



# 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 LCI 07.0001X issue No.: 3  
Status: Current  
Date of Issue: 2015-04-03 Page 1 of 5

Certificate history:  
Issue No. 3 (2015-4-3)  
Issue No. 2 (2012-10-1)  
Issue No. 1 (2011-4-14)  
Issue No. 0 (2007-1-12)

Applicant: **ABB Oy Motors and Generators**  
Strömbergin Puistotie 5A  
P.O. Box 633  
65101 Vaasa  
Finland

Electrical Apparatus: **Asynchronous motors - M3G\_ and M3D\_ 80... up to 450... ; M3L\_ 400... ; M3L\_ 450... ; M4GP and M4DP 200... up to 355...**  
Optional accessory:

Type of Protection: **Ex nA and/or Ex t**

Marking: **ABB Oy Motors and Generators**  
Address: ...  
Type: ... Serial number: ...  
Ex nA IIB or IIC T3 Gc  
Ex tb IIIA or IIIB or IIIC T125°C Db IP5X or IP6X  
Ex tc IIIB or IIIC T125°C Dc IP5X or IP6X  
IECEx LCI 07.0001X  
Electrical characteristics ( $U_n$  ... V,  $I_N$  ... A,  $P_N$  ... kW, F ... Hz, r/min ..., Cos  $\phi$  ...)  
Ambient operating temperature : ...°C if <-20°C or >+40°C  
See attached document for warnings and complete marking :  
"Annex 1 to Certificate IECEx LCI 07.0001X issue 3"

Approved for issue on behalf of the IECEx  
Certification Body:


Michel EQUI

Position:

Certification Officer

Signature:  
(for printed version)

Date:

  
2015/04/03

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:  
**Laboratoire Central des Industries Electriques (LCIE)**  
33 Avenue du General Leclerc  
FR-92260 Fontenay-aux-Roses  
France

Documents relative to LCIE certification activities (Certificates, QARs, ExTRs) can be registered under the references "LCI" or "LCIE".



LCIE



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Manufacturer: **ABB Oy Motors and Generators**  
Strömbergin Puistotie 5A  
P.O. Box 633  
65101 Vaasa  
Finland

Additional Manufacturing location  
(s):

**ABB Logistics Center  
Europe GmbH**  
Braukerweg 132  
Germany

**ABB Sp.zo.o**  
Ul. Placydowska  
95-070 Aleksandrow Lodzki  
Poland

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 electrical 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:

<b>IEC 60079-0 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-15 : 2010</b> Edition: 4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
<b>IEC 60079-31 : 2008</b> Edition: 1	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure 't'

*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:

FR/LCI/ExTR07.0001/00  
FR/LCIE/ExTR15.0022/00

FR/LCI/ExTR07.0001/01

FR/LCI/ExTR07.0001/02

### Quality Assessment Report:

FR/LCI/QAR08.0003/05



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## Schedule

### EQUIPMENT:

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

Asynchronous motors with type of protection by enclosure "t" and/or non-sparking "nA" with IP5X or IP6X.

The complete range of motors and the description of type designations are given in attachment.

Network voltage supply : between 190 V and 800 V for shaft heights 80 up to 250

Network voltage supply : between 190 V and 1000 V for shaft heights 280 up to 450

Maximum nominal voltage with converter : 690 V

Voltage tolerances according to :

- IEC 60034-1 for motors stamped in multivoltages use (e.g. : 380 V - 420 V)

- IEC 60038 for motor stamped in single voltage use (e.g. : 400 V / 690 V).

Standard output range : 0.15kW up to 1200kW.

Frequency : 50 Hz or 60 Hz or variable frequency

Duty : S1

### CONDITIONS OF CERTIFICATION: YES as shown below:

- Ambient operating temperature range :

-55°C ≤ Tamb ≤ +80°C according to the motor model specified in manufacturer's instructions.

- Pre-purging before starting the motor is not necessary for "Ex nA" motor.

- In case of use with a frequency converter, the motor may be equipped with embedded thermal sensors to ensure the insulation class. The surface temperature class may also be protected by embedded thermal sensors for the type of protection "Ex t".

Manufacturer's instructions for the safe use with a converter shall be followed.



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## EQUIPMENT(continued):

### DESCRIPTION (Continued) :

Ambient temperature between -20°C up to -55°C is allowed without adding heating elements or other heating systems.

Ambient temperature between +40°C and +80°C is acceptable under the respect of the specifications stated in the descriptive file of the manufacturer.

Permitted electrical and mechanical variations are defined within the manufacturer's technical documentation (doc. 3GZF500930-314 Rev. E).

- Any motors for a voltage between 190 V and 800/1000 V and designed with same nominal flux, within a tolerance of  $\pm 3\%$ , and same frequency as motors listed in descriptive documents are acceptable.
- Any motors with lower rated output power than listed in the descriptive file is acceptable.
- Any motors for intermittent duty S2...S8 or S10 are acceptable.
- Motor used in frequency converter supply and S9 duty are acceptable under following conditions :
  - Fixed second name plate with converter and load data provided.
  - Converter of type ACS550, ACS800 or a comparable converter in reference to the output voltage and current specifications.
- Any motors with higher outputs than the standardized listed ones, respecting the technical requirements stated in the descriptive file are acceptable.
- Any motors with terminal box "Ex e" (IEC 60079-7) in addition to the type of protection "Ex t" are acceptable provided that the box is marked accordingly.
- Flying leads are allowed.
- Thermal sensor for bearings are allowed if they have an appropriate (or better) certification than the motor.
- Closed N-end without fan is allowed (IC410).
- Any motors with water cool frame M3LP... are acceptable providing that they respect the specifications stated in descriptive document.
- Motors with designations M3GG, M3DG and M3LG are used as asynchronous generators.

