

# GCB-400

## Datasheet



GCB-400 is a small, light weight ground coupled bowtie antenna for utility detection and shallow investigation surveys. It is a fully shielded antenna that is a very robust choice for noisy urban environments because of its high front-to-back ratio.

As with all other antennas manufactured by Geoscanners this antenna is fully compatible with the rest of the Geoscanners products. Furthermore, GCB-400 is also compatible with GSSI SIR® control units. This gives endless possibilities and allows the user to change antennas without having to purchase complete new systems.

GCB-400 is the perfect choice for shallow to medium depth utility detection surveys. Depending on the conditions of the site under survey, GCB-400 can provide penetration exceeding 4 meters. The best results are however seen within the first four meters.



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### Area of Application

- Geotechnical and environmental
- Utility, UST and void detection
- Archeological investigations
- Forensics

### Mechanical and Environmental Specifications

Dimensions LxWxD (mm/inches)	320x255x150 / 12.6x9.84x5.90
Weight (kg/pounds)	1.65 / 3.64
Fastening points LxW (mm/inches)	210x160 / 8.26x6.30
Ingress Protection	IP65
Operating Temperature (°C / °F)	from -25 up to +40 / from 14 up to 104
Relative Humidity (%)	99 (NC)

### Electrical Specifications

Antenna Type	Quarter Wavelength Bowtie
Shield Type	Top and Side Shield
Distance between the TX and RX (mm/inches)	140 / 5.51
Feed point impedance (Ohms)	352
Transmitted Pulse Amplitude (Volts)	100
Receiver Sensitivity (µVolts)	14
Dynamic Range (dB)	137
Antenna Bandwidth (at 10dB)	94%
Antenna Center frequency (MHz at 10d)	380
Survey Wheel Output Voltage (Volts)	5.01

### Recommended Specifications

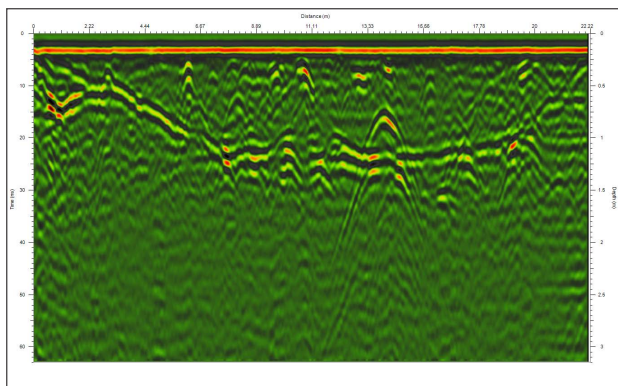
Pulse repetition Frequency, PRF (kHz)	≥100
Scan Rate, Traces/Second	100
Range (ns), (depends on soil penetration)	20-100
Low Pass Filter Cut-Off Frequency (MHz)	800
High Pass Filter Cut-Off Frequency (MHz)	200
Gain	Adjust to 75% Swing

### Accessories\*

- Tray S47 antenna tray with belts
- SVC-820 4-wheel survey cart
- GSH-490 rough terrain survey trailer

\*Accessories are not included

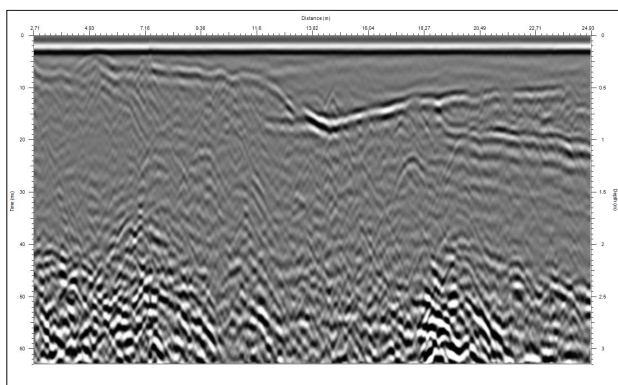




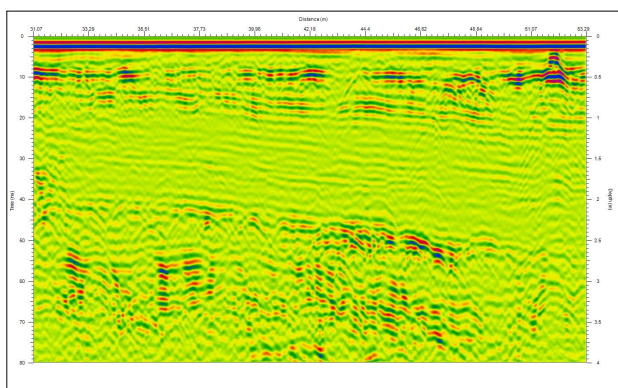
1. Utilities are easily interpreted while acquiring the data.



2. High resolution encoder is mounted on the standard cart without modifications.



3. Shallow and deep features are easily interpreted and followed in the data.



4. Deep survey with the GCB-400, in excess of 80ns penetration.

The high resolution of the data and low ringing allows for the detection and marking of the utilities in the field. The best results with the antenna are obtained using the Akula 9000 series ground penetrating radar control unit. Together with the post-processing software package GPRSoft (Standard or PRO), it makes the best choice for utility mapping.

When using the antenna for detection of water and gas pipes with smaller dimensions it is recommended to use the high resolution survey wheel.

The survey wheel coming as a standard with the SVC-820 provides good results, but higher resolution encoders are also available. Having a wide and long hyperbola always makes the detection task much easier. High resolution survey wheel encoder ENC-830 might be a better choice and it integrates with the SVC-820 survey cart without any need for modifications. It is also a good idea to use the survey wheel and the GPS positioning simultaneously whenever possible.

One of the advantages of using the GCB-400 is the fact that it can accurately detect utilities close to the surface and still perform very clear and easy for interpretation deeper surveys. Keep in mind that the ground coupled antennas work best when they are ground coupled, avoid lifting the antenna from the ground or using it in terrains with lots of pebbles and irregularities that can lift the antenna substantially from the ground. The air gap that is created in this cases may introduce artifacts in the data and will definitely weaken the amount of electromagnetic power radiated into the ground.

Although this antenna is meant to work in the time ranges up to 60ns there are exceptional cases when the penetration is very good and then deeper surveys can be done without any deterioration of the quality of the data. This is the reason why it is always a good idea to run a short survey in the site of interest to be able to find out the attainable penetration, the correct filters, the required gain etc.

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