See the notice on TED website

Portugal-Braga: Laboratory, optical and precision equipments (excl. glasses)
OJ S 235/2013 04/12/2013
Contract award notice
Supplies

Directive 2004/18/EC

Section I: Contracting authority

I.1. Name and addresses

Official name: INL, International Iberian Nanotechnology Laboratory
Postal address: Avenida Mestre José Veiga
Town: Braga
Postal code: 4715 330
Country: Portugal
Contact person: http://inl.int/contractors_projects?section=contract-opportunities
For the attention of: Adrian Watson
E-mail: adrian.watson@inl.int
Telephone: +351 253140112
Fax: +351 253140119
Internet address(es):
General address of the contracting authority: www.inl.int
Address of the buyer profile: http://inl.int/contractors/info
Electronic access to information: http://inl.int/contractors_projects?section=contract-opportunities

I.2. Type of the contracting authority

European institution/agency or international organisation

I.3. Main activity

Other: Nanotechnology Research Laboratory

I.4. Contract award on behalf of other contracting authorities

The contracting authority is purchasing on behalf of other contracting authorities: no

Section II: Object of the contract

II.1. Description

II.1.1. Title

Contract for the supply and installation of an optical microsystem analyser for the Microelectromechanical Systems (MEMS) Laboratory of the International Iberian Nanotechnology Laboratory.

II.1.2. Type of contract and place of performance or delivery

Supplies
Main site or place of performance: Avenida Mestre José Veiga, Braga 4715-330, Portugal.
NUTS code PT112 Cávado

II.1.3. Information about a framework agreement or a dynamic purchasing system (DPS)

II.1.4.

Short description of the contract or purchase(s)

The subject matter of this contract is the supply and installation of a optical microsystem analyser for the Microelectromechanical Systems (MEMS) Laboratory of the International Iberian Nanotechnology Laboratory

1. Introduction

The Microelectromechanical Systems (MEMS) Group of the International Iberian Nanotechnology Laboratory is seeking to acquire an Optical Microsystem Analyser for its laboratory in Braga, Portugal, the main features of which include the capability of dynamically characterizing in-plane movements of microelectromechanical devices by stroboscopic video microscopy with frequencies up to 1 MHz with a displacement resolution in the nanometer range. The equipment should comply with following technical specifications.

2. Technical Requirements

— System architecture: it must have been designed specifically for the analysis and visualization of structural vibrations in micro structures such as MEMS (microelectromechanical systems) devices being capable of measuring in-plane and out-of-plane vibrations with frequencies up to at least 1 MHz and 24 MHz, respectively;

— TFT monitor: It must be a premium-brand high-resolution TFT screen with high viewing angle for a convenient working environment. 61cm (24”), 16:10 aspect ratio;

— Optical unit: The optical sensor head for in-plane and out of plane measurements must be provided of optimized microscope optics, integrated LED illumination unit and progressive scan video camera for live video streams. When performing in-plane measurements, the LED unit is used for stroboscopic illumination of the device, allowing video acquisition of high frequency motions. For out-of-plane capability, the setup must be supplemented with fiber connectors for interferometer, beam splitters, and scanning units with ultra-precise piezo stages for scanning the laser beam through the microscope's optics;

— Out-of-plane measurements: The maximum acquisition bandwidth for out-of-plane displacements must be at least 24 MHz. The tool must be provided of a data management system equipped with a dual channel A/D board for synchronous acquisition of data (optical signal and reference) with (at least) maximum 40 MHz bandwidth per channel, the effective system bandwidth being limited to (at least) 24 MHz by the vibrometer decoder;

— Processing unit: It must comprise a data management system with appropriate software for measuring and analysing out-of-plane and in-plane motions, a junction box and vibrometer controller. The software corresponding to vibrometer out-of-plane measurements is expected to offer quick and easy setups, simple data acquisition and outstanding 3-D data visualization. The stroboscopic, in-plane motion related software must similarly control the in-plane measurement process and provide a dynamic visualization. The junction box must come in a 19" rack format and include the scanner controller for remote controlled positioning of the laser beam and the object illumination. It must also include the microscope stroboscope controller for generation of LED stroboscope-signals and synchronization with excitation signals as well as to provide amplified differential signal generator outputs of ± 10 Volts (50mA) for generator frequencies up to 5 MHz. The junction box must also provide a reference input for an external generator used for device stimulation/actuation. The data management system is expected to be based on a 19” industrial PC with a high performance CPU (Quad Core or better), 4 GByte RAM or more, 750 GB HDD or more, DVD recorder, LAN, a high end graphics board featuring dual DVI monitor output, video input, optical mouse and keyboard. Windows XP operating system or other Windows based environment;

