

# FQSS 213-Q

Diode Pumped Passively Q-Switched Solid State Laser

- 213 nm
- Pulsed ( $\leq 1.0$  ns)
- Up to 2.5  $\mu$ J
- Up to 20 kHz
- External and Internal Trigger
- Free Beam
- Single Pulse Operation



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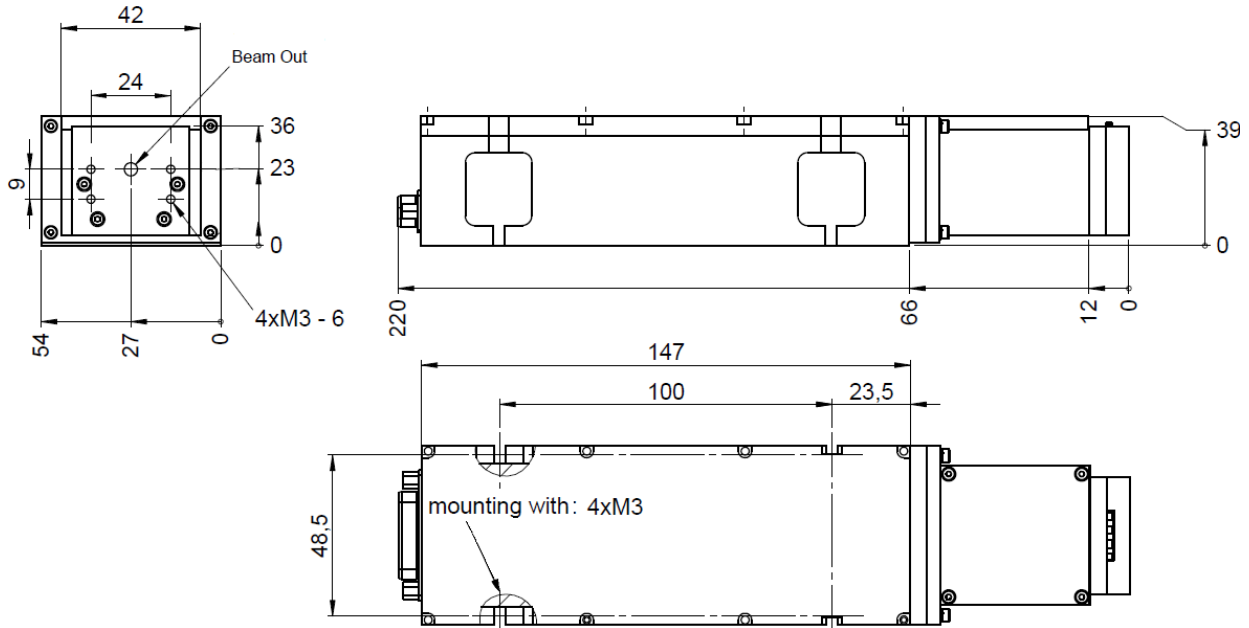
Optical Data		FQSS213-Q1	FQSS213-Q2	FQSS213-Q3	FQSS213-Q4_1k
	Wavelength	213 nm			
	Pulse Energy	> 0.05 $\mu$ J @15kHz	> 0.1 $\mu$ J @10kHz	> 1.5 $\mu$ J @1kHz	> 2.5 $\mu$ J @1kHz
	Peak Power	> 0.05 kW @15kHz	> 0.1 kW @10kHz	> 1.5 kW @1kHz	> 2.5 kW @1kHz
	Pulse Repetition Rate	$\leq 20$ kHz	$\leq 10$ kHz	$\leq 2.5$ kHz	$\leq 1$ kHz
	Pulse Width, FWHM	$\leq 1.0$ ns			
	Polarization Ratio	> 100:1 horizontal			
	Pulse Energy Drift <sup>1)</sup>	< $\pm 5$ %	< $\pm 5$ %	< $\pm 5$ %	< $\pm 5$ %
	Pulse-To-Pulse RMS <sup>2)</sup>	< 4% @15kHz	< 2% @10kHz	< 2% @1kHz	< 2% @1kHz
	Laser Classification	4 / IV			
Optical Output	Spatial Mode	TEM <sub>00</sub> (Ellipticity > 0.3)			
	Beam Divergence, 2 $\theta$	< 2.0 mrad	< 2.0 mrad	< 2.5 mrad	< 3.0 mrad
	Beam Diameter	400 $\pm$ 200 $\mu$ m	400 $\pm$ 200 $\mu$ m	600 $\pm$ 200 $\mu$ m	600 $\pm$ 200 $\mu$ m
Electrical Data	Power Consumption	15 W (max.40 W)	17 W (max.40 W)	20 W (max.70 W)	22 W (max.80 W)
	Operating Voltage	12 V DC			
	Line Voltage	90 - 240 V AC (50 – 60 Hz)			
	Marking	CE			
Interfaces	RS 232, USB				
	External Trigger (TTL, rising edge) single shot (pulse on demand) – max. repetition rate				
	Interface for TTL-control and power monitor				
Miscellaneous	Warm-up Time	< 5 min			
	Operating Temperature	18 - 38 °C			
Options	Stand-alone system (incl. key-switch, heat-sink and manual shutter; CDRH compliant)				
	Synchronization signal output (rise time < 2 ns)				
	Manual shutter or electrical beam blocker				
	External beam expander (e.g. 3x) on request				

<sup>1)</sup> Drift over 6 hours, energy averaged over 10 sec after 5 min of continuous operation, temperature variation  $\pm 3$  °C and < 3 °C/hour.

