ClearWay™

360° Radar Automatic Incident Detection for Highways

Comprehensive AID

Reliable in poor visibility

360° long-range coverage

Automatic camera control

Count and classify

No hardware maintenance

Safety is everything.

NAVTECH RADAR

Why use Navtech's AID system on highways?

Accurate incident detection in poor visibility across the entire highway.

360° long-range coverage

The combination of a 360° field-of-view and long-range detection mean the ClearWay radar system continually **monitors traffic in all lanes, on both carriageways.** More complex road layouts can be accommodated such as ramps and intersections.

Photo: Radar detects in poor visibility across both carriageways.
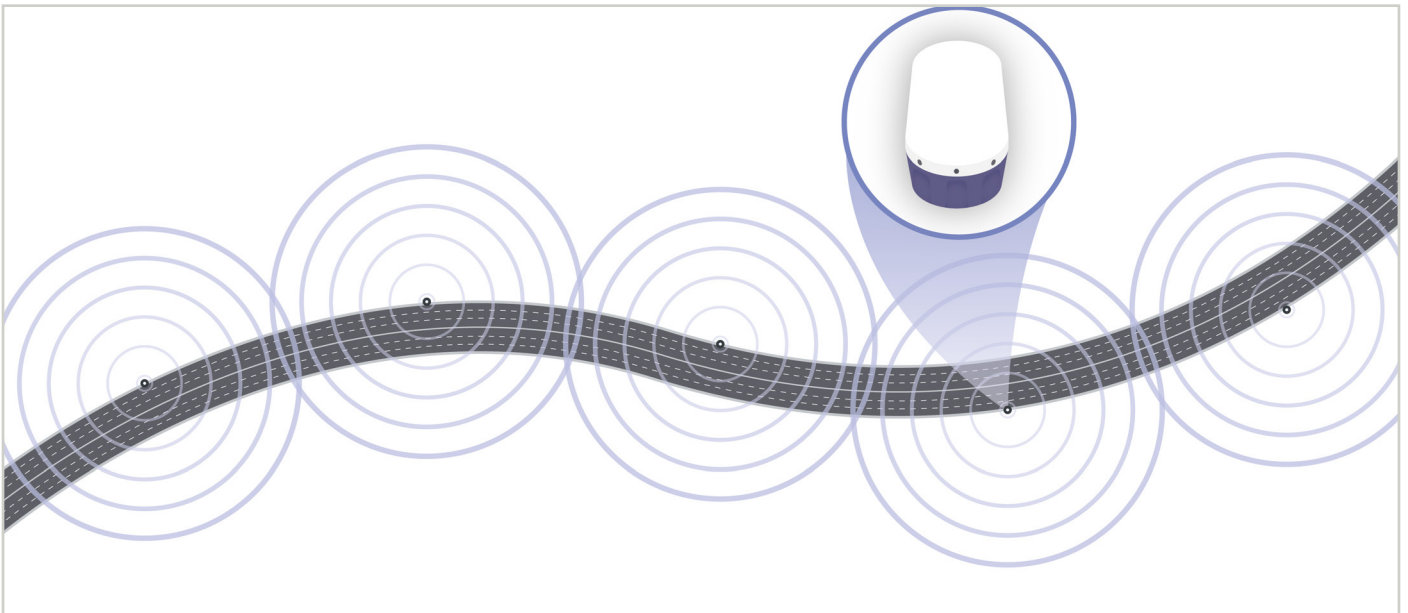

Image: 360° radar achieve full coverage across the highway with 500m/1640ft typical spacing.

Reliable and robust in poor visibility

It **works in poor visibility when accidents are more likely to happen** and light-based technologies start to fail. It detects in rain, fog, snow, complete darkness, bright sunlight and headlight glare.

Comprehensive AID

Detects incidents in seconds automatically alerting operators 24/7. Incident types include **stopped vehicle, wrong-way driver, obstruction, queue, pedestrian, hard-shoulder, and wildlife detection**. The same system also provides traffic data.

Supports operator efficiency

Improves response times with real-time incident alerts, automatic camera control and low false alarm rates.

Consolidated alerts into any traffic management system

Integrates with video management systems

Automatic camera control

CLEARWAY SOFTWARE

SERVER ROOM

ALARMS & INTEGRATIONS

CONTROL ROOM

DATA

POWER

Illustration: ClearWay system architecture

Low false alarm rates

Radar data is processed by **powerful rule-based software** which can be optimised remotely so operational teams only get the alerts they require. We deliver to guaranteed detection, time-to-detect and false alarm rates.

