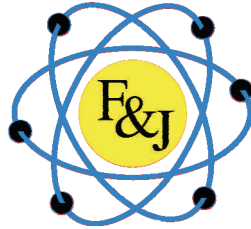
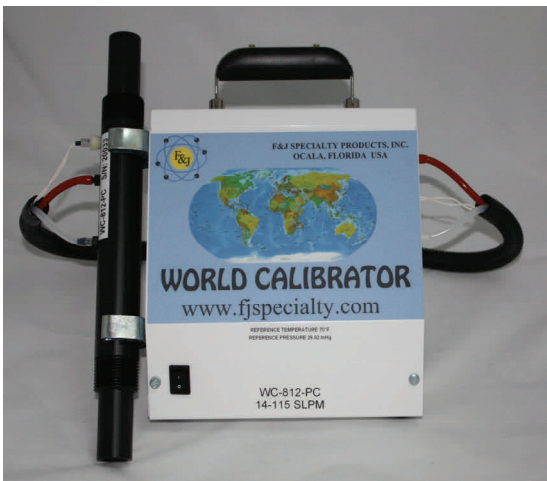


F&J SPECIALTY PRODUCTS, INC.
The Nucleus of Quality Air Monitoring Programs



**WORLD CALIBRATOR
PC INTERFACEABLE**



Displayless VERSION



VFD-VERSION



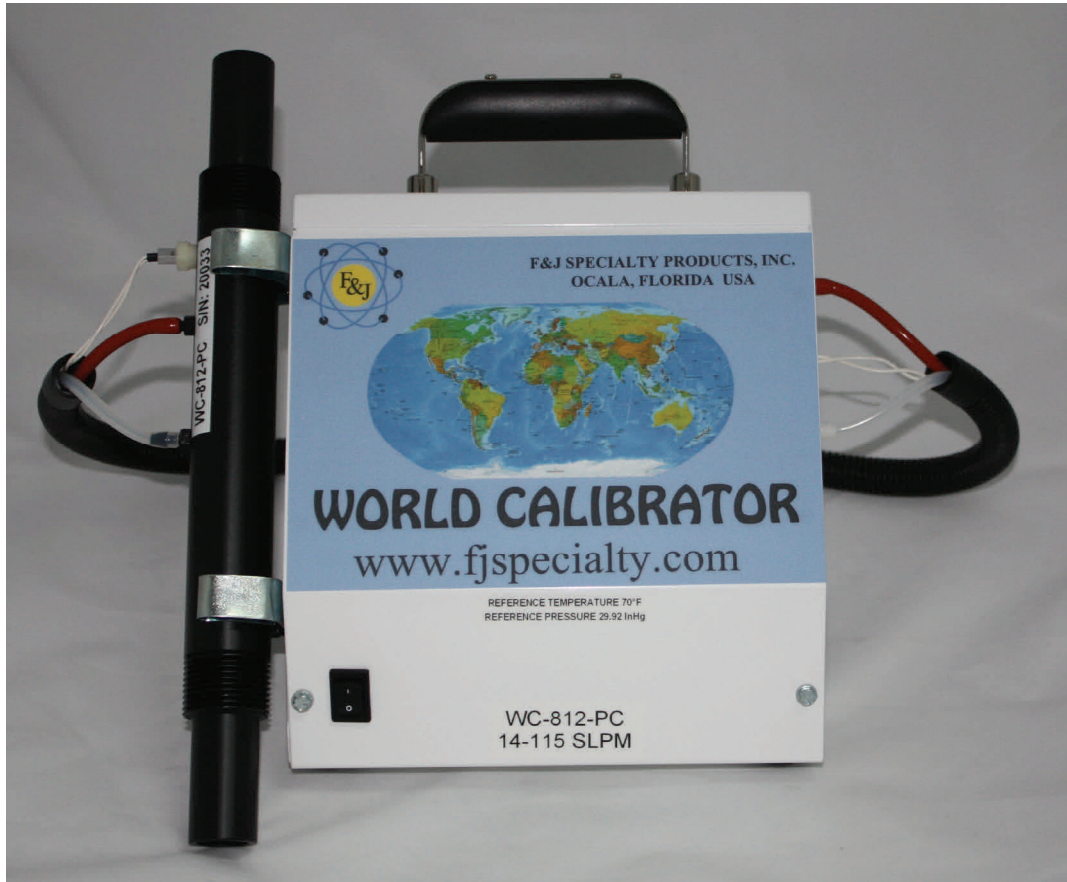
2 Year Warranty ✓

Tel: 352.680.1177
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Email: www.fjspecialty.com
Web: www.fjspecialty.com

Rev: 19 Dec. 2013

WORLD CALIBRATOR

Displayless Version



Notable Features:

- PC Interface program: Western or Asian Languages
- Operator Selectable Options
 - Multiple language options; European or Asian Version
 - Multi gas option
 - Volumetric or mass flow
 - At Reading or Full Scale Accuracy Calibration Type
 - Reference T and Reference P
 - Engineering units for all reported parameters
- Semi-Automatic calibration-verification when used with F&J digital air samplers
- Customizable calibration report
- Accuracy: $\pm 1.0\%$ Full Scale (F.S.)
- Two Year Warranty
- Complementary Storage Case

WORLD CALIBRATOR

Vacuum Fluorescent Display (VFD) Version



Notable Features:

- Vacuum Fluorescent Display (4 lines×24 characters)
- 4 button key pad for stand alone operation
- Mass flow or Volumetric flow
- Volume Totalization Feature
- Operator selectable Reference T and P
- Operator selectable engineering units
- Multi gas option
- ± 1.0% Full Scale (F.S.) Accuracy
- User customizable calibration report
- Semi-Automatic calibration-verification when used with F&J digital air samplers
- PC Interface program: Western or Asian languages
