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Schema di certificazione CESI-ATEX

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRD N. 018B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

ATEX B6003477-3-EN

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 05 ATEX 110 X / 07

[4] Product: Three-phase asynchronous motors series 5AT 71 - 80 - 90 - 100 - 112

[5] Manufacturer: **KONCAR – Mali Elektricni Strojevi d.d**

[6] Address: Falerovo Setaliste 22, HR – 10000 ZAGREB - Croatia

[7] This supplementary certificate extends EC–Type Examination Certificate CESI 05 ATEX 110X 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-C1012319.

[9] In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

[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 product shall include the following:

II 2G Ex db IIB T3 Gb or **II 2G Ex db eb IIB T3 Gb**
II 2G Ex db IIC T3,T4,T5,T6 Gb or **II 2G Ex db eb IIC T3,T4,T5,T6 Gb**

II 2D Ex tb IIIC T 160°C, T130°C, T100°C Db

Date 09/05/2024 - Translation issued the 09/05/2024
(Revision 1 of the Translation issued on 12/07/2021)

Prepared	**Verified**	**Approved**
Sergio Mezzetti	Mirko Balaz	Roberto Piccin

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110 X/07**

[15] **Description of the variation to the product**

1.1 -Complete motor range 5AT 71-112 in design T6
1.2 - IP67 mechanical protection (for gas only
1.3 - Terminal board KM4 (NEW design)
1.4 - Corrosion protection system for motors in gas group IIC
1.5 - Reassessment of motors 5AT 71 ÷ 112 on basis of the new edition of standards; EN IEC 60079-0:2018 and, EN 60079-7:2015/A1:2018

Description of equipment

The three-phase asynchronous motors series 5AT 71-80-90-100-112 are manufactured by different constructive typologies: they can be supplied by mains or by inverter, with simple or double polarity, self-ventilated.

The motors are manufactured with two separate compartments: motor (Ex-db) and terminal box (Ex-db or Ex-eb) for supply and auxiliary circuits connection or can be provided with permanently connected cable.

The motors can be equipped with auxiliary devices (heaters, thermal detectors) and with separate brake and/or encoder.

The motors series 5AT 71 ÷ 112 can be assembled with two “Ex db” terminal boxes (connected by sealing bushing 3 piece fitting or by barrier cable glands and cable) or with two “Ex eb” terminal boxes (connected by piece fitting or by cable glands and cable).

The three-phase asynchronous motors series 5AT 71 ÷ 112, can be manufactured with efficiency class IE2 and IE3 according to IEC 60034-30 standard.
The motors with efficiency level IE2 and IE3, differ from standard motors IE1 for better quality of laminations, higher length of stator/rotor package and higher filling factor of copper.
The motors with efficiency class IE2 and IE3 are identified by proper code on name plate.

The motors, for temperature class T3/T4, are produced with insulation system in class F and are designed with temperature limit of the insulation class B (120°C) at ambient temperature Ta = +40°C

The standard motors series 5AT 71÷112 are assessed for temperature classes T6 and ambient temperature Ta + 40°C

The motors series 5AT 71÷112, for gas group IIC, can be protected from corrosion with a top layer of conductive paint or alternatively with a layer of non conductive dry film having thickness > 0.2 mm, in this last case, the following label shall be applied: “Warning – potential electrostatic charging hazard. Clean with damp cloth”

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

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

Depending on of the type of protection and ambient temperature, the motor series 5AT 71÷112 shall be marked as follows:

II 2G Ex db IIC T3, T4, T5, T6 Gb **II 2G Ex db eb IIC T3, T4, T5, T6 Gb** **II 2D Ex tb IIIC T160°C,T130°C, T100°C Db**	Ambient Temperature: - 20°C / +40°C
II 2G Ex db IIB T3 Gb **II 2G Ex db eb IIB T3 Gb** **II 2D Ex tb IIIC T160°C Db**	Ambient Temperature: - 20°C / +80°C
II 2G Ex db IIC T3, T4, Gb **II 2G Ex db eb IIC T3, T4, Gb** **II 2D Ex tb IIIC T160°C,T130°C Db**	Ambient Temperature: - 20°C / + 40°C/ +50°C / +60C°

