



ANNEX D1

CALIBRATION CERTIFICATES FOR DUST
MONITORING EQUIPMENT

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID: AM1	Date of Calibration:	9-Oct-25
Name and Model : TISCH HVS Model TE-5170	Next Calibration Date:	9-Dec-25
	Operator:	P.F.Yeung

CONDITIONS

	1016	Corrected Pressure (mm Hg)	762.1
Temperature (°C)	32.0	Temperature (K)	305.0

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.5	5.5	10.9	1.593	53	52.47	Slope= 30.289 Intercept= 5.351 Corr. Coeff.= 0.9951
13	4.0	4.0	8.0	1.368	48	47.52	
10	3.0	3.0	6.0	1.188	43	42.57	
7	2.0	2.0	4.0	0.974	35	34.65	
5	1.2	1.2	2.4	0.760	28	27.72	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m(I[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

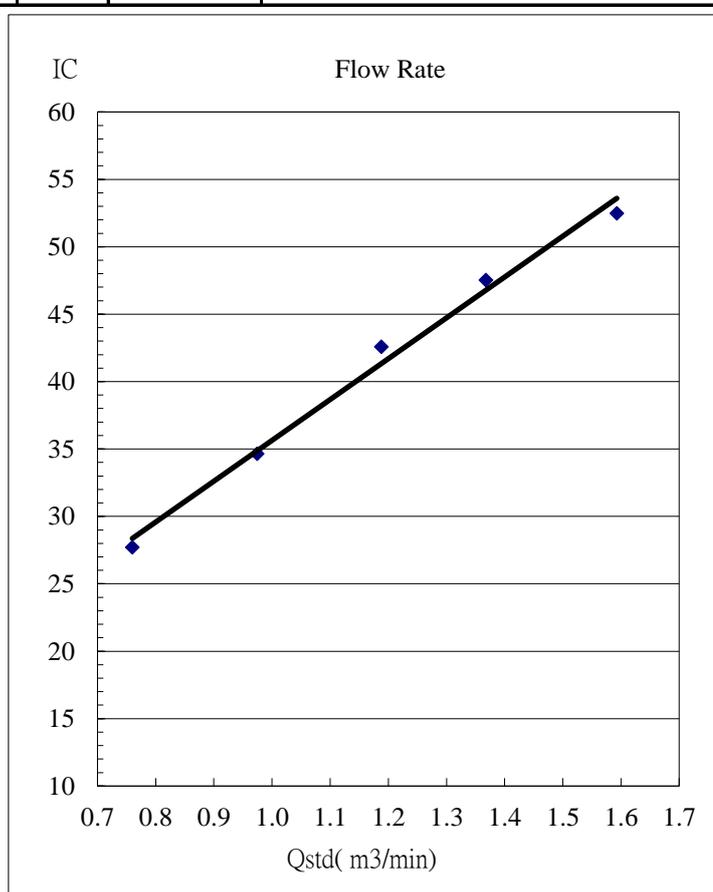
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID: AM2	Date of Calibration:	9-Oct-25
Name and Model : TISCH HVS Model TE-5170	Next Calibration Date:	9-Dec-25
	Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1016	Corrected Pressure (mm Hg)	762.1
Temperature (°C)	32.0	Temperature (K)	305.0

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.5	5.5	11.0	1.600	53	52.47	Slope= 30.371 Intercept= 4.031 Corr. Coeff.= 0.9997
13	4.4	4.4	8.8	1.434	48	47.52	
10	3.4	3.4	6.8	1.263	43	42.57	
7	2.1	2.1	4.2	0.998	35	34.65	
5	1.3	1.3	2.6	0.790	28	27.72	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m(I[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