### Routine tests for Ex nA motors:

According to clause 23.2.1 of standard IEC 60079-15, each apparatus shall be submitted to a dielectric strength test (carried out in accordance with clause 6.5.1).



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

### Issue 1 :

Adding of premium efficiency motors M4GP 200... up to 355...

### Issue 2 :

- Normative update according to the latest edition of standards.
- Update of conditions of certification.
- Addition of motors M3GC 80...355 for high speed applications.
- Addition of new terminal boxes for Ex tb and Ex tc application.
- Addition of 2 new isolating materials for the terminal board.
- Addition of new sealing materials of terminal boxes.
- Addition of use of converter ACS550.

### Issue 3:

- Addition of efficiency class IE3 for motor range M3G\_ 280...355 and M3D\_ 280...355, and associated electrical characteristics.
- Addition of new type designations M3D\_ and M4DP for Ex t motors.
- Addition of an improved connection method for flying leads.
- Addition of new material for terminal boards.
- Addition of generator application and associated designations M3GG, M3DG and M3LG.
- Addition of a new manufacturing location.

## 1. Motors range and description of type designations:

Model <sup>(1)</sup>	Shaft height (in mm) <sup>(2)</sup>	Voltage supply	Frequency	Efficiency class	
				Code	Generation
M3GP M3DP M3GC M3DC M3GG M3DG	80...250	190 – 800 V	50 Hz / 60 Hz or variable frequency	IE2	G
M3GP M3DP M3GG M3DG	280...450	190 – 1000 V			
M3GC M3DC M3GG M3DG	280...355				
M3LP M3LG	400...450	190 – 1000 V			
M3GP M3DP M3GC M3DC M3GG M3DG	280...355	190 – 1000 V			
				60 Hz or variable frequency	K
M4GP M4DP	200...250	190 – 800 V	50 Hz / 60 Hz or variable frequency	Premium efficiency	K
	280...355	190 – 1000 V			

<sup>(1)</sup> Meaning of models:

M\*GP: Ex nA / Ex t motor (note: asterisk (\*) is replaced by "3" or "4")

M\*DP: Ex t motor (note: asterisk (\*) is replaced by "3" or "4")

M3GC: Ex nA / Ex t for high speed application

M3DC: Ex t motor for high speed application

M3GG: Ex nA / Ex t motor used as generator

M3DG: Ex t motor used as generator

M3LP: Ex nA / Ex t water-cooled motor

M3LG: Ex nA / Ex t water-cooled motor used as generator

<sup>(2)</sup> Range of shaft heights (mm): 80, 90, 100, 110, 112, 132, 160, 180, 200, 225, 250, 280, 315, 355, 400 and 450.

### Type designation:

The complete motor type designation is a combination of letters and numbers.

For instance: M3GP 280 SMA 4.

M3GP : motor Ex nA / Ex t

280 : shaft height in mm according to IEC 60072-1

SM: mounting dimensions in mm according to IEC 60072-1

A : output, as per length of active iron (A...E)

4 : number of poles





## Annex 1 to Certificate IECEx LCI 07.0001X issue 03



### 2. Marking

#### The marking shall be:

ABB Oy Motors and Generators

Address: ...

Type: ...

Serial number: ...

Year of construction: ...

Ex nA IIB or IIC T3 Gc (\*)

Ex tb IIIA or IIIB or IIIC T125°C Db IP5X or IP6X (\*)

Ex tc IIIB or IIIC T125°C Dc IP5X or IP6X (\*)

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- Electrical characteristics

( $U_N$  ... V,  $I_N$  ... A,  $P_N$  ... kW, F ... Hz, r/min ...,  $\cos \phi$  ..., ...)

- Ambient operating temperature ... °C if  $> 40$  °C or  $< -20$  °C

(\*) Motors with temperature class T2 (Ex nA) or T100°C... T150°C (Ex t) are authorized respecting the specifications stated in the technical file of the manufacturer.

For the motors driven by converters a second name plate will be fixed on the motors mentioning the voltage, current and/or load conditions in function of the frequency range, as well as the relevant converter characteristics.

For use in dust atmospheres :

- WARNING – AFTER DE-ENERGIZING, DELAY 60 MINUTES BEFORE OPENING

or

- WARNING – DO NOT OPEN WHEN AN EXPLOSIVE DUST ATMOSPHERE MAY BE PRESENT

On the cover of the terminal box "Ex e" :

WARNING – DO NOT OPEN WHEN ENERGIZED

In case the temperature under rated conditions is higher than 70°C at the entry point or 80°C at the branching point of the conductors :

WARNING – SELECTION OF CABLES AND CABLE GLANDS – SEE INSTRUCTIONS

For the Group IIC, when the paint thickness is superior to the maximal values specified in IEC 60079-0 :

WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS

The efficiency class shall appear on the nameplate of the motors.