1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa14ATEX0038X**

4 Equipment or Protective System: **Range of PPA/PPC induction motors of frame sizes 80 to 400**

5 Manufacturer: **Regal Beloit Australia Pty Limited**

6 Address: **19 Corporate Ave., Rowville, VIC 3178, Australia**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, 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 No. **GB/BAS/ExTR14.0039/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 **EN 60079-7:2007** **EN 60079-31:2013**

except in respect of those requirements listed at item 18 of the Schedule.

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 EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. 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 equipment or protective system shall include the following :

⟨Ex⟩ **II 2 G** **Ex e IIC T3 Gb T_{amb}(-20°C to +50°C)** or,

⟨Ex⟩ **II 2 D** **Ex tb IIIC T135°C Db T_{amb}(-20°C to +50°C)** or,

⟨Ex⟩ **II 2 GD** **Ex e IIC T3 Gb T_{amb}(-20°C to +50°C)**

Ex tb IIIC T135°C Db

Baseefa Customer Reference No. **7215** Project File No. **13/0928**

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GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa14ATEX0038X**

15 **Description of Equipment or Protective System**

PPA/PPC Range of Induction Motors with shaft centre heights ranging from 80 to 400mm 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 IP66. The range covers 2 pole to 8 pole 3 phase windings for 40, 50 or 60Hz operation at voltages of 100 to 1000V. Ex e motors may only be used at voltages up to 800V. The range is rated up to 630kW, the largest power ratings being the 4 pole frame size 400LX.

The range of motors is designated as type PPA for Australian output (kW/frame) or type PPC for the EU (kW/frame) and are identical in construction.

The machine ratings as covered by this certificate are shown in the table below.

	Ex e		Ex t	
	Frame size	kW Rating	Frame size	kW Rating
PPA (2P – 8P)	80 to 400	0.55 to 630	80 to 400	0.55 to 630
PPC (2P – 8P)	225 to 355	18.5 to 280	225 to 355	18.5 to 280

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 4 of EN 60079-7 for any potential risk of air gap sparking with due considerations 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 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 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 e protection for the applicable voltage category.

Auxiliary terminal boxes may be fitted to the main terminal box to facilitate termination of auxiliary devices such as thermistors, anti-condensation heaters and RTDs. ATEX certified terminal blocks are used to terminate these auxiliary devices.

Cable glands or conduit fittings shall be suitably 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 ATEX certified. Optionally an ATEX certified encoder may be attached to the main motor shaft.

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 e motors operating with VVVF drives are to be tested and certified for each rating as a certified pair.

Ambient Temperatures

The standard ambient temperature range for Ex e and Ex t motors is -20°C to +50°C.

Ingress Protection Rating

The standard ingress protection rating for Ex e and Ex t motors is IP66.

Dielectric Strength Test

All Ex e motors shall be subjected to a routine dielectric strength test in accordance with the requirements of EN 60079-7.

16 Report Number

SGS Baseefa certification report GB/BAS/ExTR14.0039/00.

