

Nederlands Meetinstituut

Certificate

Applicant : Instromet B.V.
Munstermanstraat 6
Silvolde, the Netherlands

Number : G1/S/4096rev1
Ordernr. : 312465
Vk nr. : 234365
Page : 1 of 2

Request for a : An electronic volume conversion device, Instromet, consisting of:
calibration of an EVCD, type 333, nr. 03545001 - 2004,
a temperature sensor with an operation range -10 °C to +40 °C,
an absolute pressure transmitter with a span of 1,5 bara
and an operation range from $p_{min} = 0,9$ bara to $p_{max} = 1,5$ bara.
From the volume V_1 at line conditions the EVCD calculates a volume V_n at the base
temperature $t_n = 0$ °C and at the base pressure $p_n = 1,01325$ bar, using

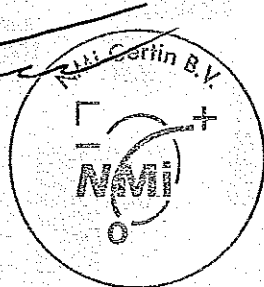
$$V_n = V_1 * p / p_n * (273,15 + t_n) / (273,15 + t) * C$$

where p is the absolute line pressure in bara and t is the line temperature in °C.
The value of the parameter $C = 1,0000$ is programmed as a preset value.
The EVCD is set to be used in combination with a gas meter that generates 1 impulse
per cubic meter indicated by the meter.

Test method : Volume impulses have been generated with an electrically gasmetersimulator.
The pressure readout of the EVCD has been compared with a deadweight tester.
The temperature readout of the EVCD has been compared with a digital reference
thermometer.
At $p = 1,2$ bara and $t = 15$ °C the operation of the system has been tested by counting
impulses from the gasmetersimulator. The indication V_1 of the EVCD has been
compared with the volume V_m indicated by the gasmetersimulator.

Silvolde, : August 17, 2004
NMI Certin B.V.

B. Pastoor
Afdeling Keuringen



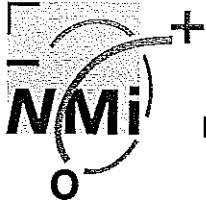
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Test method : The indication of V_n has been compared with the volume calculated from V_1 , the indicated values of p and t and C .

All testing equipment is traceable to international standards.
The ambient temperature during all tests was ± 20 °C.

Test date : May 5, 2004

Results : 1. Pressure transmitter.

Ref. press (bara)	Ind. press (bara)	Error (%)	Uncertainty (%)
1,4549	1,4550	0,01	0,10
1,2849	1,2850	0,01	0,10
0,9849	0,9850	0,01	0,15
1,1349	1,1350	0,01	0,10

2. Temperature sensor

Ref. temp. (K)	Ind. temp. (K)	Error (%)
263,25	263,24	0,00
313,07	313,03	-0,01
288,20	288,18	-0,01

The uncertainty in the error is about 0,05 %

3. Operation test at $p = 1,1350$ bara and $t = 15,03$ °C

a. Impulse transmission $V_m = V_1 = 150 * 1 \text{ m}^3$

b. Calculation

Indicated V_n	= $159,2293 * 1 \text{ m}^3$
Calculated V_n	= $159,2604 * 1 \text{ m}^3$
Resulting error	= $-0,02 \%$

