



SOLE SOURCE CERTIFICATE AND POSTING NOTICE

(Greater than \$150,000)

A sole source procurement is when you make a request to purchase product(s) and/or service(s) without competition when competition is otherwise required. This means that product/service is unique and that the supplier is the only supplier that can provide the product or service. In accordance with the authority granted under applicable Florida law and UCF Regulation 7.130, the following documentation is submitted in support of this request.

This form and related documentation shall be submitted through Workday Help using case type Waivers and Sole Source. Please do not attach to a requisition or send via email for review and approval.

WD case subject title should have common structure for easy tracking, to include:

- Exemption type (Sole Source)
- Supplier name
- Purchase amount

The completed sole source must be approved in the following order. **Please be sure to obtain all required signatures before submitting the form to Procurement Services.**

- PI/Researcher/Director/Chair
- President/Vice President/Dean
- Procurement Specialist
- Procurement Services Manager or Associate Director
- Assistant Vice President for Tax, Payables & Procurement, who will review and provide a recommendation to approve or disapprove the sole source to:
- Chief Financial Officer, who will either directly approve or disapprove the sole source, or forward it to the Provost and Executive Vice President for goods/services related to academia for input prior to making the final decision.

Once the completed sole source is received, Procurement Services in collaboration with kNEXT reviews the documentation provided and determines whether the sole source is valid or if there are additional suppliers that may be able to provide the requested product or service. The sole source review and approval process varies based on the nature of the product/service being requested and the information provided in the requestor's justification, among other factors, so please keep this in mind when submitting the form.

Contingent upon the approval of all the officers/individuals listed, the sole source shall be posted on the UCF Procurement Services website for seventy-two (72) hours. Upon expiration of said posting period, Procurement Services will process a purchase order upon receipt of the requisition.

The usual bidding process shall be conducted if sole source approval is not granted.

PART I: DEPARTMENT AND SUPPLIER INFORMATION

Department Name: CREOL Contact & Phone: M. Heeke 4078236802
Product/Service Cost: ~~203,000~~ \$201,800
 One Time Purchase Term Contract: _____
 Multiple Purchases Duration: _____

Company Name: Light Conversion Email: andrey@Lightcon-usa.com
Contact Person: Andrey Senin Title: Director, Ultrafast Scientific
Product and/or Service: Tunable Ultrafast Laser Source

PART II: SOLE SOURCE JUSTIFICATION (see pages 4-5)

Only justifications submitted on this form and in the below format will be reviewed for approval. All the listed points MUST be fully answered on the following pages and any additional attached pages as needed. Failure to submit justification as outlined in the format below will result in the form being returned without review.

PART III: SOLE SOURCE CERTIFICATIONS

- A. In my professional opinion, this is the only product or service that can reasonably meet my requirement(s)/specification(s), and this is the only supplier who can provide the product or service. I further certify that the information contained herein is true and correct to the best of my knowledge and belief and would withstand any audit or supplier protest.
- B. I, the undersigned, certify that I and/or the user do not have a financial interest in the above named supplier or contractor, and that I am unaware of any conflict of interest related to this purchase.



Signature

Darren Hudson, PI/Researcher 2/27/25

Printed Name and Title (PI/Researcher/Director/Chair) Date

David J Hagan
Digitally signed by David J Hagan
Date: 2025.02.27 17:58:56
-05'00'

Signature

David Hagan _____

Printed Name and Title (President/Vice President/Dean) Date
(Delegations not allowed; emails from absent approvers are acceptable)

I, the undersigned, hereby concur with the above justification and support a sole source approval for the above product(s) and/or service(s). Approvals may be documented and supported via email.

See below email for approval

Signature Printed Name and Title (Procurement Specialist) Date

See below email for approval

Signature Printed Name and Title (Procurement Services Manager or Associate Director) Date

See below email for approval

Signature Printed Name and Title (Asst. Vice President for Tax, Payables & Procurement) Date

See below email for approval

Signature

Printed Name and Title (Chief Financial Officer)

Date

POSTING NOTICE

3/27/25 11:00 am EST

Date/Time Posted

4/01/25 11:00am EST

Posting End Date

2508

UCF Control No.

Trinh Nguyen

Procurement Specialist

Type text here

SOLE SOURCE JUSTIFICATION

Please answer the questions below and attach additional documentation if needed.

1. Describe the product(s) and/or service(s) and anticipated use thereof in layman's language.

The product consists of a wavelength tunable ultrafast laser pulse source. The center wavelength of the pulse is tunable over a range spanning from 1300 nm to 2000 nm and from 2100 nm to 4500 nm. This large tuning range combined with the high peak power of the ultrafast pulse will allow for a wide range of fundamental studies using our hollow-core fiber systems.

2. Describe the required specifications or requirements and why are they essential to the accomplishment of your work.

We require a wavelength agile source with high peak power. The main subject of our studies, our hollow core fiber, exhibits a transmission spectrum that is strongly wave dependent, and includes resonant bands of transmission. Fixed-wavelength sources are thus not useful for characterizing our fibers over their useful transmission zone.

