



QE12

12 x 12 mm, 0.7 μ J - 3.9 J



KEY FEATURES

1. **MODULAR CONCEPT**
Increase the power capability of your detector:
2 different cooling modules
2. **LOW NOISE LEVEL**
0.7 μ J for the MB coating
3. **QED ATTENUATOR AVAILABLE**
 - Measure up to 5X higher energies
 - Available with optional calibration, all wavelengths between 532 & 1064 nm, or single wavelength
4. **AVAILABLE WITH METALLIC ABSORBER**
High Repetition Rate (6000 Hz)
5. **TEST TARGET INCLUDED**
With the MB models
6. **SMART INTERFACE**
Containing all the calibration data
7. **integra OPTIONS**
 - Standard: USB Output (-INT)
 - In Option: RS-232 Output (-IDR) and External Trigger (-INE)

AVAILABLE MODELS



QE12LP-S-MB
(Broadband-Convection)



QE12LP-H-MB
(Broadband-Heatsink)



QE12SP-S-MT
(Metallic-Convection)



QE12SP-H-MT
(Metallic-Heatsink)

ACCESSORIES



Stand with Delrin Post
(Model Number: 200428)



DB-15 to BNC Adaptor
(Model Number: 200036)



QED-12 Attenuator
(Model Number: 201200)



Pelican Carrying Case

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APPLICATION NOTE

LONG PULSE JOULEMETER
IN BURST MODE

[202153](#)

QE12

SPECIFICATIONS

	QE12LP-S-MB		QE12LP-H-MB		QE12SP-S-MT		QE12SP-H-MT	
MAX MEASURABLE ENERGY (WITH ATTENUATOR)	3.9 J		3.9 J		1.6 J		1.6 J	
MAX REPETITION FREQUENCY	300 Hz		300 Hz		6000 Hz		6000 Hz	
EFFECTIVE APERTURE	12 x 12 mm		12 x 12 mm		12 x 12 mm		12 x 12 mm	
MEASUREMENT CAPABILITY								
Spectral Range *	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
	0.19 – 20 μm	0.3 - 2.1 μm	0.19 – 20 μm	0.3 - 2.1 μm	0.19 – 20 μm ^a	0.3 - 2.1 μm	0.19 – 20 μm ^a	0.3 - 2.1 μm
Maximum Measurable Energy ^b	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, 10 Hz ^c	0.85 J	3.9 J	0.85 J	3.9 J	0.70 J	1.60 J	0.70 J	1.60 J
266 nm, 7 ns, 10 Hz	0.70 J	0.81 J	0.70 J	0.81 J	0.10 J	0.25 J	0.10 J	0.25 J
Noise Equivalent Energy ^d	0.7 μJ		0.7 μJ		0.8 μJ		0.8 μJ	
Sensitivity ^{e,f}	60 V/J		60 V/J		100 V/J		100 V/J	
Max Repetition Frequency	300 Hz		300 Hz		6000 Hz ^g		6000 Hz ^g	
Maximum Pulse Width (typical)	400 μs ^{**}		400 μs ^{**}		10 μs		10 μs	
Rise Time (typical 0-100 %)	550 μs		550 μs		20 μs		20 μs	
Calibration Uncertainty ^h	$\pm 3\%$		$\pm 3\%$		$\pm 3\%$		$\pm 3\%$	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
DAMAGE THRESHOLDS								
Maximum Average Power	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
All Wavelengths	3 W	7.5 W	5 W	12.5 W	3 W	7.5 W	5 W	12.5 W
Maximum Energy Density	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, single shot	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.50 J/cm ²	4 J/cm ²	0.50 J/cm ²	4 J/cm ²
1064 nm, 7 ns, 10 Hz	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.50 J/cm ²	2 J/cm ²	0.50 J/cm ²	2 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.07 J/cm ²	0.35 J/cm ²	0.07 J/cm ²	0.35 J/cm ²
266 nm, 7 ns, 10 Hz	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.07 J/cm ²	0.30 J/cm ²	0.07 J/cm ²	0.30 J/cm ²
Maximum Average Power Density	10 W/cm ²	600 W/cm ²	10 W/cm ² ⁱ	600 W/cm ²	10 W/cm ²	600 W/cm ²	10 W/cm ² ⁱ	600 W/cm ²
PHYSICAL CHARACTERISTICS								
Effective Aperture (with Attenuator)	12 X 12 mm (9 X 9 mm)							
Absorber	Multi-Band		Multi-Band		Metallic		Metallic	
Dimensions	36H x 36W x 14D mm		36H x 36W x 33D mm		36H x 36W x 14D mm		36H x 36W x 33D mm	
Weight	87 g		117 g		87 g		117 g	
ORDERING INFORMATION								
	Standard	With Attenuator ⁱ	Standard	With Attenuator ⁱ	Standard	With Attenuator ⁱ	Standard	With Attenuator ⁱ
Product Name	QE12LP-S-MB-D0	QE12LP-S-MB-QED	QE12LP-H-MB-D0	QE12LP-H-MB-QED	QE12SP-S-MT-D0	Call	QE12SP-H-MT-D0	Call
Product Number (without stand)	200526	202178	200528	202179	200531		200532	
 Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	Call	-INT	Call
Product Number (without stand)	202724	202726	202720	202722	202730		202728	
 Add Extension for INTEGRA (RS-232)	-IDR	-IDR	-IDR	-IDR	-IDR		-IDR	
 Add Extension for INTEGRA (Ext Trig)	-INE	-INE	-INE	-INE	-INE		-INE	

