

Models 1835-C & 2835-C

High-Performance Optical Meters

Key Features

- *Greatest possible versatility in a single optical meter*
- *DC optical power measurements in the 100 fW–300 W range*
- *Pulsed and integrated energy measurements*
- *Fast IEEE-488 data throughput, 50–100 Hz, depending on software interface*
- *Large variety of programmable input and output controlling triggers*
- *Sophisticated automation capabilities in testing and laboratory applications*



1835-C Single-Channel



2835-C Dual-Channel

Whether your application requires measurement of low-power, high-power or energy of continuous or pulsed light sources, Newport's **Models 1835-C and 2835-C** will do the job!

DC, peak-to-peak and pulse measurements can be displayed in units of W, dBm, dB, J, Ergs, A, and V. Simultaneous measurements of a variety of light sources operating at different power levels and wavelengths can be performed with our dual-channel **2835-C** optical meter.

Low-power measurements, in the 100 fW–2 W range, can be accomplished with any one of Newport's **818 Series** silicon, germanium or indium gallium arsenide semiconductor detectors, covering 190–1800 nm wavelengths.

High-power measurements, in the 20 mW–300 W range, can be performed with Newport's **818P and 818T Series** thermopile detectors, enabling measurements in the 0.19–11 μm wavelength range.

Energy measurements of pulsed laser sources, from 50 mJ–1 J, can be taken with Newport's **818E and 818J Series** family of pyroelectric detectors, operating in the 0.19–20 μm wavelength range. Pulse repetition rates from single shot to 2 kHz can be accommodated.

Advanced features include a 2500 data point storage buffer; analog and digital filtering; programmable sample rates; moving statistics; and up to 10 recallable configurations.

Additional Benefits

- Includes both RS-232C and IEEE-488 interfaces
- Vacuum fluorescent display provides excellent legibility from any angle, in any light condition
- Analog bar graph with 10X zoom
- Audible beep on pulse arrival
- Wavelength calibration in 1 nm steps
- Trigger in/out control with alarm levels

Specifications

| | |
|----------------------------------|---|
| Display Type | 6-digit vacuum fluorescent |
| Sampling Resolution | 20,000 count \leq 25 Hz, 4096 count \leq 1 kHz |
| Gain Ranges | 7 decades |
| Current Sensitivity (full-scale) | 2.5 nA–2.5 mA |
| Voltage Sensitivity (full-scale) | 790 μ V–25 V |
| Resolution | 100 fA, 125 nV |
| Sampling Rate | Up to 1 kHz single-channel, Up to 500 Hz dual-channel |
| Bandwidth (-3 dB) | DC to 1 MHz ¹⁾ |
| Analog Output | 0–2.5 V into 50 Ω |
| DC Accuracy | \pm 0.1% typical |
| Peak-to-Peak Accuracy | \pm 1% typical |
| Pulse-to-Pulse Accuracy | \pm 1% typical |
| Integration Accuracy | \pm 1% typical |
| Power Requirements | 90–240 VAC |
| Weight [lb (kg)] | 2.5 (1.1) |
| Dimension (W x H x D) [in. (mm)] | 8.5 (216) x 4 (102) x 14 (356) |
| Operating Temperature | 10°C to 40°C, <80% RH |
| Storage Temperature | -25°C to 60°C, <90% RH |

1) Gain and detector dependent

Detector Compatibility and Performance

The 1835-C/2835-C are compatible with Newport's low-power 818-series, high-power 818P-series and energy 818E-series detectors, allowing both free-space and fiber pigtailed measurements in the 190–1800 nm range. When using one of these detectors with the 1835-C or 2835-C, a calibration module needs to be attached to the detector, assuring the correct reading at any selected wavelength.

When used with various Newport detector types, the measurement modes shown below can be accessed:

| Detector Family | DC Average Power | Integrated Energy | Peak-to-Peak Power | Pulse-to-Pulse Energy |
|------------------------------------|------------------|-------------------|--------------------|-----------------------|
| Low-Power (818 Series) | Yes | Yes | Yes | No |
| High-Power (818 P and 818T Series) | Yes | Yes | No | No |
| Energy (818E and 818J Series) | No | No | No | Yes |

Ordering Information

| Model | Description |
|------------|---------------------------------------|
| 1835-C | High-Performance Optical Meter |
| 1835-C-CAL | 1835-C with test data and certificate |
| 2835-C | High-Performance Optical Meter |
| 2835-C-CAL | 2835-C with test data and certificate |

Please see page 132 thru 147 for a detailed description of Newport's semiconductor, thermopile and pyroelectric detectors, compatible with the 2835-C and 1835-C.

System Specifications (with Low-Power 818-Series Detectors)

| Model | | | | | 818-IR/CM | | |
|----------------------------------|-------------------|-------------------|-------------------|------------------|----------------------------|-------------------------|--------------------------------|
| | 818-UV/CM | 818-SL/CM | 818-F-SL | 818-ST/CM | 818-F-IR | 818-IG/CM | 818-IS-1 |
| Material | Silicon | Silicon | Silicon | Silicon | Germanium | Indium Gallium Arsenide | InGaAs/Si |
| Diameter (cm) | 1.13 | 1.13 | 0.3 | 1 x 1 | 0.3 | 0.3 | |
| Wavelength (nm) | 190–1100 | 400–1100 | 400–1100 | 400–1100 | 780–1800 | 800–1650 | 400–1650 |
| Power Range (dBm) | -83 to +23 | -90 to +33 | -90 to +3 | -70 to +33 | -70 to +21.5 ²⁾ | -90 to +21.5 | -70 to +23 |
| Accuracy ³⁾ | \pm 2% | \pm 2% | \pm 2% | \pm 2% | \pm 3% | \pm 2% | \pm 2.5% |
| Applicable wavelength range (nm) | 200–1100 | 400–1100 | 400–1100 | 400–1100 | 780–1700 | 800–1650 | 400–1650 |
| Linearity | | | | \pm 0.5% | | | |
| NEP @ 5 Hz and 1 A/W | 50 fW/ \sqrt Hz | 50 fW/ \sqrt Hz | 50 fW/ \sqrt Hz | 3 pW/ \sqrt Hz | 4 pW/ \sqrt Hz | 30 fW/ \sqrt Hz | 3 pW/ \sqrt Hz ³⁾ |

1) At calibration temperature maintained to \pm 0.2°C, -20 dBm level having 99% encircled energy on detector with no optical attenuator.

2) -70 to +3 dBm for 818-F-IR

3) 0.01 A/W for the 818-IS-1