EnergyMax Sensors - Standard DB-25

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 µm range
- Enable pulse energy measurements from 300 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

ISO/IEC 17025:2005

AC-1630

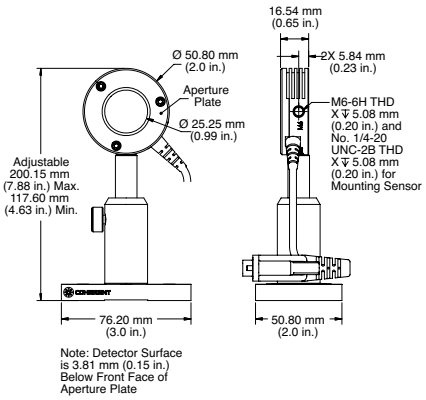
Model	J-50MB-HE	J-50MB-LE	J-25MB-HE	J-25MB-LE	J-10MB-HE	J-10MB-LE
Energy Range	1 mJ to 2J	250 µJ to 500 mJ	500 µJ to 1J	25 µJ to 50 mJ	10 µJ to 20 mJ	300 nJ to 600 µJ
Noise Equivalent Energy	<33 µJ	<8 µJ	<16 µJ	<1 µJ	<0.5 µJ	<20 nJ
Wavelength Range (µm)	0.19 to 12					
Active Area Diameter (mm)	50	50	25	25	10	10
Maximum Average Power (W)[1]	10	10	5	5	4	4
Maximum Pulse Width (µs)	57		17			
Maximum Repetition Rate (pps)	300	300	1000	1000	1000	1000
Maximum Energy Density (mJ/cm²)	500 (at 1064 nm, 10 ns)					
Detector Coating	MaxBlack					
Diffuser	No					
Calibration Wavelength (nm)	1064					
Calibration Uncertainty (%)(k=2)	±2					
Energy Linearity (%)	±3					
Cable Length (m)[2]	2.5					
Cable Type	J DB-25					
Part Number	1110573**	1110576**	1110746**	1110743**	1110843**	1110855**

[1] Extend average power range with optional heat sink. See page 75 and 94.

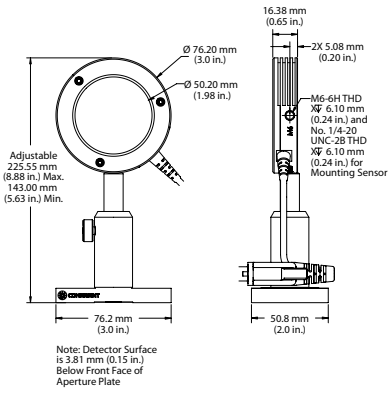
[2] Cable lengths up to 10m possible. Contact factory.

**C24 Quick Ship program: eligible for next business day shipment.

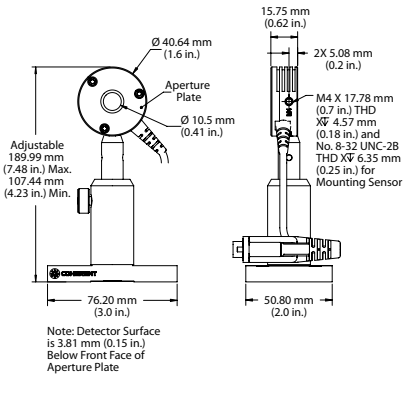
J-25MB-HE and -LE



J-50MB-HE and -LE



J-10MB-HE and -LE



EnergyMax Sensors - Standard DB-25

Diffuse Metallic Coating

J-50MT-10KHZ, J-25MT-10KHZ and J-10MT-10KHZ

Features

- **Unique diffuse metallic coating delivers increased damage threshold, allows high repetition rate operation and reduces specular reflectance**
- **Operate over the entire 190 nm to 2.1 µm range**
- **Enable pulse energy measurements from 100 nJ to 1J with high signal-to-noise characteristics**
- **Measure up to 10 kHz repetition rate**
- **Spectral compensation characteristics built into each unit**
- **Onboard sensors provide automatic temperature compensation[1]**

These sensors incorporate a diffuse metallic coating that enables measurements at high and low repetition rates across a wide range of energies, and wavelengths from 190 nm to 2.1 µm. The damage resistance at 532 nm and shorter wavelengths is higher than the MaxBlack coating. These sensors are not compatible with FieldMaxII meters because the response time is too fast. They are best suited for the LabMax-TOP meter.

