GOVERNMENT APPROVED INSPECTION AUTHORITY

Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC S/19-8012X	**Issue**	1	
Issue Date	30 May 2022	**Expiry Date**	30 May 2025	
***Based on Certificate No**	IECEx BAS 10.0104X	**Issue / Variations / Amendment**	7	
Requested by	ZEST WEG Group, 47 Galaxy Avenue, Linbro Business Park, Sandton, South Africa			
Manufacturer	WEG Equipamentos Eletricos S.A, Av. Prefeito Waldemar Grubba, 3000. Jaragua do Sul, SC, CEP: 89256-900, Brazil			
Description	The HGF Range of Induction Motors has shaft centre heights ranging from 315 to 630mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60hz and is designed for connection to supplies up to 13.8kV (Ex "ec") / 15kV (Ex "t") and duty types S1, S2, S6 or S9. The W50 range of Induction Motors has shaft centre heights ranging from 315 to 450mm and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV (Ex "ec') / 15kV (Ex "t") and duty types S1, S2 , S6 or S9. The W51 HD Range of Induction Motors has shaft centre heights ranging from 315 to 450mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV and duty types S1, S2, S6 or S9. This range is limited to T3 and T125°C/T160°C temperature classes. Refer to base certificate for full description			
Equipment	The HGF Range of Induction Motors – Frame Sizes 315 to 630, W50 Range of Induction Motors – Frame Sizes 315 to 450 and W51 HD Range of Induction Motors – Frame Sizes 315 to 450			
MARKING: **Original marking as per certificate ** remains applicable.** **IA number must be added.**	**Type** **Ex Marking** **IA Number** **Warnings**	HGF and W50 Ex ec IIC T3 or T4 Gc Ex tc IIIB T125°C or T160°C Dc Ex tb IIIC T125°C or T160°C Db MASC S/19-8012X See Base Certificate * and original marking		

Compliance:

The equipment as described above has been allocated the rating Explosion Protected 'as above' utilizing the SANS/IEC Standards:

- SANS (IEC) 60079-0 2019 General requirements
- SANS (IEC) 60079-7 2019 Equipment protection by increased safety "e"
- SANS (IEC) 10086-31 2014 Equipment dust ignition protection by enclosure "t"

Note: This certificate covers only the listed standards and does not imply compliance to any other standard, related or inferred. It is up to the manufacturer to ensure that the product complies to all relevant standards for the application.

Special conditions of safe use "X":

- See "Annex A" below

Conditions of manufacture:

- See "Annex A" below

F. van Wyk
TECHNICAL OFFICER

M. Erasmus
TECHNICAL SPECIALIST

This certificate covers all units sold as long as the QAR/QAN remains valid.
According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:
SANS 10086 requirements;
Any conditions mentioned in the above certificate;
Any relevant requirements of the MHS Act;
Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

Mining And Surface Certification (Pty) Ltd
Unit 5 Lelyta Park, 45 Jurg Avenue, Hennopspark, Ext 87
Centurion 0157

IA CERTIFICATE: MASC S/19-8012X
Equipment: HGF, W50 and W51 HD Inductive Motor Range

ANNEX A

This document is based on and must be read in conjunction with certificate **IECEx BAS 10.0104X**	
Description (According to Base Certificate *)	
"Refer to description in Base Certificate * (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate *
Special conditions of safe use ("X")	• The T4 or T3 internal and external temperature class and T125°C/T160°C external temperature classification does not include motor starting or cover motors under duty cycle conditions other than type S1, S2, S6 and S9 • The installer must ensure that any equipment certified cable glands and stopping plugs fitted to the terminal boxes are suitably IECEx certified. Any unused cable entries must be fitted with IECEx certified stopping plugs. When installed the cable gland or stopping plug must maintain the marked IP rating of the enclosure. • All terminal nuts and screws, whether used or not, shall be correctly tightened. • When tightening supply connections care should be taken to maintain clearance distances. • On auxiliary terminals the conductor insulation shall extend to within 1mm of the terminal throat. • There shall be no loose conductor strands on any terminal. • The current transformer secondary terminals must not be left open circuit to avoid potential high voltages. • Motors designed for variable frequency drives are fitted with stator winding temperature detection devices that must be connected to the motor control circuit. For other starting methods, the connection of the winding temperature detectors is optional. The stator RTDs and thermistors can be connected via a standard industrial controller provided that the controller is located in a safe area. The service temperature of the stator RTD's and thermistors shall be adhered too. Thermal protections and space heaters, in accordance with manufacturer's documents, either presenting their own Ex-certificate or certified as part of the motor, are compliant with IEC 60079 series and are approved by this certificate. • Anti-condensation heaters shall not be energized when the machine is energized. • Where auxiliary apparatus is fitted that is not covered by this certificate the installer and/or user, as appropriate, must ensure that it is suitable for the conditions of use and that it does not invalidate this certification. • Motors certified for dust only environments will have no restriction on the supply connections to any internal RTDs and thermistors. • When the Iris terminal box arrangement is used the motor is restricted to Zone 2 Gas use only and an ambient temperature range of - 20°C to +55°C. • The paint coating of the motors in potentially explosive dust atmospheres may present an electrostatic charging hazard - see the manufacturer's instructions for further information.
Conditions of manufacture	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 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.
Conditions of Certification	• This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. • As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date). • The apparatus must be additionally marked with the MASC marking details above. • This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date. • The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate. • The certification on which this IA Certificate is based must remain valid. • The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. • The Ex quality assurance notification/report for the equipment must remain valid.
Conclusion:	• From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate *. • The routine tests for production units according to the Base Certificate * must be complied with (if applicable).

