

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°.: N76088299

Type / Model / Modèle: EE08-PFT2V11D6HC01/T02

Gegenstand / Object / Objet: humidity/temperature transmitter EE08

Serien Nummer / Serial Number / Numéro de série: 2017050004080E

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 Werkstandards 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 à 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 100, Paar
Feuchte Referenz / Humidity reference / Humidité de référence	DP30; 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	49,990	75,940	23,210
Messwert / Calibrated value / Valeur mesurée	51,020	76,720	23,200
Abweichung / Error / Ecart	1,030	0,780	- 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 27.05.2020

Calibration Certificate

Model	180	Serial Number	18A20147	Firmware Version	7.80
Spectrometer	187	Serial Number	8HG20147	Revision	P
Channels	PM-10; PM-2.5				

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

Tolerance Ranges:

- Sample Flow Rate: $\pm 5 \%$ at 1.2 l/min
- Count Calibration: $\pm 3 \%$ at ≥ 500 1/l
- Relative Mass Deviation: $\pm 3 \%$ or $\pm 2 \mu\text{g}/\text{m}^3$

Mass values of spectrometers at calibration tower:

Mean Value	Reference 7H100021	Test Unit	Deviation
PM-10	266,6 $\mu\text{g}/\text{m}^3$	260,1 $\mu\text{g}/\text{m}^3$	-6,5 $\mu\text{g}/\text{m}^3$ = -2,4%
PM-2.5	117,4 $\mu\text{g}/\text{m}^3$	117,2 $\mu\text{g}/\text{m}^3$	-0,2 $\mu\text{g}/\text{m}^3$ = -0,2%
PM-1.0	42,5 $\mu\text{g}/\text{m}^3$	42,0 $\mu\text{g}/\text{m}^3$	-0,5 $\mu\text{g}/\text{m}^3$ = -1,2%
Sample Volume: 0,0180 m ³ / Sample Time: 15 min.			

Mass values of complete systems at ambient air:

Mean Value	Reference 87G09058	Test Unit	Deviation
PM-10	35,6 $\mu\text{g}/\text{m}^3$	34,7 $\mu\text{g}/\text{m}^3$	-0,9 $\mu\text{g}/\text{m}^3$ = -2,5%
PM-2.5	24,0 $\mu\text{g}/\text{m}^3$	23,3 $\mu\text{g}/\text{m}^3$	-0,7 $\mu\text{g}/\text{m}^3$ = -2,9%
PM-1.0	16,3 $\mu\text{g}/\text{m}^3$	16,2 $\mu\text{g}/\text{m}^3$	-0,1 $\mu\text{g}/\text{m}^3$ = -0,6%
Sample Volume: 3,4573 m ³ / Sample Time: 2881 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: 02.03.2021

Signature:

