Optical Measuring Instruments and Optical Device Test Systems

For use in R&D and production of next-generation optical disks and evaluation of high-power output blue-violet lasers

Q8230

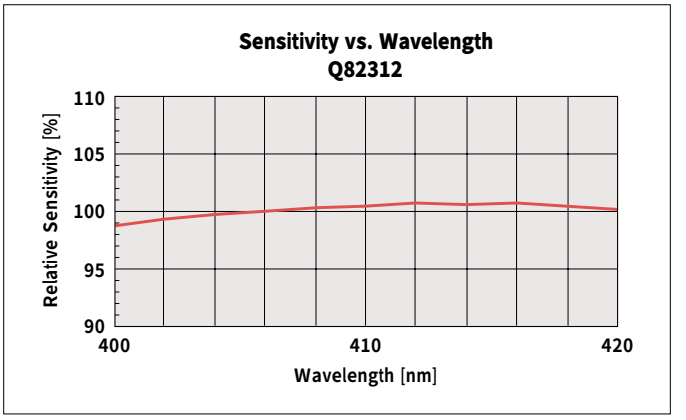
- **Various optical sensors available for handling different applications**
  Blue-violet optical sensor covering the 400nm band
  High-power optical sensor of up to 200mW
  General-purpose low-cost optical sensor
- **Flat wavelength sensitivity characteristic in the 400nm band**
- **Low incident-angle-dependency for high NA pickup**
- **USB interface (standard)**

Q8230
Optical Power Meter

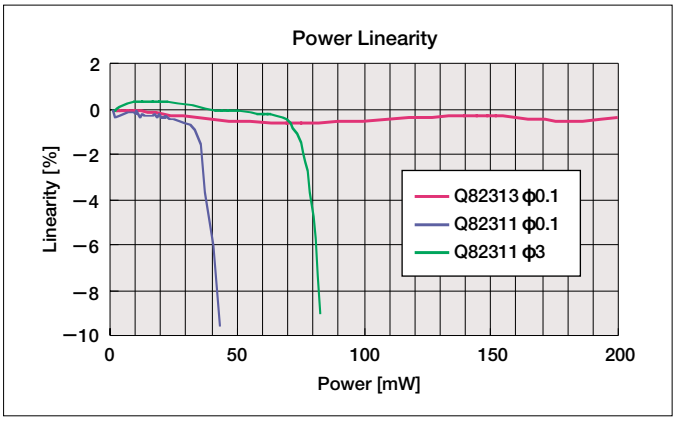
The Q8230 is a high-performance handheld optical power meter. It is most suitable for R&D and production of LDs, optical pickups, and drives for optical disks.

Six kinds of thin/cylindrical optical sensors are available. The blue-violet optical sensor, Q82312/Q82322 has achieved a flat wavelength sensitivity characteristic and low incident- angle-dependency within a 400nm range. Q82313/Q82323 is capable of high-power signal measurement of up to 200mW. These sensors display measured values in 5 ·1/2 digits and 0.001dB resolution. The USB interface that is incorporated as the standard enables the measurement data acquisition easily.

- Various optical sensors available for handling different applications
  Blue-violet optical sensor covering the 400nm band
  High-power optical sensor of up to 200mW
  General-purpose, thin and low cost optical sensor
- Flat wavelength characteristic in the 400nm band (Q82312/Q82322)
- Low incident-angle-dependency for high NA pickup (Q82312/Q82322)
- 1nm-step wavelength sensitivity correction function
- 5·1/2 digits and 0.001dB resolution
- Power calibrated wavelength: 405/650/780nm
- USB interface (standard)



Q82312 (400 nm band) wavelength sensitivity characteristic (typical value)



Q82311/82313 power linearity (typical value)

