

ABSTRACT

Provided are a flow rate measurement device and a flow rate measurement method capable of accurately measuring flow rates not only in a turbulent flow region but also in a laminar flow region and a transition region. A processor includes: a parameter generator that obtains a reference differential pressure in a flow rate calculation formula of expression 1 as follows, based on already-known flow rates and measured differential pressures corresponding thereto, and generates two parameter sets each including coefficients c_1 to c_3 of the flow rate calculation formula, with the reference differential pressure being a boundary; a differential pressure determination unit that selects one of the two parameter sets by comparing a measured differential pressure of a fluid as a measurement target with the reference differential pressure; and a flow rate calculator that calculates a flow rate of the fluid from the parameter set and the measured differential pressure.

$$\Delta P = c_1 \times \eta \times Q + c_2 \times \rho \times Q^2 + c_3 \cdots \text{(expression 1)}$$

(Q : flow rate, ΔP : differential pressure, η : coefficient of kinematic viscosity, ρ : density, c_1 to c_3 : coefficients)