- Two Year Warranty
- Complimentary Storage Case

Common Features and Specifications

MEASUREMENT PRINCIPLE

Flow Sensor:	Differential Pressure Sensor
Standardization:	Operator selectable values for reference temperature and pressure
Flow Curve linearization:	Individually calibrated and software corrected

MEASUREMENT RANGES

Air flow:	Various flow ranges available
Temperature:	-40° - 122° F (-40° - 50° C)
Barometric pressure:	30 - 22 In-Hg (760 - 559 mm-Hg); (101.325-74.5 kPa) approx. Sea level to 5900 ft. (1800 m) elevation above sea level Optional low range to 10 In-Hg (254 mg) (33.86 kPa)

MEASUREMENT ACCURACY

Air flow:	± 1.0% of full scale
Temperature (Typical):	± 1°C over range -20°C to 50°C
Barometric pressure:	± 1% of reading over measurement range of 22.00-30.00 “Hg

STANDARD TEMPERATURE and PRESSURE CHOICES:

Temperature	32°F (0°C) 59°F (15.0°C) 68°F (20.0°C) 70°F (21.1°C) 77°F (25.0°C)
Pressure	29.92”Hg (1 atm, 760mm Hg, 1.013 bar, 101.325 kPa) 1 bar, (100kPa, 750mm Hg, 0.987 atm 29.53”Hg)

PARAMETERS and RESOLUTIONS DISPLAYED on the PC SCREEN

	Parameter	Engineering Unit	Resolution	
Flow Options:	CFM	Cubic feet per minute	0.01	CFM
	LPM	Liter per minute	.1	LPM
	m ³ /min	Cubic meter per minute	0.0001	m ³ /min
	m ³ /hr	Cubic meters per hour	0.001	m ³ /hr
	cc/min	Cubic centimeter per minute	1	cc/min
Temperature:	F	Degree Fahrenheit	0.1	Degree F
	C	Degree Celsius	0.1	Degree C
	In-Hg	Inches of Mercury	0.01	In-Hg
Pressure:	mm-Hg	Millimeters of Mercury	0.1	mm-Hg
	kPa	Kilo pascals	0.1	kPa
	atm	atmospheres	0.001	atm
	bar	bar	0.001	bar

