

The range of induction motor of frame size 90 to 132 comprises a stator frame, endshields and main and auxiliary terminal boxes all fabricated from cast iron. The single ended drive shaft has an external cooling fan at the non-drive end. The terminal box cover fasteners are grade 8.8/12.9 steel or grade A2/4-70 or 80 stainless steel.

The frames are provided with a terminal neck for the integral main terminal box. A single auxiliary terminal box may be attached to the side of the main terminal box. The wall between the terminal box and the motor frame is provided with flameproof potted cable bushings for the winding tails and auxiliary cables for thermal sensors etc. The terminal boxes may be designated flameproof Ex d, or increased safety Ex e.

The motors have rolling element bearings, are foot or flanged mounted for horizontal and vertical use and may be provided with anti-condensation heaters rated as indicated below.

The motors are rated from 220V to 1100V when supplied with an Ex d terminal box, or from 220V to 690V when supplied with an Ex e terminal box, 50/60Hz or variable frequency up to a maximum of 120Hz when supplied from a type VPWM, CFW09 or CFW11 invertors manufactured by WEG. The maximum voltage on the auxiliary terminals is 440V.

The motors have a maximum rating as indicated below for use in a maximum ambient temperature of 40oC when continuously rated for S1 duty and connected to a 3 phase supply having form and symmetry not worse than that defined in IEC 60034-1 and operated within the defined voltage and frequency limits for Zone A.

Frame Size	90	100	112	132
Maximum output (kW)	3.0	4.0	7.5	11.0
Maximum output (kW) with permanent magnet and VFD	4.5	7.5	11.0	22.0
Poles	2 to 12			
Heater (W)	11	11	22	30

The motors are de-rated in accordance with the manufacturer's instructions for use with variable frequency supplies, a maximum ambient temperature between 40oC and 80oC, altitudes above 1000m, S2 to S9 duty and a service factor of 1.0 to 1.25.

The motors can be provided with various seal arrangements and materials for ingress protection IP55, IP65 and IP66.

Options include permanent magnet, a double ended shaft, integral leads, anti-condensation heaters, thermal protectors, forced ventilation and a breather-drain to IECEx CSA 12.0005U.

Cable entry holes are provided as specified on the certified drawings for the accommodation of flameproof cable entry devices, with or without the interposition of a flameproof thread adapter. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

The cable entry devices, thread adapters and stopping plugs shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component).

When used in an explosive dust atmosphere the cable entry devices shall maintain the ingress protection of the enclosure

According to certificate IECEx BAS 13.0142X issue No 0
A Range of Induction Motors of Frame Size 160 to 200

Ex marking :

Ex d IIC T4 Gb (Ta -55°C to + 80°C),

Ex d I Mb (Ta -55°C to +80°C),

Ex de IIC T4 Gb (Ta -55°C to + 80°C),

Ex d I Mb (Ta -55°C to +80°C),

Ex tb IIIC T135°C Db (Ta -55°C to +80°C)

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The range of induction motor of frame size 160 to 200 comprises a stator frame, endshields and main and auxiliary terminal boxes all manufactured from cast iron. The single ended drive shaft has an external cooling fan at the non-drive end. The terminal box cover fasteners are grade 8.8/12.9 steel or grade A2/4-70 or 80 stainless steel.

The frames are provided with a terminal neck for the main terminal box. A single auxiliary terminal box may be attached to the side of the main terminal box. The wall between the terminal box and the motor frame is provided with flameproof potted cable bushings for the winding tails and auxiliary cables for thermal sensors etc. The terminal boxes may be designated flameproof Ex d, increased safety Ex e within the provisions of this report or increased safety terminal boxes as permitted on IECEx BAS 10.0099X.

The motors have rolling element bearings, are foot or flanged mounted for horizontal and vertical use and may be provided with anti-condensation heaters rated as indicated below.

The motors are rated from 220V to 1140V when supplied with an Ex d terminal box, or from 220V to 690V when supplied with an Ex e terminal box, 50/60Hz or variable frequency up to a maximum of 120Hz when supplied from a type PWM inverter manufactured by WEG or any other inverter having identical parameters affecting the thermal performance of the motor. The maximum voltage on the auxiliary terminals is 440V.

