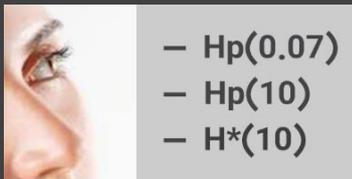




Innovator In Spectroscopy Equipment

# PD2319



## PORTABLE DOSIMETER MODEL PD2319

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CATALOG



DOSIMETERS



FREE DOWNLOAD

# PORTABLE DOSIMETER

## MODEL PD2319

### Features

- Highly integratable
- Wide dynamic range
- Dosimeter-to-PC communication
- Compact design with low weight
- IP63, IP65, IP67 protection classes
- High sensitivity and uniform response
- Sensitivity to alpha, beta, gamma & x-rays
- Geiger-Mueller (GM) & semi-conductor (SEMI) and scintillator detector
- Designed for field use to measure all types of ionizing radiation and collection of the x-ray, gamma, beta and alpha emitting sources in three types
- Cost effective
- Durable and versatile
- Wide temperature range
- Ready for field operation
- Simple and compact design
- Easy to use and low maintenance
- Protective against dust and moisture
- Resistant against impact and vibration
- Resistant against electromagnetic interference
- Robust and suitable for use in challenging conditions

### MEASURE ALL TYPES OF IONIZING RADIATION

#### X-RAY, GAMMA, BETA AND ALPHA



## Description

PD2319 from Control Farayand Pasargad (CFP) is a highly sensitive radiation dosimeter designed for various environmental conditions based on Geiger-Mueller (GM) and semi-conductor detector. PD2319 comes in three versions. Version 1 is capable of detecting gamma and x-rays radiation (two Types, see specifications for more information), version 2 detects beta, gamma and x-rays while in version 3 alpha, beta and gamma can be detected.

PD2319 provides a high dynamic range for dose values which results from the operation based on two sensors. One sensor is responsible to provide accurate calculations in low dose values while the other one takes the role in high values. All sensors are Geiger-Mueller (GM) tube, scintillator and si. The sensor is fully enclosed inside the instrument. When ionizing radiation or

a particle strikes the sensor, it is detected electronically and monitored by embedded system. Radiation is measured in different units while these units can be easily selected. All the versions come with detection window suitable to their detectable rays or particles. PD2319 version 3 (alpha, beta and gamma) is equipped with a special window to allow crossing alpha radiation which increase the device sensitivity against dust and moisture. Note that some very low energy radiation cannot be detected due to their inability to cross the window.

The industrial and electrical design in PD2319 makes the device immune against different environmental, electromagnetic and mechanical turbulence. PD2319 is certified to CE.



## Specifications

UNIT:PD2319				
Type	Portable dosimeter			
Version	Version 1 Type 1 (Scintillator)	Version 1 Type 2	Version 2	Version 3
Energy detection	Gamma and X-ray	Gamma and X-ray	Beta, Gamma and X-ray	Alpha, Beta, Gamma and X-ray
<b>Input(s)</b>				
Port	USB remote read and write			
<b>Output(s)</b>				
Output	No output signal			
<b>Control(s)</b>				
USB	Set and read all data (Via USB cable)			
Power	Push to turn on and long press 3 seconds to turn off			
KEY	Three push button function key (thumb activated)			
<b>Indicator(s)</b>				
LED battery status	Green color (full), Red Color (charging)			
LED alarm & sign	Green (LOW) – Yellow (MID) – RED (HI)			
Buzzer	85 dB in 30cm (open rubber protective)			
<b>Display</b>				
Type	Full color IPS LED Display			
Size	2.4", 320 × 240 pixels			
<b>Performance</b>				
Energy range (Gamma)	0.1 – 10MeV	0.02 – 10MeV	0.02 – 10MeV	0.01 – 10MeV
Energy dependence relative to <sup>137</sup> Cs	Comply with: ANSI N42.33-2019 (confirmed by tests SSDL) 1.54 @ <sup>241</sup> Am , 1 @ <sup>137</sup> Cs, 0.78 @ <sup>60</sup> Co			
Energy range (Beta)	Not detect		100 - 3500keV	10 - 3500keV
Energy range (Alpha)	Not detect		Not detect	3.0 – 9.0MeV
Indication range (DER)	0.001μSv/h - 10Sv/h (4 digit)			
Indication range (DE)	0.001μSv - 10Sv (4 digit)			
Data range (DER)	0.001μSv/h - 10Sv/h (12 digit)			
Data range (DE)	0.001μSv - 100Sv (12 digit)			
Measurement range (Gamma)	0.001μSv/h - 10Sv/h	0.01μSv/h - 10Sv/h	0.01μSv/h - 10Sv/h	0.01μSv/h - 10Sv/h
Measurement range (Beta)	Not detect		0.1μSv/h – 10mSv/h	0.1μSv/h – 10mSv/h
Measurement range (Alpha)	Not detect		Not detect	0 – 8000 CPS
Unit of display	μSv/h, mSv/h, Sv/h, μR/h, mR/h, R/h, CPS			
Accuracy	(Typ.< 5%) +/- 10%	(Typ.< 10%) +/- 20%	(Typ.< 10%) +/- 20%	(Typ.< 10%) +/- 20%
Instrument response time	Comply with: ANSI N42.33-2019 (confirmed by tests SSDL) 1000msec @ BG-12μSv/h 500msec @ BG-100μSv/h 400msec @ BG-1000μSv/h			

