KALIBRIER ZERTIFIKAT

CALIBRATION CERTIFICATE / CERTIFICAT DE CALIBRATION

Abnahmeprüfzeugnis nach DIN EN 10204 – 3.1
Inspection certificate acc. DIN EN 10204 – 3.1
Certificat de réception selon DIN EN 10204 – 3.1

Zertifikat Nr. / Certificate No / Certificat N°.: N77094451

Type / Model / Modèle: EE08-PFT2V11D6HC01/T02

Gegenstand / Object / Objet: humidity/temperature transmitter EE08

Serien Nummer / Serial Number / Numéro de série: 20470500053632

Hiermit bestätigen wir, dass die angeführten E+E Erzeugnisse unter Verwendung einwandfreier Werkstoffe nach dem Stand der Technik gefertigt wurden. Produktion, Kalibrierung und Qualitätsprüfung werden im Rahmen der E+E Qualitätssicherungsmaßnahmen überwacht. Die Erzeugnisse werden gegen Werksstandards kalibriert, welche auf internationale Standardeinheiten, verwaltet von den nationalen metrologischen Instituten wie NIST, PTB, NPL, BEV oder anderen anerkannten nationalen Standard Labors, rückführbar sind.
Bei Entwicklungsmustern und Reparaturteilen bezieht sich die Bescheinigung ausschließlich auf das Prüfergebnis.

We herewith certify that above listed E+E products are manufactured in compliance with the latest technical standards. All used materials and components have passed the quality assurance system. Manufacturing, calibration and quality testing are performed according to the E+E Quality Assurance System.
The products are calibrated against factory standards traceable to international standard units administrated by the national metrology institutes like NIST, PTB, NBL, BEV or other recognized national standard laboratories.
For engineering samples and repair parts extent of certification is restricted to test results only.

Nous certifions par la présente que les produits E+E ci-dessus mentionnés sont fabriqués selon les règles de l'art avec l'utilisation de matériaux de qualité. La fabrication, la calibration et le contrôle qualité des produits E+E sont exécutées conformément au système d'assurance qualité de E+E.
Les produits sont étalonnés par rapport á des étalons de travail dont la traçabilité est rattachée aux étalons internationaux, administrés par les instituts de métrologie tel que le NIST, PTB, NBL. BEV, COFRAC ou d'autres laboratoires de référence reconnus. Pour les échantillons ou prototypes et les pièces de réparation, la validité du certificat est restreinte aux seuls résultats de tests.

Rückführbare Standards / Traceable Standards / Etalons raccordés

Temperatur Referenz / Temperature reference / Température de référence	MKT 50, Paar
Feuchte Referenz / Humidity reference / Humidité de référence	373 HX, MBW
Messunsicherheiten / Uncertainty of Measurement / Incertitude de mesure	0,5% rH, 0,1°C

Prüfergebnis / Test result / Résultat de mesure

	50 %RH	76 %RH	23 °C
Referenzwert / Reference value / Valeur de référence	49,980	75,960	22,660
Messwert / Calibrated value / Valeur mesurée	50,370	76,540	22,650
Abweichung / Error / Ecart	0,390	0,580	- 0,010

Die angeführten Daten sind gültig, unter den angegebenen Bedingungen, zum Zeitpunkt der Messung und nehmen Bezug auf die angegebenen Standards und verwendeten Messeinrichtungen.

The calibrated values are valid under above conditions only at the time of measurement and are referenced to marked reference and working standards.

Les valeurs de calibration sont valides selon les conditions spécifiées ci-dessus au moment de la mesure et font référence aux spécifications et aux systèmes de mesure utilisés.

Ort, Datum / Place, Date / Lieu, date — Techniker / Technician / Technicien — Geprüft / Supervised / Vérification

Engerwitzdorf 21.12.2020

GRIMM AEROSOL TECHNIK
Dorfstraße 9
D-83404 Ainring
+49 (0)8654-578-0
info@grimm.durag.com

SPECTROMETER DEPARTMENT
Vordere Aue 4
D-06774 Muldestausee
+49 (0)3493-51407-73
service@grimm.durag.com

Calibration Certificate

Model	180	Serial Number	18A20136	Firmware Version	7.80
Spectrometer	187	Serial Number	8HG20136	Revision	P
Channels	PM-10; PM-2.5; PM-1; TC				

Calibration Method:

The reference unit is calibrated with NIST certified PSL particles and the calibration is verified every year. This is a worldwide accepted standard method referring to PTB Braunschweig and we therefore guarantee the traceability of our calibration. The absolute size calibration of the reference unit is transferred to the candidate unit with a calibration procedure using polydisperse dolomite particles.

