



Innovator In Spectroscopy Equipment

UWGRS2116



UNDERWATER IN SITU GAMMA RAY SPECTROMETER MODEL UWGRS2116

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CATALOG



SPECTROMETER



FREE DOWNLOAD

UNDERWATER IN SITU GAMMA RAY SPECTROMETER

MODEL UWGRS2116

Features

- High efficiency
- Easy and quick set up
- Online spectrum analysis
- In -situ isotope identification
- Isotope-based alarm management
- Extreme sensitivity to gamma-rays
- Unique Full Spectra Analysis method
- High spectral resolution 4096 channel
- Detector verification supported automatically
- 6-7% FWHM (typical) at 662keV (STD version)
- Fast automatic detection of very low artificial radiation under water
- Continuous acquisition of the gamma spectra between 0.1minute ~1day intervals
- NaI(Tl) detector, 2" x 2" (STD version) or 63mm x 63mm, 3" x 3" crystal size (OPT)
- USB interfaces (STD) Ready for field operation
- Absolute unattended operation
- Various Communication ports to PC
- RS232, RS485, LAN interfaces (OPT)
- Full computer control of every function
- Web server for direct data access (OPT)
- Rugged design (IP 69, max. depth 500 m)
- Fully operational in water up to a depth of 500 meters
- Easy to maintain - neither consumables nor wear parts
- Supplied in wooden case with foam inserted for shipping & storage
- Continuous operation under severe environmental conditions
- Special rugged design to withstand typical field usage, waterproof against streaming water and fully dust protected

FAST AUTOMATIC DETECTION OF VERY LOW RADIATION UNDER WATER UP TO A DEPTH OF 500 METERS



Description

The UWGRS2010 from Control Farayand Pasargad (CFP) is self-contained spectroscopic in-situ detector is designed to measure and analyze online and continuously the gamma spectrum in fresh water, sea water or potable water up to a depth of 500 meters without any time restrictions. It calculates the activity of each identified nuclear isotope, the total gamma activity as well as the total gamma dose rate.

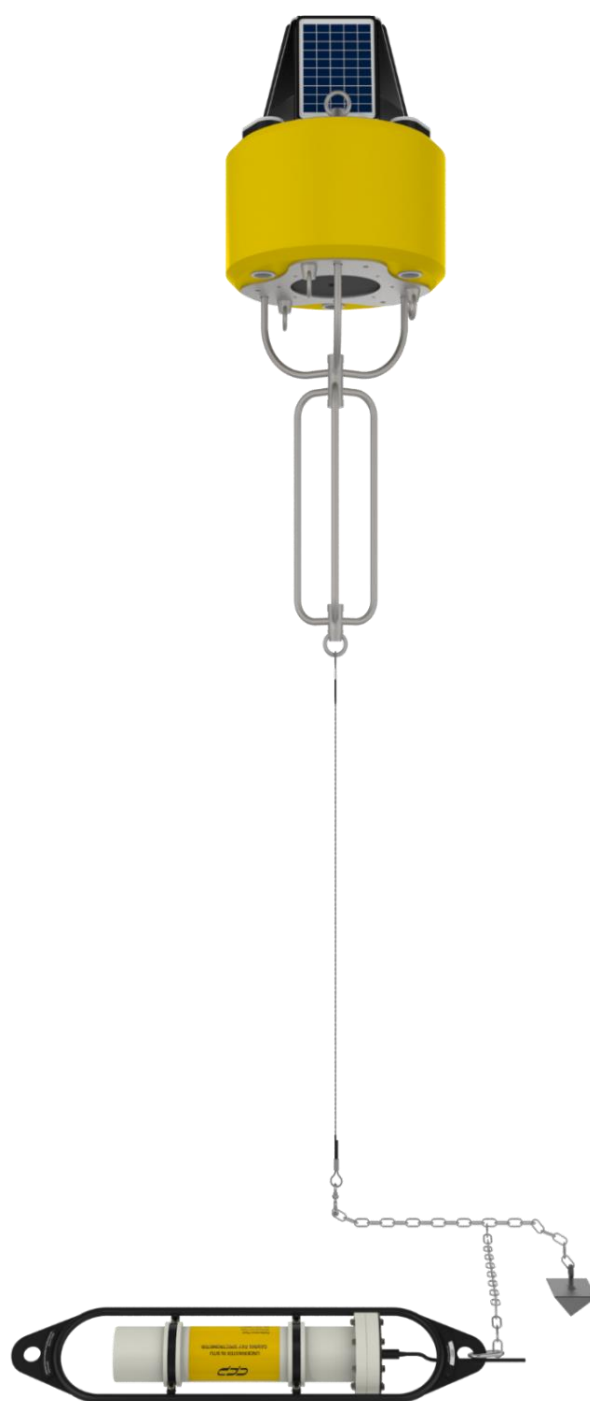
It provides fast detection of artificial nuclear radiation and an automatically identification of the nuclear isotopes in water. Thus, the detector is able to detect minor changes of the composition of the nuclear spectrum in aquatic environments and to alarm on single nuclear nuclides.

