1. Calculation of norm volume flow for PDF Flow-Sensor

$$Vn = \sqrt{[(\Delta p * pA) / (\rho n * Ta)]} \ * \ Di^2 \ * \ K \ / \ 15,23$$

2. Calculation of operating volume flow for PDF Flow-Sensor

$$Vb = \sqrt{(\Delta p / \rho)} \ * \ Di^2 \ * \ K \ / \ 25$$

3. Substituted diameter for rectangular ducts

$$Di = \sqrt{(A * B / \pi)} \ * \ 2$$

4. Calculation of mass flow for PDF Flow-Sensor

$$M = \sqrt{[(\Delta p * pA) / (\rho n * Ta)]} * Di^2 \ * \ K \ / \ 15,23 \ * \ \rho n$$

or

$$M = \sqrt{(\Delta p * \rho)} \ * \ Di^2 \ * \ K \ * \ 1/25$$

Formula letter	Unit	Meaning
Vn	Nm^3/h	Norm volume flow
Di	mm	Inside diameter of duct
Δp	mbar	Measured ram pressure at PDF Flow-Sensor
K	1	Dimensionless transmission factor of the PDF Flow-Sensor. Get it from the differential pressure calculation or from the packing list
M	kg/h	Mass flow
ρn	kg/Nm^3	Norm density of the medium at T=273,15 K and p=101,325 kPa
ρ	kg/m^3	Density of the medium under operating conditions
pA	kPa	Absolute pressure (against vacuum) of the medium
Ta	K	Temperature of the medium in Kelvin
A	mm	Edge length 1 if rectangular duct
B	mm	Edge length 2 if rectangular duct