— Scanning vibrometer controller: It is intended for decoding high frequency vibrometer signals and providing converted signals to the data management system, in which output signals are provided as dynamic voltage signals (BNC) and digital SP-DIF interfaces (RCA connector and optical Toslink). It must be configured with the following high-performance

decoder boards: (1) Digital velocity decoder with wide bandwidth (at least 8 velocity ranges from 5 mm/s/V to 1000 mm/s/V), maximum bandwidth of at least 2.5 MHz (range dependent) and maximum velocity of at least 10m/s, analog output only, no digital interface and high linearity (0.5% or better); (2) Higher linearity digital velocity decoder with 4 velocity ranges from 1mm/s/V to 50mm/s/V and maximum bandwidth of 350 kHz, digital output (24bit, 42 kHz max. frequency bandwidth) on SPDIF interface, analog output with full 350 kHz bandwidth; (3) 16-range digital wide range displacement decoder, +/- 10V analog output with 16-bit resolution, no digital output, maximum bandwidth from 0 to 2.5 MHz or better, maximum velocity of 10 m/s or better; (4) High-frequency displacement decoder with 2 frequency ranges (30 kHz ... 24 MHz, ±1dB on auxiliary output and 30 kHz ... 2 MHz, +0.5/-1dB on universal output), measurement range of +/- 75nm or better, frequency range of 30 kHz ... 24 MHz (-3 dB);

— Chassis type of electronic unit: the chassis must be equipped with handles on the front panel as well as additional flanges for mounting in 19" racks;

— Fiber laser interferometer: Single fiber laser interferometer with at least 2 m fiber cable and one miniature sensor head with ca. 10 mm diameter.

— Microscope Objective: High NA and long working distance objective lens with 10x magnification, working distance larger than 36 mm, field of view of at least 0.90 x 0.67 mm2;

— Internal arbitrary signal generator: It must have a bandwidth of at least 40 MHz supporting several output waveforms (periodic chirp, burst random, burst chirp, true random, pseudo random, ramp, rectangle, triangle, sine and user defined signals);

— Included software: The software package should consist of two independent working parts for the measurement and analysis of in- and out-of-plane motions. (1) In-plane software: Comprehensive software for in-plane measurement and analysis of stroboscopic video microscopy data. The software must control the stroboscopic illumination and the signal generator and a live slow motion video must be provided during the measurement. The video sequences of the specimen must analyzed using a by the implemented software algorithms, allowing the visualization of measurements of displacements, system resonances, transient responses, phase variations, amplitudes, Bode plot graphs, step response plots, ring-down plots and further analysis with a displacement resolution of 1 nm (sub-pixel image processing). The software must be allow to import frequency bands and provide ASCII, AVI, graphic formats export filters. (2) Out-of-plane software: A comprehensive software for data acquisition, analysis and visualization of out-of-plane motions must also be provided with (a) data acquisition in time and frequency domain, digital filters, signal averaging and real-time integration & differentiation in time and frequency domain, (b) advanced peak hold function with signal enhancement for drop-out reduction, (c) advanced point definition for arbitrary definition of measurement points and individual object properties: grid type (polar, hexagonal, rectangular), grid density and rotation, object rotation; poly-line objects; advanced edit mode for polygon, (d) advanced point definition for arbitrary definition of measurement points and individual object properties: grid type (polar, hexagonal, rectangular), grid density and rotation, object rotation; poly-line objects; advanced edit mode for polygon, (e) zoom into area display function to provide an additional digital zoom for easy scan point definition with highest precision, (f) extensive data analysis software package to provide complex spectral analysis according to well established industrial standards with H1, H2, FRF, phase and coherence functions displayed in acquisition mode (for single points) and analysis/presentation mode (for all scanned points), (g) the results of a scanning measurement should be shown as pseudo-colors, isolines and wire mesh displays and a 3D animation with overlaid video image and saving as AVI file of operating deflection shapes or as graphic-file should be possible, (h) the scanning software must allow up to 512 x 512 scan points per object; 6400 FFT lines for each channel. The entire spectrum (magnitude and phase) must be stored at every point during

