

CERTIFICATE

(1) UK Type Examination

(2) **Product or Protective System Intended for use in Potentially Explosive Atmospheres - UKSI 2016:1107 (as amended) – Schedule 3A, Part 1**

(3) UK Type Examination Certificate Number: **DEKRA 23UKEX0107X** Issue Number: **0**

(4) Product: **HART-Transparent Repeater, Types 9106B1A, 9106B1B, 9106B2A , 9106B2B**

(5) Manufacturer: **PR electronics A/S**

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

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

(8) DEKRA Certification UK Ltd., Approved Body number 8505 in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in confidential report **EX22090003-005** Issue **0**.

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

EN IEC 60079-0 : 2018

EN 60079-11 : 2012

except in respect of those requirements listed at item 18 of the Schedule to this certificate.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This UK Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

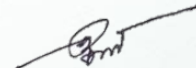


**II (1) G [Ex ia Ga] IIC/IIB/IIA
II (1) D [Ex ia Da] IIIC
I (M1) [Ex ia Ma] I**

Date of certification: 13 October 2023



DEKRA Certification UK Ltd.


Abul Kashem
Certification Manager

2714:3
Page 1/4

(13) **SCHEDULE**

(14) **to UK Type Examination Certificate DEKRA 23UKEX0107X**

Issue No. 0

(15) **Description**

HART-Transparent Repeater, Types 9106B1A, 9106B1B, 9106B2A, 9106B2B for rail mounting, are 24 V powered isolating barriers that serve as a repeater.

The repeater transfers the intrinsically safe 4 - 20 mA current signal (with HART communication) of either a loop powered transmitter or an active current source to a non-intrinsically safe 4 - 20 mA output signal (with HART communication).

The Repeater 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 Repeater.

The HART-Transparent Repeater, Types 9106B*A are one channel version and Types 9106B*B are two channel version.

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

Electrical data

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

Status-Relay output (terminals 33, 34):

$U \leq 32 \text{ Vac}$ or 32 Vdc , $I \leq 0,5 \text{ Aac}$ or $I \leq 1 \text{ Adc}$ respectively.

If the Repeater is installed outside the hazardous area, the following data for the relay contacts apply: $U \leq 110 \text{ Vdc}$ or 125 Vac , $I \leq 0,3 \text{ Adc}$ or $I \leq 0,5 \text{ Aac}$ respectively.

Outputs (terminals 11, 12 resp. 13, 14): $I = 4 \dots 20 \text{ mA}$.

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

Loop current input (terminals 43, 44 resp. terminals 53, 54):

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

for Type 9106B1A and Type 9106B1B:

$U_o = 27,5 \text{ V}$; $I_o = 92,6 \text{ mA}$; $P_o = 0,64 \text{ W}$;

$C_o = 0,084 \mu\text{F}$ (IIC) or $0,67 \mu\text{F}$ (IIB) or $2,23 \mu\text{F}$ (IIA) or $3,94 \mu\text{F}$ (I) ;

$L_o = 4,15 \text{ mH}$ (IIC) or $16,59 \text{ mH}$ (IIB) or $33,17 \text{ mH}$ (IIA) or $54,42 \text{ mH}$ (I);

$L_o/R_o = 223 \mu\text{H}/\Omega$ (IIB) or $447 \mu\text{H}/\Omega$ (IIA) or $733 \mu\text{H}/\Omega$ (I)

for Type 9106B2A and Type 9106B2B:

$U_o = 25,3 \text{ V}$; $I_o = 96 \text{ mA}$; $P_o = 0,61 \text{ W}$;

$C_o = 0,104 \mu\text{F}$ (IIC) or $0,818 \mu\text{F}$ (IIB) or $2,85 \mu\text{F}$ (IIA) or $4,74 \mu\text{F}$ (I);

$L_o = 3,86 \text{ mH}$ (IIC) or $15,43 \text{ mH}$ (IIB) or $30,86 \text{ mH}$ (IIA) or $50,64 \text{ mH}$ (I).

$L_o/R_o = 234 \mu\text{H}/\Omega$ (IIB) or $468 \mu\text{H}/\Omega$ (IIA) or $769 \mu\text{H}/\Omega$ (I)

For group IIIC, the parameters of group IIB apply.