Temperature Class T5 and Ambient Temperature +45°C

Only for motor type 90L-2, max. Power 1.7 kW

II 2G Ex db IIC T5 Gb
II 2G Ex db eb IIC T5 Gb

Temperature Class T5 and Ambient Temperature +50°C

Only for motor type 100 LA-4 (max. Power 1.7 kW)

II 2G Ex db IIC T5 Gb
II 2G Ex db eb IIC T5 Gb

Temperature Class T5 and Ambient Temperature +60°C

Only for motor type 90S-2 , max. Power 1.2 kW

II 2G Ex db IIC T5 Gb
II 2G Ex db eb IIC T5 Gb

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

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

Equipment identification codes

The various motors types are identified by a code as follows:

A B C D E F G H I J K

A = Efficiency class: Blank = IE1; E = IE2; H = IE3
B = Motor series: 5- motors with aluminium die cast frame
C = Type of motor:
AT = basic design of single-speed motor
ATP = multi-speed motor with constant torque at all speed
ATPV = multi-speed fan rated motor
ABT = single-speed marine motor
ABTP = multi-speed marine motor with constant torque at all speed
ABTPV = multi-speed fan rated marine motor
D = Additional code (single or in combination)
A = motor with special mounting dimension
E = motor with special electric design
K = motor with electromagnetic brake
E = Motor frame size (71-80-90-100-112)
F = Frame length: S = Short, M = Medium, L = Long and X for longer frame (SX, MX, LX)
G = Power designation according to stator and rotor length: A,B,C,.. or
RA, RB, …; (R= for reduced power in bigger frame)
H = Number of poles : (2 ÷ 8); (12/6...., 8/4/2; 6/4/2; ...)
I = Type of protection and means of external connection
D = Ex db IIC (B) - motor and terminal box “db”
E = Ex db eb IIC (B) - motor “db” and terminal box “eb”
K = Ex db IIC (B) - motor “db” with permanently connected cables
P = Ex tb IIIC- motor in type of protection by emclosure (dust).
J = Code of additionally mounted equipment (single or in combination)
A = motor with space heaters
G = motor with encoder
T = motor with thermal protection
K = Temperature Class for gas: T3; T4; T5; T6
Max.Surface Temp. For dust : T160°C; T130°C; T100°C;

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

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

Main Electrical characteristics of motors in temperature class T3 / T4

Motors supplied by mains

- Maximum rated voltage:	750 V
- Maximum rated power:	4.5 kW
- Maximum rated current:	8.7 A
- Rated frequency:	50 / 60 Hz
- Rated speed:	750 ÷ 3600 rpm
- Number of poles:	2 ÷ 8
- Insulation class:	F – H (with limit Δt B)
- Duty:	S1 – S10
- Degree of protection:	IP54 or IP 55 or IP 56 or IP 65 or IP 66 or IP67 (gas only)
- Ambient temperature:	-20 ÷ + 40 °C (standard motors)
	-20 ÷ + 50 °C (motors provided with permanently connected cables)
	-20 ÷ + 60 °C (on demand)
	-20 ÷ + 80 °C (group IIB motors, with power derating for reducing the winding rise-temperature within the limits of the insulation class B (120 °C))

Motors supplied by inverter

- rated voltage maximum:	750 V
- peak voltage maximum:	1060 V
- frequency range:	5 ÷ 87 Hz (motors 2p=2)
	5 ÷ 100 Hz (motors 2p=4, 6, 8)

The three-phase asynchronous motors supplied by inverter are provided with a suitable label reporting electrical operating characteristics. The motors supplied by inverter shall be provided, inside the stator winding, with thermal detectors (PTC thermistors and TP thermal switches); these thermal detectors shall be connected to suitable protection devices of the supply system.

The operation of the thermal detector shall guarantee the disconnection of the supply at:
- 150 °C maximum for motors with temperature class T3.
- 130 °C maximum for motors with temperature class T4.

The resetting of the supply shall not be automatic.

