

Intelligent subsurface data acquisition

Borehole Geophysical Logging, Imaging, Video,
and Borehole Direction Survey Systems

Product Catalogue

Borehole Geophysics Probes for:

Mineral Exploration

Resource Evaluation

Formation Characterization

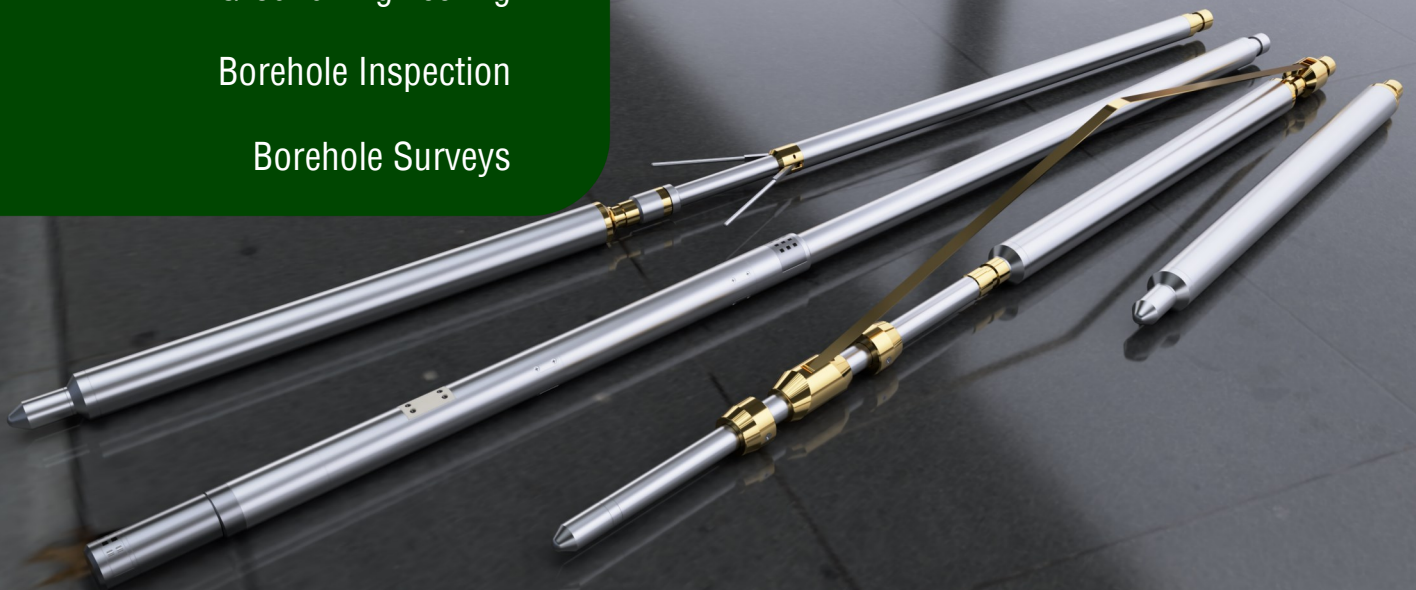
Groundwater and Environmental

Hydrology

Ground Engineering

Borehole Inspection

Borehole Surveys



Design, Manufacture, Sales, & Rentals for borehole logging equipment

Geovista offer a comprehensive range of slim-hole geophysical logging and imaging equipment including logging winches, wireline sondes, memory sondes, video cameras, televiwers, and borehole survey gyros.



Combinable probes

Geovista probes can be run alone or connected as a single tool string according to requirements or convenience.

Real-time or memory logging options

Run in standard real-time E-line mode, or memory mode. Memory mode allows for wireless logging without a wireline set up.

Thru-bit logging (TBL)

TBL allows for high-quality geophysical data to be collected in environments where borehole instability render conventional wireline logging risky. Collect your logs whilst tripping out using Geovista's Memory System.

Tools operate on single or 4-core cable.

For flexibility when it comes to Geovista supplied logging winches or third-party winches

Software is free

Free logging software and free access to updates in perpetuity

Geovista Data Acquisition System

The Data Acquisition System includes a logger to supply power and for bidirectional communication with the probes, and software providing a user interface



GVPL— GV Platform Logger

Key Features

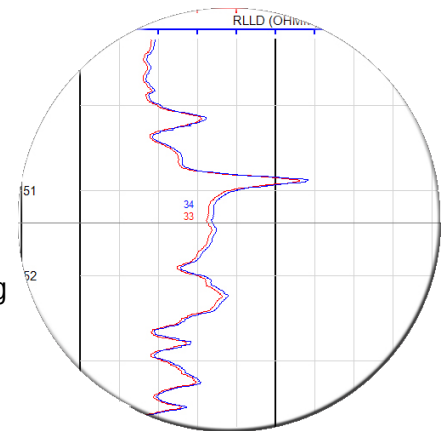
- Runs on any Windows PC or notebook via USB interface
- Runs on coaxial, mono, or multi-conductor wireline
- Interfaces with Geovista or third-party winches. Compatible with 5 to 30 V DC encoders.
- Higher baud rate allows for faster logging speed with high data rate tools
- Simple operation with on-off switch. Other controls are from GVPL logging software
- Robust aluminium case, splash-proof and dust-proof to IP65 standard
- Compact and lightweight:
 - Dimensions: (W x L x H): 20 x 20 x 7 cm (8 x 8 x 3 in)
 - Weight: 2.4 kg
- Input power: 110 to 240 V AC

GVPS— GV Platform Software

A simple and intuitive user interface. Allows for log data acquisition, log playback and data export as LAS files

Key Features

- Sonde power control
- Depth, speed, and cable tension display
- Winch and depth control parameters
- Tool string (stack) configuration
- Tool calibration and performance monitoring
- Telemetry optimisation
- Sonde communication status display
- Log header editor
- Display of analogue log curves and their digital values
- Log playback with wide choice of display options.
- Log conversion to LAS format
- Choice of printing hard copies or to PDF



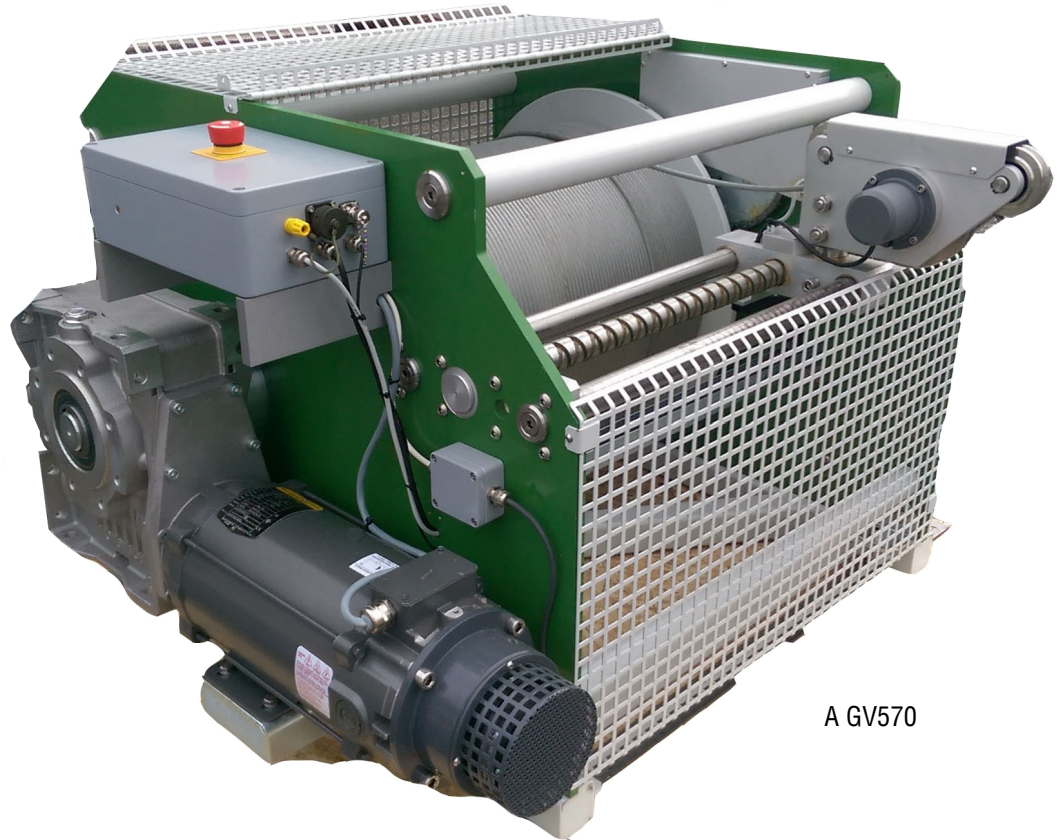
GV500 series logging winches

A proven, heavy-duty design, engineered for safe operation, with reliable performance in demanding field environments - wherever you are

The GV500 series are reliable, heavy duty logging winches with a range of motor powers and cable capacities. These reliable, utilitarian winches are trusted by clients worldwide and have been manufactured for almost 30 years.

KEY FEATURES:

- Models with a range of motor power and cable capacity
- Runs from AC (220V) supply
- Cable tension device
- Motor torque limiter
- Levelwind safety clutch
- Adaptable for 3rd party probes
- Local and aux. controller
- Floating disk brake
- CE certified



A GV570

SPECIFICATIONS

	Winch model			
	GV510	GV530	GV550	GV570
Max cable capacity (m)				
3/16"	600	1100	2100	3000
1/4"	400	600	1100	1900
1/8"	1500	2500		
Speed (m/min)	0-27	0-30	0-32	0-32
Motor Power	0.37 kW	0.75 kW	1.1 kW	1.5 kW
Weight (excl. cable)	117 kg	168 kg	186 kg	245 kg
Dimensions				
Length (cm)	62	72	78	91
Width (cm)	62	63	82	94
Height (cm)	54	61	59	64
Power input	230 V (AC)	230 V (AC)	230 V (AC)	230 V (AC)

Other Winches - *Please consult us for information about manual winches and custom adaptations or changes to existing models.*

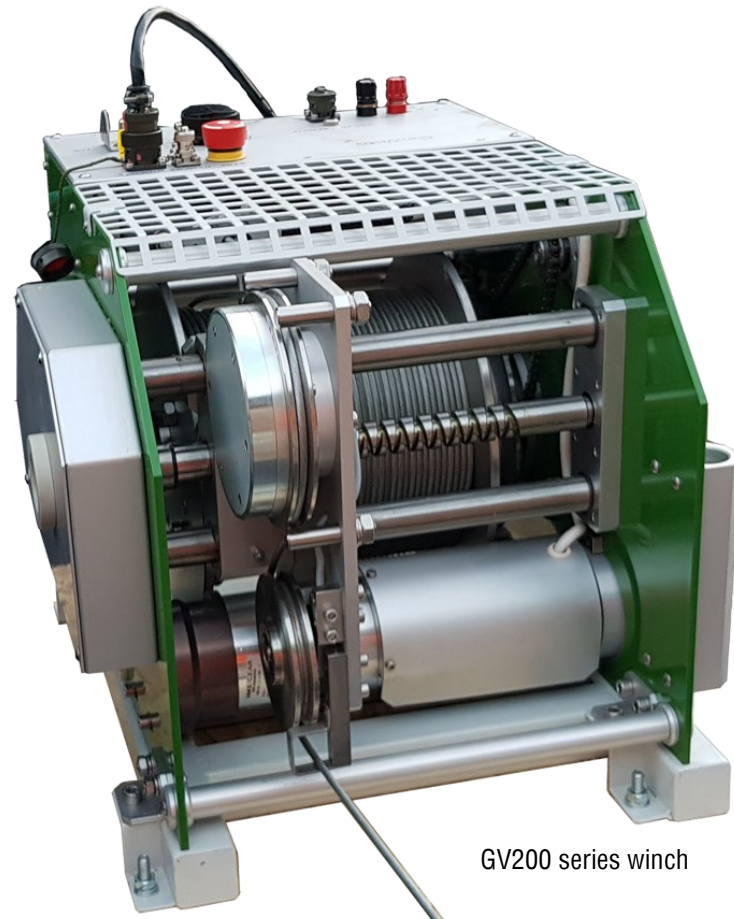
GV200 series portable logging winches

A proven and portable design, engineered for safe operation, with reliable performance in demanding field environments - wherever you are

The GV200 series are reliable, portable, and rugged logging winches that are ideal for mounting in a vehicle or use on remote sites. These reliable, utilitarian winches run off a 12V DC power supply.

KEY FEATURES:

- Portable, rugged, and reliable
- Runs from DC (12V) supply
- Cable tension device
- Motor torque limiter
- Levelwind safety clutch
- Adaptable for 3rd party probes
- Local and aux. controller
- Mechanical brake
- CE certified
- Easy installation in a vehicle



GV200 series winch

SPECIFICATIONS

	Winch model	
	GV200	GV250
Max cable capacity (m)		
3/16"	220	300
1/8"	450	
Speed (m/min)	0-15	0-15
Motor Power	170 W	170 W
Weight (excl. cable)	43 kg	50 kg
Dimensions		
Length (cm)	54	54
Width (cm)	46	46
Height (cm)	41	47
Power input	12 V (DC)	12 V (DC)

Other Winches - *Please consult us for information about manual winches and custom adaptations or changes to existing models.*

Natural Gamma Probe

Natural gamma probes measure gamma radiation that is emitted by geological units, the intensity of which depends on the concentration of different radioactive isotopes therein. Geovista has options to meet varying deployment requirements, including filtered sonde for filtering out lower energy gamma and GM probes for high count rates.

