Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(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 2172 X

(4) Equipment: Solenoids type K0591...

(5) Manufacturer: GSR Ventiltechnik GmbH & Co. KG

(6) Address: Im Meisenfeld 1, 32602 Vlotho, 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 03-23182 .

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

EN 50014:1997 + A1 + A2 **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:

Ex II 2 G EEx m II T6, T5, T4 und II 2 D IP 65 T 80 °C, T 95 °C, T 130 °C

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Gerlach
Regierungsrat

Braunschweig, October 22, 2003

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

Dr.-Ing. Johannsmeyer
Regierungsdirektor

Braunschweig, August 3, 2004

(13) # S C H E D U L E

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2172 X

(15) Description of equipment

The valve magnet consists of a solnoid, an armature system and a fixing nut. The armature guide forms the flameproof part of the magnet, the guide tube is tested with 1.5 times the rated operating pressure. Depending on it´s design, the guide tube is suitable for thread mounting or flange mounting. The winding consists of enamel-insulated copper wires of insulation class H. This coil is injection-moulded with pre-plastified plastic granules. A PCB with electronic components is soldered onto the terminal posts of the encapsulated part of the coil. A housing made of glass-fibre-reinforced polyimide 6 is mounted over the terminal area and then potted.

Electrical data

Type designation	K05916..
Type of current	direct current
Nominal voltage	6 V ... 220 V
Nominal current	0,845 A ... 0,022 A
Limit power	4,9 W
Max. perm. ambient temperature	40 °C
Temperature class	T6
Medium temperature	70 °C
Single mounting	yes
Group mounting	no

Type designation	K05916..
Type of current	alternating current
Nominal voltage	12 V ... 240 V
Nominal current	0,366 A ... 0,021 A
Limit power	4,8 W
Max. perm. ambient temperature	50 °C
Temperature class	T6
Frequency	50 Hz...60 Hz
Medium temperature	70 °C
Single mounting	yes
Group mounting	no

Type designation	K05915..
Type of current	direct current
Nominal voltage	6 V ... 220 V
Nominal current	0,845 A ... 0,022 A
Limit power	4,6 W
Max. perm. ambient temperature	50 °C
Temperature class	T5
Medium temperature	80 °C
Single mounting	yes
Group mounting	yes, wall to wall

Type designation	K05915..
Type of current	alternating current
Nominal voltage	12 V ... 240 V
Nominal current	0,366 A ... 0,021 A
Limit power	4,9 W
Max. perm. ambient temperature	50 °C
Temperature class	T5
Frequency	50 Hz...60 Hz
Medium temperature	80 °C
Single mounting	yes
Group mounting	yes, wall to wall

Type designation	K05914..
Type of current	direct current
Nominal voltage	6 V ... 220 V
Nominal current	1,58 A ... 0,043 A
Limit power	10,1 W
Max. perm. ambient temperature	50 °C
Temperature class	T4
Medium temperature	80 °C
Single mounting	yes
Group mounting	yes, wall to wall

Type designation	K05914..
Type of current	alternating current
Nominal voltage	12 V ... 240 V
Nominal current	0,623 A ... 0,039 A
Limit power	9,2 W
Max. perm. ambient temperature	50 °C
Temperature class	T4
Frequency	50 Hz...60 Hz
Medium temperature	80 °C
Single mounting	yes
Group mounting	yes, wall to wall

(16) Test report PTB Ex 03-23182

(17) Special conditions for safe use

A fuse corresponding to its rated current (max. $3*I_{rat}$ according IEC 60127-2-1) or a motor protecting switch with short-circuit and thermal instantaneous tripping (set to rated current) shall be connected in series to each solenoid as short circuit protection. For very low rated currents of the solenoid the fuse of lowest current value according to the indicated IEC standard will be sufficient. The fuse may be accommodated in the associated supply unit or shall be separately arranged. The rated voltage to the fuse shall be as high as, or higher than the stated rated voltage of the magnet coil. The breaking capacity of the fuse-link shall be as high as, or higher than the maximum expected short circuit current at the location of the installation (usually 1500 A).
A maximum permissible ripple of 20 % is valid for all magnets of direct-current design.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Gerlach
Regierungsrat

Braunschweig, October 22, 2003

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2172 X

(Translation)

Equipment: Solenoids type K0591...

Marking: Ⓔx **II 2 G EEx m II T4, T5, T6 and II 2 D IP 65 T80 °C, T95 °C, T 130 °C**

Manufacturer: GSR Ventiltechnik GmbH & Co. KG

Address: Im Meisenfeld 1, 32602 Vlotho, Germany

Description of supplements and modifications

In addition to the modifications of the input circuitry an alternative impregnating agent may be used for the coil.

In the future the equipment shall be marked as follows:

Ⓔx **II 2 G Ex mb II T6, T5, T4**

Ⓔx **II 2 D Ex tD A21 IP 65 T80 °C, T95 °C, T130 °C**

All other specifications of the examination certificate as well as the "Special Conditions" 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 11-21006

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, January 17, 2011

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 56

Sheet 1/1

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2172 X

(Translation)

Equipment: Valve solenoid, type K0591...

Marking: Ⓔx **II 2 G Ex mb II T6, T5, T4 and II 2 D Ex tD A21 IP65 T80 °C, T95 °C, T130 °C**

Manufacturer: GSR Ventiltechnik GmbH & Co. KG

Address: Im Meisenfeld 1, 32602 Vlotho, Germany

Description of supplements and modifications

In the future the valve solenoid type K0591... shall be marked as follows:

Ⓔx **II 2 G Ex mb IIC T6, T5, T4**

Ⓔx **II 2 D Ex mb tb IIIC T80 °C, T95 °C, T130 °C**

or

Ⓔx **II 2 G Ex mb IIC T6, T5, T4 Gb**

Ⓔx **II 2 D Ex mb tb IIIC T80 °C, T95 °C, T130 °C Db**

All other specifications of the EC-Type Examination certificate and the supplement apply without changes.

Applied standards

EN 60079-0:2009, EN 60079-18:2009, EN 60079-31:2009

Test report: PTB Ex 12-22127

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, June 28, 2012

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

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