

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)	233x525x444 / 9.17x20.66x17.48
Weight (kg/pounds)	6.3 / 13.88
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

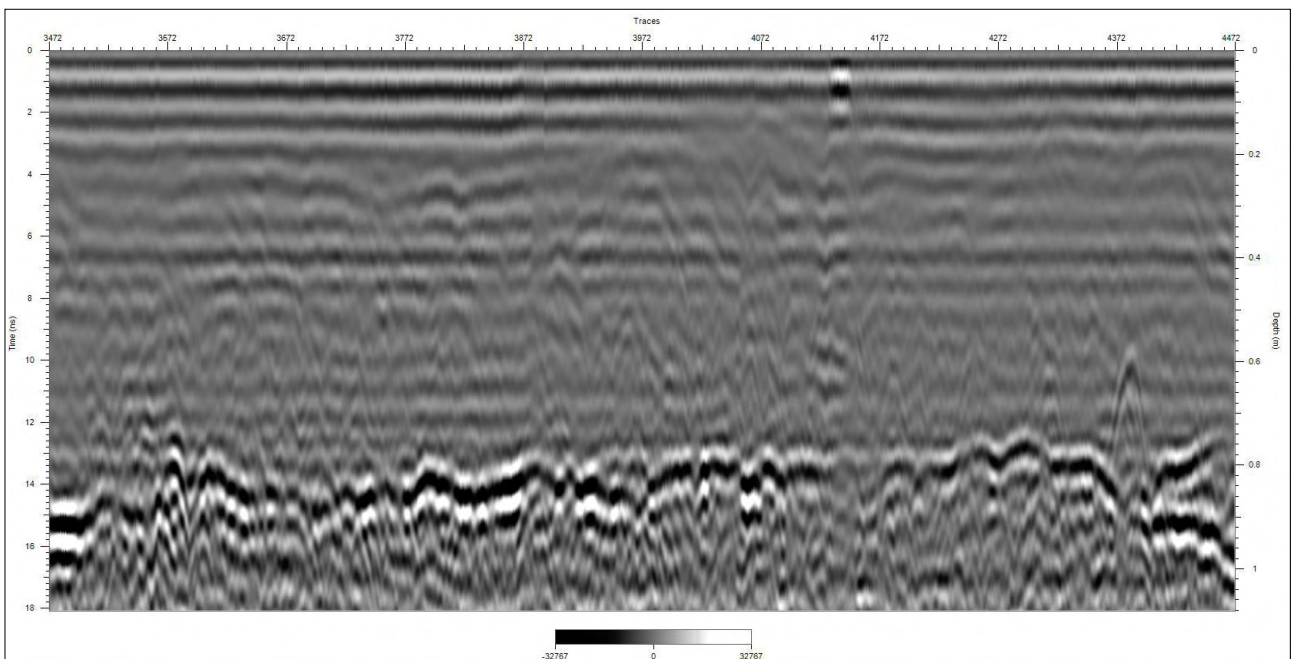
*Accessories are not included



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

Note: The information in this datasheet is based on the latest information at the time of publication. Geoscanners AB® reserves the right to make changes at any time, without notice to color, specifications, accessories, materials and models. For more information contact the Geoscanners AB Sales Department +46(0)92153020. ©2015 Geoscanners AB, Sweden.

Terms of use

Geoscanners AB has made all reasonable efforts to ensure that all information provided through this document is accurate at the time of inclusion; however, there may be inadvertent and occasional errors for which Geoscanners AB apologizes.

Geoscanners AB accepts no liability for any inaccuracies or omissions in this document and any decisions based on information contained in this document are the sole responsibility of the reader. Geoscanners AB accepts no liability for any direct, special, indirect, or consequential damages, or any other damages of whatsoever kind, resulting from whatever cause through the use of any information obtained either directly or indirectly from this document.

This document may not be copied, reproduced, re-published, downloaded, posted, broadcast or transmitted in any way except for your own personal use. Any other use requires the prior written permission of Geoscanners AB. You agree not to adapt, alter or create a derivative work from any of the material contained in this document or use it for any other purpose other than for your personal use. You agree to use this document only for lawful purposes, and in a manner which does not infringe the rights of, or restrict or inhibit the use and enjoyment of this document by any third party.

This document and the information, names, images, pictures, logos and icons regarding or relating to Geoscanners AB, its products and services (or to third party products and services), is provided "AS IS" and on an "IS AVAILABLE" basis without any representation or endorsement made and without warranty of any kind whether express or implied, including but not limited to the implied warranties of satisfactory quality, fitness for a particular purpose, non-infringement, compatibility, security and accuracy.

In no event will Geoscanners AB be liable for any damages including, without limitation, indirect or consequential damages, or any damages whatsoever arising from use or loss of use, data, or profits, whether in action of contract, negligence or other tortuous action, arising out of or in connection with the use of this document. Geoscanners AB does not warrant that the functions contained in the material contained in this document will be uninterrupted or error free, that defects will be corrected. The names, images and logos identifying Geoscanners AB and their products and services are proprietary marks of Geoscanners AB. Nothing contained herein shall be construed as conferring by implication or otherwise any license or right under any trade mark or patent of Geoscanners AB, or any other third party.

If there is any conflict between these Terms and Conditions and rules and/or specific terms of use appearing in this document relating to specific material then the latter shall prevail.

If any of these Terms and Conditions should be determined to be illegal, invalid or otherwise unenforceable by reason of the laws of any state or country in which these Terms and Conditions are intended to be effective, then to the extent and within the jurisdiction which that Term or Condition is illegal, invalid or unenforceable, it shall be severed and deleted from this clause and the remaining terms and conditions shall survive, remain in full force and effect and continue to be binding and enforceable.

These Terms and Conditions shall be governed by and construed in accordance with the laws of Sweden. Disputes arising here from shall be exclusively subject to the jurisdiction of the courts of Sweden.

If these Terms and Conditions are not accepted in full, the use of this document must be terminated immediately.