

CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM16US0465X
- Equipment:** 9106B Hart transparent repeaters and 9107B Hart transparent drivers
(Type Reference and Name)
- Name of Listing Company:** PR electronics A/S
- Address of Listing Company:** Lerbakken 10
Roende
DK-8410
Denmark
- The examination and test results are recorded in confidential report number:
3044327 dated 13th December 2011
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:
FM Class 3600:2011, FM Class 3610:2010, FM Class 3611:2004, FM Class 3810:2005,
ANSI/ISA 60079-0:2009, ANSI/ISA 60079-11:2009, ANSI/ISA 60079-15:2009, ANSI/ISA 61010-1:2004
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:**
Nonincendive for use in Class I, Division 2, Groups A, B, C, D with intrinsically safe connections to Classes I, II, III, Division 1, Groups A, B, C, D, E, F, G Hazardous (Classified) Locations.
Nonsparking for use in Class I, Zone 2, Group IIC with intrinsically safe connections to Class I, Zone 0, Groups IIC/IIB/IIA Hazardous (Classified) Locations..

Certificate issued by:

J.E. Marquedant
Manager, Electrical Systems

20 December 2016

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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SCHEDULE



US Certificate Of Conformity No: FM16US0465X

11. The marking of the equipment shall include:

9106Bab HART Transparent Repeater

Class I Division 2, Groups A, B, C, D; T4,
Provides IS outputs to Class I, II, III, Division 1/2, Groups A, B, C, D, E, F, G
Class I, Zone 2, AEx nA nC [ia] IIC T4
Ta = -20°C to +60°C
Installation Drawing: 9106QF01

9107Ba HART Transparent Driver

Class I Division 2, Groups A, B, C, D; T4,
Provides IS outputs to Class I, II, III, Division 1/2, Groups A, B, C, D, E, F, G
Class I, Zone 2, AEx nA nC [ia] IIC T4
Ta = -20°C to +60°C
Installation Drawing: 9107QF01

12. **Description of Equipment:**

General - The 9106B Repeaters and 9107B Drivers are new modules for the 9000 series and are available in one channel or two channel versions. They are rail mounted 24 V powered isolating barriers that serve as a repeater and isolator respectively for 4...20 mA signals with HART communication. Both the 9106B and 9107B provide potential free contacts for status indication. The modules are supplied via terminals at the top of the module or via Power Rail Type 9400. The removable display module 4501 can be used for programming the repeater and the driver. The manufacturer's specified ambient temperature range is -20 °C to +60 °C.

Ratings - The 9106B Hart transparent repeaters and 9107B Hart transparent drivers are rated for use in a process temperature range of -20°C to +60°C.

9106Bab. HART Transparent Repeater

a: Barrier (1 = 27.5V barrier; 2 = 25.3V barrier)
b: Channels (A = Single; B = Double)
AIS/I, II, III/1/ABCDEFG - 9106QF01; Entity
NI/II/2/ABCD/T4; -20°C ≤ Ta ≤ 60°C
I/2/AEx nA nC [ia] IIC T4; -20°C ≤ Ta ≤ 60°C - 9106QF01

Entity Parameters:

Loop Current Source: Channel 1 (Terminals 43, 44), Channel 2 (Terminals 53, 54)
Loop Current Source 1 to 2: Channel 1 (Terminal 44), Channel 2 (Terminal 52)
9106B1b: Uo (Voc) = 27.5V, Io (Isc) = 92.6mA, Po = 0.64W

	A, B or IIC	C, E, F or IIB	D, G or IIA
Co	0.084µF	0.670µF	2.24µF
Lo	4.14mH	16.58mH	33.17mH
Lo/Ro	-	223µH/Ω	447µH/Ω

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9106B2b: U_o (Voc) = 25.3V, I_o (Isc) = 96mA, P_o = 0.61W

	A, B or IIC	C, E, F or IIB	D, G or IIA
Co	0.104 μ F	0.818 μ F	2.85 μ F
Lo	3.85mH	15.43mH	30.86mH
Lo/Ro	-	234 μ H/ Ω	468 μ H/ Ω

External Current Source: Channel 1 (Terminals 41, 42), Channel 2 (Terminals 51, 52)
 U_i (Vmax) = 30V, I_i (Imax) = 120mA, P_i = 0.85W, C_i = 2nF, L_i = 0

External Current Source: Channel 1 (Terminal 42), Channel 2 (Terminal 51)
 U_i (Vmax) = 30V, I_i (Imax) = 120mA, P_i = 0.85W, C_i = 4nF, L_i = 0