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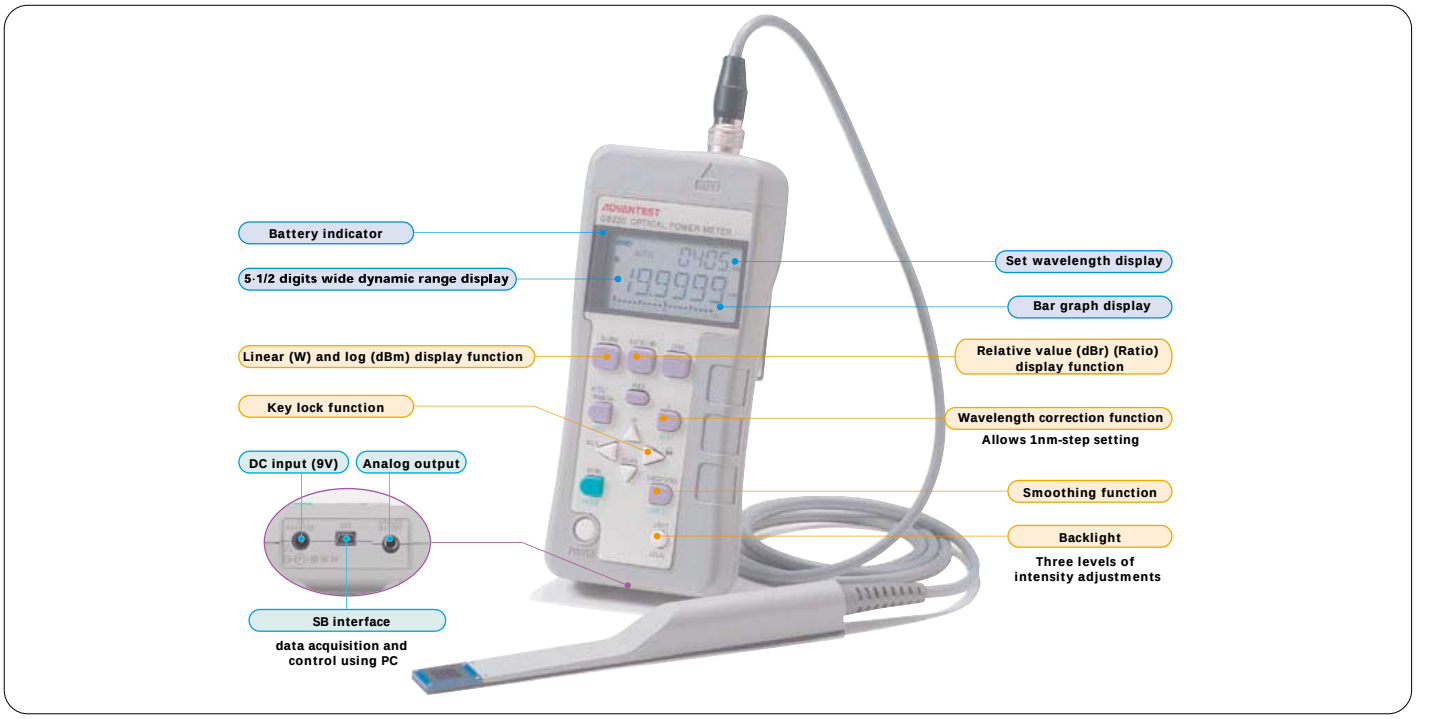

Specifications

All the accuracies are guaranteed for one year under the conditions of temperature + 23 ±5°C and relative humidity 70% or less.

Mainframe Specifications

Resolution : 0.1pW (in W), 0.001 dB (in dBm)
Accuracy : The following is added to the accuracy of each sensor for display in W.(Within 24 hours after offset zero execution)
20 nW range :± (0.55%+2000 digits)
200 nW range :± (0.15%+200 digits)
2μW range: :± (0%+70 digits)
Display : LCD with three-level backlight
Wavelength display:4 digits
Power display :5-1/2 digits (Unit:mW, μW, nW, dBm, and dBr)
Bar graph display
Range switching : Eight ranges, automatic, manual, and remote
Measurement speed : 5 samples/sec or faster
Wavelength sensitivity correction:
Automatic correction of sensor wavelength sensitivity via wavelength setting (in 1nm step)
Offset zero : Sensor offset stored in memory for automatic correction
Relative value display: Ratio(display in W), dBr (display in dBm)
Analog output :Analog output according to input signal*1
Output voltage : 0 to 2V
Output resistance :10Ω or less
Output connector : 2P mini-jack(3.5mm dia.)
USB interface :Conforming to USB1.1 (connector mini B/female)
Auto power-off : Power-off in about 30 minutes without key or remote operation (Function can be set ON/OFF)
Backup function: Four setting conditions can be stored in memory.
Other functions: Smoothing function, MAX value hold function, CF arithmetic operation (allows setting of one correction coefficient value for the measurement value), selection of the number of digits to be displayed, key lock, and battery-check function