17 Specific Conditions of Use

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 RTDs, thermistors and thermocouples must be connected to an appropriate intrinsically safe system. They must be tested at 500V to ground and must be grounded whenever dielectric testing of the machine takes place.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
B-PPA101	1 of 1	A	19/3/2014	General Arrangement of PPA Motors Frames 112 – 132 Ex e, Ex nA & Ex t Protection
B-PPA102	1 of 1	A	19/3/2014	General Arrangement of PPA Motors Frames 160 – 200 Ex e, Ex nA & Ex t Protection
B-PPA103	1 of 1	A	19/3/2014	General Arrangement of PPA Motors Frames 225 – 315 Ex e, Ex nA & Ex t Protection
B-PPA104	1 of 1	A	19/3/2014	General Arrangement of PPA Motors Frames 355 – 400 Ex e, Ex nA & Ex t Protection
B-PPA109	1 of 1	A	26/3/2014	Stator Internal Connection, Insulation, Testing PPA Motor Frames 80 - 400 Ex e, Ex nA & Ex t Protection
B-PPA110	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 112 Ex e, Ex nA & Ex t Protection
B-PPA111	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 132 Ex e, Ex nA & Ex t Protection
B-PPA112	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 160 Ex e, Ex nA & Ex t Protection
B-PPA113	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 180 Ex e, Ex nA & Ex t Protection
B-PPA114	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 200 Ex e, Ex nA & Ex t Protection
B-PPA115	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 225 Ex e, Ex nA & Ex t Protection
B-PPA116	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 250 Ex e, Ex nA & Ex t Protection
B-PPA117	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 280 Ex e, Ex nA & Ex t Protection
B-PPA118	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 315 Ex e, Ex nA & Ex t Protection
B-PPA119	1 of 1	A	26/3/2014	Parts List for PPA Motor Frame 355 Ex e, Ex nA & Ex t Protection
B-PPA120	1 of 1	A	27/3/2014	Parts List for PPA Motor Frame 400 Ex e, Ex nA & Ex t Protection
B-PPA122	1 of 1	A	6/3/2014	PPA / PPC Ex e, Ex nA, Ex t Nameplate Details Frame 80 - 400
B-PPA123	1 of 1	A	27/3/2014	Nameplate Placement 80 - 400 Frame PPA / PPC
B-PPA123A	1 of 1	A	27/3/2014	Alternative Warning Label Details 80 - 400 Frame PPA / PPC
B-PPA124	1 of 1	A	27/3/2014	Options for PPA / PPC Ex e, Ex nA & Ex t Motors
B-PPA125	1 of 1	A	27/3/2014	Terminal Box Sizes for PPA Motor Frame 112 - 400 Ex e, Ex nA & Ex t
B-PPA126A	1 of 1	A	27/3/2014	Terminal Board PPA Motor Frame 112 - 132 Ex e Protection
B-PPA127	1 of 1	A	27/3/2014	Terminal Board PPA Motor Frame 160 - 200 Ex e Protection
B-PPA129A	1 of 1	A	31/3/2014	Terminal Board PPA Motor Frame 225 - 280 Ex e Protection
B-PPA130A	1 of 1	A	31/3/2014	Terminal Board PPA Motor Frame 315 Ex e Protection
B-PPA130B	1 of 1	A	31/3/2014	Terminal Board PPA Motor Frame 315 Ex e Protection (Alternative)
B-PPA130C	1 of 1	A	31/3/2014	Terminal Board PPA Motor Frame 315 Ex e Protection (Alternative)

B-PPA131	1 of 1	A	31/3/2014	Terminal Board PPA Motor Frame 315, 355 - 400 Ex e Protection
B-PPA137	1 of 1	A	31/3/2014	Fan Clearances of PPA Motors Frames 80 – 400 Ex e, Ex nA & Ex t
B-PPA138	1 of 1	A	31/3/2014	Placement of Protection Devices
B-PPA138A	1 of 1	A	31/3/2014	Anti-Condensation Heater Allocations 80 - 400 Frames
B-PPA139	1 of 1	A	31/3/2014	Auxiliary Box Fitting Arrangement
B-PPA140	1 of 1	A	31/3/2014	Drain Plug Fitment
B-PPA141	1 of 1	A	31/3/2014	Blanking Plate and Extended Leads
B-PPA142	1 of 1	A	31/3/2014	Forced Ventilation by Separately Driven Cooling Fan
B-PPA142A	1 of 1	A	31/3/2014	Forced Ventilation by Separately Driven Cooling Fan (Option 1)
B-PPA142B	1 of 1	A	31/3/2014	Forced Ventilation by Separately Driven Cooling Fan (Option 2)
B-PPA144	1 of 1	A	2/4/2014	General Arrangement of PPA Motors Frames 80 – 100 Ex e, Ex nA & t
B-PPA146	1 of 1	A	2/4/2014	Parts List for PPA Motor Frame 80 Ex e, Ex nA & Ex t Protection
B-PPA147	1 of 1	A	2/4/2014	Parts List for PPA Motor Frame 90 Ex e, Ex nA & Ex t Protection
B-PPA148	1 of 1	A	2/4/2014	Parts List for PPA Motor Frame 100 Ex e, Ex nA & Ex t Protection
B-PPA149	1 of 1	A	2/4/2014	Terminal Board PPA Motor Frame 80 - 100 Ex e, Ex nA & Ex t Protection
B-PPA156	1 of 1	A	2/4/2014	Fan Cover Air Outlet for 80 - 400 Frames
B-PPA157	1 of 1	A	2/4/2014	Auxiliary Terminal
B-PPA158	1 of 1	A	2/4/2014	Optional Gasket Placement on Terminal Boxes for 80 - 400 Frames
B-PPA139AU	1 of 1	A	31/3/2014	Auxilliary Terminal Box Fitting Arrangement - Supplementary Details
B-PPA140AU	1 of 1	A	31/3/2014	Drain Plug Details
B-PPA158AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (80 - 100)
B-PPA159AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (112 - 132)
B-PPA160AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (160 - 200)
B-PPA161AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (225 - 315)
B-PPA162AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (315)
B-PPA163AU	1 of 1	A	2/4/2014	Terminal Box Drawing including Thickness, Fixing Points, Gasket Details (355 - 400)
B-PPA164AU	1 of 1	A	2/4/2014	Typical General Arrangement Drawing for PPA80 - 100 Frame
B-PPA165AU	1 of 1	A	2/4/2014	Typical General Arrangement Drawing for PPA112 - 132 Frame

