Kapsch “All-in-one” VRX-3550

ANPR/LPR camera for MLFF tolling and enforcement

VRX is a high-performing, fully autonomous “All-in-one” camera designed for sophisticated ETC and ITS systems. Powered with on-board deep-learning video analytics, it is optimized to autonomously detect vehicles, determine their category / class, reading the registration plates and to document the traffic scene.

VRX uses the latest sensor and image-processing technology to provide high-resolution, high-quality image capturing and automatic registration-plate reading with the highest possible accuracy.

At Kapsch we excel in optimizing system design and in delivering a comprehensive suite of vehicle registration systems, including MLFF video tolling; enforcement for DSRC, RFID, video or satellite-based tolling; ITS systems such as Traffic Surveillance, Road Safety Enforcement, and Electronic Vehicle Registration Monitoring (EVR); or Commercial Vehicle Enforcement (CVE) systems.

VRX may cover one lane or several lanes at a time and can be single or dual-headed. It can detect and classify vehicles autonomously, or receive triggers from a vehicle detection and classification subsystem, or perform both functions simultaneously, for highest accuracy and redundancy.

Optional LTE / GNSS interfaces

Actual appearance depends on configuration variant

VRX is designed for high availability, robust and redundant systems. It buffers images to compensate for time delays and uncertainties in other roadside subsystems, while continuing to produce accurate high-quality images that are correlated to and synchronized with other subsystems.

VRX offers powerful on-board processing. It uses state-of-the-art video analytics to identify and classify the passing vehicles and organizes the resulting data, including images, into a passage report. Depending on your roadside system design, data may be encrypted and signed with the latest cryptographic algorithms, ensuring both data security and integrity.

An optional LTE / GNSS interface enables wireless data connection and highest accuracy clock synchronization and geolocation.

VRX seamlessly integrates with various Kapsch software microservices that can be deployed in the cloud or directly on the edge, on-board VRX, enabling optimal system architecture for each project´s needs.

Video streaming enables visual monitoring of current roadway activities as well as a cost effective method for evaluating performance and accuracy.

VRX is the result of continuous adaptation to the latest technology while continuing to ensure full Kapsch in-house control of critical areas such as in-time delivery, performance optimization, seamless system integration, quick and easy customer-specific adaptations, as well as long-term end-of-life / lifecycle management.

VRX Overall

- Various camera sensor types, resolutions, lenses, and filters
- Sophisticated on-board video analytics for high-end vehicle detection, classification and license plate recognition
- Integrated, non-distracting, illumination and optional external illumination, several wavelength options
- Automatic exposure control based on license plate or whole image
- Configurable data bar / black strip in the image and JPEG compression
- Continuous monitoring and status information
- Local buffering to avoid data loss in case of network or server failures
- Depending on roadside system design / SW configuration:
  - Single-lane or multi-lane configuration
  - Synchronization of all cameras and illuminators in the roadside system
  - Integration with external vehicle detection and classification subsystem
  - Post-trigger mechanism allows for time delay in external triggering system
  - Encryption, signature and key management, tamper detection
  - High-definition streaming
  - Downgraded modes and redundant system design
  - Further video analytics such as automatic incident detection and pedestrian detection

VRX Device

- Image sensor(s): range of global shutter CMOS sensors from 2MP to 9MP, color and monochrome versions, near infrared light, visible light as well as a mix of both.
- Field of View: 5m to 12m at 11 to 30m with various lens options
- Integrated illumination: Up to 40 W optical (± 12° alt. ± 20° FWHM)
- Recyclable enclosure, die-cast, corrosion resistant aluminum alloy with ABS+PMMA sunshield (for LTE / GNSS configuration variant)
- Size (LxWxH): 350 x 270 x 164 mm incl. pre-mounted std. bracket
- Weight: 6.5 kg incl. pre-mounted std. bracket
- Ambient temperature
  - Operating -40°C to +55°C
  - Non-operating -25°C to +55°C
  - Dry-heat test +70°C
- Configurable heating control with separate power, for maximum robustness also in extreme climate
- Humidity (operating) 4 % to 100 %
- Power: 24-48 VDC max 40 W, typical 26 W. Optional heating max 25 W
- MTBF > 60.000 h
- Vibration 1 – 150 Hz, 10 m/s^2
- Shock 200 m/s^2, 11 ms
- IEC protection rating: IP67
- Interface 10/100/1000BASE-TX
- Optional interface: LTE / GNSS
  - LTE and UMTS/HSPA+ for Europe/Aus&NZ
  - MIMO technology
  - GNSS: GPS, GLONASS, BeiDou / Compass, Galileo, QZSS

Approvals

- CE, FCC, UKCA, RCM
- EMC 2014/30/EU
- LVD 2014/35/EU
- RoHS3 2015/863/EU
- FCC: 47CFR15
- Photo-biological Safety EN62471

Installation and Maintenance SW

- Web-based user interface seamlessly integrated in Kapsch Roadside Configuration Tool
- Setting of configuration parameters on VRX camera
- Image visualization
- Manual triggering of images
- Download firmware
- Monitoring of input (trigger) and output (result) message

Kapsch TrafficCom

Kapsch TrafficCom is a globally renowned provider of transportation solutions for sustainable mobility with successful projects in more than 50 countries. Innovative solutions in the application fields of tolling, tolling services, traffic management and demand management contribute to a healthy world without congestion.

With one-stop-shop solutions, the company covers the entire value chain of customers, from components to design and implementation to the operation of systems.

Kapsch TrafficCom, headquartered in Vienna, has subsidiaries and branches in more than 25 countries and is listed in the Prime Market segment of the Vienna Stock Exchange (ticker symbol: KTCG).

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