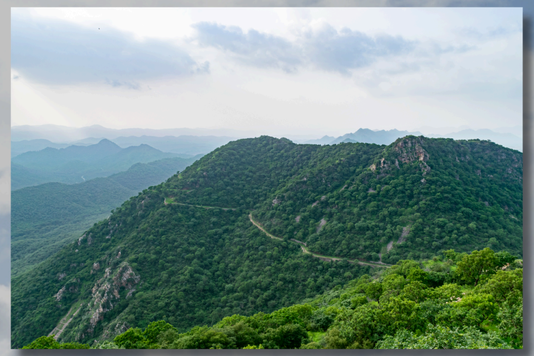


MINING SLOPES

For open-pit mines, quarries, and waste dumps, supporting safe operations and optimized excavation planning.



NATURAL SLOPES

For landslide-prone and unstable terrain, providing real-time monitoring and early warning to mitigate risks.



DAMS & EMBANKMENTS

For tailings dams and earth embankments, enabling long-term stability monitoring and early risk detection.



ENGINEERED SLOPES

For infrastructure such as highways, railways, and construction sites, ensuring slope stability and safe operation.

MR5000

SLOPE STABILITY MONITORING RADAR SYSTEM

MONITOR ANY SLOPE. PROTECT WHAT MATTERS.

From Slope Data to Early Action 360° Real-Time Intelligent Monitoring

MR5000 IS DESIGNED FOR A WIDE RANGE OF SLOPE STABILITY MONITORING APPLICATIONS, DELIVERING CONTINUOUS, PRECISE, AND RELIABLE DATA IN THE MOST DEMANDING ENVIRONMENTS





STRONG GNSS
Tracks GPS, BDS, GLONASS, Galileo, QZSS, IRNSS, SBAS with anti-interference technology.

FLEXIBLE WORK MODES
Supports Base, Rover, Static, PPK and NMEA output for maximum versatility.

LIGHTWEIGHT DESIGN
Compact and portable with a weight of only 867 g (incl. battery).

LONG BATTERY LIFE
Internal 6700mAh battery for up to 20 hours of continuous operation.

RUGGED & RELIABLE
IP68 rating for water and dust protection. Designed for harsh field conditions.

EASY CONNECTIVITY
Built-in UHF, Bluetooth, NFC and WiFi for seamless data transfer.

Cape Laboratory Equipment (Pty) Ltd

CLE CAPE LABORATORY EQUIPMENT

41 Killarney Avenue, Killarney Gardens, Cape Town, 7441, South Africa

+27 21 839 5163 sales@capelab.co.za www.capelab.co.za

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MR5000 SLOPE STABILITY MONITORING RADAR SYSTEM

MR5000 is a compact slope monitoring radar system designed for rapid deployment in medium and long-range monitoring applications such as emergency response, geological hazards, and infrastructure slopes. It provides a practical and efficient solution for continuous slope stability monitoring in challenging environments.

Combining 360° full coverage, long-range detection up to 5 km, 0.1 mm high-precision deformation measurement, and an intelligent visualization monitoring software platform, it delivers reliable and continuous monitoring performance in all-weather conditions for effective slope stability assessment and risk management.

360°

Full Coverage Monitoring

Enables continuous 360° scanning with no blind spots for comprehensive slope deformation detection.

0.1mm

Measurement Accuracy

Delivers 0.1 mm deformation measurement accuracy for precise slope stability monitoring and early risk detection.