9107Ba. HART Transparent Driver

a: Channels (A = Single; B = Double)
AIS/I, II, III/1/ABCDEFG – 9107QF01; Entity
NI/I/2/ABCD/T4; $-20^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C}$
I/2/AEx nA nC [ja] IIC T4; $-20^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C}$ - 9107QF01

Entity Parameters:

Loop Current Source: Channel 1 (Terminals 41, 42), Channel 2 (Terminals 51, 52)
 U_o (Voc) = 28V, I_o (Isc) = 93mA, P_o = 0.65W

	A, B or IIC	C, E, F or IIB	D, G or IIA
Co	0.08 μ F	0.650 μ F	2.15 μ F
Lo	4mH	16mH	32mH

13. **Specific Conditions of Use:**

9106Bab HART Transparent Repeater

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70).
2. In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70). The equipment shall be installed in an enclosure with a minimum ingress protection of IP54 unless the apparatus is intended to be afforded an equivalent degree of protection by location.
3. Install in environments rated Pollution Degree 2 or better; overvoltage category I or II.
4. Removable Display Module 4501, when connected, may not be damaged and shall be free of dust and moisture.

9107Ba HART Transparent Driver

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70).

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US Certificate Of Conformity No: FM16US0465X

2. In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70). The equipment shall be installed in an enclosure with a minimum ingress protection of IP54 unless the apparatus is intended to be afforded an equivalent degree of protection by location.
3. Install in environments rated Pollution Degree 2 or better; overvoltage category I or II.
4. Removable Display Module 4501, when connected, may not be damaged and shall be free of dust and moisture.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
13 th December 2011	Original Issue.
20 th December 2016	Supplement 1: Report Reference: – RR207607 dated 20 th December 2016 Description of the Change: Update to Installation Drawing for increased Lo values. Updated Certificate to Latest format.

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CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM16CA0213X
3. **Equipment:** 9106B Hart transparent repeaters and
(Type Reference and Name) 9107B Hart transparent drivers
4. **Name of Listing Company:** PR electronics A/S
5. **Address of Listing Company:** Lerbakken 10
Roende
DK-8410
Denmark
6. The examination and test results are recorded in confidential report number:

3044327 dated 13th December 2011
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA-C22.2 No. 157-92:2006, CSA-C22.2 No. 213-M1987:2008, CSA-C22.2 No. E60079-0:2007,
CSA-C22.2 No. E60079-11:2002, CSA-C22.2 No. E60079-15: 2002, CAN/CSA-C22.2 No. 61010-1:2004
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. **Equipment Ratings:**

Nonincendive for use in Class I, Division 2, Groups A - D with intrinsically safe connections to Classes I, II, III, Division 1, Groups A - G Hazardous Locations; Nonsparking for use in Class I, Zone 2, Group IIC with intrinsically safe connections to Class I, Zone 0, Groups IIC/IIB/IIA Hazardous Locations.

Certificate issued by:



J. E. Marquedant
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20 December 2016

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Class I, Zone 2, Ex nA nC [ia] IIC T4

Ta = -20°C to +60°C

Installation Drawing: 9106QF01

9107Ba HART Transparent Driver

Class I Division 2, Groups A, B, C, D; T4,

Provides IS outputs to Class I, II, III, Division 1/2, Groups A, B, C, D, E, F, G

Class I, Zone 2, Ex nA nC [ia] IIC T4

Ta = -20°C to +60°C

Installation Drawing: 9107QF01

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NI/I/2/ABCD/T4; -20°C ≤ Ta ≤ 60°C

I/2/Ex nA nC [ia] IIC T4; -20°C ≤ Ta ≤ 60°C - 9106QF01

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Lo	4.14mH	16.58mH	33.17mH
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Co	0.104 μ F	0.818 μ F	2.85 μ F
Lo	3.85mH	15.43mH	30.86mH
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I/2/Ex nA nC [ja] IIC T4; $-20^{\circ}\text{C} \leq T_a \leq 60^{\circ}\text{C}$ - 9107QF01

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13. Specific Conditions of Use:

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3. Install in environments rated Pollution Degree 2 or better; overvoltage category I or II.
4. Removable Display Module 4501, when connected, may not be damaged and shall be free of dust and moisture.
5. It is the responsibility of the manufacturer to provide warning markings in French where required by local jurisdictions.

9107Ba HART Transparent Driver

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the Canadian Electrical Code (C22.1).

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Canadian Certificate Of Conformity No: FM16CA0213X

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- 3. Install in environments rated Pollution Degree 2 or better; overvoltage category I or II.
- 4. Removable Display Module 4501, when connected, may not be damaged and shall be free of dust and moisture.
- 5. It is the responsibility of the manufacturer to provide warning markings in French where required by local jurisdictions.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

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