DATA FROM SKY

TrafficXRoads I131-O-NX8-128GB

TrafficXRoads I131-O-NX8-128GB unit is a video analytics embedded computer designed for real-time detection tasks for dynamic control of traffic light signaling and the collection of traffic data from IP cameras. It has a powerful NVIDIA Jetson Orin NX processor that runs the AI-based detection and tracking algorithm which turns any video stream into high quality trajectory data about road users. The system is powerful enough to analyze data from up to 6 connected cameras in real-time with an operating range of more than 80 meters. The highly optimized and fully configurable trajectory processing engine is able to evaluate dozens of detection tasks in each camera view in parallel.

Detection task configuration is performed using the traffic framework called FLOW, which involves the parallel or serial connection of spatial, temporal, or attribution filters, or other operators. Emulating an inductive loop at any location in the camera view is just a matter of a few clicks, as is the case for more complex scenarios such as U-turn detection, blocking vehicle detection, queue detection, or average speed measurement. The system is fully interactive and responds live to new settings configurations.

The system is also able to provide statistical data about the events in different aggregation modes such as whole history, time blocks, floating window or defined time interval. This data can be visualized on a user defined dashboard using interactive widgets for heatmap data, tables, trajectories, statistical values etc. The historical data together with the real-time detected events are available via open APIs for 3rd parties or can be exported in various formats.

The unit offers multiple connectivity options with traffic controllers, including data communication protocols like NTCIP, J2735, UDP, SDLC, etc. The actions/outputs are scriptable and can react to any single detected event in the video or user-defined performance metrics. The operating temperature range is from -40°C to 75°C. Two GigE PoE ports allow for easy connection of IP cameras and other network devices. Its compact size facilitates easy installation into the traffic cabinet. The system supports remote configuration, including updates, if internet connection is available.

TrafficXRoads is a multifunction traffic analyzer prepared for the new era of dynamic traffic control.

Dynamic control
- Vehicle presence
- Speed data, level of service
- Queue length / occupancy
- Gap - time & space, ETA

Traffic violations
- U-turn detection
- Wrong-way detection
- Illegal lane change
- Red-light violation

Vulnerable road user protection
- Pedestrian/cyclist presence
- Conflict detections
- Jaywalking
- Personal safety messages / J2735

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Powered by FLOW, the most powerful traffic framework

FLOW is a fully interactive video analytical traffic framework designed for real-time driven applications. It is the fastest and the most efficient way to transform any video stream into a stream of actionable insights. The first tool ever which visualizes traffic data live right at your fingertips and communicates with the other parts of your smart infrastructure using open APIs. FLOW is built for all thinkable traffic scenarios thanks to the powerful combination of unique visual traffic programming language, trajectory-driven design and AI-based image processing. Take the advantage of the one unified solution for smart traffic, parking, retail and security, which runs everywhere.

Video detection features

FLOW is powered by a proprietary developed and globally trusted video analytical engine utilizing deep-learning. This engine is capable of detecting and tracking hundreds of objects in multi-camera environments simultaneously.

Interactive data visualization

FLOW allows you to visualize the extracted information and analyses using interactive widgets on the customizable dashboards. Create a beautiful and live visualization of the current traffic situation.

Traffic analysis functions

FLOW supports various traffic analytic functions and operators that can be combined into a comprehensive traffic analysis running in real-time. Thanks to the unique visual traffic programming language, you will be a designer of a monitoring solution tailored to your specific needs.

Data interfaces

FLOW was born for integration with other parts of smart infrastructure. Any type of extracted traffic insights can be continuously delivered to 3rd party systems using an open API which supports multiple communication protocols including UDP, NTCIP, J2735 and REST.
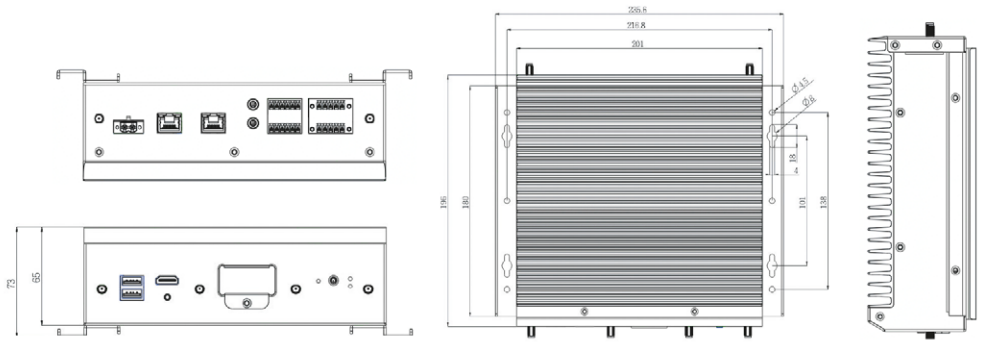

