NOGGIN®

by Sensors & Software Inc.

subsurface imaging solutions

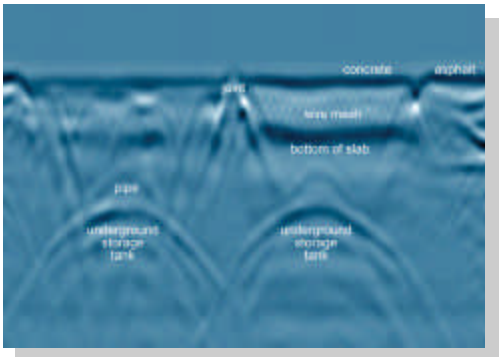
NOGGIN®

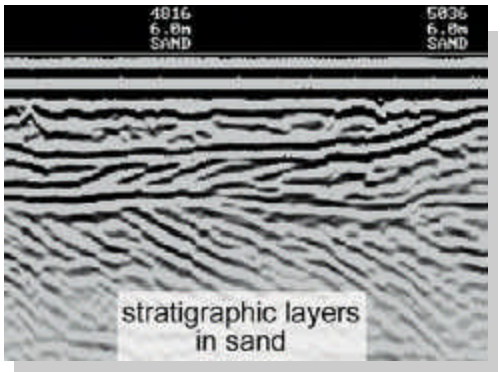
Noggin® subsurface imaging instruments are a fast, affordable and easy-to-use family of Ground Penetrating Radar (GPR) systems from Sensors & Software Inc. The rugged, weather-proof assembly combined with low power, compact, cutting edge digital electronics make Noggin® the most advanced GPR system ever developed. Experience from years of practical field operations has been exploited to enhance the functionality and simplicity of Noggin®.

Noggin® provides subsurface image output directly in digital form. Whether coupled with a PC using SpiView® or operated with a Digital Video Logger (DVL), the subsurface images appear in real-time and are recorded for scroll-through review. Printing hard copy or exporting data images to include in reports is quick and easy. All systems provide marker input as well as time and date stamps on each record.

The basic Noggin® family provides the convenience of "point and shoot" operation. The systems are designed to make you productive immediately. Once you try a Noggin® you will never do a GPR survey any other way.

NOGGIN® Applications





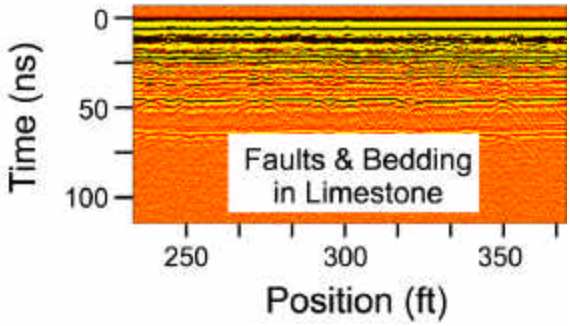
Use your Noggin® for: **Forensic & Archaeology** **Geotechnical & Environmental**

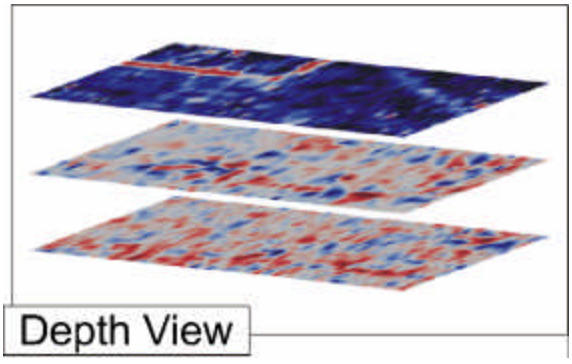
NOGGIN*plus*

The Noggin*plus* family of subsurface imaging instruments extends the power of the Noggin® group. All Noggin® systems acquire data and timing information in digital form internally. Noggin*plus* systems are enhanced to export the raw digital data. To fully exploit the power of Noggin*plus*, use a Sensors & Software Inc. DVL system to control, display, and record data.

