

# RadioLux 111

Precise · Handy · Universal



## **NEW! Handy Luxmeter Class A** according to DIN 5032-7

- handy luxmeter and radiometer in one instrument
- various functions with the keyboard
- wide range of applications for lighting designers, company physicians, experts, workstations as well as applications in botany, medical and environmental technology and the lighting fixture industry in the laboratory and on site
- intelligent electronic identifies the measuring head and its sensitivity
- unique compensation of temperature errors
- display of temperature
- two different versions adapted to different requirements
- universal possibilities of application with our wide range of accessories
- serial computer interface with USB adapter in the **Advanced** version

## Instrument Description

The RadioLux 111 is a precision hand held instrument for photometric and radiometric measurement. It equally serves for laboratory and field applications.

You can connect different kinds of measuring heads to this handy instrument without any calibration. The data of the detectors are saved in their heads and can be identified by the display unit.

For easy data acquisition, data can be saved on an internal chip and be used for different calculations like averaging.

Thanks to the simple handling also inexperienced users can successfully use the RadioLux 111 at once. The instrument is completed by an extensive range of accessories for practically all measuring tasks. Accordingly, luminance measurements are possible with an adapter.

## Technical Data:

Parameter		Advanced	Basic
		DIN 5032 Class A	DIN 5032 Class B
V(λ)-match	f <sub>1</sub>	3	6
UV-response	u	1	2
IR-response	r	1	2
cosine response	f <sub>2</sub>	1.5	3
linearity	f <sub>3</sub>	1	2
display unit	f <sub>4</sub>	3	4.5
fatigue (at 1 klx)	f <sub>5</sub>	0.5	1
modulated radiation	f <sub>7</sub>	0.2	0.5
range change	f <sub>11</sub>	0.5	1

Table 1: Error limits acc. to DIN 5032, part 7, in %

## Characteristics *Basic Version*

- digital display unit with external photometer- / radiometer head with a measuring cable of 3 m.
- alphanumerical Display 4 lines of 20 characters with switchable backlighting.
- film keyboard with 6 keys
- range 0,01 lx to 200 klx, upon request 250 klx for class A or L, 360 klx for class B
- range 10 mW/m<sup>2</sup> to 36 kW/m<sup>2</sup>
- data memory and averaging
- temperature compensation
- temperature display
- battery operation
- calibration in our laboratory

## Additional Equipment *Advanced Version*

- serial RS 232-computer interface with USB-adapter
- range 0.001 lx to 200 klx nominal, upon request 250 klx for class A or L, 360 klx for class B
- range 1 mW/m<sup>2</sup> to 36 kW/m<sup>2</sup>
- rechargeable battery and mains charger

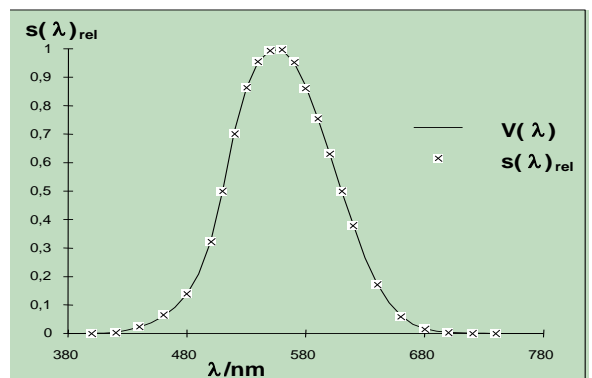


Fig. 2:  $s(\lambda)_{rel}$  compared to  $V(\lambda)$  for  $f_1 < 2\%$

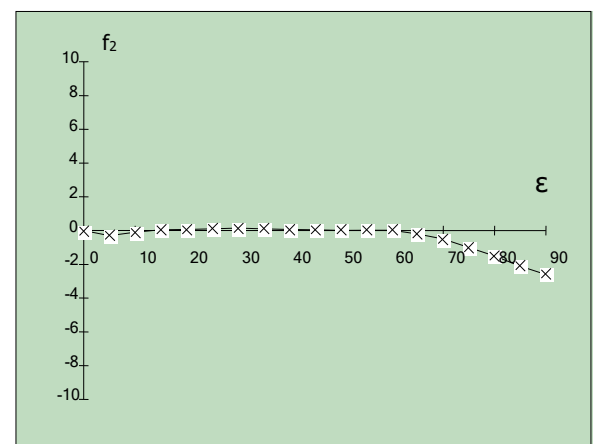


Fig. 3: Typical cosine correction  $f_2$  ( $\epsilon$ )

