GEObit

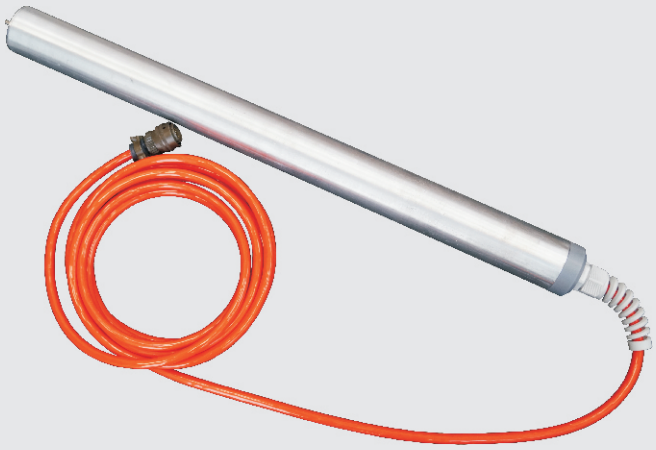
Monitoring the earth

IES Innovative Environmental Scientific Pty Ltd ABN: 46 611 085 842

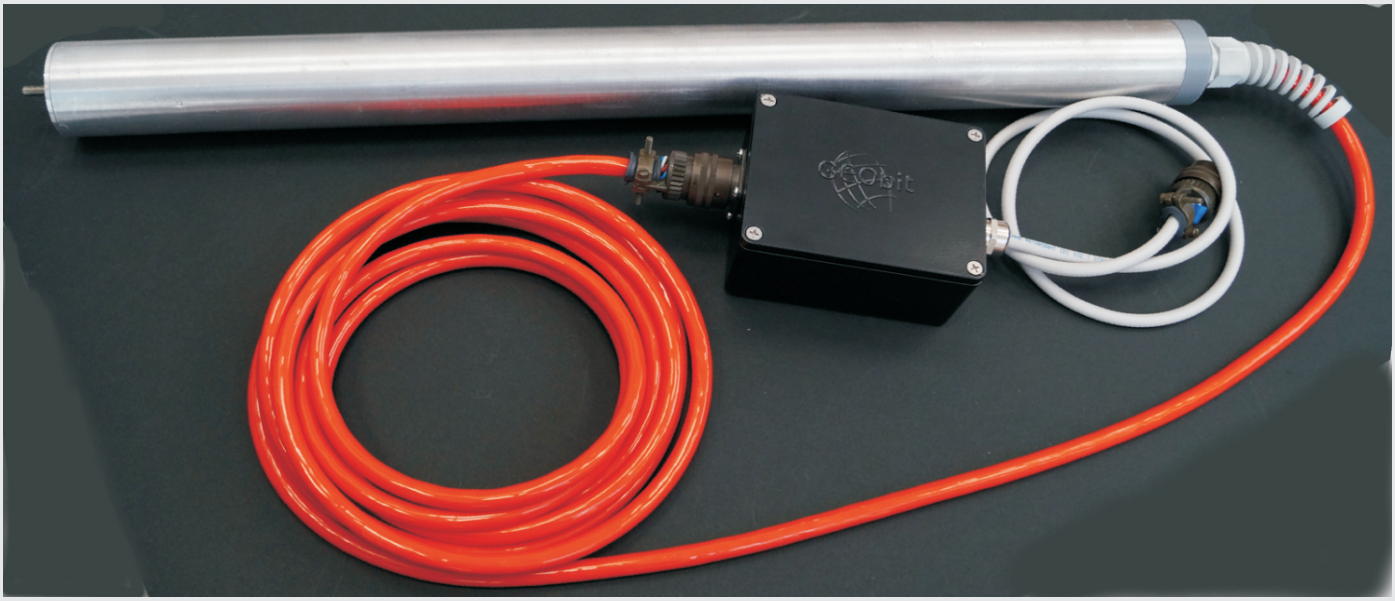
AUSTRALIAN & NZ DISTRIBUTOR

S400 short period ultra sensitive seismic sensor

- 3 axis velocity sensor
- Low power consumption
- Borehole /surface type
- Only 50mm diameter
- More than 1km depth
- Smart elastic clamping
- Guiding wheels driver
- Wide input voltage range
- Build-in test line
- Wide Response 1sec - 240Hz
- High Sensitivity 3000V/m/s
- Velocity feedback design
- Operation Range: -20 +70°C
- Micro-Seismicity Monitoring



