



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com

Optical Measuring Instruments and Optical Device Test Systems

High-Accuracy, High-Sensitivity and High-Speed Optical Power Meter

Q8221



- Various Optical Sensors and Light Sources Available
- High Accuracy :
 - ± 2.5% (at the Calibration Point)
 - ± 4.5% (over the entire Wavelength Range)
- Linearity: ± 0.5%
- Low Polarization Dependence :0.003 dB_{p-p}
- High Sensitivity : -94 dBm
- High Power Input Level : +27 dBm
- High Speed Measurement :
 - Sampling Rate of 100 times/sec



Q8221

Optical Multi Power Meter

■ Two-Channel Plug-In System

The Q8221 employs a two-channel plug-in system. Various optical sensors and light sources are available as plug-in units. The two channels of the Q8221 can be used individually or simultaneously. Free combination of optical sensors and light sources enables diverse applications.

■ Ensures Accuracy Over the Entire Range of Power and Wavelength

The optical sensors for Q8221 assure high accuracy of ±2.5% at calibration point. In broad band wavelength region, they assure ±4.5% accuracy by compensating the sensitivity curve over wavelengths of each sensors. Further more, the linearity of ±0.5% is assured. Not only at the calibration point, these sensors also assure at the broad band wavelength region and the level to be measured.

* Calibrations of Q82208, Q82215 and Q82216 at 1550 nm are also available as options (OPT.25).

■ Noise Level : -94 dBm

The Q82208 and Q82232 Optical Sensors achieve high sensitivity by cooling the InGaAs photo-diode. The Q82208 especially achieves -94 dBm. High power can be measured with high linearity up to +10 dBm .

■ Low Polarization Dependency Optical Sensors (Q82232) : 0.003 dB_{p-p} or less

The Q82232 Optical Sensor achieves low polarization dependence of 0.003 dB_{p-p}. By combining with Q8163 Polarization Scrambler, it can be used for high-speed and high precision PDL measurement of the optical devices.

■ Sensors with Less Reflection and High-Return-Loss Adaptor with Minimum Reflection

The Q82208 Optical Sensor uses optical fiber with slant polished ends to suppress reflection (return loss of 50 dB or more). When using a PC polished connector, a high return loss of 45 dB or more can be obtained with the low-loss, high-return-loss adaptor (typical return loss without this adaptor is 14 dB). This sensors fit optical fibers with a core diameter of 10 μm with NA 0.19 or less, making them suitable for measurement of dispersion shift fibers. FC, SC, ST, MU, LC and plug-in connectors are available.

■ High-Speed, High-Throughput Measurement. Max. 100 times/sec.

For all sensors, the Q8221 achieves a sampling speed of 100 times/sec. and a ranging speed (time required to move to a different range) of a maximum of 500 msec (minimum 20 msec). In addition, GPIB output can be transferred at a high speed of 100 times/sec., thus dramatically increasing the throughput of production lines.

■ Recording Function, PDL Measurement Function

Q8221 is capable of storing data containing 400 points with the A and B channels independently. Furthermore, stored data can be directly output to an external plotter as a graph. Also, PDL measurement is very easy with Q8221, because Q8221 can display maximum and minimum values as well as the difference between the maximum and minimum values of the measured data.

• Q81212 Light Source Plug-In Unit Specifications

Photoemission element : FFP-LD
Wavelength : 1550 ± 20 nm
Spectrum half value : 10 nm or less
Output power : 0 ± 1 dBm*¹
Output power(Variable) : 0 to -6 dB, in 0.1 dB steps
Stability :
(23 ± 1°C/1min) ; ± 0.01 dB or less
(Between 0 to 40°C ± 2°C/1ch) ; ± 0.05 dB or less
(0 to 40°C/8h) ; ± 1 dB or less
Output waveform : CW or chopped light ; 270 Hz (± 0.1%) with
duty of 50 ± 5%, 2 kHz/4 kHz (± 0.1%) with
duty of 50 ± 10%
Output connector : FC type
Preheating time : 60 minutes after power on

*¹ At the photoemission edge of 2 m fiber (SM 10/125 μm)

Specifications

Optical Power Measurement Specifications

Sensor plug-in channels : 2 (Channels A and B)

Resolution:

dBm/dB display: 0.001 dB (or 0.0001 dB for data output via GPIB)
W display: Max.199,999 counts

Measurement mode:

CW or chopped light (270 Hz) measurement mode selectable

Sensor wavelength sensitivity compensation:

If a wavelength is entered, an internal compensation value for the sensor wavelength sensitivity at that wavelength is automatically applied.