The motors have a maximum rating as indicated below for use in a maximum ambient temperature of 40°C when continuously rated for S1 duty and connected to a 3 phase supply having form and symmetry not worse than that defined in IEC 60034-1 and operated within the defined voltage and frequency limits for Zone A.

Frame size	160	180	200
Maximum output (kW)	22	30	45
Poles	2 to 12		
Heater (W)	30	30	38

The motors are de-rated in accordance with the manufacturer's instructions for use with variable frequency supplies, a maximum ambient temperature between 40°C and 80°C, altitudes above 1000m, S2 to S9 duty and a service factor of 1.0 to 1.25.

The motors can be provided with various seal arrangements and materials for ingress protection IP55, IP65 and IP66.

Options include a double ended shaft, integral leads, anti-condensation heaters, thermal protectors, forced ventilation and a breather drain to IECEx CSA 12.0005U.

Cable entry holes are provided as specified on the certified drawings for the accommodation of flameproof cable entry devices, with or without the interposition of a flameproof thread adapter. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

The cable entry devices, thread adapters and stopping plugs shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component) under an EC Type Examination Certificate to Directive 94/9/EC.

When used in an explosive dust atmosphere the cable entry devices shall maintain the ingress protection of the enclosure.

**According to certificate IECEx INE 16.0060X Issue No 0.
Asynchronous motors of of Frame Size 225 and 250**

Ex marking :

Ex db IIB or IIC T4 Gb (Ta -55°C to +80°C),

Ex d I Mb (Ta -55°C to +80°C),

Ex db eb IIB or IIC T4 Gb (Ta -55°C to +80°C),

Ex db I Mb, (Ta -55°C to +80°C),

Ex tb IIIC T125°C Db (Ta -55°C to +80°C)

DOCUMENT No: XPL0213

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The three phase Asynchronous motor type W22X, frame size 225 and 250, is composed by frame, endshields, terminal box and auxiliary terminal box and it has "Ex db" or "Ex db eb" types of protection for gases and "Ex tb" type of protection for dusts.

The motor is made from cast iron minimum quality FC200, the frame has a neck where the main terminal box is connected, a single auxiliary terminal box may be connected on the side of the main box.

The main and auxiliary terminal boxes may be protected by flameproof "db" type of protection or increased safety "eb" type of protection.

Allowed fasteners for terminal boxes are 8.8 or 12.9 quality steel screws or A2/A4-70/80 quality stainless steel screws.

Between frame and terminal boxes a flameproof bushing is foreseen.

The motors may in addition be fitted with temperature sensors, anti-condensation heaters vibration sensors and breather-drain device

Ex certified.

Motors could be fed by inverter, a safety thermal probe shall be fitted in the windings to ensure a maximum T4 temperature class of the motor.

Different methods of cooling can be used as TEFC, TEBC, TEAO and TENV; an external fan can be installed.

The motors get different degrees of protection from IP55 to IP66.

Motor can be mounted horizontally or vertically, for vertical use a cowl for the fan is provided.

According to certificate IECEx INE 16.0044X

A Range of Induction Motors frame size 280 to 355

Ex marking :

Ex db IIB or IIC T4 Gb,

Ex db eb IIB or IIC T4 Gb,

Ex db I Mb,

Ex tb IIIC T125°C Db

T_{amb}: -20°C up to +80°C for frame size 315 and 355 (for gas)

T_{amb}: -55°C up to +80°C for frame size 280 (for gas)

T_{amb}: -55°C up to +80°C (for dusts)

The three phase induction cage motors of frame size 280 to 355 are constructed from cast iron for the frame, terminal box, auxiliary terminal box and endshields. Various methods of cooling are used including TEFC, TEBC, TEAO and TENV. External fans are built from metallic and non-metallic material depending on service temperature. The fan cover is built from Aluminium, Steel, Stainless Steel and Cast Iron. The terminal box fasteners are grade 8.8/12.9 steel or grade A2/4-70 or 80 Stainless Steel.

The frames are provided with a terminal neck for the main terminal box. A single auxiliary terminal box may be attached to the side of the main terminal box. The wall between the terminal box and the motor frame is provided with flameproof potted cable bushings for the winding tails and auxiliary cables for thermal sensors etc.

The motors have rolling element bearings, are foot or flanged mounted for horizontal and vertical use and may be provided with anti-condensation heaters rated as indicated below.

