



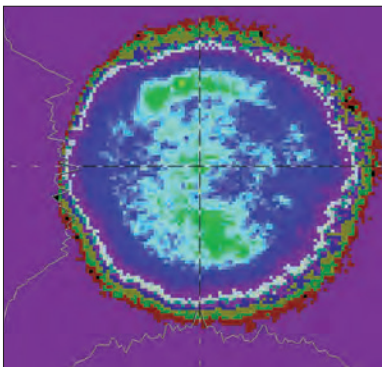
# 980

Series

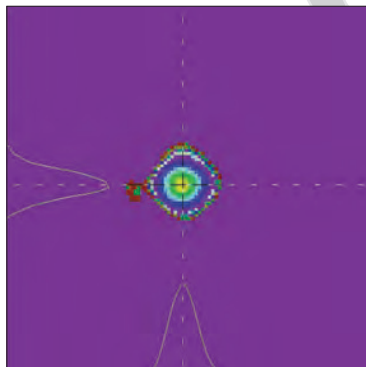
**Modular Q-Switched Nd:YAG laser series with superb beam quality, excellent stability and high brightness.**

- $\varnothing$  6 mm or  $\varnothing$  9.5 mm.
- 1 or 2 amplifiers.
- Birefringence compensation.
- Line narrowing options (injection seeder or etalon).
- Full control of the laser through the remote control terminal or the software.
- Temperature stabilized optical bench.

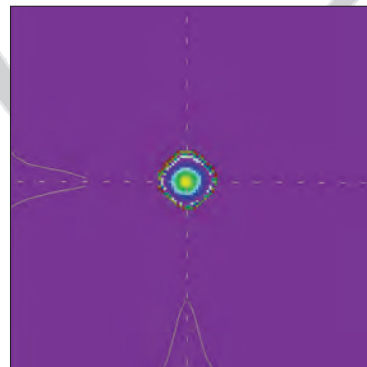
Beam profile in near field @ 1064 nm



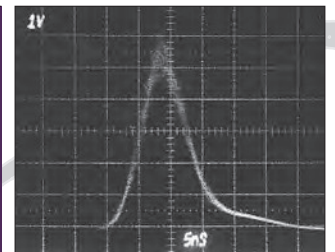
Beam profile in far field @ 1064 nm



Beam profile in far field @ 532 nm



Temporal profile @ 1064 nm



YG981E-10 (1,6J @ 1064 nm, 10 Hz)



# External synchronization flexibility:



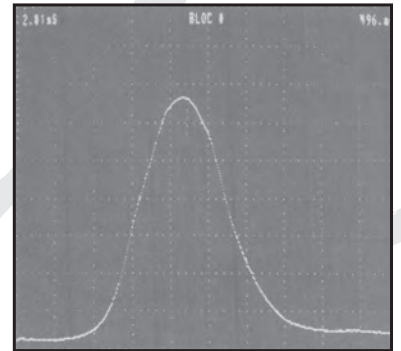
## INPUT/OUTPUT:

- 1- Turn-on key with stand-by position
- 2- AC power indicator
- 3- Laser ON warning
- 4- Output Q-Switch synchronization TTL signal, adjustable from the remote control terminal by  $\pm 500$  ns
- 5- Input Q-Switch synchronization TTL signal
- 6- Output flashlamp synchronization TTL signal
- 7- Input flashlamp synchronization TTL signal
- 8- Remote control terminal connector
- 9- Computer serial port interface (RS232)

Flashlamps and Q-Switch can be fully controlled through TTL signal, RS232 interface or remote terminal (3 meter long cable). A fast photodiode located after the oscillator gives an output signal displaying the optical pulse shape. User-friendly software is also available for control by computer (see the control panel on the main brochure).

## SLM (Single Longitudinal Mode) option:

The complete option consists of a SLM CW fiber laser with Faraday isolator, power supply, a set of mirrors and an electronic feedback loop with piezoelectric ceramic mounted mirror. The temporal beam profile is free of modulation with a very high reproducibility.



Temporal profile of a YG980 SLM pulse obtained with a 6 GHz scope and a 50 ps risetime phototube.