5km

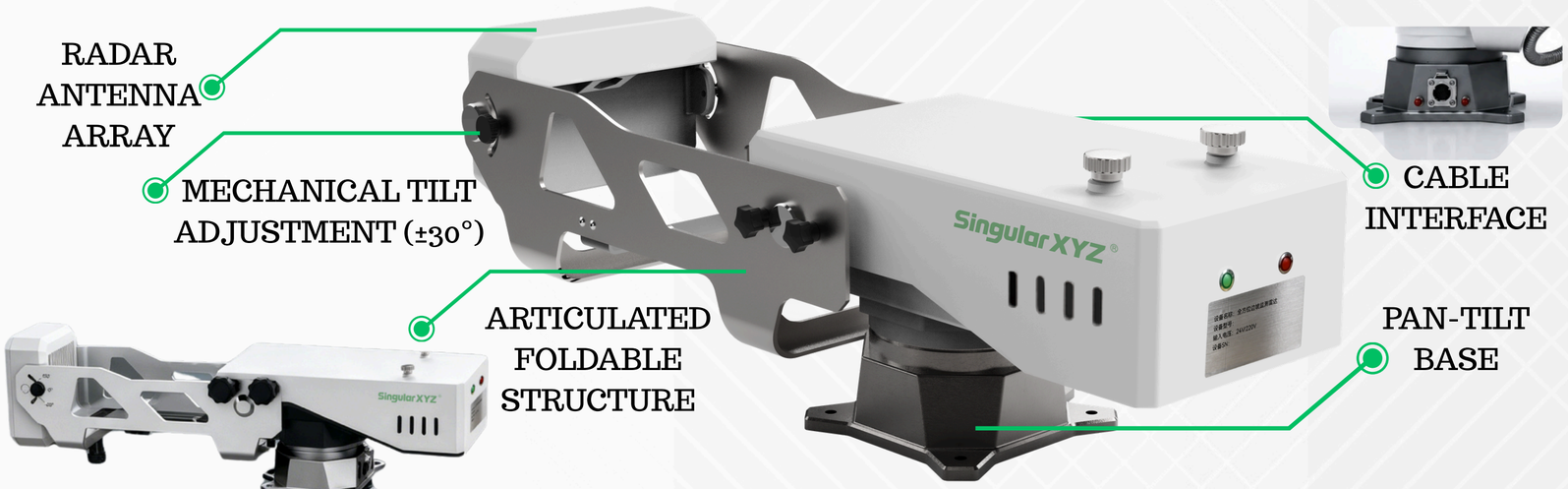
Extended Coverage

Supports 5km long-range slope monitoring with reliable performance, making it suitable for large monitoring projects.

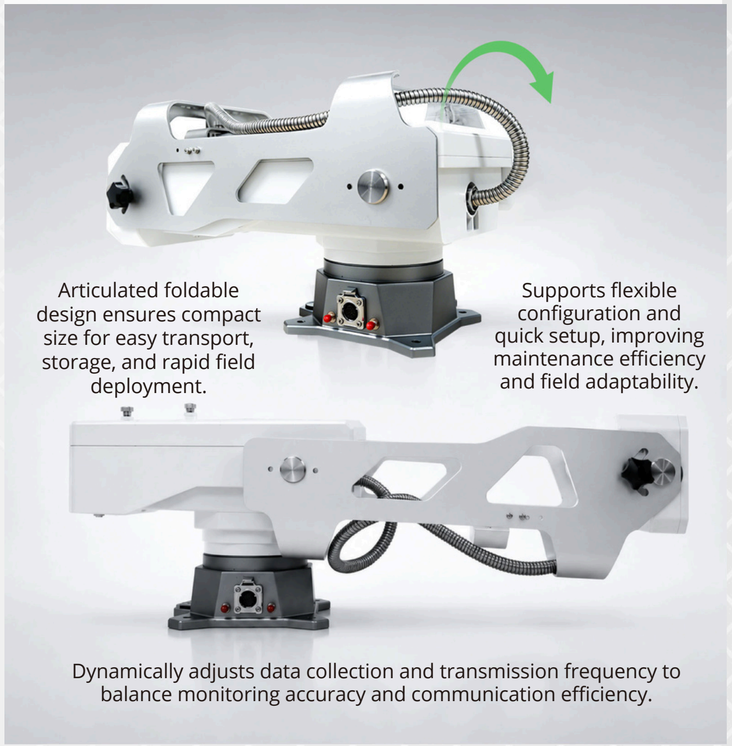
24/7

All-Weather Robust Operation

Ensures stable performance in rain, fog, and complex environments, unaffected by vegetation movement or minor disturbances.







High-precision mechanical structure ensures stable radar rotation and consistent measurement accuracy.

