



Innovator In Spectroscopy Equipment

SPECT2113

ANALYSIS



Radionuclide library:

NORM: ^{40}K , ^{232}Th , ^{238}U

SNM: ^{233}U , ^{235}U , ^{239}Pu , ^{241}Pu

INDS: ^{152}Eu , ^{22}Na , ^{57}Co , ^{60}Co , ^{133}Ba , ^{137}Cs , ^{192}Ir , ^{204}Tl , ^{226}Ra , ^{241}Am

MED: ^{67}Ga , ^{51}Cr , ^{75}Se , $^{99\text{m}}\text{Tc}$, ^{103}Pd , ^{111}In , ^{123}I , ^{125}I , ^{131}I , ^{201}Tl , ^{133}Xe

Specification

DRR: 0 to $200\mu\text{Sv/h}$

E. Range: 20-3000 keV

RES: 6.9% @137Cs

CV%: Meet ANSI N42.33-2006, CEI/IEC 1239

**DIGITAL PORTABLE
SPECTROMETER
MODEL SPECT2113
(ANALYSIS)**



www.cfp.co.ir



CATALOG



SPECTROMETER



FREE DOWNLOAD

DIGITAL PORTABLE SPECTROMETER

MODEL SPECT2113 Analysis

Features

- Easy One-hand operation
- Built-in analysis software
- KML output for GIS software
- Low power (31W Li-on battery)
- Large full color 4.3inch display
- 2D and 3D radioactive mapping
- Extreme sensitivity to gamma-rays
- Fast and accurate analysis procedure
- Radio-isotope library with 28 elements
- Geometry settings for increased accuracy
- Accurate analysis based on decision trees
- Audio output with the adjustable threshold
- Light Weight 4.5lb. (2.04kg) including batteries
- Element category detection (NORM, Industrial, SNM and Medical)
- NaI(Tl) scintillator with high detection efficiency
- Integrated GPS module for absolute timing and localization of data
- Continuous operation under severe environmental conditions
- Automatic logging of scan data with GPS-referencing for further analysis
- Auto-stabilizing in different environmental conditions
- Battery life of 5 hours at 20°C with external battery pack with 10 hours' life
- Recording and storing measurement and analysis results
- Capability of connecting to PC over USB for data transfer
- Special rugged design to withstand typical field usage
- Waterproof against streaming water and fully dust protected
- No radioactive sources required for proper operation

FAST AND ACCURATE GAMMA ANALYSIS BASED ON ANSI LIBRARY



Description

The SPECT2113-Analysis is a general purpose spectrometer and analyzer. The device is equipped with a high detection efficiency NaI(Tl) scintillator suitable for fast detection and analysis. SPECT2113-Analysis can be used in different applications such as exploration and mining, fast and accurate analysis tests, radiopharmaceutical analysis and inspection, homeland security inspections, secondary inspection at radiation portal monitors, environmental monitoring and protection, etc.

SPECT2113-Analysis is dust protected and can withstand streaming water which makes it a suitable option for different environmental conditions. The device is equipped with audible sound alarm corresponding to the environmental dose rate.

SPECT2113-Analysis comes with an embedded analysis software with 28-radioelement library. The library consists of different categories of elements including naturally occurring radioactive material (NORM), Industrial, Medical and special nuclear material (SNM). SPECT2113-Analysis can automatically determine the energy peaks in the acquired spectrum, and based on an intelligent hierarchical algorithm and decision trees, it determines the elements in the environment. The device comes with different options for source geometry which is then used for evaluating the radioactivity. The device can also calculate the dose corresponding to each found element radioactivity.

The spectrometer can be stabilized in any environment including environment with naturally occurring radioactivity or environment containing different radioactive sources.

SPECT2113-Analysis support two working modes, namely search mode and analysis mode. In the search mode, the device stores the measurements and results including dose rate, count rate, GPS info, analysis result, etc. in 1-second intervals. The resulting file have log extension. In the analysis modes, the user defines an analysis time (T) and repetition number (R) and the device accumulates the spectrum for the T seconds and evaluates the results for the acquired spectrum. This result is store in a file with MCA extension which includes the spectrum data too. This procedure is repeated for R times.

