半导体泵浦风冷Q开关激光器
DIODE PUMPED AIR-COOLED Q-SWITCHED LASER

Quantum Light Instruments

DPSS

Q2 系列

产品特点

- Up to 80mJ 脉冲能量输出, up to 2W 平均输出功率
- Up to 100 Hz 脉冲重复频率
- 风冷型 (water-free)
- 5 – 10 ns 脉宽
- 1053nm波长输出型号的重复频率平稳可调
- > 2 G shot 超长半导体泵浦寿命
- 内建同步脉冲发生器与外部设备协同工作
- 通过内置以太网控制界面实现远程监测与控制
- 脉冲能量高达 60mJ 时可选脉宽 2-3ns (short cavity version)
- 可选配作用于基频的能量衰减器附件
- 可选配脉冲能量监测器
- 可选配附加 2^{nd} 谐波发生器
- 可选配独立的 2^{nd}, 3^{rd}, 4^{th} or 5^{th} 谐波发生器

应用领域

- 激光诱导击穿等离子发射光谱 (LIBS)
- 激光雷达(LIDAR)
- LCD 修复
- 激光烧蚀/清洁(Laser ablation/cleaning)
- 飞行时间质谱 (TOFS)
- 激光诱导荧光(LIF) 光谱
- 闪光光解(Flash photolysis)
- 脉冲激光沉积(PLD)

可选附件

- > 可选配附加型二次谐波发生器(型号为SHG)输出二次谐波
- > 可选配高达五次谐波输出能力的独立型H-SMART系列谐波发生器
- > 可选配作用于基本波长的电动衰减器
- > 可选配带有模拟和/或数字输出的脉冲能量监控器

Q2系列半导体泵浦全风冷Q开关激光器可广泛适用于需要高峰值功率脉冲的应用场合。

创新的免水冷激光晶体端面泵浦技术(water-free laser crystal end-pumping technology)可产生基模(TEM00)近高斯(钟形),低发散的激光光束。同时Q2也是一个可以多种方式配置的多功能平台。可配置为80mJ@10hz脉冲输出,也可配置为更高输出频率的20mJ@100hz。

激光器可配置为单独通过Nd:YLF晶体发射1053nm波长的激光或通过Nd:YAG晶体发射1064nm波长的激光。相比于Nd:YAG晶体,Nd:YLF晶体的热稳定性更优(热透镜效应远小于Nd:YAG晶体),使得激光器在1053波长下,从单发脉冲提升至最大重复脉冲频率而不会发生明显的发散角或光斑轮廓变化。

短腔体结构相比标准结构使得脉宽可减少50%。在脉冲能量达60mJ时峰值功率可超过30MW。

基于热电制冷器的温度控制系统消除了与水冷却相关的各种风险(泄漏、有机污染等),并降低了维护成本。标配风冷散热器为可拆卸设计,用户可按需将激光器与其他冷却台或冷却系统搭配使用.

创新的激光器设计方案人性化的整合性系统使得激光器几乎无需维护。没有额外的水冷装置和笨重的电源系统占用额外的空间。激光器元件高度集成化在一个腔体内,外部只有一个集成了控制界面和12VDC,30-100W的电源适配器的轻量化控制盒。

激光器通过内置服务器经以太网端口进行监控。电脑手机与浏览器均可用于控制Q2(无需安装任何软件)。并提供可用于与用户设备集成的API。

作用于用户设备的低抖动触发脉冲在内触发模式下,提供300μs的延迟预置。在外触发模式下,激光脉冲可由延迟发生器外部触发。

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规格参数[1] (10Hz / 20Hz)

