



## **BGR-02 GAMMA, RESISTIVITY AND MAG. SUSCEPTIBILITY PROBE**

### **DESCRIPTION**

The BGR-02 combination probe contains a gamma detector, the electrodes for the resistivity and the magnetic susceptibility sensor. The probe has a 42-mm diameter non- magnetic non- conductive housing, which is pressure, rated to 3,000 meters.

The probe is controlled by an on- board microprocessor that samples the potential between the two electrode arrays at a rate of 2 samples per second. The potential range of the measurement is +/-50V and has a resolution of 0.1mV. When switching the current generator "OFF" the BGR-01 probe will measure the spontaneous potential voltages in the borehole. The magnetic susceptibility sensor is a low frequency induction sensor.

The signals from the gamma sensor in the probe are integrated in four different energy windows over a time of 0.5 seconds.

The four windows are calibrated to the four windows:

Total Count	= 0.10 - 3.00 MeV
Potassium (K <sub>40</sub> )	= 1.37 - 1.57 MeV
Uranium (Bi <sub>214</sub> )	= 1.66 - 1.86 MeV
Thorium (Tl <sub>208</sub> )	= 2.40 - 2.80 MeV

The standard gamma detector used in the probe is a 25mm by 76 mm crystal (1"x 3 " CsI). Larger sizes are available and are listed under options.

The gamma / resistivity/ magnetic susceptibility combination probe is designed for use with all standard IFG logging systems that include the BIN-04 digital data interface, 4 conductor logging cable and the data acquisition software. The probe is controlled by an on-board microprocessor that transmits all the data along the logging cable to the surface console for the re-formatting and the transfer to a microcomputer.

The microcomputer and the acquisition software (DAS) display and record the data in real time. Up to a total of 20 different parameters can be viewed during logging, in either graphic or numeric format. The recording format is in continues or incremental mode.

Post processing software (PC-LOG) is available to process the recorded data. For this process the probe can be calibrated for window stripping, dead time corrections and to compute the energy concentration in parts per million (ppm).



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SPECIFICATION	
Detector Type	Nal crystal, resolution 7.5% CsI crystal, resolution 9.5% BGO crystal, resolution 15.5%
Detector Size	25mm x 76mm 19mm x 76mm
Sample Period	0.5 second
Window Chanel:	Total Count = 0.10 - 3.00 MeV Potassium ( $K_{40}$ ) = 1.37 - 1.57 MeV Uranium ( $Bi_{214}$ ) = 1.66 - 1.86 MeV Thorium ( $Tl_{208}$ ) = 2.40 - 2.80 MeV
Resistivity Range	0 to 50,000 ohm-m
Sensitivity	1 $\Omega$ -m
Input Current	2,5,10,20mA (selectable)
Magnetic Susceptibility	Single coil AC induction
Operating Frequency	1.4 kHz
Sensor Range	$10^{-5}$ to $10^{-1}$ cgs
Sensitivity	$10 \times 10^{-5}$ cgs
Probe Housing	High strength filawound tube
Maximum Depth	3000 meters
Connection	4 pin connector (Gearhardt Owen)
Temperature Range	Storage: $-35^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ Operating: $0^{\circ}\text{C}$ to $+70^{\circ}\text{C}$
Output	10mA current loop, 48 baud
Supply Voltage	48 Vdc @ 0.2 (at probe header)
Probe Dimensions	40mm diameter x 200cm long
Probe Weight	3.8 kg