Specifications

Input(s)

Power Jack

19V (2A) DC adaptor

USB

5V DC for PC communication

Output(s)

USB

5V DC for PC communication

Control(s)

Power

Power push button to turn PC on or off

Function Key

Four push button function key (thumb activated)

Indicator(s)

power

Power on indicator

Battery status in 3 color (red, orange, green)

Ring

Green ring

Sound Alarm

Audio via miniature speaker

Variable audio threshold set point

Audio voice proportional to the count rate

Light Alarm

Main menu: Red blinking text box

Graph menu: Graph color change

Display

Large Full Color Graphic LCD

4.3", 800 x 480 pixels

Easily view log files with no need to connect to a computer

Analysis Library

Naturally occurring radioactive material (NORM)

K-40, Th-232, U-238

Special nuclear material (SNM)

Np-237, Pu-238, Pu-240, U-233, U-235

Industrial

Am-241, Ba-133, Co-57, Co-60, Cs-137, Eu-152, Ir-192, Na-22, Ra-226,

Medical

Cr-51, Ga-60, I-123, I-125, I-131, In-111, Pd-103, Se-75, Tc-99m, Tl-201, Xe-133

Performance

Detector resolution

<7.5% FWHM @ 662 KeV – Typ <7%

Count Rate

Maximum 200,000 CPS

Readout

Search Mode	Count rate, GPS information, Analysis result, Dose rate, etc.
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Analysis mode	Spectrum, Hardware parameters, Count rate, GPS information, Analysis result, Dose rate, etc.
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Gamma Sensitivity

0.5 nSv/h CPS

Energy Range

20 - 3000 KeV

Internal Sampling
20 /second
Coefficient of Variation (CV)
3.80% @ 150 CPS
1.94% @ 500 CPS
1.23% @ 1500 CPS
0.50% @ 5000 CPS
0.49% @ 15000 CPS
Detector
gamma
Nal(Tl), 2" x 2" (ø x H) cylindrical
PMT
14-pin 10-stage PMTs
Data Acquisition and Analysis
OS (Interface software)
Built in Windows 7 or higher versions
Software
SPECT2113 (SOFTWARE)
Measurement/Spectrum
High Voltage
0-2000V, Positive, 12 Bit resolution
Energy Calibration
Linear and Auto calibration
Auto-stabilization
ADC
Channels
12bit in 4096Ch @80Mhz FRQ
Conversion time
250nsec with 12.5nsec time interval
Digital Signal Processing
12-bit and 80 MHz ADC
CSP with gain:10 – 150mv/pc (selectable)
Amplifier coarse gain: (x1 to 150x) in 15 step
Amplifier fine gain: (0 - 2x) in 65536 step
Integration time (0 to 0.819ms) @80Mhz in 0-65536 step
Trigger threshold software adjustment (0 to 100% scale) in 1024 step
Software fine tuning of the Pole-Zero cancellation
Software gain stabilization
Pile-up rejection and Live Time correction
Baseline restorer with programmable averaging
Battery
Standard
Internal battery pack module (3 cell Li-ion)
Rechargeable Life: over 5 hours at 20°C in full performance
Backup
Backup battery pack kit (4 cell Li-ion)
Life: over 5-6 hours at 20°C in full performance
Device
10 hour Standard and backup battery life

Memory

Huge 40GB SSD

Storage unlimited Total Count, Scan, Assay, plus full spectrum in 32bit x 4096

Certificate

CE

Compliant to IEC 61010-1:2010

This Certificate of Compliance can be checked for validity at <https://cfp.co.ir/download.ashx?file=Digital-Portable-Spectrometer-SPECT2113-CE.pdf>

Application

- Core scanning
- Baseline surveying
- Laboratory analysis
- Emergency situations
- Dose rate measurement
- Radioactive waste control
- Customs and border control
- Scientific Research activities
- Accurate inspection of lading
- Nuclear medicine and industry
- Safe disposal of nuclear waste
- Unattended/Remote Monitoring
- Healthcare (thyroid scan and ...)
- Environmental waste monitoring
- Port and Border Law Enforcement
- Radiation monitoring and mapping
- Geological and raw material survey
- Artificial radiation sources identification
- Radiation monitoring in building industry
- Exploration of different radioactive materials
- Determination of radioactivity and dose rate of different elements
- Construction material and products feature measurements