Device Specifications

ISO/IEC 17025:2005

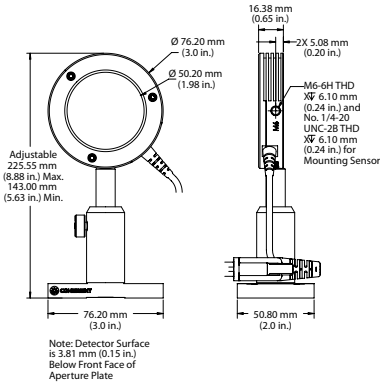
AC-1630

Model	J-50MT-10KHZ	J-25MT-10KHZ	J-10MT-10KHZ
Energy Range	500 µJ to 1J[2]	50 µJ to 100 mJ	100 nJ to 200 µJ
Noise Equivalent Energy	<16 µJ	<2 µJ	<10 nJ
Wavelength Range (µm)	0.19 to 2.1		
Active Area Diameter (mm)	50	25	10
Maximum Average Power (W)[3]	20	10	1
Maximum Pulse Width (µs)	1.7		
Maximum Repetition Rate (pps)	10,000		
Maximum Energy Density (mJ/cm²)	500 (at 1064 nm, 10 ns)		50 (at 1064 nm, 10 ns)
Detector Coating	Diffuse Metallic		
Diffuser	No		
Calibration Wavelength (nm)	1064		
Calibration Uncertainty (%)(k=2)	±2		
Energy Linearity (%)	±3		
Cable Length (m)[4]	2.5		
Cable Type	J DB-25		
Part Number	1110574**	1110747**	1110856**

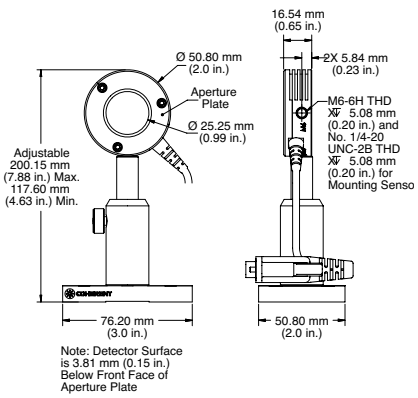
[1] Except J-10MT-10KHZ.
[2] Optional energy range 50 µJ to 100 mJ available.
[3] Extend average power range with optional heat sink. See page 75 and 94.
[4] Cable lengths up to 10m possible. Contact factory.

** C24 Quick Ship program: eligible for next business day shipment.

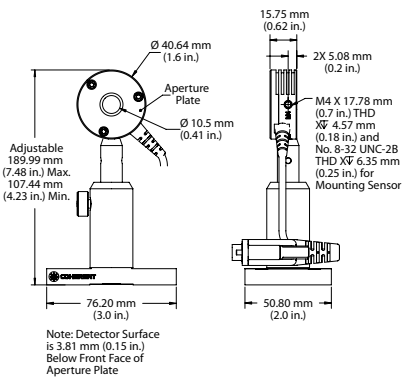
J-50MT-10KHZ



J-25MT-10KHZ



J-10MT-10KHZ



EnergyMax Sensors - Standard DB-25

MaxBlack Coating and Diffusers

J-50MB-YAG

Features

- **High energy and peak power to 14 J/cm²**
- **Operate at Nd: YAG fundamental and harmonics**
- **Enable pulse energy measurements from 1 mJ to 15J**
- **Spectral compensation characteristics built into each unit**
- **Onboard sensors provide automatic temperature compensation**

These sensors are specifically designed for high energy and high peak power lasers operating at relatively low repetition rates, such as those based on Nd:YAG, Ruby, Ho:YAG and Erbium. The J-50MB-YAG sensor can be used with beams up to 35 mm in diameter and can work at 1064 nm, 532 nm, 355 nm and 266 nm without the need to change or self-calibrate diffusers or any other accessories. Sensors combine a MaxBlack coating and a diffuser to produce superior damage resistance characteristics. This combination enables operation with lasers that produce either very high energy per pulse or very high peak fluences.

