IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx CES 12.0007X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2016-02-29) Issue 0 (2012-10-29)
Date of Issue:	2019-12-13		

Applicant: **ATOS S.p.A.**
Via alla Piana, 57
I - 21018 Sesto Calende (VA)
Italy

Equipment: **Explosion proof Solenoids series: OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-* and Inductive transducer series: ETHAM-4/***

Optional accessory:

Type of Protection: **Flameproof enclosures 'd'**

Marking: **Ex db I Mb**

Approved for issue on behalf of the IECEx Certification Body: **Mirko Balaz**

Position: **Head of IECEx CB**

Signature: (for printed version)

Date: 13-12-2019

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2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

CESI
Centro Elettrotecnico
Sperimentale Italiano S.p.A.
Via Rubattino 54
20134 Milano
Italy

IECEx Certificate of Conformity

Certificate No.: **IECEx CES 12.0007X**

Date of issue: 2019-12-13

Issue No: 2

Manufacturer: **ATOS S.p.A.**
Via alla Piana, 57
I - 21018 Sesto Calende (VA)
Italy

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

IT/CES/ExTR12.0003/00 IT/CES/ExTR12.0003/01 IT/CES/ExTR12.0003/02

Quality Assessment Report:

IT/CES/QAR10.0003/09

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

On-off and proportional solenoids are used for the command of directional, flow or pressure control valves, operating in hazardous areas with explosive or flammable environment.
The inductive transducers type ETHAM-4/* are used separately for detect a position or coupled with explosion proof solenoids type OZAM-T*, for detect the position of the spools of directional or flow control proportional valves.

The following versions with the relevant model code are available:

Version	Model Code	Description
Solenoids	**OAM-***	ON-OFF solenoid
	OZAM-A-*	Proportional solenoid without position transducer
	MZAM-A-*	Proportional solenoid without position transducer and without manual override
	OZAM-T-*	Proportional solenoid with position transducer ETHAM-4 / *
Solenoids with protected manual override	**OAM/WP-***	ON-OFF solenoid
	OZAM-A-* / WP	Proportional solenoid without position transducer
Transducers	**E-THAM-4 / * ***	Inductive LVDT transducer used coupled with proportional solenoid or as single parts

* solenoids nominal power supply voltages,

** transducer versions,

For further information see Annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Do not expose to high risk of mechanical danger.
- In order to grant to the ex-proof solenoids a suitable heat exchange, the block or the manifold where the valves equipped with such solenoids are installed, is metallic and should has a volume greater than 0.2 dm3 per valve.
- The flame paths are specified in the manufacturer drawings. For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.
- For the selection of connecting cable with operating temperature suitable for the installation conditions of equipment refer to the manufacturer safety instruction.
- Use screws property class A4-70 UNI 5931 with yield stress ≥ 450MPa.
- The conditions of the installation of the equipment are included within the safety instructions manual. For a safe use these assembling instruction are to be followed precisely.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
For issue 2
Variation 2.1:

The explosion proof solenoids and inductive transducer, originally assessed in compliance with IEC 60079-0:2011, 6th edition, have been re-assessed on the basis of the standard IEC 60079-0:2017, 7th edition.

Annex:

ATOS-IECEx CES 12.0007X_Issue No.2 ANNEX .pdf

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Prot: B9025069

Annex to certificate: **IECEx CES 12.0007X_Issue No.2 of 2019-12-13**

Applicant: **ATOS S.p.A.**
Via alla Piana, 57 – 21018 Sesto Calende (Varese) - Italy

Electrical Apparatus: **Explosion proof solenoids type OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-* and inductive position transducers type ETHAM-4/*.**

Description of equipment

On-off and proportional solenoids are used for the command of directional, flow or pressure control valves, operating in hazardous areas with explosive or flammable environment.

The inductive transducers type ETHAM-4/* are used separately for detect a position or coupled with explosion proof solenoids type OZAM-T*, for detect the position of the spools of directional or flow control proportional valves.

The following versions with the relevant model code are available:

Tab. I

Version	Model Code	Description
Solenoids	**OAM-***	ON-OFF solenoid
	OZAM-A-*	Proportional solenoid without position transducer
	MZAM-A-*	Proportional solenoid without position transducer and without manual override
	OZAM-T-*	Proportional solenoid with position transducer ETHAM-4/*
Solenoids with protected manual override	**OAM/WP-***	ON-OFF solenoid
	OZAM-A-*/WP	Proportional solenoid without position transducer
Transducers	**ETHAM-4/****	Inductive LVDT transducer used coupled with proportional solenoid or as single parts

* solenoids nominal power supply voltages; see Tab. IIa.