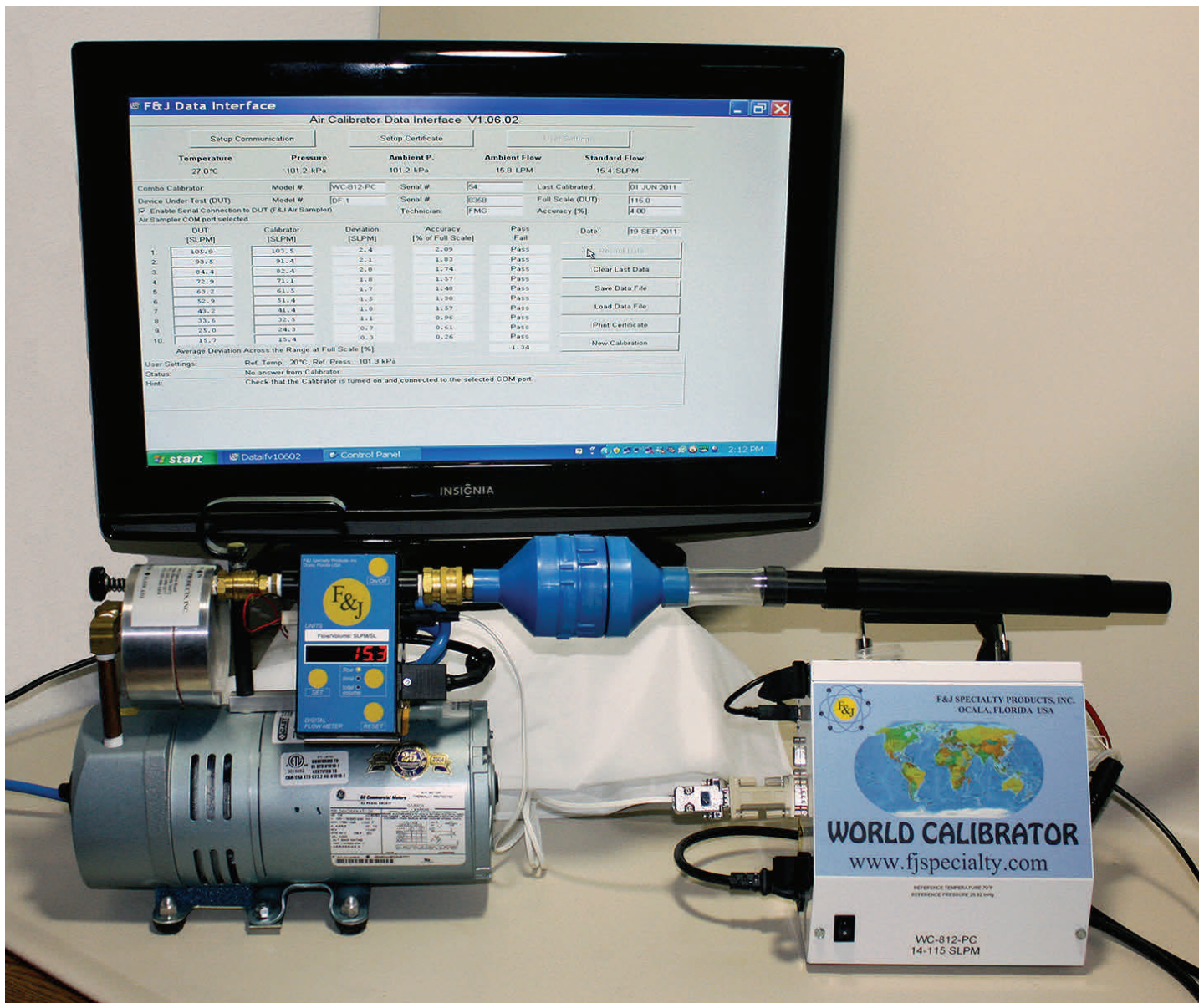
GENERAL SPECIFICATIONS

Power requirements:	Max 0.6A; 100–120 VAC;50/60Hz	Max 0.3A; 220–240 VAC;50/60Hz
Operating temperature:	-4°F to 122°F	-20°C to 50° C
Storage temperature:	-20°F to 158°F	-29°C to 70° C
Dimension (L×W×H)	8.625”×3.75”×8.375”	219×95.25×213mm
Weight:	8 lbs. 6 oz.	3.8 Kgs.
Installation Category:	Pollution Degree 2	
Enclosure Rating:	IPXO	
Communications Ports:	Dual RS232, one Mini-USB Connector, two DB-9	
PO OS:	Windows 98, Windows XP, Vista and Windows 7 operating systems	

Unique VFD Version Features

- 4x24 VFD display
- 4 button key pad for stand alone operation
- Volume totalization calibration feature

World Calibrator, PC and DF-1 Setup



The World Calibrator PC program enables a user to perform the following functions:

1. Customize the calibrator measurement parameters to match the output parameters of the Device Under Test (DUT)
2. Perform a semi-automatic calibration with any F&J digital instrument
3. Print a calibration form; either Full Scale (F.S.) or at Reading accuracy
4. Archive the calibration data file electronically to reprint certificate or review calibration data
5. Enables operator to perform calibration-verifications on analog instruments as well as digital instruments

