

1024 CHANNEL NATURAL-GAMMA SPECTROSCOPY PROBE

The natural-gamma spectroscopy probe analyses the energy spectrum of gamma radiation from naturally occurring or man-made isotopes in the formation surrounding a borehole. The probe can operate in 'fixed window' mode using preset energy windows to determine the concentrations of the natural emitters, potassium, uranium and thorium as continuous measurements. It can also operate as a full 1024 channel spectrometer for in-situ isotope studies, acquiring data from 100keV to 3MeV. Variable windows can also be defined by the user. Calibrations and borehole corrections have been defined by Monte Carlo analysis (MCNP-4 code) and relate to national standards.

PRINCIPLE OF MEASUREMENT:

Gamma photons produced by decay of naturally occurring potassium, uranium, thorium and/or unstable man-made isotopes in the formation strike are detected by a large-volume gamma scintillation counter and converted to electrical pulses. The amplitude of the pulses depends on the photon energy. An analyser within the probe separates the pulses into separate channels according to their amplitudes. Count-rates from groups of channels are converted in real-time by the surface software to concentrations of the originating elements using preset algorithms.

FEATURES

Large-volume scintillation detector for high sensitivity
Thermal insulation and automatic temperature compensation of detector for stable spectrum and freedom from drift

MEASUREMENTS

Uranium
Thorium
Potassium
Gross gamma
1024 channel count-rates

APPLICATIONS

Minerals/Water/Engineering
Lithology determination
Mineral detection
Sedimentology
Improved shale-content computation
Correlation
Contamination studies

OPERATING CONDITIONS

Borehole type: open/cased, water/air filled

SPECIFICATIONS

Diameter: 60mm
Length: 1.60m
Weight: 10.5kg
Max. temperature: 70°C
(extended range available)
Max. pressure: 20MPa
(extended range available)
Detector: CsI(Tl) scintillator
(NaI, BGO also available)
Detector Size: 38mm x 150mm
(other sizes available)
Energy range: 100keV to 3MeV
(programmable)
Resolution: 3KeV
Peak sampling: 14 bit
Stabilisation: Automatic compensation for temperature variation

SALES INFORMATION

Probe:
25 003 000 1024 Channel natural-gamma spectroscopy probe

Accessories:
20 074 000 Natural-gamma API calibrator without source
30 010 000 3.7MBq ¹³⁷Cs source for natural-gamma calibrator