Natural gamma measurements are an incredibly popular option across a wide variety of different sectors because of their utility in stratigraphic correlation and as a proxy for lithology. The isotopes most commonly responsible for natural gamma emissions in geological strata are ^{40}K , ^{238}U , ^{232}Th , and the radionuclides in the decay chains of these isotopes. The relative concentrations of these radionuclides in strata can provide key information on the lithology; for example, mudrocks with high clay content will contain higher U and Th concentrations than sandstones or carbonate rocks. Similarly, K-rich rocks will also exhibit higher gamma ray counts.

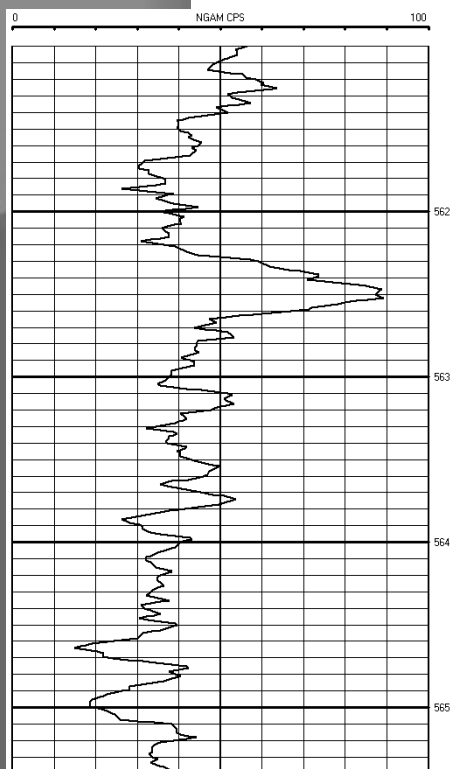
Geovista's standard Natural Gamma Probe includes a sensitive crystal which counts the ionizing events over time. For high count rate environments, a Geiger-Müller based instrument is available. Finally, a shielded (filtered) version is also available which filters out lower energy gamma rays for use in e.g., uranium exploration.

KEY FEATURES

- Fully combinable, digital probes
- Range of detectors and sondes to suit various applications

APPLICATIONS

- Depth correlation
- Stratigraphic correlation
- Shale/clay content
- Ore resource evaluation
- Geochemistry
- R.A. tracer detection
- Uranium exploration
- Nuclear geological storage



SPECIFICATIONS

	Natural GR (NaI)	Natural GR (GM)	Natural GR (NaI /Filtered)
Weight (kg)	3.5	6.3	4.5
Length (m)	0.7	0.95	0.7
Diameter (mm)	38	28	42
Other diam. options:	28	38	-
Detector D x L (mm)	NaI 25 x 50	GMT (8&15 mm)	NaI 20 x 50
Other:	NaI 20 x 75		
Max. Pressure (MPa)	20	20	20
HP version (MPa)	35	-	-
Max. Temperature	80°C	80°C	80°C
HT version	125°C	-	-
Borehole Condition	Any	Any	Any

Accessories: Verification blanket

Spectral Gamma Probe

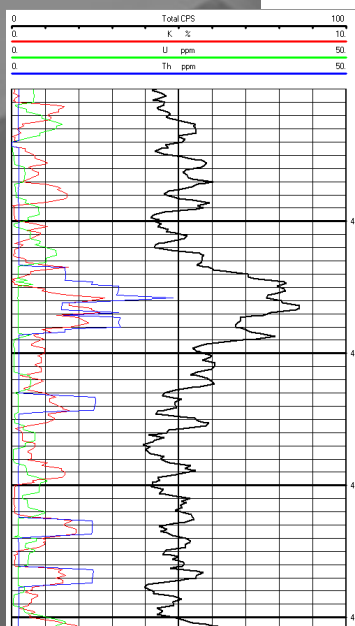
The Spectral Gamma sonde measures gamma ray energy to identify and quantify gamma emitting isotopes in strata. The sonde provides a total counts per second value and (if calibrated) a breakdown of K (%), U (ppm), and Th (ppm), calculated from the measured energy spectrum.

The Spectral Gamma probe measures the energy and intensity of gamma emissions from the formation. The main radioisotopes in geological strata are ^{238}U , ^{232}Th , ^{40}K , and various radionuclides the their decay chains. Each of these different isotopes emits gamma rays at characteristic energies that can be measured and used to identify the emitting nucleus. These data are then presented as a total gamma ray log which breaks down the abundance of K (%), U (ppm), and Th (ppm) with depth. As with the Natural Gamma Probe, the total gamma ray counts can provide limited lithological information. With the Spectral Gamma sonde, however, the breakdown of which radioisotopes are responsible for the emissions can provide a much more detailed picture of the mineralogy.

Several detector crystals are available depending on job requirements: NaI, BGO, CeBr, and LaBr. LaBr has the capacity to deal with high count rates and offers good output linearity with temperature. However, it can exhibit higher intrinsic background counts. CeBr is an alternative to LaBr and the crystals have the same form factor as NaI. It exhibits far fewer intrinsic background counts. BGO is a very efficient GR absorber due to its high Z. However, it can be susceptible to radiation damage. The table below summarizes these attributes:

Crystal	Density (g/cc)	%Resolution @662KeV	Decay Time (ns)	Photoelectr. Yield (% of NaI)	Intrinsic activity	Hygroscopic
NaI	3.67	7	260	100	No	Yes
BGO	7.13	12	300	15-20	Negl.	No
CeBr	5.2	4	20	120	Negl.	Yes
LaBr	5.2	3	16	120	Yes	Yes

- Default resolution is 256 channels with optional 512, 1016 or higher. Energy range is 100 keV (or lower) to 3 MeV



APPLICATIONS

- Depth correlation
- Stratigraphic correlation
- Shale/clay content
- Ore resource evaluation
- Geochemistry
- R.A. tracer detection
- Uranium exploration
- Nuclear geological storage

KEY FEATURES

- Fully combinable, digital probes
- Range of detectors and sondes to suit various applications

SPECIFICATIONS

	Natural GR (Spectral)
Weight (kg)	6.3
Length (m)	0.95
Diameter (mm)	60
Other diam. options:	42, 73
Detector D x L (mm)	NaI 38 x 150
Other:	CeBr, LaBr or BGO
Max. Pressure (MPa)	20
HP version (MPa)	-
Max. Temperature	80°C
HT version	-
Borehole Condition	Any

Accessories: Calibration service (in calibration pit)

Normal Resistivity (ELOG) Probe

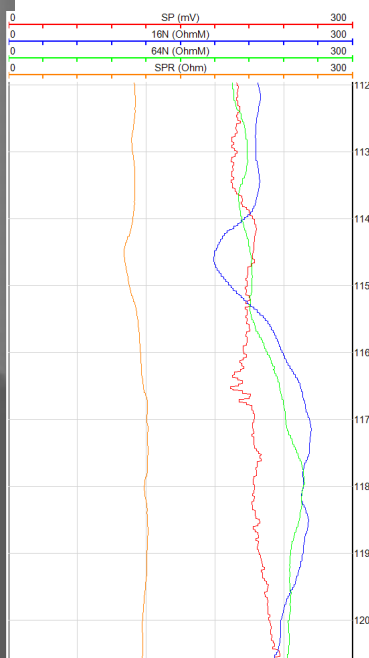
The Geovista ELOG probe records 16" and 64" normal resistivity, single point resistance (SPR), and spontaneous potential (SP) measurements. Resistivity logging is widely used in mineral exploration, hydrogeology, formation evaluation, and many other applications.

Resistivity is a fundamental property of materials and resistivity logging is one of the most mature geophysical logging techniques. The electrical resistivity of the strata is measured at 16" and 64" which provides a shallow and deep measurement. This is done by an generating a constant alternating polarity current of approximately 2 mA at a drive electrode which flows out from the source to the cable armour. The potential between the 16" and 64" electrodes is measured and this voltage is proportional to the formation resistivity in Ohm-Metres.

The SPR is the measured potential between the drive electrode and the 16" electrode. The measured voltage is proportional to the resistance of the formation in Ohms.

The SP measurement is a DC voltage measured in the presence of an AC current injected from the drive electrode. In certain circumstances, the SP is measured with reference to a surface electrode (Fish). The ELOG sonde requires a resistivity bridle for use which maintains separation between the drive electrode and the cable armour.

Resistivity logging is a staple in mineral exploration, water well drilling, formation evaluation, and many other applications. After natural gamma logging, it is probably the most widely used logging technique.



KEY FEATURES

- Combinable digital probes
- Electrode configuration and measurement options to suit requirements.

SPECIFICATIONS

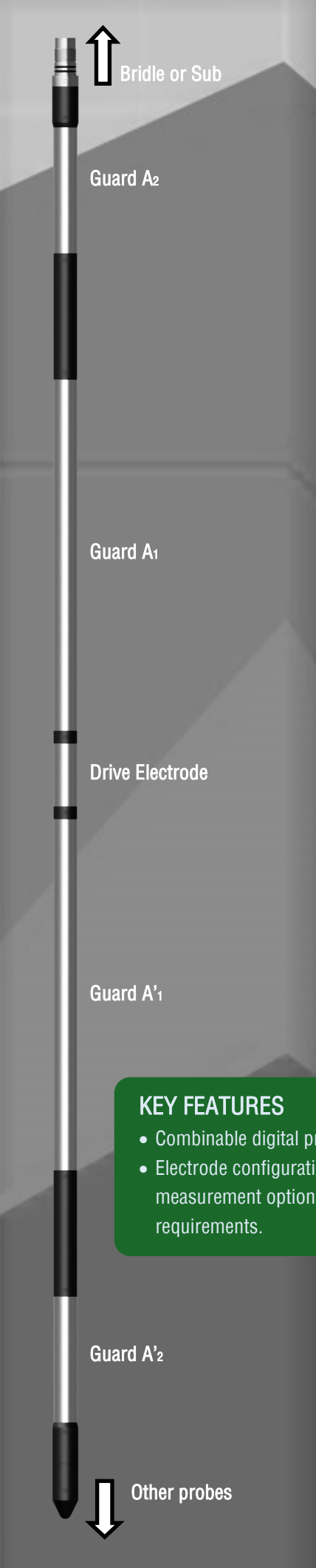
	ELOG Sonde	SP/SPR Sonde
Weight (kg)	8	3
Length (m)	2.27	0.7
Diameter (mm)	42	42
Resistivity Range (Ohm m)	0.2 to 10 K	-
SPR Range (Ohm)	0.2 to 10 K	0.2 to 10 K
SP Range (mV)	-2500 to +2500	2500 to +2500
Current return	Cable armour	Cable armour
Measure return	Bridle electrode	Bridle electrode
Max. Pressure (MPa)	20	20
HP version	35	-
Max. Temp. (°C)	80	80
HT version	125	
Borehole Condition	Water filled / Open hole	Water filled Open hole

APPLICATIONS

- Stratigraphic correlation
- Formation properties
- Mineralised zone detection
- Aquifer delineation
- Water salinity
- Indication of permeable and porous zones

Accessories: Resistivity bridle, test and calibration box





Dual Guard Focused Resistivity Probe

The Dual Guard Focused Resistivity Probe (DLL3) measures both deep and shallow focussed resistivity, as well as spontaneous potential (SP) from the bridle electrode. It has superior vertical resolution and depth of penetration than the conventional ELOG probe.

Resistivity is a fundamental property of materials and resistivity logging is one of the most mature geophysical logging techniques. The DLL3 probe provides a deep and shallow resistivity measurement at a higher vertical resolution and offers deeper penetration than is possible with a standard ELOG probe. This is achieved by sending a measure current from the drive electrode to the cable armour beyond the isolating bridle. The current is focused by a bucking current which flows from the connected guard electrode pairs. The potential of these guard electrode pairs is kept equal to the drive electrode, this turns the sonde into an equipotential surface and forces the measure current to flow out perpendicular to the sonde orientation.

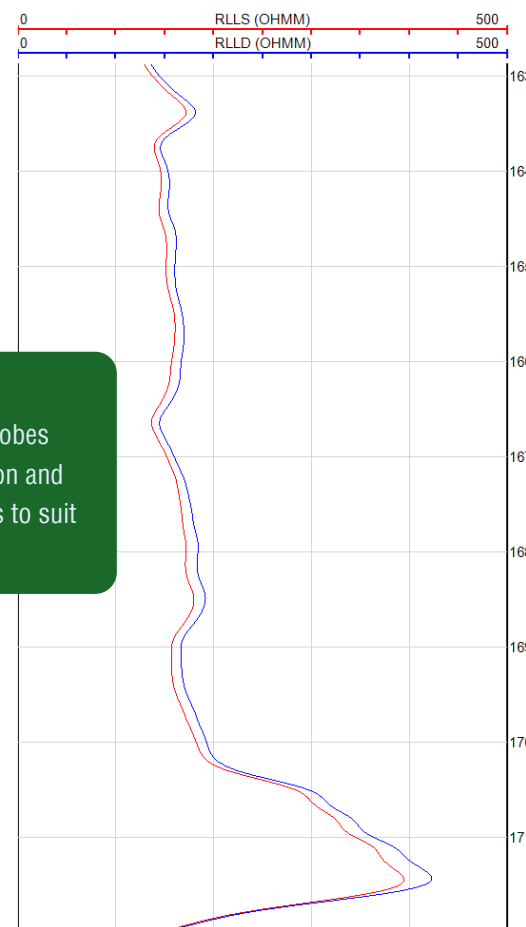
Resistivity logging is a staple in mineral exploration, water well drilling, formation evaluation, and many other applications. After natural gamma logging, it is probably the most widely used logging technique.

APPLICATIONS

- Stratigraphic correlation
- Formation properties
- Mineralised zone detection
- Aquifer delineation
- Water salinity
- Indication of permeable and porous zones

KEY FEATURES

- Combinable digital probes
- Electrode configuration and measurement options to suit requirements.



