



EC-TYPE-EXAMINATION CERTIFICATE (Translation)

- (1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
(3) EC-type-examination Certificate Number:



PTB 03 ATEX 2022 X

- (4) Equipment: Magnet, type K 25 Ex-.... and type K 25 Ex HT-...
(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 03-22382 .

- (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 me II T4 and II 2 D IP 65 T 130 °C

Zertifizierungsstelle Explosionsschutz

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, March 18, 2003

11 pages, correct and complete as regards content.
By order:

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



sheet 1/11

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.

(13)

S C H E D U L E

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 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 inside a terminal box to certified terminal clamps.

Electrical data

Type designation	K 25 Ex-230 V
Type of current	direct current
Nominal voltage	287 V
Rated current	0.19 A
Limit power	39.3 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-230 V
Type of current	alternating current
Nominal voltage	287 V
Rated current	0.17 A
Limit power	34.2 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 25 Ex HT-230 V
Type of current	direct current
Nominal voltage	260 V
Rated current	0.19 A
Limit power	34.4 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

sheet 2/11

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.

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-230 V
Type of current	alternating current
Nominal voltage	260 V
Rated current	0.17 A
Limit power	30.0 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-220 V
Type of current	direct current
Nominal voltage	256 V
Rated current	0.203 A
Limit power	37.8 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-220 V
Type of current	alternating current
Nominal voltage	256 V
Rated current	0.181 A
Limit power	33.0 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
Type designation	K 25 Ex HT-220 V
Type of current	direct current
Nominal voltage	232 V
Rated current	0.203 A
Limit power	33.2 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-220 V
Type of current	alternating current
Nominal voltage	232 V
Rated current	0.181 A
Limit power	29.0 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-200 V
Type of current	direct current
Nominal voltage	244 V
Rated current	0.215 A
Limit power	38.6 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-200 V
Type of current	alternating current
Nominal voltage	244 V
Rated current	0.192 A
Limit power	33.0 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
Type designation	K 25 Ex HT-200 V
Type of current	direct current
Nominal voltage	221 V
Rated current	0.215 A
Limit power	33.9 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-200 V
Type of current	alternating current
Nominal voltage	221 V
Rated current	0.192 A
Limit power	29 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-110 V
Type of current	direct current
Nominal voltage	124 V
Rated current	0.408 A
Limit power	38.4 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-110 V
Type of current	alternating current
Nominal voltage	124 V
Rated current	0.364 A
Limit power	32.0 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
Type designation	K 25 Ex HT-110 V
Type of current	direct current
Nominal voltage	112 V
Rated current	0.408 A
Limit power	33.7 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-110 V
Type of current	alternating current
Nominal voltage	112 V
Rated current	0.364 A
Limit power	28.1 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-98 V
Type of current	direct current
Nominal voltage	113 V
Rated current	0. 472 A
Limit power	38.4 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-98 V
Type of current	alternating current
Nominal voltage	113 V
Rated current	0.408 A
Limit power	33.5 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
Type designation	K 25 Ex HT-98 V
Type of current	direct current
Nominal voltage	102 V
Rated current	0.472 A
Limit power	33.7 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-98 V
Type of current	alternating current
Nominal voltage	102 V
Rated current	0.408 A
Limit power	29.4 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-48 V
Type of current	direct current
Nominal voltage	56 V
Rated current	0.95 A
Limit power	39.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-48 V
Type of current	alternating current
Nominal voltage	56 V
Rated current	0.78 A
Limit power	31.5 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
Type designation	K 25 Ex HT-48 V
Type of current	direct current
Nominal voltage	51 V
Rated current	0.95 A
Limit power	34.5 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-48 V
Type of current	alternating current
Nominal voltage	51 V
Rated current	0.78 A
Limit power	27.6 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-24 V
Type of current	direct current
Nominal voltage	28 V
Rated current	1.79 A
Limit power	36.5 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-24 V
Type of current	alternating current
Nominal voltage	28 V
Rated current	1.4 A
Limit power	28.4 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 25 Ex HT-24 V
Type of current	direct current
Nominal voltage	25.5 V
Rated current	1.79 A
Limit power	32.0 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-24 V
Type of current	alternating current
Nominal voltage	25.5 V
Rated current	1.4 A
Limit power	24.9 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-20 V
Type of current	direct current
Nominal voltage	24.5 V
Rated current	2.04 A
Limit power	38.3 W
Max. permissible ambient temperature	40 °C
Temperature class	T4
Medium temperature	40 °C
Single mounting	yes
Butt mounting	no
Type designation	K 25 Ex-20 V
Type of current	alternating current
Nominal voltage	24.5 V
Rated current	1.62 A
Limit power	29.4 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 25 Ex HT-20 V
Type of current	direct current
Nominal voltage	22.0 V
Rated current	2.04 A
Limit power	33.6 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

Type designation	K 25 Ex HT-20 V
Type of current	alternating current
Nominal voltage	22.0 V
Rated current	1.62 A
Limit power	25.8 W
Max. permissible ambient temperature	70 °C
Temperature class	T4
Frequency	46 Hz ... 62 Hz
Medium temperature	70 °C
Single mounting	yes
Butt mounting	no

(16) Test report PTB Ex 03-22382

(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. Since temperatures higher than 70 °C occur at the magnet's cable entry resp. higher than 80 °C at the strand junction, this equipment shall be marked with the higher temperature (information label at the cable entry). In this case only a heat resistant cable may be used. 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. A maximum permissible ripple of 20 % applies to all magnets of d.c.-design. The electro-magnets of d.c.-design may also be operated with an alternating voltage rectified by a bridge-type rectifier. In this case a ripple of 48 % in a frequency range between 46 Hz and 62 Hz shall not be exceeded. The electrical data of a.c.-design will then apply for operation with bridge-type rectifier. This bridge-type rectifier shall be installed either outside the hazardous area or inside the hazardous area in a certified apparatus.

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

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

5. For magnet-variants marked with the type designation ...HT-... only terminal clamps which are tested and certified for minimum temperatur of 120 °C shall be used.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, March 18, 2003

sheet 11/11

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.

1. S U P P L E M E N T

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2022 X

(Translation)

Equipment: Magnets, type K 25 Ex-.... and type K 25 Ex HT-...

Marking: II 2 G EEx em 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 magnets, type K 25 Ex-.... and type K 25 Ex HT-... is extended down 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

The requirements of the standards given below are complied with by this supplement.

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 08-27116

Zertifizierungssektor Explosionschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor



Braunschweig, May 15, 2009