Drone Applications FAQs

Q-1: Can I use your LiDAR with PX4 and Ardupilot?

Ans: yes, these platforms contain drivers for our TF-Series LiDARs. So, Benewake LiDARs can be used with these drone platforms.

Q-2: Which interfaces Benewake LiDARs are supported by PX4 and Ardupilot?

Ans: The commonly used interfaces on drone are IIC, UART, and CAN. Our LiDARs have these interfaces. There are supported drivers for these interfaces available on the above platfroms.

Q-3: What are the purposes for which the LiDAR can be used on drone?

Ans: Mainly there are several applications which be achieved with LiDAR installed on drones. Some of them are:

1. Altitude Hold
2. Drone Obstacle Avoidance
3. Terrain Following
4. Triggering of camera at certain height to perform image processing related tasks. For example, marker identification for autonomous landing and pose calculation.
5. Single sensor can be used for multiple purpose. For example, use its data for Altitude Hold at certain height and triggering camera usually at lower heights.
6. LiDAR with wider FoV can be used for mapping purpose.
7. Position hold
8. Detect and avoid
9. Assisted take-off and landing

Q-4: In case I want to connect multiple LiDAR sensors to a flight controller, which interface should I use?

Ans: In case you want to connect multiple sensors, I would recommend to use CAN or IIC. CAN is more robust than IIC, because you can increase length of wire, can operate LiDAR at higher frame-rate and its susceptible to noise.

Q-5: Is LiDAR applicable to different environments have different reflectivities?

Ans: As we have many drone users who are using our sensors on drone. Drone application environments are complex in nature in terms of objects having varying reflectivity and ambient light. So, keeping in mind these points, Benewake has optimized the algorithm for their sensors, which can be deployed in different environments.

Q-6: Which Flight Controller can be used with your sensors?

Ans: Compatibility of flight controller mainly depends on which flight stack you are using, if there are any drivers available for the interface of that particular sensor. The already tested flight controllers are:

. PixHawk Flight Controller Series from HolyBro
. Cube Series of flight controllers
. CUAV series
. Beagle Bone Blue
. Flight Controllers from Drotek

Q-7: How should I configure LiDAR settings in order to use it on drone?

Ans: Configurations method varies from UAV platforms to platforms. The detailed method is usually mentioned on the official websites. However, we

also provide basic documents which explain which parameters need to be configured and some hints in order to smoothly perform the tests.

Q-8: What if the interface of LiDARs is either used by another device or its not compatible with flight controller?

Ans: The interface of LiDAR can be switched by sending HEX commands to it. We provide such commands.

Q-9: Can LiDAR be used in night or less bright environment?

Ans: Yes, it can be used without any issue because working of LiDAR is not dependent on external environment. It uses its own light emitter.

Q-10: What is best location on drone where LiDAR can be installed?

Ans: It is advised to install the LiDAR at such location which is far from GPS module. Because usually every LiDAR sensor emits certain amount of EMI radiations which may affect the working of GPS. Furthermore, while using LiDAR for Altitude Hold, please make sure that installation height is larger than LiDAR blind zone.

Q-11: Is it possible to fly drone carrying LiDAR over the river water?

Ans: As LiDAR uses IR light, and for IR light, clean water acts as transparent medium. So, the signal of LiDAR will either be absorbed completely or returned but with very little energy which becomes difficult for receiver to detect it. Range is reduced significantly, hardly few tens of centimeter can be achieved. Such kind of situations needs to be avoided or switch off the LiDAR by assigning its control to one of the channels of radio control system when flying over water.

Q-12: Can Benewake LiDAR be used together with another LiDAR sensor?

Ans: Yes, it's possible. However, there are some points that need to be kept in mind. You should have multiple free port. Because the communication protocol of Benewake LiDAR is different than other LiDARs. So, you can configure multiple ports corresponding to each LiDAR and avoid any kind of interference.

Q-13: Does Benewake provide customization service, especially customizing connector of LiDAR and protocol to make it compatible with Flight Controller?

Ans: yes, we provide customization services. We have already done customization for our several drone customers.

Q-14: Which drone platforms support Benewake LiDARs?

Ans: The mostly commonly used drone platforms which support Benewake LiDAR are:

. PX4
. Ardupilot
. BetaFlight
. INAV
. CLEAN FLIGHT

Q-15: How should I power the LiDAR, either through controller port or external battery?

Ans: If your flight controller is not driving many sensors, then it's fine to power the sensor through flight controller. Otherwise, it's strongly recommended to power the sensor through external battery to make sure that LiDAR get enough current and gives stable data.

Q-16: Does the vibration of drone causes any instability to sensor readings or its lifetime?

Ans: Benewake does certain vibration tests for their products. So, the sensor can withstand with certain intensity of vibrations. However, if you see any instability in readings, then it recommended to use some shock absorbers. In normal cases none of our customers reported any issue caused by drone vibrations.

Q-17: Do you provide after-sales service in I need help to interface LiDAR with flight controller?

Ans: yes, we do provide after-sales service in order to support your test and smoothly integrate our LiDAR into your drone system. We will help you to configure the required parameters and read the data from sensor using Ground Control Station software.