

## DATA SHEET 02 TO EC TYPE EXAMINATION CERTIFICATE PTB 13 ATEX 3016 X

**Manufacturer:** Bauer Gear Motor GmbH  
Eberhard-Bauer-Str. 36-60, 73734 Esslingen, Germany

for three-phase synchronous motor, type S.09XA4-3000 with permanent-magnet rotor

### Ratings and technical data

Provided the electrical and thermal exposure of the motors of this type does not differ from the tested sample in any significant way, this certificate applies to the following designs:

#### Star connection

Torque:	12.5	15.7	20	20	14.5	Nm
Output: **)	0.196	0.84	2.1	6.3	5.5	kW
Voltage: *)	26	66	124	334	380	V
Current:	8.0	9.9	12.5	12.5	9.2	A
Frequency:	5	16.66	33.33	100	120	Hz
Speed:	150	500	1000	3000	3600	min <sup>-1</sup>
Duty type:	S1					
Thermal class:	F					

#### Delta connection

Torque:	12.5	15.7	20	20	14.5	Nm
Output: **)	0.196	0.84	2.1	6.3	5.5	kW
Voltage: *)	15	38	72	193	220	V
Current:	13.9	17.1	21.7	21.7	16	A
Frequency:	5	16.66	33.33	100	120	Hz
Speed:	150	500	1000	3000	3600	min <sup>-1</sup>
Duty type:	S1					
Thermal class:	155 (F)					

\*) Fundamental wave, measured at motor terminals.

The voltage at the motor terminals depends on the converter input voltage, the voltage drop at the filter and along the motor connection cable, and must not be lower than the rated value by more than 5 % in accordance with IEC 60034 – 1 section "A", even at a minimum converter input voltage. At a reduced motor terminal voltage, the permissible motor torque must also be reduced in proportion to the voltage change. These conditions must be considered with the motor rating, converter parameterisation and the minimum converter input voltage. The maximum permissible converter input voltage is 500 V +10 %, 50/60 Hz.

\*\*\*) Cooling medium temperature of max. 50 °C.

## Data sheet 02 to EC Type Examination Certificate PTB 13 ATEX 3016 X

The voltage rating of the motor may be adapted with the number of winding coils. The rated current changes in inverse proportion to the rated voltage.

### Monitoring device

The motors are provided with a device for direct temperature monitoring, combined with fixed converter setting data, to protect them against overheating as a result of overload conditions.

Because of the special features of converter-fed motors and the adjusted monitoring device, the specifications for the  $I_A/I_N$  ratio and the heating time  $t_E$  do not apply for the converter-fed motors.

The device for direct temperature monitoring has been type tested by Physikalisch-Technische Bundesanstalt. It consists of three winding-embedded DIN 44082 type M 140 PTC thermistors and a tripping unit that has been function tested for this purpose in compliance with Directive 94/9/EC.

At a phase current of 38 A (105 V 50 Hz) and when the rotor has been removed, the PTC thermistor must respond after 50 s ( $\pm 20\%$ ) when starting from the cold state (20 °C).

The temperature monitoring device ensures that temperature class **T3** requirements according to EN 60079-7 are complied with.

### Converter setting data

In connection with the a.m. monitoring device the following converter data have to be set and kept during operation:

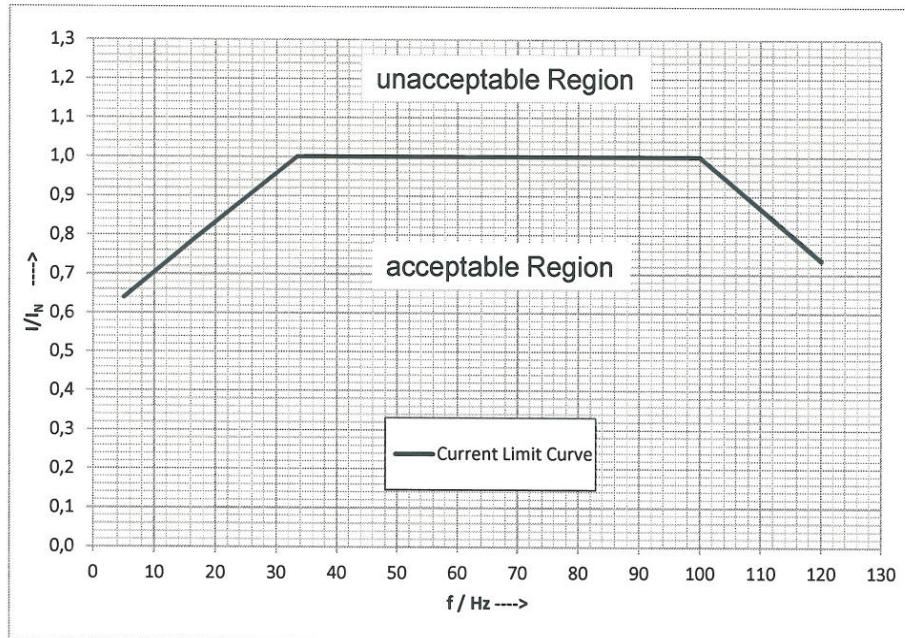
Minimum pulse frequency:	3	kHz
Current limit (temporary):	$1.6 \cdot I_N$	
Maximum overload period:	60	s
Minimum frequency $f_{\min}$ :	5	Hz
Maximum frequency $f_{\max}$ :	120	Hz
Permissible period for operation below $f_{\min}$ :	60	s

The maximum overload period and the permissible period for operation below  $f_{\min}$  relate to a time interval of 10 min.

The frequency-dependent torque results from the permissible continuous current limit.

## Data sheet 02 to EC Type Examination Certificate PTB 13 ATEX 3016 X

The continuous current limit of the frequency converter must be set on the basis of the following diagram as a function of the frequency:



Setting parameters for the continuous current limit of the frequency converter between 5 Hz and 120 Hz

All other setting data have to be selected, so the requirements of the drive are complied with.

### Special conditions for safe use

Motor group operation is not permitted.

The motors of this type may only be operated with converters which are in conformity with the requirements mentioned in the section "converter setting data".

The current rating for the frequency converter must not be higher than two times the current rating for the motor.

The current monitoring unit for the frequency converter must be able to detect the effective value of the motor current with a  $\pm 5$  %-percent tolerance based on the motor current rating.

Before putting the system into operation it has to be checked to ensure that converter-induced overvoltage with a peak of more than 1556 volts cannot occur at the terminals of the electrical machine.

Changes in the rating (torque, speed range) within the permissible operating range are possible and will be defined by the manufacturer. The permissible continuous current limit, torque and speed range are shown on the name plate.

An additional plate that is affixed on the motors points out that connecting cables with elevated heat resistance and a limiting temperature of at least 80 °C must be used.

### Test Report PTB Ex 13-32079

Zertifizierungsstelle Explosionsschutz  
On behalf of PTB

Braunschweig, September 26, 2013

  
Dr.-Ing. F. Lienesch  
Regierungsdirektor

