

# 1938-R and 2938-R Benchtop Optical Power Meters

**mks** | Newport

The 1938-R and 2938-R optical power and energy meters are the next generation models of the popular 1936-R and 2936-R meters.

The 1938-R and 2938-R energy meters both include a calibration certificate, a convenient quick start guide, a USB cable and a power cord.



## Features

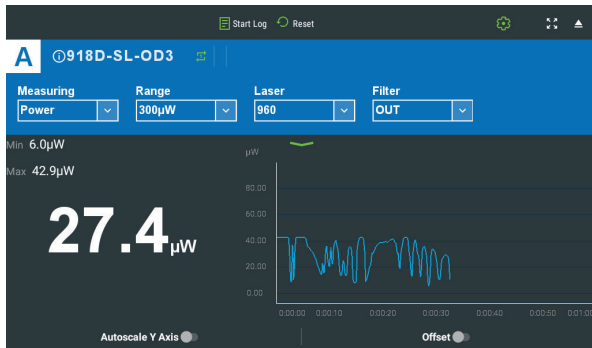
- Most advanced optical power and energy meter in the market
- Ideal for high speed, modulated light measurements
- Time-stamped data acquisition at up to 10 kHz to on-board memory or to USB memory
- Full color 7" touch screen with intuitive user interface
- Seven analog filter and multiple averaging settings
- Trigger In and TTL Out for synchronized measurements
- Various communication modes
- Compatible with PMManager™ control software

## Most advanced optical power and energy meter in the market



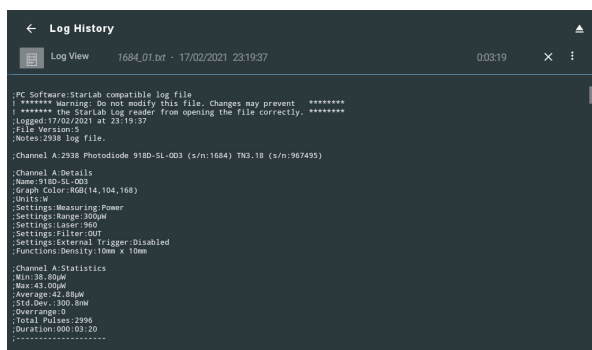
The 1938-R and 2938-R power meters inherited most of the advanced functions available in x936-R series on top of the touch screen, Android OS, and high bandwidth electronics design. The power meters are more powerful, faster, and more versatile than any other product in the market. Beautifully designed user interface allows unprecedented speed of measurements along with various graphical and numerical presentation of the data.

## Ideal for high speed, modulated light measurements



Depending on the range, x938-R power meter has up to 200 kHz bandwidth for the 818, 918D, or 819C/D series photodiode detectors. It allows up to 10 kHz rate, time-stamped data logging to the on-board memory or an external USB memory, showing more details about the characteristics of the light source. To fully utilize the high bandwidth operation, x938-R has analog output where the raw signal can be directly sent out to an oscilloscope or a DAQ (data acquisition) board. In addition, when connected to a 919E series pyroelectric sensor, every single pulse up to 25 kHz can be logged.

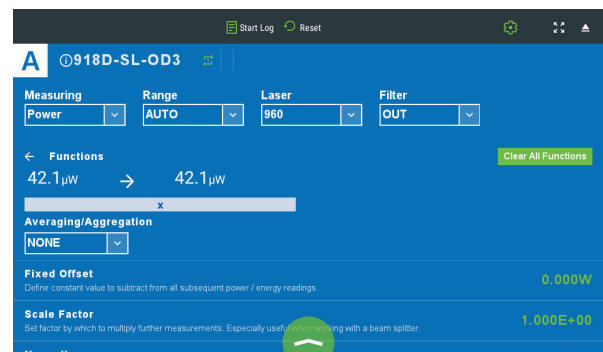
## Time-stamped data acquisition at up to 10 kHz



Even though x936-R's 10 kHz data measurement rate was already impressive, the x938-R optical power meters made an improvement by adding a time stamp to the data, thereby knowing exactly when the measurements

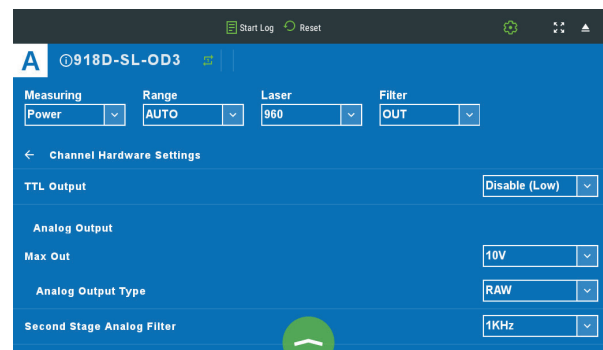
were taken. The log files can be easily set up and recorded in either the 2 GB on-board memory or on a USB thumb drive. Once the log files are created, the text data or the graphics file can be viewed within the instrument.

