

## STC series ultrafast OPOs

### STC-Spark-OPO

The STC-Spark-OPO and STC-Spark-OPO-HP is a near to mid-infrared quasi-CW optical parametric oscillator. It provides exceptional tunability and power across the near-infrared, making it an ideal light source for a wide range of application areas (from multi-photon microscopy to spectroscopy). Our ultrafast optical parametric oscillator technology can generate light from 1.4  $\mu\text{m}$  to 4.2  $\mu\text{m}$  with picosecond pulsewidths. With a fully integrated pump source it is able to deliver high average power at both the signal and idler wavelengths with exceptional reliability. We also provide access to the fixed wavelength pump light, making it suitable for CARS microscopy.



#### Specifications

	Standard Specifications	Optional
Signal wavelength	1.48 $\mu\text{m}$ – 1.9 $\mu\text{m}$	OPO crystal can be optimized for specific wavelength ranges down to 1.35 $\mu\text{m}$
Signal power	Up to 800mW (@ 1.5 $\mu\text{m}$ )	Power depends on mirror set used, can be customer optimised
Idler wavelength	2.1 $\mu\text{m}$ – 3.6 $\mu\text{m}$	OPO crystal can be optimized for specific wavelength ranges up to 4.2 $\mu\text{m}$
Idler power	Up to 250 mW (@ 3.3 $\mu\text{m}$ )	Power depends on mirror set used, can be customer optimised.
Pump source	Integrated Spark 1040 laser oscillator	Further details of pump source on request
Pump wavelength	1040 nm	
Repetition frequency	100 MHz Monitor photodiode	Lock-to-clock option available
Beam quality	Linearly polarized Divergence < 2 mrad	
Control interface	Ethernet, and web page Serial port (for control via LabView/MatLab)	Custom interface available
Dimensions	765 x 240 x 82 mm (laser head) 483 x 285 x 86 mm (control unit)	
Weight	18 kg (laser head) 2 kg (control unit)	
Electrical	Voltage 110 – 240 V AC Frequency 50 – 60 Hz Power 80W	
Cooling	Air cooled	

## Features

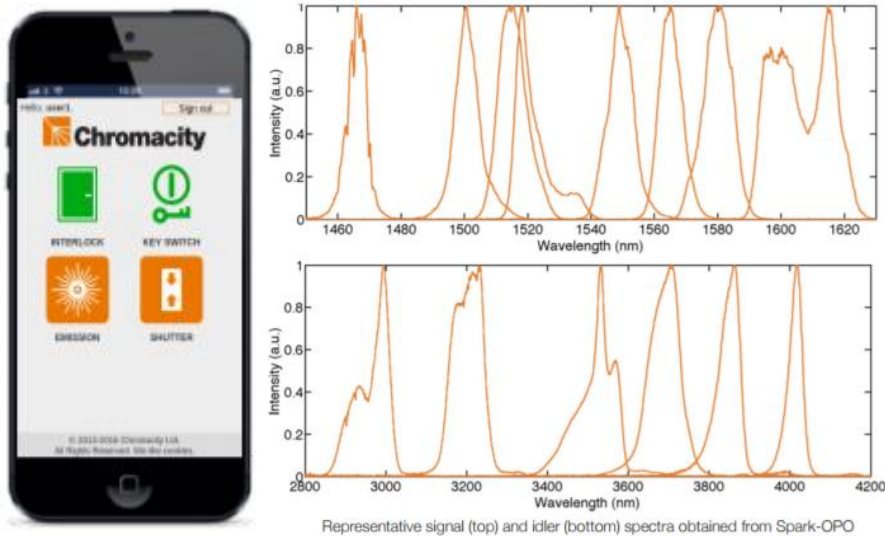
- Quasi-CW output from 1.48 – 4.2  $\mu\text{m}$
- Up to 800 W from signal port and 250 mW from idler port
- Optional 3rd output port delivers 500 mW at 1040 nm
- 100 MHz repetition frequency
- Linearly polarized free-space output
- Lock-to-clock option