Provide the names of other suppliers, products and/or services that you have investigated and explain why they do not meet the required specifications or requirements. It may be helpful to present your information in a table like the one below.

| Required Specifications | Supplier 1 | Supplier 2 | Supplier 3 | Supplier 4 |
|-------------------------|------------|------------|------------|------------|
| | Y/N | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N | Y/N |

APE - Levante-fs OPA system. This OPA system offers tunability comparable to the Light Conversion system but at a significantly reduced pulse energy. The price point is slightly higher than Light Conversion.

AFS - activeTwo. This is a fixed-wavelength thulium fiber laser based system. It offers higher pulse energy than the Light Conversion system but has a fixed wavelength near 2 μ m. The

3. State in detail why only this and no other product(s)/service(s) will satisfy the department's requirements. Description may include unique features, compatibility, specifications, availability, delivery time frame etc. (For example, please list the features or special conditions that are unique and only available from one supplier. Note: Price is not a valid reason.)

The Light Conversion Carbide+iOPA system offers a uniquely tunable system at a price point lower than the competitors (which have serious shortcomings in relative performance). First, the wavelength tunability of the Light Conversion system outperforms that of the APE system, and the AFS system is essentially a fixed wavelength. The Light Conversion system has significantly higher pulse energy than the APE system, and only marginally less than the fixed-wavelength AFS system. As wavelength tunability (key parameter) and pulse energy are key specs required in our experiments, the Light Conversion system is clearly the best choice.

4. Are there resellers or distributors? If yes, please list names and contact information.

No.

5. Will this purchase obligate UCF to this vendor for future purchases such as maintenance, licensing, or continuing need? Yes No

If yes, please provide details regarding future obligations and/or needs to include number of years and total spending amount of obligations:

6. What efforts have been made to obtain the best pricing available? Please provide an explanation to support the belief that the price is fair and reasonable.

I have researched a wide range of vendors and down-selected 3 leading companies. I reached out to these 3 well-known vendors for this piece of equipment and engaged in discussions with their technical sales representatives to understand their offerings. I requested quotes and performance specs from all 3 vendors before down-selecting to the Light Conversion system as it represented the only realistic equipment choice to hit all of our key specifications.

| Required Specifications | A.P.E. | AFS | Light Conversion | |
|---|---------------|------------|-------------------------|--|
| Wavelength Tunability (nm) from 1300-2000 nm and 2100-4500 nm | Yes | No | Yes | |
| Pulse Energy > 1 μ J | No | Yes | Yes | |
| Pulse Duration [fs] < 400 fs | Yes | No | Yes | |
| Tunable Pulse Duration from fs to ps domain | No | No | Yes | |

From: [Gerald Hector](#)
To: [Joel Levenson](#)
Cc: [Brian Sargent](#); [Trinh.Nguyen](#)
Subject: RE: Help Case C0118381 - Light Conversion USA
Date: Tuesday, March 25, 2025 2:57:37 PM
Attachments: [image004.png](#)
[image005.png](#)

Joel:

I support this sole source purchase.

Regards,

Gerald L. Hector, CPA
Senior Vice President
Administration and Finance
University of Central Florida
4635 Andromeda Loop N
MH384
Orlando, FL 32816
Tel: (407) 823-1063
Email: gerald.hector@ucf.edu



From: Joel Levenson <Joel.Levenson@ucf.edu>
Sent: Tuesday, March 25, 2025 9:53 AM
To: Gerald Hector <Gerald.Hector@ucf.edu>
Cc: Brian Sargent <Brian.Sargent@ucf.edu>; Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: FW: Help Case C0118381 - Light Conversion USA

Good morning Gerald,

I support this sole source as well. It's a laser purchase with specific parameters that research into competitors did not find any comparable products. Justification and associated documents are attached.

If you agree, reply all and indicate your approval. If you have any further questions, happy to discuss those further.

From: Brian Sargent <Brian.Sargent@ucf.edu>
Sent: Monday, March 24, 2025 11:44 AM
To: Joel Levenson <Joel.Levenson@ucf.edu>
Cc: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: FW: Help Case C0118381 - Light Conversion USA

Hi Joel,

I support this sole source submitted by CREOL as well. It's a highly specialized laser must have high pulse energy. CREOL researched other companies, but their products do not meet the full specifications required. Additionally, research into GovSpend found that Utah State issued a sole source for similar equipment. Please approve/disapprove.

Regards,
Brian

From: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Sent: Wednesday, March 19, 2025 4:04 PM
To: Brian Sargent <Brian.Sargent@ucf.edu>
Subject: FW: Help Case C0118381 - Light Conversion USA

Hi Brian,

Happy Wednesday! I have reviewed the attached sole source and can support it for the following reasons. Can you please also review to see if you agree or not?

Vendor: Light Conversion
 Product: Tunable Ultrafast Laser Source (CARBIDE 40W)
 Total Amount: \$203,000
 Dept: CREOL

Requirement: The department wants to purchase a tunable ultrafast laser system that will be used for their hollow core fiber studies. The required specifications are listed below.