## Remote control terminal:

This user-friendly terminal can be connected either to the laser housing or to the front of panel of the electronic cabinet by a 3 meter long flexible cable. It provides the following functions:

### • flashlamps:

- flashlamp firing in single shot or automatic
- choice between internal or external synchronization
- readout and adjustment of voltages
- oscillator/amplifier flashlamp delay readout and adjustment
- shot counter

### • Q-Switch:

- choice between internal or external synchronization
- setting of the Q-Switch in single shot, automatic or burst mode
- adjustable delay of the output synchronization signal with respect to opening of the Q-Switch

- readout and adjustment of delay between flashlamp and Q-Switch firing for energy adjustment

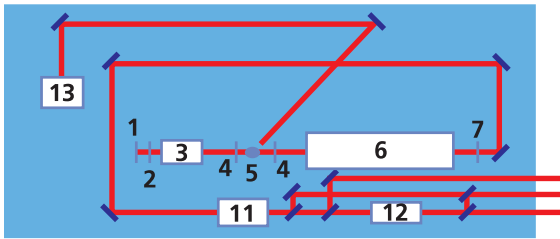
### • others:

- emergency stop
- opening/closing intra-cavity shutter
- control of harmonic generators phase-matching
- wavelength separation platform rotation
- report of security defaults

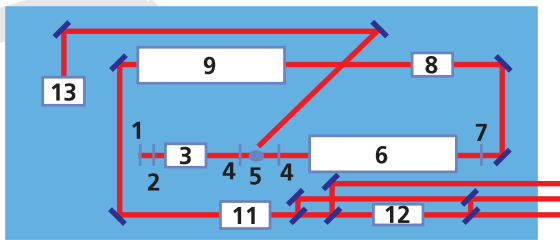


# Optical layout:

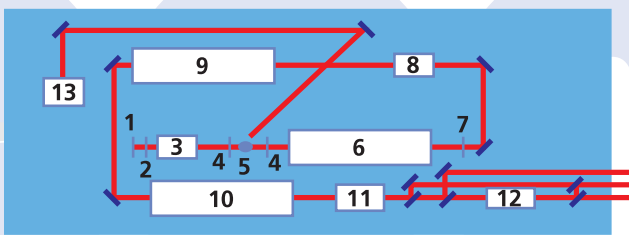
Configuration/Model	YG980	YG980E	YG981	YG981C	YG981E	YG982C	YG982E
Oscillator	ø 6 mm	ø 9.5 mm	ø 6 mm	ø 6 mm	ø 9.5 mm	ø 6 mm	ø 9.5 mm
Amplifier 1			ø 6 mm	ø 9.5 mm	ø 9.5 mm	ø 9.5 mm	ø 9.5 mm
Amplifier 2						ø 9.5 mm	ø 12 mm



YG980 & YG980E models



YG981, YG981C & YG981E models

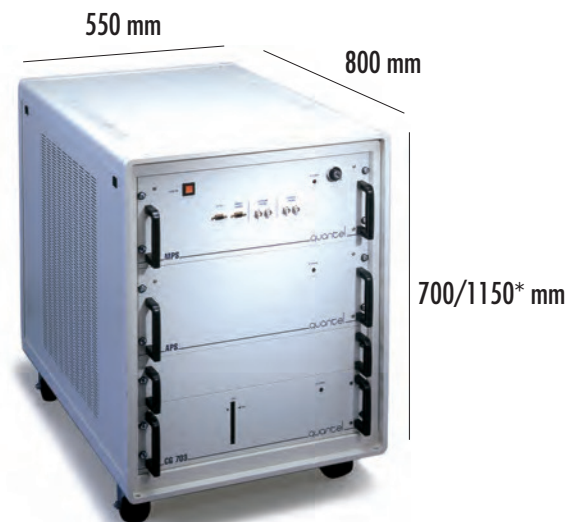
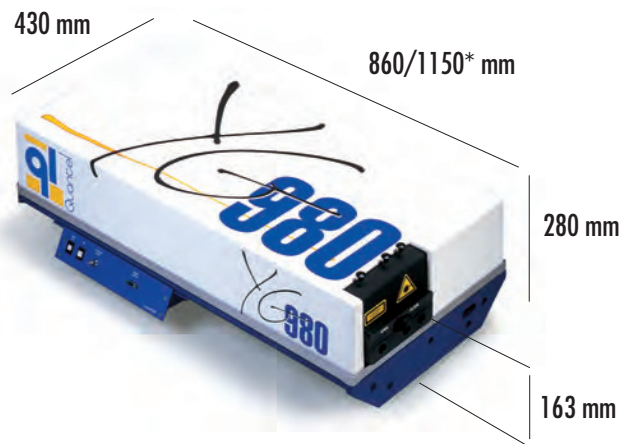