## Web-based laser control

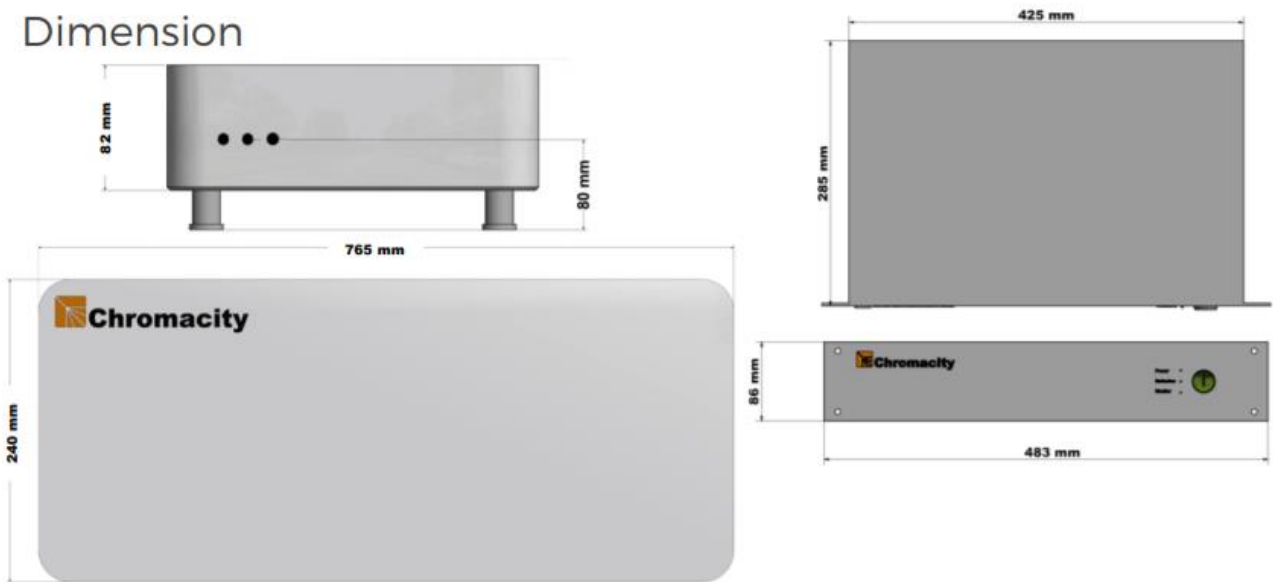
- Easy to use interface
- Safety shutter and laser emission control over ethernet and wifi
- Door interlock error alerts
- Control multiple lasers
- RS232 control as standard

## Applications

- FTIR micro-spectroscopy
- Gas spectroscopy
- Multi-photon microscopy
- Stand-off chemical sensing
- Material characterization and metrology
- Raman conversion
- THz generation
- Deep tissue multi-photon imaging
- Nonlinear optics
- Pump-probe experiments § Frequency domain OCT



### Dimension



## STC-Spark-OPO-FIR

The STC-Spark-OPO-FIR is the world's first commercial broadband ultrafast OPO providing output in the 5 – 12  $\mu\text{m}$  region. In the 5 – 7  $\mu\text{m}$  region up to 80 mW can be achieved and at 12  $\mu\text{m}$  up to 10 mW of light is available. The Spark FIR is an ideal source for spectroscopy in the molecular fingerprint region as well as stand-off detection and remote sensing applications.



### Specifications

	Standard Specs	Optional
Output wavelength	5-12 $\mu\text{m}$ output available	Individual QPM gratings provide up to 1 $\mu\text{m}$ coverage
Output power	Up to 75 mW at 5-7 $\mu\text{m}$ and up to 10mW at 12 $\mu\text{m}$	Optimised systems for specific wavelengths available on request.
OPO Wavelength tuning	Wavelength tuning is available through multiple QPM gratings	Please contact us for tuning options.
Pump source	Integrated Spark 1040 laser oscillator	Further details of pump source on request
Pump wavelength	1040 nm	
Repetition frequency	100 MHz Monitor photodiode	
Control interface	Ethernet, and web page Serial port (for control via LabView/MatLab)	Custom interface available
Dimensions	970 x 245 x 82 mm (laser head) 483 x 285 x 86 mm (control unit)	
Weight	18 kg (laser head) 2 kg (control unit)	
Electrical	Voltage 110 – 240 V AC Frequency 50 – 60 Hz Power 80W	
Cooling	Air cooled	

### Features

- First commercial quasi-CW OPO in the fingerprint region
- Spectral output available from 5-12  $\mu\text{m}$
- Up to 80 mW from 5-7  $\mu\text{m}$  region and up to 10mW at 12  $\mu\text{m}$ .
- Optional pump output port
- 100 MHz repetition frequency
- Turnkey operation with web-based control

