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## Key Features & Benefits

- An advanced RTK engine for faster initialization times when satellite lock is lost and enhanced performance near obstructions
- Support for the GPS modernized L2C and the planned L5 signals
  - Support for GLONASS
  - Support for SBAS systems (including: WAAS, EGNOS, MSAS)
- Single, rugged cab or blade mountable unit - GPS antenna, receiver and isolation system
  - 3 LED indicators that provide instant operational feedback
  - Single cable connector (high cycle count connector)
  - 100% sealed housing
- Meets EU Restriction on Hazardous Substance (RoHS) directives
  - TCP/IP capable using a serial PPP connector
- An easy to use removable mounting bracket with quick release adjustment ratchet

## Performance Characteristics

Tracking and performance:

Tracks up to 44 Satellites with 220 Tracking Channels  
GPS: L1C/A, L2C, L2E (Trimble Method for tracking L2P), and L5 Code with Full Cycle Carrier  
GLONASS: L1C/A, L1P, L2C/A, and L2P Code with Full Cycle Carrier  
SBAS: L1C/A and L5 (for WAAS, EGNOS, or MSAS)  
Fully operational during P-code encryption  
Galileo GIOVE-A and GIOVE-B<sup>4</sup>

Measurements

Advanced Trimble<sup>®</sup> Maxwell<sup>™</sup> 6 Custom GPS chip Trimble R-Track<sup>™</sup> technology for tracking the new L2C Civil Signal, L5 Signal for GPS modernization and GLONASS  
High-precision multiple correlator for L1, L2 and L5 pseudorange measurements  
Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multi-path error, low time domain correlation and high dynamic response  
Very low noise L1, L2 and L5 carrier phase measurements with <1mm precision in a 1 Hz bandwidth  
L1, L2 and L5 Signal-to-Noise ratios reported in dB-Hz  
Proven Trimble low elevation tracking technology  
72 Channels L1 C/A Code, L2C, L5C; GPS L1/L2/L5  
GLONASS L1/L2 Full Cycle Carrier

# Specifications

# Trimble MS992 GNSS Smart Antenna

Code differential Positioning <sup>1</sup> :	GPS:
Horizontal accuracy:	8 mm + 1 ppm RMS (0.032 ft + 1 ppm RMS)
Vertical accuracy:	15 mm + 1 ppm RMS (0.065 ft + 1 ppm RMS)
Real Time Kinematic (RTK) positioning <sup>1</sup> :	
Horizontal accuracy:	8 mm + 0.5 ppm RMS (0.032 ft + 0.5 ppm)
Vertical accuracy:	15 mm + 0.5 ppm RMS (0.05 ft + 0.5 ppm)
Initialization time:	Typically <sup>2</sup> < 10 seconds + 0.5 times baseline length in km, up to 30 km (Regular RTK operation with base station)
Initialization Reliability:	Typically <sup>3</sup> > 99.9%

## Physical Characteristics:

Size: (height x width x depth)	147 mm x 231.9 mm x 251.1 mm
Weight:	3.8 kg with mounting bracket
Mounting:	Mast Mounting Bracket
Network Connector:	16 pin Amphenol bayonet, sealed
Indicators (3 yellow LEDs):	
Upper:	DC Power
Middle:	GPS correction signal status (via radio link or cable)
Lower:	GNSS signal status (no signal, searching, or tracking)

## Environmental Characteristics:

Operating Temperature:	-40°C to +70°C (-40°F to +158°F)
Storage Temperature:	-50°C to +85°C (-67°F to +185°F)
Humidity:	waterproof, 100% fully sealed
Sealing:	+/- 5 psi sealing
Shock:	75 Gs, 6 milliseconds duration, 3 shocks in each of the three mutually perpendicular axes
Vibration:	20.4 gRMS
EMC:	EN13309:2000, CE Mark, C-Tick

## Technical Specifications:

Electrical Input Voltage:	9 to 32 VDC
Electrical Input Power:	18W maximum 5W nominal
Control Interface:	J1939 CAN network (two buses) RS-232 Serial (two ports)
Reverse Voltage Protection:	Yes
Load Dump Protection:	Yes
Tracking:	

**Footnotes:**

1. Accuracy and reliability may be subject to anomalies such as multi-path, obstructions, satellite geometry and atmospheric conditions.
2. May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry.
3. May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.

**4 Galileo Commercial Authorization**

Receiver technology having Galileo capability to operate in the Galileo frequency bands and using information from the Galileo system for future operational satellites is restricted in the publicly available Galileo open Service Signal-In-Space Interface Control document (GAL OS SIS ICD) and is not currently authorized for commercial use.

Receiver technology that tracks the GIOVE-A and GIOVE-B test satellites uses information that is unrestricted in the public domain in the GIOVE A + B Navigation Signals-In-Space Interface Control document. Receiver technology having developmental GIOVE-A and B capability is intended for signal evaluation and test purposes.

Specifications subject to change without notice.

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