Automatic camera control

Camera and video management system integration adds visual context to the alert. ClearWay can **direct the nearest PTZ camera to the incident** location assisting operator response. Live incidents are tracked and real-time location information is provided to the control room.

Radar technology
Detection principles.

An active sensor

A radar system **transmits a signal in the form of a radio wave**. When this signal encounters an object, it is reflected back and received by the radar's antenna.

Complete Darkness · Bright Light · Smoke & Heat · Mist & Fog · Snow · Rain

Radio waves

Due to their long wavelengths, **radio waves can penetrate adverse weather conditions**. This allows radar systems to function effectively in rain, fog and snow. Additionally, radar can operate in complete darkness and glare.

Data characteristics

Reflected **signals provide information about an object's size, location, and direction of movement**. This data can be analysed to generate incident alerts and traffic information.

Scanning radar

Navtech's radar rotates at 4Hz, providing a **360° scan of its full range four times per second**. Due to onboard edge processing the radar only requires a small bandwidth.

Processing

Using advanced radar analytics, the 360° **radar scans are processed in real time** to **identify and track both stationary and moving objects**. Rule-based software automates incident detection.

Technology comparisons

*Typical coverage, capabilities and performance in adverse conditions.*
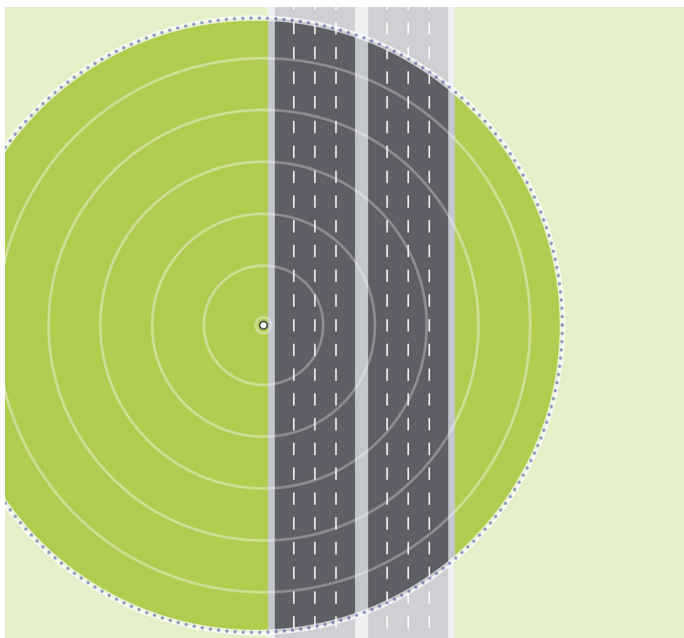
360° radar

- A **single sensor can detect traffic in all lanes, across both carriageways**

- With 360° field of view, radar can be placed to provide **continuous coverage of the entire highway**

- **500m/1640ft typical radar spacing**, full instrumented range (diameter) 1000m/3280ft

- Detects **in bad weather and poor visibility**

- **Integrates with PTZ cameras** to provide visual context

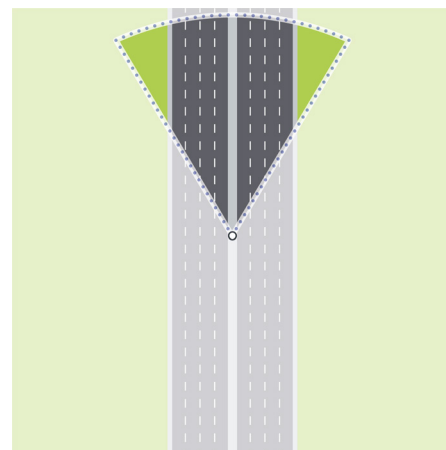- AID and traffic data
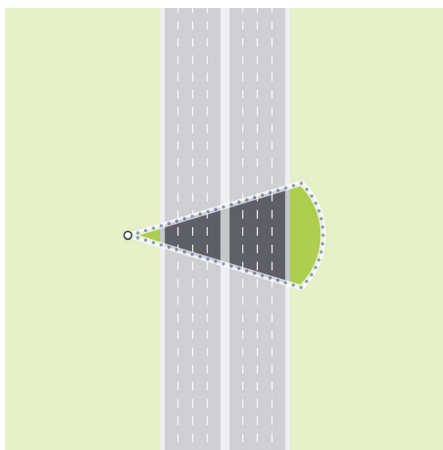
Side fire radar