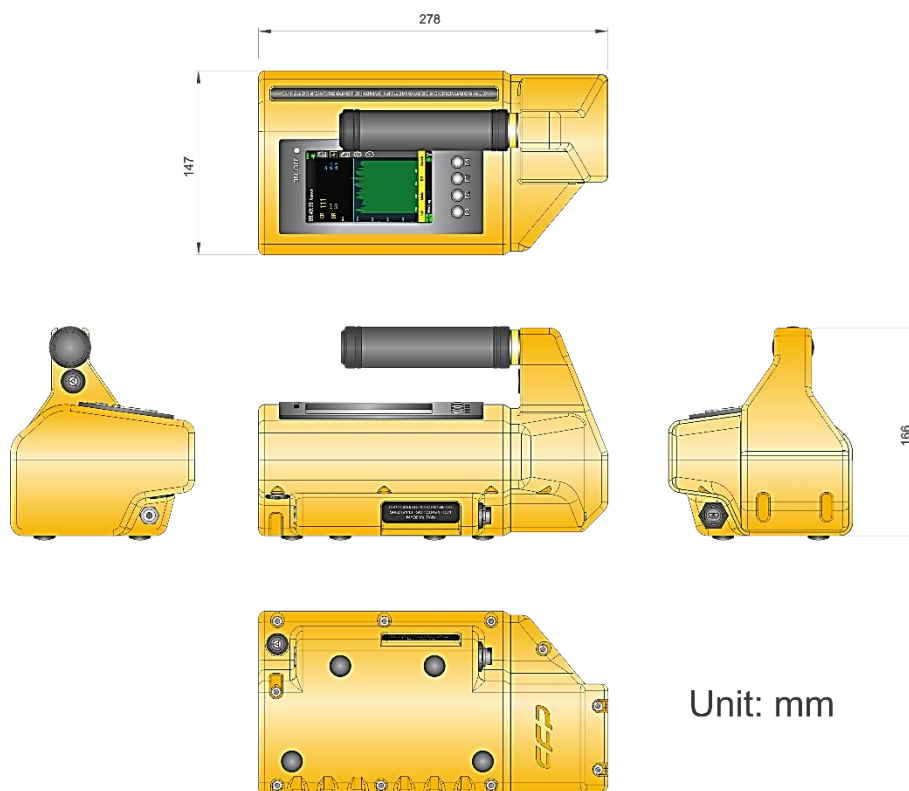
Electrical, Mechanical and Environmental

Power required

Standard version +19V (2A) DC adaptor

Physical

Dimensions	package style: 45 x 35 x 20 cm (L x W x H) spectrometer: 27 x 15 x 10 cm (L x W x H)
Weight	2.6kg
Shipping Weight	10kg (Hard case package)
Storage temperature	-20°C to 50°C in Standard Case @ 35% Relative Humidity (Best 10°C to 30°C)
Operating temperature	-10°C to 45°C.
Relative Humidity	10 to 80%



Unit: mm

SPECT2113-Mechanical

Software and user interface

Device GUI

SPECT2113-Analysis can be used standalone using the companion 4.3inch display. In the following we see the most important window in the device GUI.

Figure 1: MAIN panel: Presenting analysis results, total rate, date, time, working mode, battery, alarm, GPS status and element result with appropriate color including industrial group (**IND**), special nuclear material (**SNM**), naturally occurring radioactive material (**NRM**), Medical (**MED**) and Unknown (**UNK**).

Figure 2: Graph panel: Presenting real-time gamma spectrum data with peak position marking in the first mode and the second mode showing survey data graph with threshold level (Figure 3)

Figure 4: GPS panel: GPS status with speed

Figure 5: LOG panel: Visualize files and folders in the device storage

Figure 6: Setting panel: Analysis, survey and device settings with device description

Figure 7: Date/Time panel: Adjusting date and time with auto update option via GPS data

