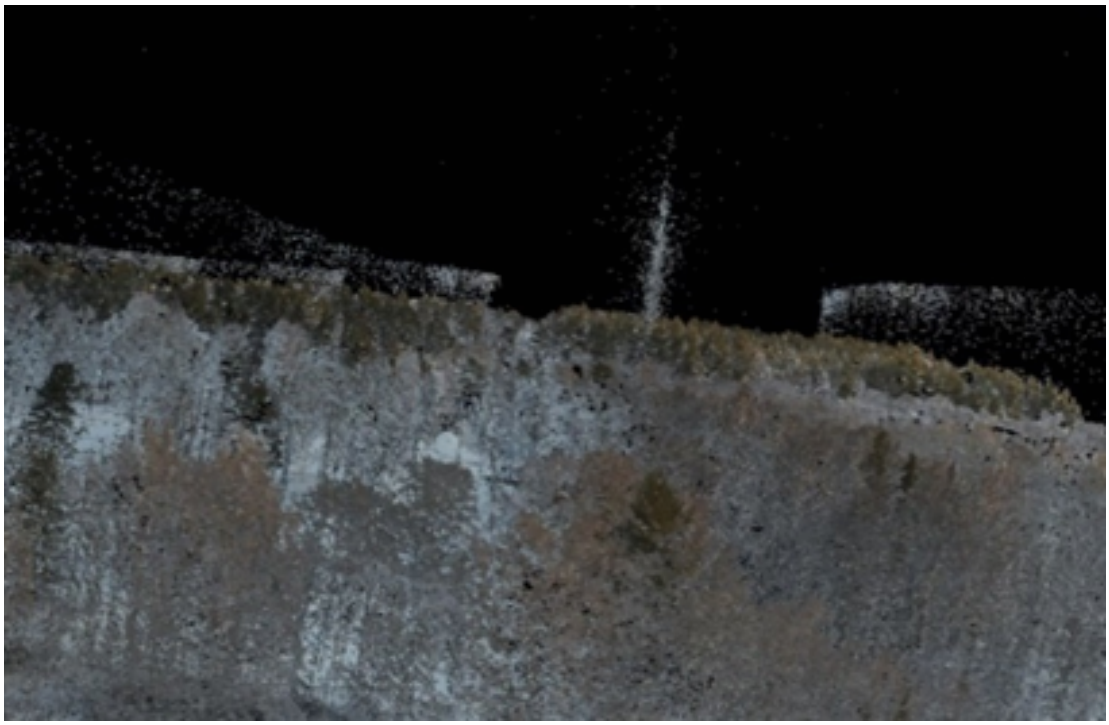
Requirements and operating conditions

TOPODRONE LiDAR are designed for use in weather without precipitation. Operation in rain, snow, frost, hail and fog is prohibited. The construction of TOPODRONE LiDAR does not have protection according to IP standard and in case of violation of this recommendation, moisture can get on the surface of the scanning lens and inside the device. This, in its turn, may deteriorate the quality of the received data, as well as damage the internal structure of the laser scanner itself. If precipitation begins, we recommend that you stop using the equipment. If scanning is performed in the presence of even slight rain, additional noise from false reflections due to water droplets or snow may occur.



Noises from false reflections of the TOPODRONE LiDAR, ALS was conducted during rain.

Operation of the TOPODRONE LiDAR in sub-zero temperatures and high humidity (above 80%) can lead to icing of the equipment and the drone. This can deteriorate the quality of the acquired data, as well as cause damage to the laser scanner structure and even lead to the aircraft crashing during ALS due to icing of the carrying propellers and their probable firing as a result of a sharp increase in the mass of the carrying blades.

DJI M200 and TOPODRONE LIDAR icing

DJI M200 blades and icing

When operating TOPODRONE ALS laser scanners in winds above 7 m/s, it is necessary to increase the side overlap of the drone between scans, as the wind can affect the number of overlapping areas. Operation of TOPODRONE LiDAR for MLS in strong winds is limited by the physical capabilities of the operator. The maximum recommended wind strength when performing ALS is 10 m/s. High winds have a much lower impact on data quality degradation when performing MLS than when performing ALS. It is not recommended to perform terrain surface scanning immediately after rain or wet snow, when there is still a thin film of water on the surface due to much worse reflection and, as a consequence, less number of points received from the surface.

For correct data post-processing it is necessary to perform at least two passes in forward and reverse directions with overlap of at least 30% relative to each other. A single pass is not effective. In case of insufficient quality or complete absence of GNSS signal, operation of TOPODRONE 100/100+/200+ laser scanners is impossible. The minimum visible number of satellites is 8 (above the elevation mask of 15°). It is strongly recommended to check the weather conditions and the number of visible GNSS satellites before the flight. It does not always make sense to perform ALS / MLS in the same area at different times.

Operation of the TOPODRONE LiDAR requires careful and gentle handling of the main lens of the laser scanning sensor. This lens has a surface hardness similar to plastic, not glass. Due to this fact, foreign objects can easily scratch the surface of the sensor. Minor single scratches on the sensor will not result in a noticeable deterioration of the data quality. To protect the lens surface from scratches, it is recommended to use a cover. It is not recommended to keep the TOPODRONE LiDAR switched on for more than 4 hours.

> The manufacturer is not responsible for equipment malfunction or for obtaining poor or inaccurate data when used outside the recommended operating conditions.

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