Specifications are subject to change without notice // Compatible stand: P/N 200428

* * Also available on special order: The Extra Long Pulse Series QE12ELP-MB for pulse widths up to 2 msec, custom-tuned for rep. rate, sensitivity, and pulse width.

* For the calibrated spectral range, see the user manual.

a. Detectors with the MT coating can be used within the range 0.19 to 20 μm , however the absorption in the IR wavelengths decreases significantly. This, in turn, reduces the sensitivity and increases the noise level.

b. Not exceeding Maximum Average Power.

c. Increasing pulse width increases the maximum measurable energy.

d. Nominal value, actual value depends on electrical noise in the measurement system.

e. Load: 1 M Ω and ≤ 30 pF.

f. Maximum output voltage = sensitivity x maximum energy.

g. 5700 Hz with Integra version. Call us for up to 9000 Hz option.

h. Excludes non-linearities.

i. At 3 W. Maximum Average Power Density is 10 W/cm² @ 5 W for -H versions.

j. When -QED extension is added, the QE + QED come as one unit with a combined calibration only. See the "QED Attenuator" page for more options on the calibration.



QE25

25 x 25 mm, 2 μ J - 23 J



KEY FEATURES

1. **MODULAR CONCEPT**
Increase the power capability of your detector:
2 different cooling modules
 2. **LOW NOISE LEVEL**
2 μ J for the MT coating
 3. **QED ATTENUATOR AVAILABLE**
 - Measure up to 5X higher energies
 - Available with optional calibration, all wavelengths between 532 & 1064 nm, or single wavelength
 4. **HIGH REPETITION RATE OPTIONS**
 - QE-MB: 300 Hz (Standard)
 - QE-MB: 1 000 Hz (Upon Request)
 - QE-MT: 6 000 Hz (Standard)
 5. **TEST TARGET INCLUDED**
With the MB models
 6. **SMART INTERFACE**
Containing all the calibration data
7. **integra OPTIONS**

 - Standard: USB Output (-INT)
 - In Option: RS-232 Output (-IDR) and External Trigger (-INE)

AVAILABLE MODELS



QE25LP-S-MB
(Broadband-Convection)



QE25LP-H-MB
(Broadband-Heatsink)



QE25SP-S-MT
(Metallic-Convection)



QE25SP-H-MT
(Metallic-Heatsink)

ACCESSORIES



Stand with Delrin Post
(Model Number: 200428)