The S-400 is a three-component velocity equivalent output seismic sensor. The unit is recommended for local micro-seismicity and fracturing seismicity monitoring. Actually three versions of this sensor type are available. One without any electronics (S400A), one with preamplifier (S400B) and a third one with signal conditioner (S400C) based on the force-balance principle. This third version provides wider sensor response 1sec to 130Hz. The main characteristic of this sensor type is the high sensitivity combined with very low noise level. It is ideal for very low seismic events or fracturing events recording. The sensor must be combined with a very low noise / high dynamic range digitizer like the SRi32L/S



The default cable length of the sensor is approximately 20 meters. Selecting special cable, the length can be extended to more than one kilometer. The sensor electronics are housed inside the back box leaving the main sensor unit area free of electronics. Thus any damage risk is dramatically minimized and no reason for sensor uninstallation for repair. The borehole type unit is housed into an 60/80mm diameter casing. The sensor body is filled with special electro-insulated resine with excellent hydrolytic stability and therefore the sensor can be installed in deep boreholes. Corroison environment is not a problem for this sensor. No mass-lock or centering is required that makes an easy connection with the digitizer. Sensitivity is 1500V/m/sec (differentially) if electronics are used, thus providing a very sensitive seismic sensor. Recording fracturing events from the surface is not an easy experiment, almost impossible using ordinary equipment. Efforts were concetrated on minimizing the noise floor, increasing the dowhhole gain and the sensor sensitivity. This sensor uses quad geophones per axis so it meets all the requirements of gain and noise levels while sensitivity becomes quadruple.

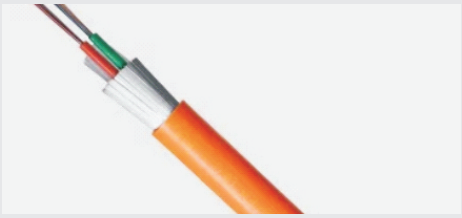
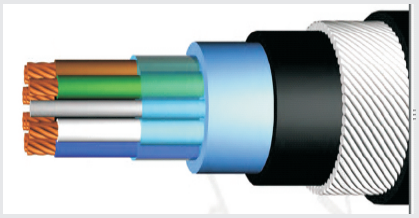
Instrument Characteristics

MODEL S400A (without electronics)	
Number of channels:	3channels, Vertical, North-South, East-West
Channel Resistance	13600 OHms
Sensitivity	368 V/m/s
Natural Frequency	4.5Hz (10Hz, 14Hz, 28Hz, 35Hz under request)
Open circuit damping	0.76
Cable length	More than 1km
Size	460mm length, 60mm diameter
Weight (geophone enclosure)	6300g
MODEL S400B (with preamplifier)	
Number of channels:	3channels, Vertical, North-South, East-West
Output Resistance	500 OHms
Sensitivity	3000 V/m/s
Natural Frequency	4.5Hz (10Hz, 14Hz, 28Hz, 35Hz under request)
Power	12Vdc, 41mA (0.49W)
Cable length	More than 1km
Size	460mm length, 60mm diameter
Weight (geophone enclosure)	6300g
MODEL S400C (with signal conditioning electronics - bandwidth extension)	
Number of channels:	3channels, Vertical, North-South, East-West
Output Resistance	500 OHms
Sensitivity	3000 V/m/s
Natural Frequency	1Hz (0.5Hz, 0.2Hz under request)
Power	12Vdc, 43mA (0.49W)
Cable length	More than 1km
Size	460mm length, 50mm diameter
Weight (geophone enclosure)	6300g
ALL MODELS GENERAL CHARACTERISTICS	
Mass lock, centering	Not required
Temperature range	-20 to +70 °C
Humidity	100%, IP68 enclosure, resin filled
Submersible	>1000 meters

Resine Specifications

RESIN SPECIFICATIONS (+ stable, - unstable)	
Water +	Hydrocholic acid 5% +
Potassium hydroxide 5% +	Unleaded fuel +
Sodium Hydroxide 5% +	Diesel Fuel +
Salt water 20% +	Xylene +
Domestic Dedergents +	DMSO -
Sulfuric acid 5% +	N-Methyl pyrrolidone -
Temperature -40 to +100	Solid 100%

Cable Specifications

CABLE SPECIFICATIONS			
KEVLAR SEISMIC CABLE		STEEL ARMOURED SEISMIC CABLE	
Conductor	6*0.32 tinned cooper DCR<36Ohms	Conductor	2X5, 0.5mm2
Insulation	HDPE O.D 1.5mm	Insulation	Individually screened conductors
Twisted	Red/Black, Blue/White, Red/blue	Twisted	2X5 conductors
Shield	Tinned Copper Braided 16X8X0.1	Shield	PVC bedding, galvanized steel wire armour
Strength	Kevlar, >350kg	Strength	Steel, >350kg
Jacket	TPU85A, OD 10mm	Jacket	PVC 20mm
Color	Orange, Yellow	Color	Black
Weight/km	160kg	Weight/km	730kg
			

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