



# 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°.: N76075683

Type / Model / Modèle: EE08-PFT2V11D6HC01/T02

Gegenstand / Object / Objet: humidity/temperature transmitter EE08

Serien Nummer / Serial Number / Numéro de série: 19360500051011

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 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 recordés

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	49,980	75,840	22,820
Messwert / Calibrated value / Valeur mesurée	51,160	76,550	22,820
Abweichung / Error / Ecart	1,180	0,710	- 0,000

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 20.09.2019

**Calibration Certificate**

Model	180	Serial Number	18A20140	Firmware Version	7.80
Spectrometer	187	Serial Number	8HG20140	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 monidisperse PSL particles with different diameters
- Candidate unit: Micro Dolomit DR90 polydisperse powder (0,10µm - 180µm)

**Tolerance Ranges:**

- Sample Flow 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	218,0 µg/m³	0,9 µg/m³ = 0,4%
PM-2.5	116,8 µg/m³	116,0 µg/m³	-0,8 µg/m³ = -0,7%
PM-1.0	44,5 µg/m³	43,5 µg/m³	-1,0 µg/m³ = -2,2%
<b>Sample Volume: 0,0180 m³ / Sample Time: 15 min.</b>			

**Mass values of complete systems at ambient air:**

Mean Value	Reference 87G09058	Test Unit	Deviation
PM-10	14,7 µg/m³	14,8 µg/m³	0,1 µg/m³ = 0,7%
PM-2.5	13,8 µg/m³	13,8 µg/m³	0,0 µg/m³ = 0,0%
PM-1.0	13,0 µg/m³	13,0 µg/m³	0,0 µg/m³ = 0,0%
<b>Sample Volume: 6,9434 m³ / Sample Time: 5786 min.</b>			