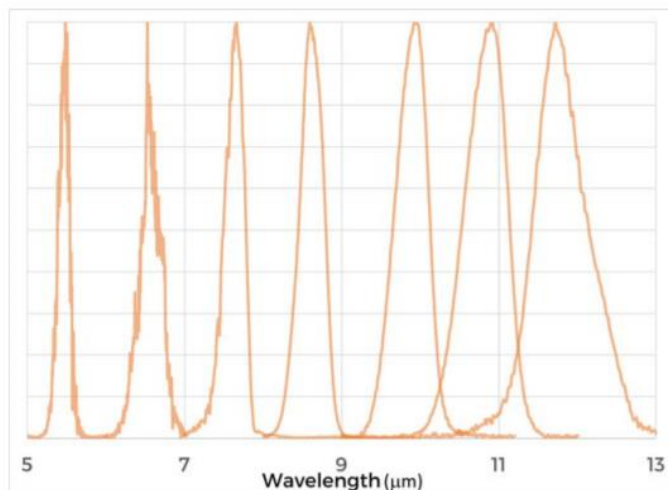
### Web-based control

- Easy to use interface
- Safety shutter and laser emission control over ethernet and wifi
- Door interlock error alerts
- Control multiple lasers
- RS232 control as standard

### Applications

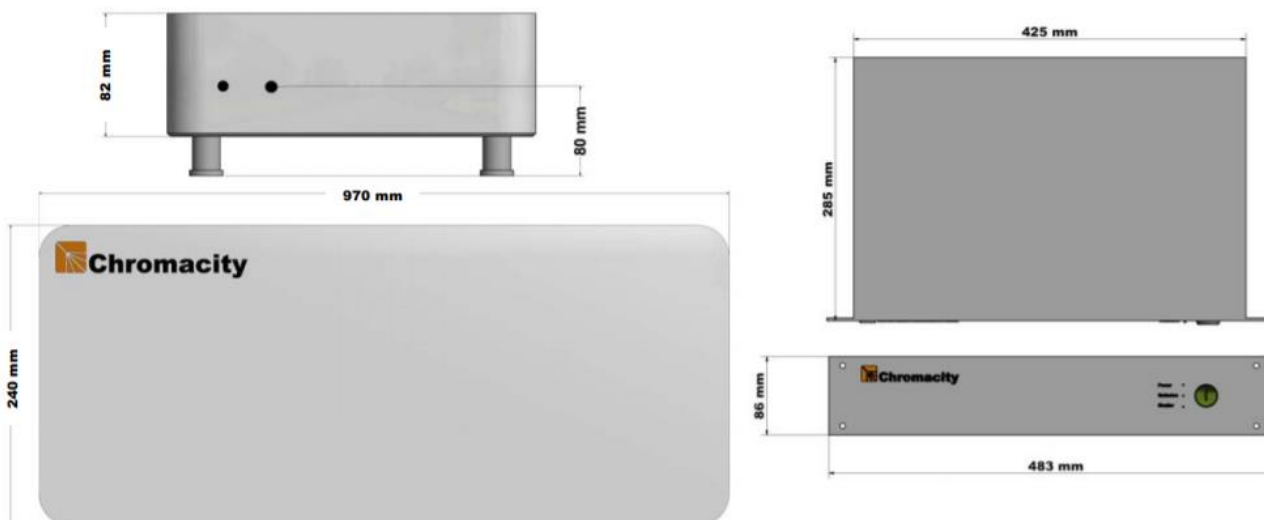
- Finger-print region spectroscopy
- Infrared spectroscopy
- Gas sensing

- Stand-off chemical sensing
- Material characterization and metrology
- Hyperspectral imaging
- Breath analysis
- Atmospheric research
- Combustion diagnostics
- Photoacoustic spectroscopy



Representative spectra obtained from Spark FIR

## Dimensions



## Custom Systems

Our focus is to provide our customers with the latest in state-of-the-art laser technology tailored for their needs. With a product range covering 1-12  $\mu\text{m}$ , our ultrafast fibre lasers and OPOs deliver high performance operation in compact, cost-effective units. If you have bespoke wavelength requirements for ultrafast systems please contact us to discuss how we can meet your needs.

