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# SMF<sup>®</sup> - RD | SonicMasterFlow<sup>®</sup>

## Compressed air operation

### Data Sheet EPE-147364



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GERMANY



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### Technical Data

Air mass flow	0,1...1000 kg/h
Air volume flow	0,2...500 m <sup>3</sup> /h

#### Regulated variables

Pressure in front of nozzle	2000...6000 mbar abs.
Pressure in front of DUT	1000...2000 mbar abs.

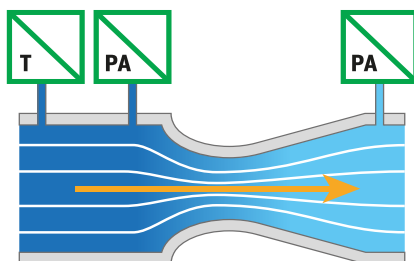
#### Measurement sizes

Pressure abs. in front of nozzle	$P_{NOZZLE}$
Pressure abs. behind nozzle	$P_{NOZZLE}$
Pressure abs. in front of DUT	$P_{DUT}$
Temperature in front of nozzle	$T_{NOZZLE}$
Temperature in front of DUT	$T_{DUT}$
Rel. humidity DUT	$rH_{DUT}$
Pressure abs. environm.	$P_{amb}$
Temperature environm.	$T_{amb}$
Rel. humidity environm.	$rH_{amb}$

#### Dimensions

Test bench (L x W x H)	2000 x 1000 x 2000 mm
Weight	approx.. 1000 kg

**!** This is only an **example** interpretation and can change according to your needs.



Measurement principle

## Test bench with sonic nozzles in register design

Up to 7 nozzles in overpressure operation  
Air mass flow up to 1000 kg/h  
Operation with compressed air or other gases

### Description

The system generates a precise air mass or air volume flow for the calibration of flow devices. Another characteristic is the regulation of an exact test pressure over a test item and the measurement of the resulting air volume flow through this test item. This measurement is made via the nozzles which are operated in the "critical state" (this is speed of sound in the narrowest section of the nozzle). With measured volume flow through the test item and the compensation (measurement of the temperature in front of the item) of temperature effects, the software calculates the effective cross section of the item. This method is used to determine the cross-section (effective area) or diameter determination of hard-to-reach holes that can not be determined by geometric measurement methods. The components are, for example, components for gas turbines, burners, injection nozzles or aircraft engines. The system is controlled by a PC with precise measurement data acquisition hardware and measurement and control software under LabVIEW.

### Benefits

- ✓ Compact design
- ✓ Integrated inlet section
- ✓ Highest accuracy - up to 0.15% MV
- ✓ Approved by the PTB as a calibration standard
- ✓ Representation of volume flow or mass flow
- ✓ Flexible adaptation of nozzles to customer requirements
- ✓ Best long-term stability - recalibration period up to 10 years for laval nozzles

### Standard solutions Application examples:

- Power plant technology:**  
Testing burner components of gas turbines
- Gas and flow measurement technology:**  
Calibration test bench for gas meters, MFM, MFC, LFE, venturi nozzles
- Automotive:**  
Adjustment bench for valves, control elements, flow meters, HFM, ...
- Filter technology:**  
Characteristic test bench for intake filter
- Valve technology:**  
Characteristic test bench for valves



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For special requirements we are happy to advise you. Subject to change. / EPE-147364 / Last update: 01/2018 / V01  
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+49 (0) 79 32 . 6 06 66 - 0 / +49 (0) 79 32 . 6 06 66 - 11 / info@ep-e.com / www.ep-e.com