## Applications

### ⇒ Luxmeter

- general lighting measurements in offices, factories, hospitals, hotels, shops, schools, streets and tunnels, museums, for daylight measurements and measurements in botany
- inspection of interior, exterior, emergency, studio and sports field lighting according to standards, their partitions and comprehensive body of legislation such as the work place regulation ASR A3.4, DIN 5034, DIN 5035, DIN EN 1838, DIN EN ISO 9241, ISO 8995, DIN EN 12193, DIN EN 12464, DIN EN 12665, DIN EN 13032, DIN EN 13201, DIN EN 13272, DIN 67524, DIN 67528 and VDI 6011
- determination of tolerable exposition duration in museums and galleries
- luminance measurements
- determination of characteristics for viewing devices according to DIN 6856 and 19045, EN 60598
- measurements of longtime afterglowing pigments
- laboratory applications
- as display unit of photometric measuring systems like goniophotometers, integrating spheres, reflectance/transmittance measurement
- expert reports

### ⇒ Radiometer

- measurements of irradiation in laboratories, industry, hospitals, museums, outdoor and botanical areas
- check of irradiance of irradiance sources like solariums, UV-sources and infrared sources
- determination of tolerable exposition duration in museums and galleries
- measurements in the medical field
- in the industrial production e.g. the radiation treatment of lacquer and plastic materials
- in green houses in the radiation treatment of plants
- in the lamp industry
- expert reports
- Photobiological safety of LED acc. to DIN EN 62471 (Lampensicherheitsnorm)

## Reading range of Photo/Radiometer Heads for RadioLux 111

Photometer- / Radiometer Head	Basic	Advanced	Advanced with Luminance Adapter
Class L, A, B, C	0,01 lx – 200 klx	0,001 lx – 200 klx	0,01 cd/m <sup>2</sup> - 2000 kcd/m <sup>2</sup>
E <sub>0</sub> , E <sub>z</sub> , E <sub>zh</sub> , E <sub>2π</sub>	''	''	—
UVA, UVC, IR, BLH	10 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	1 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	—
UVB, melatonin	—	0,01 W/m <sup>2</sup> - 200 kW/m <sup>2</sup>	—
Bilirubin	—	0,01 W/m <sup>2</sup> - 200 kW/m <sup>2</sup>	—
Dir. Pigm., Vit. D	10 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	1 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	—
ACGIH	10 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	1 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	—
Spezial	10 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	1 mW/m <sup>2</sup> - 36 kW/m <sup>2</sup>	—

**Note: Nominal values. Upon request, we can adjust the instrument to measure up to 250 klx for class A or L, up to 360 klx for class B, resp. 2500 / 3600 kcd/m<sup>2</sup> or 36 kW/m<sup>2</sup>.**

For information on detailed characteristics, please consult the data sheets for photometer or radiometer heads.

## Accessories and Options

- extension cable for photometer head
- luminance adapter (fig. 5)
- sighting telescope for luminance measurements (fig. 5)
- tripod with holder and spirit level (fig. 4)
- museum adapter for tripod (fig. 4)
- various transport cases
- cardanic suspension (fig. 6)
- radiometer heads for UV-A, UV-B, UV-C, UV-253.7, Bilirubin and Blue Light Hazard, Photosynthesis, longtime after-glowing pigments
- photometer heads for outdoor use
- photometer head with  $f1 \leq 1.5 \%$
- mini-photometer heads (fig. 8)
- underwater photometer heads
- photometer heads for measurements of
  - spherical illuminance  $E_o$
  - semi-spherical illuminance  $E_{2\pi}$
  - cylindrical illuminance  $E_z$
  - semi-cylindrical illuminance  $E_{zh}$
- holder with adjustable feet and spirit level
- tube-adapter with iris-baffle (fig. 7)
- test certificate on relative spectral response and cosine correction
- DES data collection programme: longtime evaluation with numeric and graphic depiction
- measuring software for automatic collection of LVK data (LUMBASE)
- Recharging device with NiMH-battery

## Transport Cases

- Type A* RadioLux 111 without accessories
- Type B* RadioLux 111 with 2-3 sensors, power supply unit, holder with adjustable feet, luminance adapter and sighting telescope
- Type C* RadioLux 111 with power supply unit, luminance adapter, sighting telescope, holder with adjustable feet, tripod with adapter or museum adapter



Fig. 4: Museum adapter with tripod for measurement at any inclined exhibits or space limiting areas



Fig. 5: Luminance measurement with luminance adapter and sighting telescope



Fig. 6: Cardanic suspension



Fig. 7: Tube-adapter for external photometer head with iris-baffle and angle scale for field limitation

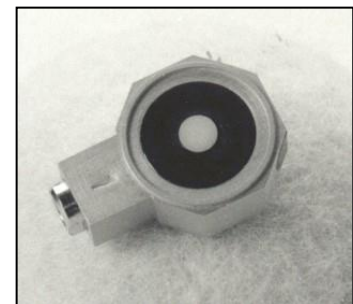


Fig. 8: Mini photometer head