Figure 8: Geometry panel: Point source @15cm, 10cm, 5cm, 0cm and infinity source

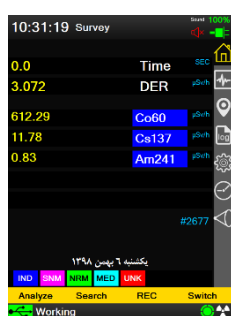


Figure 1

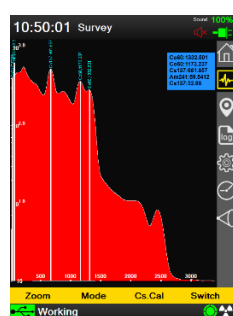


Figure 2

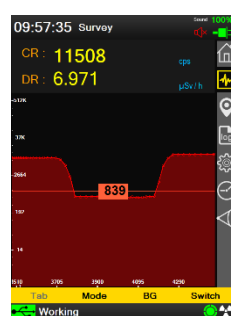


Figure 3

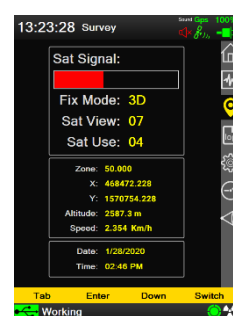


Figure 4

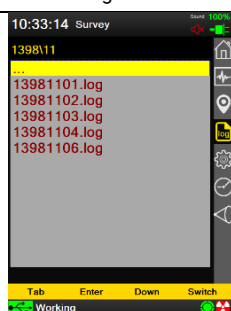


Figure 5

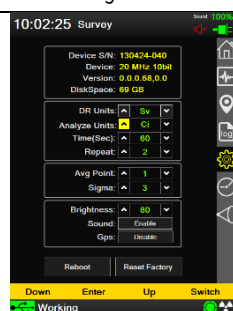


Figure 6

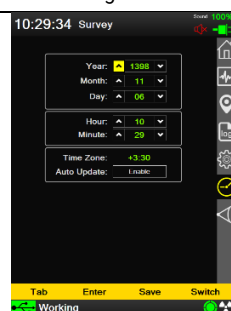


Figure 7

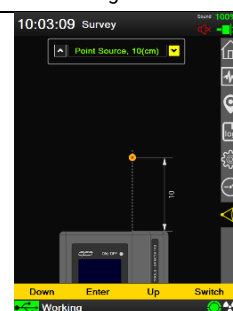


Figure 8

SPECT2113-Analysis GUI

PC software

SPECT2113-Analysis (SOFTWARE)

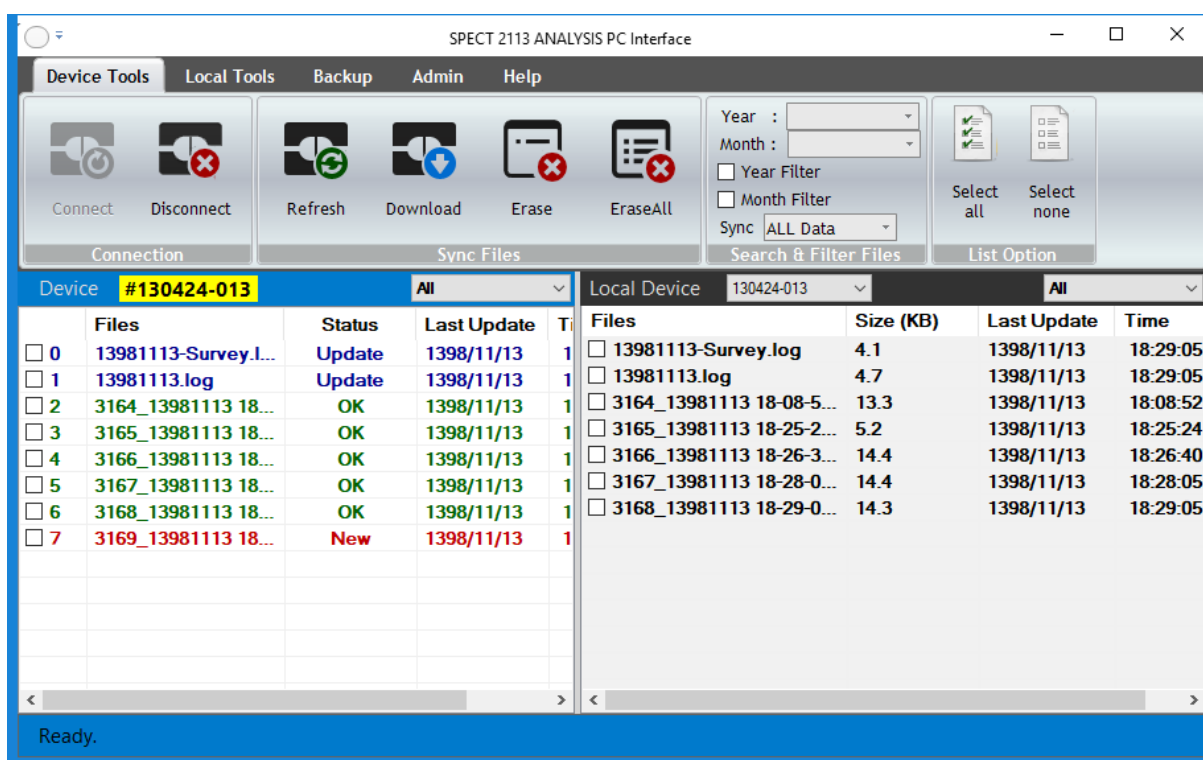
The SPECT2113-Analysis is provided with utility software to download the data that is stored in internal memory. All the stored files including log, MCA and GPS related files can be downloaded to the PC via USB. The program also gives graphical and numerical views of the data. The raw data (4096 channel) can also be re-exported as a text file for further processing.

