

Vacuum Particle Sensor Specification

Cahier de Spécifications du compteur de particules sous vide

CEA

French Alternative Energies and Atomic Energy Commission (CEA)



DRF/IRFU/DACM/LIDC2

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1 - Overview, purpose of use

This document describes the specification for a vacuum particle counter also named in situ particle monitor.

The system will be used inside ultra clean vacuum pipes between pumping cart and a superconducting cavity. The goal is to count particles during evacuating or venting the cavity.

2 - Main specification

The system is able to detect particle of size 0.25 μm .

The Signal/Noise ratio is 10 for particle size $\geq 0.3\mu\text{m}$.

The counter will operate between temperature 0 to 80 degrees Celsius.

The counter will be used in safe environment (no radiation, no flammable or corrosive gas).

The counter has to be leak tight: vacuum leak rate of measuring head: under $1.0 \times 10^{-10} \text{ Pa.m}^3/\text{sec}$ (10^{-9} mbar.l/s)

The interface connection flange has to be ConFlat standard DN40CF (or equivalent ICF70).

3 - Deliverables

Documents for installation and operation in English

Measuring head with a detection area of 200mm^2 minimum.

Control unit interfaced with Serial Communication RS232

Cables and adapters for AC 240V (about 7 m from measuring head to control unit).

Software with changing of measurement mode capability, display/saving/reading data possibilities, conversion to export data for editing.

4 - Shipment Releasing

CEA will perform the inspection of the system after delivery to Saclay and before the acceptance.

- Make inspection the outside of the box for obvious mechanical damage, e.g. cracks, dents or scratches, etc
- Check if the box is correctly closed.
- Check the presence of the documentation supplied.

5 - Acceptance (Recette)

CEA cleanroom and vacuum expert will perform installation work of the equipment.

After installing at CEA site, we will confirm the operation as a particle sensor.

- Leak tightness of the system once installed
- Particles counting
- Exporting data