Research Conducted: The PI confirmed that to the best of his knowledge, the suppliers listed below are the leading companies in the marketplace that can provide similar laser systems. However, only the product from Light Conversion can meet all the requirements below.

| Specifications Requirements | Light Conversion | A.P.E | AFS |
|---|------------------|-------|-----|
| Wavelength Tunability (nm) from 1300-2000 nm and 2100-4500 nm | YES | YES | NO |
| Pulse Energy > 1 µJ | YES | NO | YES |
| Pulse Duration [fs] < 400 fs | YES | YES | NO |
| Tunable Pulse Duration from fs to ps domain | YES | NO | NO |

- The laser system from A.P.E offers tunability, which is comparable with the Light Conversion system but with significantly reduced pulse energy.
- AFS has a fixed-wavelength thulium fiber laser-based system, but the department’s subject studies are for hollow core fiber that exhibits a transmission spectrum that is strongly wave dependent and includes resonant bands of transmission. Therefore, fixed-wavelength sources are thus not useful for characterizing their fibers over their useful transmission zone.
- Wavelength tunability and high pulse energy are key specs required for the department’s experiments.

There are no resellers/distributors for the MHz laser system from Light Conversion.

Price is fair and reasonable: The price is considered fair and reasonable. The PI noted that he had extensively engaged in discussions with technical sales representatives for each of the above suppliers to fully understand their offerings and Light Conversion is the only company that can provide a laser system to meet all key specifications needed.

GovSpend: Utah State University also awarded this company for similar equipment, CARBIDE 40W, in February 2024 where high pulse energy output is an important factor.



Carbide fs laser - CARBIDE-40W-0.4mj-1MHz from Light Conversion

| | |
|----------------------|---|
| Agency: | Utah State University |
| State: | Utah |
| Type of Government: | State & Local |
| Posted Date: | Feb 13, 2024 |
| Due Date: | Feb 20, 2024 |
| Original Source: | Please Login to View Page |
| Contact information: | Please Login to View Page |
| Bid Documents: | Please Login to View Page |

| Bid # | Description | Closing Date & Time |
|--|--|-----------------------|
| 3/26/25 | <p>Carbide fs laser - CARBIDE-40W-0.4mj-1MHz from Light Conversion</p> <p>Must have an output of 0.4 mj at 100 kHz</p> <p>The CARBIDE-40W laser is based on Yb doped crystal lasing medium (in both OSC and Regen) and has solid state design with Kerr-lens mode locking for long-term serviceability and reliability. In the CARBIDE, there is no fiber involved at all (vs. competition's fiber-based MOPA architecture and all-fiber solutions), which allows us to achieve an unmatched combination of: - max energy of 0.4 mj/pulse at up to 100 kHz - high pulse-to-pulse stability of</p> <p>Having such short pulses with high energies and high stability from the CARBIDE lasers is important for driving OPAs and harmonic generators, for example, to achieve high output energies, optimal conversion efficiency and most stable output required by experiments (since an OPA is a passive device, its stability is influenced by stability of the pump laser)</p> <p>Sole Source: A solid-state laser such as CARBIDE has certain distinct advantages over a fiber laser. In particular, CARBIDE has very clean pulses with no pulse pedestal, giving substantially better parametric conversion than is typically possible with fiber lasers.</p> <p>While comparing CARBIDE with Ti:Sapphire lasers, it should be noted that CARBIDE Yb lasers are directly diode pumped, and so are made compact and robust. Ti:Sapphire systems are notoriously large, and tend to require substantial alignment & maintenance. They have to be pumped by frequency doubled IR lasers, so there is a pump laser for the oscillator, another one for the regen, and additional for amplification stage(s). In addition, CARBIDE systems work fine at both low rep rates and high rep rates, while Ti:Sapphire lasers generally work well up to 5-10 kHz but struggle at higher rep rates due to thermal effects</p> <p>Ability to pump more than one OPA/NOPA and add OPAs in future since CARBIDE lasers produce plenty of energy for this.</p> <p>Contact jill.ballard@usu.edu with questions</p> | 02/20/2024 1:00 PM |
| <p><small>* Disclaimer: This website provides information about bids, requests for proposals (RFPs), or requests for qualifications (RFQs) for convenience only and does not serve as an official public notice.</small></p> | | |

Thanks,
Trinh

From: Michael Heeke <mike.heeke@creol.ucf.edu>
Sent: Friday, March 14, 2025 3:37 PM
To: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: RE: Help Case C0118381 - Light Conversion USA

Trinh,

Per Dr. Hudson: "Yes the full system is comprised of 2 sub items, the Carbide Pump laser here and the OPA assembly."
Please let me know if this helps or if you have any further questions.

Thanks,
Mike

From: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Sent: Friday, March 14, 2025 3:09 PM
To: Michael Heeke <mike.heeke@creol.ucf.edu>
Subject: RE: Help Case C0118381 - Light Conversion USA

Hi Mike,

I'm reviewing the above SS and found the attached sole source for the Carbide fs laser but not sure if it's them same thing that the PI is wanting to purchase. Can you please confirm with him and if it's the same, I can use it to support his SS. The SS write up is on the second page of the document.

Thank you,
Trinh

From: Brian Sargent <Brian.Sargent@ucf.edu>
Sent: Tuesday, March 4, 2025 10:00 AM
To: Michael Heeke <mike.heeke@creol.ucf.edu>
Cc: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: FW: Help Case C0118381

Good morning Michael,

This case has been assigned to Trinh Nguyen. She will reach out with any questions.

