Alicat Scientific, Inc.

7641 N. Business Park Dr., Tucson, AZ 85743 U.S.A., 1.888.290.6060

Calibration Data Sheet

Certification Number: 154489

Customer:	Alicat Scientific, Inc.
Sales Order Number:	SO332757
Serial Number:	141011
Customer Part Number:	FP-25
Software Version:	6v16.4.A-N01
Process Gas:	RHAir
Calibration Gas:	Air
Range:	25.000 SLPM
Gas Temperature:	25.09°C
Ambient Humidity:	35.95%
Calibration Procedure/Rev. #:	DOC-AUTOCAL-GASFLOW/Rev. 92
Calibrated By:	David Davis
Calibration Date:	12/16/2016
Full Scale Pressure (internal):	30.000 PSIA
Pressure Accuracy (internal):	+/-0.5% of Full Scale
Temperature Accuracy (internal):	+/-1.5°C
Relative Humidity Accuracy:	+/-3.5% RH
Standard Temp. & Pressure:	25.00°C, 14.69595 PSIA
Normal Temp. & Pressure:	0.00°C, 14.69595 PSIA
Calibration due 1 yr. after receipt:	

Equipment Used

Flow: TOOL-FLOW22
Tool Due Date: 1/13/2017
Manufacturer/Model: Alicat / MCM-25SLPM-D
Device Uncertainty: 0.4% of Reading + 0.2% of FS

Pressure: TOOL-BAROM4
Tool Due Date: 8/29/2017
Manufacturer/Model: Arduino
Device Uncertainty: +/-0.02% of Full Scale

Temperature: TOOL-TEMP15
Tool Due Date: 10/5/2017
Manufacturer/Model: ASL / F200-A-2+Probe
Device Uncertainty: +/- 0.02°C

Temperature: TOOL-TEMP18
Tool Due Date: 6/8/2017
Manufacturer/Model: SELCO
Device Uncertainty: +/- 0.75°C

Pressure: TOOL-PRESSURE8
Tool Due Date: 3/9/2017
Manufacturer/Model: Alicat / P-100PSIG-D
Device Uncertainty: +/- 0.2% of full scale

All test equipment used for calibration is NIST traceable.

Calibration

Uncertainty: +/- (1% of Reading + 0% of Full Scale)
Units of measure: SLPM

Calibration Pressure: N/A

Flow Calibration

D.U.T.	Actual	In Tolerance
0.000	0.000	Yes
1.667	1.669	Yes
6.247	6.249	Yes
6.666	6.669	Yes
12.487	12.514	Yes
16.655	16.669	Yes
18.740	18.750	Yes
22.002	22.000	Yes
25.011	24.994	Yes

Temperature Probe
Uncertainty: +/- 0.2°C

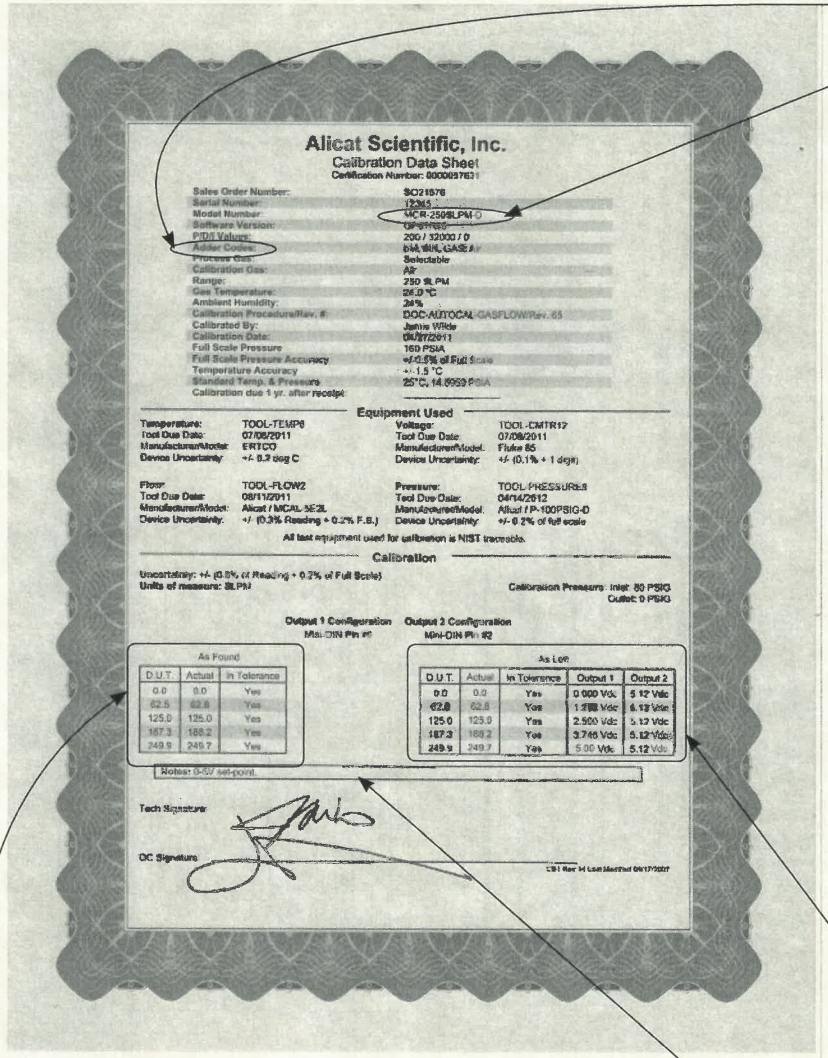
D.U.T.	Actual
19.79	19.77

Barometer
Uncertainty: +/- 1 mmHg

D.U.T.	Actual
702.70	702.80

Tech Signature:

QC Signature:



Alicat Scientific, Inc.