型号	Q2								
	-B10	-C10	-D10	-E10	-F10	-B20	-C20	-D20	-E20
波长，nm	1053 or 1064				1053	1053 or 1064			1053
脉冲重复频率[2]，Hz	10					20			
最高脉冲能量，mJ	8	15	30	60	80	10	20	50	70
典型值脉冲宽度(FWHM)[3]，ns	< 8		< 7		< 5	< 7		< 5	
峰峰值脉冲能量稳定性[4]	<0.5 % RMS								
功率输出漂移[5]	± 3.0 %								
光束模式	Bell-shaped, >80 % fit to Gaussian								
光束发散[6]	<1 mrad								
Polarization	Linear, horizontal								
典型光束直径[7]，mm	1.5	2.0	3.0		4.0	1.5		3.0	4.0
Jitter[8]	< 0.5 ns RMS								
可选配谐波发生器 - 最高脉冲能量[9]，mJ									
526.5 / 532 nm	4	7	15	30	40	5	10	25	35
351 / 355 nm	2.4	4.5	9	18	24	3	6	15	20
263 / 266 nm	1.2	2.5	5	10	12	1.5	3	7.5	10
211 / 213 nm	0.4	1	2	4	5	0.5	1	2	3
可选配衰减器[10]									
输出能量范围	0.5 – 95 %								
外形尺寸(W×L×H)，mm[3]	Laser head:160 × 230 × 141，Controller unit:108× 191 × 59 Power adapter[11]:80 × 120 × 60 typical								
运行要求									
冷却需求	风冷								
工作环境	T:15~30°C;H:10%~80% (non-condensing)								
电源	90 – 230 VAC, single phase, 47 – 63 Hz[12]								
平均功耗，W	30		40	50	60	30	40	70	80

1) Due to continuous improvements all specifications are subject to change. Unless stated otherwise all specifications are measured at fundamental wavelength and maximum pulse repetition rate. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture.
2) Factory-set pulse repetition rate is fixed at max repetition rate shown in the table.
3) At FWHM level at fundamental wavelength, measured with 350 ps rise time photodiode. Short pulse duration version is available, with pulse duration shorter by approx 50%. Inquire for detailed specifications.
4) Measured during 30 seconds operation after warm-up.
5) Over 8 hour period after 20 minutes of warm-up when ambient temperature variation is less than ±2 °C.
6) Full angle measured at the 4σ level.
7) Beam diameter is measured 20 cm from laser output at the 4σ level.
8) In respect to falling edge of pump diode triggering pulse.
9) Q2 is compatible with our attachable second harmonic generator (model SHG) and all models of stand-alone H-SMART harmonics generator. Pulse energies presented here are maximum values. Please refer to harmonic generator datasheets for detailed specifications.
10) Motorized attenuator intended to be attached to the laser housing. Transmission can be changed remotely trough laser web-server control interface.
11) Power adapter dimensions might differ from indicated here, depending on model.
12) Laser can be powered from appropriate 12 or 28 VDC power source. Please inquire for details.

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规格参数[1] (50Hz / 100Hz / 200Hz)

型号	Q2							
	-B50	-C50	-D50	-200	-100	-A100	-B100	-C100
波长, nm	1053 or 1064			1064				
脉冲重复频率[2] , Hz	50			200	100			
最高脉冲能量, mJ	10	20	40	1	2.5	5	10	20
典型值脉冲宽度(FWHM)[3] , ns	< 7	< 6	< 5	< 10		< 8		< 7
峰峰值脉冲能量稳定性[4]	<0.5 % RMS							
功率输出漂移[5]	± 3.0 %							
光束模式	Bell-shaped, >80 % fit to Gaussian							
光束发散[6]	<1 mrad			< 2 mrad		< 1.5 mrad		< 1 mrad
Polarization	Linear, horizontal							
典型光束直径[7] , mm	1.5	2.5	3.5	1.5		2.0	2.5	3.5
Jitter[8]	< 0.5 ns RMS							
可选配谐波发生器 - 最高脉冲能量[9], mJ								
526.5 / 532 nm	5	10	20	0.5	1.25	2.5	5	10
351 / 355 nm	3	6	12	0.25	0.7	1.5	3	6
263 / 266 nm	1.5	3	6	0.1	0.3	0.7	1.5	3
211 / 213 nm	0.5	1	2	0.02	0.1	0.25	0.5	1
可选配衰减器[10]								
输出能量范围	1 – 95 %							
外形尺寸(W×L×H) ,mm[3]	Laser head:160 × 230 × 141，Controller unit:108× 191 × 59 Power adapter[11] :80 × 120 × 60 typical							
运行要求								
冷却需求	风冷							
工作环境	T:15~30°C;H:10%~80%(non-condensing)							
电源	90 – 230 VAC, single phase, 47 – 63 Hz[12]							
平均功耗, W	50	80	100	40	50	70	80	100

