



**CERTIFICATE OF  
CALIBRATION**  
ISSUED BY YOUNG CALIBRATION LIMITED  
DATE OF ISSUE: 04/04/17  
CERTIFICATE NUMBER: CS3183



0604

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Customer: Fasinternational Srl  
Customer Address: Via Selvanesco, 75/77  
20142 Milano (MI) Italy  
For and on behalf of: Consorzio L.E.A.P.  
Address: Via Nino Bixio 27/c  
29121, Piacenza  
Purchase Order Number: 201700332 (424)  
Date of Receipt: 29 March 2017  
YCL Project Number: YC/39140  
Calibration Date: 04 April 2017  
Requested Due Date: n/a  
Calibration Performed By: C. Millard  
Calibration Procedure: Procedure 530

Manufacturer & Model: MKS 1179  
UUT Description: Mass Flow Controller  
Customer ID Number: n/a  
Serial Number: G505987G20  
Equipment Condition: Used / As Received / Final  
Nominal Calibration Range: 0 to 5000 scc/min  
Calibration Fluid: Dry Air  
Calibration Fluid Temperature: 18.2 to 20.3 °C  
Calibration Location: YCL Laboratory  
Laboratory Temperature: 18.7 to 20.7 °C  
Laboratory Barometric Pressure: 1024.8 to 1026.0 mbarA  
Laboratory Relative Humidity: 57.1 to 59.4 %RH  
Reference Equipment: YC/010/211 to 217

#### Calibration Method & Notes

The UUT (unit under test) was mounted in the Young Calibration Low Gas Flow Calibration Rig and was calibrated using a series transfer method. Clean, dry air was blown through the UUT to the desired flowrate.

When stabilised conditions were observed, the measurements conditions were recorded. The flowrate was adjusted to the next condition, and once steady state conditions were achieved, the results were again recorded, this procedure being repeated until the calibration was complete. The UUT results are derived from the average of at least 9 readings.

The standard flowrate is referenced to conditions of 1013.25 mbarA and 0 °C

#### Calibration Results

Standard Flowrate (scc/min)	UUT Output (V)	UUT Output Uncertainty (± V)
0.00	0.000	0.007
1015.86	1.008	0.007
2007.91	1.993	0.007
3024.43	3.020	0.007
4036.38	4.015	0.007
5023.78	4.997	0.007

Temperature of gas at the UUT : 18.3 - 20.2 °C

Pressure at the UUT : 1025.4 - 1025.5 mbarA

The uncertainty of the above flowrate measurements under laboratory conditions is ± 1.0 % (+ UUT Uncertainty)

The uncertainties reported refer to the measured values only and not to the ability of the instrument to maintain its calibration.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements. UKAS is one of the signatories to the Multilateral Agreement of the European co-operation for Accreditation (EA) for the mutual recognition of calibration certificates issued by accredited laboratories.

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