



World Calibration Centre  
for Aerosol Physics

Leibniz-Institut für Troposphärenforschung, Permoserstraße 15, 04318 Leipzig



Leibniz Institute for  
Tropospheric Research

**CPC Model:** TSI CPC 3762

**CPC Serial Number:** 10

**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 98% efficiency at 40 nm. The  $Dp_{50}$  is at 7.97 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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<b>Date of arrival of instrument in calibration lab:</b>	<i>November 16, 2020</i>
<b>Instrument:</b>	<i>Condensation Particle Counter</i>
<b>Model and serial number of instrument:</b>	<i>CPC 3762 SN 10</i>
<b>Result of physical inspection:</b>	<i>no damages</i>
<b>Result of functional test:</b>	<i>functional test successful, no problems</i>
<b>Internal parameters of instrument</b>	<i>nominal flow rate 1.0 l/min with valve</i>
<b>Model and identification number of aerosol electrometer:</b>	<i>TSI Electrometer Model 3068, SN 70838596</i>
<b>Electrometer calibration certificate:</b>	<i>September 5, 2018, calibrated at PTB Braunschweig</i>
<b>Corrections of electrometer, for instance, differing flow rate:</b>	<i>Within tolerance range (+/-2%); reference: 4.0 l/min, measured: 4.000 l/min</i>
<b>Software for recording:</b>	<i>LabView 2010; National Instruments; Program „LabCount.vi“</i>
<b>Date of calibration:</b>	<i>November 24, 2020</i>
<b>Lab temperature and pressure:</b>	<i>23.0°C, 1007 mbar</i>
<b>Measured aerosol flow rate of CPC:</b>	<i>1.009 l/min</i>
<b>Uncertainty in measured flow rate:</b>	<i>3%</i>
<b>Flowmeter used:</b>	<i>Gilian Gilibrator V; SN 1711008-S, January, 2018</i>
<b>Particles and gases used for calibration:</b>	<i>silver particles and nitrogen</i>
<b>Method of particle generation:</b>	<i>tube furnace generator</i>
<b>Zero measurement of instrument:</b>	<i>0 particles/cm<sup>3</sup> in 10 minutes</i>



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	Unit	Status
Model	-	TSI 3762
SN	-	10
Firmware	-	-
Date	-	October 1996
TSI Software Version	-	-
Saturator Temperature	°C	-
Condenser Temperature	°C	-
Optics Temperature	°C	-
Cabinet Temperature	°C	-
Ambient Pressure	kPa	-
Vacuum Pressure	kPa	-
Inlet Pressure	kPa	-
Critical Orifice Pressure	kPa	-
Aerosol Nozzle Pressure	kPa	-
Laser Current	mA	-
Liquid Level	-	full
Aerosol Flow	l/min	1.009
Zero	avg 10 min	0

Diameter	EL 3068B (#/cm <sup>3</sup> )	BNC (pulse output)		USB-C (direct output)		USB-C / BNC
		Concentration (#/cm <sup>3</sup> )	Efficiency (μ)	Concentration (#/cm <sup>3</sup> )	Efficiency (μ)	
40	1361	1317	0.97	-	-	-
40	1314	1272	0.97	-	-	-
30	1489	1439	0.97	-	-	-
20	1570	1531	0.97	-	-	-
15	1261	1233	0.98	-	-	-
14	1818	1749	0.96	-	-	-
12	1751	1603	0.92	-	-	-
11	1354	1169	0.86	-	-	-
10	1066	823	0.77	-	-	-
9	1576	978	0.62	-	-	-
8	933	436	0.47	-	-	-
7	1934	550	0.28	-	-	-
6	1503	174	0.12	-	-	-
5	1316	14	0.01	-	-	-



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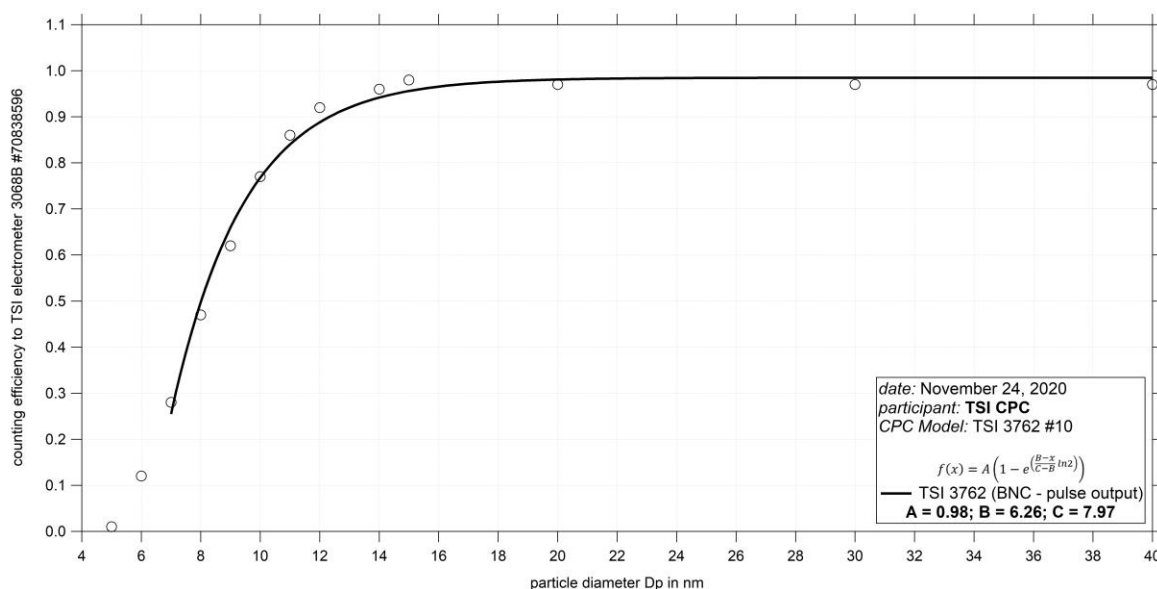


Fig. 1: Counting efficiency for TSI-CPC 3762 SN 10 against aerosol electrometer 3068 SN 70838596; silver particles between 5 nm and 40 nm were used for calibration; the calculated  $Dp_{50}$  from the BNC (pulse output) is 7.97 nm.

**Date of issue:** November 24, 2020

Reference: TSI electrometer, model 3068, SN 70838596

Reviewed: TROPOS / Kay Weinhold