DB-15 to BNC Adaptor
(Model Number: 200036)



QED-25 Attenuator
(Model Number: 201199)



Pelican Carrying Case

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QE25

SPECIFICATIONS

	QE25LP-S-MB		QE25LP-H-MB		QE25SP-S-MT		QE25SP-H-MT	
MAX MEASURABLE ENERGY (WITH ATTENUATOR)	23 J		23 J		10 J		10 J	
MAX REPETITION FREQUENCY	300 Hz (1000 Hz in option)		300 Hz (1000 Hz in option)		6000 Hz		6000 Hz	
EFFECTIVE APERTURE	25 x 25 mm		25 x 25 mm		25 x 25 mm		25 x 25 mm	
MEASUREMENT CAPABILITY								
Spectral Range *	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
	0.19–20 µm	0.3-2.1 µm ^a	0.19–20 µm	0.3-2.1 µm ^a	0.19–20 µm ^b	0.3-2.1 µm ^a	0.19–20 µm ^b	0.3-2.1 µm ^a
Maximum Measurable Energy ^c	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, 10 Hz ^d	3.8 J	23 J	3.8 J	23 J	3.0 J	10 J	3.0 J	10 J
266 nm, 7 ns, 10 Hz	3.1 J	4.8 J	3.1 J	4.8 J	0.44 J	1.45 J	0.44 J	1.45 J
Noise Equivalent Energy ^e	4 µJ		4 µJ		2 µJ		2 µJ	
Sensitivity ^{f,g}	10 V/J		10 V/J		20 V/J		20 V/J	
Max Repetition Frequency	300 Hz (1000 Hz in option)		300 Hz (1000 Hz in option)		6000 Hz ^h		6000 Hz ^h	
Maximum Pulse Width (typical)	400 µs ^{**}		400 µs ^{**}		10 µs		10 µs	
Rise Time (typical 0-100 %)	550 µs		550 µs		20 µs		20 µs	
Calibration Uncertainty ⁱ	±3 %		±3 %		±3 %		±3 %	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
DAMAGE THRESHOLDS								
Maximum Average Power	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
All Wavelengths	5 W	15 W	10 W	30 W	5 W	15 W	10 W	30 W
Maximum Energy Density	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, single shot	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.50 J/cm ²	4 J/cm ²	0.50 J/cm ²	4 J/cm ²
1064 nm, 7 ns, 10 Hz	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.50 J/cm ²	2 J/cm ²	0.50 J/cm ²	2 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.07 J/cm ²	0.35 J/cm ²	0.07 J/cm ²	0.35 J/cm ²
266 nm, 7 ns, 10 Hz	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.07 J/cm ²	0.30 J/cm ²	0.07 J/cm ²	0.30 J/cm ²
Maximum Average Power Density	10 W/cm ²	600 W/cm ²	10 W/cm ² ^j	600 W/cm ²	10 W/cm ²	600 W/cm ²	10 W/cm ² ⁱ	600 W/cm ²
PHYSICAL CHARACTERISTICS								
Effective Aperture (with Attenuator)	25 X 25 mm (22 X 22 mm)							
Absorber	Multi-Band		Multi-Band		Metallic		Metallic	
Dimensions	50H x 50W x 14D mm		50H x 50W x 52.5D mm		50H x 50W x 14D mm		50H x 50W x 52.5D mm	
Weight	120 g		187 g		120 g		187 g	
ORDERING INFORMATION								
Product Name	Standard	With Attenuator ^k	Standard	With Attenuator ^k	Standard	With Attenuator ^k	Standard	With Attenuator ^k
Product Name	QE25LP-S-MB-D0	QE25LP-S-MB-QED	QE25LP-H-MB-D0	QE25LP-H-MB-QED	QE25SP-S-MT-D0	Call	QE25SP-H-MT-D0	Call
Product Number (without stand)	200455	202182	200457	202183	200460		200461	
 Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	Call	-INT	Call
Product Number (without stand)	202381	202740	202383	202734	202385		202387	
 Add Extension for INTEGRA (RS-232)	-IDR	-IDR	-IDR	-IDR	-IDR		-IDR	
 Add Extension for INTEGRA (Ext Trig)	-INE	-INE	-INE	-INE	-INE		-INE	
Product Name with 1000 Hz Tuning	QE25HR-S-MB	QE25HR-S-MB-QED						

