

# Vitara

## Automated, Hands-Free Ultrashort Pulse Ti:Sapphire Oscillator Family

Vitara is the new industry standard for hands-free, integrated, ultra-broadband, flexible ultrafast lasers. Representing the culmination of 20 years of in-house expertise with Kerr Lens mode-locking and thousands of clean-room manufactured, industrial-grade ultrafast lasers, the Vitara family satisfies the most sophisticated requirements for amplifier seeding, terahertz generation, attosecond studies, quantum control experiments, non-linear imaging and spectroscopy applications.

Models within the Vitara family range from an ultrabroadband version generating pulses shorter than 8 fs, a tunable version with user-adjustable bandwidth and sub-12 fs compressed output, a high power version providing 1 Watt-class average power and a version tailored for seeding ultrafast amplifiers. All models of the Vitara platform provide hands-free operation ensured by Coherent's proprietary clean manufacturing practices, our unique Optically Pumped Semiconductor (OPS) pump lasers and a suite of automated controls.

In addition to its exquisite flexibility, Vitara satisfies the most sophisticated requirement in Carrier to Envelope Phase (CEP) stabilization and external source synchronization thanks to its broad range of accessories.

Designed as a long-lasting and expandable ultrafast laser platform, Vitara provides reliable hands-free operation even in the most demanding applications and environments.



**Superior Reliability & Performance**

### **Vitara Features:**

- **Automated for hands-free, reliable operation**
- **Computer controlled bandwidth**
- **Computer tunable center wavelength**
- **PowerTrack™ active optimization**
- **<8 fs to >30 fs pulsewidth capability**
- **Low noise**
- **Integrated Verdi™ G pump laser**
- **Compact footprint**

### **Vitara Options and Accessories:**

- **Carrier-Envelope Phase (CEP) Stabilizer**
- **Pulse synchronization – Synchrolock-AP**
- **Integrated, calibrated spectrometer**
- **Compact Pulse Compressor – CPC-II**
- **Second Harmonic Generator**
- **Factory configurable for use with internal or external pump laser**

### System Specifications<sup>1,2</sup>

	Vitara-T	Vitara-T-HP
Power (mW)		
at minimum specified bandwidth	>525	>930
at 60 nm bandwidth	>450	>850
at maximum specified bandwidth	>425	>800
Bandwidth (nm)(FWHM)	30 to 125	40 to 100
Tuning Range (nm)		
at minimum specified bandwidth	755 to 860	765 to 810
at 60 nm bandwidth	765 to 840	775 to 825
at 100 nm bandwidth	790 to 820	795 to 805
Uncompressed Pulsewidth <sup>3</sup> (fs)		<20 (typically <15)
Compressed Pulsewidth <sup>3</sup> (fs) with External Compressor (not included)	<12	<15
RMS Noise <sup>4</sup> (%)		<0.05
Power Stability <sup>5</sup> (%)		±0.5
Repetition Rate <sup>6</sup> (MHz)(standard)		80
M <sup>2</sup> (average of X & Y)		<1.3
Beam Diameter <sup>7</sup> (mm)		2
Beam Divergence (mrad)		<1
Polarization		Horizontal

### Features

Integrated Verdi-G Pump Laser	•	•
PowerTrack™ Active Optimization	•	•
Computer Controlled Bandwidth	•	•
Computer Tunable Center Wavelength	•	•

### Options and Accessories (not included)

Integrated and Calibrated Spectrometer	•	•
Carrier to Envelope Phase (CEP) Stabilizer	•	•
SynchroLock-AP – Repetition Rate Synchronization	•	•
CPC-II – Compact Pulse Compressor	•	•
Second Harmonic Generator	•	•
PulsePicker	•	•

### Electrical and Cooling Requirements

Voltage	100 to 240
Current Max. (A)	5
Line Frequency (Hz)	50 to 60
Cooling	Closed-cycle chiller
Laser Head Dimensions (L x W x H)	609.6 x 427.5 x 162.4 mm (24.0 x 16.8 x 6.4 in.) excluding handles
Beam Height	120.6 mm (4.75 in.)

<sup>1</sup> Specifications subject to change.

<sup>2</sup> Specifications apply at 800 nm and 80 MHz rep. rate unless otherwise stated.

<sup>3</sup> At max. bandwidth and measured with FC Spider (APE GmbH).

<sup>4</sup> Measured from 10 Hz to 10 MHz.

<sup>5</sup> Measured over 2 hrs. after 30 min. warm-up at constant environmental temperature.

<sup>6</sup> Can be factory set between 65 to 95 MHz.

<sup>7</sup> Average 1/e<sup>2</sup> diameter measured at output.

