

Certificate of Calibration - Wind Monitoring Station

Description: Yau Lai Estate, Bik Lai House

Manufacturer: <u>Davis Instruments</u>

Model No.: <u>Davis7440</u>

Serial No.: <u>MC01010A44</u>

Equipment No.: <u>SA-03-04</u>

Date of Calibration <u>17-Feb-2025</u>

Next Due Date <u>17-Aug-2025</u>

1. Performance check of Wind Speed

Wind Sp	peed, m/s	Difference D (m/s)
Wind Speed Reading (V1) Anemometer Value (V		D = V1 - V2
0.0	0.0	0.0
1.5	1.4	0.1
2.5	2.4	0.1
4.0	3.8	0.2

2. Performance check of Wind Direction

Wind Di	rection (°)	Difference D (°)
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

- 1. Performance Wind Speed Test The wind meter was on-site calibrated against the anemometer
- 2. Performance Wind Direction Test The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by:

Wong Shing Kwai

Approved by:

Henry Leung





RECALIBRATION DUE DATE:

January 7, 2026

Certificate of Calibration

Calibration Certification Information

Cal. Date: January 7, 2025 Rootsmeter S/N: 438320 Ta: 293 °K

Operator: Jim Tisch Pa: 759.0 mm Hg

Calibration Model #: TE-5025A Calibrator S/N: 3864

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4590	3.2	2.00
2	3	4	1	1.0360	6.4	4.00
3	5	6	1	0.9160	8.0	5.00
4	7	8	1	0.8800	8.8	5.50
5	9	10	1	0.7270	12.7	8.00

	Data Tabulation								
Vstd	Qstd	$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$		Qa	√∆H(Ta/Pa)				
(m3)	(x-axis)	(y-axis)	Va	(x-axis)	(y-axis)				
1.0114	0.6932	1.4252	0.9958	0.6825	0.8787				
1.0071	0.9721	2.0156	0.9916	0.9571	1.2427				
1.0050	1.0971	2.2535	0.9895	1.0802	1.3893				
1.0039	1.1408	2.3635	0.9884	1.1232	1.4572				
0.9987	1.3737	2.8505	0.9833	1.3525	1.7574				
	m=	2.08969		m=	1.30853				
QSTD	b=	-0.02374	QA	b=	-0.01464				
	r=	0.99985		r=	0.99985				

	Calculations						
	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)				
Qstd=	Vstd/∆Time	Qa= Va/ΔTime					
	For subsequent flow rate calculations:						
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	Qa=	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$				

Standard Conditions						
Tstd: 298.15 °K						
Pstd: 760 mm Hg						
	Key					
	or manometer reading (in H2O)					
	ΔP: rootsmeter manometer reading (mm Hg)					
	Ta: actual absolute temperature (°K)					
	Pa: actual barometric pressure (mm Hg)					
b: intercept						
m: slope	777					

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

FAX: (513)467-9009

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET



						File No. N	MA20003/18/031
Project No.	CKL 1 - Flat 12:	1 Cha Kwo Ling	Village				
Date:		6-Mar-25 Next Due Date: 6-May-25		Operator:	SK		
	A-01		-	TE 5170			
Equipment 110	71-0	1-10	· · · · · · · · · · · · · · · · · · ·		73170		0723
			Ambient	Condition			
Temperatu	re, Ta (K)	287.5	Pressure, Pa	ı (mmHg)		764.8	
	T		rifice Transfer Sta	1		<u> </u>	
Serial		3864	Slope, mc	0.05914	Intercep		-0.02377
Last Calibra		7-Jan-25			$c = [\Delta H \times (Pa/76)]$ $(Pa/760) \times (298)$		
Next Calibra	ation Date:	7-Jan-26		$\mathbf{Qsta} = \{ [\Delta \mathbf{H} \ \mathbf{x}] \}$	(Pa//00) X (298)	/1a)j -bc}/m	<u>c</u>
		•	Calibration of	f TSP Sampler			
Callback and		Or	fice			HVS	
Calibration Point	ΔH (orifice), in. of water		50) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of water) x (298/Ta)] ^{1/2} Y- axis
1	13.2	,	3.71	63.14	9.1	,	3.08
2	10.4		3.29	56.09	7.3	,	2.76
3	8.3		2.94	50.15	5.4		2.37
4	6.1		2.52	43.05	3.7		1.96
5	3.0		1.77	30.31	1.6		1.29
By Linear Regr Slope , mw = Correlation		_	.9991	Intercept, bw :	-0.397	70	
	coefficient < 0.99	-		_			
'II Correlation C	Joennelent < 0.99	o, check and rec	cantitate.				
			Set Point (Calculation			
From the TSP Fi	eld Calibration C	Curve, take Qstd	= 43 CFM				
From the Regres	sion Equation, th	e "Y" value acco	ording to				
		v. 1	$\mathbf{Qstd} + \mathbf{bw} = [\mathbf{\Delta W}]$	v. (Do/760) v. (2	000/Ta)1 ^{1/2}		
		IIIW X ($QSIU + DW = [\Delta VV]$	X (Fa/700) X (2	390/1a)j		
Therefore, Se	et Point; W = (m	w x Qstd + bw)	² x (760 / Pa) x (Ta / 298) =	3.78	<u> </u>	
Remarks:							
				<u></u>			
Conducted by:	Wong Sh	ing Kwai	Signature	·	<u></u>	Date:	6-Mar-25
Checked by:	Henry	Leung	Signature:	- lem	, Don	Date:	6-Mar-25