Relative value measurement (dBr):

The value relative to reference value is measured and displayed in dB with a maximum resolution of 0.001 dB (or 0.0001 dB for data output via GPIB).

Unit display: W (mW, μW, nW, pW), dBm, dB

Display of measured value: 5-1/2 digit (7-segment FL Device)

Range : Automatic, manual, remote

Integration time: 100, 20, 7, or 2 msec.

Measurement speed:

Approx. 100 measurements/second (with 2-msec. integration time and one-channel operation)

Approx. 50 measurements/second (with 7-msec. integration time and one-channel operation)

Approx. 30 measurements/second (with 20-msec. integration time and one-channel operation)

Approx. 9 measurements/second (with 100-msec. integration time and one-channel operation)

Level meter:

Displays with up to 11 dots according to measured values.

Calculation function:

A/B, B/A, and CF

W display: Measured values is multiplied by a constant.

dBm display: Offset is possible.

Maximum hold function: Displays the maximum measured value.

Averaging function: The number of averaging can be set to 2 to 256 using the running averaging method.

Light Source Plug-In Unit Specifications

Unit Plug-in channels:

2 (Channels A and B)

Output power adjustment function:

The output power can be set from 0 to -6.0 dB with a setting resolution of 0.1 dB steps.

Output mode: CW or chopped light (270 Hz, 2 kHz, or 4 kHz) mode selectable.

Other Functions

Record function; PDL/PDR* measurement functions: Can store up to 400 measurement data items for each of channels A and B in the backup memory. Stored data items can be read by a personal computer via the GPIB interface. The maximum value, minimum value and the difference of them (Max.-Min.) are displayed.

Memory function: Up to five settings can be stored and read for each of channels A and B.

Direct plotting function: Measurement data items stored by the record function can be plotted directly to an external plotter in the form of graphs.

Brightness adjustment function: The brightness of the display can be adjusted in five steps.

Output functions specifications:

GPIB interface: IEEE488-1978

Analog output: Outputs analog signal which is proportional to the input optical power.

Output voltage: 0 to +2 V(F.S.) for each range

Output impedance: 0.5 Ω or less

Output connector: BNC Connector

General Specifications

Ambient temperature: 0 to +40°C (85%RH or less)

Storage temperature: -25 to +70°C

Power requirements: 100 to 240 VAC, 48 to 66 Hz

Power consumption:

50 VA or less (including the plug-in unit and sensors)

Dimensions: Approx. 212 (W) × 88 (H) × 360 (D) mm

Mass: 3.9 kg maximum (including the plug-in unit)

Standard accessories:

