



World Calibration Centre
for Aerosol Physics

Leibniz-Institut für Troposphärenforschung, Permoserstraße 15, 04318 Leipzig



Leibniz Institute for
Tropospheric Research

CPC Model: TSI CPC 3750

CPC Serial Number: 3750202301

Customer: TSI Instruments Ltd.

Description: Calibration of a Condensation Particle Counter (CPC, Model 3750)

Date of Calibration: November 24, 2020

Summary of Intercomparison:

The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 100% efficiency at 40 nm. The Dp_{50} is at 6.81 nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Certificate / Reference: WCCAP

Date of issue: November 24, 2020 Signature:

Reviewed by: **TROPOS** Name: **Kay Weinhold**

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Date of arrival of instrument in calibration lab:	-
Instrument:	<i>Condensation Particle Counter</i>
Model and serial number of instrument:	<i>CPC 3750 SN 3750202301</i>
Result of physical inspection:	<i>no damages</i>
Result of functional test:	<i>functional test successful, no problems</i>
Internal parameters of instrument	<i>nominal flow rate 1.0 l/min</i>
Model and identification number of aerosol electrometer:	<i>TSI Electrometer Model 3068, SN 70838596</i>
Electrometer calibration certificate:	<i>September 5, 2018, calibrated at PTB Braunschweig</i>
Corrections of electrometer, for instance, differing flow rate:	<i>Within tolerance range (+/-2%); reference: 4.0 l/min, measured: 4.000 l/min</i>
Software for recording:	<i>LabView 2010; National Instruments; Program „LabCount.vi“</i>
Date of calibration:	<i>November 24, 2020</i>
Lab temperature and pressure:	<i>23.0°C, 1007 mbar</i>
Measured aerosol flow rate of CPC:	<i>0.99 l/min</i>
Uncertainty in measured flow rate:	<i>3%</i>
Flowmeter used:	<i>Gilian Gilibrator V; SN 1711008-S, January, 2018</i>
Particles and gases used for calibration:	<i>silver particles and nitrogen</i>
Method of particle generation:	<i>tube furnace generator</i>
Zero measurement of instrument:	<i>0 particles/cm³ in 10 minutes</i>



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	Unit	Status
Model	-	TSI 3750
SN	-	3750202301
Firmware	-	2.3.0
Date	-	June 2020
TSI Software Version	-	-
Saturator Temperature	°C	39.00
Condenser Temperature	°C	19.00
Optics Temperature	°C	40.00
Cabinet Temperature	°C	25.50
Ambient Pressure	kPa	101.30
Vacuum Pressure	kPa	86.30
Inlet Pressure	kPa	0.00
Critical Orifice Pressure	kPa	84.70
Aerosol Nozzle Pressure	kPa	2.26
Laser Current	mA	40.00
Liquid Level	-	full
Aerosol Flow	l/min	0.99
Zero	avg 10 min	0

Diameter	EL 3068B (#/cm ³)	BNC (pulse output)		USB-C (direct output)		USB-C / BNC
		Concentration (#/cm ³)	Efficiency (μ)	Concentration (#/cm ³)	Efficiency (μ)	
40	1361	1349	0.99	-	-	-
40	1314	1302	0.99	-	-	-
30	1489	1480	0.99	-	-	-
20	1570	1583	1.01	-	-	-
15	1261	1260	1.00	-	-	-
14	1818	1800	0.99	-	-	-
12	1751	1676	0.96	-	-	-
11	1354	1267	0.94	-	-	-
10	1066	959	0.90	-	-	-
9	1576	1272	0.81	-	-	-
8	933	656	0.70	-	-	-
7	1934	1005	0.52	-	-	-
6	1503	391	0.26	-	-	-
5	1316	15	0.01	-	-	-

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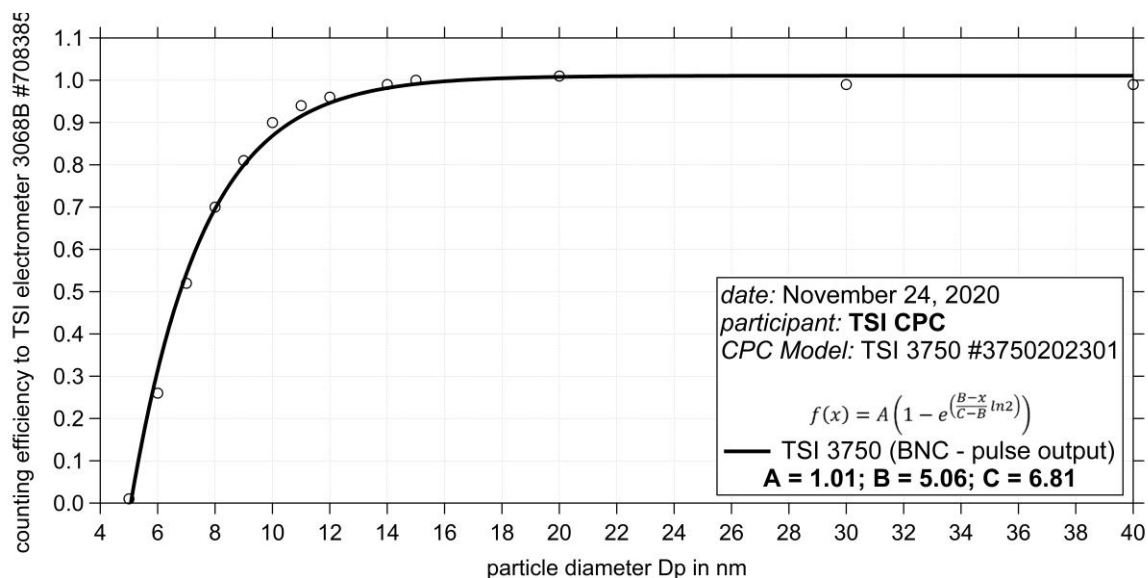


Fig. 1: Counting efficiency for TSI-CPC 3750 SN 3750202301 against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated D_{p50} from the BNC (pulse output) is 6.81 nm.

Date of issue: November 24, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold