



The detection module will comply with the form factor and electrical characteristics of a TEES Input File or NEMA Detector Rack to provide up to sixteen (16) contact closure inputs and twenty-four (24) contact closure outputs, and up to thirty-two (32) inputs and sixty-four (64) outputs via SDLC protocol to a traffic signal controller.

### **1.6 Power Consumption**

The detection system will support “green” strategic goals in its construction and by operating on 110/220 VAC, 50/60Hz at a maximum of 25 watts with the heated faceplate in full operation. A typical 4-sensor installation in an intersection cabinet will consume less than 100 watts. No supplemental surge suppression will be required outside the cabinet.

## **2.0 Functional Capabilities**

The real-time, detection performance of the MVP detection module shall be optimized to meet the detection objective of the traffic application. The detection objective determines sensor mounting location; the number of traffic lanes to monitor; sizing, placement, and orientation of vehicle detectors; and how to minimize the effects of lane-changing maneuvers.

### **2.1 Real-Time Detectors**

The detection module will be capable of simultaneously processing information from the forward-fire radar and video camera. The video will be digitized and analyzed up to 30 times per second. Intelligent decision logic monitors the current operating conditions and combines the radar video information continuously to meet the detection objectives.

Different detector types will be selectable during configuration. All of the following Detector Types will be supported: Stop Line, Count Detector, Presence Detector, Bicycle Detector, Speed Detector, Detector Function, Station, Input, Label, Scheduler, Speed Alarm, and Contrast Loss Detector.

The Stop Line Detector will indicate presence of a moving or stopped vehicle, performing moving vehicle validation and time-persistence validation during Red and compensating for vehicle occlusion effects, camera motion, and poor video contrast. It offers the choice of two behaviors during the Green of the phase. One behavior is similar to Presence detectors with a large detection area during Red and shrinking slightly during Green for better adjacent lane shadow rejection without affecting most timing strategies. The other behavior, with Snappy detection, automatically reduces its size during Green—so there is a larger detection area during Red for safety and a small detection area during Green for more efficient intersection operations, including gap out.

The Detector Function will combine multiple detector outputs together via OR, AND, NAND, NOR, and N of M logical functions to make a decision or qualify an event. In addition, the Detector Function will condition the detector outputs based on the state of the associated traffic signals. Similar to detector types in a traffic controller, all of the following detector output types will be available: Type 0, Type 1, Type 2, Type 3, Type 4, Type 5, Type 6, Type 7, Type 9 (Moving Vehicle Detector), and Type 10 (Contrast Loss Arbitration).

Detectors will accurately detect approaching, speeding, or stopped vehicles in multiple traffic lanes via processing of radar information and video images. Detection events will be available to a variety of parallel and serial outputs simultaneously that reflect the current real-time detector state. The detection module will detect an electrical malfunction, the absence of a valid video, and/or radar signal and choose the appropriate failsafe state, including turning all detector outputs on.