LiDAR Vehicle Dimension Measurement

In LiDAR vehicle dimension measurement, the system has three LiDAR WLR-711 sensors to measure the vehicle length, width and height. LiDAR can regulate oversized trucks to prevent tragic accidents as well as damage on bridges and tunnels. VanJee LiDAR would assist traffic agency to guarantee traffic safety and public asset safety.

LiDAR operating principle

Demo for vehicle dimension measurement

LiDAR sensors are installed in two gantries. The first gantry has the first and the second sensors to measure vehicle width and height. The second gantry has the third sensor to measure vehicle length. The scanning light curtain of the first and second sensors is perpendicular to the driving direction. The third sensor would scan in the middle of the road along the driving direction. When the vehicle passes through the scanning area, LiDAR system would collect the 3D scanning point cloud data of the vehicle. Finally, LiDAR system would filter, analyze and pattern recognize the cloud data to measure width, height and length of the vehicle.

LiDAR Vehicle Dimension Measurement Specification	
Length error	If vehicle length is more than 10m, the error ≤3%
Width error	≤10cm
Height error	≤10cm
System power consumption	≤ 40W, heating ≤ 240W (starting heating below 5°C)
Working temperature	-40°C~80°C

3D-Point Cloud by LiDAR WLR-732

32L-LiDAR

WLR-732

32 layers-LiDAR (WLR-732)

VanJee had made great achievements on 3D-LiDAR which is WLR-732 (32 layers-LiDAR). VanJee 32L-LiDAR is one of the most powerful sensors for autonomous driving as well as the eye of vehicle. WLR-732 plays an important role in the field of Advanced Driver Assistant Systems (ADAS) and autonomous driving.Base on several years of research, test as well as production, VanJee has developed various 32L-LiDAR with proprietary IPR and achieve the leading position in China. The LiDAR has achieved high detection precision and long detection range. Furthermore, VanJee 32L-LiDAR has the highest resolution and the smallest size. The LiDAR has several great advantages to supply auto companies such as real time, 360° full of view, 3D distance detection and high stability.

Size/weight	106*72.5/0.86kg
Measuring distance/ranging precision	100m@10% Reflection /± 6cm
Horizontal field angle	Max: 360°
Horizontal resolution	0.1° / 0.2° / 0.3° / 0.4°
Vertical field angle/vertical resolution	24° /0.75°
Scanning frequency	5HZ / 10HZ / 15HZ / 20HZ
Laser wavelength/safety level	905nm/Class 1(eye safety)
Operating voltage	9~36VDC
Protection class	IP67
Operating/storage temperature	-40 C to 85 C /-55 C to 85 C

VanJee policy on local agents and trading companies

VanJee is looking for business partners and local agents. VanJee would provide fully support for local agents with sufficient guides and clear goals.VanJee and partners would work together to establish distribution channels and pursue common interest. As a result, VanJee and partners would achieve leadership sales,profits and value creation in a new market.

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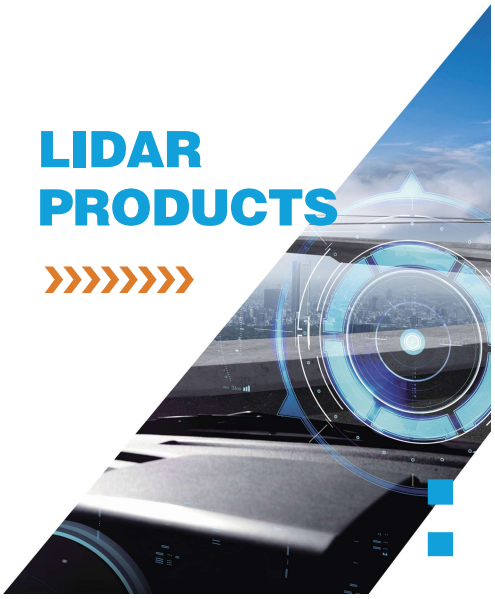
VANJEE TECHNOLOGY

LIDAR PRODUCTS



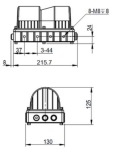
VanJee is LiDAR expert to apply LiDAR on traffic service as well as automatic driving on vehicle.

In traffic service, VanJee LiDAR WLR-711 would perform three major functions which are vehicle classification, traffic data collection (vehicle counting, speed measurement and vehicle classification) and vehicle dimension measurement (length, width and height). The LiDAR has high point density and smaller divergence to achieve better digital image quality. As a result, clients could collect invaluable traffic data for highway toll and traffic infrastructure planning. VanJee has installed thousands of LiDAR equipment in highway. VanJee LiDAR products are reliable and have great adaptability in extreme weather.

