



(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 2045 X



(4) Equipment: Magnet, type K 10 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 03-22405 .

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

EN 50014:1997 + A1 + A2

EN 50281-1-1:1998

EN 50028:1987

(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 m II T4 and II 2 D IP 68 T 130 °C**

Zertifizierungsstelle Explosionsschutz

Braunschweig, April 23, 2003

By order:

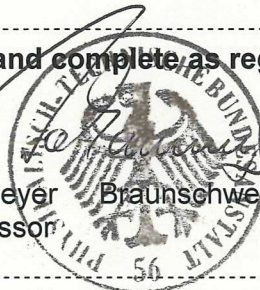
(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

5 pages, correct and complete as regards content.

By order:

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



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SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2045 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 a certified cable entry fitting, inside a terminal box. This terminal box including the terminal board and the bridge-connected diodes, is potted. The limitation of the breaking overvoltage is realized by this circuitry.

Electrical data

Type designation	K 10 Ex-230 V
Type of current	universal current
Nominal voltage	240.9 V
Rated current	0.15 A
Limit power	27.3 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-200 V
Type of current	universal current
Nominal voltage	218.2 V
Rated current	0.16 A
Limit power	27.7 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-125 V
Type of current	universal current
Nominal voltage	131.8 V
Rated current	0.26 A
Limit power	27.0 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

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Type designation	K 10 Ex-110 V
Type of current	universal current
Nominal voltage	122.7 V
Rated current	0.28 A
Limit power	27.8 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-98 V
Type of current	universal current
Nominal voltage	109.1 V
Rated current	0.32 A
Limit power	26.8 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-48 V
Type of current	universal current
Nominal voltage	54.5 V
Rated current	0.66 A
Limit power	28.2 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-24 V
Type of current	universal current
Nominal voltage	27.3 V
Rated current	1.4 A
Limit power	27.2 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

Type designation	K 10 Ex-20 V
Type of current	universal current
Nominal voltage	21.8 V
Rated current	1.7 A
Limit power	27.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no

(16) Test report PTB Ex 03-22405

(17) Special conditions for safe use

1. A fuse corresponding to magnet's rated current (max. $3xI_{rat}$ 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. When using a silicone (or silicone-containing) connecting line or a cable which is not scratch-proof, this shall be protected against mechanical damage (e.g. interrupted conduit system).
3. The magnets shall be mounted only as a single unit.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, April 23, 2003

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

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1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2045 X (Translation)

Equipment: Solenoid, type K 10 Ex-...

Marking:  II 2 G EEx m II T4 and II 2 D IP68 T130 °C

Manufacturer: müller co-ax ag

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

Description of supplements and modifications

The minimum permissible ambient temperature of the solenoid, type K 10 Ex-... is extended to – 40°C.

A higher maximum ambient temperature is permissible for intermittent operation depending on the ON-duration specified below:

-40 °C up to +40 °C for continuous operation	
-40 °C up to +60 °C for intermittent operation	ON-duration max. 600 s energized duty rating ED max. 50 %
-40 °C up to +70 °C for intermittent operation	ON-duration max. 400 s energized duty rating ED max. 50 %
-40 °C up to +70 °C for intermittent operation	ON-duration max. 600 s energized duty rating ED max. 33 %
-40 °C up to +80 °C for intermittent operation	ON-duration max. 400 s energized duty rating ED max. 33 %

The special conditions are supplemented as follows:

4. For intermittent operation the marking label of the equipment shall additionally include the maximum ON-duration and the energized duty rating indicated in %.

In the future the equipment shall be marked as follows:

 II 2 G Ex mb II T4
 II 2 D Ex tD A21 IP68 T130 °C

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2045 X

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

Applied standards

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

Assessment and test report:

PTB Ex 10-27229

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, November 1, 2010


Dr.-Ing. U. Johannsmeyer
Direktor und Professor

