

Customer Cleanroom Technology Austria GmbH
IZ NÖ-Süd, Straße 10, Objekt 60
A-2355 Wiener Neudorf
Österreich

Instrument Type: Airborne Particle Counter
Manufacturer: Lighthouse Worldwide Solutions
Model: Handheld 3016 IAQ
Serial no.: 190144003
Customer device ID.: 12000946

Date of receipt 12. January 2026

Calibration date 13. January 2026

Due date of calibration January 2027

Calibration Location A-2512 Oeynhausen

Calibration methode Calibration has been accomplished as described in ISO 21501-4:2018, excluding 6.5 & 6.8. All work performed according to ccstec Sop 03.02.03 Partikelzähler Kalibrierung.

Results All measured values comply with the specification limit(s).
The unit is readjusted.
The following results refer only to the particle counter listed above
The result of the measurements are shown on the following pages.

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

Uncertainty Results without consideration of 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. Decision rules are not applied according to 21501-4 Annex E.4

Calibrated by:

Adam Lynch
13. January 2026
(Name, Date, Signature)

Approved by:

Daniel Gruber
13. JAN. 2026
(Name, Date, Signature)

Calibration Service

CCSTEC GesmbH
2512 Oeynhausen

Triesterstraße 36
Austria

Tel: +43 2252/25 27 59-0
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Date of calibration 13. January 2026

Calibrated by Adam Lynch

Environmental conditions 21,3 °C to 22,5 °C 42,8 %rF to 43,9 %rF

Results, As found

Performance details

Test	Test result	Expanded uncertainty	Criteria	Pass / Fail
ISO21501-4 Sampling Flow rate error	3,83 % $\pm$ 0,11 l/min	0,34 %	2,8 l/min. $\pm$ 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	211,89 particles/m ³	n.a.	n.a.	Pass
ISO21501-4 Sampling time error	0,12 % $\pm$ 0,070 sec.	0,40 sec.	< 1%	Pass
ISO21501-4 Size resolution	6,47 % used size 0,40 μ m	1,91 %	< 15%	Pass
ISO21501-4 Counting efficiency 50%	57,98 % used size 0,30 μ m	5,62 %	(50 $\pm$ 20)%	Pass
ISO21501-4 Counting efficiency 100%	108,57 % used size 0,50 μ m	4,71 %	(100 $\pm$ 10)%	Pass

Size calibration

Channel	Channel Size	Threshold voltage	Calculated Size	Expanded uncertainty	Calculated Sizing error ($\pm$ 10%)	Pass / Fail
1.	0,30 μ m	41 mV	0,299 μ m	0,0122 μ m	-0,36 %	Pass
2.	0,50 μ m	292 mV	0,502 μ m	0,0184 μ m	0,42 %	Pass
3.	1,00 μ m	905 mV	0,979 μ m	0,0479 μ m	-2,07 %	Pass
4.	2,50 μ m	1983 mV	2,557 μ m	0,1121 μ m	2,27 %	Pass
5.	5,00 μ m	3956 mV	4,925 μ m	0,2013 μ m	-1,49 %	Pass
6.	10,00 μ m	6274 mV	9,470 μ m	0,3330 μ m	-5,30 %	Pass

Fault description

n.a.

Reference Equipment

Internal ID	Model	Serial Number	Certificate Number	Due date
C143	MesaLabs Defender 530+	218339	721045	17.12.2026
C129	Jumbo-Digit Stopwatch	240174443	E349373	18.07.2026
C83	MCA 8000D	738	2507-04400	10.07.2026
C100	Testo 622	39521980	AF5508	09.12.2026
C125	Solair 3100 GenE	230404530	C09985	09.07.2026
C91	Remote 2014	180221001	C19599	10.12.2026

Reference Particle Standards

Size	Description	Due date	Lot#
0,30 μ m	3300A & 3300B, Nanosphere™ Size Standards	Jun-27	281235
0,40 μ m	3400A, Nanosphere™ Size Standards	Aug-27	283679
0,50 μ m	3500 & 3500A, Nanosphere™ Size Standards	May-27	279810
1,00 μ m	4009, 4009A & 4009B, DUKE STANDARDS™ Microsphere Size Standards	Jan-27	275827
2,50 μ m	11025-20, MicroStandards™ - 11000 series	Mar-26	CS0008.2123
5,00 μ m	4D-05, DUKE STANDARDS™ Dry Microsphere Size Standards	Jan-26	263147
10,00 μ m	4D-10, DUKE STANDARDS™ Dry Microsphere Size Standards	Dec-27	287466

Date of calibration 13. January 2026

Calibrated by Adam Lynch

Environmental conditions 22,8 °C to 22,9 °C 45,2 %rF to 45,4 %rF

Results, As left

Performance details

Test	Test result	Expanded uncertainty	Criteria	Pass / Fail
ISO21501-4 Sampling Flow rate error	3,12 % $\pm$ 0,09 l/min	0,34 %	2,8 l/min. $\pm$ 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	211,89 particles/m ³	n.a.	n.a.	Pass
ISO21501-4 Sampling time error	0,10 % $\pm$ 0,060 sec.	0,40 sec.	< 1%	Pass
ISO21501-4 Size resolution	6,47 % used size 0,40 μ m	1,91 %	< 15%	Pass
ISO21501-4 Counting efficiency 50%	50,31 % used size 0,30 μ m	5,62 %	(50 $\pm$ 20)%	Pass
ISO21501-4 Counting efficiency 100%	97,84 % used size 0,50 μ m	4,71 %	(100 $\pm$ 10)%	Pass

Size calibration

Channel	Channel Size	Threshold voltage	Calculated Size	Expanded uncertainty	Calculated Sizing error ($\pm$ 10%)	Pass / Fail
1.	0,30 μ m	44 mV	0,302 μ m	0,0122 μ m	0,75 %	Pass
2.	0,50 μ m	292 mV	0,502 μ m	0,0184 μ m	0,42 %	Pass
3.	1,00 μ m	905 mV	0,979 μ m	0,0479 μ m	-2,07 %	Pass
4.	2,50 μ m	1983 mV	2,557 μ m	0,1121 μ m	2,27 %	Pass
5.	5,00 μ m	3956 mV	4,925 μ m	0,2013 μ m	-1,49 %	Pass
6.	10,00 μ m	6450 mV	9,860 μ m	0,3330 μ m	-1,40 %	Pass

Fault description

n.a.

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5,00 μ m	4D-05, DUKE STANDARDS™ Dry Microsphere Size Standards	Jan-26	263147
10,00 μ m	4D-10, DUKE STANDARDS™ Dry Microsphere Size Standards	Dec-27	287466