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### System Specifications<sup>1,2</sup>

	Vitara-S <sup>7</sup>	Vitara-UBB
Power (mW)		
at minimum specified bandwidth	-	-
at 60 nm bandwidth	-	-
at maximum specified bandwidth	>325	>550
Bandwidth (nm)(FWHM)	>70 (fixed)	<180 to >220 at -10dB
Tuning Range (nm)		
at minimum specified bandwidth	-	-
at 60 nm bandwidth	-	-
at 100 nm bandwidth	-	-
Uncompressed Pulsewidth <sup>3</sup> (fs)	-	-
Compressed Pulsewidth <sup>3</sup> (fs) with External Compressor (not included)	<20	<10 (<8 option)
RMS Noise <sup>4</sup> (%)		<0.1
Power Stability <sup>5</sup> (%)		±0.5
Repetition Rate <sup>6</sup> (MHz)(standard)		80
M <sup>2</sup> (average of X & Y)		<1.3
Beam Diameter <sup>7</sup> (mm)	1	2
Beam Divergence (mrad)	<1.5	<1
Polarization		Horizontal

### Features

Integrated Verdi-G Pump Laser	•	•
PowerTrack™ Active Optimization	•	•
Computer Controlled Bandwidth		•
Computer Tunable Center Wavelength		

### Options and Accessories (not included)

Integrated and Calibrated Spectrometer	•	•
Carrier to Envelope Phase (CEP) Stabilizer		
SynchroLock-AP – Repetition Rate Synchronization		
CPC-II – Compact Pulse Compressor	•	
Second Harmonic Generator		
PulsePicker	•	

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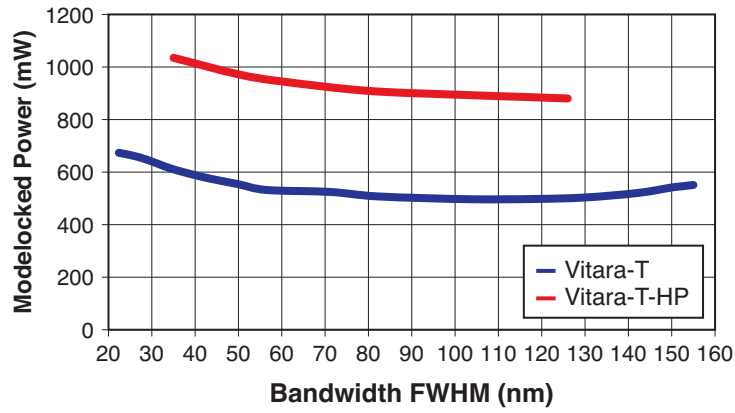
<sup>6</sup> Can be factory set between 65 to 95 MHz.

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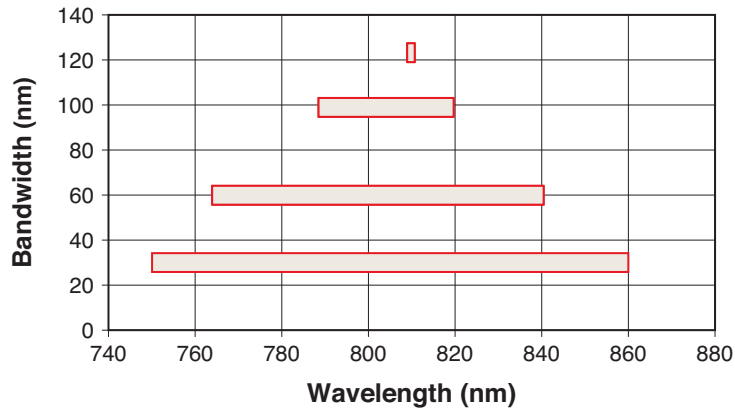
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Automated, Hands-Free Ultrashort Pulse Ti:Sapphire Oscillator Family

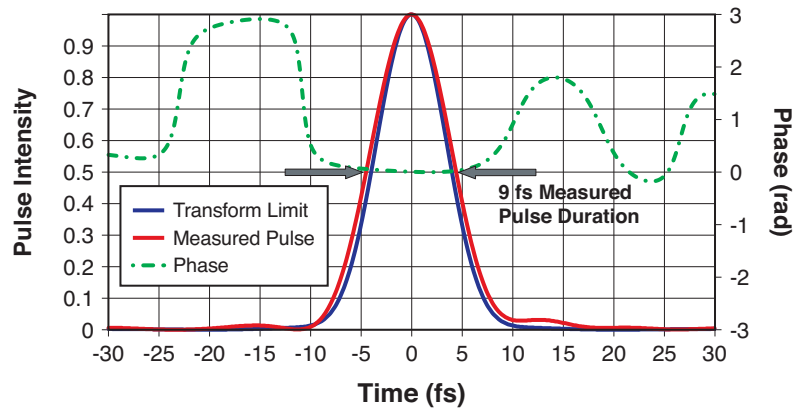
Vitara-T and Vitara-T-HP Typical Power vs. Bandwidth at 80 MHz



