

1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

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

3 Supplementary EC - Type Examination Certificate Number: **BAS02ATEX2120X/10**

4 Equipment or Protective System: **A Type EF280MN and EF315SN Cage Induction Motor**

5 Manufacturer: **Fabryka Silnikow Elektrycznych "Tamel" SA**

6 Address: **ul. Elektryczna 6, 33-100, Tarnow, Poland**

7 This supplementary certificate extends EC – Type Examination Certificate No. **BAS02ATEX2120X** to apply to equipment or a protective system designed and constructed in accordance with the specification set out in the Schedule of this certificate which incorporates and supersedes all previous issues of the said certificate.

8 The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa, Notified Body Number 1180, is responsible only for the additional work relating to this re-issued certificate and any other supplementary certificate it has issued.

The examination and test results are recorded in confidential Report No. **10(C)0579**

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

EN60079-0: 2009

EN60079-1: 2007

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 Supplementary 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 :

⊕ II 2 G Ex d IIB T* Gb (T_{amb} -*°C to +*°C) and /or ⊕ IM2 Ex d I Mb see schedule

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **5233**

Project File No. **10/0579**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.


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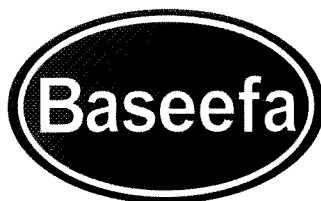
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R S SINCLAIR *MLOWNEY*
DIRECTOR
On behalf of
Baseefa



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Schedule

14

Certificate Number BAS02ATEX2120X/10

15 Description of Equipment or Protective System

The EF Series Induction Motors of Frame Sizes EF280MN and EF315SN comprise a stator frame and end shields manufactured from cast iron, and a terminal box attached to the stator frame. The single or double ended motors can be provided with either an end shield adapter for flange mounting and/or bolt-on feet and have an optional external cooling fan and sheet steel fan cowling. An additional drip-proof canopy is provided when the motors are supplied with an external cooling fan and are intended to be mounted vertically with the shaft downwards.

The EF280MN and the longer EF315SN motors have the same frame diameter, the bolt-on feet are used to provide the alternative shaft heights. The motors can be provided with imperial dimensions for the drive shaft and shaft height, and alternative feet and shaft sizes with redesignated frame sizes.

Other options include a cable spreader box, a cast iron fan cowling, internal heaters or low voltage heating of the windings for anti-condensation purposes.

The motors are continuously rated for SI duty as defined in EN 60034-1 and are for connection to a three phase supply having form and symmetry not worse than that defined in EN 60034-1. Alternatively the motors may be used on non-sinusoidal or variable frequency supplies up to a maximum of 60Hz. In these cases, and for motors, without an external fan, at least one thermal overload protector per phase is fitted in the stator winding slot or overhang, for connection to a protective circuit.

The motors are rated from 220V a.c. to 1100V a.c., three phase, up to 60Hz, 2 to 12 pole, and have a maximum power output, dependent on the number of poles, of 41.5kW or 47kW at 50Hz and 60Hz respectively.

In this form the ambient temperature range is -55°C to +40°C, however for operational purposes the motors may be marked for a restricted range with these temperatures.

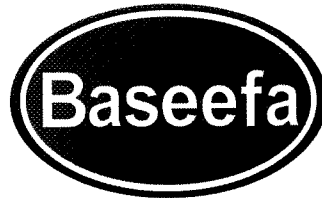
Cable entry holes are provided as specified on the certified drawings for the accommodation of flameproof cable entry devices, with or without the interposition of a flameproof thread adapter. Unused entries are to be fitted with suitable certified flameproof stopping plugs.

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.

Drawings

Number	Revision	Date	Description
B00017**	F	18.09.10	Sectional Arrangement 280MN – 315SN Motor
B10050*	-	12.11.01	Terminal box Ex d, 6 terminal 101 – 160 Amp
B10052*	-	12.11.01	Terminal box Ex d, 3 main terminals, 101 – 160 Amp
B10054*	-	12.11.01	Terminal box Ex d, 3 main terminals, 0- 100 Amp
B10056*	-	12.11.01	Terminal box Ex d, 6 main terminals, 0- 100 Amp
B10058*	-	12.11.01	Terminal box Ex d, 9 main terminals, 0- 100 Amp
B10060*	-	12.11.01	Terminal box Ex d, 12 main terminals, 0 – 100 Amp
B20078*	-	12.11.01	Captive Terminal Box Screw Arrangement
B20075*	-	12.11.01	Coupling Adapter Plate
B20101*	-	12.11.01	Gas Group IIB Dimensions
B20081*	-	12.11.01	Cast Iron Fan Cover Arrangement
B30280*	-	12.11.01	Low Voltage Heating Details
B30300*	-	12.11.01	Alternative Cord Type Anti-condensation Heater