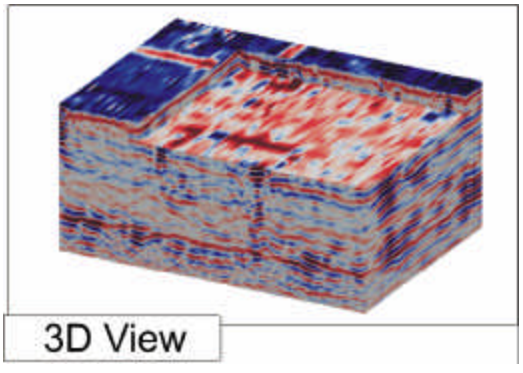
Noggin*plus* is designed for the professional GPR user who needs fast and simple operation combined with full digital data acquisition for enhanced imaging. Combine Noggin*plus* with a SmartCart™ or SmartHandle™ system to rapidly create maps and 3D visualizations using EKKO_Mapper, EKKO_Pointer and EKKO_3D Windows based software.

NOGGIN*plus* Applications





2D and 3D views of Old Foundations



Mining & Quarrying **Buried Utilities** **Structure Assessments (NDT)**

Systems and Peripherals

SmartCart™

The SmartCart™ provides the perfect platform for rapid surveying. The collapsible cart is constructed from tough fiberglass components. With quick release removable wheels and a fold down handle, the SmartCart™ is easily loaded into a vehicle or neatly stored. The integrated DVL, battery, and wheel odometer make controlled surveys easy. From arrival on site to beginning surveying, start up time is less than a minute. The computer managed power system allows survey operation all day using a single rechargeable battery. Integrated data management makes survey of grids for maps and 3D visualization quick and easy. Downloading data to a PC or making hard copy records directly to a printer are standard features of the integrated system software.

SmartHandle™

The SmartHandle™ provides a compact platform for surveying in confined areas with a Noggin®. Building on Sensors & Software Inc.'s ergonomic designs, the integrated odometer and intelligent control button, light indicators, and beeper accelerates remote data acquisition. A SmartHandle™ system includes the same DVL data acquisition and power management features as the SmartCart™.

DVL (Digital Video Logger)

The DVL provides for control, display, and recording of data for the family of Noggin® systems. The robust, waterproof package enables easy survey operation in any weather condition. The wide temperature range, high contrast, sunlight visible LCD screen makes outdoor operation practical. No more squinting at screens through tunnel hoods to see your data in the field. Large capacity data storage, easy integration with peripherals, and support of GPS operation make the DVL an indispensable part of the Noggin®

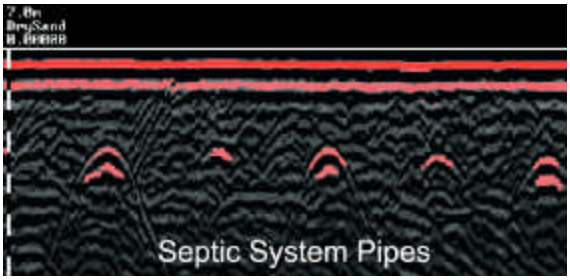
*Sensors & Software offers a complete range of accessories that complement the Noggin® family of GPR systems. From shipping cases to battery packs to cables, visit www.sensoft.ca or contact us to find out more.

Military, Law Enforcement & Espionage **Bio Applications** **Snow & Ice**

Software

SpiVIEW ®

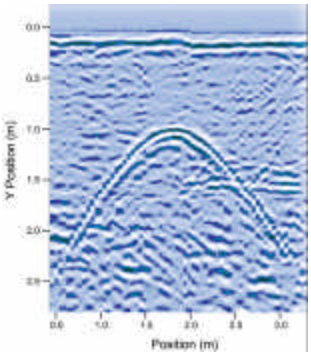
SpiView™ turns a DOS-based PC into a control, display, printing, and data storage system for the Noggin® family. Simple time-based operation of Noggin® with on-the-fly gain, depth, colour, and speed adjustments make for an inexpensive entry to the exciting GPR field.