- Covers a snapshot of the highway

- Counts in bad weather and poor visibility

- Count and classify

- AID is inferred from count data
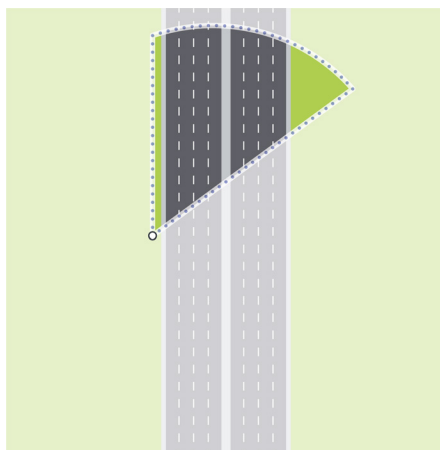
Fixed camera

- Typical 100m/330ft range

- Detection affected in low light, glare and adverse weather conditions

- AID and traffic data

Forward fire radar

- Typical 250m/820ft range

- Detects in bad weather and poor visibility

- Inter-device interference

- AID and traffic data

Safety and efficiency applications

ClearWay is used by highway agencies, DoTs, toll and concession owners to operate their roads more safely and efficiently.


Multiple capabilities

With multiple applications from a single system, including both **incident detection** as well as **count and classify**, ClearWay delivers additional functionality when compared to traditional traffic monitoring solutions.

Photo left: CTS radar installed on existing infrastructure.

Advancing safety

As part of your wider traffic management system, ClearWay can support the safer operation of **part-time shoulder use** and **all lane running schemes**, across long stretches of roadway and multiple schemes.
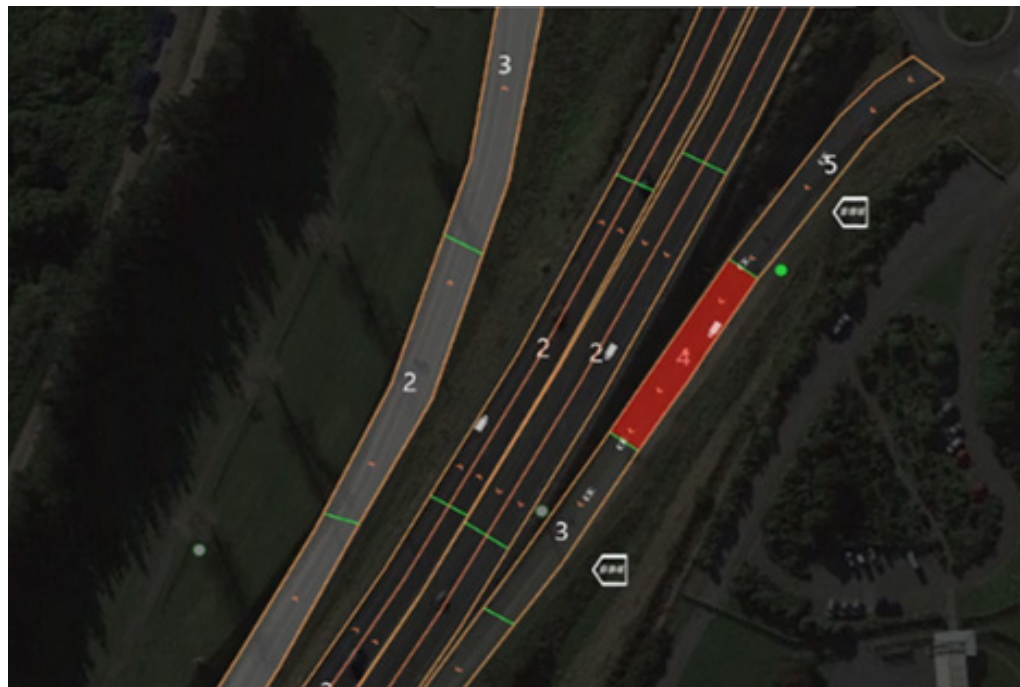
Screenshot: ClearWay software highlights the section of ramp where a vehicle has stopped.

