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PLIEGO DE PRESCRIPCIONES TÉCNICAS

SUMINISTRO, INSTALACIÓN Y PUESTA EN MARCHA DE UN “HIGH-POWER TUNABLE 507.4 NM LASER DIODE SYSTEM” PARA EL LABORATORIO DE ICFO, MEDIANTE PROCEDIMIENTO ABIERTO NO SUJETO A REGULACIÓN ARMONIZADA

NÚMERO D’EXPEDIENT: 2024.SU.025

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CLÁUSULA 1. Objeto del contrato

El presente contrato tiene como objetivo el Suministro e instalación de “HIGH-POWER TUNABLE 507.4 NM LASER DIODE SYSTEM” para el laboratorio de ICFO.

La tipología de los artículos objeto de suministro se hallan vinculados con el CPV (Vocabulario Común de Contratación Pública), **38000000-5 Equipo de laboratorio, óptico y de precisión (excepto gafas).**

CLÁUSULA 2. Needs to be satisfied with the contracting

We request a high-power tunable 507.4 nm External-Cavity Diode Laser (ECDL) system. We are looking for grating-stabilized External-Cavity Diode Laser (ECDL) system operating at 507.4 nm with the option of alignment-free coarse tuning around the 507.4 nm central wavelength. The system should provide a specific level of stable output optical power after an optical isolation stage at any chosen operational wavelength within its allowable wavelength range. The detailed specifications of the required system including the coarse tuning range, the output power level and other characteristics are specified in CLAUSE 3 – Technical Requirements.

The requested laser system will be used for spectroscopy with molecular Iodine as a part of an implementation of a frequency-stabilization technique for a larger Fourth Harmonic Generation laser system at 253.7nm, which will be used in atomic sensor development with neutral Hg (mercury) atoms.

CLÁUSULA 3. Technical specifications. Requirements

We list below the requirements for the requested laser system.

1. Center Wavelength: 507.4 nm
2. Coarse Tuning Range (in Vacuum): +/- 0.5 nm
3. Maximum Output power: 45 mW
4. Linewidth: < 150 kHz
5. Frequency stability: < 100 MHz/K
6. Mode hop-free tuning: > 20 GHz
7. Laser resonator machined from a solid block for enhanced acoustic, temperature, and alignement stability.
8. Integrated Optical Isolator
9. Beam angle compensation opto-mechanics
10. Integrated Laser Diode allows for Fast Modulation (AC & DC coupled)
11. Output beam shaping optics
12. Extremely stable fiber coupling unit with all needed degrees of freedom (2 X/Y+Z) Fiber with coupling efficiency >55% (fiber coupler, coupling lens, labor and additional material to mount the fiber coupler at the laser head are included)

Main specifications on the electronics and control systems:

13. Full digital locking with 2 integrated PIDs to address the current and Piezo of the laser system
14. Lock-In signal generation for locking top-of-fringe
15. Includes Click & Lock and Re-Lock intelligence
16. Can be controlled via touch UI, PC GUI and via remote control commands
17. PC GUI includes tool for optimization of lock parameters incl. automatic optimization of PID settings

Other:

18. Warranty on laser diode 1 year or 3000 h (whatever comes first)

CLÁUSULA 4. Power distributions and safety

The system should be configured for EU (Spain) power grid (voltage, sockets, etc.) and be CE marked.

The system will be fully protected against unexpected power cuts and, in that case, will be fully safe for the operators. A quick and easy turning on of the system has to be possible after a power cut.

CLÁUSULA 5. System layout and services

The contract winner will include in the proposal:

A) A complete set of pictures, drawings and layouts of the system, including dimensions, location and details of the different components,
B) Full installation and start-up requirements,
C) Transportation to ICFO's facilities including insurance and all export/import and customs duties,
D) Lifetime free remote service to be requested whenever needed by ICFO personnel to optimize any part of the requested system, whenever optimization of the setup is possible and does not require a service visit in person by the contract winning company.
E) A full warranty valid 12 months on all parts and components of the system. The warranty will include the replacement of any faulty or damaged part(s) during normal use of the system. It will cover any cost related with the disassembly, transportation, reparation and re-assembly of the damaged component(s), including all travelling and living costs of the required service engineer(s).
F) Lifetime free follow-on support and updates on all the provided software packages for the whole laser system, when software intrinsic bugs are influencing the usage or there are updated versions with better performance available for the purchased hardware.

The laser system will be placed in the selected location by ICFO in Spain. Contract winner will cover all costs, organization and coordination of laser system placement, including any required specialized equipment or vehicle, and any required component disassembly and reassembly for system unloading and transportation inside the building.

Spare parts, components and subsystems will be available during, at least, 10 years after system supply.

CLÁUSULA 6. Shipping, transport

Shipping and transport to the laboratory of the research group: Atomic Quantum Optics (prof. Morgan Mitchell) at ICFO must be included.

CLÁUSULA 7. Technical proposal structure

The proposal must follow as much as possible the structure of this technical requirements document to facilitate evaluation. Any optional accessories not included in the proposal will have to be put in a separate section, and not mixed with the items included

CLÁUSULA 8. Target price

The target price for the system is 26,000 € (VAT excluded)
Payment terms: 100% after delivery, installation and acceptance

CLÁUSULA 9. Delivery time

The system must be delivered and installed at ICFO in no more than 12 weeks. Delivery time is defined as the time elapsed since the signature of the contract until the system delivery at ICFO facilities. It includes the manufacture of the system, the transportation, the installation and the acceptance test at ICFO's premises.

Castelldefels, a fecha de su firma digital

Prof. Dr. Morgan W. Mitchell
GL Atomic Quantum Optics Group