Device Specifications

ISO/IEC 17025:2005

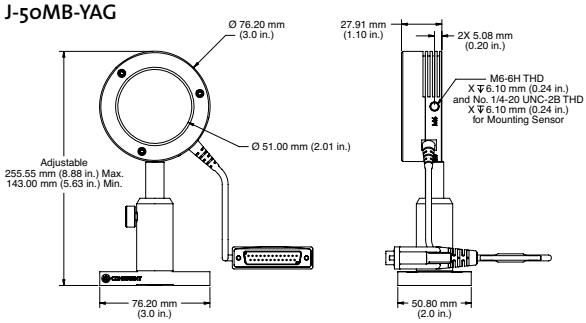
AC-1630

Model	J-50MB-YAG	J-50MB-YAG-1528	J-50MB-YAG-1535	J-50MB-YAG-1561
Energy Range	1.5 mJ to 3J	1.5 mJ to 3J	12 mJ to 15J	50 µJ to 100 mJ
Noise Equivalent Energy (µJ)	<50			
Wavelength Range (µm)	0.266 to 2.1			
Maximum Beam Size (mm)	35			
Maximum Average Power (W)[1]	20			
Maximum Pulse Width	340 µs	57 µs	2 ms[2]	340 µs
Maximum Repetition Rate (pps)	50	300	10	50
Maximum Energy Density (J/cm²)	14.0 (at 1064 nm, 10 ns) 2.8 (at 532 nm, 10 ns) 0.75 (at 355 nm, 10 ns) 1.0 (at 266 nm, 10 ns)			
Detector Coating	MaxBlack			
Diffuser	YAG			
Calibration Wavelength (nm)	1064			
Calibration Uncertainty (%)(k=2)	±2			
Energy Linearity (%)	±3			
Cable Length (m)[3]	2.5			
Cable Type	J DB-25			
Part Number	1110744**	1144701	1151431	1174756

[1] Extend average power range with optional heat sink. See page 75 and 94.
[2] Pulsewidths up to 5 ms can be measured with an additional ±1% uncertainty.
[3] Cable lengths up to 10m possible. Contact factory.

** C24 Quick Ship program: eligible for next business day shipment.

J-50MB-YAG



EnergyMax Sensors - Standard DB-25

MaxBlack Coating and Diffusers

J-50MB-IR and J-25MB-IR

Features

- High energy and peak power
- Operate throughout the IR
- Enable pulse energy measurements from 1 mJ to 3J
- Spectral compensation characteristics built into each unit
- Onboard sensors provide automatic temperature compensation

These sensors are specifically designed for high energy and high peak power medical lasers operating at relatively low repetition rates, such as those based on Ruby, Ho:YAG and Erbium. Both sensors combine a MaxBlack coating and a diffuser to produce superior damage resistance characteristics. This combination enables operation with lasers that produce either very high energy per pulse or very high peak fluences.