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

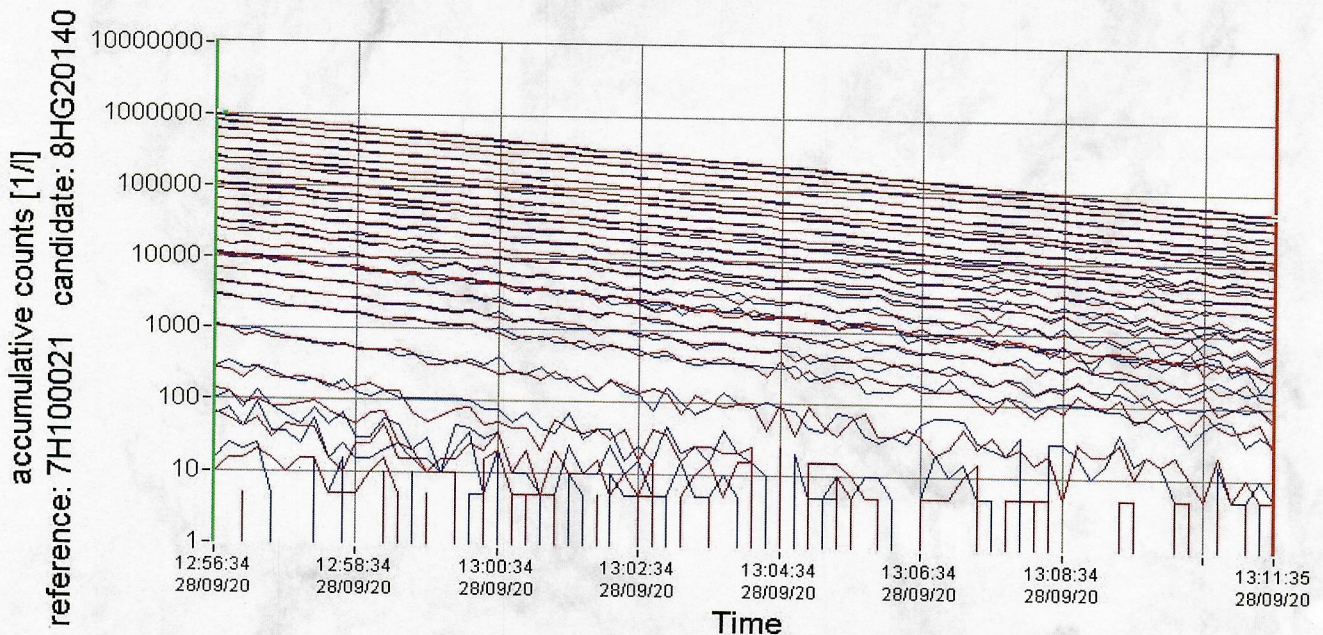
**Calibration Certificate**

**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	321287	268097	209518	152981	108789	82355	66861	46788
Deviation [%]		-2,1	0,1	0,7	1,1	1,0	0,8	-1,1	-0,7
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	33812	27785	19725	13968	9504	7362	4658	2969
Deviation [%]		-0,9	0,4	-0,1	-0,4	0,0	1,5	-0,2	-0,9
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	3083	1787	1090	663	216	55	18	10
Deviation [%]		2,3	0,9	1,3	0,6	5,4	10,0	-10,0	11,1
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 m <sup>3</sup>		Sample Time: 15 min.							

**Count validation graph of spectrometers at calibration tower:**

— Reference  
— Test Unit



Date: 02.03.2021

Signature: *F. K.*  
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: 18A20140

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

Grimm Aerosol Technik Pouch GmbH

OT Friedersdorf  
Vordere Aue 4

Date: 02.03.2021

06774 Muldestausee

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

**Calibration Certificate - QC Inspection Report**

Model	180	Serial Number	18A20140	Firmware Version	7.80
Power Supply	230V / 60Hz			Revision	P
<b>Settings:</b>	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**

<b>Spectrometer</b>	QC: <u>B. Roth</u>	Date: 28.01.2021
<b>Housing</b>	QC: <u>B. Roth</u>	Date: 01.03.2021

**Electrical Instrument End Check**

DC/V	52,6 mV	Vacuum	-60 kPa	passed
DC_d	137,2 mV	Pneumatic tightness		passed
DC_h	153,5 mV	0-Check		passed
DC-Difference	16,3 mV	PCMCIA-Card function		passed
CO_d	0	Analog inputs		passed
CO_h	0	Battery function		n.a.
Laser Current low	51 mA	Keyboard function		passed
Laser Current high	89 mA	Software test		n.a.
Pump Current	42 %	RS-232-Interface function		passed
Air flow	1,19 l/min	RJ45-Interface function		n.a.

**End Check completed** QC: B. Roth Date: 01.03.2021

**Calibration Approval**

Calibration at Calibration Tower	QC: <u>F. H.</u>	Date: 25.09.2020
Check Spectrometer at Ambient Air	QC: <u>F. H.</u>	Date: 28.09.2020
Check complete System at Ambient Air	QC: <u>F. H.</u>	Date: 05.02.2021

**Final packing and shipping**

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

Date: 02.03.2021

Signature: B. Roth

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

# 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°.: N7089856

Type / Model / Modèle: EE08-PFT2V11D6HC01/T02

Gegenstand / Object / Objet: humidity/temperature transmitter EE08

Serien Nummer / Serial Number / Numéro de série: 203005000139E2

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 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	22,970
Messwert / Calibrated value / Valeur mesurée	51,040	76,720	22,950
Abweichung / Error / Ecart	1,050	0,780	- 0,020

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 30.07.2020

**Calibration Certificate**

Model	180	Serial Number	18A20139	Firmware Version	7.80
Spectrometer	187	Serial Number	8HG20139	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 monidisperse PSL particles with different diameters
- Candidate unit: Micro Dolomit DR90 polydisperse powder (0,10µm - 180µm)

**Tolerance Ranges:**

- Sample Flow 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	213,3 µg/m³	-3,8 µg/m³ = -1,8%
PM-2.5	116,8 µg/m³	114,5 µg/m³	-2,3 µg/m³ = -2,0%
PM-1.0	44,5 µg/m³	43,3 µg/m³	-1,2 µg/m³ = -2,7%
<b>Sample Volume: 0,0180 m³ / Sample Time: 15 min.</b>			

