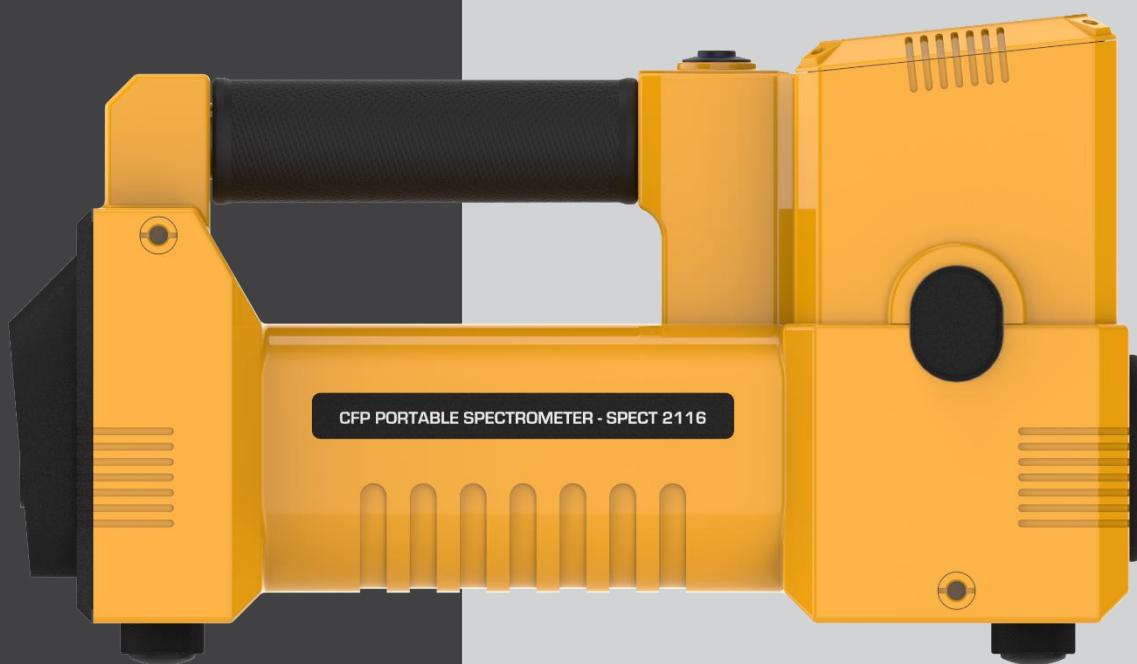




Innovator In Spectroscopy Equipment

SPECT2116



GAMMA SPECTROMETER MODEL SPECT2116



CATALOG



SPECTROMETER



FREE DOWNLOAD

www.cfp.co.ir

GAMMA SPECTROMETER

MODEL SPECT2116

Features

- High efficiency
- Multiple functions
- Single-block design
- One-hand operation
- High spectral resolution
- NaI(Tl) detector, 50cm³ (3.0in³)
- Extreme sensitivity to gamma-rays
- On-line and expert mode operation
- Easy to use, single button operation
- Unique Full Spectra Analysis method
- 1.6' x 1.6" (40mm x 40mm) Crystal size
- Audio output with the adjustable threshold
- Assay mode readout
- Ultra high speed: real 100msec sampling interval
- Digital measurement path temperature compensation
- Continuous operation under severe environmental conditions
- Auto-stabilizing on naturally occurring radio elements
- Ready for field operation
- Configuration menu
- Date and time menu
- full color 2.4inch IPS display
- Auto Calibration with ¹³⁷Cs
- 2D and 3D radioactive mapping
- Light Weight 5.5lb. (2.5kg) including batteries
- GPS data for absolute timing and location data
- Special rugged design to withstand typical field usage
- Waterproof against streaming water and fully dust protected
- Recording and storing measurement result and spectra in memory
- Automatic logging of scan data with GPS-referencing for further analysis
- Capability of connecting to PC over USB or Bluetooth interface for data transfer
- Typical 8hours battery life
- No radioactive sources required for proper operation
- External military GPS (optional)

