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

Certificate No.: IECEx SIR 09.0011X

Issue No: 3

Certificate history:
Issue No. 3 (2019-06-06)
Issue No. 2 (2015-06-25)
Issue No. 1 (2010-10-01)
Issue No. 0 (2009-04-07)

Status: **Current**

Date of Issue: **2019-06-06**

Applicant: **ABB Motors & Mechanical Inc. (Formerly Baldor Electric Company)**
5711 R.S Boreham Jr Street,
Fort Smith, Arkansas,
72901-2400,
72902
United States of America

Equipment: **Range of 180 to 440 NEMA Frame Motors**

Optional accessory:

Type of Protection: **Flameproof and Dust**

Marking:

Ex db I Mb

Ex db IIB T* Gb

Ex tb IIIC T*°C Db IP6X
* See table of suitable applications

The manufacturer of these products, Baldor Electric Company, became ABB Motors and Mechanical Inc. on 1 March 2018. Nameplates may contain the company name 'Baldor Electric Company' for a period of time as they have been updated to reflect the corporate identity'.

Approved for issue on behalf of the IECEx Certification Body:

N Jones

pp R.A. CRAIG

Position:

Certification Manager

Signature:
(for printed version)

Date:

2019-06-06

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.

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

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Manufacturer: **ABB Motors & Mechanical Inc. (Formerly Baldor Electric Company)**
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Additional Manufacturing location(s):

ABB Motors & Mechanical Inc. (formerly Baldor Electric Company
These products may be manufactured at any ABB Motors & Mechanical Inc. (formerly Baldor Electric Company) Facility listed on Quality Assessment Report GB/SIR/QAR07.0002/02 that has been audited for the manufacture of the type of protection listed

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 : 2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2013 Edition:2	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:

GB/SIR/ExTR09.0048/00 GB/SIR/ExTR10.0235/00 GB/SIR/ExTR15.0175/00
GB/SIR/ExTR19.0150/00

Quality Assessment Report:

GB/SIR/QAR07.0002/01

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The NEMA 180-440 (IEC equivalent designations 112S-280H) frame range of induction motors are rated for use with various voltages up to 7200 V. Each machine comprises a cast iron housing with bolt-on, cast iron endshields. The enclosure contains a rotor and stator assembly, the rotor passing through the endshields via rolling-element bearings. The shaft at the non-drive end is fitted with a cooling fan within a cast iron or steel cowl. Anti-condensation heaters may optionally be fitted around the stator windings; these are interlocked electrically such that they are de-energised when the motor is in use. Cabling to the motor is by means of a threaded aperture and cable tube for the fitting of a suitably certified cable entry device. The stator and rotor length (and consequent frame length) determines the rated output power as below:

Frame designation	Nominal continuous rating kW (hp)	Frame designation	Nominal continuous rating kW (hp)
180 (112S - 112M)	7.5 (10)	320 (200M - 200L)	56.2 (75)
210 (132S - 132M)	15.0 (20)	360 (225S - 225M)	93.7 (125)
250 (160M - 160L)	22.5 (30)	400 (250S – 250M)	111.8 (150)
280 (180M - 180L)	37.5 (50)	440 (280S – 280H)	372.9 (500)

Refer to the Annexe for the full description, Design Options, change status, Conditions of Certification and Conditions of Manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:

For Conditions of Certification REFER TO THE ANNEXE

IECEx Certificate of Conformity

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Date of Issue: **2019-06-06**

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

Refer to annexe

Annex:

IECEx SIR 09.0011X Annexe Iss3.pdf

Annexe to:	**IECEx SIR 09.0011X Issue 3**
Applicant:	**ABB Motors & Mechanical Inc. (Formerly Baldor Electric Company)**
Apparatus:	**Range of 180 to 440 NEMA frame motors**

Product Description

The NEMA 180-440 (IEC equivalent designations 112S-280H) frame range of induction motors are rated for use with various voltages up to 7200 V. Each machine comprises a cast iron housing with bolt-on, cast iron endshields. The enclosure contains a rotor and stator assembly, the rotor passing through the endshields via rolling-element bearings.

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NEMA Type Definition

NN N A AA

- AA: No Alpha signifies no flange, with standard long shaft extension
  - S – Short Shaft Extension
  - C – C-Face Bracket
  - D – D-Flange Bracket
  - P – P-Base Bracket
  - Z – Special Shaft Extension
  - Y – Special Flange or Foot Mounting
- A: T-Line Motor (T is basic, HP or LP for Pump Mounting)
- N: Frame Length Series (2, 3, 4, 5, 6, 7, 9 or may be generically shown as 0)
- NN: Frame Diameter Series (18, 21, 25, 28, 32, 36, 40, 44)

Design Options

- Fitting a connection box to the cable tube; the box is manufactured from cast iron and has a bolt-on top access cover. Cabling from the motor is by means of a threaded aperture in the wall to allow fitting to the cable tube, which is subsequently tack welded in place. Cabling into the box is by means of a threaded aperture for the fitting of a suitably certified and dimensioned cable entry device. The box dimensions vary according to the motor to which it is to be fitted.
- Fitting a drain facility threaded into either endshield; the drain comprises a treaded body with either a captive spiral shaft engaged in a mating bore or a series of stacked baffles crimped in place.
- Alternative fitting of a protective drip cover over the fan cowl inlet, for use when the motor is vertically mounted.
- The equipment may also be driven to form a generator.