**Mass values of complete systems at ambient air:**

Mean Value	Reference 87G09058	Test Unit	Deviation
PM-10	14,7 µg/m³	13,7 µg/m³	-1,0 µg/m³ = -6,8%
PM-2.5	13,8 µg/m³	12,8 µg/m³	-1,0 µg/m³ = -7,2%
PM-1.0	13,0 µg/m³	12,1 µg/m³	-0,9 µg/m³ = -6,9%
<b>Sample Volume: 6,9434 m³ / Sample Time: 5786 min.</b>			

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

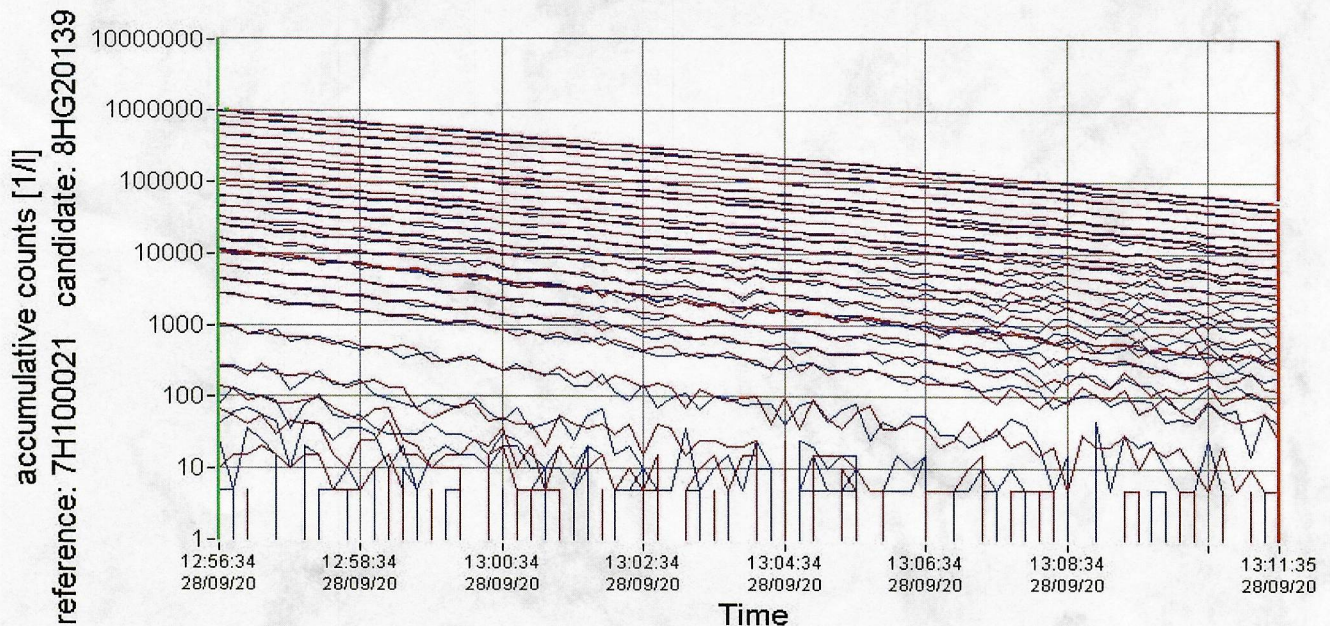
**Calibration Certificate**

**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	328219	267936	208026	151242	107680	81680	67622	47099
	Test unit	322575	269903	207837	150996	107251	81375	67443	47089
Deviation [%]		-1,7	0,7	-0,1	-0,2	-0,4	-0,4	-0,3	0,0
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	33677	27261	19402	13696	9375	7196	4586	2933
Deviation [%]		-1,3	-1,5	-1,8	-2,3	-1,3	-0,8	-1,7	-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	3001	1755	1062	651	197	48	19	10
Deviation [%]		-0,5	-0,9	-1,3	-1,2	-3,9	-4,0	-5,0	11,1
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	3	1	0	0	0	0	0	0
Deviation [%]		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Sample Volume: 0,0180 m <sup>3</sup> / Sample Time: 15 min.									

