

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

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IECEx TSA 10.0007X

issue No.:3

Status:

Current

Date of Issue:

2013-07-26

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Certificate history
Issue No. 3 (2013-7-26)
Issue No. 2 (2013-3-21)
Issue No. 1 (2012-8-1)
Issue No. 0 (2010-10-14)

Applicant:

Regal Beloit Australia Pty Ltd

19 Corporate Drive

Rowville VICTORIA **Australia**

Electrical Apparatus: Optional accessory:

Range of HPD Flameproof Induction Motors Frame Size 80 to 315

Type of Protection:

Ex d

Marking:

CMG Flameproof 3 Phase Induction motor

Ex d I Mb, Ex d IIB T4* Gb IP66 (*T5 optional)

Frame Size

Serial No

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Approved for issue on behalf of the IECEx

Certification Body:

Debbie Wouters

Position:

Acting Quality & Certification Manager

Signature:

(for printed version)

Date:

26 JULY 2013

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:





IECEx Certificate of Conformity

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Manufacturer:

Regal Beloit Australia Pty Ltd

19 Corporate Drive

Rowville **VICTORIA** Australia

Additional Manufacturing location(s):

CMG Electric Motors Asia Pacific Pte Ltd

12 Tuas Loop Singapore 637346 Singapore

CMG Electric Motors NZ Regal Beloit Australia Ltd

18 Jomac Place Avondale, Auckland 1026 New Zealand

Regal Beloit Austra Pty Pty Ltd 21 Colin Jamieson Drive

Welshpool WA 6106 Australia

Ltd 7 Mahogany Court

Willawong QLD 4110 Australia

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:

IEC 60079-0: 2004

Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

Edition: 4.0

IEC 60079-1: 2007-04

Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Edition: 6

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: AU/TSA/ExTR10.0014/00

AU/TSA/ExTR10.0014/01

Quality Assessment Report:

AU/TSA/QAR06.0012/04

AU/TSA/QAR07.0008/05

AU/TSA/QAR07.0009/03



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The range of HPD Flameproof (squirrel cage) high efficiency Induction Motors is manufactured from cast iron and comprises a main body (motor enclosure) with a separate bolt-on terminal box. The motors are designed to operate on 3 phase, 100 V to 1100 V, 40, 50 or 60 Hz and also from a VVVF drive. Motors may be supplied with anti-condensation heaters, RTD'S, thermocouples and thermistors as options. Motors are available as foot mounted, flange mounted or foot and flange mounted. See Annexe for certificate IECEx TSA 10.0007X for a detailed description of the motors.

CONDITIONS OF	CERTIFICATION: Y	YES as	shown	below:
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See Annexe for certificate IECEx TSA 10.0007X for conditions of certification.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)	DETAILS OF	CERTIFICATE	CHANGES	(for issues 1	and above)
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3 released for chan	ge of name of Manufact	urer. For details refer t	to Annexe.	

Annex: Annexe_IECEx TSA 10.0007X 3.pdf



Annexe for Certificate No.:

IECEx TSA 10.0007X

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Equipment:

The range of HPD Flameproof (squirrel cage) high efficiency Induction Motors is manufactured from cast iron and comprises a main body (motor enclosure) with a separate bolt-on terminal box. The motors are designed to operate on 3 phase, 100 V to 1100 V, 40, 50 or 60 Hz and also from a VVVF drive. Motors may be supplied with anti-condensation heaters, RTD'S, thermocouples and thermistors as options. Motors are available as foot mounted, flange mounted or foot and flange mounted. An O-ring seal on the cover of the terminal box gives the motors an IP rating of IP66 against the ingress of dust and moisture. Electrical connection is via two threaded entries in the terminal box wall. The special fasteners for the motors have a property class (yield stress) of either grade 4.8 or grade 8.8, as indicated on the respective GA drawings.

The motors and terminal boxes utilise the following flameproof joints. Cylindrical joints for the DE and NDE endshield spigots, the DE and NDE shaft glands, the terminal box cover and the motor terminal bushings. Flanged joints for the DE and NDE bearing holders (frames 160 to 315 only) and the terminal box connection with the motor. Motor terminal bushings are provided for connection of the motor to the supply and also to the motors windings. The bushings form threaded joints with the motor.

The full range of HPD motors is shown in the schedule, below.