Input /Output (Using supplied CFP-Analysis software)

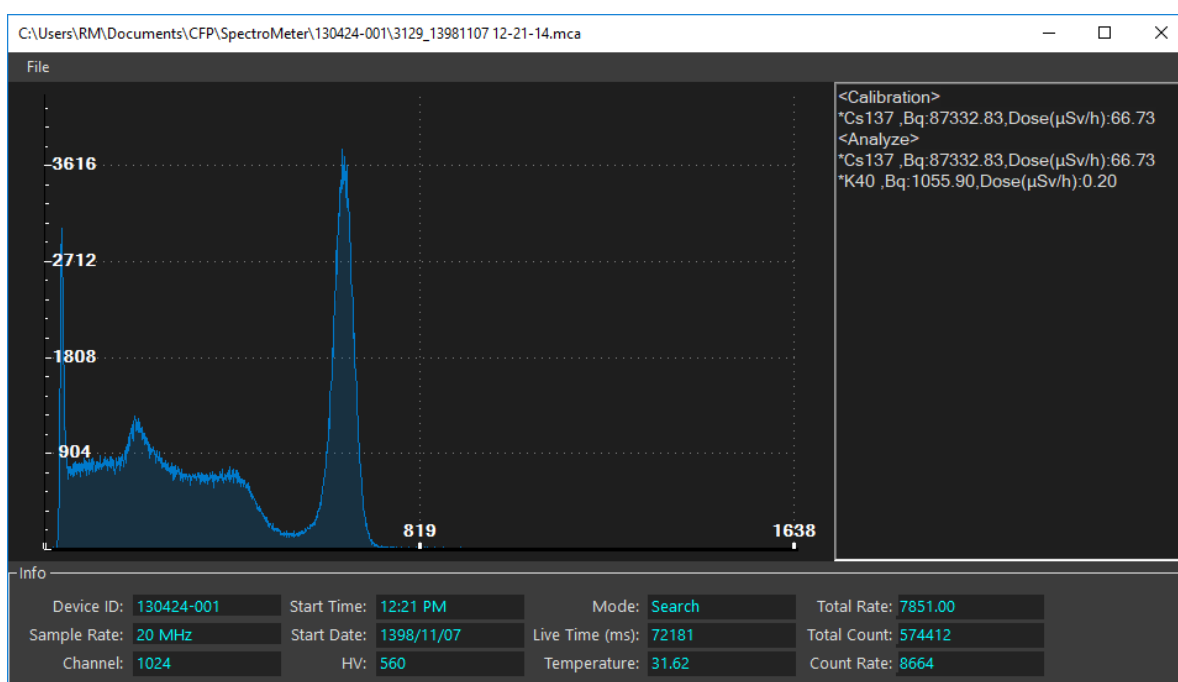
USB

Data Output formats

CSV, TXT, MCA, LOG



Software main window



Graphical view of gamma spectrum

Ordering info

Standard package includes

Part #	Image	Description
SPECT2113-Analysis		Portable digital spectrometer NaI(Tl) crystal 2"x2"
ACCE2113001		CD user guide (1 Pack)
ACCE2113003*		Guaranty (one year)
ACCE2113007		Hard case with foam insert
ACCE2113011		Car kit battery charger
ACCE2113012		Adaptor and charger
ACCE2113013		Battery charger
ACCE2113014		Backup battery
ACCE2113015		Cable USB 2.0 (A) to Mini USB (B) Cable

* We support our products and guarantee your satisfaction in the quality of our instruments by providing a complete one-year warranty covering any defect of workmanship, material, and/or design. If our products do not perform, we will provide complete repair and/or replacement. For guaranty conditions, please refer to device manual (SPECT2113-Analysis Manual)

Optional accessories and services

Part #	Image	Description
ACCE2113004		Installation
ACCE2113005		Training
ACCE2113006**		Re-Calibration (Interval) services. 1year factory maintenance suggested
ACCE2113016		Single-ended sealed mini USB cable, Type A Plug to Mini Type B Plug, 2m length
ACCE2113017		USB to USB extenuation Cable 10,15, 20, 30 meters
ACCE2113018		Remote reader Software

** The proper maintenance & calibration of your instruments is critical to ensure proper performance & accuracy. for Re-calibration (Interval) services, please call with CFP company (021- 46045383)



Innovator in Spectroscopy Equipment



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