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 10.0104X**

Page 1 of 4

Certificate history:

Status: **Current**

Issue No: 7

Issue 6 (2020-03-17)
Issue 5 (2019-11-25)
Issue 4 (2019-04-17)
Issue 3 (2018-12-17)
Issue 2 (2014-08-05)
Issue 1 (2013-08-30)
Issue 0 (2012-03-12)

Date of Issue: 2021-07-23

Applicant: **WEG Equipamentos Eletricos S.A**
Av. Prefeito Waldemar Grubba
3000. Jaragua do Sul
SC
CEP: 89256-900
Brazil

Equipment: **The HGF Range of Induction Motors – Frame Sizes 315 to 630, W50 Range of Induction Motors – Frame Sizes 315 to 450, and W51 HD Range of Induction Motors – Frame Sizes 315 to 450.**

Optional accessory:

Type of Protection: **Equipment protection by increased safety "e", Equipment dust ignition protection by enclosure 't'**

Marking: **Ex ec IIC T3 or T4 Gc Tamb***
Ex tc IIIB T125°C or T160°C Dc Tamb*
Ex tb IIIC T125°C or T160°C Db Tamb*
***See annex for ambient temperature.**

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: 26/7/2021

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

IECEx Certificate of Conformity

Certificate No.: **IECEx BAS 10.0104X**

Date of issue: 2021-07-23 Issue No: 7

Manufacturer:
WEG Equipamentos Eletricos S.A
Av. Prefeito Waldemar Grubba
3000. Jaragua do Sul
SC
CEP: 89256-900
Brazil

Additional manufacturing locations:

WEG Euro - Industria Electrica S.A.
Rua Eng Frederico Ulrich
Zona Industrial da Maia, Sector V
4470-605 Maia.
Portugal

WEG Industries India Pvt Limited
Plot e-20, Moranapalli Village
Sipcot Phase II ExpII
Krishnagiri Dist, Hosur
Tamil Nadu
635109
India

WEG (Nantong) Electric Motor Manufacturing Co., Ltd.
128#, Xin Kai South Rd., Nantong ETDA,
Jiangsu Province
Zip 226010
China

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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

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

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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/ExTR10.0226/00
GB/BAS/ExTR13.0020/00
GB/BAS/ExTR14.0091/00
GB/BAS/ExTR17.0091/00
GB/BAS/ExTR18.0261/00
GB/BAS/ExTR19.0312/00
GB/BAS/ExTR21.0095/00

Quality Assessment Reports:

CN/CQM/QAR19.0003/01
GB/BAS/QAR07.0032/09
GB/BAS/QAR13.0006/05
GB/BAS/QAR13.0007/06

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The HGF Range of Induction Motors has shaft centre heights ranging from 315 to 630mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV (Ex ec) / 15kV (Ex t) and duty types S1, S2, S6 or S9.

The W50 Range of Induction Motors has shaft centre heights ranging from 315 to 450mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV (Ex ec) / 15kV (Ex t) and duty types S1, S2, S6 or S9.

The W51 HD Range of Induction Motors has shaft centre heights ranging from 315 to 450mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV and duty types S1, S2, S6 or S9. This range is limited to T3 and T125°C/T160°C temperature classes.

Refer to certificate Annex for full details of the equipment.