FAST AND ACCURATE RESULTS VIA FULL SPECTRA ANALYSIS METHOD



Description

The SPECT2116 Spectrometer from Control Farayand Pasargad (CFP) is the state-of-the art portable hand-held radiation survey meter device for using in the geophysical industry, health physics, homeland security industries, etc. It offers an integrated design with a NaI(Tl) detector for high sensitivity, direct survey readout, audio output, full weather protection, ease of use and highest sensitivity in the market segment. There are no test sources required, the spectrometer stabilizes automatically on the different forms of radioactivity (K, U and Th). Portable multifunctional radiation monitoring devices, primarily designed for search and detection of gamma radiation sources with automatic identification of radionuclide composition. Can be used for area and land radiation monitoring with data GPS-referencing.

The spectrometer is auto-stabilizing on the naturally occurring (K, U, & Th) radioactivity. With this convenient, handheld instrument offers the equivalent performance of much larger, and costlier, portable units. For example, a 120 second measurement with the SPECT2116 handheld provides comparable quality as the same measurement using 2x (in³) NaI(Tl) portable detector.

The spectrometer operates in continuous radiation environment scan mode: search, detection, localization and identification of gamma sources. When radioactive source is detected the spectrometer activates alarm and identifies its radionuclide composition. High-sensitivity scintillation NaI(Tl) gamma radiation detector is used in these devices.

Survey and Scan Modes

Total Count Readout is 1x/sec rate in the Survey Mode or can be adjusted (1 - 20 sec) in the Scan Mode. The unit has an integrated mapping capability using an External GPS that is integrated. This scan capability enables the users to move through a large area with the unit recording data at typically a one reading per second rate with GPS location. Companion software then permits a map to be made with high precision in the positioning of data points. When used with a GPS receiver, data can be stored and profiles are produced which is ideal for both area surveying and drilled core.

Assay Mode

The Assay mode provides the concentrations of K, U, and Th as shown in the display below. The sample time is selected by the user from 30 seconds and up; in most cases 120 seconds 1s sufficient. In Assay mode the complete 4096 channel sample spectra and the results of the calculation of concentrations (plus position data if available) are stored for later retrieval. The user can select the desired sampling time.

On-fly-assays

In Scan mode, the user can select the scan data rate for recording assays together with total counts. These on-fly

assays do not store complete spectra but only the average assays over the scan period.

Specifications

Input(s)

Antenna connector
SMA connector for GPS
USB

5V DC for PC communication

Output(s)

No output signal

Control(s)

Power
Power push single button to turn on or off device
Function Key

Single one button (thumb activated)

Indicator(s)

power
Power on indicator
Battery status in 3 color (red, orange, green)

Ring

Blue ring button

Alarm

Audio via miniature speaker, Variable audio threshold set point and Audio voice proportional to the count rate

Logo

CFP logo indicator (full color)

Display

Color IPS LCD
2.5", 240 x 320pixels
All viewing angle readable(160D)
6-digit LCD display with high count rate over 200,000 CPS
Scrolling histogram graph display of the last 220 reading
sunlight readable LCD (800 nits)

High contrast	1:800
Display colors	65K/262K
Display mode	Transmissive / Normally Black
High-definition Luminance	800cd/m ² (800nit : 233fL)