Regards,
Brian

From: Michael Heeke <mike.heeke@creol.ucf.edu>
Sent: Monday, March 3, 2025 2:52 PM
To: Brian Sargent <Brian.Sargent@ucf.edu>
Cc: CREOL Purchasing <creol-purchasing@creol.ucf.edu>
Subject: Help Case C0118381

3/26/25

Hi Brian,

Just wanted to send a note that we submitted a sole source request via Help Case C0118381.
I'm including the attachments here in case that is helpful!

Please let me know if anything else is needed.

Thank you,
Mike Heeke
Procurement Coordinator
CREOL, College of Optics & Photonics
University of Central Florida
4304 Scorpius St
Orlando, FL 32816-2700
PH: (407) 823-6802

Quote #: Q250224-AS1*February 26, 2025***Prof. Darren Hudson**

CREOL, The College of Optics and Photonics
University of Central Florida
4304 Scorpius Street, Orlando, FL 32816
(848) 466-8806; darren.hudson@ucf.edu

Dear Prof. Darren Hudson,

Following is the quotation for the Carbide-40W-1MHz + iOPA-One DPSS tunable laser system, configured for spectroscopy/ microscopy. Key features and specifications include:

- Carbide pump laser has been engineered for applications where reliability is crucial, it represents 'best in class' stability and a robust design. The CPA design with computer-controlled stretcher/compressor allows the user to control the pulse duration from a computer. Tunability of the laser output parameters allows Carbide system to cover applications normally requiring different classes of lasers.
- The iOPA-One is a robust and compact mid-IR optical parametric amplifier. It is a rugged module integrated into the Carbide laser, and providing long-term stability comparable to that of the industrial-grade harmonic generators. The sealed design provides mechanical stability and eliminates the effects of air turbulence, minimizing energy fluctuations and ensuring stable long-term performance.
- The entire system has been designed to allow customers to use the laser as a tool, maintaining focus on their work. It is thoroughly tested at production site and debugged there to ensure best performance at installation.
- The system is equipped with an extensive software package, which ensures smooth operation as well as remote system monitoring and troubleshooting.

We have designed the system to be flexible, and are happy to work with you over time to update or reconfigure the system to accommodate evolutions in your work.

We appreciate the opportunity to work with your group, please let me know if you have any questions.

Best Regards

Andrey Senin, Ph.D.
Light Conversion-USA
Andrey@LightCon-USA.com
(833) 685-2872 x118

Quote #: Q250224-AS1

February 26, 2025

Prof. Darren Hudson

 CREOL, The College of Optics and Photonics
 University of Central Florida
 4304 Scorpius Street
 Orlando, FL 32816
 (848) 466-8806
darren.hudson@ucf.edu

| Item | Description | Price, USD |
|----------------------------------|---|-------------------|
| CB3-40W-0.1mJ-1MHz with iOPA-One | CARBIDE-40W-0.1mJ-1MHz Femtosecond Pump Laser <ul style="list-style-type: none"> • ~1030 nm Fundamental Output • 40 W max output power (at 400 kHz to 1 MHz) • 0.1 mJ/pulse max output energy (at up to 400 kHz) • < 250 fs fundamental pulse duration • 400 kHz - 1,000 kHz base rep rate • Includes integrated pulse picker to effectively divide the rep rate • Includes an extensive software package • Laser control laptop/PC is NOT included and to be provided by the end-user (or can be added at extra charge – see option 1 below) iOPA-One tunable-wavelength mid-IR optical parametric amplifier <ul style="list-style-type: none"> • 1350 – 2000 nm (signal) and 2100 – 4500 nm (idler) • Input energy (power & rep rate): 40 uJ (40 W @ 1 MHz) – pls. confirm | \$ 192,080 |
| | Installation & Training: on-site | \$ 5,900 |
| | Delivery (to a loading dock, by air freight) | \$ 2,000 |
| | Total: | \$ 199,980 |

| | | |
|----------|--|----------|
| Option 1 | Laser control laptop with a preloaded extensive software package | \$ 1,820 |
| Option 2 | Oscillator output simultaneous with the main output: <ul style="list-style-type: none"> • up to 500 mW, 1030 ± 10 nm, ~ 65 MHz, ~ 200 fs slightly chirped | \$ 7,290 |

NOTES: Local sales tax will be added unless exemption certificate is provided.
 Prices quoted include special discount for the Hudson Lab: Carbide+iOPA system should be mentioned in published work; Prof. Darren Hudson agrees to be mentioned as a reference.

Terms & Conditions

- **Price:** US Dollars, DDP Destination
- **Payment:** Net 30, payment by check or wire transfer
- **Delivery:** ~5-6 months ARO
- **Quotation valid:** 30 days

CLASS IV LASER SYSTEM: User is responsible for compliance with all local codes and regulations.

Product Warranty: Seller warrants to Buyer that the Products shall be substantially free from defects in materials and workmanship under normal use and service for one (1) year from the date of shipment from the factory.

Buyer's exclusive remedy and Seller's sole liability for any breach of the foregoing warranty shall be for Seller, at Buyer's request within the warranty period by written notice specifying the defect, and at Seller's sole option, to repair or replace the defective Product or refund any amounts paid for the defective Product.

For on-site warranty service, labor and daily expenses are paid by LC-USA. For on-site service, typical response time is 2-4 weeks. If immediate service is needed, buyer agrees to pay for airfare.