**These drawings have been submitted for this certificate.



* These drawings have been previously certified under BAS02ATEX2120X and its previous supplementary certificates. Some of these drawings are common to other certificates as indicated on drawing B30213. All are held on file 5233/02.

Special Conditions for Safe Use

1. For motors of temperature classification T3, operating on a non-sinusoidal and/or variable frequency supply, the fundamental frequency is limited to a maximum of 60Hz. For these motors, and those without an external fan, thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding 160°C.
2. When applicable, the motor control shall be such as to ensure that the low voltage on the windings for anti-condensation purposes is only applied when the main supply is disconnected. The maximum voltage specified by the manufacturer and marked on the motor shall not be exceeded.
3. The electrical supply to the anti-condensation heaters must be interlocked with the main motor power supply so that they are only energised when the motor is de-energised, and the heaters must be de-energised before opening any part of the motor enclosure.
4. When the motors are vertically mounted with the drive shaft uppermost, the driven component must prevent falling objects from entering the fan cowling.
5. For replacement purposes, fixing screws must be of minimum grade 8.8, except socket head cap screws which must be minimum grade 12.9.
6. When maintaining or repairing the motor, the minimum length and maximum gap of the rotor shaft and bearing cap flamepaths must be maintained to gas Group IIC specifications.

Variation 10.1

Alternative ambient temperature range ($T_{amb} = +60^{\circ}\text{C}$) without a change in temperature classification of T3 when derated as specified.

Drawing

Number	Revision	Date	Description
B30217*	-	10.11.01	Derating Factors T3 High Ambient

Variation 10.2

Alternative temperature classification of T4 ($T_{amb} = +40^{\circ}\text{C}$) when derated as specified on drawing B00017, or an alternative temperature classification of T4 ($T_{amb} = +60^{\circ}\text{C}$) when derated as specified.

Drawing

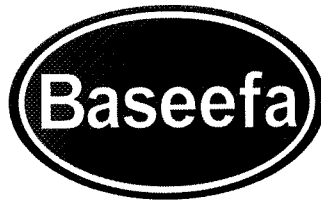
Number	Revision	Date	Description
B30214*	-	12.11.01	Derating Factors T4 High Ambient

Additional Special Condition for Safe Use

For motors of temperature classification T4, operating on a non-sinusoidal and/or variable frequency supply, the fundamental frequency is limited to a maximum of 60Hz. For these motors, and those without an external fan, thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding 140°C. Where the supply is derived from an inverter this shall have an output whose total harmonic distortion of voltage and current waveforms does not exceed 15% and 6% at all operating speeds and frequencies.

Variation 10.3

To permit the motors to be used on non-sinusoidal or variable frequency supplies up to a maximum of 75Hz, with at least one thermal overload protector per phase is fitted in the stator winding slot or overhang, for connection to a protective



circuit. The output is increased up to 127kW with a temperature classification of T3 or up to 114kW with a temperature classification of T4, within an ambient temperature range of -20°C to +40°C.

Additional Special Condition for Safe Use

For motors of temperature classification T3 or T4, operating on a non-sinusoidal and/or variable frequency supply, the fundamental frequency is limited to a maximum of 75Hz, and the thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the supply to prevent the winding temperature exceeding 160C or 140C respectively. The inverter shall have an output whose total harmonic distortion of voltage and current waveforms does not exceed 15% and 6% at all operating speed and frequencies.

Variation 10.4

To permit the substitution of the terminal box with a gland plate and compound filled cable glands together with integral cable tails.

Number	Revision	Date	Description
B20072*	-	12.11.01	Direct Entry Arrangement

Special Condition for Safe Use

The permanently attached cables shall be suitably protected against mechanical damage and terminated within a terminal or junction facility suitable for the conditions of use.

Variation 10.5

Alternative windings to the 60Hz, temperature classification T4, motors only to provide specified increased outputs.