Improving journeys

ClearWay's early incident detection and ramp monitoring helps to **keep traffic flowing** on key strategic roads, and provides data for performance reporting.

Key highway projects

360° Radar-based Automatic Incident Detection.

Transmission Gully Motorway, New Zealand
72 radar installed delivering multiple applications across across **27km**

National Highways SVD rollout, England
1200 radar installed across **250miles** of All Lane Running motorway

Kwinana Freeway, Australia
13 radar installed across **13km** of freeway to help reduce journey times

E4 Motorway, Sweden
92 radar installed across **35.6km** of motorway to improve road safety in Sweden's extreme weather

Maryland, US
Selected as the AID technology for a key highway due to its additional functionality

Tunnels and bridges

Ryfast Tunnel, Norway
102 radar installed Across **28.8km**

Eysturoy tunnel, Faroe Islands
42 radar installed Across **11.2km**

Vejle Bridge, Denmark
2 radar installed

Design, installation and commissioning

Our team follows proven design, installation, commissioning and performance verification processes.


System design

We **start by understanding your needs** and collaborating on an initial system design. Our engineers then conduct a **detailed site survey to confirm the design** and ensure it will meet performance specifications.

Project delivery

Following radar installation, **we verify the system meets your performance and coverage expectations.** Powerful software raises incident alerts and keeps false alarms to a minmum.
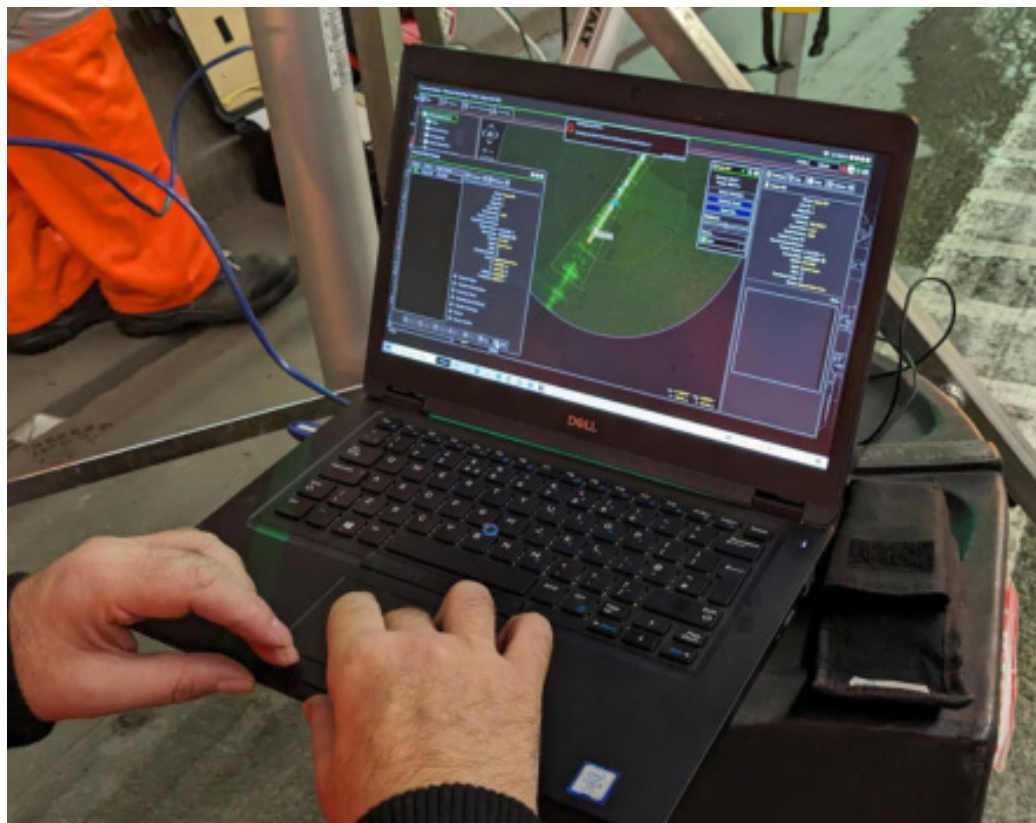
Your technology partner for the lifetime of the system

Giving you access to our expert customer service team, a support package maintains the optimal performance of your Navtech Radar solution.

NavCover plus

A **comprehensive hardware and software support package**, providing assistance during UK office hours. We adhere to ITEL processes and provide a convenient customer portal for managing support requests within set service levels.