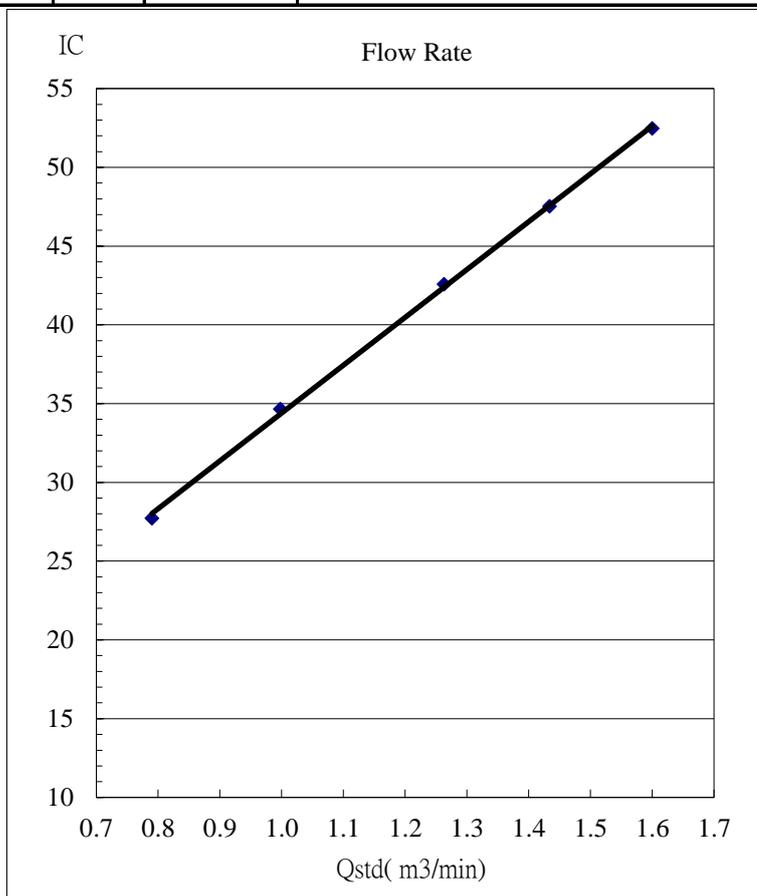
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID: AM3	Date of Calibration:	9-Oct-25
Name and Model : TISCH HVS Model TE-5170	Next Calibration Date:	9-Dec-25
	Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1016	Corrected Pressure (mm Hg)	762.1
Temperature (°C)	32.0	Temperature (K)	305.0

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.5	5.5	11.0	1.600	57	56.43	Slope= 26.806 Intercept= 13.239 Corr. Coeff.= 0.9976
13	4.2	4.2	8.4	1.401	51	50.49	
10	3.2	3.2	6.4	1.226	46	45.54	
7	2.1	2.0	4.1	0.986	41	40.59	
5	1.3	1.2	2.5	0.775	34	33.66	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m(I[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

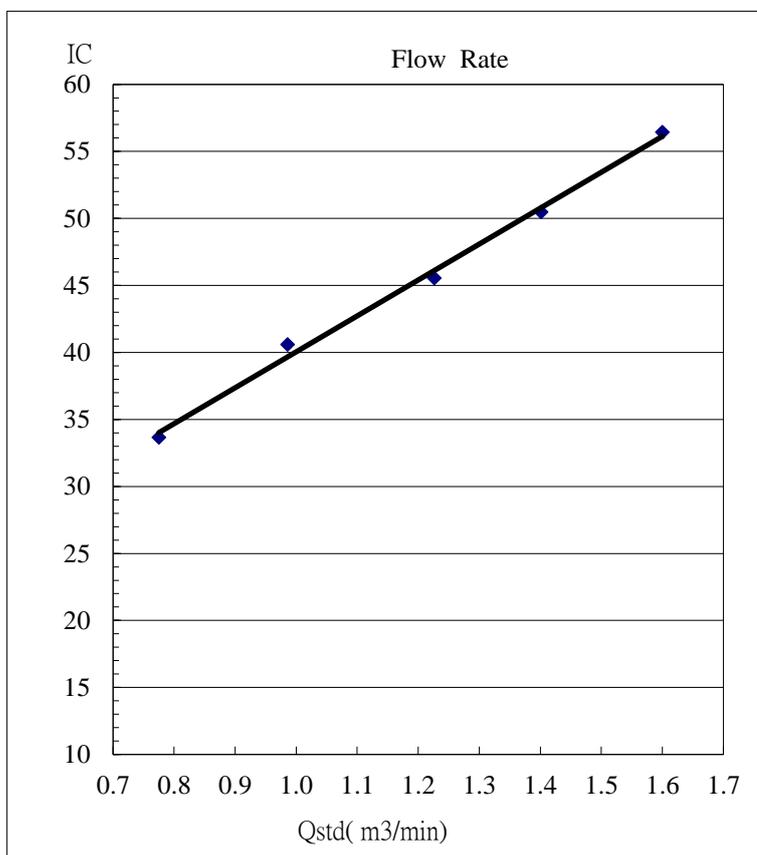
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID: AM4	Date of Calibration:	9-Oct-25
Name and Model : TISCH HVS Model TE-5170	Next Calibration Date:	9-Dec-25
	Operator:	P.F.Yeung

CONDITIONS

Sea Level Pressure (hpa)	1016	Corrected Pressure (mm Hg)	762.1
Temperature (°C)	32.0	Temperature (K)	305.0

CALIBRATION ORIFICE

Make:	TISCH	Qstd Slope	2.08315
Model:	TE-5025A	Qstd Intercept	-0.04938
Serial#:	2454		

CALIBRATION

Plate No.	H2O(L) (in)	H2O(R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.8	5.7	11.5	1.635	56	55.44	Slope= 30.206 Intercept= 6.483 Corr. Coeff.= 0.9981
13	4.4	4.3	8.7	1.426	51	50.49	
10	3.5	3.5	7.0	1.281	45	44.55	
7	2.2	2.2	4.4	1.021	38	37.62	
5	1.3	1.2	2.5	0.775	30	29.70	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m(I[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

