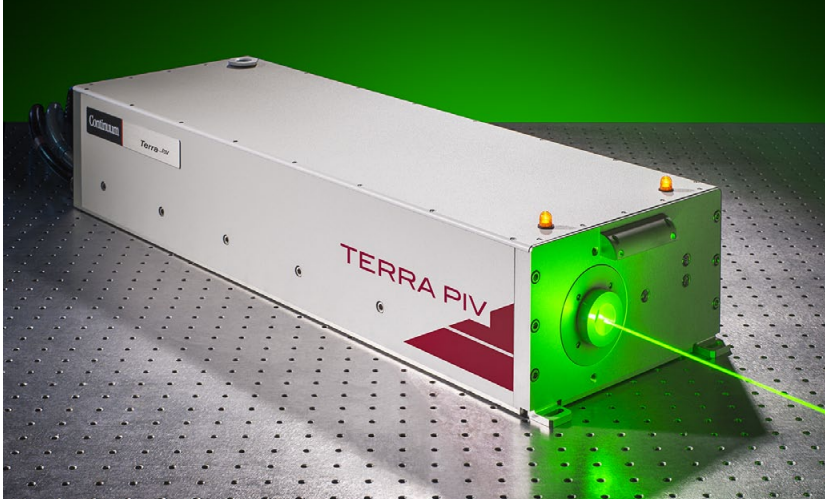


# Diode Pumped Nd:YLF Diode Pumped Nd:YLF Diode Pumped Nd:YLF

## Terra PIV



### Terra PIV, the diode pumped Nd:YLF laser

Terra PIV is a dual oscillator/single head, high repetition rate, diode-pumped Nd:YLF laser. The Terra PIV offers the ultimate in flexibility for PIV and other dual output applications.

The combination of two independent oscillators allows complete control of pulse separation and pulse energy. Both oscillators in the Terra PIV system are identical in optical design giving temporally and spatially matched pulses for the highest degree of cross-correlation. Each oscillator can be independently triggered via TTL inputs. As an option, a compact, external combination box can be directly attached to the laser to provide for an easy and safe access to the beam combination optics.

The Terra PIV uses our proprietary intracavity frequency doubling to achieve high energy 527 nm outputs without resorting to the tight focusing (which can result in optical damage) necessary for extra-cavity doubling. Our proprietary pump chamber design increases the overall efficiency allowing for high pulse energy, excellent beam quality and long component lifetimes from a compact and robust diode-pumped package.

**>60 mJ total energy at 1 kHz**

**Average power >100 W @ 3 kHz**

**Ideal for Particle Image Velocimetry**

**Independent external trigger for each oscillator**

**External and internal triggering**

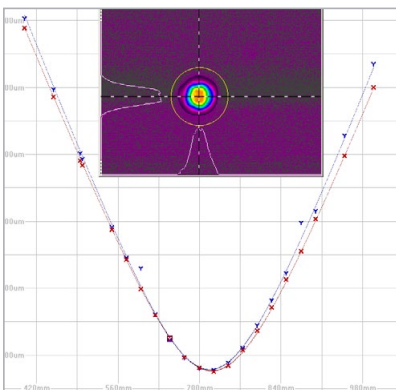
**Built-in optics for beam combination**

**Compact & rugged package designed for 24/7 operation**

**Flexible time delay and energy adjustment**

**Record 3 min. diode module replacement**

**Proprietary optical cavity design for optimal laser performance**



**Terra PIV Output Profile**  
Smooth beam profile, ideal for PIV applications.

# Terra PIV Specifications

Description <sup>1</sup>	527-100-M	527-80-M	527-60-M	527-40-M
Wavelength (nm)	527	527	527	527
Energy per Oscillator at 0.1-1 kHz (mJ)	30	25	20	15
Total Pulse Energy at 0.1-1 kHz (mJ)	60	50	40	30
Pulse Repetition Rate (kHz) <sup>2</sup>	0.1-10	0.1-10	0.1-10	0.1-10
Average Power @ 3 kHz (W)	100	80	60	40
Pulsewidth (ns)	<210	<230	<250	<270
Pulse-to-Pulse Stability (% RMS)	<0.5	<0.5	<0.5	<0.5
Beam Pointing Stability ( $\mu$ rad)	<25	<25	<25	<25
Beam Diameter at Output (mm) <sup>3, 4</sup>	3.0	3.0	3.0	3.0
Beam Quality ( $M^2$ )	<25	<25	<25	<25
Beam Divergence (mrad) <sup>4</sup>	8	8	8	8
Time Jitter (ns RMS)	<3	<3	<3	<3
Polarization <sup>5</sup>	circular	circular	circular	circular

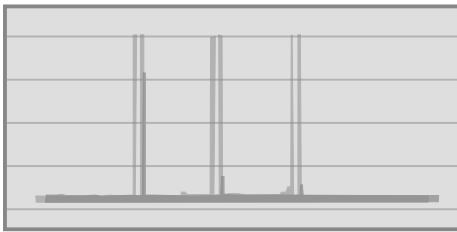
## Notes

1. All specifications at 1kHz unless otherwise noted
2. Single shot to 0.1 kHz available with external trigger
3. Typical measurement ( $\pm 10\%$ )
4. Measured at 13.5% level at output window
5. Cross-polarization available as option

As a part of our continuous improvement program, all specifications are subject to change without notice.

