

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

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 04ATEX1316 X**

(4) Equipment or protective system: **Programmable Transmitter Type 5116B**

(5) Manufacturer: **PRelectronics A/S**

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

(7) This equipment or protective system 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 or protective system 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 report no. 2077244.


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

EN 50014 : 1997 + A1, A2 EN 50020 : 2002 EN 50284 : 1999

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system 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 or protective system according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

 **II (1) GD [EEEx ia] IIC**

Arnhem, 10 June 2005
KEMA Quality B.V.


C.G. van Es
Certification Manager

* This Certificate may only be reproduced in its entirety and without any change

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(15) **Description**

The Programmable Transmitter Type 5116B converts signals from a temperature sensor or from a variable resistor or from a current sink (loop supply included) into an analogue output of 4-20 mA or 0-1 V or 0-10 V.

The programmable transmitter is located outside the hazardous area; only the intrinsically safe circuits may extend into the hazardous area.

The Programmable Transmitter has an ingress protection of IP20 in accordance with EN 60529.

The connections are provided with a mechanical key system.

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

Electrical data

Supply 24 ... 230 Vac
 $U_m = 253 \text{ Vac}$

Signal input/output circuits $U_m = 253 \text{ Vac}$

Communication interface circuit $U_m = 60 \text{ Vdc}$
 (connection J101 at the front)

RTD, TC, mV circuit in type of protection intrinsic safety EEx ia IIC,
 (terminals 44, 43, 42, 41) with the following maximum values (circuits combined):

$$\begin{aligned} U_o &= 7,5 \text{ V} \\ I_o &= 2,2 \text{ mA} \\ P_o &= 4,2 \text{ mW} \\ C_o &= 6,0 \text{ }\mu\text{F} \\ L_o &= 1,0 \text{ H} \end{aligned}$$

V, mA circuit in type of protection intrinsic safety EEx ia IIC,
 (terminals 53, 52, 51) with the following maximum values (circuits combined):

$$\begin{aligned} U_o &= 7,5 \text{ V} \\ I_o &= 2,2 \text{ mA} \\ P_o &= 4,2 \text{ mW} \\ C_o &= 6,0 \text{ }\mu\text{F} \\ L_o &= 1,0 \text{ H} \end{aligned}$$

Loop supply, Ref circuit in type of protection intrinsic safety EEx ia IIC,
 (terminals 54, 53, 52, 51) with the following maximum values (circuits combined):

$$\begin{aligned} U_o &= 28 \text{ V} \\ I_o &= 93 \text{ mA} \\ P_o &= 650 \text{ mW} \end{aligned}$$

The maximum allowed external capacitance C_o and the maximum allowed external inductance L_o are as shown per table below:

| | IIC | IIB | IIA |
|-------|-------|--------|-----------------|
| C_o | 75 nF | 645 nF | 2 μF |
| L_o | 3 mH | 16 mH | 31 mH |

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The intrinsically safe circuits are infallibly galvanically isolated from the non-intrinsically safe supply and signal input/output circuits up to a maximum peak voltage of 375 V.
The intrinsically safe circuits are galvanically connected to the communication interface circuit.

Routine tests

Transformer TR1 shall be subjected to a routine voltage test in accordance with clause 11.2 of EN 50020, with a test voltage of 2500 Vac between primary (1-8) + secondary (3-4) and secondary (5-6) windings.

(16) **Report**

KEMA No. 2077244.

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

1. When an ingress protection higher than IP20 is required, this has to be achieved by an additional enclosure which is suitable for the applicable environmental conditions.
2. When two or more units are placed next to each other it has to be assured that the terminations for the intrinsically safe circuits are all on the same side and are separated, in accordance with clause 6.3.1 of EN 50020, from the non-intrinsically safe circuits of the units which could be mounted above or below it.
3. Each combination of circuits (to terminations 44, 43, 42, 41 or to terminations 53, 52, 51 or to terminations 54, 53, 52, 51) shall be connected via separate cables or, if the combinations are in one cable, the cable shall be type A or B in accordance with EN 60079-14 Clause 12.2.2.8.

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

Covered by the standards listed at (9).

For the assessment of circuits which may extend into hazardous areas in which category 1 D equipment is required, EN 61241-0:2004 + prAA and draft IEC 61241-11:2004 have been used as a guide.

(19) **Test documentation**

As listed in Test Report No. 2077244.