SPECIFICATIONS

	DLL3 Sonde
Weight (kg)	8
Length (m)	2.37
Diameter (mm)	42
Resistivity Range (Ohm m)	0.2 to 30 K Extendable to 100 K
SPR Range (Ohm)	-
SP Range (mV)	2500 to +2500
Current return	Cable armour
Measure return	Bridle electrode
Max. Pressure (MPa)	20
HP version	35
Max. Temp. (°C)	80
HT version	125
Borehole Condition	Water filled Open hole

Accessories: Resistivity bridle/bridle substitution sub, test and calibration box

Induced Polarisation Probe

The Induced Polarization Probe measures formation resistivity and chargeability. Formations with high chargeability and low resistivity indicate potential areas of mineralization.

The Geovista Induced Polarisation (IP) Probe comprises four electrodes in AB-MN Wenner configuration. A high DC voltage with alternating polarity is periodically applied to the outer two electrodes. This voltage is applied for a fixed time and then the decaying voltage is measured at the inner two electrodes after a brief delay. The polarizability of different materials is dependent on the electronic configuration. In strata containing metals, the difference in the rate of electrolytic reactions when a current passes across conductive metal grains causes polarisation. An IP effect is also evident when a current is applied to certain clay minerals with surficial negative charges.

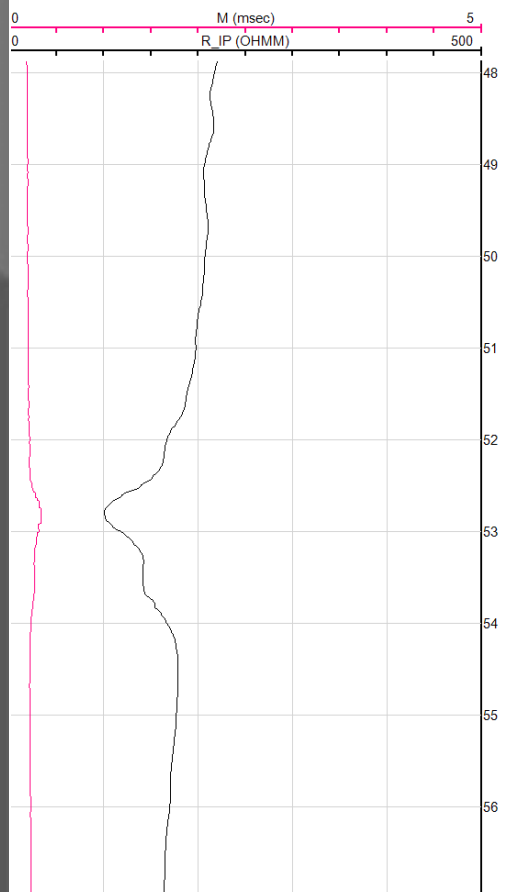
The IP probe is an important tool in mineral exploration and is commonly used when prospecting for elements that commonly occur in sulphides like iron, copper, nickel, lead, cobalt, silver, and zinc.

KEY FEATURES

- Fully combinable, digital probe

APPLICATIONS

- Delineation of mineralised formations with disseminated metallic sulphides and oxides
- Pyrite detection
- Identification clay-rich zones



SPECIFICATIONS

SPECIFICATIONS		IP Sonde
Weight (kg)		8.0
Length (m)		2.08
Diameter (mm)		42
Electrode spacing (cm)		40
Chargeability measurement		Time Domain with 220ms cycle time
Resistivity Range (Ohm m)		0.2 to 1000
Max. Pressure (MPa)		20
Max. Temp. (°C)		80
Borehole Condition		Water filled/open hole

Accessories: Test and calibration box



Magnetometer Probe

The Magnetometer Probe measures the three orthogonal components of the total

This probe boasts a high performance 3-axis fluxgate sensor and a 2-axis accelerometer. The sensors come in three versions according to their measurement noise floor: basic, standard, and low noise. These are used to obtain the values of the resultant of the anomalous vector components after the removal of the normal field. The probe comes with a choice of optional ranges and noise levels and the accelerometer allows for output correction in inclined boreholes.

APPLICATIONS

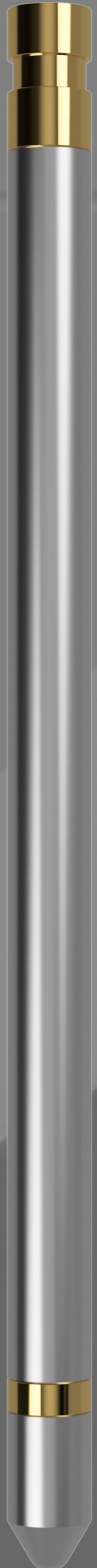
- Detection of magnetic disturbances
- Detection of iron ore
- Geophysical exploration

KEY FEATURES

- Choice of optional low, standard or basic noise level sensors
- Combinable (base of stack), digital probe

SPECIFICATIONS

	MAG Sonde
Weight (kg)	3.5
Length (m)	0.71
Diameter (mm)	38
Optional Range per axis	$\pm 70\mu\text{T}$ / $\pm 100\mu\text{T}$ / $\pm 250\mu\text{T}$ / $\pm 500\mu\text{T}$ / $\pm 1000\mu\text{T}$
Optional noise level	<6, 6 to 10, and 10 to 20 pT rms/ $\sqrt{\text{Hz}}$ at 1Hz
Max. Pressure (MPa)	20
Max. Temp. (°C)	80
Borehole Condition	Water or air filled/open hole/PVC cased



EM Dual Induction Probe

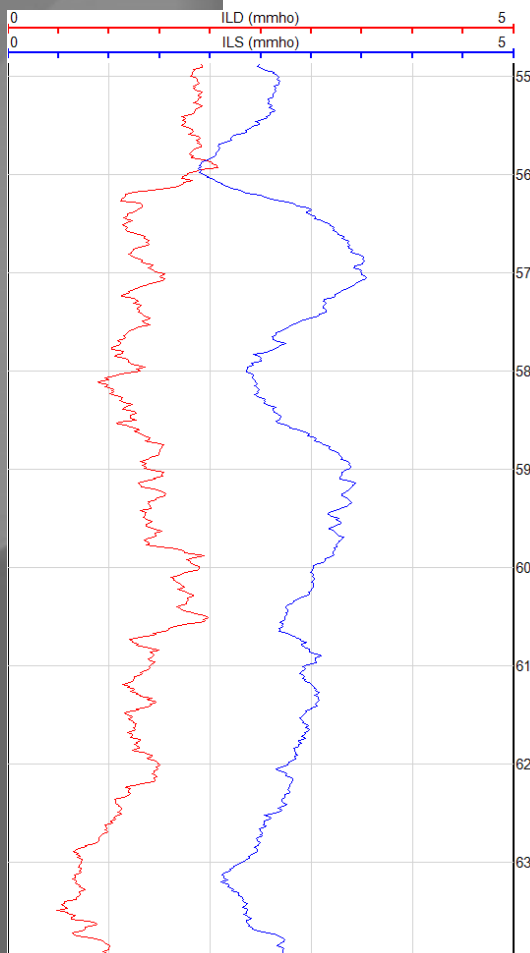
The EM Dual Induction Probe measures deep (ILD) and a shallow (ILS) formation conductivity. It can be operated in low-conductivity mud, air-filled, and plastic-lined bore-

The Dual Induction Probe works by transmitting a high frequency current through a coil and measuring the induced electromagnetic field 180° out of phase at the receiver. The sonde has two receiver coils, allowing for measurements over two depths of penetration - ILD and ILS.

The GV Dual Induction sonde is ideal for helping mineral explorers to detect conductive ore bodies. The probe also has key applications in hydrogeology where it can easily identify porous and permeable formations with differing ILD and ILS resistivity readings. The sonde performs particularly well in conductive formations and where the boreholes contain either higher resistivity mud or just air.

KEY FEATURES

- Combinable, digital probe
- Works in mud, air-filled, and plastic lined boreholes
- Simultaneous deep and shallow measurement



APPLICATIONS

- Formation conductivity in both open and plastic lined boreholes.
- Indication of porous and permeable zones.
- Detection and delineation of mineralised formations

SPECIFICATIONS

	DILS Sonde
Weight (kg)	5.0
Length (m)	1.86
Diameter (mm)	45
TX-RX Spacings	20" & 32"
Operating Frequency	100 kHz
Resistivity Range	0.2 to 1000 Ohm m
Max. Pressure (MPa)	20 (HP version @ 35)
Max. Temp. (°C)	80 (HT version @ 125)

Accessories: Test and calibration loop, stand-off

Magnetic Susceptibility Probe

This probe is a two coil electromagnetic sonde that measures apparent formation magnetic susceptibility. This is useful for the detection and evaluation of mineral deposits.

The volume magnetic susceptibility of a formation refers to the degree of magnetisation in response to an applied magnetic field.

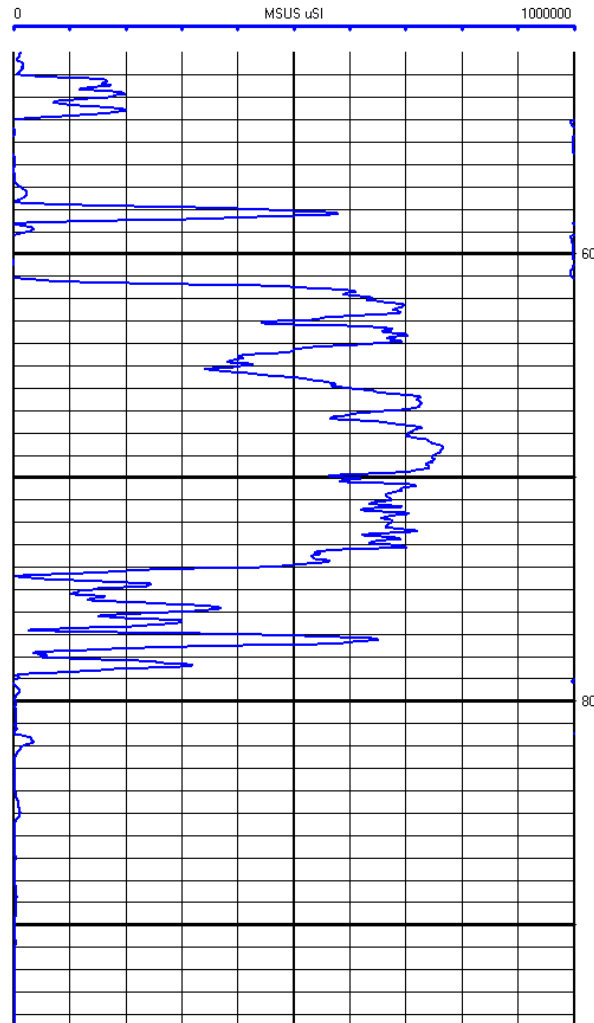
The Magnetic Susceptibility sonde is a useful tool in the exploration and evaluation of mineral deposits and in formation characterisation. It is particularly suited for iron and sulphide deposits.

APPLICATIONS

- Detection and delineation of mineralised formations
- Lithology and ore identification
- Ore quality correlation
- Formation characterisation

KEY FEATURES

- Combinable, digital probes
- Can work in mud, air-filled, and plastic lined boreholes.



SPECIFICATIONS

	MSusc Sonde	MSusc /Conductivity Combination Sonde
Weight (kg)	4.5	7
Length (m)	1.37	1.5
Diameter (mm)	45	45
TX-RX Spacings	30 cm	MSusc: 25 cm / Cond.:50 cm
Operating Frequency	2 kHz	MSusc: 2 kHz/ Cond.:100 kHz
Range	10^{-4} to 2 SI units	MSusc.: 10^{-5} to 0.5 SI units Cond.: 1 to 3000 mS/m
Max. Pressure (MPa)	20 (HP version @ 35)	20
Max. Temp. (°C)	80 (HT version @ 125)	80
Accessories	Test and calibration Jig, Stand-off	

Caliper Probes

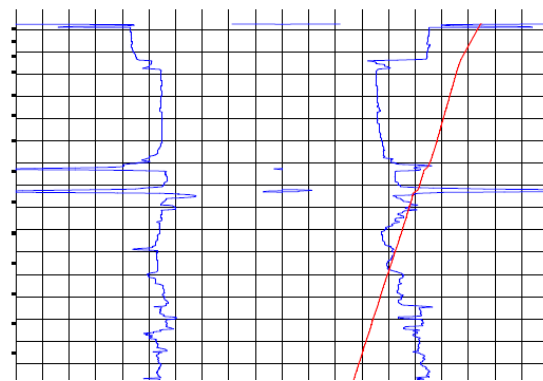
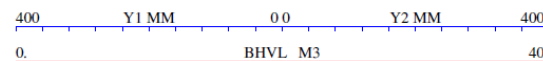
KEY FEATURES

- Combinable, digital probes
- Independent arms (2 and 4 arm)
- Extendable range (4-arm)

The Geovista range of borehole caliper probes provide a continuous log of the borehole diameter or radii. They use motorised, spring-loaded arms that follow the profile

Geovista calipers can be used on their own or in combination with other Geovista sondes. In addition to the traditional 3-arm caliper, a caliper with two independent arms is available. This can be coupled with a second 2-arm caliper sonde to provide a slim 4-independent arm caliper. Alternatively a single four-arm caliper with independent arms is available for larger boreholes, up to 1500 mm with arm extensions.

Independent caliper arms allow for the measurement of diameters (or radii), even when the sonde is not centred, thus avoiding the problem that is common to sondes with interlinked arms.