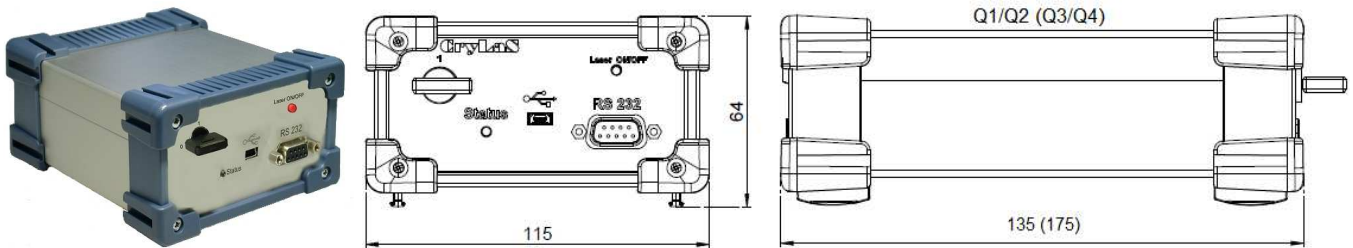
<sup>2)</sup> RMS over 1000 pulses after 5 min of continuous operation.

## Dimensions

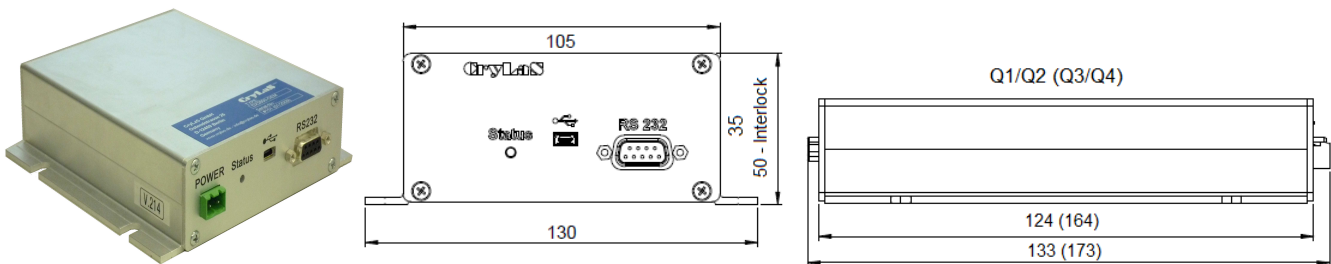
Laser Head: 220 x 54 x 39 mm



Controller Stand-Alone: Q1, Q2: 135 x 115 x 64 mm; Q3, Q4: 175 x 115 x 64 mm



Controller OEM: Q1, Q2: 133 x 130 x 35/50 mm; Q3, Q4: 173 x 130 x 35/50 mm



## Laser Safety Label

The FQSS 213-Q lasers are class 4 / IV according to IEC 60825-1:2007

<p>wavelength: 213 nm  max. output: 1 µJ  pulse duration: &lt; 1.0 ns  max. repetition rate: 20 kHz</p> <p>Complies with IEC 60825-1:2007  Complies with 21 CFR 1040.10 and 1040.11  except for deviations pursuant to  Laser Notice Nr. 50, dated July 26, 2001</p>	<p>wavelength: 213 nm  max. output: 2 µJ  pulse duration: &lt; 1.0 ns  max. repetition rate: 10 kHz</p> <p>Complies with IEC 60825-1:2007  Complies with 21 CFR 1040.10 and 1040.11  except for deviations pursuant to  Laser Notice Nr. 50, dated July 26, 2001</p>	<p>wavelength: 213 nm  max. output: 6 µJ  pulse duration: &lt; 1.0 ns  max. repetition rate: 2.5 kHz</p> <p>Complies with IEC 60825-1:2007  Complies with 21 CFR 1040.10 and 1040.11  except for deviations pursuant to  Laser Notice Nr. 50, dated July 26, 2001</p>	<p>wavelength: 213 nm  max. output: 10 µJ  pulse duration: &lt; 1.0 ns  max. repetition rate: 1.2 kHz</p> <p>Complies with IEC 60825-1:2007  Complies with 21 CFR 1040.10 and 1040.11  except for deviations pursuant to  Laser Notice Nr. 50, dated July 26, 2001</p>	<p><b>INVISIBLE</b>  <b>LASER RADIATION</b>  <b>AVOID EYE OR SKIN</b>  <b>EXPOSURE TO DIRECT OR</b>  <b>SCATTERED RADIATION</b>  <b>CLASS 4 LASER PRODUCT</b></p>
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Q1 series

Q2 series

Q3 series

Q4 serie

