

**Optical Power Meter OPM1**

**1 General**

The power meter is used to determine the optical power of a light source (LED or Laser), or to measure the attenuation of optical cables in association with a stabilised light source.

Using microprocessor technology the meter allows measuring two different wavelengths as well as displaying the absolute optical power in  $\mu\text{W}$  or dBm. For relative power measurements the measured value will be displayed in (dB).

Changeable adapters allows easy coupling to all common optical cable connectors.



Pic. 2 Optical power meter OPM1

**2 Applications**

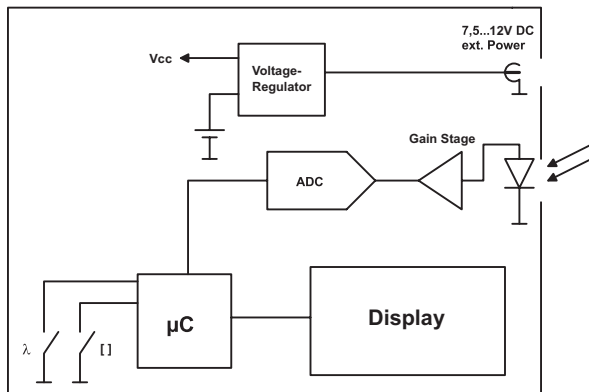
Favourable characteristics plus accurate coupling with all adapters to assembled optical cables enables a great number of applications:

- laboratory analysis
- installation inspections
- quality control
- testing of optical transmitters
- attenuation readings on optical cable

**4 Features**

- Optical power meter
- 660nm and 850nm calibrated wavelengths
- M12 adapter system
- 9 V Block battery or external power supply
- 25 x 50 mm LC-Display
- Plastic housing
- Robust rubber boot
- Easy handling

**3 Block Diagram**



Pic. 1 Block diagram of optical power meter

**5 Ordering Information**

<b>Specification</b>	<b>Part number</b>
Basic device (no adapters)	<b>909PM00000111</b>

Appropriate adapters for different connector styles must be ordered separately

**Note :**

Please refer to data sheet **E09PMADASM001** for system adapters

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## 6 Operation

Please attach the required adapter.  
Pic. 3 shows the power meter with the F-ST adapter 909PMADAST001.

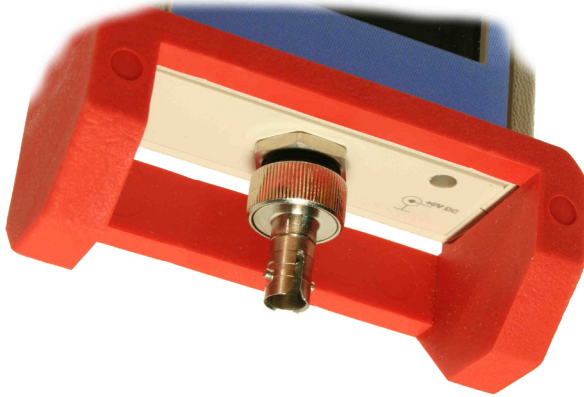

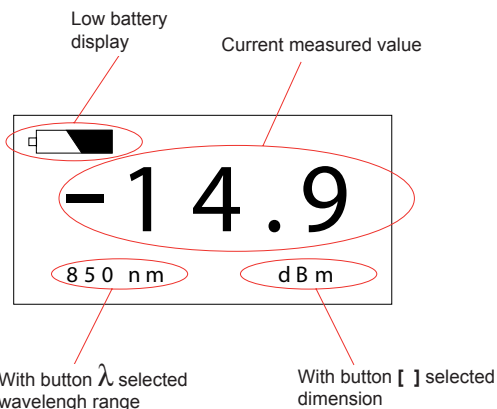




Bild 3 Detector with adapter

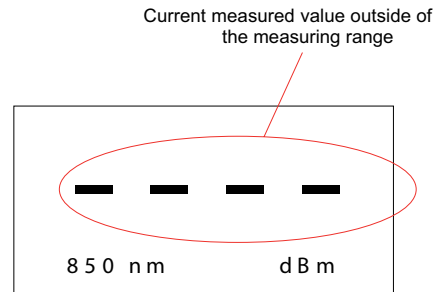
Press ON / OFF  button positioned on left top half of housing. At power up the power meter starts an offset cancellation routine. The display signals the progress with a dashed line. After completion the offset routine, the LC-Display shows the wavelength range and unit of the measured value.



Pic. 4 Power meter display

By operating the Buttons  and  on top of the power meter the wavelength (850/660nm) as well as the unit of the measured value ( $\mu\text{W}$ /dBm/dB) may be toggled.  
If the battery or the external power supply drops below 6.5V, a warning appears in the display.

