

# EnergyMax-USB/RS Sensors

## MaxBlack Coating



J-50MB-HE, J-25MB-HE and J-10MB-HE

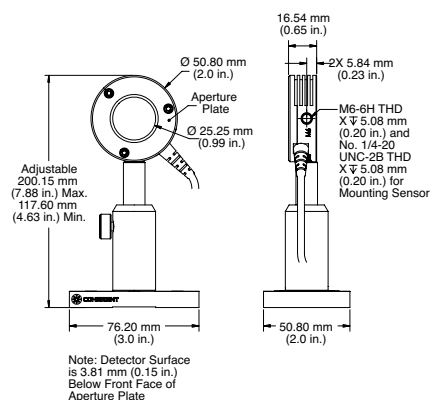
### Features

- Unique MaxBlack coating increases damage threshold, allows high repetition rate operation, and improves mechanical durability
- Operate over the 190 nm to 12  $\mu$ m range
- Enable pulse energy measurements from 500 nJ to 2J with high signal-to-noise characteristics
- Measure single shot to 1 kHz repetition rate
- Spectral compensation characteristics built into each unit
- Onboard sensors provide automatic temperature compensation

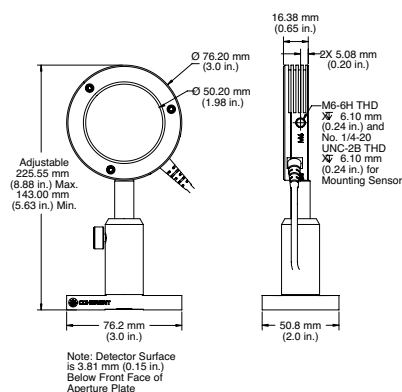
These sensors allow measurements over a wide range of wavelengths, beam diameters, average power levels, and repetition rates. The MaxBlack coating on these sensors provides significant damage resistance and mechanical durability characteristics compared to the black paint coatings often used on broadband sensors in the past.

Device Specifications	Model	J-50MB-HE	J-50MB-LE	J-25MB-HE	J-25MB-LE	J-10MB-HE	J-10MB-LE
	Energy Range	1.6 mJ to 2J	400 $\mu$ J to 500 mJ	850 $\mu$ J to 1J	50 $\mu$ J to 50 mJ	12 $\mu$ J to 20 mJ	500 nJ to 600 $\mu$ J
	Noise Equivalent Energy	<160 $\mu$ J	<40 $\mu$ J	<85 $\mu$ J	<5 $\mu$ J	<1.2 $\mu$ J	<50 nJ
	Wavelength Range ( $\mu$ m)	0.19 to 12					
	Active Area Diameter (mm)	50	50	25	25	10	10
	Maximum Average Power (W)	10	10	5	5	4	4
	Maximum Pulse Width ( $\mu$ s)	57		17			
	Maximum Repetition Rate (pps)	300	300	1000	1000	1000	1000
	Maximum Energy Density (mJ/cm <sup>2</sup> )	500 (at 1064 nm, 10 ns)					
	Detector Coating	MaxBlack					
	Diffuser	No					
	Calibration Wavelength (nm)	1064					
	Calibration Uncertainty (%) (k=2)	$\pm 2$					
	Energy Linearity (%)	$\pm 3$					
	Cable Length (m)	3					
	Cable Type	USB and RS					
	Part Number						
	USB	1191444	1191443	1191442	1191441	1191436	1191435
	RS	1191432	—	—	1191431	1191429	1191428

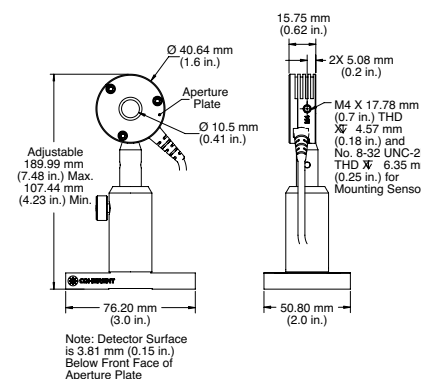
### J-25MB-HE and -LE



### J-50MB-HE and -LE



### J-10MB-HE and -LE



# EnergyMax-USB/RS Sensors

## Product Overview



Coherent's high performance EnergyMax sensors are also available in a meterless form factor with either RS-232 or USB 2.0 connectivity. This product range enables measurement of the energy per pulse or average power of pulsed lasers from the nanojoule to the multi-joule level, over wavelengths from the deep ultraviolet through the far infrared, and from single pulses to repetition rates of 10 kHz (with measurement of every pulse). Furthermore, multiple EnergyMax sensors can share a trigger (internal or external) for synchronized operation, such as to enable pulse ratiometry.

These meterless sensors are particularly attractive to system builders because their small size allows them to be easily

embedded within instrumentation, and their RS-232 or USB communications capabilities facilitate automated operation by a host computer.

Furthermore, EnergyMax USB/RS sensors significantly reduce the user's overall cost of ownership by eliminating the need to purchase a separate, more costly meter with each sensor, and by reducing annual calibration costs associated with integrating the electronics into the sensor. These products are also useful in the lab and research setting because they can be used as standalone instruments with a computer, or integrated smoothly into any experiment with an automated control and data acquisition system.

