

RAP-227

EC-Type Examination Certificate for Gas Analysers Series EM/RE/ER

**EC-Type Examination Certificate number: CESI 11 ATEX 021 X,
CESI Centro Elettrotecnico Sperimentale Italiano Giacinto Motta
SpA, Milano, Italia, 30 March 2011**

CESI

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Registro Imprese di Milano
Sezione Ordinaria
N. R.E.A. 429222
P.I. IT00793580150

Schema di certificazione

ATEX

CESI

Il CESI è stato autorizzato dal governo italiano ad operare quale organismo di certificazione di apparecchi e sistemi destinati a essere utilizzati in atmosfera potenzialmente esplosiva con D.M. 1/3/1983, D.M. 19/6/1990, D.M. 20/7/1998, D.M. 27/9/2000 e D.M. 02/02/2006

CERTIFICATE



EC-TYPE EXAMINATION CERTIFICATE

- [1] **Equipment or Protective System intended for use in potentially explosive atmospheres**
Directive 94/9/EC
- [2] **EC-Type Examination Certificate number:**
CESI 11 ATEX 021 X
- [3] **Equipment:** Gas analysers series EM/RE/ER
- [4] **Manufacturer:** C.E. Srl
Compagnia Generale Elettronica
Misure - Regolazioni - Sicurezze
- [5] **Address:** Via G. da Verrazzano, 26
20132 Milano - Italia
- [6] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [7] CESI, notified body n. 0722 in accordance with Article 9 of the 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 report n. EX-B1009853.
- [8] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0: 2009 EN 60079-1: 2007 EN 60079-31: 2009 EN 60079-28: 2007
- [9] 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.
- [10] 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.
- [11] The marking of the equipment or protective system shall include the following:

II 2GD Ex d op is IIC T6, T5, T4 Gb
Ex tb IIC T85°C, T100°C, T135°C Db IP66

This certificate may only be reproduced in its entirety and without any change, schedule included.

Date 30 March 2011 - Translation issued the 30th March 2011

Prepared
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Verified
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Approved
Fiorenzo Bregani

CESI S.p.A.
Testing & Certification Division

Schedule

[13] EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 021 X

[14]

[15] **Description of equipment**

The gas analyser, subject of this certificate, is optical equipment made of a laser transmitter and a receiver which analyses the laser beam after it has crossed the fluid to be investigated. The equipment is formed by two parts each one protected by a flameproof enclosure:

- A *transmitter*, which receives, through optical fibre, the laser beam and reflects it outward, across a quartz window, into the fluid to be investigated;
- A *receiver*, which receives the laser signal, through another quartz window, after it has crossed the fluid to be investigated; this component lodges the optical sensor and the electronics which makes the processing.

The external laser source is not included in this certificate and for safety reason shall comply with what reported at clause [17] of this certificate in accordance with the concept of inherently safe optical radiation “op is” (standard EN 60079-28).

The aluminium, cast iron or stainless steel enclosure is formed by a base, where the quartz window is placed, which can have one or two cable entries and a lid, screwed to the base, which can have two heights and a glass window protected or not by a metallic grid. The plant binding is made on the quartz side through flange or cylindrical extension. The equipment is identified through the following codes:

ER X C

Commercial designation (irrelevant for the type of protection):

- EM** – Only the transmitter
- RE** – Only the receiver
- ER** – Both components: Transmitter and receiver

Identification of the protecting enclosure.

Type	Lid height	N. cable entries	Protecting grid	Binding to the plant
1	TALL	1	YES	Flange
2	SHORT	1	YES	Flange
3	TALL	2	YES	With extending pipe
4	SHORT	2	YES	With extending pipe
5	SHORT	1	NO (*)	Flange
6	SHORT	2	NO (*)	With extending pipe
7	TALL	1	BLIND	Flange
8	TALL	2	BLIND	With extending pipe

(*) Types 5 and 6 only for ambient temperatures in the interval [-20°C, +60°C]

Kind of use not influencing the ATEX protection):

- O** – open path (laser beam emitted in open air)
- C** – close path (laser beam emitted in-house)

Characteristics of ATEX protection

ATEX Category:

Category 2G protection:

Temperature class (2G):

Category 2D protection:

Max surface temperature (2D):

Ingress protection of the enclosures:

2GD

Ex d op is IIC TX Gb

T6 – with ambient temperature [-20°C, +60°C] and [-40°C, +60°C];

T5 - with ambient temperature [-40°C, +80°C];

T4 - with ambient temperature [-40°C, +100°C];

Ex tb IIIC TX°C Db

T85°C - with ambient temperature [-20°C, +60°C] and [-40°C, +60°C];

T100°C - with ambient temperature [-40°C, +80°C];

T135°C - with ambient temperature [-40°C, +100°C];

IP66.

This certificate may only be reproduced in its entirety and without any change, schedule included.

[13]

Schedule

[14]

EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 021 X

[15] **Description of equipment** (continue)

Characteristics of the receiver electronics:

Maximum supply voltage:	24 V
Maximum supply current:	1 A
Maximum power supply:	24 W

Safety limits, even in case of malfunctioning, for the remote laser emitter (not included in this certificate):

Maximum optic power of the laser emitter:	15 mW
Maximum irradiance of the laser beam outside the enclosure:	5 mW/mm²

Cable entries

The accessories used for cable and optical fibre entries and to close the unused holes shall be certificated according to the standard EN 60079-1 and shall guarantee a minimum ingress protection IP66, according to the standard EN 60529.

In case of cylindrical threads the coupling shall be fixed against loosening using a thread locking compound.

Warning labels

The equipment shall be marked with the warning necessary to identify the presence of coherent optical radiation and the protection against the risks connected to the possible exposure of eyes to the emitted laser beam.

For the equipment marked for the temperature classes T5 and T4:

“Use cables suitable for temperature X°C” (X=100 for class T5, X=135 for class T4)

[16] **Report n. EX-B1009853**

Routine tests

The manufacturer shall carry out the routine tests prescribed at paragraph 27 of the standard EN 60079-0 and at paragraph 16 of EN 60079-1.

The routine overpressure test shall be carried out on the receiver enclosure, using the static method (paragraph 15.1.3.1 of the standard EN 60079-1), at the pressure of 18 bar.

Descriptive documents (prot. EX-B1009872)

- Technical note ATEX-ER/RE-NT-10/06 rev. 0 (4 sheets)	dated	2/06/2010
- Safety instructions ATEX-ER/RE-IS-10/06 rev. 0 (3 sheets)	dated	2/06/2010
- Technical drawing E2011-23 rev. 0	dated	30/04/2010
- Technical drawing E2011-24 rev. 0	dated	30/04/2010
- Technical drawing E2010-53 rev. 0	dated	30/04/2010
- Technical drawing E2010-54 rev. 0	dated	30/04/2010
- Technical drawing E2010-55 rev. 0	dated	30/04/2010
- Technical drawing E2010-56 rev. 0	dated	30/04/2010
- Technical drawing E2010-57 rev. 0	dated	30/04/2010
- Technical drawing E2010-58 rev. 0	dated	30/04/2010
- Technical drawing E2010-59 rev. 0	dated	30/04/2010
- Technical drawing E2010-60 rev. 0	dated	30/04/2010
- Technical drawing E2010-61 rev. 0	dated	30/04/2010
- Technical drawing E2009-187 rev. 0	dated	19/10/2009
- Technical drawing E2009-189 rev. 0	dated	19/10/2009
- Manufacturer declaration	dated	28/03/2011

Schedule

[13]

[14]

EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 021 X

[16] **Report n. EX-B1009853 (continue)**

- Threads dimensions
- Facsimile EC declaration of conformity

One copy of all the documents above is kept in CESI files.

[17] **Special conditions for safe use (X)**

The external laser emitter, even in case of foreseeable malfunctioning, shall emit an optical signal with power not higher than 15 mW and irradiance of laser beam, exiting the transmitter unit, shall nowhere be higher than 5 mW/mm² (inherently safe optical radiation, standard EN 60079-28).

[18] **Essential Health and Safety Requirements**

Covered by standard fulfilment and by installation and use condition defined by the manufacturer.