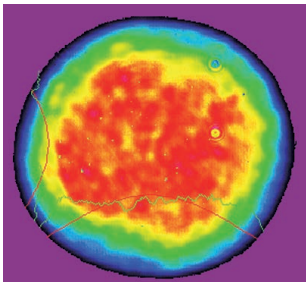


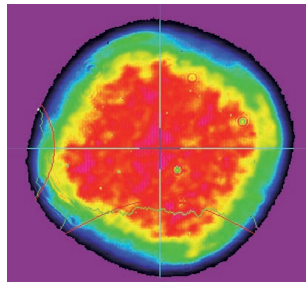
Compact Folded Resonator Pulsed Nd:YAG laser

MAIN FEATURES

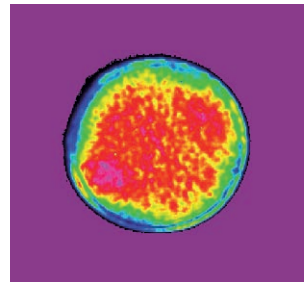
- 1064, 532, 355, 266 nm AND 1.57 μ m AVAILABLE
- ALIGNMENT GUARANTEED
- QUICK UMBILICAL DISCONNECTS
- COMPACT AND PORTABLE
- GAUSSIAN OR MULTIMODE RESONATORS
- 50 MILLION SHOTS LAMP LIFETIME GUARANTEED
- BUILT TO WITHSTAND HARSH ENVIRONMENTS



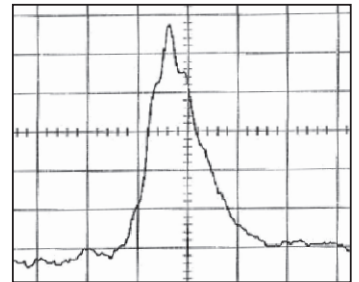
Beam profile in near field
@ 1064 nm, stable resonator



Beam profile in near field
@ 532 nm, stable resonator



Beam profile in near field
@ 355 nm, stable resonator



Temporal profile
@ 1064 nm, 20Hz

DIMENSIONS

Laser head 3.6kg (8lbs)

- A 323 mm [12.7"]
- B 94 mm [3.7"]
- C 84 mm [3.3"]



ICE 450 19" rack 14kg (31lbs)

- A 483 mm [19"]
- B 508 mm [20"]
- C 133 mm [5.25"]



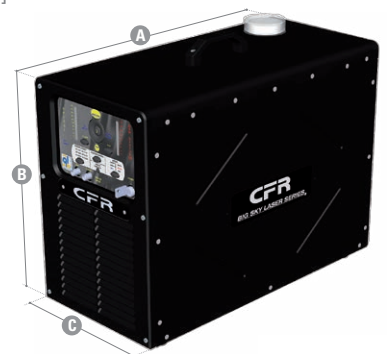
ICE 450 14kg (31lbs)

- A 435 mm [17.2"]
- B 360 mm [14.2"]
- C 133 mm [5.25"]



ICE HRR 18kg (40lbs)

- A 500 mm [19.7"]
- B 406 mm [16"]
- C 236 mm [9.3"]



ICE : Integrated Cooling and Electronics
HRR : High Repetition Rate

Others dimensions
available on:
www.quantel-laser.com

CFR

BIG SKY LASER SERIES.

TOUGH, RUGGED, RELIABLE. SIMPLY EASY TO USE.

