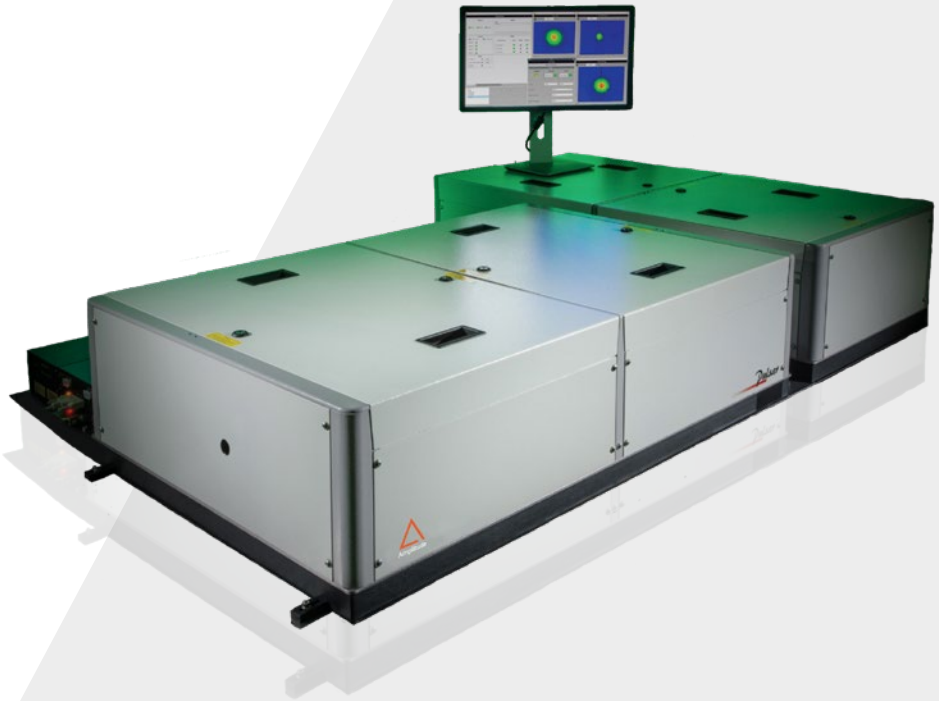
ARCO

High energy Ti:Sapphire amplifiers

The best of the Ti:Sapphire technology

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

Science:

> High harmonic generation
> Attophysics
> Spectroscopy
> Filamentation
> Laser wakefield acceleration
> Teraherz
> Plasma study
> Electron generation & acceleration

Key Features

> 10 Hz, 100 Hz, 1 kHz repetition rates
> Pulse energy from 1 mJ to 2.7 J
> Amplitude-made pump lasers
> Most versatile and robust architecture
> Peak power up to 120 TW
> Highest performance in class
> Pulse duration down to 20 fs
> Hybrid systems with dual repetition rate

Amplitude

Specifications

ARCO C (100 Hz)

Repetition Rate	100 Hz		
Energy Per Pulse (mJ) [1]	18 mJ	40 mJ	60 mJ
Pulse Width (fwhm) [1]	< 100 fs or < 35 fs or < 20 fs		
Central Wavelength (nm) [2,3]	800 ± 10		
Pulse To Pulse Energy Stability (RMS)[4]	≤ 1 %		
Power Stability (RMS) [5]	≤ 1.2 %		
Nanosecond Contrast [6]	≤ 5.10^{-4}		
Picosecond Contrast [7]	10^{-5} @ <-5 ps, 10^{-6} @ <-10 ps, 5.10^{-7} @ <-50 ps		
Beam Quality M^2	≤ 1.5		
Pointing Stability (RMS)	≤ 10 µrad		
Polarization	Linear horizontal		
Warm-up Time	< 1 hour		

[1] Please contact factory for other energy and pulse durationlevel
[2] 790 nm+/- 10nm for 100fs pulse duration. Other central wavelength, please contact the factory
[3] Factory set, must be specified when ordered and will be optimized prior to shipment
[4] Over 2000 pulses
[5] Over 8 hours under stable environmental conditions
[6] Pre-pulse, regenerative amplifier replicas
[7] Measured with third order cross-correlator (SEQUOIA)