NavCover hardware

A **priority service for hardware repairs** in the unlikely event of a problem. Benefit from guaranteed turnaround times.

NavCover software

We provide **expert software support** to keep your system operating at its best. Wherever your installation is in the world our team can connect remotely to resolve any issues.
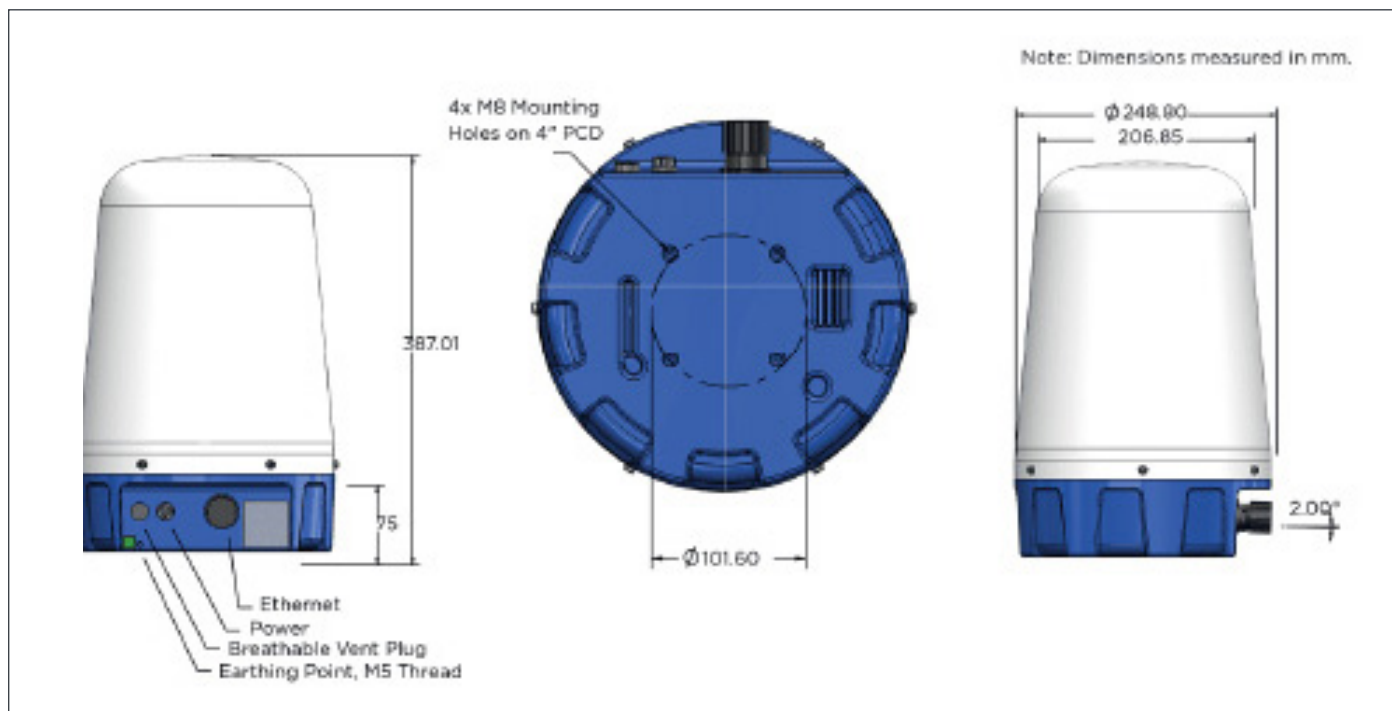