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

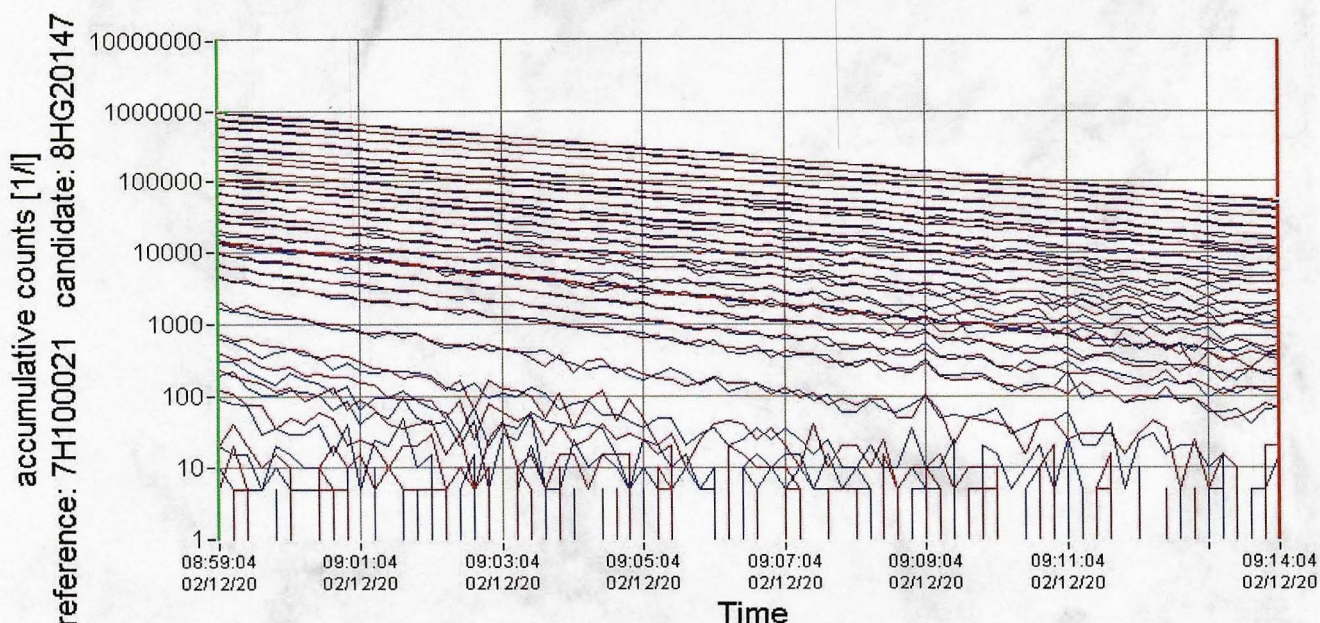
Calibration Certificate

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	318879	256770	196825	142371	100979	76593	63572	44957
	Test unit	311892	253420	196012	141477	100803	76858	63992	45080
Deviation [%]		-2,2	-1,3	-0,4	-0,6	-0,2	0,3	0,7	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	32877	26841	19420	14134	9894	7775	5204	3501
	Test unit	33284	26727	19511	14162	9902	7823	5129	3490
Deviation [%]		1,2	-0,4	0,5	0,2	0,1	0,6	-1,4	-0,3
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	3650	2288	1478	956	350	109	53	26
	Test unit	3569	2251	1464	940	330	98	43	26
Deviation [%]		-2,2	-1,6	-0,9	-1,7	-5,7	-10,1	-18,9	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	11	3	1	0	0	0	0	0
	Test unit	9	2	1	0	0	0	0	0
Deviation [%]		-18,2	-33,3	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:

 Reference
 Test Unit



Date: 02.03.2021

Signature:

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

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: 18A20147

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:

Grimm Aerosol Technik Pouch GmbH

OT Friedersdorf

Vordere Aue 4

06774 Muldestausee

Tel.: 03493 51407-0 Fax: 03493 51407-50

Date: 02.03.2021

Calibration Certificate - QC Inspection Report

Model	180	Serial Number	18A20147	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			
Customer	Green Group PE SAC			Order-Number	2462002497

Mechanical Instrument End Check

Spectrometer	QC:	<u>B. Rall</u>	Date:	10.02.2021
Housing	QC:	<u>B. Rall</u>	Date:	02.03.2021

Electrical Instrument End Check

DC/V	68,4 mV	Vacuum	-54 kPa	passed
DC_d	128,8 mV	Pneumatic tightness		passed
DC_h	158,2 mV	0-Check		passed
DC-Difference	29,4 mV	PCMCIA-Card function		passed
C0_d	0	Analog inputs		passed
C0_h	0	Battery function		n.a.
Laser Current low	52 mA	Keyboard function		passed
Laser Current high	101 mA	Software test		n.a.
Pump Current	52,4 %	RS-232-Interface function		passed
Air flow	1,20 l/min	RJ45-Interface function		n.a.

End Check completed	QC:	<u>B. Rall</u>	Date:	02.03.2021
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Calibration Approval

Calibration at Calibration Tower	QC:	<u>F. Rall</u>	Date:	01.12.2020
Check Spectrometer at Ambient Air	QC:	<u>F. Rall</u>	Date:	02.12.2020
Check complete System at Ambient Air	QC:	<u>F. Rall</u>	Date:	24.02.2021

Final packing and shipping

All the above described test have been successfully finished and the system is completed	
Date	02.03.2021
Signature:	<u>B. Rall</u>
Grimm Aerosol Technik Pouch GmbH OT Friedersdorf Vordere Aue 4 06774 Muldestausee Tel.: 03493 51407-0 Fax: 03493 51407-50	