(13) **SCHEDULE**

(14) **to UK Type Examination Certificate DEKRA 23UKEX0107X**

Issue No. 0

Current input (terminals 41, 42 resp. terminals 51, 52):
 in type of protection intrinsic safety Ex ia IIC/IIB/IIA/IIIC/I, for connection to a certified intrinsically safe circuit, with following maximum values:
 $U_i = 30 \text{ V}$; $I_i = 120 \text{ mA}$; $P_i = 0,85 \text{ W}$; $C_i = 2 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$;
 $U_o = 0 \text{ V}$; $I_o = 0 \text{ mA}$; $P_o = 0 \text{ mW}$.

Current input and Loop current input of one channel are not applied simultaneously.

Both channels (terminals 41...44 and terminals 51...54) are infallibly galvanically isolated from each other and from the non-intrinsically safe supply and output circuits

Combination of Loop current input of channel 1 (terminals 43, 44) and Current input of channel 2 (terminals 51, 52) in series, where terminal 43 is connected to terminal 51:
 Loop current circuit (terminals 44 and 52) is in type of protection intrinsic safety Ex ia IIC/IIB/IIA/IIIC/I, with following maximum values:

for Type 9106B1A and Type 9106B1B:
 $U_o = 27,5 \text{ V}$; $I_o = 92,6 \text{ mA}$; $P_o = 0,64 \text{ W}$;
 $C_o = 0,084 \text{ }\mu\text{F}$ (IIC) or $0,67 \text{ }\mu\text{F}$ (IIB) or $2,23 \text{ }\mu\text{F}$ (IIA) or $3,94 \text{ }\mu\text{F}$ (I) ;
 $L_o = 4,15 \text{ mH}$ (IIC) or $16,59 \text{ mH}$ (IIB) or $33,17 \text{ mH}$ (IIA) or $54,42 \text{ mH}$ (I);
 $L_o/R_o = 223 \text{ }\mu\text{H}/\Omega$ (IIB) or $447 \text{ }\mu\text{H}/\Omega$ (IIA) or $733 \text{ }\mu\text{H}/\Omega$ (I)

for Type 9106B2A and Type 9106B2B:
 $U_o = 25,3 \text{ V}$; $I_o = 96 \text{ mA}$; $P_o = 0,61 \text{ W}$;
 $C_o = 0,104 \text{ }\mu\text{F}$ (IIC) or $0,818 \text{ }\mu\text{F}$ (IIB) or $2,85 \text{ }\mu\text{F}$ (IIA) or $4,74 \text{ }\mu\text{F}$ (I);
 $L_o = 3,86 \text{ mH}$ (IIC) or $15,43 \text{ mH}$ (IIB) or $30,86 \text{ mH}$ (IIA) or $50,64 \text{ mH}$ (I).
 $L_o/R_o = 234 \text{ }\mu\text{H}/\Omega$ (IIB) or $468 \text{ }\mu\text{H}/\Omega$ (IIA) or $769 \text{ }\mu\text{H}/\Omega$ (I)
 For group IIIC, the parameters of group IIB apply.

Combination of both Current inputs (terminals 41, 42 resp. 51, 52) in series, where terminal 41 is connected to terminal 52:
 Current input (terminals 42 and 51) is in type of protection intrinsic safety Ex ia IIC/IIB/IIA/IIIC/I, for connection to a certified intrinsically safe circuit, with following maximum values:
 $U_i = 30 \text{ V}$; $I_i = 120 \text{ mA}$; $P_i = 0,85 \text{ W}$; $C_i = 4 \text{ nF}$; $L_i = 0 \text{ }\mu\text{H}$;
 $U_o = 0 \text{ V}$; $I_o = 0 \text{ mA}$; $P_o = 0 \text{ mW}$.

Installation instructions

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

(16) **Report Number**

EX22090003-005 Issue 0.

(17) **Specific conditions of use**

The HART Transparent Repeater shall be installed in a controlled environment with suitably reduced pollution, limited to pollution degree 2 or better.

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

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Issue No. **0**

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

In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the relevant reports.

(19) **Test documentation**

As listed in Report number EX22090003-005 Issue 0.