It is designed for fixed installation and for continuously operation under harsh environmental conditions. The detector unit is enclosed by a waterproof housing and can be submerged directly into the water. The hermetically sealed housing protects the detector system and the electronics.

The NaI(Tl)-based scintillation detector together with the CFP MCA (multi-channel analyzer) provide good energy resolution under ambient temperature operation conditions.

In combination with a PC that displays the readings and provides further analysis, the detector can be used in a wide variety of applications. It can be integrated quite easily into existing monitoring stations. The nuclear spectra that are automatically measured and analyzed in the probe can be uploaded via interface ports.

UWGRS2116 need to be empowered from an external source through 8pin IP69 subsea connector while this connector support data commination using various protocols including USB (STD) and LAN (OPT). The external source can be optionally provided with an external power and control box (PCB) using solar cells. This box is equipped with a battery as backup to solar energy. The power and control box (PCB) supports several options for data communication, for example DSL or GRS.



Specifications

Input(s)

Power (sensor)

2pin as 5V (1A) DC adaptor 5Watt

Output(s)

No output signal

Control(s)

USB port (STD) power and control box (PCB) sensor

Setting configure via USB cable

LAN port (OPT)

Setting configure via LAN cable

Commination power and control box (PCB) port

USB (STD), LAN (OPT)

Indicator(s)

Power and Control Box (PCB)

PWR Green LED Turn of when Power on

Function LED Blink=Work, ON=Stop, OFF=Error

Performance

Resolution

Typically < 6.5% FWHM @ 662 keV (NaI, 2"×2")

Typically < 7% FWHM @ 662 keV (NaI, 2.5"×2.5")

Typically < 7.8% FWHM @ 662 keV (NaI, 3"×3")

Count Rate

Maximum 250,000 CPS

Gamma Sensitivity

1cps equal 0.6 nSv/h (NaI, 2"×2")

1cps equal 0.35 nSv/h (NaI, 2.5"×2.5")

1cps equal 0.2 nSv/h (NaI, 3"×3")

Energy Response

20 - 3000 keV

Detector

gamma

NaI(Tl), 2.0"×2.0"

NaI(Tl), 2.5"×2.5"

NaI(Tl), 3"×3"

PMT

14-pin 10-stage PMTs

Data Acquisition and Analysis

OS

Built in Linux

Software

UWGRS2116 (SOFTWARE)

Measurement/Spectrum

High Voltage

0-1200V, Positive, 12 Bit resolution

Energy Calibration

Linear calibration

Auto-calibration

Auto-stabilization

Spectrum

4096 channel raw data

4096x32bit

ADC

Channels

12bit in 4096CH @80Mhz FRQ

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

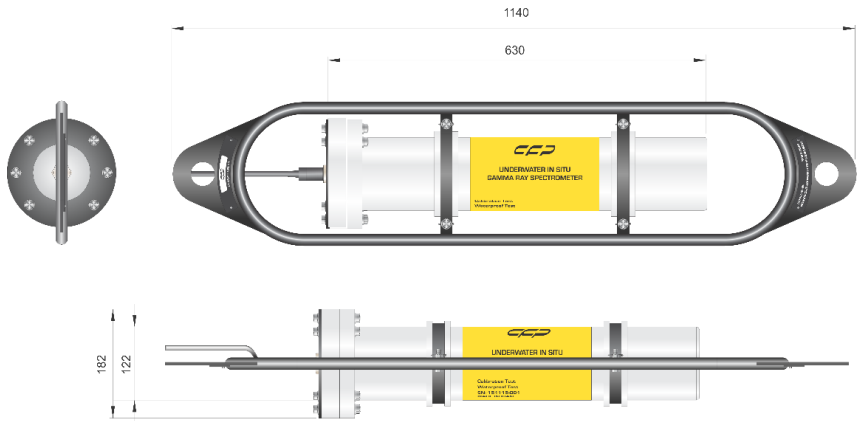
Pile-up rejection and Live Time correction

Baseline restorer with programmable averaging

Application

- Laboratory assays
- Natural radiation measurement
- Looking for gamma radiation sources
- Surveying the radiation level in radioisotope
- Monitor the radiation of sea water and underwater deposit
- Comprehensive solutions for monitoring water online in sweetening factories
- Monitor the position of radiation in seaports, near nuclear power plants & etc.