General Specifications

Operating environment:
Ambient temperature: 0 to +40˚C
Relative humidity: 80% or less (No condensation)
Storage environment:
Ambient temperature: -20 to +70˚C
Relative humidity: 85% or less (No condensation)
Warm-up time: 30 minutes or more (to achieve prescribed accuracy)
Power supply:
Battery drive : Four AA batteries*2
Battery life : 60 hours (alkaline batteries under the conditions of maximum incidence power 1mW, backlight off, and ambient temperature +23±5°C)
DC input : 9V 100mA or less
AC adapter : AC100V to 240V
Power supply frequency : 50/60Hz
Power consumption: 100-120V 5VA or less, 220 - 240V 10VA or less (using the AC adapter included as the standard)
Dimensions : Approx. 80 (width) × 180 (height) × 40 (depth)mm
Weight : 300g or less (excluding AA batteries)

**1:The full scale values change according to the sensor model, the wavelength setting, correction value (CF), and the range setting.*
**2: The voltages of the battery cells are within the nominal voltage range from 1.2V to 1.5V. Batteries are not included.*

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Thin Optical sensor specifications (sold separately)

Model		Q82311 (General-purpose)	Q82312 (Blue-violet)	Q82313 (High-power)
Wavelength range		390 to 1100nm	390 to 450nm	390 to 1100nm
Power range	Display in dBm	-60 to +17dBm	-50 to +20dBm	-50 to +23dBm
	Display in W	1nW to 50mW	10nW to 100mW	10nW to 200mW
	Beam diameter	at 3mm dia. or more	at 1mm dia. or more	at 0.1mm dia. or more
Sensor element		SI Photo Diode		
Sensing area		Approx. 9.5 x 9.5mm□	Approx. 10 x 10mm□	Approx. 8.5mm dia.
Effective sensing area*1		Approx. 8.5 x 8.5mm□		Approx. 6mm dia.
Calibrated wavelength*2		780nm	405nm	650nm
Measuring accuracy (at 1mW input)		±2.5%(at calibrated wavelength)		
		±3.5% *3 (400 to 1000nm)	±3.5%(390 to 450nm)	±3.5%(400 to 1000nm)
Wavelength sensitivity calibration range		390 to 1100nm	390 to 450nm	390 to 1100nm

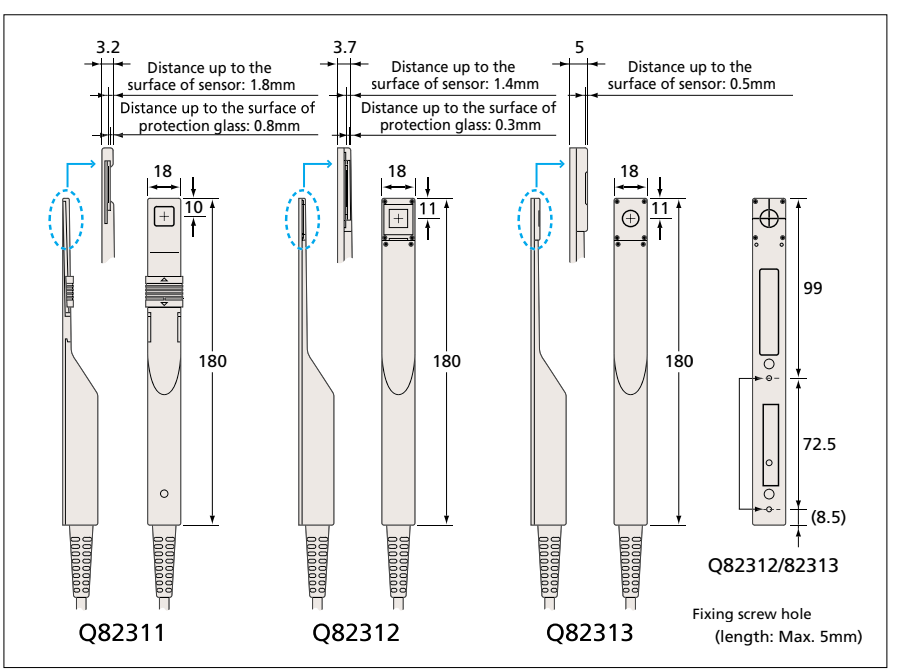
**1 Range where the relative sensitivity for the center is within ±10%.* **2 Changeable with option* **3 For Q82311, this value is achieved only when option +20 is specified.*