Alarm Response time	<p>&lt; 500msec@ BG-12<math>\mu</math>Sv/h</p> <p>&lt; 500msec@ BG-100<math>\mu</math>Sv/h</p> <p>&lt; 500msec@ BG-1000<math>\mu</math>Sv/h</p>
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<p>Variation of response with angle of incidence of radiation (Vertical) @<sup>137</sup>Cs</p> <p>Comply with: ANSI N42.33-2019 (confirmed by tests SSDL)</p>	
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<p>Variation of response with angle of incidence of radiation (Horizontal) @<sup>137</sup>Cs</p> <p>Comply with: ANSI N42.33-2019 (confirmed by tests SSDL)</p>	
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Over range response	> 10Sv/h Comply with: ANSI N42.33-2019 (confirmed by tests SSDL)
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Continuous run time	<p>In normal conditions <math>\geq</math> 24 h</p> <p>In economy mode <math>\geq</math> 64 h</p>
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Detector				
Beta, Gamma, and X- ray detector	Scintillator & GM	2 GM	SEMI & GM	2 GM
Radiation measured	Gamma and X-ray	Gamma and X-ray	Beta, Gamma and X-ray	Alpha, Beta, Gamma and X-ray
Data Acquisition and Analysis				
OS	Built in Windows 8 or higher versions			
Software	PD2319 (SOFTWARE)			

Battery	
Type	Li-ion 4500mAh
Batter life	At least 500 times at more than and 80% of the initial capacity Around 5 years or at least 2000 charging cycles
Certificates	
Electromagnetics	Electrostatic discharge test (ESD) EMI radiated measurement Power frequency magnetic field Radiared EM field immunity
Environmental	High temperature variation Low temperature variation High temperature shock Low temperature shock Cold temperature start-up Moisture and dust protection Immersion
Mechanical	Vibration Mechanical shock Impact (microphonics)
Radiological	Accuracy, Reproducibility instrument response with angle Over range Response time

