

# 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. Easily switch your Noggin between a cart, hand-tow, trailer or handle configuration to collect data in any terrain. Noggin's patented ultra-wide band (UWB), ground-coupled antennas provide maximum signal penetration and the highest GPR data quality. Noggins provide optimal flexibility and performance for your diverse needs.

### SmartCart

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



### SmartTow

Light, compact hand-tow configuration; traverse rough or difficult terrain.



### SmartHandle

Versatile, compact handle; 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 and golf courses.



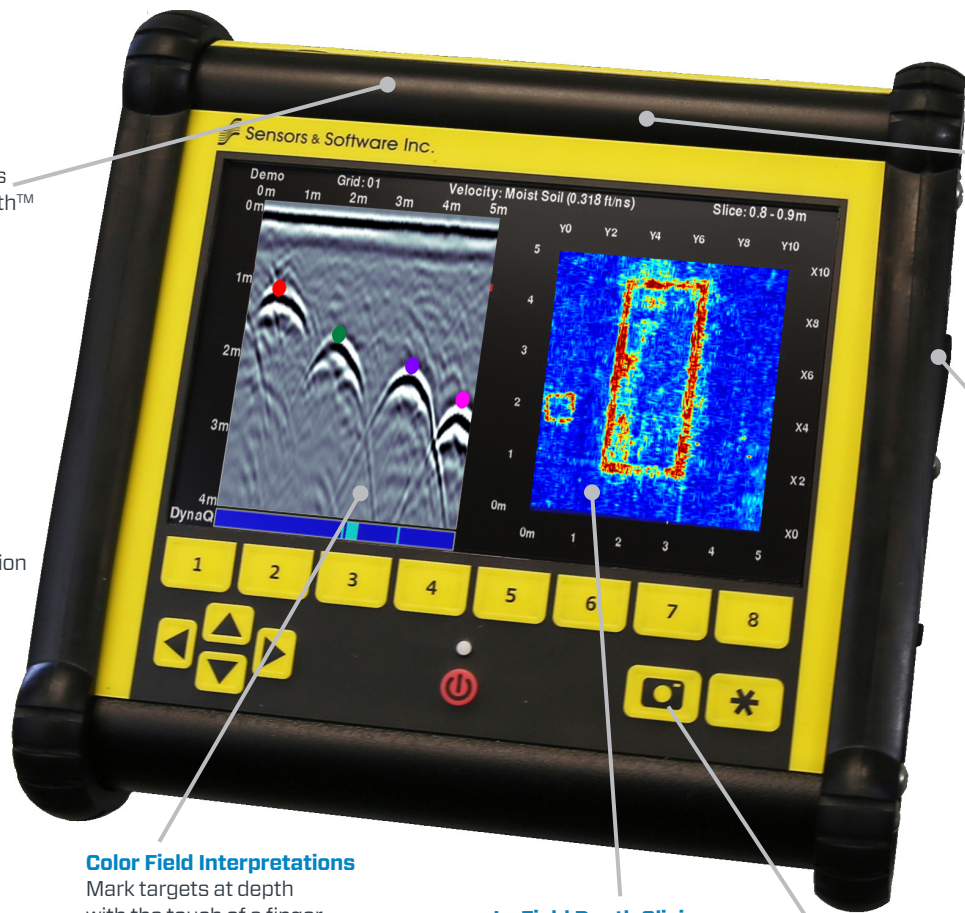
## Custom Systems

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



# Digital Video Logger: powerful yet simple data collection

The Digital Video Logger (DVL) has a high-resolution, sunlight visible, touchscreen and provides flexible data collection settings. Adjust depth, step size, stacking, time window, grid size, triggering and more to optimize your GPR survey.



