

## **CheetahNAV**

Compact



## SYSTEM OVERVIEW

Our **CheetahNAV Compact** is meticulously crafted to be compact and space-efficient, ensuring it can be seamlessly integrated into a wide range of vehicle platforms. Despite its reduced size, the display maintains excellent readability and clarity, thanks to advanced display technologies. The touchscreen functionality allows for effortless navigation and swift access to critical data. The interface can also be customised to suit your specific operational needs, providing you with relevant information at the right time. **CheetahNAV Compact** utilises real-time moving map technology that provides the driver and crewmembers continuously with accurate situational awareness information. **CheetahNAV Compact** has a user-friendly graphical navigation capability, combining inertial and satellite position information for accurately navigating between pre-set waypoints towards the final destination. **CheetahNAV Compact** makes use of an advanced Inertial Navigation System (INS), comprising several aids, including accelerometers and gyroscopes to provide accurate position, velocity, heading, pitch and roll of the platform using an advanced Kalman filter- based algorithm. The integrated Inertial Measurement Unit (IMU) ensures jamming free operation or during emergency conditions where normal communication networks are compromised.

Ideal for tough operational conditions, the ruggedised **CheetahNAV Compact** is designed and has been tested to withstand severe customer environments.

CheetahNAV Compact multi-language option ensures successful joint multinational operations.

The crew of the vehicle is provided with the following guidance queues to execute the planned tactical maneuvers:

- > Current Vehicle Speed and True Heading of the vehicle
- Current Vehicle Position
- Desired Heading towards the Next Waypoint or Destination
- > Desired Vehicle Speed to reach the Next Waypoint or Destination at the planned time
- > Next Waypoint or Destination Position and Distance to the Next Waypoint
- > Pitch and Roll Attitude of the vehicle
- > Track travelled by the vehicle

## **Moving Map Display**



**CheetahNAV Compact** is a versatile tactical navigation system designed for security services, emergency services and light All-Terrain Vehicle (ATV) using user controlled offline navigation maps.

**CheetahNAV Compact** is field proven, PNT- capable high precision GNSS-Aided Inertial Navigation System (INS) which utilise tactical grade, MEMS sensors based Inertial Measurement Unit (IMU); embedded, multi constellation and multi frequency GNSS receiver; Advanced Kalman Filter based algorithm providing very accurate position information, navigation, time, velocity and orientation in GNSS enabled and GNSS-denied environments.

An optional slave module is available for use in space constrained areas where specific information needs to be communicated to personnel i.e. the driver.

#### **Key Features**

- > Route planning functionality
- Improved situational awareness
- Enhances mobility of vehicles
- Real time tactical moving map
- Arabic language pack
- MIL-STD-2525B symbology
- > Touch screen display
- Ruggedised design
- Compact, MIL-STD qualified Inertial Navigation System (INS)
- > Embedded GNSS receiver
- Tactical-grade IMU
- > Dead reckoning accuracy within 0.2% of distance travelled (DT)
- > Non ITAR controlled

## **Optional**

- > Battle management system integration
- > Multifunctional HD display sharing for other vehicle systems
- Freeform messaging
- > Anti GNSS spoofing and jamming



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## **SPECIFICATIONS**

## Navigation

Heading Accuracy (Static)	1.0° RMS	
Heading Accuracy (Dynamic, GNSS)	0.2° RMS	
Pitch/Roll Accuracy (Static)	0.06° RMS	
Pitch/Roll Accuracy (Dynamic)	0.06° RMS	
Horizontal Position Accuracy (with GNSS)	1.8m RMS	
Horizontal Position Accuracy (GNSS-denied, free inertial, RMS) <sup>(1)</sup>	0.2% of distance travelled	
Vertical Position Accuracy	1.8m RMS	
Velocity Accuracy	± 0.06 m/s RMS	
Angular Resolution	< 0.04° RMS	
Output Rate (IMU Data)	2000 Hz	
Output Rate (INS Data)	200 Hz	

Note 1: Under specific test conditions or with optional odometer input to INS

#### GNSS

Receiver Type	184 Channels - F9 Engine	
Enabled Navigation Signals	GPS L1/L2, GLONASS L1/L1, Galileo E1/E5, BeiDou B1/B2	
GNSS Solution Update Rate	10 Hz	
Time to First Fix (Cold/Warm Start)	< 30 s	
Time to First Fix (Hot Start)	< 10 s	

IMU	Accelerometers	Gyroscopes	Barometer
Range	± 15 g	± 450° /s	300 - 1100 hPA
In-Run Bias Stability	< 0.02 mg	< 1° /hr	2 Pa
Noise Density	0.035 m/s/√Hr	0.2° /√Hr	0.8 Pa/√Hz

### Environmental

Temperature (Operational)	-20°C to +71°C		
Temperature (Storage)	-40°C to +80°C		
Vibration	MIL-STD810G 'Operational Service' as for Category 20 Ground Vehicles. MIL-STD810G 'Transportation' as for Category 6 Large Assembly Cargo.		
Shock	MIL-STD810G 'Procedure I –Functional Shock' of 40g as for Ground Equipment.		
Humidity	MIL-STD810G Procedure I –Natural' of 80%RH at 40°C.		
Sand and Dust	MIL-STD810G Dust (<150um) Procedure' as for Ground Vehicles.		
Electromagnetic Compatibility	MIL-STD-461F Class B.		
Altitude	MIL-STD810G 'Procedure I – Storage/Air Transport' up to 15 km (50,000 feet).		
Input Voltage	28V DC MIL-STD-1275E		
MTBF	15,000 hours @55°C GM		

The vehicle navigation system is a 'map based' navigation system that will allow maximum tactical advantage by enhancing the situational awareness of the crew at a reasonable cost. The vehicle relies on an inertial measurement unit in conjunction with GNSS and dead reckoning techniques, producing precise positional accuracies. This ensures the vehicle's capability to perform effectively in tactical offensive or emergency operations, particularly in scenarios where conventional communication systems are inoperative.

## **Compact Display Unit**

- Display
  - 8.4" Diagonal 4:3 TFT
  - 1024x768 Resolution
  - Sunlight Readable (800+ cd/m<sup>2</sup>)
  - Resistive touch
- Interfaces
  - 100/1000 Base T Ethernet
  - 28Vdc (MILSTD 1275E)
  - RS422 / USB / CAN
  - IMU/INS interfaceGNSS Antenna (Optional)