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- The omission of the cooling fan and cowl assembly, see table of suitable applications below.
- The motors may be fitted with thermal trips located in at least two stator windings and, for most applications, the temperature class of the motor is dependent upon the type of trip that is fitted. When thermal trips are not fitted or are not connected by the user/installer, the use of the motor is limited to the applications below.
- The motors may be fed from either a continuous sinusoidal supply or an inverter, see table of suitable applications below.

Group	Fan	Type of supply	Thermal trips
I	Fitted	Sinusoidal	Not required
I	Fitted	Sinusoidal	Connected
I	Fitted	Inverter	Connected
I	Not fitted	Sinusoidal	Connected
I	Not fitted	Inverter	Connected

Group	Fan	Type of supply	Thermal trips	Temperature class Gb	Temperature class Db
IIB & III	Fitted	Sinusoidal	Not required	T4	T135°C
IIB & III	Fitted	Sinusoidal	Connected	T3, T4 or T5	T200 °C, T135 °C or T100 °C
IIB & III	Fitted	Inverter	Connected	T3, T4 or T5	T200 °C, T 135 °C or T100 °C
IIB & III	Not fitted	Sinusoidal	Connected	T3, T4 or T5	T200 °C, T135 °C or T100 °C
IIB & III	Not fitted	Inverter	Connected	T3, T4 or T5	T200 °C, T 135 °C or T100 °C

Specific Conditions Of Use

1. When a motor is not supplied with the optional connection box provided by the manufacturer, then it shall be fitted with a terminal box that is appropriate for the application and has been certified as suitable for use in a hazardous area by an Ex Certification Body.
2. The motors shall only be installed in an application that is stated to be suitable in the table listed in the description of the equipment.
3. The user/installer shall ensure that the anti-condensation heaters and the thermal trips are correctly connected in accordance with the information supplied by the manufacturer.
4. The equipment provides threaded and non-threaded entries (Group I only) for suitably certified cable glands, blanking elements or adaptors, the user shall contact ABB Motors & Mechanical Inc (formerly Baldor Electric Company) for guidance on their selection to ensure that the flamepaths and fixings are in accordance with the certificate schedule drawings.
5. Only the manufacturer's recommended fixing screws shall be fitted.
6. Where required by the rating tables or for sinusoidal duty S2 these machines are fitted with thermostats (thermal trips). These devices must be connected during operation such as to disconnect the power supply when they are activated.

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7. The equipment has flamepaths which differ from those in IEC 60079-1:2014. When maintaining the flamepaths, ABB Motors & Mechanical Inc (formerly Baldor Electric Company) shall be contacted for guidance.
8. The user shall be aware that all external fasteners on which the flameproof enclosure depends are property class 8.8.

Condition of Manufacture

i. The motors shall be subjected to the following routine overpressure tests for at least 10 s as required by clause 16.1 of EN 60079-1:2007, there shall be no permanent deformation or damage to the enclosure.

Frame designation	Routine test pressure (bar)	Frame designation	Routine test pressure (bar)
180 (112S - 112M)	18	320 (200M - 200L)	18
210 (132S - 132M)	18	360 (225S - 225M)	None
250 (160M - 160L)	18	400 (250S – 250M)	10.2
280 (180M - 180L)	18	440 (280S – 280H)	10.2

ii. The temperature class that is marked on the motor shall be appropriate to the type of thermal trips that are fitted.

iii. The manufacturer shall take all reasonable steps to ensure that any anti-condensation heaters and thermal trips are correctly connected when in service and shall provide all the necessary information that will enable the user/installer to achieve this.

iv. The motors and terminal box configurations shall be subjected to the following routine overpressure tests for at least 10 s as required by clause 16.1 of IEC 60079-1:2007. There shall be no permanent deformation or damage to the enclosure.

Motors fitted with 'Ex e' terminal boxes:

Frame designation	Routine test pressure (bar)
180 (112S - 112M)	18
210 (132S - 132M)	18
250 (160M - 160L)	18
280 (180M - 180L)	18
320 (200M - 200L)	18
360 (225S - 225M)	None
440-449 (250S – 280H)	10.2

180 frame motor with 'Ex d' terminal boxes

Configuration	Motor enclosure (bar)
No conduit.	10.4
3' conduit maximum	12.0

NOTE: Terminal boxes are exempted from routine pressure testing

Motors >180 frame

Configuration	Conduit Box Drawing ref	Motor enclosure (bar)	Box enclosure (bar)
Integral box endshield	087769-041 sht 19	15.75	-
Hemispherical box with no conduit.	087769-041 sht 11	15.75	18.47

