



LIGHTHOUSE
WORLDWIDE SOLUTIONS BENELUX BV



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Calibration certificate

Certificate number: LH31591

Revision 2.10

Applicant : CCSTEC GesmbH
Triesterstrasse 36
A-2512, Oeynhausen
Austria

Instrument : Description : Airborne particle counter
Manufacturer : Lighthouse
Model : Solair 3100
Serial no. : 171004018

Date of calibration : 08 November 2018

Due date calibration : November 2019

Calibration location : Lighthouse Benelux Calibration laboratory
in Boven-Leeuwen

Calibration method : Calibration has been accomplished as described in ISO21501-4:2007.
All work performed is in accordance with Lighthouse Worldwide
Solutions Benelux, Master Calibration Document: I201 and is recorded
and maintained as such.

Results : The results of the measurements are shown in the appendix.
No readjustments are made.
All measured values comply with the specification limit(s).

Traceability : The measurements have been executed using standards for which the
traceability to (inter)national standards has been demonstrated towards
the Raad voor Accreditatie.

Uncertainty : The reported 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. The measurement uncertainty is taken into
account for compliance statements.

M.A.W. van Boxel
Head of calibration

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The Raad voor Accreditatie is one of the signatories of the
Multilateral Agreement of the European Cooperation for
Accreditation (EA) for the mutual recognition of calibration
certificates.

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of the certificate may only be reproduced with written
approval of the calibration laboratory. This certificate is
issued provided that neither Lighthouse Worldwide
Solutions Benelux BV nor the Raad voor Accreditatie
assumes any liability.



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Appendix

Certificate number: LH31591

Date of calibration : 08 November 2018
Calibrated by : A.C.G. Gerritse
Function : Calibration & Service Engineer
Environmental conditions : The ambient temperature was 22,7°C at a relative humidity of 42,3%

Measurement results, As found

Performance information			
Test	Test result	Expanded uncertainty	Criteria
ISO21501-4 Flow	27,96l/min	0,49l/min	28,30l/min ±5%
JIS B 9921 Zero count	0	N/A	≤1 in 5 mins
ISO21501-4 False count rate	Upper confidence level 21 particles/m3	N/A	N/A
ISO21501-4 Timer check	59,9 seconds	0,40s	±1%
ISO21501-4 Size resolution	0,00%	3,66%SR	< 15%
ISO21501-4 Counting efficiency 50%	59,5% used size 0,30µm	5,55%CE	(50±20)%
ISO21501-4 Counting efficiency 100%	102,9% used size 0,50µm	5,92%CE	(100±10)%

Size calibration					
Channel	Channel Size	Threshold voltage	Calculated size	Expanded uncertainty	Calculated Sizing error (±10%)
1	0,30µm	47mV	0,302µm	0,006µm	0,67%
2	0,50µm	426mV	0,490µm	0,008µm	-2,07%
3	1,00µm	1220mV	0,999µm	0,018µm	-0,13%
4	3,00µm	3142mV	2,955µm	0,059µm	-1,50%
5	5,00µm	3696mV	4,796µm	0,135µm	-4,07%
6	10,00µm	4582mV	9,536µm	0,228µm	-4,64%

Notes

Counting efficiency: used size 1.0 µm: 96,75%CE ± 7,05%CE

Reference equipment

Model	S/N	Due to	Certificate number
Defender 510	120068	2-Jan-2019	44314
MCA8000D	425	22-Mar-2019	1803-08453
Fluke-175	32880416	17-Sep-2019	1808-11657
Control company 14-649-11	181513043	10-Aug-2020	1045-9722549
Solair 1100+	090405002	4-Dec-2018	LH25924

Particle size standards

Size	Description	Due to	Lot#
0,30µm	3300A & 3300B, Nanosphere Size Standards	1-Mar-2020	183039
0,50µm	3500 & 3500A, Nanosphere Size Standards	1-Jan-2021	193188
1,00µm	4009A, 4009A & 4009B Microsphere Size Standards	1-Aug-2020	187477
3,00µm	4203 and 4203A, Particle Size Standards	1-Jun-2020	185943
5,00µm	4205, 4205A and 4205C Microsphere Size St.	1-Mar-2020	182656
10,00µm	4210 and 4210A Microsphere Size Standards	1-Jan-2020	179270



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