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Radiometer RM-12

Operating Manual

Version: 1.2

1 Contents

2 Change History

Date	Version	Modified by	Changes
23.06.2014	1.1	Paravia	div. changes
30.06.2017	1.2	Paravia	minor changes

3 Symbol Overview

Meaning:
Failure to follow these instructions can cause an injury to the user.

Meaning:
Failure to follow these instructions can result in equipment damage.

Meaning:
Instructions can be considered for regular operation.

* Optional features that are not available in every device

4 Preface

Dear Sir or Madam,

Congratulations for buying a high precision measuring device. Handling is easy, please follow enclosed operating instructions to guarantee measuring devices.

To ensure measuring precision over long operating periods we recommend you to send us the device every 12 months. We carry out recalibration and necessary reparations are performed.

We will continuously provide you with information about our latest UV measuring developments. Service for our customers is our request. Further we are glad to support you with technical information and consultation.

Sincerely

Opsytec Dr. Gröbel GmbH

5 General Description

The battery operated compact radiometer RM-12 is equipped with a 3½ digit LC-Display. Three preset versions with different sensitivities are available. For example:

0 - 19.99 mW/cm²
0 - 199.9 mW/cm²
0 - 1999 mW/cm²

Using the button “ON/OFF” the instrument is switched on and off. The button “Range” allows switching between the two ranges and hereby enhances resolution and accuracy.

Note, sensor calibration and measuring range and stored in sensor and given on sensor type label.

The meter is extremely linear over the whole measuring range.

The sensors are connected to the display unit via cable, thus allowing measurements in positions inaccessible to the unit. The spectral sensitivity ranges from 200 to 780 nm, for which different sensors are available. The sensor inputs use cosine-corrected diffusors.

Fields of application are:
- Control of UV-lamps in production and manufacturing
- Analysis of the ageing of lamps
- Transmission measurement
- Radiation protection
- Measurement of radiation rate and dose in Biology, Medicine etc.

6 Exchange of batteries and battery control

The state of the battery is monitored during operation. As soon as the arrow appears on the LC-Display battery has to be changed. The battery compartment is located at the bottom of the instrument.

For best performance only leak-proof high quality batteries should be used, for instance Varta 3022 or 4022, IEC 6 F 22

7 Practical Hints

It should be noted that radiometric measurements are not as simple as, for example, measuring distances in a room. Although the meter gives a value, this value is highly dependent on the position of the lamp to the sensor and the reflective behaviour of the surrounding. If the sensor is tilted with respect to the lamp a cosine-like reduction of the value will result.

To achieve reproducible results the surrounding, the geometric arrangement, the temperature and the power of the lamp must be controlled. Furthermore, the appropriate sensor must be chosen to fit the particular measurement application. Any sensor is designed to measure radiation over a specified spectral range. Although our sensors are highly insensitive to other spectral regions, than those they are designed for, there is a physical limitation for integral measuring equipment caused by steepness of the filter wings and the width of the sensitive region. The limitation results in an error factor of 10E-4 to 10E-2.

8 Protection against UV-radiation

Always be careful when measuring UV-radiation. UV-radiation is harmful to the health. Always protect eyes with adequate protective goggles. Protect the skin when working with strong (more than 20 mW/cm² UVA-radiation or any shorter wavelength radiation (<315 nm).

Ignoring these precautions could result in conjunctivitis, sunburn or tumours! Avoid exceeding the full scale (and use a diaphragm if necessary). If the sensor becomes too warm use an aperture or light guides.

9 Transmission measurements

For transmission measurements the probe is positioned between lamp and sensor. Transmission is calculated using the ratio of the reading with and without the probe. The spectral range can be reduced using an interference filter.