LiDAR WLR-711

WLR-711

LiDAR WLR-711 Size



LiDAR WLR-711with cover

VanJee LiDAR WLR-711 would provide clients with five major benefits:

- LiDAR WLR-711 has high protection level of IP68, so the sensor can be used under various extreme weather conditions as well as has longer lifespan;
- LiDAR WLR-711 has automatic heating function which enables it to operate regularly even at -40°C;
- LiDAR WLR-711's light spot divergence angle is relatively small and its scanning frequency can reach 100, so the sensor satisfies the high-speed dynamic scanning requirements;
- LiDAR WLR-711 can be tailor-made as well as can be integrated various interfaces and IO.
- LiDAR WLR-711 has automatic fault detection and real-time reporting to make sure sensor has little chance to break down.

LiDAR WLR-711 Parameters and Specification	
Dimensions/weight	120×130×221mm/3.4Kg
Scan angle	120°
Scan frequency	50Hz (WRL-711E)/100Hz(WRL-711A)
Angle resolution	0.5°/0.25°
Ranging capability	0.5m to 30m @10% reflectance
Ranging error	≤3cm
Supply voltage	DC24V±4V
Communication interface	Ethernet
Laser Level	Class I Human Eye Safety
Wavelength	905nm
Operating temperature	-40°C~80°C
Protection class	IP68
Automatic heating function	Reliable detection in rain, snow, fog and other inclement weather conditions.

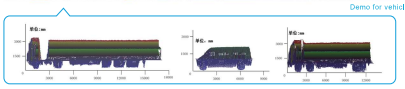
LiDAR Vehicle classification:

VanJee develops LiDAR WLR-711 to achieve vehicle classification with 99% classification accuracy rate.

As a result, the toll system would charge all passing vehicle in different toll rate according to LiDAR classification results. At first, VanJee would base local vehicle class standard to develop 3-D vehicle models in database including vans, SUV, sedans, hatchbacks and enclosed trucks and trucks with different number of axles. When a vehicle passing by the LiDAR scanned area, LiDAR acquire three dimensional (3-D) profile of the vehicle also known as 3-D point clouds to match the vehicle 3-D models in database. Additionally, VanJee LiDAR could use axle distance measurement and axle numbers to assist vehicle classification. VanJee would integrate LiDAR with automatic number-plate recognition (ANPC) to make sure no vehicle can cheat on toll system.

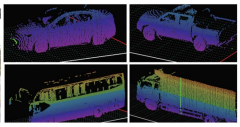
Due to VanJee has installed more than 4000 laser sensors in highway and has developed vehicle database over four year by using machine learning, VanJee LiDAR would achieve the highest reliability and accuracy rate as well as has little environmental affect such as headlight, shadow, rain and fog.

Demo for vehicle classification



LiDAR WLR-711 is installed in toll station to do vehicle classification.

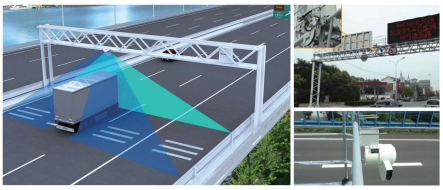
LiDAR WLR-711 would assist highway IC card dispenser to charge different rate base on different vehicle classes



LiDAR WLR-711 for 3-Dpoint clouds on different vehicle classes

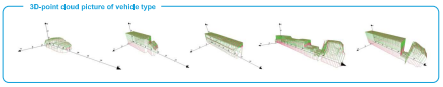
LiDAR Traffic Data Collection

LiDAR WLR-711 would collect various traffic data including vehicle amount, vehicle class and speed. These data are invaluable for traffic research, monitoring, operation, infrastructure planning and congestion measurement. Researchers and policy makers could use traffic data to study regional economic activities and logistic activities.



Demo for LiDAR Traffic Data Collection

LiDAR is installed in highway gantry to collect vehicle profile. VanJee LiDAR is installed in highway gantry.



LiDAR Traffic Data Specification	
Vehicle counting number error	≤2%;
Vehicle classification error	≤10%;
Speed measurement range	0~200km/h;
Average speed measurement error	≤5%
The number of detected lanes:	The largest one supports 10 lanes (60 meters in width), and the other is 8 lanes (30 meters in width).
Data storage time	≥10 years;
Structural stability	Maximum wind resistance 40m/s;
Working power supply	AC220V±15%, 50Hz±4%; or DC24V
Total power consumption of the system	≤30W, heating ≤90W (starting heating below -10°C)
Atmospheric pressure	50Kpa-106 Kpa
Relative humidity	≤95%
Working temperature	-40°C~80°C
Mean Time Between Failure	≥ 50000h.