

# EDUCATION KIT Basic Detectors and Analysers for Training and Education



The EDUCATION KIT is a versatile set of detectors designed for secondary school and university students. Its purpose is to introduce students to the detection of different types of radiation. The kit concept allows a deeper understanding of the physical processes of radiation detection, but also the technical aspects of dosimetry. The EDUCATION KIT consists of NUVIATech Instruments' standard products for the nuclear industry and research. It gives students a unique opportunity to get familiar with detectors used in real applications.

## Benefits

- All-in-one case solution
- Cost affordable kit
- Laboratory exercises included as well as an introduction to the detection of ionising radiation
- Lightweight case
- Functional and fast set-up
- Modular system enabling multiple uses
- Exercises that can be tailored to various levels of experience
- Licence for the NuSOFT GAMWIN spectrometric software included

## Key figures

7 different detectors

→ *In standard configuration*

2 different analysers

→ *In standard configuration*

7 kg → *Weight*



## Product description

The system in basic configuration consists of:

- Alpha radiation detector
- Beta radiation detector
- Combined alpha/beta radiation detector
- Neutron detector + polyethylene moderator
- NaI:TI scintillation detector
- Plastic scintillation detector
- Geiger-Müller (GM) tube
- Multichannel analyser
- Four-channel analyser
- Cables and power supply
- 1 NuSOFT GAMWIN licence
- Photomultiplier (PMT) compatible with all detectors
- User manual and documentation
- Robust case

### Additional equipment

- Multiple-radionuclide sources
- Stand for detector and shielding
- Set of shielding materials of different thicknesses (copper, lead, iron, aluminium)
- Set of polyethylene moderators of different thicknesses

### Control software

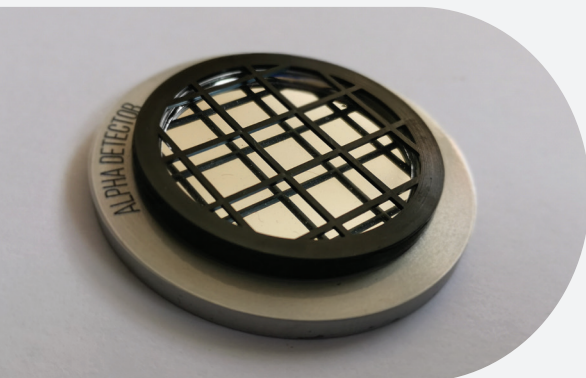
The kit is supplied with a licence for NuSOFT GAMWIN software which provides:

- Spectrum acquisition
- Data evaluation
- Nuclide identification



## Product specifications

<b>Alpha detector (NuDET A)</b>	ZnS:Ag layer on glass lightguide, 60 mm diameter, covered by polyester foil of 2.5 µm thickness with 1.1 µm aluminium layers on both sides
<b>Beta detector (NuDET B)</b>	Plastic scintillator of 0.5 mm thickness in aluminium housing, 60 mm diameter
<b>Alpha/beta detector (NuDET AB)</b>	ZnS:Ag layer on 0.5 mm thin plastic scintillator in aluminium housing, 60 mm diameter
<b>Neutron detector (NuDET NEUTRON)</b>	Mixture of <sup>6</sup> LiF/ZnS:Ag on PMMA lightguide in aluminium housing, 60 mm diameter, active area diameter 40 mm, thermal neutron sensitivity 4.5 cps/nv
<b>NaI:TI scintillation detector (NuDET NAI)</b>	Detector with housing: 45 mm diameter, 45 mm height; scintillator alone: 40 mm diameter, 35 mm height
<b>Plastic scintillation detector (NuDET PLASTIC)</b>	40 mm diameter and 35 mm height in aluminium housing
<b>GM tube (NuDET EGM-01S)</b>	Measuring range 50 nSv/h – 20 mSv/h
<b>Multichannel analyser (NuNA MCB)</b>	With universal 14-pin PMT base
<b>Four-channel analyser (NuNA SCA)</b>	With universal 14-pin PMT base
<b>Photomultiplier</b>	ET Enterprises* type 9266KB* in aluminium housing



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## Product options

BASIC	ADVANCED	FULL	DETECTORS
<ul style="list-style-type: none"> <li>Nal:TI scintillator</li> <li>Plastic scintillator</li> <li>Photomultiplier</li> <li>MCB</li> <li>Optical grease</li> <li>Ethanol</li> <li>Documentation</li> <li>Cables</li> <li>Case</li> </ul>	<ul style="list-style-type: none"> <li>Nal:TI scintillator</li> <li>Plastic scintillator</li> <li>Alpha detector</li> <li>Beta detector</li> <li>Combined Alpha/Beta detector</li> <li>Photomultiplier</li> <li>MCB</li> <li>SCA</li> <li>Detector holder</li> <li>Optical grease</li> <li>Ethanol</li> <li>Documentation</li> <li>Cables</li> <li>Case</li> </ul>	<ul style="list-style-type: none"> <li>Nal:TI scintillator</li> <li>Plastic scintillator</li> <li>Alpha detector</li> <li>Beta detector</li> <li>Combined Alpha/Beta detector</li> <li>Neutron detector</li> <li>EGM Probe</li> <li>Polyethylene moderator</li> <li>Set of shielding</li> <li>Photomultiplier</li> <li>MCB</li> <li>SCA</li> <li>Detector holder</li> <li>Optical grease</li> <li>Ethanol</li> <li>Documentation</li> <li>Cables</li> <li>Case</li> </ul>	<ul style="list-style-type: none"> <li>Nal:TI scintillator</li> <li>Plastic scintillator</li> <li>Alpha detector</li> <li>Beta detector</li> <li>Combined Alpha/Beta detector</li> <li>Neutron detector</li> <li>EGM Probe</li> <li>Polyethylene moderator</li> <li>Photomultiplier</li> <li>Optical grease</li> <li>Ethanol</li> <li>Documentation</li> <li>Case</li> </ul>

## Product applications

BASIC	ADVANCED	FULL	DETECTORS
<ul style="list-style-type: none"> <li>Properties of gamma spectra</li> </ul>	<ul style="list-style-type: none"> <li>Properties of gamma spectra</li> <li>Alpha spectrometry</li> <li>Beta spectrometry</li> <li>Measurement with four channel counter</li> <li>Alpha/Beta pulse discrimination</li> </ul>	<ul style="list-style-type: none"> <li>Properties of gamma spectra</li> <li>Dose and dose rate measurement</li> <li>Alpha spectrometry</li> <li>Beta spectrometry</li> <li>Neutron measurement</li> <li>Measurement with four channel counter</li> <li>Alpha/Beta pulse discrimination</li> <li>Absorption of gamma radiation in different materials</li> </ul>	<ul style="list-style-type: none"> <li>Properties of gamma spectra</li> <li>Dose and dose rate measurement</li> <li>Alpha spectrometry</li> <li>Beta spectrometry</li> <li>Neutron measurement</li> <li>Alpha/Beta pulse discrimination</li> </ul>

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