Device Specifications

ISO/IEC 17025:2005

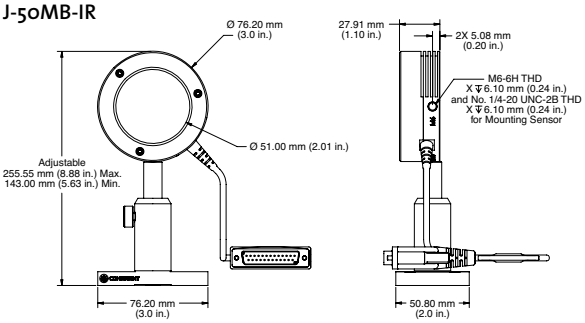
AC-1630

Model	J-50MB-IR	J-25MB-IR
Energy Range	1.0 mJ to 3J	1.5 mJ to 3J
Noise Equivalent Energy (µJ)	<100	<50
Wavelength Range (µm)	0.5 to 3.0	0.532 to 2.1
Maximum Beam Size (mm)	30	12.5
Maximum Average Power (W)[1]	15	20
Maximum Pulse Width (µs)	1000	860
Maximum Repetition Rate (pps)	30	20
Maximum Energy Density (J/cm²)	>100 (at 2940 nm, 100 µs)	5.0 (at 1064 nm, 10 ns)
Detector Coating	MaxBlack	
Diffuser	IR	
Calibration Wavelength (nm)	1064, 2940	1064
Calibration Uncertainty (%)(k=2)	±2 at 1064 nm, ±3 at 2940 nm	±2
Energy Linearity (%)	±3.5	±3
Cable Length (m)[2]	2.5	
Cable Type	J DB-25	
Part Number	1155722	1110577

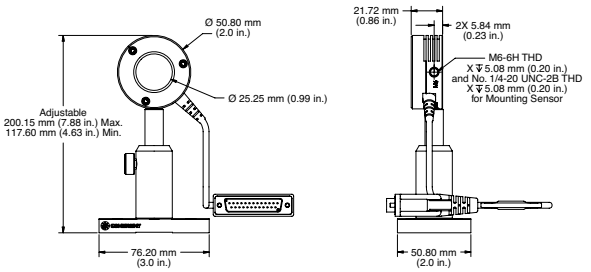
[1] Extend average power range with optional heat sink. See page 75 and 94.

[2] Cable lengths up to 10m possible. Contact factory.

J-50MB-IR



J-25MB-IR



EnergyMax Sensors - Standard DB-25

MaxUV Coating

J-50MUV-248 and J-25MUV-248

Features

- **Unique MaxUV coating delivers highest DUV damage threshold and long-term UV exposure resistance**
- **Operate over the 190 nm to 2.1 µm range**
- **Enable pulse energy measurements from 50 µJ to 1J**
- **Measure up to 400 Hz repetition rate**
- **Spectral compensation characteristics built into each unit**
- **Onboard sensors provide automatic temperature compensation**

MaxUV-coated EnergyMax sensors are specifically optimized for use with ArF lasers operating at 193 nm and KrF lasers at 248 nm. These sensors feature high accuracy and large active areas (up to 50 mm), and use a unique coating called MaxUV that delivers superior long-term damage resistance.

Two of the 50 mm diameter models incorporate a DUV quartz diffuser for increased resistance to coating damage.

Device Specifications

ISO/IEC 17025:2005

AC-1630

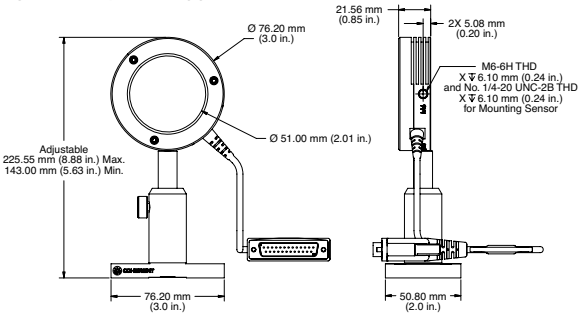
Model	J-50MUV-248 w/o Diffuser	J-50MUV-248 w/Diffuser	J-50MUV-193 w/o Diffuser	J-50MUV-193 w/Diffuser	J-25MUV-248 w/o Diffuser	J-25MUV-193 w/o Diffuser
Energy Range	500 µJ to 1J	500 µJ to 1J	125 µJ to 250 mJ	125 µJ to 250 mJ	125 µJ to 250 mJ	50 µJ to 100 mJ
Noise Equivalent Energy (µJ)	<16	<16	<4	<4	<4	<2
Wavelength Range (µm)	0.19 to 2.1	0.19 to 0.266	0.19 to 2.1	0.19 to 0.266	0.19 to 2.1	0.19 to 2.1
Active Area Diameter (mm)	50	50	50	50	25	25
Max. Average Power (W)[1]	10	15	10	18	5	5
Max. Pulse Width (µs)	86	86	86	86	43	43
Max. Rep. Rate (pps)	200	200	200	200	500	500
Max. Energy Density (mJ/cm²)	260 (at 248 nm, 10 ns)	520 (at 248 nm, 10 ns)	200 (at 193 nm, 10 ns)	400 (at 193 nm, 10 ns)	260 (at 248 nm, 10 ns)	200 (at 193 nm, 10 ns)
Detector Coating	MaxUV					
Diffuser	No	DUV	No	DUV	No	No
Calibration Wavelength (nm)	248	248	193	193	248	193
Calibration Uncertainty (%)(k=2)	±3					
Energy Linearity (%)	±3					
Cable Length (m)[2]	2.5					
Cable Type	J DB-25					
Part Number	1146243	1110572**	1146237	1110575	1110745	1110741