Articulated foldable design ensures compact size for easy transport, storage, and rapid field deployment

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MR5000 SLOPE STABILITY MONITORING RADAR SYSTEM



High-Precision Deformation Algorithm

Advanced algorithms enhance measurement accuracy and sensitivity to subtle slope movement.

Real-Time Visualization

Provides 3D visualization with deformation, velocity, and backscatter layers for multi-angle slope analysis.

TECHNICAL SPECIFICATIONS

GENERAL	SPECIFICATION
Spatial Resolution	1. Range ≤0.15 m, Cross Range ≤5mrad 2. @100 m, 0.15 m by 0.30 m 3. @500 m, 0.15 m by 1.50 m
Accuracy	• 0.1mm
Operating Range	• 5km
Field of View	1. Horizontal 360° 2. Vertical 40° 3. (support ±60° adjustment, motorised optional)
Sampling Interval	• ≤ 1 min
Data Upload Interval	• Adjustable from 1 min to 24 h
Frequency Band	• Ku, 15.7~17.2 GHz

COMMUNICATION	SPECIFICATION
Interface	• Integrated multi-function interface with power and Ethernet connection
Network Access	• Supports external router

ELECTRICAL	SPECIFICATION
Power Supply	• AC power / Solar power
Power Consumption	• Average power consumption: ≤45 W • Low power consumption: ≤15 W • (continuous monitoring mode)
Input Voltage	• 220 VAC

PHYSICAL	SPECIFICATION
Weight	• ≤10 kg (including radar unit, pan-tilt platform, and built-in processing unit)
Size	• ≤550 × 260 × 350 mm (L × W × H)
Housing Material	• 220 VAC

ENVIRONMENTAL	SPECIFICATION
Operating Temperature	• -55°C to +65°C
Waterproof & Dustproof	• IP66

COMMUNICATION	SPECIFICATION
Interface	• Integrated multi-function interface with power and Ethernet connection
Network Access	• Supports external router

RECOMMENDED	SPECIFICATION
Operating system	• Linux / Windows
Database	• -Linux: QuestDB or TDengine • -Windows: QuestDB
Processor	• ≥ 4 cores
RAM	• ≥ 8 GB
Storage	• 1 TB or higher
GPU	• NVIDIA RTX 3060 or above
Web Service	• NGINX

DEPLOYMENT	SPECIFICATION
Deployment Mode	• Cloud / On-premise
Access Method	• Supports both client-based software and web browser-based access
Software License	• Registration required

FUNCTIONALITY
AI-powered Early WarningEngine
Multi-Sensor Data Integration
Real-time Visualization & Analysis

SUPPORTED LANGUAGES
English
Simplified Chinese
Russian

APPLICATIONS



Engineered Slopes

For tailings dams and earth embankments, enabling long-term stability monitoring and early risk detection.



Mining Slopes

For open-pit mines, quarries, and waste dumps, supporting safe operations and optimised excavation planning.



Dams & Embankments

For infrastructure such as highways, railways, and construction sites, ensuring slope stability and safe operation.



Natural Slopes

For landslide-prone and unstable terrain, providing real-time monitoring and early warning to mitigate risks.

System Security & Stability Architecture

Ensures reliable operation with data encryption, access control, and a stable backend architecture for critical monitoring environments.

Multi-Source Data Fusion Hub

Integrates radar, visual, and other sensor data into a unified platform, breaking data silos and enabling consistent monitoring across different scenarios.

Web-Based Remote Monitoring Access

Provides secure web access to monitoring data and dashboards, enabling remote supervision and cross-platform operation.

Distributed Processing Platform

A distributed platform enabling parallel radar data processing with integrated solving and visu- alization for efficient and stable operation.

AI Intelligent Early Warning Engine

AI models analyze deformation patterns and automatically generate alerts for abnormal slope behavior, enabling proactive risk response.

Time-Series Data Management Engine

Built on a time-series data-base for efficient storage and fast retrieval of monitoring data, enabling real-time analysis and deformation tracking.

MONITOR ANY SLOPE.

PROTECT WHAT MATTERS.

MR5000 is designed for a wide range of slope stability monitoring applications, delivering continuous, precise, and reliable data in the most demanding environments

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