

[1] EC-TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protected System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC

[3] EC-Type Examination Certificate Number: **Nemko 07ATEX1160X** Issue 6

[4] Equipment or Protective System: **Flare Gas Meter FGM 160**

[5] Applicant/ Manufacturer: **FLUENTA AS**
[6] Address: **Haraldsgate 90
N-5501 Haugesund
Norway**

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] Nemko AS, notified body number 0470 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.



The examination and test results are recorded in confidential D0001024 report no.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
CENELEC EN 60079-0:2012, CENELEC EN 60079-1:2007, CENELEC EN 60079-7:2007, CENELEC EN 60079-11:2012, CENELEC EN 60079-26:2007

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

Field Computer:		II 2 (1) G	Ex d e [ia Ga] IIC T6 Gb	Ta: -40°C to +60°C
Sensors:		II 1 G	Ex ia IIC T* Ga T6:	Ta: -70°C to +60°C
			T5:	Ta: -70°C to +85°C
			T4:	Ta: -70°C to +120°C

Oslo, 2015-06-03



Asle Kaastad
Certification Manager

[13] Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE No Nemko 07ATEX1160X Issue 6**

[15] **Description of Equipment or Protective System**

This certificate covers Fluenta Flare Gas Meter FGM 160 which is designed to measure the velocity of gases in a flare pipe. The Fluenta Flare Gas Meter consists of a Field Computer and Ultrasonic Sensors. The Field Computer is composed of an Increased safety "e" enclosure with terminal blocks and a Flameproof "d" enclosure containing the electronics. The output to the Ultrasonic sensors is supplied through IS-barriers ("ia").

The standard configuration allows up to 20m Draka RFOU 250V S2/S6 4pair 0.75mm² or Draka FlexFlame RFOU(i) 150/250(300V) S1/S5 1Pair 0.75mm² Instr. Cable to the Ultrasonic Sensor. As an option cable length up to 50m can be used by adding a current limiting resistor: *5.6ohm series resistor*.

FGM 160 also includes outputs to external IS certified temperature and pressure transmitters, intrinsically safe when connected according to below parameters.

Safety parameters for intrinsically safe connection at terminals Tmp1, Tmp2, Prs1 and Prs2 on the Fluenta enclosure.

Maximum output voltage, $U_o = 27.3V$

Maximum output current, $I_o = 90mA$

Maximum output power, $P_o = 0.62W$

Maximum external capacitance, $C_o = 0.088\mu F$

Maximum external inductance, $L_o = 3.5mH$, $L_o/R_o = 58\mu H/ohm$

Technical Data

$U_m = 250V$ AC, 50/60Hz

External fuse: Max 1.25A, min breaking capacity 1500A

Type Designation

Fluenta Flare Gas Meter type FGM 160.

Ingress protection Code

IP66 according to IEC 60529 Edition 2.1.

