



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX BAS 14.0018X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 4 Issue 3 (2017-09-04)
Date of Issue: 2021-09-22 Issue 2 (2016-06-02)
Applicant: **Regal Beloit Australia Pty Limited** Issue 1 (2015-07-31)
19 Corporate Ave. Issue 0 (2014-06-11)
Rowville
VIC 3178
Australia
Equipment: **Range of SGA induction motors of frame sizes 71 to 315 and Range of HGA induction motors of frame sizes 80 to 315**
Optional accessory:
Type of Protection: **Ex nA, Ex tc**
Marking: **Ex nA IIC T3 Gc Tamb(-20°C to +50°C (Optionally +60°C)) or,
Ex tc III C T135°C Dc Tamb(-20°C to +40°C (Optionally +50°C)), or
Ex nA IIC T3 Gc Tamb(-20°C to +40°C (Optionally +50°C))
Ex tc III C T135°C Dc**

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

Position:

Technical Manager

Signature:
(for printed version)

M POWNEY
Certification
Manager

Date:

22/9/2021

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 www.iecex.com or use of this QR Code.



Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire, SK17 9RZ
United Kingdom





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Manufacturer: **Regal Beloit Australia Pty Limited**
19 Corporate Ave.
Rowville
VIC 3178
Australia

Additional manufacturing locations: **Regal Beloit New Zealand Limited**
18 Jomac Place, Avondale, Auckland
1026
New Zealand

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 equipment 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 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

This Certificate **does not** indicate compliance with 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 Reports:

[GB/BAS/ExTR14.0040/00](#)

[GB/BAS/ExTR16.0152/00](#)

Quality Assessment Reports:

[AU/TSA/QAR06.0012/10](#)

[AU/TSA/QAR07.0009/09](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The SGA range of squirrel cage induction motors is manufactured from cast iron and comprises a main body with a separate bolt-on terminal box. The motors are designed to operate on 3 phase, 100V-800V and 40-60Hz power systems. Motors may be supplied with auxiliary terminal boxes as required for the connection of optional anti-condensation heaters, RTD's and thermistors. Motors are available as foot mounted, flange mounted or foot and flange mounted. The bearings have V-ring seals and the lid of the main terminal box has a nitrile rubber gasket seal, which gives the motors an IP rating of at least IP55. A gamma seal is available to give the motors an IP66 rating. Electrical connection is via a threaded entry in the main terminal box wall, designed to accommodate either a gland or conduit.

The HGA range of motors is generally identical to the SGA range, other than changes made to improve efficiency. These include changes to the core length, winding design current density (achieved through an increased amount of copper in the windings) and provision of a low loss fan.

See Annex for further details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The equipment may present a potential electrostatic charging hazard; the user instructions shall be followed in order to minimize the risk of electrostatic discharge.
2. For arrangements which include a separate motor driven cooling fan, these shall be tested to verify that the rating of the cooling fan motor is not exceeded.
3. The thermal protection devices, when fitted to the motors with VVVF drives, shall be connected into the motor control circuit in such a manner as to disconnect the source of supply in order to prevent the nominated temperature class from being exceeded. The stator RTDs and thermistors can be connected via a standard industrial controller provided that the controller is located in a safe area.
4. The plug and socket type DXN1 shall not to be used on inverter driven motors above 50/60 hertz.
5. The plug and socket type DXN1 are limited to use within low impact areas.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 4.1

To update QARs only.

File Reference: **21/0601**

Annex:

[IECEX BAS 14.0018X Annex 1.pdf](#)

SGA/HGA Range of Induction Motors with shaft centre heights ranging from 71 to 315mm for SGA and 80mm to 315mm for HGA are manufactured with cast iron frames for horizontal or vertical, foot and/or flange mounting. The flanges may be oversize or undersize as required and the enclosure provides a degree of ingress protection of at least IP55. The range covers 2 pole to 8 pole 3 phase windings for 40 to 120Hz operation at voltages of 100 to 800V. The range is rated up to 200kW, the largest power ratings being the 2 or 4 pole frame size 315L.