These remedies are available only if Seller's examination discloses to Seller's satisfaction that such defects actually exist and were not caused by Buyer's misuse, abuse, unauthorized modifications or disassembly, neglect, attempts to repair, or by accident, fire, third party materials or other hazard. It is buyer's responsibility to perform periodic maintenance including periodically inspecting OPA optics, cleaning as-needed. Repair or replacement of a part does not extend the warranty period beyond the initial warranty period, which commences with the date of shipment.

Seller makes no representation or warranty that the Products supplied hereunder comply with any local laws or ordinances, and Buyer has the responsibility for compliance with local laws and ordinances, including obtaining all permits, licenses, authorizations or certificates required by any regulatory body for installation or use of the Products.

Service Warranty: Services shall be performed consistent with generally prevailing professional and industry standards. Buyer's exclusive remedy and Seller's sole liability for any breach of the foregoing warranty shall be the re-performance of the applicable Services, failing which Seller shall refund the portion of fees paid which relate to the specific non-conforming Services.

No Other Warranties: To the maximum extent permitted by applicable law, the Seller and its suppliers disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the software and any related or accompanying written materials. No liability for damages, to the maximum extent permitted.

Laser Safety: Laser safety training is not provided by LC-USA. It is imperative that the customer obtain laser safety training from a qualified Laser Safety Officer, and ensure that lasers are operated in a safe manner and in compliance with applicable regulations. We offer training on use and maintenance of the systems we sell. However, this training does not substitute for laser safety training.

Technical Specifications

- See product brochure for detailed specifications, www.LightCon.com

High Power Femtosecond DPSSL System CARBIDE-40W

- Integrated design
- Yb lasing medium
- All solid state diode pump technology

| | |
|---|--|
| Fundamental Wavelength | 1030 +/- 10 nm |
| Pump Laser Output Power | 40 W maximum average power at 400 kHz to 1 MHz |
| Pulse energy | 100 µJ maximum output energy at up to 400 kHz |
| Pulse duration : | < 250 fs (assuming Gaussian pulse shape) |
| Pulse duration adjustment range | 250 fs – 10 ps |
| Repetition rate tunable in the range of | 400 kHz – 1 MHz (lower repetition rates available using Pulse Picker) |
| Pulse selection | Single-shot, Pulse-on-Demand, any base repetition rate division |
| Output beam quality | $M^2 < 1.2$ |
| Output pulse-to-pulse stability | < 0.5 % nrmsd over 24 hours (under stable environmental conditions) |
| Power stability | < 0.5 % nrmsd deviation over 100 hours (under stable environmental conditions) |
| Beam pointing stability | < 20 µrad/°C |
| Laser settings and functions | PC controllable |
| Laser diagnostics | available through PC interface |

| | |
|----------|---|
| Powering | 120 VAC or 208 VAC, single phase, < 2 kW |
| Safety | Includes interlock and emergency stop connections |
| Cooling: | Air-cooled or water-cooled chiller is included (choose when ordering) |

