

Arco

High energy Ti:Sapphire amplifiers

Arco - the class of ultra-intense fs laser systems designed as the ideal light source for the most demanding applications. Arco amplifiers offer outstanding performance: best-in-class output parameters packaged in robust, reliable and user friendly configurations.

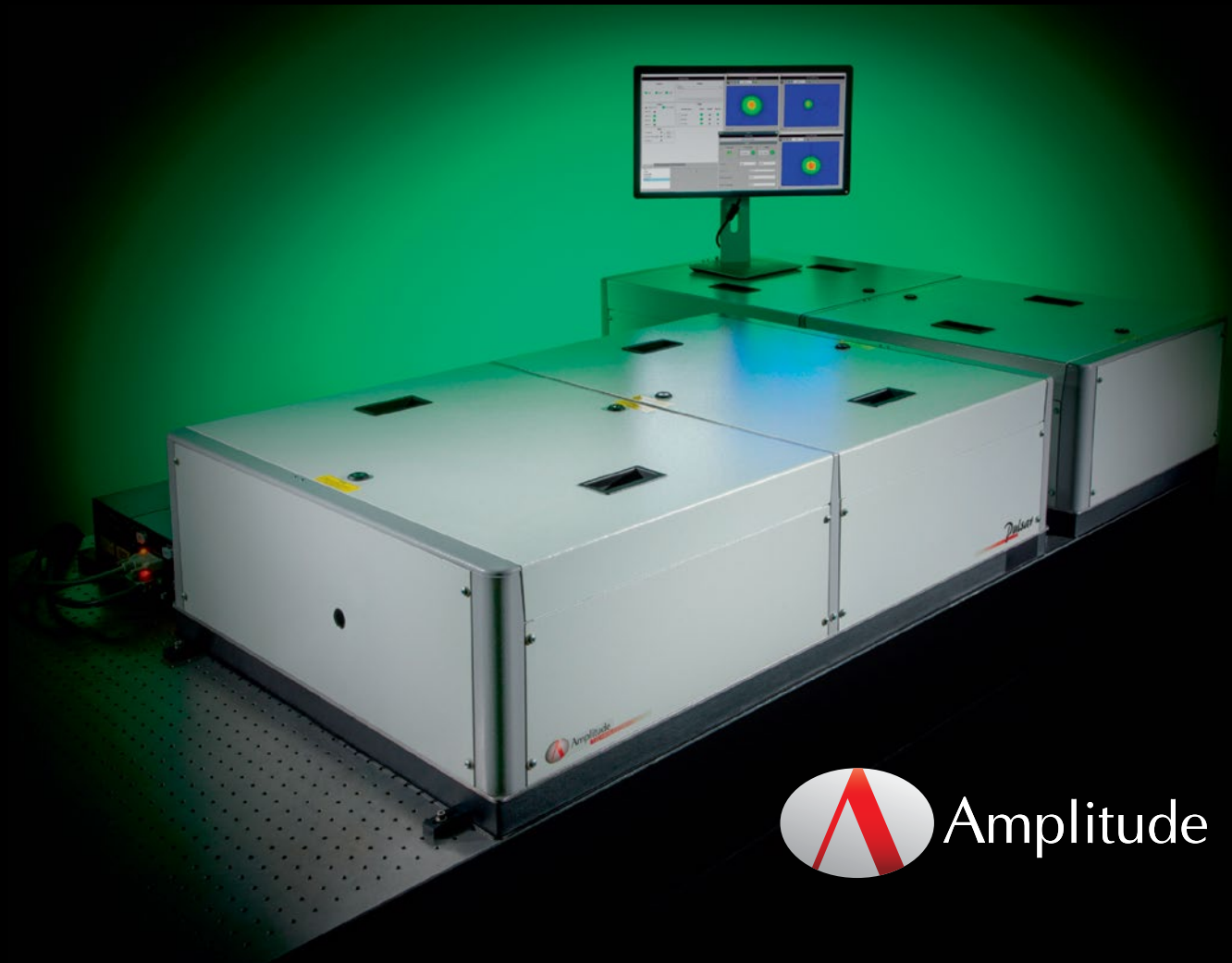
Arco ultrafast Ti:Sapphire lasers are built on a modular and versatile architecture and cover most exhaustive output parameter range on the ultrafast laser market.

