



(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 03 ATEX 2051 X



(4) Equipment: Magnet, type K 32/K 40 Ex-.....

(5) Manufacturer: müller co-ax ag

(6) Address: Gottfried-Müller-Straße 1; 74670 Forchtenberg, 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 03-23007 .

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

EN 50014:1997 + A1 + A2

EN 50019:2000

EN 50028:1987

EN 50281-1-1:1998

(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 EEx em II T4 and II 2 D IP 65 T 130 °C**

Zertifizierungsstelle Explosionsschutz

By order:

(signature)

Dr.-Ing. H. Wehinger
Direktor und Professor

Braunschweig, May 19, 2003

5 pages, correct and complete as regards content.

By order:

Dr.-Ing. H. Wehinger, Braunschweig, November 11, 2005
Direktor und Professor

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SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2051 X**

(15) Description of equipment

The magnet consists of a coil wound on a plastic bobbin which is installed in a housing with inner tube and magnetic ring. The coil is completely potted. The connection is performed through certified cable entry fittings to certified terminal clamps inside a terminal box of type of protection Increased Safety "e".

Electrical data

Type designation	K 32/K 40 Ex-230 V
Type of current	direct current
Nominal voltage	230 V
Rated current	0.236 A
Limit power	45 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-220 V
Type of current	direct current
Nominal voltage	220 V
Rated current	0.277 A
Limit power	49.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-210 V
Type of current	direct current
Nominal voltage	210 V
Rated current	0.272 A
Limit power	47 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

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Type designation	K 32/K 40 Ex-200 V
Type of current	direct current
Nominal voltage	200 V
Rated current	0.316 A
Limit power	51.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-110 V
Type of current	direct current
Nominal voltage	110 V
Rated current	0.528 A
Limit power	48.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-98 V
Type of current	direct current
Nominal voltage	98 V
Rated current	0.592 A
Limit power	47.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-48 V
Type of current	direct current
Nominal voltage	48 V
Rated current	1.18 A
Limit power	46.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-24 V
Type of current	direct current
Nominal voltage	24 V
Rated current	2.2 A
Limit power	45 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 32/K 40 Ex-20 V
Type of current	direct current
Nominal voltage	20 V
Rated current	3 A
Limit power	50 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

(16) Test report PTB Ex 03-23007

(17) Special conditions for safe use

1. A fuse corresponding to magnet's rated current (max. $3I_{\text{rat}}$ according to IEC 60127-2-1) or a motor protecting switch with short-circuit or thermal instantaneous tripping (adjusted to rated current) shall be connected in series to each magnet. For very low rated magnet currents, the fuse with the lowest current rating according to the above mentioned IEC standard will be sufficient. The fuse may be accommodated in the corresponding power supply unit or it shall be separately connected in series. The rated voltage of the fuse shall be as high as, or higher than the rated voltage specified for the magnet. The breaking capacity of the fuse link shall be as high as, or higher than the maximum short-circuit current expected to occur at the place of installation (usually 1500 A).
2. A maximum permissible ripple of 20 % applies to all magnets of d.c.-design.
3. The magnets may also be operated with alternating current up to 62 Hz and with an interposed bridge-type rectifier, provided that the limit power does not exceed the value stated for the d.c.-variant. In this case a ripple of 48 % in a frequency range between 46 Hz and 62 Hz shall not be exceeded. This bridge-type rectifier shall be installed either outside the hazardous area or inside the hazardous area in a certified apparatus.

4. It shall be guaranteed by suitable measures that the breaking overvoltage is not exceeded:

rated voltage up to 30 V, breaking overvoltage	480 V
rated voltage up to 60 V, breaking overvoltage	800 V
rated voltage up to 110 V, breaking overvoltage	1200 V
rated voltage up to 250 V, breaking overvoltage	1600 V

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, May 19, 2003

(signature)

Dr.-Ing. H. Wehinger
Direktor und Professor

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2051 X

(Translation)

Equipment: Solenoid, type K 32 / K 40 Ex-...

Marking:  II 2 G EEx e m II T4 and II 2 D IP65 T130 °C

Manufacturer: müller co-ax ag

Address: Gottfried-Müller-Str. 1, 74670 Forchtenberg, Germany

Description of supplements and modifications

The ambient temperature range of the solenoid, type K 32 and type K 40 Ex-... is extended to -40 °C.

In the future the equipment shall be marked as follows:

 II 2 G Ex mb e II T4 II 2 D Ex tD A21 IP65 T130 °C

All other specifications of the EC-type examination certificate apply without changes.

Applied standards

EN 60079-0:2006, EN 60079-7:2007, EN 60079-18:2004, EN 61241-0:2006, EN 61241-1:2004

Assessment and test report: PTB Ex 10-27231Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, 2. November 2010

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

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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.