

# NOGGIN<sup>®</sup>

ADAPTABLE,  
HIGH-PERFORMANCE  
GROUND PENETRATING  
RADAR



# NOGGIN

## Adaptable, proven GPR to solve today's problems

Noggins are available in four center frequencies, ranging from 100 MHz for deep penetration to 1000 MHz for shallow, high resolution surveys. Noggins adapt to any job in any terrain. Easily switch your Noggin from a cart to hand-tow to a trailer configuration to collect data in any situation. Or attach a different Noggin to a configuration to achieve the best depth penetration and resolution for your application. All configurations include the rugged DVL 500 display unit to clearly view data in the field and save it for report generation.

### Center Frequencies

Noggin's patented antennas have center frequencies of 100, 250, 500 and 1000 MHz spanning the depths and resolutions required for subsurface investigations.



### Configurations



#### SmartCart

Durable, 4-wheeled, folding cart provides rapid data collection in open areas.



#### SmartTow

Light, compact; traverse rough or difficult terrain



#### SmartHandle

Versatile, Compact; operates on vertical or overhead surfaces and in confined spaces.



#### SmartChariot

Rugged, vehicle hitch-mounted; rapidly survey large, flat areas such as roads, parking lots & golf courses.

### Custom Systems

Modular Noggins are ideal for customized systems. Design your own unique deployments, or engage our engineering team to assist you.



# Powerful yet simple data collection

## Rugged by design

Noggins are used in a wide range of environments, temperatures, and weather conditions.

## Ultra-wide band (UWB) GPR antennas

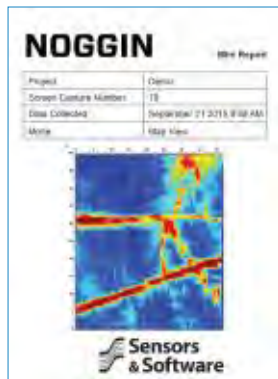
Ground-coupled for maximum signal penetration and data quality.

## Digital Video Logger

High resolution, sunlight visible, resistive touch screen with Wi-Fi and USB data transfer.

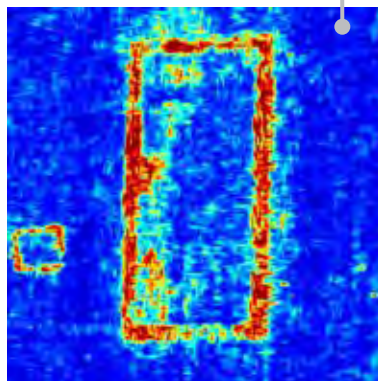
## Flexible data collection

Change GPR parameters to optimize the survey. Adjust depth, step size, stacking, time window, grid size, triggering and more.



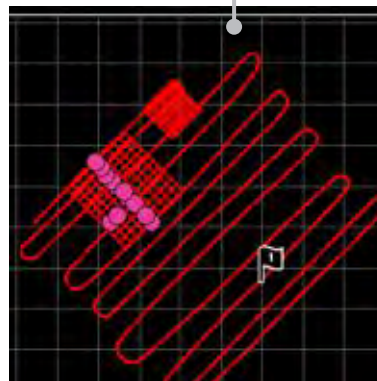
### Wi-Fi mini-reports

Email a report of line, depth slice or map view data to your customers or colleagues.



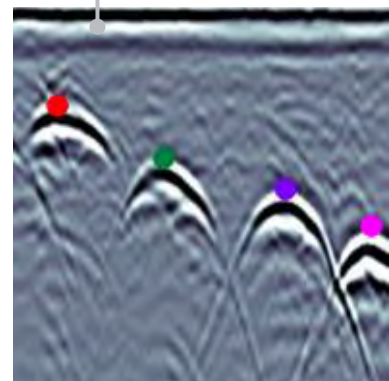
### Depth slicing

Collect grids of data and view depth slices right in the field.



### Map view

Using external GPS, display a plan map view of survey path, grids, field interpretations and flags.



### Field interpretations

Add color-coded interpretations and field flags with the touch of a finger.