APPLICATIONS

- Borehole diameter changes
- Borehole condition and integrity
- Fractures
- Borehole volume calculation
- Log environmental corrections

SPECIFICATIONS

	2-Arm	3-Arm	4-Arm
Weight (kg)	9.8	8.5	18.0
Length (m)	1.32	1.45	1.18
Diameter (mm)	45	38	80
Range (mm)	50-400	45-600	85-1000 /1500
Independent arms	Yes	No	Yes
Arm extensions	No	No	Yes / 1500
Measurement	X1, X2 Radii <i>(can be combined to give a slim-4arm caliper with independent arms)</i>	Overall Diameter	X1,X2,Y1,Y2 Radii
Max. Pressure (MPa)	20 (HP version @ 35)	20 (HP version @ 35)	20 (HP version @ 35)
Max. Temp. (°C)	80 (HT version @ 125)	80 (HT version @ 125)	80 (HT version @ 125)
Accessories	Calibration Jig	Calibration Jig	Calibration Jig, Arm Extensions

Fluid Temperature and Conductivity Probe

The inline Fluid Temperature and Conductivity Probe (TCIS) measures a continuous temperature and conductivity profile of borehole fluid.

The TCIS measures the fluid temperature using a platinum resistor, the resistance of which varies with temperature in a well characterised manner. The conductivity of the borehole fluid is measured with a series of electrodes. The fluid enters an inlet near the bottom of the sonde, travels up the centre, and then exits via an outlet higher up.

TCIS temperature data provide information on thermal anomalies, water movement, and the producing formations (feed zones). Under static, equilibrium conditions, temperature changes according to the local geothermal gradient. Where present, temperature anomalies can be associated with groundwater movement or some types of mineralisation (e.g., sulphide oxidisation), as well as radioactive minerals.

Conductivity logs provide information related to the concentration of dissolved solids in the fluid column from which an equivalent NaCl salt concentration can be determined. For meaningful values, a temperature sensor is always included with this sonde. Under conditions of vertical flow, the sonde can show the contribution of separate interstitial water bodies. Under static, equilibrium conditions, the probe can pick out the interface between brine and fresh water. The combinability with a flowmeter is particularly useful for pumping tests.



Outlet

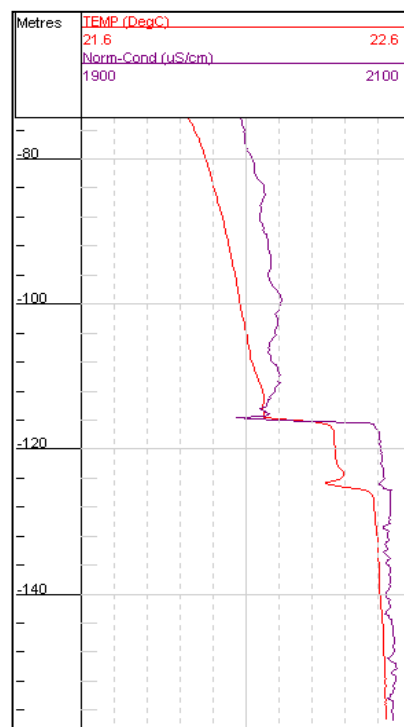
Inlet

KEY FEATURES

- Fully combinable digital probes (including with a flowmeter)
- Wide measuring range

APPLICATIONS

- Temperature gradient and temperature anomalies
- Correction of electric logs.
- Groundwater salinity and salt water encroachment
- Groundwater movements
- Dewatering
- Groundwater contamination



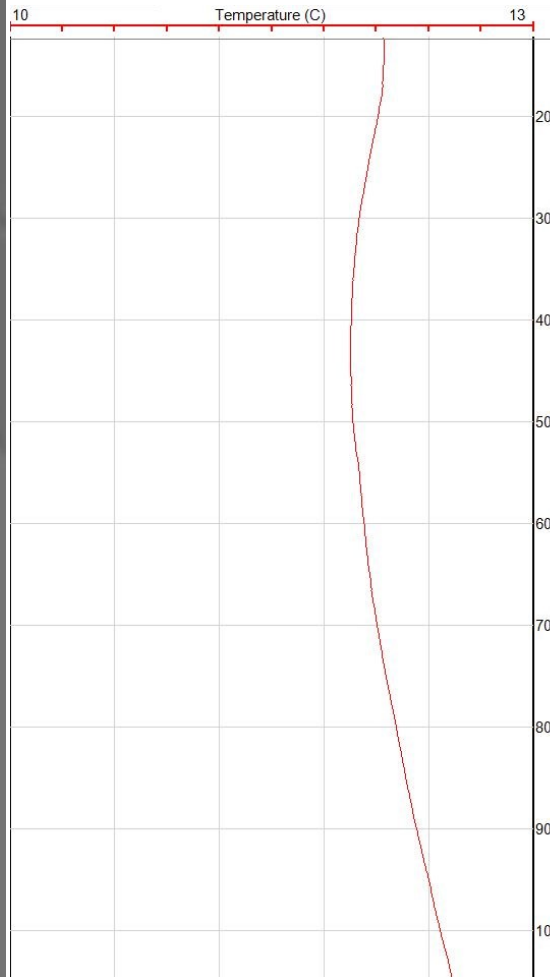
SPECIFICATIONS

Weight (kg)	4.3
Length (m)	0.76
Diameter (mm)	38
Accuracy:	±0.15° to IEC
Std. Cond. Range (mS/cm)	0.05 - 50
Accuracy:	±0.1% @1 mS/cm
Ext. Cond. Range (mS/cm)	0.05 - 250
Max. Pressure (MPa)	20 or 35
Max. Temp. (°C)	80 or 125

Temperature Probe

The Temperature Probe gives an accurate temperature profile down well.

The fully combinable Geovista Temperature Probe can be run in any borehole to provide an accurate temperature profile. This is useful for various applications, including providing temperature data for compensation equations for other logs.



APPLICATIONS

- Fluid temperature
- Compensation equations for other geophysical tools
- Geothermal gradient determination
- Contamination analysis
- Fault/fracture flow analysis

KEY FEATURES

- Fully combinable digital probe

SPECIFICATIONS

Weight (kg)	2.6
Length (m)	0.53
Diameter (mm)	38
Accuracy:	±0.15° to IEC 60751:2008 Class
Std. Cond. Range (mS/cm)	N/A
Ext. Cond. Range (mS/cm)	
Max. Pressure (MPa)	20 or 35
Max. Temp. (°C)	80 or 125

pH Probe

The Geovista pH Probe measures a continuous pH profile of the borehole fluid.

The Geovista pH Probe is easy to use and connects to the bottom of a stack. It provides a full, continuous pH profile of the borehole. This information is used in a variety of applications, from evaluation of contamination associated with e.g., acid mine drainage, to aquifer water quality measurements.

Water pH is affected by the types of gases and minerals groundwater has interacted during transport from the source into the borehole. The typical pH range for groundwater systems is between 6 to 8.5. Water with lower pH may indicate reaction with trace metals during transport and can be characteristic of acid mine drainage. Water with high pH may record reaction with carbonate-rich rocks which could cause impact its taste and interaction with appliances.

APPLICATIONS

- Water quality profile
- Fluid properties
- Groundwater properties
- Monitoring
- Intrusion and zonal determination
- Contamination analysis
- Groundwater flow

KEY FEATURES

- Fully combinable digital probes
- Measures pH range 1-14
- Bottom of stack only

SPECIFICATIONS

	pH
Weight (kg)	1.8
Length (m)	0.54
Diameter (mm)	38
Measure Range	pH 1 to 14
Max. Pressure (MPa)	12
Max. Temp. (°C)	80



Water Level Indicator Probe

The Geovista Water Level Indicator Probe measures the borehole water level.

This simple probe accurately determines the water level in the borehole. This probe is widely used in monitoring the level of the water table, particularly around sites where there is a risk of contamination.

SPECIFICATIONS

Weight (kg)	2.2
Length (m)	0.35
Diameter (mm)	38
Max. Pressure (MPa)	20
Max. Temp. (°C)	80

Water

Level

2.2
0.35
38
20
80

APPLICATIONS

- Fluid properties
- Groundwater properties
- Monitoring
- Water table depth
- Intrusion and zonal determination
- Groundwater flow

KEY FEATURES

- Fully combinable digital probe



Quartz Pressure Gauge Probe

The Geovista Quartz Pressure Gauge (QPG) Probe is used to log pressure variations within the borehole fluid column with high accuracy.

This simple yet highly accurate and useful probe is used to detect pressure changes in the borehole column.

SPECIFICATIONS

Weight (kg)	4.0
Length (m)	0.73
Diameter (mm)	38
Accuracy:	± 1 dBar
Max. Pressure (MPa)	20 or 35
Max. Temp. (°C)	80 or 125

QPG

KEY FEATURES

- Fully combinable digital probe

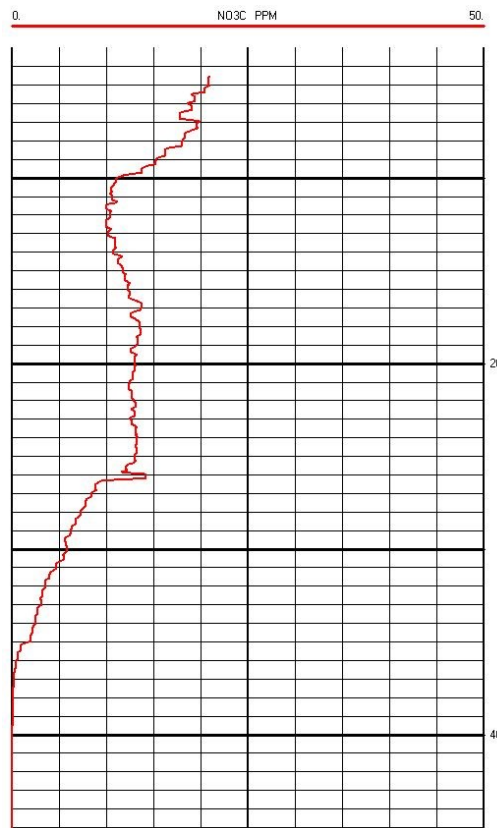
APPLICATIONS

- Fluid properties
- Groundwater properties
- Monitoring
- Contamination analysis
- Geothermal gradient determination
- Groundwater flow
- Log compensation
- Water column profile

Nitrate Probe

The Geovista Nitrate Probe logs a continuous profile of nitrate levels in the borehole.

Nitrate contamination of groundwater is an important public health issue. Much of it is traced back to diffuse pollution from agriculture, and from sewage sludge disposal. The Geovista Nitrate Probe measures UV light attenuation by NO₃ molecules to track the abundance of nitrate in the water column. This method is more reliable than the selective membrane method.



APPLICATIONS

- Trace metals contamination
- Organic contaminants
- Ground water quality
- Mining waste
- Landfill leachate

KEY FEATURES

- Combinable digital probes

SPECIFICATIONS

	Nitrate
Weight (kg)	12
Length (m)	1.2
Diameter (mm)	79
Measure Range	0-100 mg/l (ppm)
Max. Pressure (MPa)	20
Max. Temp. (°C)	80

Addressable Water Sampler Probe

The GeoVista Water Sampler sonde is capable of retrieving samples from boreholes at selected depths.

The water sampler sonde is supplied with a 1 litre (or optionally 2 litre) sample chamber for general sampling. For sample preservation under downhole conditions, the chamber can be replaced by a system of removable smaller volume pressurised sample cylinders with individual valves, with typically 300 cc capacity each. As it is addressable, this sonde can be run alone or in combination with other Geovista sondes. This is useful for correlation purposes, or for sampling areas where significant contamination (e.g., nitrates) are detected.

SPECIFICATIONS

Weight (kg)	3.0
Length (m)	0.45 (without chamber)
Diameter (mm)	44 (1L Chamber) 60 (2L Chamber)
Max. Pressure (MPa)	63 (Press. Cylinder) 20
Max. Temp. (°C)	80 (HT version @ 125)

Sampler

APPLICATIONS

- Groundwater salinity
- Groundwater contamination

KEY FEATURES

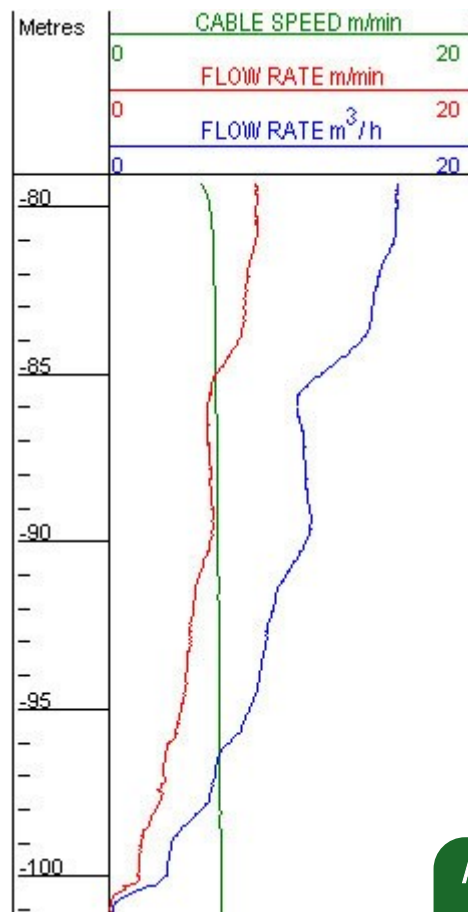
- Combinable digital probe
- 1l or 2l sample chamber

Impeller Flowmeter Probe

The Geovista Impeller Flowmeter Probe detects differential flow rates and flow direction in boreholes. Primarily used in groundwater applications, the data are real time and the probe can be combined with other Geovista probes.