powered by FLOW. FRAMEWORK

Model

I131-O-NX8-128GB

Description

Fanless unit designed for real-time video analysis, intended for installation in a traffic controller cabinet.

General properties

Processor	Orin NX 8 GB
Memory	8 GB 128-bit LPDDR5x; 128 GB NVMe SSD storage
Expansion slots	1x M.2 304(5)2 B-Key Socket (USB 3.0) or 5G; Sub-6 With Dual SIM Socket Reserved; 1x M.2 2230 E-Key Socket (USB2.0 & PCIe) for WiFi
Ethernet	2x GigE PoE LANs With Support For IEEE 802.3af/at; PoE(+) Under Max. 30W (Surge Protection Up To 2KV)
Video output	1x HDMI 2.0 A/B @ 4Kp60 With Screw Lock
Power supply	System Power Input Rated DC 12V
Dimensions	W201 x D65 x H196mm / 7.91" x 2.56" x 7.72"
Gross weight	~2.6 kg
Operating temperature	-40°C ~ 75°C (-40°F ~ 167°F) (without LTE)
Storage temperature	-40°C ~ 75°C (-40°F ~ 167°F)
Relative humidity/Storage Humidity	5% ~ 90% Operating; 5% ~ 95% Non-Operating
Certification	CE/FCC Class A, UL

Video analytics

Video analytic engine	exact object traces, 17 categories, built-in ALPR for LP with alphanumeric characters (EU, USA, UK), traffic light state recognition, dynamic and static anonymization, georegistration, no-detection zones, color recognition
Processing power in FPS (B/B+A/B+LP/B+LP+A)*	@640x384: 218/162/92/83 (B = basic detection, A = add-ons img. processing modules, LP = license plate recognition)
Camera support	IP cameras with H.264 or H.265 codec and RTSP or ONVIF cameras. PTZ cameras, 360 cameras, thermal or visible light spectrum; capable of processing up to 6 cameras in the real time; detection range at least 80 meters.

Traffic analytics

Multifunctional engine	fully configurable trajectory processing pipeline via visual programming language FLOW; ability to evaluate multiple detection tasks in parallel (100+)
Available filters	zone, gate, directional gate, directional zone, movement, duration, time of occurrence, category, LP, color
Other operators	level of service, union, intersection, complement, volume, near misses
Data statistics	incremental / whole history, time blocks, floating window, fixed interval
Outputs	events, actions / commands, statistics, tables, histograms, images
Possible tasks	presence detection, u-turn detection, blocking vehicle detection, red light violation, average speed, detection of specific traffic events, OD matrix, conflict detection, traffic data collection

Interfaces

Visualization	fully configurable dashboards with interactive widgets
Data interfaces	NTCIP / SNMP, J2735, UDP, REST, WEBHOOK, MJPEG
HW interfaces	support for IO expanders (relay / digital outputs), SDLC expanders

Other features

- User management - admin, analyst, viewer
- NTP time synchronization
- Remote updates - over-the-air
- Data reduction profiles for remote configuration
- Evidence - excel reports, images, video
- Visibility detection
- Georeferencing & undistortion
- Multi-camera tracking

All specifications are subject to change without notice.
RCE systems s.r.o. | Svatopluka Čecha 1d, 612 00 Brno, Czech Republic

Packing list

- TrafficXRoads unit
- Power harness cable
- Bracket screw kit (4 screws, connectors)

Optional

- SDLC expander - 16 channels / 4 BIU
- IO expander - 16 relay / digital outputs

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