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET



File No. MA20003/55/031 Project No. CKL 2 - Flat 103 Cha Kwo Ling Village 6-Mar-25 Next Due Date: 6-May-25 Date: Operator: SK Equipment No.: A-01-55 Model No.: TE 5170 Serial No. 1956 **Ambient Condition** Temperature, Ta (K) 287.5 Pressure, Pa (mmHg) 764.8 **Orifice Transfer Standard Information** 0.05914 Intercept, bc 3864 Slope, mc -0.02377 Serial No. $mc \times Ostd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ 7-Jan-25 Last Calibration Date: Qstd = $\{ [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} -bc \} / mc$ 7-Jan-26 Next Calibration Date: **Calibration of TSP Sampler** Orfice Calibration $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ ΔH (orifice), Ostd (CFM) ΔW (HVS), in. $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ Point in. of water X - axis of water Y-axis 1 13.5 3.75 63.85 9.1 3.08 7.2 2.74 2 11.0 3.39 57.68 9.1 3.08 52.50 5.6 2.42 4 5.1 2.31 39.40 2.6 1.65 1.9 5 3.8 1.99 34.07 1.41 By Linear Regression of Y on X Slope , mw = 0.0571 Intercept, bw : -0.5684 Correlation coefficient* = *If Correlation Coefficient < 0.990, check and recalibrate. **Set Point Calculation** From the TSP Field Calibration Curve, take Qstd = 43 CFM From the Regression Equation, the "Y" value according to mw x Qstd + bw = $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) = 3.42$ Remarks: Conducted by: Wong Shing Kwai Checked by: Henry Leung

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/04/0029

Project No.	KER 1 - Future	Residential Dev		_				
Date:	13-Mar-25		Next Due Date:	13-1	May-25	Operator:	SK	
Equipment No.:	A-02	1-04	Model No.:	TE 5170		Serial No.	10595	
			Ambient C	ondition				
Temperatur	re, Ta (K)	297.3	Pressure, Pa			760.1		
•				·				
		Or	ifice Transfer Star	ndard Informa	ation			
Serial	No.	3864	Slope, mc	0.05914	Intercept	t, bc	-0.02377	
Last Calibra	ation Date:	7-Jan-25	1	mc x Qstd + bo	$c = [\Delta H \times (Pa/760]]$) x (298/Ta)] ^{1/2}	2	
Next Calibra	ation Date:	7-Jan-26	($Qstd = \{ [\Delta H \ x] \}$	(Pa/760) x (298/7	Γa)] ^{1/2} -bc} / m	c	
			Calibration of T	ΓSP Sampler				
Calibration		Oı	fice			HVS		
Point	ΔH (orifice), in. of water	[ΔH x (Pa/76	50) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of water		50) x (298/Ta)] ^{1/} -axis	
1	13.0		3.61	61.44	8.5	:	2.92	
2	10.8		3.29	56.04	7.2	2.69		
3	8.7		2.95	50.34	5.6	2.37		
4	5.1		2.26	38.64	3.2	1.79		
5	3.9		1.98	33.84	2.2	1.49		
Slope , mw =	ession of Y on X 0.0518 coefficient* =	_	. 9990	Intercept, bw :	-0.238	32		
	Coefficient < 0.99			•				
			Set Point Ca	alculation				
From the TSP Fi	eld Calibration C	urve, take Qstd						
	sion Equation, th							
	•		-		410			
		mw x ($\mathbf{Qstd} + \mathbf{bw} = [\mathbf{\Delta W} \ \mathbf{x}]$	(Pa/760) x (29	98/Ta)] ^{1/2}			
Therefore, Se	et Point; W = (m	w x Qstd + bw)	² x (760 / Pa) x (7	Γa / 298) =	3.94			
Remarks:								
				h				
Conducted by:	Wong Sh	ing Kwai	Signature:		<u>/\-</u>	Date:	13-Mar-25	
Checked by:	Henry	Leung	Signature:	1-0	- Mari	Date:	13-Mar-25	