The impeller flowmeter uses an interchangeable impeller mounted on jewel bearings which spins in response to fluid flow. Measurements can either be made as the sonde travels down the borehole at a constant speed, which generates a continuous flow profile over the interval of interest, or while the sonde is stationary. The sonde can make measurements over a wide range of flow rates, with a minimum threshold velocity in the region of 1 to 2 m/min.

The impeller comes in three different interchangeable sizes (50, 75, and 100 mm) for different borehole diameters. The probe is often logged at different speeds to detect a wide range of flow rates. It is commonly used with a Geovista Fluid Temperature and Conductivity Probe to give a complete borehole flow profile.



KEY FEATURES

- Combinable digital probes
- Interchangeable impeller heads

SPECIFICATIONS		Impeller
Weight (kg)		3.5
Length (m)		0.48
Diameter (mm)		50, 75 or 100 mm Interchangeable Impeller cage
Threshold velocity (m/min)		1 to 2 depending on setting and cage size
Data Output		Flow rate, Direction
Max. Pressure (MPa)		20
Max. Temp. (°C)		HP version @ 35 80 (HT version @ 125)

APPLICATIONS

- Flow profile
- Zonal identification
- Casing leak determination
- Location of permeable and flowing zones
- Identification of hydraulic gradients
- Identification of transient fractures and fracture flow
- Qualitative and quantitative aquifer characteristics
- Cross hole flowmeter profiling

Heat Pulse Flowmeter Probe

The Geovista Heat Pulse Flowmeter Probe detects differential flow rates and flow direction in boreholes. A heated grill and two thermistors detect water movement in the borehole. It is useful at low flow rates.

The Heat-Pulse Flowmeter is useful for very low velocity flow rates, typically of less than 2m/min. Measurements are made with the tool stationary in the borehole. It uses a short heat pulse and two thermistors at a fixed distance from either side to detect the transported heat energy. Using the time between the firing of the heat pulse and detection at the upper or lower thermistor, the fluid velocity is computed and its direction established.



APPLICATIONS

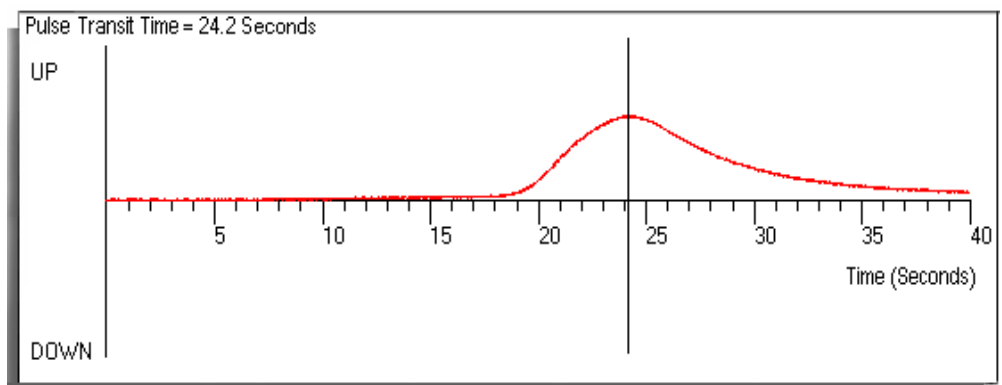
- Flow profile
- Zonal identification
- Casing leak determination
- Location of permeable and flowing zones
- Identification of hydraulic gradients
- Identification of transient fractures and fracture flow
- Qualitative and quantitative aquifer characteristics
- Cross hole flowmeter profiling

KEY FEATURES

- Combinable digital probe

SPECIFICATIONS

	Heat Pulse
Weight (kg)	6.2
Length (m)	0.90
Diameter (mm)	51
Threshold velocity (m/min)	0.1
Data Output	Time, Direction
Max. Pressure (MPa)	20
Max. Temp. (°C)	80



Water Quality (Idronaut 303) Probe

Whereas fluid conductivity is linked to salinity and other dissolved solids, other water quality parameters like pH, Eh, dissolved oxygen, and nitrate are used to investigate different types of contamination that might be present in groundwater at levels of concern

APPLICATIONS

- Trace metals contamination
- Organic contaminants
- Ground water quality
- Mining waste
- Landfill leachate



The Water Quality Probe uses Idronaut sensors with suitable pressure ratings for deployment in most boreholes. The basic sensor set includes temperature, pressure, and conductivity. Additional optional sensors include redox (eH), pH, and dissolved oxygen (DO). This probe can be run at the bottom of a logging stack with other Geovista probes.

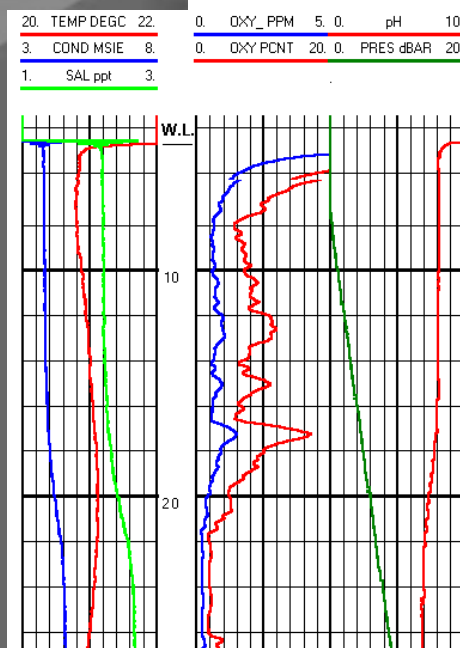
- Temperature logs provide information on thermal anomalies/equilibrium, water movement, and the producing formations
- Pressure logs profile changes in the pressure gradient
- Conductivity logs respond to the concentration of dissolved solids in the fluid column
- pH logs provide an indication of the types of gases and minerals groundwater has interacted during fluid transport
- DO logs can be used to assess the stability of various trace metals and organic contaminants in ground water, particularly when investigating landfill leachate or mining waste
- Eh logs respond to the redox condition of the groundwater. This condition has potential implications for groundwater quality. For example, excessive concentrations of As and Mn are more likely to be present in anoxic groundwater, whereas concentrations of U, Se, and NO_3^- are more likely to be excessive in oxic groundwater

KEY FEATURES

- Combinable digital probe
- Up to six parameters in one sonde

SPECIFICATIONS

Probe	
Weight (kg)	2
Length (m)	0.6
Diameter (mm)	43
Max. Pressure (MPa)	15
Max. Temp. (°C)	80



Sensors	Range	Accuracy	Precision
Pressure	0 -150 bar	0.05% FS	0.0015% FS
Temperature	-1 to +50 °C	0.005 °C	0.001 °C
Conductivity	0 to 64 mS/cm	0.02 mS/cm	0.001 mS/cm
Dissolved Oxygen	0 to 50 ppm	0.1 ppm	0.01 ppm
pH	0 to 14 pH	0.01 pH	0.001 pH
Redox	-1 to +1 V	1 mV	0.1 mV

Borehole Survey Probes

The Geovista Verticality and Inclinator probes are designed to meet your direction surveying requirements, be it in open holes or steel cased boreholes, in real time or in memory mode.

APPLICATIONS

- Borehole direction, including inclination and azimuth
- True vertical depth (TVD) of target zone
- Locating magnetic anomalies
- Orientating caliper arms



Verticality Probe

Verticality Probe

The Verticality Probe uses a high accuracy navigation package including a 3-axis accelerometer and a 3-axis fluxgate magnetometer to provide either a punctual direction, or a continuous survey of borehole trajectories in non-magnetic environments, as well as continuous inclination data for your borehole.

It can also be used to delineate formations with magnetic material, or to detect steel objects that are buried near the borehole. When used in combination with a 4-arm caliper sonde, it will orientate any detected borehole diameter anisotropy.

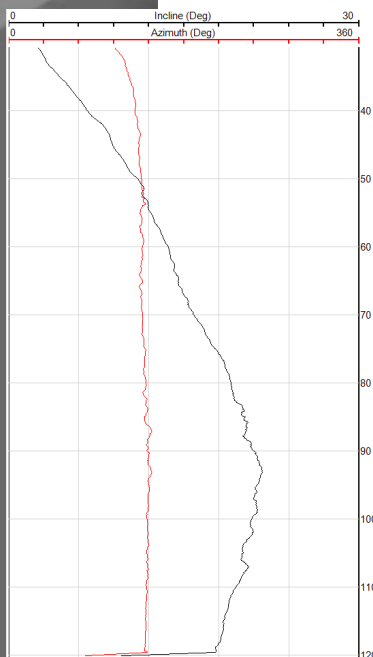
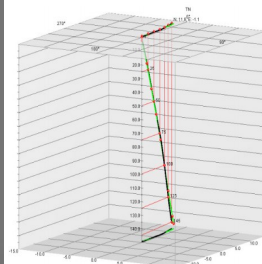
Inclinator Probe

The Inclinator Probe contains a 3-axis accelerometer and measures only borehole inclination.

The inclination measurements offered by both the Verticality and Inclinator probes can be obtained in any environment and are not affected by magnetic fields. If azimuth data are required in metallic/magnetic environments, consider a Geovista Gyro Probe.

KEY FEATURES

- Combinable digital probes
- Available for real time or memory surveying
- Options for gyro or magnetometer azimuth.



SPECIFICATIONS

	Verticality Sonde	Inclinator Sonde
Weight	2.5 kg	2.5 kg
Length	0.6 m	0.6 m
Diameter	38 mm	38 mm
Inclination Accuracy	±0.4°	±0.4°
Inclination Range	0 to 180°	0 to 180°
Azimuth Accuracy	±1.0°	<i>Not included</i>
Azimuth Range	0 to 360°	<i>Not included</i>
Max. Pressure	20 MPa	20 MPa
HP version	35 MPa	35 MPa
Max. Temperature	80°C	80°C
HT version	HT 125°C	HT 125°C
Combinability	Modular	Modular
Borehole	Water, Mud, Air Open hole	Water, Mud, Air Open, Cased, PVC
	Cased hole (<i>inclination only</i>)	
Centralisation	Recommended	Recommended

GV FOG Gyro

The Geovista North Seeking Fibre Optic Gyro (FOG) Probe provides high accuracy data for profiling wellbores. The GV FOG Gyro requires no calibration, has no drift, and can be run on wireline or slickline. It can be run in wireline or memory mode.

The Geovista FOG Gyro Probe provides real-time wireline multi-shot or single shot orientation and deviation surveys of boreholes in any environment, including steel casing and drill pipe. It incorporates a high accuracy gyroscope which is unaffected by steel or areas of local magnetic field anomalies. It does not require any special calibration or any surface equipment other than the GV logger system. You can connect other Geovista geophysical probes above the FOG Gyro to record a continuous log in one run in hole.

The sonde is can be run in either of two modes:

1. on wireline with real time data display on the logging PC
2. in memory mode, with data downloaded on return to the surface

APPLICATIONS

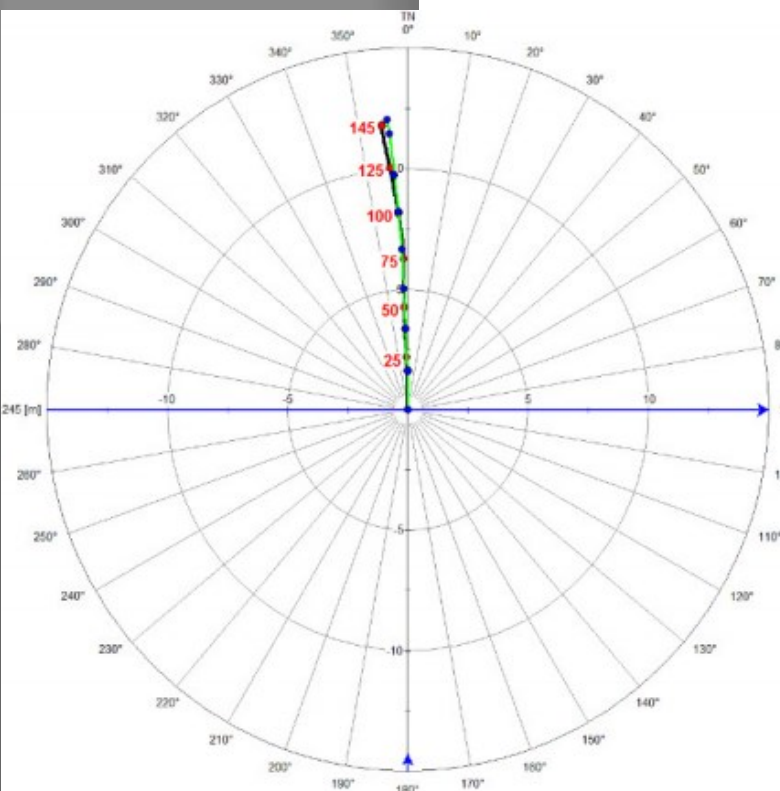
- Borehole direction, including inclination and azimuth
- True vertical depth (TVD) of target zone
- Locating magnetic anomalies
- Orientating caliper arms

KEY FEATURES

- Combinable digital probes
- Available for real time or memory surveying
- Options for gyro or magnetometer azimuth.

Fibre Optic Gyro Sonde

Weight	3.1 kg
Length	1.11 m
Diameter	34 mm
Inclination	0 to 70° ; accuracy: $\pm 0.4^\circ$
Azimuth	0 to 360° ; accuracy: $\pm 2.0^\circ$ (*)
Max. Pressure	20 MPa
Max. Temperature	80 °C
Combinability	Modular
Borehole	Can connect probes above
Centralisation	Any hole
Accessories	Recommended
	In-Line centralisers



Driller Operated Borehole Surveying Probes

Geovista memory probe systems are intended for operation by drillers to assist with directional drilling operations and with drill hole direction surveys. All have provision for optional natural gamma detectors.

