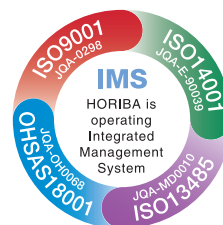


**DESIGNED  
with  
plant-based  
plastic material**

Helping to reduce petroleum  
consumption

**EASY  
MEASUREMENT  
— by Anyone,  
Anytime,  
Anywhere**



## Environmental Radiation Monitor

PA-1000

*Radi*

CE

CE marking compliant

**MEASURING  
the presence  
of environmental  
radiation  
around  
us**

### The HORIBA Radi:

Able to measure the environmental  
radiation (gamma rays) in our daily lives  
starting from **0.001  $\mu\text{Sv/h}$**



Every day, wherever we go, we are exposed to minute amounts of environmental radiation.\*

This environmental radiation is emitted continuously, day and night, from various objects and substances in the natural world and our living environment.

Most environmental radiation consists of three types: alpha rays ( $\alpha$ ), beta rays ( $\beta$ ) and gamma rays ( $\gamma$ ).

HORIBA's handy PA-1000 "Radi" environmental radiation monitor makes it easy for non-specialists to measure even minute levels of gamma rays.

\* Environmental radiation, also known as natural radiation, includes radiation emitted from space, soil, stones, the ground and the air, as well as from manmade objects such as concrete and buildings

# High performance detection with a CsI (TI) scintillator

The Radi can measure radiation levels ranging from normal natural radiation to levels 100 to 200 times that intensity. Even non-specialists will find it easy to accurately measure radiation of 0.001 - 9.999  $\mu\text{Sv/h}$ .

## Types of radiation

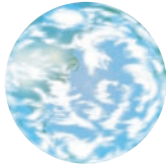
- **Alpha rays ( $\alpha$ ):** Alpha rays are streams of positively charged particles made up of two neutrons and two protons (helium nucleus). In the natural world, alpha rays are given off by radium 226. In air, the particles cannot travel more than a few centimeters.
- **Beta rays ( $\beta$ ):** Beta rays are streams of electrons. In air, the particles can travel several dozen centimeters in a zigzag pattern.
- **Gamma rays ( $\gamma$ ):** Gamma rays, the most penetrating type of radiation, are electromagnetic waves. They can pass through the human body. X-rays that are used in X-ray machines are also electromagnetic waves.

## Radiation units

- **Becquerel (Bq):** The becquerel (Bq) is the unit of radioactivity. The radioactivity of a substance measured in becquerels is the number of its nuclei that decay each second.
- **Gray (Gy) and Sievert (Sv):** These units express the effect of radiation. The gray expresses the amount of radioactive energy received, while the sievert expresses the effect on a human being. Normally the gray and the sievert are used to express quantities per hour; the units are Gy/h and Sv/h, respectively.

The International Commission on Radiological Protection (ICRP) has recommended exposure to the general public of no more than 1 mSv per year to manmade radiation (not including natural radiation). This does not include exposure from medical checkups (such as X-rays).  
(1 mSv = 1000  $\mu\text{Sv}$ )

**HORIBA continues contributing to the preservation of the global environment through analysis and measuring technology.**



**Radiation measurement is displayed in large LCD display.**

Unit: microsieverts per hour ( $\mu\text{Sv/h}$ )

Sievert (Sv): a radiation unit used to quantify the effect of radiation on the human body.

**Starts measurement.**

Automatic power off function after 3 hours.

• **Splash-resistant construction (JIS water resistance protection grade IPX4)** The Radi can be used with confidence even if there are water droplets on the surface.

• **Handy unit is both compact and lightweight.**

• **Uses two AA batteries.**

Battery life 50 hours or more (when manganese dry cell batteries are used)

