

Reliable system operation:

**Explosion-proof AC asynchronous motors  
of category 2 (94/9/EC) in combination with  
frequency inverters from SEW**



## Motors compliant with 94/9/EC for gas and gas/dust: Dynamic and safe even during inverter operation

It is important to observe and comply with guidelines particularly in areas containing potentially-explosive air/gas and gas/dust mixtures. Thanks to many years of experience and competence in this area, SEW-EURODRIVE ensures that the relevant guidelines are observed. Furthermore, the company's expertise is continually being expanded to include new and further developments.

In 2006, the Physikalisch-Technische Bundesanstalt (PTB) has verified that SEW-EURODRIVE is the first company to have an AC asynchronous motor in protection type "e" approved for operation with a frequency inverter.

This basic type of approval was implemented for all 4-pole motors of category 2 from SEW-EURODRIVE and certificates of all eDT and eDV motors are now available. These new approvals for the motors were performed according to the new European standards applicable to explosion protection:

Gas (EN 60079-0; EN 60079-7) and dust (EN 61241-0; EN 61241-1).

These motors meet the requirements for equipment intended for use in potentially-explosive areas of category 2 as defined in directive 94/9/EC (ATEX 95). A device for direct temperature monitoring in combination with the defined operating parameters of the frequency inverter offers the best possible protection against excessive heating caused by an overload.



Compared to the rated supply torque, the permitted load value for operation with a frequency inverter was reduced to the values given in the

below table to ensure thermally safe operation. The table shows the current values for 400 V / 50 Hz voltage in star connection;

the current values for delta connection 230 V / 50 Hz (or 400 V / 87 Hz) must be converted with factor  $\sqrt{3}$ .

## Technical data

Type*	$P_{\text{supply}}$ [kW]	$M_{\text{supply}}$ [Nm]	$M_{\text{FI}}$ [Nm]	$I_{\text{rated-FI}}$ at 400 V / 50 Hz [A]
eDT71D4	0.37	2.6	2.2	1.04
eDT80K4	0.55	3.8	3.3	1.5
eDT80N4	0.75	5.2	4.5	1.9
eDT90S4	1.0	6.7	5.6	2.2
eDT90L4	1.5	10.1	8.5	3.4
eDV100M4	2.2	14.9	11.9	4.0
eDV100L4	2.6	17.6	14.5	4.8
eDV112M4	3.6	23.9	19.6	6.7
eDV132S4	5.0	33.2	30.7	9.7
eDV132M4	6.8	45.1	38.4	11.7
eDV132ML4	7.5	49.7	38.3	11.7
eDV160M4	9.2	60.8	51.0	15.7
eDV160L4	11.0	71.9	59.5	18.6
eDV180M4	14.0	91.6	76.4	23.7
eDV180L4	16.0	103.9	85.3	26.8

\* at  $F_{\text{max}}$  87 Hz



An overview of the advantages this combination offers compared to an AC asynchronous motor in explosion protection "d" (EN 60079-1; flameproof enclosure):

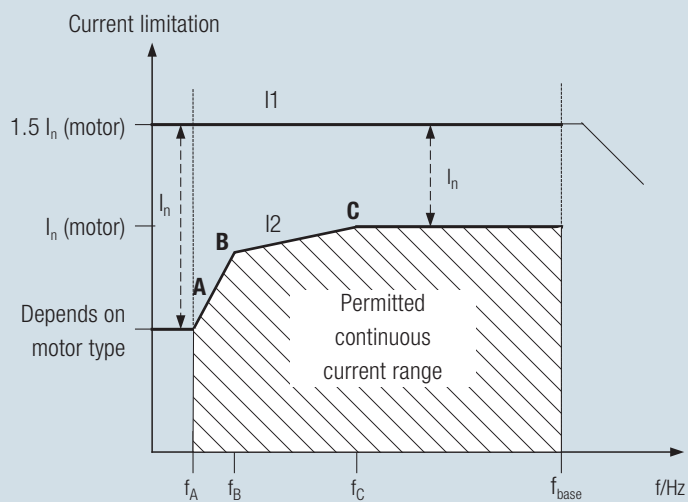
- High efficiency
- Lighter weight
- Shortest possible delivery times, high availability
- Certified for operation with frequency inverters from SEW
- Suitable for pump and fan drives
- Delivery from one source, from a manufacturer that offers both components itself

## Frequency-dependent current limitation

Since there is less cooling available for speeds below the rated supply point, the thermal overload of the motor poses a risk in explosion-proof applications. This is why there is a current limitation, which is part of the approval. The current limitation information is stored in the firmware for frequency inverters from SEW-EURODRIVE and will be activated at startup.

The current limit must not be exceeded for longer than 60 seconds. Subsequent recovery time is 10 minutes. After 50 seconds, the current is reduced to the value permitted for the frequency along a ramp within the next 10 seconds.

The short-term permitted maximum motor over-current is 150 %  $I_n$ .





(1) **EC-TYPE-EXAMINATION CERTIFICATE**  
(Translation)

(2) Equipment and Protective Systems Intended for Use in  
Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

**PTB 07 ATEX 3055 X**

- (4) Equipment: Three-phase motor of the type series eD..90 ...
- (5) Manufacturer: SEW-Eurodrive GmbH & Co KG
- (6) Address: Ernst-Blickle-Str. 42, 76646 Bruchsal, Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
- The examination and test results are recorded in the confidential report PTB Ex 07-36183.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 60079-0: 2004 EN 60079-7: 2003 prEN 61241-0: 2002 EN 61241-14: 2004**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 2 G Ex e II T1, T2 or T3**

 **II 2 D Ex tD A21 IP65 T 120 °C**

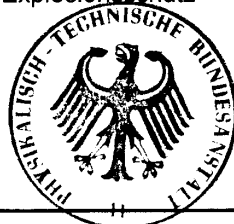
Zertifizierungsstelle Explosionsschutz

Braunschweig, July 05, 2007

By order:



Dr.-Ing. F. Lienesch  
Oberregierungsrat



sheet 1/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.



## How we're driving the world

With people who think fast and develop the future with you.

With a worldwide service network that is always close at hand.

With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

With uncompromising quality that reduces the cost and complexity of daily operations.



**SEW-EURODRIVE**  
Driving the world

With a global presence that offers responsive and reliable solutions. Anywhere.

With innovative technology that solves tomorrow's problems today.

With online information and software updates, via the Internet, available around the clock.

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