APPLICATIONS

- Drill hole direction surveys and navigation in all environments, magnetic and non magnetic

The Geovista driller operated tools come with complementary deployment accessories as required, these can include:

- Depth encoder and depth/time recorder
- Battery modules and battery charger
- Centralizer and shock absorber
- Spear head
- Field tablet

KEY FEATURES

- Driller operated
- North seeking probe has no need for prior alignment
- No drift correction
- Optional gamma ray detector
- Bluetooth data interface and download

GV DOG—Driller Operated Gyro

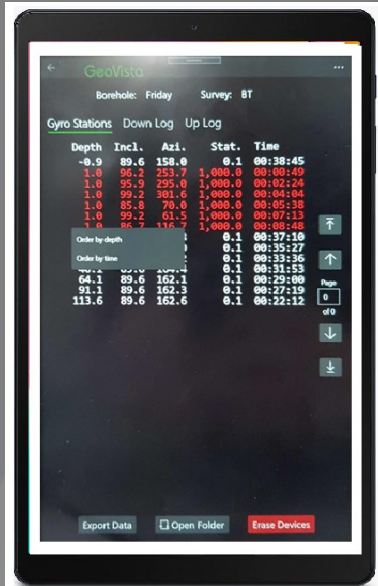
FEATURES

- The GV DOG is a single shot/multi-shot north seeking probe
- Suitable in all environments, magnetic and non-magnetic
- Can be run in steel pipe and steel casing
- No drift correction as each reading is independent of the previous one
- Optional integrated gamma ray detector

GV DOV—Driller Operated Verticality

FEATURES

- The GV DOV is a single shot/continuous directional survey probe
- Suitable in non-magnetic environment only
- Measures in all directions
- No drift correction required



SPECIFICATIONS

	GV DOG	GV DOV
Length:	2.24 m	2.24 m
Diameter:	42 mm	42 mm
Inclination :	0 to 70°	0 to 90°
Accuracy:	±0.2°	±0.2°
Azimuth:	0 to 360° ;	0 to 360°
Accuracy:	±2.0°	±2.0°
Max. Pressure :	20 MPa	20 Mpa
Max. Temperature:	80°C	80°C
Power:	NiMH Battery	NiMH Battery
Borehole Condition	Any	Non-magnetic
Data interface:	Bluetooth	Bluetooth
Natural Gamma Detector:	Optional	Optional



Borehole Video Cameras

Geovista borehole video cameras offer high quality, flexible, and reliable performance. With high speed data transmission, user-controlled lens focusing, and industry leading optical and lighting technology, our cameras make borehole inspection easy.

Geovista borehole colour video cameras work on your wireline winch along with your geophysical logging probes. This means you don't need to purchase and mobilise a second winch just for the camera. The cameras offer high quality, flexible, and reliable performance to ensure you can see what is happening in your well; our camera systems are currently in use worldwide. Innovative designing allows for high speed data transmission, real time video and still photo capture, user controlled lens focusing, video compression, optical and lighting technology, CCD sensors and image processing. We offer two types of camera system:

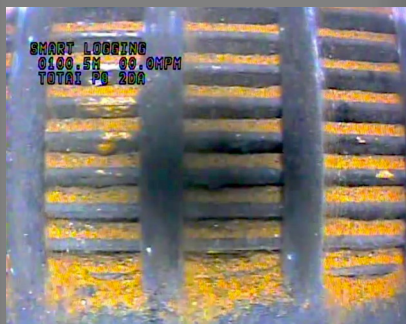
Dual Camera: The dual view camera provides both axial and 360° infinite rotating video with real time depth, speed, comments, title, software controllable functions (editing, zoom, BLC, camera control...), variable high and low intensity lighting, as well as focusing, and rotation speed control. An inclination and deviation sensor can be added to orientate your downhole video.

Axial Camera: Offers the convenience of a smaller diameter and a lower price. With a 0.01 lux sensitivity sensor and frontal light head, this camera is suitable for inspections in small diameter wells or wells with small entry restrictions.



APPLICATIONS

- Wellbore inspection



SPECIFICATIONS	Dual View Colour Camera	Axial Colour Camera
Weight	9.5 kg	2.8 kg
Length	1.4 m	0.66 m
Diameter	62 mm	42 mm (54 mm HP version)
Image Sensor	1/4" CCD	1/3" CCD
Min Illumination	0.02 Lux	0.01 Lux
Lens Size	2.5 mm & 2.9 mm	2.6 mm
	Automatic iris	Automatic iris, fixed focus
	User controllable focus	
	Software controllable functions	
Max. Pressure	150 bar	80 bar (optional 150 bar)
Max. Temperature	70 °C	70 °C
Wireline cable limitations	Connects to your wireline winch like other downhole probes.	
	Works on maximum 650 m 3/16 in coaxial cable	
	Works on maximum 1500 m 1/4 in coaxial cable	
Combinability	Not combinable	Not combinable
Borehole	Clear water, air open, cased, PVC	Clear water, air open, cased, PVC
Centralisation	Recommended	Recommended
Accessories	Optional orientation sensor	

Optical Televiewer

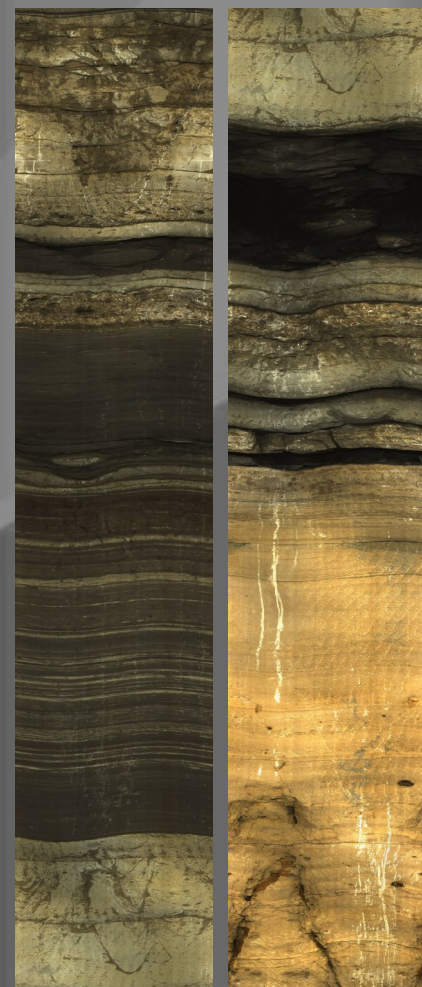
The Optical Televiewer provides continuous logs of oriented, unwrapped images of the borehole wall revealing detailed information on fracture and bedding dip direction and orientation. The operating software acquires this high resolution data in real time.

The Optical Televiewer provides real time high resolution 360 degree images of the borehole wall. It can be run in both air filled and (clear) water filled holes. Log parameters include 360° oriented optical image and borehole azimuth and dip.

APPLICATIONS

- Oriented structural information
- Breakout analysis
- Thin bed analysis
- Core orientation referencing
- Stratigraphic studies
- Cased hole inspection
- Fracture identification

SPECIFICATIONS	Optical Televiewer Probe
Weight	5.0 kg
Length	1.63 m
Diameter	52 mm
Borehole Diameter Range	70 to 300 mm, depending on conditions
Max. Pressure	100 bar
Max. Temperature	60 °C
Typical Logging Speed	2.5 m/min with 720 pixels horizontal and 1 mm vertical resolution.
Optical Subsystem:	<ul style="list-style-type: none"> - Image resolution: 360 to 1440 pixels/circumference (user definable) - Data rate : 1500 Kbps - Colour resolution: 24 bit RGB - Sensor: 1280 x 1024 CMOS image sensor - Structural log and Image data format: Bitmap files - Structural and orientation data format: ASCII files
Combinability	Not combinable
Borehole	Clear water, air open, cased, PVC
Centralisation	Required Centralisers supplied with probe
Accessories	Optional NaI gamma detector installed Commonly used with post-log processing software



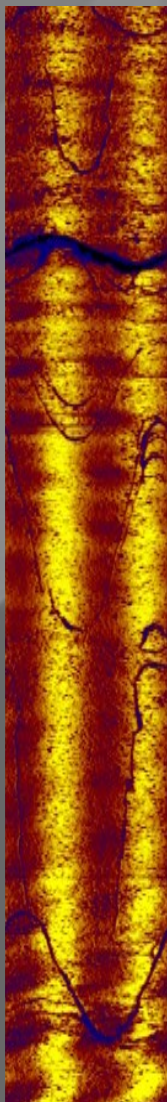
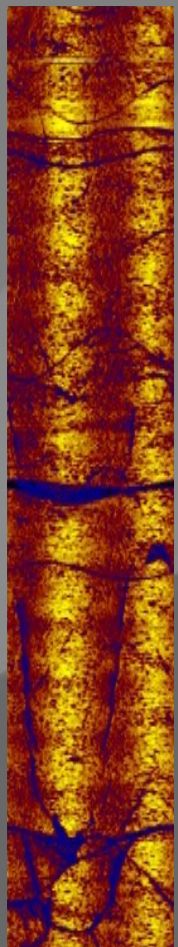
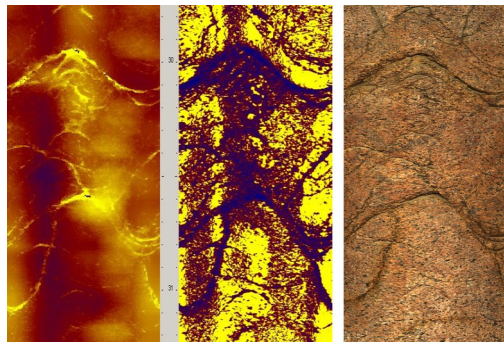
Acoustic Televiewer

The Acoustic Televiewer provides continuous false colour images of the borehole walls, revealing detailed information on fracture and bedding dip direction and orientation. The operating software acquires this high resolution data in real time.

The Acoustic Televiewer provides “false colour” images of borehole walls. can be run in both clear and opaque mud. Log parameters include 360° oriented Travel Time Image (12-bit resolution / 100 ns per bit), 360° oriented amplitude Image and borehole azimuth and dip.

APPLICATIONS

- Oriented structural information
- Breakout analysis
- Borehole deformation analysis
- Thin bed analysis
- Core orientation referencing
- Stratigraphic studies
- Cased hole inspection
- Fracture identification



SPECIFICATIONS Acoustic Televiewer Probe

Weight	8.0 kg
Length	2.1 m
Diameter	42 mm
Borehole Diameter Range	70 to 400 mm , depending on conditions
Max. Pressure	200 bar
Max. Temperature	70 °C
Typical Logging Speed	2.5 m/min with 720 pixels horizontal and 1 mm vertical resolution.
Acoustic Subsystem:	<ul style="list-style-type: none"> - Frequency: 1.5 MHz - Beam angle: 3° conical - Rotation speed: up to 20 rev/sec - Sampling density: 90, 120, 180 or 360 per revolution - Acquisition sampling rate: 100 nS - Gain: 0 to 60 dB in 1 dB steps or automatic gain control (AGC)
Combinability	Acquisition resolution: 8 bits
Borehole	Not combinable
Centralisation	Fluid filled & light mud
Accessories	Open, cased, PVC
	Required
	Centralisers supplied with probe
	Optional NaI gamma detector installed
	Commonly used with post-log processing software

Density Sondes

GeoVista density logging sondes detect gamma rays emitted by a ^{137}Cs source mounted on the sonde. Gamma radiation is attenuated and scattered by Compton Scattering through the formation and then counted at detectors located at set distances. The intensity of the detected gamma rays is proportional to the formation bulk density, with denser materials attenuating more gamma rays and resulting in lower gamma ray intensity at the detectors.

The sondes are designed to suit different data and operational requirements. In geological environments where very high density (>3 g/cc) formations are expected, a higher energy ^{60}Co source can be used instead.

Sidewall Density Sonde

The Sidewall Density Sonde provides quantitative, calibrated bulk density measurements. There are three versions of this sonde. The basic (FDSB) version produces a bulk density log, and a caliper (borehole diameter) log. An LL3 resistivity detector can be added to the basic sonde to provide extra utility. Finally, the FDSB can be altered to collect PEF (photoelectric factor) information in addition to density measure-

FDSB KEY FEATURES

- Combinable digital probes
- Three sonde configurations

2-PI Density Sondes

The 2-PI density sonde also known as Trisonde, provides uncalibrated (qualitative) density logs, using a lower activity source. There are two versions of this sonde, a basic version which can only be run at the bottom of a sonde stack, and an in-line version can be placed anywhere in a sonde stack.

APPLICATIONS

- Mineral exploration
- Coal exploration
- Geotechnical investigations

TRISONDE KEY FEATURES

- Combinable digital probe
- Two sonde configurations

SPECIFICATIONS

	FDSB	FDSB LL3	FDSB PEF	2-PI	2-PI In-line
Length (m):	2.06	2.59	2.14	1.65	1.44
Diameter (mm):	54	54	60	38	45
Weight (kg) :	26	29	31	5	5
Detector spacing (cm):	47, 25, Opt. 14	47, 25, Opt. 14	29, 15	46, 24	46, 24
Source Type:	^{137}Cs or ^{60}Co	^{137}Cs or ^{60}Co	^{137}Cs	^{137}Cs	^{137}Cs
Source activity (mCi)	80 to 100	80 to 100	250	10	10
Density range (g/cc):	1 to 3-4	1 to 3-4	1 to 4	N/A	N/A
Caliper range (mm):	60 to 350	60 to 350	60 to 350	N/A	N/A
Max. Pressure (MPa):	20/35	20	20	20	20
Max. Temperature (°C):	80 °C/125 °C	80 °C	80 °C	80 °C	80 °C
Calibration bloc:	Al/Mg	Al/Mg	Al/Mg	N/A	N/A

Neutron porosity tools

Geovista offer two neutron sondes. The Dual Neutron Sonde provides quantitative formation porosity measurements in uncased holes. The Neutron-Neutron probe is a single detector slim probe for qualitative porosity measurements in most boreholes.