**[Selectable]**

**Audible beep when radiation is detected.**

## Specifications

Detection method	Scintillation
Type of radiation measured	Gamma rays ( $\gamma$ )
Sensitivity	Min. 1000 counts per minute (1000 cpm) for 1 $\mu\text{Sv/h}$
Relative error of indication	$\pm 10\%$
Indicator value variation	Max. 0.1 coefficient of variation
Energy range	More than 150 keV
Energy properties	0.5 - 3* (150 keV - 1250 keV)
Effective measurement range and display	0.001 - 9.999 $\mu\text{Sv/h}$ 4-digit digital display (count value converted into $\mu\text{Sv/h}$ )
Sampling time	60 seconds
Display interval	60-second integrated value (moving average) displayed every 10 seconds
External dimensions	68 (W) $\times$ 28 (D) $\times$ 121 (H) mm [ Inch size : 2.7 (W) $\times$ 1.1 (D) $\times$ 4.8 (H) ]
Weight (without batteries)	Max. 175 g (6.2 oz)
Accessories	Instruction manual, two AA dry cell batteries, neck strap

\* Relative sensitivity with 1 as the sensitivity to cesium 137 ( $^{137}\text{Cs}$ ) (662 keV).

**Note:** This unit is designed only to measure the quantity of radiation at the measurement location. It does not determine the safety or danger posed by that quantity of radiation.



**Please read the operation manual before using this product to assure safe and proper handling of the product.**

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- It is strictly forbidden to copy the content of this catalog in part or in full.
- All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.

<http://www.horiba.com> e-mail: [info@horiba.co.jp](mailto:info@horiba.co.jp)

● **HORIBA, Ltd.**  
Head Office  
2 Miyahonogashi, Kisshoin  
Minami-ku, Kyoto, Japan  
Phone: 81 (75) 313-8123  
Fax: 81 (75) 321-5725

**Tokyo Sales Office**  
1-7-8 Higashi-Kanda  
Chiyoda-ku, Tokyo, Japan  
Phone: 81 (3) 3861-8231  
Fax: 81 (3) 3861-8259

● **HORIBA TRADING (SHANGHAI) CO., Ltd.**  
Shanghai Office  
Room 1701, United Plaza,  
1468 Nanjing Rd. West,  
Shanghai, 200040, China  
Phone: 21-6289-6060  
Fax: 21-6289-5553

● **HORIBA KOREA Ltd.**  
112-6 Sogong-Dong  
Choong-ku, Seoul, Korea  
Phone: 82 (2) 753-7911  
Fax: 82 (2) 756-4972

● **HORIBA INSTRUMENTS Pte. LTD.**  
10 Ubi Crescent  
#05-11/12, Ubi Techpark  
Singapore 408564  
Phone: 65 6745-8300  
Fax: 65 6745-8155

● **HORIBA India Private Limited**  
Delhi Office  
246, Okhla Industrial Estate,  
Phase 3 New Delhi-110020  
Phone: +91 11-4669-5001/5000  
Fax: +91 11-4669-5010/5020

**Pune Office**  
502, Purushottam Plaza,  
Baner Road, Baner,  
Pune - 411045 INDIA  
Phone: +91 20-2729-1121

● **HORIBA INSTRUMENTS INCORPORATED**  
Irvine Facility  
17671 Armstrong Avenue  
Irvine, CA 92614, U.S.A.  
Phone: 1 (949) 250-4811  
Fax: 1 (949) 250-0924

● **HORIBA INSTRUMENTS LIMITED**  
Kyoto Close  
Summerhouse Road  
Moulton Park, Northampton  
NN3 6FL, U.K.  
Phone: 44 (1604) 542500  
Fax: 44 (1604) 542699

● **HORIBA GmbH**  
Kaplanstrasse 5  
A-3430 Tulln,  
Austria  
Phone: 43 (2272) 65225  
Fax: 43 (2272) 65230

**HORIBA CZECHIA**  
Organizace slozka Praha  
Petrohradská 13  
CZ-101 00 Praha 10,  
Czech Republic  
Phone: 420 (2) 717-464-80  
Fax: 420 (2) 717-470-64

● **HORIBA EUROPE GmbH**  
Head Office  
Hans-Mess-Str.6  
D-61440 Oberursel/Ts.  
Germany  
Phone: 49 (6172) 1396-0  
Fax: 49 (6172) 137385

**Leichlingen Facility**  
Julius-kronenberg Strasse  
D-42799 Leichlingen  
Germany  
Phone: 49 (2175) 8978-0  
Fax: 49 (2175) 8978-50

● **HORIBA FRANCE**  
12, Avenue des Tropiques  
91955 LES ULIS  
France  
Phone: 33 (1) 69-29-96-23  
Fax: 33 (1) 69-29-95-77