Electrical, Mechanical and Environmental

UWGRS2116	
Electrical	
Power required	Less than 5 watt
Physical	
Dimensions	package style: 182 x 1140mm (Ø x H)
Weight	9.2kg
Mechanical	 Unit: mm
	UWGRS2116- Mechanical
Environmental	
Storage temperature	-20°C to 60°C
Operating temperature	-15°C to +50°C
Relative Humidity	0 to 100%
Protection class	IP69



Software and user interface

PC software logger version (STD)

UWGRS2116 (SOFTWARE)

Input /Output (Using supplied Analysis software)

USB or LAN

Data Output formats

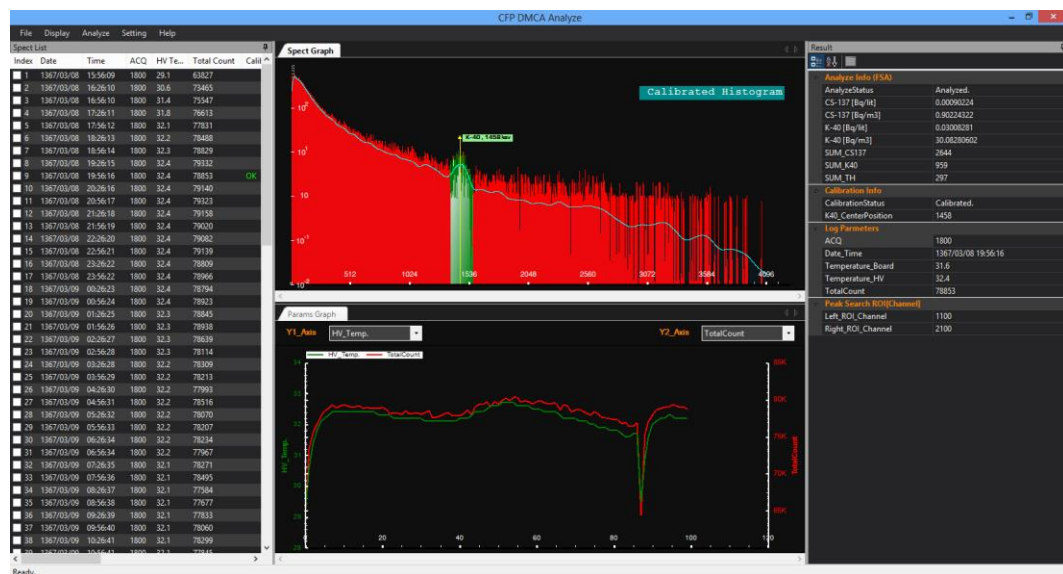
CSV, MCA



PC software Analysis version (OPT)

UWGRS2116 Analysis software

Offline analysis data, automatic and manual calibration and re-calibration, user define ROI maximum 4



Software main window

Ordering info

Standard package includes (USB interface)

Part #	Image	Description
UWGRS2116 main		Under water in situ gamma —ray spectrometer Includes the main body of device (detection systems, ...), with USB interface
ACCE2116001		CD user guide (1 Pack)
ACCE2116003*		Guaranty (one-year)
ACCE2116007		Hard wood case with foam insert
ACCE2116011		Cage for data buoy installation

* = 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 (UWGRS2116 - Manual).

Standard package includes (LAN interface)

Part #	Image	Description
UWGRS2116 main		Under water in situ gamma —ray spectrometer Includes the main body of device (detection systems, ...), with LAN interface
ACCE2116001		CD user guide (1 Pack)
ACCE2116003*		Guaranty (one-year)
ACCE2116007		Hard wood case with foam insert
ACCE2116011		Cage for data buoy installation

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Optional accessories and services

Part #	Image	Description
ACCE2116004		Installation
ACCE2116005		Training
SERVICE2116006**		Re-Calibration (Interval) services. 1year factory maintenance suggested, not required.
ACCE2116016		3, 5, 10m sea water (submarine) cable IP69 one side is 8pin Connector and the other side is cut. Other length available on request.
ACCE2116017		3, 5, 10m sea water (submarine) cable IP69 both side are 8pin Connector. Other length available on request.
ACCE2116018		Nal(Tl) detector, 2.5" x 2.5"
ACCE2116019		Nal(Tl) detector, 3" x 3"
ACCE2116020		Power and Control Box (PCB) IP65 Power and Control Box (PCB) IP67 Power and Control Box (PCB) IP68
ACCE2116012		Buoy

** = 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).