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Configuration	Conduit Box Drawing ref	Motor enclosure (bar)	Box enclosure (bar)
	087769-041 sht 17		
Indirect box with no conduit.	087769-041 sht 19	18.75	21.6
Square boxes with no conduit.	087769-041 sht 19	16.05	16.83
Hemispherical box with 1' conduit max.	087769-041 sht 17	20.55	23.55
Indirect & square boxes with 1' conduit max'	087769-041 sht 19	18.9	29.5
Hemispherical box with 2' conduit max.	087769-041 sht 17	16.59	26.3
Indirect & square boxes with 2' conduit max'	087769-041 sht 19	20.91	39.9
Hemispherical box with 3' conduit max.	087769-041 sht 17	18.54	29.8
Indirect & square boxes with 3' conduit max'	087769-041 sht 19	18.53	47.8
Group I box (isolated)	087769-041 sht 19	15.75	10.0
Conduit box with no conduit.	087769-041 sht 20	18.75	18.66
Conduit box with no conduit.	087769-041 sht 21 087769-041 sht 22	18.75	18.66
Conduit box with 1' conduit max.	087769-041 sht 21 087769-041 sht 22	18.90	26.64
Square box (alt)	087769-041 sht 23	16.05	16.83

NOTE: Low profile, auxiliary and 'Wilcox' boxes are exempted from routine pressure testing.

Change Status

Due to limitations of space the modifications assessed with Issue 1 are listed here:

Issue 1

i. The fitting of alternative terminal box arrangements, as shown on drawing sheets 18 and 19, and described below were approved:

a) Either of two designs of bolt-on, cast iron box with a bolt-on access cover and facings for the fitting of suitably certified cable entry devices. The motor frame is machined to provide a suitable fixing face.

b) A cast, bolt-on right angle (Wilcox) box with a threaded aperture for the fitting of a suitably certified cable entry device. The motor frame is machined to provide a suitable fixing face.

c) A threaded fitting, indirect entry box. The box comprises two enclosures separated by connection bushings and has two separate, bolt-on access covers. A facing is provided for the fitting of a suitably certified cable entry device. The motor frame utilises the existing cable nipple arrangement.

d) A Group I only, fabricated, bolt-on box with a bolt-on access cover. A facing is provided for the fitting of a Victor socket type A41SR or A44SB. The motor frame is machined to provide a suitable fixing face with a suitably certified cable gland fitted between the motor frame and terminal box such as to create two separate 'Ex d' enclosures.

e) A threaded fitting, 'low profile' box with a bolt-on access cover. The motor frame utilises the existing cable tube arrangement.

f) Integral terminal box. The non-drive-end endshield is modified to incorporate a bolt-on access cover and two cable entry apertures.

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g) Cast iron auxiliary box. This box is identical to the existing hemispherical box as fitted to 180 frame machines and is additional to the main terminal box.

ii. An increase in the cable tube length allowing up to 36 inches (914 mm) is recognised.

iii. The motor ratings for S2 duty have been clarified.

iv. The option to fit sealing compound within the cable tube is endorsed.

v. Optional shaft sealing using non-contact 'slingers' was permitted.

vi. The fitting of a threaded adaptor either replacing or augmenting the existing cable tube as an option was ratified.

vii. The option to fit a breather drain to any of the 'Ex d' terminal boxes is authorised.

viii. The clarification and additional detailing of cable entry dimensions were approved.

ix. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards relating to dust atmospheres the documents originally listed, IEC 61241-0:2004 Edition 1 and IEC 61241-1:2004 Edition 1, were replaced by those currently listed, the markings in section 12 were confirmed.

Issue 2

i. The addition of an alternative arrangement with a new conduit box and different lifting points, as shown on drawing 087769-041 sheet 11, the Conditions of Manufacture were amended accordingly.

ii. The reduction in the flamepath width between the conduit box and motor frame, as shown on drawing 087769-041 sheet 19. An additional Special Condition For Safe Use/Condition of Certification was introduced.

iii. The addition of alternative conduit boxes for motor sizes >180 frame including additional Spigot fitting entries, as shown on drawings 087769-041 sheets 20, 21, 22 and 23, the Conditions of Manufacture were amended accordingly.

iv. The recognition of minor drawing modifications to drawing 087769-041; an alternate fit for the stator laminations and an alternative nameplate have been added; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

v. The markings were corrected to add the EPL 'Mb'.

Issue 3

i. The applicant's name has been changed from Baldor Electric Company to ABB Motors & Mechanical Inc (formerly Baldor Electric Company).

ii. Changes to brackets, additional reducer and entry sizes.

iii. The product description is changed to add the "Nema Type Definition"

iv. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, the previously listed standards are replaced as follows,
IEC 60079-0:2007 Ed 5 is replaced by IEC 60079-0:2017 Ed 7
IEC 60079-1:2007 Ed 6 is replaced by IEC 60079-1:2014 Ed 7
IEC 60079-31:2008 Ed 1 is replaced by IEC 60079-31:2013 Ed 2
As a result of the assessment the product marking is changed.

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