

**Calibration Certificate**

75240

**Applicant**

Customer name CCSTEC GesmbH  
Address Triesterstrasse 36  
2512 Oeynhausen  
Austria

Order reference applicant CP0999  
Order reference TPF Control 75089

**Instrument information**

Manufacturer TSI  
Instrument type Volume Flow Device  
Model 4043 H  
Serial number 4043 1653 004  
Tag number C87

**Calibration method**

The device under test is directly, in line, connected to a flow calibrator to compare flow readings. An appropriate warm up time is incorporated.  
A flow source is connected to the inlet of the instrument to generate a flow.

**Environmental conditions**

The laboratory environment was maintained at  $21^{\circ}\text{C} \pm 2^{\circ}\text{C}$  and  $40\%\text{rh} \pm 20\%\text{rh}$ .  
The atmospheric pressure at the time of calibration was 1003 mBar.

**Date (or period) of calibration**

24 December 2021

**Results**

The results of the calibration are presented on the following page(s).

**Uncertainty**

The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

The standard uncertainty of measurement has been determined in accordance with EA-4/02.

**Traceability**

The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA.

**Date**

24 December 2021

**Calibration Technician**

Hans Threels

**Technical Manager**

Rik van de Bovenkamp

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Reproduction of the complete certificate is allowed.

Parts of the certificate may only be reproduced after written approval of the calibration laboratory.

This certificate is issued under the provision that the Raad voor Accreditatie does not assume any liability.

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### Instrument specification [ Device Under Test ]

Process gas : Air  
Qmax : 200 l/min

Input signal : n.a  
Output signal : Display  
Inlet pressure : 0 Bar (g)  
Outlet pressure : 0 Bar (g)

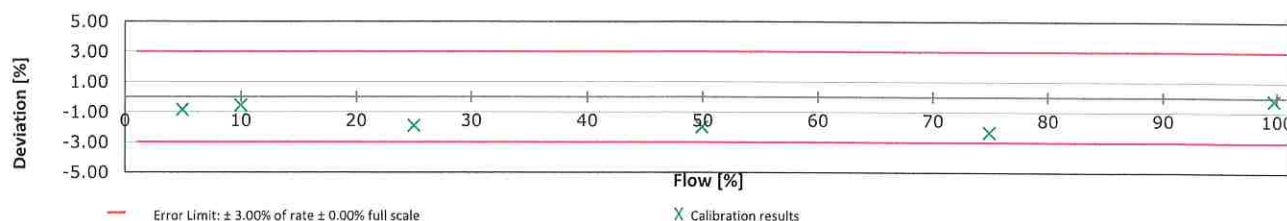
### Calibration conditions

Calibration gas : Air  
Gas conversion factor : 1.0000 ( TSI )

Calibration inlet pressure : 0 Bar (g)  
Calibration outlet pressure : 0 Bar (g)

### Calibration results

Instrument reading			Reference Flow [ l/min ]	Deviation (ERROR)			Uncertainty Calibration Flow [ % ]
Output Display [ l/min ]	Full scale [%]	Calculated flow [ l/min ]		Of rate [%]	DUT - REF [ l/min ]	Limit [%]	
0							
9.97	4.99	9.97	10.057	-0.84	-0.09	3.00	0.49
19.98	9.99	19.98	20.093	-0.57	-0.11	3.00	0.47
49.97	24.99	49.97	50.947	-1.91	-0.98	3.00	0.31
99.9	49.93	99.9	101.88	-1.99	-1.98	3.00	0.32
149.8	74.92	149.8	153.43	-2.34	-3.63	3.00	0.30
199.5	99.73	199.5	199.86	-0.20	-0.36	3.00	0.30



### Note

- The deviation is determined by : 
$$\text{Deviation} = \frac{\text{Instrument reading} - \text{Reference}}{\text{Reference}} \cdot 100\%$$
- The hysteresis of the DUT can be determined by the deviation between two series but is not included in the uncertainty.
- The indicated Lab Standard Flow is derived applying the gas conversion factor. Calibration takes place with the calibration gas, results are reported in process gas (DUT).
- Calibration done with inlet filter.