Calibration Data Sheet

Certification Number: 8000697831

Sales Order Number:	SO21576
Serial Number:	12345
Model Number:	MCR-250SLPM-D
Software Version:	GP-STR03
PID/I Values:	200 / 32000 / 0
Adder Codes:	S4L, 5IN, GASE Air
Pressure Unit:	Selectable
Calibration Gas:	Air
Range:	250 SLPM
Gas Temperature:	25.0 °C
Ambient Humidity:	24%
Calibration Procedure/Rev. #:	DOC-AUTOCAL-GASFLOW/Rev. 65
Calibrated By:	Jamie Wride
Calibration Date:	08/8/2011
Full Scale Pressure	160 PSIA
Full Scale Pressure Accuracy	+/-0.5% of Full Scale
Temperature Accuracy	+/- 1.5 °C
Standard Temp. & Pressure	25°C, 14.6959 PSIA
Calibration due 1 yr. after receipt	

Equipment Used

Temperature:	TOOL-TEMP6	Voltage:	TOOL-CMTR12
Tool Due Date:	07/08/2011	Tool Due Date:	07/08/2011
Manufacturer/Model:	ERTCO	Manufacturer/Model:	Fluke 85
Device Uncertainty:	+/- 0.3 deg C	Device Uncertainty:	+/- (0.1% + 1 digit)
Flow:	TOOL-FLOW2	Pressure:	TOOL-PRESSURE8
Tool Due Date:	08/11/2011	Tool Due Date:	04/04/2012
Manufacturer/Model:	Alicat / MCAL-5E2L	Manufacturer/Model:	Alicat / P-100PSIG-D
Device Uncertainty:	+/ (0.3% Reading + 0.2% F.S.)	Device Uncertainty:	+/- 0.2% of full scale

All test equipment used for calibration is NIST traceable.

Calibration

Uncertainty: +/- (0.8% of Reading + 0.2% of Full Scale)

Units of measure: SLPM

Calibration Pressure: Inlet: 80 PSIG, Outlet: 0 PSIG

Output 1 Configuration — MAI-DIN Pin #1

As Found

D.U.T.	Actual	In Tolerance
0.0	0.0	Yes
62.5	62.8	Yes
125.0	125.0	Yes
187.3	188.2	Yes
249.9	249.7	Yes

Output 2 Configuration — MAI-DIN Pin #2

As Left

D.U.T.	Actual	In Tolerance	Output 1	Output 2
0.0	0.0	Yes	0.000 Vdc	5.12 Vdc
62.5	62.8	Yes	1.[illegible] Vdc	5.12 Vdc
125.0	125.0	Yes	2.500 Vdc	5.12 Vdc
187.3	188.2	Yes	3.746 Vdc	5.12 Vdc
249.9	249.7	Yes	5.00 Vdc	5.12 Vdc

Notes: 0-5V set-point.

Tech Signature:

QC Signature:

Model Type
M = mass flow meter
V = volumetric flow meter
P = pressure gauge
MC = mass flow controller
MCV = mass flow controller integrated shutoff valve
MCP = mass flow controller moderate flow valve
MCR = mass flow controller, high flow
VC = volumetric controller
VCR = volumetric controller, high flow
PC = pressure controller
PCR = pressure controller, high flow
PCD = dual valve pressure controller
L = liquid meter
LC = liquid controller
LCR = liquid controller, high flow
MS = mass flow meter*
MCS = mass flow controller*
MCRS = mass flow controller, high flow*
PS = pressure gauge*
PCS = pressure controller*
PCRS = pressure controller, high flow*
* "S" adder indicates aggressive gas configuration

Key to Common Adder Codes:	
Parameters	
M = Mass	P = Pressure
T = Temperature	V = Volumetric
Analog Output Signals	
1M, 1P, 1T or 1V = *1-5V primary output*	
12M, 12P, 12T, or 12V = *1-5V secondary output*	
5M, 5P, 5T or 5V = *0-5V primary output*	
52M, 52P, 52T or 52V = *0-5V secondary output*	
10M, 10P, 10T or 10V = *0-10V primary output*	
102M, 102P, 102T or 102V = *0-10V secondary output*	
CM, CP, CT or CV = *4-20mA primary output*	
C2M, C2P, C2T or C2V = *4-20mA secondary output*	
Set Points (controllers only)	
1IN = *1-5V set-point*	10IN = *0-10V set-point*
5IN = *0-5V set-point*	CIN = *4-20mA set-point*
Others	
GAS = *primary calibration gas*	TOT = *totalizer*
DS = *downstream valve*	
For explanation of additional adder codes please contact Alicat.	

D.U.T. (Device Under Test) = What this device reads/shows at corresponding **"Actual"** value.

Actual = Readings of the Calibrator while this unit was showing the number seen under "**D.U.T.**" - after calibration adjustments.

In Tolerance = Yes/No as to whether or not this unit was in spec after calibration.

Output Columns = The output value on stated pin when **"D.U.T."** reads corresponding value.

Any special configuration information will appear here.

These three columns appear only on Recalibration Certificates.

D.U.T. = What this device reads/shows at corresponding **"Actual"** value.

Actual = Readings of the Calibrator while this unit was showing the number under "**D.U.T.**" as received from the customer.

In Tolerance = Yes/No as to whether or not this unit was in spec as received from the customer.