CESI

ISMES

IPH BERLIN

FGH

CESI S.p.A.
Via Rubattino 54
I-20134 Milano - Italy
Tel: +39 02 21251
Fax: +39 02 21255440
e-mail: info@cesi.it
www.cesi.it

CESI-ATEX

Schema di certificazione

CERTIFICATE

[1] SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in potentially explosive atmospheres Directive 2014/34/EU**

[3] Supplementary EU-Type Examination Certificate number:

CESI 03 ATEX 057X / 04

[4] Product: Solenoids type **OAM-*, OAM/WP-*, OZAM-A-*, OZAM-A-*/WP, OZAM-T-*, MZAM-A-*** and Inductive transducers type **ETHAM-4/***

[5] Manufacturer: **ATOS S.p.A.**

[6] Address: **Via alla Piana, 57 – 21018 Sesto Calende (VA) - Italy**

[7] This supplementary certificate extends EU–Type Examination Certificate **CESI 03 ATEX 057X** to apply to products designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 17 of the Directive 2014/34/EU of the Parliament and Council of 26 February 2014, 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-B9024660.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-1:2014

except in respect of those requirements listed at item 18 of the Schedule.

[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 EU-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. 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:

Ex **I M2 Ex db I Mb**

Date 11.12.2019 - Translation issued the 11.12.2019

Prepared	**Verified**	**Approved**
Vito Giampietro	Mirko Balaz	Roberto Piccin

CESI S.p.A.
Testing & Certification Division
Business Area Certification
Il Responsabile
(Roberto Piccin)

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 057X / 04**

[15] **Description of the variation to the product**
Variation 1.1: Updating to EN IEC 60079-0:2018.

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 version with the relevant model code is 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	**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: from -20°C to + 40° / +45°C / +60°C / + 70°C (depending of the models)

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

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 057X / 04**

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*

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 057X / 04**

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

Relation between the max ambient temperature, temperature class, 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.

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 057X / 04**

Marking

The equipment shall be marked as follows:

I M2 Ex db I Mb

Cable entries

The cable entry devices used on the enclosure shall be suitably certified according to the applicable standards EN 60079-0 and EN 60079-1. The accessories used for cable entries and for unused holes shall guarantee the degree of protection IP66/67 according to EN 60529 standard.

Warning label

"Warning – do not open when energized"

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

[16] **Report n.** EX-B9024660

Routine tests

The solenoids and the transducer are exempted from the routine overpressure test required by EN 60079-1 standard, since they have been subjected, with the static method and favourable result, to an overpressure test at a pressure corresponding to 4 times the reference pressure.

[17] **Special conditions for safe use**

- 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 dm^3 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.
- The characteristics of cable used and of accessories for cable entries into the enclosure should be suitable for transducer operative temperature range. For the connecting cable operating temperature function of mounting and/or service temperatures of transducer, refer to the manufacturer Safety instruction. The cable entry devices used on the enclosure shall be subject of separated certification and suitable for the installation zone.
- 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.

[13] **Schedule**

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 057X / 04**

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

Compliance with the Essential Health and Safety Requirements has been assured by compliance to the following standards:

EN IEC 60079-0:2018 Explosive atmospheres – Part 0: Equipment - General requirements;
EN 60079-1: 2014 Explosive atmospheres – Part 1: Equipment protection by flameproof enclosure "d";

[19] **Descriptive documents (prot. EX-B9024664)**

- Technical Note No. SAS-569-D/1 (2 pg.) dated 20.11.2019
- Safety Instructions No. TT-354-D/1 (5 pg.) dated 20.11.2019
- EU Declaration of Conformity No. TT352/2 dated 20.11.2019

One copy of all documents is kept in CESI files.

Certificate history

Issue N°	Issue Date	Summary description of variation
04	11/12/2019	Updating standards EN IEC 60079-0:2018.
03	13/10/2015	Updating standards EN 60079-0:2012/A11:2013; Nameplate updating for multi-certification ATEX/IECEx.
02	15.03.2012	Updating standards EN 60079-0:2009 and EN 60079-1:2007.
01	22/01/2008	Constructional modifications; updating standards EN 60079-0:2006 and EN 60079-1:2004; change of code and new electrical characteristics.
00	18/03/2003	First Issue of the Certificate