[1] Extend average power range with optional heat sink. See page 75 and 91.

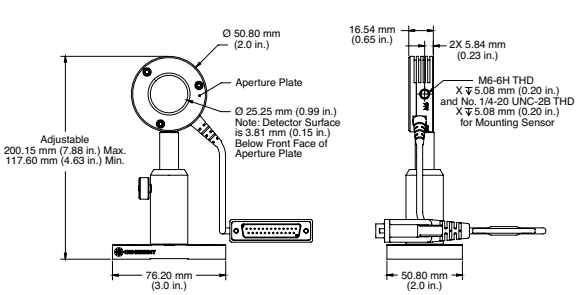
[2] Cable lengths up to 10m possible. Contact factory.

** C24 Quick Ship program: eligible for next business day shipment.

J-50MUV-248 and -193



J-25MUV-248 and -193



EnergyMax Sensors - Standard DB-25

Quantum Series

J-10SI-LE

Features

- **Pulse enegy measurement down to 8 pJ (within line; model dependent)**
- **Average power measurement of pulsed sources from nW to mW level signal-to-noise characteristics**
- **Measures single pulses to 10,000 Hz**
- **Accurate spectral compensation**
  - 325 nm to 900 nm for Silicon
  - 800 nm to 1700 nm for Germanium
- **Robust and reliable construction**

Quantum EnergyMax sensors enable low energy pulse measurements down to the 8 pJ level , as well as average power of pulsed systems from the nW to mW level, across a broad range of wavelengths. These models are not compatible with FieldMaxII meters because the response time is too fast. They are best suited for the LabMax-TOP meter. These sensors have a removable light shield on the front used to block stray light.

Device Specifications

Model	J-10SI-LE	J-10SI-HE	J-10GE
Energy Range	8 pJ to 80 nJ (at 532 nm)	60 pJ to 775 nJ (at 532 nm)	200 pJ to 600 nJ (at 1064 nm)
Noise Equivalent Energy	<0.8 pJ (at 532 nm)	<6 pJ (at 532 nm)	<8 pJ (at 1064 nm)
Wavelength Range (nm)	325 to 900	325 to 900	800 to 1700
Active Area Diameter (mm)	10	10	10
Max. Avg. Power (mW)	6	60	15
Max. Pulse Width (µs)	1	1	1
Max. Rep. Rate (pps)	10,000	10,000	10,000
Sensor	Silicon	Silicon	Germanium
Diffuser	ND2	ND2	ND2
Calibration Wavelength (nm)	532	532	1064
Calibration Uncertainty (%)(k=2)	±3	±3	±3
Linearity (%)	±3	±3	±3
Cable Length (m)[1]	3	3	3
Cable Type	J DB-25	J DB-25	J DB-25
Part Number	1140727	1150146	1140408

[1] Cable lengths up to 10m possible. Contact factory.

J-10SI-LE and -HE/J10GE