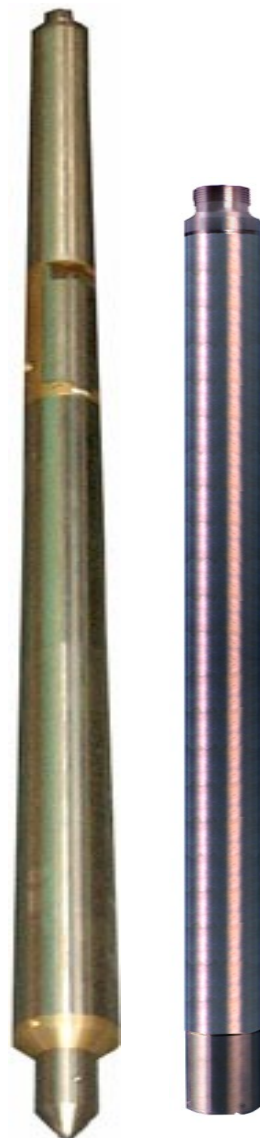
APPLICATIONS

- Quantitative porosity (compensated only)
- Qualitative porosity (Neutron—Neutron only)
- Lithology identification
- Petrophysical properties
- Correlation
- Aquifer analysis

Dual Neutron Compensated Neutron: The sonde uses a bottom loading neutron source and a set of two detectors at different spacings to detect the neutrons that are slowed by hydrogen in the formation. As the sonde is sensitive to hydrogen, it is used to distinguish between fluid bearing formations and rock matrix. In order to optimise performance, the sonde is designed with three main features:

1. A side-walling bow spring to ensure that the detector measures only the neutrons slowed by the formation
2. A detector mandrel diameter that is large enough to minimise the sonde and borehole curvature mismatch and improve sonde to formation contact to minimise the effect of the borehole fluid
3. An efficient detector shield to prevent neutrons from travelling up inside the sonde body

Neutron-Neutron: A reduced diameter version with only one detector available for qualitative porosity measurements. Can be run in any environment.



SPECIFICATIONS

	Dual Neutron	Neutron-Neutron
Weight	23 kg	5 kg
Length	1.67 m	1.44 m
Diameter	60 mm	38 mm
Detector	x2 ³ He	x1 ³ He
	proportional	proportional
	counters	counter
Source	²⁴¹ Am-Be	²⁴¹ Am-Be
	Typically 2.5 Ci	1Ci
Max. Pressure	20 MPa	20 MPa
Max. Temperature	80 °C	80 °C
Combinability	Modular	Modular
	(Can connect probes above only)	(Can connect probes above only)
Borehole	Water, mud	Water, mud
	open/cased Hole	open/cased Hole
Centralisation	Ex-centralised	Not required
Accessories	Bow spring	Source holder
	Verification jig	
	Source holder	
	Source handling tool	

Full Waveform Sonic Probes

Geovista sonic probes are used to measure sonic velocities as well as the associated sonic waveforms. These data can be used for formation characterisation as well as

The Geovista sonic sondes consist of a ceramic-piezoelectric transmitter and two or four receivers. The larger 60 mm diameter sonde is particularly suited for deployment in large water wells. The slimmer, 50 mm diameter sonde is suitable for the smaller diameter mineral exploration and geotechnical boreholes. For both sondes, the transmitter-receiver combinations allow for the measurement of formation acoustic wave velocities and wave amplitude. The compressional (P) wave arrivals are easily identifiable from GV Full Waveform Sonic data. However, the shear (S) wave arrivals can be identified only under certain suitable borehole and formation conditions.

APPLICATIONS

- Lithology identification
- Seismic data correction
- Formation porosity
- Mining
- Geomechanics
- Cement bond evaluation (CBL)

KEY FEATURES

- Fully combinable digital probes
- Two size and diameter options
- Sondes available with 2 or 4 receivers

SPECIFICATIONS

	60mm Sonde	50mm Sonde
Weight	25 kg	16.7 kg
Length	2.34 m	2.2 m
Diameter	60 mm	50 mm
Receiver spacing	91 & 152 cm (3 ft & 5 ft)	60, 80, 100, 120 cm
Sampling rate	Variable (500 samples at 4 ms or slower)	2 μ s or 4 μ s
Resolution	12 bit; Record length: minimum 2 ms	12 bit; Record length: 1 or 2 ms
Transducers	Ceramic piezoelectric (23 kHz resonant frequency)	Ceramic piezoelectric (28 kHz resonant frequency)
Gain Settings	16 levels with selectable AGC	11 levels 0-30 db in 3 db steps
Max. Pressure	20 MPa	20 MPa
HP version	35 MPa	–
Max. Temperature	80 °C	80 °C
Centralisation	Required	Required
Accessories	In-line centralisers	In-line centralisers

Casing Collar Locator

The Geovista Casing Collar Locator allows for accurate pipe collar detection and depth referencing.

APPLICATIONS

- Casing collar locator
- Depth referencing
- Casing shoe identification
- Reference with perforation logs

The Geovista CCL sonde is used to locate casing joints in a borehole. The probe can be used on its own or in combination with other Geovista sondes for correlation purposes in cased holes. The probe is sensitive to changes in metal thickness. It is most often used for depth control and depth correlation.



SPECIFICATIONS

CCL

Weight	3.9 kg
Length	0.65 m
Diameter	38 mm
Detector	1" Coils and magnets assembly
Max. Pressure	200 bar
HP version	350 bar
Max. Temperature	80 °C
HT version	125 °C
Combinability	Modular
Borehole	Water, mud, air any hole. detects casing collars
Centralisation	Not required

Movement Sensor Sub

The Geovista Movement Sensor Sub is an in-line probe connected to the logging stack which registers whether the stack is stationary or moving.

The Movement Sensor Sub is predominantly used as a safety feature which allows the user to quickly detect when the downhole probes have stopped moving even though the winch may still be running. This immediate notice minimises the risk of spooling cable into the borehole. Similarly, the sub will indicate if the stack has become stuck moving up-hole which can help prevent accidents.

A further use for this sub is to confirm measurement readings at depth.

APPLICATIONS

- Safe logging
- Immediate notice if string is stuck



SPECIFICATIONS	Movement Sensor Sub
Weight	<0.2 kg
Length	0.44 m
Diameter	38 mm
Max. Pressure	200 bar
Max. Temperature	80 °C
Combinability	Modular
Borehole	Any hole
Centralisation	Not required

Seismic Geophone

Geovista offer digital and analogue seismic geophone options with a motorised caliper clamping arm and three SM24 geophones arranged in an X-Y-Z pattern. The clamping

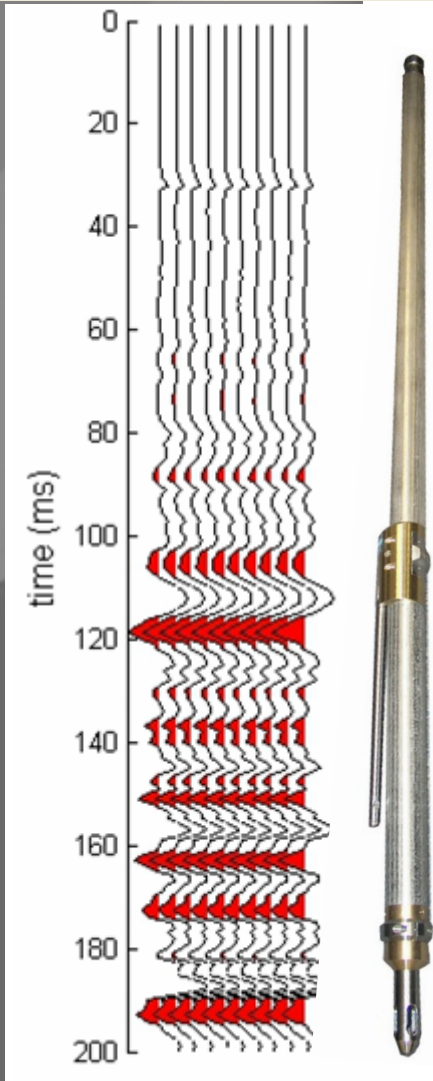
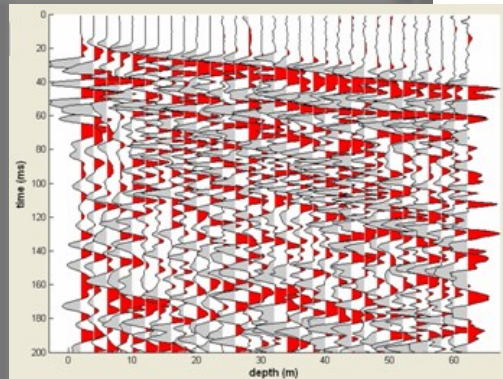
APPLICATIONS

- Seismic profiling
- Correlation with seismic surveys
- Soil dynamics
- Rock mechanics and elasticity

Digital: The Geovista borehole geophone system includes a downhole digital sonde and a compact digital interface unit at the surface, with no requirement for a seismograph. The sonde runs on single conductor cable on a standard logging winch. The digital interface unit at the surface has inputs for the downhole sonde, three surface geophones and the trigger. Collected data are outputted to a PC via the USB port. The acquisition software allows for data viewing and stacking. The generated SEG2 files can then be imported into most commercial seismic processing software.

Analogue: The analogue version has the same geophone in the borehole, but sends analogue signals to the surface. This sonde must be run on 4-core or 7-core cable and a surface seismograph is required. This option allows the geophone to be run in deeper boreholes.

Monitoring Geophone: Geovista can also supply an analogue monitoring geophone.



SPECIFICATIONS

	Digital Version	Analogue Version
Weight / Length / Diameter	15 kg / 1.69 m / 64 mm	15 kg / 1.69 m / 64 mm
Clamping	Motorised arm	Motorised arm
Downhole Sensors	3 geophones with simultaneous recording. X-Y-Z SM24	3 geophones with simultaneous recording. X-Y-Z SM24
Seismic Source	Not included	Not included
Trigger	From suitable source (e.g., surface geophone)	Depends on surface seismograph (not included)
Data Acquisition	Max 16 s record length / 16 bit resolution on a 500 μ s sample interval. No seismograph required. Surface box connects to PC with USB cable.	Requires surface seismograph (not included)
Output file format	Used with GV Seismic Software. Output SEG2	Depends on surface seismograph (not included)
Logging cable	1000 m 3/16 in mono or 4-core cable	2500 m 4-core or 7-core cable
Surface inputs	3 surface geophones	Depends on surface seismograph (not included)
Depth measurement	Depth reading real time with connection to winch encoder	Third party system to read in depth from winch encoder
Pressure/Temperature	20 MPa / 80 $^{\circ}$ C	20 MPa / 80 $^{\circ}$ C
Combinability	Not combinable	Not combinable
Borehole	Water, mud open hole	Water, mud open hole
Comments	Ideal for boreholes <1000m VSP measurements as part of a complete wireline logging suite. No need for seismograph. Depth input from winch.	Ideal for deeper VSP surveys and a vibroseis source. Requires use of third party seismograph and surface setup.

Downhole P&S Sonde

APPLICATIONS

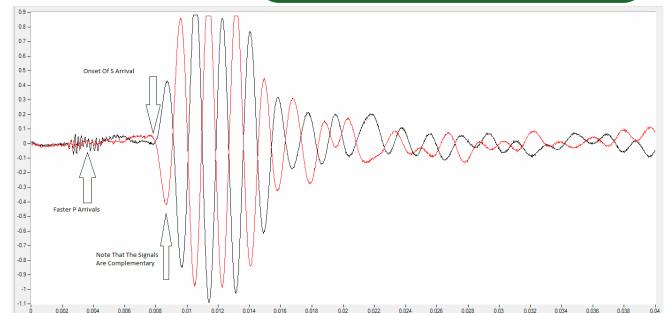
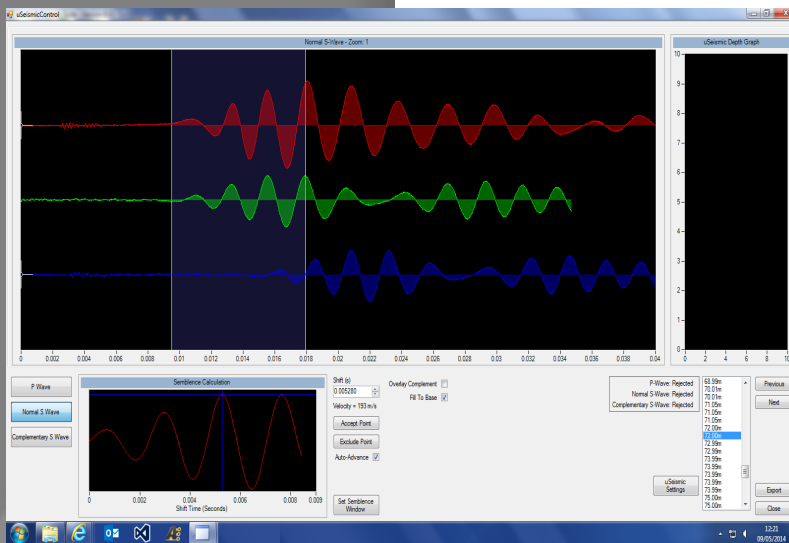
- Site investigations and ground engineering
- Compressional and shear wave velocity measurements

The Geovista Downhole P&S (DPS) probe is used to log formation compressional (P) and shear (S) wave propagation velocities. It is particularly effective in "slow" formations where shear velocity is lower than borehole-fluid velocity.