SPECIFIC CONDITIONS OF USE: YES as shown below:
1. The T4 or T3 internal and external temperature class and T125°C/T160°C external temperature classification does not include motor starting or cover motors under duty cycle conditions other than type S1, S2, S6 and S9

2. The installer must ensure that any equipment certified cable glands and stopping plugs fitted to the terminal boxes are suitably IECEx certified. Any unused cable entries must be fitted with IECEx certified stopping plugs. When installed the cable gland or stopping plug must maintain the marked IP rating of the enclosure.

3. All terminal nuts and screws, whether used or not, shall be correctly tightened.

4. When tightening supply connections care should be taken to maintain clearance distances.

5. On auxiliary terminals the conductor insulation shall extend to within 1mm of the terminal throat.

6. There shall be no loose conductor strands on any terminal.

7. The current transformer secondary terminals must not be left open circuit to avoid potential high voltages.

8. Motors designed for variable frequency drives are fitted with stator winding temperature detection devices that must be connected to the motor control circuit. For other supply methods, the connection of the winding temperature detectors is optional. The stator RTDs and thermistors can be connected via a standard industrial controller provided that the controller is located in a safe area. The service temperature of the stator RTD's and thermistors shall be adhered too.

Thermal protections and space heaters, in accordance with manufacturer's documents, either presenting their own Ex-certificate or certified as part of the motor, are compliant with IEC 60079 series and are approved by this certificate.

9. Anti-condensation heaters shall not be energised when the machine is energised.

10. Where auxiliary apparatus is fitted that is not covered by this certificate the installer and/or user, as appropriate, must ensure that it is suitable for the conditions of use and that it does not invalidate this certification.

11. Motors certified for dust only environments will have no restriction on the supply connections to any internal RTDs and thermistors.

12. When the Iris terminal box arrangement is used the motor is restricted to Zone 2 Gas use only and an ambient temperature range of -20°C to +55°C.

13. The paint coating of the motors in potentially explosive dust atmospheres may present an electrostatic charging hazard - see the manufacturer's instructions for further information.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 7.1

To introduce the W51 HD range with frame sizes 315 to 450

Variation 7.2

To confirm that the equipment covered has been reviewed against the requirements of IEC 60079-7: 2017 Edition 5.1 in respect of the differences from IEC 60079-7: 2015

ExTR: **GB/BAS/ExTR21.0095/00**	File Reference: **20/0443**

Annex:

IECEx BAS 10.0104X - Annex Issue 6.pdf

The HGF Range of Induction Motors has shaft centre heights ranging from 315 to 630mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV (Ex ec) / 15kV (Ex t) and duty types S1, S2, S6 or S9.

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The W51 HD Range of Induction Motors has shaft centre heights ranging from 315 to 450mm (and NEMA equivalent) and comprises cast iron frames for horizontal or vertical, foot and/or flange mounting. The range covers 2 to 14 poles, 3 phase windings for 50 or 60Hz and is designed for connection to supplies up to 13.8kV and duty types S1, S2, S6 or S9.

Bearing Arrangements

Spigot housings are machined at either end of the stator frame into which the machined spigots of cast iron end frames are fitted. The end shields carry the bearing arrangements which may be roller bearing or sleeve bearing and be grease, oil lubricated or oil mist lubricated. Optional bearing insulation is available, and the bearing housings made from cast iron. The bearing housings provide a degree of protection of at least IP55 for equipment Group II and IP55 for equipment Group IIIB (EPL Dc) and IP65 for equipment Group IIIC (EPL Db).

Stator

The stator core packs are built from insulated steel laminations which are clamped together for machines up to 560 and welded for machines size 630. The wound and impregnated stator assembly is secured in the stator frame by an interference fit and rotation is further prevented by the use of dowels (only for HGF motors).

Rotor

The rotor core packs which are built from insulated steel are keyed onto the steel shaft, located at one end by a shoulder and at the other by a circlip (only for copper rotor bars). The laminations may be drilled to allow for radial and/or axial cooling air circulation. The rotor cage is either cast aluminium or built up from copper bars. When a built-up rotor is used the copper bars are forced into the slots to give an interference fit and the end rings are brazed to the bars.

Balancing of the rotor is achieved either by fixing washers to cast studs on the aluminium rotors only or by fastening washers to the end rings or by fastening weight balances on the balancing disc of the rotor for both aluminium and copper rotors.

Terminal Boxes

The motors are fitted with separate bolt-on terminal boxes which are manufactured from cast iron or steel and fitted with bolt-on covers incorporating a gasket which is glued to one surface. The following component certified terminal boxes can also be fitted when applicable.