Specifications are subject to change without notice // Compatible stand: P/N 200428

* Also available on special order: The Extra Long Pulse Series QE25ELP-MB for pulse widths up to 4 msec, custom-tuned for rep. rate, sensitivity, and pulse width.

* For the calibrated spectral range, see the user manual.

a. 0.19 - 0.3 µm with QEAS Attenuator, 0.3 - 2.1 µm with QED Attenuator.

b. Detectors with the MT coating can be used within the range 0.19 to 20 µm, however the absorption in the IR wavelengths decreases significantly. This, in turn, reduces the sensitivity and increases the noise level. Nevertheless, each detector is individually scanned and the wavelength correction factor (PWC) is NIST traceable in the range of 248 nm to 2.5 µm.

c. Not exceeding Maximum Average Power.

d. Increasing pulse width increases the maximum measurable energy.

e. Nominal value, actual value depends on electrical noise in the measurement system.

f. Load: 1 MΩ and ≤ 30 pF.

g. Maximum output voltage = sensitivity x maximum energy.

h. 5700 Hz with Integra version.

i. Excludes non-linearities.

j. At 5 W. Maximum Average Power Density is 10 W/cm² @ 10 W for -H versions.

k. When -QED extension is added, the QE + QED come as one unit with a combined calibration only. See the "QED Attenuator" page for more options on the calibration.



QE50

50 x 50 mm, 10 μ J - 85 J



KEY FEATURES

1. **MODULAR CONCEPT**
Increase the power capability of your detector:
2 different cooling modules
 2. **LOW NOISE LEVEL**
10 μ J for both coatings
 3. **QED ATTENUATOR AVAILABLE**
 - Measure up to 5X higher energies
 - Available with optional calibration, all wavelengths between 532 & 1064 nm, or single wavelength
 4. **HIGH REPETITION RATE OPTIONS**
 - QE-MB: 200 Hz (Standard)
 - QE-MB: 500 Hz (Upon Request)
 - QE-MT: 4 000 Hz (Standard)
 5. **TEST TARGET INCLUDED**
With the MB models
 6. **SMART INTERFACE**
Containing all the calibration data
7. **integra OPTIONS**

 - Standard: USB Output (-INT)
 - In Option: RS-232 Output (-IDR) and External Trigger (-INE)

AVAILABLE MODELS



QE50LP-S-MB
(Broadband-Convection)



QE50LP-H-MB
(Broadband-Heatsink)



QE50SP-S-MT
(Metallic-Convection)



QE50SP-H-MT
(Metallic-Heatsink)

ACCESSORIES



Stand with Delrin Post
(Model Number: 200428)



DB-15 to BNC Adaptor
(Model Number: 200036)



QED-50 Attenuator
(Model Number: 201198)



