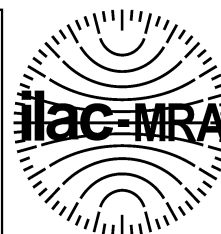


CERTIFICATE OF CALIBRATION

ISSUED BY DRUCK STANDARDS LABORATORY

CERTIFICATE NUMBER: 0082421

DATE OF ISSUE: 07 May 2019



GE Druck

Druck Limited
Fir Tree Lane, Groby, Leicester LE6 0FH, England
Tel: +44 (0) 116 231 7107
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Email : Sensing.grobyukas@ge.com

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Approved Signatory
Name: S Berdej
Title: Deputy Technical Manager
Signature
Digitally Signed

Client: Druck LLC.
1100 Technology Park Drive
Billerica MA 01821
USA

Client Ref: XXXXXXXXXXXX

Our Ref: 2000#####

Date Received: 25 April 2019

Item Submitted

Manufacturer: GE Druck

Model: CM2-B

Serial No: #####

Customer ID: #####

Condition On Arrival: Used in good condition

As Received Calibration: 29 April 2019 to 03 May 2019

Post Adjustment Calibration: 29 April 2019 to 03 May 2019

Environmental Conditions: Temperature: 21.2°C to 21.7°C
Relative Humidity: 40% to 45%

Notes:

- 1) Adjustments were performed. As received and post adjustment values are reported.
- 2) 20 bar gauge range was optimised
- 3) The following version of software was present in the Control Module. Main code; DK0364 V02.03.10

The United Kingdom Accreditation Service (UKAS) is one of the signatories to the International Laboratory Accreditation Co-operation (ILAC) Arrangement for the mutual recognition of calibration certificates.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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Test Equipment Used

Description	Serial Number	Certificate Number
Pressure Standard	X5686_B	0081383 0081373
Pressure Standard	864\F	2016110013-1
Pressure Standard	1176	1500238730

The Calibration was undertaken using the equipment listed above that has maintained traceability to National Standards in accordance with the requirements of UKAS and international standard ISO/IEC 17025

The readings are the results at the time of calibration only and they do not carry any implication regarding long term stability of the instrument being tested.

Notes:

- 1) The calibration was performed in accordance with laboratory procedures P-004A and P-005.
- 2) The Pneumatic control module (CM) was fitted into a PACE5000/6000 chassis, which conditions the signal and displays the digital output, corresponding to the applied pressure, in pressure units. The readings obtained would be the same if the control module was connected to any other, correctly functioning, compatible instrument. It should be noted, the resolution of the display may change, depending upon the settings of the host instrument. Prior to each calibration: the pressure system was switched on and allowed to stabilise to ambient laboratory conditions for a minimum of one hour. The pressure measuring system was purged over the calibration range to exercise the pressure sensor and to flush the system with the pressurising medium, which is listed on the results page(s). With the chassis resting on its base, the pressurising medium was applied to the output port, the reference level being taken as the centre horizontal axis of this port.
- 3) When calibrating a gauge pressure range, the zero adjustment procedure was performed in accordance with the manufacturer's operating instructions.
- 4) For the barometric range, absolute pressures were applied to the reference port of the module with the reference level taken as the centre horizontal axis of this port.
- 5) Where procedure P-004A was used; The readings of the pressure standard and the instrument under test were taken simultaneously via their external communications connections and read by a PC running the calibration software PS1111. With the applied pressure stable, each certified reading is the average of twenty readings taken at two second intervals. This averaging may show one more digit of resolution than the instrument's display.
- 6) The SI unit of pressure is the Pascal (Pa). The conversion factors between the Pa and the pressure units used in this certificate are taken from British Standard BS350 and are shown on the following results pages. The expanded uncertainty column includes the contributions from the measurement of the generated pressure and the instrument being calibrated.
- 7) All data shown in the tables of results are in the units shown in the first column of the table.

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AS RECEIVED

Calibrated Range: -1 to 20 bar gauge, Medium: Nitrogen

- 1) Conversion factor: 1 bar = 100000 Pa
- 2) For negative gauge pressures, air was used as the pressurising medium.

Applied By Standard	Indicated On Test Unit	Deviation	Expanded Uncertainty \pm
0.00000 bar	0.0000	0.00000	0.00005
-0.90204 bar	-0.9021	-0.00006	0.00010
0.00000 bar	0.0000	0.00000	0.00005
0.00000 bar	0.0000	0.00000	0.00005
4.00226 bar	4.0025	0.00024	0.00023
8.00392 bar	8.0044	0.00048	0.00046
12.00481 bar	12.0053	0.00049	0.00069
16.00736 bar	16.0081	0.00074	0.00092
20.00985 bar	20.0109	0.00105	0.00114

POST ADJUST

Calibrated Range: -1 to 20 bar gauge, Medium: Nitrogen

- 1) Conversion factor: 1 bar = 100000 Pa
- 2) For negative gauge pressures, air was used as the pressurising medium.

Applied By Standard	Indicated On Test Unit	Deviation	Expanded Uncertainty \pm
0.00000 bar	0.0000	0.00000	0.00005
-0.90204 bar	-0.9020	0.00004	0.00010
0.00000 bar	0.0000	0.00000	0.00005
0.00000 bar	0.0000	0.00000	0.00005
4.00225 bar	4.0023	0.00005	0.00023
8.00391 bar	8.0039	-0.00001	0.00047
12.00479 bar	12.0047	-0.00009	0.00069
16.00733 bar	16.0072	-0.00013	0.00092
20.00981 bar	20.0098	-0.00001	0.00114
16.00732 bar	16.0072	-0.00012	0.00092
12.00479 bar	12.0047	-0.00009	0.00069
8.00390 bar	8.0039	0.00000	0.00046
4.00225 bar	4.0023	0.00005	0.00023
0.00000 bar	0.0000	0.00000	0.00010

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AS RECEIVED

Calibrated Range: 750.00 to 1150.00 mbar a, Medium: Air

1) Conversion factor: 1 mbar = 100 Pa

Applied By Standard	Indicated On Test Unit	Deviation	Expanded Uncertainty ±
754.430 mbar	754.47	0.039	0.035
895.078 mbar	895.12	0.042	0.041
945.476 mbar	945.52	0.041	0.043
995.963 mbar	996.00	0.041	0.046
1045.112 mbar	1045.15	0.039	0.048
1145.921 mbar	1145.96	0.039	0.052

POST ADJUST

Calibrated Range: 750.00 to 1150.00 mbar a, Medium: Air

1) Conversion factor: 1 mbar = 100 Pa

Applied By Standard	Indicated On Test Unit	Deviation	Expanded Uncertainty ±
754.430 mbar	754.43	0.001	0.035
895.078 mbar	895.08	0.001	0.041
945.476 mbar	945.48	-0.001	0.043
995.963 mbar	995.96	-0.001	0.046
1045.112 mbar	1045.11	-0.002	0.048
1145.921 mbar	1145.92	-0.002	0.052
1045.112 mbar	1045.11	-0.001	0.048
995.963 mbar	995.96	-0.001	0.046
945.476 mbar	945.48	-0.001	0.043
895.078 mbar	895.08	-0.000	0.041
754.430 mbar	754.43	0.000	0.035

SAMPLE