Bearing Arrangements

Spigots are machined at either end of the stator frame onto which the machined spigots of cast iron end shields are fitted. The end shields carry the grease lubricated rolling element bearing arrangements which are of ball or roller or angular contact designs. The bearings are covered either by the end shield itself as in smaller frames or by separate bearing covers with appropriate sealing arrangement for ingress protection.

Stator

The stator core packs are built from insulated silicon steel laminations which are clamped together. The wound and impregnated stator assembly is secured in the stator frame by an interference fit.

Rotor

The rotor core packs built from insulated steel laminations are fitted on to the steel shaft with an interference fit. The rotor cage is of die cast aluminium and is dynamically balanced by the addition of balanced weights secured onto cast studs on the rotor cage. Double shaft extensions or alterations to standard shaft extensions are included in the range. The rotor construction is designed to be compliant with the requirements of Table 6 of IEC 60079-15 for any potential risk of air gap sparking with due consideration to risk factors.

Terminal Arrangement

The motors are fitted with separate bolt-on cast iron terminal boxes fitted with bolt-on covers incorporating a gasket which is glued to one surface. The position of terminal boxes can be at the top or on either side of the motor frame.

Main terminal boxes contain moulded resin/fibre glass terminal blocks incorporating threaded terminal studs to support the winding ends and supply cables with provision for optional auxiliary terminals. Optionally the winding ends may be brought out as extended flying leads via suitably IECEx/ATEX certified conduit fittings for direct connection to the supply terminals. Adequate clearance and creepage distances are provided as required by the standards for Ex nA protection for the applicable voltage category.

Auxiliary terminal boxes may be fitted to the main terminal box to facilitate termination of auxiliary devices like thermistors, anti-condensation heaters and RTD's. IECEx/ATEX certified terminal blocks are used to terminate these auxiliary devices.

Cable glands or conduit fittings shall be suitably IECEx/ATEX certified with IP rating equivalent to or better than that of the equipment rating. Unused cable or conduit entries must be fitted with appropriately certified plugs.

Ventilation

Various methods of cooling are used including TEFC or TEBC with the blower motor being separately IECEx/ATEX certified. Optionally an IECEx/ATEX certified encoder may be attached to the main motor shaft.

Optional plug and socket type DXN1 DXN2 and DXN6 arrangements may also be used that are covered by their own IECEx certificates IECEx LCI 09.0005X, IECEx LCI 09.0006 and IECEx LCI 09.0007.

Windings

Motors are wound with modified polyester or polyester-imide enamelled copper wires with the winding overhangs suitably insulated and adequately tied in order to compact them and keep the insulation between phases.

Use of Variable Voltage Variable Frequency (VVVF) Drives

Ex nA motors may be operated with VVVF drives in the following conditions:

- Use of PWM inverters (VVVF) drives with carrier switching frequency > 5kHz or the default switching frequency of the drive whichever is lower.
- When motors are operated below 50Hz with constant torque loads, a de-rating factor to be applied as per the loadability curve published in the Installation, Operation and Maintenance (IOM) manuals supplied with each motor.
- Ex nA and Ex t motors shall be fitted with thermal protective devices which shall be connected to the motor control circuit in such a manner as to disconnect the source of supply in order to prevent the nominated temperature class from being exceeded or as per the details on additional nameplate for motors supplied with VVVF drive.

SGS Baseefa Limited
Rockhead Business Park
Staden lane, Buxton, Derbyshire
SK17 9RZ
United Kingdom



ANNEX to IECEx BAS 14.0018X

Issue No. 1

Date: 2016/06/02

Ambient Temperatures

The standard ambient temperature range for Ex t motors is -20°C to +40°C with the option to increase to +50°C, based on the manufacturers initial testing and calculation. For Ex nA motors the standard ambient temperature is -20°C to +50°C with the option to increase to +60°C.

Ingress Protection Rating

The standard ingress protection rating for Ex nA motors is IP55 whereas for Ex t motors it is IP66. Ex nA motors can optionally be built to achieve an IP66 rating.

Dielectric Strength Test

All Ex nA motors shall be subjected to a routine dielectric strength test in accordance with the requirements of IEC 60079-15.