**Count validation graph of spectrometers at calibration tower:**

Reference  
Test Unit



Date: 02.03.2021

Signature: *[Handwritten 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: 18A20139

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. Raik

Grimm Aerosol Technik Pouch GmbH

OT Friedersdorf

Vordere Aue 4

06774 Muldestausee

Date: 02.03.2021

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

**Calibration Certificate - QC Inspection Report**

Model	180	Serial Number	18A20139	Firmware Version	7.80
Power Supply	230V / 60Hz			Revision	P
<b>Settings:</b>	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**

<b>Spectrometer</b>	QC:	<u>B. Roll</u>	Date:	28.01.2021
<b>Housing</b>	QC:	<u>B. Roll</u>	Date:	01.03.2021

**Electrical Instrument End Check**

DC/V	135,5 mV	Vacuum	-59 kPa	passed
DC_d	183,5 mV	Pneumatic tightness		passed
DC_h	212,6 mV	0-Check		passed
DC-Difference	29,1 mV	PCMCIA-Card function		passed
C0_d	0	Analog inputs		passed
C0_h	0	Battery function		n.a.
Laser Current low	51 mA	Keyboard function		passed
Laser Current high	91 mA	Software test		n.a.
Pump Current	49,3 %	RS-232-Interface function		passed
Air flow	1,20 l/min	RJ45-Interface function		n.a.

<b>End Check completed</b>	QC:	<u>B. Roll</u>	Date:	01.03.2021
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**Calibration Approval**

Calibration at Calibration Tower	QC:	<u>F. K.</u>	Date:	25.09.2020
Check Spectrometer at Ambient Air	QC:	<u>F. K.</u>	Date:	28.09.2020
Check complete System at Ambient Air	QC:	<u>F. K.</u>	Date:	05.02.2021

**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. Roll</u>

Grimm Aerosol Technik Pouch GmbH  
OT Friedersdorf  
Vordere Aue 4  
06774 Muldestausee

TEL: 03493 51407-0 Fax: 03493 51407-50

# 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°: N77094454

Type / Model / Modèle: EE08-PFT2V11D6HC01/T02

Gegenstand / Object / Objet: humidity/temperature transmitter EE08

Serien Nummer / Serial Number / Numéro de série: 204705000575EB

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 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 rattachés

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	49,990	76,000	22,650
Messwert / Calibrated value / Valeur mesurée	50,500	76,680	22,660
Abweichung / Error / Ecart	0,510	0,680	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

**Calibration Certificate**

Model	180	Serial Number	18A20137	Firmware Version	7.80
Spectrometer	187	Serial Number	8HG20137	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 Flow 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	217,5 µg/m³	0,4 µg/m³ = 0,2%
PM-2.5	116,8 µg/m³	116,5 µg/m³	-0,3 µg/m³ = -0,3%
PM-1.0	44,5 µg/m³	44,0 µg/m³	-0,5 µg/m³ = -1,1%
<b>Sample Volume: 0,0180 m³ / Sample Time: 15 min.</b>			

**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	17,5 µg/m³	0,2 µg/m³ = 1,2%
PM-1.0	16,5 µg/m³	16,7 µg/m³	0,2 µg/m³ = 1,2%
<b>Sample Volume: 5,0029 m³ / Sample Time: 4169 min.</b>			

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  
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06774 Muldestausee  
Tel.: 03493 51407-0 Fax: 03493 51407-50