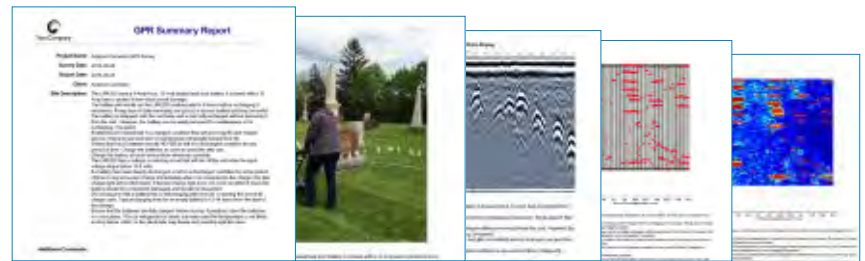
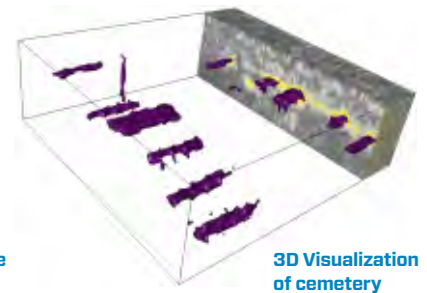
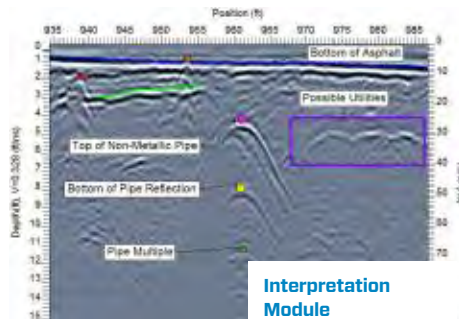
### Optional GPS

Integrated GPS for post-processing and export to Google Earth™, CAD drawings & GIS databases.



# EKKO\_Project software: Processing & reporting made easy

Organize, edit, process and plot your GPR data with EKKO\_Project. See your data in seconds – spend your time understanding the data, not importing and integrating ancillary information. The reporting capability outputs interpretations and other information into PDF, spreadsheet (csv), Google Earth (kmz) and CAD (dxf) files.



### GPR Summary Report

Create reports in minutes. Easily incorporate photos, data images and insights into a PDF report with your company logo.

### Additional Software Modules:

Processing | Bridge Deck Condition Report | Pavement Structure Report

Specs	Noggin 100	Noggin 250	Noggin 500	Noggin 1000
Size	91 x 76 x 17 cm (36 x 30 x 6.5 in)	63 x 41 x 23 cm (25 x 16 x 9 in)	38 x 23 x 15 cm (15 x 9 x 6 in)	30 x 15 x 11 cm (12 x 6 x 4.5 in)
Weight	9.5 kg (21 lbs)	7.3 kg (12.5 lbs)	3 kg (6.5 lbs)	2.3 kg (5 lbs)
Center Frequency	100 MHz	250 MHz	500 MHz	1000 MHz
- 3dB Bandwidth	50 - 150 MHz	125 - 375 MHz	250 - 750 MHz	500 - 1500 MHz
Shielding Front to Back	ground coupled focusing	>20dB	>20dB	>20dB
Maximum Time Window*	4,000 ns @ 0.8 ns/pt	2,000 ns @ 0.4 ns/pt	1,000 ns @ 0.2 ns/pt	500 ns @ 0.1 ns/pt
Maximum Depth Setting*	200m (656 ft)	100m (328 ft)	50m (164 ft)	25m (82 ft)

#### Additional Specifications

\* Determined by the computer software controlling data acquisition. DVL specifications indicated here.

Maximum points/trace\* 5,000

Power 8 watts 12V @ 0.6A DC

Performance Factor 160 dB + 10 log<sub>10</sub>N ex: for 2048 stacks are 193 dB

Acquisition Rate\* 100,000 samples/second

Stacks (N) Unlimited, DynaQ when odometer triggering

Integrated GPS Point mark or continuous NMEA string logging

Data output Digital (raw) 16 bit 2's complement

Operating Temperature -50 to +50°C, Environmental IP65

Noggins comply with the Industry Canada (IC), United States Federal Communications Commission (FCC), and European Technical Standards Institute (ETSI) Regulations for ultra-wide bandwidth (UWB) devices.

