

HA-1000

Datasheet



Horn antennas are used in many applications, from pavement thickness and road condition assessment to high speed tunnel surveys. The main property of these antennas is that they are very focused and have low ringing in the upper part of the range where it matters for the intended applications. The Geoscanners HA-1000 has been extensively used for road surveys and also for assessment of primary and secondary lining in tunnels.

High speed surveys make ground coupled antennas unusable because of the danger of bad contact or even mechanical damage to the antenna. As an answer to these needs we present HA-1000. Because lots of energy is wasted in the interface air/ground surface the air launched antennas have to produce a very narrow beam to focus as much energy as possible into the ground and get a proper response.

It is also very important to keep the antenna distance from the surface between 50 and 75 centimeters for best results. The combination of narrow beams and high speeds makes this antennas hard to use when it comes to utility detecting (hyperbolas are narrower). On the other hand these antennas can reveal shallow voids, delaminations and thickness of the layers with ease. This antenna is often used in survey systems where it is combined with HA-2000 and/or FLB-390 to collect all the relevant data.

With a little ingenuity the antenna can easily be used for tunnel lining (with no rebar mesh reinforcement) inspections (consider it an upside down road survey).





Area of Application

- High speed road survey
- High speed tunnel lining surveys
- Ballast inspection surveys

Mechanical and Environmental Specifications

Dimensions LxWxD (mm/inches)	220x520x452 / 8.66x20.47x17.79
Weight (kg/pounds)	6.5 / 14.33
Fastening points LxW (mm/inches)	120x60 / 4.72x2.36
Ingress Protection	IP65
Operating Temperature (°C / °F)	from -25 to +40 /from 14 to +104
Relative Humidity (%)	99 (NC)

Electrical Specifications

Antenna Type	TEM Horn Antenna
Shield Type	Un-shielded
Distance between the TX and RX (mm/inches)	300 / 11.81
Feed point impedance (Ohms)	50
Transmitted Pulse Amplitude (Volts)	40
Receiver Sensitivity (µVolts)	4
Antenna Bandwidth (at 10dB)	83.1%
Antenna Center frequency (MHz at 10dB BW)	890
Survey Wheel Output Voltage (Volts)	5.01

Recommended Specifications

Pulse repetition Frequency, PRF (kHz)	≥100
Scan Rate, Traces/Second	100
Range (ns), (depends on soil penetration)	7-30
Low Pass Filter Cut-Off Frequency (MHz)	750
High Pass Filter Cut-Off Frequency (MHz)	2000
Gain	Adjust to 75% Swing
Distance from surface (cm / inch)	50 - 75 / 19.68 – 29.53

Accessories

- CMH-201 Single antenna car mounting kit
- CMH-203 Three antennas car mounting kit

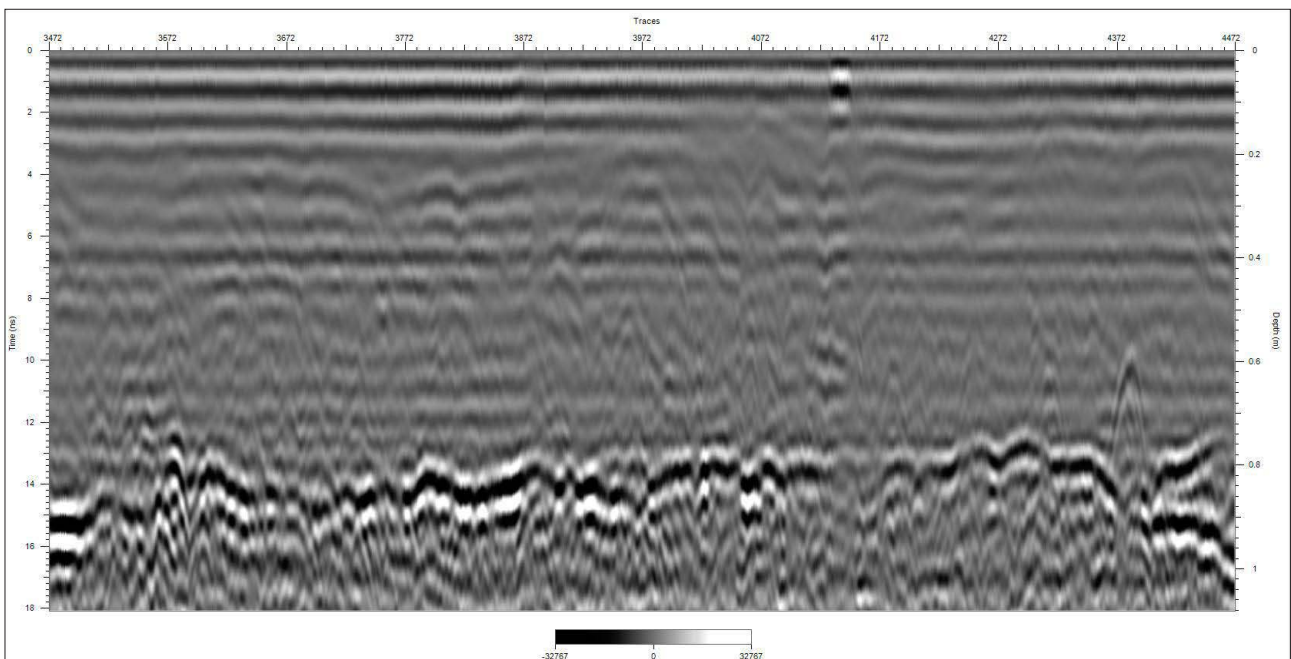
*Accessories are not included



1. The antenna is easily mounted on a vehicle.



2. Tunnel lining can be quickly inspected with a retracting mast installed on a vehicle.



3. Road GPR survey with the HA-1000 data example

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