

TECHNICAL SPECIFICATIONS	
Accuracy	+/- 0.1 mm (l.o.s.)
Spatial resolution	Range: 0.5 m Cross Range: 4.4 mrad (0.5 m by 4.4 m @1 km; 0.5 m by 8.8 m @2 km)
Operating range	10 m to 4000 m
Operating temperature	-20°C to +55°C
Scan time	<3 min
Power consumption	<100 W
Environment	IP66
Certifications	FCC, CE, IC
IBIS-FM OPTIONAL ITEMS	
The IBIS-FM basic configuration, including linear scanner, radar sensor and power supply module, can be provided with the optional tools listed below	
Genset	Diesel generator controlled by IBIS Controller
Digital Camera	High Resolution Digital Camera with dedicated software
Radio link	Wi-fi point-to-point link for data transfer
Radio link repeater	Radio link repeater for data transfer
Weather station	Weather station controlled by IBIS Controller
SOFTWARE SPECIFICATIONS	
IBIS CONTROLLER acquisition & system management software	Acquisition parameter setting Power supply control Status Information Preliminary data processing Transfer data tools
IBIS GUARDIAN real time processing, data interpretation & early warning software	Automatic Atmospheric Correction Alarm generation with user-defined levels Multiple alarm criteria based on area definition 3D interactive data handling Output exportation to mine planning packages External DTM importation

# IBIS-FM

INNOVATIVE RADAR FOR MONITORING SLOPE MOVEMENTS IN MINES

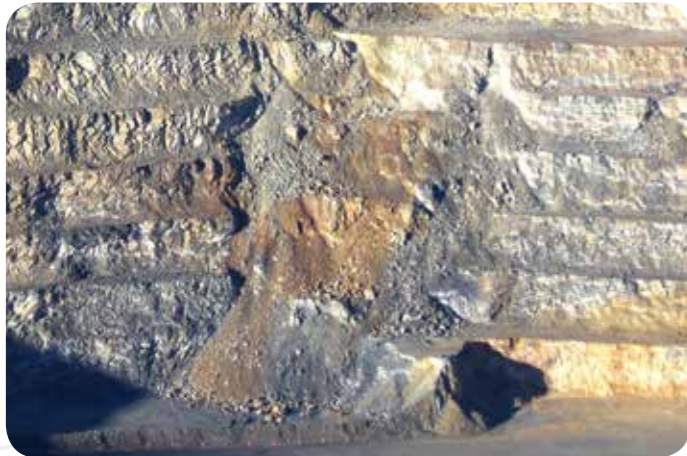
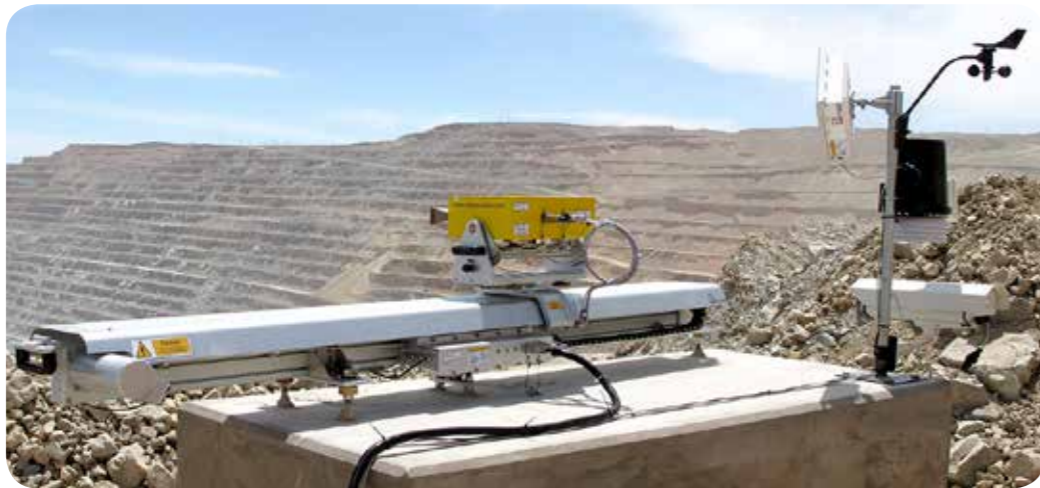
Highest spatial resolution and greatest operating distance