Schedule:

Table 1 - HPD Range of Induction Motors

Frame	Power (kW)	Poles	1.00	Free Internal Volume (cm ³)		Power (kW)	Poles		Free Internal Volume (cm ³)	
		- "	Motor	Terminal Box	al		Motor	Terminal Box		
	0.75	2	1155			30	2	13982		
1	1.1	2	956			37	2	12841		
LIDDAG	0.55	4	1168		HPD200L	30	4	11602		
HPD80	0.75	4	969		HPD200L	18.5	6	14261		
	0.37	6	1447		l [22	6	13520		
	0.55	6	1248			15	8	13503	4225	
	1.5	2	1234			45	2	14500	4225	
HPD90S	1.1	4	1115		HPD225M	45	4	14400		
	0.75	6	1324	1550	ן וי	HPD225IVI	30	6	18500	
	2.2	2	1309			22	8	19900		
HPD90L	1.5	4	1115		HPD225S	37	4	15500		
	1.1	6	1175] [IPD2255	18.5	8	20600	
	3	2	2083			55	2	30100		
LIDDAGG	2.2	4	2104		HPD250M	55	4	21132		
HPD100L	3	4	1699			IUD TO SOUN	37	6	27700	
	1.5	6	2209			30	8	28800		
	4	2	2160]		75	2	37268		
HPD112M	4	4	1800		HPD280S	75	4	32182	6885	
	2.2	6	2109		HFD2003	45	6	43423		
	5.5	2	3761			37	8	43546		
[7.5	2	3761			90	2	39546		
HPD132S	5.5	4	3708	2650	HPD280M	90	4	33200	4	
]]	3	6	4427			55	6	44200		
	2.2	8	3761			45	8	45100		

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Frame	Power (kW)	Poles		nternal ie (cm³)	Frame	Power (kW)	Poles	Free Internal Volume (cm³)		
			Motor	Terminal Box				Motor	Terminal Box	
	7.5	4	3704			110	2	93457		
أريم	4	6	3254		LIDDA4EC	110	4	93547		
HPD132M	5.5	6	3154		HPD315S	75	6	93560		
	3	8	4415			55	8	93560		
	11	2	8304			132	2	93457		
l ĵ	15	2	5208		HPD315M	132	4	94325		
LIBBACON	11	4	6077	перзі	מאסו פטאון	90	6	91060		
HPD160M	7.5	6	8569			75	8	92060		
l î	4	8	10400			160	2	108317	18158	
	5.5	8	9300			l [185	2	93547	10130
	18.5	2	7500		l (200	2	93547		
LUBBACOL	15	4	6208		1 [160	4	108317		
HPD160L	11	6	6677		HPD315L	185	4	94142		
	7.5	8	8900		LLED2 19F	200	4	92347		
LIDD 4 0014	22	2	6540			110	6	108317		
HPD180M	18.5	4	10400			132	6	91060		
	22	4	9700			90	8	101060		
HPD180L	15	6	9419			110	8	91060		
	11	8	10279							

Table 2 – Options for HPD Range of Induction Motors (Frames 080 to 315)

Option No	Option Description
1	Socket head cap screws Grades 8.8, 10.9 or 12.9 can replace all external bolts and/or screws.
2	Anti-condensation heaters fitted in accordance with drawing HPD001.
3	¥
4	
5	Winding RTD's – PT100 RTD's fitted into the motor windings. RTD's fitted in accordance with drawing HPD001.
6	Stainless steel shaft. Magnetic grades of stainless steel only for 2 pole motors. Other poles can have magnetic or non-magnetic grades of stainless with minimum ultimate tensile strength (UTS) of 570 MPa.
7	Alterations to shaft extension diameter and/or length. Shaft diameter shall comply with IEC 60072-1 Table 4 "Shaft extension keys and keyway dimensions. Greatest permissible torque on continuous duty for AC motors". Alternatively, shaft design shall meet requirements of AS 1403-2004: Design of Rotating Steel Shafts.
8	Alternative types of rolling element bearings (ie ball, roller, angular contact or four point contact). As per manufacturer's recommendation.
9	Flange size and type changes external to motor enclosure.
10	Operation on VVVF drives, with thermistor protection.