1) Due to continuous improvements all specifications are subject to change. Unless stated otherwise all specifications are measured at fundamental wavelength and maximum pulse repetition rate. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture.
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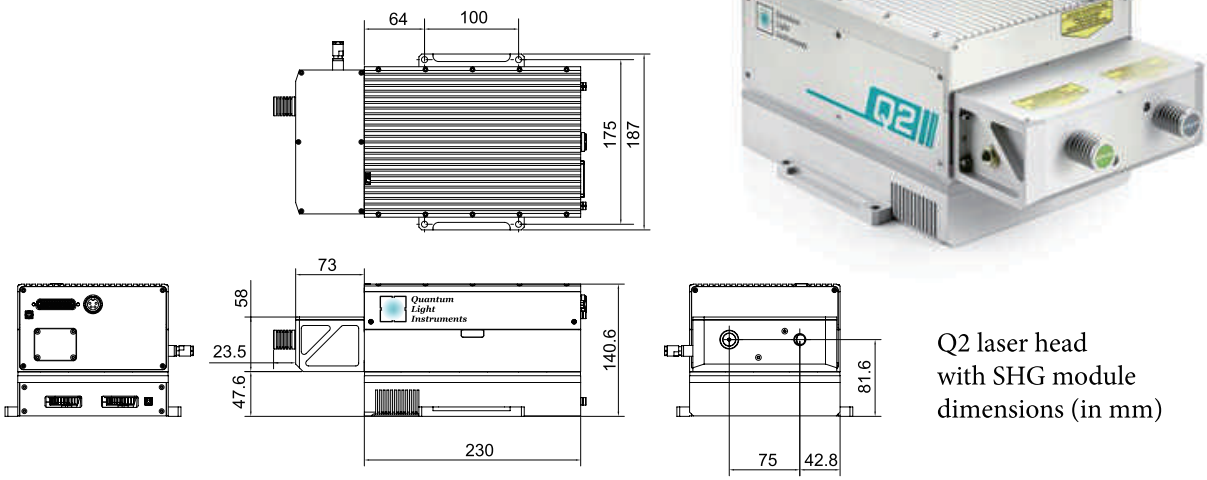
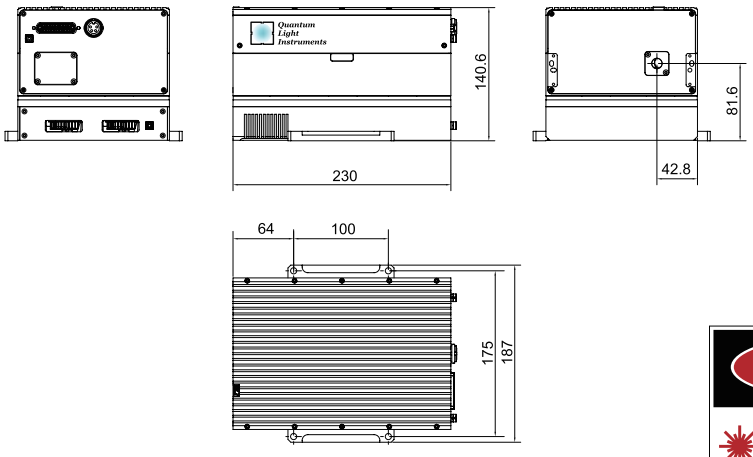
DRAWINGS



Q2 laser head
with SHG module
dimensions (in mm)

DRAWINGS

Laser
controller unit



Q2 laser head dimensions (in mm)