Load Volume Scanner - LVS-F (Vision + LiDAR Fusion)

Product Description

The LVS-F is Tolveet's fusion scanner for bulk-haul trucks. An out-of-the-box, pole-mounted unit that pairs a 30 fps stereo depth camera with a 25 Hz solid-state LiDAR (120 ° × 90 ° FoV). Both sensors stream eye-safe depth data to an embedded plug-and-play CPU-GPU module that auto-calibrates on power-up and fuses, filters, and meshes roughly 260 000 3-D points every second. Computer-vision enabled algorithms then isolate the true payload from cab, chassis, and tie-downs to deliver net load and remaining capacity with better than ±1 % volumetric error-even in dust, rain, or glare. Supplied pre-calibrated in an IP-rated enclosure, the LVS-F installs with a single 12 V DC line and Cat 6a cable, requires no other hardware, and connects natively to Tolveet Manager for real-time dashboards, alerts, and analytics.

Key Highlights

- Dynamic (in-motion) scan: One-pass, non-contact, autonomous.
- Static scan: Stop-and-scan, non-contact, manual trigger.
- Sensor-fusion redundancy LiDAR and vision back each other up through dust, rain, glare & darkness.
- Edge AI engine delivers 3-D mesh, net volume, mass estimate, and confidence score in ~90 s
- Web-based UI for convenient remote access and configuration
- Computer-vision load auditing-AI detects over- or under-fill, uneven loads, carryback detection, load estimates without empty profile, material classification and automatic QR-code detection.
- Daylight-readable multicolor LED bar shows system health to 8 m.
- ANPR-enabled camera & UHF-RFID for automatic truck identification and ticket linkage

Why It Matters

- Higher throughput - single-pass measurement shortens load-out cycles and eliminates weighbridge queues
- Reliable accuracy - sub-percent volumetric error in all lighting and weather, day or night
- Low lifetime cost - no periodic recalibration, minimal civil works, and OTA firmware & AI upgrades included
- Guaranteed uptime - dual-modal sensing keeps trucks moving even if one sensor is obstructed
- Actionable insights - volume, mesh, and optional weight are pushed to our platform before the truck leaves the yard
- End-to-end traceability - seamless links to Gate Control, Belt Volume Scanner, and Stockpile modules for complete supply-and-demand balancing

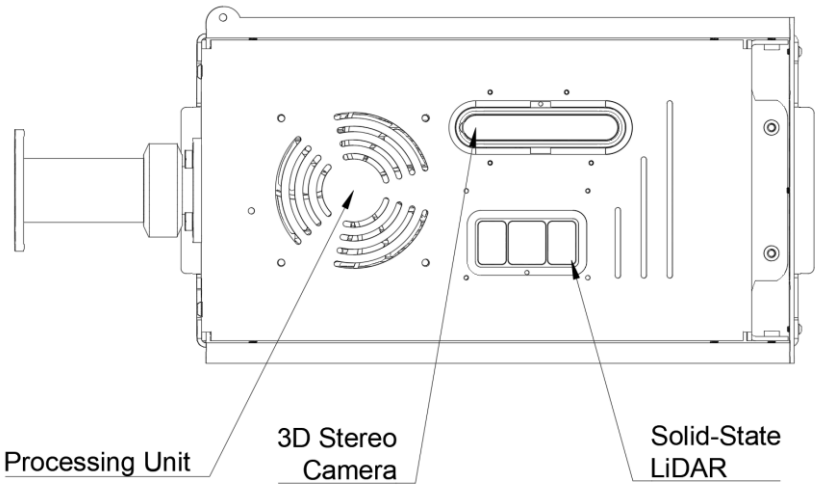
Detailed Technical Data

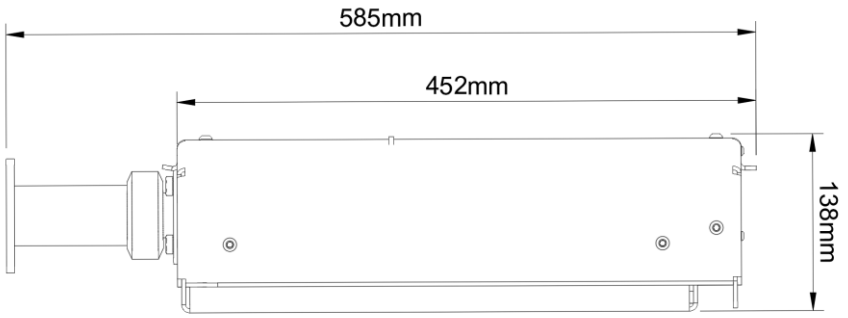
(Representative values—final performance depends on site conditions and configuration.)