NOGGIN*plus*

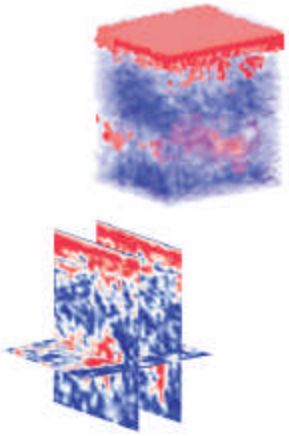
EKKO_View

For Noggin*plus* users with raw digital data, EKKO_View provides a powerful Windows® based data editing, display, and plotting capability. EKKO_View acts as a pre-processor for the EKKO_Mapper, EKKO_3D and EKKO_Pointer imaging software modules.



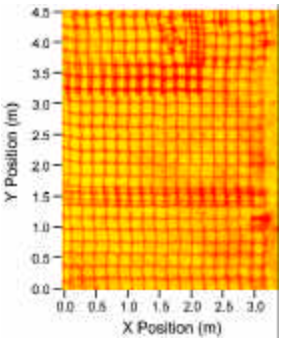
EKKO_3D

EKKO_3D provides 3D visualization of GPR grid data obtained using the SmartCart™ or SmartHandle™ Systems. EKKO_3D enables fascinating 3D slice, cube, and chair presentations and movies to be created quickly and easily.



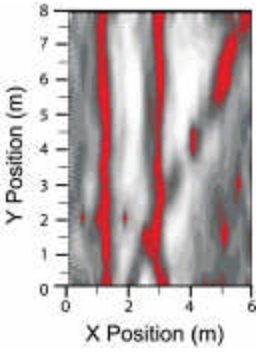
EKKO_Mapper

EKKO_Mapper converts the Noggin*plus* SmartCart™ or SmartHandle™ grid survey data into GPR time and depth slice maps. The DVL and Noggin*plus* output merge seamlessly into EKKO_Mapper to enable rapid map creation. Map outputs ease the understanding of complex 3D structures.



EKKO_Pointer

EKKO_Pointer uses pattern recognition to identify localized target responses in GPR data and creates a statistical output representation. Output aids in identifying features such as pipes and cables. Processing is highly automated and operates on the same grid data sets used by EKKO_Mapper and EKKO_3D.



NOGGIN® Technical Specifications

	NOGGIN® 1000	NOGGIN® 500	NOGGIN® 250
Size	12 x 6 x 4.5 in (30 x 15 x 11 cm)	15 x 9 x 6 in (39 x 22 x 16 cm)	25 x 16 x 9 in (63 x 41 x 23 cm)
Weight	5 lbs (2.3 kg)	6.5 lbs (3 kg)	16 lbs (7.3 kg)
Power	8 watts 12 V @ 0.7A DC	8 watts 12 V @ 0.7A DC	8 watts 12 V @ 0.7A DC
Performance Factor	>160 dB	>160 dB	>160 dB
Transducer Patented Dipole	500 - 1500 MHz	250 - 750 MHz	125 - 375 MHz
Shielding Front to Back	>20dB	>20dB	>20dB
Noggin® to PC	115KB, RS232	115KB, RS232	115KB, RS232
Default Depth Windows (User Definable)	0.25, 0.5, 1, 2, 4m (6.25, 12.5, 25, 50, 100ns)	1, 2.5, 4, 5, 8m (25, 50, 75, 100, 150ns)	2.5, 5, 7.5, 10, 15m (50, 100, 150, 200, 300ns)
Acquisition Rate (depends on control system)	100,000 samples/s	100,000 samples/s	100,000 samples/s
PC & DVL Output	Digital image in .PCX Format	Digital image in .PCX Format	Digital image in .PCX Format
DVL Output	Digital (raw) 16 bit 2's complement*	Digital (raw) 16 bit 2's complement*	Digital (raw) 16 bit 2's complement*
Operating Temperature	-40 to 40°C	-40 to 40°C	-40 to 40°C
Environmental	IP67	IP67	IP67

* In Noggin*plus* only

subsurface imaging solutions

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