Formation P & S wave slowness are among the parameters required to estimate rock properties at the site investigation stage, be it for foundations or civil engineering projects such as dams. The Geovista DPS probe comes with one transmitter and two receivers. The transmitter is designed to excite a dispersive flexural mode which propagates at a velocity close to that of the formation shear velocity. It is currently the only technique available in slow formations where shear velocity is lower than borehole fluid velocity. This method does not require clamping to achieve acoustic coupling.

KEY FEATURES

- Digital probe
- Variable spacing
- No clamping required for acoustic coupling



SPECIFICATIONS

Weight (kg)
 Length (m)
 Diameter (mm)
 TX1-RX1 spacing
 TX1-RX2 spacing
 Sampling Density
 Resolution
 Sampling interval
 Data file format
 Max. Pressure (MPa)
 Borehole Condition
 Accessories

DPS Sonde

14.0
 4.85 / 5.85
 51
 Typically 200 / 300 cm depending on length of first isolator section (other lengths available).
 Typically 300 / 400 cm depending on length of first isolator section (other lengths available).
 2000 samples/wave
 16 bits
 Selectable 2.5, 5, 10, 20 or 40 mS
 SEG2
 5
 Water or mud filled Open hole
 Stand offs
 P&S Simulator Test Jig

Memory Logging Systems

Geovista memory logging systems allow for operations without the need for an E-line. The logger and the winch are replaced by a depth/time recorder (DTR), a sonde battery pack, and a sonde memory module.

APPLICATIONS

- Logging on sites where an E-line logging winch is not practical
- In-pipe or through-bit logging while tripping out
- Unstable or highly deviated boreholes

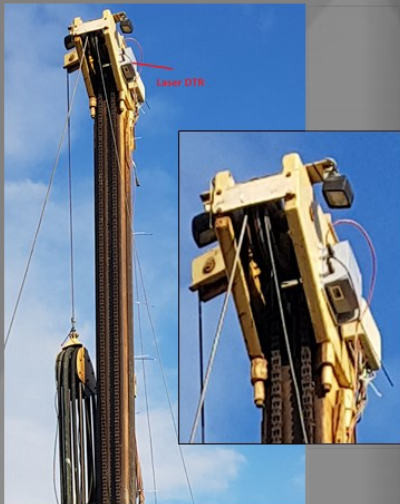
Geovista memory logging systems allow users to run selected GeoVista probes without the need for a logger or a logging winch. The log parameters are uploaded and the recorded data is downloaded by the user, by means of a field tablet and the Geovista Android app. The downloaded logging and depth data are merged to produce the equivalent of a traditional log against depth.

A typical system would include the following:

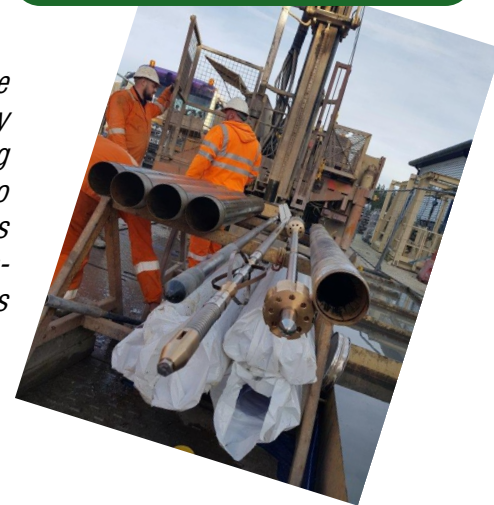
- A depth measuring assembly (*)
- A depth-time recorder (DTR) unit
- A battery module
- A memory module
- Any applicable running gear
- A field tablet

KEY FEATURES

- Compatible with most GeoVista probes
- Suitable for different tool string configurations
- Suitable for in-rod or through bit logging



(*): If the rig wireline is used to convey the downhole tools while logging, a depth encoder wheel assembly is used to measure depth. In the case of logging while tripping out, a laser ranging device is used to track the travel of the drill head (and pipe). This is typically mounted on the rig mast. In this case, a sensor must be fitted to detect whether the foot clamp is engaged or not.



In-rod logging

Applications for in-rod memory logging include gyro surveys, natural gamma, and density logging. Density logging while tripping out reduces the requirement for corrections as the tool remains in the same position in the drilling rod.

Through-bit logging

This technique is useful highly inclined, or unstable cored boreholes. Once the borehole is ready for logging, the drill rods are pulled off bottom far enough to accommodate the logging tool string. The memory system is activated and synchronised before the logging tools are lowered down using the rig's wireline spear and overshot system that is used to convey the core sleeve.

The running gear is arranged in a way that when the landing ring sits on top of the coring bit, the logging tools stick out into the open borehole. The borehole is the logged as the drill rods are tripped out.



Memory Logging Module

Geovista supply a memory and battery module which are capable of logging most Geo-

APPLICATIONS

- Logging in remote areas
- Logging with very small teams
- Any industry



The Geovista Memory Logging Module is a versatile acquisition box that runs downhole with Geovista combinable probes. Using a Geovista Android app, logs can easily be set up and then downloaded from the probe via Bluetooth. With the Geovista Memory Logging Module, there is no need to transport an e-line winch to remote locations. The module can also perform thru-bit or slickline logging. It is ideal for situations where keeping a small set of probes at the rig and minimising equipment mobilisation is desirable.

The memory module, along with a battery module and surface depth-time recorder (DTR) is designed to solve problems and offer more possibilities in acquiring borehole geophysical data

GVDTR (Depth Time Recorder): Measures depth vs time and communicates with a tablet via Bluetooth. The DTR has inputs for encoder measurements (commonly optical or laser) and also the rig direction pressure switch measurement (TBL).

Contact us to discuss your requirements.

KEY FEATURES

- No need to mobilise a lot of equipment
- Ideal for remote locations
- Usable on third party cable or slickline
- Usable in thru-bit logging
- Programmable with Android app
- Data download via Bluetooth
- Can connect to third party depth systems, standalone depth encoders, or rig pipe



Thru-bit Logging

Thru-bit logging (TBL) is a memory based logging technique whereby tools are conveyed through the diamond drill bit into an open hole section.

The TBL conveyance method is ideal to log the zones that cant otherwise be logged with traditional wireline.

Generally:

- Geovista memory module and logging probes are lowered inside a wireline core barrel
- The probes sensors slide through the core bit into open hole
- Data can be acquired while pulling out the drill pipe
- A surface depth system box encoder is used to record depth (with the DTR) as drill pipe is pulled out. A laser or optical encoder is commonly used
- Communication is done via Bluetooth and an Android/Windows app
- The logging file and depth file is downloaded and merged to provide a full wireline log

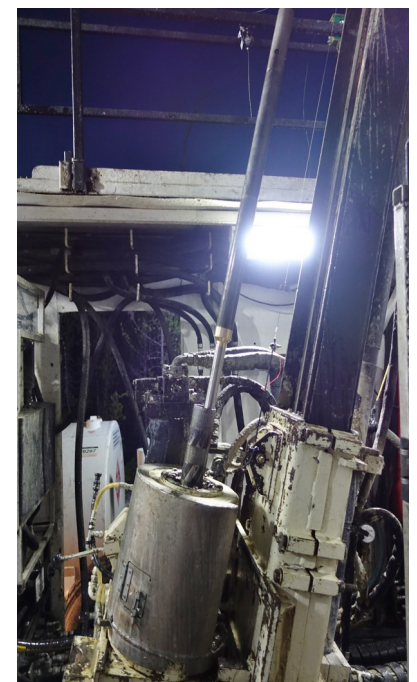
Contact us to discuss your requirements.

APPLICATIONS

- Deviated logging
- High risk/collapsible boreholes
- Remote logging
- Any industry

KEY FEATURES

- No need to mobilise a lot of equipment
- Ideal for remote locations
- Usable on third party cable or slickline
- Easy to use
- Programmable with Android app
- Data download via Bluetooth
- Long battery life
- Run in any environment



Ultra-Slim logging

The Geovista range of 16 mm ultra-slim logging probes are designed to allow data acquisition in extremely small boreholes.

APPLICATIONS

- Very small diameter holes
- Geothermal
- Temperature
- Trajectory
- Density

Short, small diameter (16 mm) tools allow for in-situ logging inside very small diameter boreholes or pipes. The logging cable is fitted with a special, small diameter rope socket and cable head. These tools are commonly used in geothermal wells and shallow pipe systems.

Ultra-Slim Density Sonde: The Geovista Ultra-Slim Density Sonde detects variations in the cement density around very small diameter casing or tubes inside a borehole. This helps locate zones of insufficient or inadequate cementation. The sonde also has an internal temperature sensor for simultaneous measurements of density and temperature.

Ultra-Slim Temperature Sonde: The Geovista Ultra-Slim Temperature Sonde has an external PT100 probe to allow for accurate and instantaneous measurements of the fluid temperature profile inside very small diameter holes.

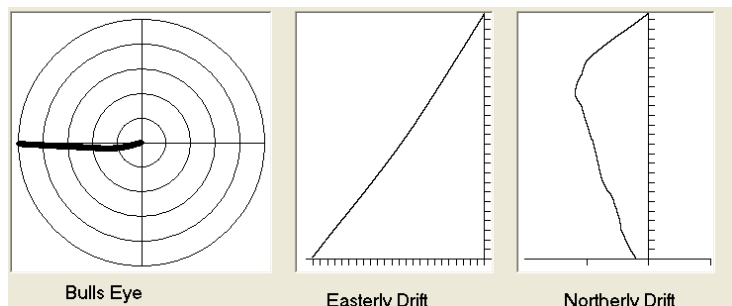
Ultra-Slim Pipeline Trajectory Sonde: The Geovista Ultra-Slim Trajectory Sonde measures the trajectory profile (azimuth and inclination) of very small diameter, non magnetic pipes and boreholes.



SPECIFICATIONS

Ultra Slim Probes

Weight	<0.2 kg
Length	38 to 42 cm including cable head
Diameter	16 mm
Max. Pressure	20 MPa
Max. Temperature	80 °C
Combinability	Stand alone
Borehole	Any small hole
Centralisation	Not required
Accessories	None



Accessories

Geovista offer a range of accessories.

Rig up sheave wheels:

Rig up sheave wheels are useful when there is a rig in place. They allow for the safe feeding of the cable and tools into a borehole.

Tripod with sheave wheel:

The logging tripod and sheave wheel is the efficient choice for logging boreholes that do not have a rig in place. It is a standard way to deploy the logging cable into the rig-less borehole.

Fishing tool:

Used to retrieve sondes that are stuck in a borehole without cutting the wireline cable. This tool is attached to drill pipe and lowered downhole. The grapple is designed to catch 28mm. The assembly consists of the following:

- Grapple half-shells
- A body with a side door slit for the cable
- A 2 3/8" EUE Box Crossover to connect to the fishing string

Centralisers & Standoffs:

A range of solutions are available including:

1. In-line centralisers
2. Rubber finger standoffs
3. Over-body centralisers
4. Custom made centralisers (e.g., for larger holes)

Sinker (weight) Bar:

A helpful accessory when your sondes are too light for the borehole conditions. The sinker bar is through-wired and can be run anywhere in a probe stack.

Weight: 9.7 kg, Length; 112 cm, Diameter: 38 mm

Shock Absorber:

A bottom of stack shock absorber is useful when running in boreholes of unknown condition, TBL, memory or Gyro operations to reduce any shock on the stack if the probe hits an obstruction.

Accessories

Geovista offer a range of accessories.

Push rod adapter:

If you want to log GeoVista tools at a higher deviation you can use a push rod adapter. This adapter can be connected to your logging head and allows you to connect rods to the tool so that you can push the tool stack down your borehole.

Gamma Ray Verification Blanket:

Useful jig to verify and check gamma probe readings.

A 38mm and 60mm blanket is available.

Cable Line Wiper:

To clean your cable from fluid and debris as you pull out your logging string.

Pressure Cable Line Wiper:

To clean your cable from fluid and debris as you pull out your logging string. This option uses an air pressure supply from the rig or a compressor.

DPS (P&S) Verification jig:

This jig is used with the Downhole P & S probe. This jig can be attached to the receiver section of the DPS probes and two different signals can be generated to verify the probe records the correct waveforms.

Knuckle Joint:

GeoVista supply a knuckle joint to add flexibility within the tool string. It is great for running centralized and eccentric probes in the same stack.

The knuckle joint is through wired and can be connected anywhere in a logging combination. It is especially useful in deviated hole and TBL memory logging mode applications.

GeoVista can also supply a range of other accessories including:

- T-Clamp
- Bespoke Transport Cases
- Crossovers, Cable Heads
- Winch Electronic Depth Display Module
- Tool Boxes
- Third Party Commercial Log Processing Software

Contact us for more information on borehole geophysical accessories



Groundwater















Geotechnics



Exploration



Mining

-  Natural Gamma
-  Spectral Gamma
-  Grade Gamma
-  Caliper (2 Arm, 3 Arm and 4 arm)
-  Spontaneous Potential (SP)
-  Normal Resistivity and Focused Resistivity
-  EM Induction Conductivity
-  Induced Polarisation (IP)
-  Magnetic Susceptibility
-  Magnetometer (Three axis)
-  Sonic / FW/CBL
-  Down the hole P & S velocity
-  Down the hole geophone
-  Verticality
-  North Seeking Gyro & Driller's Gyro
-  Televiwers
-  Nuclear (Density / Neutron)
-  Temperature
-  Water Quality (Conductivity, pH, DO, and Redox)
-  Flowmeter
-  Water Sampler
-  Pressure (QPG)
-  Down the hole Video
-  Memory module and Depth/Time recorder

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