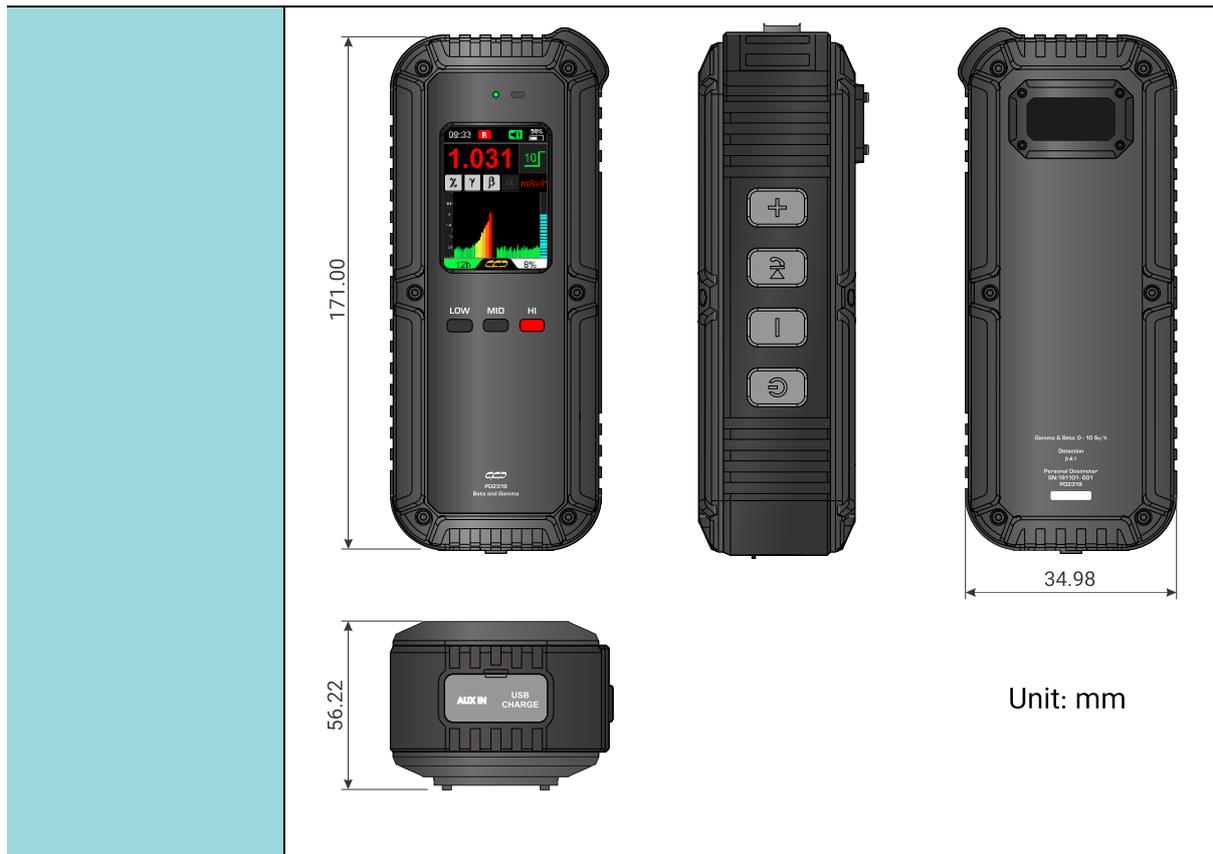
### Application

- Security control
- Nuclear industry
- Accelerator sites
- Measure background radiation
- Roentgenology and radiotherapy
- Individual radiation and protection
- Nuclear medicine (x-rays, CT scans, etc.)
- Research activities in radioecology and radiology
- Dose monitoring of population
- Half-life determination (counts/interval vs. time)
- Counts/interval vs. distance and shielding studies
- Radiation protective measures in case of nuclear disasters
- Health physics (for contamination monitoring on surfaces, clothing and objects etc.)
- Scientific research



## Electrical, Mechanical and Environmental

Unit:PD2319				
Type	Portable dosimeter			
Version	Version 1 Type 1 (Scintillator)	Version 1 Type 2	Version 2	Version 3
Energy detection	Gamma and X-ray	Gamma and X-ray	Beta, Gamma and X-ray	Alpha, Beta, Gamma and X-ray
Electrical				
Power required	0.65W			
Physical				
Dimensions (L × W × H)	172 x 70 x 55 (mm)			
Net weight	0.65kg (1.43lb)	0.47kg (1.03lb)	0.49kg (1.08lb)	0.55kg (1.21lb)
Shipping weight	1.19kg (2.63lb)	1.01kg (2.23lb)	1.03kg (2.27lb)	1.09kg (2.40lb)
Protection class	IP63, IP65, IP67	IP63, IP65, IP67	IP63, IP65, IP67	IP63, IP65, IP67
Mechanical	Beta, Gamma			



**Gamma and X-ray**



Unit: mm

**Alpha, Beta, Gamma**



Unit: mm

**Environmental**

Storage temperature	-25°C to 60°C @ standard box & 35% humidity
Operating temperature	-20°C to 50°C
Relative humidity	40 to 93% (relative humidity at 35°C)

Software and user interface

Device GUI

PD2319 dosimeter can be used standalone using the companion 2.4 inch display. In the following we see the most important windows in the device GUI.

- 99% Shows measurements with high level of coefficient of variation (Rapidly changing environmental radiation)
- 30% Shows measurements with moderate level of coefficient of variation (Changing environmental radiation)
- 12% Shows measurements with low level of coefficient of variation (Almost constant environmental radiation)

Figure 1: Presents device GUI in low level of radiation.

Figure 2: Presents device GUI in moderate level of radiation.

