

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT**

2. **Certificate No:** FM16US0020X
3. **Equipment:** EnCal 3000
(Type Reference and Name) Gas Chromatograph

4. **Name of Listing Company:** Elster GmbH

5. **Address of Listing Company:** Steinern Straße 19-21
Mainz-Kastel, 55252
Germany

6. The examination and test results are recorded in confidential report number:

3058077 dated 6th September 2016

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600: 2011, FM Class 3615: 2006, FM Class 3810: 2005,
ANSI/ISA 60079-0: 2013, ANSI/UL 60079-1: 2015

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates only to the design, examination and tests of the specified equipment. Further requirements of FM Approvals apply to the manufacturing process and supply of this equipment. These are not covered by this certificate. FM Approvals apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

10. Equipment Ratings:

Explosionproof for Class I, Division 1, Group B; Explosionproof for Class I, Division 1, Groups C and D;
Flameproof for Class I, Zone 1 AEx db IIC Gb; hazardous (classified) locations with a T6 temperature class;

Certificate issued by:

J.E. Marquedant
Manager, Electrical Systems

6th September 2016

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

HIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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SCHEDULE

Hazardous (Classified) Location Electrical Equipment to FM16US0020X

11. The marking of the equipment shall include:

Class I Division 1, Group B; T6 Ta = -40°C to +55°C;

Class I Division 1, Groups C, D; T6 Ta = -40°C to +55°C;

Class I, Zone 1, AEx db IIC T6 Gb Ta = -40°C to +55°C,

12. **Description of Equipment:**

General – The EnCal 3000 is an on-line gas chromatograph that is housed in an explosionproof housing with one or two analytical channels that are controlled by one processor board.

Construction – The Gas Chromatograph type EnCal 3000 consists of a flameproof enclosure with a low base, to which a relatively high cap is attached through a screw connection. Once the cap is removed from the base, almost all the internal components are directly reachable. Up to two analytical modules (which do each a part of the total analysis, in parallel), processor board, Internal sample system (stream selection and pressure regulation) all electrical field connections (Ethernet, ModBus, analogue IN, digital I/O, solenoid drivers), fuses, switches and jumpers.

The internal free volume of the enclosure is max. 18600 cm³. The compactness of the unit (installation clearance Ø 55 cm x 70 cm height, weight <30 kg) allows it to mount the device on a platform, a pole or to the wall. Mounting holes at the back (M8) and in the bottom (M5) allow for fixation. All gas tubing (sample lines, cal gas, vent line, helium in and out) and all electrical connections can be directly connected to the unit. Enclosure is made of aluminum. It is provided with 4 (2X M25X1.5 & 2X M25X1.5) entry openings, a threaded cover, a sintered breathing device and process connections.

The difference in the units rated for Group B and those rated for Groups C and D is the length and diameter of the flame arresting feedthrough (capillary). For use in Group B environment, the stainless steel tube in the flame arresting feedthrough is at least 250 mm and has a maximum internal diameter of 0.01" (0.25 mm), while it is at least 500 mm long and has a maximum internal diameter of 0.015" (0.38 mm) for use in Groups C and D.

Ratings – The EnCal 3000 operates at 24 Vdc (50 W) non-heated and 120 W nominal heated version. The transmitters are rated for use in an ambient temperature range of -40°C to +55°C.

EnCal 3000 Gas Chromatograph

Option	Meaning	Explanation
HT	Heated	Heaters for frost protection installed to keep the housing above 0°C
SC	Single Channel	The analyzer has only one analytical channel
QS	Quad Slave	By linking two analyzers electrically, one processor board can control the modules in the other housing. The slave unit doesn't have a processor board. Both units have an additional PCB with a connector for the cable.
H2	Hydrogen	The analyzer can have hydrogen as carrier gas, and instead of venting the non-flammable gas into the housing, the vent is lead outside (optionally via a dampening volume).

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SCHEDULE



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Hazardous (Classified) Location Electrical Equipment to FM16US0020X

13. Specific Conditions of Use:

1. The flamepaths of the equipment are not intended to be repaired. Consult the manufacturer if repair of the flamepath joints is necessary.
2. The process pressure shall be limited to 2 MPa to ensure that the pressure rise inside the flameproof enclosure remains below 10 kPa.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
6 th September 2016	Original Issue.

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