Power cable × 1

Fuse × 2




Instruction manual × 1

*PDR: Polarization Dependent Ratio

Optical Measuring Instruments and Optical Device Test Systems

High-Accuracy, High-Sensitivity and High-Speed Optical Power Meter

Q8221

| | |  | |  | |  | |
|---|---|---|---------------------|--|---------------------|---|---------------------|
| Model | | Q82214 | | Q82215 | | Q82216 | |
| Product Type | | Short Wavelength General-Purpose | | Long Wavelength General-Purpose | | Long Wavelength Large-Caliber Medium-Sensitivity | |
| Wavelength Range | | 400 to 1100 nm | | 800 to 1750 nm | | 800 to 1750 nm | |
| Power Range | | -80 to +17 dBm ^{*1} | | -60 to +10 dBm ^{*1} | | -77 to +10 dBm ^{*1} | |
| Range ^{*2} | Max. | CW 200 mW | CHOP 200 mW | CW 20 mW | CHOP 20 mW | CW 20 mW | CHOP 20 mW |
| | Min. | 20 nW | 20 nW | 2000 nW | 2000 nW | 20 nW | 20 nW |
| Sensor Element | | Si 8mm ϕ | | Ge 5mm ϕ | | Ge 5mm ϕ Cooled | |
| Optical Input Form | Beam | Possible (Optical Input Diameter 8mm ϕ) | | Possible (Optical Input Diameter 5mm ϕ) | | | |
| | Fiber | Core Diameter $\leq 100 \mu\text{m}$, NA ≤ 0.3 PC, APC, and Slanted Rubbed Connectors (Use With Appropriate Connector Adaptor For Each) | | | | | |
| Measurement Accuracy ^{*3, *4} At Calibration Wavelength | | CW $\pm 3.0\%$ | CHOP $\pm 4.0\%$ | CW $\pm 3.0\%$ | CHOP $\pm 4.0\%$ | CW $\pm 2.5\%$ | CHOP $\pm 3.5\%$ |
| | | 780 nm 1 mW 0 to 40°C | | 1300 nm 1 mW 0 to 40°C | | 1300 nm 1 mW 0 to 40°C | |
| At Wide Wavelength range | | CW $\pm 5.0\%$ | CHOP $\pm 6.0\%$ | CW $\pm 5.0\%$ | CHOP $\pm 6.0\%$ | CW $\pm 4.5\%$ | CHOP $\pm 5.5\%$ |
| | | 480 to 900 nm 1 mW 23 $\pm 3^\circ\text{C}$ | | 950 to 1600 nm 1 mW 23 $\pm 3^\circ\text{C}$ | | 950 to 1600 nm 1 mW 0 to 40°C | |
| Linearity (At Average Time : 1 sec.) | | $\pm 0.5\% \pm 10 \text{ pW}$ -54 to +17 dBm 23 $\pm 3^\circ\text{C}$ | | $\pm 0.5\% \pm 1 \text{ nW}$ -37 to +10 dBm 23 $\pm 3^\circ\text{C}$ | | $\pm 0.5\% \pm 20 \text{ pW}$ -47 to +10 dBm 23 $\pm 3^\circ\text{C}$ | |
| | | $\pm 1.0\% \pm 10 \text{ pW}$ -57 to +17 dBm 23 $\pm 3^\circ\text{C}$ | | $\pm 1.0\% \pm 1 \text{ nW}$ -40 to +10 dBm 23 $\pm 3^\circ\text{C}$ | | $\pm 1.0\% \pm 20 \text{ pW}$ -50 to +10 dBm 23 $\pm 3^\circ\text{C}$ | |
| Noise Level ^{*4} | At Averaging Time : 1 sec. | -80 dBm | | -60 dBm | | -77 dBm | |
| | Without Averaging ^{*5} | | | | | | |
| | SLOW (approx. 9/sec.) | -75 dBm | | -55 dBm | | -72 dBm | |
| | FS-1 (approx. 30/sec.) | -71 dBm | | -51 dBm | | -68 dBm | |
| | FS-2 (approx. 50/sec.) | -69 dBm | | -48 dBm | | -65 dBm | |
| | FS-3 (approx. 100/sec.) | -66 dBm | | -45 dBm | | -62 dBm | |
| Polarization Dependence (at wavelength 1550 nm) | | — | | 0.03 dBp-p (Typical) ^{*6} | | 0.03 dBp-p (Typical) ^{*6} | |
| Return Loss | With APC, or slanted Rubbed Connector | 60 dB or more | | | | | |
| | With high return loss adaptor ^{*7} | 45 dB or more (Typical 47 dB) | | | | | |
| | With PC rubbed connector | approx. 14 dB | | | | | |
| Dimensions and Mass | | Approx. 60(W) \times 43(H) \times 110(D) mm, 270 g or less | | | | | |
| Connectors to Adaptor Correspondence List | FC | A08012 | | | | | |
| | SC | A08090 | | | | | |
| | ST | A08096 | | | | | |
| | MU | A08369 | | | | | |
| | LC | A08654 | | | | | |
| | Plug-in | — | | | | | |
| MT Adaptor (Mating to 12-pin SMF) | — | A08187 (Mating to 12-pin SMF) | | | | | |
| High Return Loss Adaptor Correspondence List ^{*9} | FC | A08328 | | | | | |
| | SC | A08329 | | | | | |
| | ST | A08330 | | | | | |
| | Plug-in | A08331 | | | | | |
| Connection to the Q8221 Main Unit | | Q82203 Interface Plug-in Unit Required. Connection Cable Available as Accessory with Q82203 | | | | | |

^{*1} Level at Max. is when optical input was received with entire sensor area.

