TECHNICAL SPECIFICATIONS

FLINT — a compact, digital and integrated gamma-ray spectrometer

INTRODUCTION

FLINT is a compact, digital and complete gamma-ray spectrometer. The device integrates a gamma-ray scintillator crystal, Si-arrays acting as photomultiplier (SiPMs), a temperature-stabilized bias power supply and a full-featured digital multichannel analyzer (MCA). All these components are arranged into a compact layout and thermically isolated case.

The FLINT spectrometer can be supplied with many scintillator crystals types, such as NaI(Tl), CsI(Tl), $CeBr_3$,$LaBr_3$(Ce), LBC, SrI_2, etc; and different crystal sizes as well. However, the standard device is an integrated round NaI(Tl) scintillator crystal of 2x2 (51 mm diameter by 51 mm height) or 3x3 (76 mm by 76 mm height) inches in size.

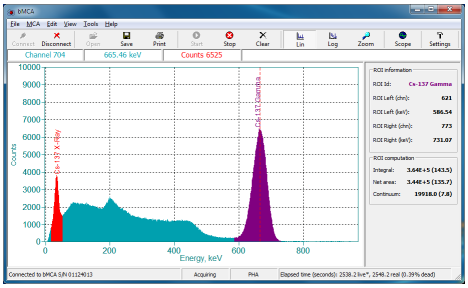
The device is provided with a basic software package that allows to control the device, and to acquire and visualize the energy spectrum. It can also be supplied with an advanced and full-featured gamma-ray spectrum analysis software: bGamma.

DESCRIPTION

The FLINT device is a complete gamma-ray spectrometer. The device integrates in a single enclosure all the necessary components for detection and energy distribution of the emitting gamma-ray radiation.

The FLINT device can be ordered with different types of scintillator crystals and also different sizes. However, the standard models are using a NaI(Tl) scintillator of 2x2 or 3x3 inches crystal sizes.

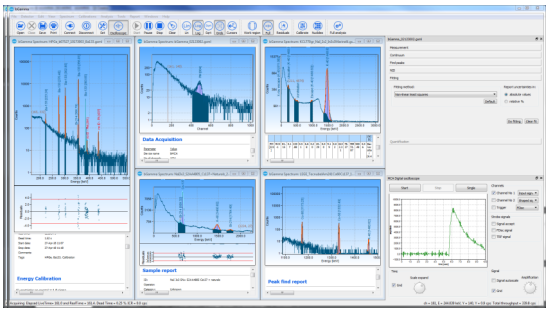
The FLINT uses Si-arrays as photomultipliers (SiPM). The SiPMs are optimally positioned and warrant the best light collection and energy resolutions.



The power for the scintillation and SiPMs is internally generated by a temperature compensated power supply. The power supply compensation results into minimum spectrum peak shift and energy resolution deterioration.

The FLINT integrates a full-featured, advanced and digital MCA for processing the pulses from the scintillator. This integration minimizes any noise induction and provides high spectroscopy performance.

The FLINT MCA has up-to 4096 channels with a channel depth of 32-bits. It has a trapezoidal digital shaper that can be tuned to any application and/or setup conditions. Additionally it has digital base line (BLR) restorer and advanced pile up rejector (PUR). The MCA also has powerful algorithms for electronic noise rejection, filtering and noise threshold capabilities.



The MCA implements two modes of data acquisition: Pulse Height Analysis (PHA) and Multi-channel scaling (MCS)

The device is cased in an aluminum encapsulation of compact sizes with only one connector (USB mini type B) to the PC.

A basic acquisition software package is provided for managing such device operations as setup, control, data acquisition and visualization.

However the models **FLINT-NAI-PRO** are delivered with our full-featured gamma-ray and activity quantification software **bGamma** at a highly competitive price.

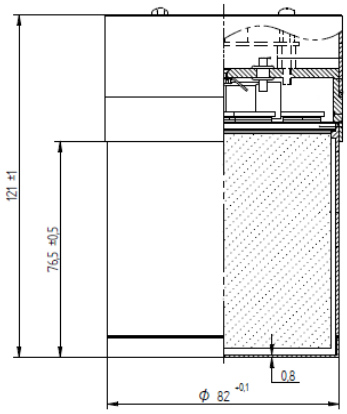
Additionally, the spectrometer FLINT can be interfaced into any existing project or instrument by using our Software Development Kit (SDK). The SDK is a set of programming libraries for interfacing with any BrightSpec® spectrometry device. The SDK is fully compatible across platforms, such as MS Windows™, Linux ® and macOS™.