**Internal GPS**  
Geo-tag screen captures and grids for Google Earth™

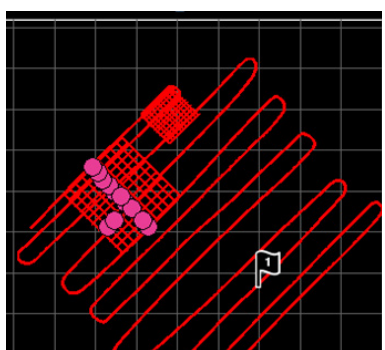
**Wi-Fi Enabled**  
Connect to a Wi-Fi network or hotspot to email reports from the field

**Optional External GPS**  
Serial port GPS connection for high accuracy positioning

**USB Data Transfer**  
Quickly transfer project data for further analysis

**Color Field Interpretations**  
Mark targets at depth with the touch of a finger

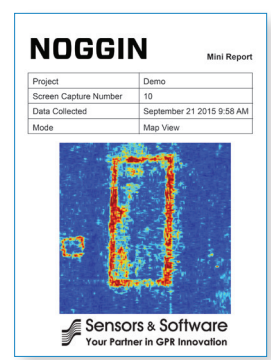
**In-Field Depth Slicing**  
Flexible grid collection with immediate results



**Map View**  
Using external GPS, view a map of the GPS survey path, grids, field interpretations & flags.



**EKKO\_Project Software**  
EKKO\_Project makes complex GPR analysis and reporting easy with intuitive tools to organize, edit, process & plot your data. Quickly and easily create superior deliverables for your clients.



**Send Reports from the Field**  
Capture screen images and email mini-reports to your colleagues or customers before leaving the site.

# Choose the system that's right for you

		Applications	SmartCart	SmartTow	SmartChariot	SmartHandle
	1000	<ul style="list-style-type: none"> <li>Pavement</li> <li>Bridge deck</li> <li>Concrete assessment</li> </ul>				
	500	<ul style="list-style-type: none"> <li>Archaeology</li> <li>Forensics</li> <li>Ice/snow</li> </ul>				
	250	<ul style="list-style-type: none"> <li>SUM/SUE</li> <li>Underground storage tanks (UST)</li> <li>Drainage systems</li> </ul>				N/A
	100	<ul style="list-style-type: none"> <li>Geologic mapping</li> <li>Geotechnical applications</li> </ul>			N/A	N/A

Specifications	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)

Maximum points/trace\*: 5,000

Power: 8 watts 12V @ 0.6A DC

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

Acquisition Rate\*: 100,000 samples/second

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

Stacks: 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

# NOGGIN

## Ground penetrating radar built on experience

Ground Penetrating Radar images objects and structures (both metallic and non-metallic) embedded in soil, rock, concrete, asphalt, and fresh water – any non-metallic material. Noggin GPRs are recognized by leading researchers as providing the highest quality data of all GPR systems available today. Rugged by design, Noggin GPR systems have been used successfully in the most demanding conditions around the world – from the Arctic to the Sahara desert.



## 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, easy to use, 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 and training 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



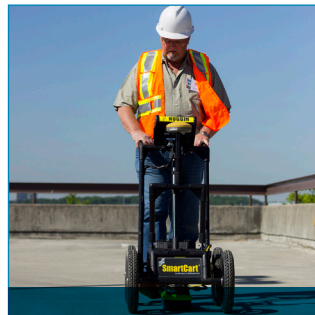
- Search for artifacts and tombs
- Locate foundations of ancient structures
- Find graves and burials

### SUBSURFACE UTILITY ENGINEERING



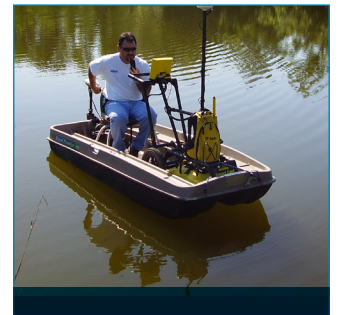
- Detect metallic and non-metallic pipes and cable
- Locate abandoned infrastructure and buried structures

### CONCRETE & PAVEMENT



- Assess the interior of concrete for deterioration
- Measure pavement layering
- Prioritize infrastructure maintenance

### GEOTECHNICAL & ENVIRONMENTAL



- Map depth to bedrock and geological stratigraphy
- Locate underground storage tanks (UST)
- Detect sinkholes
- Conduct bathymetry and sub-bottom profiling

### FORENSICS & MILITARY



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

### MINING & QUARRYING



- Improve mine safety practices
- Guide resource development
- Locate fractures, faults and joints

### AGRICULTURE & FORESTRY



- Map drainage tile
- Characterize soil conditions in crop-growing areas
- Map tree roots
- Evaluate water content
- Conduct biomass assessment

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**Subsurface  
imaging  
solutions**