

D230A – Mini Airborne Gamma Ray Spectrometer

Introduction

The D230A is a lightweight Gamma Ray Spectrometer designed for small payload UAV. Attention has been paid to minimize weight of the device and maximize sensitivity.

The D230A utilises two 1024 channel gamma-ray spectrometers and small data acquisition and control unit. Spectrometers use an advanced method of automatic gain stabilisation using natural background radiation. This unique stabilisation method eliminates the need for an additional radioactive check source.



Applications

The main application for the D230A is gamma ray airborne. Spectra of both detectors are accumulated and saved separately with scanning rate adjustable from one second up to one minute. Additionally there is integrated spectrum as a contribution of both detectors during monitoring activity.



SD card type of data memory makes large recording space for spectra of many monitoring hours. Memory size is upgradeable. Standard size 2 x 20 000 full spectra samples.

The D230A user interface is provided through any suitable PC or Laptop using the software package delivered with the instrument. This software ensures the on-line communication with the spectrometer, logs the data into the PC and assists the user to set-up the operational parameters.

The D230A is available with BGO or NaI/Tl gamma-ray detectors both with a dimension of 2" x 2". An independent electronic design and mechanical support of detectors allows using also a single detector. This may be requested to lower weight of the unit. The housing is made from thin aluminium. There are 4 hoisting points on upper side of the housing ready as coupling interface to an UAV.

The D230A electronic is powered from a small Li-Ion battery located in a slot in front panel. Fully charged battery holds for minimum 4 hours of operation and is fast replaceable.

Operating is arranged by a single button what switches ON/OFF and STARTs/STOPs measurements.



PYCKO SCIENTIFIC LIMITED

The D230A is delivered with an external GPS module. The module shall be mounted on suitable place of a UAV. Connection to the D230A is made by cable what is a part of the GPS module.

Technical Data

Detector

two pieces BGO, volume 104 cm³, dia.51 x 51 mm (2" x 2"), with bi-alkal PMT sensitivity 2 x 160 cps / MBq/ m (Cs-137). Resolution max 11.5% FWHM (661 keV).

or

two pieces NaI/Tl, volume 104 cm³, dia.51 x 51 mm (2" x 2"), with bi-alkal PMT. Resolution max 8% FWHM (661 keV).

Spectrometer Full Digital 2x1024 channel, 40 MHz DSP, Linear Energy corrected, Pile-up Rejecter, 200 ns Resolution, Max throughput 250 000 cps per detector

Sampling rate user selectable min one per second. Each spectrum in separate data file and total accumulated spectrum.

Energy Range 25 keV - 3000 keV

Display LCD 2 x 20 characters

Control Single button operation

Data Storage min. 2x 20000 Samples with full Spectra including GPS coordinates. Stabilization spectra and system messaged log. Memory size extendable

GPS navigate down to -162 dBm and -148 dBm coldstart, prec. 2m

Communication Data Transfer, Remote Control and Diagnostic by:
USB 2.0

Power Rechargeable Li-ion 7.2V/2200 mAh – min. 4 hours of operation at 20 degrees Celsius
External charger and battery pack

Size 145 mm x 78 mm x 260 mm

Weight

2xBGO 3.5 kg

Environmental Operation Temperature Range -10°C to +50°C
Protection IP-40, No Dust and Water resistant