Pelican Carrying Case

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QE50



*Also traceable to NRC-CNRC

SPECIFICATIONS

	QE50LP-S-MB		QE50LP-H-MB		QE50SP-S-MT		QE50SP-H-MT	
MAX MEASURABLE ENERGY (WITH ATTENUATOR)	85 J		85 J		44 J		44 J	
MAX REPETITION FREQUENCY	200 Hz		200 Hz		4000 Hz		4000 Hz	
EFFECTIVE APERTURE	50 x 50 mm		50 x 50 mm		50 x 50 mm		50 x 50 mm	
MEASUREMENT CAPABILITY								
Spectral Range *	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
	0.19 – 20 μm	0.3 - 2.1 μm^a	0.19 – 20 μm	0.3 - 2.1 μm^a	0.19 – 20 μm^b	0.3 - 2.1 μm^a	0.19 – 20 μm^b	0.3 - 2.1 μm^a
Maximum Measurable Energy ^c	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, 10 Hz ^d	15 J	85 J	15 J	85 J	13 J	44 J	13 J	44 J
266 nm, 7 ns, 10 Hz	12.5 J	22 J	12.5 J	22 J	1.8 J	6.5 J	1.8 J	6.5 J
Noise Equivalent Energy ^e	10 μJ		10 μJ		10 μJ		10 μJ	
Sensitivity ^{f, g}	3 V/J		3 V/J		4 V/J		4 V/J	
Max Repetition Frequency	200 Hz		200 Hz		4000 Hz		4000 Hz	
Maximum Pulse Width (typical)	675 μs **		675 μs **		10 μs		10 μs	
Rise Time (typical 0-100 %)	900 μs		900 μs		20 μs		20 μs	
Calibration Uncertainty ^h	± 3 %		± 3 %		± 3 %		± 3 %	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
DAMAGE THRESHOLDS								
Maximum Average Power	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
All Wavelengths	10 W	25 W	20 W	45 W	10 W	25 W	20 W	45 W
Maximum Energy Density	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, single shot	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.50 J/cm ²	4 J/cm ²	0.50 J/cm ²	4 J/cm ²
1064 nm, 7 ns, 10 Hz	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.50 J/cm ²	2 J/cm ²	0.50 J/cm ²	2 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.07 J/cm ²	0.35 J/cm ²	0.07 J/cm ²	0.35 J/cm ²
266 nm, 7 ns, 10 Hz	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.07 J/cm ²	0.30 J/cm ²	0.07 J/cm ²	0.30 J/cm ²
Maximum Average Power Density	10 W/cm ²	600 W/cm ²	10 W/cm ² ⁱ	600 W/cm ²	10 W/cm ²	600 W/cm ²	10 W/cm ² ⁱ	600 W/cm ²
PHYSICAL CHARACTERISTICS								
Effective Aperture (with Attenuator)	50 X 50 mm (47 X 47 mm)							
Absorber	Multi-Band		Multi-Band		Metallic		Metallic	
Dimensions	75H x 75W x 15D mm		75H x 75W x 44D mm		75H x 75W x 15D mm		75H x 75W x 44D mm	
Weight	209 g		338 g		209 g		338 g	
ORDERING INFORMATION								
	Standard	With Attenuator ^j	Standard	With Attenuator ^j	Standard	With Attenuator ^j	Standard	With Attenuator ^j
Product Name	QE50LP-S-MB-D0	QE50LP-S-MB-QED	QE50LP-H-MB-D0	QE50LP-H-MB-QED	QE50SP-S-MT-D0	Call	QE50SP-H-MT-D0	Call
Product Number (without stand)	200479	202186	200481	202187	200484		200485	
Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	Call	-INT	Call
Product Number (without stand)	202750	202752	202746	202748	202756		202754	
Add Extension for INTEGRA (RS-232)	-IDR	-IDR	-IDR	-IDR	-IDR		-IDR	
Add Extension for INTEGRA (Ext Trig)	-INE	-INE	-INE	-INE	-INE		-INE	

Specifications are subject to change without notice // Compatible stand: P/N 200428

* * Also available on special order: The Extra Long Pulse Series QE50ELP-MB for pulse widths up to 5 msec, custom-tuned for rep. rate, sensitivity, and pulse width.

* For the calibrated spectral range, see the user manual.

a. 0.19 - 0.3 μm with QEAS Attenuator, 0.3 - 2.1 μm with QED Attenuator.b. Detectors with the MT coating can be used within the range 0.19 to 20 μm , however the absorption in the IR wavelengths decreases significantly. This, in turn, reduces the sensitivity and increases the noise level. Nevertheless, each detector is individually scanned and the wavelength correction factor (PWC) is NIST traceable in the range of 248 nm to 2.5 μm .

c. Not exceeding Maximum Average Power.

d. Increasing pulse width increases the maximum measurable energy.

e. Nominal value, actual value depends on electrical noise in the measurement system.

f. Load: 1 M Ω and ≤ 30 pF.

g. Maximum output voltage = sensitivity x maximum energy.

h. Excludes non-linearities.

i. At 10 W. Maximum Average Power Density is 5 W/cm² @ 20 W for -H versions.

j. When -QED extension is added, the QE + QED come as one unit with a combined calibration only. See the "QED Attenuator" page for more options on the calibration.