Variation 10.6

To permit outputs of up to 50% above standard rating with additional air velocity provided by either modified design Self Circulating fan (IC411) or air circulated by Relative Displacement (IC418) both with thermal overload protection at 160°C. This arrangement is for machines used on a sinusoidal supply or, with suitably de-rating, on a non-sinusoidal supply.

When used in this manner, the motors have a Temperature Classification of T3

Additional Special Condition for Safe Use

For motors of temperature classification T3, with 'Air Over Motor' build, thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding 160°C.

Variation 10.7

To permit outputs at up to 20% above standard rating with additional air velocity provided by either modified design Self Circulating fan (IC411) or air circulated by Relative Displacement (IC418) both with thermal overload protection at 140°C. This arrangement is for machines intended only for use on a sinusoidal supply.

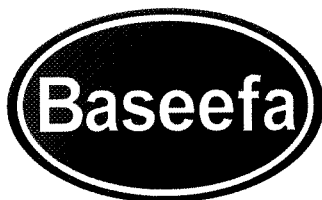
When used in this manner, the motors have a Temperature Classification of T4

Additional Special Condition for Safe Use

For motors of temperature classification T4, with 'Air Over Motor' build, thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding 140°C.

Variation 10.8

To permit all motors to be used on a non-sinusoidal supply up to a maximum running speed of 3600 rev/min when de-rated and thermally protected as specified.



Additional Special Condition for Safe Use

The thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding the specified temperature classification.

Variation 10.9

To permit optional M12 terminals

Drawing

Number	Revision	Date	Description
E51AC001*	-	05.05.05	Terminal Box Exd, 3 main terminals 250A

Variation 10.10

Alternative windings to provide two speed motors. The 2 to 8 pole single or two winding motors have a thermal protector in each phase, or 2 thermal protectors for a single phase motor, for each winding.

Addition Special Condition for Safe Use

The thermal protectors must be connected to a suitable control circuit such that the motor is disconnected from the supply in the event of excessive temperatures.

Variation 10.11

Addition of

Ex I M2 Ex d I

to the marking of existing T4 or T5 temperature class motors listed below.

When motors are used in Group I applications, aluminium cooling fans are not to be fitted and certain fan cowls are attached via an extension barrier when specified in the drawings below.

Cable entry holes are provided as specified on the certified drawings for the accommodation of suitable cable entry devices, with or without the interposition of a suitable thread adapter, or suitable stopping plugs. The cable entry devices, thread adapters and stopping plugs must be certified as flameproof Group I Equipment (not a Component) under an EC-Type Examination certificate to Directive 94/9/EC.

Component certified cable entry devices, thread adapters and stopping plugs may only be used if specifically included in the certificate schedule.

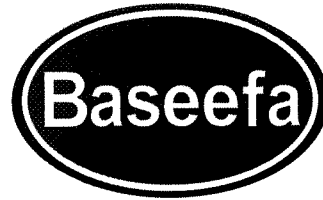
The cable entry device and cabling methods used in service must be suitable for their intended duty and the special types of cable used in mining.

Additional Special Conditions for Safe Use

- 1 For motors used in Group I applications, thermal overload protectors are to be connected into a control circuit such that the machine is disconnected from the main supply to prevent the winding temperature exceeding 140°C.
2. Flamepath gaps are less than those required for Group I, consult the manufacturer before repair.

Drawing

Number	Sheet	Issue	Date	Description
K20AC001/0	-	-	19-4-07	Group I Versions of Motors
K26BZ001/0*	-	-	19-4-07	Barrier – 280M/315S



Variation 10.12

To note alternative frame designations as indicated below.

POLES	MAIN FRAME TYPE (BS specification)	MAIN FRAME TYPE (European specification)	ALTERNATIVE TYPE	MAX OUTPUT POWER T4 AT 50Hz [kW]
2	EF280MN	EF315SNE	dSg315S-2	110
2	EF315SN	EF315MNE	dSg315ME-2	132
4	EF280MN	EF315SNE	dSg315S-4	110
4	EF315SN	EF315MNE	dSg315ME-4	132
6	EF280MN	EF315SNE	dSg315S-6	75
6	EF315SN	EF315MNE	dSg315ME-6	90
8	EF280MN	EF315SNE	dSg315S-8	55
8	EF315SN	EF315MNE	dSg315ME-8	75