The motors are rated from 220V to 1140V when supplied with an Ex d terminal box, or from 220V to 690V when supplied with an Ex e terminal box, 50/60Hz or variable frequency up to a maximum of 120Hz when supplied from a type PWM inverter manufactured by WEG or any other inverter having identical parameters affecting the thermal performance of the motor. The maximum voltage on the auxiliary terminals is 440V.

The motors have a maximum rating as indicated below for use in a maximum ambient temperature of 40°C when continuously rated for S1 duty and connected to a 3 phase supply having form and

symmetry not worse than that defined in IEC 60034-1 and operated within the defined voltage and frequency limits for Zone A.

Frame size	280	315	355
Maximum output (kW)	150	345	440
Poles	2 to 12		
Heater (W)	140	140	174

The motors may be de-rated in accordance with the manufacturer’s instructions for use with variable frequency supplies, a maximum ambient temperature between 40°C and 80°C, altitudes above 1000m, S2 to S9 duty and a service factor of 1.0 to 1.25.

The motors can be provided with various seal arrangements and materials for ingress protection IP55, IP65 and IP66.

Options include a double ended shaft, integral leads, anti-condensation heaters, thermal protectors, forced ventilation and a breather-drain to IECEx CSA 12.0005U.

The motors may be alternatively marked for gas groups IIA, I, dust groups IIB, IIIA, temperature classifications of T3 and T2 without an increase in ambient temperature above 80°C, temperature classifications of T5, and T6 Ta=40°C, ingress protection IP5X, IP6X, gas only or dust only.

2. ROUTINE EXAMINATIONS AND TESTS

In accordance with clause 16.1 of the IEC 60079-1 standard, each sample defined above has to pass, before delivery, an overpressure test of a period comprised between 10 and 60 seconds under:

Routine test configurations for frame motor size 225 to 250					
Gas Group	T. amb	Stack length	Diffusor	Silicone	Pressure
IIB	-20°C	Min 170 mm	no	no	24.6 bar
IIB	-55°C	Min 170 mm	no	no	37 bar
IIC	-55°C	Min 260 mm	no	yes	40.7 bar
Routine test configurations form main terminal box and auxiliary box / -55°C ≤ Tamb < -20°C					
Gas Group			Pressure		
IIB			21.1 bar		
IIC			21.1 bar		

Routine test configurations for frame motor size 280				
Diffuser	Silicone	Gas Group	Tamb	Pressure
No	Yes	IIB	-20°C	14.8 bar
Yes	Yes	IIB	-20°C	13.4 bar
Yes	No	IIB	-20°C	13.9 bar
No	No	IIB	-20°C	14.9 bar
No	Yes	IIC	-20°C	23 bar
Yes	Yes	IIC	-20°C	23 bar
No	Yes	IIB	-55°C	23 bar
Yes	Yes	IIB	-55°C	23 bar
Yes	No	IIB	-55°C	23 bar
No	Yes	IIC	-55°C	23 bar
Routine test configurations for frame motor size 315 and 355				
Diffuser	Silicone	Gas Group	Tamb	Pressure
No	Yes	IIB	-20°C	14.8 bar
Yes	Yes	IIB	-20°C	13.4 bar
Yes	No	IIB	-20°C	13.9 bar
No	No	IIB	-20°C	14.9 bar
No	Yes	IIC	-20°C	28.4 bar
Yes	Yes	IIC	-20°C	24.3 bar

In accordance with § 16.2 of the IEC 60079-1 standard, the main and auxiliary terminal boxes are exempted from routine tests due to the fact that the boxes underwent to an overpressure test at 61.2 bar, 4 times the reference pressure, with positive results.

In accordance with clause 7.1 of the IEC 60079-7 standard, the main and auxiliary terminal boxes protected by increased safety shall successfully pass, before delivery, a dielectric strength test on each of the different circuits of the connection units, performed according to the relevant standards, the supply voltage shall be applied during one minute.