## APPLICATIONS

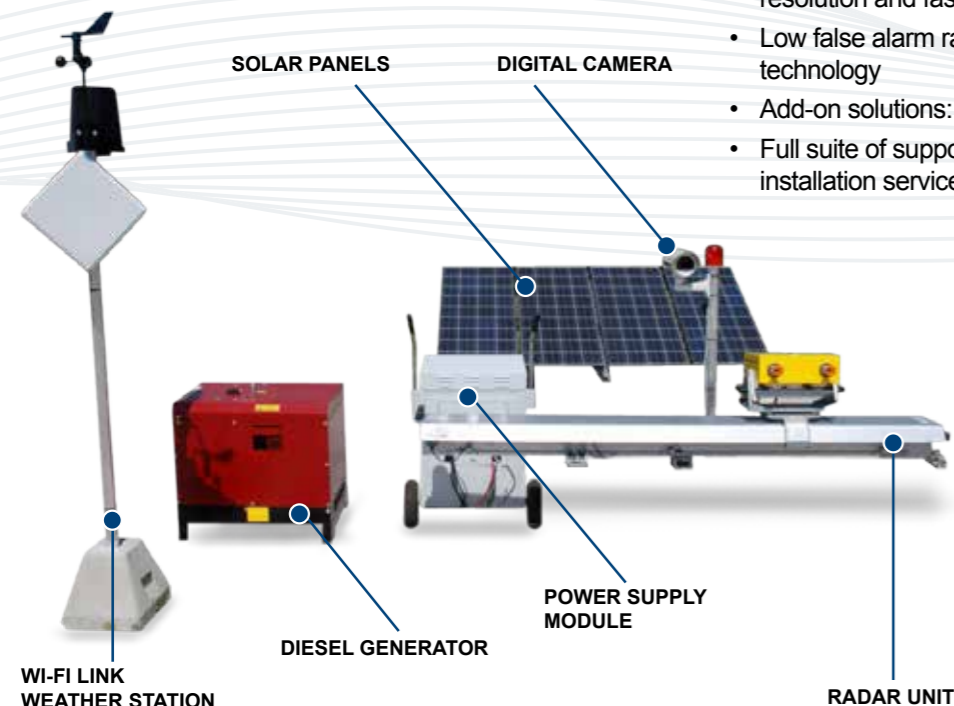
- Continuously measure (24x7) mine wall movements with sub-millimetric accuracy at long distance (up to 4 Km)
- Provide reliable early warning for progressive slope movements that potentially lead to failures of mine walls
- Map the long term evolution of slow moving slopes



## BENEFITS

- Safety improvements for both personnel and equipment
- Reduced production delays due to slope instability
- A better knowledge of the rock mass strength through long term monitoring
- Limited use of personnel needed to operate the radar thanks to the long working range
- The large area coverage provides a broad picture of the pit walls
- Simultaneous tracking of fast and slow movements through long term acquisitions
- Reduced service disruption due to a highly robust construction and a limited number of moving parts
- Fast alarm generation time thanks to high spatial resolution and fast scan time
- Low false alarm rate thanks to the innovative radar technology
- Add-on solutions: from basic to premium configurations
- Full suite of support packages: professional training, installation services, customer support plans

## COMPOSITION



## OPTIONAL INTEGRATED CONTAINER

The Integrated Container for the IBIS-FM system offers a unique all-in-one solution, as well as extra protection against unexpected weather events and theft attempts

- Fully integrated and self-powered
- Rugged solution for harsh environments
- Easy to relocate (forklift, bottom skids, truck)
- Thermal insulation
- Optional processing workstation for on-site radar data availability



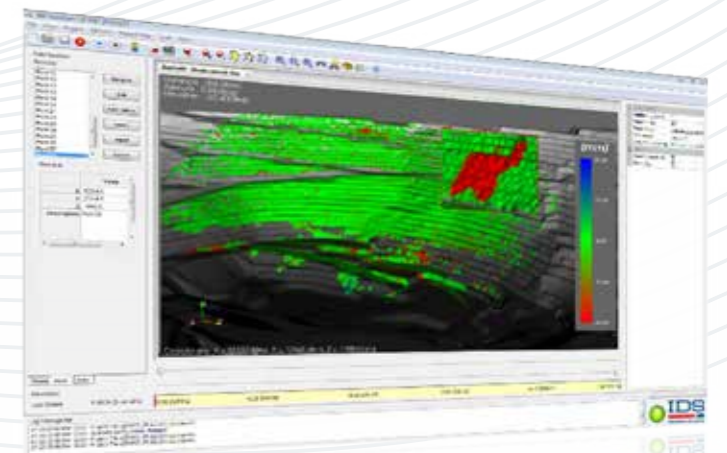
## FEATURES

IDS has furnished IBIS-FM with a suite of advanced technologies able to overcome the weak points of the previous generation of slope radar systems and it now offers the following leading edge features:

- Highest spatial resolution (0.5 x 4.4 m resolution cell @1 km), resulting in a smaller detectable area of failure.
- Longest operating range: from 10 m to 4000 m.
- Extremely broad coverage of pit walls (e.g. an area of around 5 km<sup>2</sup> @2 km)
- Acquisition time: just a few minutes for a full resolution scan at long range (3 minutes @2 km)
- Long term monitoring through either permanent installations away from blasting restricted areas or precise re-positioning of the system
- Fully self powered operation by using a combination of solar panels and batteries, resorting to a diesel generator only as a back-up
- High in-service availability: limited number of moving parts and low maintenance requirements mean minimum down time
- Fully remote operation through a wire-less radio link.
- Advanced atmospheric estimation
- Fully tested in harsh mining environments

## SOFTWARE FEATURES

- Real time processing with automatic atmospheric corrections
- Alarm generation with user-defined levels and multiple alarm criteria
- Processing of discontinuous datasets (through re-positioning of the system)
- Fully georeferenced outputs
- 3D interactive data handling
- User defined zones for alarm generation
- Exportability of outputs to mine planning software



IBIS Guardian software highlighting areas of slope movement