



# QE12

12 x 12 mm, 0.7  $\mu$ 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  $\mu$ 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	
<b>MAX MEASURABLE ENERGY (WITH ATTENUATOR)</b>	3.9 J		3.9 J		1.6 J		1.6 J	
<b>MAX REPETITION FREQUENCY</b>	300 Hz		300 Hz		6000 Hz		6000 Hz	
<b>EFFECTIVE APERTURE</b>	12 x 12 mm		12 x 12 mm		12 x 12 mm		12 x 12 mm	
<b>MEASUREMENT CAPABILITY</b>								
Spectral Range *	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
	0.19 – 20 $\mu\text{m}$	0.3 - 2.1 $\mu\text{m}$	0.19 – 20 $\mu\text{m}$	0.3 - 2.1 $\mu\text{m}$	0.19 – 20 $\mu\text{m}$ <sup>a</sup>	0.3 - 2.1 $\mu\text{m}$	0.19 – 20 $\mu\text{m}$ <sup>a</sup>	0.3 - 2.1 $\mu\text{m}$
Maximum Measurable Energy <sup>b</sup>	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator	Alone	Attenuator
1064 nm, 7 ns, 10 Hz <sup>c</sup>	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 <sup>d</sup>	0.7 $\mu\text{J}$		0.7 $\mu\text{J}$		0.8 $\mu\text{J}$		0.8 $\mu\text{J}$	
Sensitivity <sup>e,f</sup>	60 V/J		60 V/J		100 V/J		100 V/J	
Max Repetition Frequency	300 Hz		300 Hz		6000 Hz <sup>g</sup>		6000 Hz <sup>g</sup>	
Maximum Pulse Width (typical)	400 $\mu\text{s}$ <sup>**</sup>		400 $\mu\text{s}$ <sup>**</sup>		10 $\mu\text{s}$		10 $\mu\text{s}$	
Rise Time (typical 0-100 %)	550 $\mu\text{s}$		550 $\mu\text{s}$		20 $\mu\text{s}$		20 $\mu\text{s}$	
Calibration Uncertainty <sup>h</sup>	$\pm 3$ %		$\pm 3$ %		$\pm 3$ %		$\pm 3$ %	
Repeatability	<0.5 %		<0.5 %		<0.5 %		<0.5 %	
<b>DAMAGE THRESHOLDS</b>								
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 <sup>2</sup>	16 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	16 J/cm <sup>2</sup>	0.50 J/cm <sup>2</sup>	4 J/cm <sup>2</sup>	0.50 J/cm <sup>2</sup>	4 J/cm <sup>2</sup>
1064 nm, 7 ns, 10 Hz	0.6 J/cm <sup>2</sup>	8 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	8 J/cm <sup>2</sup>	0.50 J/cm <sup>2</sup>	2 J/cm <sup>2</sup>	0.50 J/cm <sup>2</sup>	2 J/cm <sup>2</sup>
532 nm, 7 ns, 10 Hz	0.6 J/cm <sup>2</sup>	6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	6 J/cm <sup>2</sup>	0.07 J/cm <sup>2</sup>	0.35 J/cm <sup>2</sup>	0.07 J/cm <sup>2</sup>	0.35 J/cm <sup>2</sup>
266 nm, 7 ns, 10 Hz	0.5 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	0.5 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	0.07 J/cm <sup>2</sup>	0.30 J/cm <sup>2</sup>	0.07 J/cm <sup>2</sup>	0.30 J/cm <sup>2</sup>
Maximum Average Power Density	10 W/cm <sup>2</sup>	600 W/cm <sup>2</sup>	10 W/cm <sup>2</sup> <sup>i</sup>	600 W/cm <sup>2</sup>	10 W/cm <sup>2</sup>	600 W/cm <sup>2</sup>	10 W/cm <sup>2</sup> <sup>i</sup>	600 W/cm <sup>2</sup>
<b>PHYSICAL CHARACTERISTICS</b>								
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	
<b>ORDERING INFORMATION</b>								
	Standard	With Attenuator <sup>i</sup>	Standard	With Attenuator <sup>i</sup>	Standard	With Attenuator <sup>i</sup>	Standard	With Attenuator <sup>i</sup>
Product Name	QE12LP-S-MB	QE12LP-S-MB-QED	QE12LP-H-MB	QE12LP-H-MB-QED	QE12SP-S-MT	Call	QE12SP-H-MT	Call
Product Number (Including stand)	200508	202180	200510	202181	200511		200512	
 Add Extension for INTEGRA (USB)	-INT	-INT	-INT	-INT	-INT	Call	-INT	Call
Product Number (Including stand)	202723	202725	202719	202721	202729		202727	
 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

\* \* 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  $\mu\text{m}$ , 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 $\Omega$  and  $\leq 30$  pF.

f. Maximum output voltage = sensitivity x maximum energy.

g. 5700 Hz with Integra version and up to 9000 Hz in option.

h. Excludes non-linearities.

i. At 3 W. Maximum Average Power Density is 10 W/cm<sup>2</sup> @ 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.