FEATURES

- Compact and complete gamma-ray spectrometer.
- Incorporates round type scintillator detector of different sizes or materials, Si-arrays as photomultipliers, internal and temperature-stabilized power supply, amplifier and full-featured digital multichannel analyzer (MCA).
- Aluminum case with advanced thermal isolation.
- Typical scintillators: 2x2 inches and 3x3 inches NaI(Tl). Energy resolution @ ^{137}Cs better than 7.6%
- Full Pulse-Height Analysis (PHA) and Multi-Channel Scaling (MCS) modes of data acquisition
- Up to 4096 channels, 32-bit depth for PHA and MCS acquisition
- Full settable digital trapezoidal shaper to accommodate signals from any scintillator type and/or application
- Compact device with sizes of 57 mm diameter and 96 mm height (FLINT-NAI-2 model), or 82x121 mm (FLINT-NAI-3 model)
- USB 2.0 for data communication and device control and power
- Basic spectrum acquisition and device control software included
- Available programming libraries for Windows and Linux Operating System (upon request)
- **Also available with full-featured gamma-ray spectrum analysis software: bGamma**

BRIGHTSPEC

is a dynamic engineering company providing novel designs and innovative solutions in the field of nuclear electronics and software development for radiation detection.



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TECHNICAL SPECIFICATIONS

Scintillator detectors

- Can be ordered with many scintillator materials such as: NaI(Tl), CsI(Tl), $CeBr_3$,$LaBr_3$(Ce), LBC and SrI_2
- Standard scintillator crystal will be round NaI(Tl) with 2x2 inches and 3x3 inches crystal sizes
- Typical energy resolution @ ^{137}Cs better than 7.6 %
- Low energy noise lower than 15 keV

PHA acquisition mode

- Spectral memory size of 256, 512, 1024, 2048 and 4096 channels, 32-bit depth per channel.
- Coarse gain with amplification factors of 1, 2, 4 and 8. Fine gain from 1 to 2 in steps of 1/4096
- Acquisition preset on time (Live or Real), or count-for-ever, or counts on ROI or combination of both.

MCS acquisition mode

- Spectral memory size of 256, 512, 1024, 2048 and 4096 channels
- Dwell time from 0.1 sec to "count-forever"
- Easy to setup from ROIs or nuclide information.

Digital Settings

- Rise Time: from 0.1 to 12 µsec in steps of 0.2 µsec
- Flat Top: from 0.1 to 8.0 µsec in steps of 0.1 µsec
- Threshold: 1 to 255
- Digital Base Line Restorer (BLR)
- Pile-Up Rejector (PUR)
- Includes a digital oscilloscope

Bias Power Supply

- Internally generated. Typically +6 - 16 Volts. Voltage supply stabilized for temperature changes.
- Powered over 5 Volts from PC USB port

Data communication

- USB 2.0, cable of (standardly) 3 m long included

Physical

- Sizes:
  - Model FLINT-NAI-2: 57 mm diameter and 96 mm height
  - Model FLINT-NAI-3: 82 mm diameter and 121 mm height
- Connectors :
  - USB type mini B (to computer)
- Indicators:
  - Yellow LED for incoming count rate (ICR)
  - Blue LED for power and communication status

Environmental

- Operational ambient temperature range: -10 °C to 60 °C

Other

- The device is supplied with a basic software to control operation, data acquisition and visualization. The software is MS Windows™compatible
- (upon request) necessary programming libraries for MS Windows™ and Linux®

Optional

- FLINT can be supplied with full-featured gamma-ray spectrum analysis and radioisotope quantification software bGamma

Certifications

- The device is CE compliant

Ordering information

- FLINT-NAI-2: FLINT with 2x2 inches NaI(Tl) crystal
- FLINT-NAI-3: FLINT with 3x3 inches NaI(Tl) crystal
- FLINT-NAI-2-PRO: FLINT with 2x2 inc NaI(Tl) crystal and single license of bGamma software
- FLINT-NAI-3-PRO: FLINT with 3x3 inc NaI(Tl) crystal and single license of bGamma software

CE
CERTIFIED

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