WORLD CALIBRATOR

Displayless Version

Typical Flow Range

STANDARD FLOW MODELS

100-120 VAC

Model	CFM (SLPM)
WC-801-PC	.1 to 1 (3 - 30)
WC-802-PC	0.2 to 2.1 (6 - 60)
WC-812-PC	.5 to 4.0 (15 - 115)
WC-828-PC	1 to 10.6 (30 - 300)
WC-814-PC	1.4 to 14 (40 - 420)
WC-530-PC	5.3 to 30 (150 - 850)
WC-1000-PC	4 to 35 (115 - 1000)
WC-550-PC	5.3 to 50 (150 - 1400)
WC-870-PC	8.5 to 70 (240 - 2000)

220-240 VAC

Model	CFM (SLPM)
WC-801E-PC	.1 to 1 (3 - 30)
WC-802E-PC	0.2 to 2.1 (6 - 60)
WC-812E-PC	.5 to 4.0 (15 - 115)
WC-828E-PC	1 to 10.6 (30 - 300)
WC-814E-PC	1.4 to 14 (40 - 420)
WC-530E-PC	5.3 to 30 (150 - 850)
WC-1000E-PC	4 to 35 (115 - 1000)
WC-550E-PC	5.3 to 50 (150 - 1400)
WC-870E-PC	8.5 to 70 (240 - 2000)

HIGH FLOW MODELS

100-120 VAC

Model	CFM (m ³ /hr)
WC-890-PC	15 to 90 (26 - 153)
WC-125-PC	30 to 125 (51 - 212)
WC-150-PC	40 to 150 (68 - 255)
WC-200-PC	50 to 200 (85 - 340)
WC-300-PC	60 to 300 (102 - 510)
WC-400-PC	60 to 400 (102 - 680)
WC-600-PC	100 to 600 (170 - 1020)

220-240 VAC

Model	CFM (m ³ /hr)
WC-890E-PC	15 to 90 (26 - 153)
WC-125E-PC	30 to 125 (51 - 212)
WC-150E-PC	40 to 150 (68 - 255)
WC-200E-PC	50 to 200 (85 - 340)
WC-300E-PC	60 to 300 (102 - 510)
WC-400E-PC	60 to 400 (102 - 680)
WC-600E-PC	100 to 600 (170 - 1020)

