

TrafficXRoads-OF4004

The TrafficXRoads-OF4004 unit is a next-generation video analytics embedded computer, designed for real-time detection tasks to dynamically control traffic light signaling and collect traffic data using IP cameras. Equipped with today's most powerful NVIDIA embedded processor, the Jetson ORIN, it runs AI-based detection and tracking algorithms that convert any video stream into high-quality trajectory data about each road user. It is powerful enough to analyze data from up to 10 connected cameras in real-time over an operating range of more than 80 meters. The highly optimized and fully configurable trajectory processing engine can evaluate dozens of detection tasks in each camera view simultaneously.

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.

It can also provide statistical data about 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, along with the real-time detected events, are available via open APIs for third 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 -20°C to 60°C. Five PoE ports allow easy connection of enough cameras to cover any intersection, regardless of its shape. Its compact size facilitates easy installation into the traffic cabinet. The system supports remote configuration, including updates, if an internet connection is available.

TrafficXRoads is a multifunctional traffic analyzer, ready 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

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.

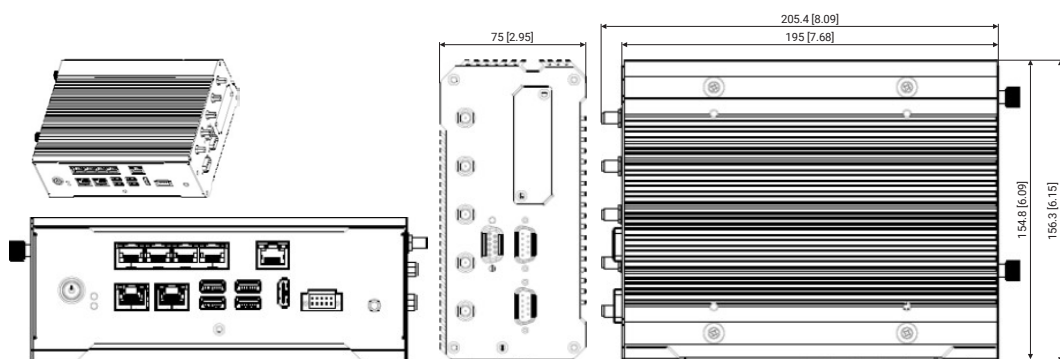


Model

TrafficXRoads-OF4004

Description

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



General properties

Processor	NVIDIA Orin NX 16 GB
Memory	16 GB 128-bit LPDDR5x; 128 GB nVME SSD
Expansion slots	1x M.2 M key, support NVME; 1x MICRO SD Slot
Ethernet	1 x GbE LAN support PD 60W, RJ45; 1 x GbE LAN support PSE 15W, RJ45; 4 x GbE LAN support PSE Max 60W, RJ45 (DC Mode)
Video output	1x HDMI 2.0 Out
Power supply	DC 9 - 48 V
Power consumption	Max. 45W without PoEs
Dimensions	W192.6 x D154.8 x H70.4mm / 7.58" x 6.09" x 2.77" (without bracket)
Gross weight	~2.4 kg
Operating temperature	-20°C ~ 60°C (-4°F ~ 140°F)
Storage temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Storage humidity	95% @ 40 °C (non-condensing)
Vibration/Shock	MIL-STD-810G
Certification	CE, FCC, NEMA TS2 (optional)
Designed for installation	traffic control cabinet / outdoor cabinet / DIN rail

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: 300/220/125/116; @704x448: 200/160/106/96 (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; capable of processing up to 10 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, movement, duration, time of occurrence, category, LP, color, speed
Other operators	level of services, 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 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

Packing list




- TrafficXRoads unit x 1 with DIN rail kit
- Power harness cable x 1
- Bracket screw kit x 1 (with 4 screws and 8 spacers)

Accessories

- SDLC expander - 16 channels / 4 BIU
- IO expander - 8/16/32 relays

All specifications are subject to change without notice.

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