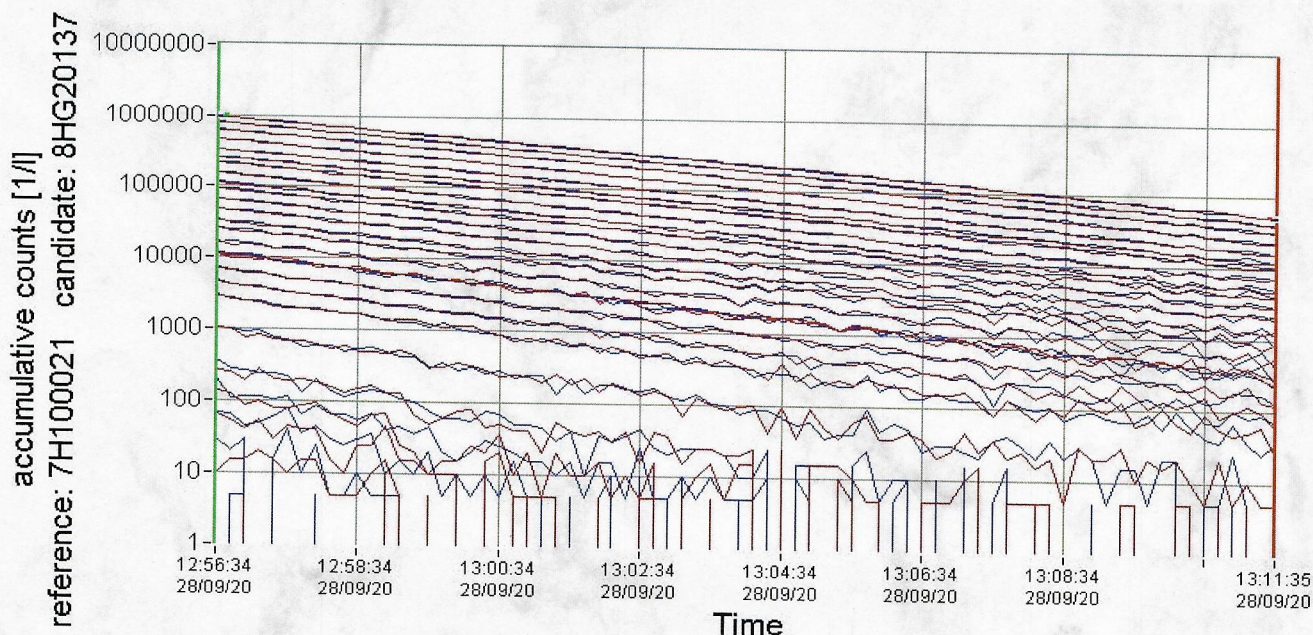
**Calibration Certificate**

**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	328219	267936	208026	151242	107680	81680	67622	47099
	Test unit	322253	264791	208701	152531	107555	81601	67505	46913
Deviation [%]		-1,8	-1,2	0,3	0,9	-0,1	-0,1	-0,2	-0,4
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	34058	27902	19786	14041	9540	7317	4679	2978
Deviation [%]		-0,2	0,8	0,2	0,1	0,4	0,9	0,3	-0,6
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	2980	1768	1065	649	208	52	22	10
Deviation [%]		-1,2	-0,2	-1,0	-1,5	1,5	4,0	10,0	11,1
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	3	0	0	0	0	0	0	0
Deviation [%]		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Sample Volume: 0,0180 m <sup>3</sup>		Sample Time: 15 min.							

**Count validation graph of spectrometers at calibration tower:**

Reference  
Test Unit



Date: 16.02.2021

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Model: 180

Serial Number: 18A20137

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

B. Kall OT Friedersdorf  
Vordere Aue 4

Date: 16.02.2021

06774 Muldestausee

Tel.: 03493 51407-0 Fax: 03493 51407

**Calibration Certificate - QC Inspection Report**

Model	180	Serial Number	18A20137	Firmware Version	7.80
Power Supply	230V / 60Hz			Revision	P
<b>Settings:</b>	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**

<b>Spectrometer</b>	QC: <u>B. Rall</u>	Date: 23.11.2020
<b>Housing</b>	QC: <u>B. Rall</u>	Date: 16.02.2021

**Electrical Instrument End Check**

DC/V	75,8 mV	Vacuum	-61 kPa	passed
DC_d	125,3 mV	Pneumatic tightness		passed
DC_h	145 mV	0-Check		passed
DC-Difference	19,7 mV	PCMCIA-Card function		passed
CO_d	0	Analog inputs		passed
CO_h	0	Battery function		n.a.
Laser Current low	51 mA	Keyboard function		passed
Laser Current high	90 mA	Software test		n.a.
Pump Current	43,6 %	RS-232-Interface function		passed
Air flow	1,20 l/min	RJ45-Interface function		n.a.

**End Check completed** QC: a. ball Date: 16.02.2021

**Calibration Approval**

Calibration at Calibration Tower	QC: <u>F. Ma</u>	Date: 25.09.2020
Check Spectrometer at Ambient Air	QC: <u>F. Ma</u>	Date: 28.09.2020
Check complete System at Ambient Air	QC: <u>F. Ma</u>	Date: 23.11.2020

**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

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