

# MAXIMIZE PRODUCTION AND SAFETY IN UNDERGROUND MINES

WITH THINGWAVE'S GEOTECHNICAL IOT SOLUTION



## RBM-VX™

Rock bolt monitor



The RBM-VX™ is an Industrial Internet of Things (IIoT) device for real-time rock bolt monitoring to ensure the stability of mines and safeguard lives. It is designed to support resin installation and pre-tensioning using jumbos with no, or minimal, human interaction.

ThingWave's rock bolt monitor RBM-VX™ sensor data is invaluable for geotechnical teams to understand deformations deep within the mines! The RBM-VX™ can measure bolt *elongation*, *rupture*, and *vibrations*. In addition, the RBM-VX™ also features on board sensors for *battery voltage*, *temperature*, and *tilt*. These signals can be transmitted using ThingWave's high-performance mesh technology to a gateway and then to a backend-server, either on the Internet or in the mine's local network.

The RBM-VX™ also supports 5G. More wireless technologies such as Wi-Fi and LoRA are coming soon!

The high-performance wireless mesh technology that is powering the RBM-VX™ supports thousands of devices in the same network, and different types of devices can be used simultaneously. Examples are ThingWave's air-quality devices, the Air-Q, convergence sensors, and tilt sensors.

The RBM-VX™ with its low cost and unmatched scalability enables true digitalization of *ground support monitoring*! A mine's geotechnical staff can now have real-time access to rock strata information, and immediate alarms when rapid deformations occur.

- Measures elongation up to 40 mm with 0.1 mm resolution
- Lifetime up to 10 years
- Supports resin and concrete grouting by jumbo
- Size: 60x60x110 mm
- Weight: 1.1 kg
- Enclosure: steel and composite
- Rating: IP66
- Fully integrated into ThingWave's Mining 4.0 digital platform

Experience the future of data-driven operation with us!