APPLICATIONS:

- High harmonic generation
- Attophysics
- Spectroscopy
- Filamentation
- Laser wakefield acceleration
- Terahertz
- Plasma study
- Electron generation & acceleration

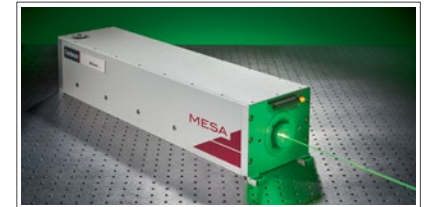
FEATURES:

- 10 Hz, 100 Hz, 1 kHz, 10 kHz repetition rates
- Pulse energy from 1 mJ to 1.1 J
- Amplitude-made pump lasers
- Most versatile and robust architecture
- Peak power up to 55 TW
- Highest performance in class
- Pulse duration down to 20 fs
- Hybrid systems with dual repetition rate

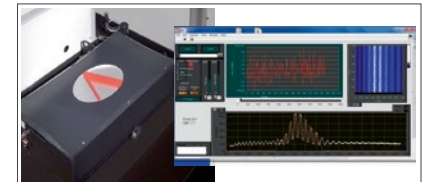


ARCO W 10 kHz amplifiers

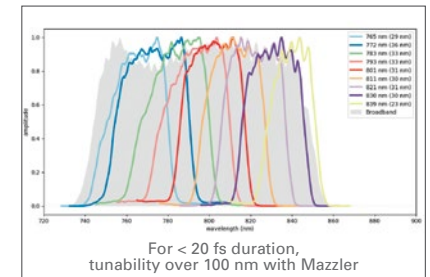
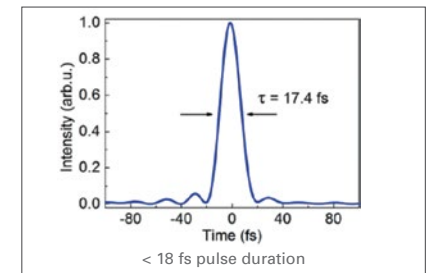
Repetition rate ¹	10 kHz		
Energy per pulse ^{2,3}	0.8 mJ @ 10 kHz	1.8 mJ @ 10 kHz	3 mJ @ 10 kHz
Central wavelength ⁴	800 ± 10 nm		
Pulsewidth (FWHM) ⁵	< 100 fs	/ < 35 fs	/ < 20 fs
Average power	8 W	18 W	30 W
Pump lasers	Mesa	Mesa Duo	Mesa & Mesa Duo
Energy stability (RMS) ⁶	1 %	1 %	0.7 %
Power stability (RMS) ⁷	1 %		
Nanosecond contrast ⁸	< 5.10 ⁻⁴		
Picosecond contrast ⁹	< 10 ⁻⁷ @ 300 - 50 ps	/ < 10 ⁻⁶ @ 50 - 10 ps	/ < 10 ⁻⁵ @ 1 ps
Beam quality M ²	< 1.3		
Pointing stability	< 10 µrad RMS		
Polarization	Linear horizontal		
Warm up time	< 1 hour		



Mesa DPSS Nd:YAG pump laser



BIRD for CEP stabilization and measurement



For < 20 fs duration, tunability over 100 nm with Mazzler

¹ Please contact factory for specifications at other repetition rates

² 0.6 mJ / 1.6 mJ / 2.8 mJ @ 10 kHz for pulse duration < 25 fs

³ Please contact factory for specifications at other energy level

⁴ 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory

⁵ Factory set, must be specified when ordered and will be optimized prior to shipment

⁶ Over 2000 pulses

⁷ Over 8 hours under stable environmental conditions

⁸ Pre-pulse, regenerative amplifier replicas

⁹ Measured with third order cross-correlator (SEQUOIA)

Options

- Carrier envelope phase (CEP)
- Down to 17 fs pulse durations
- External synchronization
- User friendly laser control software

Accessories

- Energy attenuator
- Active beam pointing control
- SHG, THG, FHG harmonic generators
- Palitra OPA (230 nm - 17 µm)

ARCO C (100 Hz) & ARCO M (1 kHz)

