

# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM16US0465X
3. **Equipment:** 9106A Hart transparent repeaters and 9107A Hart transparent drivers  
(Type Reference and Name) 9106B Hart transparent repeaters and 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 13<sup>th</sup> December 2011
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2018, FM Class 3810:2018,  
ANSI/ISA-12.12.01-2015, ANSI/ISA 60079-0:20013, ANSI/ISA 60079-11:2014, ANSI/ISA 60079-15:2013,  
ANSI/ISA 61010-1:2012
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.

**Certificate issued by:**

J.E. Marquedant  
VP, Manager, Electrical Systems

28 June 2019

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: [information@fmapprovals.com](mailto:information@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# SCHEDULE



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10. Equipment Ratings:

**9106A , 9107A**

Nonincendive for use in Class I, Division 2, Groups A, B, C, D Hazardous (Classified) Locations.  
Nonsparking for use in Class I, Zone 2, Group IIC Hazardous (Classified) Locations.

**9106Bab , 9107Ba**

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 Hazardous (Classified) Locations.

11. The marking of the equipment shall include:

**9106A Hart Transparent Repeaters and 9107A Hart Transparent Drivers**

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

Class I, Zone 2, AEx nA nC IIC T4

Ta = -20°C to +60°C

**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 [ja] 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 [ja] IIC T4

Ta = -20°C to +60°C

Installation Drawing: 9107QF01

12. **Description of Equipment:**

**General** - The 9106 Repeaters and 9107 Drivers 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

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signals with HART communication. Both the 9106 and 9107 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 9106 Hart transparent repeaters and 9107 Hart transparent drivers are rated for use in a process temperature range of -20°C to +60°C.

**9106Aab. HART Transparent Repeater**

a: Barrier (1 = 27.5V barrier; 2 = 25.3V barrier)

b: Channels (A = Single; B = Double)

**9106Bab. HART Transparent Repeater**

a: Barrier (1 = 27.5V barrier; 2 = 25.3V barrier)

b: Channels (A = Single; B = Double)

**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

9106B2b: Uo (Voc) = 25.3V, Io (Isc) = 96mA, Po = 0.61W

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

External Current Source: Channel 1 (Terminals 41, 42), Channel 2 (Terminals 51, 52)

Ui (Vmax) = 30V, Ii (Imax) = 120mA, Pi = 0.85W, Ci = 2nF, Li = 0

External Current Source: Channel 1 (Terminal 42), Channel 2 (Terminal 51)

Ui (Vmax) = 30V, Ii (Imax) = 120mA, Pi = 0.85W, Ci = 4nF, Li = 0

**9107Aa. HART Transparent Driver**

a: Channels (A = Single; B = Double)

**9107Ba. HART Transparent Driver**

a: Channels (A = Single; B = Double)

**Entity Parameters:**

Loop Current Source: Channel 1 (Terminals 41, 42), Channel 2 (Terminals 51, 52)

Uo (Voc) = 28V, Io (Isc) = 93mA, Po = 0.65W

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

**13. Specific Conditions of Use:**

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a too-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). Where installed in outdoor or potentially wet locations, the enclosure shall, at a minimum, meet the requirements of IP54.
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 <sup>th</sup> December 2011	Original Issue.
20 <sup>th</sup> December 2016	<u>Supplement 1:</u> Report Reference: – RR207607 dated 20 <sup>th</sup> December 2016 Description of the Change: Update to Installation Drawing for increased Lo values. Updated Certificate to Latest format.
28 <sup>th</sup> June 2019	<u>Supplement 2:</u> Report Reference: - PR452213 dated 28 <sup>th</sup> June 2019 Description of the Change: Add 9106A and 9107A model variations.Update the standards to current editions.

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# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM16CA0213X
3. **Equipment:**  
(Type Reference and Name) 9106A Hart transparent repeaters and  
9107A Hart transparent drivers  
9106B Hart transparent repeaters and  
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 13<sup>th</sup> 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. 213-2015, CSA-C22.2 No. 60079-0:2015, CSA-C22.2 No. 60079-11:2014,  
CSA-C22.2 No. 60079-15: 2016, CAN/CSA-C22.2 No. 61010-1:2012
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.

**Certificate issued by:**

J.E. Marquedant  
VP, Manager - Electrical Systems

28 June 2019

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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# SCHEDULE



Canadian Certificate Of Conformity No: FM16CA0213X

10. Equipment Ratings:

**9106A, 9107A**

Nonincendive for use in Class I, Division 2, Groups A, B, C, D Hazardous Locations. Nonsparking for use in Group IIC Gc Hazardous Locations.

**9106B, 9107B**

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 Locations; Nonsparking for use in Group IIC Gc with intrinsically safe connections to Groups IIC Ga Hazardous Locations.

11. The marking of the equipment shall include:

**9106A Hart Transparent Repeaters and 9107A Hart Transparent Drivers**

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

Ex nA nC IIC T4 Gc

Ta = -20°C to +60°C

**9106B 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

Ex nA nC [ia Ga] IIC T4 Gc

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

Ex nA nC [ia Ga] IIC T4 Gc

Ta = -20°C to +60°C

Installation Drawing: 9107QF01

12. **Description of Equipment:**

**General** - The 9106 Repeaters and 9107 Drivers 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 9106 and 9107 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 9106 Hart transparent repeaters and 9107 Hart transparent drivers are rated for use in a

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process temperature range of -20°C to +60°C.

**9106Aab. HART Transparent Repeater**

a: Barrier (1 = 27.5V barrier; 2 = 25.3V barrier)  
b: Channels (A = Single; B = Double)

**9106Bab. HART Transparent Repeater**

a: Barrier (1 = 27.5V barrier; 2 = 25.3V barrier)  
b: Channels (A = Single; B = Double)

**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:  $U_o$  (Voc) = 27.5V,  $I_o$  (Isc) = 92.6mA,  $P_o$  = 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

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	0.104μF	0.818μF	2.85μF
Lo	3.85mH	15.43mH	30.86mH
Lo/Ro	-	234μH/Ω	468μH/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

**9107Aa. HART Transparent Driver**

a: Channels (A = Single; B = Double)

**9107Ba. HART Transparent Driver**

a: Channels (A = Single; B = Double)

**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	0.08μF	0.650μF	2.15μF
Lo	4mH	16mH	32mH

**13. Specific Conditions of Use:**

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure

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# SCHEDULE



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which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the Canadian Electrical Code (C22.1).

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 Canadian Electrical Code (C22.1). The equipment shall be installed in an enclosure with a minimum ingress protection rating 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.
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**

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

**16. Certificate History**

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