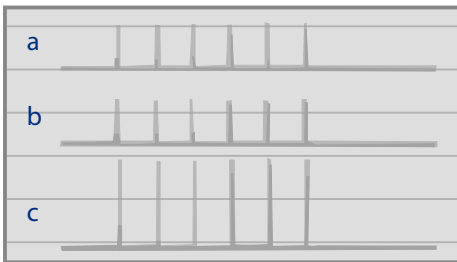
## Advantages

### Generation of Pulse Pairs

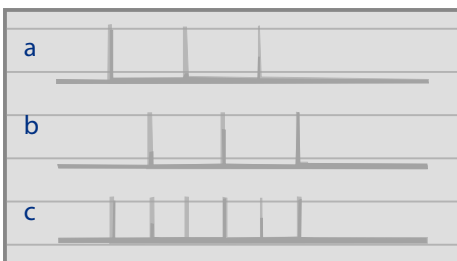


### Generation of Pulse Pairs

Flexible time delay adjustment



Two laser outputs synchronized to double the pulse energy and peak power,  
a) one laser output,  
b) a second laser output, and  
c) combined output.



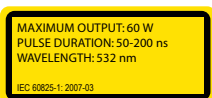
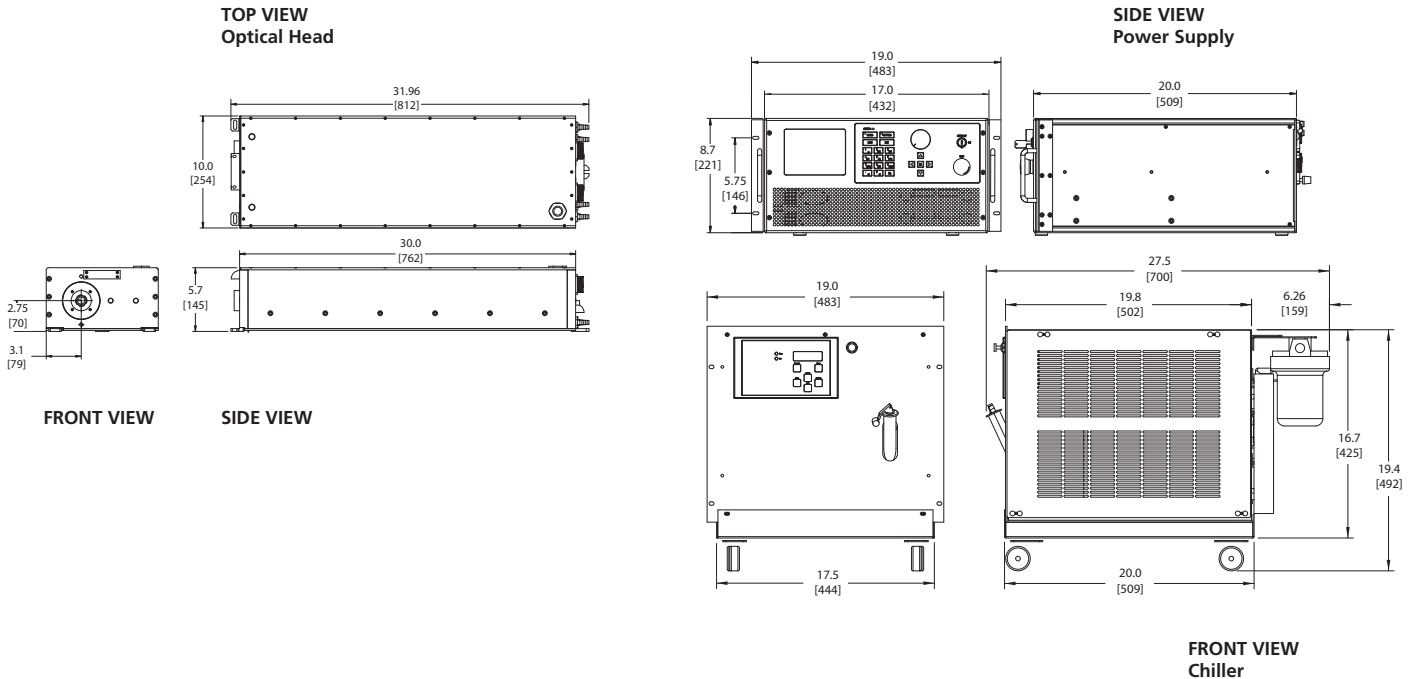
Two laser outputs combined with an adjustable delay to double the pulse repetition rate,  
a) one laser output,  
b) a second laser output with delay, and  
c) combined laser output.

# Terra PIV System Requirements

Size	Optical Head (LxWxH)	812 x 254 x 145 mm (31.9 x 10.0 x 5.6 in)
	Power Supply (LxWxH) Chiller (LxWxH)	509 x 483 x 221 mm (20.0 x 19.0 x 8.7 in) 699 x 483 x 492 mm (27.5 x 19.0 x 19.4 in)
Weight	Optical Head	31.5 kg (70 lbs)
	Power Supply Chiller	27 kg (60 lbs) 65 kg (144 lbs)
Cooling		Air-Water; Water-Water cooling option available
Electrical Service	Power Supply	Single-phase: 200-240 VAC, 50/60 Hz Operating current: 10A, Max current: 20A
	Chiller	Single-phase: 230 ±10% VAC, 20A, 50/60 Hz Operating current: 12A, Max current: 20A
Temperature & Humidity	Operating Temperature Storage Temperature Relative Humidity	15 to 35° C -20 to 50° C 8-80%, non-condensing
Umbilical Length		3.65 m (12.0 ft); longer available upon request
Control Interface	Serial Interface	RS-232, Ethernet
	Rear Connections	External beam enable, External trigger, Analog current control, Analog RF attenuation control, Digital alert output
	Control Software	MS Windows-based Laser Commander™

## Terra PIV Physical Layout

All dimensions are in inches [mm]



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