C63
(1/2)

TPF CONTROL

ilac-MRA

RvA CALIBRATION RvA K 149

Calibration Certificate

68474

Applicant

Customer name	CCSTEC GesmbH
Address	Triesterstrasse 36 2512 Oeynhausen Austria
Order reference applicant	CP0999
Order reference TPF Control	68436

Instrument information

Instrument type	Flow Calibrator
Manufacturer	Mesalabs
Model	Definer 220H
Serial number	115673
Tag number	C63

Calibration method

The temperature calibration is done by compairing the DUT reading to a PT-100 reading in Air. The pressure DUT is directly, connected to a pressure standard to compare pressure readings. The flow measurements are made in a parallel setup.

A flow source is connected to the inlet of the instrument to generate a flow.

Environmental conditions

The laboratory environment was maintained at 21°C ± 2°C and 40%rh ± 20%rh.
The atmospheric pressure at the time of calibration was 1030 mBar.

Date (or period) of calibration

14 April 2021 - 15 April 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

15 April 2021

Calibration Technician

Bart Vissers

Technical Manager

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Instrument specification [Device Under Test]

Qmax	:	30000 sccm	Serial number	:	115673
Reference conditions	:	21.1 °C & 1013.25 mBar	Tag number	:	C63

Calibration conditions

Calibration gas : Air

Calibration results

Instrument reading	Reference	Deviation (ERROR)			Uncertainty
Flow [sccm]	Flow [sccm]	Of rate [%]	DUT- REF [sccm]	Limit [%]	Calibration [%]
301.66	302.49	-0.27	-0.83	1.00	0.22
4991.8	5015.6	-0.47	-23.80	1.00	0.18
29901	29960	-0.20	-59.00	1.00	0.20
Temperature [°C]	**Temperature [°C]**	**Of rate [%]**	**DUT - REF [°C]**	**Limit [°C]**	**Calibration [°C]**
21.1	21.3	-0.94	-0.2	0.8	0.4
Pressure [mBar (a)]	**Pressure [mBar (a)]**	**Of rate [%]**	**DUT- REF [mBar (a)]**	**Limit [mBar (a)]**	**Calibration [mBar (a)]**
1029	1030	-0.10	-1	5	3

Calibration results after adjustment

Instrument reading	Reference	Deviation (ERROR)			Uncertainty
Flow [sccm]	Flow [sccm]	Of rate [%]	DUT- REF [sccm]	Limit [%]	Calibration [%]
301.83	300.87	0.32	0.96	1.00	0.18
5007.8	5000.7	0.14	7.10	1.00	0.18
29951	29889	0.21	62.00	1.00	0.20
Temperature [°C]	**Temperature [°C]**	**Of rate [%]**	**DUT - REF [°C]**	**Limit [°C]**	**Calibration [°C]**
20.9	20.9	0.00	0.0	0.8	0.4
Pressure [mBar (a)]	**Pressure [mBar (a)]**	**Of rate [%]**	**DUT- REF [mBar (a)]**	**Limit [mBar (a)]**	**Calibration [mBar (a)]**
1030	1030	0.00	0	5	3

Note

1 The deviation is determined by : $\text{Deviation} = \frac{\text{Instrument reading - Reference}}{\text{Reference}} * 100\ \%$

2 Calibrations are performed at mentioned pressure and temperature conditions. Reference temperatures are defined according the ITS-90.