High-resolution radar system for early warning and real-time monitoring of buildings, dams, tunnels, mining infrastructures, and cut-slopes.

IDS GeoRadar: Innovative Interferometric Radar for Environmental and Civil Engineering Applications

www.idsgeoradar.com
HYDRA-G is a compact, remote sensing monitoring system designed for early warning and real-time measurements of sub-millimetric displacements in buildings, dams, tunnels, mining infrastructures, and cut-slopes.

**REAL TIME REPORTS AND ALERTS**

HYDRA-G is able to provide real-time monitoring of civil structures and cut-slopes deformations and trigger early-warning alerts in case of impending collapses to evacuate people and machinery at-risk.

**PERFORMANCE FOR CRITICAL DECISIONS**

With a scan range up to 800 metres, the system provides the high-accuracy and resolution radar technology. HYDRA-G exploits the cutting-edge ArcSAR technology, providing a spatial resolution of centimetres with updated displacement information every 30 seconds.

**INFORMATION AT A GLANCE**

An optical and infrared HD camera provides real-time visual inspection of monitored areas, and radar data are draped on a 3D model of the scene created by the built-in laser.

The industry-leading HYDRA Guardian software provides an easy-to-use and powerful tool to visualize and interpret radar data, and perform analysis of displacement trends of structure and cut-slope movements. Moreover, SurfScan is a dedicated, real-time building displacement and deformation analysis software.

**BENEFITS**

- **Non-intrusive technology:** no pointers or devices to be installed on the target.
- **Hyper spatial resolution:** to detect even the smallest displacement with sub-millimetric displacement accuracy.
- **Fast acquisition rate:** 30 seconds for a full resolution scan.
- **Short range and large angular coverage capability:** to track in real-time thousands of points in the monitored scenario.
- **On-site results:** data provided in real time with instant processing.
- **3D representation and visual imaging:** to ease data interpretation of the monitored area.
- **Compact and portable solution:** easily transportable from a location to another and installed by one single person.
- **High availability with low maintenance costs:** minimal moving parts and low profile design to guarantee robustness and maximum availability in harsh environmental conditions.
MODULAR COMPOSITION

- Radar Sensor
- Laser
- Pan/Tilt
- IR Camera
- Tripod

Acquisition Unit

Supply & Control Unit

Rugged tablet

Wi-fi Connection
IR light/tablet supply
Local alarm
Mains input
Mine network

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>ACCURACY</td>
<td>&lt;0.1mm (Line of Sight.)</td>
</tr>
<tr>
<td>SPATIAL RESOLUTION</td>
<td>Range 0.2 m, Azimuth: 8 mrad</td>
</tr>
<tr>
<td></td>
<td>@10 m, 0.2 m by 0.08 m</td>
</tr>
<tr>
<td></td>
<td>@100 m, 0.2 m by 0.80 m</td>
</tr>
<tr>
<td></td>
<td>@500 m, 0.2 m by 4.00 m</td>
</tr>
<tr>
<td>MAX OPERATING RANGE</td>
<td>200 m (Low Power configuration)</td>
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<td></td>
<td>800 m (High Power configuration)</td>
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<tr>
<td>FIELD OF VIEW</td>
<td>Up to 360° (Horizontal) x 30° (Vertical)</td>
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<tr>
<td>OPERATING TEMPERATURE</td>
<td>-20°C to +55°C</td>
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<tr>
<td>ACQUISITION TIME INTERVAL</td>
<td>30 seconds</td>
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<td>POWER CONSUMPTION</td>
<td>100W</td>
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<tr>
<td>SUPPLY</td>
<td>110/220 V AC - 12/24 V DC</td>
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<tr>
<td>SUPPLY AUTONOMY</td>
<td>2 hours without mains power</td>
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<tr>
<td>ENVIRONMENT</td>
<td>IP65</td>
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</table>

SOFTWARE SPECIFICATIONS

- HYDRA Controller:
  Acquisition & system management software
  - Acquisition configuration and management
  - Status information
  - Preliminary data processing

- HYDRA 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
  - Email and SMS alarm forwarding
  - 3D interactive data handling
  - Output exportation to external software (GIS)
  - External DTM importation

- SurfScan:
  3D building monitoring software
  - Single point of control for the complete monitoring system
  - Customizable scanned area selection
  - Point mapping over camera picture for easy data interpretation
  - Quick campaign set-up procedure
  - Flexible time series analysis panel for both real-time and post campaign analysis and reporting
  - Easy report generation

The software is also suited for the monitoring of mining infrastructures.