# Material Level Detection FAQs

**1. What are the detection ranges of Benewake's level LiDAR products?**

Benewake's single-point LiDARs have the detection ranges of 8m, 12m, 40m, 100m and 180m and could detect the silos of sizes within the ranges.

**2. How to ensure precise measurement of the silo level?**

- Precise measurement requires information of the dust concentration in the silo, the coverage range of LiDAR, and the measurement accuracy.
- At present, Benewake's LiDAR can detect the maximum distance of 180m, with an accuracy of ± 6cm within 6m.
- If the diameter of the silo is large, multiple single-point LiDARs could be installed to cover the entire silo and further improve the measurement precision.

**3. How to select LiDAR products based on the heights of silos and materials stored?**

- Depend on the heights of silos and the reflectivity (color) of materials. With lower reflectivity, the detection range is shorter.

e.g.: If wheat is stored in a 4m-high silo, LiDAR with 8m range could be selected; if black beans are stored in the same silo, LiDAR with 12m range could be selected.

Please contact Benewake's sales team or FAE team for more information about the product models (email: support@benewake.com)

**4. As some silos are powered by solar energy or batteries, the power consumption of equipment is strictly limited. How's the power consumption of Benewake's LiDAR products?**

- All single-point LiDARs of Benewake could be in low-power mode in solar-/battery-powered scenarios. For example, TF-Luna's power consumption is as low as 1.5mW and could last for 3 years powered independently by a 10,000mA battery.

**5. When materials are unloaded, the silo is inevitably dusty, which may pollute the LiDAR lens and lead to inaccurate ranging. Do we need to wipe the lens manually if this happens?**

- No. Some Benewake's LiDAR products have built-in brush to clean up the lens in real time. The brush cleans up the lens every 4 hours in default mode. Users could shorten the interval through the remote software after unloading materials based on the on-site environment, so as to reduce the maintenance cost of LiDAR.

**6. How to ensure the timeliness of LiDAR data as materials are unloaded continuously?**

- The default transmission frequency of LiDAR is 100Hz, i.e., 100 data per second and 1 datum every 10ms. Generally speaking, 100Hz is enough for the normal operation. You can raise the frequency through instruction if necessary.

**7. What communication interfaces do sensors have?**

- At present, Benewake's LiDAR products support TTL, IIC, CAN, RS-485, and RS-232 interfaces, and if needed, wireless interfaces such as TCP, 4G, and LoRA through interface board.