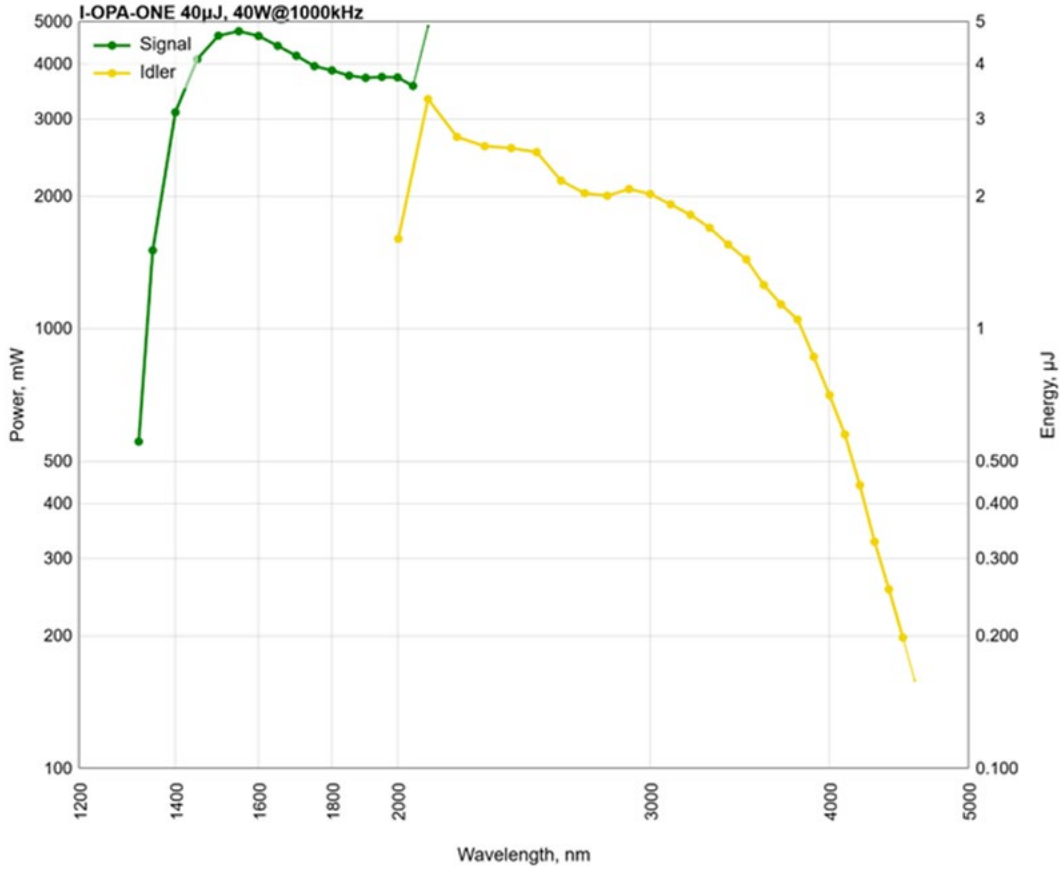
iOPA-One specifications

| PRODUCT NAME | iOPA-One |
|--|--|
| Based on | <u>ORPHEUS-One</u> model |
| Pump power | Up to 40 W |
| Pump pulse energy | 20 – 100 μ J |
| Pulse repetition rate | Up to 1 MHz |
| Wavelength range, signal | 1350 – 2000 nm |
| Wavelength range, idler | 2100 – 4500 nm |
| Conversion efficiency | > 9% @ 1550 nm (40 – 100 μ J pump; up to 1 MHz) |
| Pulse bandwidth | 60 – 150 cm^{-1} @ 1450 – 2000 nm |
| Pulse duration | 100 – 300 fs depending on the selected wavelength and pump laser pulse duration |
| Long-term power stability, 8 h | < 1% NRMSD @ 1550 nm |
| Pulse-to-pulse energy stability, 1 min | < 1% NRMSD @ 1550 nm |

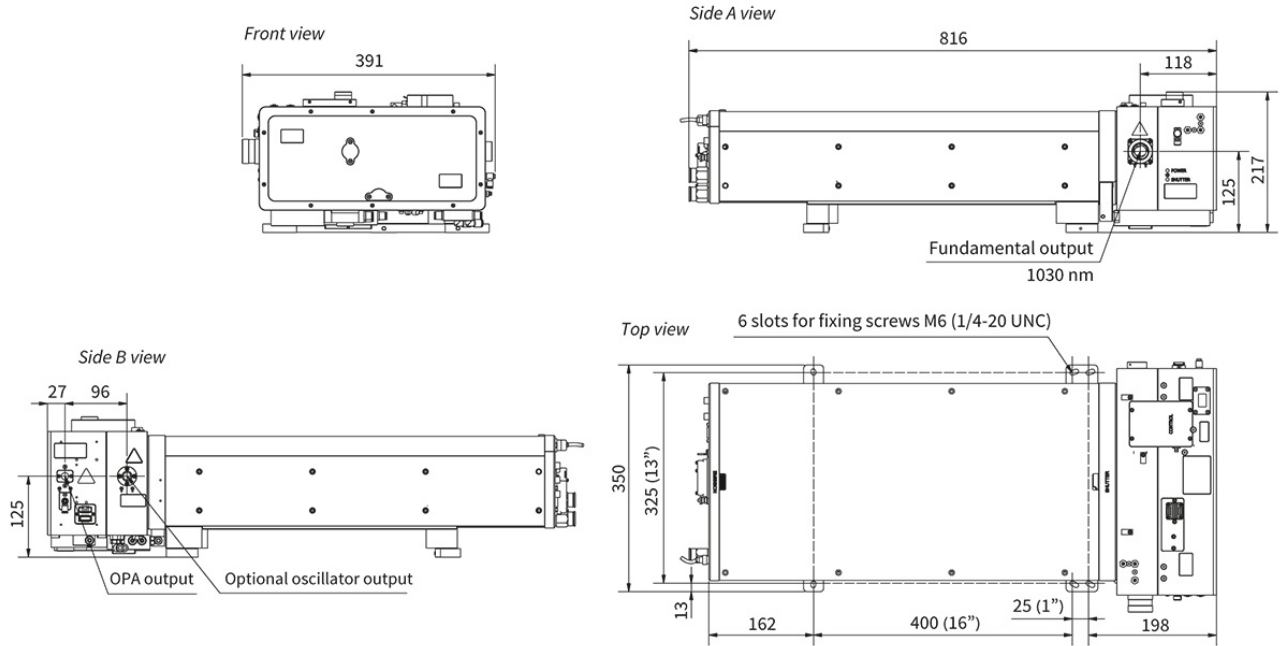
- Industrial-grade design
- Plug-and-play installation, user-friendly operation, robust performance
- Single-box solution. Compact footprint

Sample tuning curve for the iOPA-One pumped by 40 μ J (40W @ 1 MHz)

(Sample tuning curves can be found at <http://toolbox.lightcon.com/tools/tuningcurves/>)



Drawing, mm





APE - Applied Physics and Electronics, Inc.
 27119 NE Bradford Rd
 Vancouver, WA 98682 US
 888-690-3250
 sales@ape-america.com
 http://www.ape-america.com

Quotation

ADDRESS

University of Central Florida
 Research Pavilion - 350
 4000 Central Florida Blvd
 Orlando, FL 32816-0975 USA