Manufacturer	Type of terminal box	Certificate Number(s)
Quartzelec Limited	PSE Phase Segregated	IECEx SIR 10.0147U
Weidmuller	Empty enclosure Type TB MH	IECEx KEM 10.0015U
R.Stahl	Type 8150/0-****-****-***-****	IECEx PTB 09.0047U
	Type 8146/-***-**	IECEx PTB 06.0044U
	Type 8125/-***-***	IECEx PTB 06.0029U
Bartec	Type 07-56.1-..../....	IECEx IBE 09.0016U
	Type 07-5180****/****	IECEx PTB 11.0032U

	Type 07-5184-****/**** and 07-5185-****/****	IECEx PTB 09.0008U
WEG Equipamentos Elétricos S/A	WPS, WPI, WBT, WBL, WAI, WNT	IECEx BAS 14.0175U
	WATB Series	IECEx BAS 16.0129U

Main terminal boxes may contain insulators, copper bars, current transformers (C.Ts), surge arrestors and capacitors to form single or double cable arrangements of air insulated and phase segregated versions. Neutral connections may also be included as part of the main terminal box or as a separate unit.

Auxiliary terminal boxes contain IECEx component certified terminals. Details of which are shown below:

Manufacturer	Type	Certificate Number
Weidmüller Interface Gmbh & Co. Kg	WDK 2.5 / 4; WDU 1.5 / 2.5	IECEx ULD 05.0008U
	ZDU / ZPE / ZDK series	IECEx ULD 05.0009U
	SAK ; EK series	IECEx KEM 06.0014U
	ZDU ; ZPE series	IECEx ULD 05.0009U
	WDU / WPE series	IECEx ULD 14.0005 U
Phoenix Contact	Series USLKG	IECEx KEM 06.0035U
	ST 1,5 / 2,5; STTB 1,5/2,5	IECEx KEM 06.0051U
	Series ST 4, STTB 4 and 6	IECEx KEM 06.0050U
	Series ST 10, 16 and 35	IECEx KEM 06.0033U
	MBK 3; MBK 6; MSLKG 6	IECEx KEM 07.0008U
	UT series	IECEx KEM 06.0027U
	UK series	IECEx KEM 06.0029U
	UK 1,5N; UK 2.5; 3N; 5N; 6N	IECEx KEM 06.0034U
	Type MSLKG 2.5	IECEx KEM 07.0017U
	UT series	IECEx KEM 06.0013U

WEG Drives & Controls	Type BTWP* and BTWP*T	IECEx FTZU 12.0005U
	Type BTWI* and BTWI*T	IECEx FTZU 12.0006U
	Type BTWI 6, BTWI 10, BTWI 6T and BTWI 10T	IECEx FTZU 12.0007U
Klemsan	TB MVK ...; TB PIK …; TB PYK …; TB PUK	IECEx FTZU 10.0011U
	Series TB AVK	IECEx FTZU 10.0012U
	TB MYK* ; TB MYPK*; TB MYSK*; TB PYK*; TB WGO*; TB AVK*; TB PIK*; TB PEK*	IECEx FTZU 11.0006U
	AVK*; AVKY*; PYK*; PYKM*; PYKMR 2,5; PIK*; WGO*; WGL 1; WGO PB 6; PB*	IECEx FTZU 16.0003U
Wieland	WT series	IECEx SEV 14.0004U
	WKN series	IECEx SEV 15.0002U
Connectwell	CTS, CMT, CMB, CMC, CDL, ODL, CTL, CSC, CGM, CGT, PTB, AS, ADL, AGT	IECEx SIR 16.0056U
	CTS, PTB, CDL, ODL, CTL, CSC, CGT, CGM, CGT, CMT, CMB, CMC	IECEx UL 11.0053U
	AS, AGT, ADL	IECEx UL 11.0044U
	CX, CM, CSB, CBS, STH, CDL	IECEx SIR 16.0016U

Any size of terminal box can be fitted to any of the frame sizes within the range as long as they are suitable rated for their intended use and it is physically possible to do so.

Note: The use of ATEX Certified boxes and terminals is justified in the report.

Ventilation

Various methods of cooling are used including externally ventilated or totally enclosed versions of air to air or air to water, with or without silencing. In addition, forced ventilation may be used with separately IECEx certified motors and optionally an IECEx certified encoder or brake may be attached to the main motor shaft.

External fans when used are manufactured from polypropylene, cast iron, bronze, welded steel or aluminium containing less than 6% magnesium.