Instruments used for Calibration:

- Reference instrument class 3	Model	107GF
- Oscilloscope Hameg HM507	Serial Number	60210471
- Flow meter Defender 520-M	Serial Number	119944
- Calibration tower model		7851

Calibration Material:

- Reference unit: NIST certified monidisperse PSL particles with different diameters
- Candidate unit: Micro Dolomit DR90 polydisperse powder (0,10µm - 180µm)

Tolerance Ranges:

- Sample Flowe Rate:	1,2 l/min ± 5%
- Count Correlation:	± 3% at 1µm
- Count Calibration:	± 3% ≥ 500P/l
- Relative Mass Deviation:	± 3% **or** ± 2 µg/m³

Mass values of spectrometers at calibration tower:

Mean Value	Reference 7H100021	Test Unit	Deviation
PM-10	217,1 µg/m³	216,9 µg/m³	-0,2 µg/m³ = -0,1%
PM-2.5	116,8 µg/m³	117,0 µg/m³	0,2 µg/m³ = 0,2%
PM-1.0	44,5 µg/m³	43,9 µg/m³	-0,6 µg/m³ = -1,3%
Sample Volume: 0,0180 m³ / **Sample Time:** 15 min.			

Mass values of complete systems at ambient air:

Mean Value	Reference 87G09058	Test Unit	Deviation
PM-10	18,2 µg/m³	18,9 µg/m³	0,7 µg/m³ = 3,8%
PM-2.5	17,3 µg/m³	17,9 µg/m³	0,6 µg/m³ = 3,5%
PM-1.0	16,5 µg/m³	17,0 µg/m³	0,5 µg/m³ = 3,0%
Sample Volume: 5,0029 m³ / **Sample Time:** 4169 min.			

We hereby confirm that this instrument has been successfully calibrated and passed the mass test. All work has been done by qualified and trained staff of GRIMM Aerosol Technik.

This calibration is valid until 31 March 2022

Date: 16.02.2021

Signature:

Grimm Aerosol Technik Pouch GmbH
OT Friedersdorf
Vordere Aue 4
06774 Muldestausee
Tel.: 03493 51407-0 Fax: 03493 51407-50

GRIMM AEROSOL TECHNIK
Dorfstraße 9
D-83404 Ainring
+49 (0)8654-578-0
info@grimm.durag.com

SPECTROMETER DEPARTMENT
Vordere Aue 4
D-06774 Muldestausee
+49 (0)3493-51407-73
service@grimm.durag.com

