



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx UL 16.0170X Issue No: 2 Certificate history:  
Status: **Current** Issue No. 2 (2018-07-31)  
Date of Issue: **2018-07-31** Page 1 of 5 Issue No. 1 (2017-09-13)  
Applicant: **Elwood Corp.** Issue No. 0 (2017-01-31)  
2701 N. Green Bay Road  
Racine, WI 53154  
**United States of America**

Equipment: **Servo Motors, : M43X-XXXX-8XXX, M43X-XXXX-9XXX, M43X-XXXX-DXXX, M43X-XXXX-EXXX, M44X-XXXX-8XXX, M44X-XXXX-9XXX, M44X-XXXX-DXXX, M44X-XXXX-EXXX, M46X-XXXX-8XXX, M46X-XXXX-9XXX, M46X-XXXX-DXXX, M46X-XXXX-EXXX**

*Optional accessory:*

Type of Protection: **Flameproof "db"**

Marking: Ex db IIB T3 Gb

-20°C to +40°C

Approved for issue on behalf of the IECEx  
Certification Body:

Lucy Frieders

Position:

Staff Engineer

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
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 the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

**UL LLC**  
**333 Pfingsten Road**  
**Northbrook IL 60062-2096**  
**United States of America**





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Manufacturer: **Elwood Corp.**  
2701 N. Green Bay Road  
Racine, WI 53154  
**United States of America**

Additional Manufacturing location(s):

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 apparatus 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 : 2011** Explosive atmospheres - Part 0: General requirements  
Edition:6.0

**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 electrical 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 Report:

[US/UL/ExTR16.0196/02](#)

Quality Assessment Report:

[US/UL/QAR18.0005/00](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

These motors are total enclosed non-ventilated permanent magnet, servo specialty motors. The motors have a three-phase connection wound field. They are intended to be controlled by a pulse width modulated (PWM) variable frequency drive. The speed of the motor is varied by changing the frequency of the power supplied. The drive frequency and voltage are changed by rapid pulse width modulating of a bus voltage. The current waveform used is sinusoidal. The motors are rated for a 320 max or 640 max bus voltages.

The motors are brushless designs employing a feedback device that controls the motor rotation and shaft position. The motors are temperature limited with over temperature (OTL) devices installed in the windings. The OTL is an automatic resetting device and should be connected directly into a power disabling or latched (locked-out) type circuit that requires manual resetting.

An installation manual is provided specifying the power supply requirements, the PWM controller output and performance characteristics required, the resolver ratings, thermostat ratings and connections and the motor performance curves when held within the specified limits of operation

Please see Annex for additional information.

### SPECIFIC CONDITIONS OF USE: YES as shown below:

- Motors manufactured with permanently connected unterminated conductors and therefore marked with X to indicate the need for appropriate protection of the free end of the conductors. The supplied lead seal is not sufficient for the protection method. An IECEx conduit fitting with an integral seal complying with the requirements of IEC 60079-0 and IEC 60079-1 must be supplied by the end user.
- If replacement of screws and/or locknuts that secure the front end bell to the stator assembly is necessary, they must be replaced with screws and locknuts having the following dimensions and minimum tensile strength.

Model No.	Dimension, screws	Material	Tensile Strength	Dimensions, nuts	Material	Tensile Strength
M43X	M4 x 0.7 x 16	Steel	174 KSI	M5	Steel	116 KSI
M44X	M5 x 0.8 x 16	Steel	174 KSI	M5	Steel	116 KSI
M46X	M5 x 0.8 x 25	Steel	174 KSI	M5	Steel	116 KSI

- If replacement of the tie bolts that secure the rear end bell and the motor cover to the stator assembly is necessary, they must be replaced with M5 x 0.8-6g tie bolts. The bolts must be made of steel and have a minimum tensile strength of 58 KSI. If replacement of lock nuts is necessary, they must be replaced with M5 x 0.8-6H lock nuts. The lock nuts must be made of steel and have a minimum tensile strength of 116 KSI.
- The motors must be excited with 3-phase sinusoidal currents in proper relationship to the motor's generated voltage of back electromotive force at each rotor position. A pulse-width-modulated (PWM) current amplitude, frequency and phase for operation of the rotor within its specification. The PWM switching frequency is specified at a minimum of 3 kHz.
- Flameproof joints are not intended to be repaired, contact Elwood Corp. for information.



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**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

Issue 1: Updated instructions to latest revision level and removed IEC 60079-31 from this certificate

Issue 2: New motor models with designation M43X-XXXX-DXXX, M43X-XXXX-EXXX, M44X-XXXX-DXXX, M44X-XXXX-EXXX, M46X-XXXX-DXXX, M46X-XXXX-EXX and added an alternate motor construction.



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**Additional information:**

**Annex:**

[Annex to IECEX 16.0170X Issue 2.pdf](#)



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## TYPE DESIGNATION

M4    3    2    =    N    N    N    0    =    8    G    0    8    1A  
I    II    III       IV    V    VI    VII    VIII    IX    X    XI    XII

### **I – Basic Designation**

M4 – Square motor

### **II – Motor Frame**

Given as 3, 4, or 6

### **III – Number of magnets (stack length)**

Given as 1, 2, 3, 4, or 5

### **IV – Designation of speed**

Given as a letter

### **V – Output Shaft and Flange Dimensions**

Given as a letter

### **VI – Magnet Material**

Given as a letter

### **VII – Brake**

Given as a letter; 0 (zero) designates without brake

### **VIII – Explosion Protected by Flameproof Enclosure and Winding Voltage**

Given as 8, 9, D or E

### **IX – Feedback Device**



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Given as a letter or number; 0 (zero) designates without feedback device

### X – Secondary Feedback Device

Given as a letter; 0 (zero) designates without feedback device

### XI – Connection method

Given as a letter or number

### XII – (Optional) Factory Assigned Options

Two characters, given as a combination of letters or numbers

### PARAMETERS RELATING TO THE SAFETY

M43: 230 or 460V, 5.7A, Continuous Duty or 5 seconds on 55 seconds off

M44: 230 or 460V, 8.7A, Continuous Duty or 5 seconds on 55 seconds off

M46: 230 or 460V, 23.6A, Continuous Duty or 5 seconds on 55 seconds off

### MARKING

Marking has to be readable and indelible; it has to include the following indications:

		<b>ELWOOD</b> HIGH PERFORMANCE MOTORS SERVOS - STEPPERS		ELWOOD CORPORATION Racine, Wisconsin USA 1-800-558-9489 www.elwood.com	
Specialty Motor for Hazardous Locations E149083		NO. <input type="checkbox"/>		CE 0539 Ex II 2 G Ex db IIB T3 Gb DEMKO 16 ATEX 1817X Ex db IIB T3 Gb IECEX UL 16.0170X	
Class I, Groups C&D		See Install./Oper. Manuals			
Model No.			S.N.		
Rated: HP,		kW,		A, RPM	
Stall: Lb.In.,		Nm,		A, $\frac{3}{\sqrt{2}}$ VRMS	
Rated Freq: Hz.		Freq. Range: 0 to Hz.			
Rated Amb: 40 °C		Oper. Temp: °C,			
PERM. LUBRICATED BALL BEARINGS	CONTINUOUS DUTY CYCLE	IP	Ins.Cl: H	Temp. Limited	
Permanent Magnet AC Servo Motor					