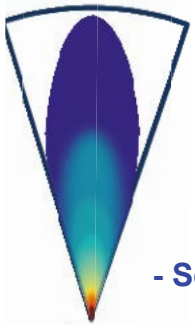
govcomm
Intelligent Transportation Systems

Microwave Vehicle Detection System

Standard Definition Microwave Sensor
Technical Specifications - Model GC-R160

Key Attributes

- Traffic Data Statistics
- Intersection Management
- Simultaneously Tracks up to 64 Objects
- Presence Detection
- Classification
- Precise Individual Vehicle Speed
- Incident Detection
- Wrong Way Detection
- Auto Configuration Tool
- All Weather Operation
- Maintenance Free
- Field Proven



- Seperation in Speed

Version 2.4

Linux ISO 9001 NEMA

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Overview

GovComm's standard definition microwave sensor is a decades-old highly available and proven technology. With the ability to track 64 objects in its field of view simultaneously and a passenger car detection range of up to 524 feet (over 1,000 feet for trucks), this microwave sensor is a perfect fit for most intelligent transportation system applications. GovComm microwave vehicle detection systems are equipped with a stainless steel three-dimensional mounting bracket, junction box mounting adapter, hardened media converter and cables.

GovComm microwave vehicle detection systems are offered as stand-alone solutions or for integration into intersection management, advance detection, presence detection, traffic data statistics, wrong-way and other intelligent transportation system applications.

*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.

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Table 1: General Performance Data

Parameter	Value
Sensor Performance	
Range Pedestrians	164 feet[I]
Range Passenger Cars	524 feet[I]
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	≤ 50ms
Simultaneously tracked objects	Up to 64
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	12oz
Dimensions	3.89 inches x 4.33 inches x 1.69 inches
General	
Power Supply	7 to 32 VDC[V] / 3.7W
Frequency Band	24.0 to 24.25 GHz
Bandwidth	< 100 MHz
Max. Transmit Power (EIRP)	20 dBm
Interfaces	CAN V2.0b (passive)[VI] / RS485
Connector	8 Pin Plug Binder Series 712 (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

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Table 2: Standard Configuration for Counting and Statistics

Parameter	Value
Traffic Direction	Approaching & Receding
Mounting Height	Recommended 20 feet (Range 15 to 35 feet)[I]
Sensor Azimuth Angle	Recommended ±8 degrees (Range ±18 degrees)[II]
Sensor Elevation Angle	Recommended 0 degrees (Range ± 6 degrees) [II], [III]
Counting Line Distance (Approaching)	Recommended 115 feet (Range 66 feet to 164 feet)[IV]
Counting Line Distance (Receding)	Recommended 295 feet (164 feet to 525 feet)[IV]
Setback	Recommended 3 feet (0 to 33 feet)
Counting Accuracy	> 95%[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	Recommended 20 feet (Range 15 to 35 feet)[I]
Sensor Azimuth Angle	Recommended -8 degrees (Range ±15 degrees)[II]
Sensor Elevation Angle	Recommended -6 degrees(Range -9 to 0 degrees)[II], [III]
Stop Bar Distance	Recommended 115 feet (Range 66 feet to 164 feet)[IV]
Advance Detection Distance	Recommended 443 feet (Range 164 feet to 524feet)[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.

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