**ANNEX NO. 4 OF DOCUMENTATION OF THE TENDER PROCEDURE**

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**SPECIFICATION OF THE PUBLIC CONTRACT SUBJECT**

The subject of the public contract shall meet the following minimum requirements for technical parameters and equipment:

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| **Technical specification – 1-axis piezoelectric cell No. 1** | | |
| **Designation of the delivery (min. brand and type)** | |  |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| 1 | 1-axis piezoelectric load cell for the measurement of small forces acting in a given direction |  |
| 2 | Calibrated |  |
| 3 | At least three ranges |  |
| 4 | Maximum force magnitude, compression, up to 200 N |  |
| 5 | Maximum force magnitude, tension, up to 20 N |  |
| 6 | Overload magnitude, at least 10 N above maximum |  |
| 7 | Threshold, at least 0.0005 N |  |
| 8 | Sensitivity, at least 95 pC/N |  |
| 9 | Linearity, calibrated measuring ranges, at least 1 % FSO |  |
| 10 | Natural frequency, at least 50 kHz |  |
| 11 | Any dimension, less than 30 mm |  |
| 12 | Weight, less than 10 g |  |
| 13 | Suitable force introducing cap and coupling element |  |

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| **Technical specification**­­ **­– 1-axis piezoelectric cell No. 2** | | |
| **Designation of the delivery (min. brand and type)** | |  |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| 1 | 1-axis piezoelectric load cell for the measurement of small forces acting in a given direction |  |
| 2 | Calibrated |  |
| 3 | At least three ranges |  |
| 4 | Maximum force magnitude, compression and tension, up to 500 N |  |
| 5 | Overload magnitude, at least 100 N above maximum |  |
| 6 | Threshold, at least 0.001 N |  |
| 7 | Sensitivity, at least 105 pC/N |  |
| 8 | Linearity, calibrated measuring ranges, at least 0.3 % FSO |  |
| 9 | Natural frequency, at least 20 kHz |  |
| 10 | Any dimension, less than 50 mm |  |
| 11 | Weight, less than 50 g |  |
| 12 | Suitable force introducing cap and coupling element |  |

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| **Technical specification**­­ **­– 1-axis piezoelectric cell No. 3** | | |
| **Designation of the delivery (min. brand and type)** | |  |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| 1 | 1-axis piezoelectric reaction torque sensor for the measurement of small torques acting on a non-rotating shaft |  |
| 2 | Calibrated |  |
| 3 | At least two ranges |  |
| 4 | Maximum torque magnitude, up to 1 Nm |  |
| 5 | Overload magnitude, at least 0,2 Mn above maximum |  |
| 6 | Threshold, at least 0,03 mNm |  |
| 7 | Sensitivity, at least 2170 pC/Nm |  |
| 8 | Linearity, all measuring ranges, at least 0,2 % FSO |  |
| 9 | Natural frequency, at least 50 kHz |  |
| 10 | Any dimension, less than 30 mm |  |
| 11 | Weight, less than 100 g |  |
| 12 | Suitable mounting flange |  |

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| **Technical specification - Suitable multichannel charge amplifier** | | |
| **Designation of the delivery (min. brand and type)** | |  |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| 1 | with at least 3 modules |  |
| 2 | with the possibility of adding at least 5 other modules |  |
| 3 | with a display showing all channel settings and the possibility of being controlled externally |  |
| 4 | Minimum charge magnitude, at least 2 pC |  |
| 5 | Uncertainty, up to 2 % FS |  |
| 6 | Drift magnitude, up to 0.3 pC/s |  |
| 7 | Output voltage, up to 10 V |  |

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| **Technical specification - Relevant cables** | | |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| 1 | to perform the measurement and collect the signal, e.g. cables to connect sensors and amplifier, and for signal outputs |  |