

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 7. April 2021

Due date of calibration April 2022

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
7. April 2021
(Name, Date, Signature)

Approved by:

Marcus Willig
7. April 2021
(Name, Date, Signature)

Date of calibration 7. April 2021

Calibrated by Daniel Poppinger

Environmental conditions 24,2 °C 28,5 %rF 987,9 hPa

Results, As found**Performance details**

Test	Test result	Expanded uncertainty	Criteria	Pass / Fail
ISO21501-4 Flow	28,2 l/min	0,05 l/min	28,3 l/min. +- 5%	Pass
JIS B 9921 Zero count	0 particles in 5 min. Upper confidence level	N/A	≤1 in 5 min.	Pass
ISO21501-4 False count rate	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	0,81 % used size 0,40 µm	0,63 %	< 15%	Pass
ISO21501-4 Counting efficiency 50%	54,5 % used size 0,30 µm	3,82 %	(50±20)%	Pass
ISO21501-4 Counting efficiency 100%	95,0 % used size 0,50 µm	3,94 %	(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	0,302 µm	0,0061 µm	0,78 %	Pass
2.	0,50 µm	323 mV	0,501 µm	0,0043 µm	0,20 %	Pass
3.	0,70 µm	681 mV	0,705 µm	0,0033 µm	0,70 %	Pass
4.	1,00 µm	820 mV	0,990 µm	0,0048 µm	-1,03 %	Pass
5.	3,00 µm	2804 mV	2,970 µm	0,0033 µm	-0,98 %	Pass
6.	5,00 µm	3420 mV	5,253 µm	0,0046 µm	5,05 %	Pass
7.	10,00 µm	4160 mV	9,852 µm	0,0037 µm	-1,48 %	Pass
8.	25,00 µm	8800 mV	23,225 µm	0,0155 µm	-7,10 %	Pass

Notes

25,00µm can not be manufactured with dev. ≤ 2,5%. 25,00µm channel does not comply with ISO-21501-4:2018

Reference Equipment

Internal ID	Model	Serial Number	Certificate Number	Due date
C63	Definer 220-H	115673	61493	18.05.2021
C45	Fluke 87 V	87380269	65112019	20.11.2021
C98	Hanhart Labor 3	9051	20_2759	14.12.2021
C83	MCA 8000D	738	2005-06547	15.05.2021
C100	Testo 622	3952 1980/909	225235	12.01.2022
C96	Solair 3100 GenE	190504038	LH54094	04.06.2021
C97	Remote 2014	191121036	LH62134	14.12.2021

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	Apr-22	210349
0,70 µm	DUKE STANDARDS™ Nanosphere Size Standards Particles	Oct-21	204048
1,00 µm	DUKE STANDARDS™ Microsphere Size Standards Particles	Apr-22	211354
3,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Sep-21	202646
5,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Jan-22	206792
10,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Apr-21	196944
25,00 µm	DUKE STANDARDS™ Dry Microsphere Size Standards Particles	Sep-21	203046

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5.	3,00 µm	2804 mV	2,970 µm	0,0033 µm	-0,98 %	Pass
6.	5,00 µm	3373 mV	5,022 µm	0,0048 µm	0,43 %	Pass
7.	10,00 µm	4160 mV	9,852 µm	0,0037 µm	-1,48 %	Pass
8.	25,00 µm	9250 mV	24,522 µm	0,0147 µm	-1,91 %	Pass

Notes

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