QE65

65 x 65 mm, 10 μ J - 200 J



KEY FEATURES

1. **MODULAR CONCEPT**
Increase the power capability of your detector:
2 different cooling modules
 2. **LARGE APERTURE**
Effective aperture of 65 x 65 mm
 3. **QED ATTENUATOR AVAILABLE**
 - Measure up to 5X higher energies
 - Available with optional calibration, all wavelengths between 532 & 1064 nm, or single wavelength
 4. **LOW NOISE LEVEL**
10 μ J for the MB coating
 5. **TEST TARGET INCLUDED**
With the MB models
 6. **SMART INTERFACE**
Containing all the calibration data
7. **integra OPTIONS**

 - Standard: USB Output (-INT)
 - In Option: RS-232 Output (-IDR) and External Trigger (-INE)

AVAILABLE MODELS



QE65LP-S-MB
(Broadband-Convection)



QE65LP-H-MB
(Broadband-Heatsink)



QE65ELP-S-MB
(XLong Pulse-Convection)



QE65ELP-H-MB
(XLong Pulse-Heatsink)

ACCESSORIES



Stand with Delrin Post
(200428, For -S Model)



Stand with Delrin Post
(201284, For -H Model)



DB-15 to BNC Adaptor
(Model Number: 200036)



QED-65 Attenuator
(Model Number: 201282)



Pelican Carrying Case

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QE65



*Also traceable to NRC-CNRC

SPECIFICATIONS

	QE65LP-S-MB	QE65LP-H-MB	QE65ELP-S-MB	QE65ELP-H-MB				
MAX MEASURABLE ENERGY (WITH ATTENUATOR)	200 J	200 J	200 J	200 J				
MAX REPETITION FREQUENCY	100 Hz	100 Hz	20 Hz	20 Hz				
EFFECTIVE APERTURE	65 x 65 mm	65 x 65 mm	65 x 65 mm	65 x 65 mm				
MEASUREMENT CAPABILITY								
Spectral Range *	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm
Maximum Measurable Energy ^{a,b}	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 150 µs pulse, Single shot ^c	25 J	200 J	25 J	200 J	50 J	200 J	50 J	200 J
1064 nm, 7 ns, 10 Hz	25 J	125 J	25 J	125 J	25 J	125 J	25 J	125 J
266 nm, 7 ns, 10 Hz	20 J	35 J	20 J	35 J	20 J	35 J	20 J	35 J
Noise Equivalent Energy ^d	10 µJ		10 µJ		20 µJ		20 µJ	
Sensitivity ^{e,f}	4 V/J		4 V/J		1.5 V/J		1.5 V/J	
Max Repetition Frequency	100 Hz		100 Hz		20 Hz		20 Hz	
Maximum Pulse Width (typical)	0.7 ms		0.7 ms		5 ms		5 ms	
Rise Time (typical 0-100 %)	1 ms		1 ms		6 ms		6 ms	
Calibration Uncertainty ^g	±3 %		±3 %		±3 %		±3 %	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
DAMAGE THRESHOLDS								
Maximum Average Power	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
All Wavelengths	12 W	30 W	40 W	90 W	12 W	30 W	40 W	90 W
Maximum Energy Density	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 150 µs, 10 Hz	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²
1064 nm, 7 ns, single shot	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²
1064 nm, 7 ns, 10 Hz	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²
266 nm, 7 ns, 10 Hz	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²
Maximum Average Power Density (@12 W)	10 W/cm ²	600 W/cm ²	10 W/cm ² ^h	600 W/cm ²	10 W/cm ²	600 W/cm ²	10 W/cm ² ^h	600 W/cm ²
PHYSICAL CHARACTERISTICS								
Effective Aperture (with Attenuator)	65 X 65 mm (62 X 62 mm)							
Absorber	Multi-Band	Multi-Band	Multi-Band	Multi-Band				
Dimensions	90H x 90W x 20D mm	90H x 90W x 94D mm	90H x 90W x 20D mm	90H x 90W x 94D mm				
Weight	440 g	900 g	440 g	900 g				
ORDERING INFORMATION								
	Standard	With Attenuator ⁱ	Standard	With Attenuator ⁱ	Standard	Standard		
Product Name	QE65LP-S-MB	QE65LP-S-MB-QED	QE65LP-H-MB-DO	QE65LP-H-MB-QED	QE65ELP-S-MB-DO	QE65ELP-H-MB-DO		
Product Number (without stand)	201251	202190	201253	202191	201279	201280		
Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	-INT		
Product Number (without stand)	202766	202768	202762	202764	202760	202758		
Add Extension for INTEGRA (RS-232)	-IDR	-IDR	-IDR	-IDR	-IDR	-IDR		
Add Extension for INTEGRA (Ext Trig)	-INE	-INE	-INE	-INE	-INE	-INE		

