



EXPLANATION OF PUBLIC PROCUREMENT NO. 3

Small size public procurement:

“Optical delay lines kits for ultrashort laser pulses” („Public Tender“)

Name of the contracting authority: Institute of Physics of Academy of Sciences of
the Czech Republic, public research institution
Registered office: Na Slovance 2, Praha 8, PSČ: 182 21
Identification No.: 68378271
Person authorized to act
on behalf of the contracting authority: RNDr. Michaelém Prouzou, PhD., ředitelem

(“Contracting Authority”)

In Prague 7th of September 2018

Above mentioned Contracting Authority pursuant to Rules for the applicants and recipients (“Rules”) applicable within the Research, Development and Education Operational Programme (“OP VVV”) is hereby announcing explanation of the above mentioned Public Procurement based on request to explain the Public Procurement submitted to the Contracting Authority on 3th of September 2018. As a result of the Contracting Authority’s reply (explanation) to the request to explain the Public Procurement, the Contracting Authority is also hereby prolonging the deadline for submitting bids for the above mentioned Public Procurement.

Question:

Question 1 - Explanation of Public Procurement no. 2 - Answer to Question 2:

In the answer to Question 2 of the Explanation of Public Procurement no. 2 the Contracting Authority stresses that "the absolute error in delay - due to 2 times (back and forth travels of the beam) the sum of absolute accuracy of positioning and bi-directional reproducibility must satisfy the requirement."

Reading this answer, it is not clear, which value the Contracting Authority means when talking about "absolute accuracy". For our stages, the absolute accuracy is defined as follows:

Accuracy is a measure of the degree to which a given displacement conforms to an agreed upon standard. The accuracy of a motion system can be highly influenced by the test set up, environmental conditions and the procedure used to measure displacement. In the micron and submicron world, thermal expansion can have a profound impact upon accuracy, particularly when temperatures are not constant or well controlled.



In practice absolute accuracy is measured and calculated using the deviations of a large number of real interferometrically measured data points along the full travel range from both directions. It therefore already includes the bi-directional repeatability and therefore, it is not valid to sum up the accuracy and the bi-directional repeatability to calculate the delay accuracy.

Some manufacturer define "absolute accuracy" as the "Design resolution" or "Encoder resolution" of the stage. Using such a definition for Accuracy is misleading since the parameter for "Design Resolution" or "Encoder resolution" are theoretical values, which can never be achieved in a real situation due to friction, backlash, thermal expansion and other effects and therefore pretends a much higher accuracy than can be achieved in real situations.

How exactly does the Contracting Authority defines the parameter "Absolute Accuracy"?

Answer:

The Contracting Authority define the absolute accuracy in delay, Δ_t , by the accuracy in the positioning of the stage:

$$\Delta_t = 2 * \Delta_x / c$$

where Δ_x is the sum of absolute accuracy in positioning + the bi-directional reproducibility, and where c is the speed of light in vacuum.

The absolute accuracy in positioning is the uncertainty related to the exact positioning. It can be determined by any technique, which is reliable and precise enough to measure the reported uncertainty.

The Contracting Authority agrees with the argument regarding accuracy and bi-directionality. However, some modifications could arise for example in the cases where the stage is set at one position, then displaced back and then forth.

The accuracy may happen not to be the same anymore due to the bidirectional reproducibility.

If the devices provided by the Bidders can ensure that displacements up to 1cm back and forth from an arbitrary given position still provides the required absolute accuracy in the delay when back to the arbitrary given position, then, in this cases only, we allow Bidders to propose a device with the absolute accuracy in the delay comprising only the absolute accuracy on the stage.

Regarding the temperature, our lab is maintained at a temperature between 20 and 21 degrees Celsius. We therefore require this accuracy for stable temperature between 20 and 21 degrees at least.

The Contracting Authority mention that the values for Pitch and Yaw also apply for this temperature range at least.



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Due to the aforementioned Questions and Answers the Contracting Authority has decided to extend the bids' submission deadline.

Bids shall be submitted not later than on 24th September 2018 at 10:00 AM.

Regards,

Tereza Rabasová
Procurement Administrator

