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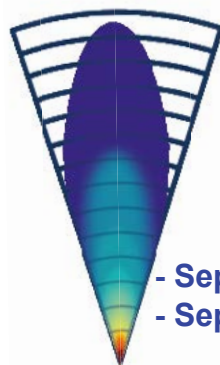
Intelligent Transportation Systems

Microwave Vehicle Detection System

Two-Dimensional High Definition Microwave Sensor Technical Specifications - Model GC-R180

Key Attributes

- Traffic Data Statistics
- Intersection Management
- Simultaneously Tracks up to 126 Objects
- Presence Detection
- Classification
- Precise Individual Vehicle Speed
- Incident Detection
- Wrong Way Detection
- Auto Configuration Tool
- All Weather Operation
- Maintenance Free
- Field Proven



- Separation in Speed
- Separation in Range

Version 2.4



Overview

GovComm's two-dimensional high-definition microwave sensor employs a new Doppler technology specifically designed to optimize vehicle separation for unmatched detection rates and the best position, speed vector, lane position and measurement accuracy, even in dense and congested traffic situations. With the ability to track 126 objects in its field of view simultaneously and a passenger car detection range of up to 755 feet (over 1,400 feet for trucks), this microwave sensor is a perfect fit for most intelligent transportation systems. The GC-R180 features Ethernet and full duplex RS485 interfaces, a real time clock and on-board storage.

GovComm microwave vehicle detection systems are equipped with a stainless steel three-dimensional mounting bracket, junction box mounting adapter, hardened media converter and cables.



*Typical values; may vary to higher or lower values depending on clutter environment. All values given for bore sight. Please note that the MVDS – like any other sensor system – although well optimized, will not achieve a 100% detection on probability and will not achieve a false alarm rate equal to zero.



Technical Specifications for GovComm Microwave Vehicle Detection System Two-Dimensional High Definition Microwave Sensor Model GC-R180

Table 1: General Performance Data

| Parameter | Value |
|--------------------------------|---|
| Sensor Performance | |
| Max. Range on Passenger Car | 1,148 Feet ^I (@20dBm) / 755 Feet ^I (@12.7dBm) |
| Max. Range on Truck | 1,476 Feet ^I (@20dBm) / 1,148 Feet ^I (@12.7dBm) |
| Instrumented Range | 1,479 Feet |
| Minimum Range | 5 Feet |
| Range accuracy | > 97.5% |
| Minimum Absolute Radial Speed | 0.3 Feet per Second |
| Speed Accuracy | 99% ^{II} |
| Angle Interval (field of view) | -6 to +6 (Elevation); -18 to +18 (Azimuth) degree ^{III} |
| Update time | ≤ 79ms |
| Environmental | |
| Ambient Temperature | -40°F to +185°F |
| Shock | 100g ^{rms} |
| Vibration | 14g ^{rms} |
| Ingress Protection | IP67 ^{IV} |
| Pressure / Transport Altitude | 0 to 33,000 Feet |
| Mechanical | |
| Weight | 45.50 oz |
| Dimensions | 8.37 inches x 6.08 inches x 1.57 inches |
| General | |
| Power Supply | 13 to 32 VDC ^V / 12W |
| Frequency Band | 24.0 to 24.25 GHz |
| Bandwidth | < 250 MHz |
| Max. Transmit Power (EIRP) | < 20 dBm |
| Interfaces | CAN V2.0b (passive) ^{VI} / RS485 / 10/100 Ethernet |
| Connector | 12 Pin Plug Binder Series 712 / Hirose LF10WBRB-12PD (CAN, Power, RS485) |

^I Typical values; may vary to higher or lower values depending on clutter environment. All values given for bore sight. Please note that the MVDS – like any other sensor system – although well optimized, will not achieve a 100% detection probability and will not achieve a false alarm rate equal to zero.

^{II} Measured on object having constant radial speed, at bore sight.

^{III} Total field of view is angle interval where reflectors can be detected; 3dB field of view is narrower.

^{IV} IP 67 only when connector or cap attached.

^V Measured at connector; minimum. voltage slew rate 500V/s or maximum voltage rise time 15ms; supply source impedance 0.5Ohms.

^{VI} It is recommended to use an external surge protector for power, CAN, RS485 and other interface ports.



Technical Specifications for GovComm Microwave Vehicle Detection System Two-Dimensional High Definition - Model GC-R180

Table 2: Standard Configuration for Counting and Statistics

| Parameter | Value |
|--------------------------------------|---|
| Traffic Direction | Approaching & Receding |
| Mounting Height | Recommend 20 feet (13 to 33 feet) ^I |
| Sensor Azimuth angle | Recommend -3 degrees (-15 to +15 degrees) ^{II} |
| Sensor Elevation angle | Recommend -1 degrees (-9 to 0 degrees) ^{II, III} |
| Counting Line Distance (Approaching) | Recommend 230 feet (131 to 328 feet) ^{IV} |
| Counting Line Distance (Receding) | Recommend 394 feet (230 to 591 feet) ^{IV} |
| Setback | Recommend 3 feet (0 to 33 feet) |
| Counting Accuracy | > 95% ^V |
| Classification Accuracy | > 80% ^V |
| Common Classes | Motorcycles, Passenger Cars and Trucks |

^I May affect maximum detection range. Occlusion needs to be considered.

^{II} Smaller absolute angles allow longer detection range along a road.

^{III} Application specific. Gantry mount: steeper elevation. angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.

^{IV} Typical value for counting applications; may be different for other applications.

^V Typical value when properly installed at suitable location. The counting and classification accuracy typically depends on the following main (and other) factors: mounting height, traffic density

Table 3: Standard Configuration for Stop Bar Detection

| Parameter | Value |
|----------------------------|---|
| Traffic Direction | Approaching |
| Mounting Height | Recommend 20 feet (3 to 33 feet) ^I |
| Sensor Azimuth angle | Recommend -3 degrees (± 15 deg.) ^{II} |
| Sensor Elevation angle | Recommend -1 degrees (-9 to 0 degrees) ^{II, III} |
| Stop Bar Distance | Recommend 148 feet (66 feet to 230 feet) ^{IV} |
| Advance Detection Distance | Recommend 591 feet (164 feet to 1,444 feet) ^{IV} |

^I May affect maximum detection range. The best performance is typically achieved for mounting heights between 7 to 26 feet. Occlusion needs to be considered.

^{II} Smaller absolute angles allow longer detection range along a road.

^{III} Application specific. Gantry mount: steeper elevation angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.

^{IV} Typical value for stop bar applications; may be different for other applications.