scan and (i) post processing and further evaluation of data must be greatly enhanced by an open programming interface, versatile data export to modal analysis packages (UFF, ASCII, binary, etc.).
— Fast scans: The system must be provided of fast scan routines for single frequency vibration measurements.
— Data post-processing: A signal processor as the user interface to the library included in the main software must be included. Easy-to-use spreadsheet for post processing of scan data. It must be possible for processed area data sets to be re-exported into the original file for animation as well as for stored data and live data can be used for processing.
— Measurement grid definition: The system must allow a measurement grid to be defined, including single point modus for defining single scan points, moving and deleting individual points.
— Universal file data export: An export software filter that transforms scanning data into Universal File Format (UFF) data file format, supports ME Scope, LMS, SDRC (MTS), Star Modal and other modal analysis packages as well as UNIX based packages must be included.
— Extended FFT resolution: The system must able to process 6400 FFT lines for all acquisition channels.
— Gated input: The software must allow gated fast or standard full field scans.
— Grid density: The software must allow high-resolution 512 x 512 (or higher) point density across the viewing area (full screen).
— Scripting engine and open data interface: The software must include the SAX Basic Engine: Visual Basic for Applications (VBA)® compatible programming interface and property access software that enables retrieval of data via external applications supporting Microsoft's Component Object Model (COM), e.g. Visual Basic, Matlab, LMS Test.Lab, VSI Rotate.
— Video microscopy included and extended FFT resolution included extension of the FFT resolution to 816,200 lines depending on the number of active channels, 51200 with 8 active channels)
— System should be capable of measuring in-plane and out-of-plane displacements as well as topography, with software licenses included.
— Windows 7 Ultimate 64bit OEM for “Embedded System”, preinstalled and activated.
— Software maintenance included in the system for a duration of at least 1 year (for both in- and out-of-plane displacements). New releases of the software must be provided free of charge during this period.
— Stand for optical head: the stand must provide a rigid support for the optical unit, equipped with standard mounting holes (metric and imperial) that can be fixed directly on to an optical table.
— Optical table: An optical table (bread board + supporting frame) must be included.
— Cabinet: A cabinet for electronic components (data management system, controller, junction box), including wheels, must be provided.

II.1.5. CPV code(s)

38000000 Laboratory, optical and precision equipments (excl. glasses)

II.1.6. Information about the Government Procurement Agreement (GPA)

The procurement is covered by the Government Procurement Agreement: no

II.2. Total value of the contract/lot

II.2.1. Total value of the contract/lot

Value: 149 000 EUR
excluding VAT

Section IV: Procedure

IV.1. Type of procedure

IV.1.1. Type of procedure

Open

IV.2. Award criteria

IV.2.1. Award criteria

The most economically advantageous tender in terms of
1. Technical Quality. Weighting 30
2. Price. Weighting 15
3. Delivery Schedule. Weighting 15
4. Payment Terms. Weighting 10
5. Warranty. Weighting 10
6. Technical Assistance. Weighting 5
7. Installation and Training Conditions. Weighting 5
8. List of References. Weighting 5
9. Improvements. Weighting 5

IV.2.2. Information about electronic auction

An electronic auction has been used: no

IV.3. Administrative information

IV.3.1. File reference number attributed by the contracting authority

AW/JG

IV.3.2. Previous publication concerning this procedure

Contract notice

Notice number in the OJ S: 2013/S 193-332270 of 4.10.2013

Section V: Award of contract

Contract No: 2013-132623
Lot No: 1
- Lot title: Supply and installation of an optical microsystem analyser for the Microelectromechanical Systems (MEMS) Laboratory of the International Iberian Nanotechnology Laboratory

V.1. Date of conclusion of the contract

18.11.2013

V.2. Information about tenders

Number of tenders received: 2

V.3. Name and address of the contractor

Official name: Bolonia Testing Instruments Lda
Postal address: Rua dos Malhões, Edifício D. Pedro I Quinta da Fonte
Town: Paço D'Arcos
Postal code: 2770-071
Country: Portugal
E-mail: info@btinstruments.pt
Telephone: +351 210001628

Fax: +351 210001675
Internet address: www.btinstruments.pt

V.4. Information on value of the contract/lot

Initial estimated total value of the contract/lot:
Value: 149 000 EUR
excluding VAT
Total value of the procurement:
Value: 149 000 EUR
excluding VAT

V.5. Information about subcontracting

The contract is likely to be subcontracted: no

Section VI: Complementary information

VI.1. Information about European Union funds

The procurement is related to a project and/or programme financed by European Union funds: yes
Identification of the project: This project will be co-financed by the European Regional Development Fund (ERDF), namely through the Programa Operacional Regional do Norte ON. 2 (Portugal).

VI.2. Additional information

VI.3. Procedures for review

VI.3.1. Review body

VI.3.2. Review procedure

VI.3.3. Service from which information about the review procedure may be obtained

VI.4. Date of dispatch of this notice

1.12.2013