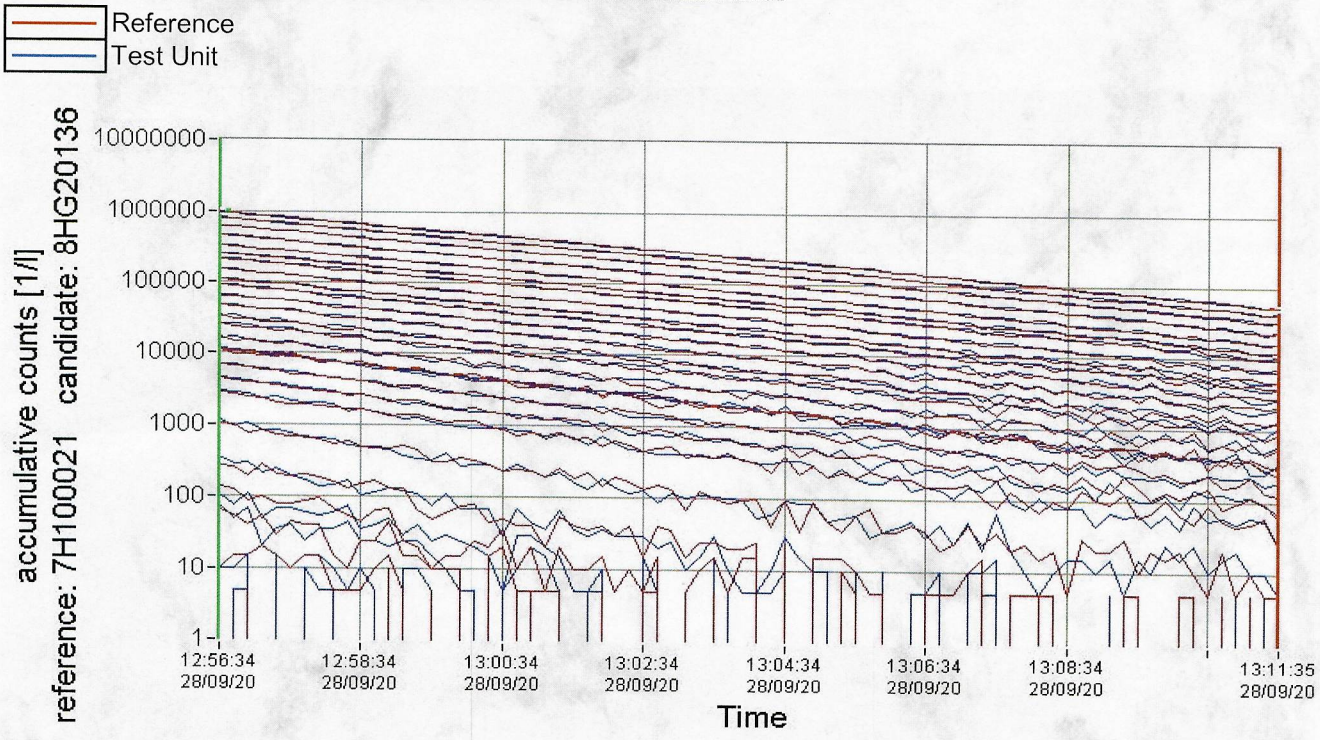
Calibration Certificate

Count values of spectrometers at calibration tower:

Channels		0	1	2	3	4	5	6	7
Diameter [µm]		> 0,25	> 0,28	> 0,30	> 0,35	> 0,40	> 0,45	> 0,50	> 0,58
Concentration [p/l]	Reference	328219	267936	208026	151242	107680	81680	67622	47099
	Test unit	321982	267026	208953	152975	108160	82208	68228	47258
Deviation [%]		-1,9	-0,3	0,4	1,1	0,4	0,6	0,9	0,3
Channels		8	9	A	B	C	D	E	F
Diameter [µm]		> 0,65	> 0,70	> 0,80	> 1,00	> 1,30	> 1,60	> 2,00	> 2,50
Concentration [p/l]	Reference	34132	27686	19752	14025	9501	7252	4665	2997
	Test unit	34198	27887	19890	14116	9628	7381	4642	2935
Deviation [%]		0,2	0,7	0,7	0,6	1,3	1,8	-0,5	-2,1
Channels		G	H	I	J	K	L	M	N
Diameter [µm]		> 2,50	> 3,00	> 3,50	> 4,00	> 5,00	> 6,50	> 7,50	> 8,50
Concentration [p/l]	Reference	3015	1771	1076	659	205	50	20	9
	Test unit	3029	1748	1071	658	205	51	16	9
Deviation [%]		0,5	-1,3	-0,5	-0,2	0,0	2,0	-20,0	0,0
Channels		O	P	Q	R	S	T	U	V
Diameter [µm]		> 10,00	> 12,50	> 15,00	> 17,50	> 20,00	> 25,00	> 30,00	> 32,00
Concentration [p/l]	Reference	3	0	0	0	0	0	0	0
	Test unit	2	0	0	0	0	0	0	0
Deviation [%]		-33,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Sample Volume: 0,0180 m³ / **Sample Time:** 15 min.