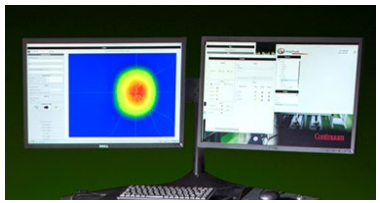
Options

- Down to 20 fs pulse durations
- External synchronization
- Laser 4.0 HE system control software

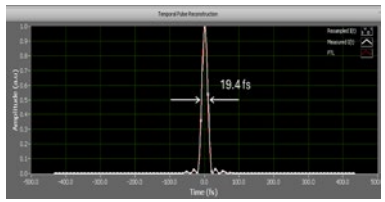
Accessories

- Energy attenuator
- Active beam pointing control
- SHG, THG, FHG harmonic generators

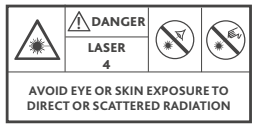
Surelite 4 pump laser


User friendly laser control software

Dazzler & Mazzler for spectral phase and amplitude control



< 20 fs duration



ARCO M (1 kHz)

Specifications

Repetition Rate [1]	1 kHz		
Energy Per Pulse (mJ) [2]	5 mJ	10 mJ	20 mJ
Pulse Width (fwhm) [3]	< 100 fs or < 35 fs or < 20 fs		
Central Wavelength (nm) [4]	800 ± 10		
Pulse To Pulse Energy Stability (RMS)[5]	≤ 0.7 %		
Power Stability (RMS) [6]	≤ 1 %		
Nanosecond Contrast [7]	5.10^{-4}		
Picosecond Contrast [8]	10^{-5} @ <-5 ps, 10^{-6} @ <-10 ps, 5.10^{-7} @ <-50 ps		
Beam Quality M^2	≤ 1.5		
Pointing Stability (RMS)	≤ 10 µrad		
Polarization	Linear horizontal		
Warm-up Time	< 1 hour		

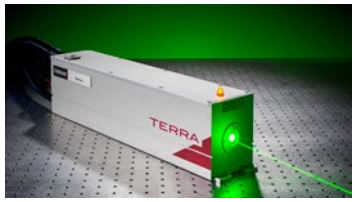
[1] Please contact factory for other energy and pulse duration level
[2] 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory
[3] Factory-set, must be specified when ordered and will be optimized prior to shipment
[4] Over 2000 pulses
[5] Over 8 hours under stable environmental conditions
[6] Pre-pulse, regenerative amplifier replicas
[7] Measured with third order cross-correlator (SEQUOIA)

Options

- Carrier envelope phase (CEP) with OPCPA Seeder
- Down to 20fs pulse duration
- External synchronization
- User friendly laser control software

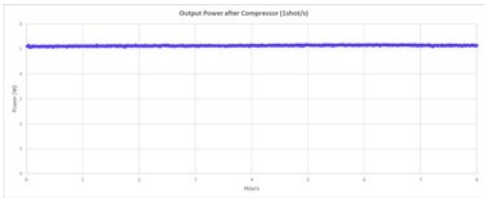
Accessories

- Energy attenuator
- Active beam pointing control
- SHG, THG, FHG harmonic generators

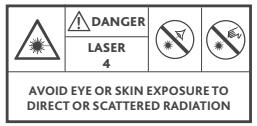


Terra DPSS Nd:YLF pump laser


User friendly laser control software


High power stability


OPCPA Seeder



ARCO X 10 Hz high energy

Specifications

Repetition Rate [1]	10 Hz			5 Hz / 10 Hz
Energy Per Pulse [2]	25 mJ	500 mJ	1 J	> 2.7 J
Pulse Width (fwhm) [3]	< 100 fs or < 35 fs or < 20 fs			
Central Wavelength (nm) [4]	800 ± 10			
Peak Power (max)	1.25 TW	25 TW	50 TW	120 TW
Pulse To Pulse Energy Stability (RMS)[5]	≤ 1,5 %			
Power Stability (RMS) [6]	≤ 2 %			
Nanosecond Contrast [7]	5.10^{-4}			
Picosecond Contrast [8]	10^{-5} @ <-5 ps, 10^{-6} @ <-10 ps, 5.10^{-7} @ <-50 ps			
Beam Quality	$M^2 \leq 1.5$		Strehl ratio > 0,85 [9]	
Pointing Stability (RMS) [10]	≤ 10 µrad			
Polarization	Linear horizontal			
Warm-up Time	< 1 hour			

