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 07 ATEX 2059 X

(4) Equipment: Solenoids, types M.Z45-... and Typ I.Z45-...

(5) Manufacturer: Wandfluh AG
Hydraulik und Elektronik

(6) Address: Helkenstraße 13, 3714 Frutigen, Switzerland

(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 07-27263.

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

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-26:2004**

(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 1 G Ex ia IIC T6 bzw. T5

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, December 10, 2007

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.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 07 ATEX 2059 X

(15) Description of equipment

The solenoids of types M.Z45-... and Typ I.Z45-... consist of a coil (insulation class B) and a p.c.b. which is fitted with components and then completely encapsulated with polyurethane resin or epoxy resin inside of a steel enclosure. The diodes and the winding are encapsulated as one unit. The solenoids are intended for the actuation of valves for which the medium pressure can range up to a few 100 bar. Components of the valve (e.g. the guide tube) are not used as a partition to the hazardous area where category-1-equipment is required.

The permissible range of the ambient temperature depends on the temperature class as follows:

temperature class	permissible range of the ambient temperature
T5	-20 °C up to +60 °C
T6	-20 °C up to +45 °C

Electrical data

Supply circuit

type of protection Intrinsic Safety Ex ia IIC

only for connection to intrinsically safe circuits of category ia

Maximum values:

$U_i \leq$ 30 V
$I_i \leq$ 800 mA
$P_i \leq$ 3.0 W

$L_i \approx 0$
$C_i \approx 0$

(16) Test report PTB Ex 07-27263

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.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

(17) Special conditions for safe use

1. The guide tube and all pressurized parts shall be subjected to a routine test with the 1.5-fold operating pressure, or to a type test with the 4-fold operating pressure.
2. For the application as category-1-equipment the solenoid shall only be connected to intrinsically safe circuits of category ia.
3. For the application as category-1-equipment the regulations for installation according to EN 60079-14, particularly clause 12.3, shall be considered.
4. When the supply lines for the electrical energy and/or the pressure medium are fed through the partition to the hazardous area requiring category-1-equipment, the requirements of EN 60079-26, clause 4.2.5 are to be complied with.
5. The solenoid itself, or parts of it shall not be used as a partition to the hazardous area requiring category-1-equipment.
6. The connection to intrinsically safe circuits of categories ia and ib is permissible for the application in areas requiring equipment of categories 2 or 3.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, December 10, 2007

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.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig