

Scanning at highway speeds. Kestrel measures vehicle height in real time as traffic passes at full roadway speed — flagging over-height vehicles without slowing or contacting them.



Kestrel sensor unit. Compact LiDAR in a sealed stainless enclosure with integrated side-mount bracket — minimal infrastructure, fast installation on a standard roadside pole.



Warning in action. Kestrel activates flashing beacons and warning signs based on the site's configured warning response — alerting drivers before they reach the low-clearance structure.

OVER-HEIGHT DETECTION & WARNING

Kestrel

Over-Height Detection and Warning for Fixed and Portable Deployments

Kestrel measures vehicle height, identifies lane and direction of travel, and activates configured warning devices when a vehicle exceeds a defined height threshold. Available for fixed installations or optional trailer deployment, it supports bridge-strike mitigation at bridges, tunnels, work zones, and temporary clearance restrictions.

1×	Real-Time	Solar	Edge
LIDAR SENSOR	HEIGHT DETECTION	POWER OPTION	ON-BOARD PROCESSING

KEY CAPABILITIES

Real-Time Height Detection
Identifies vehicles exceeding posted clearance limits at roadway speed.

Warning Activation
Interfaces with warning signs and beacons via configurable outputs to alert drivers before impact.

Lane & Direction
Lane identification and direction-of-travel tracking with every detection.

Wrong-Way Detection OPTIONAL
Available on the same sensor platform to detect and warn against wrong-way movements.

Portable & Solar Ready OPTIONAL
Fully self-contained trailer-mounted platform with optional solar power, communications, and an interface for connecting agency-supplied warning devices. Ideal for temporary locations, pilot deployments, emergency response, and work zones.

Edge Processing
Self-contained roadside analytics with basic event logging (timestamp, height, lane, direction, and triggered warning) and optional cellular/cloud access for remote log retrieval.

IDEAL APPLICATIONS

Bridge Strike Prevention
Protecting bridges, tunnels & low-clearance structures

Portable Warning
Work zones & temporary clearance restrictions

Wrong-Way Detection (Optional)
Ramp & divided-highway monitoring

INFRASTRUCTURE PROTECTION

Early warning to help prevent bridge strikes.

Bridge strike prevention · tunnel protection · temporary clearance protection · construction zone protection. Kestrel interfaces with flashing beacons, DMS messages, gate arms, and other warning devices through configurable digital outputs — these warning devices are supplied and installed by the agency or its systems integrator unless otherwise specified in the project scope. Kestrel supports both permanent and temporary infrastructure protection strategies, allowing agencies to deploy over-height warning capabilities wherever risks emerge, without waiting for permanent construction or utility installation.

RAPID-DEPLOY OVER-HEIGHT PROTECTION

Optional Portable Trailer Platform

Rapid Deployment. Relocatable. Optional Off-Grid Solar Power.



Representative trailer-mounted deployment. Solar array and telescoping mast in operating position on the shoulder — illustrative of the optional trailer platform's rapid setup, with no trenching or permanent infrastructure required.

Kestrel is available as an optional, fully integrated trailer-mounted platform designed for rapid deployment at temporary or evolving locations. The platform includes Kestrel's LiDAR-based over-height detection, an interface for connecting agency-supplied warning signs or beacons, communications, and an optional solar power package. Once on site, the trailer can typically be made operational within hours after site preparation, calibration, and warning-device integration are complete — and relocated between sites as needs change, making it well suited to bridge-strike mitigation, work zones, detours, temporary clearance restrictions, pilot projects, and emergency-response deployments.

IDEAL USES

- Bridge strike mitigation
- Construction zones
- Temporary detours
- Seasonal restrictions
- Pilot projects
- Emergency response deployments

Deploy protection where and when it is needed.

Kestrel's optional trailer platform lets agencies address emerging bridge-strike risks, construction projects, and temporary roadway conditions without installing permanent infrastructure — brought on site, configured, and moved again as operational needs change.

WHY THE TRAILER PLATFORM MATTERS

On Site in Hours	Relocatable	Self-Contained	Solar Powered
Operational within hours of arrival, once site prep and calibration are complete	Move protection between sites as needs change	Sensor, power, communications & a warning-device interface on one chassis	Optional off-grid solar package; battery autonomy is confirmed per deployment

The portable trailer platform is an optional configuration. Deployment timelines depend on site preparation, sensor calibration, and warning-device integration; solar package sizing and battery autonomy are confirmed for each project's power requirements.

