March 2023

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**Product guide specification**

**BOSCH MVC-IVA-TRA IVA Pro Traffic**

1. **Performance requirements**
   * 1. The video analytics software shall be designed for ITS applications such as counting, classification, and Automatic Incident Detection.
     2. The video analytics software shall allow for traffic monitoring at intersections, highways, and tunnels and shall improve detection capabilities in congested scenes for accurately counting vehicles at traffic lights or in traffic jams.
     3. The video analytics software shall achieve accuracy levels beyond 95% for real-time event detection and aggregation of comprehensive data necessary for highway and urban infrastructure planning.
     4. The video analytics software shall offer new deep neural network-based video analytic detectors for cars, trucks, buses, motorcycles, bicycles, and pedestrians.
     5. The video analytics software shall ignore potential disturbances caused by vehicle headlights or shadows, extreme weather, sun reflections, and shaking cameras.
     6. The video analytics software shall offer automatic detection of safety risks and other traffic events, including alerts for pedestrian presence, slow and stopped vehicles, traffic queues and congestion, and vehicles traveling the wrong way.
     7. The video analytics software shall provide a dedicated tracking mode: Traffic tracking (3D).
     8. The video analytics software shall provide the following object classes:
        1. Pedestrian
        2. Bicycle
        3. Motorcycle
        4. Car
        5. Truck
        6. Bus
     9. The video analytics software shall provide the following alarm and statistic tasks:
        1. Detect persons and vehicles within, entering, or leaving a single or multiple (up to three) defined detection zones in specified sequence or timing
        2. Detect multiple line crossings from a single line up to three lines combined in specified sequence or timing
        3. Detect persons and vehicles traversing a route
        4. Detect loitering in an area related to radius and time
        5. Detect persons and vehicles that have started or stopped moving
        6. Detect persons and vehicles with properties, such as size, speed, direction, and aspect ratio, that change within a configured time according to specification
        7. Count persons and vehicles crossing a virtual line
        8. Count persons and vehicles within an area and alarm if a predefined threshold is reached
        9. Combine tasks using scripts
     10. The video analytics software shall be configurable to ignore specified image areas and small objects to enhance robustness.
     11. The video analytics software shall include the calibration possibility to transform 2D pixels into 3D real-world measures, including size, speed, and geolocation of objects for tracking use cases.
     12. The video analytics software shall run in full on the camera without any need of external hardware or software.
     13. The video analytics software shall provide intelligence-at-the-edge technology which allows users to reduce bandwidth and storage in the absence of action and switch back to full image quality in case of video analytics alarms.
     14. The video analytics software shall be able to be used for full forensic search in which the rules can be changed within a video management system, even after the fact. New tasks shall be able to be defined and adapted for each search, and the recorded metadata shall then be scanned and evaluated accordingly for an event list. With forensic search, the video analytics software shall scan a huge recording database for events within seconds.
     15. The video analytics software shall provide intuitive graphical user interface.
     16. The video analytics software shall provide assisted calibration.
2. **Manufacturers**

Acceptable Manufacturer:

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