** transducer versions see; Tab. IIb.

Electrical characteristics

Solenoids power supply
Rated voltage: 12 ÷ 220 Vdc, 12 ÷ 240 Vac (depending of the models)
Rated power: max 35 W (depending of the models)

Transducers power supply
Power supply (VDC stabilized): ±15
Max power consumption: <1 W
Max current consumption: 28 mA

Ambient temperature range: -20°C ÷ +40° / +45°C / +60°C / + 70°C (depending of the model)

Degree of protection: IP 66/67 (IEC 60529)

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Electrical Apparatus: **Explosion proof solenoids type OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-* and inductive position transducers type ETHAM-4/*.**

Tab. IIa - Available solenoids power supply voltages:

Solenoid	Power supply (values +/- 10%)		Power (W)	Notes
	continuous current (VDC)	alternating current (VAC 50/60 Hz)		
OAM-12DC OAM/WP-12DC	12	-	8	
OAM-24DC OAM/WP-24DC	24	-	8	
OAM-28DC OAM/WP-28DC	28	-	8	
OAM-48DC OAM/WP-48DC	48		8	
OAM-110DC OAM/WP-110DC	110	-	8	
OAM-125DC OAM/WP-125DC	125	-	8	
OAM-220DC OAM/WP-220DC	220	-	8	
OAM-12AC OAM/WP-12AC	-	12 /50/60	8	(1)
OAM-24AC OAM/WP-24AC	-	24 /50/60	8	(1)
OAM-110 OAM/WP-110	98	110/50 120/60	8	(1)
OAM-230 OAM/WP-230	207	230/50 240/60	8	(1)
OZAM-A-12DC OZAM-A-12DC/WP	12	-	35	(2)
OZAM-A-24DC OZAM-A-24DC/WP	24	-	35	(3)
MZAM-A-12DC	12	-	35	(2)
MZAM-A-24DC	24	-	35	(3)
OZAM-T	12	-	35	(4)

Note:
(1) The alternating current supply is rectified by a four-diode bridge rectifier internal to the solenoid
*(2) The power limitation is obtained by feeding the solenoid with current of 2500 mA, controlled by the electronic drivers E-ME-AC-0*F.*
Driver characteristics:

- *Power supply: 24 VDC +/- 10% stabilized - rectified and filtered 21 to 28 VRMS (3Vpp max)*
- *Current supplied: I max = 2,5 A PWM square wave type*
- *Output protection: against short circuit*

(3) Atos does not provide any type of driver of its production; thus, the solenoid has to be fed by a suitable driver provided of current limitation set at 1100 mA.
*(4) The power limitation is obtained by feeding the solenoid with current of 2500 mA, controlled by the electronic drivers E-ME-T-0*H.*
Driver characteristics:

- *Power supply: 24 VDC +/- 10% stabilized - rectified and filtered 21 to 28 VRMS (3Vpp max)*
- *Current supplied: I max = 2,5 A PWM square wave type*
- *Output protection: against short circuit*
- *Power supply stage for ETHAM-4/** transducer ± 15VDC*

Annex to certificate: **IECEx CES 12.0007X_Issue No.2 of 2019-12-13**

Applicant: **ATOS S.p.A.**
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Electrical Apparatus: **Explosion proof solenoids type OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-* and inductive position transducers type ETHAM-4/*.**

Tab. IIb - Available transducers power supply voltages:

Transducer	Power supply	Max. current consumption	Power (W)	Description
ETHAM-4/1	± 15 VDC	28 mA	<1	With voltages output, voltage resolution 3,3 V/mm
ETHAM-4/2				With voltages output, voltage resolution 2,5 V/mm
ETHAM-4/4				With voltages output, voltage resolution 1,25 V/mm
ETHAM-4/8				With voltages output, voltage resolution 0,6 V/mm
ETHAM-4/C				With current output 4÷20 mA or 0÷20 mA, a voltage to current converter circuit is used

Tab. III – Max ambient temperature, max surface temperature, connecting cable temperature

Solenoids:

Solenoid Type	Max ambient temperature (°C)	Max surface temperature (°C)	Connecting cable temperature (°C)
OAM OAM/WP	70	150	≥ 90
OAM OAM/WP	45	150	- -
OZAM-A OZAM-A/WP	60	150	≥ 110
OZAM-A OZAM-A/WP	40	150	≥ 90
MZAM-A	60	150	≥ 110
MZAM-A	40	150	≥ 90
OZAM-T	60	150	≥ 110
OZAM-T	40	150	≥ 90

Inductive transducers:

Transducer Type	Max ambient temperature (°C)	Max surface temperature (°C)	Connecting cable temperature (°C)	note
ETHAM-4/*	70	150	≥ 90	(1)
	40	150	- -	(1)
	60	150	≥ 110	(2)
	40	150	≥ 90	(2)

Note:
(1) when connected to mechanical parts that not influencing the surface temperature.
(2) if used together with the proportional solenoid, solenoid type OZAM-T.

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Electrical Apparatus: **Explosion proof solenoids type OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-* and inductive position transducers type ETHAM-4/*.**

Cable entries

The cable entry devices used on the enclosure shall be suitably certified according to the applicable standards. The accessories used for cable entries and for unused holes shall guarantee the degree of protection IP66/67 according to IEC 60529 standard.

Warning label

"Warning – do not open when energized"

"For the correct selection of connecting cable temperatures see safety instructions"