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Option No	Option Description
11	Forced ventilation by separately driven cooling fan – the main motor protected by thermistors. The motor driving the fan shall have the same protection as the main motor. The cooling unit shall be fitted as shown on drawing HPD004A and HPD004B.
12	Fan and fan cover design changes for noise reduction maintaining required clearances and airflow. New fan cover shall be of steel or stainless steel with same thickness or greater thickness than original fan cover with same fixing.
13	Rain canopy for vertical mount (shaft down) motors. Rain canopy made out of steel or stainless steel (minimum thickness 1.5 mm).
14	Sun shields for frames 160 and above, made from steel or stainless steel (minimum thickness 1.5 mm).
15	Other supply voltages within 100 V to 1100 V – 40, 50, 60 Hz.
16	Operation of motors with electronic soft starters. Electronic soft starters shall be disconnected from the circuit once the motor is started and supply to motor shall be direct from mains only.
17	Supply terminals to suit Star-Delta starting with 6 supply leads.
18	Lower kW output rating other than standard. Other rating data for lower kW output to be declared by test and/or calculation based on test for standard kW rating.
19	Stainless steel (304 - 316 alloy) external fasteners in place of grade 4.8 (Class A2-70 or A4-70) bolts / screws for frames 132 and above.
20	Alternative conduit entries as detailed in terminal box drawings.
21	Up to 55 °C ambient temperatures as per procedure EP-GT012 to determine suitability.
22	T5 Temperature Class with motor de-rated to 75% rating at 40 °C ambient, with trip protection at 100 °C and suitability confirmed by test.
23	Class "H" insulation for windings.
24	= /.
25	Double shaft extension.

Conditions of Certification pertaining to Issue 0 of this Certificate:

- 1. It is a condition of manufacture that for all motor enclosures a 1.5 times over pressure test according to IEC 60079-1 Clause 16.1 shall be carried out using the reference pressures from IECEX test report AU/TSA/ExTR10.0014/00.
 - The terminal boxes fitted to the HPD motors passed an overpressure test at 4 times the reference pressure and are exempt from routine pressure testing.
- It is a condition of specific use for any multi-speed motor or any motor operated from a VVVF drive that the thermal protection devices 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.
- 3. The flame path dimensions are detailed in IECEX test report AU/TSA/ExTR10.0014/00 Attachment A and shall comply with the manufacturer's drawings listed below.

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<u>Drawing list pertaining to Issue 0 of this Certificate:</u>

Drawing/ Document No.:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
HPD0801	1	Flameproof HPD080	E	2010-08-20
HPD0802	1	Flameproof HPD080	E	2010-08-03
HPD0901	1	Flameproof HPD 90	E	2010-08-20
HPD0902	1	Flameproof HPD 90	E	2010-09-15
HPD1001	1	Flameproof HPD100	E	2010-08-20
HPD1002	1	Flameproof HPD100	E	2010-09-15
HPD1121	1	Flameproof HPD112	F	2010-08-20
HPD1122	1	Flameproof HPD112	E	2010-09-15
HPD1321	1	Flameproof HPD132	E	2010-05-19
HPD1322	1	Flameproof HPD132	E	2010-09-24
HPD1601	1	Flameproof HPD160	F	2010-08-25
HPD1602	1	Flameproof HPD160	E	2010-09-13
HPD1801	1	Flameproof HPD180	G	2010-09-13
HPD1802	1	Flameproof HPD180	E	2010-09-13
HPD2001	1	Flameproof HPD200	F	2010-08-25
HPD2002	1	Flameproof HPD200	F	2010-09-27
HPD2251	1	Flameproof HPD225	F	2010-08-15
HPD2252	1	Flameproof HPD225	E	2010-09-13
HPD2501	1	Flameproof HPD250	E	2010-05-19
HPD2502	1	Flameproof HPD250	E	2010-09-13
HPD2801	1	Flameproof HPD280	F	2010-08-04
HPD2802	1	Flameproof HPD280	E	2010-09-15
HPD3151	1	Flameproof HPD315	G	2010-05-19
HPD3152	1	Flameproof HPD315	G	2010-09-24
HPD0811TB	1	Flameproof Terminal Box HPD80 - 112	К	2010-09-30
HPD1318TB	1	Flameproof Terminal Box HPD132 - 180	Н	2010-08-03
HPD2022TB	1	Flameproof Terminal Box HPD200 - 225	Н	2010-08-03
HPD2528TB	1	Flameproof Terminal Box HPD250 - 280	Н	2010-08-03
HPD315TB	1	Flameproof Terminal Box HPD315	Н	2010-08-03
HPD001	1	Placement of Auxiliary Devices	В	2009-05-26