BATTERY MODEL PART NUMBERS

100-120 VAC

WC-801B-PC	WC-890B-PC
WC-802B-PC	WC-125B-PC
WC-812B-PC	WC-150B-PC
WC-828B-PC	WC-200B-PC
WC-814B-PC	WC-300B-PC
WC-530B-PC	WC-400B-PC
WC-550B-PC	WC-600B-PC

220-240 VAC

WC-801BE-PC	WC-890BE-PC
WC-802BE-PC	WC-125BE-PC
WC-812BE-PC	WC-150BE-PC
WC-828BE-PC	WC-200BE-PC
WC-814BE-PC	WC-300BE-PC
WC-530BE-PC	WC-400BE-PC
WC-550BE-PC	WC-600BE-PC
WC-870BE-PC	

WORLD CALIBRATOR
VFD Version
Typical Flow Range

STANDARD FLOW MODELS

100-120 VAC

220-240 VAC

Model	CFM (SLPM)	Model	CFM (SLPM)
WC-801-VFD	.1 to 1 (3 - 30)	WC-801E-VFD	.1 to 1 (3 - 30)
WC-802-VFD	0.2 to 2.1 (6 - 60)	WC-802E-VFD	0.2 to 2.1 (6 - 60)
WC-812-VFD	.5 to 4.0 (15 - 115)	WC-812E-VFD	.5 to 4.0 (15 - 115)
WC-828-VFD	1 to 10.6 (30 - 300)	WC-828E-VFD	1 to 10.6 (30 - 300)
WC-814-VFD	1.4 to 14 (40 - 420)	WC-814E-VFD	1.4 to 14 (40 - 420)
WC-530-VFD	5.3 to 30 (150 - 850)	WC-530E-VFD	5.3 to 30 (150 - 850)
WC-1000-VFD	4 to 35 (115 - 1000)	WC-1000E-VFD	4 to 35 (115 - 1000)
WC-550-VFD	5.3 to 50 (150 - 1400)	WC-550E-VFD	5.3 to 50 (150 - 1400)
WC-870-VFD	8.5 to 70 (240 - 2000)	WC-870E-VFD	8.5 to 70 (240 - 2000)

HIGH FLOW MODELS

100-120 VAC

220-240 VAC

Model	CFM (m³/hr)	Model	CFM (m³/hr)
WC-890-VFD	15 to 90 (26 - 153)	WC-890E-VFD	15 to 90 (26 - 153)
WC-125-VFD	30 to 125 (51 - 212)	WC-125E-VFD	30 to 125 (51 - 212)
WC-150-VFD	40 to 150 (68 - 255)	WC-150E-VFD	40 to 150 (68 - 255)
WC-200-VFD	50 to 200 (85 - 340)	WC-200E-VFD	50 to 200 (85 - 340)
WC-300-VFD	60 to 300 (102 - 510)	WC-300E-VFD	60 to 300 (102 - 510)
WC-400-VFD	60 to 400 (102 - 680)	WC-400E-VFD	60 to 400 (102 - 680)
WC-600-VFD	100 to 600 (170 - 1020)	WC-600E-VFD	100 to 600 (170 - 1020)

BATTERY MODEL PART NUMBERS

100-120 VAC

220-240 VAC

WC-801B-VFD	WC-890B-VFD	WC-801BE-VFD	WC-890BE-VFD
WC-802B-VFD	WC-125B-VFD	WC-802BE-VFD	WC-125BE-VFD
WC-812B-VFD	WC-150B-VFD	WC-812BE-VFD	WC-150BE-VFD
WC-828B-VFD	WC-200B-VFD	WC-828BE-VFD	WC-200BE-VFD
WC-814B-VFD	WC-300B-VFD	WC-814BE-VFD	WC-300BE-VFD
WC-530B-VFD	WC-400B-VFD	WC-530BE-VFD	WC-400BE-VFD
WC-550B-VFD	WC-600B-VFD	WC-550BE-VFD	WC-600BE-VFD
WC-870B-VFD		WC-870BE-VFD	

USER SETTINGS SCREEN

User Settings [X]

Language

- English
- Nederlands
- Français
- Deutsch
- Español
- Русский
- Български

Flow Type

- Volumetric
- Mass

Accuracy Type

- Full Scale
- At Reading

Temperature

- °C
- °F

Pressure

- atm
- InHg
- mmHg
- bar
- kPa

Flow

- CFM
- LPM
- cc/min
- m³/hr
- m³/min

Mass Flow

- g/min
- lbs/hr
- kg/hr

Reference Temp.