Count validation graph of spectrometers at calibration tower:



Date: 16.02.2021

Signature:

Grimm Aerosol Technik Pouch GmbH
OT Friedersdorf
Vordere Aue 4
06774 Muldestausee
Tel.: 03493 51407-0 Fax: 03493 51407-50

GRIMM AEROSOL TECHNIK

WARRANTY POLICY

Dorfstraße 9 * D-83404 Ainring contact@grimm-aerosol.com Tel.: +49 8654 / 578 - 0; Fax: +49 8654 / 578 – 35

Model: 180 Serial Number: 18A20136

GRIMM Aerosol Technik, hereinafter referred to as GRIMM, warrants the equipment purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purpose for which it is designed, for a period of (1) one year from the date of shipment. GRIMM further warrants that the equipment performs in accordance with the technical specifications which accompanied the formal equipment offer.

GRIMM will repair or replace any such defective items that may fail within the stated warranty period, PROVIDED:

That any claim of defect under this warranty is made within thirty (30) days after discovery thereof and that inspection by GRIMM , if required, indicates the validity of such claim to GRIMM's faction; and

- That the defect is not the result of damage incurred in shipment to or from our factory; and
- That the equipment has not been altered in any way whether as to design or use, whether by replacement parts not supplied or approved by GRIMM , or otherwise; and
- That any equipment or accessories furnished but not manufactured by GRIMM , or not of GRIMM design, shall be subject only to such adjustments as GRIMM may obtain from the supplier thereof.

GRIMM 's obligation on under this warranty is limited to the repair or replacement of defective parts with the exception noted above. If the equipment includes a scattering chamber, GRIMM 's warranty does not extend to contamination on of the scattering chamber by foreign material.

At GRIMM 's option, any defective equipment that fails within the warranty period shall be returned to Grimm's factory for inspection, properly packed with shipping charges prepaid. No equipment shall be returned to GRIMM without prior issuance of a return authorization on by GRIMM .

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by GRIMM and the foregoing warranty shall constitute the Buyer's sole right and remedy. In no event does GRIMM assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of GRIMM products, or any inability to use them either separately or in combination on with other equipment or materials or from any other cause.

Location: GAT Pouch Responsible: B. Ball Date: 16.02.2021

Grimm Aerosol Technik Pouch GmbH
OT Friedersdorf
Vordere Aue 4
06774 Muldestausee
Tel.: 03493 51407-0 Fax: 03493 51407-50

GRIMM AEROSOL TECHNIK
Dorfstraße 9
D-83404 Ainring
+49 (0)8654-578-0
info@grimm.durag.com

SPECTROMETER DEPARTMENT
Vordere Aue 4
D-06774 Muldestausee
+49 (0)3493-51407-73
service@grimm.durag.com

Calibration Certificate - QC Inspection Report

Model	180	Serial Number	18A20136	Firmware Version	7.80
Power Supply	230V / 60Hz			Revision	P
Settings:	P-weight / P-volume	n.a.		Fast Mode	off
	Type of Date	EU			
	Channels	PM-10; PM-2.5; PM-1; TC			
Customer	Green Group PE SAC			Order-Number	2462002497

Mechanical Instrument End Check

Spectrometer	QC: B. Rall	Date:	23.11.2020
Housing	QC: B. Rall	Date:	16.02.2021

Electrical Instrument End Check

DC/V	84,2 mV	Vacuum	-59 kPa		passed
DC_d	155,3 mV	Pneumatic tightness			passed
DC_h	180,9 mV	0-Check			passed
DC-Difference	25,6 mV	PCMCIA-Card function			passed
C0_d	0	Analog inputs			passed
C0_h	0	Battery function			n.a.
Laser Current low	50 mA	Keyboard function			passed
Laser Current high	87 mA	Software test			n.a.
Pump Current	46,1 %	RS-232-Interface function			passed
Air flow	1,20 l/min	RJ45-Interface function			n.a.

End Check completed QC: B. Rall Date 16.02.2021

Calibration Approval

Calibration at Calibration Tower	QC: F. Mk	Date	25.09.2020
Check Spectrometer at Ambient Air	QC: F. Mk	Date	28.09.2020
Check complete System at Ambient Air	QC: F. Mk	Date	30.11.2020

Final packing and shipping

All the above described test have been successfully finished and the system is completed

Date 16.02.2021 Signature: B. Rall

Grimm Aerosol Technik Pouch GmbH
OT Friedersdorf
Vordere Aue 4
06774 Muldestausee
Tel.: 03493 51407-0 Fax: 03493 51407-50