Specifications are subject to change without notice // Compatible stands: P/N 200428, 201284

* For the calibrated spectral range, see the user manual.

a. Not exceeding Maximum Average Power.

b. Maximum measurable energy depends on the monitor.

c. Increasing pulse width increases the maximum measurable energy.

d. Nominal value, actual value depends on electrical noise in the measurement system.

e. Load: 1 MΩ and ≤ 30 pF.

f. Maximum output voltage = sensitivity x maximum energy.

g. Excludes non-linearities.

h. At 12 W. Maximum Average Power Density is 5 W/cm² @ 40 W.

i. When -QED extension is added, the QE + QED come as one unit with a combined calibration only. See the "QED Attenuator" page for more options on the calibration.



QE95

95 mm Ø, 15 µJ - 250 J



KEY FEATURES

1. **MODULAR CONCEPT**
Increase the power capability of your detector:
2 different cooling modules
2. **EXTRA LARGE APERTURE**
Effective aperture of 95 mm Ø
3. **QED ATTENUATOR AVAILABLE**
 - Measure up to 5X higher energies
 - Available with optional calibration, all wavelengths between 532 & 1064 nm, or single wavelength
4. **LOW NOISE LEVEL**
15 µJ for the MB coating
5. **TEST TARGET INCLUDED**
With the MB models
6. **SMART INTERFACE**
Containing all the calibration data
7. **integra OPTIONS**
 - Standard: USB Output (-INT)
 - In Option: RS-232 Output (-IDR) and External Trigger (-INE)

AVAILABLE MODELS



QE95LP-S-MB
(Broadband-Convection)



QE95LP-H-MB
(Broadband-Heatsink)



QE95ELP-S-MB
(Long Pulse-Convection)



QE95ELP-H-MB
(Long Pulse-Heatsink)

ACCESSORIES



Stand with Delrin Post
(200428, For -S Model)



Stand with Delrin Post
(201284, For -H Model)



DB-15 to BNC Adaptor
(Model Number: 200036)



QED-95 Attenuator
(Model Number: 201323)