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

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

Main electrical characteristics of representaive motors of series 5AT.., with Temperature class T6

Motor	***71B-4ET***	***80A-4EPT***	***80B 2ET***	***90L 2D***
Rated Voltage (V)	400	400	400	400
Rated Power -S1 (kW)	0.3	0.5	0.85	1.1
Rated frequency (Hz)	50	50	50	50
Rated current (A)	0.97	1.26	2.11	2.32
Number of poles	4	4	2	2
Connection	star	star	star	delta
Temperature Class	T6	T6	T6	T6
Ambient Temperature (C°)	-20 ÷ + 40			
Degree of protection	IP 54 or IP 55 or IP 56 or IP 65 or IP 66 or IP67 (gas only)			

Motors with brake and/or encoder

Brake and/or encoder, coupled to the motor, shall be suitable for group, category, type of protection and ambient temperature range foreseen from the motor.

Cable entries

The accessories used for cable entries, for unused holes and for connecting the separated terminal boxes shall be subject of separate certification according to the following standards:

Motors of Category 2G: EN IEC 60079-0 and EN 60079-1 for terminal box "Ex db"
EN IEC 60079-0 and EN IEC 60079-7 for terminal box "Ex eb"

Motors of category 2D: EN IEC 60079-0; EN 60079-1 and EN 60079-31 for terminal box "Ex db" and "Ex tb"
EN IEC 60079-0; EN IEC 60079-7 and EN 60079-31 for terminal box "Ex eb" and "Ex tb"

In all cases, the minimum degree of protection IP54, for motors of category 2G, and the minimum degree of protection IP 66, for motors of category 2D, shall be guaranteed according to EN 60034-5 and EN 60529 standards.

If cylindrical threads are used the coupling between the cable gland and terminal box shall be provided with block to prevent loosening.

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

Warning labels

"Warning - Do not open when energized".

For motors without terminal box and motors with ambient temperature +60°C:
"Supply cables of motors shall be suitable at least for an operating temperature of 92°C";

For motor supply by inverter:
"Winding protected with PTC thermistors or TB thermal switches"

In case of use of anticondensation heaters:
"Warning – energised resistors".

In case of paint with non-conductive dry film thickness > 0.2 mm
"Warning – potential electrostatic charging hazard. Clean with damp cloth"

[16] **Report n.** EX-C1012319

Routine tests

"Ex db" motor enclosures

The manufacturer shall carry out the overpressure routine tests according to paragraph 15.2.3.2 of EN 60079-1 standard, at the following pressure values:

- Motor enclosure size 71 : 16.1 bar
- Motor enclosure size 80 : 12.6 bar
- Motor enclosure size 90: 15.5 bar
- Motor enclosure size 100: 11.3 bar
- Motor enclosure size 112: 12.8 bar

Terminal boxes:

"Ex db" terminal boxes:
- On the terminal boxes dwg. A69192/2C1, the manufacturer shall carry out the overpressure routine tests according to paragraph 15.2.3.2 of EN 60079-1 standard, at the pressure value of 12.6 bar
- The other terminal boxes for motors 71-80-90 (drw. A69192-41) and for motors 100-112 (drw. A69192-42) are exempted from overpressure test since they have been submitted, with positive result, to an overpressure test at 30 bar, corresponding to 4 times the reference pressure.

"Ex eb" terminal boxes:
The routine dielectric test, on "Ex eb" terminal box, shall be performed at 2U + 1000V with a minimum value of 1500V (U = rated voltage of the motor).

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

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

- Supply cables of motors for the ambient temperature + 60°C shall be suitable for an operating temperature equal or greater than 92°C; for ambient temperature +80°C supply cable shall be suitable for an operating temperature equal or greater than 105°C.
- Screws used for fastening the parts of motor enclosure, shields and terminal box shall have a tensile strength higher than 800 Nmm^2.
- The motor provided with the cables permanently connected, shall have these cables protected against the risk of damage due to mechanical stresses. The free end connections shall be made according to one of the types of protection indicated in the EN 60079-0. Standard in compliance with the installation rules in force in the site of installation.
- For motors painted with non-conductive dry film having thickness > 0.2 mm, the following label shall be applied: "Warning – potential electrostatic charging hazard. Clean with damp cloth"
- The flamepaths are specified in the manufacturer drawings. For information regarding the dimensions of the the manufacturer shall be contacted.

