

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 07ATEX0147 X** Issue Number: **2**

(4) Equipment: **Solenoid / alarm driver, Type 9203B1A, Type 9203B1B and Type 9203B2A**

(5) Manufacturer: **PR Electronics**

(6) Address: **Lerbakken 10, 8410 Rønne, Denmark**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 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 confidential test report number 209639000

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

**EN 60079-0 :2006**  
**EN 61241-0 : 2006**

**EN 60079-11 : 2007**  
**EN 61241-11 : 2006**

**EN 60079-26 : 2007**

(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 according 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/IIB/IIA and**  
**II (1) D [Ex iaD]**

This certificate is issued on 15 December 2009 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.



C.G. van Es  
Certification Manager



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 07ATEX0147 X Issue No. 2**

(15) **Description**

Solenoid / Alarm drivers, Type 9203B1A, Type 9203B1B and Type 9203B2A for rail mounting are 24 V powered isolating barriers, converting digital signals from PLC's and other equipment into signals for driving valves, solenoids and light emitting diodes located in an explosive atmosphere.

Solenoid / Alarm driver Type 9203B.. is supplied via terminals at the front of the module, or via Power Rail Type 9400. Removable display module 4501 can be used for programming of the Solenoid / Alarm driver.

Ambient temperature range -20 °C to +60 °C.

**Marking**

The equipment marking may additionally include the code II 3 G Ex nA nC IIC T4.

**Electrical data**

Supply (terminals 31, 32 and rear contacts):  $U = 19,2 \dots 31,2$  Vdc.

Digital input (terminals 11, 12 and 13, 14): —  
 $U \leq 60$  Vdc

Status Relay (terminals 33, 34):  
 $U \leq 32$  Vdc or 32 Vac,  $I \leq 1$  Adc or  $I \leq 0,5$  Aac

For all circuits above:  $U_m = 253$  Vac (max. frequency 400 Hz).

Solenoid / Alarm driver, Type 9203B1A and Type 9203B1B, output circuits (terminals 41 ... 44 and 51 ... 54):

in type of protection intrinsic safety Ex ia IIC/IIB/IIA or Ex iaD, with following maximum values:

$U_o = 28$  V;  $C_o = 80$  nF (IIC) or 640 nF (IIB) or 2,1  $\mu$ F (IIA);

and for terminals 41, 42 and 51, 52:

$I_o = 93$  mA;  $P_o = 0,65$  W;  $L_o = 4,2$  mH (IIC) or 16,8 mH (IIB) or 32,6 mH (IIA);

$L_o/R_o = 54$   $\mu$ H/ $\Omega$  (IIC) or 218  $\mu$ H/ $\Omega$  (IIB) or 436  $\mu$ H/ $\Omega$  (IIA);

and for terminals 41, 43 and 51, 53:

$I_o = 100$  mA;  $P_o = 0,70$  W;  $L_o = 3,5$  mH (IIC) or 14,2 mH (IIB) or 27,6 mH (IIA);

$L_o/R_o = 50$   $\mu$ H/ $\Omega$  (IIC) or 201  $\mu$ H/ $\Omega$  (IIB) or 402  $\mu$ H/ $\Omega$  (IIA);

and for terminals 41 ... 44 and 51 ... 54:

$I_o = 110$  mA;  $P_o = 0,77$  W;  $L_o = 2,9$  mH (IIC) or 11,8 mH (IIB) or 22,8 mH (IIA);

$L_o/R_o = 46$   $\mu$ H/ $\Omega$  (IIC) or 184  $\mu$ H/ $\Omega$  (IIB) or 369  $\mu$ H/ $\Omega$  (IIA);

The intrinsically safe output circuits are infallibly galvanically isolated from each other and from the non-intrinsically safe circuits.

Solenoid / Alarm driver, Type 9203B2A, output circuits (terminals 41 ... 44):

in type of protection intrinsic safety Ex ia IIC/IIB/IIA or Ex iaD, with following maximum values:

$U_o = 28$  V;  $C_o = 80$  nF (IIC) or 640 nF (IIB) or 2,1  $\mu$ F (IIA);

and for terminals 41, 42:

$I_o = 115$  mA;  $P_o = 0,81$  W; (group IIC);  $L_o = 2,69$  mH (IIC) or 10,8 mH (IIB) or 20,8 mH (IIA);

$L_o/R_o = 44$   $\mu$ H/ $\Omega$  (IIC) or 176  $\mu$ H/ $\Omega$  (IIB) or 353  $\mu$ H/ $\Omega$  (IIA);

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and for terminals 41, 43:

$I_o = 125 \text{ mA}$ ;  $P_o = 0,88 \text{ W}$ ; (group IIB);  $L_o = 9,1 \text{ mH}$  (IIB) or  $17,6 \text{ mH}$  (IIA);

$L_o/R_o = 163 \text{ } \mu\text{H}/\Omega$  (IIB) or  $327 \text{ } \mu\text{H}/\Omega$  (IIA);

and for terminals 41 ... 44:

$I_o = 135 \text{ mA}$ ;  $P_o = 0,95 \text{ W}$ ; (group IIB);  $L_o = 7,80 \text{ mH}$  (IIB) or  $15,1 \text{ mH}$  (IIA);

$L_o/R_o = 150 \text{ } \mu\text{H}/\Omega$  (IIB) or  $301 \text{ } \mu\text{H}/\Omega$  (IIA);

**Installation instructions**

The instructions provided with the equipment shall be followed in detail to assure safe operation.

**Routine tests**

Transformers TR3 and TR4 shall be subjected to a dielectric strength test in accordance with clause 10.10 of EN 60079-11: 2007 with a test voltage of 1500 V ac.

(16) **Test Report**

KEMA No. 209639000.

(17) **Special conditions for safe use**

If the Solenoid / Alarm driver is installed in an explosive atmosphere, it shall be in an enclosure in type of protection Ex n or Ex e, providing a degree of protection of at least IP54. Cable entry devices and blanking elements shall fulfil the same requirements.

Removable Display Module 4501, when connected to the Solenoid / Alarm driver, may not be damaged and shall be free of dust and moisture.

Supply via the mounting rail is only allowed if Power Rail Type 9400 with Power Control Unit Type 9410 (Type Examination Certificate KEMA 07ATEX0152 X) is used.

(18) **Essential Health and Safety Requirements**

Assured by compliance with the standards listed at (9).

Compliance with the Essential Health and Safety requirements for Equipment Category 3 has been assured by compliance with EN 60079-0 : 2006 and EN 60079-15 : 2005, as recorded in Test Report No. 209639000.

(19) **Test documentation**

As listed in Test Report No. 209639000.