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Drawing/ Document No.:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
HPD001A	1	Anti-Condensation Heater Allocations HPD80 - 315 Frames	А	2009-05-26
HPD004A	1	Forced Ventilation 200 - 315 Frames by Separately Driven Cooling Fan (Option 1)	С	2010-09-15
HPD004B	1	Forced Ventilation 200 - 315 Frames by Separately Driven Cooling Fan (Option 2)	С	2010-09-15
HPD005	1	Rain Hood Details for Shaft Down Motors	В	2009-05-27
HPD006	1	HPD Nameplate for Ex d 80 - 315	F	2010-09-13
HPD007	1	HPD Options List Ex d 80 - 315	D	2010-08-13
HPD008	1	Flange Earth Placement Ex d 80 - 315	А	2010-08-13

Variations permitted by Issue 1.

Table 1

	Tubio i					
1	Change of Address	CMG Electric Motors NZ Ltd				
		18 Jomac Place Avondale Auckland New Zealand				
2	New Manufacturing Location	CMG Pty Ltd				
		21 Colin Jamieson Drive Welshpool WA 6106				
3	Dimension and tolerance	Changes in dimensions of hole depths, tapping depth,				
	changes to drawings	tolerances to clearance holes, correction to end shield bolt				
		PCD, warning label dimension added.				

Note

See "Additional Information "Page 5 of the Certificate for the list of Additional Manufacturing Locations.

Conditions of Certification relating to variations permitted by Issue 1 of this Certificate: All previous conditions still apply.

Drawing relating to variations permitted by Issue 1of this Certificate:

Drawing/ Document No.	Sheets	Drawing/Document Title	Issue/ Revision	Date
HPD0801	1	Flame Proof HPD080	F	2012-03-09
HPD0802	1	Flame Proof HPD080	F	2010-12-09
HPD0902	1	Flame Proof HPD090	F	2010-12-09
HPD1002	1	Flame Proof HPD100	F	2010-12-09
HPD1122	1	Flame Proof HPD112	F	2010-12-09
HPD1322	1	Flame Proof HPD132	F	2010-12-09
HPD1602	1	Flame Proof HPD160	F	2010-09-13
HPD1802	1	Flame Proof HPD180	F	2010-12-09

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Drawing/ Document No.	Sheets	Drawing/Document Title	Issue/ Revision	Date
HPD2002	1	Flame Proof HPD200	G	2010-12-09
HPD2252	1	Flame Proof HPD225	G	2012-03-09
HPD2502	1	Flame Proof HPD250	G	2012-03-27
HPD2802	1	Flame Proof HPD280	F	2010-12-09
HPD3152	1	Flame Proof HPD315	Н	2010-12-09
HPD0811TB	1	Flame Proof Terminal Box HPD 080-112	L	2011-07-05
HPD1318TB	1	Flame Proof Terminal Box HPD 132-180	K	2011-07-05
HPD2022TB	1	Flame Proof Terminal Box HPD 200-225	K	2011-07-05
HPD2528TB	1	Flame Proof Terminal Box HPD 250-280	K	2011-07-05
HPD315TB	1	Flame Proof Terminal Box HPD 315	1	2011-07-05
HPD001	1	Placement of Auxiliary Devices	С	2010-12-16
HPD004A	1	Forced Ventilation 200-315 Frames by Separately Driven cooling Fan(Optional 1)	D	2011-12-16
HPD004B	1	Forced Ventilation 200-315 Frames by Separately Driven cooling Fan(Optional 2)	D	2011-12-16
HPD006	1	HPD Name plates Exd 80-315	G	2011-12-16
HPD007	1	HPD Options List Exd 80-315	E	2010-12-17

Variations permitted by Issue 2

Linked quality assessment reports for additional manufacturing locations - Singapore & New Zealand

Conditions of Certification relating to variations permitted by Issue 2 of this Certificate: All previous conditions still apply.

Variations permitted by Issue 3

Manufacturing company's name has changed from CMG Australia Pty Ltd to Regal Beloit Australia Pty Ltd.

Conditions of Certification relating to variations permitted by Issue 3 of this Certificate: All previous conditions still apply.

Drawing relating to variations permitted by Issue 3 of this Certificate:

Drawing/ Document No.	Sheets	Drawing/Document Title	Issue/ Revision	Date
HPD006	1	HPD Nameplate for Exd 80-315	H	2013/05/24
HPD006NZ	1	HPD Nameplate for Exd 80-315	A	2013/05/24
HPD006SG	1	HPD Nameplate for Exd 80-315	A	2013/05/24

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