Enhanced services are available giving you **access to 24/7 assistance** and service levels that align with your organisational needs.
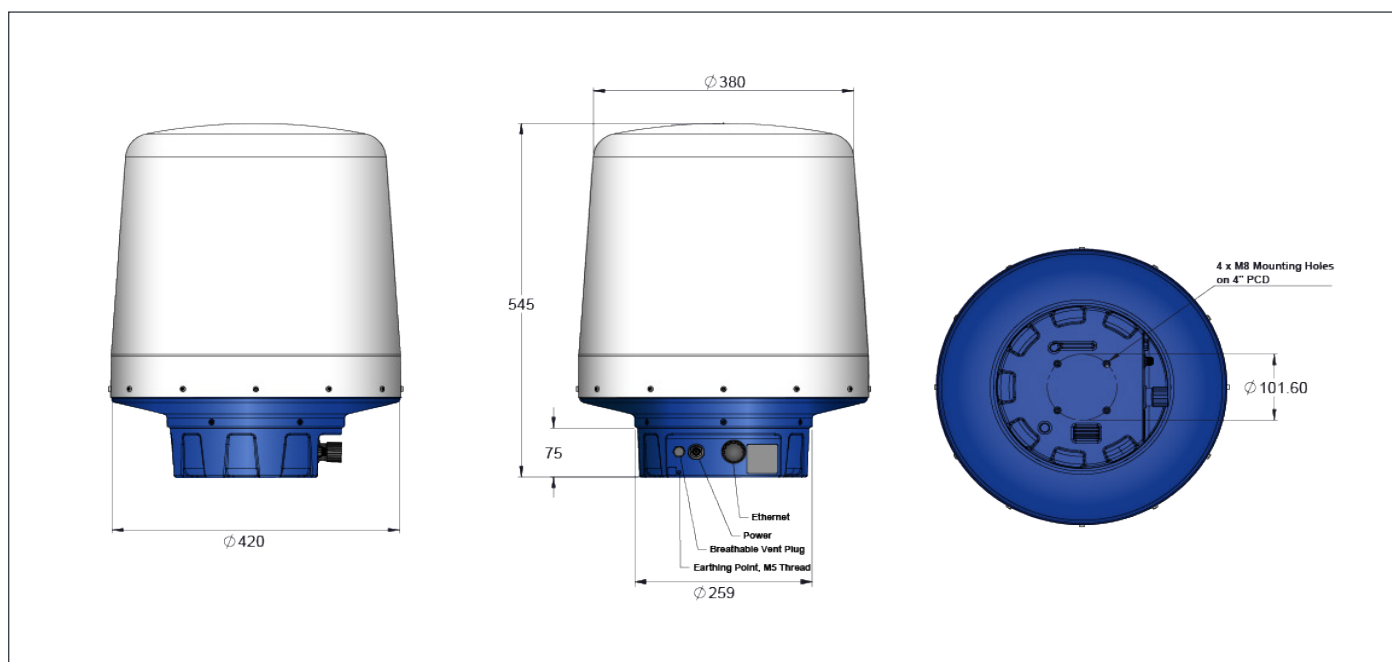
Performance guaranteed

The performance of our ClearWay system is guaranteed from the design stage. We deliver to specified performance metrics, including detection rate, false alarm rate, and time to detect requirements.

SYSTEM OVERVIEW	
Multiple applications	Automatic incident detection including **stopped, slow and queuing vehicles, wrong-way driving, obstruction, pedestrian, and wildlife** **Emergency bay and hard shoulder monitoring** Traffic data including **travel time, vehicle count and classification**
Software	Rules-based **automatic incident alerts and real-time tracking** Automatically **directs cameras to incident location** for visual context **Integrates with cameras and Video Management Systems.** Remote system commissioning, optimisation and health data
Hardware	Networked 360° radar can provide **coverage across the entire highway.** Update rate 4Hz. High resolution data. **Typical radar spacing 500m/1640ft**, full instrumented range (diameter) 1000m/3280ft. Spacing is dependent on the applications required, road characteristics and system performance specifications. **Unaffected by adverse weather and lighting conditions** **No calibration, cleaning or maintenance for 10 years** **IP67 ingress protection rating**. Radar certified for use in US and EU

Radar dimensions

Note: Dimensions measured in mm.

4x M8 Mounting Holes on 4" PCD

387.01

75

Ø 248.90
206.85

2.00"

Ø101.60

Ethernet
Power
Breathable Vent Plug
Earthing Point, M5 Thread

CTS350 Radar: EU compliant, operates at 76-77 GHz, 24V DC / POE variants.

Ø 380

545

75

Ø 420

Ø 259

4 x M8 Mounting Holes on 4" PCD

Ø 101.60

Ethernet
Power
Breathable Vent Plug
Earthing Point, M5 Thread

KTS350 Radar: certified for US, operates in Ka band, FCC, NEMA TS-2.

View technical datasheets

Safety is everything.

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Navtech complies with the following ISO standards

ISO 9001:2015 Quality   **ISO 45001 Health and Safety**

ISO 27001 Information Security   **ISO 14001 Environmental**

ISO 20000 IT Service Management

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