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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 280 X /10

4] Product: Three-phase asynchronous motors series 7AT 71-80-90-100-112-132-160-180-200-225-250-280-315

[5] Manufacturer: **KONCAR – MES d.d. (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 03 ATEX 280X 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-C1011338.

[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:

I M2 Ex db IMb *or* **I M2 Ex db eb IMb**
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 T160°C, T130°C, T 100°C Db

Date 09/01/2024 - Translation issued the 09/01/2024
(Revision 1 of the Translation issued on 29th June 2021)

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

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

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

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

- New motor sizes 7AT 71, 80, 90S/L (shorter version than previous size 90, now called 90LX)
- New terminal box 7AT 71-112 (Ex eb)
- Terminal block KM4 new design
- Complete motor range 7AT 71-315 in design T6;
- IP67 mechanical protection (for gas only)
- Corrosion protection system for motors in group IIC
- Reassessment of all motors 7AT 71 ÷ 315 on basis of the new standards EN IEC 60079-0: 2018 and EN IEC 60079-7:2015+A1:2018.

Description of equipment

The three-phase asynchronous motors series 7AT 71-80-90-100-112-132-160-180-200-225-250-280-315 are manufactured by different constructive typologies; they can be supplied by mains or by inverter, with simple or ouble polarity, self-ventilated or with forced ventilation.

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.
Only for groups II and III, the motors series 7AT 71 ÷ 315 can be assembled with two "Ex d" terminal boxes (connected by sealing bushing + 3 piece fitting or by barrier cable glands and cable) or with two "Ex e" terminal boxes (connected by piece fitting or by cable glands and cable).
The motors can be equipped with auxiliary devices such as heaters, thermal detectors, brake and encoder.

The three-phase asynchronous motors series 7AT 71-80-90-100-112-132-160-180-200-225-250-280-315, can be manufactured with efficiency class IE1, IE2 and IE3 according to EN 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 and the level of the efficiency class is stated 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 motors series 7AT 71÷315, 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"

Depending on of type of protection and ambient temperature, the motor series 7AT 71 ÷ 315 for Group II and III can be marked as follows:

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

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

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

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 types: 180 M-4 (max. Power 15.0 kW); 200 L-4 (max. Power 22.0 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 132M-4 (max. Power 5.0 kW);

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

Temperature Class T6 and Ambient Temperature +45°C

Only for Motor type: 132MA-4 (max. Power 4.8 kW)

II 2G Ex db IIC T6 Gb
II 2G Ex db eb IIC T6 Gb

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[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

Description of the equipment (follows**)**

Equipment identification

The motors of series 7AT.. , are identified by a code with the following meaning:

A B C D E F G H I J K

A = Efficiency class: Blank = IE1; E = IE2; H = IE3

B = Motor series: 7- motors with cast iron 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 (71-80-90-100-112-132-160-180-200-225-250-280-315)

F = Frame length: S = Short, M = Medium, L = Long and X for longer frame (SX, MX, LX)

G = Power designation, power 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 with dust protection mode “tb”

R1 = design Ex db eb I - motor in Ex protection “db” and terminal box in Ex protection “eb” with certified cable plugs

R2 = design Ex db I - motor in Ex protection “db” and terminal box in Ex protection “db” with certified cable plugs, or with direct cable entry (barrier cable glands)

J = Code of additionally mounted equipment (single or in combination)

A = motor with space heaters

G = motor with encoder

T = motor with thermal protection

V = motor with forced ventilation unit and certified driving motor

K = Temperature Class for gas: T3; T4; T5; T6.

Max. Surface Temperature for dust: T160°C; T130°C ; T100°C.

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

Electrical characteristics

Motors supplied by mains

- Maximum rated voltage:	750 V
- Maximum rated power:	225 kW
- Maximum rated current:	370 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 and shall be provided, inside the stator winding, with thermal detectors (PTC thermistors or 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. and motors for group I M2 (mining).

The resetting of the supply shall not be automatic.

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

Main electrical characteristics of representative 7AT motors with Temperature class T6

Motor	*71 A*	*90 LR*	*100 LA*	*132 MA*	*160 MA*	*180 L*	*200 L*	*250 M*	*315 M*
Rated Voltage (V)	400	400	400	400	400	400	400	400	*400*
Rated Power -S1 (kW)	0.37	1	2.1	3.4	11	7.5	26	45	*98*
Rated frequency (Hz)	50	50	50	50	50	50	50	50	*50*
Rated current (A)	0.932	2.6	4.6	7.9	19.39	18.19	47.94	82.78	*132.3*
Numbers of poles	2	4	4	6	2	8	4	4	*2*
Connection	star	star	star	delta	delta	delta	delta	delta	delta
Temperature Class	T6	T6	T6	T6	T6	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.