Vitara-T Typical Tuning Range vs. Bandwidth



Vitara-UBB Typical Pulse Duration

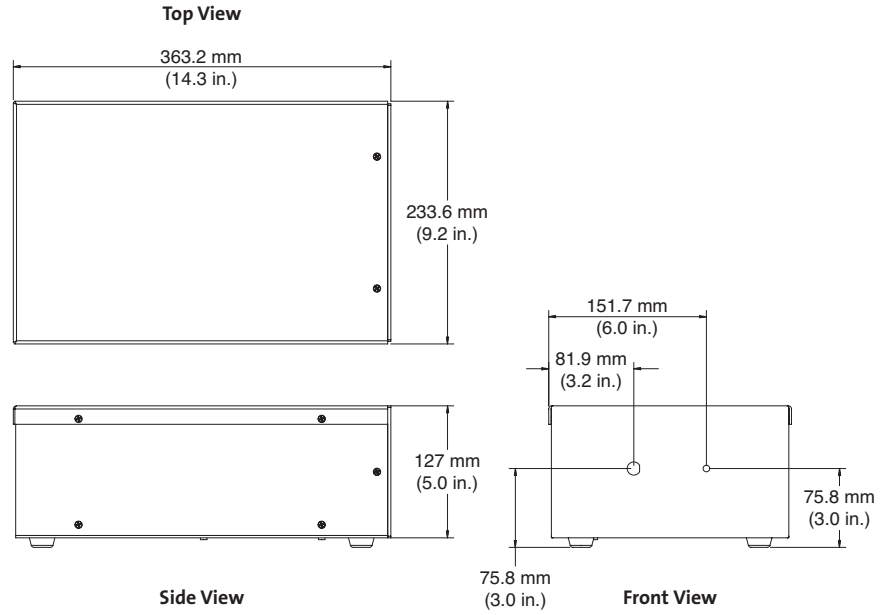


# Vitara

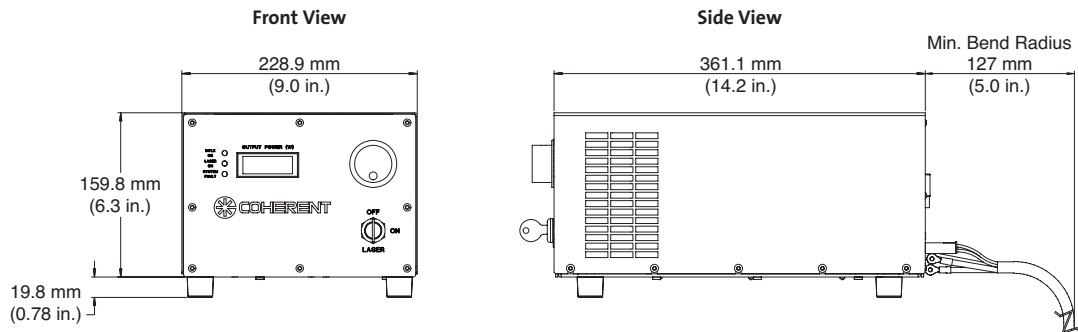
## Automated, Hands-Free Ultrashort Pulse Ti:Sapphire Oscillator Family

### Mechanical Specifications

#### Controller



#### Power Supply

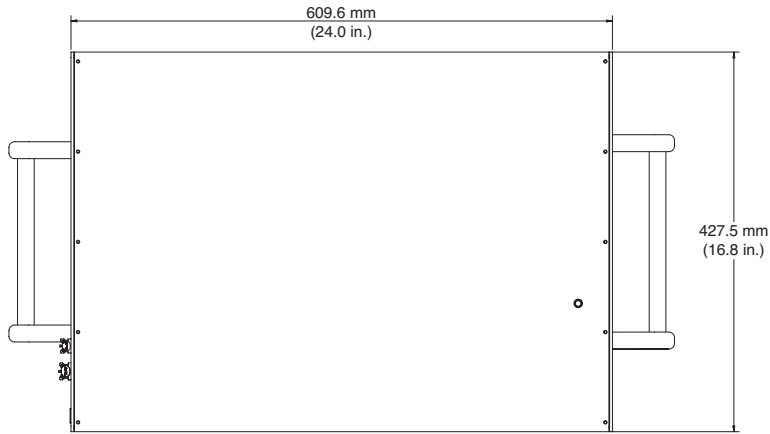


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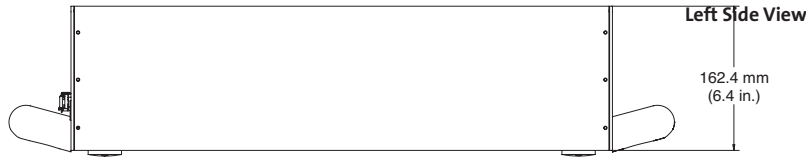
## Automated, Hands-Free Ultrashort Pulse Ti:Sapphire Oscillator Family

### Mechanical Specifications

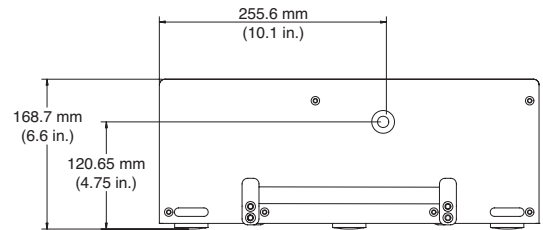
Top View



Side View



Left Side View



Front View



**COHERENT**

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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Vitara Ti:S oscillators. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.