SHIP TO

University of Central Florida
 Attn: Darren Hudson

QUOTATION # APE250-0026

DATE 02/12/2025

EXPIRATION DATE 03/13/2025

SHIP VIA

Customer Account on PO

| PRODUCT DESCRIPTION | QTY | RATE | AMOUNT |
|---|-----|------------|------------|
| FLINT 12 W Solid State Pump Laser for Levante IR fs Technical Specifications: - Output power: > 12 W - Pulse duration: < 170 fs - Repetition rate: 80 0.5 MHz - Centre wavelength: 1035 10 nm - Chiller: air-water (included) | 1 | 112,710.00 | 112,710.00 |
| Levante IR fs Fully Automated fs OPO for IR Pump Laser Features: ▪ Fully automated tuning ▪ Control software: simply enter desired Signal or Idler wavelength ▪ Internal diagnostic for power and wavelength ▪ Two tunable output beams on two separated outputs ▪ Remote access available for customer support and error diagnosis Technical Specifications: - Pump laser parameter: 1029 nm >12 W <170 fs ~80 MHz (not included) - Signal wavelength range: 1320 ... 2000 nm - Idler wavelength range: 2150 ... 4800 nm - Signal power: 2.8 W at 1500 nm - Idler power: 1.05 W at 2500 nm - Pulse width: typ. 200 fs - Repetition rate: 80 MHz (corresponding to Pump repetition rate) - Time bandwidth product: typ. 0.6 Options (not included): ▪ Adaption for different Pump laser ▪ SRS Modulator - Electrical-Optical Modulator (EOM) ▪ HarmoniXX SHG - frequency doubler for Signal and Idler ▪ HarmoniXX DFG - wavelength extension to 4 ... 15 m Content of Delivery: - Optical unit - Notebook with pre-installed control software - Two steering mirrors with mounts to couple Pump into OPO | 1 | 95,976.00 | 95,976.00 |

For EFT/ACH Routing/ABA: 322271627 Account: 845625318
 For payment by Wire Transfer, remit to:
 JPMorgan Chase Bank NA
 4 New York Plaza, New York, NY 10004
 SWIFT Code: CHASUS33 Account: 845625318
 PRICING: Prices quoted are those in effect at the time quote is

SUBTOTAL 208,686.00
 TAX 0.00
 TOTAL **USD 208,686.00**

issued and are subject to change at any time, with or without prior notice, written or verbal.

Payment Terms: Prepaid

Tax ID: 27-3146099 | DUNS: 86-511-8081 SAM EID

HGJ7PE8KFM14

SAP ID/ANID: AN01014229202

PAYMENT

-ACH to Chase Bank ABA: 322271627 A/C#: 845625318

-Wire to JPMorgan Chase Bank NA

4 New York Plaza, New York, NY 10004

SWIFT Code: CHASUS33 A/C#: 845625318

-Wire/ACH Fees are the responsibility of the Buyer.

SHIPMENT: Customer Shipping Account is required. Devices are shipped EXW Germany, typically 26 to 28 weeks upon receipt of order. Actual ship dates may vary due to complexity, manufacturing schedules and potential delays by regulatory agencies such as U.S. Customs or FDA.

Accepted By


Accepted Date

CREOL
The College of Optics and Photonics
4304 Scorpius Street
32816 Orlando, FL
USA

Quotation **1353_3**
Date: 24.10.2024

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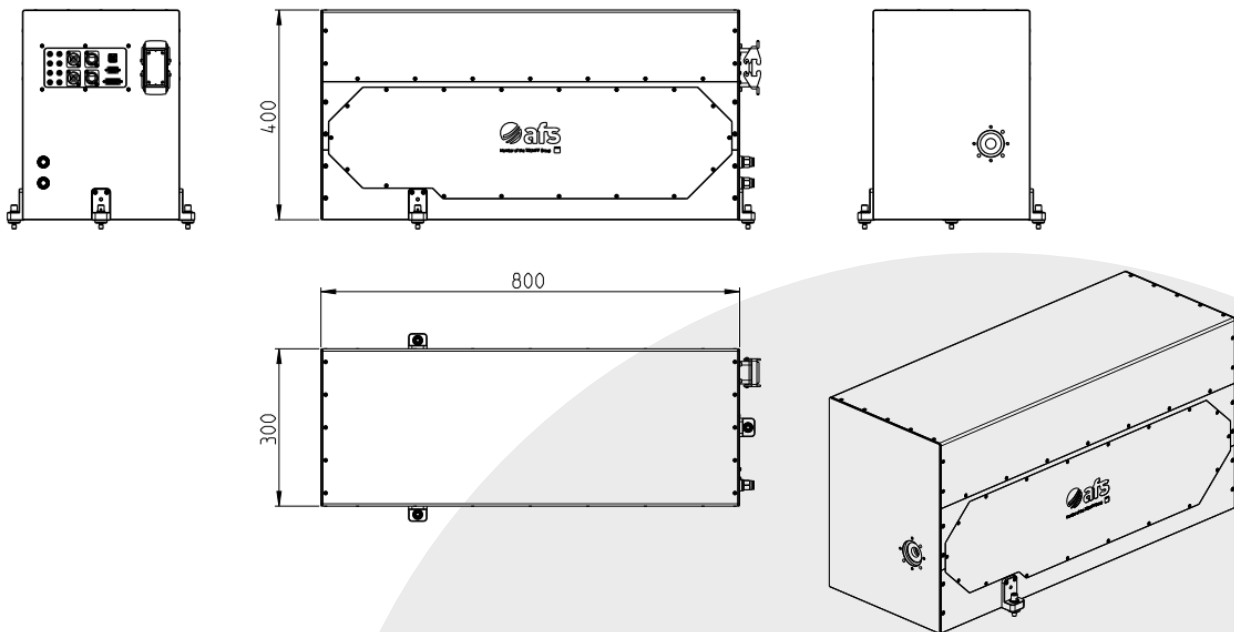
QUOTATION