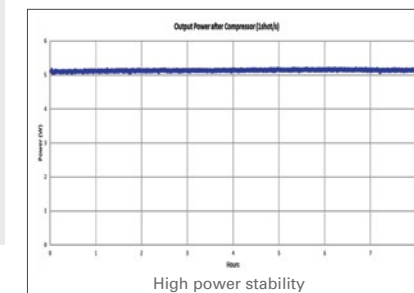
Repetition rate ¹	100 Hz for Arco C / 1 kHz for Arco M		
Energy per pulse ²	6 mJ @ 100 Hz / 5 mJ @ 1 kHz	12 mJ @ 100 Hz / 10 mJ @ 1 kHz	25 mJ @ 100 Hz / 20 mJ @ 1 kHz
Central wavelength ³	800 ± 10 nm		
Pulsewidth (FWHM) ⁴	< 100 fs	/ 35 fs	/ 20 fs
Average power (1 kHz)	5 W	10 W	20 W
Pump lasers	Terra	Terra Duo	2 Terra Duo
Energy stability (RMS) ⁵	0.7 %	0.7 %	0.5 %
Power stability (RMS) ⁶	1 %		
Nanosecond contrast ⁷	< 5.10 ⁻⁴		
Picosecond contrast ⁸	< 10 ⁻⁷ @ 300 - 50 ps	/ < 10 ⁻⁶ @ 50 - 10 ps	/ < 10 ⁻⁵ @ 1 ps
Beam quality M ²	< 1.3		
Pointing stability	< 10 µrad RMS		
Polarization	Linear horizontal		
Warm up time	< 1 hour		



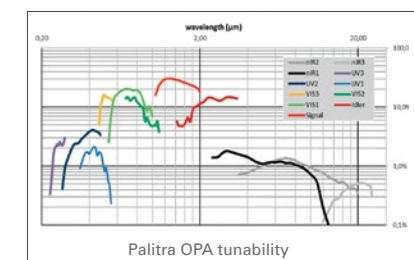
Terra DPSS Nd:YLF pump laser



User friendly laser control software



High power stability



Palitra OPA tunability

¹ Please contact factory for specifications at other repetition rates

² 5 mJ / 9 mJ / 20 mJ @ 100 Hz or 4 mJ / 9 mJ / 16 mJ @ 1 kHz for pulse duration < 25 fs

³ 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory

⁴ Factory-set, must be specified when ordered and will be optimized prior to shipment

⁵ Over 2000 pulses

⁶ Over 8 hours under stable environmental conditions

⁷ Pre-pulse, regenerative amplifier replicas

⁸ Measured with third order cross-correlator (SEQUOIA)

Options

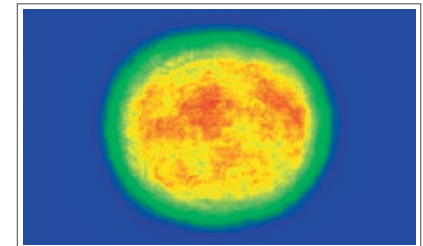
- Carrier envelope phase (CEP)
- Down to 17 fs pulse durations
- External synchronization
- User friendly laser control software

Accessories

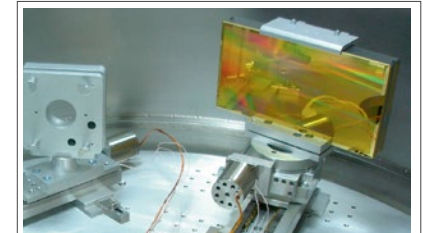
- Energy attenuator
- Active beam pointing control
- SHG, THG, FHG harmonic generators
- Palitra OPA (230 nm - 17 µm)

ARCO X 10 Hz high energy amplifiers

Repetition rate ¹	10 Hz			
Energy per pulse ²	25 mJ	100 mJ	500 mJ	1.1 J
Central wavelength ³	800 ± 10 nm			
Pulsewidth (FWHM) ⁴	< 100 fs / < 35 fs / < 20 fs			
Peak power (max)	1.25 TW	5 TW	25 TW	55 TW
Pump Lasers	Inlite II	Minilite II & Surelite III	Inlite II & Powerlite 2.5 J	Inlite II & 2 Powerlite 2.5 J
Energy stability (RMS) ⁵	< 1.5 %	< 1.5 %	< 1.5 %	< 1 %
Power stability (RMS) ⁶	2 % over 8 hours			
Nanosecond contrast ⁷	< 5 · 10 ⁻⁴			
Picosecond contrast ⁸	< 10 ⁻⁷ @ 300 - 50 ps	< 10 ⁻⁶ @ 50 - 10 ps	< 10 ⁻⁵ @ 1 ps	
Beam quality M ²	< 1.5			
Pointing stability ⁹	< 10 µrad RMS			
Polarization	Linear horizontal			
Warm up time	< 1 hour			



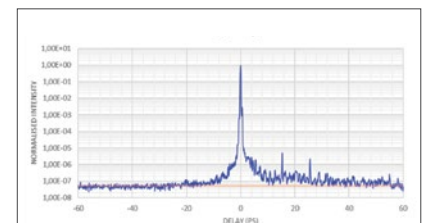
High quality beam profile (500 mJ)