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA20003/44/0028

Project No.	KTD1 - Centre	of Excellence in	Paediatrics (Childr	en's Hospital)		_	
Date:	13-M	13-Mar-25 Next Due Date: 13-May-25		Operator:	SK		
Equipment No.:	A-0	01-44	Model No.:	TE-5170		Serial No.	1316
			Ambient C	ondition			
Temperatu	re, Ta (K)	297.3	Pressure, Pa			760.1	
		Or	ifice Transfer Star	ndard Informa	ation		
Serial	l No.	3864	Slope, mc	0.05914	Intercept		-0.02377
Last Calibra	ation Date:	7-Jan-25			$c = [\Delta H \times (Pa/760)]$		
Next Calibra	ation Date:	7-Jan-26		$Qstd = \{ [\Delta H \ x]$	(Pa/760) x (298/	$[\Gamma a]^{1/2}$ -bc $\}$ / m	ıc
			Calibration of 7	FCD Camplar			
- 41:		Oı	fice	ioi bampiei		HVS	
Calibration Point	ΔH (orifice), in. of water		60) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/7)	60) x (298/Ta)] ^{1/2} 7 -axis
1	13.5		3.68	62.61	9.1		3.02
2	11.4		3.38	57.56	7.5		2.74
3	9.3		3.05	52.03	5.7	2.39	
4	6.0		2.45	41.87	3.6	1.90	
5	3.6		1.90	32.52	2.0	1.42	
Slope , mw =		_		Intercept, bw :	-0.324	14	
	coefficient* = Coefficient < 0.99	90, check and rec	.9991 calibrate.				
			Set Point Ca	alculation			
		Curve, take Qstd ne "Y" value acco mw x (t (Pa/760) x (29	98/Ta)] ^{1/2}		
Therefore, Se	et Point; W = (m	nw x Qstd + bw)	² x (760 / Pa) x (7	Γa / 298) =	3.83		
Remarks:							
Conducted by:	Wong Sl	ning Kwai	Signature:	χ	· · · · · · · · · · · · · · · · · · ·	Date:	13-Mar-25
conducted by:	w olig Si	iiig ixwai	Signature:		, 🗸	Date.	1 J-1v1a1-2J
Checked by	Henry	Leung	Signature:	1-Pa	- Mors	Date:	13-Mar-25

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET



						File No.	MA20003/41/0028
Project No.	KTD 2D - Next	to the SOR Office	ce of Trunk Road T	2 in Kai Tak A	rea		
Date:	13-M	Iar-25	Next Due Date:	13-1	May-25	Operator:	SK
Equipment No.:					E 5170	· · · · · · · · · · · · · · · · · · ·	
_1						_	
			Ambient C	ondition			
Temperatur	re, Ta (K)	297.3	Pressure, Pa	(mmHg)		760.1	
~			fice Transfer Star				
Serial		3864	Slope, mc	0.05914	Intercept		-0.02377
Last Calibra		7-Jan-25	mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} \cdot bc\} / mc$				
Next Calibra	ation Date:	7-Jan-26		QSta = {[ΔH X	(Pa//00) X (298/)	[a)] -bc}/1	inc
		•	Calibration of T	rsp Sampler			
G 17 .:		Or	fice	ST Swiipier		HVS	
Point Point	Calibration Point ΔH (orifice), in. of water		[ΔH x (Pa/760) x (298/Ta)] ^{1/2}		ΔW (HVS), in. of water	[ΔW x (Pa/	760) x (298/Ta)] ^{1/2} Y-axis
1	13.8		3.72	63.29	9.6	3.10	
2	11.6	:	3.41	58.06	8.5	2.92	
3	9.6	3.10		52.86	6.3	2.51	
4	7.1	,	2.67	45.51	4.4	2.10	
5	4.1		2.03	34.68	2.3		1.52
By Linear Regr	ession of Y on X	ζ					
Slope, mw =			I	ntercept, bw	-0.471	0	
	coefficient* =	0.	9972	• '			
*If Correlation C	Coefficient < 0.99	0, check and rec	alibrate.				
T 4 TOD T	110111		Set Point Ca	lculation			
From the TSP Fig							
From the Regress	sion Equation, th	ie "Y" value acco	ording to				
		mw x Q	$\mathbf{pstd} + \mathbf{bw} = [\Delta \mathbf{W} \ \mathbf{x}]$	(Pa/760) x (29	$[0.8]^{1/2}$		
			,				
Therefore, Se	et Point; $W = (m)$	w x Qstd + bw)	² x (760 / Pa) x (7	$\Gamma a / 298) =$	3.92		
Remarks:							
•				10	<u></u>		
Conducted by:	Wong Sh	ing Kwai	Signature:		<u> </u>	Date:	13-Mar-25
				,		·	
Checked by:	Henry	Leung	Signature:	-len	J Mar	Date:	13-Mar-25