Motors with forced ventilation unit *(only for motors 132 ÷315)*

These machines are provided with a motor-driven blower mounted on the primary motor. In these case the primary motor is provided with thermal detectors for the control of internal temperature. The operation of the primary motor shall be interlocked to the correct operation of the forced ventilation.

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.

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[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

Warning labels
"Warning - Do not open when energized".
For motors size 315LB, 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 TP thermal switches"
In case of use of anticondensation heaters:
"Warning – energized 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-C1011338

Routine tests

"Ex db" motor enclosures

On the 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 sizes 71:	16.0 bar
- Motor enclosure sizes 80:	14.5 bar
- Motor enclosure sizes 90:	14.5 bar
- Motor enclosure size 100:	13.5 bar
- Motor enclosure sizes 112:	14.5 bar
- Motor enclosure sizes 132:	11.7 bar
- Motor enclosure size 132MX:	13.0 bar
- Motor enclosure sizes 160:	11.7 bar
- Motor enclosure sizes 180:	14.5 bar
- Motor enclosure sizes 200:	14.5 bar
- Motor enclosure size 225:	17.6 bar
- Motor enclosure size 250:	24.3 bar
- Motor enclosure size 280:	28.2 bar
- Motor enclosure size 315:	23.5 bar
- Motor enclosure size 315LB:	27.8 bar

"Ex db" terminal boxes

On the terminal boxes with type of protection "Ex db" (drw.122016/9B2), 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:

- Terminal box for motors 71 ÷ 112: 12.6 bar

On the terminal boxes, with type of protection "Ex db", (dwg. 122016/7B1) 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:

- Terminal box for motors 132 ÷ 280: 13.2 bar
- Terminal box for motor 315: 15.5 bar

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

"Ex db" terminal boxes (follows)

On the terminal boxes, with type of protection "Ex db", (dwg. 122016/7B4) for motors sizes 200, 225, 250 and 280, 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:

- Terminal box for motors 200 ÷ 225: 12.8 bar
- Terminal box for motors 250 ÷ 280 13.7 bar

The terminal boxes with type of protection "Ex db" (drw. 122016/7B4) for motors sizes 132, 160 e 180 are exempted from overpressure test since they have been submitted, with positive result, to an overpressure test at corresponding to 4 times the reference pressure at the following values:

- 35.3 bar (8.8 x 4) terminal box for motor 132
- 33.2 bar (8.3 x 4) terminal box for motors 160, 180.

On the auxiliary terminal box, with type of protection "Ex db", (dwg. A69192/C1), used in the two boxes version, 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.

"Ex eb" terminal boxes

For the terminal boxes with type of protection "Ex eb", the dielectric test with applied voltage shall be performed (according to clause 7.1 of the EN IEC 60079-7) at 2U + 1000V with a minimum value of 1500V (U = rated voltage of the motor).

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

- Supply cables of motors size 315LB, motors without terminal box and motors for the ambient temperature +60°C shall be suitable for an operating temperature equal or greater than 92°C.
- Screws used for fastening the parts of motor enclosure, shields and terminal box shall have a tensile strength equal or higher than:
  800 N/mm^2 for motors size 71, 80, 90, 100, 112, 132, 160, 180, 280 and 315.
  1200 N/mm^2 for motors size 200, 225 and 250.
- The motor provided with the cables permanently connected, shall have these cables protected against the risk of damage due to mechanical stresses. The end connections shall be made according to one of the types of protection indicated in the EN IEC 60079-0 standard according to 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 flameproof joints the manufacturer shall be contacted.