RESONATOR ²	TEM 00 ¹	CFR 200					CFR 300					CFR 400										
		Stable					GRM					Stable		GRM			Stable		GRM			
Repetition rate (Hz)	To 100	To 10	To 20	To 30	*** To 50	*** To 100	10	20	30	*** 50	*** 100	To 10	To 20	10	20	To 10	To 20	*** To 30	10	20	*** 30	
Energy per pulse (mJ)	1064 nm	10	200			125	30	200		180	100	25	300		270		400		330	330		
	532 nm	6	130			70	15	130		60	15						230		190	200		170
	355 nm	2	70		50		6	70	60		5					90		80	90	80		
	266 nm*	1	50		30		3	50	50	20												
	1.57 µm**				35											70	65	65				
Energy stability (%) ³	1064 nm	<3	<2	<2	<3	<4	<2	<2	<3	<4	<2.5	<2.5	<2	<2								
	532 nm	<4	<2.5	<2.5	<4	<5	<2.5	<2.5	<4	<5												
	355 nm	<5	<2	<3	<3	NA	<2			NA												
	266 nm*	<5	<3	<3	<3	NA	<3	<3														
	1.57 µm**				<5																	
Pulse duration (ns) ⁴	1064 nm	13	13	13	17	14	10	11	18	16	11	11	10	10								
	532 nm	14	10	10	16	13	10	10	14	11												
	355 nm	13	11	10		NA	9			NA												
	266 nm*	13	10	10		NA	10	10														
	1.57 µm**				14																	
Beam divergence (mrad) ⁵	1064 nm	<2	<4	<4	<4	<3	<1.5				<5	<2			<4.5	<5	<1.5					
	532 nm	<1.5	<4	<4	<3.5	<3	<1.5						<3.5	<4.5	<1.5							
	355 nm	<1	<3.5	<3		NA	<1.5			NA			<3.5	<4	<1.8							
	266 nm*	<1	<3.5	<3.5		NA	<1.5						<3.5	<4	<1.8							
	1.57 µm**				<12																	
Beam diameter (mm)	All	<1.5	<6.35			<3	<6.35		<3	<6.35						<7						
Pointing stability (µrad) ⁶	All											100										
Jitter (+/-ns WRT Q-switch) ⁷	All	<1					<2					<1										
Q-Switch delay (s) ⁸	All											2										

* Crystals used for 266 nm generation exhibit self-heating due to light absorption and the crystal temperature is therefore dependent on the average laser power. The output energy of a 266 nm laser is strongly dependent on the repetition rate and the specified pulse energy will only be provided within a limited range above or below the optimum repetition rate.
 ** Other wavelength upon request *** Power supply: ICE HRR. The specifications correspond to the selected primary wavelength.
¹ TEM00 is delivered only with the smaller diameter rod. Energies are engineering values. ² Stable systems may operate over a wide range of repetition frequencies; GRM lasers may not have such flexibility.
³ Variation from mean for 99% of shots (RMS). ⁴ FWHM. +/-2ns. ⁵ Full angle, 99% of shots. ⁶ Angle containing 86.5% Energy. Other methods can predict lower values for GRM systems
⁷ Measured from Q-Switch Sync. Output. ⁸ Disables Q-Switch until after resonator has stabilized.

RESONATOR CONFIGURATION	CFR / ICE450	CFR / ICE HRR
1064 nm	Horizontal	
532 nm	Vertical	
355 nm	Vertical	
266 nm	Vertical	
1.57 µm	Vertical	
SPECTRAL PURITY (%)¹		
532 nm	> 97	
355 nm	> 90	
266 nm	> 85	
HIGH SPECTRAL PURITY (%)²		
532 nm	> 99.5	
355 nm	> 99.5	
266 nm	> 99	
ENERGY DRIFT OVER 8 HOURS (%)³	< 10	
OPERATIONAL⁴ TEMPERATURE RANGE	10°C to 40°C Ethylene Glycol Option (EWG) ⁵ : -10°C to 40°C	18°C to 28°C
STORAGE TEMPERATURE RANGE	5°C to 70°C Ethylene Glycol Option (EWG) ⁵ : -30°C to 70°C	NA
FLASHLAMPS LIFETIME	> 50 million shots	
MAX. ALTITUDE	3000 m [10,000 feet]	
SERVICE REQUIREMENT	100 – 240 V 10 A 50 – 60 Hz Single phase	200 – 240 V 5 A 50 – 60 Hz Single phase
CABLE LENGTH	3 m [9.84 feet] (other lengths available upon request)	

OPTIONS

- Wavelength separation packages: two or three apertures on request (WS2 or WS3), high spectral purity (WSP).
- Motorized Variable Attenuator (MTA) for IR (installed in the laser head). Manual (MNA) version on request.
- Low Temperature Operation (EWG).
- ICE 450 19" rack

Note on Beam Divergence:

Quantel pioneered beam measurement software and measures divergence as an angle containing energy. For GRM systems, this returns a figure which is larger than that given using alternative criteria.

¹ Optional dual dichroic (WS2/WS3)
² Optional quad dichroics (WSP)
³ Specifications applying to all 1064 nm laser head systems
⁴ For IR laser head only.
 Temperature performance available upon request for higher harmonics.
⁵ 10% energy drop at 1064 nm



For more detailed technical drawings, please visit www.quantel-laser.com