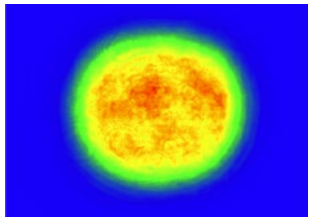
[1] Please contact factory for specifications at other repetition rates
[2] Please contact factory for specifications at other energy level
[3] Factory-set, must be specified when ordered and will be optimized prior to shipment. Please contact factory for specifications at other pulse duration
[4] 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory
[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] With deformable mirror option
[10] Over 2000 consecutive pulses

Options

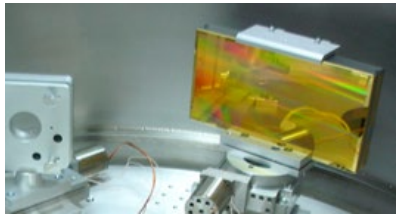
- Vacuum compatible compressor
- Down to 20 fs pulse durations
- External synchronization
- Laser 4.0 HE system control software
- EPICS / TANGO gateway

Accessories

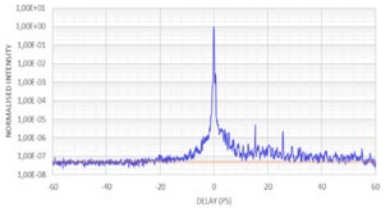
- Energy attenuator
- Active beam pointing control
- Isolation of experimental reflected beam



High quality beam profile (500 mJ)

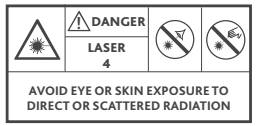


Vacuum compressor for high energy



High picosecond contrast

Arco X 120 TW



ARCO Hybrid Dual 1 kHz and 10 Hz amplifier

Specifications

Repetition Rate [1]	10 Hz & 1 kHz		
Energy Per Pulse [2]	5 mJ @ 1 kHz & 25 mJ @ 10 Hz	5 mJ @ 1 kHz & 500 mJ @ 10 Hz	10 mJ @ 1 kHz & 500 mJ @ 10 Hz
Pulse Width (fwhm) [3]	< 100 fs or < 35 fs		
Central Wavelength (nm) [4]	800 ± 10		
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 %		
Nanosecond Contrast [7]	$< 5.10^{-4}$ @ 1 kHz & $< 1.10^{-6}$ @ 10 Hz		
Picosecond Contrast [8]	10^{-5} @ <-5 ps, 10^{-6} @ <-10 ps, 5.10^{-7} @ <-50 ps		
Beam Quality M^2	≤ 1.5		
Pointing Stability (RMS)[9]	≤ 10 µrad		
Polarization	Linear horizontal		
Warm-up Time	< 1 hour		

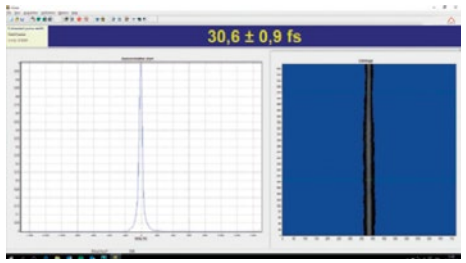
[1] 1 kHz - 10 Hz when 10 Hz output is activated. Please contact factory for specifications at other repetition rates
[2] Please contact factory for specifications at other energy level
[3] Factory-set, must be specified when ordered and will be optimized prior to shipment
[4] 790 nm +/- 10 nm for 100 fs pulse duration. Other central wavelengths, please contact factory
[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)
[9] Over 2000 consecutive pulses

Options

- Two independent compressed beams
- Down to 20 fs pulse durations
- Simultanous 1 kHz & 10 Hz output
- Laser 4.0 HE system control software
- Vacuum compatible compressor