Figure 3: Presents device GUI in high level of radiation.

Figure 4: Presents device GUI in night vision mode (Dark Mode)

Figure 5: Presents device splash

Figure 6: Different modes of status bar including (from top to bottom): Remaining memory information, sending data to PC, memory full warning, low battery warning, typical working status bar (time, recording data, connected to PC, silent mode) and typical working status bar (time, active alarm)

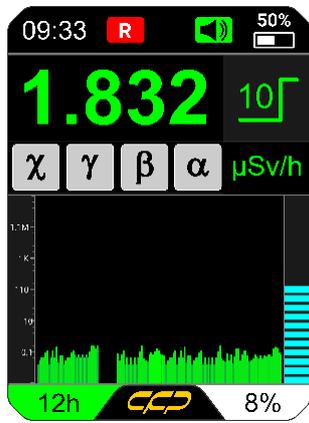


Figure 1



Figure 2

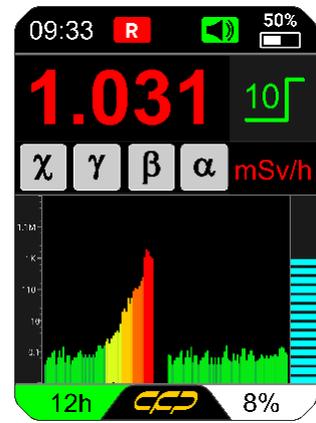


Figure 3



Figure 4

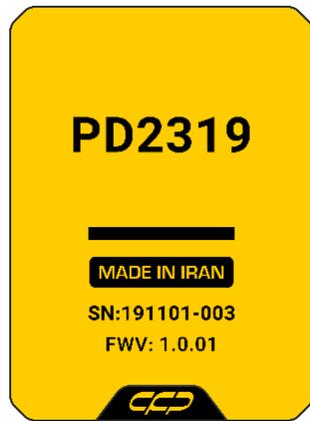
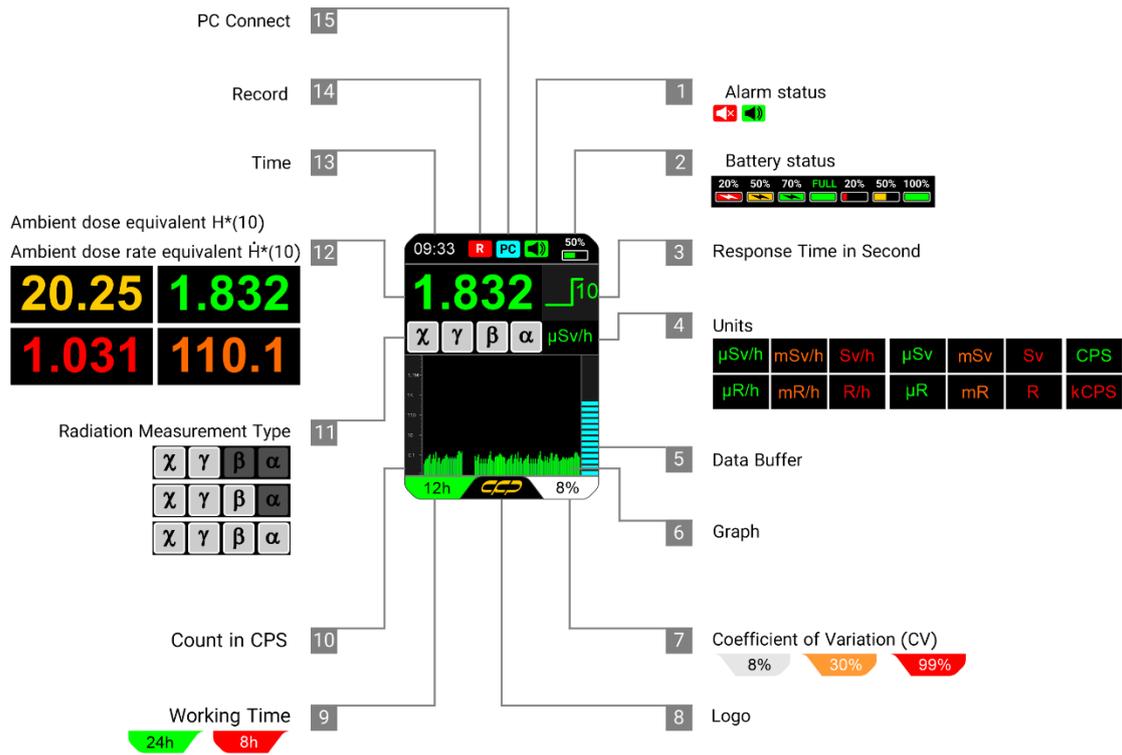