- 32°F, 0°C
- 59°F, 15°C
- 68°F, 20°C
- 70°F, 21°C
- 77°F, 25°C

Reference Press.

- 1 atm, 29.92 InHg, 760 mmHg, 1.013 bar, 101.3 kPa
- 0.987 atm, 29.53 InHg, 750 mmHg, 1 bar, 100 kPa

Tube

- Tube #1
- Tube #2
- Tube #3
- Tube #4

OK **Cancel**

Utilize ENTER and ESC keys

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404 Cypress Road, Ocala, FL 34472, USA Tel: +1 352 680-1177 Fax: +1 352 680-1454 www.fjspecialty.com

DATA INTERFACE SCREEN

F&J Data Interface Air Calibrator Data Interface V1.06.03

Setup Communication Setup Certificate User Settings

Data from saved calibration file is in use

World Calibrator: Model #: WC-812-PC Serial #: 54 Last Calibrated: 01 JUN 2011

Device Under Test (DUT): Model #: DF-1 Serial #: 8358 Full Scale (DUT): 115.0

Technician: FMG Accuracy [%]: 4.00

DUT [SLPM]	Calibrator [SLPM]	Deviation [SLPM]	Accuracy [% of Full Scale]	Pass / Fail	Date
1. 105.9	103.5	2.4	2.09	Pass	19 SEP 2011
2. 93.5	91.4	2.1	1.83	Pass	Record Data
3. 84.4	82.4	2.0	1.74	Pass	Clear Last Data
4. 72.9	71.1	1.8	1.57	Pass	Save Data File
5. 63.2	61.5	1.7	1.48	Pass	Load Data File
6. 52.9	51.4	1.5	1.30	Pass	Print Certificate
7. 43.2	41.4	1.8	1.57	Pass	New Calibration
8. 33.6	32.5	1.1	0.96	Pass	
9. 25.0	24.3	0.7	0.61	Pass	
10. 15.7	15.4	0.3	0.26	Pass	

Average Deviation Across the Range at Full Scale [%]: 1.34

User Settings: Ref. Temp.: 20°C, Ref. Press.: 101.3 kPa

Status: Data from saved calibration file is in use

Hint: Data and settings from saved calibration file are in use. Make any necessary modifications and click Print Certificate to make a printout. Click New Calibration to return to the regular calibration mode and reconnect to the Calibrator.

At Reading Accuracy Calibration Certificate

CERTIFICATE OF CALIBRATION

F&J SPECIALTY PRODUCTS, INC.
 404 Cypress Road
 Ocala, FL 34472
 USA
 Tel: +1 352 680-1177 Fax: +1 352 680-1454
 Email: fandj@fjspecialty.com www.fjspecialty.com
 THE NUCLEUS OF QUALITY AIR MONITORING PROGRAMS

MODEL #: DF-1 **SERIAL #:** 10222

REFERENCE INSTRUMENT: WC-812-PC CALIBRATION DATE: 23 MAY 2011
 REFERENCE SERIAL #: 20033 RECALIBRATION DATE: 23 MAY 2012
 REFERENCE CALIBRATED: 18 APR 2011

FLOW TYPE: Volumetric ACCURACY TYPE: **At Reading**
 REFERENCE TEMPERATURE: 77°F REFERENCE PRESSURE: 29.92 InHg

INSTRUMENT FULL SCALE: 115.0 [SLPM]
 INSTRUMENT ACCURACY AT READING: ± 4.00 [%]