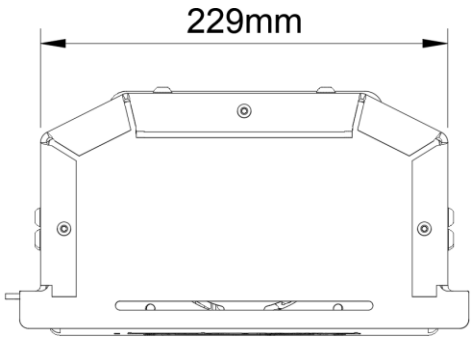
Category	Specification
Sensors	Stereo depth camera, 30 fps, 1280 × 720 px depth, 82° × 58° FoV Solid-state LiDAR, 25 Hz, 120° × 90° FoV, 120 lines, 0.66° vert. resolution
Data rate	≈ 260 k 3-D points s^{-1} after fusion & filtering
Measurement range	1 – 10 m
Max vehicle speed	20 km h^{-1} / 15 mph
Volumetric accuracy	> 99 % (> ±1 % error under recommended installation)
Latency	~90 s from trigger to result (edge processing)
Power	12 V DC ±10 %, 13 A typical / 14 A peak
Enclosure & IP	Powder-coated aluminium housing, IP65; sensor windows IP67
Operating temperature	–10 °C to +55 °C (14 °F to 131 °F)
Mechanical	621 × 248 × 210 mm (L × W × H); 11.2 kg
Interfaces	1 × GigE (Cat 6a), optional 1 × RS-485
Compliance	FCC Part 15 Subpart B Class B; CE; eye-safe IEC 60825-1 (Class 1)
Status indicator	Multi-color LED bar, visible daylight range 8 m
Mounting height	≥ 1 m above highest expected truck load for optimal accuracy

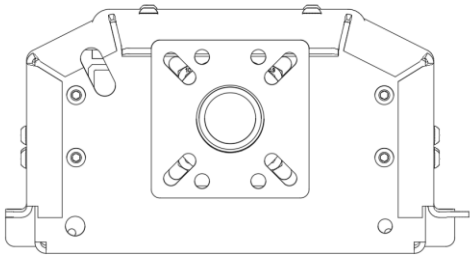
Dimensional drawing

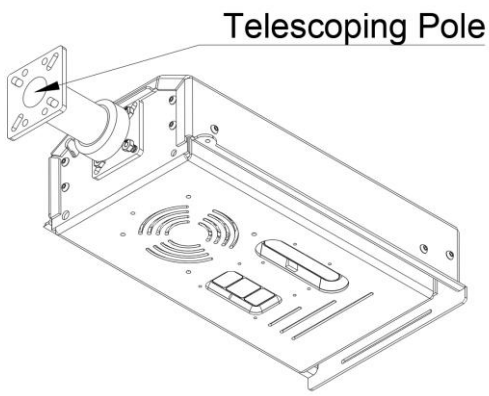
Dimensions in mm.

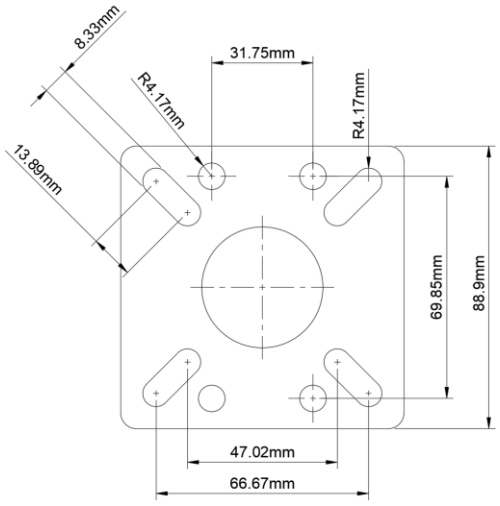












Tolveet at a Glance

Tolveet LLC, headquartered in Atlanta, GA, powers Smart Quarry operations with next-generation computer vision and AI-driven decision intelligence. Our Load Volume Scanner, gate-automation packages, and belt-monitoring systems convert every truckload and conveyor run into precise, real-time data for demand forecasting, inventory control, and production optimization. By automating monitoring and streamlining workflows, Tolveet boosts efficiency, lifts revenue, and gives operators tighter, data-backed control of every site—turning physical activity into actionable intelligence.