

## Explanatory Notes on Livox Point Cloud Sequences

### Livox 点云序列说明

Date	Version	Author	Update description
March 5, 2020	V1.0.0	Livox	First version
March 6, 2020	V1.0.1	Livox	Revised
March 5, 2020	V1.0.2	Livox	Revised

日期	版本	作者	更新说明
2020/3/5	V1.0.0	Livox	第一个版本
2020/3/6	V1.0.1	Livox	修订
2021/3/5	V1.0.2	Livox	修订

## Explanatory Notes

To facilitate users in point cloud analysis, Livox provides angular coordinate parameters for lidar point clouds for the duration of 4s.

The file is in the .xlsx format and contains three columns of data. The first is the time sequence measured in “s”; the second column is the azimuth; and the third the zenith. The units of measurement for the angular parameters are all “degrees”.

As shown in Image 1,  $\theta$  is the zenith while  $\phi$  is the azimuth.

## 说明

为了方便用户分析点云特征，Livox 提供时长 4s 的雷达点云角度坐标参数。

该文件为 xlsx 格式，文件中共三列数据，第一列为时间序列，单位为秒；第二列为方位角坐标参数，第三列为天顶角坐标参数，角度坐标参数单位均为度。

坐标定义如图 1 所示，其中 $\theta$ 为天顶角， $\phi$ 为方位角：

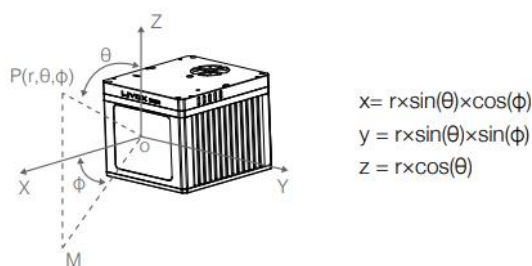


Image 1 Lidar coordinate system

A partial screenshot of the point cloud sequences is shown in Image 2 below. Note: The azimuth range based on the standard coordinate system is  $0^{\circ}\sim 360^{\circ}$ , while the azimuth coordinate parameters provided by Livox are expressed in the range of  $-180^{\circ}\sim 180^{\circ}$ , where  $-180^{\circ}\sim 0^{\circ}$  is equivalent to  $180^{\circ}\sim 360^{\circ}$  in the standard coordinate system.

点云序列部分截图如图 2 所示。需注意的是：根据标准坐标系定义，方位角范围为  $0^{\circ}\sim 360^{\circ}$ ，Livox 提供的方位角坐标参数范围为  $-180^{\circ}\sim 180^{\circ}$ ，即其中的  $-180^{\circ}\sim 0^{\circ}$  相当于  $180^{\circ}\sim 360^{\circ}$ 。

Time/s	Azimuth/deg	Zenith/deg
0.00001	-19.17240569	89.96987193
0.00002	-19.17124642	89.93974786
0.00003	-19.16931436	89.90963181
0.00004	-19.16660959	89.87952777
0.00005	-19.16313223	89.84943976
0.00006	-19.15888242	89.81937178
0.00007	-19.15386034	89.78932782
0.00008	-19.14806621	89.75931188
0.00009	-19.14150028	89.72932796
0.0001	-19.13416282	89.69938005
0.00011	-19.12605415	89.66947213
0.00012	-19.11717461	89.6396082
0.00013	-19.10752458	89.60979222
0.00014	-19.09710448	89.58002818
0.00015	-19.08591473	89.55032003
0.00016	-19.07395583	89.52067174
0.00017	-19.06122828	89.49108727
0.00018	-19.04773262	89.46157056
0.00019	-19.03346943	89.43212555

Image 2 Mid-40 point cloud sequences