| POS. | QTY. | DESCRIPTION | PRICE EXCL. VAT |
|--|------|--|-----------------|
| 1 | 1 | <p>High-power fiber-based ultrashort-pulse laser system Platform: activeTwo-10 Key specs: 10W, 50μJ, 400fs, 1980nm</p>  | 225,000.00 € |
| <p>Consisting of:</p> <ul style="list-style-type: none"> • High-power fiber-based ultrashort-pulse laser system activeTwo-10 • Temperature-stabilized and dust-sealed housing with temperature and humidity sensors • Control unit 19", 5m connection cables between rack and laser, 5m power cable for external power supply, water-water chiller • Monitor signals of oscillator pulses and picked pulses • Laser lamp • Control PC including control software enabling extensive analysis of laser behavior • Laser manual in English <p>Specifications:</p> <ul style="list-style-type: none"> • Center wavelength: approx. 1980nm • Pulse duration: dispersively tunable from <400fs to 3ps (measured via AC assuming sech² pulse shape) | | | |

- Repetition rate: adjustable between single shot and approx. 2.5MHz (in integer dividers of 25MHz)
- Average power: up to 10W for repetition rates $\geq 200\text{kHz}$
- Pulse energy: up to $50\mu\text{J}$ for repetition rates $\leq 200\text{kHz}$
- Beam quality: close to diffraction limited ($M^2 < 1.3$)
- Polarization: linear
- Average-power stability: $< 1\%$ RMS deviation (1/ (8 hours – 1Hz))
- Pulse-to-pulse energy stability: $< 2\%$ RMS deviation (1Hz – $f_{\text{rep}}/2$)
- Beam-pointing stability: $< 20\mu\text{rad}$ RMS

Dimensions:

- Laser head: approx. 800mm × 300mm × 400mm
- Control unit: 19"-rack approx. 30 HU



| | |
|--|---------------------|
| Total price (excl. VAT, excl. discount) | 225,000.00 € |
| 10% scientific discount | -22,500.00 € |
| Total price (excl. VAT, incl. discount) | 202,500.00 € |

Comments: Price is given in Euro, ordering in USD adds a 5% surcharge. Price is a net price and does not include any taxes, import fees or similar additional costs that may occur in the US. The quoted systems do not comply with UL/NRTL standards. If these certificates are necessary, additional costs may occur.

Delivery conditions: FCA Incoterms 2020 (Active Fiber Systems, Jena, Germany). Includes packaging, installation, and on-site training.

Installation: The laser will be installed once (unless otherwise expressly agreed) by AFS GmbH. The following preconditions are requested:

- Space according to the specified dimensions of the laser system
- Conditioned and clean room
 - $18^{\circ} < \text{room temperature} < 25^{\circ}$, temperature fluctuations: $<1\text{K}$
 - $20\% < \text{relative humidity} < 80\%$, relative humidity fluctuations $<10\%$ peak-to-peak
- $3 \times 230\text{V}$ power socket, connector type: E+F (CEE 7/7)
- House-water supply: 2bar ... 6bar, $12^{\circ}\text{C} \dots 25^{\circ}\text{C}$, $>15 \text{ l/min}$ flow rate, at least 1bar pressure difference between water inlet and water outlet

Lead time: Approx. 7 months after receipt of order and prepayment.

Payment terms: 50% with placing the order, 40% after factory acceptance test, 10% after installation, payable 10 days date.

Validity: This quotation is valid until 31 December 2024.

Warranty: 12 months after delivery.

Laser safety: The laser system as assembly part conforms to laser safety class 4 according to DIN EN 60825-1 and contains no means for laser safety. The integrator or end user, respectively, is responsible for suitable means to comply with laser safety. The device is designed according to German and EU standards. If different regulations apply in your country for the safety and commissioning of Class 4 laser devices, these are not considered here. However, they can be integrated or made available after prior consultation.

End-use declaration: The sale, resale, and the disposal of AFS products and services including any associated technology or documentation may be subject to German, EU, or other export control regulations. Any resale of our products to embargoed countries or to denied persons or persons that use those products for military purposes, ABC weapons or nuclear technology is subject to authorization (so called dual-use goods).

Technical changes: AFS GmbH reserves the right to carry out technical changes if these changes lead to an improvement of the laser device.

Please take notice of our [General Terms and Conditions](#) which the quotation is based on. If there are any questions, please do not hesitate to contact us at any time under +49 3641 633790 or sales@afs-jena.de. We would be pleased to receive your order.

With best regards,

AFS Sales Team