# Annex No. 1  Technical Descriptions

**The Contracting Authority requires supplying the equipment which complies with the following minimum technical parameters:**

**Delivery specifications:**

The delivery must include an instrument for automated long-term field measurement of ice-nucleating particles (hereinafter the **"instrument"**). The instrument must operate in a remotely controlled regime from the workplace of the Institute of Atmospheric Physics of the Czech Academy of Sciences in Prague.

The delivery must include a provision of the appropriate documentation for the instrument and appropriate training of instrument operators.

Further specifications of the public tender are specified below in the technical parameters and in the proposal of purchase contract, which is annexed to this tender documentation.

**The following technical requirements of the equipment are considered as minimum requirements that must be fulfilled. In case, when the bidder will offer an equipment which does not conform to the technical conditions specified below or an equipment which does not contain all the components described below, the bidder will be excluded from the tender on the basis of failure to comply with the terms and conditions specified by Contracting Authority tender.**

**The Contracting Authority requires that the equipment was brand new, fully functional and complete.**

**Technical parameters:**

**A) General characteristics of the instrument:**

* An instrument for measurement of ice-nucleating particles (INP);
* Fully automated operation;
* Working temperature 15 to 35ºC;
* INP concentration range 0.002 to 1000 L-1;
* Optical particle counter particle detection range 0.2 to 200 µm;
* Possibility to do ice nucleation and INP measurements between -10°C and -65°C;
* Dimensions - height 2 m max, width 1 m max, depth 1 m max;
* Power consumption 1 kW max;
* Weight 250 kg max;
* Transportable instrument;
* Compact rack design;
* Plug and play instrument;
* Integrated control system;

**B) Construction of the instrument:**

* All components of the device must be brand new and their age should not exceed 12 months at the date of production. Contract Authority expressly notes that prototypes and remanufactured components of the older equipment are not permitted;
* Equipment must be adapted to the supply network, which comply with DIN EN 50160. The supply voltage is 230 V 50 Hz, single phase connection;
* All electrical equipment must meet the following legislation or regulations:
	+ 2014/30 / EU;
	+ IEC 61000-4-5: 2014;
	+ IEC/EN 62311 Ed1.0:2007;
* Maximum input power supply of all equipment ensuring 24-hour operation of the instrument cannot exceed 1 kW;
* Total size of the instrument does not exceed 2000 mm in height, 1000 mm in width and 1000 mm in depth;
* Weight of the instrument does not exceed 250 kg;
* The instrument must meet the operating temperature range of 15°C to 35°C;
* Connectors must be differentiated so that they cannot be connected by mistake;
* The connectors must be capable of withstanding repeated engagement and disengagement (in the framework of service requirements) without damage and degradation;
* All connectors and measuring points must have granted access, which must be described in the technical documentation;
* All components of the instrument including connectors, cables, circuit boards, etc. must be clearly identified and described - Client requires that all components are documented in English;
* After an interruption of the power supply system shall allow automatic sequential switching (soft start) and start of operational measurement;
* Safety precautions - all the equipment which could be damaged by inappropriate handling or which endanger the health of operators, must include security protection (safety interlock);
* Noise level produced by the instrument should not exceed 70 dBA when measured one meter in front of the instrument. Supplier performs the necessary measurements and prepares a report of the measurements;
* The instrument must be designed for continuous 24-hour operation;
* Manufacturer's recommended maintenance shutdowns must not cause outages of instrument measurements exceeding 2% of the total operational time of measurement, i.e. maximum of 168 hours per year;
* The Contracting Authority requires to deliver service tools that are required to access all measuring points and forced replacement of any components;

**C) Backup Power Supply UPS:**

* The instrument must be able to operate via power supply by the standard UPS.

**D) Requirements for spare parts:**

* The supplier is obliged to ensure the spare parts supply for a period of 7 years from the delivery.

**E) Documentation Requirements:**

Contracting Authority declares that all documentation for the device must be in English and delivered in printed and electronic form (including schematics). It must contain at least the following elements:

* + Operator manual - contains instructions and operations necessary for complete control of the instrument;
		- instructions for basic system settings and data processing and given specific values of important parameters;
		- operation workflow for control of the system and the accuracy of measurements;
	+ Technical manual - containing a detailed description of the individual facilities and their maintenance;
		- description of the installation, setup, operation, operational instructions, periodic maintenance and periodic diagnosis;
		- description of the solution of typical problems;
	+ Results and official protocol of Factory Acceptance Test (validation).
* Approval of the documentation will be part of the approval process;
* Contracting Authority reserves the right to reproduce the entire technical documentation or part thereof in electronic and paper form for internal use;
* Contracting Authority will be entitled to require the update of documentation that occurs:
	+ about the same time as any change in hardware or software;
	+ in case of its evident inaccuracy or incompleteness, to which the Contracting Authority notifies the applicant.