^{*2} Full Scale of the range Measurable power range is shown above

^{*3} CW : Continuous Optical Measurement Mode used, CHOP : 270 Hz Chopped light Measurement Mode used.

^{*4} Noise Level with CW Mode and at calibration wavelength (With CHOP Mode, noise level at FS-1, FS-2, FS-3 is approx. the same as at SLOW.)

^{*5} SLOW : Integration Time, 100 msec FS-1 : Integration Time, 20 msec FS-2 : Integration Time, 7 msec

FS-3 : Integration Time, 2 msec



^{*6} Typical Figure (Not Specified)

^{*7} When using PC rubbed connector with return loss 45 dB or more.

Optical Measuring Instruments and Optical Device Test Systems

High-Accuracy, High-Sensitivity and High-Speed Optical Power Meter

Q8221

| | | | | | |
|---|-------------------------|---|-------------------------|---|---|
|  | |  | | | |
| Q82232 | | Q82208 | | Model | |
| Long Wavelength High-Sensitivity Low Polarization | | Long Wavelength High-Sensitivity | | Product Type | |
| 900 to 1650 nm | | 800 to 1700 nm | | Wavelength Range | |
| -94 to +10 dBm | | | | | |
| CW 20 mW 200 pW | CHOP 20 mW 200 nW | CW 20 mW 200 pW | CHOP 20 mW 200 nW | Max. | Range* ² Min. |
| In GaAs Cooled | | | | Sensor Element | |
| Not Possible | | | | Beam | Optical |
| Core Diameter ≤ 10 μm, NA ≤ 0.19 PC Rubbed Connector | | Core Diameter ≤ 62.5mm, NA ≤ 0.21 PC, APC, and Slanted Rubbed Connectors | | Fiber | Input Form |
| CW ± 2.5% | CHOP ± 3.5% | CW ± 2.5% | CHOP ± 3.5% | Measurement Accuracy* ³ At Calibration Wavelength | |
| 1550 nm 1 mW 0 to 40°C | | 1300 nm 1 mW 0 to 40°C | | | |
| ± 4.5% | CHOP ± 5.5% | CW ± 4.5% | CHOP ± 5.5% | At Wide Wavelength range | |
| 950 to 1600 nm 1 mW 0 to 40°C | | 1000 to 1650 nm 1 mW 0 to 40°C | | | |
| ± 0.5% ± 0.4 pW -72 to +10 dBm 0 to 40°C | | | | Linearity (At Average Time : 1 sec.) | |
| +1.0% ± 0.4 pW -75 to +10 dBm 0 to 40°C | | | | | |
| -94 dBm | | | | At Averaging Time : 1 sec. | Noise Level* ⁴ |
| -93 dBm | | | | Without Averaging* ⁵ SLOW (approx. 9/sec.) | |
| -90 dBm | | -91 dBm | | FS-1 (approx. 30/sec.) | |
| -88 dBm | | -87 dBm | | FS-2 (approx. 50/sec.) | |
| -85 dBm | | 0.02 dBp-p or less | | FS-3 (approx. 100/sec.) | |
| 0.003 dBp-p or less | | (Typical 0.015 dBp-p) | | Polarization Dependence (at wavelength 1550 nm) | |
| — | | 50 dB or more | | With APC, or slanted Rubbed Connector | Return Loss |
| — | | 43 dB or more (Typical 45 dB) | | With high return loss adaptor* ⁷ | |
| approx. 14 dB | | approx. 14 dB | | With PC rubbed connector | |
| Approx. 60 (W) × 43 (H) × 135(D) mm 590 g or less | | Plugs into Q8221 | | Dimensions and Mass | |
| A08340 (Standard Accessory) | | A08161 (Standard Accessory) | | FC | Connectors to Adaptor Corre- spondence List |
| A08338 | | A08162 | | SC | |
| A08339 | | A08163 | | ST | |
| A08371 | | A08370 | | MU | |
| A08655 | | A08653 | | LC | |
| — | | Jack-type Possible | | Plug-in | |
| — | | — | | MT Adaptor (Mating to 12-pin SMF) | |
| Usage of high return loss adaptors are not possible | A08328 | | FC | High return loss adaptor Corre- spondence List* ⁹ | |
| Usage of high return loss adaptors are not possible | A08329 | | SC | | |
| Usage of high return loss adaptors are not possible | A08330 | | ST | | |
| Usage of high return loss adaptors are not possible | A08331 | | Plug-in | | |
| Q82203 Required Connection Cable Available as Accessory with Q82203 | | Q82203 Not Required | | Connection to the Q8221 Main Unit | |