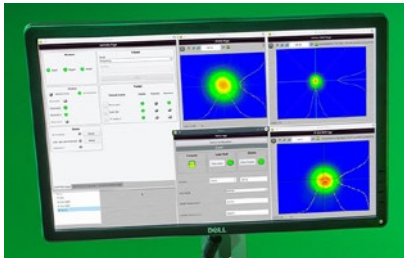
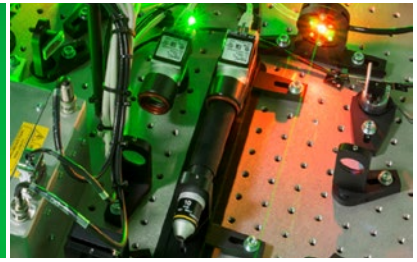
Accessories

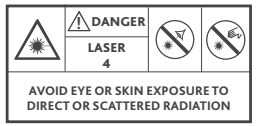
- Energy attenuator
- Active beam pointing control



Pulse duration < 35 fs

Vaccum compressor for high energy



Laser control software with beam profile monitoring for each amplifier and pump



ARCO

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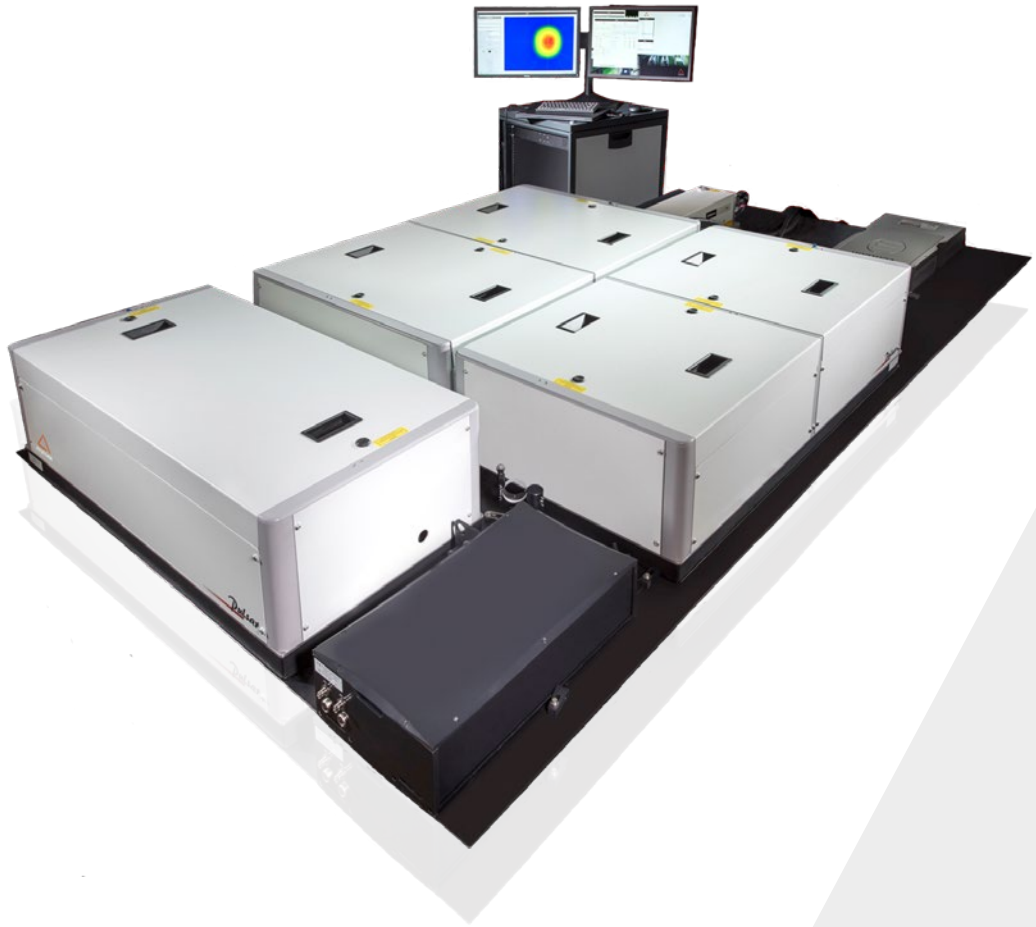

Amplitude