	DEVICE UNDER TEST	REFERENCE INSTRUMENT	DEVIATION AT READING	ACCURACY AS % At Reading [%]	PASS OR FAIL
	FLOW [SLPM]	FLOW [SLPM]	[SLPM]		
1.	107.1	107.4	-0.3	-0.28	Pass
2.	82.8	83.4	-0.6	-0.72	Pass
3.	66.6	65.9	0.7	1.06	Pass
4.	42.1	42.5	-0.4	-0.94	Pass

AVERAGE DEVIATION ACROSS THE RANGE AT READING [%]: 0.75

This is to certify that the instrument identified on this certificate has on this date certified to be within the instrument accuracy specified above. The Reference Flow Device bears letters of certification traceable to the National Institute of Standards and Technology (NIST).

CALIBRATED BY: _____ /KRK/

Full Scale Accuracy Calibration Certificate

CERTIFICATE OF CALIBRATION

F&J SPECIALTY PRODUCTS, INC.

404 Cypress Road
Ocala, FL 34472
USA

Tel: +1 352 680-1177 Fax: +1 352 680-1454

Email: fandj@fjspecialty.com www.fjspecialty.com

THE NUCLEUS OF QUALITY AIR MONITORING PROGRAMS

MODEL #: DF-1

SERIAL #: 10222

REFERENCE INSTRUMENT: WC-812-PC
REFERENCE SERIAL #: 20033
REFERENCE CALIBRATED: 18 APR 2011

CALIBRATION DATE: 23 MAY 2011
RECALIBRATION DATE: 09 AUG 2012

FLOW TYPE: Volumetric
REFERENCE TEMPERATURE: 77°F

ACCURACY TYPE: **Full Scale**
REFERENCE PRESSURE: 29.92 InHg

INSTRUMENT FULL SCALE: 115.0 [SLPM]
INSTRUMENT ACCURACY AT FULL SCALE: ± 4.00 [%]

	DEVICE UNDER TEST FLOW [SLPM]	REFERENCE INSTRUMENT FLOW [SLPM]	DEVIATION AT READING [SLPM]	ACCURACY AS % OF F.S. [%]	PASS OR FAIL
1.	107.1	107.4	-0.3	-0.26	Pass
2.	82.8	83.4	-0.6	-0.52	Pass
3.	66.6	65.9	0.7	0.61	Pass
4.	42.1	42.5	-0.4	-0.35	Pass

AVERAGE DEVIATION ACROSS THE RANGE AT FULL SCALE [%]: **0.43**

This is to certify that the instrument identified on this certificate has on this date certified to be within the instrument accuracy specified above. The Reference Flow Device bears letters of certification traceable to the National Institute of Standards and Technology (NIST).

CALIBRATED BY: _____ /KRK/

Calibration Software and Equipment provided by F&J SPECIALTY PRODUCTS, INC. (V1.06.02)

404 Cypress Road, Ocala, FL 34472, USA Tel: +1 352 680-1177 Fax: +1 352 680-1454 www.fjspecialty.com



CERTIFICATE

TUV USA Inc.

hereby certifies that



F & J SPECIALTY PRODUCTS, INC.
404 Cypress Road
Ocala, FL 34472 USA

has established and applies a quality system for

Design and manufacture of portable and fixed station environmental air sampling instruments, airflow calibrators and supplies for radiological and non-radiological airborne pollutant monitoring applications. Product lines also include filter paper, filter holders, radiolodine collection cartridges and radon detection products.

Proof has been furnished that the requirements according to

ISO 9001:2008

are fulfilled.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2008 requirements may be obtained by consulting the organization.

Certificate Registration No.

11-2049

Effective: October 17, 2011

Expires: October 16, 2014



TGA-ZQ-37-95-00-0

Jodi Espinal
Quality Systems Division
Salem, New Hampshire

Date of issue: October 5, 2011

215 Main Street, Suite 3, Salem, NH 03079