If the measured value is outside of the detectable range the display shows a dashed line.




Pic. 5 Measured value is outside of the measuring range

## 7 Attenuation Measurements

For standard measurements of insertion losses on optical cables the IEC 874-1 (CECC 86000) recommends nine different methods. Depending upon requirement the most suitable or most practicable method is to be selected.

An attenuation measurement is by definition a relative measurement related to a reference value.

The reference value for the measurement is saved as follows in the instrument:

- a) Choose value dimension [ $\mu\text{W}$ ] at the power meter.
- b) Wait until display read-out is stable.
- c) Press button  one time to enter value dimension [dB]
- d) The instrument saves the actual measured value, which serves as reference value for following measurements.

---Caution---

**If the instrument is switched off, the reference value is stored. For more precise measurements it is a good practice to update the reference value after switching on again.**

The detectable range of an attenuation measurement depends on the reference value.

Example:

The instrument has an absolute input power range of  $0.01\mu\text{W}$  to  $2000\mu\text{W}$  (-50dBm to +3dBm).  
If the reference value =  $10\mu\text{W}$  (-20dBm) there will be -30dB available in lossy systems.  
For optical powers greater than the reference value the detectable range is +23dB.



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## 8 Maximum Ratings \_\_\_\_\_

Power supply +V \_\_\_\_\_ +12V DC  
 Storage temperature \_\_\_\_\_ -20..+70°C  
 Operating temperature \_\_\_\_\_ -10..+60°C

**Stresses beyond those listed under 'Maximum Ratings' may cause permanent damage to the instrument. Above listed values are stress limits only and functional operation of the power meter at these conditions is not recommended. Exposure to maximum rating conditions for extended periods may affect the instrument reliability.**

## 9 Technical Data \_\_\_\_\_

**opt. port:** Adapter, screwable for all common fiber optic connectors

**opt. detector:** Silicon-PIN-Diode

**detector area:** 2.65 x 2.65 mm

**meas. range:**

$\mu$ W	0.01 - 2000
dBm	-50.0 - +3
dB	-50 - +33

(depending on reference value)

**non-linearity:**  $\pm 0.018\%$  FSR

**offset error:**  $\pm 1$  Digit

**offset drift:**  $\pm 0.08\%$  / °C

**gain error:**  $\pm 0.05\%$  FSR

**gain drift:**  $\pm 0.3$ ppm / °C

**power supply:** 9V block battery ( $t_{Life}$  appr. 10h)  
external 9V DC via 3.5mm female

**current consumption:** appr. 20mA

**case:** plastic

**dimensions:** appr. 128x70x26 mm (L x B x H) (without rubber boot)

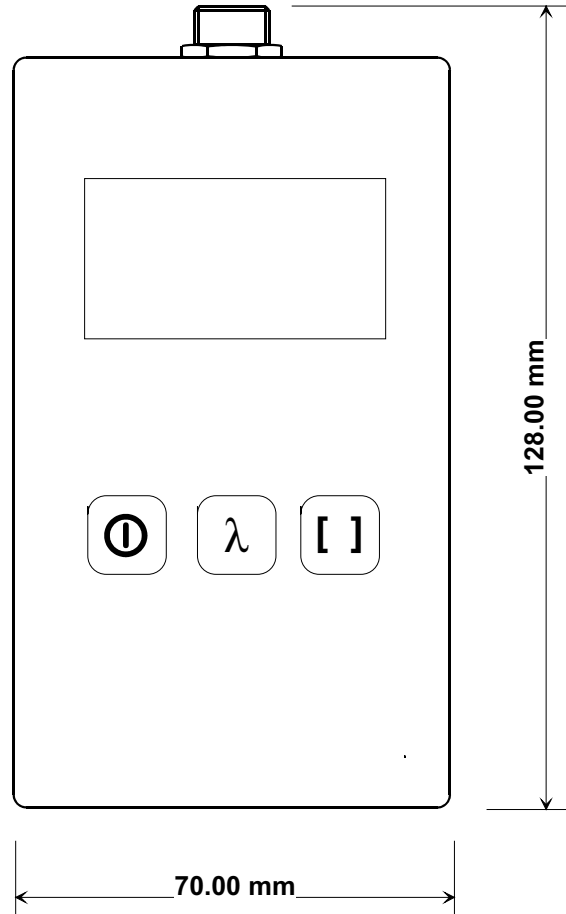
**protection class:** IP40

**weight:** appr. 160g

**temperature range:** 0 ... +50°C (operation)

## 10 Technical Drawing \_\_\_\_\_

Dimensions without rubber boot.



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