



LIGHTHOUSE
WORLDWIDE SOLUTIONS BENELUX BV



Calibration certificate

Revision 2.10

Certificate number: LH19476

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 : 26 October 2017

Due date calibration : October 2018

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.

Reproduction of the complete certificate is allowed, parts
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.



Appendix

Certificate number: LH19476

Date of calibration : 26 October 2017
Calibrated by : P.J. van den Berk
Function : Calibration & Service Engineer
Environmental conditions : The ambient temperature was 22,3°C at a relative humidity of 58,2%

Measurement results, As found

Performance information			
Test	Test result	Expanded uncertainty	Criteria
ISO21501-4 Flow	27,45l/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	60,0 seconds	0,40s	±1%
ISO21501-4 Size resolution	0,54%	4,24%SR	< 15%
ISO21501-4 Counting efficiency 50%	52,5% used size 0,30µm	3,24%CE	(50±20)%
ISO21501-4 Counting efficiency 100%	98,6% used size 0,50µm	5,95%CE	(100±10)%

Size calibration					
Channel	Channel Size	Threshold voltage	Calculated size	Expanded uncertainty	Calculated Sizing error (±10%)
1	0,30µm	47mV	0,303µm	0,006µm	1,00%
2	0,50µm	426mV	0,500µm	0,008µm	0,01%
3	1,00µm	1220mV	0,999µm	0,018µm	-0,05%
4	3,00µm	3142mV	2,998µm	0,060µm	-0,06%
5	5,00µm	3696mV	5,001µm	0,138µm	0,01%
6	10,00µm	4582mV	10,003µm	0,214µm	0,03%

Notes

Reference equipment

Model	S/N	Due to	Certificate number
Flowmeter Bios Drycal	104546	8-Nov-2017	37417
MCA8000D	1086	11-Jan-2018	MCD-025-A0
Fluke-175	11900154	13-Apr-2018	1704-02973
Fisher Scientific 0666256	170471257	26-Jun-2019	1042-8643931
Solair 2010+	081299001	19-Nov-2017	LH14518

Particle size standards

Size	Description	Due to	Lot#
0,30µm	3300A & 3300B, Nanosphere Size Standards	1-Feb-2019	164983
0,50µm	3500 & 3500A, Nanosphere Size Standards	1-Dec-2019	177807
1,00µm	4009A, 4009A & 4009B Microsphere Size Standards	1-Jul-2019	171667
3,00µm	4203 and 4203A, Particle Size Standards	1-Nov-2019	177421
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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