Wavelength sensitivity correction and calibration with additional wavelengths as options

Wavelength sensitivity correction: Performs correction by measuring the wavelength sensitivity of each sensor at calibration.
(Correction based on the typical value has been applied to Q82311 of the standard specification.)
Calibration with additional wavelengths as options:
Calibration performed using the wavelengths other than those available as the standard (Multiple options are allowed)

Optical sensor	Q82311	Q82312	Q82313
Wavelength sensitivity correction option	OPT82311+20	Standard specification	Standard specification
Calibration with additional wavelengths as options			
405nm	OPT82311+21	Standard specification	OPT82311+21
650nm	OPT82311+22	—	Standard specification
780nm	Standard specification	—	OPT82311+23

Exterior dimensions



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Cylindrical optical sensor specifications (sold separately)

All the accuracies are guaranteed for one year under conditions where the temperature is +23°C ±5°C and the relative humidity is 70% or lower.

Model Name		Q82321(For General Purpose)	Q82322 (For Blue Violet)	Q82323(For High Output)
Range of wave length		390 to1100nm	390 to 450nm	390 to 1100nm
Power range	dBm indication	-60 to +17dB	-50 to +20dB	-50 to +23dB
	W indication	1nW to 50mW	10nW to100mW	10nW to 200mW
	Beam spot	3 mm dia. or more	1 mm dia. or more	0.1 mm dia. or more
Light-sensitive element		Si photodiode		
Light-sensitive area		Approx.8.5mm dia.		
Valid sensitive area*1		Approx.6.5mm dia.		Approx.6mm dia.
Calibration wave length*2		780nm	405nm	650nm
Measuring accuracy	With calibration wave length*3	±2.5%		
	Within specified wave length range*4	(±3.5%)	±3.5%	
	Specified wave length range	(400 to 1000nm)	390 to 450nm	400 to 1000nm
Calibration range of wave length sensitivity		390 to1100nm	390 to 450nm	390 to 1100nm

*1: Range where the sensitivity in relation to the center is within ±10%

*2: Changeable with option

*3: When 1 mW is input with calibration wave length

*4: When 1 mW is input within the specified wave length range (only when an option is specified for the Q82321)

General specifications

Connector	12-pin for connection with Q8230
Cable length	Approx.1.5m
Operating environmental range	Ambient temperature: 0 to 40°C Relative humidity: 80% or lower, no condensation
Storage environmental range	Ambient temperature: 20 to 70°C Relative humidity: 80% or lower, no condensation
External dimensions	Approx.38mm(diameter)×40mm(length)
Mass	160g or less

Accessory

Adapter with connector support

Name	Type
FC type	A08012

Options for correcting wave length sensitivity and adding calibration wave length

Wave length sensitivity correction: The wave length specific to each sensor is measured and corrected during calibration.
(The Q82321 with standard specifications is calibrated according to the typical value.)
Addition of calibration wave length: Wave lengths outside of the standard specifications are additionally calibrated. (Two or more wave lengths can be specified.)

Option		Q82321	Q82322	Q82323
Wave length sensitivity correction		OPT82321+20	Standard specifications	Standard specifications
Wave length sensitivity correction	405nm	OPT82321+21	Standard specifications	OPT82323+21
	650nm	OPT82321+22	—	Standard specifications
	780nm	Standard specifications	—	OPT82323+23

External dimensions