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

Performance

Resolution

<7.5% FWHM @ 662 keV

Count Rate

Maximum 200,000 CPS

Readout

Search Mode	Counts in CPS from 0 to 200k and Hist 32bit x 4096
Assay mode	Display in K (%), U and Th (ppm) (ROIs according to IAEA)
Gamma Sensitivity	
1cps equal 1 nSv/h	
Energy Response	
20 - 3000 keV	
Internal Sampling	
10 /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	
NaI(Tl), 40mm x 40mm	
PMT	
14-pin 10-stage PMTs	
Data Acquisition and Analysis	
OS	
Built in Windows 7 or higher versions	
Software	
SPECT2116 (SOFTWARE)	
Measurement/Spectrum	
High Voltage	
0-1400V, Positive, 12 Bit resolution	
Energy Calibration	
Linear calibration	
Auto-calibration	
Auto-stabilization	
ROI Selection	
4 ROIs to select on store	
Spectrum Type	
cumulative spectrums	
ADC	
Channels	
12bit in 4096Ch @80Mhz FRQ	
Conversion time	
250nsec with 12.5nsec time interval	
Digital Signal Processing	
12-bit and 80 MHz ADC	
Charge sensitive preamplifier gain:10 — 150mv/pc (selectable)	
Amplifier coarse gain: (x1 to 150x) in 15 step	
Amplifier fine gain: (0 - 2x) in 65536 step	

Integration time filter for the energy calculation with software adjustable rise time in the range 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 (2 cell Li-ion)

Protected Li-ion battery 3.6V 3400mAh

Rechargeable Life: over 8 hours at 20°C in full performance

Device

350times recharging process battery life

Memory

32MB (pro version 128MB)

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

Application

- Core scanning
- Laboratory assays
- Baseline surveying
- Emergency situations
- Dose rate measurement
- Radioactive waste control
- Accurate inspection of lading
- Nuclear medicine and industry
- Safe disposal of nuclear waste
- Healthcare (thyroid scan and ...)
- Environmental waste monitoring
- Radiation monitoring and mapping
- Exploration for Uranium and Thorium
- Artificial radiation sources identification
- Radiation monitoring in building industry
- Scientific Research and Research activities
- Radioactive sources and materials traffic control
- Geological and raw material survey (uranium ore)
- Determination of concentrations of natural radioactive elements (K %, U and Th ppm)
- Construction material and products radiation monitoring Absorbance, Reflectance & Transmission



Electrical, Mechanical and Environmental

Power required

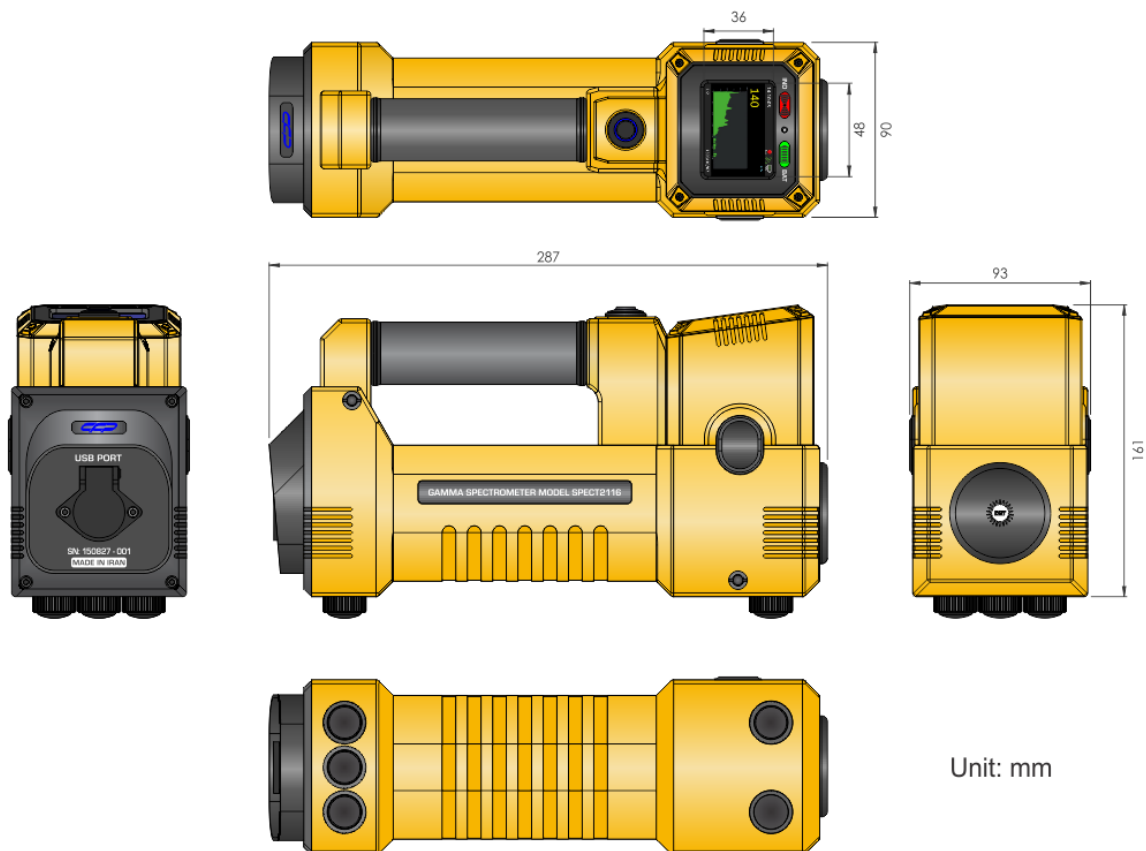
Internal battery pack module (2 cell Li-ion)