## Full color 7" touch screen with intuitive user interface



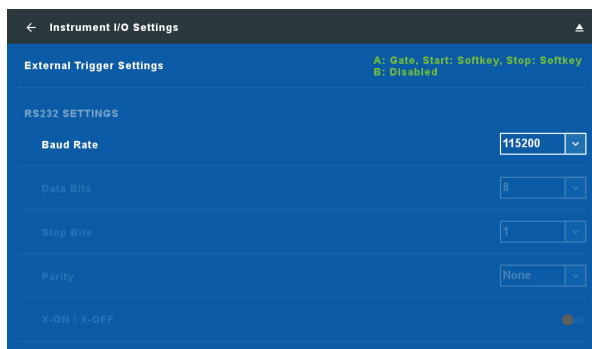
1024 x 600 pixel high brightness, full color 7" touch screen provides the feel of using a tablet, making the menu maneuvering at one's fingertip. With the clearly legible display, various selections of information and graphs are visually appealing and easy to read even at a distance, making the instruments more helpful in complex measurement situations. The user interface is beautifully designed so that advanced features such as advanced graphing, mathematical functions, offsetting, scaling, laser tuning, logging can easily be accessed and utilized during measurements and experiments.

## Seven analog filter and multiple averaging settings



With seven analog filters, ranging from 0.5 Hz to 250 kHz, and the averaging function, ranging from one second to one hour of moving average, one can configure the power meter for either the stable average power measurements of a continuous wave light source, fast tracking of a rapidly changing optical power level, or the peak-to-peak measurements of a modulated signal. The analog filter is an electronic low pass filter used to eliminate high frequency noise, while averaging allows smoothing the data by applying moving average of the obtained data. By adjusting these settings, it is possible to make stable power measurements while the beam is modulated.

## Trigger In and TTL Out for synchronized measurements



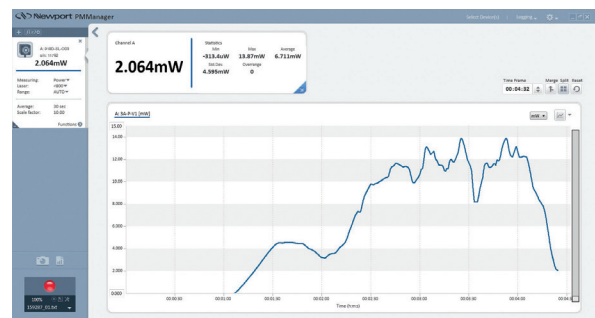
X938-R power and energy meters are equipped with Trigger In and TTL Out connectors for synchronized measurements. Trigger In can be an external TTL signal, or a button available from the meter, or a computer command. TTL Out gives out either 0 V or 5 V to signal the status of the present measurement to a device connected via TTL Output. It can also be set to generate an output when the meter encounters an error such as power reading is over-range or saturated.

## Various communication modes and output signals



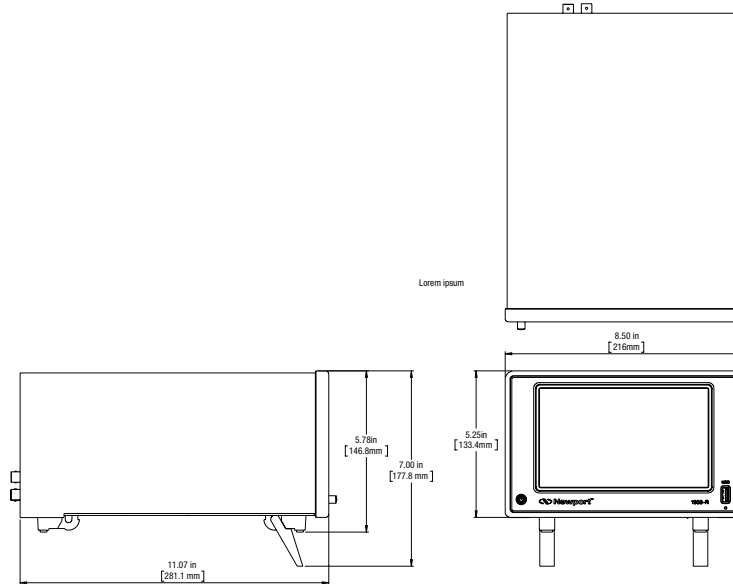
For the computer communication, Ethernet, USB and RS-232 (max baud rate 115,200) are available. In addition to the aforementioned Trigger In and TTL Output, fast analog output directly coming from the analog board allows the full bandwidth available with the power meter.

## PMManager™ Application Software



PMManager™ is a powerful application software controlling and taking measurement data. It turns a PC into a laser power multi-channel analysis workstation. The PMManager software features include: extensive graphic display of data, advanced measurement processing, data logging for future review, printing of graphs and data, and the ability to connect additional devices during active measurements. Please see below or the PMManager Tutorial for more details regarding its capabilities.

## Dimensional Drawing



## General Specifications

Sensor Compatibility	Thermopile (919P series) Photodiode (918D, 818DB, 819C/D series) Pyroelectric (919E series)
Sensor Connectors	15-pin D-Sub type Male; One in 1938-R model (Channel A) Two in 2938-R model (Channel A and Channel B)
Dimensions	216W x 296D x 147H (mm)
Mass	2.8 kg
Display	1024x600 pixel TFT LCD Active area 154x91mm (7") Touchscreen Interface
Display digit height	18mm
LCD Backlight	LED's Backlight level is user adjustable.
Loudspeaker	For audio warnings
Lithium Coin Battery Clock Backup	3 Volts Model CR2032
Operating Temperature Range	5 – 40 degrees C
Relative Humidity	<70% RH Non-condensing
Altitude	<3000m
Use location	Indoor use only
Power Supply	~100-240V AC 50-60Hz Max power 40 Watts

## Ordering Information

Model	Description
1938-R	Advanced Optical Power & Meter, Benchtop, Single Channel
2938-R	Advanced Optical Power & Meter, Benchtop, Dual Channel