



# TEMPEST HIGH ENERGY COMPACT, PULSED Nd: YAG LASER SYSTEMS

Deliver maximum performance in an inexpensive, compact, adaptable, easy-to-use platform

## Features

### Proven Resonator Design

Robust design that provides superior beam pointing and energy stability with minimum beam divergence

### Complete Solution

Four available output beam wavelengths and a wide range of repetition rates (single-shot, burst and continuous modes) available

### Various Applications

Can be used for laser ablation, micromachining, plasma physics, high energy spectroscopy, LIBS and scientific research

# Tempest

## Specifications summary



### Features

- Compact flashlamp pumped, Q-switched Nd:YAG laser system
- Pulse energy per unit volume is highest in the industry – from 100-300 mJ at 1064 nm
- Beam divergence <1 mrad at 1064 nm
- Repetition rates from 10-30 Hz
- Wavelength availability: 1064 nm, 532 nm, 355 nm, and 266 nm
- Optional optical attenuator makes it easy to control laser energy without changing the beam parameters
- Compact head configuration minimizes optical bench space requirement and simplifies OEM package design
- Controllable flashlamp voltage
- Self-contained cooling system
- Flexible operational controls with RS232 and remote control panel
- Standard or 19" rack mount power supply

Products					
		Tempest 10	Tempest 20	Tempest 30	Tempest 300
Repetition Rate (Hz)		10	20	30	10
Energy <sup>1</sup> (mJ)	1064 nm	200	200	180	300
	532 nm	100	100	90	180
	355 nm	50	50	40	75
	266 nm	30	30	20	40
Energy Stability <sup>2</sup> (%)	1064 nm	2	2	2.5	2
	532 nm	3.5	3.5	4	4
	355 nm	8	8	9	9
	266 nm	9	9	10	10
Pulse Width <sup>3</sup> (ns)		3-5	3-5	3-5	3-5
Beam Diameter (mm)		5	5	5	6
Divergence <sup>4</sup> (mrad)		<1	<1	<1	<1
Beam Pointing Stability (µrad)		<100	<200	<250	<200
IR Beam Quality <sup>5</sup> (TDL)		1.5	1.5	2	1.5
Jitter (±ns) <sup>6</sup>		0.5	0.5	0.5	0.5

### Operating Requirements

Temperature	70° ± 10° F (21° ± 5° C)
Relative humidity	20-80% non-condensing
Voltage	95-120 V or 200-250 VAC, 50/60 Hz
Power Consumption	< 800 watts

#### Notes:

1. Optical losses due to optional attenuator will reduce maximum energy by 10%
2. Pulse-to-pulse for 98% of shots after 30 minute warm up
3. Full width half maximum
4. Full angle for 86% of the energy, at 1/e<sup>2</sup> point
5. Times diffraction limited, at 1/e<sup>2</sup> point
6. From Q-Switch synch out pulse to light pulse for 98% of 1,000 shots
7. Nominal values only; contact NWR representative for full specifications
8. Add 5.0"/13.0 cm for umbilical bend radius

Nominal Dimensions <sup>7</sup>					
	Tempest 10, 20, & 30	Tempest 300	Baseplate	Power Supply	Control Panel
Length	13.4"/ 34.0 cm <sup>8</sup>	15.0"/ 38.0 cm <sup>8</sup>	7.0"/ 17.8 cm	20.5"/ 52.1 cm <sup>8</sup>	6.3"/ 16.0 cm
Width	7.0"/ 17.8 cm	7.0"/ 17.8 cm	9.0"/ 22.9 cm	8.7"/ 22.1 cm	8.2"/ 20.8 cm
Height	3.5"/ 8.9 cm	3.5"/ 8.9 cm	0.5"/ 1.3 cm	15.7"/ 39.9 cm	3.5"/ 8.9 cm
Weight	12 lbs/ 5.5 kg	15 lbs/ 6.8 kg	5 lbs/ 2.3 kg	55 lbs/ 25 kg	5 lbs/ 2.3 kg
Length Umbilical	8 ft/ 2.4 m	8 ft/ 2.4 m	-	-	10 ft/ 3.0 m

VISIBLE AND INVISIBLE LASER RADIATION. AVOID EYE AND SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.  
 Wavelength 1064 nm / 600 mJ / 5 ns  
 Wavelength 532 nm / 500 mJ / 5 ns  
 Wavelength 355 nm / 300 mJ / 4 ns  
 Wavelength 266 nm / 200 mJ / 4 ns  
 Wavelength 213 nm / 100 mJ / 4 ns  
 Wavelength 670 nm / 5 mW  
**CLASS 4 LASER PRODUCT**