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

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"

[13] # Schedule

[14] **SUPPLEMENTARY EU-TYPE EXAMINATION CERTIFICATE n. CESI 03 ATEX 280X /10**

[19] **Descriptive documents** (prot. EX-C1011343)

- *Technical Description A524200 Annex 10 (44 pg.)	Ed. 3	dated 24/06/2021
- *Drawing n. 122016/6A	Rev. D	dated 01/12/2020
- *Drawing n. 122016/9A	Rev. A	dated 01/12/2020
- *Drawing n. 122016/9B (2 pg.)	Rev. A	dated 01/12/2020
- *Drawing n. 122016/10A1		dated 01/07/2020
- *Drawing n. 122016/10A2		dated 01/07/2020
- *Drawing n. 122016/10A3		dated 01/07/2020
- *Drawing n. 122016/9D1	Rev. A	dated 01/12/2020
- *Drawing n. 122016/9B2 (4 pg.)	Rev. A	dated 01/12/2020
- *Drawing n. 122016/9D2	Rev. A	dated 01/12/2020
- *Drawing n. 122016/10B1		dated 21/01/2021
- *Drawing n. 122016/10I		dated 21/01/2021
- *Drawing n. 122016/7B6 (4 pg.)	Rev. C	dated 16/03/2020
- *Drawing n. 122016/10B6 (2 pg.)		dated 01/03/2021
- *Drawing n. 122016/9B3	Rev. A	dated 16/03/2020
- *Drawing n. 122016/9D3	Rev. A	dated 01/12/2020
- *Drawing n. 172367		dated 02/08/2018
- *Drawing n. 172367/A		dated 02/08/2018
- *Drawing n. 122016/10C5		dated 01/02/2017
- *Drawing n. A69192/7C1		dated 01/02/2017
- *Drawing n. A07824/L	Rev. A	dated 12/05/2021
- *Appendix 1		dated 01/03/2021
- *Appendix 2		dated 01/03/2021
- *Appendix 3		dated 01/03/2021
- *Appendix 4		dated 04/03/2021
- *Appendix 5 (3 pg.)	issue 2	dated 24/02/2021
- *Appendix 6	issue 2	dated 18/05/2020
- *Appendix 7		dated 01/03/2021
- *Appendix 8 (4 pg.)	Ed. 1	dated 09/04/2019
- *Fac-simile of EU Declaration. of Conformity Ex OB 7.3.7.5 ED18		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 03 ATEX 280X /10**

Certificate history

Issue n.	Issue Date	Summary description of variation
10 rev.1	2024/01/09	- Correction in translation of tensile strength, it was yield strength
10	2021/06/29	- New 7AT motor sizes 71, 80, 90S/L (shorter version than previous size 90, now called 90LX) - New terminal box 7AT 71-112 (Ex eb) - Terminal block KM4 new design - Complete motor range 7AT 71-315 in design T6 - IP67 mechanical protection (for gas only) - Corrosion protection system for motors in group IIC - Reassessment of all motors 7AT 71 ÷ 315 on basis of the new standards EN IEC 60079-0: 2018 and EN IEC 60079-7:2015+A1:2018
09	2017/02/28	- New 7AT motor sizes 90, 100 and 112. - Constructive variation of motor size 7AT 132 MX. - New design of motors with efficiency class IE2 and IE3. . Additional code for the identification of motor class efficiency - Assessment for standard motors in temperature class T5 with Ta +40° - Updating of nameplate - The motors series 7AT, originally assessed in compliance with EN 60079-7 Ed. 4th 2006, has been reassessed on the basis of the new standard EN 60079-7 Ed. 5th: 2015
08	2016/05/27	- New terminal blocks KM5, KM8, KM12 - New multicore bushing type RSM - New temperature class T5 for motors type 7AT 132M-4 - New protection mode “Ex tb” (EN 60079-31: 2014) - Updating to new standard edition EN 60079-1: 2014
07	2015/04/15	- Updating of technical documentation with more construction details - New temperature class for motors type 7AT132-MA-4, 7AT180-M-4, 7AT200L-4 - New terminal boxes “Ex d” (Dwg. 122016/7B4) - Motors assembled with two terminal boxes “Ex d” or “Ex e”
06	2013/05/22	- Constructive variations to 7AT-315 motor for delivering up to 200 Kw - New terminal boxes for 7AT-315 (200Kw) - New terminal boxes in protection “e” for motors series 7AT (132÷315) - Updating of nameplate - Updating to the new standard editions
05	2010/07/20	- New temperature class T6 for motors type 7AT132SA-2 and type 7AT180 L-4
04	2010/04/09	- New motor frame size 315
03	2008/09/09	- Constructive variations and updating to the new standard editions - Frequency range 5-87 Hz for motors (2 poles), supplied by inverter - Ambient temperature range -20°C + 80°C (only for group IIB and Temperature class T3)
02	2006/06/14	- New motor type 7 A.T. 280
01	2006/03/28	- Constructive variations
00	2003/10/02	- First issue of certificate CESI 03 ATEX 280X