Protected Li-ion battery 3.6V 3400mAh

Rechargeable Life: over 8 hours at 20°C in full performance

Physical

Dimensions	package style: 44 x 35 x 20 cm (L x W x H) spectrometer: 27 x 15 x 10 cm (L x W x H)
Weight	without batteries: 2.1kg with batteries: 2.5kg Shipping: 4.2kg
Storage temperature	-20°C to 50°C @35% Relative Humidity
Operating temperature	-10°C to 45°C.
Relative Humidity	10 to 80%



SPECT2116-Mechanical

Software and user interface

Device GUI

SPECT2116 can be used standalone using the companion 2.5inch display. In the following we see the most important window in the device GUI.

Figure 1: Spectrum main window

Figure 2: Survey and scan mode

Figure 3: main menu

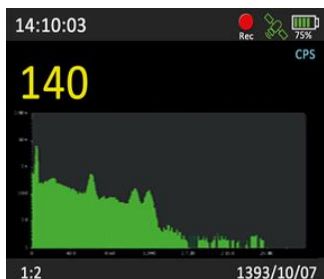


Figure 1



Figure 2



Figure 3

SPECT2116 GUI

PC software

SPECT2116 (SOFTWARE)

The SPECT2116 is provided with utility software to download the data that is stored in memory. All data in the memory can be handled via USB to the SPECT – Analysis program on a PC in the form of 4096 channel spectra, data or Scan data +GPS. The program also gives graphical and numerical views of the data. The data can also be re-exported as a text file for further processing.

Input /Output (Using supplied CFP-Analysis software)

USB

External GPS

Data Output formats

Standard CSV file



Software main window

Ordering info

Standard package includes

Part #	Image	Description
SPECT2116		Portable digital spectrometer NaI(Tl) crystal 40mm x 40mm Includes the main body of device (detection system, linear stage, integrated display)
ACCE2215001		CD user guide (1 Pack)
ACCE2215007		Hard case with foam insert
ACCE2215011		Battery charger + 2 Cell protective li-ion battery
ACCE2215003 [*]		Guaranty (one-year)
ACCE2215013		Cable USB 2.0 (A) to USB (A) Cable (1 Pack)

* = we stand behind our products. We 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 manual device (SPECT2116- Manual)

Optional accessories and services

Part #	Image	Description
ACCE2215004		Installation
ACCE2215005		Training
ACCE2215006**		Re-Calibration (Interval) services. 1year factory maintenance suggested, not required.
ACCE2215015		Shoulder strap
ACCE2215016		Backup protective battery cell (OLIGHT) 3600mAh
ACCE2215017		Backup protective battery cell (NITCORE) 3400mAh
ACCE2215018		Battery charger 4Cell
ACCE2215019		Screw type waterproof USB 2.0 connector IP67 (1 pack)
ACCE2215020		External GPS active antenna

** = 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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