OVER-HEIGHT DETECTION & WARNING

Kestrel Specifications & Capabilities

LIDAR SENSOR SPECIFICATIONS

Sensor Platform	**Solid-State LiDAR**
Maximum Observable Range	**70 m***
Field of View (H×V)	**80° × 22°**
Angular Resolution (H & V)	**0.4°**
Sensor Range Accuracy	**±0.05 m (< 100 m)**
Frame Rate	**Up to 25 FPS**
Number of Returns	**Up to 2 returns per pixel**
Laser Wavelength	**905 nm**
Laser Safety	**Class 1 eye-safe, IEC/EN 60825-1:2014**
Communication Interface	**1000Base-T Ethernet**
Power Input	**9–20 VDC or PoE**
Power Consumption (Sensor Only)	**Typ. 9.5–10.5 W (DC)**
	PoE input supported — consult HyPoint for PoE power budget
Sensor Environmental Protection	**IP67 Rated***

**Maximum observable range reflects Kestrel's validated over-height detection range under standard deployment conditions; the LiDAR sensor itself is rated to a longer maximum range. IP67 applies to the sensor module with properly sealed connections. Specifications above describe the sensor module only — the complete Kestrel enclosure is a separately sealed, outdoor-rated housing matched to roadway geometry, clearance environment, power availability, and project objectives.*

Measurement & Deployment Performance

Height-measurement accuracy, supported vehicle speed range, lane coverage, mounting geometry, and detection-to-warning latency are validated for each deployment based on sensor mounting height, angle, and roadway geometry — multi-lane coverage depends on lane count, geometry, and mounting position. Final performance figures are confirmed during site commissioning and available upon request.

Optional Portable Trailer Platform

- Integrated Kestrel detection system
- Interface for agency-supplied warning signs and beacons
- Cellular communications
- Optional solar power package
- Remote monitoring and diagnostics
- Rapid deployment and relocation
- No permanent infrastructure required

Deployment & Support

The system includes automated calibration capabilities when deployed at a new location, minimizing setup time and reducing field configuration requirements. HyPoint provides remote technical support during deployment and relocation to assist with system verification, calibration, and operational testing.

Open Integration

Open API delivers over-height detection events and warning-activation status to your agency's ITS, warning-controller, and traveler-information systems; specific interfaces are confirmed during project scoping.

KESTREL AT A GLANCE

Feature / Capability	Kestrel
Primary Application	**Over-Height Detection & Warning**
Sensor Configuration	**Single LiDAR**
Height Detection	**Yes**
Length / Width Measurement	**—**
Speed Detection	**—**
Direction of Travel	**Yes**
Lane Detection	**Yes**
Vehicle Classification	**—**
Wrong-Way Detection & Warning	**Optional**
Over-Height Warning Integration	**Integration supported**
Trigger Warning Signs / Beacons	**Integration supported**
Rapid Deployment	**Optional**
Relocatable Between Sites	**Optional**
Temporary Site Applications	**Optional**
Work Zone Applications	**Optional**
Vehicle Overview Images	**—**
Web-Based Data Portal	**—**
Time-Stamped Event Records	**Basic event logging**
LPR / USDOT Integration	**—**
Open API Integration	**Integration supported**
Real-Time Alerts	**Yes**
Multi-Lane Support	**Yes**
Portable Trailer Deployment	**Optional**
Solar Operation	**Optional**
Edge Processing	**Yes**
Cloud / Remote Access	**Optional**
Power Requirements	**Configuration dependent**
Typical Deployment Type	**Fixed or portable**

Legend Yes = standard Optional = module / config Integration supported = via configurable interface — = not available

Each event log entry records a timestamp, detected height, lane, direction of travel, and the resulting warning activation, retrievable on site by direct connection. The optional cellular/cloud package adds remote log retrieval, CSV export, and system-health/diagnostic alerts — Kestrel does not include the searchable, multi-site web portal used by HyPoint's vehicle-classification systems (e.g., Falcon).

Let's talk about your roadway.

Application review, site assessment, and system recommendation at no cost — whether you need permanent bridge-strike protection or a portable trailer deployed in hours, we'll match Kestrel to your site.

John Caya · President
john@hypointsolutions.com
608.695.6024 · www.hypointsolutions.com