### The Meterless Advantage

#### Low Cost of Ownership

- Lower initial price – because no separate meter
- Lower calibration cost – because electronics are integrated into sensor
- Easy to adapt with apps software and drivers
- Less costly multi-channel operation

#### Embedded OEM Integration

- Flexibility of RS-232 and USB PC interfaces
- Compact size
- Easy ASCII host commands
- USB sensors attach as virtual COM port

#### State-of-the-Art Sensor Energy Technology

- Based upon industry leading EnergyMax sensors
- High accuracy
- High damage threshold
- High repetition rate with large active areas
- High dynamic range

# EnergyMax-USB/RS Sensors

## Product Overview

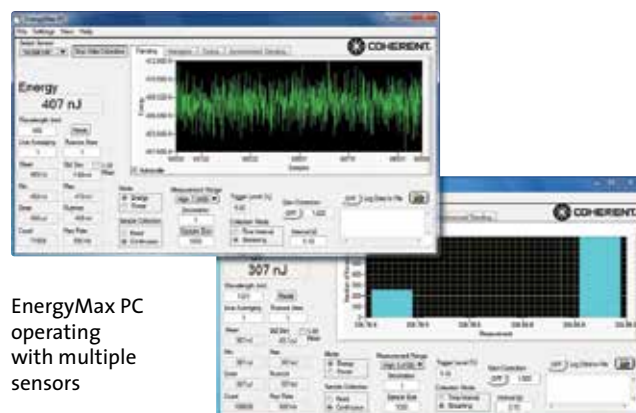
### Main Product Features

- Able to measure every pulse up to 10 kHz and stream this data over the host port (USB only). RS-232 capable of measuring every pulse up to 10 KHz and streaming data over host port at a rate of 1 kHz.
- EnergyMax-USB provides direct USB high speed 2.0 connection to PC. Power provided via USB connection.
- EnergyMax-RS provides RS-232 connectivity. Power input provided via +4-20 VDC input.
- Fast 14-bit A/D converter supports measurement accuracy similar to that found in Coherent's top-of-the-line LabMax meter
- Up to five digits of measurement resolution
- Each sensor incorporates a unique spectral compensation curve for accurate use at wavelengths that differ from the calibration wavelength
- External and Internal triggering available (trigger cable included)

### Main Software Features

EnergyMax PC applications software is supplied free with sensor and includes the following features:

- Trending, tuning, histogram at data rate up to 1 kHz
- Statistics (mean, minimum, maximum, and standard deviation, dose, fluence, and missed pulses)
- Ability to log data to a file at up to 10kHz (in Turbo mode)
- Operate multiple devices simultaneously and perform synchronized ratiometry (A/B analysis). Trend and log results to file.

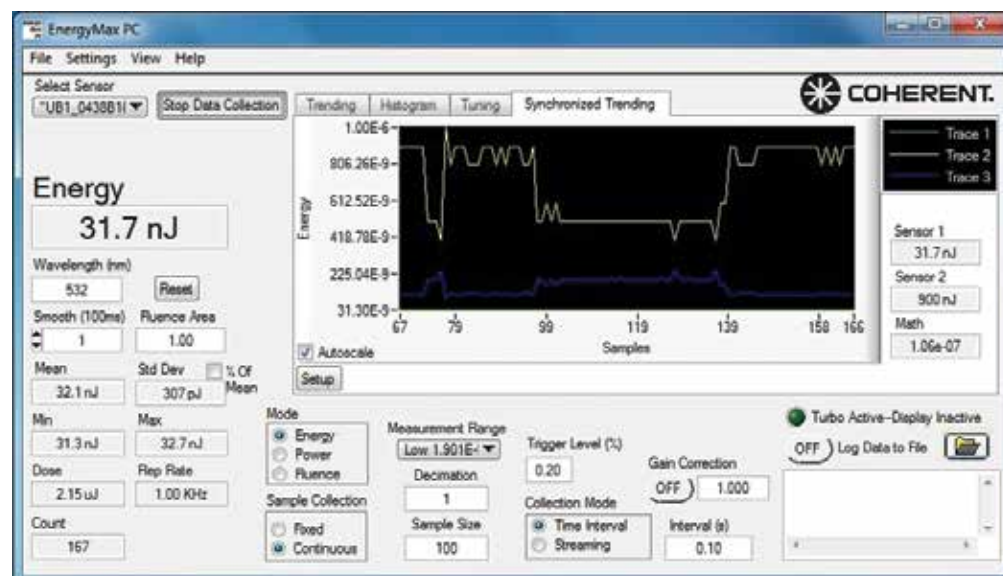


EnergyMax PC operating with multiple sensors

- Units can share triggers to provide synchronized measurements for applications such as ratiometry
- Order optional power supply #1105557 to provide 5VDC power the EnergyMax-RS sensors

For system integration and for implementations involving customer written software the sensors provide an in depth command set that is easy to access:

- USB sensors connect on Virtual COM port, thus supporting simple ASCII host commands communication for remote interfacing
- National Instruments LabVIEW drivers are supplied for easy LabVIEW integration



EnergyMax PC in synchronized ratiometric trending mode

POWER & ENERGY

Power & Energy Meters

USB/RS Power Sensors

DB-25 Power Sensors

USB/RS Energy Sensors

DB-25 Energy Sensors

Custom & OEM

BEAM DIAGNOSTICS

CALIBRATION & SERVICE

Laser Cross-Reference Index

Model Name Index