

# Model 1918-C High-Performance Hand-Held Optical Power and Energy Meter



1918-C High Performance Hand-Held Power and Energy Meter

- Measurement rep-rates up to 4 kHz
- *True rms* measurements
- Power measurements, 11 pW to 20 kW
- Energy measurements, 7  $\mu$ J to 20 kJ
- Accelerated thermopile based power measurements with fast prediction algorithm
- USB computer interface
- Data storage via internal memory (250k data samples) or *USB Flash Drive*
- Plotting, graphing, math, statistics, and on-board data post-processing

For applications requiring the measurement of low-power, high-power or energy of continuous or pulsed light sources, Newport's model 1918-C Hand-Held Optical Power and Energy Meter is the instrument of choice. This new optical meter leverages the advanced features and display capabilities of Newport's 1935-C Series optical meters, into a compact, wall-plug and battery powered device, for use in the lab or in the field. The 4 inch, full color, graphical LCD display enables both numerical and graphical measurement representation, with a selection of various color palettes to match filtering properties of users' laser eye safety goggles.

The 1918-C has the ability to handle peak-to-peak measurements of pulses with repetition-rates of up to 4 kHz at a sampling rate of 100 kHz. Pulse, peak-to-peak and DC source measurements can be displayed in units of W, dBm, dB, J, A, and V.

*Low-power measurements*, of 1nW to tens of Watts can be accomplished with Newport's 918D Series Silicon (Si), Germanium (Ge) or Indium Gallium Arsenide (InGaAs) Detectors, covering 200–1800 nm wavelengths (see page 1088). All 918D Series Detectors have a built-in temperature sensor utilized for sensing, and active compensation of temperature-induced measurement fluctuations. 818 Series low power detectors can also be used with the instrument in combination with a 841-DIN adapter.

*High-power measurements*, up to 6 kWatt can be performed with Newport's (page 1101, Thermopiles), enabling measurements in the 0.19–11  $\mu$ m wavelength range.

*Energy measurements* of pulsed laser sources, from 100  $\mu$ Joule to 75 Joules can be taken with Newport's (page 1104, Pyroelectric Detectors), operating in the 0.19–20  $\mu$ m wavelength range and pulse repetition rates from single shot to 4 kHz, without having to rely on oscilloscope measurements.

*True Root-Mean-Square (rms) measurements*, provide the most accurate rms value regardless of the shape of the input waveform.

Advanced features include a 250,000 data point storage buffer, analog and digital filtering, programmable sample rates, moving statistics, plotting and multiple user-configuration storage.

The 1918-C comes complete with a rechargeable battery, battery charger and carrying case. Batteries are field replaceable by the user and can also be ordered separately.



## Specifications

### 1918-C General Power/Energy Meter Specifications

Compatible, Hot-swappable Newport Detectors	918D, 918L, 818P, 818E, and 818 (w/adaptor)
Sampling Rate (kHz)	100
Measurement Rate (kHz)	4
Display Refresh Rate (Hz)	20
Maximum Rep Rate (kHz)	2 (Pyroelectric Detectors)
Maximum Rep Rate (kHz)	4 (Photodiode Detectors, Peak to Peak Power)
Resolution (% of Full Scale)	0.0004
CW Accuracy (%)	±0.1
Accuracy (%)	±1 (Peak to Peak, Pulse to Pulse, Integration)
Maximum Detector Input Current (mA)	25
Maximum Detector Input Voltage (V)	130
Analog Output (User Selectable)	0-1 V , 0-2 V, or 0-5 V into 1MΩ
Analog Output Bandwidth	DC-500 kHz (Photodiode), DC-1 MHz (Thermo or Pyro)
Display Type	82 x 62 mm Graphical, Color TFT LCD, 1/4 VGA
Display Formats	14 mm Numeric, Bar Chart, Min/Max Bar, Statistics
Communication Interfaces	USB
Internal Sample Storage (data points)	250,000
External Sample Storage (data points)	Defined by external USB Flash drive (user supplied)
Battery Type and Life (Typical)	Rechargeable, 8 Hours
Power Requirements	90-240 VAC, 24V 1.5A
Operating Temperature	10°C to 40°C, <80% RH
Storage Temperature Range	-20°C to 60°C, <90% RH
Weight [lb (kg)]	2.3 (1.04)
Dimensions (W x H x D) [in. (mm)]	7.6 (193) x 5.4 (137) x 2.4 (61)

### Calibrated Measurements with 918D and 918L Series Photodiode Detectors <sup>(1)</sup>

Minimum Detectable Power (pW)	11.1
Maximum Input Power (W)	2
Wavelength Range (nm)	200-1800
Supported Advanced Features	Temperature Compensation and Attenuator Sensing

### Calibrated Measurements with 818P Series Thermopile Detectors <sup>(1)</sup>

Minimum Detectable Power (mW)	1
Maximum Input Power (W)	400
Wavelength Range	190 nm - 11 μm

### Calibrated Measurements with 818E Series Pyroelectric Detectors <sup>(1)</sup>

Minimum Detectable Energy (μJ)	6.7 μJ
Maximum Measurable Energy (J)	75 J
Wavelength Range	190 nm - 20 μm

1) Instrument range is determined by detector used. Please refer to our complete offering on detector types for complete specifications of individual detectors: Photodiode (see page 1088), Thermopile (see page 1101) and Pyroelectric (see page 1104) detectors.

## Detector Compatibility and Performance

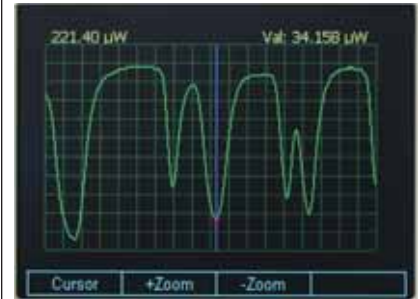
The 1918-C Power/Energy Meter is compatible with Newport's new Low-Power 918D, 818, High-Power 818P and 818E Series Energy Detectors, allowing both free-space and fiber pigtailed measurements in the 190 nm – 20 μm range. All compatible detectors have a built-in or external in-line EEPROM containing detector identification and calibration information. When using an 818 Series detector with the 1918-C, the optional 841-DIN adaptor is required.

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 (Single or Continuous)
Low-Power (918D, 918L and 818 Series Photodiodes)	Yes	Yes	Yes	No
High-Power (818P Series Thermopiles)	Yes	Yes	No	No
Energy (818E Series Pyroelectric)	No	No	No	Yes

## Color Display Formats

Users can select from 6 display colors to match their specific lighting conditions and colors of their laser safety eyewear. Measurements can also be displayed in various display formats, such as numeric, graphic, bar and strip charts.



The 1918-C has advanced graphing capabilities



The 1918-C with vertical strip chart display

## Ordering Information

Model	Description
1918-C	High-Performance Hand-Held Optical Power/Energy Meter
841-DIN <sup>(1)</sup>	Mini-DIN to DB15 Detector Adaptor for 818/CAL Series Detectors

(1) This adaptor is required when using 818 Series Low-power detectors with the 1918-C