YG982 models

- 1- Back mirror
- 2- Shutter
- 3- Pockels cell
- 4- Quarter-wave plate
- 5- Glan polarizer
- 6- Oscillator laser head
- 7- Gaussian output coupler
- 8- Birefringence compensation (depends on the model)
- 9- First amplifier laser head
- 10- Second amplifier laser head
- 11- Second harmonic generator
- 12- Third or fourth harmonic generator
- 13- Injection seeder

## Service requirements:

240 V - 16 to 20 A - 50/60 Hz  
 Water: 12.5 l/mn, 5°C-20°C  
 Pressure IN ≤ 6 bars (88PSI)  
 Pressure OUT ≤ 3 bars (44PSI)  
 Differential pressure IN-OUT ≥ 3 bars (44PSI)



\* YG982

Model	YG980	YG980E		YG981			YG981C			YG981E			YG982C	YG982E	
Repetition rate (Hz)	10	10	20	10	20	50	10	20	30	10	20	30	30	10	
Energy (mJ)	1064 nm	420	850	700	650	630	500	1200	1050	900	1600	1600	1200	1500	2500
	532 nm	190	400	300	320	290	170	600	520	350	820	780	550	700	1250
	355 nm	85	165/200*	140/160*	140	125	85	280	240	200	490	420	280/340*	350/420*	850
	266 nm	40	90	60	60	45	30	130	90	60	150	120	85	105	230
Pulse duration (ns)	1064 nm	6-8	6-8		6-8		8-11		6-8			8-11		8-11	9-12
Beam diameter (mm)	1064 nm	≤6	≤10		≤6			≤10			≤10		≤10	≤13	
Divergence (mrad)	1064 nm	≤0.5	≤0.5		≤0.5			≤0.45		≤0.5	≤0.5			≤0.5	≤0.5
Polarization ratio (%)	1064 nm	≥90	≥80	≥70	≥90			≥80	≥75	≥70	≥95	≥90	≥90	≥90	≥90
Spatial profile	Near field (fit to Gaussian)	≥0.7	≥0.7		≥0.7			≥0.7			≥0.7			≥0.7	≥0.7
	Far field (fit to Gaussian)	≥0.95	≥0.9		≥0.9			≥0.9			≥0.95	≥0.9	≥0.9	≥0.9	≥0.9

Repetition rate (Hz): other values available on request

\* HE355: High Energy U.V. option

Pulse duration: at FWHM measured with fast photodiode and 1 GHz scope - Divergence: full angle at  $1/e^2$  of the peak

Polarization: horizontal @ 1064 nm - vertical @ 532 nm - horizontal @ 355 nm and @ 266 nm - Near field spatial profile: at 1 m from laser output

Far field spatial profile: at focal plane of a 2 m focus lens, least square fit to Gaussian (perfect fit = 1).

Power drift (%)	1064 nm	± 2
	532 nm	± 4
	355 nm	± 5
	266 nm	± 10
Energy stability (%)	1064 nm	± 2
	532 nm	± 4
	355 nm	± 6
	266 nm	± 8
Pointing stability (μrad)	1064 nm	< 50
	532 nm	< 50
	355 nm	< 50
	266 nm	< 50

Power drift: over 8 hours for  $\Delta T \leq \pm 3^\circ\text{C}$ .

Energy stability: peak-to-peak, 100% of the shots.

Pointing stability: measured by Spiricon LBA-100, rms, on 200 pulses at the focal plane of a 1 m focus lens.

Jitter (ns)	Standard	± 0.5	
	SLM option	± 1	
Focusability (times diffraction limit), $M^2$	10-20 Hz	≤ 2	
	30-50 Hz	≤ 3	
	Standard	≤ 0.7	
Linewidth ( $\text{cm}^{-1}$ )	LNE intracavity etalon	≤ 0.1	
	SLM injection seeding	11 ns	≤ 0.003
		6 ns	≤ 0.005

Jitter: with respect to Q-Switch trigger, at half-width of 500 accumulated shots.

Linewidth:

Standard: FWHM, measured by a grating spectrometer with  $0.045 \text{ cm}^{-1}$  resolution.

LNE: FWHM, measured by a grating spectrometer with  $0.045 \text{ cm}^{-1}$  resolution, ≤ 15% energy reduction @ 1064 nm.

SLM: measured with a slow scan Fabry-Perot Etalon, ≤ 10% energy reduction @ 1064 nm and @ 532 nm, higher energy @ 355 nm.



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