*⁸ Calibrations of Q82215, Q82216 and Q82208 are also available as options (OPT82215+25, OPT82216+25, OPT82208+25).

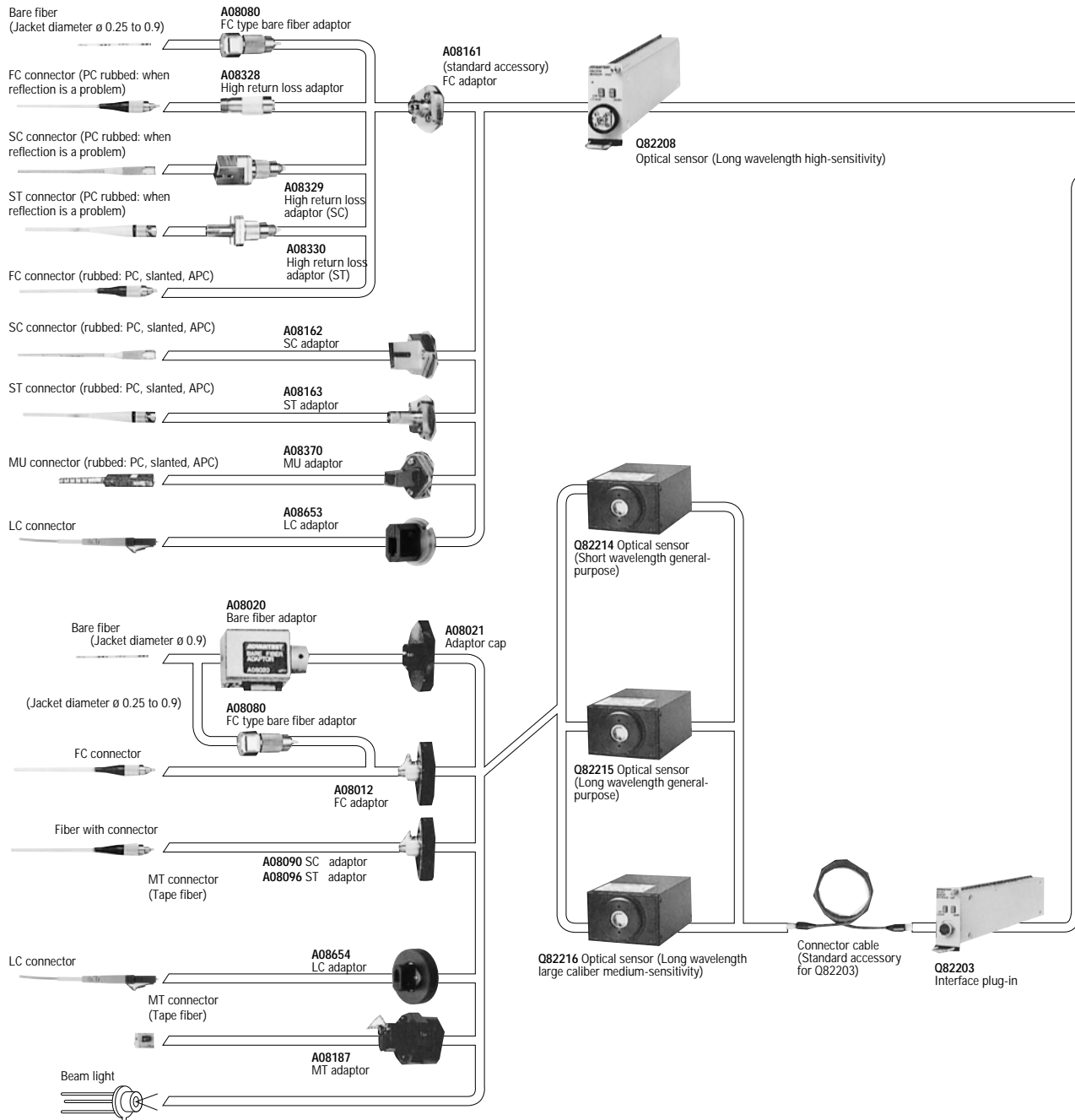
Measurement accuracy value for the option sensors are the same as in the chart above at 1550 nm calibration wavelength.