B-PPA166AU	1 of 1	A	2/4/2014	Typical General Arrangement Drawing for PPA160 - 280 Frame
B-PPA167AU	1 of 1	A	2/4/2014	Typical General Arrangement Drawing for PPA315 - 400 Frame
B-PPA168AU	1 of 1	A	2/4/2014	Terminal Board Details PPA80 - 132 - Supplementary Information
B-PPA169AU	1 of 1	A	2/4/2014	Terminal Board Details PPA160 - 200 - Supplementary Information
B-PPA170AU	1 of 1	A	2/4/2014	Terminal Board Details PPA225 - 315 - Supplementary Information
B-PPA171AU	1 of 1	A	2/4/2014	Terminal Board Details PPA315 - Supplementary Information
B-PPA172AU	1 of 1	A	2/4/2014	Terminal Board Details PPA315 - 400 - Supplementary Information
B-7454A	1 of 1	A	2/4/2014	Vibration Sensor Adaptor
B-7454B	1 of 1	A	2/4/2014	Vibration Sensor Extension
B-7473A	1 of 1	A	2/4/2014	Vibro-Lube Adaptor
B-7473B	1 of 1	A	2/4/2014	Vibro-Lube Extension
B-7476A	1 of 1	A	2/4/2014	RTD Arrangement, 250 - 400 Frame PPA
B-7476B	1 of 1	A	2/4/2014	Vibration sensor Arrangement, 250 - 400 Frame PPA

The drawings above are common to Baseefa14ATEX0038X, Baseefa14ATEX0039X, IECEx BAS 14.0008X and IECEx BAS 14.0017X and copies are held with the latter two certificates.

Number	Sheet	Issue	Date	Description
B-PPA105	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 2 Pole PPA Motors Frames 112 – 355 Ex e
B-PPA105A	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 2 Pole PPC Motors Frames 225 – 355 Ex e
B-PPA106	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 4 Pole PPA Motors Frames 112 – 400 Ex e
B-PPA106A	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 4 Pole PPC Motors Frames 225 – 355 Ex e
B-PPA107	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 6 Pole PPA Motors Frames 112 – 400 Ex e
B-PPA107A	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 6 Pole PPC Motors Frames 225 – 355 Ex e
B-PPA108	1 of 1	A	19/3/2014	Rotor / Stator Air Gaps - 8 Pole PPA Motors Frames 112 – 400 Ex e
B-PPA108A	1 of 1	A	26/3/2014	Rotor / Stator Air Gaps - 8 Pole PPC Motors Frames 225 – 355 Ex e
B-PPA143	1 of 1	A	31/3/2014	Determination of tE Time for PPA Ex e Motors
B-PPA143A	1 of 1	A	31/3/2014	tE Time for PPA 2 Pole Ex e Motors
B-PPA143B	1 of 1	A	31/3/2014	tE Time for PPA 4 Pole Ex e Motors
B-PPA143C	1 of 1	A	31/3/2014	tE Time for PPA 6 Pole Ex e Motors
B-PPA143D	1 of 1	A	31/3/2014	tE Time for PPA 8 Pole Ex e Motors
B-PPA143E	1 of 1	A	31/3/2014	tE Time for PPA 80 - 100 FRAME Ex e Motors
B-PPA143F	1 of 1	A	2/4/2014	tE Time for PPC 225 - 355 FRAME Ex e Motors
B-PPA145	1 of 1	A	2/4/2014	Rotor / Stator Air Gaps - 2 - 6 Poles PPA Motors Frames 80 – 100 Ex e Protection

The drawings above are common to Baseefa14ATEX0038X and IECEx BAS 14.0008X and are held with the latter.