Vacuum compressor for high energy



Genpulse: safety and timing control unit



High picosecond contrast

¹ Please contact factory for specifications at other repetition rates

² Please contact factory for specifications at other energy level

³ 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory

⁴ Factory-set, must be specified when ordered and will be optimized prior to shipment. Please contact factory for specifications at other pulse duration

⁵ Over 2000 consecutive pulses

⁶ Over 8 hours under stable environmental conditions

⁷ Pre-pulse, regenerative amplifier replicas

⁸ Measured with third order cross-correlator (SEQUOIA)

⁹ Over 2000 consecutive pulses

Options

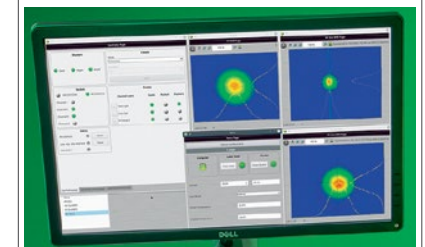
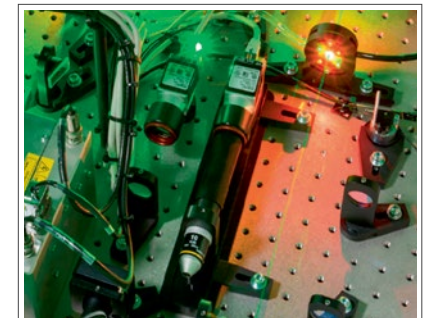
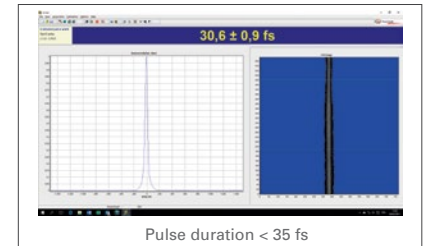
- Vacuum compatible compressor
- Down to 20 fs pulse durations
- External synchronization
- User friendly laser control software

Accessories

- Energy attenuator
- Active beam pointing control
- Isolation of experimental reflected beam
- Palitra OPA (230 nm - 17 µm)

ARCO Hybrid Dual 1kHz and 10 Hz amplifier

	10 Hz & 1 kHz		
	10 Hz	1 kHz	10 Hz & 1 kHz
Repetition rate ¹	10 Hz & 1 kHz		
Energy per pulse ²	4 mJ @ 1 kHz / 25 mJ @ 10 Hz	4 mJ @ 1 kHz / 100 mJ @ 10 Hz	4 mJ @ 1 kHz / 500 mJ @ 10 Hz
Central wavelength ³	800 ± 10 nm		
Pulsewidth (FWHM) ⁴	< 100 fs / < 35 fs		
Peak power (10 Hz output)	0.7 TW	2.8 TW	14 TW
Pump lasers	Terra & Inlite II	Terra & Surelite III	Terra & Inlite + Powerlite 2,5 J
Energy stability (RMS) ⁵	0.7 % @ 1 kHz / 1.2 % @ 10 Hz	0.7 % @ 1 kHz / 1.5 % @ 10 Hz	0.7 % @ 1 kHz / 1.5 % @ 10 Hz
Power stability (RMS) ⁶	2 % over 8 hours		
Nanosecond contrast ⁷	< 5.10 ⁻⁴ @ 1 kHz & < 1.10 ⁻⁶ @ 10 Hz		
Picosecond contrast ⁸	< 10 ⁻⁷ @ 300 - 50 ps / < 10 ⁻⁶ @ 50 - 10 ps		
Beam quality M ²	< 1.3	< 1.5	< 1.5
Pointing stability ⁹	< 10 µrad RMS		
Polarization	Linear horizontal		
Warm up time	< 1 hour		



¹ 1 kHz - 10 Hz when 10 Hz output is activated. Please contact factory for specifications at other repetition rates

² Please contact factory for specifications at other energy level

³ 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory

⁴ Factory set, must be specified when ordered and will be optimized prior to shipment

⁵ Over 2000 consecutive pulses

⁶ Over 8 hours under stable environmental conditions

⁷ Pre-pulse, regenerative amplifier replicas

⁸ Measured with third order cross-correlator (SEQUOIA)

⁹ Over 2000 consecutive pulses

Options

- Two independent compressed beams
- Down to 20 fs pulse durations
- Simultaneous 1 kHz & 10 Hz output
- User friendly laser control software

Accessories

- Energy attenuator
- Active beam pointing control
- Vacuum compatible compressor
- Palitra OPA (230 nm - 17 µm)



Arco

- Arco amplifiers offer outstanding performance: best-in-class output parameters packaged in robust, reliable and user friendly configurations.

