IRIS

Intelligent Vehicle Detection & Counting System

Camera-Based Traffic Detection at the Edge

IRIS processes IP camera streams with real-time edge AI, replacing the function of physical induction loops with configurable virtual detection zones. It detects vehicles, pedestrians and bicycles, actuates Traffic Signal Controller detector inputs over SNMP/NTCIP, and produces class- and line-based traffic counts.

12	3	AI	NTCIP
Camera connections	Vehicle · Pedestrian · Bicycle	Local processing	Controller integration

Product Value

No Road Cutting
Virtual loops reduce the need for road-embedded detection infrastructure.

Controller Compatible
Works with Sinyal controllers and NTCIP-compatible traffic signal controllers.

Local and Autonomous
Detection, tracking and actuation operate on site without a cloud dependency.

Key Capabilities

- Polygon-based virtual detection zones
- Vehicle, pedestrian and bicycle-specific detection
- Multiple named counting lines
- Independent direction per counting line
- Vehicle count and density measurement during red
- Persistent counting history and period summaries
- Live video, logs and health monitoring
- Automatic camera isolation and reintroduction

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Core Functions

Virtual Loop Detection

- Polygon-based zones on live camera images
- Vehicle, pedestrian and bicycle-specific loop behaviour
- Adjustable overlap, debounce and hold times
- Loop-to-controller detector mapping

Traffic Counting

- Multiple named lines per camera
- Separate vehicle, pedestrian and bicycle results
- Direction and tolerance selection for each line
- Daily totals and 30-minute distribution

Controller Actuation

- SNMP v2c read–modify–write operation
- NTCIP 1202 vehicle and pedestrian detector objects
- Coalesced detector-group writes
- Ownership-aware startup and shutdown reconciliation

Density Monitoring

- Automatic phase resolution from detector-to-phase data
- Vehicle count and occupied-area ratio during red
- Daily, weekly, yearly and ten-year summaries
- Unknown phase reported explicitly, never as zero

System Architecture

IP Cameras
Live video streams

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IRIS AI Computer
Video processing and analytics

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Traffic Signal Controller
SNMP · NTCIP

Video analytics, object tracking, virtual-loop evaluation, traffic counting and controller actuation run locally on the IRIS AI computer. The system requires no cloud connection for continuous field operation.

Operator Interfaces

Interface	Capabilities
Web maintenance UI	Live annotated video, ROI and counting-line configuration, detector mapping, camera and detection settings, logs and service controls.
Touchscreen kiosk	Camera, count, density, alert, log, network, IRIS health and system health views. Configuration actions are access-protected.
Languages	Turkish · English · Albanian

Resilience

Camera Recovery

Unhealthy sources are isolated; recovered cameras are automatically reintroduced.

Persistent Counts

Counting history survives service and device restarts.

Safe Network Changes

Static-IP changes include automatic rollback against loss of access.

Processing & Capacity

Parameter	Value
Processing unit	Industrial AI computer
Processing method	Real-time local video analytics and object tracking
Camera input	Live IP camera streams
Recommended video	1920×1080 · 15–25 FPS; 25–30 FPS for high-speed approaches
Product capacity	**Up to 12 IP camera connections**

Mechanical, Electrical & Network

Parameter	Value
Enclosure dimensions	**600 × 540 × 560 mm** — W × H × D
Weight including base	**65 kg**
Construction / mounting	Welded metal cabinet construction; fixed roadside/cabinet installation
Ingress protection	IP65
Operating temperature	−20 °C to +70 °C
Power input	230 VAC nominal, 50 Hz
Average power consumption	**250 W**
Network connectivity	8 × Gigabit Ethernet PoE+ camera ports and 2 × SFP; expandable
Controller interface	SNMP / NTCIP; configurable network connection

Violation and Plate Analytics

Red-Light Violation Detection

Traffic signal channel status is monitored over SNMP. The configured violation line becomes active while the associated channel is red, and vehicles crossing the line are detected as violations.

Automatic Number Plate Recognition

Vehicle number plates are detected and read from the camera image, and the plate information is associated with the corresponding red-light violation record.

Compliance, Warranty & Support

Declared standards	TS EN 50556 · TS HD 638 S1 · TS EN 12675 · TS EN 50293 · IP65
Warranty	5 years
Technical support	Technical support throughout the product service life
Country of origin	Türkiye

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