



1. Fiber optic cable



2. Connectors



3. Antenna Elements



4. Antennas for deep and standard mode



## Borehole

The Borehole Antenna series from MALA are a powerful tool often used to obtain information at greater depths than is obtainable with surface GPR. MALA manufactures the only commercially available borehole GPR system that can perform surveys deeper than 30 meters, due to the use of fiber optic cables for communication. In fact, MALA's borehole systems have been used successfully to depths in excess of 2500 m.

Common measurement methods include single-hole reflection mode, cross-hole mode (tomography) and surface-to-borehole mode.

The area of investigation is a cylinder shaped volume around the borehole with a radius of 10 - 100 m (dependent on electrical properties of the media under investigation).

In reflection mode the transmitter and receiver are deployed in the same borehole. The antennas are dipoles and radiate and receive reflected signals omni-directionally. Data is displayed in real time using MALA's GroundVision software. To determine the exact distance and bearing of the reflector in this mode requires scans in at least three boreholes.

## Brief Description & Technical Specification

A typical system set-up comprises a ProEx control unit, XV Monitor or a laptop PC, a tripod with depth encoder (mechanical or digital) and then also the antenna. For deeper investigations, cable winches are also available.

### 100 MHz Slimhole Borehole Antenna

The 100 MHz Borehole slim antenna is the lowest frequency available. It is used for medium to low resolution investigations.

**Dimensions :**

**Tx:** Length: 1.89 m (including batteries) – Diameter: 40 mm - Weight: 3.3 kg

**Rx:** Length: 1.76 m (including batteries) – Diameter: 40 mm - Weight: 3.6 kg



### 250 MHz Borehole Antenna

The 250 MHz Borehole antenna is a general purpose antenna, generally used for investigations that require medium resolution.

**Dimensions :**

**Tx/Rx:** Length: 1.29 m (including batteries) – Diameter: 48 mm - Weight: 4.75 kg



## Applications

The MALÅ Borehole Antenna System is recommended for applications including fracture characterization, foundation engineering/ studies, karst imaging, cavity and void detection, flow path analysis, localization of “lost” boreholes, delineation of ores, earth dam investigations, contamination transportation and more.

## Accessories

A number of accessories are available for the borehole antennas, including :

- Antenna separators
- Tripods
- Mechanical / digital depth encoders
- Electrical winches

**See our webpage for latest information.**

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