# NOGGIN

## Ground penetrating radar built on experience

Ground Penetrating Radar images metallic and non-metallic objects and structures embedded in soil, rock, concrete, asphalt, and fresh water – any non-metallic material. But not all GPR systems are created equal. Noggin GPR systems have been recognized by leading researchers as providing the highest quality GPR data in the most demanding conditions around the world – from the Arctic to the Sahara desert to the Antarctic.



## Sensors & Software is committed to your success

For more than a quarter of a century, Sensors & Software has pioneered advancements in GPR technology and delivered practical, innovative, and cost effective GPR solutions. GPR is in our DNA: research to manufacturing is conducted in a single cutting-edge facility. Through our extensive dealer network and global offices, Sensors & Software is equipped to provide a complete solution, both hardware and software.

When you purchase a Noggin, you are not only buying the highest-performing GPR system in the market today, you are also joining the worldwide Sensors & Software community.



### When you engage with us we:

Assess the feasibility of using GPR technology to solve your problem

Recommend suitable products for your needs

Provide support for field collection, analysis and reporting

Help you with technical advice, supplemental rentals and support throughout the lifetime of your product

## Expandable GPR to seize tomorrow's opportunities

As your GPR knowledge and expertise grow, use your Noggin system to expand your business into new markets. Easily add another frequency, a new configuration or accessories to your existing Noggin system and your subsurface investigation opportunities are limitless.

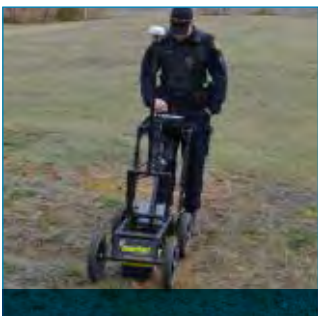
Noggin systems provide valuable insights in countless subsurface applications:

### ARCHAEOLOGY & CEMETERIES



- Search for artifacts and tombs
- Locate clandestine graves & tunnels
- Find Graves and burials

### FORENSICS & MILITARY



- Find buried caches of drugs, money and weapons
- Locate clandestine graves & tunnels
- Detect landmines, UXO and buried IEDs

### SUBSURFACE UTILITY ENGINEERING



- Detect metallic and non-metallic pipes and cable
- Locate abandoned infrastructure and buried structures

### MINING & QUARRYING



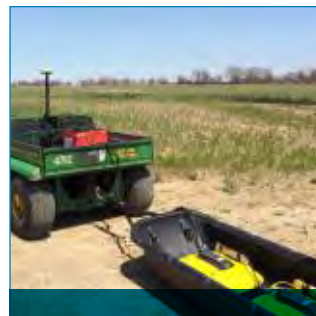
- Mine safety
- Resource development
- Sense structures such as fractures, faults & joints

### CONCRETE & PAVEMENT



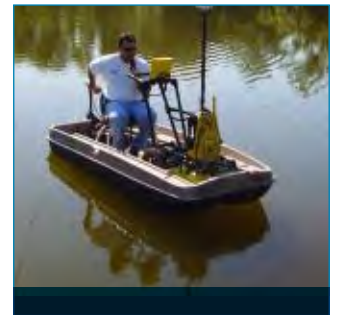
- Assess the interior of concrete/pavement for hazards, maintenance & planning

### AGRICULTURE & FORESTRY



- Drainage tile detection and mapping
- Geological characterization of soils in crop-growing areas
- Tree root mapping
- Water content evaluation for biomass assessment

### GEOTECHNICAL & ENVIRONMENTAL



- Bathymetry & sub-bottom profiling
- Geological stratigraphy
- Mapping depth to bedrock
- Sinkhole detection
- Locating underground storage tanks (USTs)
- Route selection for roads, railways and pipelines

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**Subsurface  
imaging  
solutions**