Windings

Low voltage motors are wound using polyester-imide enamel wire with the overhangs suitably insulated and tied with fibreglass. High voltage motors are wound using either enamelled copper wire with a polyester and glass fibre covering or bare wire with two layers of special mica tape.

Motors with rated voltages above 4160V have tape applied to protect against corona effects and also have stress relief tape applied. After winding, the high voltage motors are vacuum impregnated with a bi-component epoxy resin.

Use of Variable Voltage Variable Frequency Drives

The range of HGF / W50 Motors can be operated with frequency inverters (variable speed drives) in the following conditions/considerations:

- With PWM variable frequency drives, up to 13800 V, insulation system F (or H), are able to operate within their insulation class limit, respecting the motor temperature class.
- With forced ventilation (independent cooling system) or oversizing, shall be applied in accordance with the application characteristics due on variation of nominal frequency.
- With safety thermal margin or power derating to operate within insulation class limit B.
- With variable frequency drives with sinusoidal output signal (equipment able to supply motor voltage and current with negligible harmonic content), or variable frequency drives type PWM fitted with sinusoidal filters in the output. In this condition it is not expected significant additional temperature rise (more than 10K), beyond the normally shown by the motor under sinusoidal supply.
- With variable frequency drives that supply motor voltage / current with greater harmonic distortion, may resulting in additional heating more than 10K. This situation is usually to occur with higher power machines and low voltage (<1000V) and the motor should be designed properly.
- Oversizing insulation of motors operating with variable frequency drives can be necessary depending on the application characteristics and variable frequency drive.
- Use of variable frequency drives that supply PWM voltage with presence of common mode components (zero sequence) require motor insulation oversizing for voltage higher than 4000V.
- Speed x torque curves for motor shall be supplied for application with a variable frequency drive.

Motors shall be fitted with thermal protective devices which shall be connected into the motor control circuit in order to maintain the T3 or T4 temperature class and/or the T125°C or T160°C surface temperature for dust applications.

Auxiliaries

The auxiliaries which may be fitted to this range of machine are:

- Anti-condensation heaters (in accordance with document number 10000826090 - with own Ex certificate or approved as part of the motor);
- Winding and bearing temperature detectors comprising RTD's, thermocouples, thermistors or thermostats (in accordance with document number 10000822920 - with own Ex certificate or approved as part of the motor);

The following are IECEx component certified temperature detectors that can be used.

Manufacturer	Type	Certificate Number
EPHY-MESS GnbH	Temperature Sensor Type PR-SPA-Ex-NWT and PR-SPA-EX-WKF	IECEx IBE 14.0058U
Techno Controls	Stator Winding Temperature Detectors (Types - TRS,,)	IECEx PRE 18.0032U

	TSR* series slot resistance thermometer and TBTD-* series bearing temperature detectors	IECEx SIR 16.0033U
Minco Products inc.	Models: S, MS and TS	IECEx DEK 15.0057U
	B217137	IECEx DEK 15.0018U

- Anti-condensation heaters.

The following are IECEx component certified heaters that can be used.

Manufacturer	Type	Certificate Number
Flexelec SA	RSV Anti-condensation heater	IECEx SIR 10.0151U
BARTEC GmbH	Self Limiting Heating Cable Series HSB	IECEx KEM 07.0048U
	Model PSB	IECEx KEM 07.0047U

Note: In the situation where motors are fitted with IECEx equipment certified T4 anti-condensation heaters the overall motor temperature class marking can be T4. Any relevant specific conditions of use relating to the use of the heaters as part of the motor must be complied with.

Type Testing

Each motor design shall be subjected to a WEG test procedure for Ex ec motors:

- Motor with temperature class T4: motor design verification by thermal test with measurement of stator and rotor temperatures.
- Motor with temperature class T3: motor design verification by thermal test without measurement of rotor temperature.
- Motor with temperature class T3: Type Testing is not required when the stator is limited to class B rises

Slight variations in motor design already tested can have the temperature class re-verified by calculation.

Ambient Temperatures

The standard temperature range of the motors is -20°C to +40°C. By the choice of suitable materials and use of the de-rating data called up on the drawings an ambient range of -55°C to +80°C may be achieved. Individual motors must be marked according to the build of the unit.

Ingress Protection Rating

The ingress protection rating of the motors depends on the shaft seal used:

Shaft seal	IP rating
Oil	IP55 to IP66
Taconite labyrinth	IP55
Taconite labyrinth with Teflon seal / Seal ring	IP55 toIP66
Labyrinth Oil-Mist / Grease (Inproseal)	IP55 to IP65
Flange/Sleeve Bearing	IP55 to IP66