

# govcomm

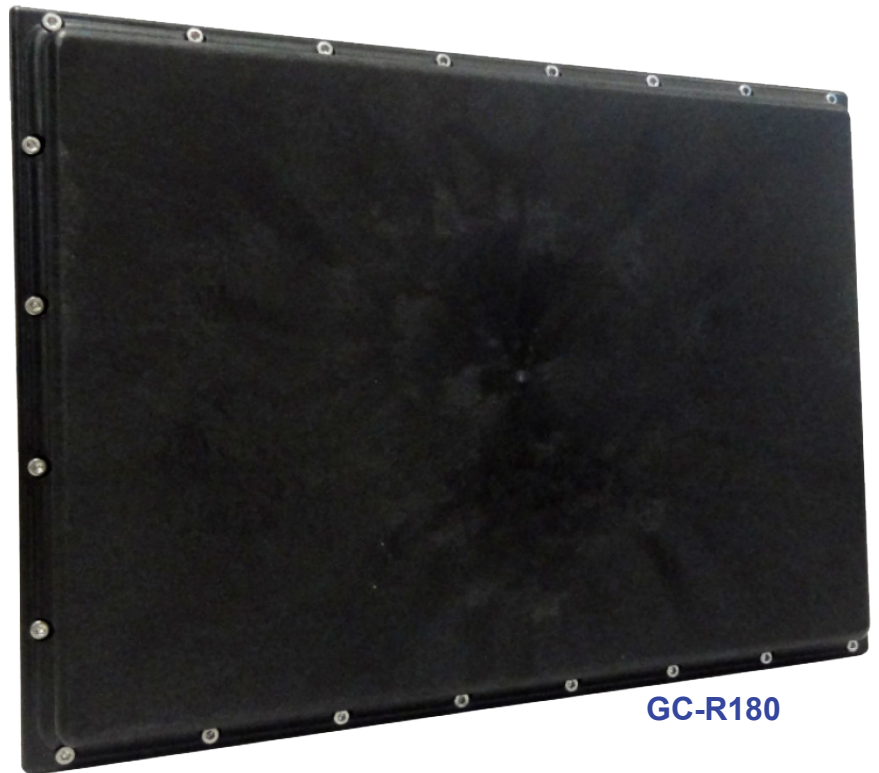
Intelligent Transportation Systems

Microwave Vehicle Detection System

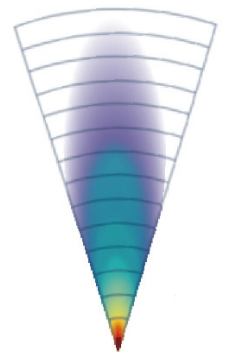
**Two-Dimensional High Definition Microwave Sensor  
Technical Specifications - Model GC-R180**

## Key Attributes

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



GC-R180



- Separation in Speed
- Separation in Range

Version 2.5



Product picture and technical specifications are subject to change without notice.  
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# 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.

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

## Table 1: General Performance Data

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

<sup>I</sup> 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.

<sup>II</sup> Measured on object having constant radial speed, at bore sight.

<sup>III</sup> Total field of view is angle interval where reflectors can be detected; 3dB field of view is narrower.

<sup>IV</sup> IP 67 only when connector or cap attached.

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

<sup>VI</sup> It is recommended to use an external surge protector for power, CAN, RS485 and other interface ports.



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# Technical Specifications for GovComm Microwave Vehicle Detection System Two-Dimensional High Definition Microwave Sensor - 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) <sup>I</sup>
Sensor Azimuth angle	Recommend -3 degrees (-15 to +15 degrees) <sup>II</sup>
Sensor Elevation angle	Recommend -1 degrees (-9 to 0 degrees) <sup>II, III</sup>
Counting Line Distance (Approaching)	Recommend 230 feet (131 to 328 feet) <sup>IV</sup>
Counting Line Distance (Receding)	Recommend 394 feet (230 to 591 feet) <sup>IV</sup>
Setback	Recommend 3 feet (0 to 33 feet)
Counting Accuracy	> 95% <sup>V</sup>
Classification Accuracy	> 80% <sup>V</sup>
Common Classes	Motorcycles, Passenger Cars and Trucks
Classes	Usually 3 classes are used of the following: Pedestrian, Bicycle, Motorbike, Passenger Car, Truck

<sup>I</sup> May affect maximum detection range. Occlusion needs to be considered.

<sup>II</sup> Smaller absolute angles allow longer detection range along a road.

<sup>III</sup> Application specific. Gantry mount: steeper elevation. angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.

<sup>IV</sup> Typical value for counting applications; may be different for other applications.

<sup>V</sup> 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) <sup>I</sup>
Sensor Azimuth angle	Recommend -3 degrees ( $\pm 15$ deg.) <sup>II</sup>
Sensor Elevation angle	Recommend -1 degrees (-9 to 0 degrees) <sup>II, III</sup>
Stop Bar Distance	Recommend 148 feet (66 feet to 230 feet) <sup>IV</sup>
Advance Detection Distance	Recommend 591 feet (164 feet to 1,444 feet) <sup>IV</sup>

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

<sup>II</sup> Smaller absolute angles allow longer detection range along a road.

<sup>III</sup> Application specific. Gantry mount: steeper elevation angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.

<sup>IV</sup> Typical value for stop bar applications; may be different for other applications.