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

Compliance with the Essential Health and Safety Requirements is not affected by this variation.
EHSR are assured by compliance with safety conditions and by compliance with the following standards:

EN IEC 60079-0: 2018	Explosive atmospheres - Part 0 -	General requirements
EN 60079-1: 2014	Explosive atmospheres - Part 1 –	Equipment protection by enclosures "d"
EN IEC 60079-7: 2015/A1: 2018	Explosive atmospheres- - Part 7 –	Equipment protection by increased safety "e"
EN 60079-31: 2014	Explosive atmospheres – Part 31 -	Equipment dust ignition protection by enclosure "t"

[19] **Descriptive documents** (prot. EX-C1012325)

- *Technical description Nr. A69192 - Annex 7 (33 pages)	Edition 2	dated	02/07/2021
- *Drawing n. A69192/7C1		dated	01/02/2017
- *Drawing n. A07824/L	Rev.4	dated	12/05/2021
- *Drawing n. 17237		dated	02/08/2018
- *Drawing n. 17327/A		dated	02/08/2018
- *Appendix 1		dated	01/03/2021
- *Appendix 2		dated	01/03/2021
- *Appendix 3		dated	01/03/2021
- *Appendix 4		dated	30/03/2021
- *Appendix 5		dated	24/02/2021
- *Appendix 6		dated	18/05/2020
- *Appendix 7		dated	01/03/2021
- *Appendix 8		dated	09/04/2019
- *Fac-simile of EU Declaration. of Conformity Ex OB 7.3.7.5/19		dated	24.02.2021
- *Operation and Manual Instruction n° 1619721 (64 pg.)		dated	--/03/2021

*Note: an * is included before the title of documents that are new or revised annexed to this supplement.*
One copy of all documents is kept in CESI files.

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 110X/07**

Certificate history

Issue N.	Issue Date	Summary description of variation
07 rev.1	2024/05/09	- Correction in translation of tensile strength, it was yield strength
07	2021/07/12	- Complete motor range 5AT 71-112 in design T6 - IP67 mechanical protection (for gas only) - Terminal block KM4 new design - Corrosion protection system for motors in gas group IIC - Reassessment of motors 5AT on basis of new edition of standards: EN IEC 60079-0:2018 and EN IEC 60079-7:2015/A1:2018.
06	2017/02/24	- New design of motors with efficiency class IE2 and IE3. - New additional code for motors with efficiency class IE2 and IE3. - Reassessment for temperature class T5 for standard motors series 5AT 71 ÷ 112 - Upgrading the nameplate - Reassessment of motors series 5AT on basis of the new standard EN 60079-7 Ed. 5th: 2015
05	2016/05/27	- New terminal blocks KM5 - New multicore bushing type RSM - New temperature class T6 for motors type 5AT 80 A-2 - Updating to new standard edition EN 60079-1: 2014
04	2015/04/15	- Updating of technical documentation with more construction details - Motors assembled with two terminal boxes (Ex d or Ex e) - New temperature classes T5/T6 for motors type 5AT 90L-2 - Updating to new standard edition EN 60079-31: 2014
03	2014/04/03	- New electrical characteristics for motors type 5AT 90 S-2.
02	2013/05/22	- New terminal boxes with protection “Ex d” - Name plate updating - Updating to new standard editions EN 60079-0: 2012; EN 60079-1: 2007, EN 60079-7: 2007; EN 60079-31: 2009
01	2009/05/26	- Constructive changes and document review for compliance with EN60079-0 (2006), EN60079-1 (2007), EN60079-7 (2007), EN61241-0 (2006) and EN 61241-1 (2004). - Frequency range 5-87 Hz for 2 poles motors supplied by inverter; - Ambient temperature range -20°C + 80°C (only for group IIB, temperature class T3).
00	2005/12/29	First issue of certificate CESI 05 ATEX 110X