*⁹ Connection loss with single mode fiber is 0.07 dB (typical)

Optical Measuring Instruments and Optical Device Test Systems

High-Accuracy, High-Sensitivity and High-Speed Optical Power Meter

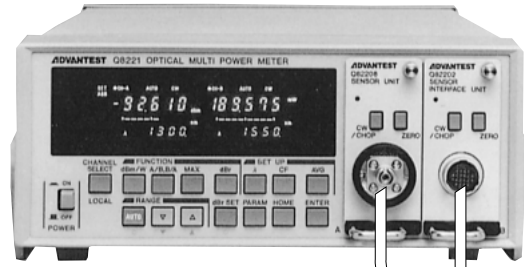
Q8221



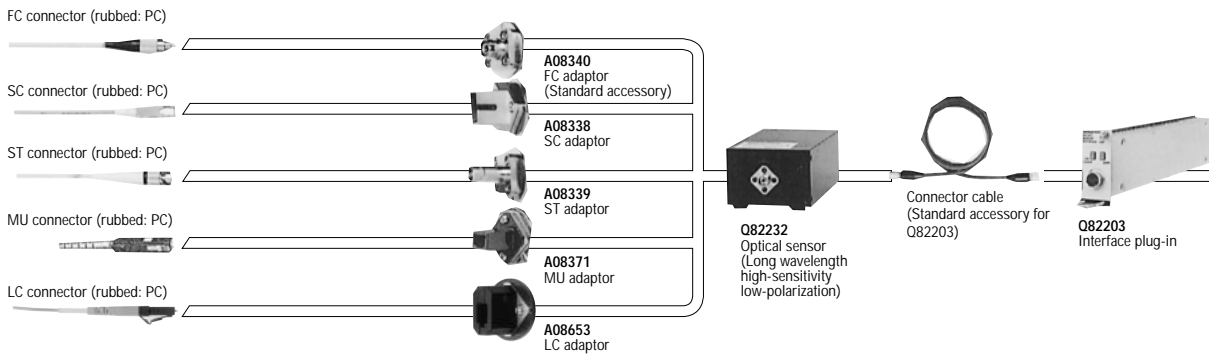
Optical Measuring Instruments and Optical Device Test Systems

High-Accuracy, High-Sensitivity and High-Speed Optical Power Meter

Q8221



Q8221 Optical Multi Power Meter



※ Remove proof cap is used to prevent the mis-removing the high return loss adaptor from the sensor adaptor when removing the fiber connector.



Artisan Technology Group is your source for quality new and certified-used/pre-owned equipment

- FAST SHIPPING AND DELIVERY
- TENS OF THOUSANDS OF IN-STOCK ITEMS
- EQUIPMENT DEMOS
- HUNDREDS OF MANUFACTURERS SUPPORTED
- LEASING/MONTHLY RENTALS
- ITAR CERTIFIED SECURE ASSET SOLUTIONS

SERVICE CENTER REPAIRS

Experienced engineers and technicians on staff at our full-service, in-house repair center

*InstraView*SM REMOTE INSPECTION

Remotely inspect equipment before purchasing with our interactive website at www.instraview.com ↗

WE BUY USED EQUIPMENT

Sell your excess, underutilized, and idle used equipment. We also offer credit for buy-backs and trade-ins. www.artisanng.com/WeBuyEquipment ↗

LOOKING FOR MORE INFORMATION?

Visit us on the web at www.artisanng.com ↗ for more information on price quotations, drivers, technical specifications, manuals, and documentation

Contact us: (888) 88-SOURCE | sales@artisanng.com | www.artisanng.com