[16] Report No. D0001024

Descriptive Documents

Title/Description	Number	Rev.	Date	Sheets
FGM 160 Production and Assembly of IS Barrier Module	62.120.106	A	2009.01.08	5
FGM 160 IS Barrier – PCB Layout – Gerber Files	63.120.301	B	2008-10-03	-
FGM 160 Sensor Electronics – PCB Layout – Gerber Files	63.120.303	B	2008-12-05	-
FGM 160 RTC Backup Battery – PCB Layout – Gerber Files	63.120.313	A	2008-09-12	-
FGM 160 Parts List – Ex Related Components	74.120.002	I	2015.04.30	9
FGM 160 IS Barrier Module – Parts and Check List	74.120.100	D	2012.02.17	12
FGM 160 Sensor Electronics – Parts and Check List	74.120.102	F	2015.05.15	8
FGM 160 RTC Backup Battery Module – Parts and Check List	74.120.113	D	2012.02.17	6
FGM 160 GA Sensor Unit – TFS With Lemo	77.120.362	D	2014.08.07	1
FGM 160 IS Barrier – Assembly Drawing	77.120.801	B	2008.10.03	1
FGM 160 IS Barrier – PCB Layout All Layers	77.120.802	B	2008.10.03	1
FGM 160 Sensor Electronics – PCB Layout All Layers	77.120.805	B	2008.12.05	1
FGM 160 Sensor Electronics – Assembly Drawing w/Cable	77.120.807	B	2008.12.05	1
FGM 160 RTC Backup Battery Module – Ex-Certification Drawing	77.120.850	C	2009.01.05	1
FGM 160 Production and Assembly of Surge Protection Module	62.120.108	B	2010.11.01	5
FGM 160 Surge Protection – PCB Layout – Gerber Files	63.120.305	C	2010-12-15	-
FGM 160 Surge Protection – Parts and Check List	74.120.104	G	2014.06.25	13
FGM 160 Prod Drawing Ex-e Box for Field Computer with new Ex-d	77.120.179	C	2013.07.29	8
FGM 160 Prod Drawing Ex-d Enclosure	77.120.189	E	2013.07.29	5
FGM 160 IECEx, ATEX and CSA Label (Fluenta enclosure)	77.120.207	I	2015.05.27	2
FGM 160 Prod Drawing – Ultrasonic sensor tag plate	77.120.212	F	2015.05.27	2
FGM 160 New Ex-d enclosure Detailed Mounting Arrangement	77.120.364	C	2013.08.02	1
FGM 160 Field Wiring Fluenta Enclosure	77.120.509	E	2012.02.28	4
FGM 160 Ex d electrical feed through principal drawing	77.120.510	A	2010.11.11	1
FGM 160 Ex e electrical connection principal drawing	77.120.511	A	2010.11.11	1
FGM 160 Ex d bushing production control drawing	77.120.514	A	2011.07.20	1
FGM 160 Surge Protection – Assembly Drawing	77.120.808	C	2010.11.01	1
FGM 160 Surge Protection – PCB Layout All Layers	77.120.809	C	2010.11.11	1
FGM 160 Ex Certification Schematics with enclosure	77.120.854	D	2015.03.13	22
FGM 160 Ex Certification Schematics Fieldbus option	77.120.856	C	2015.03.13	22
FGM 160 IS-Barrier Module PCB coating	77.120.847	B	2015.04.15	1

Certificate History and Associated Nemko Reports

Issue	Date	Report	Description
0	2007-12-13	95416	Prime Certificate released
1	2009-04-15	124323	The certificate is extended to include new design of IS-Barrier. The certificate is updated to include accordance with the following standards: EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2004
2	2011-04-15	147895	The certificate is updated to include new Ex d and Ex e enclosure.
3	2011-06-31	177209	Descriptive documents list corrected.
4	2011-10-19	186837	The certificate includes the descriptive documents for the Technor enclosure. Waived routine overpressure testing of the Fluenta Ex d enclosure, withstand type test made at a static pressure equal to four times the reference pressure and the assembly procedure is sufficiently documented in 77.120.514. Included Fieldbus option as an alternative to the IO-module in the Fluenta enclosure. Included the option to connect the Transducer through a suitable Ex e cable gland specified in 77.120.508 and 77.120.509, as an alternative to the LEMO connector. Changed safety parameters for external transmitter.
5	2012-03-21	191800	Included the option to use cable length between 20m and 50m to the Ultrasonic Sensor, according to 77.120.508 and 77.120.509. Duplicate marking label on Ultrasonic sensor added. Added alternative DC/DC converter on schematics 77.120.852, 77.120.854, and 77.120.856.
6	2015-06-03	D0001024	Changed address and certificate updated to latest standards. X-marked due to Ultrasonic sensor head is made of titanium, avoid impact or friction. Included 1Pair Draka cable instead of 4 pair.

Routine Test

Dielectric test according to clause 7.1 in EN 60079-7.

Routine tests for infallible transformer T811 according to clause 11.2 in EN 60079-11.

[17] Special Conditions for Safe Use

The Ultrasonic sensor head is made of titanium, avoid impact or friction.

[18] Essential Health and Safety Requirements

See item 9