Figure 5



Figure 6

PD2319GUI



This sensor can be used with PC and tablet interfaces and the data collection PD2319 software (win8 or upper version)

**PC software**

PD2319 (SOFTWARE)

**Input /Output (Using PD2319 software)**

USB

**Data Output formats**

CSV, TXT, N42.42

## Ordering info

### PD2319 (X & Gamma) version 1, Type 1 (scintillator) standard package includes

Part #	Image	Description
PD2319 (X & Gamma) main		PD2319 portable dosimeter for X & Gamma rays.
ACCE2319001		User guide CD (1 Pack)
ACCE2319002		Printed Wooden Rigid Hard Box with insert (1 Pack)
ACCE2319003*		Guaranty (one year)
ACCE2319007		SSDL 1 year Certificated (Printed)- AEOI
ACCE2319008		SSDL recalibration software (Win8 or upper)
ACCE2319011		USB Type-C to USB-A 2.0 male data and charge cable (1 meter).
ACCE2319012		5V, 2A fast charger

**PD2319 (X & Gamma) version 1, Type 2 standard package includes**

Part #	Image	Description
PD2319 (X & Gamma) main		PD2319 portable dosimeter for X & Gamma rays.
ACCE2319001		User guide CD (1 Pack)
ACCE2319002		Printed Wooden Rigid Hard Box with insert (1 Pack)
ACCE2319003*		Guaranty (one year)
ACCE2319007		SSDL 1 year Certificated (Printed)- AEOI
ACCE2319008		SSDL recalibration software (Win8 or upper)
ACCE2319011		USB Type-C to USB-A 2.0 male data and charge cable (1 meter).
ACCE2319012		5V, 2A fast charger

**PD2319 (Beta, X & Gamma) standard package includes**

Part #	Image	Description
PD2319 (Beta, X & Gamma) main		PD2319 portable dosimeter for Beta, X & Gamma rays.
ACCE2319001		User guide CD (1 Pack)
ACCE2319002		Printed Wooden Rigid Hard Box with insert (1 Pack)
ACCE2319003*		Guaranty (one year)
ACCE2319007		SSDL 1 year Certificated (Printed)- AEOI
ACCE2319008		SSDL recalibration software (Win8 or upper)
ACCE2319011		USB Type-C to USB-A 2.0 male data and charge cable (1 meter).
ACCE2319012		5V, 2A fast charger

**PD2319 (Alpha, Beta, X & Gamma) standard package includes**

Part #	Image	Description
PD2319 (Alpha, Beta, X & Gamma) main		PD2319 portable dosimeter for Alpha, Beta, X & Gamma rays.
ACCE2319001		User guide CD (1 Pack)
ACCE2319002		Printed Wooden Rigid Hard Box with insert (1 Pack)
ACCE2319003*		Guaranty (one year)
ACCE2319007		SSDL 1 year Certificated (Printed)- AEOI
ACCE2319008		SSDL recalibration software (Win8 or upper)
ACCE2319011		USB Type-C to USB-A 2.0 male data and charge cable (1 meter).
ACCE2319012		5V, 2A fast charger

\* We fully support 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 device manual (PD2319 - Manual).

### Optional accessories and services

Part #	Image	Description
ACCE2319004		Installation
ACCE2319005		Training
ACCE2319006**		Re-Calibration (interval) services. 1year factory maintenance suggested, not required
ACCE2319009		Online monitoring & Download software -1 user
ACCE2319010		SSDL Type test Certified (Printed)- Group test- AEOI
ACCE2319013		Calibration Kit - <sup>137</sup> Cs-30y (1-2 µCi check source)
ACCE2319014		Calibration Kit - <sup>241</sup> Am-432y (0.8 µCi check source)
ACCE2319015		Calibration Kit - <sup>60</sup> Co-5.27y (1-2 µCi check source)

\*\* = The proper maintenance & calibration of your instruments is critical to ensure proper performance & accuracy. for Re-calibration (interval) services, please call with CFP company ([www.cfp.co.ir](http://www.cfp.co.ir)).





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