

## Vacuum flowmetric reference installation IVFR

### PURPOSE

Installation is designed for reproducing and precision measurements of the unit of gas flow in vacuum, as well as for verification and calibration of measures of gas flow in vacuum.

### FIELD OF APPLICATION

Aerospace industry, space simulation, electrical engineering, semiconductor technologies, metallurgy, nuclear industry, particle physics, metrology, research technology for growing thin films and crystals, biotechnology and medical technology, etc.



### MODE OF OPERATION

Installation implements two measurement principles:

- accumulation principle, based on the measurement of the absolute pressure changes in time in the test volume of the installation by reference vacuum gauges;
- comparator principle, based on a comparison using a mass spectrometric comparator of the measured gas (helium) flow from a verified (calibrated) leak with a known gas (helium) flow from a reference flow measure.

Measurement range	from $1 \cdot 10^{-11}$ to $1 \cdot 10^{-5}$ Pa·m <sup>3</sup> /s	
Limits of permissible relative measurement error		
• in a range	$1 \cdot 10^{-11}$ to $1 \cdot 10^{-9}$ Pa·m <sup>3</sup> /s	± (15-10) %
• in a range above	$1 \cdot 10^{-9}$ to $1 \cdot 10^{-5}$ Pa·m <sup>3</sup> /s	± (10-5) %