

# MOTORIZED ATTENUATORS & PULSE ENERGY MONITORS

## ATTENUATOR FEATURES

Drop-in attachable to the laser body attenuators for **1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>** or **5<sup>th</sup>** harmonics of Nd:YAG or Nd:YLF lasers

Up to **98%** maximum transmission

Precise transmission control by stepper motor in microstepping mode (12800 steps/rotation)

Transmission adjustment resolution **<0.15 %**

Remote control via common with laser **Ethernet** interface

Optional stand-alone version for mounting on optical table

Optional side port transforms attenuator to variable beam splitter

## PULSE ENERGY MONITOR FEATURES

Drop-in laser pulse energy or power monitoring (up to **100 samples/second**)

Less than **2 %** insertion losses

**12-bit** resolution

Average pulse energy and pulse-to-pulse stability calculation

Sample&Hold analog output from BNC socket on the rear panel of laser controller

Digital readout through laser **Ethernet** interface

Optional broadband version for 210 – 2300 nm range

## ATTENUATOR SPECIFICATIONS <sup>1)</sup>

MODEL	ATTENUATORS				
	AT1	AT2	AT3	AT4	AT5
Design wavelength	1064 nm	532 nm	355 nm	266 nm	213 nm
Typical max transmission <sup>2)</sup>	98 %	95 %	90 %	75 %	65 %
Typical min transmission <sup>2)</sup>	1 %			0.5 %	
Output polarization <sup>3)</sup>	linear, horizontal			linear, rotating	
Resolution	< 0.15 %				
Accuracy	± 0.5 %				
Clear aperture	6 mm				
Stepper motor	12800 steps / 360 deg, 4-phase, 1A				
Dimensions (W×L×H)	42 × 54 × 77 mm <sup>3</sup>				
Weight	< 0.4 kg				

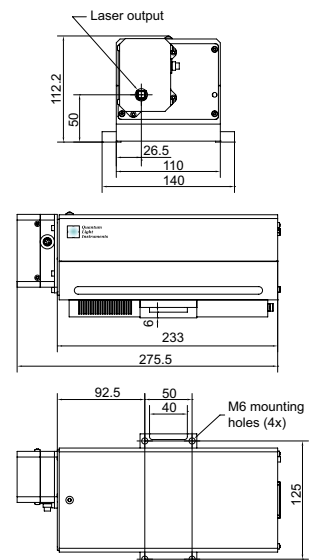
## PULSE ENERGY MONITOR SPECIFICATIONS <sup>1)</sup>

MODEL	PULSE ENERGY MONITOR					
	EM1	EM2	EM3	EM4	EM5	EM/BB
Design wavelength	1064 nm	532 nm	355 nm	266 nm	213 nm	210 – 2600 nm
Insertion loss	< 2 %					
Detector type	photodiode				pyroelectric	
Resolution	12 bit					
Accuracy	± 3 %					
Clear aperture	6 mm					
Dimensions (W×L×H)	24 × 28 × 48 mm <sup>3</sup>					
Weight	< 0.1 kg					

<sup>1)</sup> Due to continuous improvements all specifications are subject to change. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture.

<sup>2)</sup> Depends on polarization state of laser. Depolarization of laser beam might affect values provided here.

<sup>3)</sup> For some models polarization plane depends on angular position of polarizer.



Dimensions (in mm) of Q1 laser with attenuator attached



Attenuator and pulse energy monitor attached to the laser head