Pelican Carrying Case

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QE95



*Also traceable to NRC-CNRC

SPECIFICATIONS

	QE95LP-S-MB	QE95LP-H-MB	QE95ELP-S-MB	QE95ELP-H-MB				
MAX MEASURABLE ENERGY (WITH ATTENUATOR)	250 J	250 J	250 J	250 J				
MAX REPETITION FREQUENCY	40 Hz	40 Hz	10 Hz	10 Hz				
EFFECTIVE APERTURE	95 mm Ø	95 mm Ø	95 mm Ø	95 mm Ø				
MEASUREMENT CAPABILITY								
Spectral Range *	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm	Alone 0.19 – 20 µm	Attenuator 0.3 - 2.1 µm
Maximum Measurable Energy ^{a, b}	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 150 µs pulse, Single shot ^c	35 J	250 J	35 J	250 J	70 J	250 J	70 J	250 J
1064 nm, 7 ns, 10 Hz	35 J	150 J	35 J	150 J	35 J	150 J	35 J	150 J
266 nm, 7 ns, 10 Hz	30 J	50 J	30 J	50 J	30 J	50 J	30 J	50 J
Noise Equivalent Energy ^d	15 µJ		15 µJ		30 µJ		30 µJ	
Sensitivity ^{e, f}	2 V/J		2 V/J		0.6 V/J		0.6 V/J	
Max Repetition Frequency	40 Hz		40 Hz		10 Hz		10 Hz	
Maximum Pulse Width (typical)	1.5 ms		1.5 ms		5 ms		5 ms	
Rise Time (typical 0-100 %)	2 ms		2 ms		6 ms		6 ms	
Calibration Uncertainty ^g	±3 %		±3 %		±3 %		±3 %	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
DAMAGE THRESHOLDS								
Maximum Average Power	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
All Wavelengths	20 W	45 W	40 W	90 W	20 W	45 W	40 W	90 W
Maximum Energy Density	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 150 µs, 10 Hz	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²	1.2 J/cm ²	14 J/cm ²
1064 nm, 7 ns, single shot	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²	0.6 J/cm ²	16 J/cm ²
1064 nm, 7 ns, 10 Hz	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²	0.6 J/cm ²	8 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²	0.6 J/cm ²	6 J/cm ²
266 nm, 7 ns, 10 Hz	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²	0.5 J/cm ²	1 J/cm ²
Maximum Average Power Density (@12 W)	10 W/cm ²	600 W/cm ²	10 W/cm ² ^h	600 W/cm ²	10 W/cm ²	600 W/cm ²	10 W/cm ² ^h	600 W/cm ²
PHYSICAL CHARACTERISTICS								
Effective Aperture (with Attenuator)	95 mm Ø (90 mm Ø)							
Absorber	Multi-Band		Multi-Band		Multi-Band		Multi-Band	
Dimensions	122H x 122W x 20D mm		122H x 122W x 98D mm		122H x 122W x 20D mm		122H x 122W x 98D mm	
Weight	0.78 kg		1.2 kg		0.78 kg		1.2 kg	
ORDERING INFORMATION								
	Standard	With Attenuator ¹	Standard	With Attenuator ¹	Standard	Standard		
Product Name	QE95LP-S-MB	QE95LP-S-MB-QED	QE95LP-H-MB	QE95LP-H-MB-QED	QE95ELP-S-MB-D0	QE95ELP-H-MB-D0		
Product Number (without stand)	201307	202194	201309	202195	201311	201313		
Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	-INT		
Product Number (without stand)	202778	202780	202774	202776	202772	202770		
Add Extension for INTEGRA (RS-232)	-IDR	-IDR	-IDR	-IDR	-IDR	-IDR		
Add Extension for INTEGRA (Ext Trig)	-INE	-INE	-INE	-INE	-INE	-INE		

Specifications are subject to change without notice // Compatible stands: P/N 200428, 201284

* For the calibrated spectral range, see the user manual.

a. Not exceeding Maximum Average Power.

b. maximum depends on monitor.

c. Increasing pulse width increases the maximum measurable energy.

d. Nominal value, actual value depends on electrical noise in the measurement system.

e. Load: 1 MΩ and ≤ 30 pF.

f. Maximum output voltage = sensitivity x maximum energy.

g. Excludes non-linearities.

h. At 12 W. Maximum Average Power Density is 5 W/cm² @ 40 W

i. When -QED extension is added, the QE + QED come as one unit with a combined calibration only. See the "QED Attenuator" page for more options on the calibration.