Type of component	Name of the manufacturer	Certificate number	Editions of the standard
Breather and drain device	WEG Equipamentos Electricos S.A	IECEx CSA 12.0005U	IEC 60079-0 : 2011 IEC 60079-1 : 2007-04 (*) IEC 60079-31 : 2008 (*)
Terminal boards	WEG Equipamentos Electricos S.A	IECEx PTB 11.0088U	IEC 60079-0 : 2011 IEC 60079-7 : 2006-07 (*)
Terminal blocks	WAGO Kontakttechnik	IECEx PTB 04.0003U	IEC 60079-0 : 2011 IEC 60079-7 : 2006-07 (*)
Terminal blocks	PHOENIX CONTACT	IECEx PTB 08.0048U	IEC 60079-0 : 2011 IEC 60079-7 : 2006-07 (*)
Connecting terminals	BARTEC	IECEx PTB 07.0007U	IEC 60079-0 : 2011 IEC 60079-7 : 2015

(*) Not concerned by the major technical changes of the last edition of the standard.

3. INSTALLATION INSTRUCTIONS

It is the manufacturer's responsibility to supply installation instructions with each unit offered for sale as required by IEC/SANS 60079-0 Clause 30.

4. SPECIAL CONDITIONS FOR SAFE USE (denoted by X after certificate number)**Special conditions for safe used of motor frame size 71 to 200**

- The flamepath gaps are less that those permitted by IEC60079-1 for gas group IIC and shall not be enlarged in service.
- The motors may be provided with integral leads, which must be suitably protected and terminated within an enclosure suitable for the conditions of use.
- When provided with a breather-drain to IECEx CSA 12.0005U the motors are excluded from Group I, and are limited to temperature classification T5 to T2 Ta -55°C to + 50°C, or T4 to T2 Ta -55°C to + 80°C, and have an IP rating of IP6X.
- The maximum surface temperature was determined without a dust layer. The end user shall prevent a dust layer forming on the motors.
- After de-energising a delay 60 minutes is required before opening.
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Special conditions for safe used of motor frame size 225 to 355

- The motors may be provided with integral leads, which must be suitably protected and terminated within an enclosure suitable for the conditions of use.
- The maximum surface temperature was determined without a dust layer. The end user shall prevent a dust layer forming on the motors.
- The width of the different flameproof joints is greater than the value specified in the tables of IEC 60079-1 standard.
- The depth engagement of the flameproof threaded joints is greater than the value specified in the tables of IEC 60079-1 standard
- The gap of the different flameproof joints is lower than the value specified in the tables of IEC 60079-1 standard.
- The yield stress of the fastener elements of the flameproof terminal boxes must be equal to class 8.8 or 12.9 or stainless steel A2-70/80 or A4-70/80.

Based on the following documentation: IECEx BAS 13.0142X issue No 0 ,IECEx BAS 13.0045X issue No 0, IECEx INE 16.0060X, IECEx INE 16.0060X Issue No 0 and IECEx BAS 13.0008X

5. CONDITIONS OF CERTIFICATION

- All production units must be covered by a QAN (Quality Assurance Notification), Product Mark Scheme or batch evaluation.

6. MARKING

The following (or similar) information have to be clearly and permanently marked on all units:

Supplier : Zest WEG Electric (Pty) Ltd
 Manufacturer : WEG Equipamentos Eletricos S.A
 Equipment : A Range of Induction Flameproof Motors
 Model/Type : A Range of Induction Flameproof Motors Type W22X of Frame Size 71 to 355
 Serial No. : ---
 Ex Rating : see general description
 IA Certificate No : MS-XPL/17.0490 X

This certification indicates compliance with R10.1 of the Mines Health and Safety Act and/or EMR 9(2) of the Occupational Health and Safety Act, provided that the apparatus is used as relevant in accordance with:

- i) SANS 10086 and IEC/SANS 61241-14 requirements as applicable;
 - ii) Any conditions mentioned in the above report;
 - iii) Any relevant requirements and codes of practice enforced in terms of the Mine Health and Safety Act or Occupational Health and Safety Act; and
 - iv) Any restrictions and conditions enforced by the Chief Inspector of Mines or the Principal Inspector or the Chief Inspector: Occupational Health and Safety.
- v) A revision certificate replaces all previous version of the certificate.
 vi) * - Only covers equipment Imported between the "Issued" and "Expire" dates.
 vii) If and when your QAN (Quality Assurance Notification) Certificate for your equipment manufacturer expires during the valid period of the IA Certification (issued for your equipment) and a new certificate is not submitted the existing IA Certification will then be cancelled. It is thus the client's responsibility to always submit the updated and valid QAN certificate(s) to Explolabs (Pty) Ltd.

Responsible Testing Officer:



D Maree
 Senior Testing Officer

Reviewed by:



H De Wet
 Testing Officer

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