Parts Certificate

Number **TC8698** revision 1
Project number 16200139

Issued by	NMi Certin B.V.
In accordance with	– WELMEC guide 8.8 – OIML R140 Edition 2007 (E) "Measuring systems for gaseous fuel".
Producer	Emerson Process Management Meridian Business Park, Meridian East Leicester LE19 1UX United Kingdom

Measuring instrument

A model of a **gas chromatograph (GC)**, intended to be used as a part of a measuring system for gaseous fuel

Type	:	370XA
Producer's mark or name	:	Rosemount
Destined for the measurement of	:	Calorific value, Wobbe and composition of natural gases
Accuracy class	:	A / 0,5
Environment classes	:	M1 / E2
Temperature range gas	:	-25 °C / +60 °C
Temperature range ambient	:	-25 °C / +55 °C
Destined for	:	condensing humidity

The intended location for the instrument is open.

Further properties and test results are described in the annexes:
– Description TC8698 revision 1;
– Documentation folder TC8698-2.

Remarks: This revision replaces the earlier version, including its documentation folder.

Issuing Authority: **NMi Certin B.V.**
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1 General information of the gas chromatograph

All properties of the measurement transducer, whether mentioned or not, shall not be in conflict with the legislation.

This Parts Certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC guide 8.8.

The complete measuring instrument must be covered by an EC type-examination Certificate or EU-type examination certificate.

1.1 Essential parts

Part	Document	Remarks
User Inteface	8698/0-02	-
Analytical Board	8698/0-03	-
Back Plane Board	8698/0-04	-
CPU board	8698/0-05	-
IMB Board	8698/0-06	-
LOI Board	8698/0-07	-
Chromatography columns & valves	8698/0-07; 8698/1-01	The following column sets can be used: -7A00101G03; -7A00101G10.
Detector	8698/0-07	-

The construction of the gas chromatograph is presented in drawing no. 8698/0-01.

1.2 Essential characteristics

1.2.1 Working range

Natural gas, with a heating value from 30,0 to 50,0 MJ/m^3 at a base pressure of 1,01325 bar, base temperature of 15 °C and a combustion temperature of 15 °C with the following ranges for the different components:

Component	Range [mol%]
CH_4	50 – 100
C_2H_6	0 – 20
C_3H_8	0 – 10
i-C_4H_{10}	0 – 4
n-C_4H_{10}	0 – 4
i-C_5H_{12}	0 – 1
n-C_5H_{12}	0 – 1
neo-C_5H_{12}	0 – 1
Sum of C6+	0 – 0,5
N_2	0 – 15
CO_2	0 – 20

1.2.2 Calculations
The calculation of the heating value, Wobbe is performed according to ISO6976 [1995].

1.2.3 Calibration
The gas chromatograph can be programmed to be calibrated manually or automatically at variable interval times with a calibration gas. The maximum allowed calibration interval is 20 weeks. The calibration procedure is described in the manual.

1.2.4 Accountable alarms
Accountable alarms will be generated if a defect arises (see documentation 8698/0-08).
If extreme values are measured by the gas chromatograph user set limits can be applied.
In case of an accountable alarm the display will show a red alarm icon in the lower right corner.

1.2.5 Software specification (refer to WELMEC guide 7.2):
- Software type P;
- Risk Class C;
- Extension T and L, while extensions D and S are not applicable.

Software version	Checksum	Remarks
1.1.2	0x54b705b3	Build date: 2015/06/11
1.1.5	0x491e796e	Build date: 2016/03/18

The software version is readable via the display menu (Main Menu -> Application -> System).

1.3 Essential shapes

1.3.1 The name plate on the gas chromatograph contains at least, clearly legible, the following:
- the name of the producer;
- the type;
- the Parts Certificate number TC8698;

An example of the markings is shown in documentation no. 8698/0-09.

1.3.2 Sealing: see chapter 2.

1.4 Conditional parts

1.4.1 Housing
The housing of the gas chromatograph has sufficient tensile strength.
Metrological important parts are only accessible after breaking one or more seals.
See document 8698/0-01 for an example of the housing.

1.4.2 Power supply
The gas chromatograph needs an external dc power supply: 24 Vdc ± 15%. The power supply shall always be connected to a UPS.

1.4.3 Calibration gas
For field calibrations a gas mixture containing all components as described in chapter 1.2.1 is used. For the recommended composition see documentation no. 8698/0-10.

1.4.4 Carrier gas
The device uses Hydrogen or Helium as carrier gas. The carrier gas should have a purity of at least N5.5 (see documentation no. 8698/0-11).

1.4.5 Communication ports
The gas chromatograph is equipped with 2 RS485 ports and 2 Ethernet ports. The Ethernet ports always need to be used in combination with a Tripp Lite DNET1 In-Line Surge protector. Use of the communication ports may not influence the working of the gas chromatograph. In the normal situation the essential parameters needed for the legal working of the Gas chromatograph cannot be changed via the communication ports.

1.5 Conditional characteristics

1.5.1 Programming
The parameters which are essential for the legal functioning of the gas chromatograph can be changed only when the security switch is open. See document no. 8698/0-12.

2 Seals

The following items are sealed:
- the housing of the gas chromatograph.

See document 8698/0-13 for an example of the sealing locations

3 Conditions for Conformity Assessment

- The Parts Certificate may be used without permission from the holder of this document.

4 Test reports

An overview of performed tests is given in the test reports:
- No. NMi – 15200094 – 02 issued by NMi Certin B.V.
- No. NMi – 16200139 – 01 issued by NMi Certin B.V.
- No. NMi – 16200520 – 01 issued by NMi Certin B.V.