

Applicant

CCSTEC GmbH
Triester Straße 36
2512 Oeynhausen
Österreich

Instrument

Type: Airborne Particle Counter
Manufacturer: Lighthouse Worldwide Solutions
Model: Solair 3100
Serial no.: 180204002
Customer device ID.: C99

Date of calibration 18. February 2022

Due date of calibration February 2023

Calibration Location A-2512 Oeynhausen

Calibration methode Calibration has been accomplished as described according to ISO 21501-4:2018.

Results

The result of the measurements are shown on the following pages.
The unit is readjusted.
All measured values comply with the specification limit(s).

Traceability Reference equipment used for calibration are regularly calibrated and traceable to national standards.

Uncertainty The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, which provides a confidence level of approximately 95%. The standard uncertainty is determined in accordance with EA-4/02.

Calibrated by:

Daniel Poppinger
18. February 2022
(Name, Date, Signature)

Approved by:

Marcus Willig
18. February 2022
(Name, Date, Signature)

Calibration Service

CCSTEC GesmbH
2512 Oeynhausen

Triesterstraße 36
Austria

Tel: +43 2252/25 27 59-0
E-Mail: office@ccstec.at

PARTIKELMESSTECHNIK

Revision: I

Certificate number: 22_4564

Date of calibration 18. February 2022

Calibrated by Daniel Poppinger

Environmental conditions 24,5 °C 38,9 %rF 990,5 hPa

Results, As found

Performance details

Test	Test result	Expanded uncertainty	Criteria	Pass / Fail
ISO21501-4 Flow	29,7 l/min	0,05 l/min	28,3 l/min. +- 5%	Pass
JIS B 9921 Zero count	0 particles in 5 min.	N/A	< 1 in 5 min.	Pass
ISO21501-4 False count rate	Upper confidence level 21,19 particles/m ³	N/A	N/A	Pass
ISO21501-4 Timer Check	60,0 sec.	0,03 sec.	±1%	Pass
ISO21501-4 Size resolution	1,80 % used size 0,40 µm	0,69 %	< 15%	Pass
ISO21501-4 Counting efficiency 50%	66,8 % used size 0,30 µm	4,21 %	(50±20)%	Pass
ISO21501-4 Counting efficiency 100%	109,3 % used size 0,50 µm	4,21 %	(100±10)%	Pass

Size calibration

Channel	Channel Size	Threshold voltage	Calculated Size	Expanded uncertainty	Calculated Sizing error (±10%)	Pass / Fail
1.	0,30 µm	40 mV	0,303 µm	0,0061 µm	0,83 %	Pass
2.	0,50 µm	323 mV	0,505 µm	0,0042 µm	0,92 %	Pass
3.	0,70 µm	681 mV	0,710 µm	0,0032 µm	1,36 %	Pass
4.	1,00 µm	820 mV	0,963 µm	0,0049 µm	-3,72 %	Pass
5.	3,00 µm	2804 mV	2,828 µm	0,0043 µm	-5,74 %	Pass
6.	5,00 µm	3373 mV	5,138 µm	0,0035 µm	2,76 %	Pass
7.	10,00 µm	4160 mV	9,543 µm	0,0050 µm	-4,57 %	Pass

Notes

Reference Equipment

Internal ID	Model	Serial Number	Certificate Number	Due date
C87	Mass Flowmeter 4043	40431653004	75240	24.12.2022
C45	Fluke 87 V	87380269	05112021	02.11.2022
C98	Hanhart Labor 3	9051	294.4994-00	30.11.2022
C93	MCA 8000D	01665	2111-19947	15.12.2022
C94	Testo 622	3951 8351/809	4371586	20.01.2023
C96	Solair 3100 GenE	190504038	LH71128	08.06.2022
C91	Remote 2014	180221001	LH80905	03.01.2023

Particle size standards

Size	Description	Due date	Lot#
0,30 µm	DUKE STANDARDS™ Nanosphere Size Standards Particles	Apr-23	223077
0,50 µm	DUKE STANDARDS™ Nanosphere Size Standards Particles	Feb-24	236574
0,70 µm	DUKE STANDARDS™ Nanosphere Size Standards Particles	Jul-24	242110
1,00 µm	DUKE STANDARDS™ Microsphere Size Standards Particles	Apr-22	211354
3,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Aug-24	244037
5,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Aug-24	244334
10,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Feb-23	221642

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ISO21501-4 Timer Check	60,0 sec.	0,03 sec.	±1%	Pass
ISO21501-4 Size resolution	2,61 % used size 0,40 µm	0,77 %	< 15%	Pass
ISO21501-4 Counting efficiency 50%	52,6 % used size 0,30 µm	3,81 %	(50±20)%	Pass
ISO21501-4 Counting efficiency 100%	99,4 % used size 0,50 µm	3,81 %	(100±10)%	Pass

Size calibration

Channel	Channel Size	Threshold voltage	Calculated Size	Expanded uncertainty	Calculated Sizing error (±10%)	Pass / Fail
1.	0,30 µm	46 mV	0,307 µm	0,0060 µm	2,38 %	Pass
2.	0,50 µm	340 mV	0,510 µm	0,0042 µm	1,99 %	Pass
3.	0,70 µm	688 mV	0,702 µm	0,0033 µm	0,32 %	Pass
4.	1,00 µm	854 mV	0,994 µm	0,0047 µm	-0,55 %	Pass
5.	3,00 µm	2903 mV	3,010 µm	0,0040 µm	0,33 %	Pass
6.	5,00 µm	3363 mV	5,080 µm	0,0036 µm	1,61 %	Pass
7.	10,00 µm	4247 mV	9,988 µm	0,0048 µm	-0,12 %	Pass

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